

	GQF10a Front Page Form Geophysical Survey Activities BLOCK 2 "LOT01", Offshore Greece	Rev. 11 Rev. date: 2025/05/19
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OFFSHORE
GEOPHYSICAL &
ENVIRONMENTAL SURVEY

GEOPHYSICAL SURVEY ACTIVITIES
BLOCK 2
"LOT01"
OFFSHORE GREECE

S/V ECO ONE Geophysical Survey - Final Survey Report



IDP	Delivery Date	Survey area	Contract No.
EER001	09/06/2026	BLOCK 2 - OFFSHORE GREECE	2600012533
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N. Chicco	S. Sandroni		S. Sandroni

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1.0.0 ABBREVIATIONS AND REFERENCED DOCUMENTS

1.1.1 Abbreviations and Acronyms

A list of the abbreviations included in this document is presented in Table 1.

Table 1 – Abbreviations and Acronyms

Abbreviation	Description
AAE-1	Asia-Africa-Europe 1 submarine cable
ADCP	Acoustic Doppler Current Profiler
AIS	Automatic Identification System
ASCII	American Standard Code for Information Interchange
AUV	Autonomous Underwater Vehicle
BSF	Below Sea Floor
CBL	Cable
CRP	Common Reference Point
CSR	COMPANY Site Representative
CTD	Conductivity, Temperature and Depth
DGNSS	Differential Global Navigation Satellite System
DP	Dynamically Positioned
DPR	Daily Progress Report
DTM	Detailed Terrain Model
DVL - AINS	Doppler Velocity Log Aided Inertial Navigation System
EBS	Environmental Baseline Survey
EPSG	European Petroleum Survey Group
ESRI	Environmental Systems Research Institute
ETS	Eco Tech Systems Srl
FLS	Forward Looking Sonar
GPS	Global Positioning System
HISAS	High-resolution Synthetic Aperture Sonar
HOS	HUGIN Operator Station
HSE	Health, Safety and Environment
IDP	Internal Project Identifier
IHO	International Hydrographic Organization
IIR	Ionian Islands Region
INS	Inertial Navigation System
ISO	International Standards Organisation

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Abbreviation	Description
KF	Kalman Filter
LAT	Lowest Astronomical Tide
LGH	Lighthouse S.p.A.
MAC	Mobilisation Activity Checklist
MAG	Magnetometer
MBES	Multi Beam Echo Sounder
MMO	Marine Mammals Observer
MRU	Motion Reference Unit
MSL	Mean Sea Level
MTD	Mass Transport Deposit
MXD	Map Exchange Document
NA	Not Applicable
OPITO	Offshore Petroleum Industry Training Organization
PDF	Portable Document Format
PPE	Personal Protective Equipment
POS	Payload Operator Station
PQMP	Project Quality Management Plan
QA	Quality Assurance
QC	Quality Control
RU	Regional Unit
SBAS	Satellite Based Augmentation Systems
SBP	Sub-Bottom Profiler
SEG	Society of Exploration Geophysics
SI	System International
SIMOPS	Simultaneous Operations
SOC	Safety Observation Card
SOM	Survey Operations Manual
SOW	Scope of Work
SPA	Società Per Azioni
SSS	Side Scan Sonar
STD	Standard Deviation
SVP	Sound Velocity Profiler
THU	Total Horizontal Uncertainty
TPU	Total Propagate Uncertainty
TVD	True Vertical Depth

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Abbreviation	Description
TVU	Total Vertical Uncertainty
TM	Transverse Mercator
TW	Territorial Waters
USBL	Ultra-Short Base Line
UTC	Coordinated Universal Time
UTM	Universal Transverse Mercator
WD	Water Depth
WGS	World Geodetic System
WKT	Well Known Text

Table 2 – Main International Codes, Standards, Regulations and Papers

Code	Document Name
ACCOBAMS	Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic Area
D. Lgs 81	Testo Unico sulla salute e sicurezza sul lavoro
D. Lgs 272	Principi generali in materia di sicurezza ed igiene del lavoro inerenti le operazioni e i servizi portuali
EPA 823-B-95-001	QA/QC Guidance for Sampling and Analysis of Sediments, Water, and Tissues for Dredged Material Evaluations
I449EN	Protocol for the Protection of the Mediterranean Sea against Pollution resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil (Offshore Protocol)
IHO S-44	Standards for Hydrographic Surveys, Special Publication No 44, 5th Edition, February 2008
IMCA	Standard for Underwater Acoustic Positioning (2011) IMO Regulations
IMCA S003	Guidelines for the Use of Multibeam Echosounder for Offshore Surveys
IMCA S016	Guidance on Mobilisation Requirements for Offshore Survey Operations
IMCA S017	Guidance on Vessel USBL System for Use in Offshore Survey, Positioning and DP Operations
IMO Regulations	International Maritime Organisation for the Safety and Security of Shipping & Prevention of Marine and Atmospheric Pollution
IOGP 373-19-IMCA S015	Guidelines for DGNSS Positioning in the Oil and Gas Industry
IOGP SSDM V2	Seabed Survey Data Model – Recommended GIS Data Structure for Seabed Survey Deliverables
ISM Code	International Management Code for Safe Operation of Ships & Pollution Prevention

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Code	Document Name
ISO 9000	Quality Management Systems – Fundamentals and Vocabulary
ISO 9001	Quality Management Systems – Requirements
ISO 9004	Managing for the sustained success of an organization – A quality management approach
ISO 14001	Environmental Management System
ISO 19011	Guidelines for auditing management systems
ISO 19115	Geographic Information - Metadata - Part 1 : Fundamentals - Part 2 : Extensions for acquisition and processing
ISO 19901-7	Petroleum and Natural Gas Industries – Specific Requirements for Offshore Structures – Part 7 : Stationkeeping Systems for Floating Offshore Structures and Mobile Offshore Units
ISO 19901-8	Petroleum and natural gas industries - Specific requirements for offshore structures - Part 8: Marine soil investigations
ISO 19901-10	Petroleum and Natural Gas Industries – Specific Requirements for Offshore Structures – Part 10 : Marine Geophysical Investigations
ISO 45001	Occupational health and safety management systems -- Requirements with guidance for use
JCGM 200	International Vocabulary of Metrology
JNCC	Guidelines for Minimising the Risk of Injury and Disturbance to Marine Mammals from Seismic Surveys
MARPOL 73/78	International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978
OPITO	Offshore Petroleum Industry Training Organization, Industry Training and Competency Standards
OSIG	Guidance Notes for the Planning and Execution of Geophysical and Geotechnical Ground Investigations for Offshore Renewable Energy Developments
RINA	Rules for Classification of Ships
SOLAS Convention	International Convention for the Safety of Life at Sea
Note: Latest available revision is considered, unless noted otherwise	

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2.0.0 INTRODUCTION

2.1.1 Project Overview

The CONTRACTOR Lighthouse S.p.A was entrusted by Energean (here referred as the COMPANY) to perform a geophysical survey investigation with the aim of acquiring all bathymetric and geophysical data for the currently planned ASOPUS-1A_Exploration and the potential future ASOPUS-1B Exploration wells, located in the Ionian Sea at the western boundary of the Offshore BLOCK 2 (red polygon in Figure 1) that represents the maritime delimitation between the continental shelf areas of Italy and Greece.

Block 2 is located approximately 20 km west of the Island of Corfu at water depths ranging from 750 to 1200 meters and falls within the Regional Unit (RU) of Corfu, which is part of the Ionian Islands Region (IIR).

The study area has an extension of 320 km² and a water depth ranging to 754.08m LAT to 924.08 m LAT.

Figure 1 shows the location of BLOCK 2 (white polygon) and the survey area (red polygon); it is also represented the location of the planned ASOPUS-1A_Exploration (green dot) and the potential future location of ASOPUS-1B_Exploration wells (red dot).

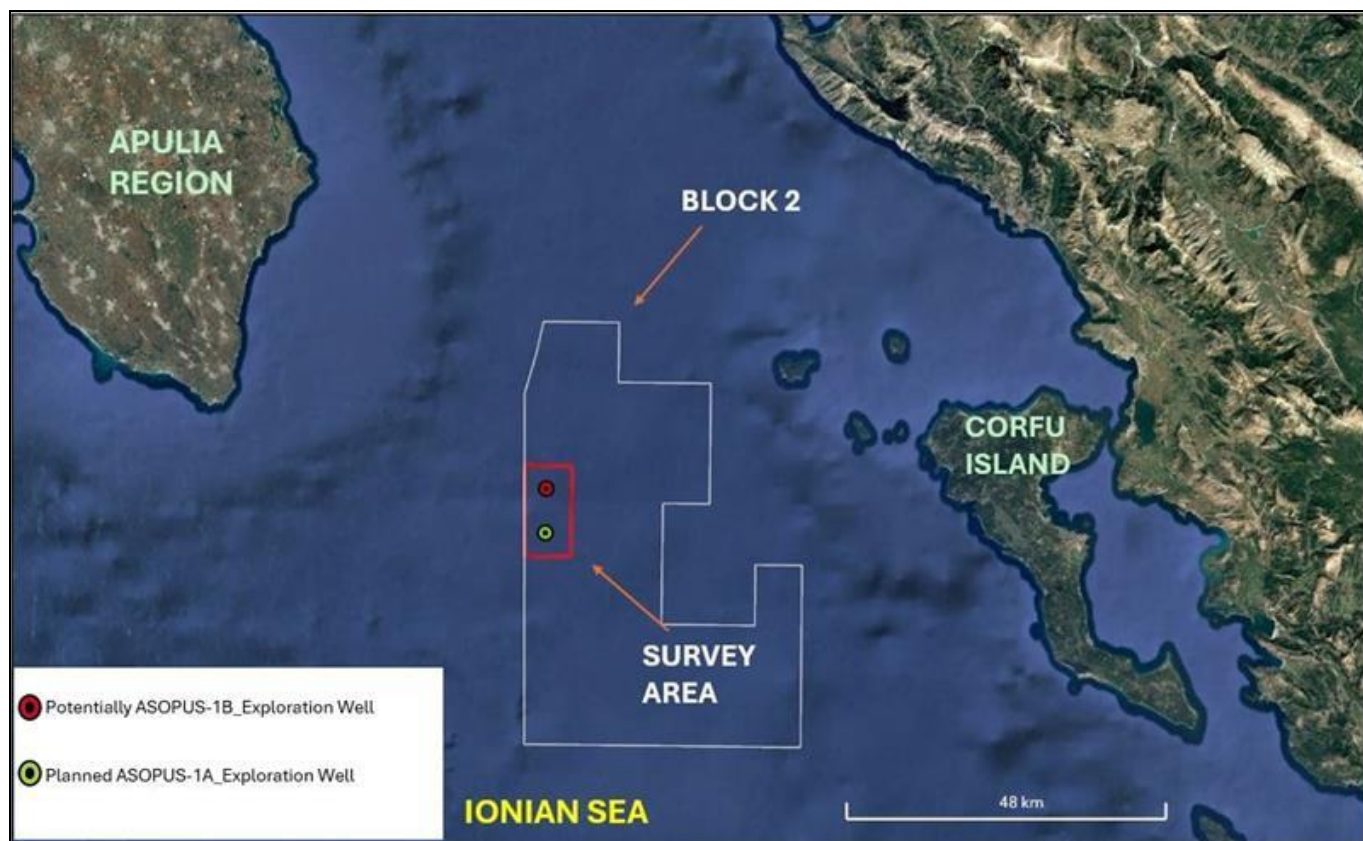


Figure 1 – Overview of the surveyed area (green polygon) within BLOCK 2 (white polygon)

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2.1.2 Scope of WORK Summary

The geophysical survey was conducted as part of the Lot 1 Geophysical Campaign and in accordance with the Lot 1 Geophysical requirements. The campaign was executed to fulfil the Scope of Work defined in the document "GRC-BL2-SW-HSE-002_Asopus 1_ESBS Field Support Activities_rev1.

The Survey Campaign included AUV High-Resolution Geophysical and AUV Photographic elements, divided as follows:

- MBES (multibeam Echo Sounder), HISAS (High-Resolution Synthetic Aperture Sonar), SBP (Sub-bottom) and MAG (magnetometer) data have been acquired by AUV in eight (8) missions to guarantee a full coverage of the survey area in accordance with the SOW.
- AUV CATHX CAMERA has been used in two (2) additional missions to provide images of seventeen (17) spots. Sixteen (16) of these locations were chosen in the same spot of the environmental sampling stations as per SOW. One (1) additional location was added after Client Rep approval to acquire data on a potential target zone of interest recognized in the HISAS data.

The geophysical campaign has provided full spatial coverage to characterize seabed morphology, shallow geology, potential geohazards, and to detect any anthropogenic or natural features that may impact project development. It involved:

- **Multibeam Echo Sounder (MBES)** for high-resolution bathymetric mapping and detection of morphological seabed features
- **High-resolution Synthetic Aperture Sonar (HISAS)** for identification of seabed structures, man-made objects (e.g. wrecks, pipelines), sediment features (e.g. ripples, sand waves), of archaeological or ecological relevance
- **Magnetometer (MAG)** for the detection of ferromagnetic anomalies such as wrecks, and buried infrastructure (e.g. cables, pipelines)
- **Sub-Bottom Profiler (SBP)** for imaging shallow sub-seabed geology.
- **CathX Camera** for high-resolution pictures on the seventeen (17) spots given by the client

The final aim of the geophysical survey was to:

- Establish the bathymetry by means of MBES.
- Describe seabed morphology, unevenness (e.g. scour zones, sand ripples, sand waves/dunes, seabed vegetation) and slope gradient by means of MBES and HiSAS.
- Identify geohazards (e.g. faults, rock outcrops/ridges, pockmarks/gas seepages, mud volcanoes, boulders, shallow gas, steep slopes prone to instability) by means of MBES, HiSAS and SBP.
- Identify man-made constraints (e.g. shipwrecks, well heads, sealines, power cables and communication cables, debris, unexploded ordnances) by means of MBES, HiSAS, SBP and Magnetometer.
- Provide an interpretation of the stratigraphic profiles (layers and their reflectors, erosional surfaces stratigraphic patterns, in-filled channels) across the area, by means of SBP.
- Provide a map with all potential geological and man-made features that may influence the future drilling operations, subsea wells, subsea structures, and pipelines/flowlines/umbilical.

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3.0.0 SURVEY REQUIREMENTS

3.1.1 Survey Control-Horizontal Datum

All the positions and coordinates presented in this study are referenced to WGS84 using the UTM 34 North projection (EPSG code: 32634).

In the following table are illustrated all the datum details, transformations and projection parameters.

Table 3 – Project Projection Parameters

Ellipsoid Parameters	
Ellipsoid	World Geodetic System 1984
Datum	WGS 84
Semi-Major Axis	6 378 137 m
Inverse Flattening	6 356 752.314 m
Semi-Minor Axis	1/f = 298.2572236
Eccentricity	0.00669438
Projection Parameters	
Grid Projection	Universal Transverse Mercator
Grid System	UTM – Zone 34 North
Central Meridian (CM)	21
Latitude of Origin	0° Equator
UTM Zone	34 North
Scale Factor on CM	0.9996
False Easting	500 000m
False Northing	0 m
Unit	Meter
Angular Units	Degrees (°) Grid (unless otherwise stated)

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3.1.2 Vertical Datum and tide stations for tide prediction and LAT reduction

The Vertical Datum adopted for the final deliveries is the Lowest Astronomical Level (LAT).

The lowest astronomical tide reduction is calculated using twenty-five (25) harmonic tidal constituents extracted from the TPXO global tidal model (TPXO10.v2). The LAT is defined as the global minimum of the predicted tidal elevation obtained from the harmonic synthesis of the 25 selected constituents. This value is evaluated over an 18.6-year period, corresponding to a complete luni-solar nodal cycle.

Two virtual tide stations (EER001_1 and EER001_2 in Figure 2) have been used to cover the surveyed area.

Tide values and LAT reduction values have been calculated using TPXO model 10 v.2.

The location of the two virtual stations is shown in Figure 2.

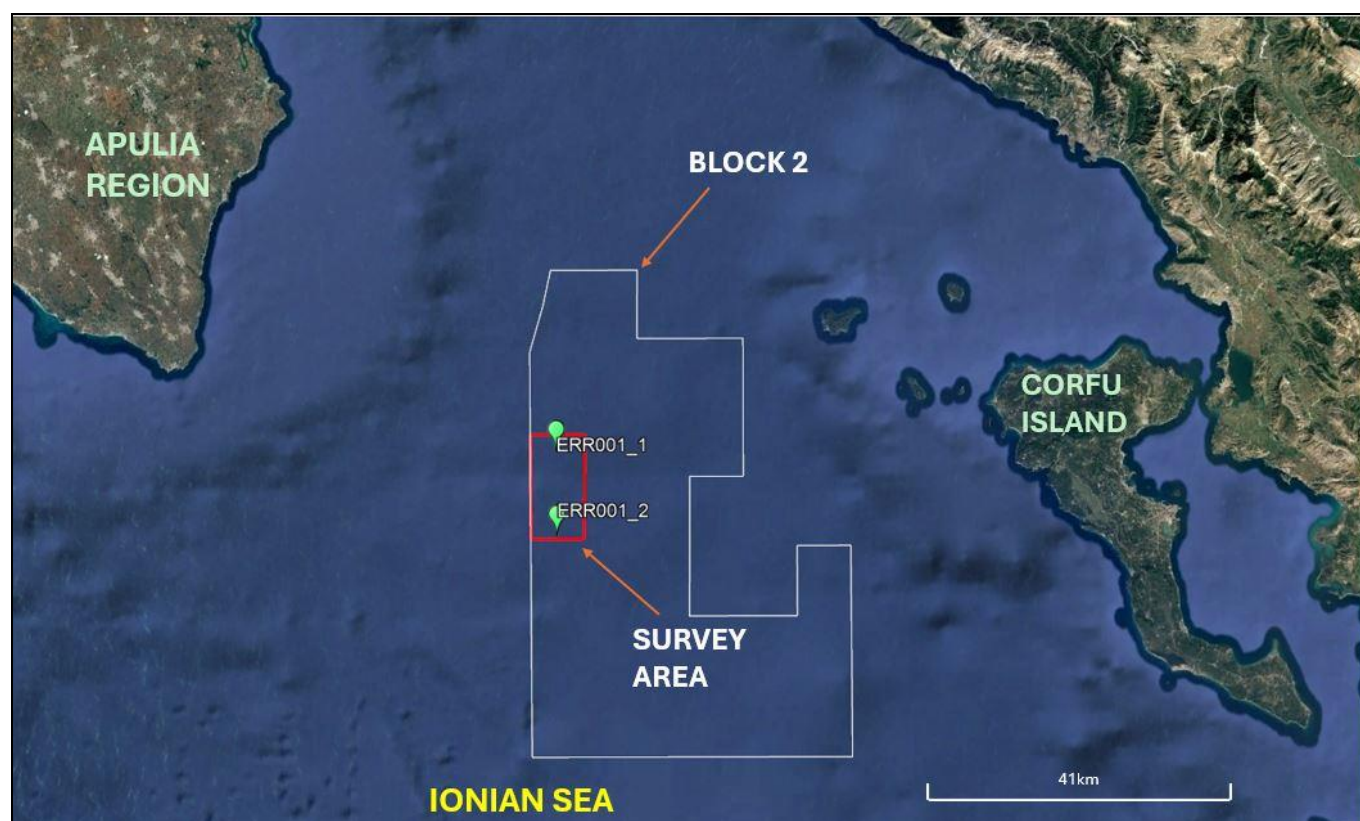


Figure 2 – Location of the selected tide stations

3.1.3 Survey Convention Grid Convergence

The difference between True North and Grid North (Convergence) varies across geographical extents. This value has been computed in real time to be applied in the navigation software.

Figure 3 describes the Gauss-Bomford convergence sign convention, using the formula:

$$\text{Grid Bearing } \beta = \text{True Bearing } \alpha + (\pm) \text{ Convergence } \gamma$$

Note: The grey watermark sign under each quadrant in the diagram is the convergence sign convention applied in the above calculation.

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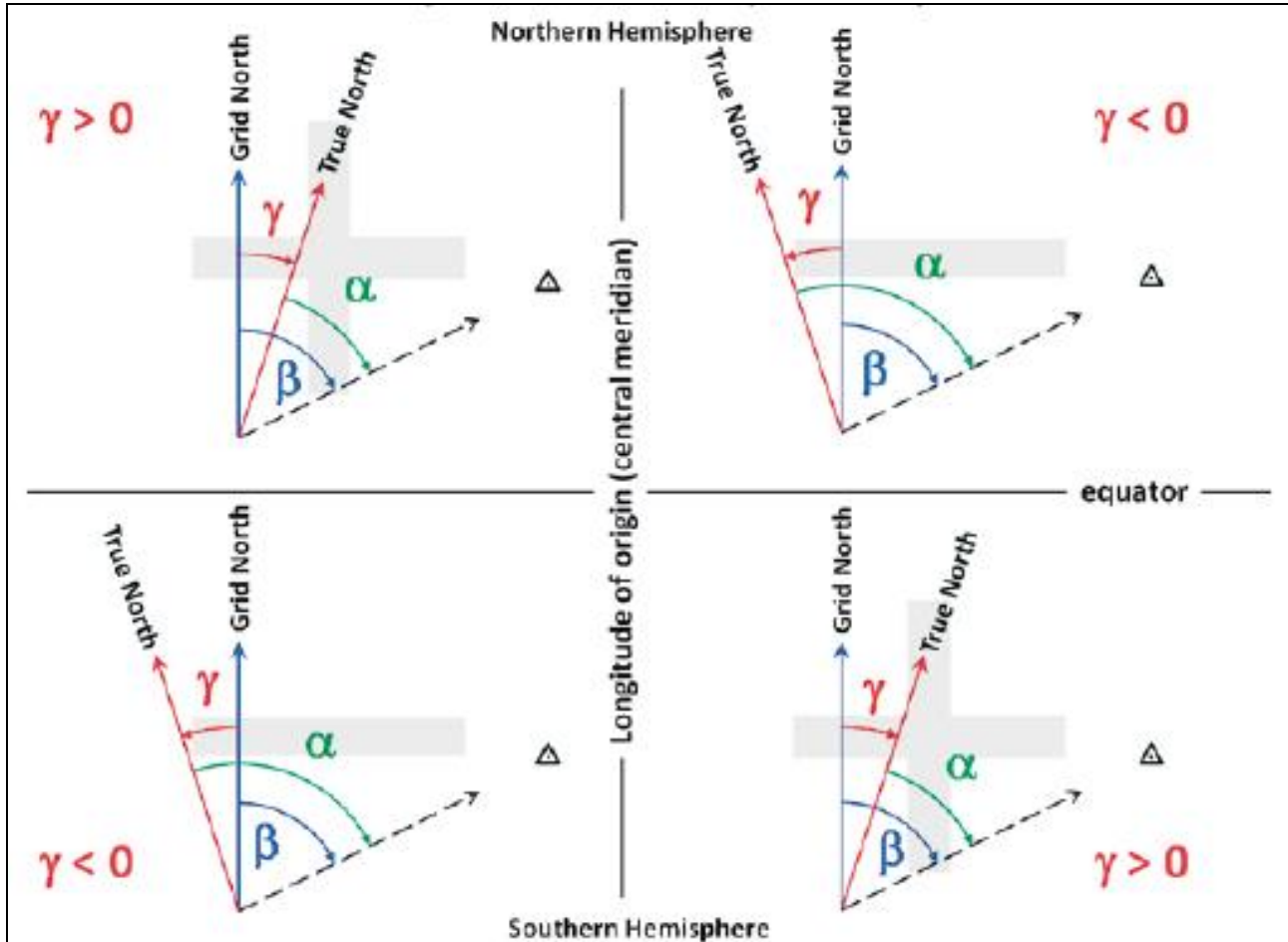


Figure 3 - Grid Convergence Sign Convention (after Bomford, 1985)

3.1.4 Orientation

All headings/bearings are referred to the Grid North. Where the True bearing is quoted, the value for Convergence in that specific location will be provided to facilitate the conversion between True bearing and Grid bearing. All charts state the convergence at the centre of the chart.

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3.1.5 Attitude Sign Convention

The sign convention adopted for rotation around X and Y axes (pitch and roll) is shown in Figure 4.

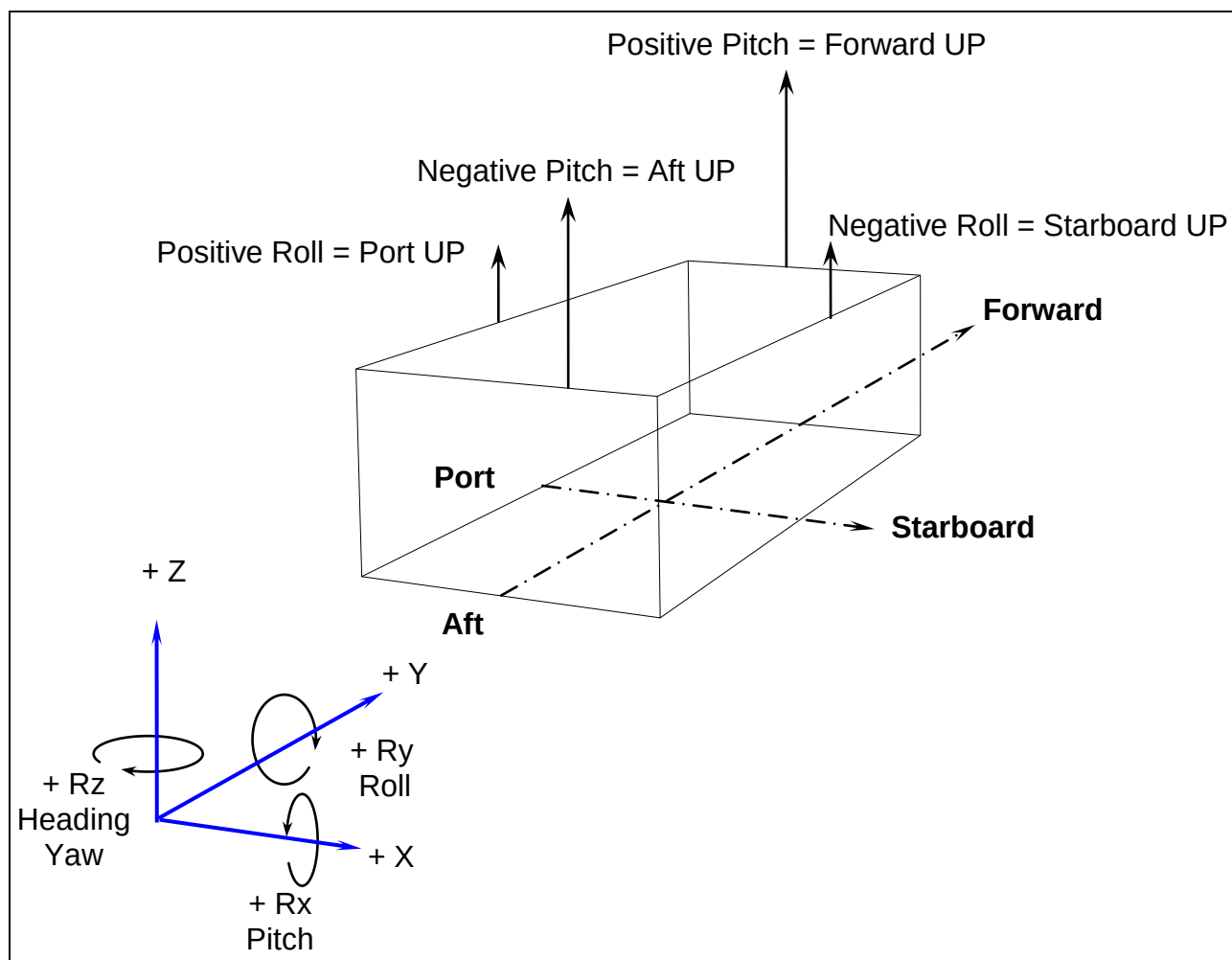


Figure 4 – Attitude Sign Convention

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3.1.6 Units of Measurement

The International System of Units (SI) has been adopted.

Table 4 – Units of Measurement

Parameter	Unit / Definition	Abbreviation
Linear	International Metre	m
Angular	Degree	°
Orientation	Grid unless otherwise stated. (True bearings shall have Convergence applied and be recorded as Grid values)	°G / °Grid
Pressure	Bar	Bar
Time	UTC	UTC

3.1.7 Time Zone and Synchronization

UTC time has been used for all operational reports and logbooks to ensure consistency with the survey raw data recorded with the same time convention.

Time synchronization is by 1PPS (One Pulse Per Second) and UTC signals from the DGNSS receiver being distributed to all sensors connected. Time-stamped data has been logged and processed in time-synchronised QINSy computers.

The AUV has an internal 1PPS generator. The output of the 1PPS generator is synchronised with the DGNSS time prior to each mission, using either a 1PPS signal from the AUV DGNSS receiver or a 1PPS signal from the ship DGNSS system.

The AUV automatically synchronizes itself with the AUV DGNSS as soon as a valid AUV DGNSS 1PPS signal is received and the AUV DGNSS has a valid position solution. Then, it sends time messages to connect payload sensors.

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3.1.8 Line Plans

The line plan used to cover all the study area was planned to maximise acquisition and processing capacity in accordance with the scope of work requirements. Table 5 shows a summary of the acquired lines:

Table 5 – AUV Geophysical Survey Requirements

Survey Area	Box Size	Main sensors	Line Spacing Inline/Cross	AUV Altitude	Lines No. Inline/Cross	Total Linear km
LOT01	320 km ²	HISAS+SBP+MBES+MAG	150m/1000m	~40m	49/14	773km
Lowpass	37.5 km ²	CATHX+ MAG+SBP+MBES	3m	~5-7m	17/NA	14km

The study area was divided into eight (8) missions in compliance with AUV capability (Figure 5).

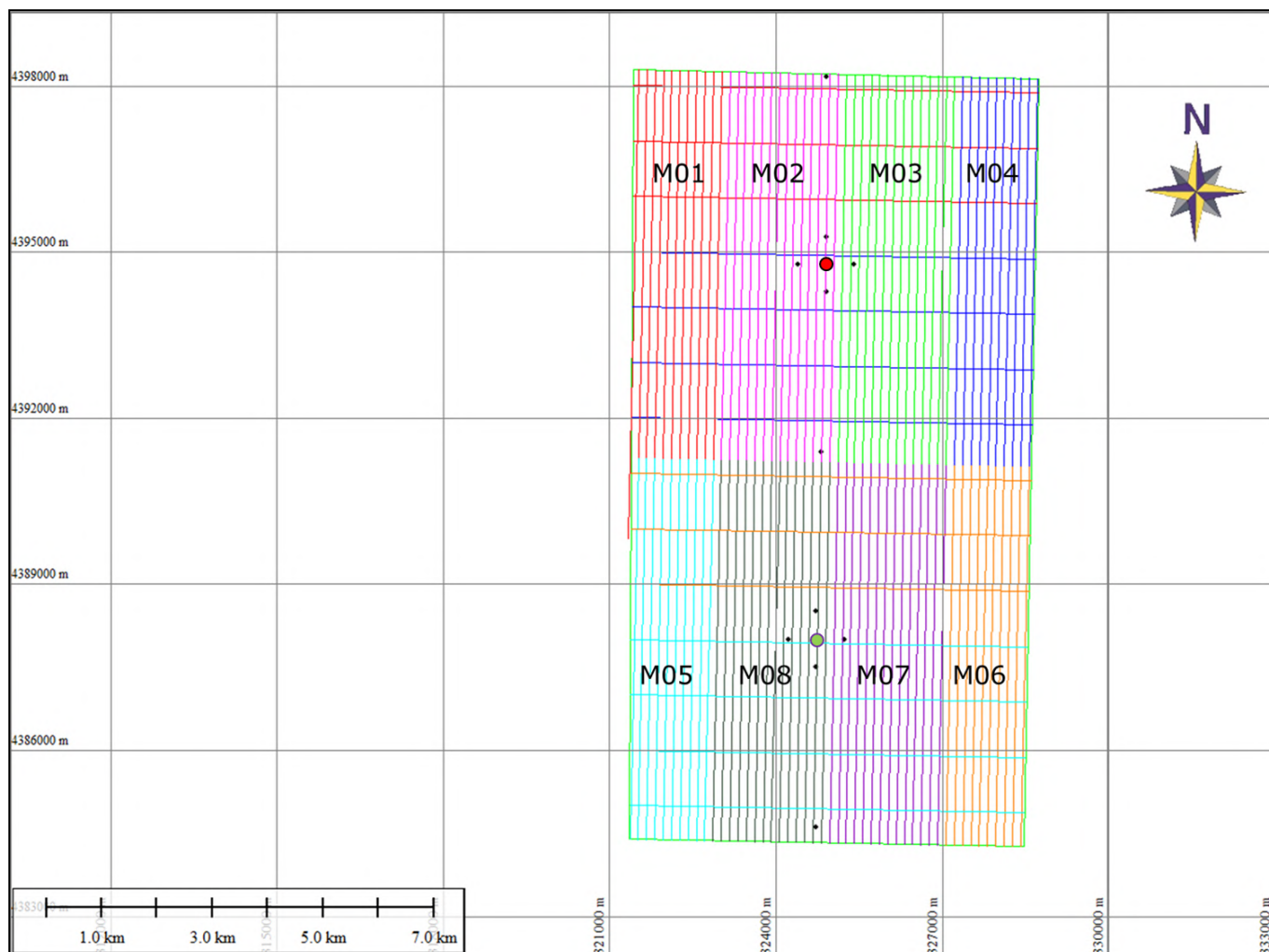


Figure 5 – AUV Mission Plan for LOT01 area

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The proposed coordinates for the currently planned ASOPUS-1A_Exploration (green dot in Figure 5) and the potential coordinates for the future ASOPUS-1B_Exploration well (red dot in Figure 5) are listed in Table 6.

Table 6 – Wells' coordinates provided by the client

Location	Latitude (°)	Longitude (°)	Easting (m)	Northing (m)
WGS84 UTM34N				
ASOPUS-1A_Exploration	39.623868	18.957920	324729.00	4388004.00
ASOPUS-1B_Exploration	39.684848	18.958200	324907.06	4394772.00

The automatic acquisition of the positioning data allowed plotting of the navigation lines to ensure the full coverage of the surveyed area and the completeness of planned lines.

In the following Figure 6 the acquired lines extracted from the SBP data are displayed.

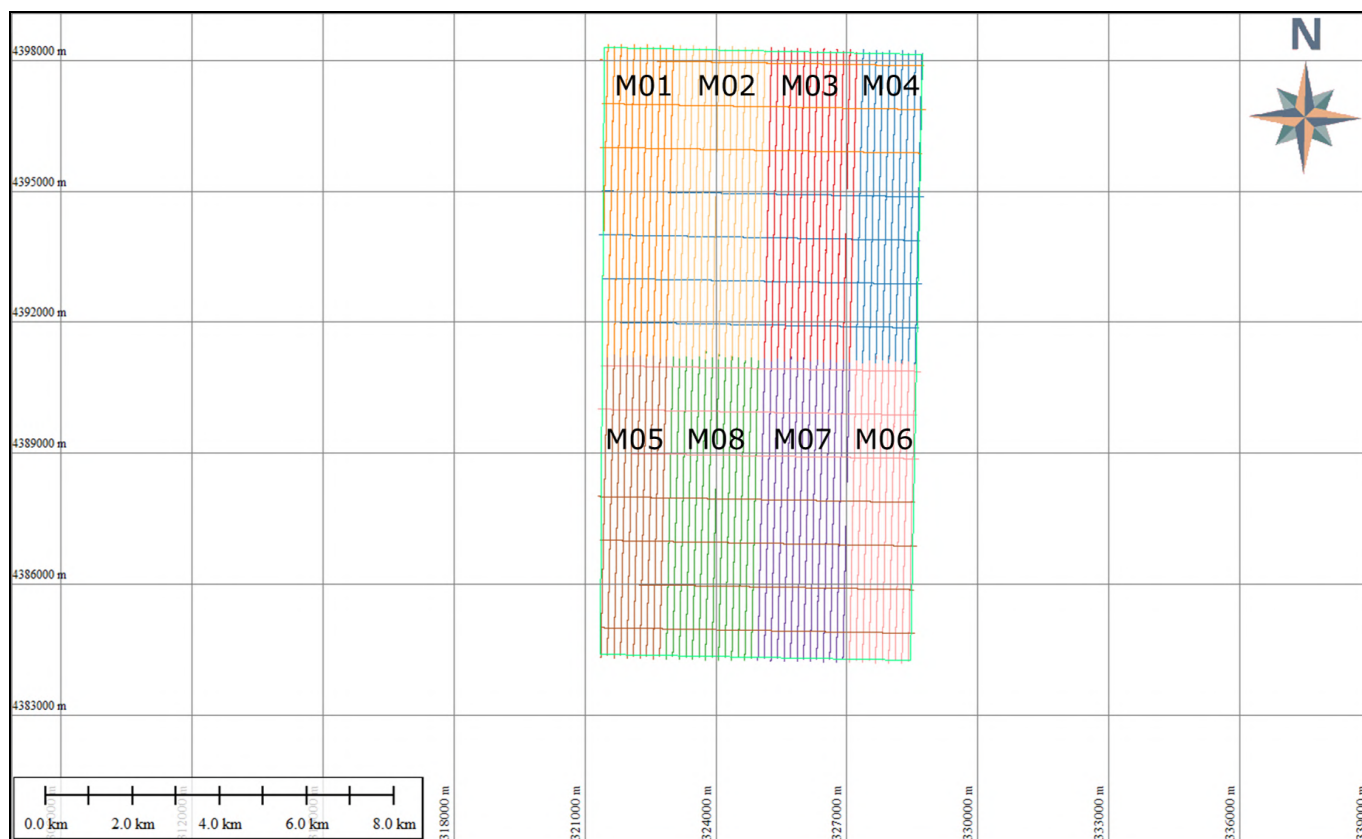


Figure 6 – AUV Acquired Lines for LOT01 area

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To provide a more detailed assessment, according to the SOW, a Visual inspection using a CATHX Color Camera mounted on Hugin 4500+ was performed. Seventeen (17) low passes were executed on a 50mx50m area:

- Ten (10) located at the EBS sampling stations, of which, two (2), at potentially future ASOPUS-1B well, were aborted (mosaic images were later deemed acceptable by the client).
- Three (3) located upstream the potentially future ASOPUS-1B_Exploration well, upstream ASOPUS-1B_Exploration and downstream currently planned ASOPUS-1A_Exploration respectfully.
- Three (3) located towards the coasts of Greece (2) and Italy (1) as reference station stations.
- One (1) located at the target T057 area.

The following table is a list of the mosaics generated from the CATHX data acquired and their locations

Table 7 – Cathx Mosaics list

mosaic	location
D1a*	324729 E, 4388004 N
D1b	324907 E, 4394772 N
D2a	325229 E, 4388004N
D2b	325407 E, 4394772 N
D3a	324729 E, 4388504 N
D3b	324907 E, 4395272 N
D4a*	324229 E, 4388004 N
D4b	324407 E, 4394772 N
D5a	324729 E, 4387504 N
D5b	324907 E, 4394272 N
D6a	324729 E, 4384619 N
D6b	324818 E, 4391388 N
D7b	324907 E, 4398157 N
Italy ref	304317 E, 4414647 N
Kerkyra ref	345736 E, 4385893 N
Othonoi ref	339666 E, 4400659 N
T057	326639 E, 4396094 N

*Aborted missions

The analysis of the seabed features through the low pass phase was planned to follow the main current, which in both planned well sites have a N-S direction: upstream/downstream respectfully.

The following figure shows the Visual Inspection line plan of acquired areas.

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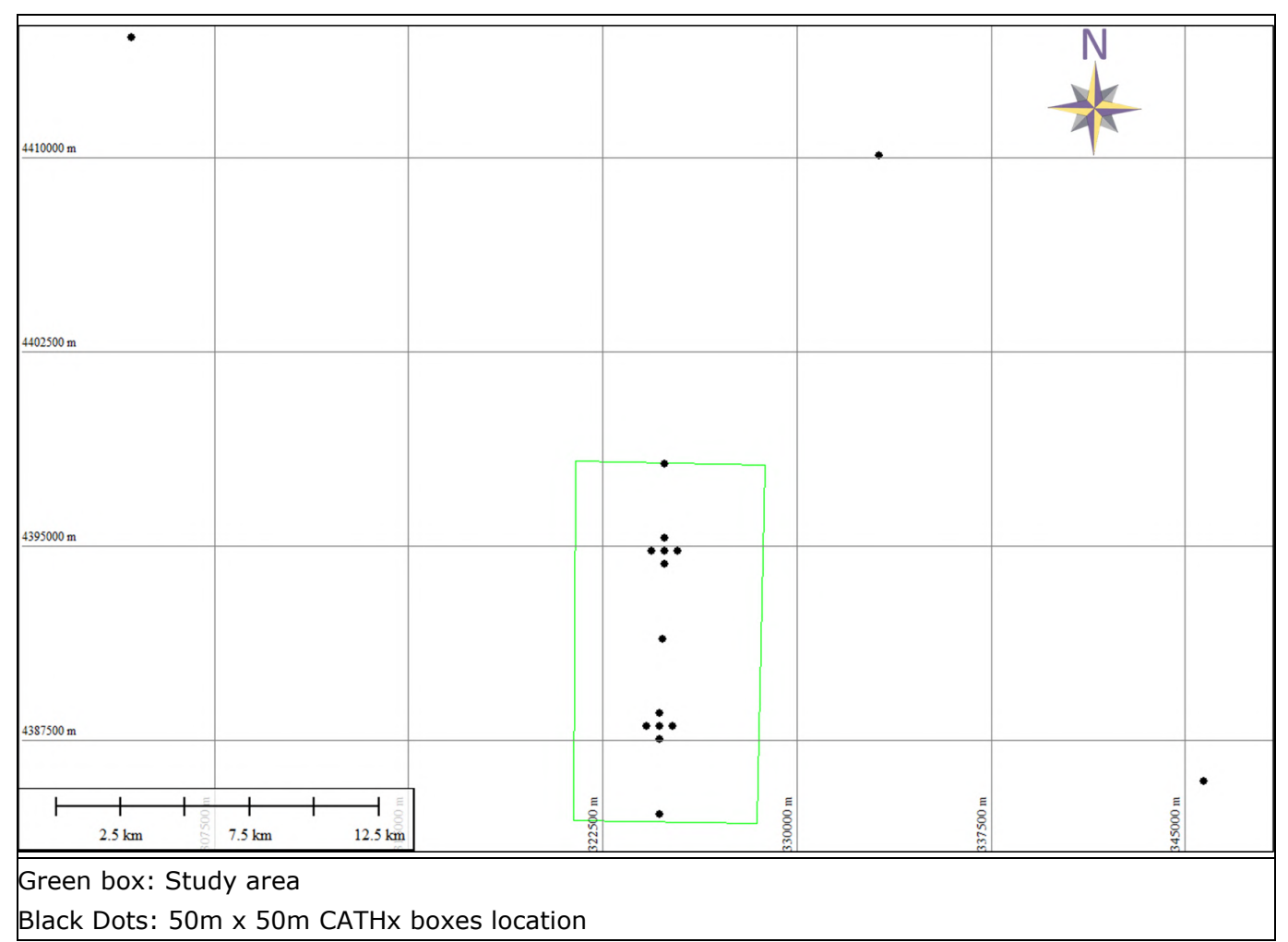


Figure 7 – Location of CATHx boxes for the Visual Inspection

Each 50mx50m area has a line spacing of 3m. This altitude created images of approximately 6mx3m in size, ensuring full data coverage between all lines (Figure 8).

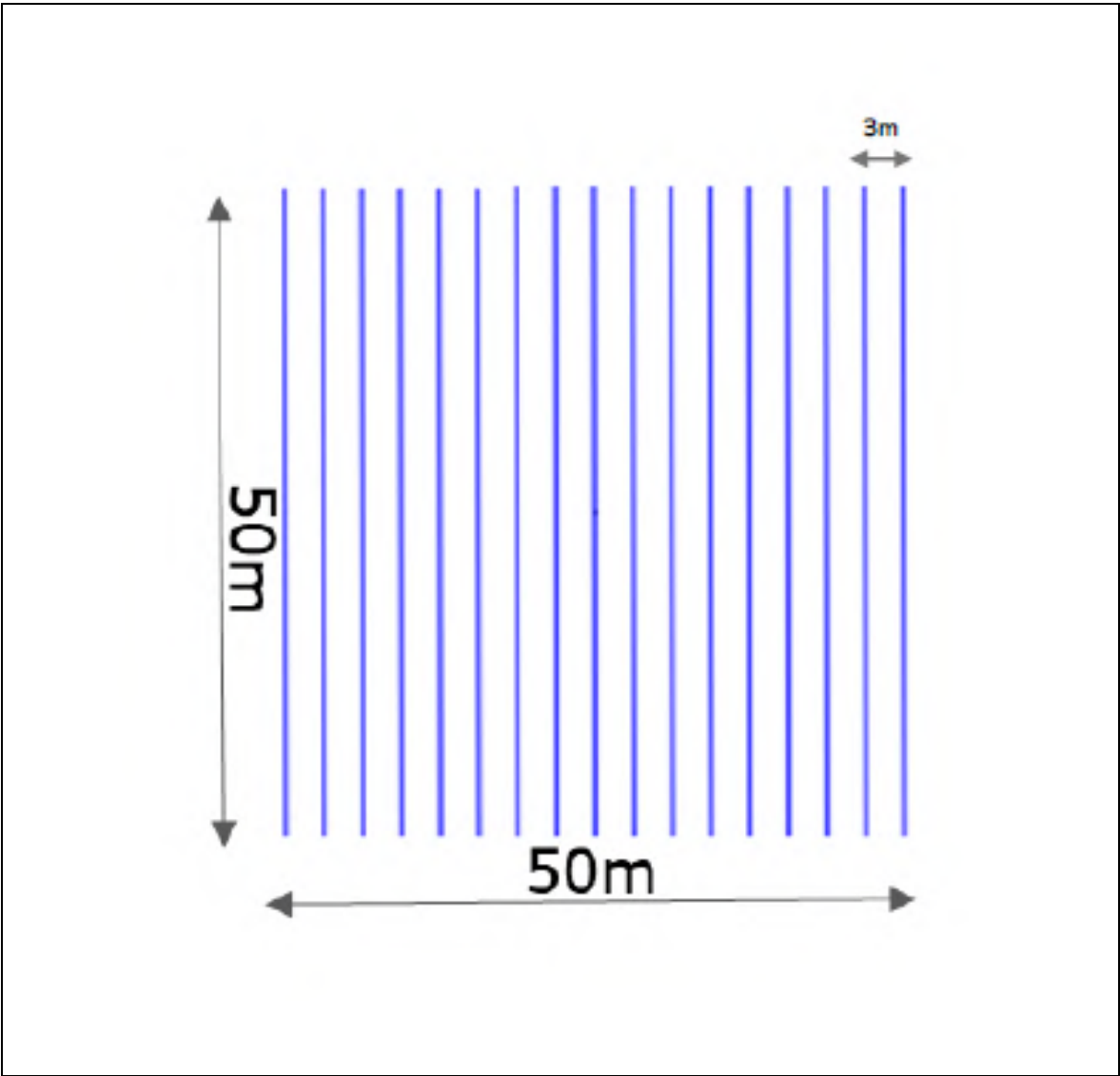


Figure 8 - Example of CathX inspection area

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4.0.0 SURVEY VESSEL PERSONNEL AND TIME SCHEDULE

4.1.1 Survey Vessel

Summary of the vessel characteristics and survey capabilities are presented below.

Table 8 – Vessel characteristics: S/V ECO ONE

S/VECO ONE	
Length overall	59.25m
Width overall	14.95m
Draft	4.95m
Cruising Speed	10kts

4.1.2 List of Personnel

Table 9 – On-board personnel – S/V ECO ONE

Name	Duty
Party Chief	Kevin Palmeri
AUV Surveyor	Hugo Pozzolini
AUV Surveyor	Giuseppe DeCaro
AUV Tech	Richard Vasey
AUV Tech	Michael Bain
AUV Tech	Dario Basciano
Processing Super Intended	Nicola Chicco
Senior Data Processor/Geophysicist	Etibar Abidov
Senior Data Processor/Geophysicist	Nneka Maris Aigbe
Senior Data Processor/Geophysicist	Sofia Stagni
Senior Data Processor/Geophysicist	Allison De Simone
Marine Mammal Observer	Alexandra Pierozynska
Passive Acoustic Monitored	Marcello Giustozzi

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4.1.3 Synthesis of the survey activities

Table 11 shows a summary of the activities performed between 4th April and 28th April 2026. Table 10 shows the meaning of the codes used in 4th column of Table 11.

Table 10 – Tasks and relative codes used during survey activities

Task	Code
Transit	TR
Disputed time	DP
Operation	OP
Port Call	PC
Weather Standby	WS
Client Standby	CS
Other Standby	OS
Downtime	DT
Mob/Demob	MD

Table 11 – Operation summary

Date	Start time	End Time	Code	Activity
02/04/2026	0:00	24:00	MD	Vessel alogside Crotone port - Change configuration from LOT2 to LOT1 - Crew change
03/04/2026	0:00	24:00	MD	Vessel alogside Crotone port - Change configuration from LOT2 to LOT1 - Crew change
04/04/2026	0:00	24:00	MD	Vessel alogside Crotone port - Change configuration from LOT2 to LOT1 - Crew change
05/04/2026	0:00	19:00	MD	Vessel alogside Crotone port - Change configuration from LOT2 to LOT1 - Crew change
	19:00	00:00:00	TR	Vessel started to sail toward working area
06/04/2026	0:00	7:00	TR	Vessel started to sail toward working area
	7:00	8:45	MD	Mooring line deployment
	8:45	11:30	MD	AUV Ballasting
	11:30	15:00	MD	MMO Pre Watch and SVP
	15:00	16:40	MD	Download and process SVP Data
	16:40	22:20	MD	USBL Verification
	22:20	24:00	MD	Vessel sailed toward the Sea Trial area
07/04/2026				
	0:00	3:00	TR	Vessel started to sail toward working area (ASOPUS 1-B)
	3:00	5:40	MD	Prepare to AUV Seatrials and MMO Pre watch
	5:40	6:45	MD	AUV Pre DIVE
	6:45	7:55	MD	AUV in the water but recovered due to communications issues

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Date	Start time	End Time	Code	Activity
	7:55	10:42	DT	AUV Maintenance
	10:42	13:31	MD	AUV launch and recovered due to communications issues
	13:31	16:15	DT	AUV Maintenance
	16:15	17:10	MD	AUV Pre DIVE
	17:10	18:10	MD	AUV launch and recovered due to communications issues
	18:10	24:00	DT	AUV Maintenance
08/04/2026	0:00	20:35	DT	AUV Maintenance
	20:35	24:00	MD	PAM watching
09/04/2026	0:00	6:00	DT	AUV Maintenance
	6:00	9:00	MD	Pre Dive - Test AUV in the water - Recovery
	9:00	10:20	MD	CTD cast for AUV SeaTrails and M01
	10:20	24:00	WS	Weather Standby
10/04/2026	0:00	2:15	WS	Weather Standby
	2:15	4:05	OP	PAM deployment, AUV Pre dive, TBC on bridge, PAM Recovery
	4:05	4:25	OP	AUV Descending at working depth and Soft Start
	4:25	24:00	OP	AUV SeaTrial (6 lines, cal01-cal06) and M01 (11 lines, er1m1l01-er1m1l11)
11/04/2024	0:00	5:30	OP	M01 (3lines, erm1x01-erm1x03)
	5:30	7:30	OP	AUV recovery procedures and data download
	7:30	9:05	OP	Pre dive - TBT on bridge - Pre watch start - AUV descending at working depth
	9:05	9:25	OP	Soft start - pre watch end
	9:25	24:00	OP	M02 (11 lines, er1m02l01- er1m02l11)
12/04/2026	0:00	13:35	OP	M02 (3lines, er1m2l12-er1m2l14) and M03 (er1m3l01-er1m3l07)
	13:35	16:00	OP	AUV recovery procedures and data download
	16:00	24:00	WS	Vessel start to sail toward shelter area due to bad weather in the working area
13/04/2026	0:00	24:00	WS	Weather standby in shelter area
14/04/2026	0:00	21:00	WS	Weather standby in shelter area
	21:00	24:00	WS	Vessel start to sail toward working area - Standby Weather
15/04/2026	0:00	19:00	WS	Weather standby
	19:00	20:30	OP	CTD Cast for M03_ M04
	20:30	24:00	WS	Weather standby + PAM Recording
16/04/2026	0:00	1:10	OP	AUV PreDive - TBT - Pre Watch
	1:10	1:35	OP	AUV Descending at work depth
	1:35	1:55	OP	Soft Start
	1:55	24:00	OP	M03 (7 lines, er1m3l08-er1m3l14) - M04 (10 lines, er1m4l01-er1m4l10)
17/04/2026	0:00	8:15	OP	M06 (5 lines, er1m6l10 - er1m6l06)
	8:15	9:10	OP	AUV recovery procedures

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Date	Start time	End Time	Code	Activity
	9:10	10:15	OP	AUV Data download
	10:15	24:00	WS	Weather Standby in working area
18/04/2026	0:00	24:00	WS	Weather Standby in working area
19/04/2026	0:00	2:00	WS	Weather Standby in working area
	2:00	3:05	OP	Pre Dive - TBT - Pre watch
	3:05	3:35	OP	AUV descending at work depth
	3:35	3:55	OP	Soft start
	3:55	24:00	OP	M06 (7 lines, er1m6l01 - er1m6l05 and er1m6x10-er1m6x09) - M07 (8 lines, er1m7l14 - er1m7l07)
20/04/2026	0:00	8:00	OP	M04 (4 lines, er1m4x04-er1m4x07) - M06 (1 line, er1m6x08)
	8:00	8:50	OP	AUV recovery procedures
	8:50	10:00	OP	AUV Data download and Pre Watch
	10:00	10:50	OP	Pre Dive - TBT
	10:50	11:20	OP	AUV descending at work depth
	11:20	11:40	OP	Soft start
21/04/2026	11:40	24:00	OP	M07 (6 lines, er1m6l01-er1m6l06) - M08 (4 lines, er1m8l11-er1m8l14)
	0:00	14:55	OP	M05 (4 lines, er1m4x01-er1m4x04) - M08 (6 lines, er1m8l10 - er1m8l05)
	14:55	16:05	OP	AUV recovery procedures
	16:05	17:35	OP	AUV Data download and Pre Watch
	17:35	18:30	OP	Pre Dive - TBT
	18:30	18:50	OP	AUV descending at work depth
	18:50	19:10	OP	Soft start
22/04/2026	19:10	24:00	OP	M08 (4 lines, er1m8l01-er1m8l04)
	0:00	6:00	OP	M05 (4 lines, er1m4l10-er1m4l07)
	6:00	7:00	OP	AUV recovery procedures
	7:00	9:00	OP	AUV Data download
23/04/2026	9:00	24:00	WS	Weather Standby in working area
	0:00	24:00	WS	Weather Standby in working area
24/04/2026	0:00	7:30	WS	Weather Standby in working area
	7:30	11:05	OP	Pre Dive - TBT - Pre Watch
	11:05	11:30	OP	AUV descending at working depth
	11:30	11:50	OP	Soft Start
	11:50	24:00	OP	M05 (6 lines, er1m5l01 - er1m5l06) - LOWPASS1 (box: D6A)
25/04/2026	0:00	5:50	WS	LOWPASS D3A - D2A - D5A
	5:50	16:30	OP	3 different attempts on D1A and D4a - ABORTED
	16:30	18:30	OP	PreWatch - Pre dive - TBT
	18:30	18:55	OP	AUV descending to work area
	18:55	19:15	OP	Soft Start

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Date	Start time	End Time	Code	Activity
	19:15	24:00	OP	LOWPASS D6B - D5B
26/04/2026	0:00	6:30	OP	LOWPASS D2B - D3B - D1B - D4B
	6:30	9:05	AW	T057- Possible ancient wreck
	9:05	24:00	OP	LOWPASS D7B - Italy Ref. - Othonoi Ref.
27/04/2026	0:00	5:05	OP	LOWPASS Kerkyra Ref.
	5:05	6:00	OP	AUV Recovery procedures
	6:00	13:00	OP	Mooring recovery
	13:00	19:00	OP	Italy Ref. Sampling
	19:00	20:15	OP	Check data
	20:15	24:00	TR	Transit to Crotona Port

4.1.4 Equipment

The following equipment has been mobilised on the *S/V ECO ONE* for the execution of all tasks related to the Offshore Geophysical Survey.

Table 12 – S/V ECO ONE Equipment List

System	Equipment	Primary	Spare
Primary Surface positioning	DGNSS Receiver Hemisphere R330	1	1
Secondary Surface positioning	Septentrio AsteRx-U3 Marine	1	-
Primary Heading sensor	HiPAP 351P-MGC	1	-
Secondary Heading sensor	Septentrio AsteRx-U3 Marine	1	-
AUV	Kongsberg HUGIN 4500+	1	-
USBL Transponder	Kongsberg cNODE MiniS	1	1
Sound Velocity Profiler	Hydro-Tech SVP1500	1	-
Barometer	SIAP+MICROS Digital Barometer	1	-
Passive Acoustic Monitoring	Co.L.Mar Passive Acoustic Monitoring System	1	1

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Table 13 – S/V ECO ONE Software List

Software	Application	Online/Offline
QINSy	Survey & Navigation software	Online
APOS	USBL (Survey & Vessel)	Online
Caris	MBES Data Processing	Offline
Seaview	HISAS/SBP/MAG Data Processing	Offline
Surfer	2D/3D Modelling software	Offline
ProgeCAD	Sampling Locations	Offline
PAMguard	PAMguard or equivalent	Online
ArcGIS / QGIS	Creation and use of Maps and compilation of geographic data	Offline
Geo Calculator	Grid to geographical conversion	Offline
	Geographical to grid conversion	Offline

Table 14 – AUV HUGIN 4500 Plus Sensor Payload

Equipment Type	Name and Manufacturer
USBL Transponder	cNode
Inertial Measurement Unit	Kongsberg Seatex MGC-R3
Depth Sensor	Paroscientific Digiquartz 8000
Altimeter Downward & Forward Looking	Kongsberg Mesotech 1007D
Forward Looking Sonar	Imagenex 837A "Delta T"
Acoustic Doppler Velocity Log & Profiler	Nortek DVL500
Multibeam Echosounder	Kongsberg Maritime EM2040
Interferometric Synthetic Aperture Sonar	Kongsberg Maritime HISAS 1032
Sub Bottom Profiler	Edgetech DW-216
Magnetometer	Ocean Floor Geophysics OFG-SCM
Still Laser Camera System	CathX M12
SVP/CTD Probe	SAIV SD208

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Table 15 – AUV 4500+: Payload Sensors Specifications

KONGSBERG SEATEX / HONEYWELL MGC-R3 / HG9900 INERTIAL MEASUREMENT UNIT (IMU)	Error of Distance Travelled: 0.25% m (1h straight line at 4kts) Resolution: 0.001° Accuracy Roll/Pitch: 0.01° RMS Accuracy HDG: 0.08° RMS or. 004° RMS (GNSS aided)
KONGSBERG cNODE Modem (AUV position and communication modem) Modem Explorer 34 with cNODE mini TD180	M18 - B41 Modem Frequency: 20 - 30 kHz (MF)
KONGSBERG cNODE Modem Transponder mini TD30V, mini TD40V, mini TD180	TD30V Beam Width: +/-15° Vertical TD40V Beam Width: +/-20° Vertical TD180 Beam Width: +/-90° Omni Directional
KONGSBERG cNODE Transponder (Emergency) MiniS 34-40V	M39 - B51 Beam Width: 40° Vertical Typical range capability: 5000m
PAROSCIENTIFIC DIGIQUARTZ DEPTH SENSOR 8000 series 8CB4500	Range: 0 - 10m H ₂ O to 0 - 7000m H ₂ O Range: 0 - 30psia to 0 - 10000psia Accuracy: 0.01%
KONGSBERG MESOTECH ALTIMETER DOWNWARD & FORWARD LOOKING 1007D	Frequency: 675kHz Min. Range: 0.3 – 1.0m Max Range: 5 - 75m
NORTEK 500 Ti6-000m ACOUSTIC DOPPLER CURRENT PROFILER - DOPPLER VELOCITY LOG (ADCP/DVL)	Frequency: 500kHz Bottom-track Range: 0.3 - 200m Current Profiling ADCP Max Range: 70m Max Ping Rate: 8Hz DVL default pingrate: 3Hz 1 Hz)/ping for DVL bottomtrack for navigation 1 Hz/ping for DVL watertrack for navigation 1 Hz/ping for ADCP data.
IMAGENEX 837A "Delta T" FORWARD LOOKING SONAR (FLS) - OBSTACLE AVOIDANCE	Frequency: 260 kHz Detectable Range: 0.5 - 100m Beams N°: 120
LEICA COMPASS HOUSING DMC-SX-5000	HDG Accuracy: 0.25° Elevation and Bank Accuracy +/- 0.1°
KONGSBERG MARITIME MULTIBEAM ECHOSOUNDER (MBES) EM2040	Frequency: 200 - 400kHz (at steps of 10kHz); 0.7°X0.7°
KONGSBERG MARITIME HISAS1032 4.5K INTERFEROMETRIC SYNTHETIC APERTURE SONAR (SAS)	Frequency: 85 - 115kHz Max Range 250m @2.5kts or 150m @4.0kts)
EDGETECH DW-216 SUB-BOTTOM PROFILER (SBP)	Frequency: 2 - 16kHz; Resolution: 6 - 10cm Penetration in coarse sand 6m. in clay 80m

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OCEAN FLOOR GEOPHYSICS OFG-SCM-Ti6000 MAGNETOMETER (MAG)	Dynamic Range: +/- 65μT (+/- 0.65 Gauss) Resolution: 0.0001 mGauss
CATHX LASER CAMERA FAST MODEL M12 B2000 F1.4 (48.5FOV)	APS -C sized CMOS with RGB Bayer Filter Resolution: 4096 x 3072 - 12.5 Megapixel 30 deg Tilt Angle
CATHX STILL COLOR CAMERA FAST FLY M12 L1000 F1.4 (48.5FOV)	Wavelength: 520nm diode laser. Stability: <0.25nm/°C Points/Profile: up tp 2046 per line/profile Profiles/Second: up to 40/s (ROI dependent) Points/Second: >60000/s
CATHX LED FORE W2000mm CAD6000m	N/A
CATHX LED AFT W3300mm CAD6000m	N/A
SAIV SD208SVP/CTD PROBE	<u>Conductivity</u> (Inductive Cell. Temp. & Press. Comp.) Range: 0 to 80 mS/cm Resolution: 0.00008 mS/cm Accuracy: ± 0.003 mS/cm <u>Salinity</u> (Calculated from C.T & D) Range: 0 to 50 ppt Resolution: 0.00008 ppt Accuracy: ± 0.003 ppt <u>Temperature</u> Range: -2 to +40°C Resolution: 0.0002°C Accuracy: ± 0.003°C <u>Pressure</u> Resolution: 0.01 dbar (m) Accuracy: ± 0.01% FS (-2 to +40°C) <u>Sound velocity</u> (Calculated from S.T &D) Range: 1300 to 1700m/s; Resol.: 0.5cm/s; Accuracy: ± 2cm/s

4.1.5 Calibrations & Measurements

Mobilization of the S/V ECO ONE was performed from 2nd and 9th April 2026. Calibration and verifications follow the Contractor internal procedures.

4.1.6 Surface Positioning System

Surface positioning has been achieved with the use of DGNSS receiver Hemisphere R330 installed onboard the vessel and located on the top of the container. Dedicated differential corrections providing sub meter accurate positioning.

The position data quality control is constantly monitored via a dedicated QC computer and navigation software QINSy.

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Accuracy of R330 DGNSS in differential correction mode H10 Atlas: 0.04m in RMS (67%); 0.08m in 2DRMS (95%).

4.1.7 AUV Underwater Navigation and Positioning

The AUV navigation was managed via its high-performance Doppler Velocity Log Aided Inertial Navigation System (DVL-AINS) that can integrate various forms of position measurement updates. The aided Inertial Navigation System (INS) calculates position, velocity and attitude using high frequency data from the Inertial Measurement Unit (IMU).

The HUGIN vehicle was equipped with a Kongsberg Seatex MGC R3 IMU navigation grade Inertial Measurement Unit (IMU) having an error growth of about 0.07% of the travelled distance per hour when integrated in an Inertial Navigation System (INS). To reduce or bound the Inertial Navigation System (INS) error drift the system was aided by external sensor measurements. These sensors were integrated with the INS through a Kalman Filter (KF), which performed this integration in a mathematically optimal manner. The AUV was deployed and followed by the survey vessel to provide constant position aiding during the underwater navigation: the survey vessel was equipped with the DGNSS system and tracks the AUV with the Ultra Short Base Line (USBL) acoustic positioning system. By combining DGNSS with USBL, a global position estimate was obtained, which was then transmitted to the AUV using the acoustic link.

Once reached the seabed, the HUGIN vehicle measured the AUV velocity relative to the seabed along four (4) acoustic beams. The information obtained from the pings in each beam was then merged to calculate the AUV velocity. The AUV internally merged all these informations to create a more reliable navigation solution named NavP.

The navigation data was then post-processed by means of NavLab software to refine the navp navigation.

4.1.8 Sound Velocity Profiler

The SVP probes available onboard is a SBE19 multi-parametric instrument that provide Sound Velocity, Salinity, Conductivity, Temperature and Density data through the water column.

The instrument will operate autonomously, with setup and data download performed by serial communications with PC before and after deployment.

The main scope for SVP probe is to record the sound velocity profile of the water column in order to use that value for the HiPAP system to increase USBL accuracy.

Prior to the first mission, and upon resumption of operations following an interruption or change of area, the first sound velocity profile will be acquired using the vessel-mounted frame and onboard winch. This will allow the sound velocity data along the water column in the working area to be recorded and subsequently applied in APOS to improve the accuracy of the subsea positioning data provided by the HiPAP system.

For subsequent missions within the same working area, the sound velocity profiles will be extracted from the recordings of the SAIV probe mounted on the HUGIN, which logs data during each dive and ascent of the vehicle. This provides updated sound velocity values along the water column that will be applied in APOS for each individual mission.

SAIV CTD SD208 (HUGIN)

Conductivity accuracy: ± 0.003 mS/cm.

Depth accuracy: $\pm 0.01\%$.

Temperature accuracy: $\pm 0.01^\circ\text{C}$.

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4.1.9 AUV Guidance and Control System

The Guidance and control system was responsible for safe navigation of the AUV in horizontal and vertical orientation through the water. The software is part of the Control Processor software and the external sensors used are part of the control sensors.

The Guidance and control system employed a modular design, providing accurate control of the AUV in all three dimensions. The AUV has been equipped with two rudders for horizontal control (yaw), two stern planes for vertical control (pitch) and a motor and propeller for propulsion and speed control. The guidance and control system provided the input to all these units.

Input to the guidance and control system was provided by the mission plan stored in the Control Processor (CP). The current state of the HUGIN vehicle was then compared with the references and used to determine the rudder/stern plane and motor actuation. The operator could change these inputs underway either by changing the mission plan or by setting the control system references directly in HuginOS.

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5.0.0 AUV DATA PROCESSING METHODOLOGIES

5.1.1 Navigation data processing

AUV position data post-processing is carried out using NavLab to improve the navigation data accuracy. Table 16 describes the fast-track processing sequence applied to the acquired data. Each step of the workflow is explained in detail in the following pages.

Table 16 – NAVIGATION Processing Sequence

STEPS	PROCESSING FLOW	DESCRIPTION
1	Ctd_profile.txt generation and control	A ctd profile is generated considering the atmospheric pressure values acquired by the barometer onboard of the vessel
2	Modify the most relevant values in Navlab configuration file	Navigation raw data are displayed to understand the minimum and maximum depth reached by the AUV during the mission and the Hipap accuracy. These data are put in the Navlab configuration file (*.ini)
3	Run NAVLAB	For the processing the program requires the mission folder path and the directory of the modified configuration file
4	Edit and delete wildpoints	Navlab allows to edit and remove manually all the measurements which exceed some range in accuracy and distance
5	Navlab Processing	Once the manual editing is complete the process starts and the result is a *.bin file containing the post-processed smooth navigation.
6	Application of Navlab processed navigation (*.bin)	Navlab processed navigation (*.bin) is injected into RAW data to have a better estimation of vehicle position, attitude (gyro, pitch, roll, heading), velocity and AUV sensor errors.

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5.1.2 MBES data processing

The acquired bathymetric data were quality checked and processed onboard by means of Caris HIPS and SIPS software (version 9.1.2). Table 17 describes the fast-track processing sequence applied to the acquired data.

Table 17 – MBES Processing Sequence

STEPS	PROCESSING FLOW	DESCRIPTION
1	Download *.all bathymetry files	*.all MBES RAW files downloaded from detachable Network Attached Storage (NAS) and transferred in a 16Tb server
3	Import of *.all files in Caris Software	*.all MBES RAW data are imported in Caris HIPS and SIPS software (version 9.1.2)
4	*.all files merged with Tide correction data	*.all MBES RAW data are merged with the Predicted Tide from TPX10-Atlas Model.
5	LAT reduction	Lat reduction value is applied to shift the MBES RAW lines.
6	RAW DATA QC	Verification of sounding accuracy and data density
7	RAW DTM creation	A DTM with 2mx2m cell is created from the RAW data.
8	Application of Navlab processed navigation	Navlab processed navigation is injected into *.all RAW MBES data to have a better estimation of vehicle position, attitude (gyro, pitch, roll, heading), velocity and AUV sensor errors
9	De-spike and data editing	Data are processed to delete any possible outliers
10	POST-PROCESSED DTM	Final DTM creation with 2mx2m cell size
11	EXPORT DTM	DTM is exported from CARIS as ASCII file (*.txt)
12	MAPS creation	The previous ASCII file is used to create BATHYMETRIC and SLOPE MAPS

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5.1.3 HISAS data processing

Kongsberg HISAS data have been pre-processed using NEXUS software, then the QC steps and post-processing have been carried out with Seaview Moga (v.7.0.255) software.

FOCUS processing suite merged the processed navigation to raw HISAS data and export *.xtf format data.

Table 18 describes the fast-track processing sequence applied to the acquired data.

Table 18 – HISAS Processing Sequence

STEPS	PROCESSING FLOW	DESCRIPTION
1	Download *.all SAS raw files	*.all SAS raw files are downloaded from detachable NAS (Network Attached Storage)
2	Processing of SAS raw files in NEXUS application	Starboard and port HISAS raw data are pre-scanned and processed in NEXUS. All survey lines (inlines and crosslines) are selected, excluding lines related to AUV turns and transits, and processed.
3	Import HISAS *.xtf files into SeaView	HISAS SASI (Synthetic Aperture Sidescan Imagery) output files (*.xtf) are imported into SeaView Moga software (v.7.0.255).
4	Line position check	After importing the data in *.xtf format, the position of the HISAS lines is checked and compared to the mission's line plan to ensure correct alignment and coverage.
5	Data Quality Check	The quality of the HISAS data signal is verified to ensure it is free from distortions, with no significant shifts from the bathymetry DTM. Presence of sudden intensity changes and gaps in the area coverage are also verified.
6	Gain application	Manual application of UGC and TVG filters
7	Nadir Transparency and range adjustment	Application of the transparency for the nadir area of each line. Adjustment of the outer ranges to eliminate noisy data.
8	Sonar contact detection	Detection of sonar contacts and features on the seafloor; this step is made with the help of REFLECTION, a Kongsberg software that provide a high-resolution display of the Hisas Data.
9	EXPORT Sonar contact log	Export of the Field Sonar Contact Log in *.xlsx file
10	EXPORT MOSAIC	Export of the imagery mosaic as GeoTIFF at 0.5m resolution
11	MAPS creation	Seabed morphology and interpreted features are charted

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5.1.4 SBP data processing

The SBP data were acquired in *.jsf format and processed on board applying a speed of sound value within the water column equal to the average value of the sound velocity profile obtained by the CTD mounted on the AUV.

Seaview Moga (v.7.0.255) software was used for SBP data processing. Table 19 describes the fast-track processing sequence applied to the acquired data.

Table 19 – SBP Processing Sequence

STEPS	PROCESSING FLOW	DESCRIPTION
1	Download *.jsf SBP files	*.jsf SBP files are downloaded from detachable NAS (Network Attached Storage).
2	Import of *.jsf files into SeaView	SBP data are imported into SeaView Moga software (version: v.7.0.255).
3	Set SVP mean velocity	The sound velocity (m/s) is set using the mean value obtained from the sound velocity profile (SVP) measurement.
4	First Line position check	After importing *.jsf files, line positions are checked against the mission's line plan to ensure correct alignment.
5	Data Presence and quality Check	Data presence and signal quality are checked for all lines, ensuring continuity and consistency between switches of the same line.
6	Navigation Injection	Navigation processed in NavLab software is injected to the *.jsf raw data files using SeaView Moga software.
7	Navigation export	Navigation is exported as shapefile.
8	Second line position check	Line positions are rechecked after navigation injection to identify any errors or shifts.
9	Switch aggregation	Switches from the same line are merged into single line files, renamed by line name and acquisition date.
10	Line quality check	Merged lines are checked individually. Depth is validated against the bathymetry.
11	Bottom Tracking	Bottom tracking is performed on each line to extract seabed depth values.
11	Gain application	Gain: TVG manual application
12	Buried Contact detection	Detection of buried contacts and main features on the shallow stratigraphy
13	SEGY file export	Processed SBP data are exported in SEG Y format
14	Export	Export of the buried contact list and mapped items
15	MAPS creation	Shallow stratigraphy interpretation is charted

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5.1.5 Magnetometer data processing

Comparative magnetic total field data has been acquired by Ocean Floor Geophysics magnetometer OFG-SCM-Ti6000 mounted on board the AUV. The acquired data has been exported in *.csv format (with Easting, Northing and field information) and then processed using SeaView Moga software (version: v.7.0.255). Table 20 describes the fast-track processing sequence applied to the acquired data.

Table 20 – MAG processing sequence

STEPS	PROCESSING FLOW	DESCRIPTION
1	Download *.txt MAG files	*.txt MAG files are downloaded from detachable NAS (Network Attached Storage).
2	Import of *.txt files into SeaView	MAG data are imported into SeaView Moga software (version: v.7.0.255). Raw data are acquired in <i>Gauss</i> .
3	First Line position check	After importing *.txt raw data files, line positions are checked against the line plan to ensure correct alignment.
4	Data Presence and quality Check	Data presence and quality are checked for all lines.
5	Navigation Injection	Navigation processed in NavLab software is injected into *.txt raw data files on SeaView Moga Software.
6	Second line position check	Line positions are rechecked after navigation injection to identify any errors or shifts.
7	Line Quality Check	Each line is reviewed for quality. Presence of gaps in between the switches is verified.
8	Magnetic Anomalies Detection	Detection of the magnetic anomalies due to ferrous magnetic objects
9	Export of the processed Mag field	Export of the processed Mag Field in *.csv format
10	EXPORT anomalies list	Export of the magnetic anomalies list in *.xlsx format
11	MAPS creation	The detected magnetic anomalies will be inserted in the final charts

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5.1.6 CathX data processing

CathX Camera images have been processed using CLARITY Software. Table 21 describes the fast-track processing sequence applied to the acquired data.

Table 21 – CATHX processing sequence

STEPS	PROCESSING FLOW	DESCRIPTION
1	Navigation Injection	Navigation processed in NavLab software is injected in CLARITY Software to georeference the Cathx pictures
2	Filtering	Apply Flat Field Correction to enhance the contrast of the images.
3	Orthorectification	Process orthorectification, distortion correction and sharpening
4	Data quality Check	Pictures are imported in GLOBAL MAPPER Software to check the overall quality.
5	Mosaic Creation	Pictures are merged to create a smooth mosaic for each spot (50m x 50m box).
6	EXPORT Mosaic	Mosaics are exported in Geotiff format

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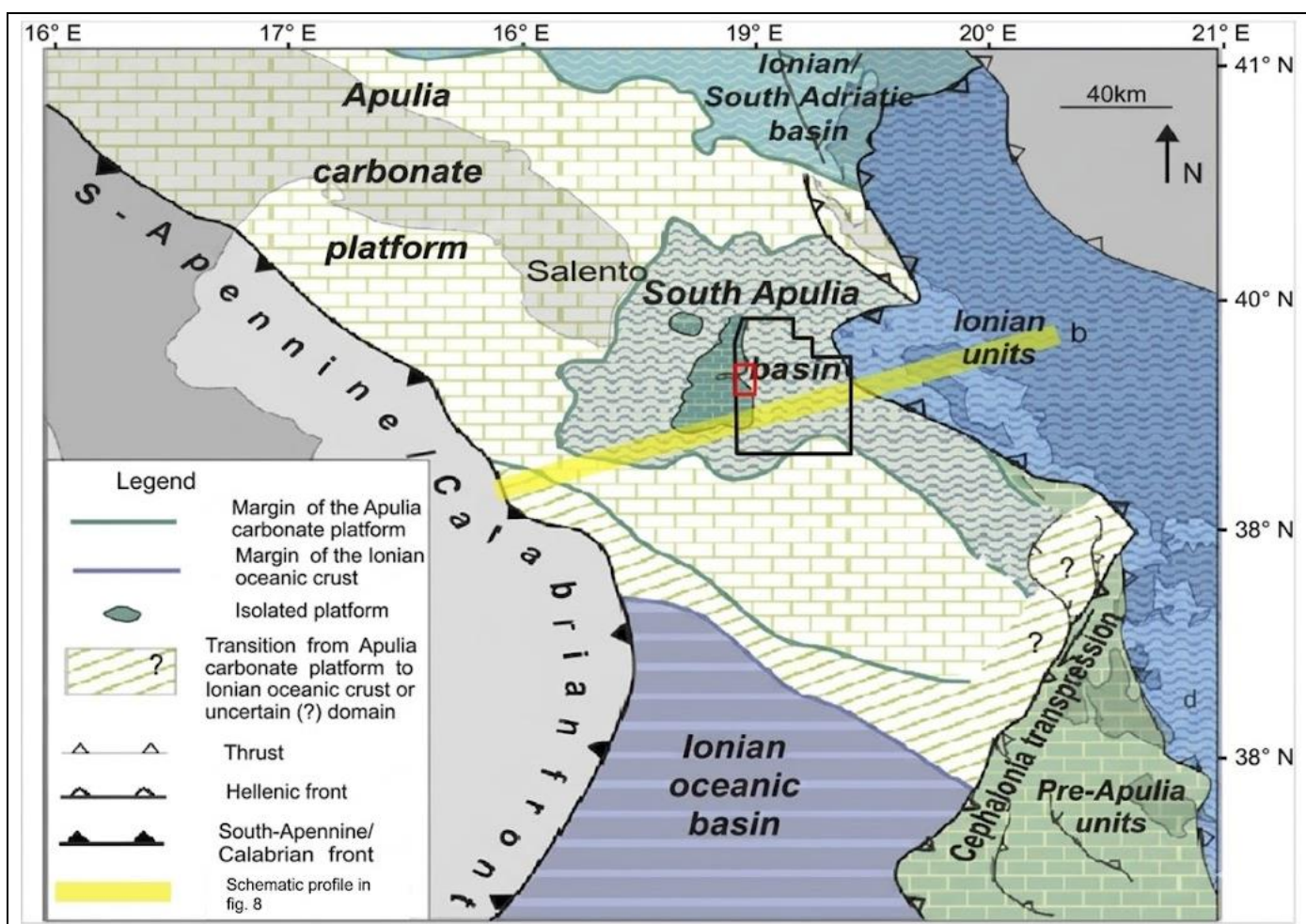
6.0.0 GEOLOGICAL SETTING

6.1.1 Geological Framework

The survey area is in the Ionian Sea, in the southern part of the Adria Microplate (Del Ben A. et al., 2015).

The Adria Microplate is a continental lithospheric block broken away from the African Plate.

In the SW part of the Apulian carbonate Platform, the paleo margin with the Ionian Oceanic Crust is still preserved; this was subducted under the Calabrian accretionary wedge to the west and the Hellenic Arc to the east. The origin of this two-sided subduction and the current crustal and lithospheric structure is still under debate (Zang W. et al. 2022).



Ionian Sea geological domains surrounded by the double subduction zone described above. Block 2 is displayed in black, and the study area is shown in red. The survey area falls on a wide isolated carbonate platform called "South Apulia Basin" (SAB). (Mod. From Del Ben A. et al., 2015). The schematic profile proposed in Figure 10 crosses the survey area with a SW-NE direction.

Figure 9 – Schematic map of the main sedimentary domains surrounding the study area

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As shown in the schematic section in Figure 10 the Adria microplate mainly consists of the Apulian carbonate platform that is a thick carbonate block of continental crust (Del Ben A. et al., 2015). From the seismic and boreholes data acquired along this carbonate block, the thickness of the carbonates varying between 4 and 12 km and is underlain by a thin, discontinuous layer of P-T terrigenous sediments, that are lacking in some areas (Bianchi I. et al., 2014). In its southern part, the Adria microplate represents the foreland of the Dinaric-Albanian Hellenic and Apennines chains (Brancatelli G. et al., 2022).

The Apulian carbonate platform lies on the Burano evaporites, a Triassic formation deposited along the continental margin of the Tethyan Ocean during its rifting stage (Chizzini N. et al., 2023). In the Southern part of the Adria Microplate Triassic evaporitic deposits have never been mapped in this deep-water Ionian offshore sector mainly due to the lack of petroleum exploration wells (Chizzini N. et al., 2023).

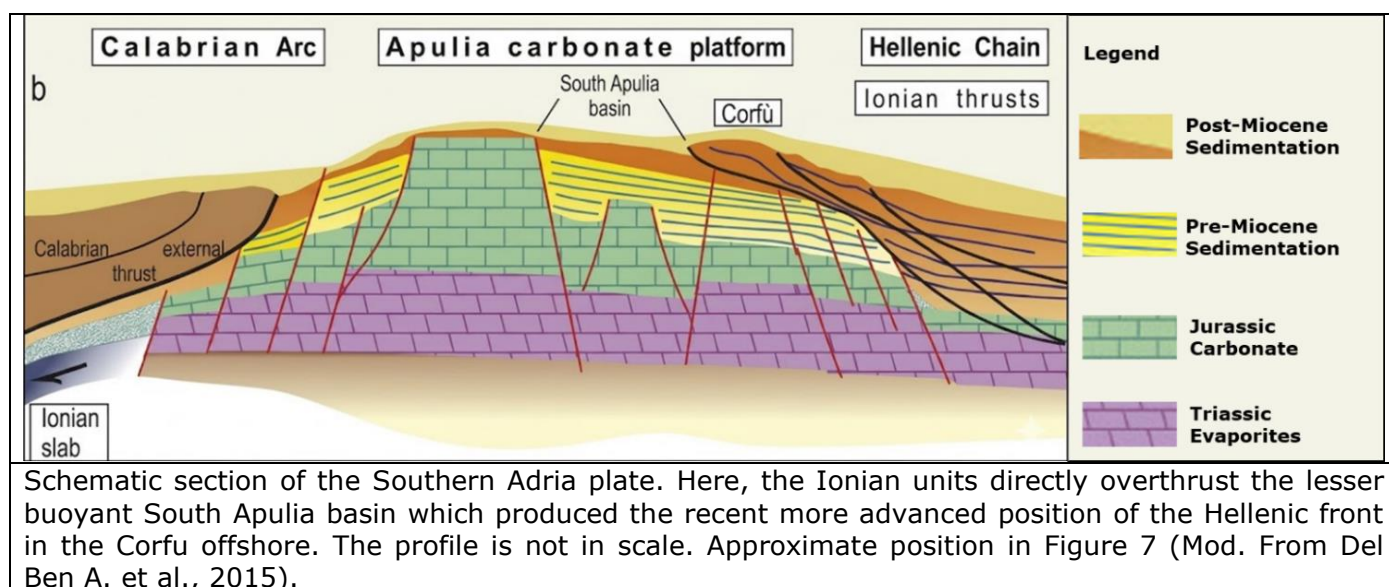


Figure 10 – Schematic section of the southern Adria plate.

The schematic section showed in Figure 10 crosses the Block 2 with a SW-NE direction (see Figure 9). In the surveyed area the Apulia platform is up-lifted due to the displacement of normal faults creating a "horst-graben" structure, widely developed in the onshore part of the Apulia platform (Apulia region, Italy). Here, the Apulian platform tends to be exposed or covered by a thin layer of post-Miocene sediments. During the Messinian salt-crisis the entire Mediterranean area has been interested by evaporites deposition (Messian Unit).

6.1.2 Tectonic History

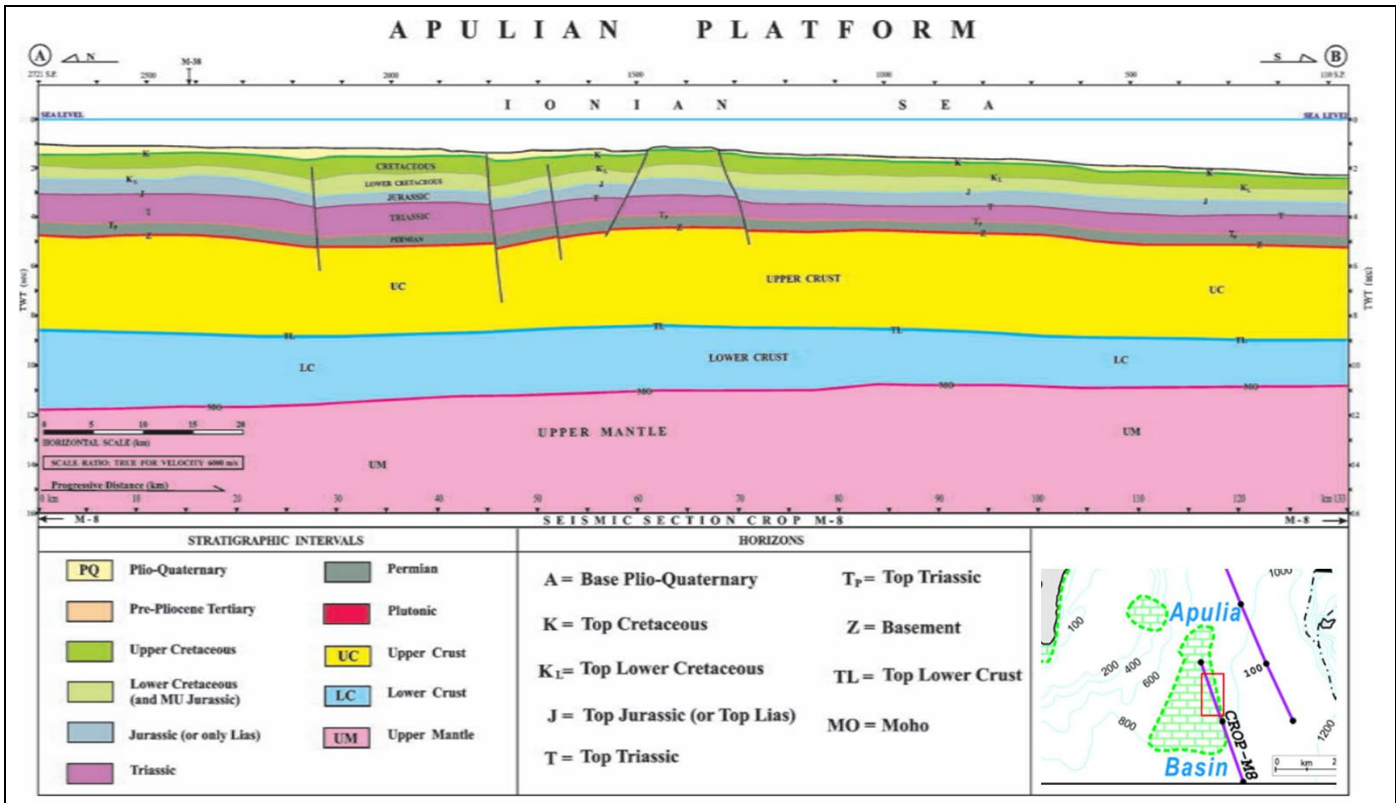
The geodynamic and tectonic evolution of the Adria microplate can be summarized as follows:

- Starting from the Permian-Middle Triassic (250-300 Ma) period, Adria microplate was involved in the Ionian rifting that gave rise to several extensional basins (Chizzini N. et al., 2023).
- During the Middle-Upper Triassic (250-210 Ma) period, the area was characterised by an anoxic sedimentation and evaporite deposition (Burano Formation)

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- At the end of the Norian, a global cooling event caused a sea-level fall, which was responsible for the emersion of the Middle- Upper Triassic platform and the consequent end of the evaporitic sedimentation.
- During the Upper Triassic-Lower Jurassic (180-210 Ma) period, the Tethyan rifting involving the Adria microplate caused the fragmentation of the existing platform, resulting in a separation between shallow water and basinal domains. The Tethyan rifting caused the development of regional normal faults.
- From the Early Cretaceous (145 Ma) period, the Dinaric/Hellenic thrust belt moved gradually onto the Adria foreland causing the transition from carbonate to siliciclastic sedimentation.
- In the Early Pliocene (5 Ma) period, the southern Apennine/Calabrian nappes overthrust the southwestern margin of the Apulia carbonate platform.
- Extension-with-compression/ transpression affected the Apulian platform carbonate succession when involved in the Apulian foreland and foreland basin domains, up to the Plio-Quaternary.

The survey area is crossed by a regional seismic section trending NW–SE called “CROP M-8” (profile in Figure 11) and acquired in the 1990s as a part of the CROP Project, a multidisciplinary research program aimed at understanding the geodynamic processes of the Italian territory.



Interpreted CROP-M8 on the southeastern extension of the Apulian platform, characterized by a flat setting, and interrupted by a few minor faults, probably connected to small shear movement. On the lower right corner, the survey area location (red polygon) is shown in map (Mod. from Finetti I.R. et al., 2018).

Figure 11 – Interpreted CROP section M8, crossing the study area with NW-SE direction

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A 3D seismic acquisition was performed by Energean within BLOCK 2. The Client sent to Lighthouse the resultant seismic 3D volume in depth domain, cropped within the LOT-1 until a depth of 200 m b.s.b. Two seismic profiles, related to the given volume, are displayed in Figure 12.

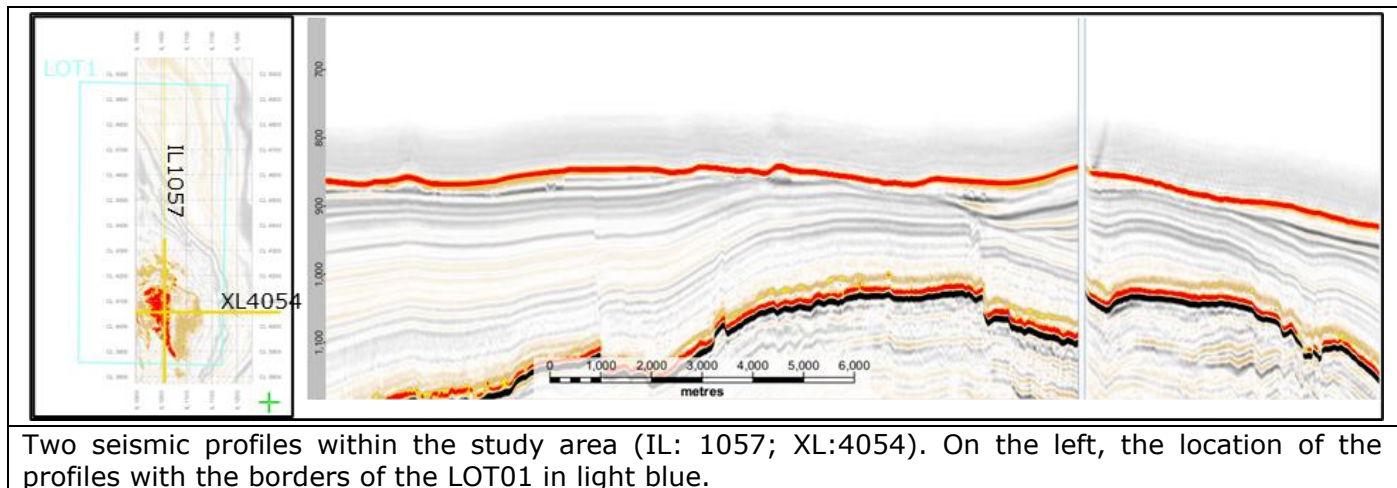


Figure 12 – 3D seismic volume given by Energean (IL: 1057; XL: 4054)

As shown in Figure 12, the area is affected by various normal faults; their displacements create the accommodation space for the formation of some sedimentary basin.

A high reflectivity reflector is detected in the entire given volume at a minimum depth of 139 m b.s.b.. The same reflector is clearly visible in the seismic line CROP-M08 and interpreted as possible Messinian Erosional surface and/or Messinian Gessoso-Solfifera Formation (MES/GS in Figure 13).

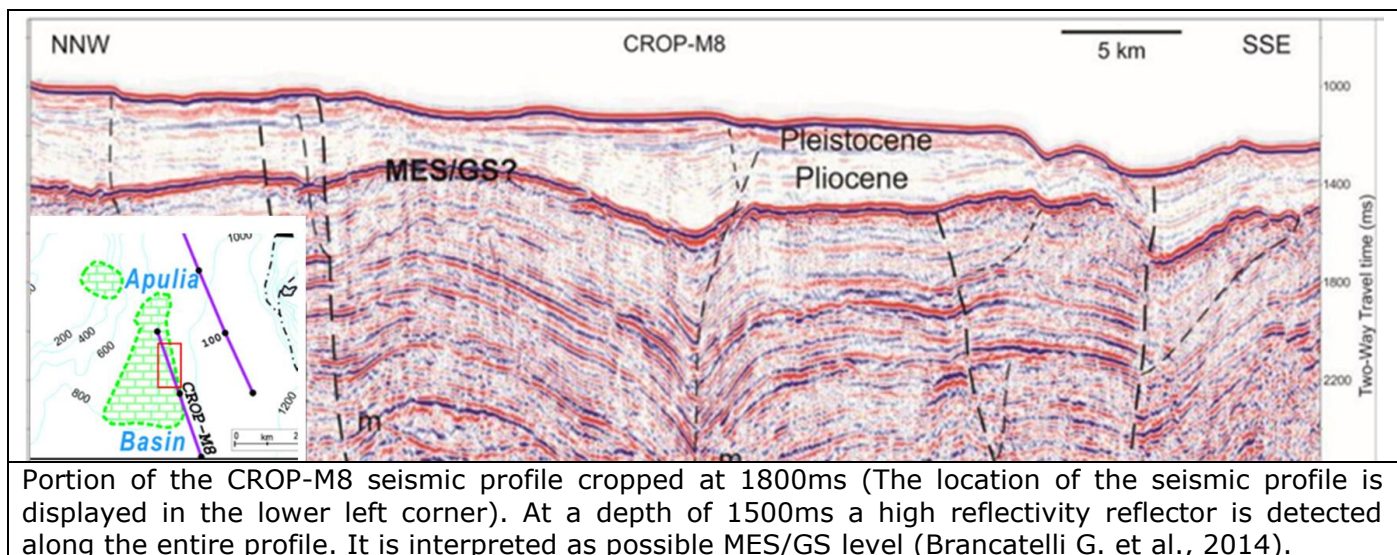


Figure 13 – Portion of the Crop-M8 seismic profile

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6.1.3 Stratigraphy of the South Apulian basin

The study area is located within the South Apulian Basin. This basin is a pelagic trough characterized by a complex architecture resulting from the interfingering development of shallow water and deep domains.

This basin was almost partially separating the Apulia Platform from the Pre-Apulian units; the latter are widely exposed on the Ionian Islands of Greece (Del Ben A. et al., 2015).

During Messinian salinity crisis (7-5 Ma) the entire Mediterranean Sea was affected by evaporites deposition (Messinian Unit) (Roveri M. et al., 2014).

No boreholes have yet been drilled in the study area; Figure 14 shows a schematic stratigraphic column reconstructed on the basis of the available literature (From Chizzini N. et al., 2023).

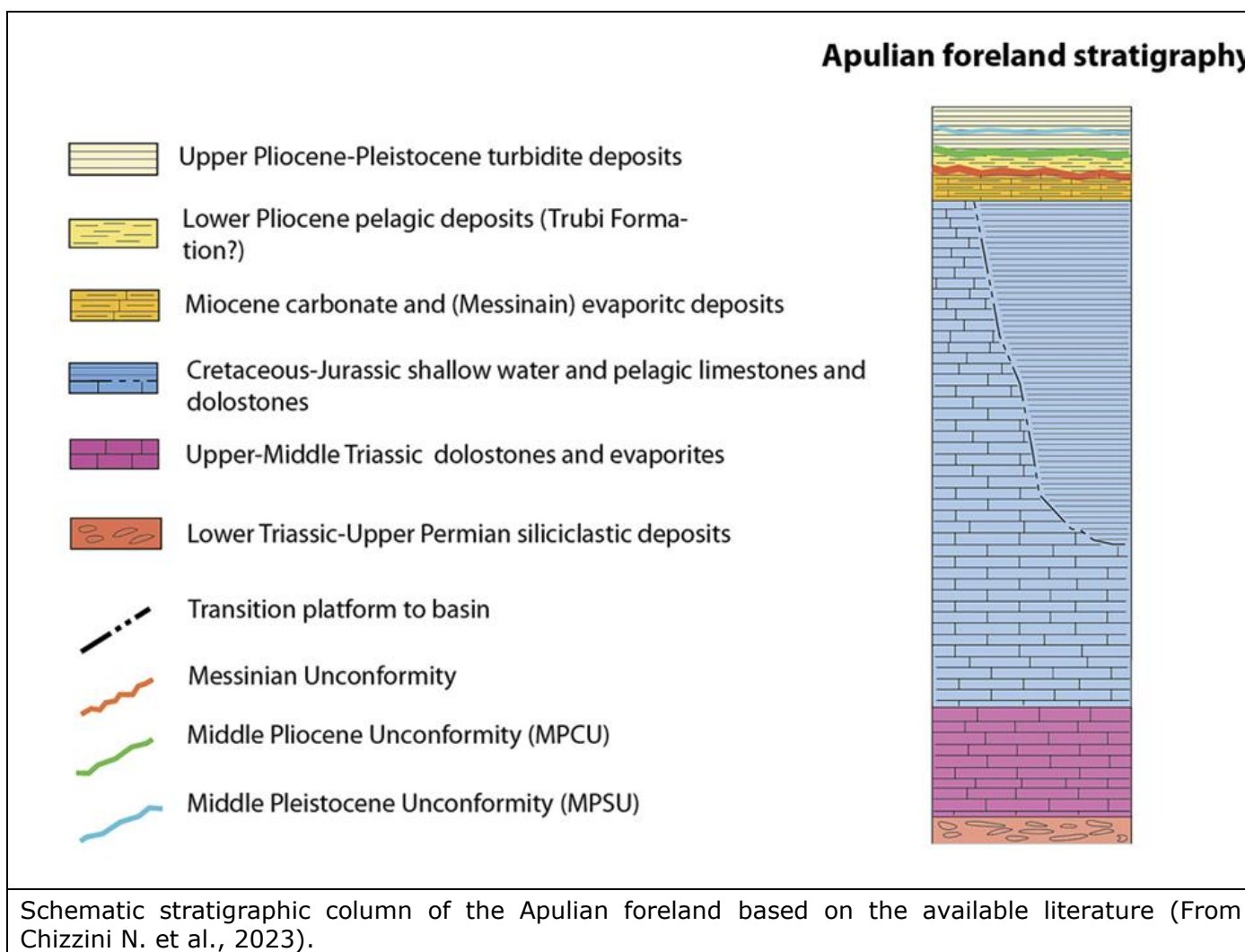


Figure 14 – Schematic stratigraphic column of the Apulian Foreland

6.1.4 References

Bianchi, I., Agostinetti, N.P. (2014). *Apulian crust: top to bottom*
 Journal of Geodynamics
<http://dx.doi.org/10.1016/j.jog.2014.09.007>

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Brancatelli, G., Forlin, E., Bertone, N., Del Ben, A., & Geletti, R. (2022).
Time to depth seismic reprocessing of vintage data: A case study in the Otranto Channel (South Adriatic Sea) - In R. Bell, D. Iacopini, & M. Vardy (Eds.), *Interpreting Subsurface Seismic Data* (pp. 157–197). Elsevier.
<https://doi.org/10.1016/B978-0-12-818562-9.00009-1>

Chizzini, N., Artoni, A., Torelli, L., Maiorana, M., & Sulli, A. (2023).
Evidence of new diapiric structures in the southern Adria Plate (Eastern Margin of Tethyan Ocean): Implications for Triassic paleogeography and evaporites remobilization during subduction/collision (Northern Ionian Sea, Central Mediterranean)
Marine Geology, 465, 107162.
<https://doi.org/10.1016/j.margeo.2023.107162>

Del Ben, A., Mocnik, A., Volpi, V., & Karvelis, P. (2010).
Old domains in the South Adria plate and their relationship with the West Hellenic front.
Tectonophysics, 492(1–4), 152–168.

Finetti, I. R., & Del Ben, A. (2005).
Crustal tectono-stratigraphic setting of the Adriatic Sea from new CROP seismic data.
 In *CROP Project: Deep Seismic Exploration of the Central Mediterranean and Italy* (pp. 39–56). Elsevier.

Karakitsios, V. (2013).
Western Greece and Ionian Sea petroleum systems.
AAPG Bulletin, 97(9), 1567–1595.

Roveri, M., Flecker, R., Krijgsman, W., Lofi, J., Lugli, S., Manzi, V., Sierro, F. J., Bertini, A., Camerlenghi, A., De Lange, G., Govers, R., Hilgen, F. J., Hübscher, C., Meijer, P. T., & Stoica, M. (2014).
The Messinian salinity crisis: Past and future of a great challenge for marine sciences.
Marine Geology, 352, 25–58.
<https://doi.org/10.1016/j.margeo.2014.02.002>

Zhang, W., Jiménez-Munt, I., Torne, M., Vergés, J., Bravo-Gutiérrez, E., Negredo, A. M., Carminati, E., García-Castellanos, D., & Fernández, M. (2022).
Geophysical-petrological model for bidirectional mantle delamination of the Adria microplate beneath the Northern Apennines and Dinarides orogenic systems - *Journal of Geophysical Research: Solid Earth*, 127(12), e2022JB024800.
<https://doi.org/10.1029/2022JB024800>

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7.0.0 DATA INTERPRETATION & RESULTS

7.1.1 Data deliverables

The acquired geophysical data have been processed onboard and then finalized in Lighthouse office in Bologna. Table 22 summarizes all the digital deliverables uploaded on the Ftp given by the Client, whose results are presented and discussed in the following sections.

Table 22 – Data deliverables

Data deliverables		
EER001_HISAS		
File Name	Format	
EER001_HISAS_TOTAL_MOSAIC_0.5m	.tif	
EER001_MAG		
Folder Name	Quantity	Format
VISUAL_INSPECTION_1	150	.csv
VISUAL_INSPECTION_2	373	.csv
M01	72	.csv
M02	74	.csv
M03	70	.csv
M04	74	.csv
M05	94	.csv
M06	68	.csv
M07	40	.csv
M08	70	.csv
EER001_MBES		
File Name	Quantity	Format
EER001_TOTAL_BATHY_2m	1	.xyz
EER001_TOTAL_BATHY_2m_32BIT	1	.tif
EER001_TOTAL_SLOPE_2m	1	.grd
EER001_TOTAL_BATHY_2m	1	.grd
EER001_TOTAL_BATHY_2m	1	.txt
EER001_SBP		
Folder Name	Quantity	Format
M01	14	.seggy
M02	15	.seggy
M03	14	.seggy
M04	14	.seggy
M05	14	.seggy
M06	13	.seggy
M07	14	.seggy
M08	14	.seggy
VISUAL_INSPECTION_1 (6 sub-folders)	92	.seggy
VISUAL_INSPECTION_2 (11 sub-folders)	354	.seggy
EER001_shapefile		
File Name	Quantity	Format
EER001_cables	4	.shp

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Data deliverables		
EER001_cnt_1m	1	.shp
EER001_deep_normal_faults	1	.shp
EER001_grab_sample	1	.shp
EER001_high_sonar_reflectivity	1	.shp
EER001_limit_of_survey_area	1	.shp
EER001_fluids-acoustic_anomaly	1	.shp
EER001_MTDs	2	.shp
EER001_mottled_seafloor	1	.shp
EER001_mound-like_morphology	1	.shp
EER001_steep_to_very_steep_slopes	1	.shp
EER001_Sonar_Contacts	1	.shp
EER001_CAHTX-MOSAIC		
File Name	Format	
EER01_D1a_TOTAL_UTM34N_	.tif/tfw	
EER01_D1B_TOTAL_UTM34N_new	.tif/tfw	
EER01_D2a_TOTAL_UTM34N	.tif/tfw	
EER01_D2b_FINAL_UTM34N	.tif/tfw	
EER01_D3a_TOTAL_NEW_UTM34N	.tif/tfw	
EER01_D3b_TOTAL_UTM34N	.tif/tfw	
EER01_D4a_TOTAL_UTM34N	.tif/tfw	
EER01_D4b_TOTAL_UTM34N	.tif/tfw	
EER01_D5a_TOTAL_UTM34N	.tif/tfw	
EER01_D5b_FINAL_UTM34N	.tif/tfw	
EER01_D6a_TOTAL_UTM34N	.tif/tfw	
EER01_D6b_TOTAL_UTM34N	.tif/tfw	
EER01_D7b_TOTAL_UTM34N	.tif/tfw	
EER01_ITA_TOTAL_UTM34N	.tif/tfw	
EER01_ker_TOTAL_UTM34N	.tif/tfw	
EER01_oth_TOTAL_UTM34N	.tif/tfw	
EER01_T057_TOTAL_UTM34N	.tif/tfw	
EER001_REPORT		
File Name	Format	
EER001_TARGET_REPORT TOTAL	.pdf	
EER001_Geophysical_Survey_Report_REV01	.pdf	
EER001_ENCLOSURES		
File Name	Format	
EER001_BATHY_SLOPE_MAP_20K_REV00	.pdf	
EER001_BATHY_MORPHOLOGICAL_MAP_20K_REV01	.pdf	
EER001_Geohazard_MAP_20K_REV00	.pdf	

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7.1.2 MBES acquisition accuracy and statistics

The bathymetric mapping around the area is an IHO standard S44 Special order survey and has been recorded and QC checked on board to guarantee the coverage of the study area, according to the SOW. Data has been verified line by line for eventual acquisition and recording problems and overall evaluation of the data quality.

A preliminary quality control is carried out to detect and identify possible mismatches between the theoretical and the acquired lines. In addition, a verification of 100% total coverage of the area was checked to ensure that no data gaps were present.

As part of the data quality assessment, the following attributes were also calculated before processing flow to verify the data quality and accuracy: density, standard deviation, THU and TVU.

In the Table 23 are summarized some of the general requirements agreed upon regarding QA/QC parameters:

Table 23 – QA/QC specifications

General QC specifications per SOW	
Coverage	DTM: 2m bin size; 20% overlap
Maximum gaps allowed	none
Estimated hits per bin (density on 2m cell DTM)	≈ 27
Total Vertical Uncertainty (TVU)	$\leq 0.11\text{m @ } 1000\text{m}$
Total Horizontal Uncertainty (THU)	$\leq 2.56\text{m @ } 1000\text{m}$

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TPU is the estimated combined accuracy of a single seabed point acquired using a multibeam echosounder. It is divided into Total Horizontal Uncertainty (THU) and Total Vertical Uncertainty (TVU).

As shown in Table 23, uncertainty is generally higher in the horizontal plane than along the vertical axis. THU value is mainly influenced by the uncertainty associated with the Hipap-INS-AUV system.

The following graph (Figure 15) illustrates the equation used to calculate the HiPAP-INS system uncertainty in determining the AUV position as a function of seabed depth.

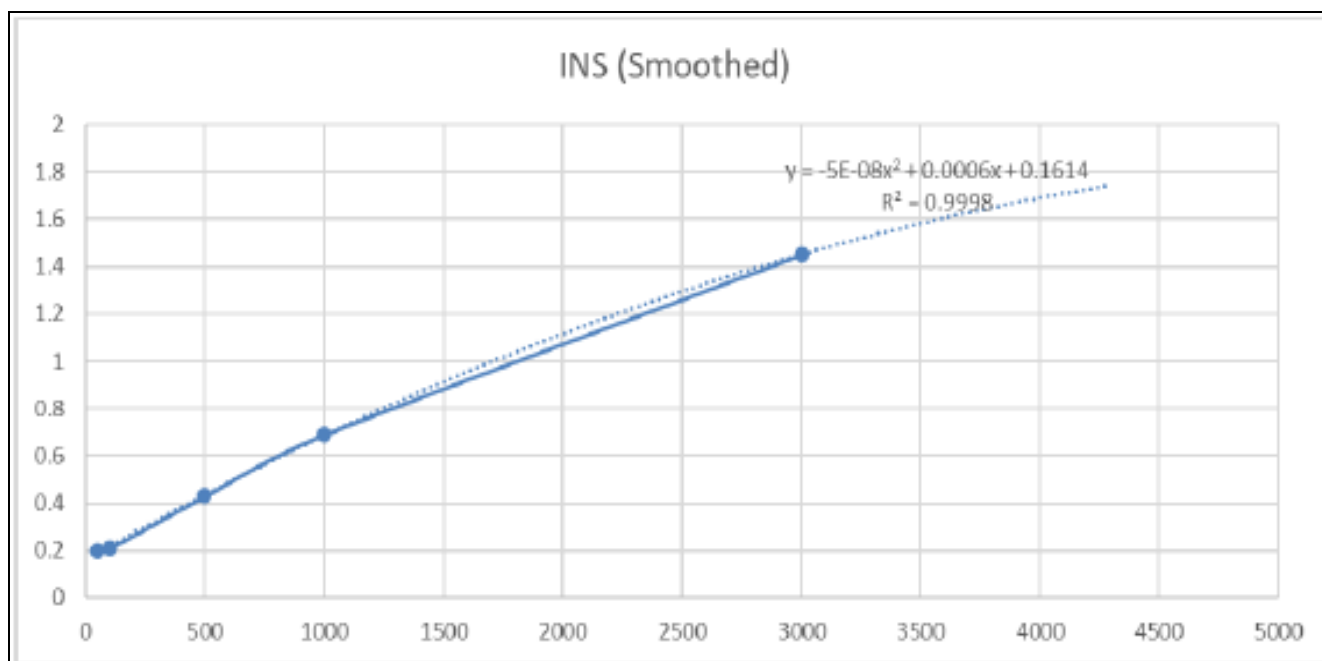


Figure 15 - Graph showing the equation used to calculate the HiPAP-INS system uncertainty

The maximum depth recorded within the survey area is 924m LAT; considering this value, the maximum allowable THU is 2.2m. The THU values calculated within the study area on the MBES raw data are shown in Figure 16. All values fall within the acceptable range, always equal or lower the maximum allowable value, indicating good data quality and accuracy.

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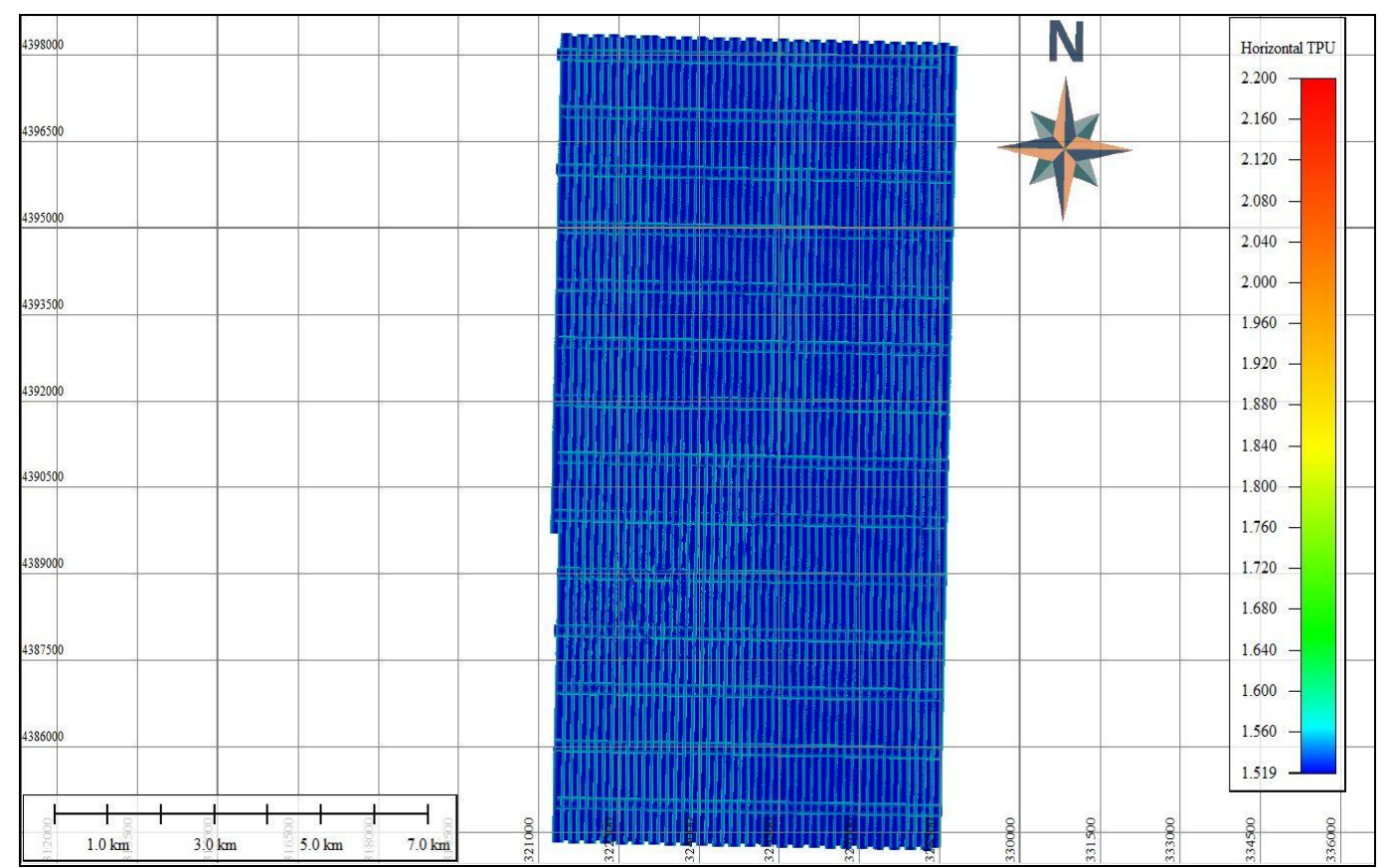


Figure 16 – THU values within the survey area (2x2m cell) related to MBES raw data

The vertical component of TPU is influenced by the uncertainties related to the z-axis of the HIPAP-INS system, sound velocity measurement and the applied tide model.

Considering the maximum depth detected in the survey area (924m), the maximum allowable value for the TVU is 0.11m. The TVU values calculated on MBES raw data are shown in Figure 19; all the TVU values of the acquired dataset fall within the acceptable range and are always equal or lower the maximum allowable values.

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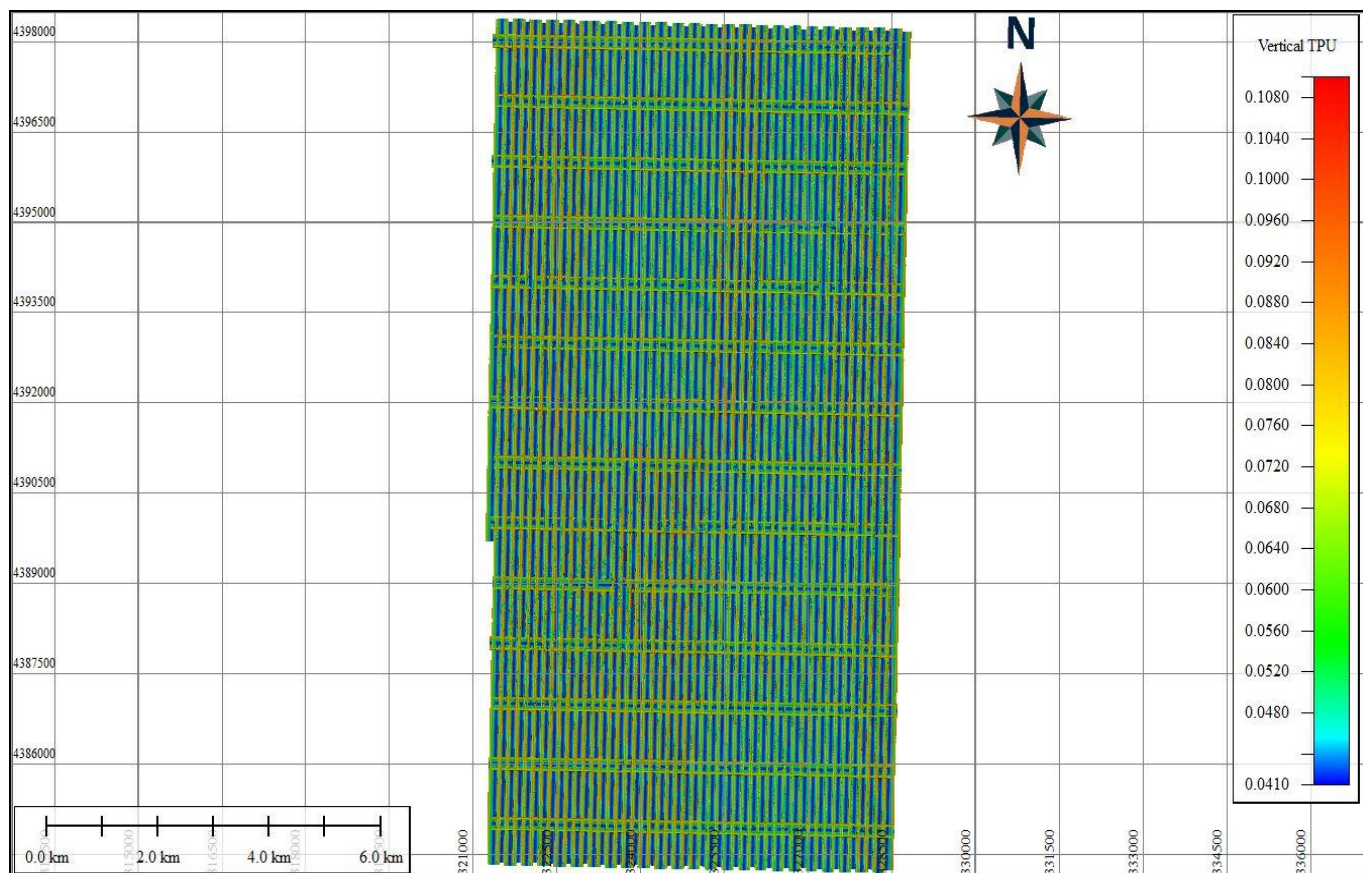


Figure 17 – TVU values within the survey area (2x2m cell) related to MBES raw data

In the following images (Figure 18 and Figure 19) are shown the standard deviation and the density related to the RAW MBES data with 2x2m grid cell. As shown in Figure 19 the higher values are observed in areas where swath overlap occurs, reflecting increased data coverage from adjacent survey lines, with >20% overlap achieved as per the scope of work requirements. No gaps are detected within the study area.

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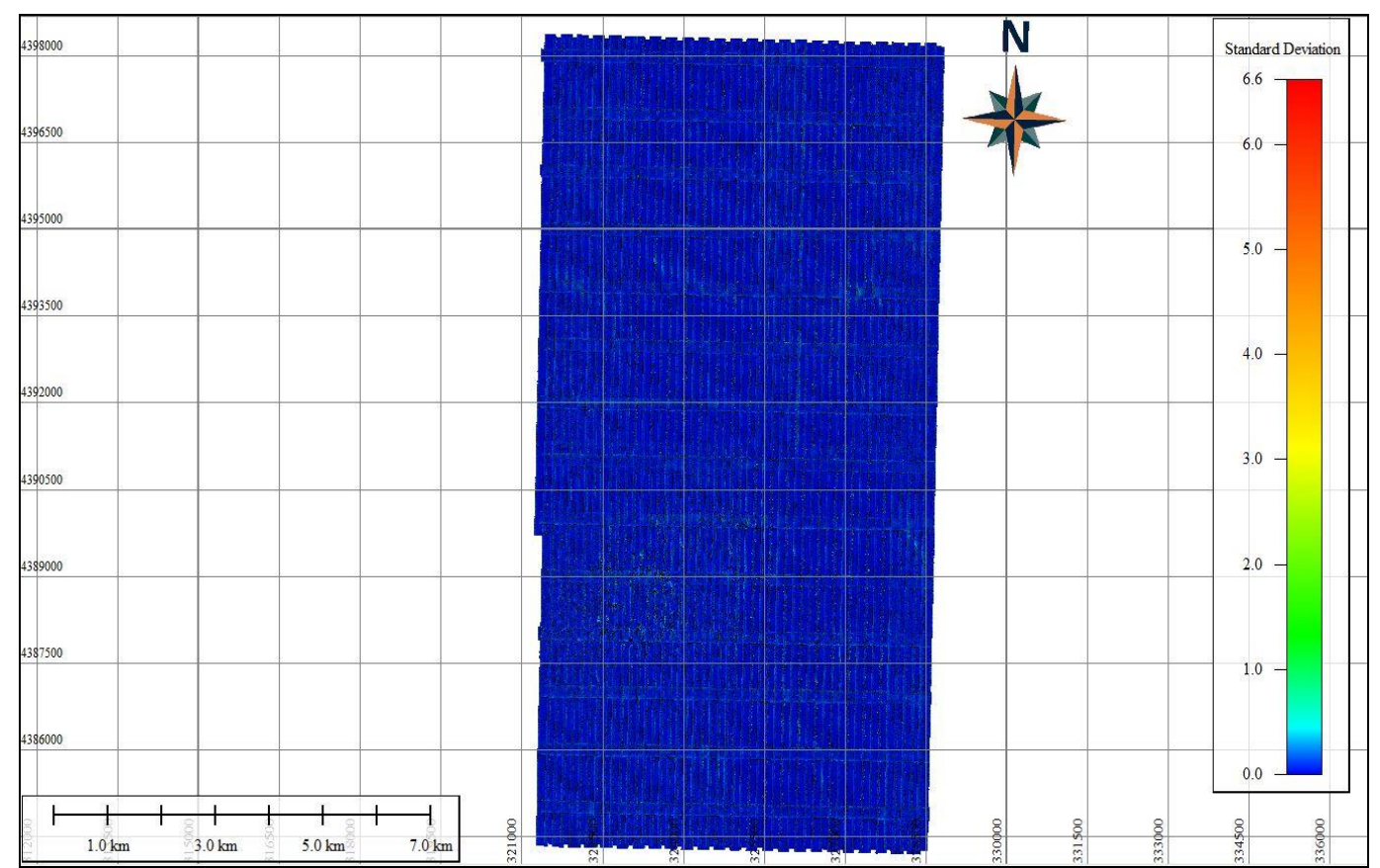


Figure 18 – STD from the mean depth of the survey area (2x2m cell)

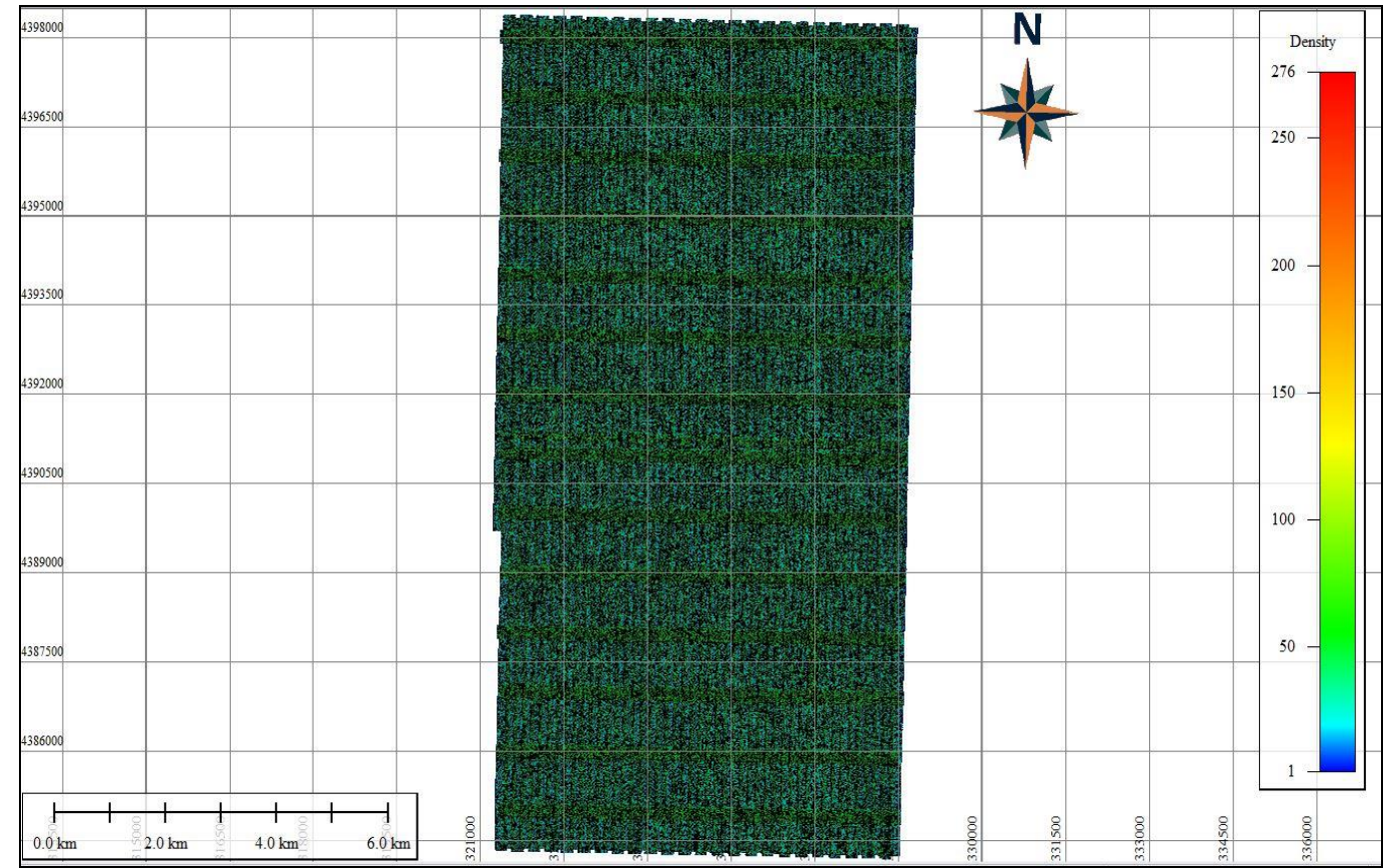


Figure 19 –Soundings density per cell within the survey area (2x2m cell)

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7.1.3 Seabed morphology and acoustic data

The MBES data together with Hisas sonar-type data, provided high-resolution mapping of the seabed morphology, enabling the identification of distinct morphological features that highlight the high morphological complexity within the surveyed area (Figure 20).

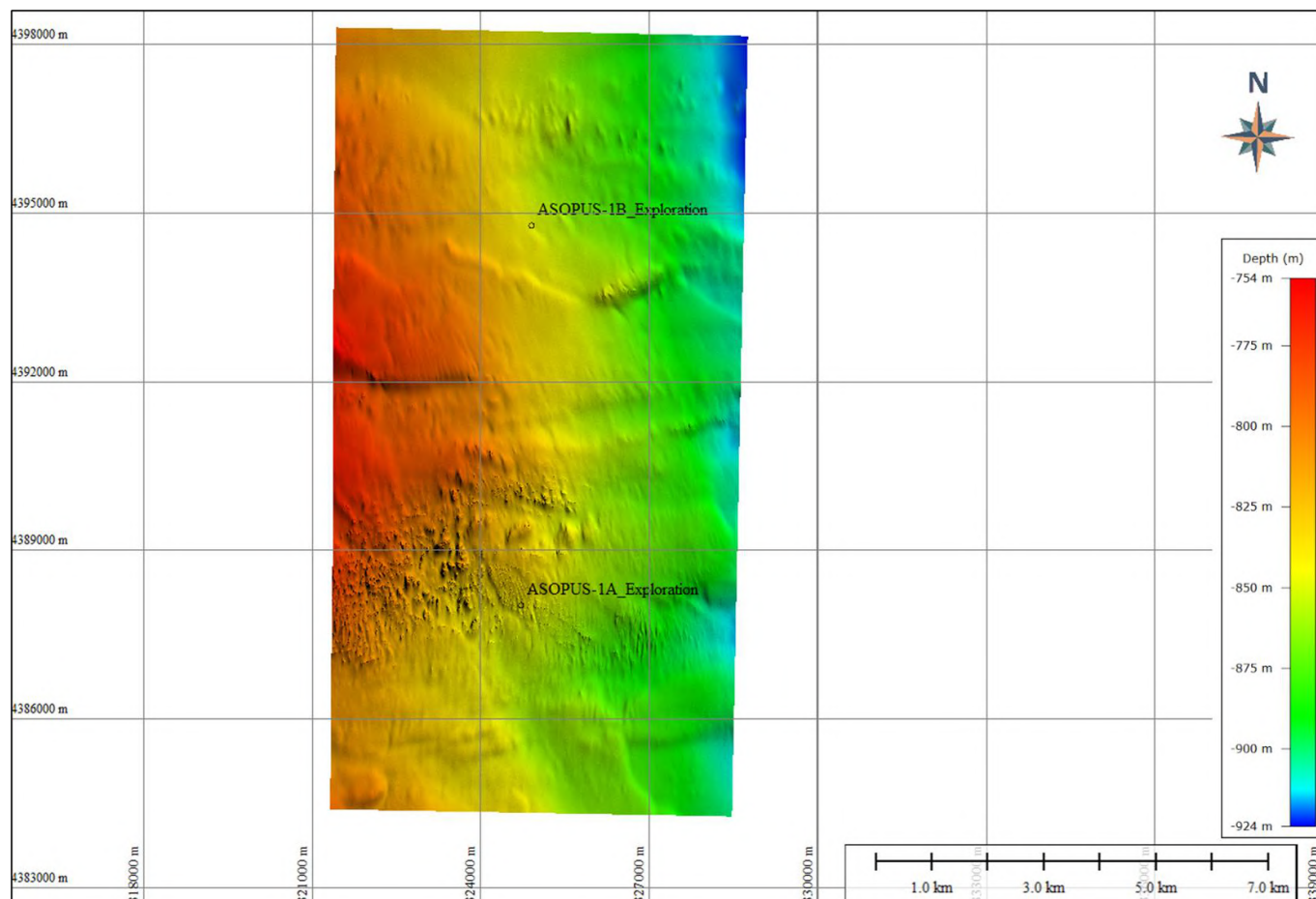


Figure 20 –2D Bathymetry DTM of the study area (2x2 m cell)

In Table 24 are shown the seabed categories, based on slope ranges, which have been used to classify the seabed gradient.

Table 24 – Seabed gradient classification

Classification	Seabed Gradient
Very Gentle	< 1°
Gentle	1°- 4.9°
Moderate	5°- 9.9°
Steep	10°- 14.9°
Very Steep	>15°

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The study area is located within the distal sector of the Ionian Sea. The average slope gradient ranges from very gentle to gentle (from 0 to 10°). Locally, as shown in Figure 21, slope gradient reaches higher values up to 38°. The seabed progressively deepens from west to east, in agreement with the continental slope orientation. The water depth ranges from 754.08m LAT at the central portion of the western edge to 924.08 m LAT in the northeastern sector. The water depth at the planned ASOPUS-1A_Exploration well location is 842.5 m LAT with a seabed slope of 1.3°. The water depth at the potentially future ASOPUS-1B_Exploration well location is 846.9m LAT with a seabed slope of 1.5°.

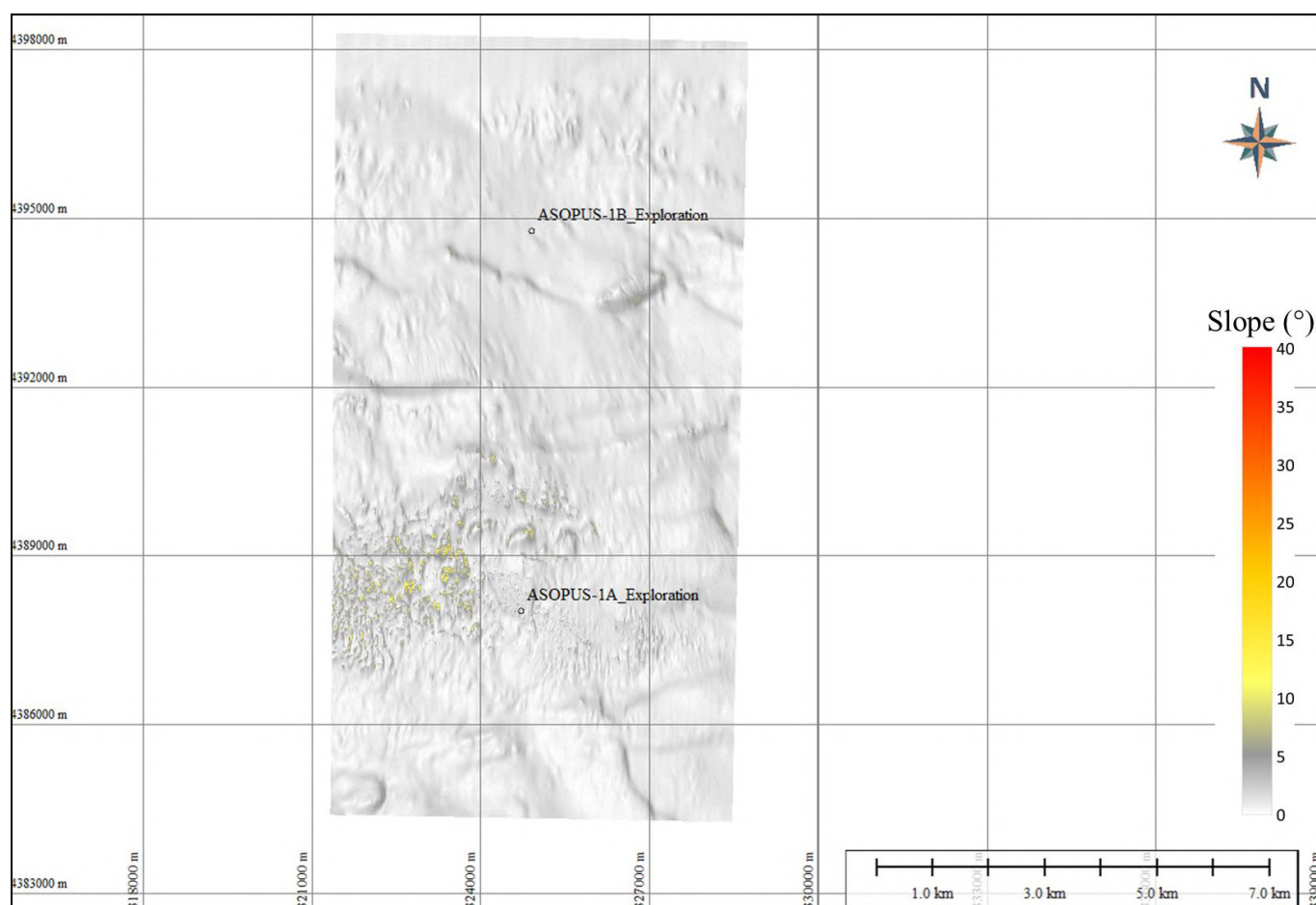


Figure 21 – 2D Slope map of the study area (2x2 m cell). The seabed slope is 1.3° for the currently planned ASOPUS-1A_Exploration and 1.5° for potentially future ASOPUS-1B_Exploration well

As shown in the 3D bathymetric DTM in Figure 22 the seafloor appears articulated, with a marked morphological variability reflecting the complex structural framework.

The most prominent features observed were the roughly E-W oriented scarps, which reflected tectonic control on large-scale morphology. Fault-related scarps were more noticeable in the central sector, creating a step-like profile with throws of few meters.

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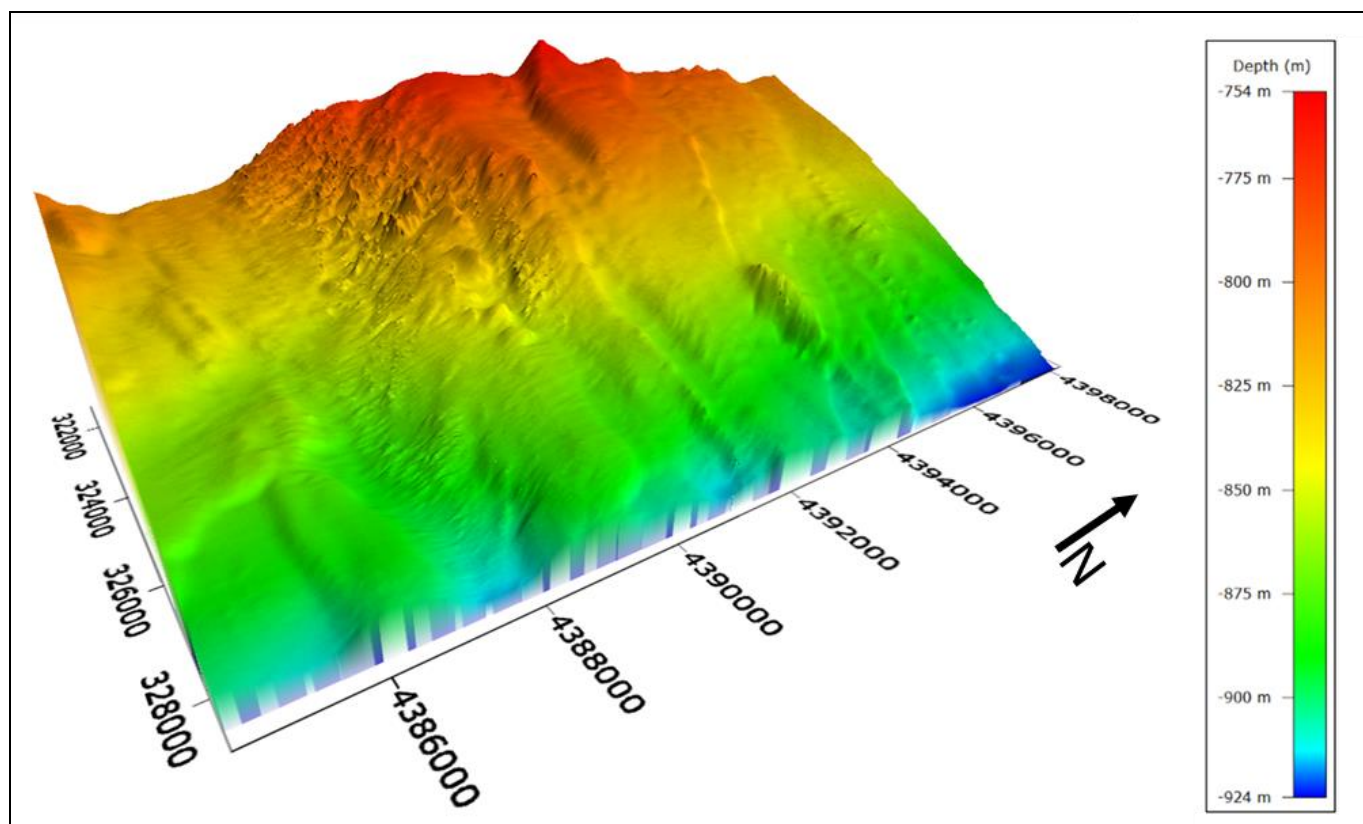


Figure 22 – 3D Bathymetric DTM of the study area (2x2 m cell)

Bathymetric data preserve the record of past gravitational and depositional processes resulting from sediment slumping and remobilization within shallow, unconsolidated deposits, driven by deformation associated with deep tectonic processes.

The rough seafloor is affected by a mass transport deposit (MTD), whose surface results dominated by mound-like morphologies (Savini A. et al., 2010). Mound-like shapes create narrow and elongated seabed features aligned perpendicular to the slope (Figure 20 and Figure 21). This alignment is diagnostic of a gravity flow with an E-W direction that affect the entire study area.

The MTD material, as inferred from the HISAS data shown in Figure 23 is almost entirely draped by low-reflectivity sediments, interpreted as pelagic cover deposits. However, in some sectors of the study area, the underlying material remains exposed, defining more consolidated sediments clearly visible in the bathymetric 3D map (Figure 22). These outcrops can also be identified in the HISAS data due to the high reflectivity typical of these harder bodies. (see the detail within the red box in Figure 23).

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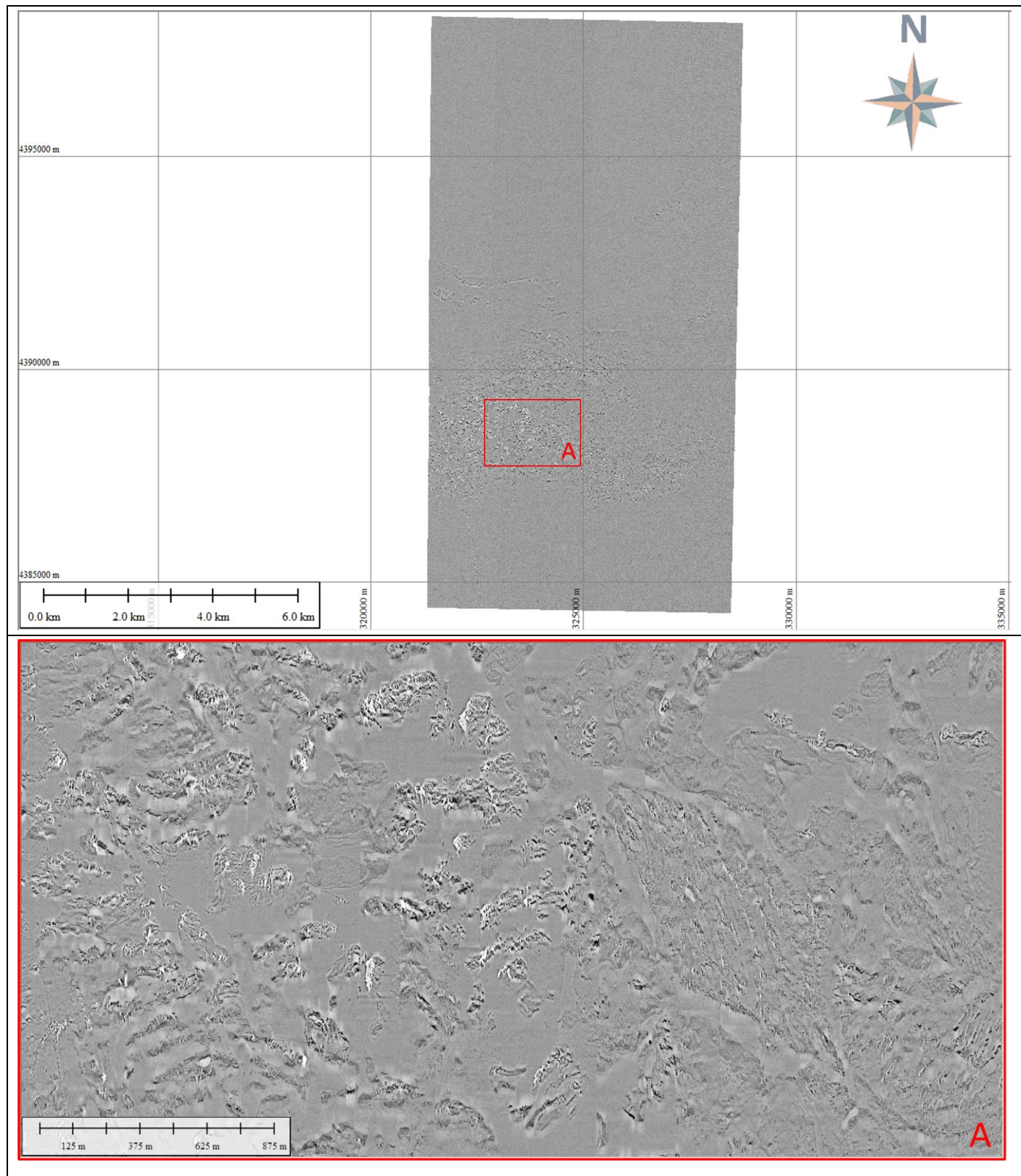


Figure 23 – 2D HISAS mosaic of the study area (0.5x0.5 m cell)

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Figure 24 shows an example of the MTD recognised on SBP data with folded structures and chaotic deposits.

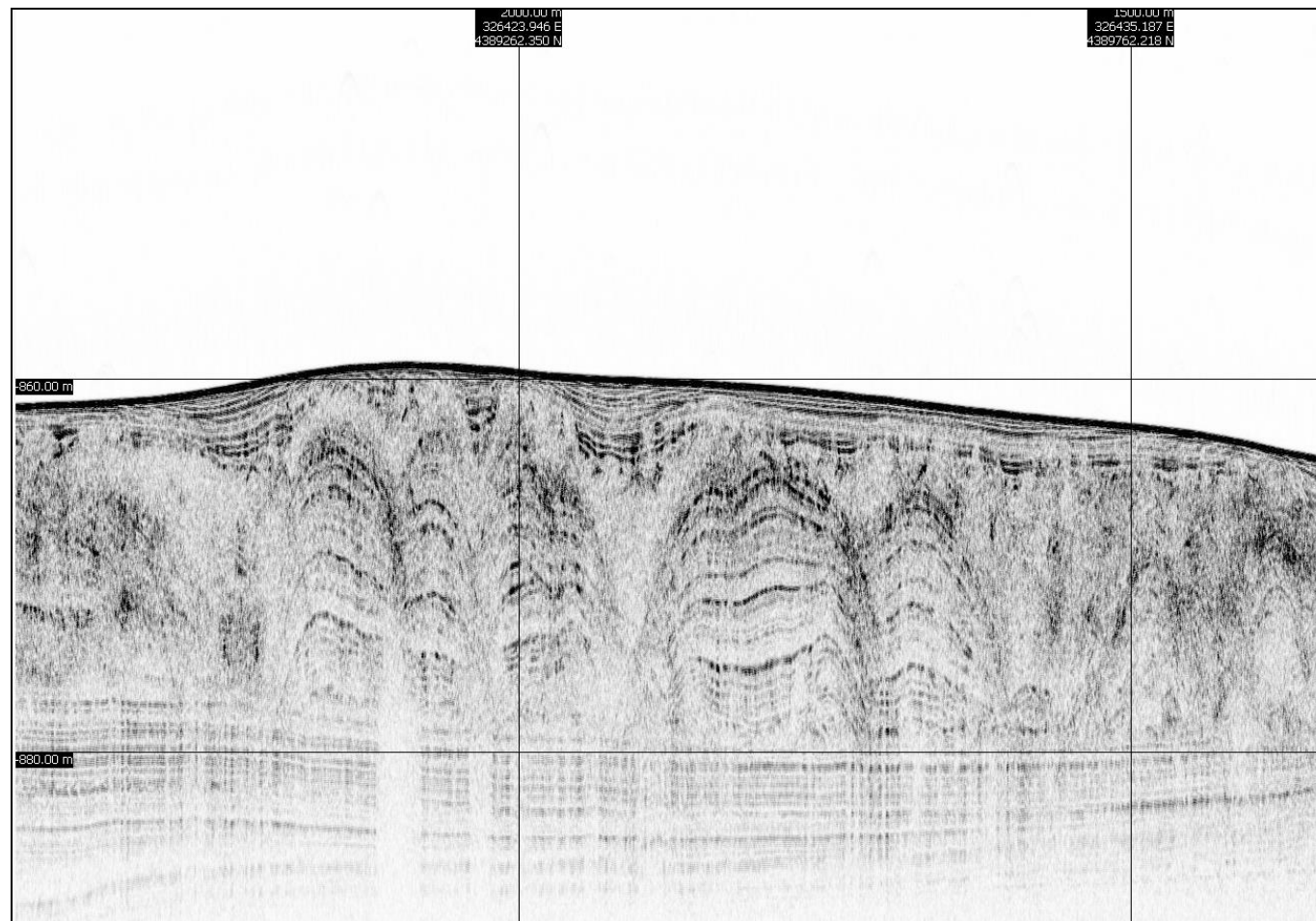


Figure 24 – SBP line M07_I10: Example of MTD material on SBD data.

All the morphological features and the manmade objects detected on the seafloor of the study area are described in the following paragraphs by types and mapped in the enclosed *.pdf EER001_BATHY-MORPHOLOGICAL_MAP_20K_REV00 and EER001_Geohazard_MAP_20K_REV00 at a 1:20000 scale.

7.1.4 Mound-like morphology

Mounds are distributed throughout the study area, creating an undulating seafloor with hummocky appearance. Considering the bathymetric data, mounds are mainly distributed in the central sector of the study area, corresponding to the more consolidated sediments recognized in the study area (Figure 25). Here, these features are recognised through their heterogeneous pattern, formed by spurs and grooves (Figure 26), significant topographical variation relative to the surrounding seafloor and high-rugosity morphology characterized by irregular lateral boundaries (Figure 25). The complex morphology of this sector is associated with the steepest slope gradients, exceeding 15° and reaching a maximum of 38° where outcrops rise abruptly from the seabed because of increasing downslope gradients (Figure 27).

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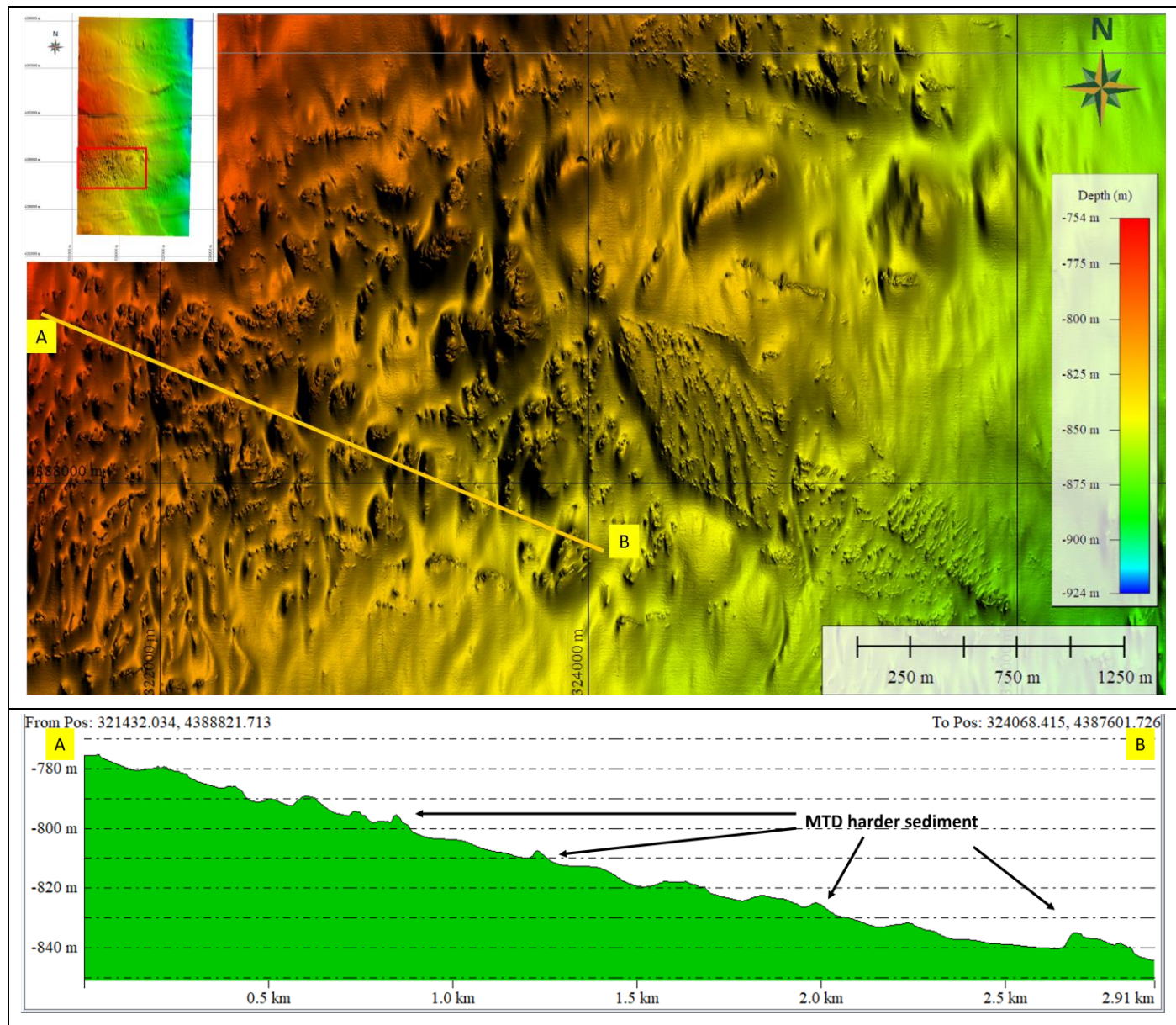


Figure 25 – Bathymetric data and profile of exposed harder sediments associated with MTD in the central sector of the study area

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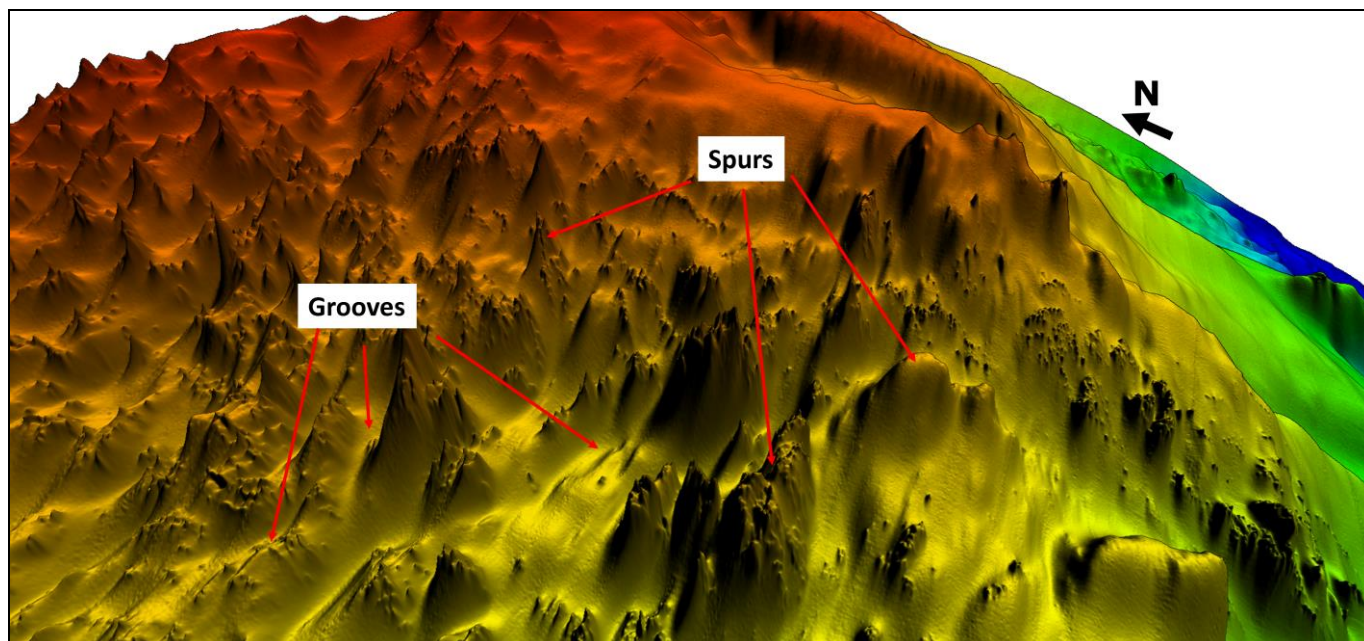


Figure 26 – Detail of 3D bathymetry DTM on spurs and grooves morphologies visible in the central sector of the study area

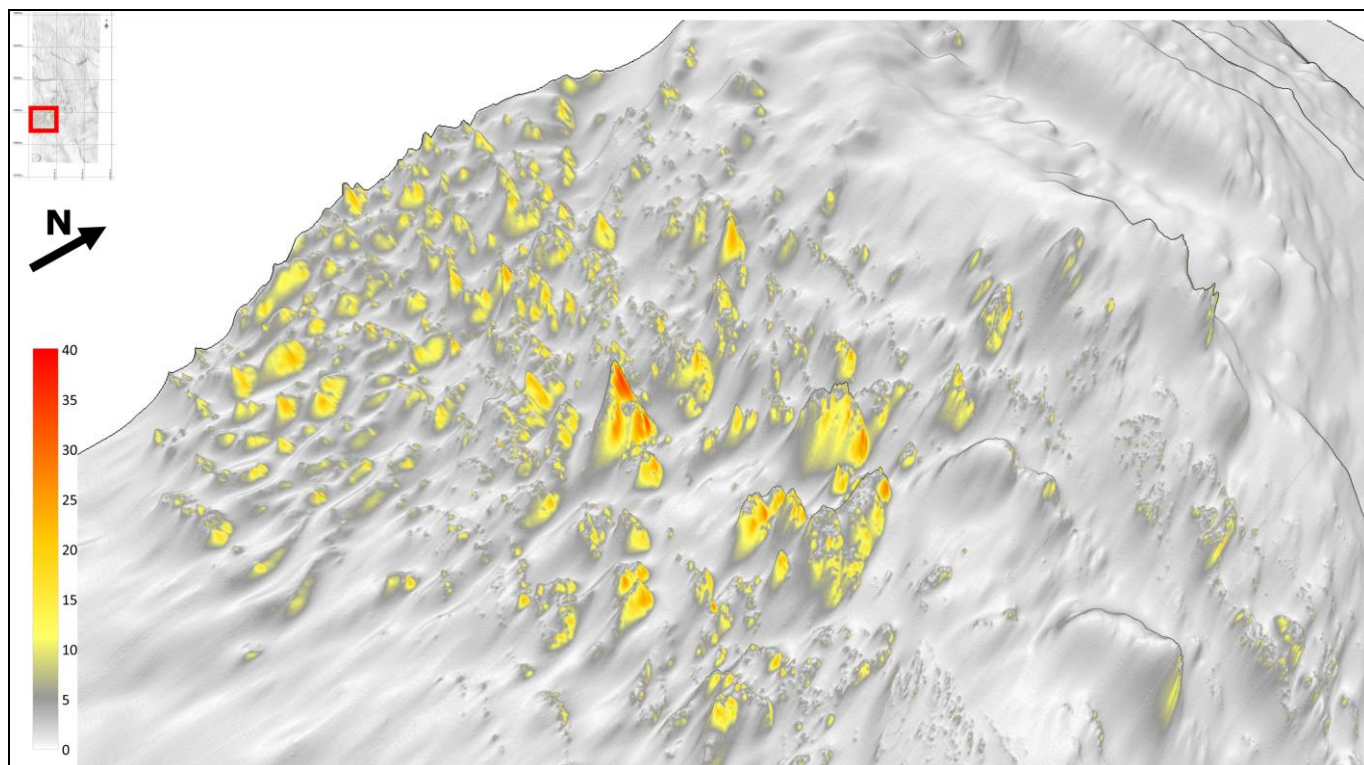


Figure 27 – Steep/Very steep slope gradients associated with harder sediment morphologies in the central sector of the study area

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HISAS mosaic in the central sector appears in large dark areas with rough edges, indicating a strong and heterogeneous acoustic reflectivity from harder surfaces, often contrasted by white shadows behind them, revealing positive reliefs and structures identified as more consolidated sediments (Figure 28).

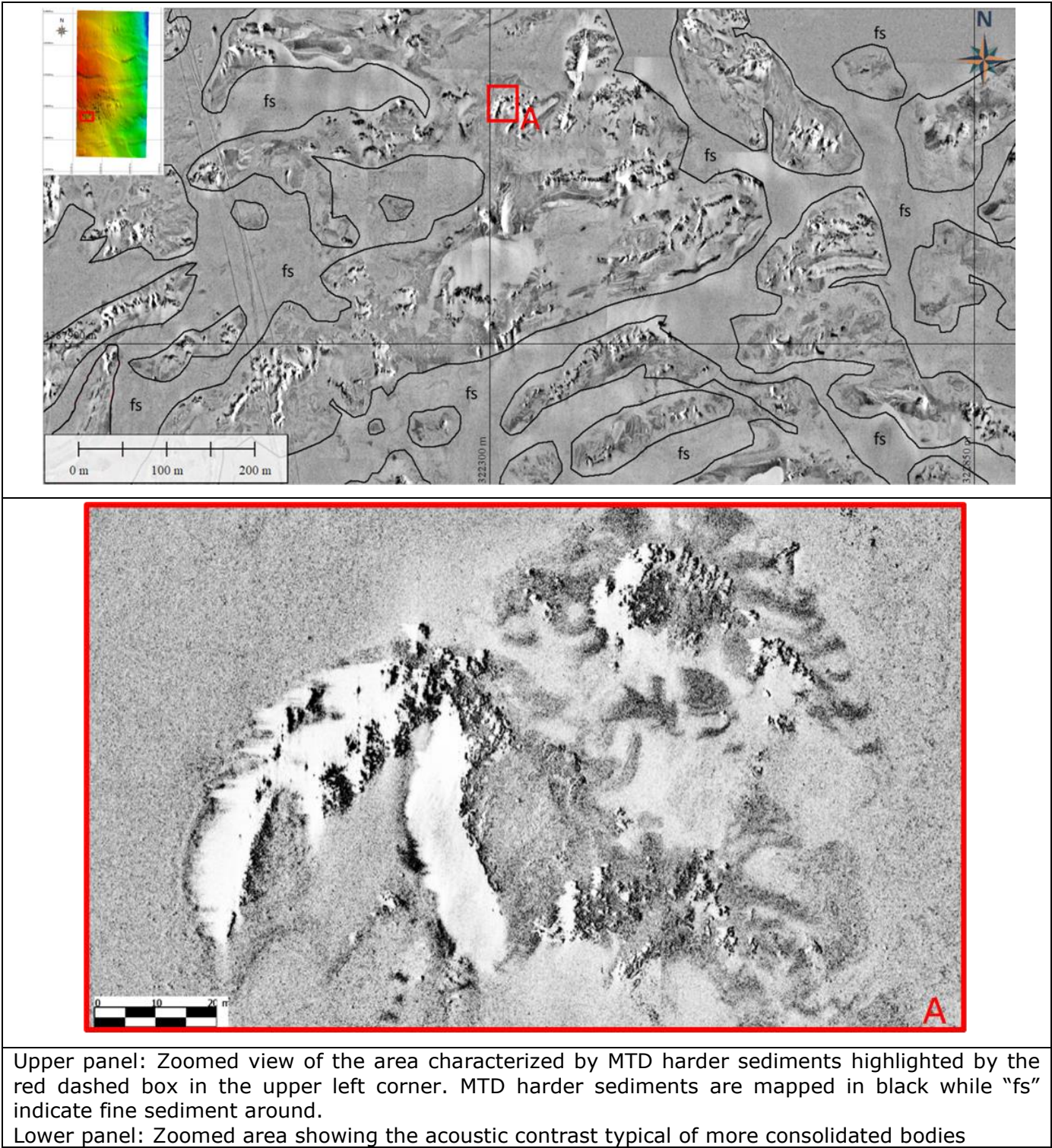


Figure 28 – A detail of HISAS data on MTD harder sediments

LIGHTHOUSE GAS		GEOPHYSICAL SURVEY ACTIVITIES, BLOCK 2, "LOT01" S/V ECO ONE Geophysical survey - Final Survey Report				ENERGEAN
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Locally, these bodies are surrounded by moderate reflectivity sediments interpreted as Sub-cropping sediments. These features typically exhibit intermediate to higher intensity than the surrounding more recent mobile sediments (such as mud or fine sand) due to their increased compaction and higher bulk density resulting from ongoing lithification processes (Figure 29).

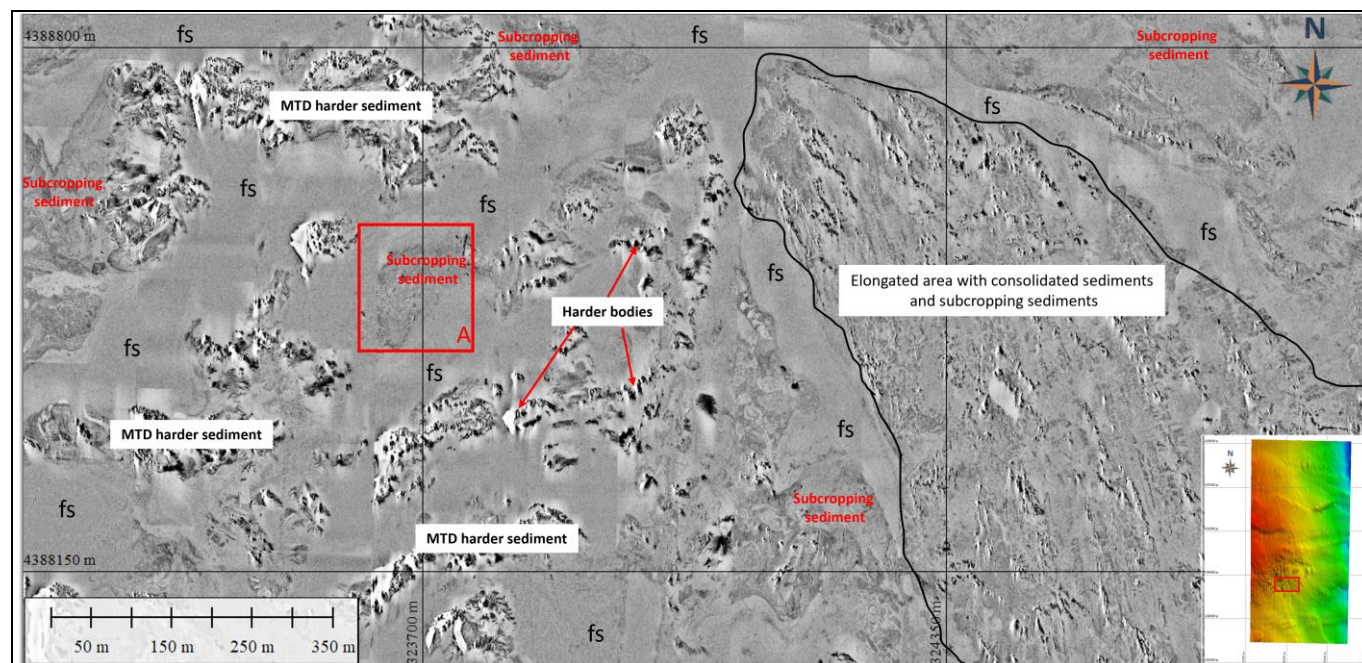


Figure 29 – Different acoustic reflectivity zones recognized in the central sector of the study area.

In the southern portion of the central sector, the mounds exhibit a strongly elongated and narrow morphology, oriented SW-NE, always perpendicular to the local seafloor slope. They occur as closely spaced, sub-parallel ridges, locally showing slight curvature (Figure 30). HISAS data on these features exhibits different reflectivity, varies from moderate to high, showing the internal layering of fold-type structures exposed on the seabed. The internal structure is visible thanks to erosional reworking process of previously deformed sediments. These features are affected by variable degrees of erosion, which locally result in discontinuities in backscatter intensity and, in some cases, complete erosion of the fold crests, leading to the exposure of their cores (Figure 30). As shown in Figure 30, the exposed fold cores on the seafloor display concentric, elliptical layering.

The shape of the folds is diagnostic of compressional gravity-driven deformation typical of the toe of a downslope-translating sediment mass. The slight curvature of these features reflects the lobate plan-view of the translating sheet (concave-upslope, see Figure 30), with the maximum advancement in the centre and lateral retardation at the edges.

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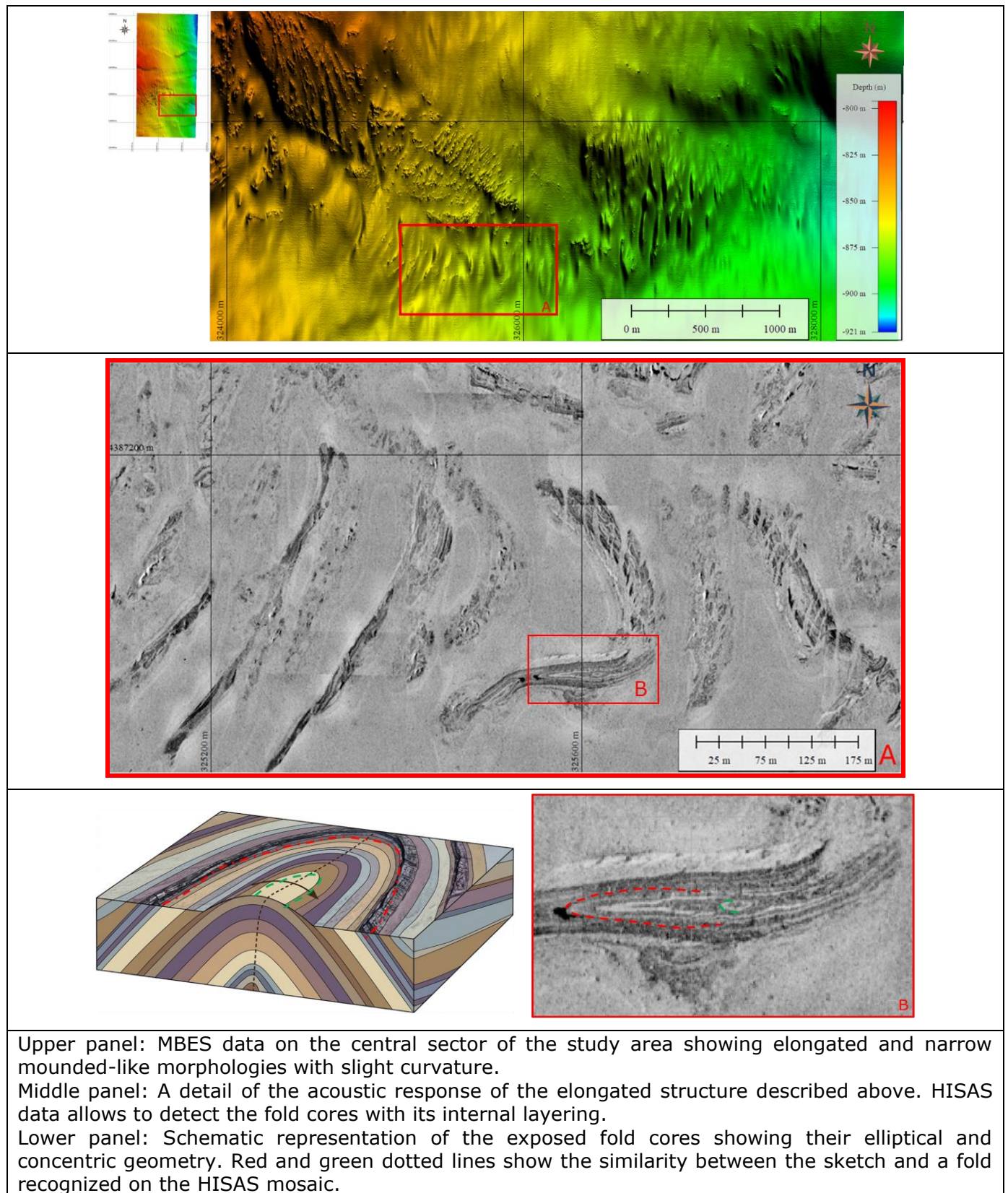


Figure 30 – Fold structures recognized on the seabed

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In the northern sector of the study area, mounds are not widely distributed. They appear mostly organised in few clusters showing a variable topographic relief, with an average height of 2 meters and a maximum height of about 4 meters (Figure 31).

As described for the central sector, these structures show a N-S alignment, perpendicular to the slope orientation. The main difference between these structures and the previously described mounds lies in their less-elongated shape and a thicker profile.

Considering the HISAS acoustic data, these features are not detectable because they are fully covered by low-reflectivity sediments interpreted as pelagic sediments (clay or silt). The fine sediment contributes to smoothing the morphology, reducing the slope gradients on the mounds' flanks. Indeed, the average slope values detected on these flanks ranging from 3° to 4°, reaching a maximum value of 5.7°.

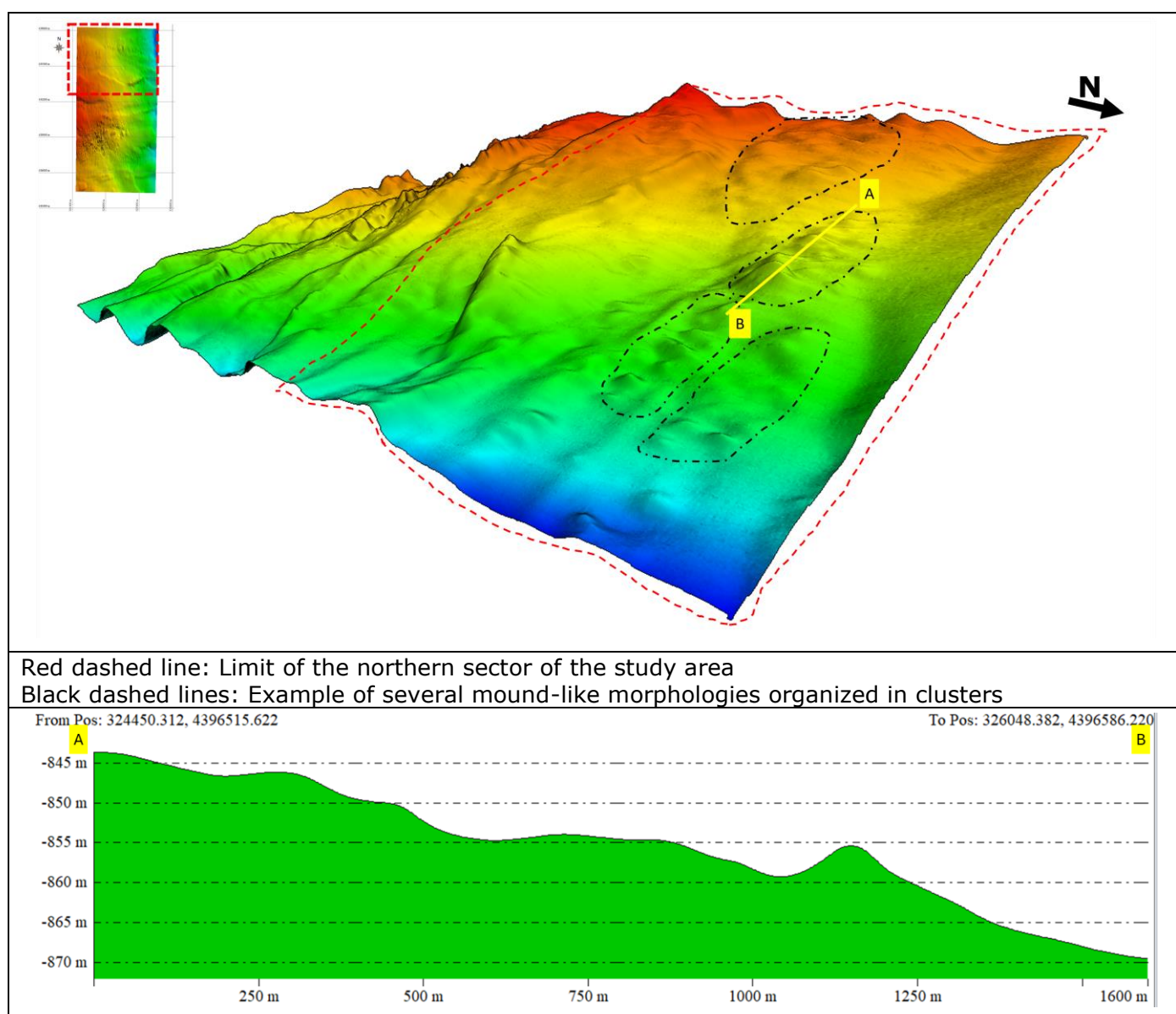


Figure 31 – Overview of the northern sector of the study area

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In the same sector a large, isolated mound, oriented SW-NE, is detected. Based on MBES data it shows a length of 1200 m and a width of 450 m (Figure 32).

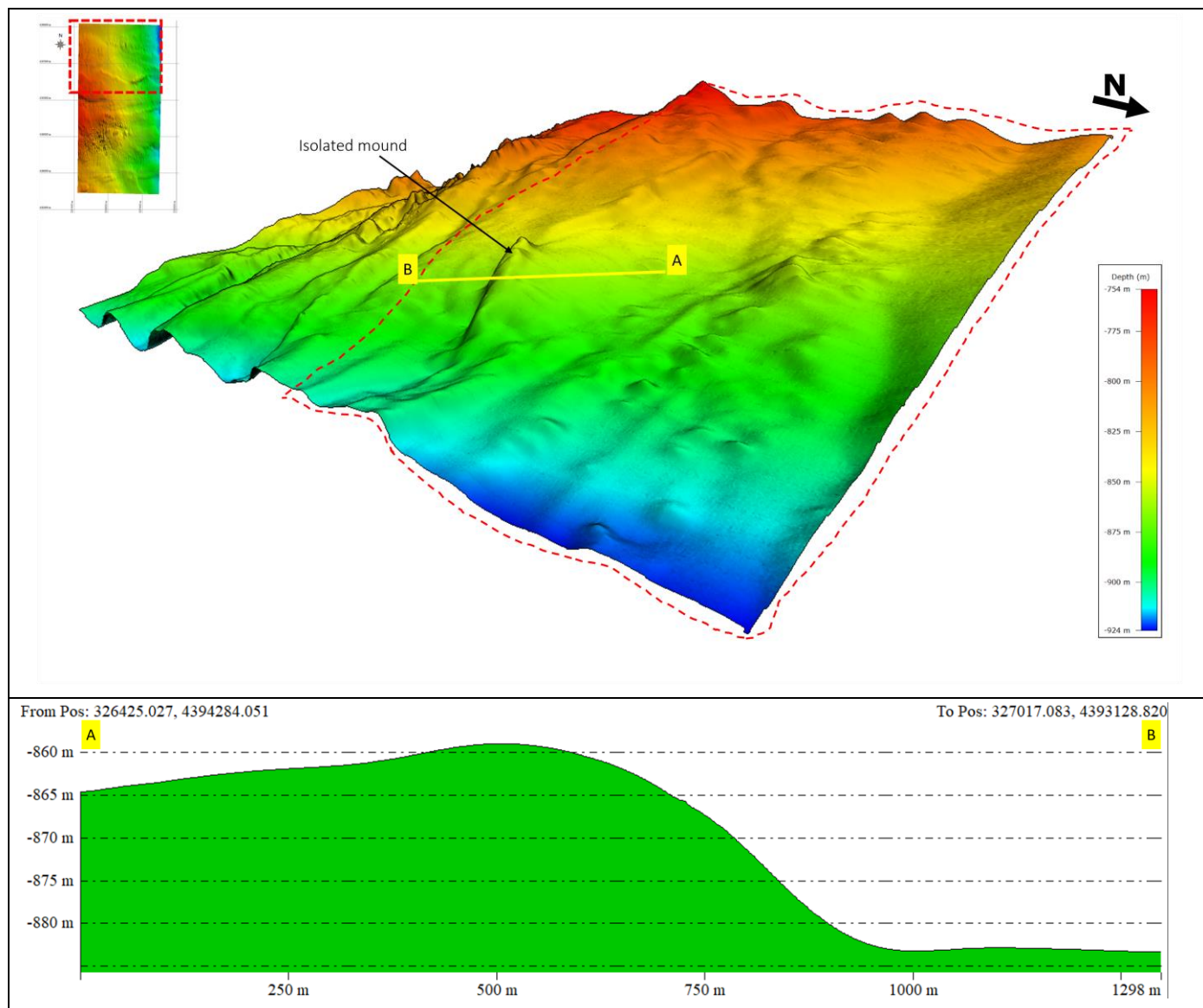


Figure 32 – Isolated mound recognized in the northern sector of the study area

This structure exhibit different slope gradients on its flanks and HISAS data allowed to identify the different seabed nature of the seafloor:

- the southeastern flank is steeper, reaching a maximum of 6°. HISAS data shows a high reflectivity at the crest of this flank, caused by the local exposure of the underlying more consolidated sediments (Figure 33). Toward the slope base, the HISAS data show a patchy and heterogeneous reflectivity pattern that defines this localized area, classified as mottled seafloor, from the surrounding seabed. Its upper boundary is also visible in the MBES data (Upper panel in Figure 33). This heterogeneity may reflect variations in sediment composition or bioturbation processes, as it does not appear to be directly controlled by slope gradient or associated with widespread degassing processes.

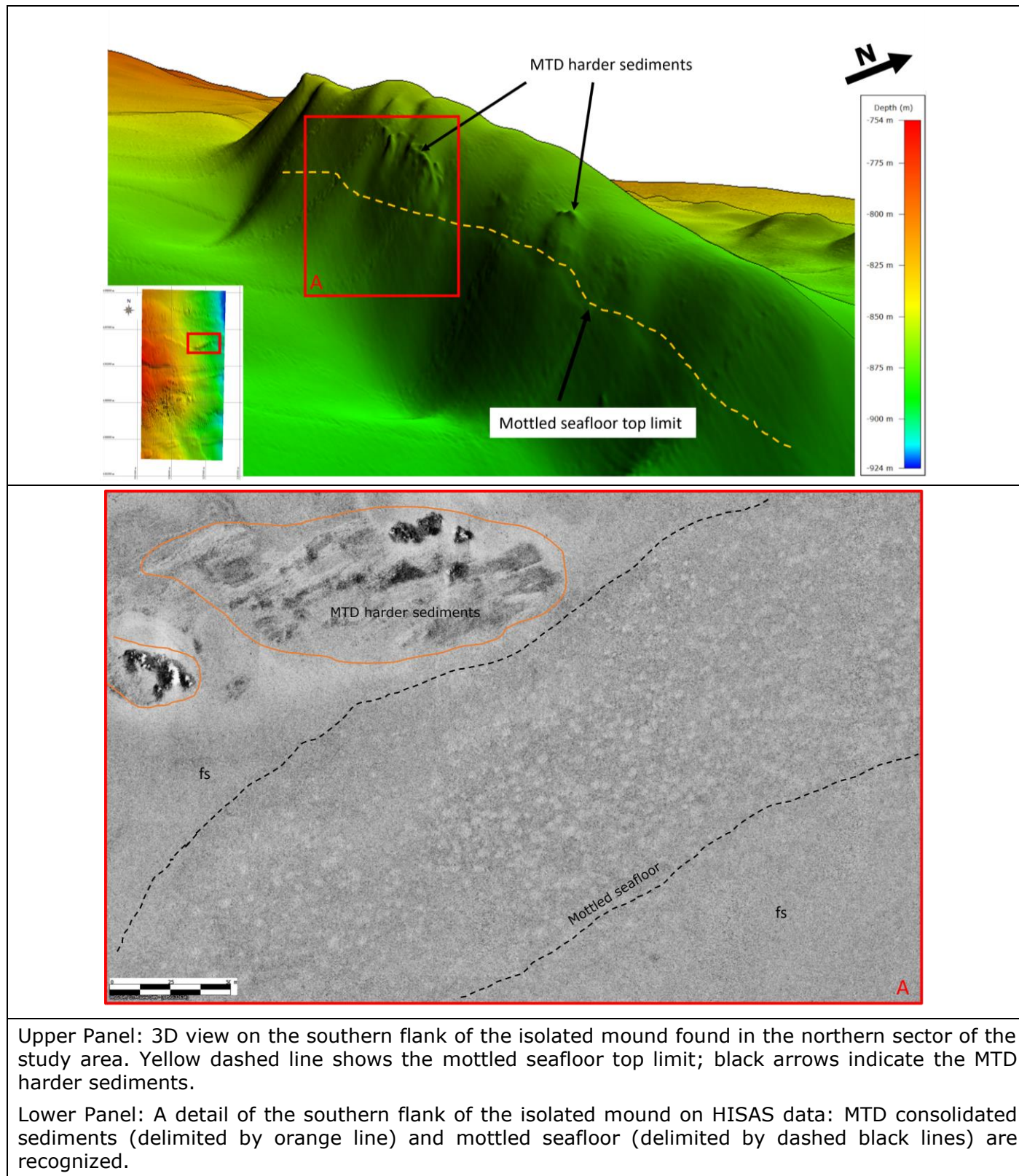
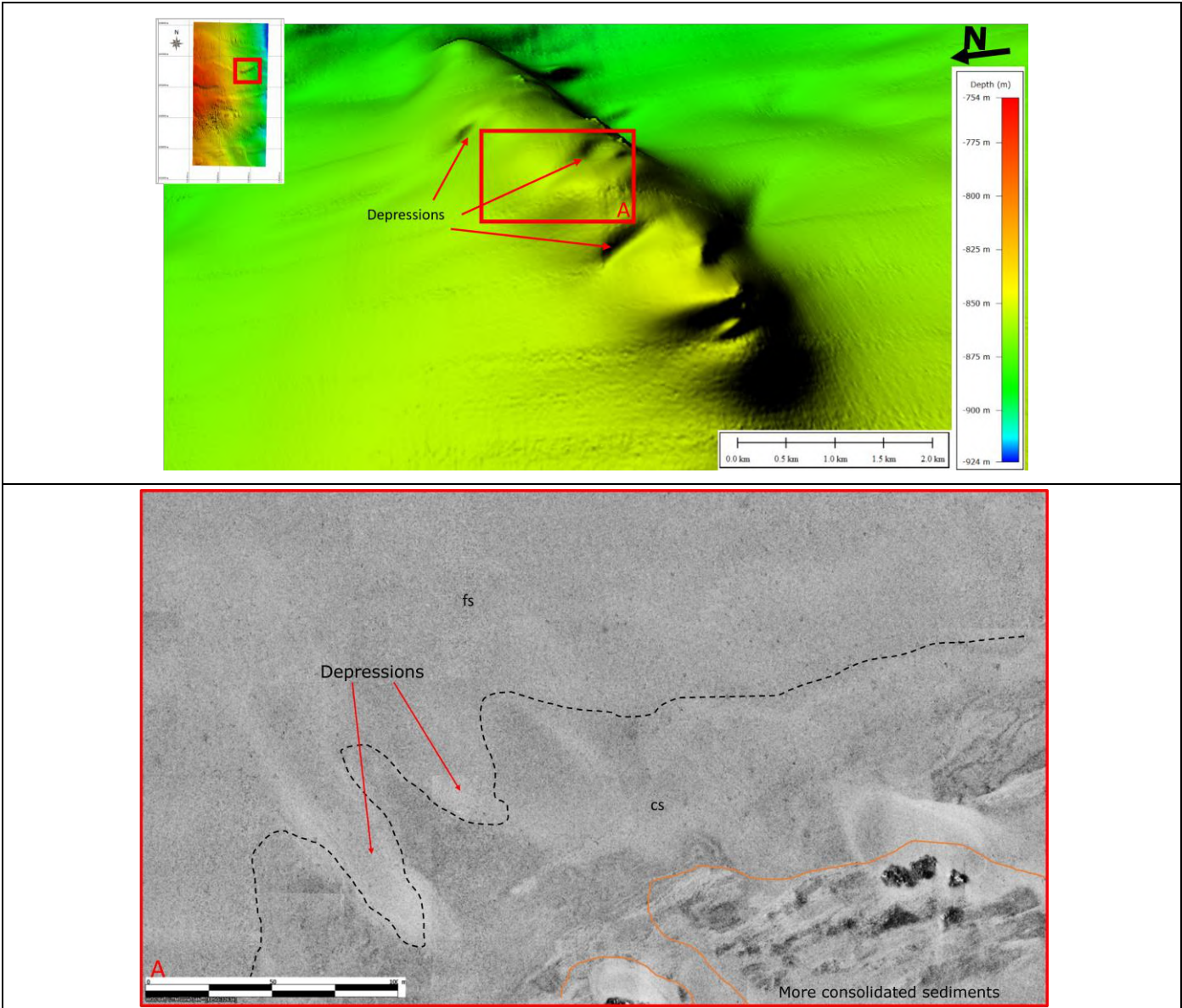


Figure 33 – Detail of the Southern flank of the isolated mound recognized in the northern sector of the study area.

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- The northwestern flank is less inclined (maximum 3°), with no exposed bodies. The mound is cross-cut by lineaments with a NW–SE orientation, that influence its morphology, producing elongated ridges and depressions (Figure 34). These features are partially identifiable in the HISAS data due to variations in acoustic intensity (Figure 34), which appears lower and nearly white in correspondence with the depressions. A change in sedimentation is also observable at the top of the mound, where sediments appear coarser grained compared to those in the northern sector. The intermediate acoustic intensity suggests the presence of more compacted sediments that have not yet resulted in the complete exposure of the underlying more consolidated sediments.



Upper Panel: 3D view on the northern flank of the isolated mound found in the northern sector of the study area. Red arrows indicate the depressions visible on its flank.

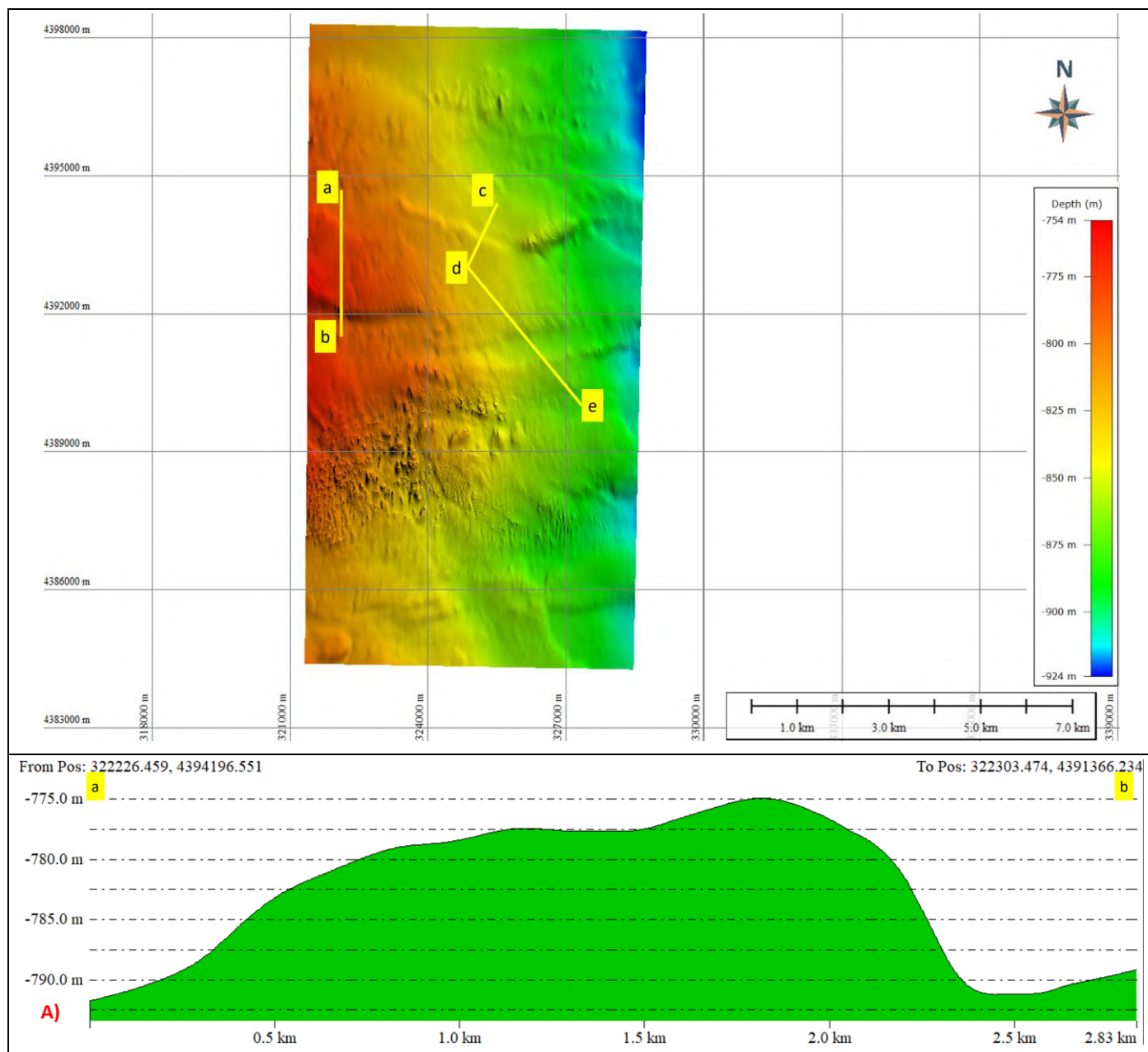
Lower Panel: A detail of the northern flank of the isolated mound on HISAS data: more consolidated (delimited by orange line) and coarse sediments (cs, delimited by black dotted line), are recognized.

Figure 34 – Detail of the northern flank of the isolated mound recognized in the northern sector of the study area.

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7.1.5 Fault scarps morphologies

The complex structural setting of the study area is also highlighted by the presence of several morphological steps. These features are clearly visible on the seabed showing a height up to 20m with a gently slope gradient varying between 2 and 4° (see Figure 35). These steps exhibit a general W-E trend, as shown in, and are widely spaced with an interval of about 1km (Figure 35).



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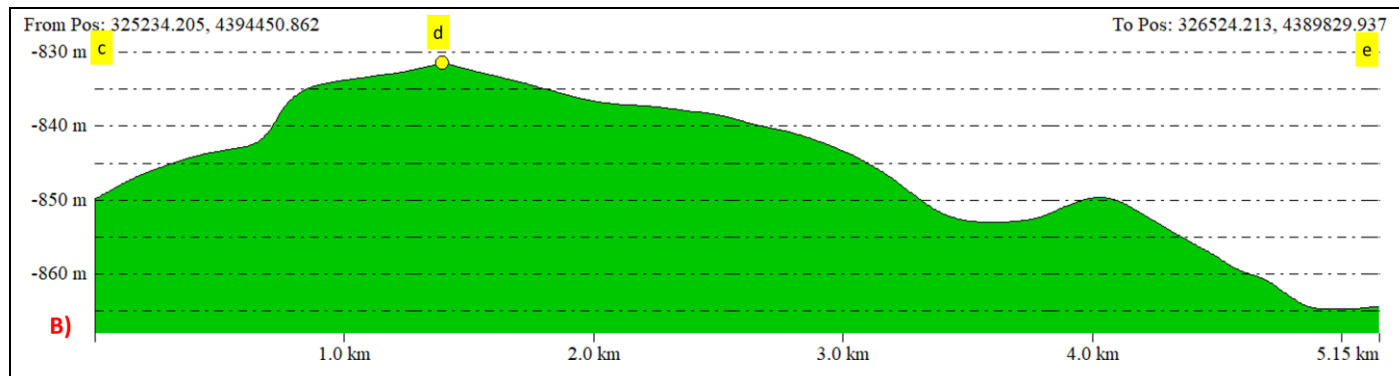
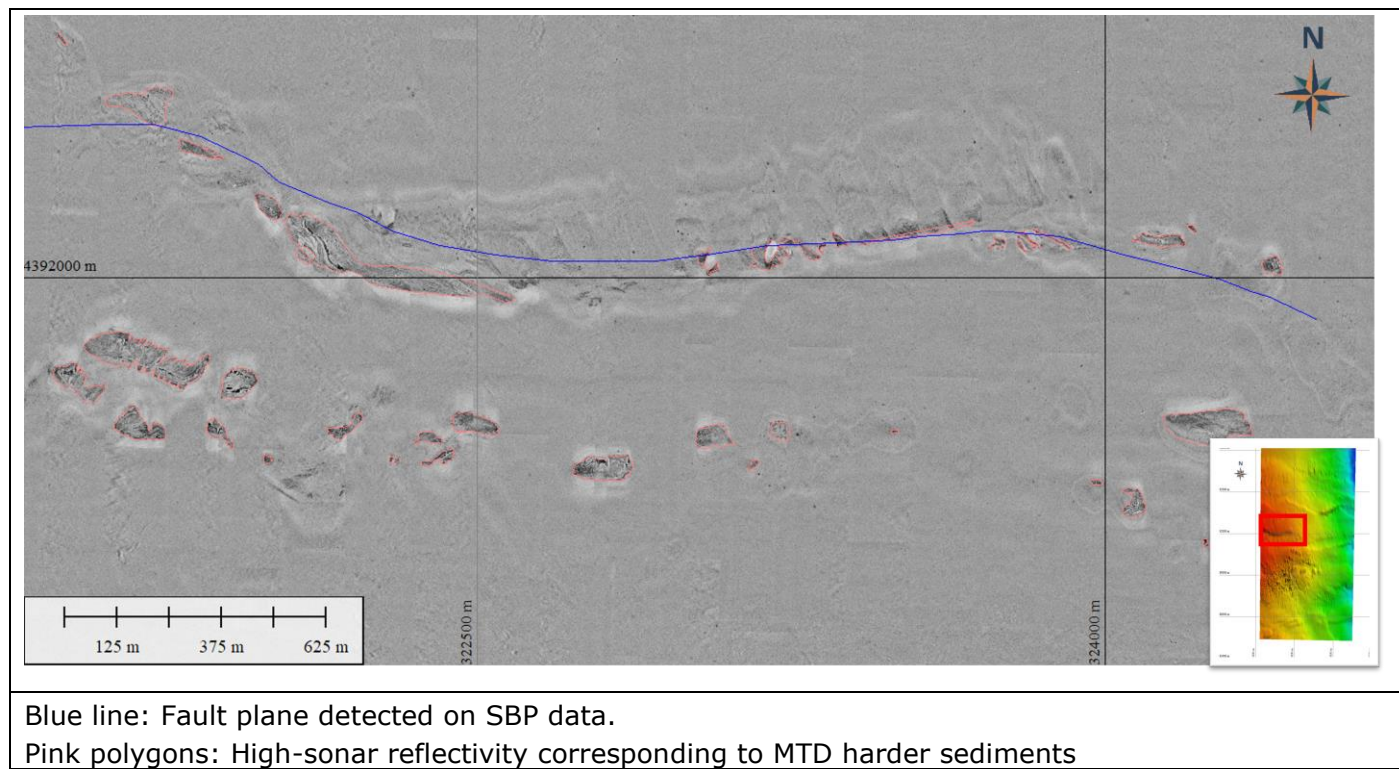


Figure 35 – Fault scarps overview with bathymetric profiles on two arbitrary lines.

Locally, several exposed bodies can be observed along the steps. As visible on HISAS data, these bodies appear scattered and surrounded by the fine sediments that partially bury them (Figure 36). The presence of these deposits is related to the morphological step, interpreted as faults scarps, clearly visible on the SBP data. These faults do not directly affect the seafloor morphology, but they created the ideal accommodation space for the accumulation of the harder material underlying the blanket of fine-grained sediments spread across the area.



Blue line: Fault plane detected on SBP data.
Pink polygons: High-sonar reflectivity corresponding to MTD harder sediments

Figure 36 – Detail of acoustic data on the major fault scarp recognised in the NW part of the study area.

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7.1.6 Mud volcanoes

Based on the available geophysical and geological data no evidence of mud volcanoes has been identified within the investigated area. These morphological features have not been recognized in the bathymetric and sub-bottom profiler data. In addition, no indications of buried mud volcanoes have been observed in seismic data, as well as fluids rising associated to them.

The absence of this morphology contributes significantly to reducing the geohazard risk within the study area.

7.1.7 Cables and Trench

Figure 37 shows the cables/trench identified from datasets, overlaid on the bathymetric DTM of the study area.

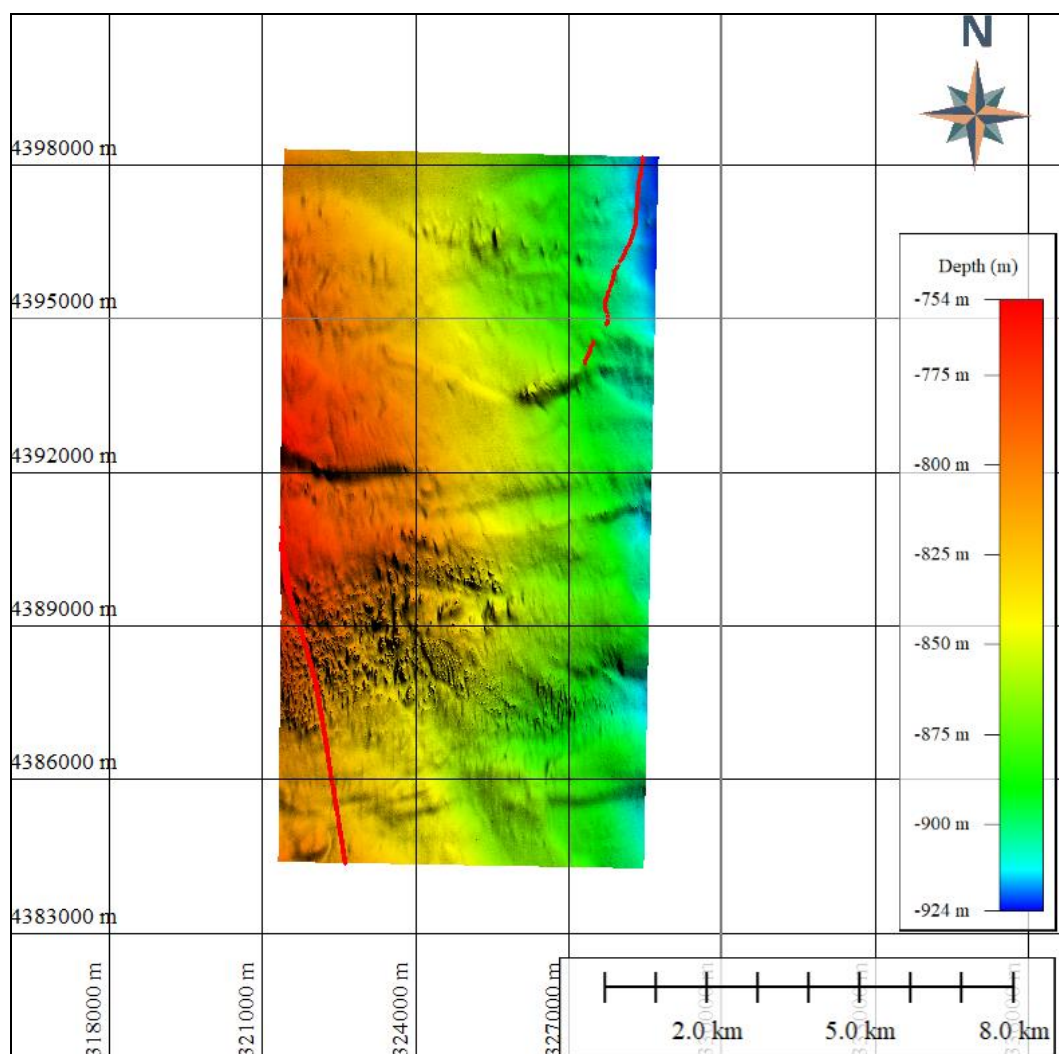


Figure 37 – Overview of the surveyed area showing the positions of the identified subsea cables/trench, as mapped from HISAS and MBES data.

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Cables have been primarily detected through HISAS as acoustic facies with high reflectivity. Four different cables have been recognized within the study area, and they are mostly exposed on the seafloor. The following table (Figure 24) shows the start/end position and the length of all the exposed portions of these cables.

Table 25 – Start/end position and length of the cables detected within the study

Cable Name	Cable ID	Easting Start (m)	Northing Start (m)	Easting End (m)	Northing End (m)	Exposed Length (m)
Unknown	EER001_C BL-01	328449.17	4398147.06	328035.32	4396161.98	2047.16
	EER001_C BL-01	327949.39	4396017.91	327847.80	4395739.21	298.07
	EER001_C BL-01	327755.78	4395455.20	327713.94	4394843.10	642.54
	EER001_C BL-01	327476.12	4394542.97	327298.04	4394120.96	470.00
AAE-1	EER001_C BL-02	322620.12	4384361.64	321371.59	4390632.40	6379.60
	EER001_C BL-03	322628.58	4384360.22	322504.41	4385151.26	801.00
	EER001_C BL-03	322501.56	4385168.50	322496.00	4385203.58	35.22
	EER001_C BL-03	322487.38	4385257.59	322472.19	4385357.35	100.28
	EER001_C BL-03	322470.09	4385372.49	322073.67	4387695.83	2358.37
	EER001_C BL-04	322157.67	4387279.20	321846.10	4388624.36	1383.50
	EER001_C BL-04	321837.75	4388657.10	3215667.74	4389576.52	956.70
	EER001_C BL-04	321551.26	4389636.82	321431.71	4390430.81	799.17
	EER001_C BL-04	321431.31	4390584.47	321369.70	43909939.36	354.89

In the south-western sector of the study area a cluster consisting of three cables has been recognised (EER001_CBL-02, EER001_CBL-03, EER001_CBL_04).

These segments have been interpreted as belonging to the AAE-1 (Asia-Africa-Europe-1) submarine cable system, in agreement with the cable route displayed in the Submarine Cable Map database.

The cables are predominantly sub-parallel, although local intersections complicate the reconstruction of their paths. Locally, they appear discontinuous, possibly due to partial burial by the fine-grained sediments that characterize the study area. However, no SBP data are available along these interruptions, and therefore the exact path of the cables cannot be reliably reconstructed where they are buried.

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In the southernmost portion of the area, the trench excavated for cables installation is clearly visible on bathymetric DTM. MBES data depict it as a few meters wide and deeply incised feature extended for thousands of meters in length (Figure 38).

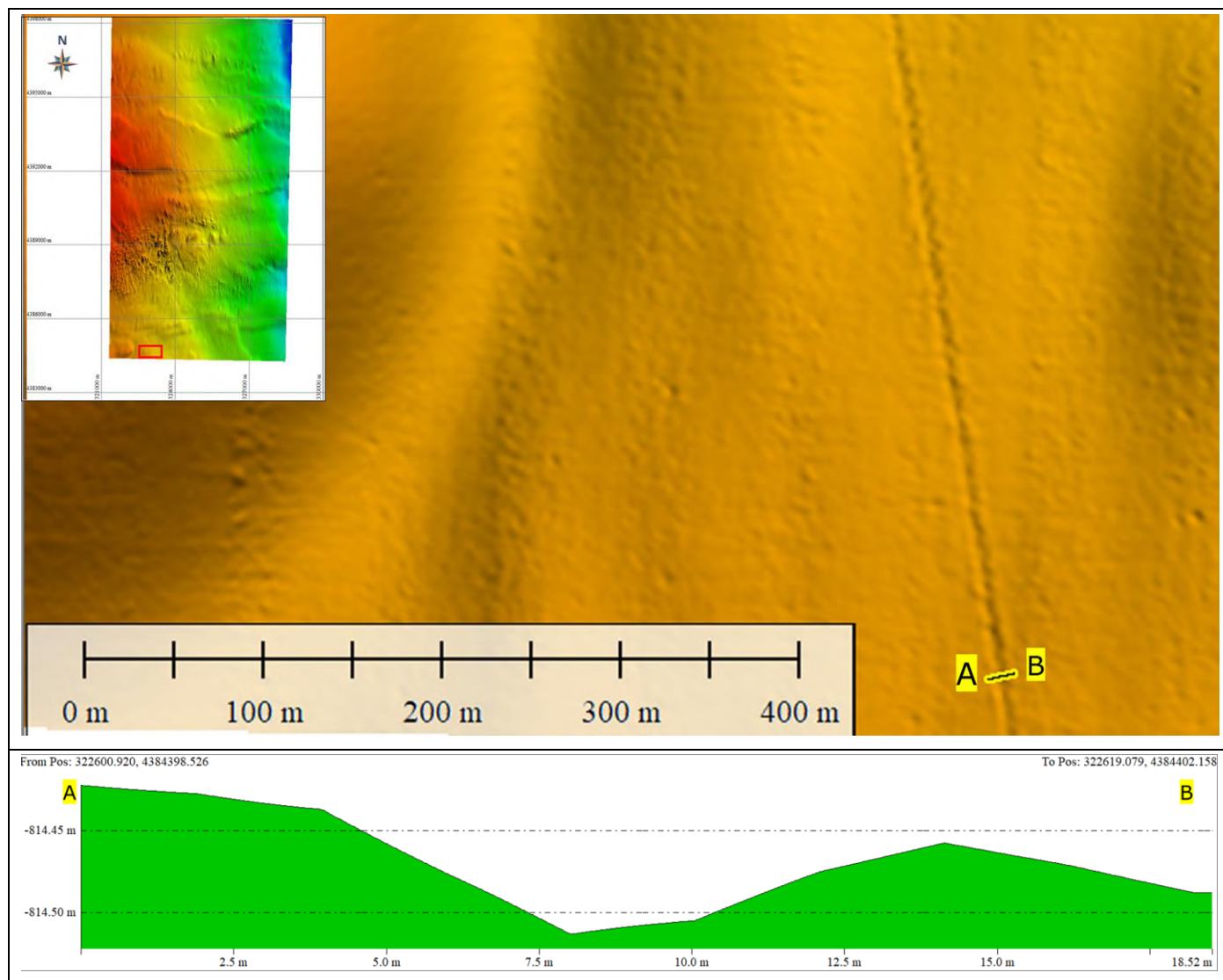


Figure 38 – Cables trench detected on MBES as a narrow and deep incision.

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The higher-resolution HISAS data allow a more accurate delineation of the trench margins, as well as the adjacent spoil heaps resulting from excavation. (Figure 39).

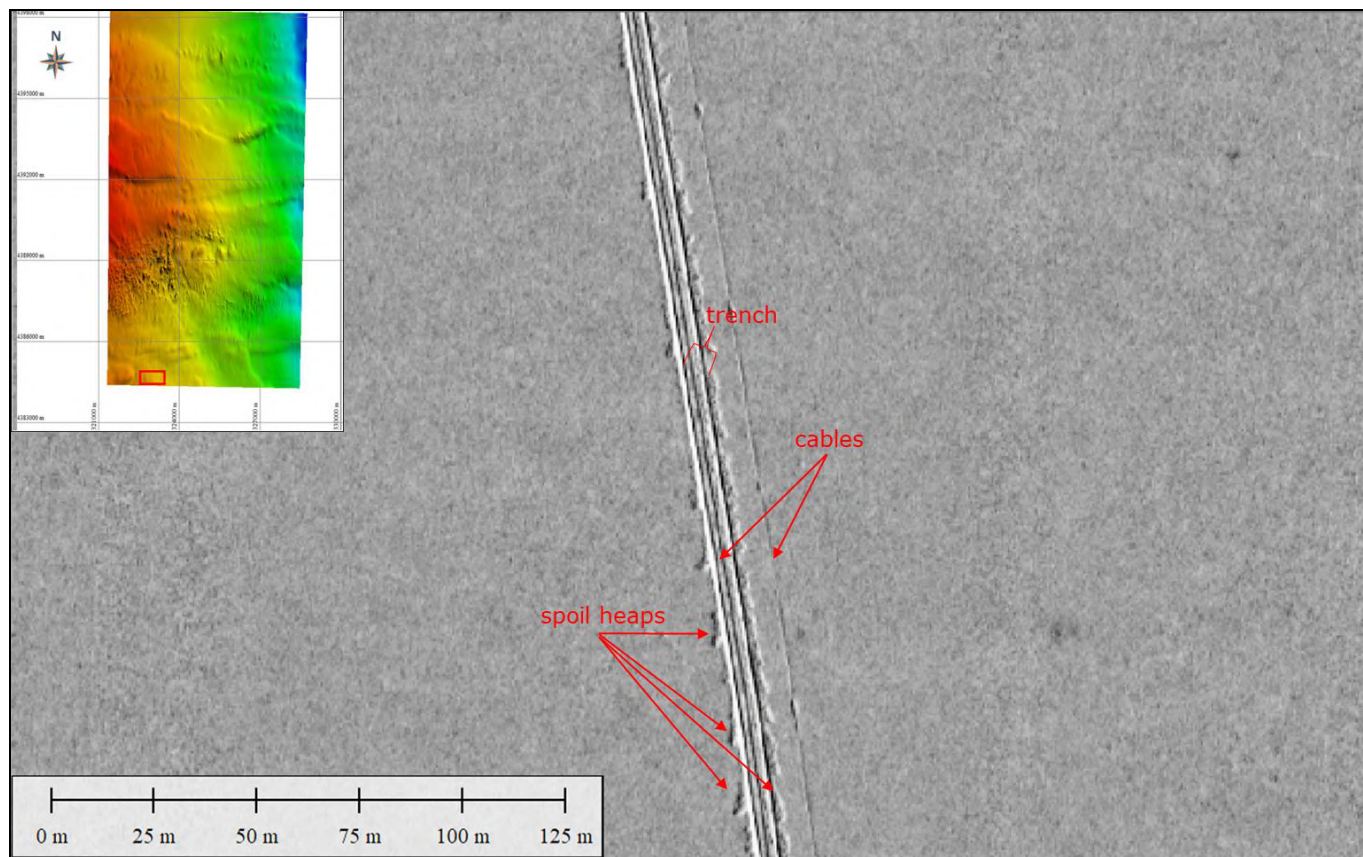


Figure 39 – Cables trench detected on HISAS with a detail of the lateral spoil heaps.

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Moving toward the central sector, the cable trench is no longer visible, as this area is characterized by the MTD harder sediments described above. The presence of these hard substrates possibly prevented trench excavation, and the cables were laid directly on the seafloor.

In the northeastern part of the study area, another cable is identified only in the HISAS data, as no associated trench is visible. It appears thin, partially buried, and shows a discontinuous path. The cable terminates near the isolated mound in the northern sector where it appears twisted and is no longer detectable toward the southern part of the study area (Figure 40).

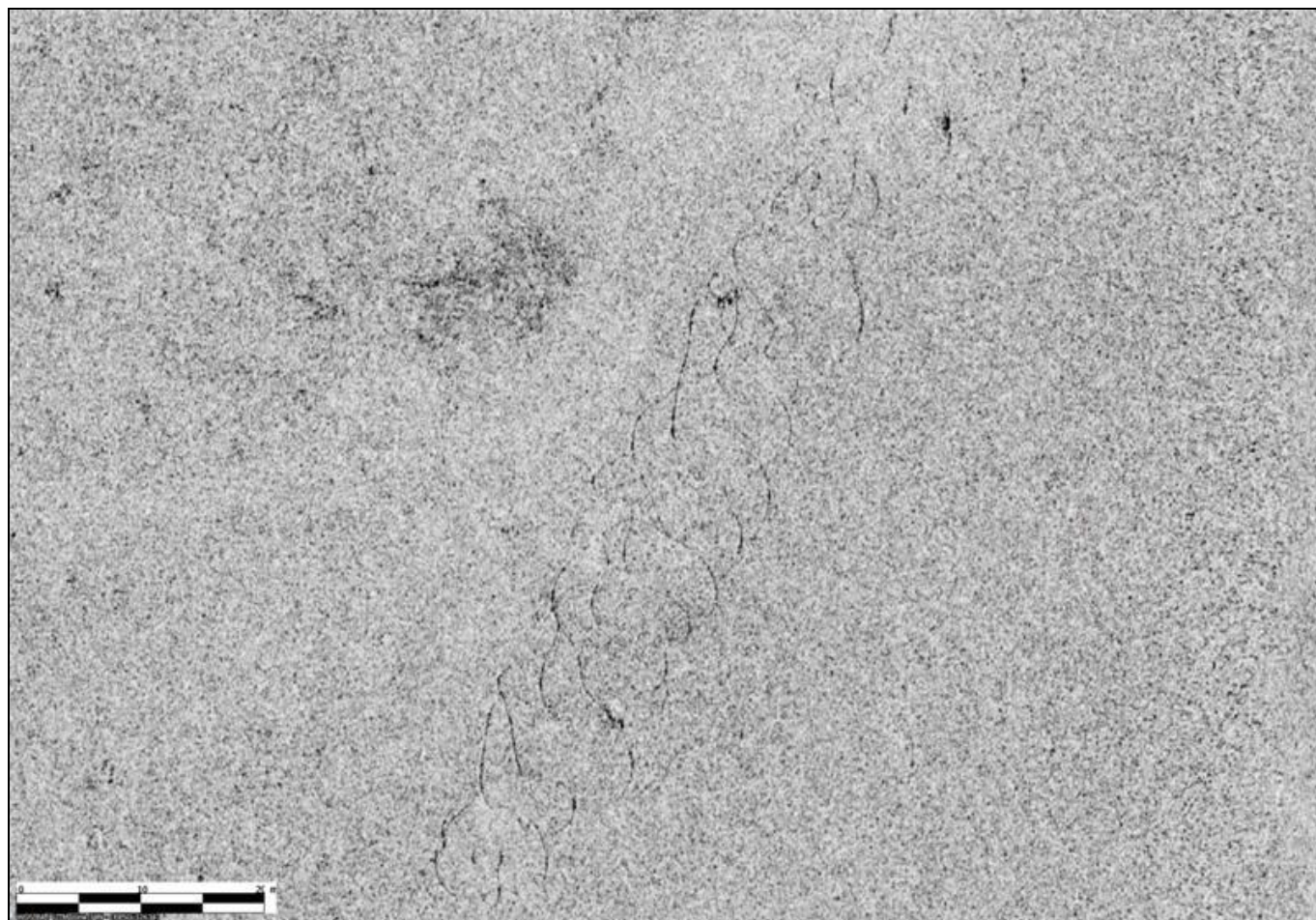


Figure 40 - Detail of the cable identified in the northern sector of the study area.

7.1.8 Sonar contacts recognized in the study area

Within the study area 144 targets have been recognized. The sonar contact list related to all these targets is enclosed in *.pdf format ("EER001_Target_Report").

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7.1.9 Sub-surface stratigraphy interpretation from SBP

The processing of SBP records was conducted applying a speed of sound in the sediments of 1517m/sec and the data reveal an average penetration of 30m b.s.b..

SBP data reveal a complex and heterogeneous shallow stratigraphy, dominated by a Mass Deposit Transport (MTD) that characterises the entire surveyed area.

The sub-bottom profiler data reveal a complex shallow stratigraphy dominated by the presence of a mass-transport deposit (MTD), whose material is distributed throughout the entire study area. As previously observed in the acoustic dataset, this unit is currently almost entirely draped by sub-parallel layers with an average thickness of approximately 7.9 m. These sub-parallel strata define the first seismic facies (Facies F1), bounded between the seafloor and reflector R2, which corresponds to the top of the chaotic MTD deposits.

Facies F1 is further subdivided into two sub-facies by reflector R1, which separates the overlying low-to medium-reflectivity strata (Sub-facies F1a) from the underlying sub-parallel strata characterized by medium- to high-amplitude reflectivity (Sub-facies F1b). R1 depth ranges from 0m (not detectable) to 6.5m b.s.b..

Sub-facies F1a consists of sub-parallel layers generally less than 1 m thick, laterally continuous across most of the study area and conformable with the morphology of the MTD. In correspondence with the mounds, a marked reduction in the thickness of Sub-facies F1a is observed, producing a truncated geometry. Figure 41 shows a seismic section across the isolated mound located in the northern sector, where the strata of Sub-facies F1a appear truncated against lithified material partially exposed along the mound crest.

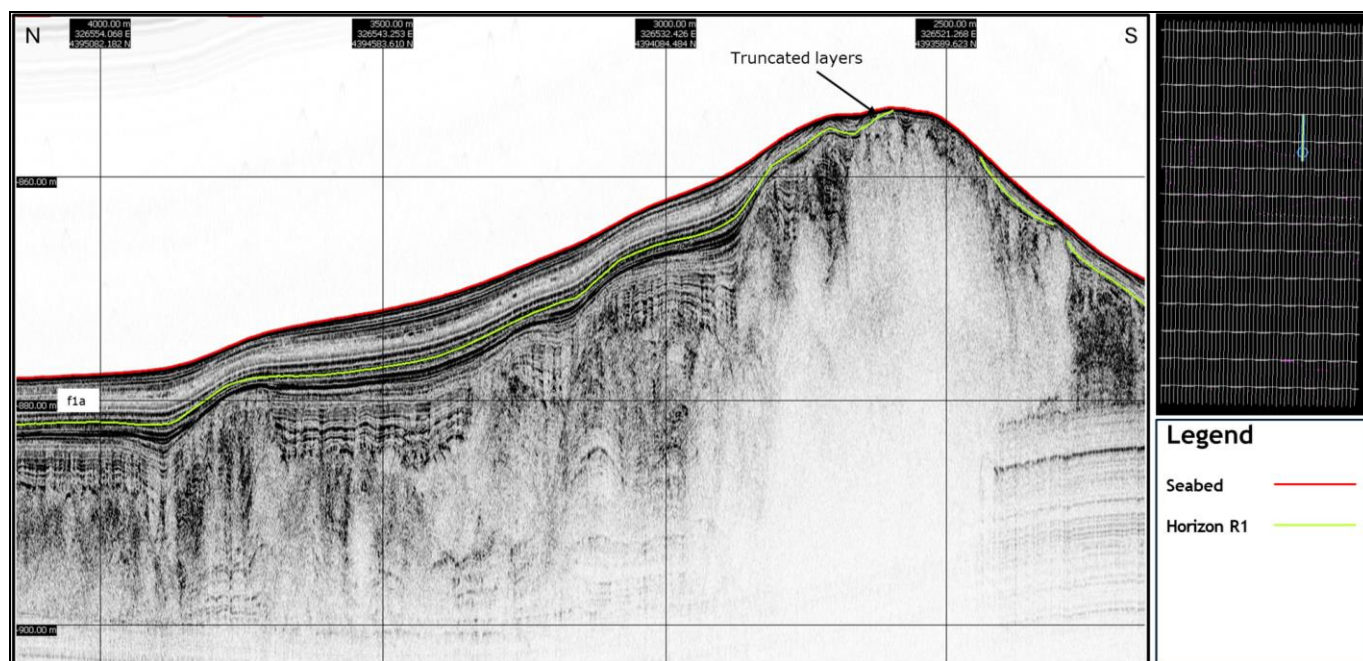


Figure 41 – Detail of SBP line M03_I10: Facies f1a with truncated layers on the isolated mound identified in the northern sector of the study area.

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This sedimentary drape is completely absent where harder material incorporated within the MTD is exposed at the seafloor. Figure 42 illustrates a seismic section across these harder bodies, which interrupt the continuity of the overlying sedimentary cover.

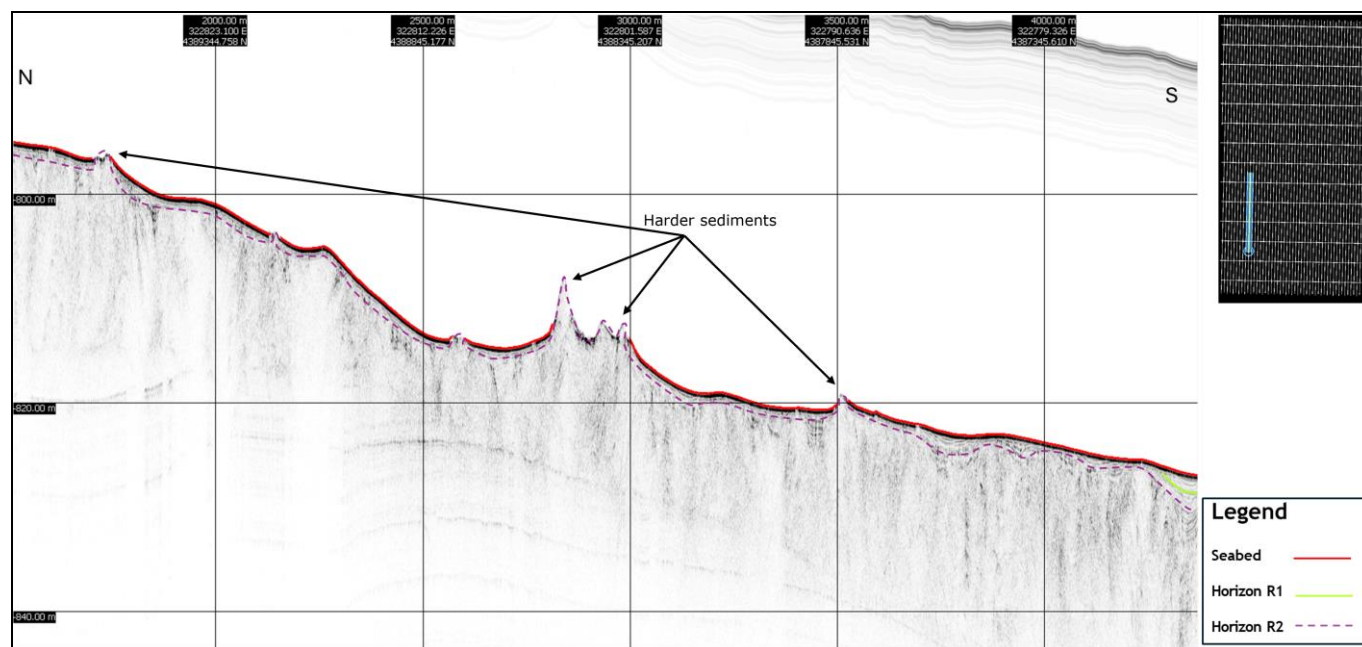


Figure 42 – Detail of SBP line M05_I10: harder sediments of MTD material.

Furthermore, in the northwestern sector of the study area, the presence of a fault scarp characterized prevented the accumulation of pelagic sediment, resulting in the exposure of the underlying Sub-facies F1b and MTD deposits (Figure 43).

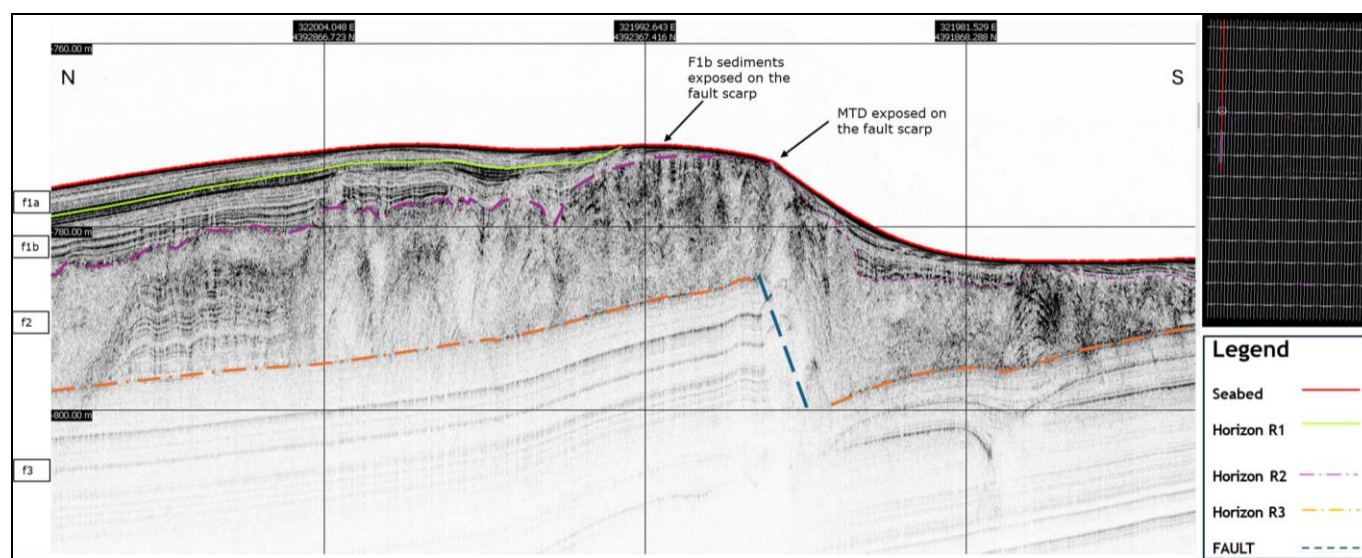


Figure 43 – Detail of SBP line M01_I05: Facies F1b and MTD material (facies f2) exposed on the fault scarp.

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Based on granulometric analyses performed on grab-samples material, the deposits composing Sub-facies F1a are interpreted as pelagic silty-clay sediments.

Sub-facies F1b is generally thicker than Sub-facies F1a. Reflector R1, marking the top of this sub-facies, is characterized by high reflectivity and can be continuously traced throughout the study area, except where harder bodies are exposed. The F1b sub-facies layers follow the morphology of the MTD, filling the accommodation space generated by irregularities of the mass-transport deposit and leading to the formation of small channels and sedimentary basins. Locally, these strata appear fractured, suggesting deformation of the sedimentary succession associated with compressional, gravity-driven folds developed at the toe of the underlying MTD. These fractures may be interpreted as tensile fractures related to fold growth, associated with syn-deformational de-watering processes.

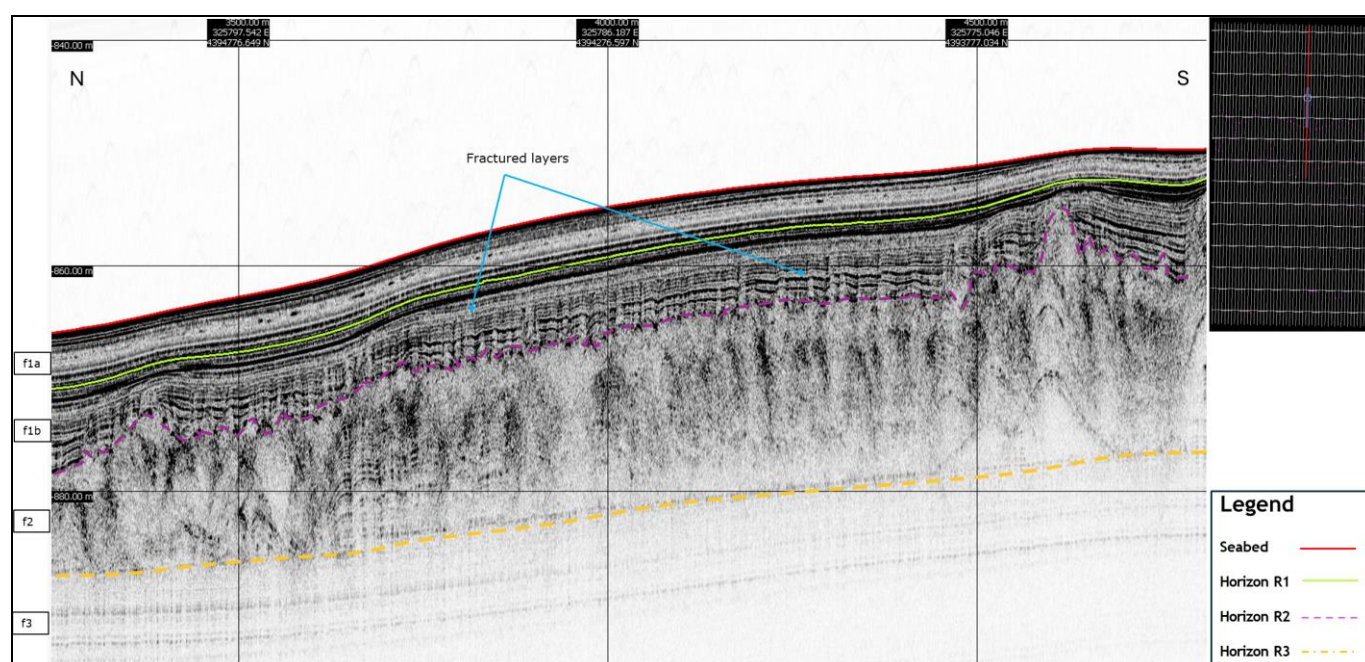


Figure 44 – Detail of SBP line M03_I05: Fractures layers in the facies f1b vs undisturbed layers in the facies f1a.

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Considering the high reflectivity displayed in the seismic data, the material composing Sub-facies F1b is interpreted as fine-grained sediment. Where f1b sediments are exposed, their acoustic response is equal to F1a sediments, suggesting a silty-clayey granulometry.

Within Sub-facies F1b, restricted to the northern sector of the study area, another chaotic body has been identified. This unit, in the northernmost part of the study area has an average thickness of 5m. It is interpreted as a second gravitational event whose deposits overlies the main MTD, separating from it only by few thin sub-parallel layers. Moving from north to south, the thickness and lateral extent of this second gravitational unit progressively decrease, eventually forming isolated lenses enclosed within the sub-parallel strata of the same sub-facies (Figure 45). The available data do not allow to determine the full extent of this secondary event because the chaotic body continues beyond the northern border of the study area. However, looking at its areal extension, it can be interpreted as the lateral portion of a gravity-driven body extending downslope along the E-W seabed gradient.

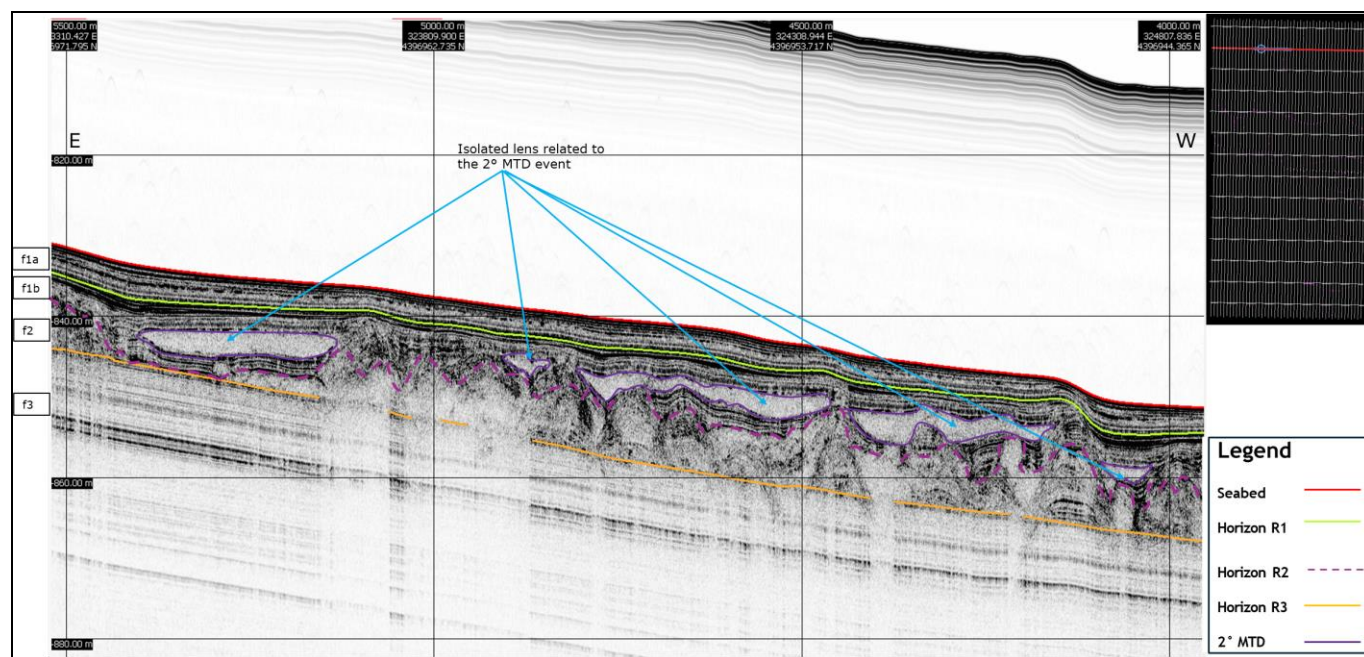


Figure 45 – Detail of SBP line M01_x02: Isolated lens related to the 2° MTD event recognized in the northern part of the study area.

Facies F1b is delimited on the bottom by the reflector R2. It is a low- to medium-amplitude, irregular reflector representing the top of the MTD material. Its depth ranges from 0m (where the MTD material is exposed) to 16.82m b.s.b. (in the northern sector of the study area).

Seismic Facies F2, bounded between reflectors R2 and R3, corresponds to the MTD deposits. The internal architecture of this unit appears highly heterogeneous, displaying an alternation of chaotic bodies characterized by acoustic turbidity and stratified bodies with sub-parallel layering (Figure 46).

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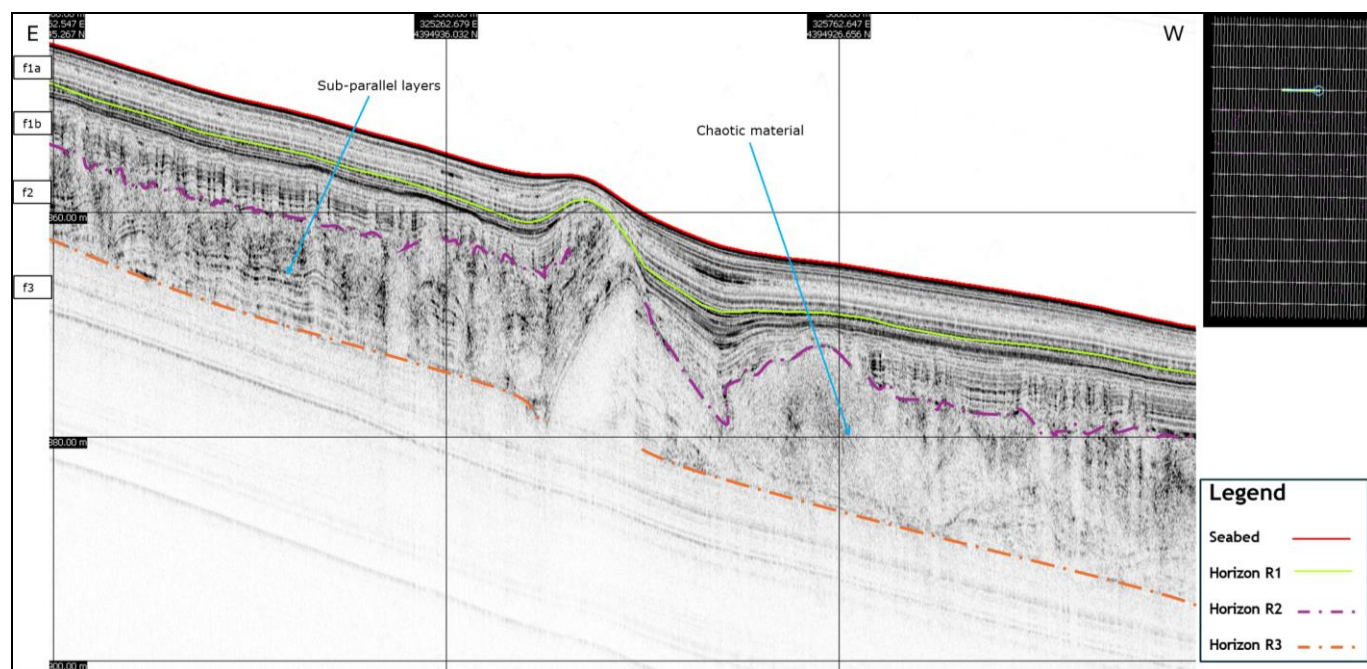


Figure 46 – Detail of SBP line M04_x04: Internal structure of the MTD shows an alternation of chaotic and stratified bodies.

In addition, variations in seismic signal penetration highlight differences in both lithology and degree of lithification within the MTD deposits. In correspondence with lithified material, seismic penetration decreases significantly, producing acoustic blanking effects. Moreover, the MTD deposits appear strongly deformed, as evidenced by fold structures visible both in seismic profiles and, where exposed at the seafloor, in the HISAS acoustic data (Figure 47).

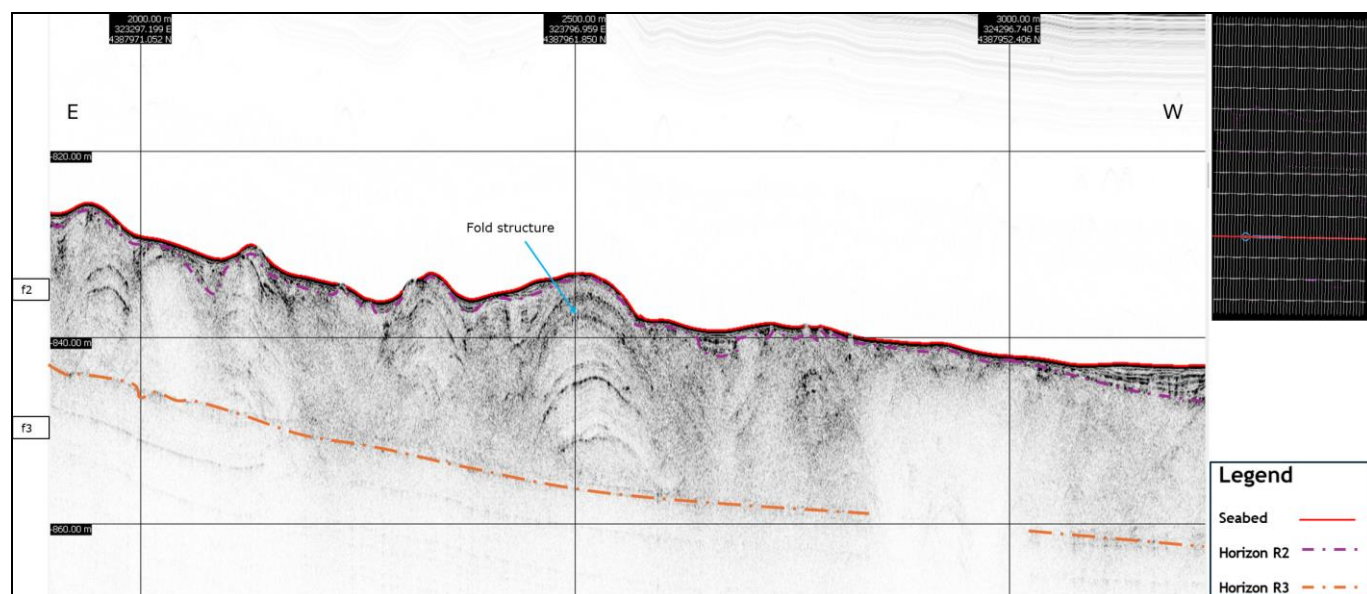


Figure 47 – Detail of SBP line M05_x11: An example of the folded structures recognized in the facies f2 (MTD material).

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Facies F2 exhibits a highly variable thickness, with an average value of 15m (Figure 48). Locally, in correspondence of the mound-like morphologies and fault scarps F2 reaches thickness values that can exceed 30m. The highest value is recorded on the isolated mound in the northern sector of the study area where the MTD material reaches a thickness of 35m (see Figure 43).

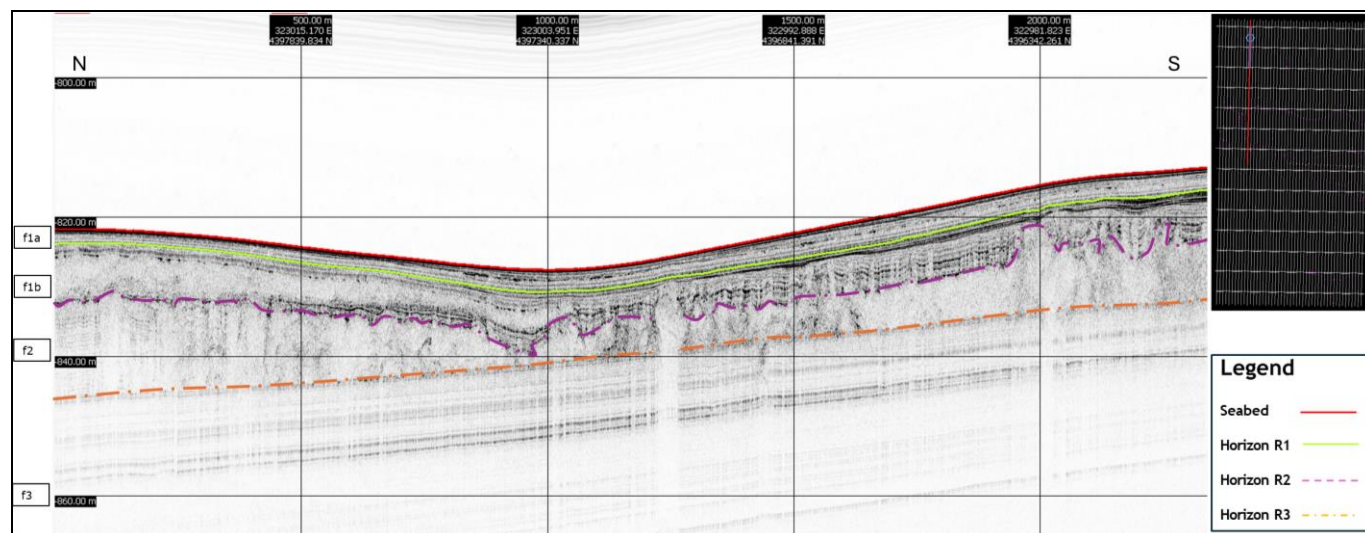


Figure 48 – Detail of SBP line M01_I11: Example of Facies f2 showing a high thickness variability within the study area.

The variable thickness of the MTD across the study area is mainly related to the activity of deep normal faults (>3 m b.s.b.) identified throughout the area, with larger displacements occurring in the western sector. These faults, interpreted as extensional tectonic structures, are characterized by throws of several meters. The MTD material, deposited in situ, progressively filled the accommodation space generated by fault activity, partially smoothing the tectonic displacements associated with these structures. Since Facies F2 is itself affected by tectonic deformation, the MTD is interpreted as a syn-tectonic gravitational deposit.

Facies F2 is delimited on the bottom by the reflector R3. It is a medium-amplitude reflector representing the bottom of the MTD material. Its depth ranges from 0m (where R3 is not detected due to blanking effects described in the following paragraph) to 37m b.s.b. (beneath the isolated mound). The reflector is discontinuous because it is cut by the deep normal faults described above.

The MTD deposits overlie a deeper unit composed of well-defined sub-parallel strata, sharply cut by fault planes, suggesting a relatively stiff and consolidated nature of the sediment (Figure 49). The sub-bottom profiler signal terminates within this stratified unit. Deep faults are potentially extended down the maximum detected depth, until they are no longer detectable.

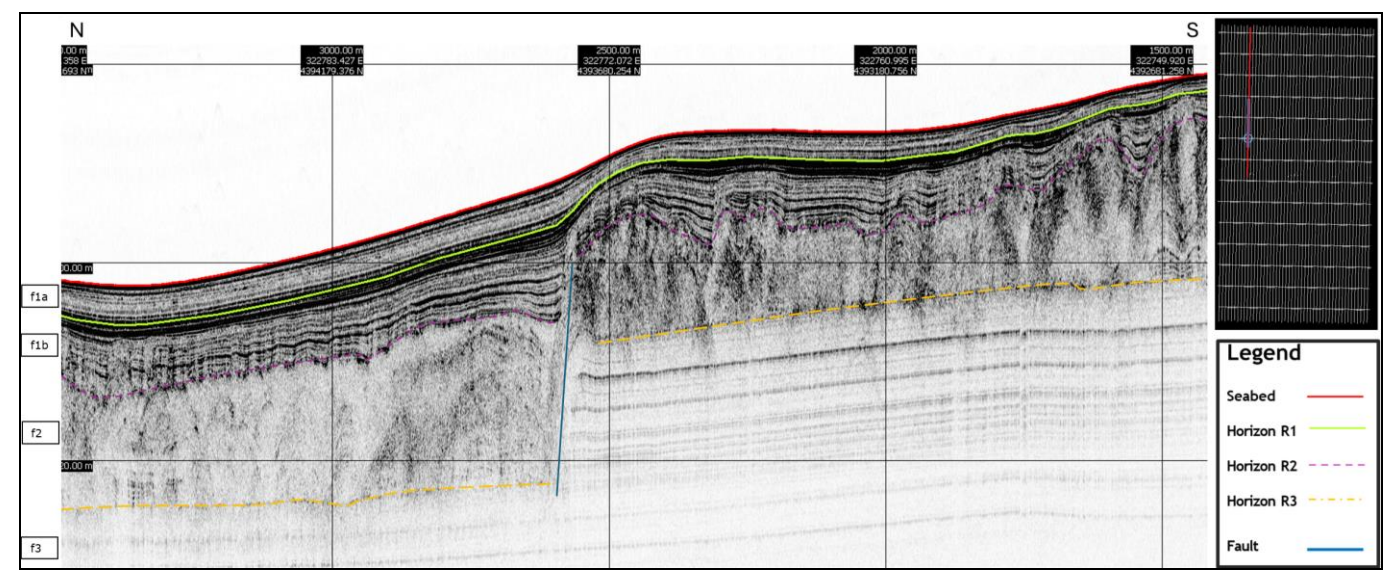


Figure 49 – Detail of SBP line M01_I10: Reflector R3 cut by a deep normal fault.

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7.1.9.1 Fluids/Acoustic Anomalies in SBP Profiles

Within the study area, the seismic data are locally affected by strong blanking effects (wipe-out zone). The limit of the fluids/acoustic anomalies detected in the study area is shown in Figure 50.

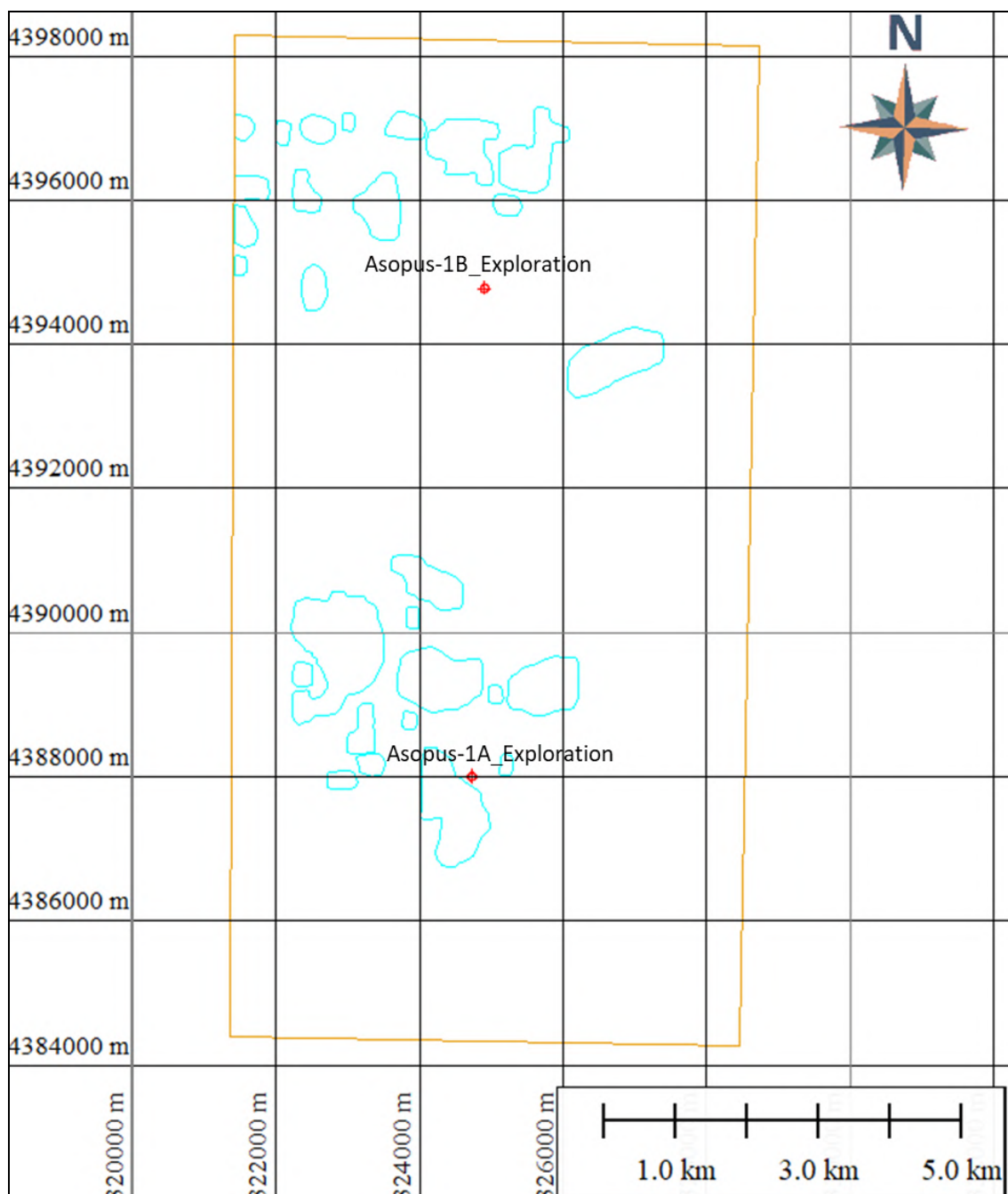


Figure 50 – Limit of fluids/acoustic anomalies (light-blue polygons) detected in the survey area.

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As shown in Figure 51, these anomalies affect both seismic facies F2 and F3, producing transparent zones within the deeper part of the seismic profiles. Such effects may reflect localized fluid presence. These fluids may be related to the de-watering processes described in the paragraph 7.1.9, although their origin cannot be unequivocally determined from the available seismic dataset alone.

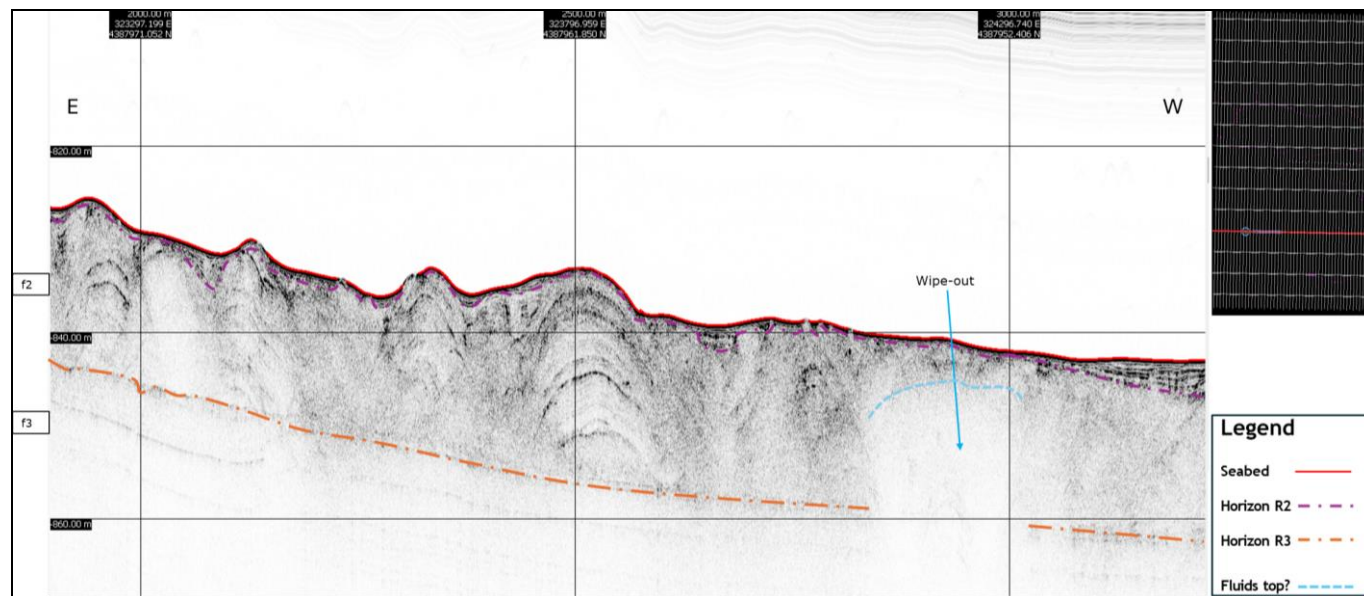


Figure 51 – Detail of SBP line M05_x11: Blanking (Wipe-out) of the seismic signal.

In the northern sector of the study area, acoustic blanking is observed beneath the isolated mound. This mound developed along a fault plane, whose damage zone may have acted as a preferential pathway for fluid migration and/or fluid expulsion from the surrounding sediments, potentially contributing to the observed seismic attenuation beneath the feature.

The formation of the isolated mound may also be related to the underlying fault plane. The fault hanging wall likely acted as a morphological obstacle to the mass-transport deposits, promoting the accumulation of material along the fault scarp (Figure 52).

No direct indicators of active seepage, such as pockmarks, acoustic plumes, or confirmed fluid chimneys, have been identified within the study area.

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N. Chicco	S. Sandroni	S. Sandroni	09/06/2026	EER001	EER001_Geophysical_Survey_Report_REV01.doc	P. 83/ 98

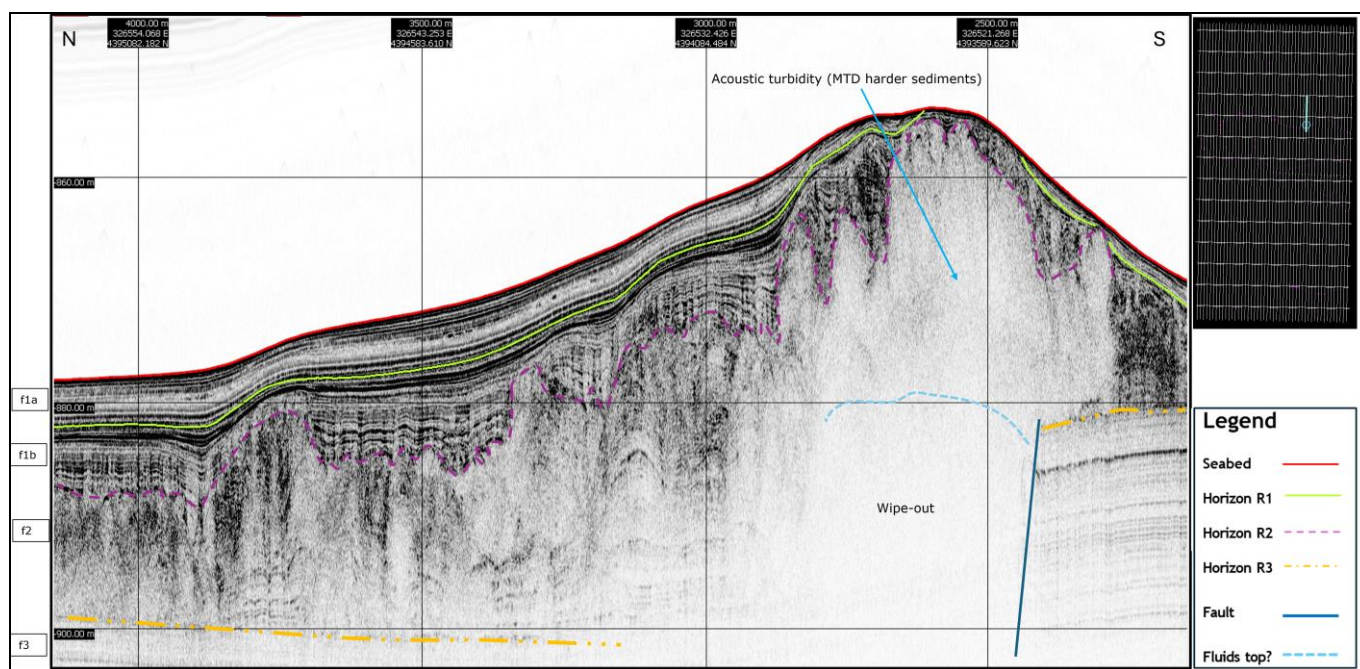


Figure 52 – Detail of SBP line M03_l10: Wipe-out effect under the isolated mound recognized in the northern sector of the study area.

In the central sector of the study area, where the more consolidated sediments of the MTD are exposed, several seismic lines show pronounced acoustic blanking effects. The wipe-out zones are not spatially associated with fault damage zones as the previous case, suggesting a different genetic origin.

Considering the surface data acquired within the study area, no active fluids expulsion features (such as pockmarks, chimney, plumes etc) have been recognized.

Furthermore, in the sub-surface data these acoustic anomalies are not associated with other diagnostic indicators commonly used to infer the presence of fluids such as bright spots, polarity reversals, or velocity pull-down effects.

The observed acoustic response may alternatively reflect fluid-related processes associated with the dewatering of compressional ridges within the MTD deposits. The overlying sediments of seismic facies F1 may act as a sealing unit, contributing to the preservation of the observed acoustic signature by limiting vertical migration processes.

7.1.9.2 Existence of unstable hydrates

Based on the interpretation of the available geophysical datasets no gas hydrates have been identified within the study area. In particular, the sub-bottom profiler data do not show any features typically associated with gas hydrate occurrence that could indicate an increased geohazard risk.

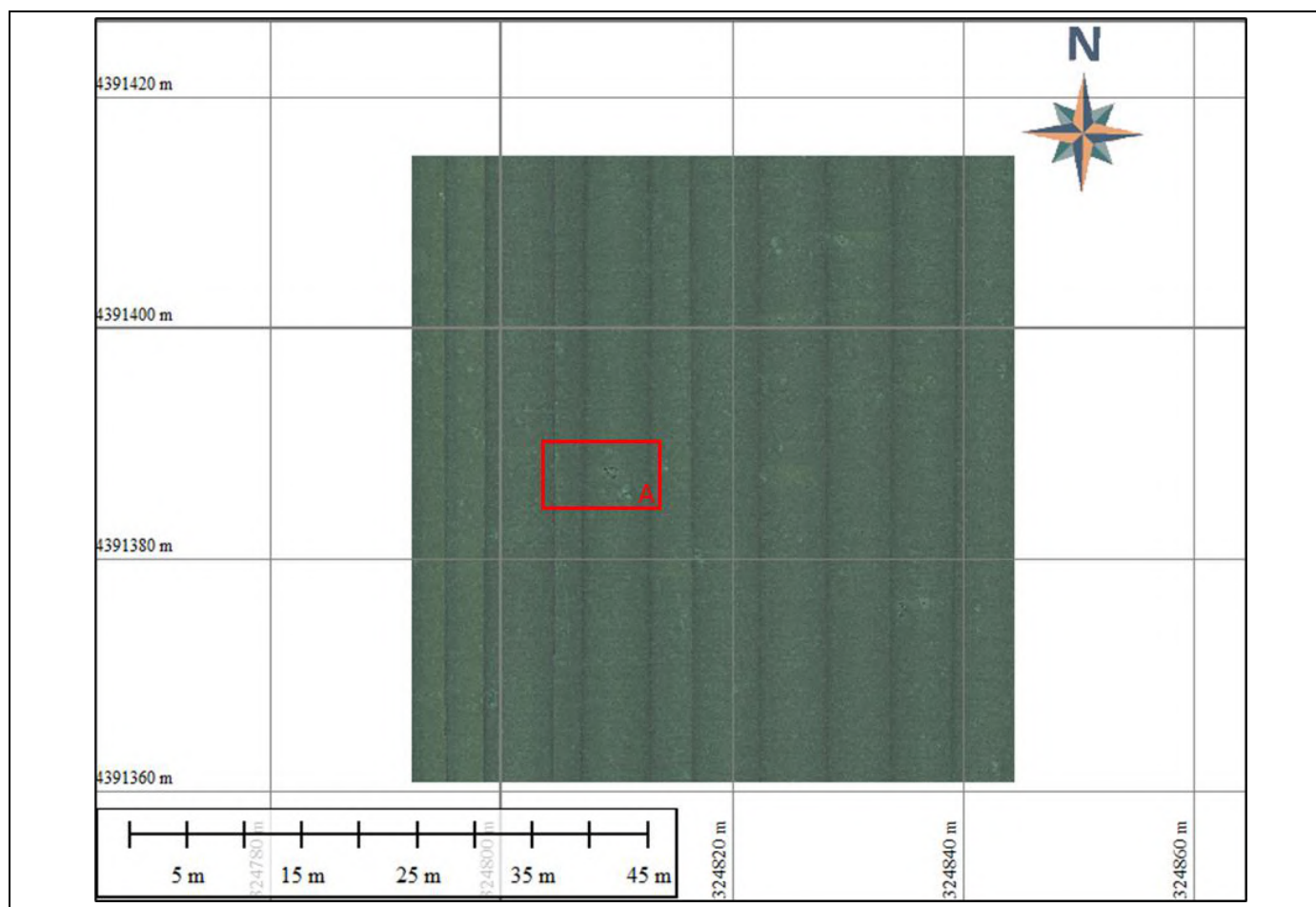
As a result, gas hydrates are not expected to represent a relevant geohazard for the proposed development within the study area.

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7.1.10 CATHX Data interpretation

The resolution of the individual images is approximately 1 mm/pixel, while the mosaics were exported at 5mm/pixel to optimize processing efficiency.

Figure 53 shows an example of a CathX mosaic and detailed view of the seabed within the sampling area D6a.



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Figure 53 - D6a sampling area with detailed view of seabed

A detail of D3b box is shown in Figure 54 showing the trace left by the Van Veen grab sampler used during environmental sampling phase.



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Figure 54 - Detailed view of traces left by Van Veen grab sampler at D3b location

The analysis of seabed areas through the low pass phase, within the EBS sampling points, did not reveal any risks or hazards due to morphological features and man-made objects.

7.1.11 Target T057

During mission M03 an isolated portion with high acoustic reflectivity and an elongated shape has been recognized on the HISAS mosaic (Figure 55). In correspondence of this feature the MBES data showed a mound shape approximately 60 cm higher than the surrounding seabed. Client onboard asked to perform an additional Visual Inspektion on this possible target.

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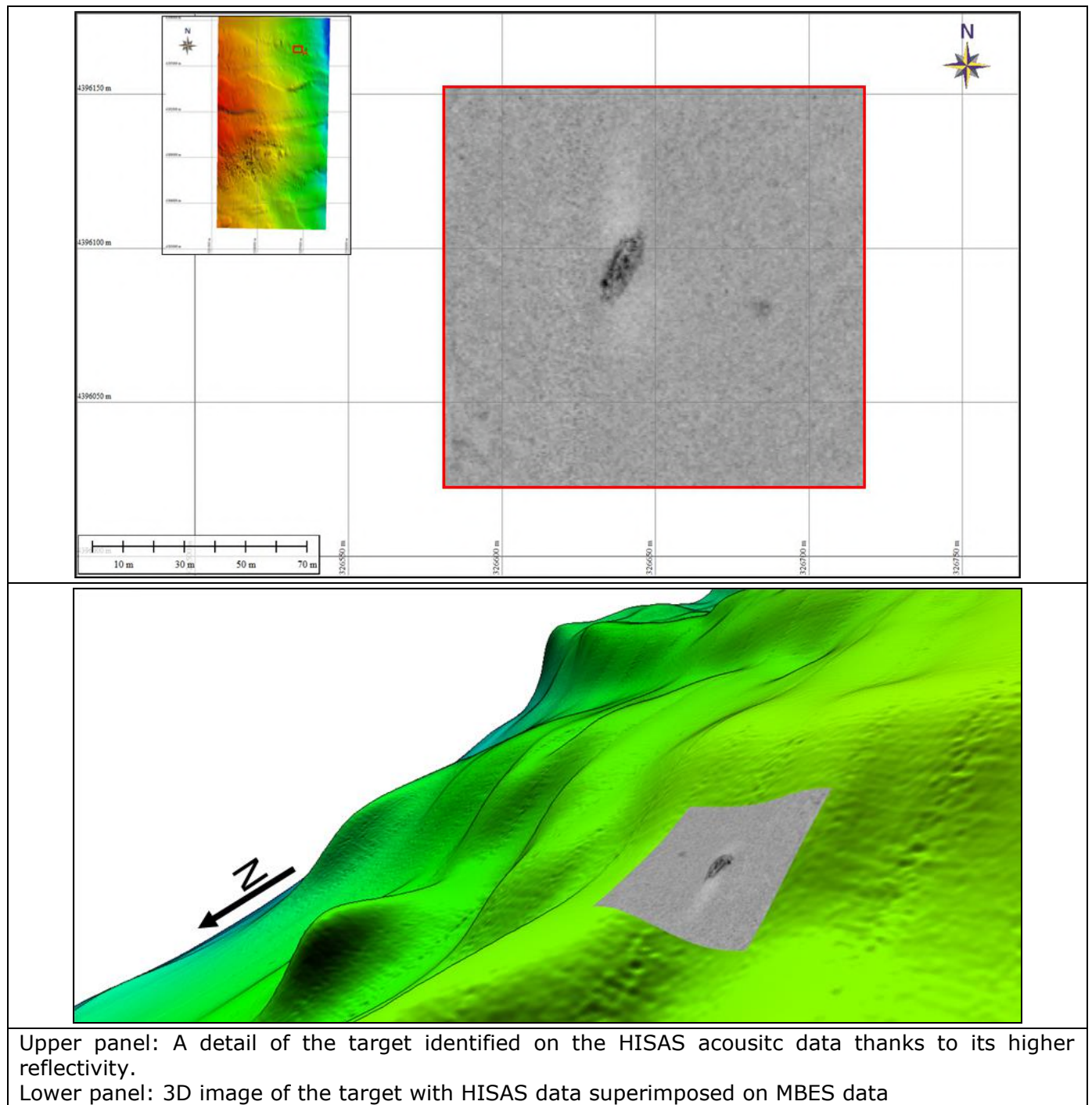


Figure 55 – Target T057 recognized in HISAS and MBES data

The visual inspection performed on the target T057 allows to identify a group of amphoras partially buried (Figure 56). Around the amphoras is visible a white frame representing the elongated shape already detected on the acoustic data.

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N. Chicco	S. Sandroni	S. Sandroni	09/06/2026	EER001	EER001_Geophysical_Survey_Report_REV01.doc	P. 88/ 98

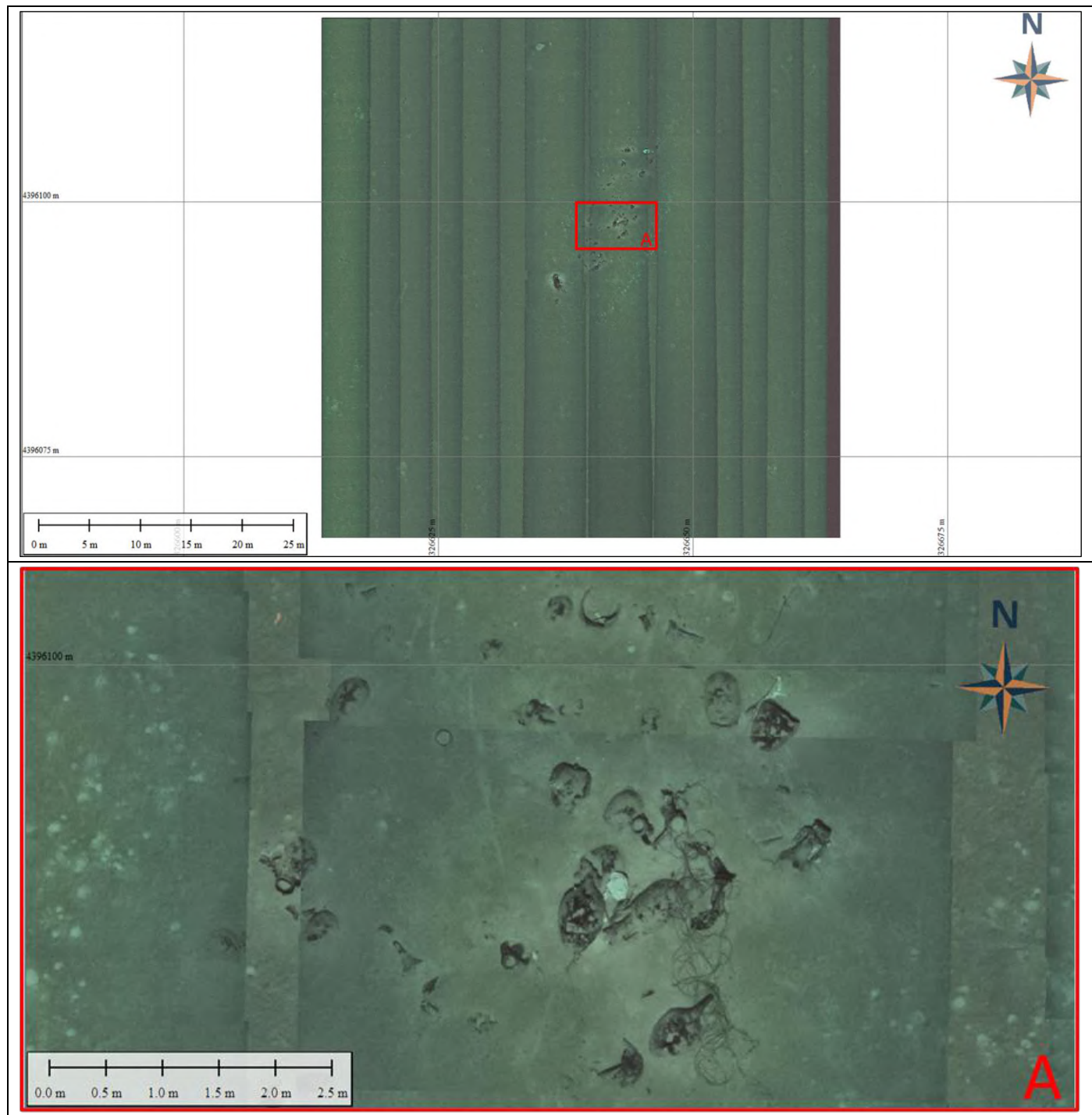


Figure 56 – Detailed view of amphoras present at T057

The SBP data acquired during Visual inspection on the target box area allowed to identify a buried feature. Figure 57 shows the SBP data on the line 8 of T057 target box area.

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N. Chicco	S. Sandroni	S. Sandroni	09/06/2026	EER001	EER001_Geophysical_Survey_Report_REV01.doc	P. 89/ 98

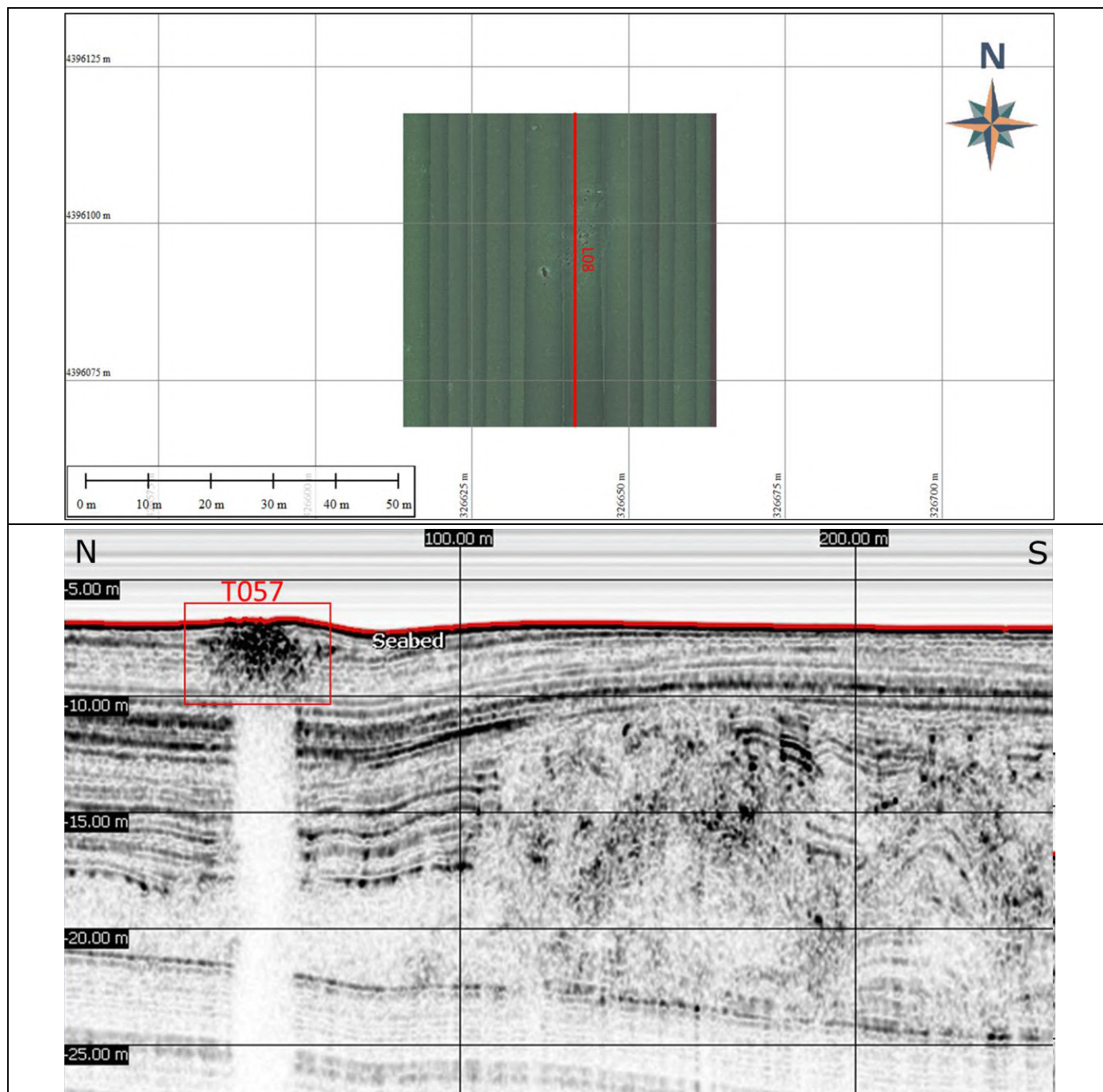


Figure 57 – SBP line T057_I08: buried part of the target T057 identified on the seismic data during Visual Inspection

Using all the available data the target area has been interpreted as the ruins of an ancient shipwreck, probably made of wood because it is completely eroded on the surface, excepting for a white shadow visible on the Cathx images. As visible on SBP data, the shipwreck ruins are partially buried, justifying the mound structure visible on MBES data. The group of amphoras discovered by the Cathx camera represents the cargo of the ship, which sank along with it.

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In the following table (Table 26) are summarized the dimensions and coordinates of surface Target T057.

Table 26 – Target T057: Description and parameters

Feature Type	Target ID	Easting (m)	Northing (m)	Dimensions (m) (LxWxH)	Water Depth (m)	Height / Burial Depth (m)	Description
Surface Target	EER001_T057	326640.2	4396095	23.7x8.3x0.6	880.04	2.20below seabed	Possible ruins of an ancient shipwreck comprising scattered objects interpreted as amphorae, with average dimensions of approximately 0.9 m x 0.3 m. The target area is characterized by a buried acoustic anomaly detected on SBP profiles and has been interpreted as the remains of an ancient shipwreck.

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8.0.0 CONCLUSION AND HAZARDS

The combined interpretation of geophysical data analyses (MBES, HISAS, SBP, MAG) allowed the detection of the main area features and shallow hazards. The hazard evaluation qualitative criteria are summarised in the following Table 27 and Table 28.

The risk assessment reported in following tables is exclusively related to the well coordinates listed in the Table 6. Any change in the proposed well coordinates would require a site-specific geohazard review based on the interpreted geophysical data to verify hazard evaluation for the new locations.

Table 27 - Hazard evaluation qualitative criteria

ITEM	MAIN FEATURES	HAZARD
BATHYMETRY	Featureless seabed Very gentle gradient	NEGLIGIBLE
	Featureless seabed Gentle gradient	LOW
	Bedforms Slope instabilities and failures Rough seabed (positive/negative reliefs) Moderate gradient	MODERATE
	Bedforms Slope instabilities and failures, Rough to very rough seabed (positive/negative reliefs) Steep to very steep gradient	HIGH
MORPHOLOGY	Mass transport deposits Shallow gas evidence Outcrops Posidonia oceanica meadows Volcanism Diapirs	NEGLIGIBLE to HIGH: presence of one of more of the morphologic geohazards and their proximity to the route
STRATIGRAPHY	Faulting (shallow/deep faults) Fluid seepage Gas charged sediments Diapiric structure Buried slump Buried channel Erosive surface	NEGLIGIBLE to HIGH: presence of one of more of the stratigraphic geohazards and their proximity to the route
MAN MADE FEATURES, SONAR CONTACTS, MAG ANOMALIES	Sonar contact (wreck, well head, debris etc.) Magnetic anomaly Existing or planned systems (best crossing angle is close to 90°) Anchor and fishing scars	NEGLIGIBLE to HIGH: presence of these hazards and their proximity to the route

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Table 28 - Evaluation qualitative risk

HAZARD POTENTIAL (based on identified features)	EVALUATION RISK
NEGLIGIBLE	Almost zero risk that the event may occur
LOW	Low risk that the event may occur
MODERATE	Moderate or significant risk that the event may occur
HIGH	High risk, almost certain that the event will occur

Table 29 – Summary of results for ASOPUS-1A_Exploration

ITEM	MAIN FEATURES	HAZARD
BATHYMETRY	The surveyed area at the proposed ASOPUS-1A_Exploration wells location is characterized by a rough seafloor with complex morphology. The water depth on the wells' coordinates is 842.5 m for ASOPUS-1A_Exploration with a seabed slope of 1.3°. ASOPUS-1A_Exploration site is in an area where the material of MTD is exposed, creating a maze pattern with grooves covered by fine sediments and spurs made by MTD harder sediments. Considering the planned well's coordinates, ASOPUS-1A Exploration falls in one of these grooves, surrounded by several harder sediment outcrops ranging from 0.2 to 1 m of height. Within 500m radius area around ASOPUS-1A_Exploration, the presence of MTD harder sediments results in a localized increase in slope values along their flanks, which may exceed 10°. No fault scarps morphologies are recognized within the 500m radius area. There is no evidence of active deformation on the seabed or remobilization of the MTD gravity underlying unit. The rough seabed and the presence of harder sediment bodies suggest a LOW drilling risk.	LOW
SEABED MORPHOLOGY	The analysis of the acoustic data of the seafloor in ASOPUS-1A_Exploration site reveals low reflectivity backscatter inside the grooves. This sediment could be interpreted as the same clay/silty pelagic sediment collected in the grab sample during the environmental sampling phase (location D1a). The exposed MTD material shows a high backscatter reflectivity associated with white shadow revealing positive relief. The high reflectivity material is then surrounded by sub-cropping sediments with a medium amplitude,	LOW

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ITEM	MAIN FEATURES	HAZARD
	suggesting a coarser sediment if compared to pelagic sediments with the lowest reflectivity. Within 500m radius area around ASOPUS-1A_Exploration location only one anthropic target has been recognized (EER001_T142) at 441.6m (209°): it is an irregular object of small dimensions (1.14 m x 1.00 m x nmh). Considering its dimension and the distance from the proposed well's coordinates it doesn't influence the risk level. ASOPUS-1A_Exploration has a minimum distance from the cables detected within the study area of 2692m considering the AAE-1 cable in the south-western corner of the surveyed area. The distance between ASOPUS-1A_Exploration planned location and the other cable recognized in the NE part of the study area is 6700m. ASOPUS-1A_Exploration is located 8606 m from the target T057 (possible shipwreck's ruins). The presence of MTD harder sediments bodies with high backscatter values suggests a moderate drilling risk but the proposed well location falls on a low reflectivity area. In addition, the 500m-radius area around well position is not interested by relevant targets. The risk is assessed as LOW.	
SHALLOW STRATIGRAPHY	Within 500m radius area around ASOPUS-1A_Exploration the shallow stratigraphy is mainly characterized by the chaotic material of the MTD (seismic facies f2). Here, facies f1 isn't recognized on the seismic data because the fine sediments coverage along the grooves is too thin to be clearly detected in the SBP. On ASOPUS-1A_Explorations location the seismic facies F2 has a thickness of 18.62 m. Within 500m-radius area several blanking effects are recognized. These acoustic anomalies appear localized and discontinuous through the survey area, and they never reach the surface. These strong attenuations could be caused by possible fluids and/or lithology variations along the MTD unit. Considering the first hypothesis, the potential presence of fluids could be related to de-watering processes triggered by the high compression, deformation, and fracturing of the MTD material (as evidenced by the fold structures or tensile fractures observed in the seismic data). These fluids do not reach the surface because they are blocked by the thin, sub-parallel layers of pelagic material of facies f1. There is no other evidence of fluids in both sub-surface and surface data: in particular, no gas seepage gas	LOW

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ITEM	MAIN FEATURES	HAZARD
	chimneys, active pockmarks, acoustic plumes have been recognised within the study area. The minimum distance between these acoustic anomalies and ASOPUS-1A_Exploration is 243m (214°): the blanking effect starts at a depth of 8 m b.s.b.. Facies f2 is delimited to the bottom by R3, a medium-reflectivity horizon. On the well's location it is detected at a depth of 19.72 m. No faults displacement affects the stratigraphy within the 500m area around well trajectory. The probability of shallow gas is assessed as LOW because no evidence of gas seepage within the 500m radius area has been detected, also if the presence of fluids cannot be ruled out due to the acoustic blanking effects visible in the seismic data. Furthermore, the nearest blanking effect is observed more than 200m from the planned well's location.	

Table 30 – Summary of results for ASOPUS-1B_Exploration

ITEM	MAIN FEATURES	HAZARD
BATHYMETRY	The surveyed area at the possible future ASOPUS-1B_Exploration well location is characterized by a relatively homogenous seafloor. The water depth on the wells' coordinates is 846.9 m for ASOPUS-1B_Exploration with a seabed slope of 1.5°. ASOPUS-1B_Exploration site is in an undisturbed area with a constant, gently slope with E-W trend that never exceeds 2.6° within 500m radius-area around well's location. The relatively homogeneous seabed with minor mound-like morphology and the gentle slope gradient within the entire 500m-radius area suggest a NEGLIGIBLE drilling risk.	NEGLIGIBLE
SEABED MORPHOLOGY	The analysis of the acoustic data of the seafloor in ASOPUS-1B_Exploration site shows a homogenous low reflectivity backscatter response. Considering the analysis results of the sediment collected in the grab sample during the environmental sampling phase (location D1b), the sediment distributed on the seabed could be interpreted as clay/silty pelagic sediment. Within 500m radius area around the possible future location of ASOPUS-1B_Exploration, seven anthropic	NEGLIGIBLE

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ITEM	MAIN FEATURES	HAZARD
	targets have been recognized: 1. EER001_T022: An irregular object with small dimensions (1.13 m x 0.88 x 0.65). 2. EER001_T023: Debris area (13.61 m x 8.80 m x nmh). The average object dimension is 2.0x0.2xnmh. 3. EER001_T033: An irregular object with small dimensions (1.09 M X 0.68 M X nmh). 4. EER001_T034: Square object with small dimensions (0.96 m x 0.96 m x nmh). 5. EER001_T035: A rectangular object of 1.78 m x 0.75 m x nmh. 6. EER001_T036: A rectangular object with small dimensions (0.87 m x 0.45 m x nmh). 7. EER001_T048: An elongated object of 2.96 m x 0.55m x nmh. The anthropic targets recognized within 500m-radius area around ASOPUS-1B_Exploration do not affect the level of risk, as they are small objects. Furthermore, the nearest target (T022) is located 221 m away (111°) from the proposed well coordinates. Considering the possible future coordinates of the well ASOPUS-1B_Exploration, it will have a minimum distance from the cables detected within the study area of 2825m considering the unknown cable in the north-eastern part of the surveyed area. The distance between ASOPUS-1B_Exploration possible future location and the AAE-1 cable, recognized in the SW part of the study area, is 8770m. ASOPUS-1B_Exploration will be potentially far 1307m from the target T057 (possible shipwreck's ruins). For all the reasons described above the risk is assessed as NEGLIGIBLE.	
SHALLOW STRATIGRAPHY	Within 500m radius area around ASOPUS-1B_Exploration the shallow stratigraphy is characterized by an alternation of sub-parallel, low to medium amplitude reflectors (sub-facies f1a). Then, sub-parallel reflectors with higher intensity and locally fractured are recognized (sub-facies f1b). The reflector R1, that divides the two sub-facies is clearly detectable at a depth of 4m b.s.b. The bottom of the first seismic facies corresponds to R2, an irregular reflector with low- to medium-intensity. R2 represents the top of the MTD unit (facies f2). On the wells' location R2 is picked at a depth of 8.6m b.s.b.	LOW

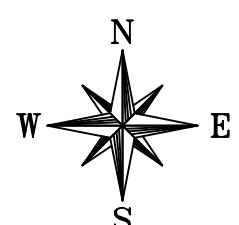
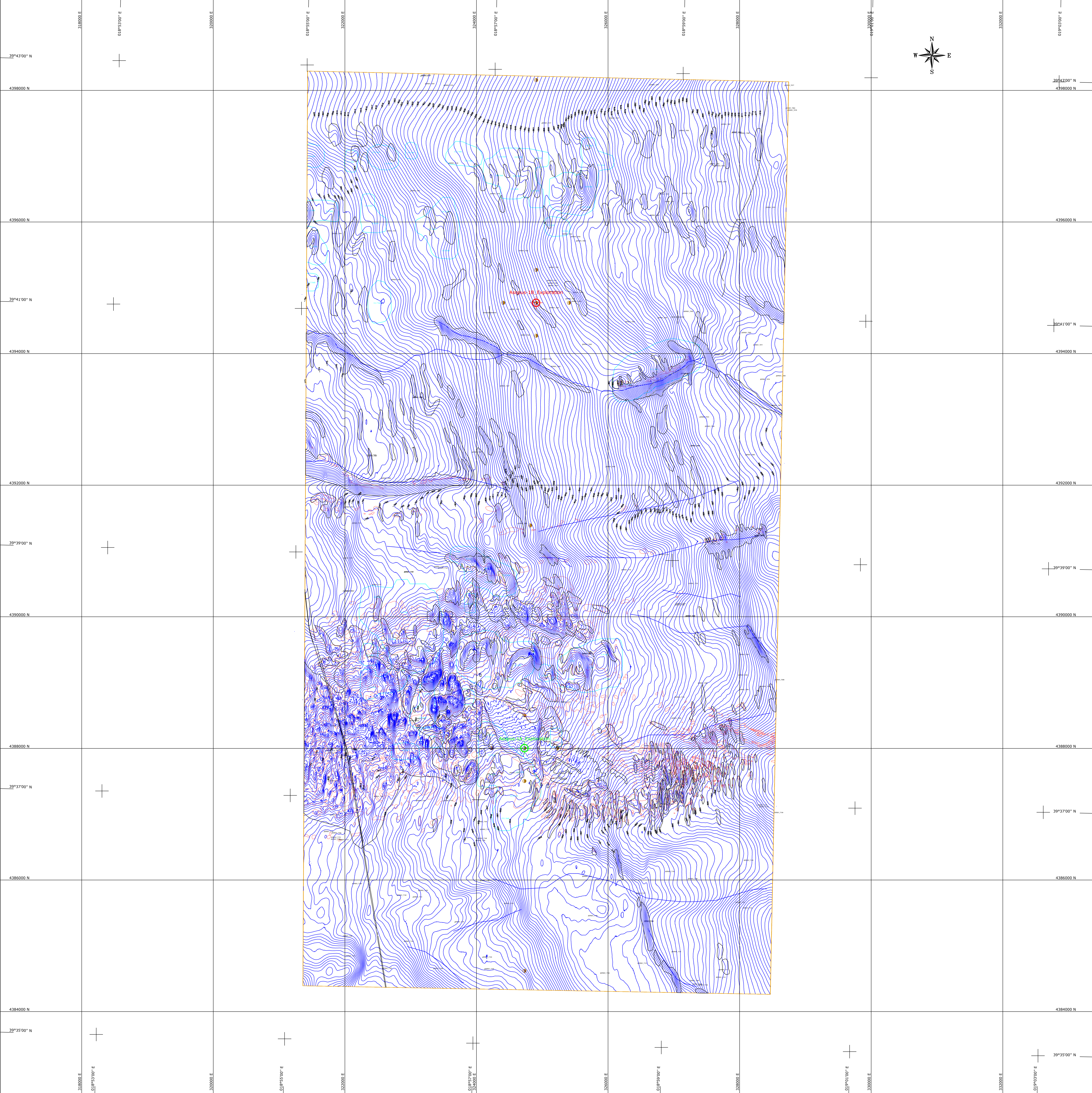
		GEOPHYSICAL SURVEY ACTIVITIES, BLOCK 2, "LOT01" S/V ECO ONE Geophysical survey - Final Survey Report				
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ITEM	MAIN FEATURES	HAZARD
	Within 500m radius area the MTD exhibits a highly heterogeneous internal architecture, with acoustic turbidity related to the presence of the chaotic bodies composing it. No stratified bodies with sub-parallel layering are identified within the 500m. On ASOPUS-1B_Exploration site the MTD material has a thickness of 10m. On the bottom, facies f2 is delimited by R3, a medium-intensity reflector, corresponding to the top of the last seismic facies recognized in the study area. This facies is made by sub-parallel reflectors with low to medium intensity, interpreted as the alternance of lithified sediments. No faults are recognized inside the 500m radius area. The nearest one is located 850m (199°) from the well coordinates at the seabed. For all the reasons described above, the risk of the potential future well location is assessed as LOW.	

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9.0.0 APPENDICES

- EER001_BATHY_MORPHOLOGICAL_MAP_20K_REV01
- EER001_Geohazard_MAP_20K_REV00
- EER001_BATHY_SLOPE_MAP_20K_REV00
- EER001_TARGET_REPORT



LEGEND

CARTOGRAPHIC SYMBOLS

WELL HEAD

Asopus-1A_Exploration

Asopus-1B_Exploration

Limit of Survey Area

Bathymetric contour lines (depth values in l.a.t.)
Contour interval: 1m

Mound-Like Morphologies

IOP3099 Mottled Seafloor

IOP3096 High Sonar Reflectivity

Limit of fluids/acoustic Anomalies (with quotes)

IOP2111 Deep Normal Fault

Sonar contact with ID number

IOP1110 Grab Sample

Cables

WELL CO-ORDINATES AT THE SEABED				
Asopus-1A_Exploration	39.623868	18.957920	324729.00m	4388004.00m
Asopus-1B_Exploration	39.684848	18.958200	324907.06m	4394772.00m

OFFSHORE GREECE

Geophysical Survey

BLOCK 2, "LOT01"

MORPHOLOGICAL MAP

GEODETIC PARAMETERS

DATUM:

World Geodetic System 1984

ELLIPSOID:

WGS84

Semi Major axis (a):

6378137.0m

Flattening:

1/298.257

PROJECTION:

CENTRAL MERIDIAN (CM):

LATITUDE OF ORIGIN:

FALSE EASTING:

FALSE NORTHING:

SCALE FACTOR:

UTM - 34N

21° E

0° N

500 000m

0m

0.9996

IDP	Rev.:	Issue Date:	Interpreted:	Drawn:	Checked:	Approved:
EER001	01	June 2026	N.Chicco	N.Chicco	S. Sandroni	S. Sandroni

SCALE 1:20000

0 400 800 1200 1600 2000

m

Via Roma, 1 - Località Ponte Ronca

49049 Zola Predosa (BO)

Tel. +39 051 6516114 - Fax +39 051 6516719

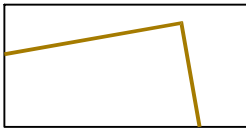
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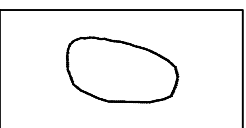
LEGEND

CARTOGRAPHIC SYMBOLS

WELL HEAD



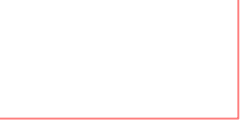
Limit of Survey Area



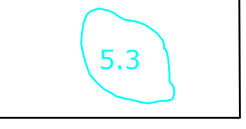
Mound-like Morphologies



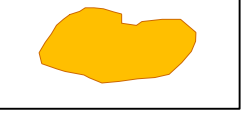
IOGP3099 Mottled Seafloor



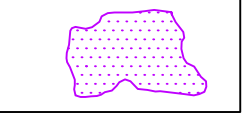
IOGP3096 High Sonar Reflectivity



Limit of fluid/acoustic Anomalies (with quotes)



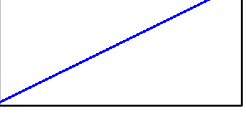
Steep to very steep slope (>10°)



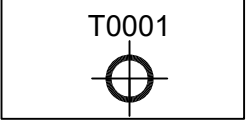
Mass transport deposit (<2m b.s.b)



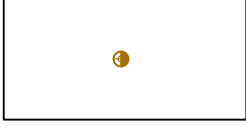
Mass transport deposit (second event, b.s.b)



IOGP2111 Deep Normal Fault



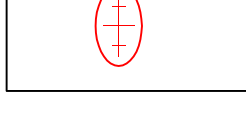
Sonar contact with ID number



IOGP1110 Grab Sample



Cables



Wreck with ID number and dimensions

WELL CO-ORDINATES AT THE SEABED

Asopus-1A_Exploration	39.623868	18.957920	324729.00m	4388004.00m
Asopus-1B_Exploration	39.684848	18.958200	324907.06m	4394772.00m

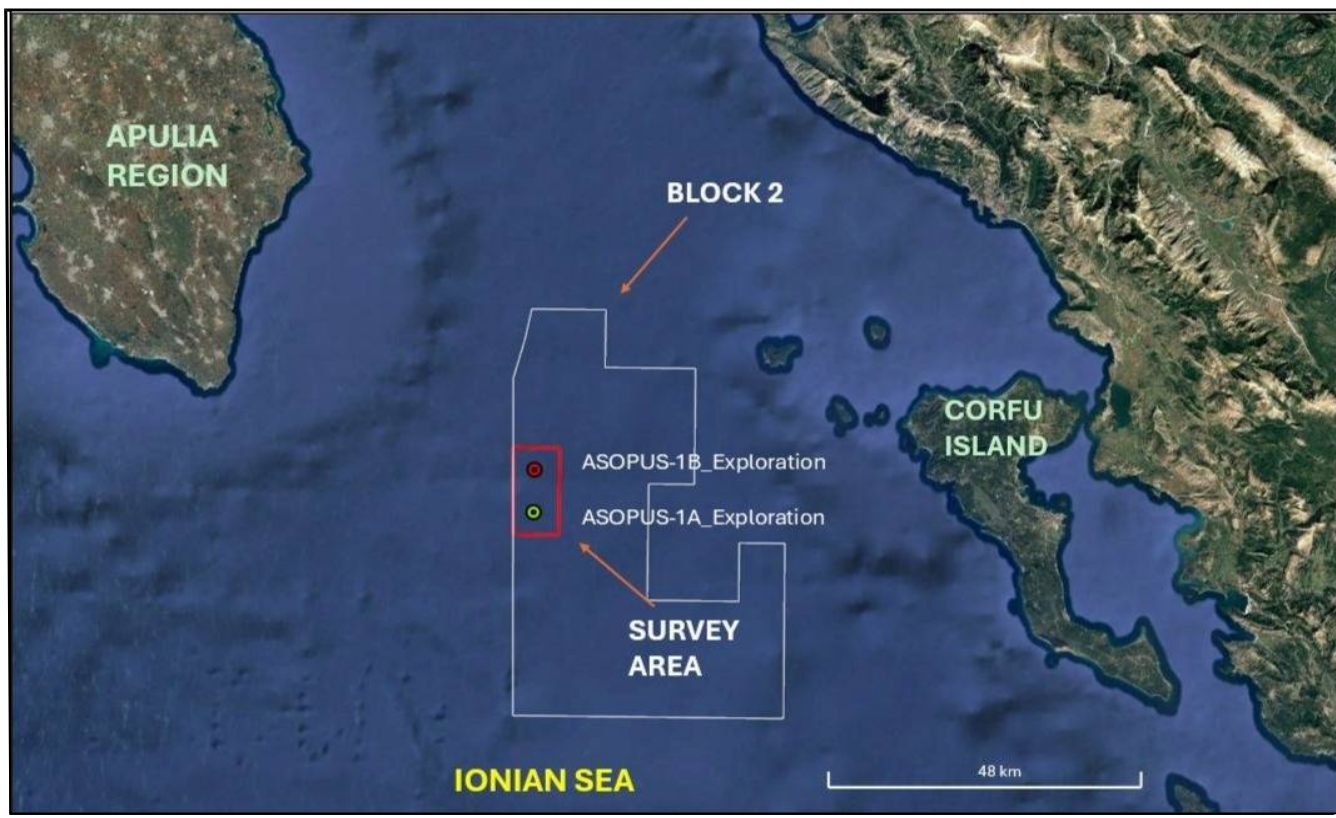


OFFSHORE GREECE

Geophysical Survey

BLOCK 2, "LOT01"

GEOHAZARD MAP



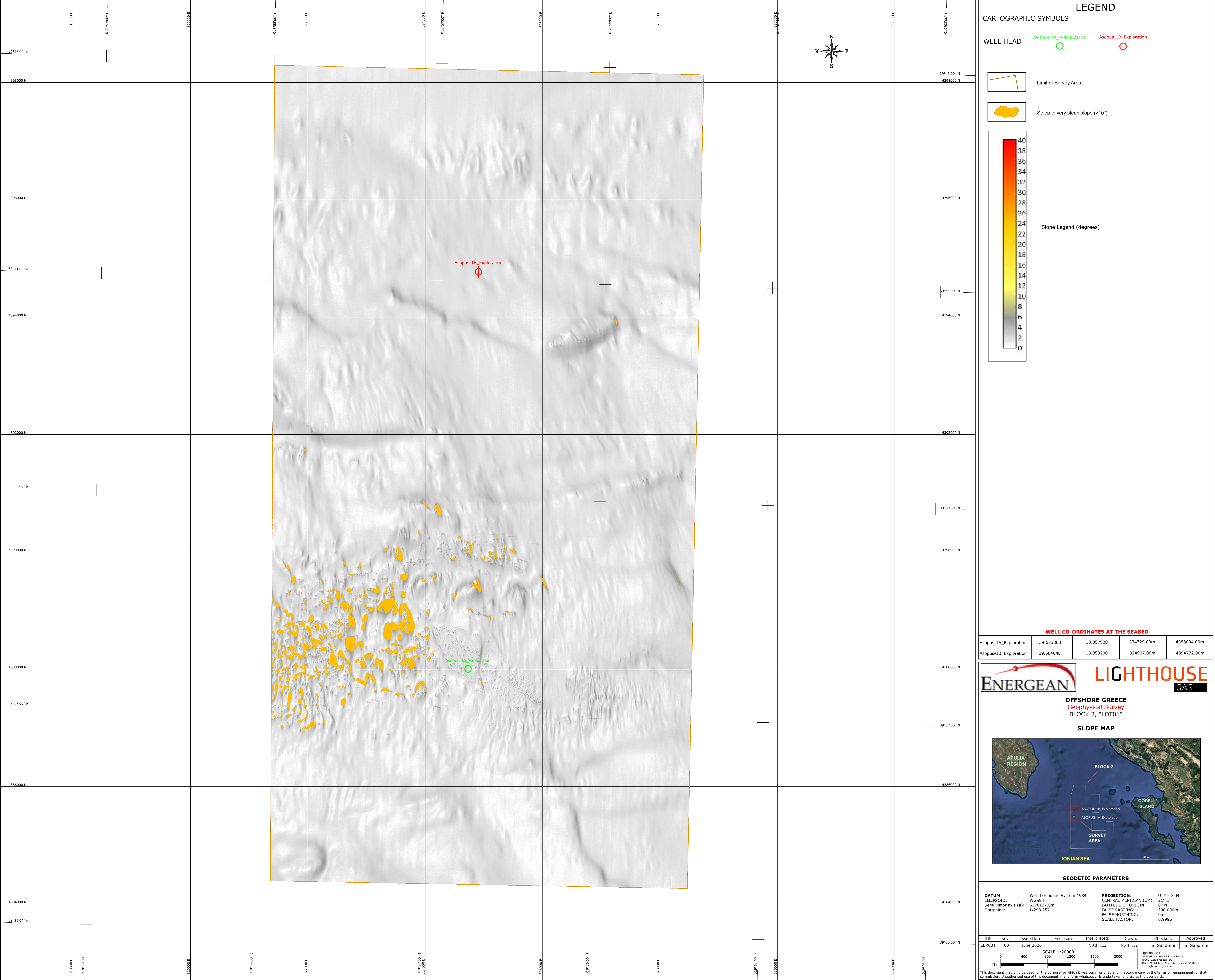
GEODETTIC PARAMETERS

DATUM:	World Geodetic System 1984	PROJECTION:	UTM - 34N
ELLIPSOID:	WGS84	CENTRAL MERIDIAN (CM):	21° E
Semi Major axis (a):	6378137.0m	LATITUDE OF ORIGIN:	0° N
Flattening:	1/298.257	FALSE EASTING:	500 000m
		FALSE NORTHING:	0m
		SCALE FACTOR:	0.9996

IDP	Rev.:	Issue Date:	Interpreted:	Drawn:	Checked:	Approved:
EER001	00	June 2026	N.Chicco	N.Chicco	S. Sandroni	S. Sandroni

0	400	800	1200	1600	2000
m					
Lighthouse S.p.A. Via Poletti, 1 - Località Ponte Ronca 40060 Zola Predosa (BO) Tel. +39 051 6518715 - Fax +39 051 6518719 www.lighthouse-gas.com					

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CARTOGRAPHIC SYMBOLS

WELL HEAD

ASOPUS-1A_EXPLORATION

Asopus-1B_Exploration

Limit of Survey Area

Steep to very steep slope (>10°)

Slope Legend (degrees)

WELL CO-ORDINATES AT THE SEABED				
Asopus-1A_Exploration	39.623868	18.957920	324729.00m	4388004.00m
Asopus-1B_Exploration	39.684848	18.958200	324907.06m	4394772.00m

OFFSHORE GREECE

Geophysical Survey

BLOCK 2, "LOT01"

SLOPE MAP

GEODETIC PARAMETERS

DATUM:

ELLIPSOID:

Semi Major axis (a):

Flattening:

World Geodetic System 1984

WGS84

6378137.0m

1/298.257

PROJECTION:

CENTRAL MERIDIAN (CM):

LATITUDE OF ORIGIN:

FALSE EASTING:

FALSE NORTHING:

SCALE FACTOR:

UTM - 34N

21° E

0° N

500 000m

0m

0.9996

IDP	Rev.:	Issue Date:	Enclosure:	Interpreted:	Drawn:	Checked:	Approved:
EER001	00	June 2026		N.Chicco	N.Chicco	S. Sandroni	S. Sandroni

SCALE 1:20000

0

400

800

1200

1600

2000

m

Lighthouse S.p.A.

Via Rieti, 1 - Località Ponte Ronca

40049 Zola Predosa (BO)

TEL. +39 051 6516716 - FAX +39 051 6516719

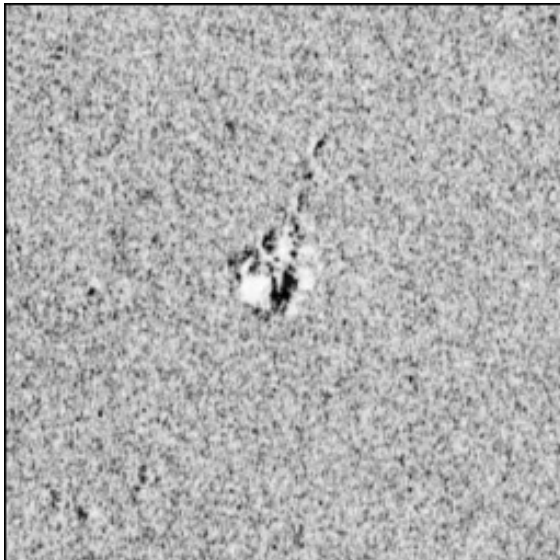
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EER001_TARGET REPORT FINAL



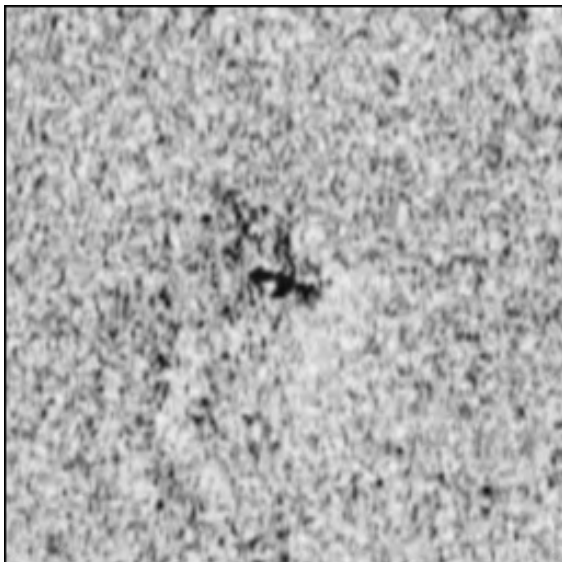
Name: EER01_T001
Easting: 323222.241
Northing: 4398094.521
Latitude: 39.714417887 N
Longitude: 18.937674200 E
Height: 0.08 m
Width: 0.52 m
Length: 0.94 m
Depth: 822.35 m
Image: sasi-20260410-210138-er1m1l11-1-L-WN-000_CH[1_2]
Description: Irregular Object
Ping ID: 2748
Range: 204.05 m
Altitude: 40.15 m
Heading: 181.45 °
Date-time: 10/04/2026 21:04:09.140



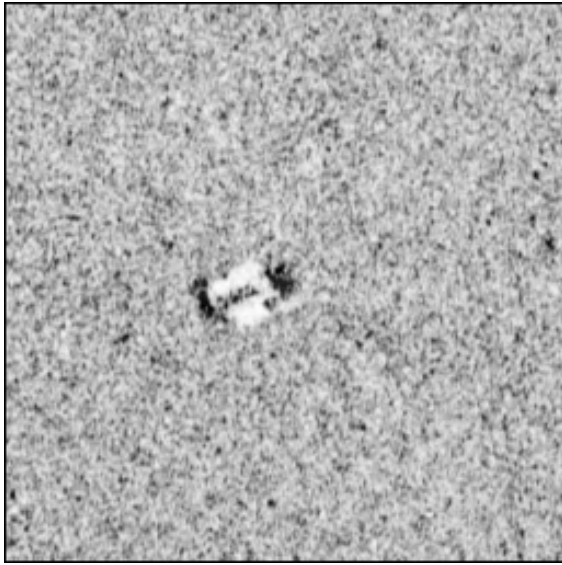
Name: EER01_T002
Easting: 322142.377
Northing: 4397136.705
Latitude: 39.705568983 N
Longitude: 18.925342484 E
Height: 0.25 m
Width: 0.89 m
Length: 1.89 m
Depth: 807.48 m
Image: sasi-20260410-125617-er1m1l04-1-L-WN-000_CH[1_2]
Description: Irregular Object
Ping ID: 4107
Range: -195.78 m
Altitude: 40.15 m
Heading: 1.35 °
Date-time: 10/04/2026 13:00:02.430



Name: EER01_T003
Easting: 322998.354
Northing: 4396466.420
Latitude: 39.699711410 N
Longitude: 18.935501038 E
Height: 0.17 m
Width: 0.50 m
Length: 2.90 m
Depth: 814.48 m
Image: sasi-20260410-203852-er1m1l10-1-L-WN-000_CH[1_2]
Description: Elongated Object
Ping ID: 410
Range: -166.44 m
Altitude: 39.99 m
Heading: 1.36 °
Date-time: 10/04/2026 20:39:14.560



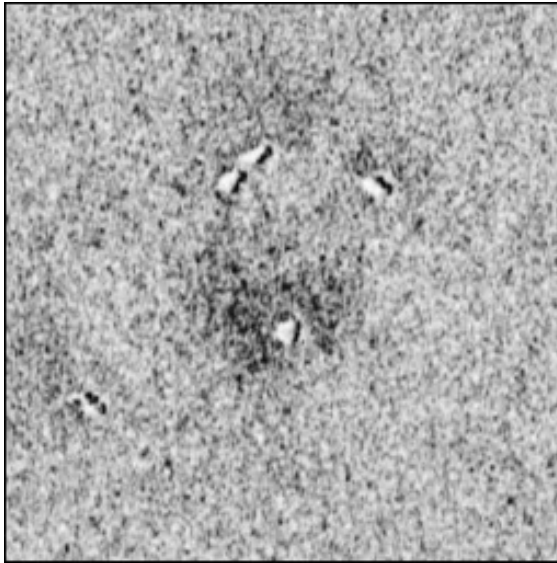
Name: EER01_T004
Easting: 321807.204
Northing: 4395816.151
Latitude: 39.693608371 N
Longitude: 18.921792038 E
Height: 0.00 m
Width: 0.76 m
Length: 1.49 m
Depth: 789.32 m
Image: sasi-20260410-101040-er1m1l02-1-L-WN-000_CH[1_2]
Description: Irregular Object
Ping ID: 213
Range: -190.56 m
Altitude: 40.15 m
Heading: 1.30 °
Date-time: 10/04/2026 10:10:52.090



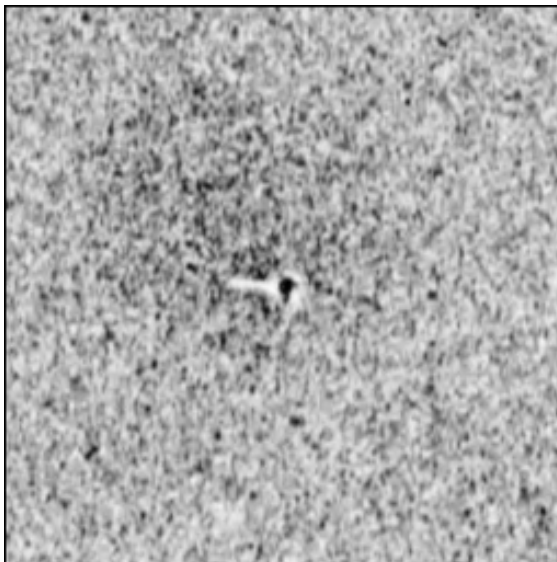
Name: EER01_T005
Easting: 322705.298
Northing: 4395117.069
Latitude: 39.687500498 N
Longitude: 18.932447661 E
Height: 0.31 m
Width: 0.97 m
Length: 1.56 m
Depth: 800.16 m
Image: sasi-20260410-174428-er1m1l08-1-L-WN-000_CH[1_2]
Description: Irregular Object
Ping ID: 5766
Range: -204.44 m
Altitude: 40.35 m
Heading: 1.28 °
Date-time: 10/04/2026 17:49:45.050



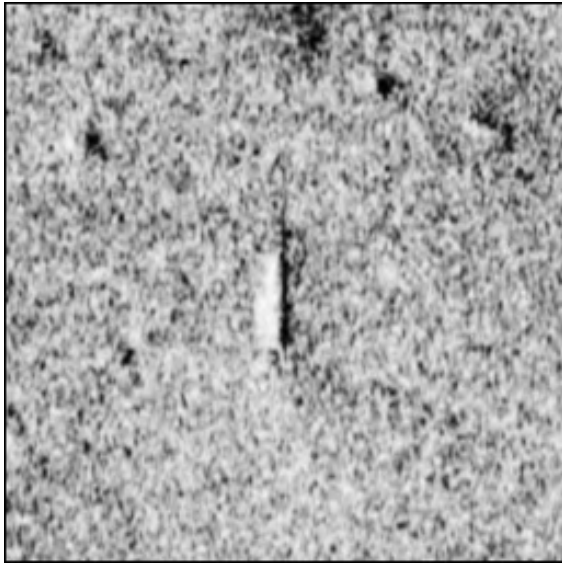
Name: EER01_T006
Easting: 323036.739
Northing: 4393329.757
Latitude: 39.671475489 N
Longitude: 18.936789598 E
Height: 0.00 m
Width: 0.54 m
Length: 6.45 m
Depth: 789.96 m
Image: sasi-20260410-215150-er1m1l11-1-L-WN-000_CH[1_2]
Description: Elongated Object
Ping ID: 2333
Range: 124.01 m
Altitude: 40.47 m
Heading: 181.31 °
Date-time: 10/04/2026 21:53:58.560



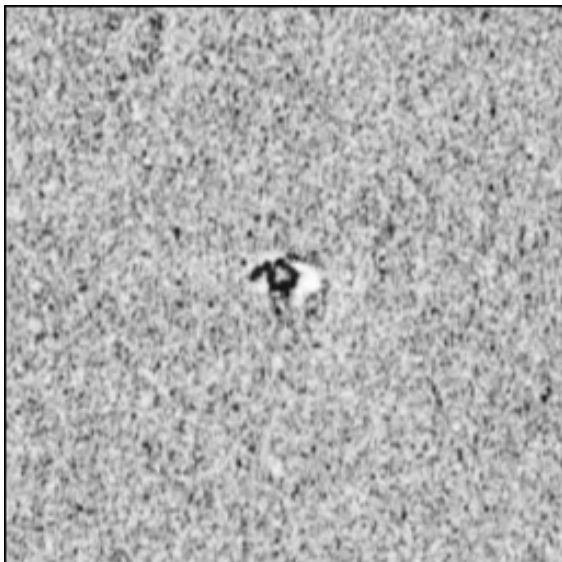
Name: EER01_T007
Easting: 322346.772
Northing: 4392436.048
Latitude: 39.663284995 N
Longitude: 18.928990592 E
Height: 0.22 m
Width: 0.38 m
Length: 0.87 m
Depth: 778.38 m
Image: sasi-20260410-171817-er1m1l08-1-L-WN-000_CH[1_2]
Description: Irregular set of objects (average dimensions of the object (0.87x0.38x0.59)
Ping ID: 3690
Range: 99.17 m
Altitude: 40.16 m
Heading: 1.26 °
Date-time: 10/04/2026 17:21:39.360



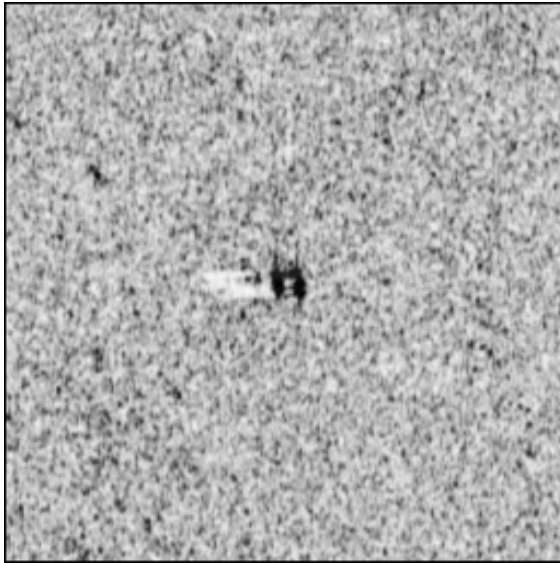
Name: EER01_T008
Easting: 322336.506
Northing: 4392450.631
Latitude: 39.663414175 N
Longitude: 18.928867068 E
Height: 0.39 m
Width: 0.45 m
Length: 0.68 m
Depth: 778.33 m
Image: sasi-20260410-171817-er1m1l08-1-L-WN-000_CH[1_2]
Description: Irregular Object
Ping ID: 3854
Range: 109.93 m
Altitude: 40.10 m
Heading: 1.26 °
Date-time: 10/04/2026 17:21:48.360



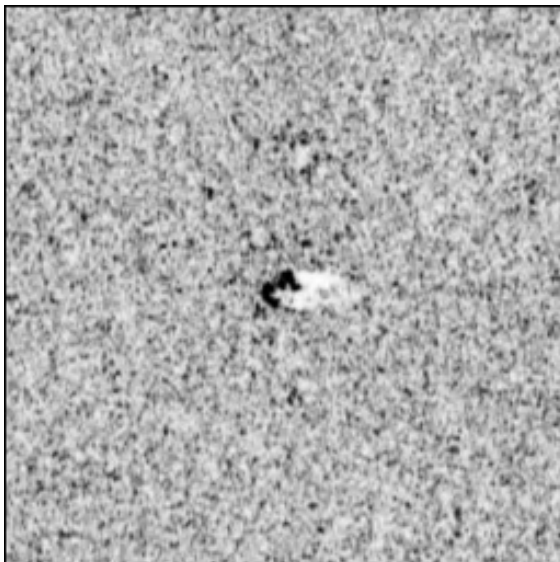
Name: EER01_T009
Easting: 322554.915
Northing: 4392098.420
Latitude: 39.660288077 N
Longitude: 18.931506226 E
Height: 0.15 m
Width: 0.26 m
Length: 3.93 m
Depth: 782.08 m
Image: sasi-20260410-194952-er1m1l10-1-L-WN-000_CH[1_2]
Description: Elongated object
Ping ID: 3915
Range: 185.36 m
Altitude: 40.54 m
Heading: 1.35 °
Date-time: 10/04/2026 19:53:29.460



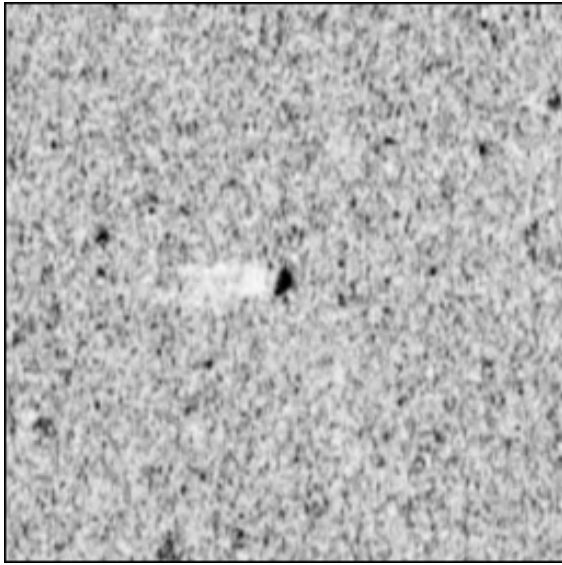
Name: EER01_T010
Easting: 322639.155
Northing: 4395857.597
Latitude: 39.694154779 N
Longitude: 18.931477724 E
Height: 0.19 m
Width: 1.02 m
Length: 1.62 m
Depth: 804.69 m
Image: sasi-20260410-175136-er1m1l08-1-L-WN-000_CH[1_2]
Description: Irregular Object
Ping ID: 6420
Range: -120.01 m
Altitude: 40.07 m
Heading: 1.29 °
Date-time: 10/04/2026 17:57:28.500



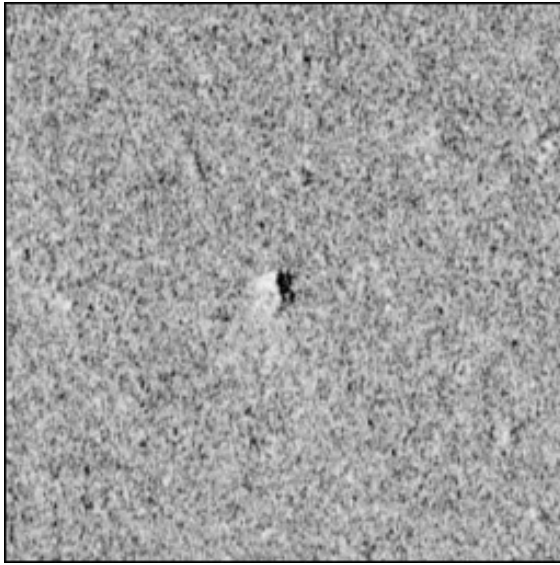
Name: EER01_T011
Easting: 321898.313
Northing: 4394297.669
Latitude: 39.679954427 N
Longitude: 18.923263789 E
Height: 0.48 m
Width: 1.05 m
Length: 1.74 m
Depth: 784.45 m
Image: sasi-20260410-112212-er1m1l03-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 679
Range: 165.00 m
Altitude: 40.55 m
Heading: 181.28 °
Date-time: 10/04/2026 11:22:48.990



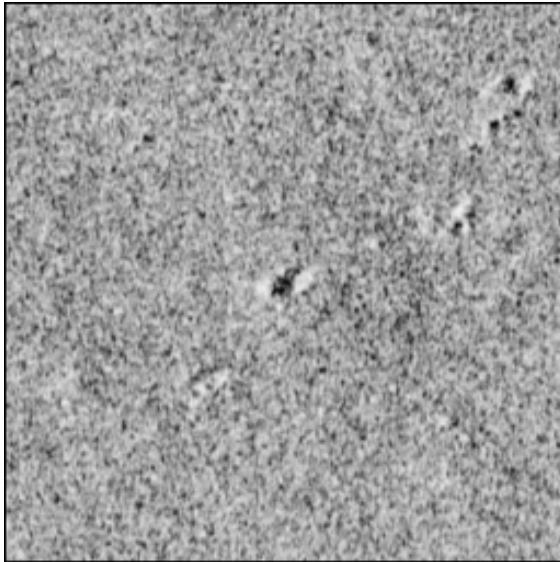
Name: EER01_T012
Easting: 321992.467
Northing: 4391662.594
Latitude: 39.656246791 N
Longitude: 18.925071157 E
Height: 0.26 m
Width: 0.80 m
Length: 1.38 m
Depth: 779.84 m
Image: sasi-20260410-120155-er1m1l04-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 922
Range: -168.27 m
Altitude: 40.20 m
Heading: 1.35 °
Date-time: 10/04/2026 12:02:45.990



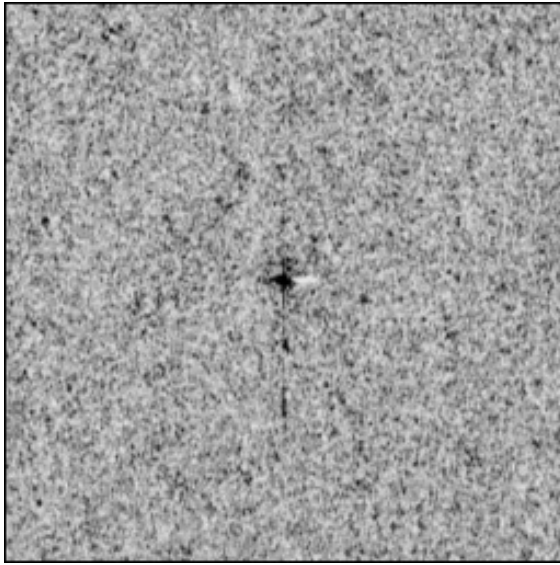
Name: EER01_T013
Easting: 322108.276
Northing: 4391416.452
Latitude: 39.654054523 N
Longitude: 18.926486495 E
Height: 0.22 m
Width: 0.55 m
Length: 1.03 m
Depth: 783.15 m
Image: sasi-20260410-142304-er1m1l05-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 5554
Range: 141.64 m
Altitude: 40.28 m
Heading: 181.47 °
Date-time: 10/04/2026 14:28:09.950



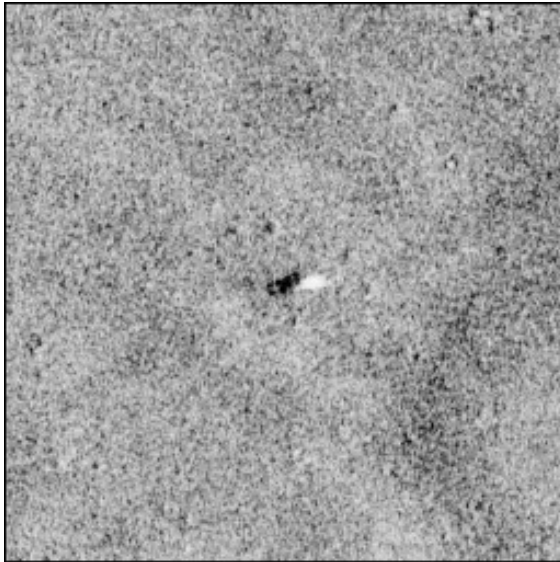
Name: EER001_T014
Easting: 323151.564
Northing: 4398212.752
Latitude: 39.715467839 N
Longitude: 18.936818434 E
Height: 0.18 m
Width: 0.64 m
Length: 1.62 m
Depth: 825.57 m
Image: sasi-20260411-105019-
er1m2l02-1-L-WN-000_CH[1_2]
**Not measurable
height:** No
Reviewed: Yes
Description: Irregular object
Ping ID: 6690
Altitude: 40.17 m
Date-time: 11/04/2026 10:56:25.870



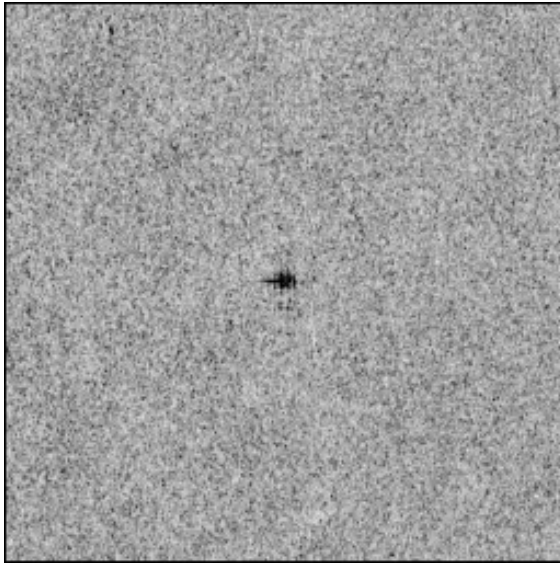
Name: EER001_T015
Easting: 323166.615
Northing: 4398222.525
Latitude: 39.715558965 N
Longitude: 18.936991296 E
Height: 0.12 m
Width: 0.56 m
Length: 1.38 m
Depth: 825.54 m
Image: sasi-20260411-105019-
er1m2l02-1-L-WN-000_CH[1_2]
**Not measurable
height:** No
Reviewed: Yes
Description: Irregular object
Ping ID: 6805
Altitude: 40.20 m
Date-time: 11/04/2026 10:56:32.170



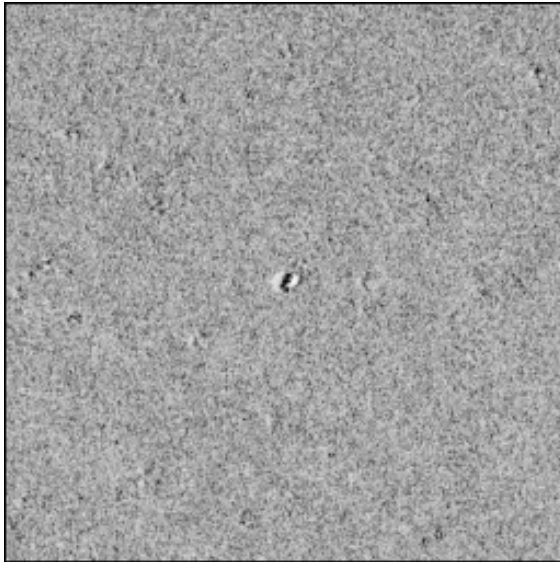
Name: EER001_T016
Easting: 323504.829
Northing: 4398070.602
Latitude: 39.714261017 N
Longitude: 18.940975334 E
Height: 0.20 m
Width: 0.85 m
Length: 1.14 m
Depth: 826.14 m
Image: sasi-20260411-105019-
er1m2l02-1-L-WN-000_CH[1_2]
**Not measurable
height:** No
Reviewed: Yes
Description: Irregular object
Ping ID: 5164
Altitude: 39.84 m
Date-time: 11/04/2026 10:55:02.250



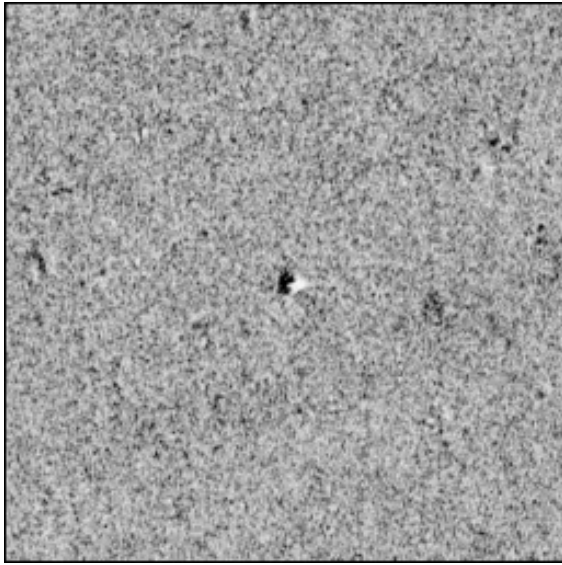
Name: EER001_T017
Easting: 324994.229
Northing: 4397495.829
Latitude: 39.709392246 N
Longitude: 18.958493151 E
Height: 0.44 m
Width: 1.00 m
Length: 2.12 m
Depth: 851.78 m
Image: sasi-20260411-234349-
er1m2l12-1-L-WN-000_CH[1_2]
**Not measurable
height:** No
Reviewed: Yes
Description: Irregular object
Ping ID: 2367
Altitude: 40.28 m
Date-time: 11/04/2026 23:45:59.320



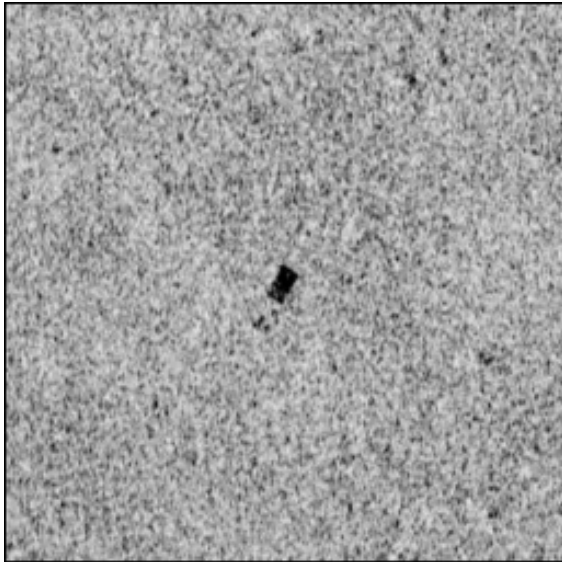
Name: EER001_T018
Easting: 323578.554
Northing: 4396885.164
Latitude: 39.703602064 N
Longitude: 18.942152186 E
Height: nmh
Width: 1.34 m
Length: 2.39 m
Depth: 833.61 m
Image: sasi-20260411-111355-
er1m2l03-1-L-WN-000_CH[1_2]
**Not measurable
height:** No
Reviewed: Yes
Description: Irregular object
Ping ID: 1860
Altitude: 40.46 m
Date-time: 11/04/2026 11:15:36.920



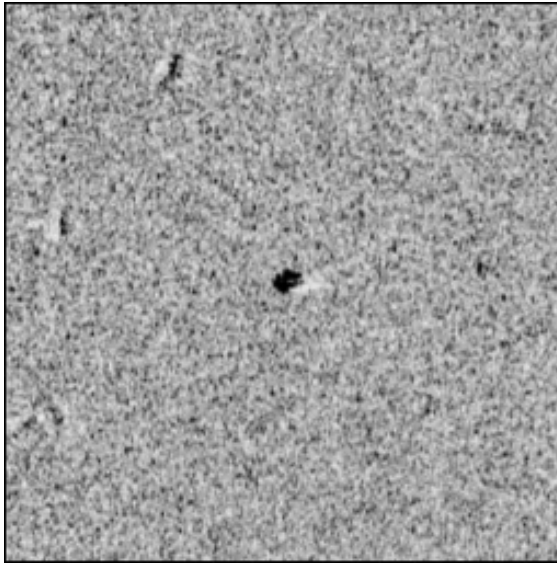
Name: EER001_T019
Easting: 324211.573
Northing: 4396422.745
Latitude: 39.699568825 N
Longitude: 18.949654788 E
Height: 0.24 m
Width: 0.62 m
Length: 1.69 m
Depth: 836.59 m
Image: sasi-20260411-162758-
er1m2l07-1-L-WN-000_CH[1_2]
**Not measurable
height:** No
Reviewed: Yes
Description: Irregular object
Ping ID: 3257
Altitude: 40.27 m
Date-time: 11/04/2026 16:30:56.850



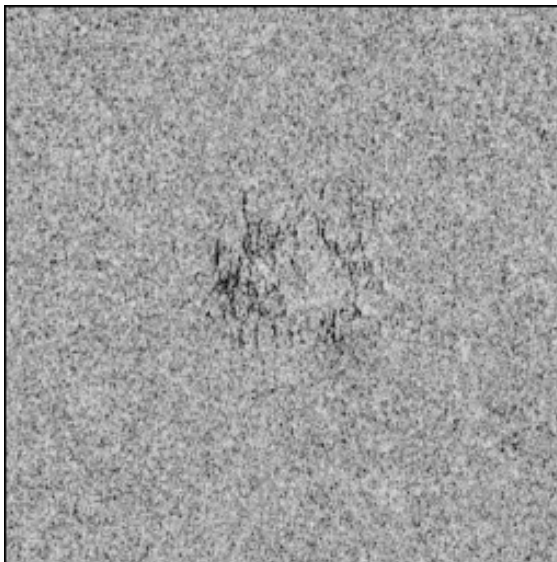
Name: EER001_T020
Easting: 324644.342
Northing: 4395557.184
Latitude: 39.691863861 N
Longitude: 18.954929564 E
Height: 0.21 m
Width: 0.83 m
Length: 1.23 m
Depth: 841.74 m
Image: sasi-20260411-203557-
er1m2l10-1-L-WN-000_CH[1_2]
**Not measurable
height:** No
Reviewed: Yes
Description: Irregular object
Ping ID: 15712
Altitude: 40.24 m
Date-time: 11/04/2026 20:50:19.510



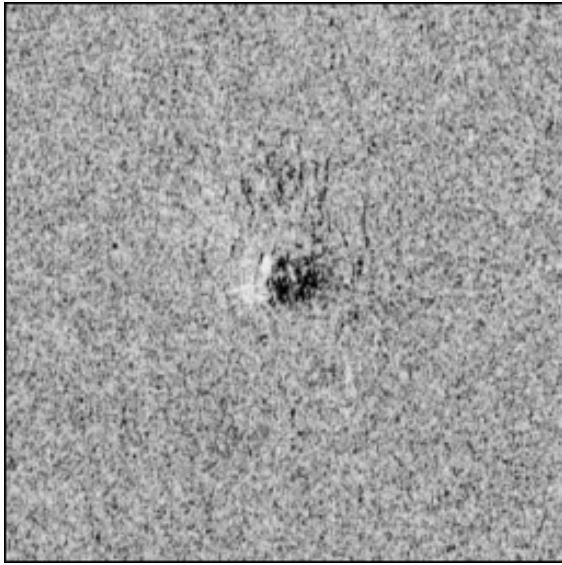
Name: EER001_T021
Easting: 325107.322
Northing: 4395302.758
Latitude: 39.689667820 N
Longitude: 18.960393252 E
Height: nmh
Width: 0.82 m
Length: 1.43 m
Depth: 851.27 m
Image: sasi-20260411-002651-
er1m2l13-1-L-WN-000_CH[1_2]
**Not measurable
height:** No
Reviewed: Yes
Description: Rectangular object
Ping ID: 1677
Altitude: 40.12 m
Date-time: 12/04/2026 00:28:22.590



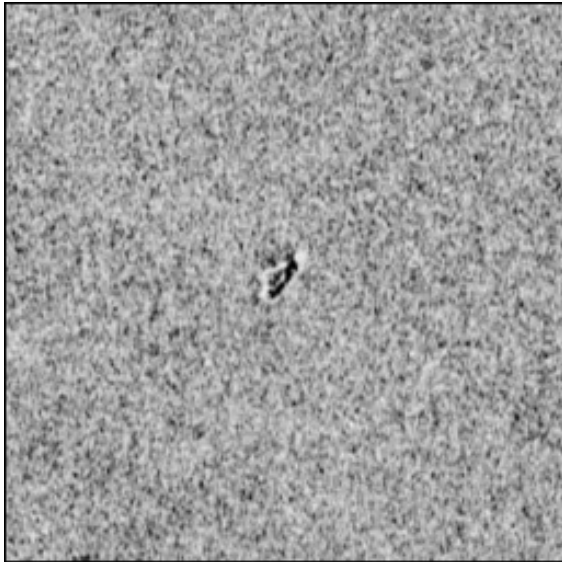
Name: EER001_T022
Easting: 325112.084
Northing: 4394688.775
Latitude: 39.684140139 N
Longitude: 18.960611489 E
Height: 0.65 m
Width: 0.88 m
Length: 1.13 m
Depth: 848.64 m
Image: sasi-20260412-015040-
er1m2l14-1-L-WN-000_CH[1_2]
**Not measurable
height:** No
Reviewed: Yes
Description: Irregular object
Ping ID: 1486
Altitude: 40.23 m
Date-time: 12/04/2026 01:52:02.020



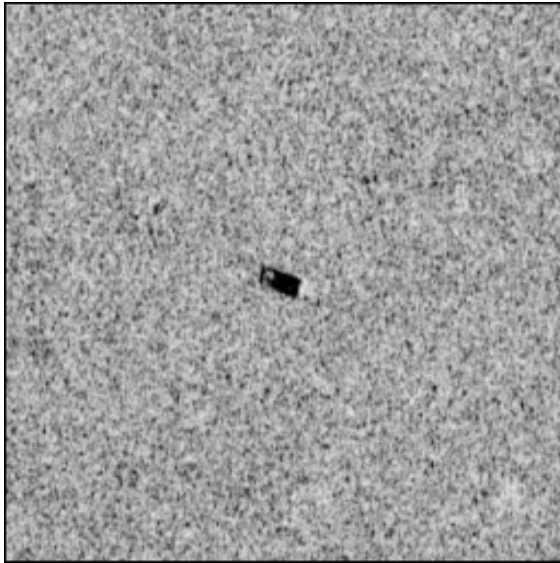
Name: EER001_T023
Easting: 324506.927
Northing: 4394665.093
Latitude: 39.683802776 N
Longitude: 18.953565196 E
Height: nmh
Width: 8.80 m
Length: 13.61 m
Depth: 839.06 m
Image: sasi-20260411-215236-
er1m2l11-1-L-WN-000_CH[1_2]
**Not measurable
height:** No
Reviewed: Yes
Description: Debris area (average object
dimension 2.0x0.2xnmh)
Ping ID: 7879
Altitude: 40.24 m
Date-time: 11/04/2026 21:59:48.980



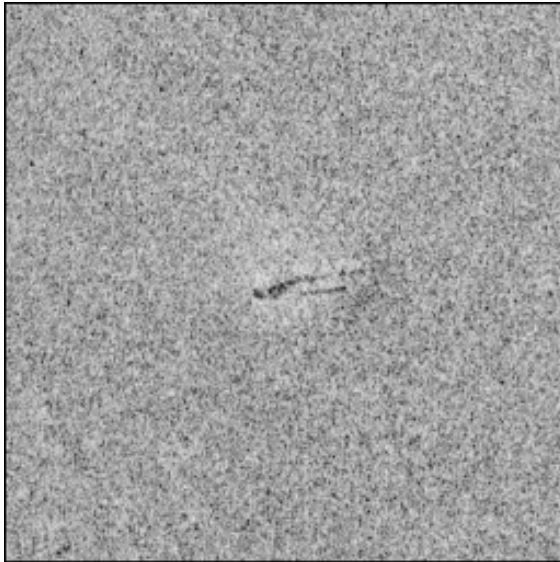
Name: EER001_T024
Easting: 324675.129
Northing: 4394273.492
Latitude: 39.680311124 N
Longitude: 18.955629456 E
Height: 0.65 m
Width: 2.17 m
Length: 3.37 m
Depth: 835.12 m
Image: sasi-20260411-215236-
er1m2l11-1-L-WN-000_CH[1_2]
Not measurable height: No
Reviewed: Yes
Description: Irregular object
Ping ID: 12312
Altitude: 40.12 m
Date-time: 11/04/2026 22:03:52.240



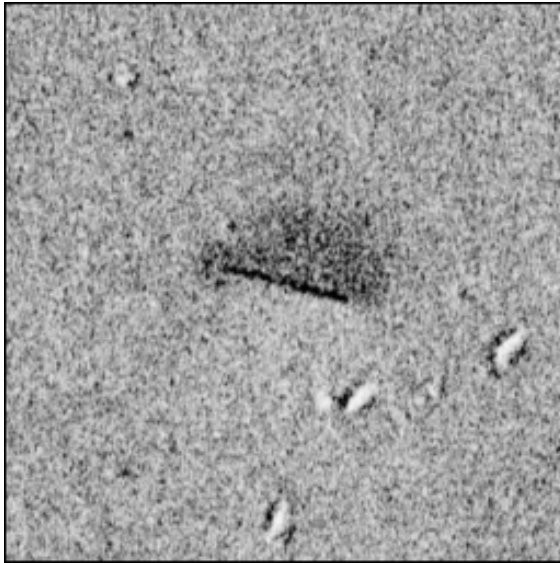
Name: EER001_T025
Easting: 325001.523
Northing: 4393910.994
Latitude: 39.677113913 N
Longitude: 18.959529189 E
Height: 0.09 m
Width: 0.40 m
Length: 1.67 m
Depth: 838.42 m
Image: sasi-20260411-003543-
er1m2l13-1-L-WN-000_CH[1_2]
Not measurable height: No
Reviewed: Yes
Description: Irregular object
Ping ID: 7815
Altitude: 40.35 m
Date-time: 12/04/2026 00:42:52.550



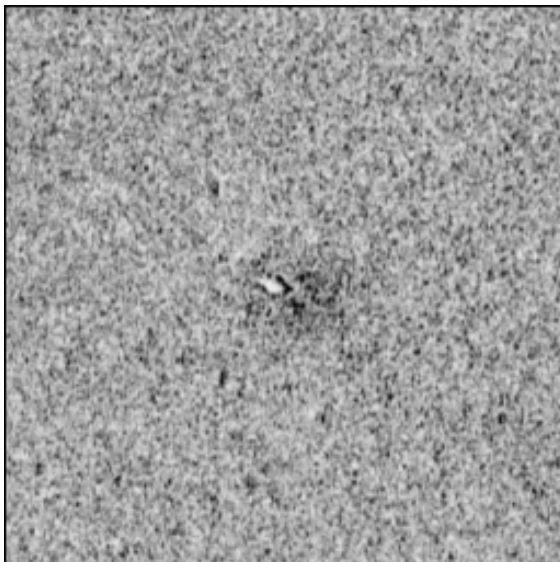
Name: EER001_T026
Easting: 325133.838
Northing: 4393796.300
Latitude: 39.676108225 N
Longitude: 18.961101435 E
Height: 0.12 m
Width: 0.85 m
Length: 1.95 m
Depth: 841.61 m
Image: sasi-20260412-014115-
er1m2l14-1-L-WN-000_CH[1_2]
Not measurable height: No
Reviewed: Yes
Description: Rectangular object
Ping ID: 1598
Altitude: 40.58 m
Date-time: 12/04/2026 01:42:42.490



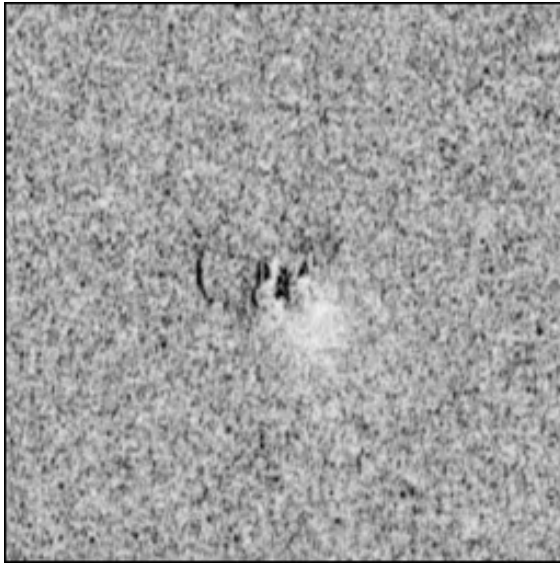
Name: EER001_T027
Easting: 324359.429
Northing: 4393501.994
Latitude: 39.673299295 N
Longitude: 18.952155707 E
Height: nmh
Width: 0.69 m
Length: 4.52 m
Depth: 819.70 m
Image: sasi-20260411-193226-
er1m2l09-1-L-WN-000_CH[1_2]
Not measurable height: No
Reviewed: Yes
Description: Elongated object
Ping ID: 4685
Altitude: 40.20 m
Date-time: 11/04/2026 19:36:43.610



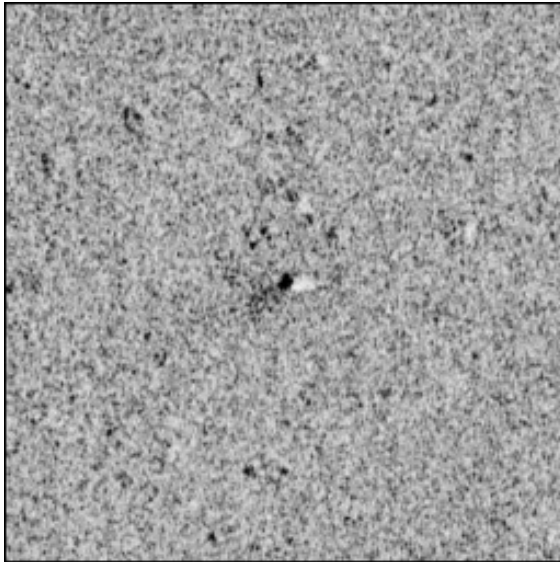
Name: EER001_T028
Easting: 323038.018
Northing: 4393324.503
Latitude: 39.671428440 N
Longitude: 18.936805906 E
Height: nmh
Width: 0.47 m
Length: 6.22 m
Depth: 796.53 m
Image: sasi-20260411-095928-
er1m2l02-1-L-WN-000_CH[1_2]
**Not measurable
height:** No
Reviewed: Yes
Description: Linear object
Ping ID: 6419
Altitude: 40.01 m
Date-time: 11/04/2026 10:05:20.500



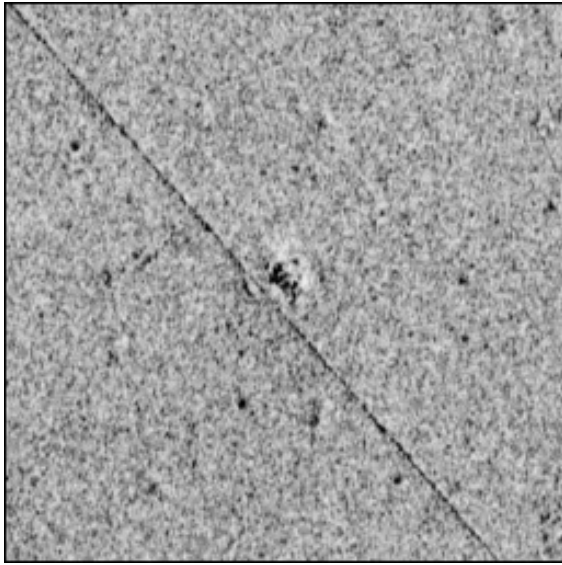
Name: EER001_T029
Easting: 323142.991
Northing: 4392807.213
Latitude: 39.666792255 N
Longitude: 18.938167558 E
Height: 0.29 m
Width: 0.19 m
Length: 0.92 m
Depth: 787.46 m
Image: sasi-20260411-092149-
er1m2l01-1-L-WN-000_CH[1_2]
**Not measurable
height:** No
Reviewed: Yes
Description: Irregular object
Ping ID: 1316
Altitude: 39.90 m
Date-time: 11/04/2026 09:23:01.270



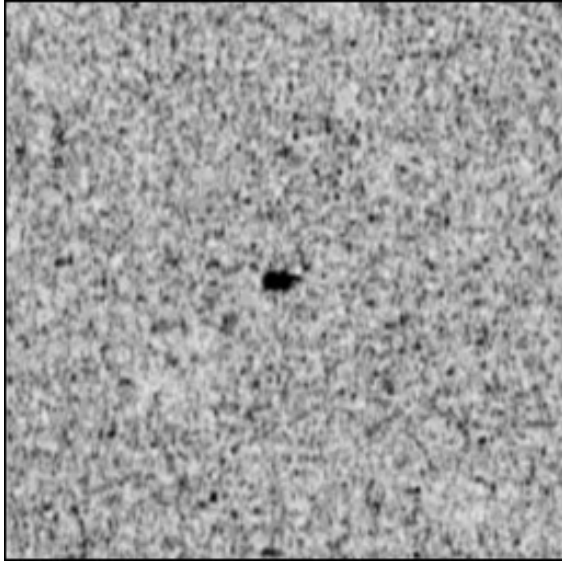
Name: EER001_T030
Easting: 323934.241
Northing: 4392494.752
Latitude: 39.664142054 N
Longitude: 18.947469812 E
Height: 0.13 m
Width: 0.49 m
Length: 1.11 m
Depth: 800.61 m
Image: sasi-20260411-150421-
er1m2l06-1-L-WN-000_CH[1_2]
**Not measurable
height:** No
Reviewed: Yes
Description: Irregular object
Ping ID: 3403
Altitude: 40.07 m
Date-time: 11/04/2026 15:07:28.160



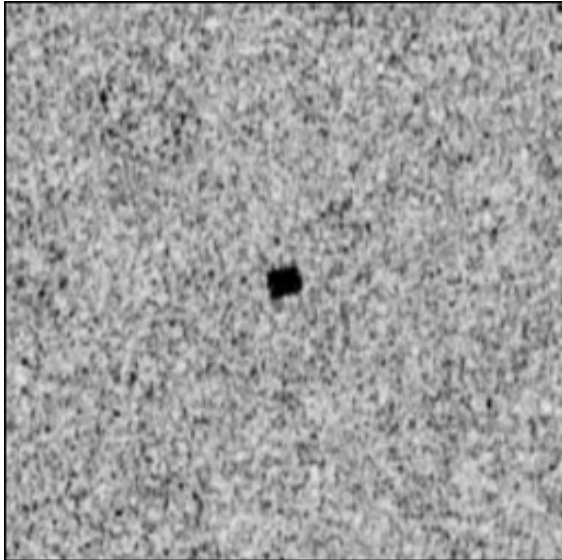
Name: EER001_T031
Easting: 324577.522
Northing: 4392121.946
Latitude: 39.660917355 N
Longitude: 18.955063512 E
Height: 0.23 m
Width: 0.54 m
Length: 0.74 m
Depth: 814.86 m
Image: sasi-20260411-201322-
er1m2l10-1-L-WN-000_CH[1_2]
**Not measurable
height:** No
Reviewed: Yes
Description: Irregular object
Ping ID: 1103
Altitude: 40.25 m
Date-time: 11/04/2026 20:14:23.070



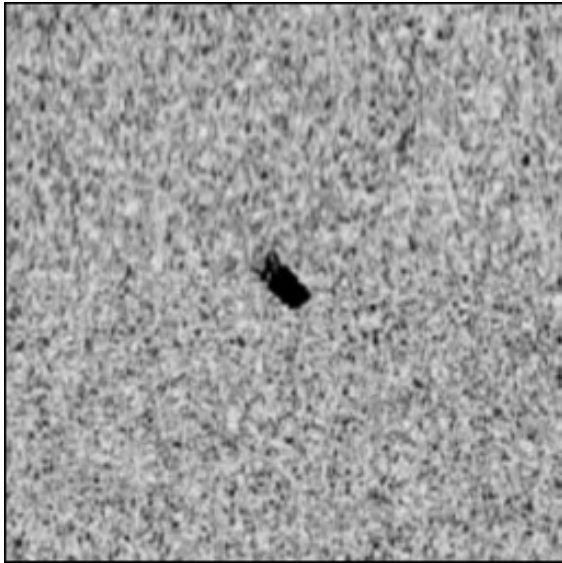
Name: EER001_T032
Easting: 324628.348
Northing: 4391410.906
Latitude: 39.654525162 N
Longitude: 18.955844334 E
Height: 0.08 m
Width: 0.80 m
Length: 1.73 m
Depth: 827.49 m
Image: sasi-20260411-010605-
er1m2l13-1-L-WN-000_CH[1_2]
Not measurable height: No
Reviewed: Yes
Description: Irregular object
Ping ID: 3257
Altitude: 40.25 m
Date-time: 12/04/2026 01:09:04.140



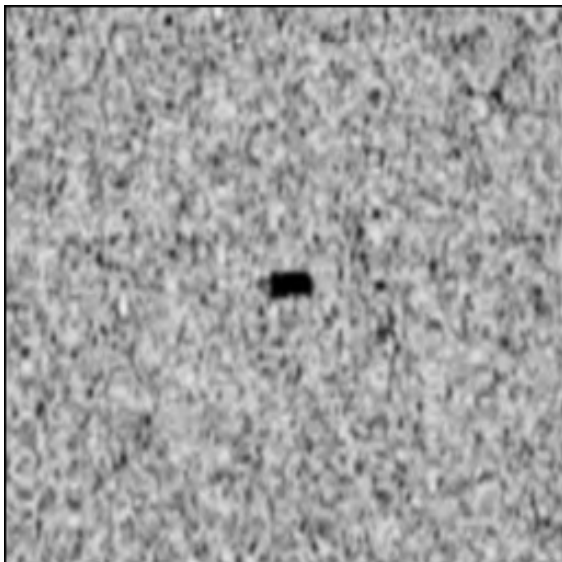
Name: EER001_T033
Easting: 325075.379
Northing: 4395103.558
Latitude: 39.687867567 N
Longitude: 18.960073772 E
Height: nmh
Width: 0.68 m
Length: 1.09 m
Depth: 855.64 m
Image: sasi-20260412-030230-er1m3l01-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 3594
Range: -131.25 m
Altitude: 40.07 m
Heading: 181.28 °
Date-time: 12/04/2026 03:05:47.540



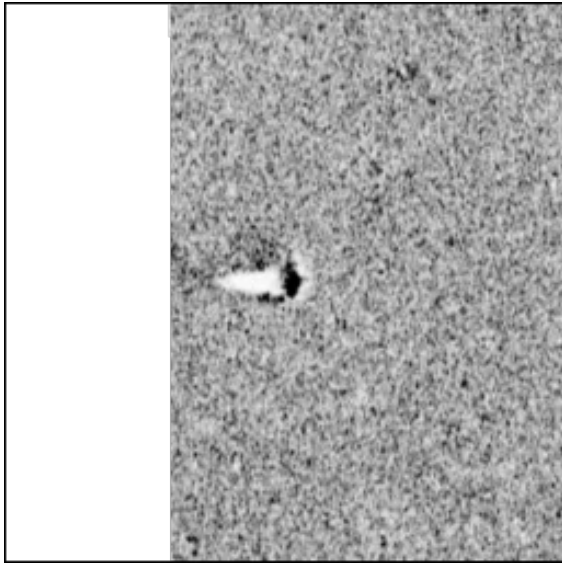
Name: EER001_T034
Easting: 325093.648
Northing: 4395025.602
Latitude: 39.687169344 N
Longitude: 18.960307352 E
Height: nmh
Width: 0.96 m
Length: 0.96 m
Depth: 854.61 m
Image: sasi-20260412-030230-er1m3l01-1-L-WN-000_CH[1_2]
Description: Square object
Ping ID: 4480
Range: -110.91 m
Altitude: 39.84 m
Heading: 181.28 °
Date-time: 12/04/2026 03:06:36.120



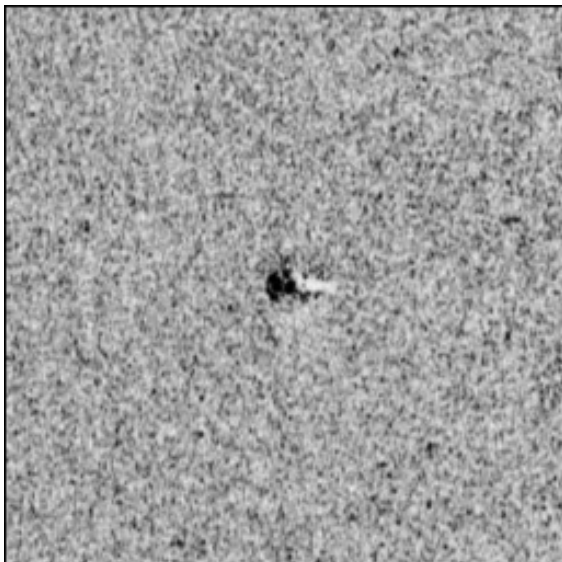
Name: EER001_T035
Easting: 325103.825
Northing: 4394935.816
Latitude: 39.686362946 N
Longitude: 18.960449756 E
Height: nmh
Width: 0.75 m
Length: 1.78 m
Depth: 853.37 m
Image: sasi-20260412-030230-er1m3l01-1-L-WN-000_CH[1_2]
Description: Rectangular object
Ping ID: 5548
Range: -98.57 m
Altitude: 40.03 m
Heading: 181.28 °
Date-time: 12/04/2026 03:07:34.600



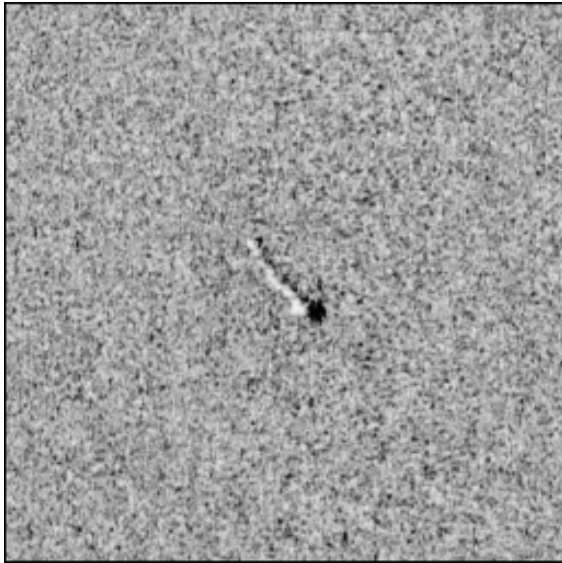
Name: EER001_T036
Easting: 325092.114
Northing: 4395063.885
Latitude: 39.687513754 N
Longitude: 18.960279333 E
Height: nmh
Width: 0.45 m
Length: 0.87 m
Depth: 855.12 m
Image: sasi-20260412-030230-er1m3l01-1-L-WN-000_CH[1_2]
Description: Rectangular object
Ping ID: 4043
Range: -113.34 m
Altitude: 39.96 m
Heading: 181.28 °
Date-time: 12/04/2026 03:06:12.160



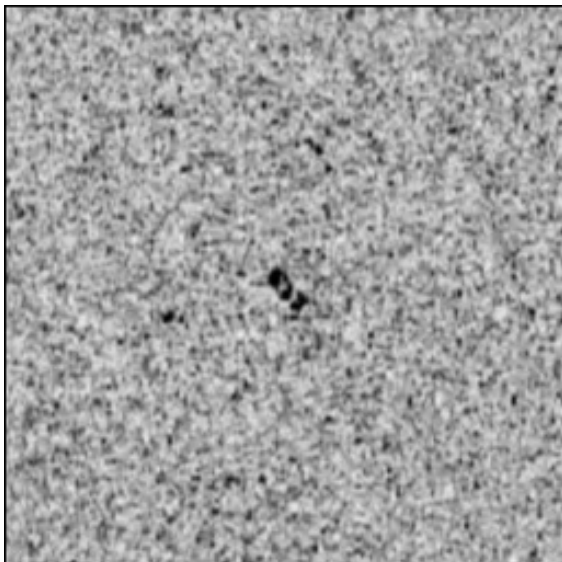
Name: EER001_T037
Easting: 326631.605
Northing: 4398076.934
Latitude: 39.714959082 N
Longitude: 18.977429630 E
Height: 0.66 m
Width: 0.86 m
Length: 1.65 m
Depth: 880.77 m
Image: sasi-20260416-015441-er1m3l09-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 2068
Range: 159.96 m
Altitude: 40.18 m
Heading: 181.76 °
Date-time: 16/04/2026 01:56:34.930



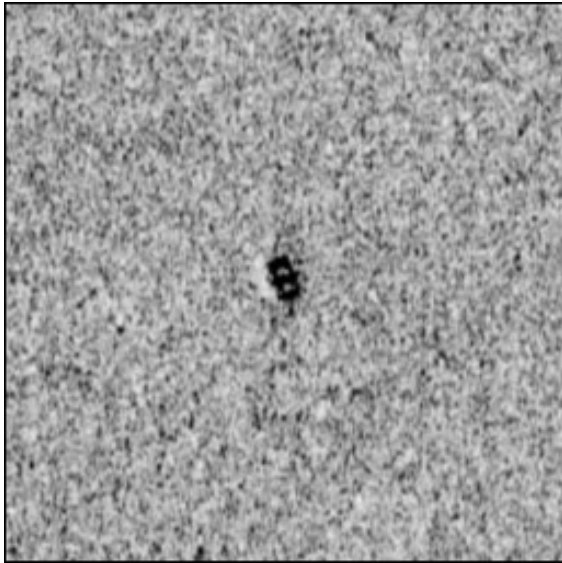
Name: EER001_T038
Easting: 326265.346
Northing: 4394477.009
Latitude: 39.682468617 N
Longitude: 18.974107623 E
Height: 0.45 m
Width: 1.38 m
Length: 1.80 m
Depth: 867.62 m
Image: sasi-20260416-022906-er1m3l09-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 5666
Range: -127.49 m
Altitude: 40.35 m
Heading: 181.31 °
Date-time: 16/04/2026 02:34:17.360



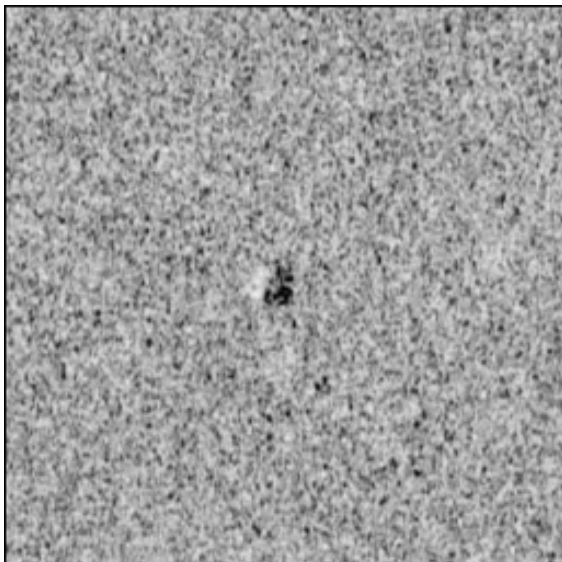
Name: EER001_T039
Easting: 326756.135
Northing: 4394537.580
Latitude: 39.683113713 N
Longitude: 18.979811389 E
Height: 0.50 m
Width: 1.01 m
Length: 5.54 m
Depth: 873.35 m
Image: sasi-20260416-050552-er1m3l11-1-L-WN-000_CH[1_2]
Description: Elongated object
Ping ID: 3280
Range: 64.37 m
Altitude: 40.01 m
Heading: 181.29 °
Date-time: 16/04/2026 05:08:51.970



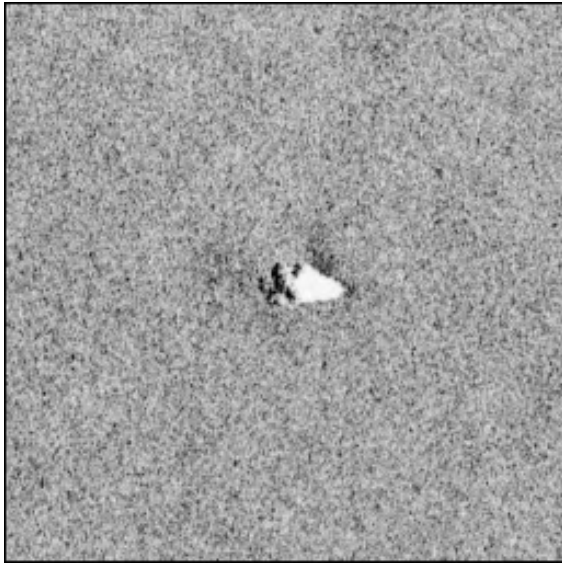
Name: EER001_T040
Easting: 326784.840
Northing: 4396416.885
Latitude: 39.700042060 N
Longitude: 18.979652491 E
Height: nmh
Width: 0.54 m
Length: 1.61 m
Depth: 883.38 m
Image: sasi-20260416-044840-er1m3l11-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 599
Range: 54.07 m
Altitude: 40.29 m
Heading: 181.31 °
Date-time: 16/04/2026 04:49:12.540



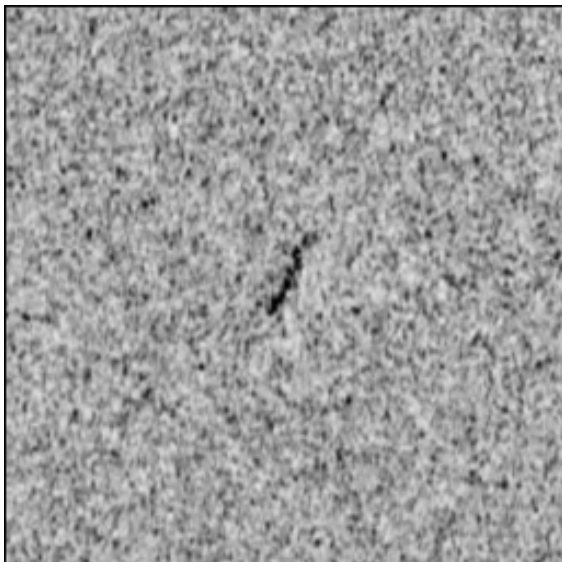
Name: EER001_T041
Easting: 326861.649
Northing: 4396303.537
Latitude: 39.699036977 N
Longitude: 18.980577612 E
Height: 0.10 m
Width: 0.99 m
Length: 1.48 m
Depth: 882.36 m
Image: sasi-20260416-044840-er1m3l11-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1876
Range: 134.71 m
Altitude: 39.83 m
Heading: 181.31 °
Date-time: 16/04/2026 04:50:22.620



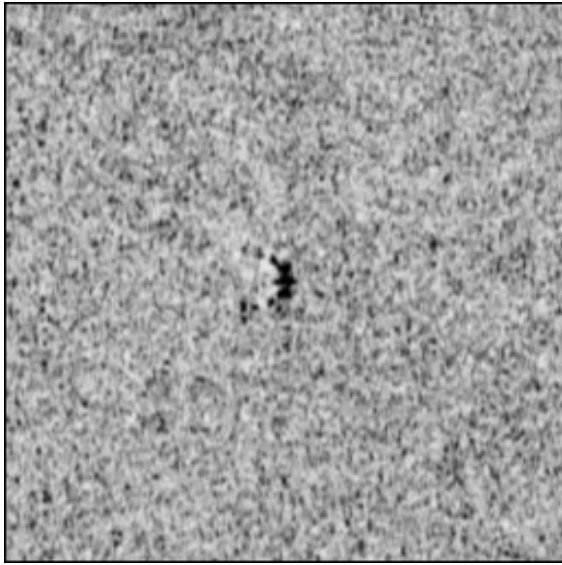
Name: EER001_T042
Easting: 325309.768
Northing: 4395810.430
Latitude: 39.694280623 N
Longitude: 18.962618353 E
Height: 0.35 m
Width: 0.89 m
Length: 1.59 m
Depth: 859.96 m
Image: sasi-20260412-025555-er1m3l01-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 2655
Range: 90.45 m
Altitude: 39.92 m
Heading: 181.27 °
Date-time: 12/04/2026 02:58:21.220



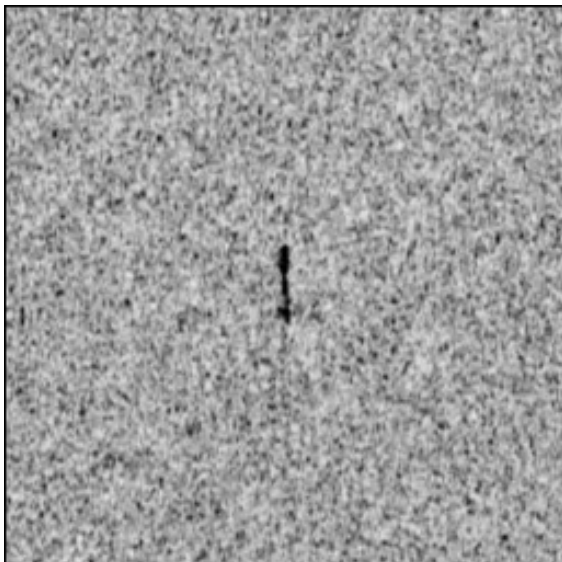
Name: EER001_T043
Easting: 325472.250
Northing: 4394922.608
Latitude: 39.686319376 N
Longitude: 18.964747086 E
Height: 1.17 m
Width: 1.54 m
Length: 3.21 m
Depth: 856.26 m
Image: sasi-20260412-042057-er1m3l02-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 9753
Range: -123.28 m
Altitude: 39.92 m
Heading: 1.30 °
Date-time: 12/04/2026 04:29:51.730



Name: EER001_T044
Easting: 325448.930
Northing: 4394785.603
Latitude: 39.685080943 N
Longitude: 18.964511541 E
Height: nmh
Width: 0.33 m
Length: 2.42 m
Depth: 854.90 m
Image: sasi-20260412-042057-er1m3l02-1-L-WN-000_CH[1_2]
Description: Elongated object
Ping ID: 8182
Range: -102.79 m
Altitude: 40.03 m
Heading: 1.30 °
Date-time: 12/04/2026 04:28:25.590



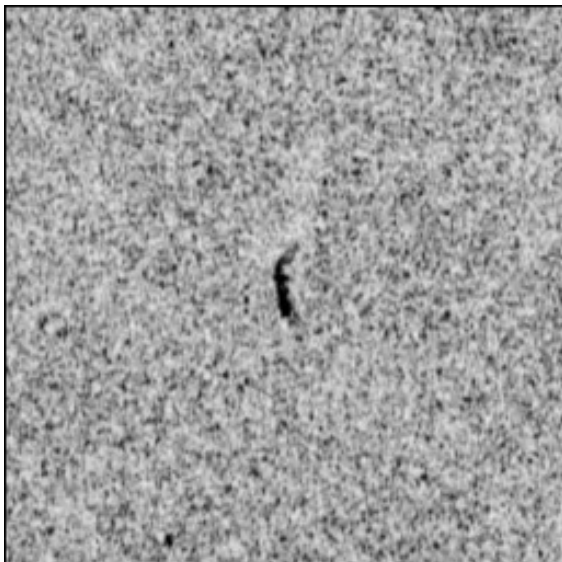
Name: EER001_T045
Easting: 325609.972
Northing: 4394131.440
Latitude: 39.679223352 N
Longitude: 18.966561225 E
Height: 0.19 m
Width: 0.81 m
Length: 1.16 m
Depth: 850.81 m
Image: sasi-20260412-054535-er1m3l03-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 6054
Range: 129.05 m
Altitude: 40.07 m
Heading: 181.28 °
Date-time: 12/04/2026 05:51:07.280



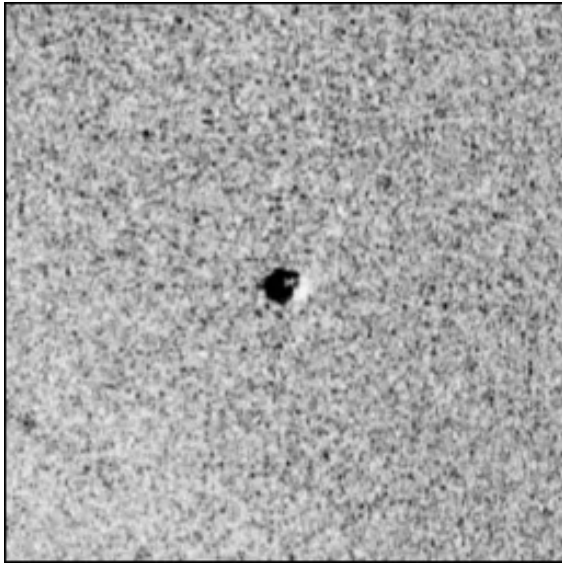
Name: EER001_T046
Easting: 325965.601
Northing: 4392274.296
Latitude: 39.662572933 N
Longitude: 18.971194934 E
Height: nmh
Width: 0.40 m
Length: 2.89 m
Depth: 848.26 m
Image: sasi-20260412-090813-er1m3l06-1-L-WN-000_CH[1_2]
Description: Linear object
Ping ID: 5154
Range: -75.12 m
Altitude: 39.77 m
Heading: 1.28 °
Date-time: 12/04/2026 09:12:56.620



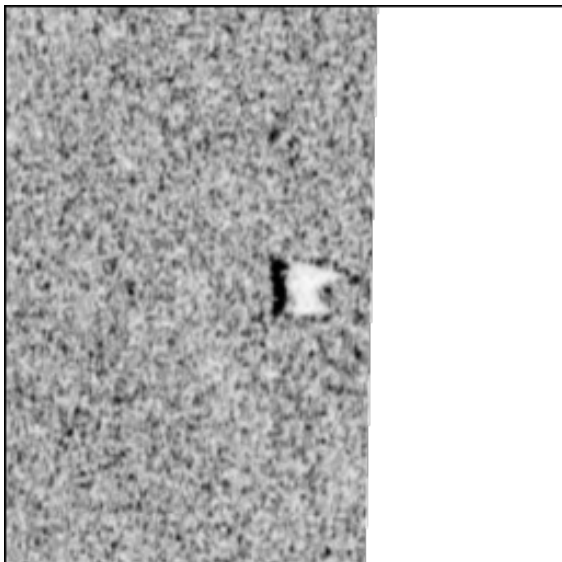
Name: EER001_T047
Easting: 326024.221
Northing: 4397570.702
Latitude: 39.710277042 N
Longitude: 18.970481517 E
Height: nmh
Width: 0.19 m
Length: 19.87 m
Depth: 876.24 m
Image: sasi-20260412-102441-er1m3l07-1-L-WN-000_CH[1_2]
Description: Rope
Ping ID: 1198
Range: -137.30 m
Altitude: 40.18 m
Heading: 181.30 °
Date-time: 12/04/2026 10:25:46.770



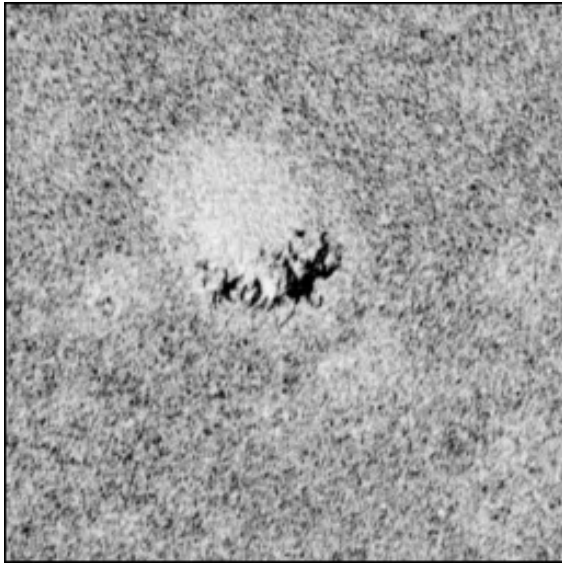
Name: EER001_T048
Easting: 325357.034
Northing: 4394826.867
Latitude: 39.685433718 N
Longitude: 18.963429637 E
Height: nmh
Width: 0.55 m
Length: 2.96 m
Depth: 856.90 m
Image: sasi-20260412-054231-er1m3l03-1-L-WN-000_CH[1_2]
Description: Elongated object
Ping ID: 1530
Range: -143.61 m
Altitude: 39.62 m
Heading: 181.32 °
Date-time: 12/04/2026 05:43:55.140



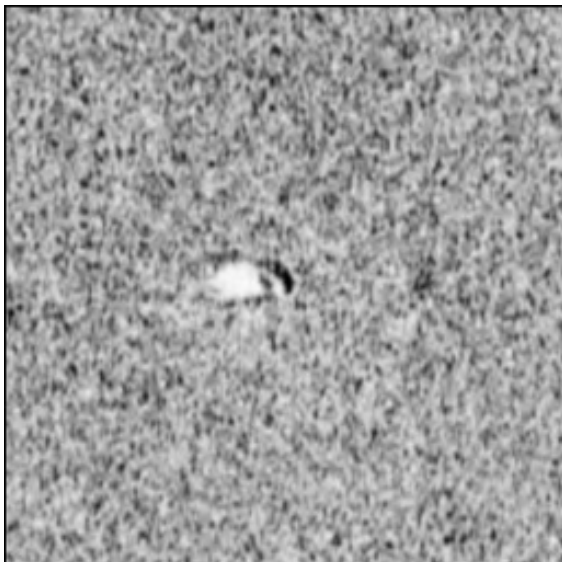
Name: EER001_T049
Easting: 326317.247
Northing: 4393504.516
Latitude: 39.673722197 N
Longitude: 18.974968337 E
Height: 0.68 m
Width: 1.34 m
Length: 1.74 m
Depth: 853.07 m
Image: sasi-20260416-024255-er1m3l09-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1510
Range: -47.06 m
Altitude: 40.33 m
Heading: 181.12 °
Date-time: 16/04/2026 02:44:23.750



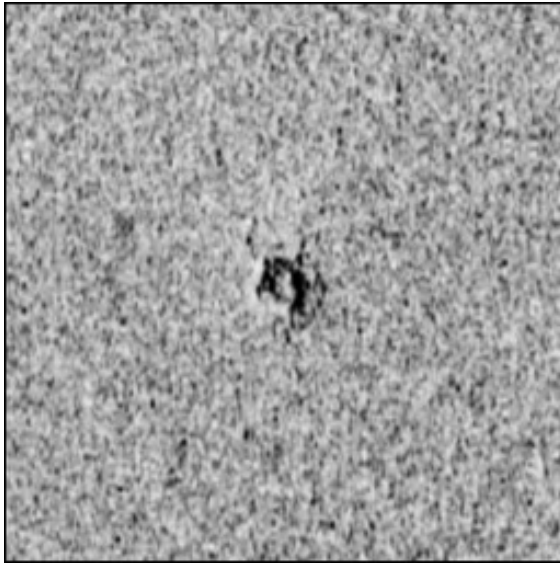
Name: EER001_T050
Easting: 327254.019
Northing: 4392591.969
Latitude: 39.665694845 N
Longitude: 18.986122842 E
Height: 0.45 m
Width: 0.47 m
Length: 1.85 m
Depth: 881.55 m
Image: sasi-20260416-083305-er1m3l14-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 6231
Range: -157.45 m
Altitude: 40.11 m
Heading: 1.19 °
Date-time: 16/04/2026 08:38:46.830



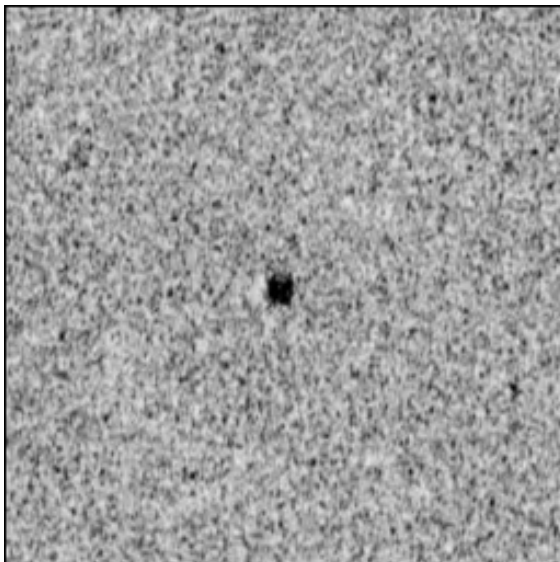
Name: EER001_T051
Easting: 327108.791
Northing: 4393690.667
Latitude: 39.675558960 N
Longitude: 18.984143112 E
Height: 0.21 m
Width: 1.48 m
Length: 5.30 m
Depth: 874.52 m
Image: sasi-20260416-075227-er1m3l13-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 485
Range: 144.56 m
Altitude: 40.10 m
Heading: 181.44 °
Date-time: 16/04/2026 07:52:53.730



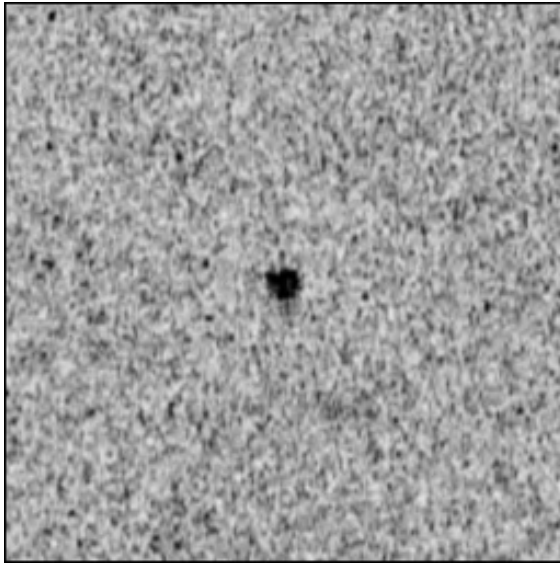
Name: EER001_T052
Easting: 327151.715
Northing: 4394634.722
Latitude: 39.684068594 N
Longitude: 18.984396100 E
Height: 0.36 m
Width: 0.31 m
Length: 1.00 m
Depth: 881.65 m
Image: sasi-20260416-074050-er1m3l13-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 2402
Range: 159.46 m
Altitude: 40.51 m
Heading: 181.25 °
Date-time: 16/04/2026 07:43:01.910



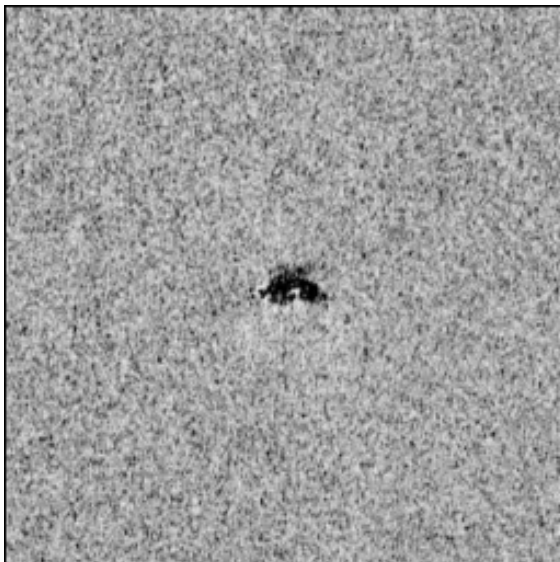
Name: EER001_T053
Easting: 327136.618
Northing: 4396428.658
Latitude: 39.700219377 N
Longitude: 18.983750082 E
Height: nmh
Width: 1.56 m
Length: 2.02 m
Depth: 890.14 m
Image: sasi-20260416-071947-er1m3l13-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 4956
Range: 103.68 m
Altitude: 39.81 m
Heading: 181.29 °
Date-time: 16/04/2026 07:24:19.170



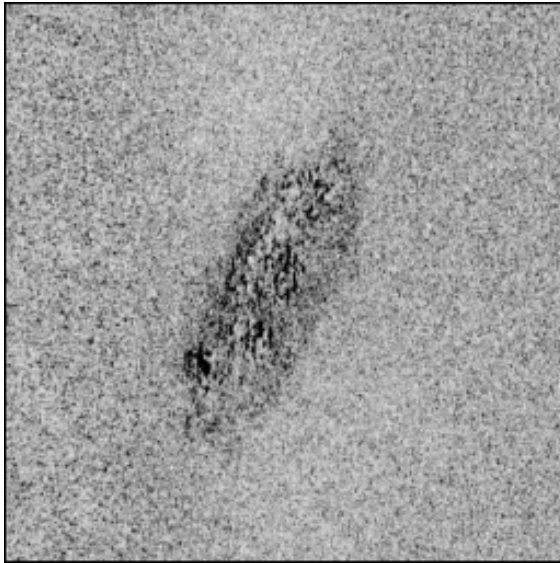
Name: EER001_T054
Easting: 325518.380
Northing: 4395704.577
Latitude: 39.693370118 N
Longitude: 18.965077918 E
Height: 0.19 m
Width: 0.90 m
Length: 1.09 m
Depth: 867.16 m
Image: sasi-20260412-070626-er1m3l04-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 7558
Range: 151.98 m
Altitude: 40.25 m
Heading: 1.26 °
Date-time: 12/04/2026 07:13:21.100



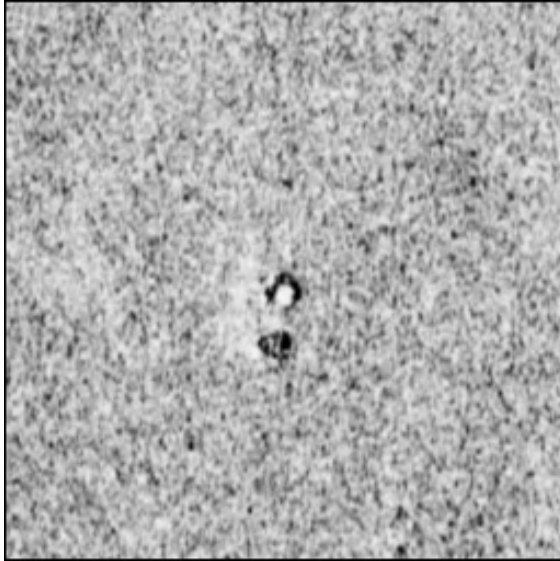
Name: EER001_T055
Easting: 325437.945
Northing: 4395770.451
Latitude: 39.693946841 N
Longitude: 18.964122957 E
Height: nmh
Width: 1.08 m
Length: 0.92 m
Depth: 865.50 m
Image: sasi-20260412-052558-er1m3l03-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 8749
Range: -83.14 m
Altitude: 39.31 m
Heading: 181.25 °
Date-time: 12/04/2026 05:34:02.670



Name: EER001_T056
Easting: 327085.297
Northing: 4397382.364
Latitude: 39.708796789 N
Longitude: 18.982901693 E
Height: 0.21 m
Width: 1.90 m
Length: 3.10 m
Depth: 895.41 m
Image: sasi-20260416-092819-er1m3l14-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 515
Range: 123.60 m
Altitude: 39.94 m
Heading: 1.39 °
Date-time: 16/04/2026 09:28:47.800

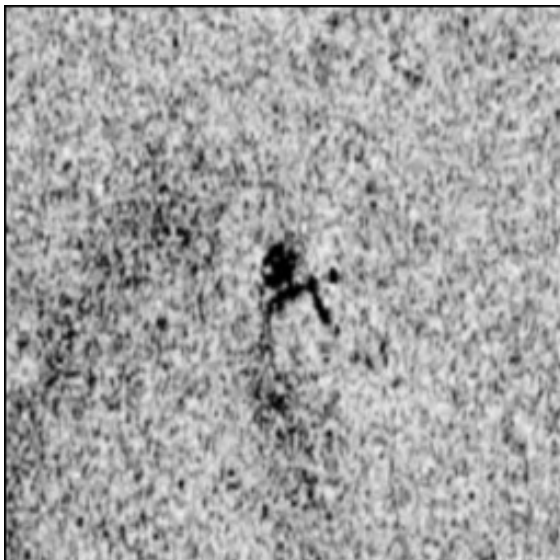


Name: EER001_T057
Easting: 326640.237
Northing: 4396094.989
Latitude: 39.697114143 N
Longitude: 18.978051476 E
Height: nmh
Width: 8.29 m
Length: 23.73 m
Depth: 880.04 m
Image: sasi-20260416-040401-er1m3l10-1-L-WN-000_CH[1_2]
Description: Debris area (average object dimensions 0.9x0.3xnmh)
Ping ID: 690
Range: -64.47 m
Altitude: 39.71 m
Heading: 1.30 °
Date-time: 16/04/2026 04:04:39.110



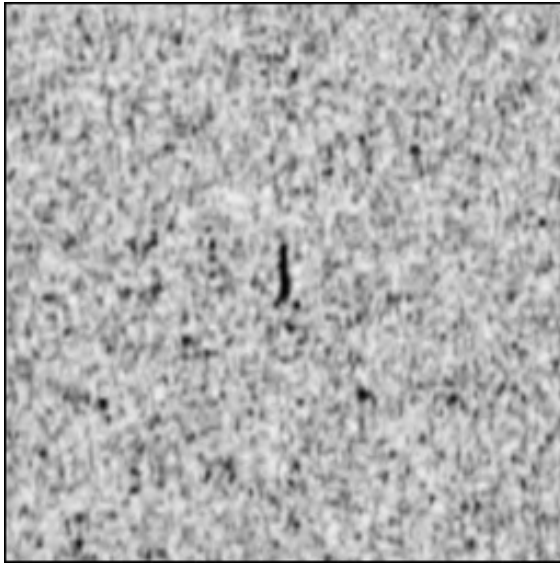
Name: EER001_T058
Class:
Easting: 328226.917
Northing: 4391225.455
Latitude: 39.653585716 N
Longitude: 18.997813619 E
Height: 0.16 m
Width: 0.27 m
Length: 1.10 m
Depth: 900.31 m
Image: sasi-20260416-183923-er1m4l07-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 273
Range: 111.72 m
Altitude: 40.13 m
Heading: 182.02 °

Date-time: 16/04/2026 18:39:38.170



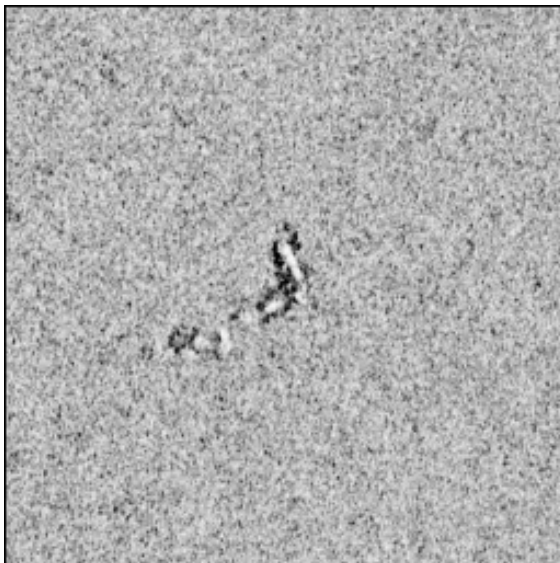
Name: EER001_T059
Class:
Easting: 327656.535
Northing: 4396603.426
Latitude: 39.701898233 N
Longitude: 18.989765112 E
Height: nmh
Width: 1.48 m
Length: 2.84 m
Depth: 904.15 m
Image: sasi-20260416-142627-er1m4l04-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 5422
Range: 134.48 m
Altitude: 39.84 m
Heading: 1.35 °

Date-time: 16/04/2026 14:31:24.760



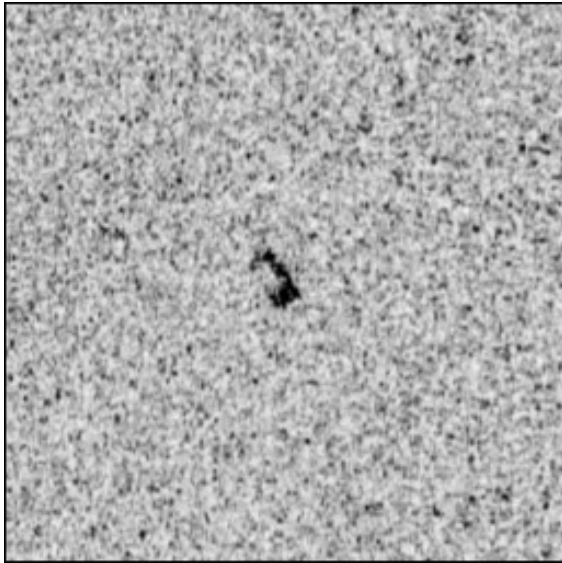
Name: EER001_T060
Class:
Easting: 327887.586
Northing: 4397358.761
Latitude: 39.708746433 N
Longitude: 18.992261363 E
Height: nmh
Width: 0.21 m
Length: 1.36 m
Depth: 907.22 m
Image: sasi-20260416-143507-er1m4l04-1-L-WN-000_CH[1_2]
Description: Elongated object
Ping ID: 4642
Range: -81.98 m
Altitude: 39.75 m
Heading: 1.44 °

Date-time: 16/04/2026 14:39:21.490



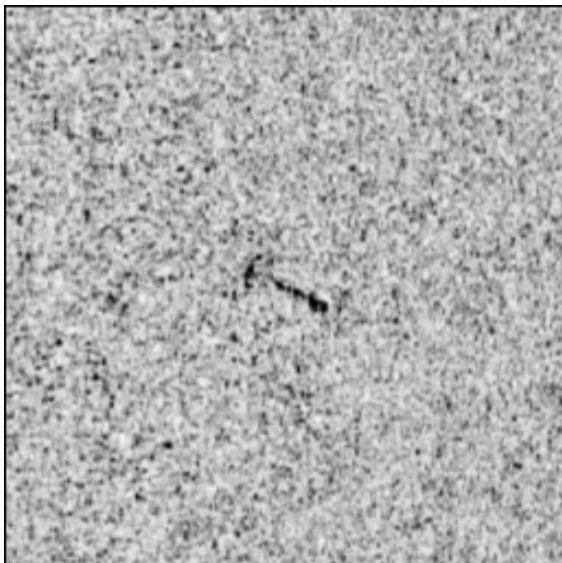
Name: EER001_T061
Class:
Easting: 328489.593
Northing: 4393204.126
Latitude: 39.671456041 N
Longitude: 19.000359958 E
Height: nmh
Width: 1.01 m
Length: 4.64 m
Depth: 907.46 m
Image: sasi-20260416-214111-er1m4l10-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 983
Range: 125.41 m
Altitude: 40.15 m
Heading: 1.11 °

Date-time: 16/04/2026 21:42:03.820



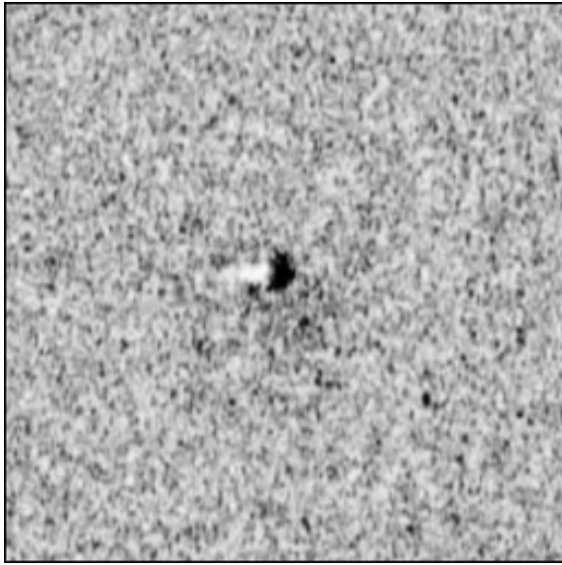
Name: EER001_T062
Class:
Easting: 328556.580
Northing: 4393654.486
Latitude: 39.675524893 N
Longitude: 19.001023569 E
Height: nmh
Width: 0.95 m
Length: 2.04 m
Depth: 906.35 m
Image: sasi-20260416-214342-er1m4l10-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 3365
Range: 67.40 m
Altitude: 40.13 m
Heading: 1.27 °

Date-time: 16/04/2026 21:46:46.890



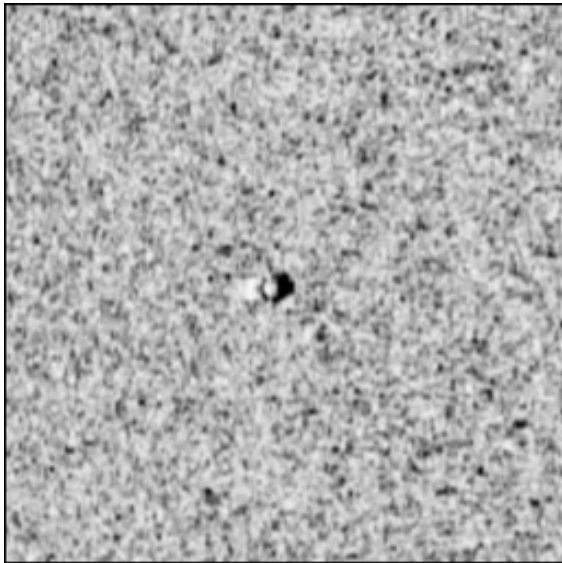
Name: EER001_T063
Class:
Easting: 327548.335
Northing: 4396874.125
Latitude: 39.704313945 N
Longitude: 18.988432981 E
Height: nmh
Width: 0.97 m
Length: 3.86 m
Depth: 899.01 m
Image: sasi-20260416-115643-er1m4l02-1-L-WN-000_CH[1_2]
Description: Elongated object
Ping ID: 2372
Range: -53.83 m
Altitude: 39.71 m
Heading: 1.34 °

Date-time: 16/04/2026 11:58:53.760



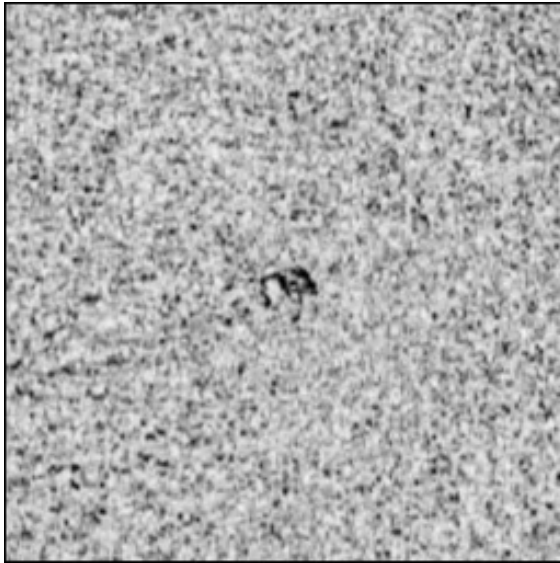
Name: EER001_T064
Class:
Easting: 328702.280
Northing: 4397722.945
Latitude: 39.712189737 N
Longitude: 19.001664902 E
Height: 0.37 m
Width: 0.73 m
Length: 1.10 m
Depth: 919.69 m
Image: sasi-20260416-200300-er1m4l09-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 4383
Range: 140.50 m
Altitude: 40.02 m
Heading: 181.46 °

Date-time: 16/04/2026 20:07:01.290



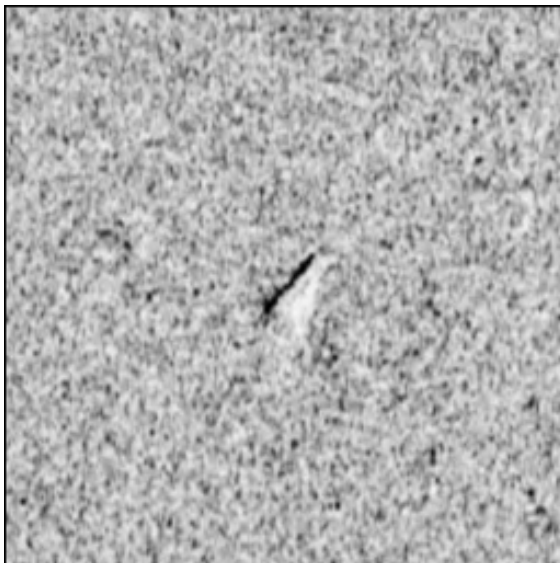
Name: EER001_T067
Class:
Easting: 327722.668
Northing: 4397477.137
Latitude: 39.709779097 N
Longitude: 18.990307722 E
Height: 0.40 m
Width: 1.09 m
Length: 0.99 m
Depth: 903.06 m
Image: sasi-20260416-121926-er1m4l03-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 4813
Range: 66.00 m
Altitude: 40.05 m
Heading: 181.34 °

Date-time: 16/04/2026 12:23:50.760



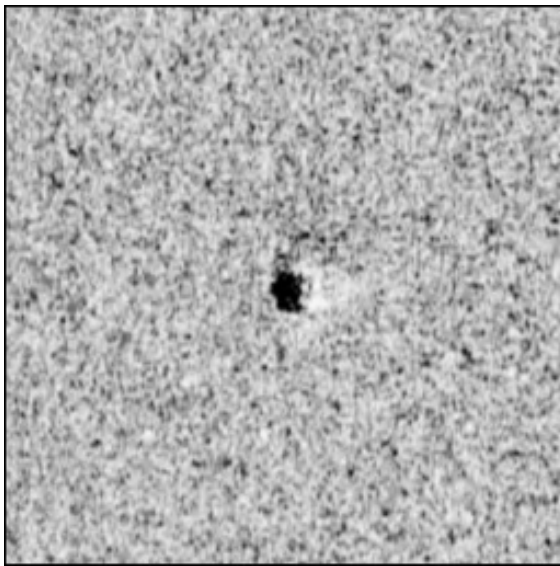
Name: EER001_T068
Class:
Easting: 328008.384
Northing: 4397342.215
Latitude: 39.708621796 N
Longitude: 18.993674012 E
Height: nmh
Width: 1.34 m
Length: 1.82 m
Depth: 909.99 m
Image: sasi-20260416-145901-er1m4l05-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1613
Range: 55.01 m
Altitude: 40.26 m
Heading: 181.20 °

Date-time: 16/04/2026 15:00:30.240



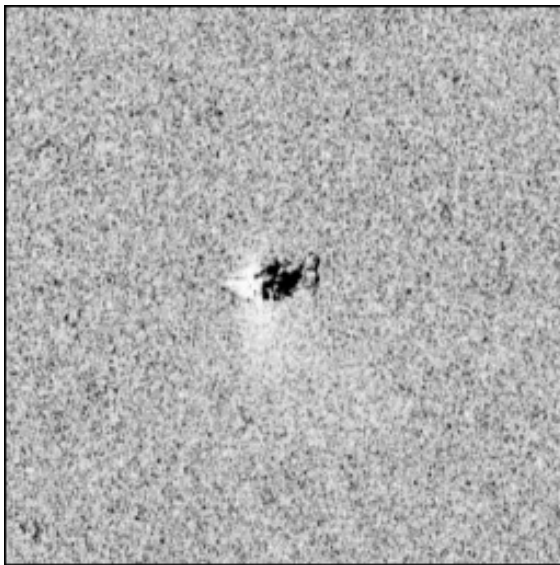
Name: EER001_T069
Class:
Easting: 327629.899
Northing: 4396845.888
Latitude: 39.704076152 N
Longitude: 18.989391220 E
Height: 0.30 m
Width: 0.27 m
Length: 2.19 m
Depth: 899.12 m
Image: sasi-20260416-115643-er1m4l02-1-L-WN-000_CH[1_2]
Description: Linear object
Ping ID: 2071
Range: -137.32 m
Altitude: 39.87 m
Heading: 1.34 °

Date-time: 16/04/2026 11:58:37.240



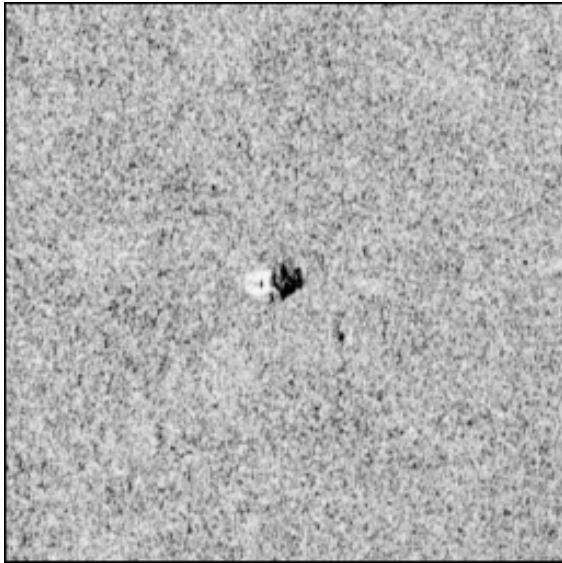
Name: EER001_T070
Class:
Easting: 328398.503
Northing: 4396213.939
Latitude: 39.698540476 N
Longitude: 18.998515892 E
Height: 0.31 m
Width: 1.04 m
Length: 2.07 m
Depth: 918.49 m
Image: sasi-20260416-201702-er1m4l09-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 6360
Range: -133.85 m
Altitude: 40.18 m
Heading: 181.23 °

Date-time: 16/04/2026 20:22:51.030



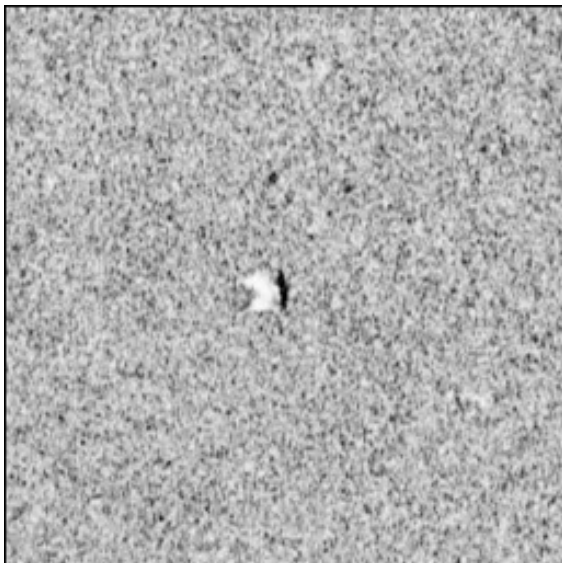
Name: EER001_T071
Class:
Easting: 328209.912
Northing: 4394124.783
Latitude: 39.679690186 N
Longitude: 18.996861478 E
Height: 0.62 m
Width: 2.02 m
Length: 3.62 m
Depth: 902.41 m
Image: sasi-20260416-191320-er1m4l08-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 3256
Range: 125.17 m
Altitude: 39.93 m
Heading: 1.29 °

Date-time: 16/04/2026 19:16:18.850



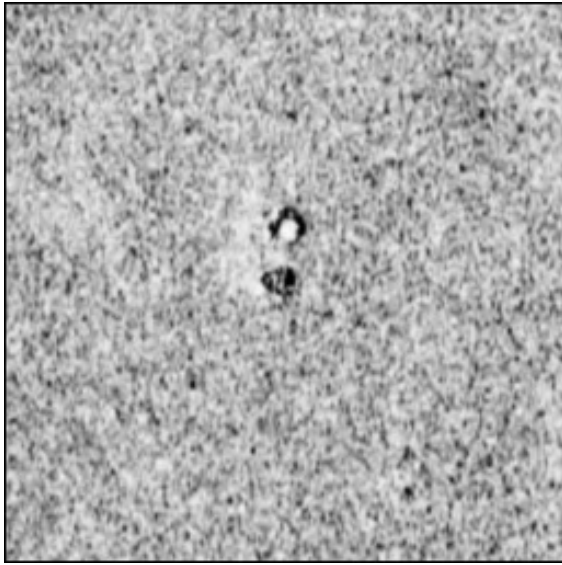
Name: EER001_T072
Class:
Easting: 327393.452
Northing: 4393028.711
Latitude: 39.669655775 N
Longitude: 18.987633272 E
Height: 0.36 m
Width: 1.94 m
Length: 2.09 m
Depth: 888.74 m
Image: sasi-20260416-103413-er1m4l01-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 926
Range: 136.69 m
Altitude: 39.96 m
Heading: 181.31 °

Date-time: 16/04/2026 10:35:03.610



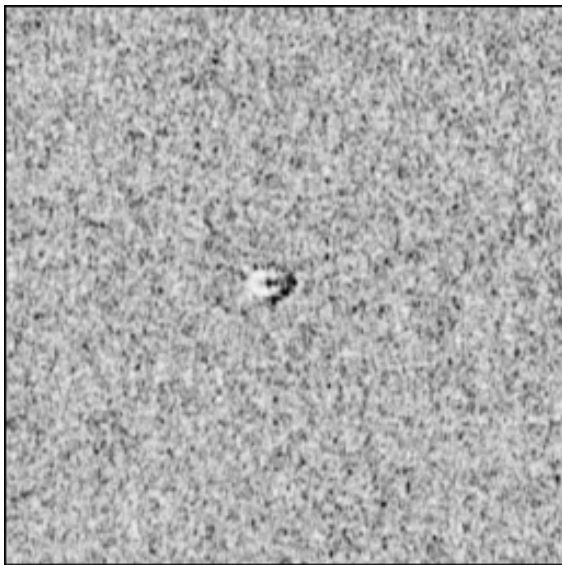
Name: EER001_T073
Class:
Easting: 327254.427
Northing: 4392591.512
Latitude: 39.665690814 N
Longitude: 18.986127709 E
Height: 0.28 m
Width: 0.50 m
Length: 1.89 m
Depth: 888.97 m
Image: sasi-20260416-110922-er1m4l02-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 5144
Range: 146.91 m
Altitude: 39.90 m
Heading: 1.34 °

Date-time: 16/04/2026 11:14:04.700



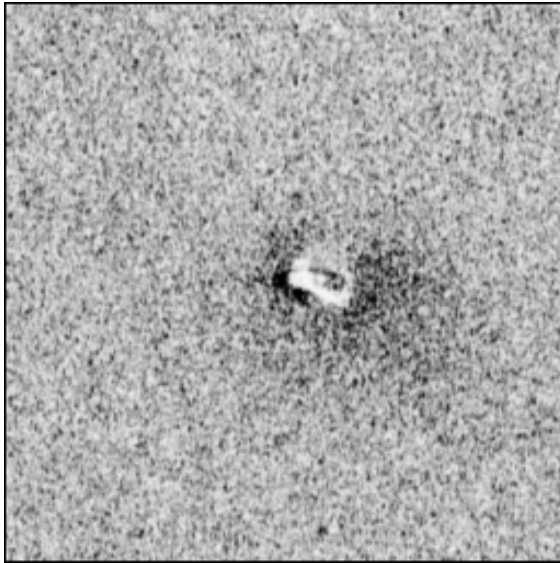
Name: EER001_T074
Class:
Easting: 328227.105
Northing: 4391227.420
Latitude: 39.653603454 N
Longitude: 18.997815304 E
Height: 0.27 m
Width: 0.95 m
Length: 1.26 m
Depth: 900.26 m
Image: sasi-20260416-183923-er1m4l07-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 250
Range: 111.83 m
Altitude: 40.12 m
Heading: 182.02 °

Date-time: 16/04/2026 18:39:36.940



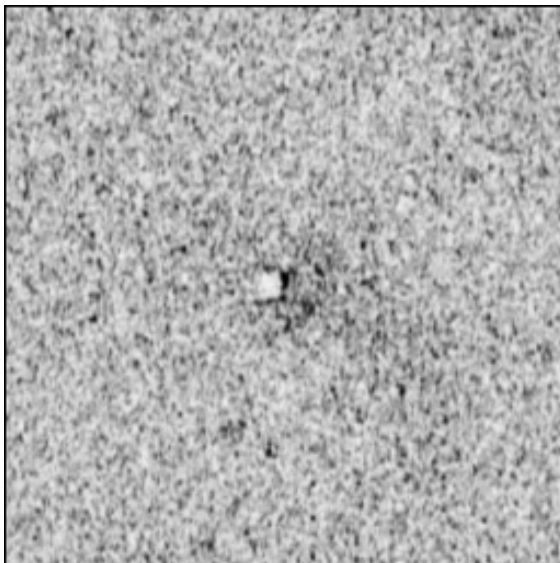
ame: EER001_T077
Class:
Easting: 328685.646
Northing: 4398068.910
Latitude: 39.715301726 N
Longitude: 19.001381013 E
Height: 0.26 m
Width: 1.07 m
Length: 1.75 m
Depth: 920.72 m
Image: sasi-20260416-200300-er1m4l09-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 437
Range: 114.37 m
Altitude: 40.18 m
Heading: 181.46 °

Date-time: 16/04/2026 20:03:24.610



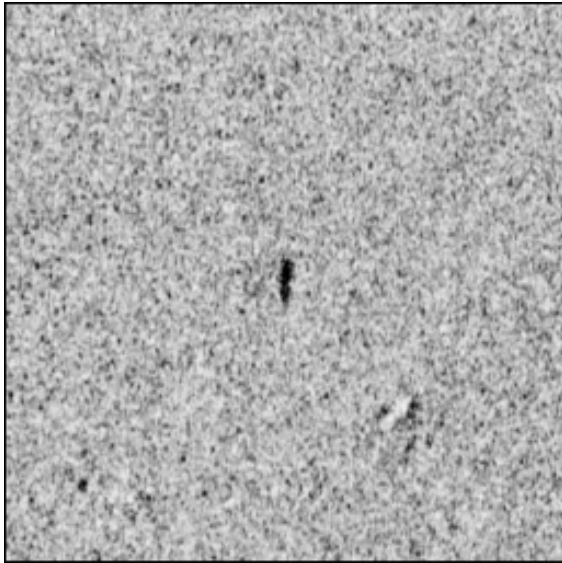
Name: EER001_T078
Class:
Easting: 328727.955
Northing: 4397690.941
Latitude: 39.711906703 N
Longitude: 19.001972567 E
Height: nmh
Width: 1.11 m
Length: 1.86 m
Depth: 919.66 m
Image: sasi-20260416-200300-er1m4l09-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 4741
Range: 167.43 m
Altitude: 40.04 m
Heading: 181.46 °

Date-time: 16/04/2026 20:07:20.900



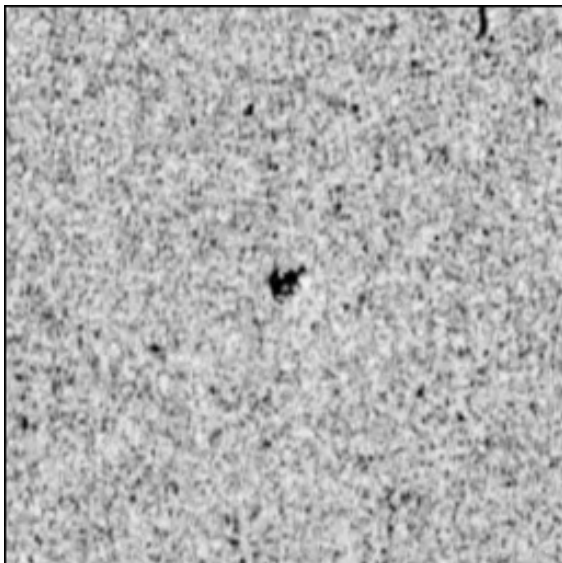
Name: EER001_T079
Class:
Easting: 328315.139
Northing: 4393603.160
Latitude: 39.675014231 N
Longitude: 18.998223407 E
Height: 0.21 m
Width: 1.31 m
Length: 2.15 m
Depth: 905.17 m
Image: sasi-20260416-180921-er1m4l07-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 5946
Range: 145.98 m
Altitude: 40.05 m
Heading: 181.35 °

Date-time: 16/04/2026 18:14:48.880



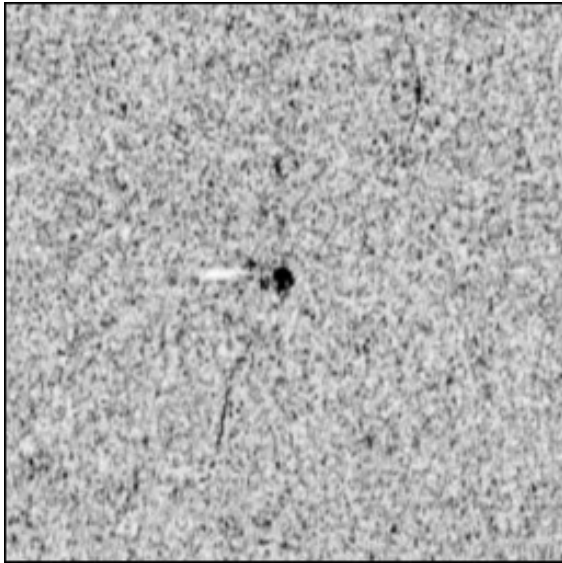
Name: EER001_T080
Class:
Easting: 328088.519
Northing: 4392456.039
Latitude: 39.664639082 N
Longitude: 18.995881231 E
Height: nmh
Width: 0.67 m
Length: 2.24 m
Depth: 896.41 m
Image: sasi-20260416-161856-er1m4l06-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 5015
Range: -93.22 m
Altitude: 39.95 m
Heading: 1.27 °

Date-time: 16/04/2026 16:23:31.380



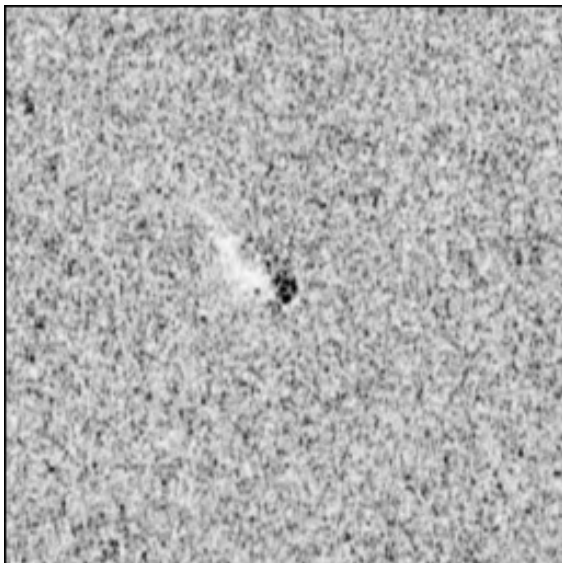
Name: EER001_T081
Class:
Easting: 327881.294
Northing: 4397350.851
Latitude: 39.708673932 N
Longitude: 18.992190074 E
Height: 0.21 m
Width: 0.88 m
Length: 1.43 m
Depth: 907.23 m
Image: sasi-20260416-143507-er1m4l04-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 4551
Range: -75.83 m
Altitude: 39.81 m
Heading: 1.44 °

Date-time: 16/04/2026 14:39:16.500



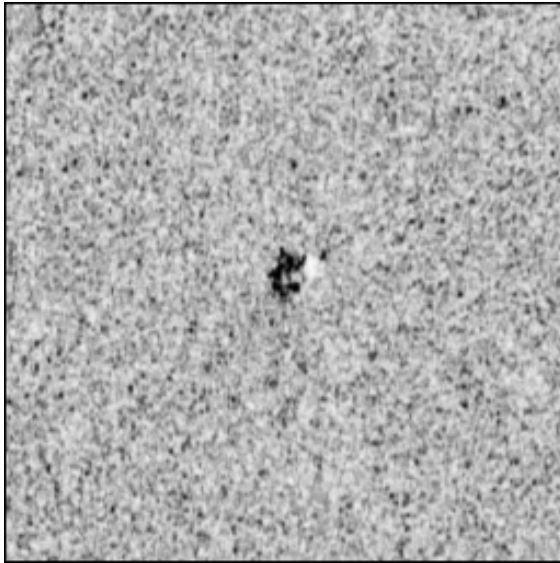
Name: EER001_T082
Class:
Easting: 327956.359
Northing: 4396029.296
Latitude: 39.696788830 N
Longitude: 18.993410065 E
Height: nmh
Width: 1.08 m
Length: 1.42 m
Depth: 908.38 m
Image: sasi-20260416-165711-er1m4l06-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 3975
Range: 121.42 m
Altitude: 40.01 m
Heading: 1.27 °

Date-time: 16/04/2026 17:00:49.370



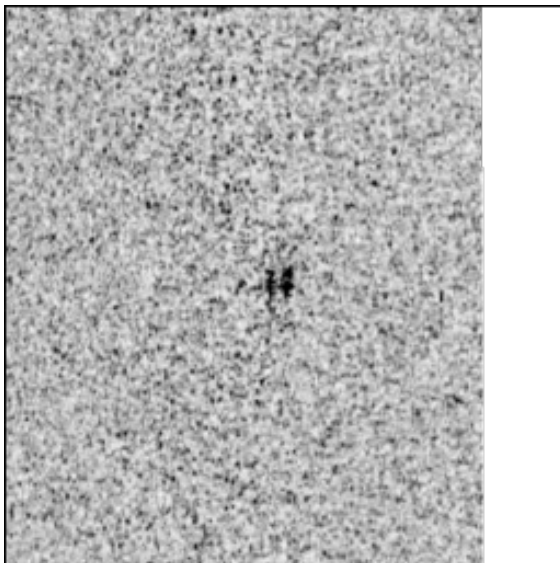
Name: EER001_T083
Class:
Easting: 328031.834
Northing: 4394312.180
Latitude: 39.681341825 N
Longitude: 18.994737389 E
Height: 0.28 m
Width: 1.00 m
Length: 1.23 m
Depth: 898.33 m
Image: sasi-20260416-152837-er1m4l05-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 3855
Range: 146.67 m
Altitude: 40.15 m
Heading: 181.28 °

Date-time: 16/04/2026 15:32:08.500



Name: EER001_T084
Class:
Easting: 327475.132
Northing: 4392886.483
Latitude: 39.668391541 N
Longitude: 18.988622154 E
Height: 0.49 m
Width: 1.31 m
Length: 1.71 m
Depth: 891.17 m
Image: sasi-20260416-110922-er1m4l02-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 8572
Range: -70.19 m
Altitude: 39.54 m
Heading: 1.34 °

Date-time: 16/04/2026 11:17:12.720

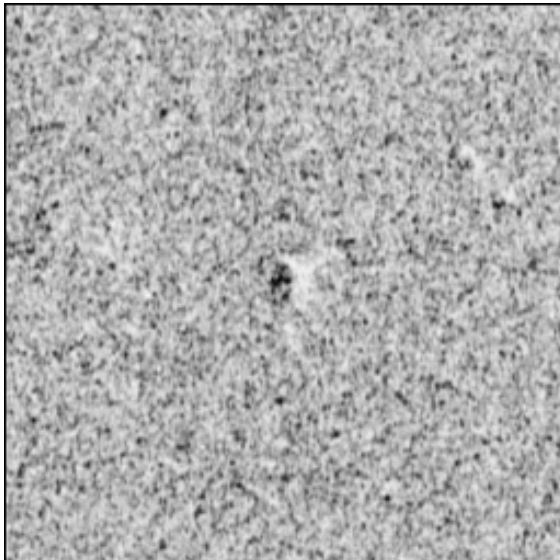


Name: EER001_T085
Class:
Easting: 327620.133
Northing: 4393974.753
Latitude: 39.678220401 N
Longitude: 18.990027573 E
Height: nmh
Width: 1.38 m
Length: 1.52 m
Depth: 895.51 m
Image: sasi-20260416-125444-er1m4l03-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 6315
Range: 43.08 m
Altitude: 40.23 m
Heading: 181.27 °

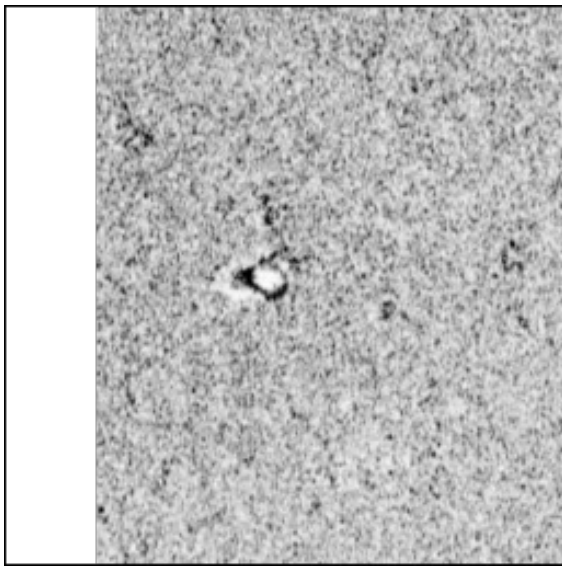
Date-time: 16/04/2026 13:00:30.180



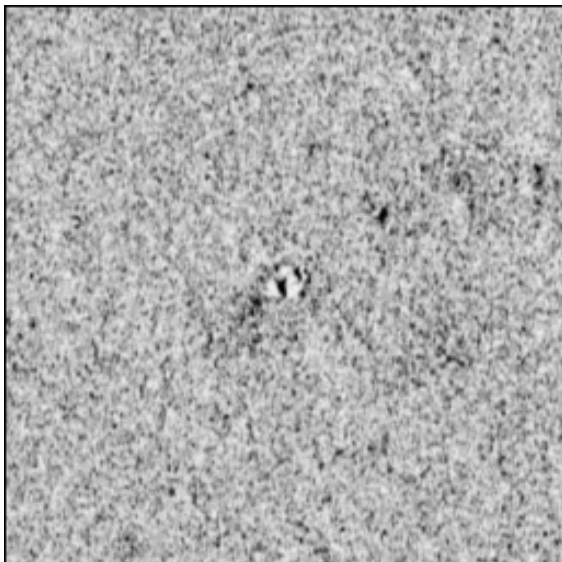
Name: EER001_T086
Easting: 327020.613
Northing: 4390173.535
Latitude: 39.643870255 N
Longitude: 18.984036326 E
Height: 0.43 m
Width: 0.80 m
Length: 1.12 m
Depth: 875.83 m
Image: sasi-20260419-084147-er1m6l01-2-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 149
Range: 177.55 m
Altitude: 40.11 m
Heading: 1.38 °
Date-time: 19/04/2026 08:41:55.140



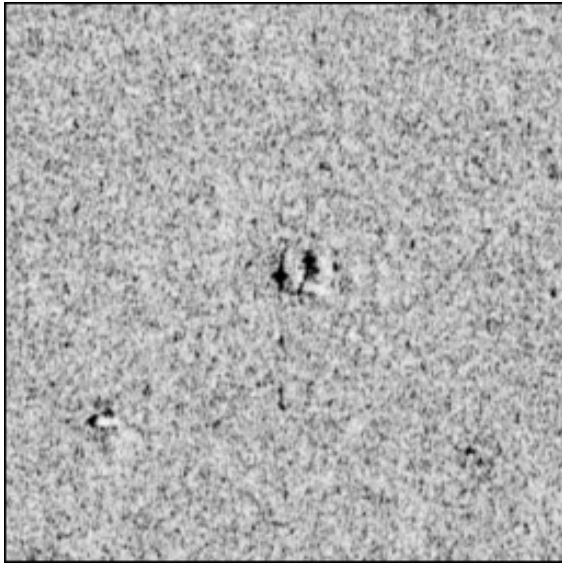
Name: EER001_T087
Easting: 327243.841
Northing: 4384465.063
Latitude: 39.592511565 N
Longitude: 18.988125793 E
Height: 0.15 m
Width: 0.74 m
Length: 1.29 m
Depth: 879.41 m
Image: sasi-20260419-074140-er1m6l01-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 724
Range: -179.87 m
Altitude: 40.19 m
Heading: 1.72 °
Date-time: 19/04/2026 07:42:21.320



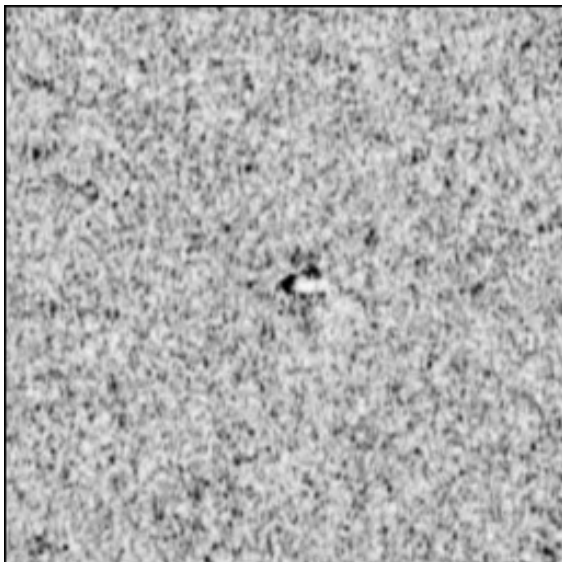
Name: EER001_T088
Easting: 327559.215
Northing: 4391103.062
Latitude: 39.652349201 N
Longitude: 18.990067315 E
Height: 0.23 m
Width: 0.78 m
Length: 2.31 m
Depth: 875.90 m
Image: sasi-20260419-062313-er1m6l02-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1457
Range: 192.72 m
Altitude: 39.92 m
Heading: 181.53 °
Date-time: 19/04/2026 06:24:35.690



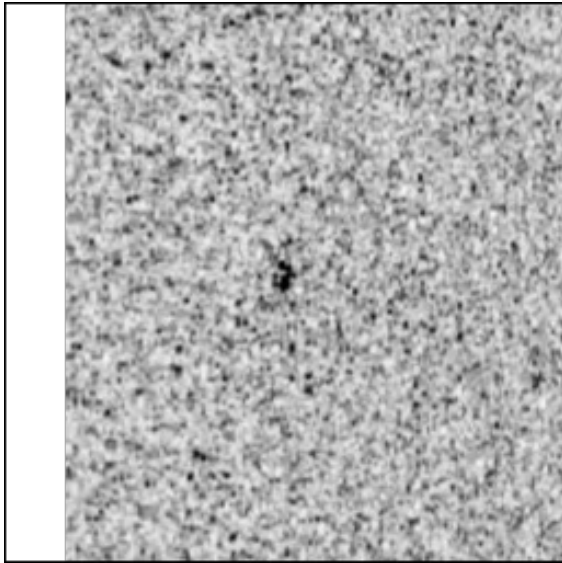
Name: EER001_T089
Easting: 327033.865
Northing: 4390191.496
Latitude: 39.644034663 N
Longitude: 18.984185982 E
Height: 0.10 m
Width: 0.53 m
Length: 0.77 m
Depth: 875.71 m
Image: sasi-20260419-084147-er1m6l01-2-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 358
Range: 164.49 m
Altitude: 40.26 m
Heading: 1.38 °
Date-time: 19/04/2026 08:42:06.590



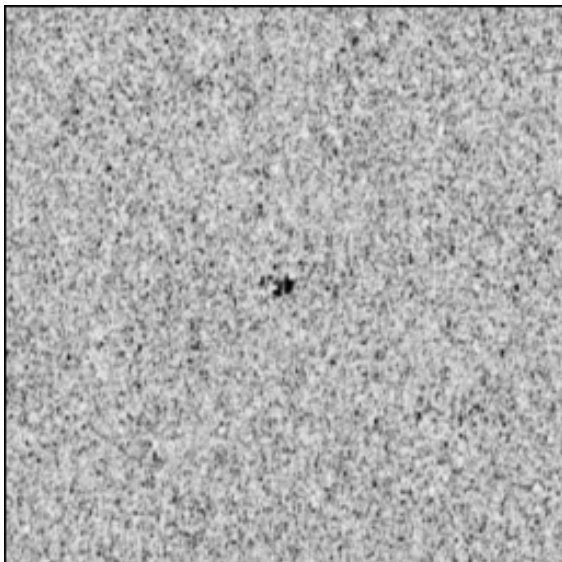
Name: EER001_T090
Easting: 327177.999
Northing: 4390002.609
Latitude: 39.642362912 N
Longitude: 18.985914160 E
Height: 0.12 m
Width: 2.09 m
Length: 2.63 m
Depth: 878.49 m
Image: sasi-20260419-063305-er1m6l02-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 3386
Range: -168.74 m
Altitude: 40.15 m
Heading: 181.31 °
Date-time: 19/04/2026 06:36:11.160



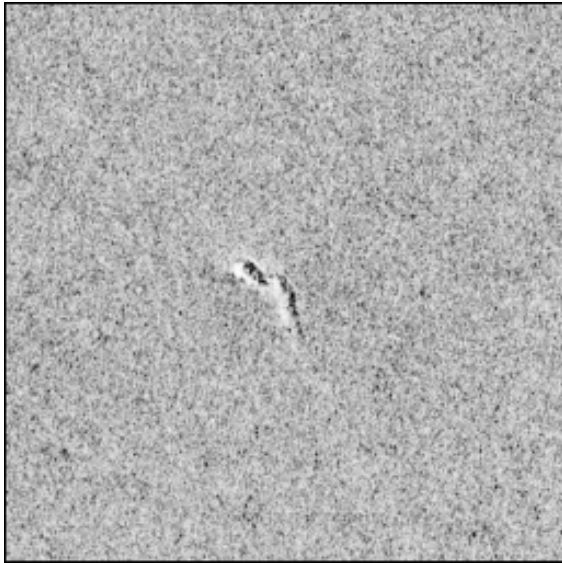
Name: EER001_T091
Easting: 327186.739
Northing: 4390008.581
Latitude: 39.642418458 N
Longitude: 18.986014403 E
Height: 0.22 m
Width: 0.64 m
Length: 1.35 m
Depth: 878.51 m
Image: sasi-20260419-063305-er1m6l02-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 3316
Range: -160.04 m
Altitude: 40.16 m
Heading: 181.31 °
Date-time: 19/04/2026 06:36:07.310



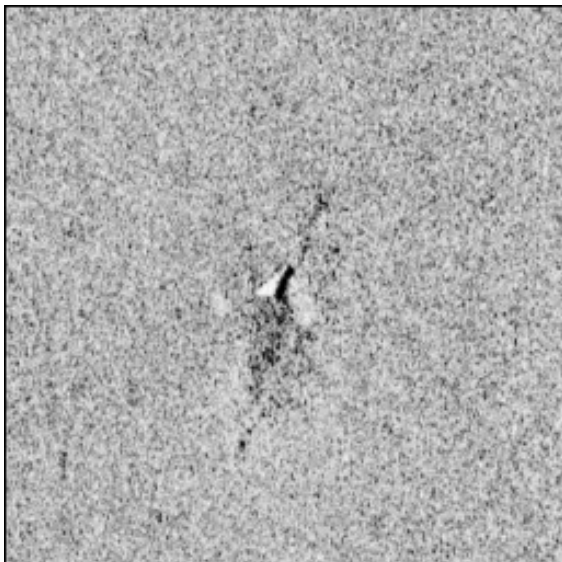
Name: EER001_T092
Easting: 328191.255
Northing: 4389673.205
Latitude: 39.639600793 N
Longitude: 18.997801531 E
Height: nmh
Width: 0.84 m
Length: 1.76 m
Depth: 895.87 m
Image: sasi-20260417-023848-er1m6l08-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 580
Range: -41.33 m
Altitude: 40.30 m
Heading: 181.21 °
Date-time: 17/04/2026 02:39:19.510



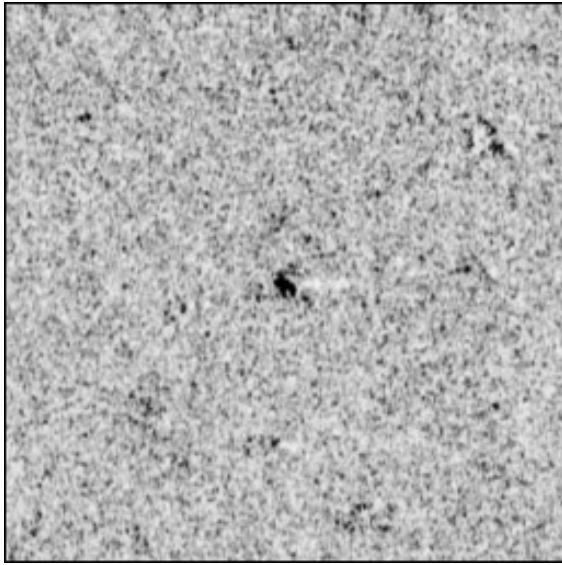
Name: EER001_T093
Easting: 327998.499
Northing: 4389419.209
Latitude: 39.637274865 N
Longitude: 18.995622558 E
Height: 0.13 m
Width: 0.95 m
Length: 1.37 m
Depth: 883.80 m
Image: sasi-20260417-043353-er1m6l07-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 225
Range: 85.41 m
Altitude: 40.03 m
Heading: 1.18 °
Date-time: 17/04/2026 04:34:05.090



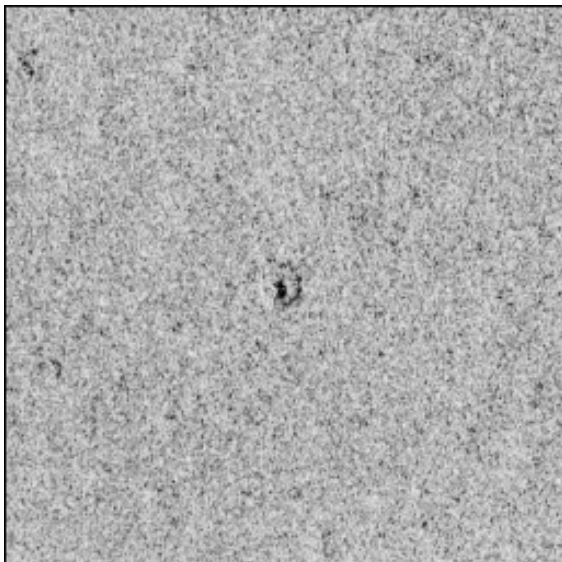
Name: EER001_T094
Easting: 327982.191
Northing: 4389107.982
Latitude: 39.634469041 N
Longitude: 18.995513559 E
Height: 0.28 m
Width: 1.00 m
Length: 6.80 m
Depth: 883.96 m
Image: sasi-20260417-042612-er1m6l07-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 5054
Range: 94.79 m
Altitude: 40.15 m
Heading: 1.30 °
Date-time: 17/04/2026 04:30:49.640



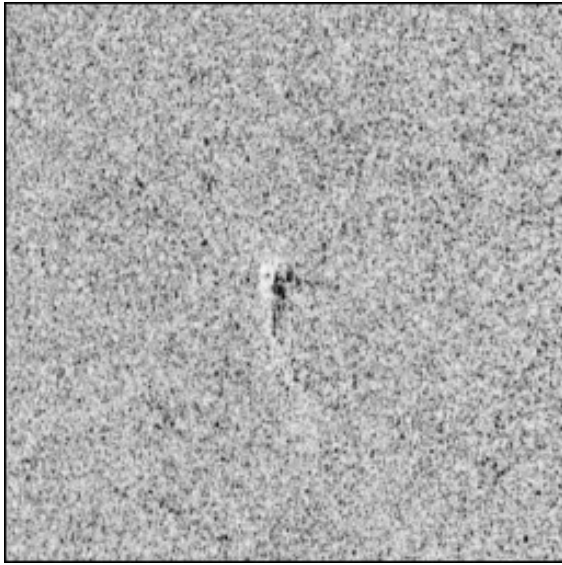
Name: EER001_T095
Easting: 327369.682
Northing: 4388985.603
Latitude: 39.633243685 N
Longitude: 18.988412173 E
Height: 0.42 m
Width: 0.65 m
Length: 2.02 m
Depth: 875.34 m
Image: sasi-20260419-054912-er1m6l03-1-L-WN-000_CH[1_2]
Description: Elongated object
Ping ID: 8395
Range: 99.90 m
Altitude: 40.03 m
Heading: 1.28 °
Date-time: 19/04/2026 05:56:52.920



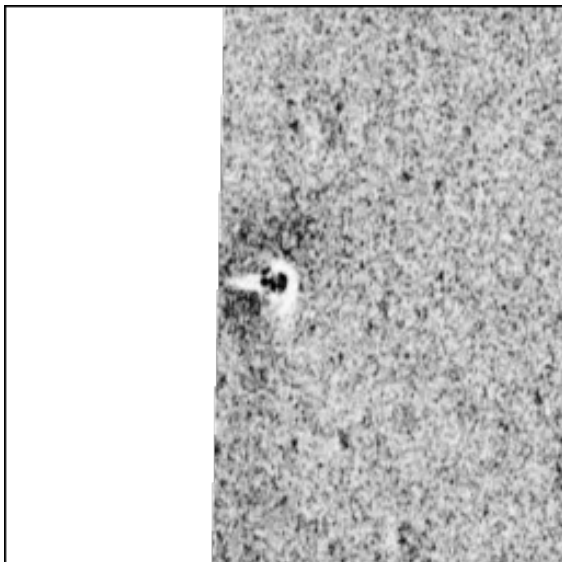
Name: EER001_T096
Easting: 328537.685
Northing: 4389035.450
Latitude: 39.633927394 N
Longitude: 19.002001704 E
Height: 0.23 m
Width: 0.55 m
Length: 1.04 m
Depth: 890.92 m
Image: sasi-20260417-015616-er1m6l09-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1367
Range: -167.97 m
Altitude: 39.86 m
Heading: 1.54 °
Date-time: 17/04/2026 01:57:31.440



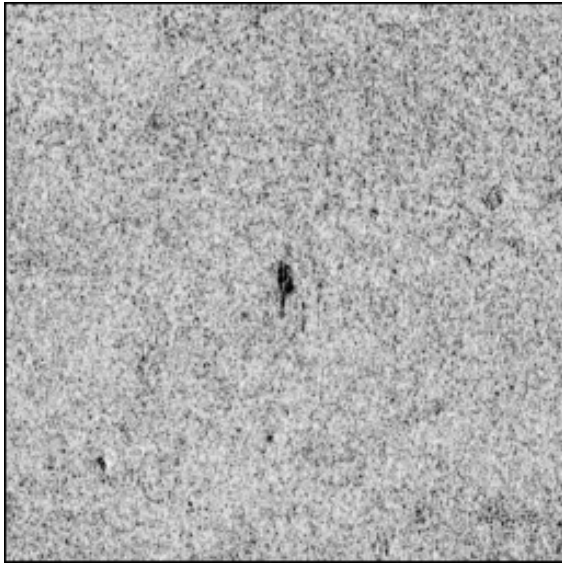
Name: EER001_T097
Easting: 328325.095
Northing: 4388934.150
Latitude: 39.632972575 N
Longitude: 18.999552154 E
Height: 0.11 m
Width: 1.86 m
Length: 2.55 m
Depth: 887.29 m
Image: sasi-20260417-024503-er1m6l08-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 2152
Range: 110.71 m
Altitude: 40.19 m
Heading: 181.03 °
Date-time: 17/04/2026 02:47:01.280



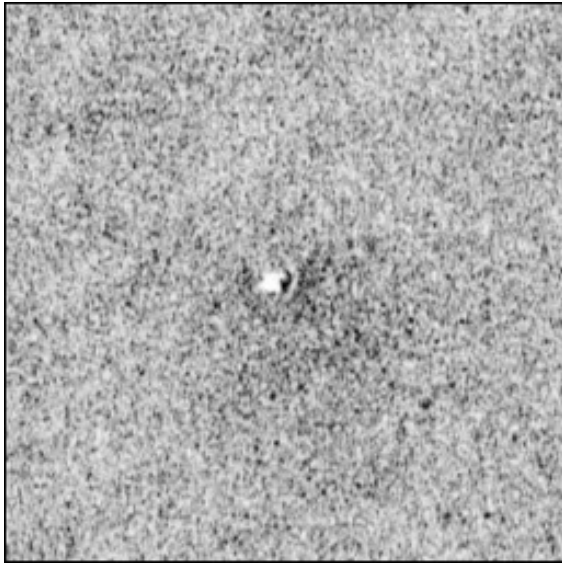
Name: EER001_T098
Easting: 327995.003
Northing: 4388885.028
Latitude: 39.632463951 N
Longitude: 18.995720721 E
Height: 0.38 m
Width: 0.89 m
Length: 1.74 m
Depth: 884.09 m
Image: sasi-20260417-042612-er1m6l07-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 2508
Range: 76.48 m
Altitude: 39.58 m
Heading: 1.30 °
Date-time: 17/04/2026 04:28:30.030



Name: EER001_T099
Easting: 326967.707
Northing: 4388452.468
Latitude: 39.628361724 N
Longitude: 18.983870269 E
Height: 0.27 m
Width: 0.80 m
Length: 1.30 m
Depth: 875.37 m
Image: sasi-20260419-082233-er1m6l01-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1442
Range: 196.59 m
Altitude: 40.11 m
Heading: 1.28 °
Date-time: 19/04/2026 08:23:52.140



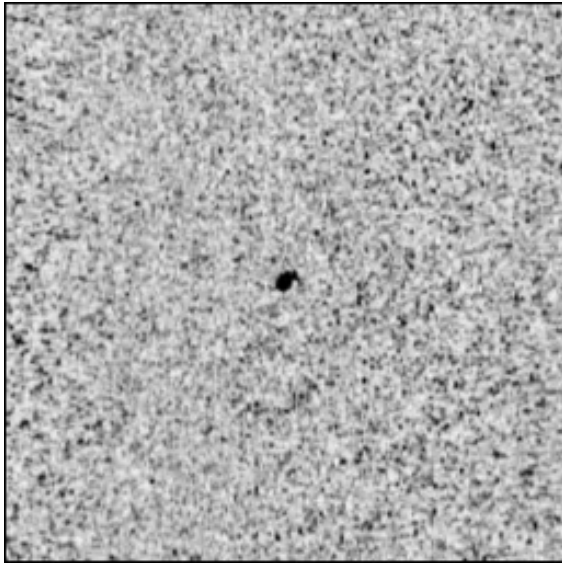
Name: EER001_T100
Easting: 327220.216
Northing: 4388137.144
Latitude: 39.625573311 N
Longitude: 18.986893049 E
Height: nmh
Width: 0.98 m
Length: 3.67 m
Depth: 881.52 m
Image: sasi-20260419-065018-er1m6l02-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 5814
Range: -80.76 m
Altitude: 40.14 m
Heading: 181.25 °
Date-time: 19/04/2026 06:55:39.780



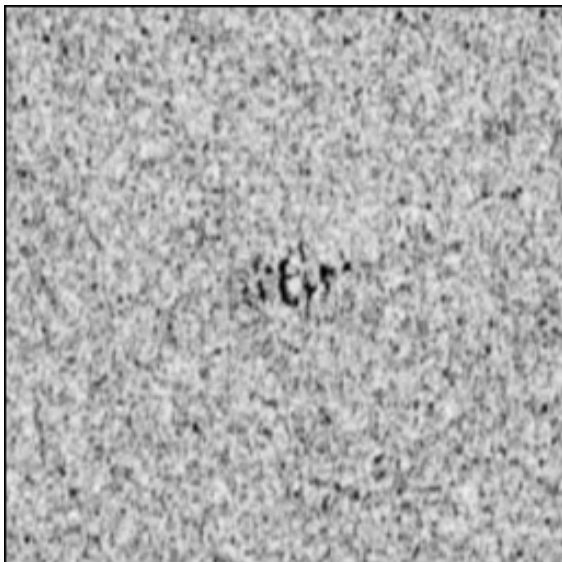
Name: EER001_T102
Easting: 328298.901
Northing: 4387104.463
Latitude: 39.616491205 N
Longitude: 18.999721732 E
Height: 0.28 m
Width: 0.52 m
Length: 0.98 m
Depth: 904.03 m
Image: sasi-20260417-030414-er1m6l08-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 2069
Range: 126.20 m
Altitude: 40.09 m
Heading: 181.35 °
Date-time: 17/04/2026 03:06:07.530



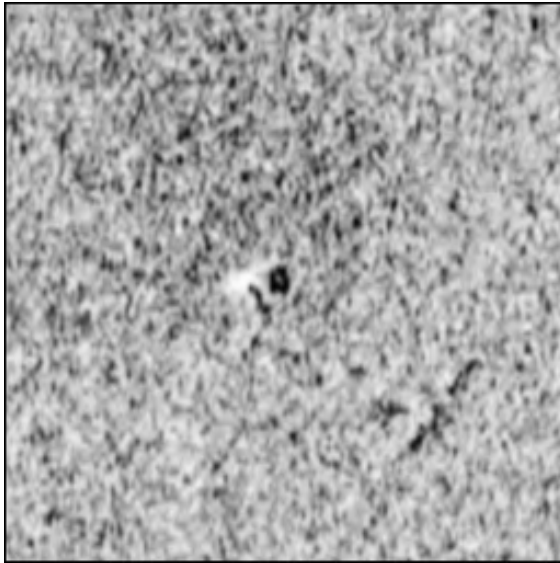
Name: EER001_T103
Easting: 328275.722
Northing: 4387131.547
Latitude: 39.616730442 N
Longitude: 18.999444826 E
Height: nmh
Width: 0.45 m
Length: 2.94 m
Depth: 904.37 m
Image: sasi-20260417-030414-er1m6l08-1-L-WN-000_CH[1_2]
Description: Elongated object
Ping ID: 1766
Range: 102.04 m
Altitude: 39.97 m
Heading: 181.35 °
Date-time: 17/04/2026 03:05:50.910



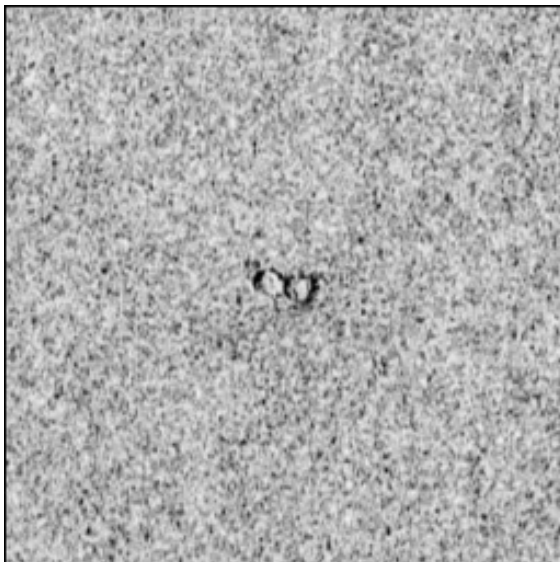
Name: EER001_T104
Easting: 328520.846
Northing: 4387017.246
Latitude: 39.615750302 N
Longitude: 19.002328445 E
Height: nmh
Width: 0.55 m
Length: 0.96 m
Depth: 908.47 m
Image: sasi-20260416-003110-er1m6l10-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 3449
Range: 47.08 m
Altitude: 40.23 m
Heading: 181.40 °
Date-time: 17/04/2026 00:34:19.440



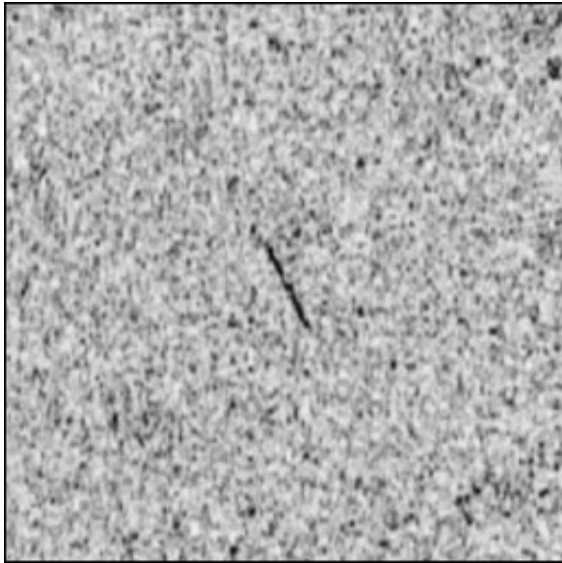
Name: EER001_T105
Easting: 328066.514
Northing: 4386293.831
Latitude: 39.609144920 N
Longitude: 18.997226463 E
Height: 0.13 m
Width: 0.35 m
Length: 1.41 m
Depth: 892.58 m
Image: sasi-20260417-031359-er1m6l08-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 724
Range: -92.29 m
Altitude: 40.12 m
Heading: 181.46 °
Date-time: 17/04/2026 03:14:38.910



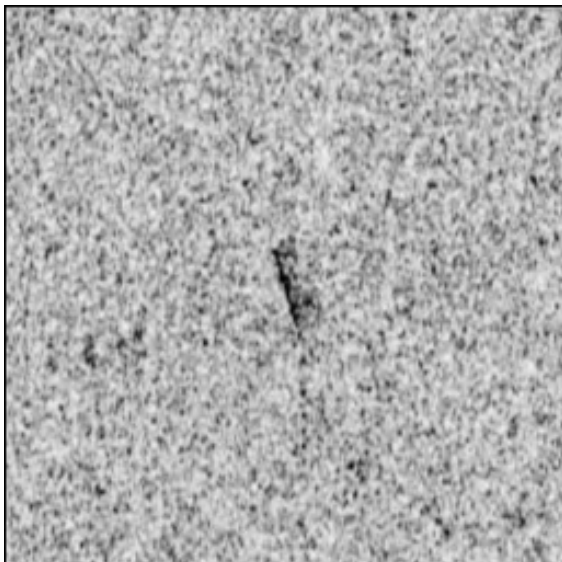
Name: EER001_T106
Easting: 327217.138
Northing: 4386012.254
Latitude: 39.606438421 N
Longitude: 18.987411638 E
Height: 0.15 m
Width: 0.46 m
Length: 0.61 m
Depth: 884.81 m
Image: sasi-20260419-052333-er1m6l03-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 2429
Range: 187.44 m
Altitude: 40.40 m
Heading: 1.27 °
Date-time: 19/04/2026 05:25:46.880



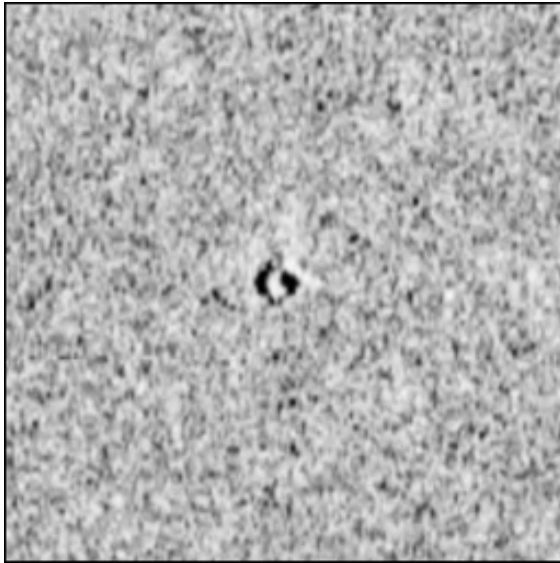
Name: EER001_T107
Easting: 327941.098
Northing: 4385653.999
Latitude: 39.603358110 N
Longitude: 18.995932554 E
Height: 0.30 m
Width: 0.79 m
Length: 2.78 m
Depth: 893.99 m
Image: sasi-20260417-055136-er1m6l06-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 2663
Range: 100.69 m
Altitude: 39.97 m
Heading: 181.37 °
Date-time: 17/04/2026 05:54:02.100



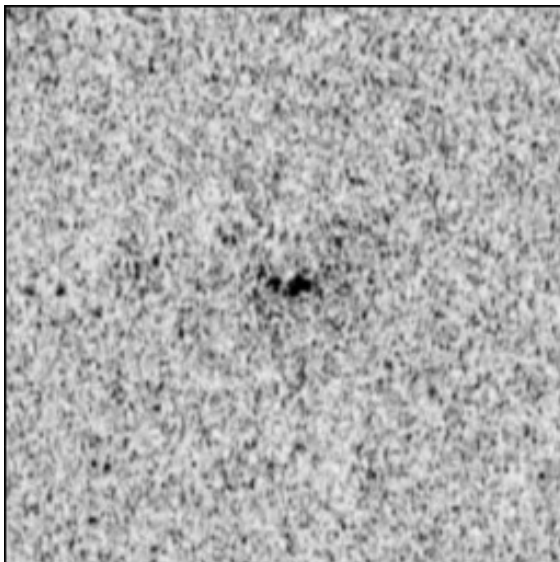
Name: EER001_T108
Easting: 327286.465
Northing: 4384411.342
Latitude: 39.592036407 N
Longitude: 18.988635889 E
Height: nmh
Width: 0.22 m
Length: 2.79 m
Depth: 881.24 m
Image: sasi-20260419-073421-er1m6l02-1-L-WN-000_CH[1_2]
Description: Linear object
Ping ID: 214
Range: 72.98 m
Altitude: 40.09 m
Heading: 181.32 °
Date-time: 19/04/2026 07:34:33.860



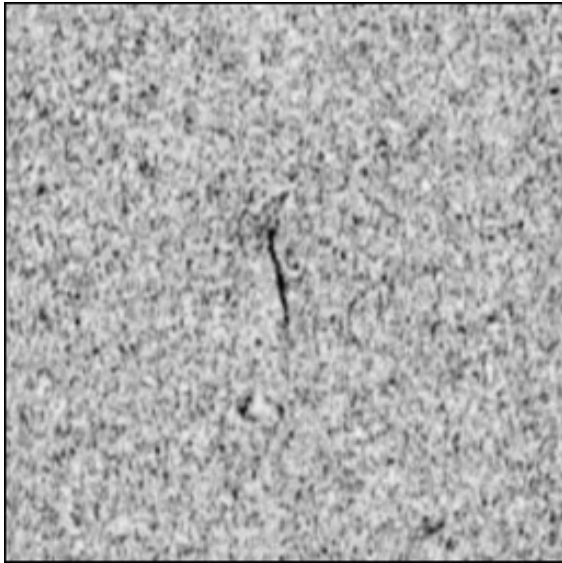
Name: EER001_T109
Easting: 327372.828
Northing: 4384398.071
Latitude: 39.591934310 N
Longitude: 18.989644513 E
Height: nmh
Width: 0.22 m
Length: 2.70 m
Depth: 880.91 m
Image: sasi-20260419-073421-er1m6l02-1-L-WN-000_CH[1_2]
Description: Elongated object
Ping ID: 334
Range: 160.96 m
Altitude: 40.06 m
Heading: 181.32 °
Date-time: 19/04/2026 07:34:40.910



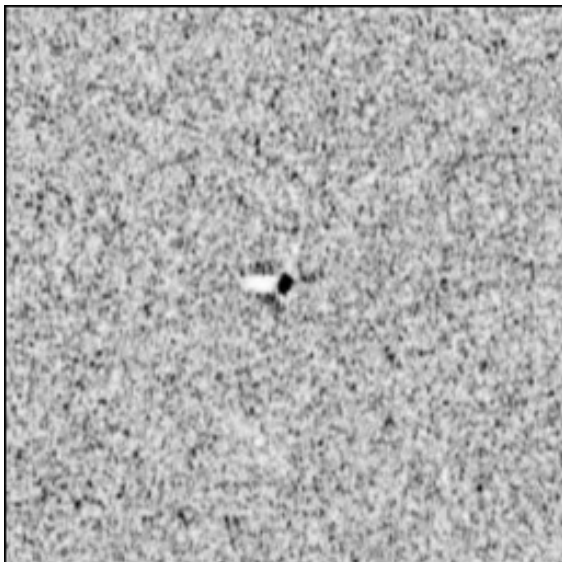
Name: EER001_T110
Easting: 328048.276
Northing: 4385566.956
Latitude: 39.602595814 N
Longitude: 18.997202794 E
Height: 0.15 m
Width: 1.06 m
Length: 1.09 m
Depth: 903.09 m
Image: sasi-20260417-032020-er1m6l08-1-L-WN-000_CH[1_2]
Description: Possible tyre
Ping ID: 2071
Range: -93.33 m
Altitude: 40.37 m
Heading: 181.29 °
Date-time: 17/04/2026 03:22:14.210



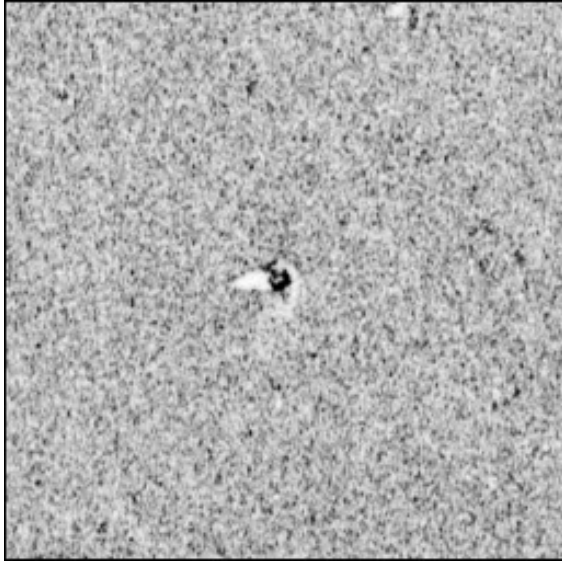
Name: EER001_T111
Easting: 327683.623
Northing: 4384629.163
Latitude: 39.594077821 N
Longitude: 18.993201775 E
Height: nmh
Width: 0.64 m
Length: 1.37 m
Depth: 888.49 m
Image: sasi-20260419-045152-er1m6l04-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 8305
Range: 171.96 m
Altitude: 40.02 m
Heading: 181.40 °
Date-time: 19/04/2026 04:59:27.800



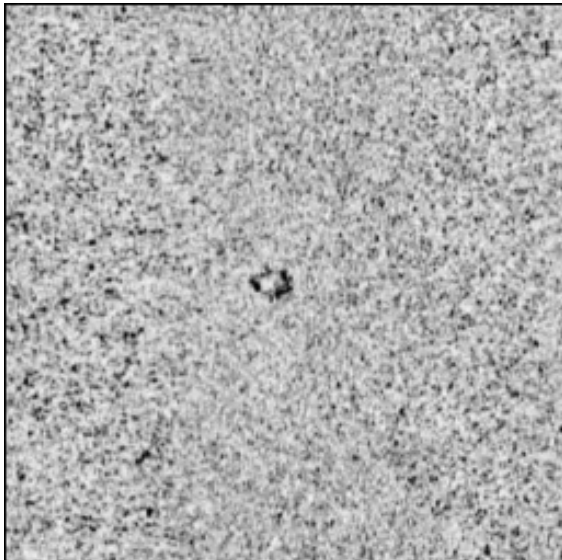
Name: EER001_T112
Easting: 326968.730
Northing: 4384902.747
Latitude: 39.596397336 N
Longitude: 18.984809540 E
Height: nmh
Width: 0.35 m
Length: 2.70 m
Depth: 881.44 m
Image: sasi-20260419-074332-er1m6l01-1-L-WN-000_CH[1_2]
Description: Linear object
Ping ID: 3624
Range: 111.24 m
Altitude: 39.97 m
Heading: 1.30 °
Date-time: 19/04/2026 07:46:50.870



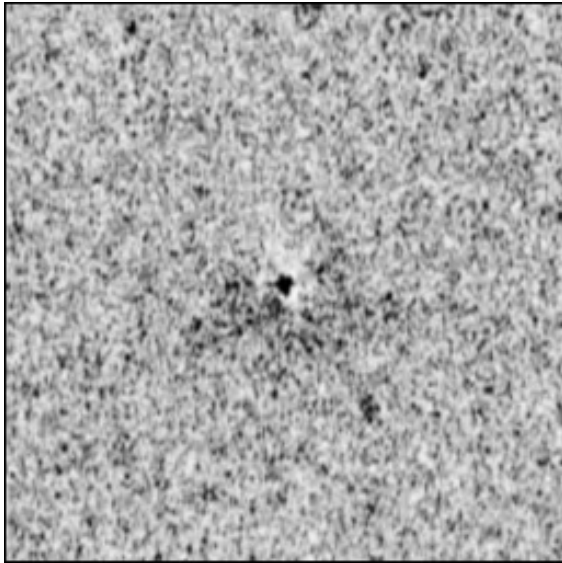
Name: EER001_T113
Easting: 327643.084
Northing: 4384515.443
Latitude: 39.593045635 N
Longitude: 18.992759494 E
Height: 0.35 m
Width: 0.41 m
Length: 0.61 m
Depth: 888.54 m
Image: sasi-20260419-045152-er1m6l04-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 9614
Range: 133.58 m
Altitude: 40.19 m
Heading: 181.40 °
Date-time: 19/04/2026 05:00:39.580



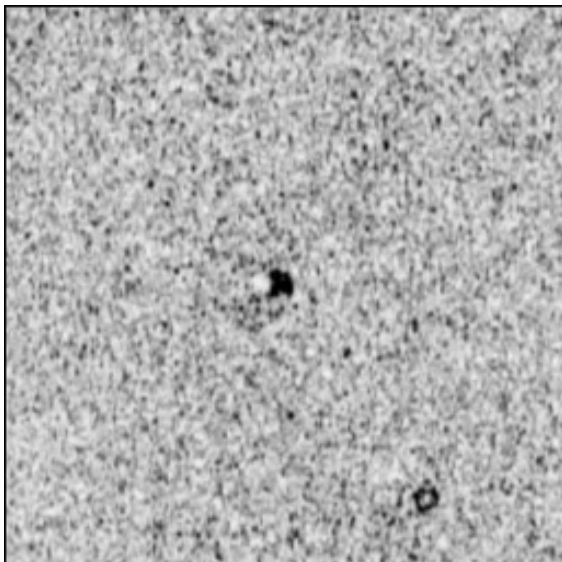
Name: EER001_T114
Easting: 326778.615
Northing: 4390939.129
Latitude: 39.650715260 N
Longitude: 18.981017067 E
Height: 0.48 m
Width: 0.98 m
Length: 1.45 m
Depth: 865.28 m
Image: sasi-20260419-111945-er1m7l13-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 3128
Range: 136.88 m
Altitude: 39.78 m
Heading: 1.35 °
Date-time: 19/04/2026 11:22:36.710



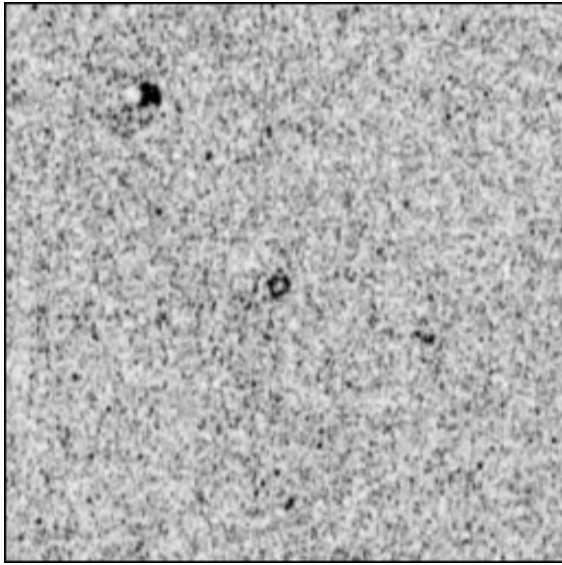
Name: EER001_T115
Easting: 326205.741
Northing: 4390706.690
Latitude: 39.648505977 N
Longitude: 18.974404943 E
Height: 0.41 m
Width: 1.16 m
Length: 1.95 m
Depth: 853.71 m
Image: sasi-20260419-163418-er1m7l08-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 6294
Range: 50.27 m
Altitude: 40.86 m
Heading: 181.44 °
Date-time: 19/04/2026 16:40:08.290



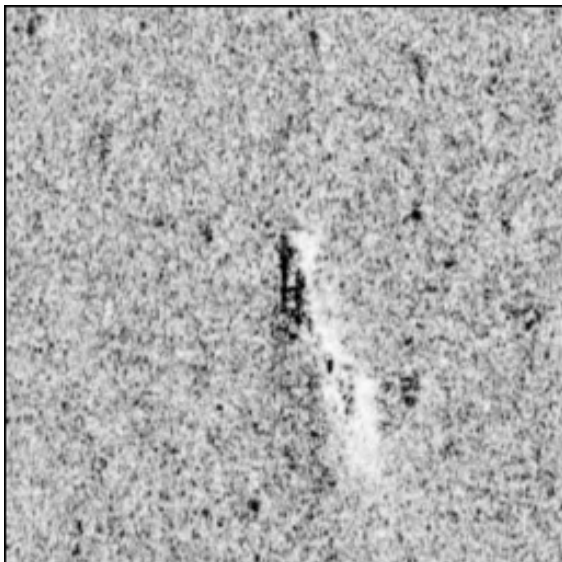
Name: EER001_T116
Easting: 327221.909
Northing: 4390499.838
Latitude: 39.646849221 N
Longitude: 18.986295684 E
Height: 0.05 m
Width: 0.61 m
Length: 0.61 m
Depth: 868.28 m
Image: sasi-20260419-085750-er1m7l14-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 6440
Range: 172.61 m
Altitude: 39.95 m
Heading: 181.34 °
Date-time: 19/04/2026 09:03:43.120



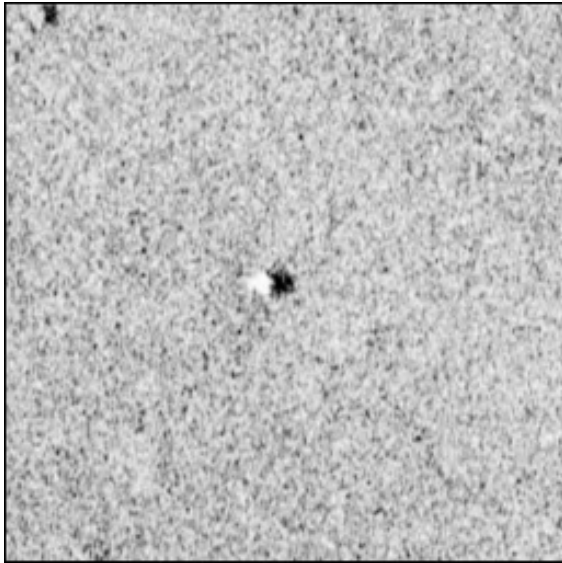
Name: EER001_T117
Easting: 325605.335
Northing: 4389436.138
Latitude: 39.636942848 N
Longitude: 18.967746310 E
Height: 0.27 m
Width: 0.86 m
Length: 1.00 m
Depth: 850.22 m
Image: sasi-20260420-122449-er1m7l05-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1518
Range: 77.07 m
Altitude: 40.65 m
Heading: 1.32 °
Date-time: 20/04/2026 12:26:12.720



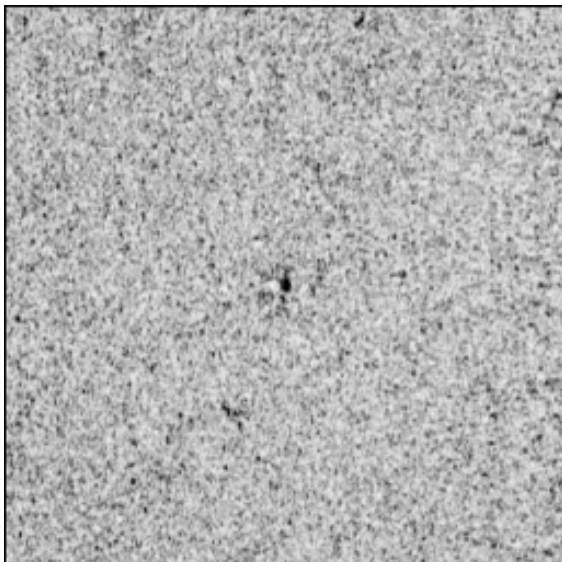
Name: EER001_T118
Easting: 325609.749
Northing: 4389429.561
Latitude: 39.636884527 N
Longitude: 18.967799451 E
Height: 0.11 m
Width: 0.68 m
Length: 0.69 m
Depth: 850.01 m
Image: sasi-20260420-122449-er1m7l05-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1444
Range: 72.49 m
Altitude: 40.70 m
Heading: 1.32 °
Date-time: 20/04/2026 12:26:08.640



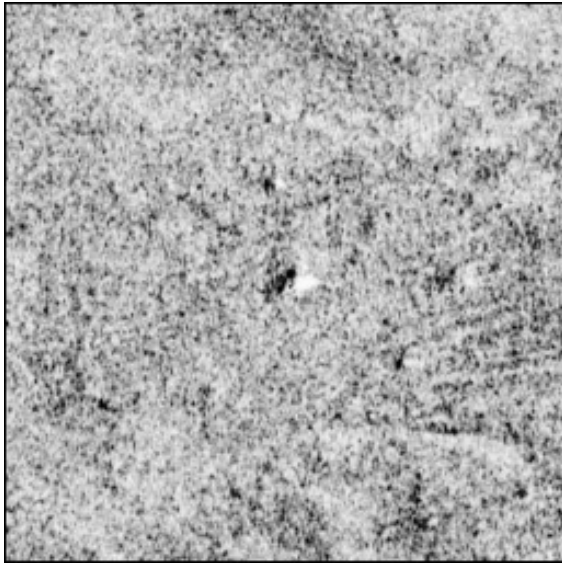
Name: EER001_T119
Easting: 327018.092
Northing: 4388771.067
Latitude: 39.631240832 N
Longitude: 18.984373717 E
Height: 0.29 m
Width: 1.13 m
Length: 3.78 m
Depth: 867.15 m
Image: sasi-20260419-105452-er1m7l13-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 5586
Range: -150.05 m
Altitude: 39.86 m
Heading: 1.30 °
Date-time: 19/04/2026 10:59:58.540



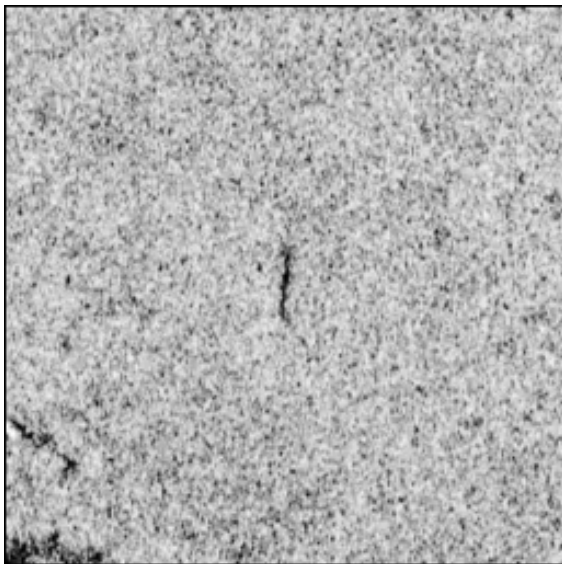
Name: EER001_T120
Easting: 325186.974
Northing: 4388701.145
Latitude: 39.630239099 N
Longitude: 18.963068170 E
Height: 0.20 m
Width: 1.00 m
Length: 1.05 m
Depth: 845.08 m
Image: sasi-20260420-144859-er1m7l03-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 2445
Range: 182.09 m
Altitude: 40.29 m
Heading: 1.24 °
Date-time: 20/04/2026 14:51:13.790



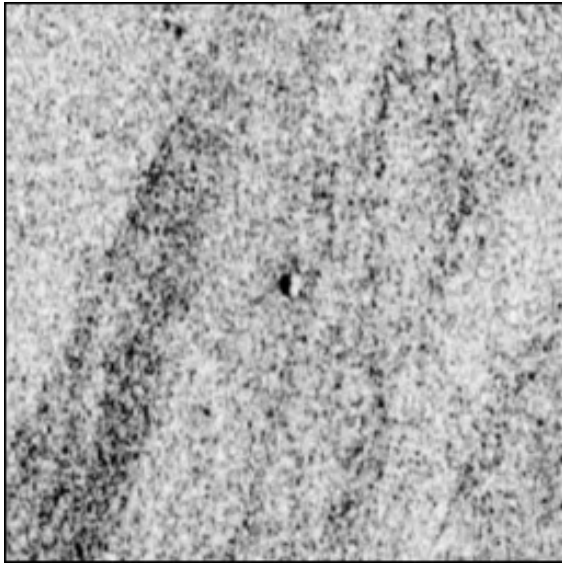
Name: EER001_T121
Easting: 325296.247
Northing: 4388697.311
Latitude: 39.630226891 N
Longitude: 18.964341674 E
Height: 0.31 m
Width: 0.41 m
Length: 0.74 m
Depth: 845.09 m
Image: sasi-20260420-144859-er1m7l03-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 2427
Range: 71.00 m
Altitude: 40.29 m
Heading: 1.24 °
Date-time: 20/04/2026 14:51:12.800



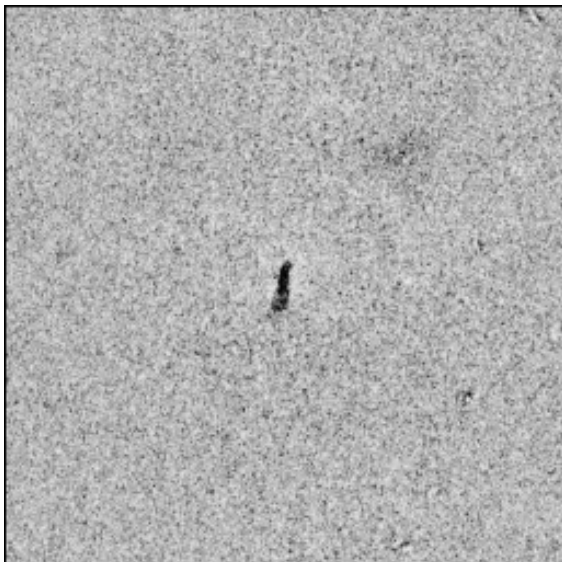
Name: EER001_T122
Easting: 326545.441
Northing: 4388032.230
Latitude: 39.624492104 N
Longitude: 18.979063125 E
Height: 0.32 m
Width: 0.82 m
Length: 1.81 m
Depth: 870.95 m
Image: sasi-20260419-115639-er1m7l12-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 6272
Range: -153.94 m
Altitude: 40.16 m
Heading: 181.26 °
Date-time: 19/04/2026 12:02:25.670



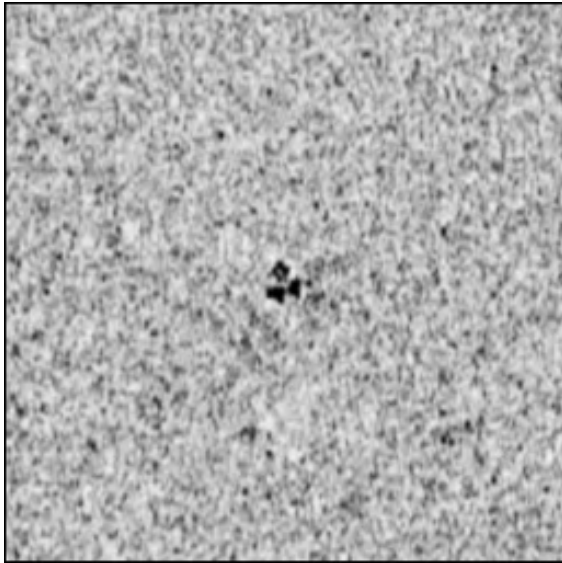
Name: EER001_T123
Easting: 325547.177
Northing: 4387283.081
Latitude: 39.617543361 N
Longitude: 18.967636513 E
Height: nmh
Width: 0.32 m
Length: 3.08 m
Depth: 863.45 m
Image: sasi-20260420-120320-er1m7l05-1-L-WN-000_CH[1_2]
Description: Linear object
Ping ID: 399
Range: 86.82 m
Altitude: 40.08 m
Heading: 1.30 °
Date-time: 20/04/2026 12:03:42.420



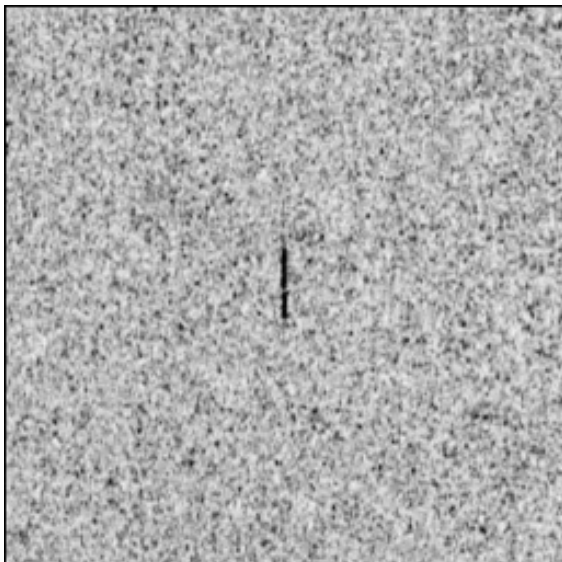
Name: EER001_T124
Easting: 325410.731
Northing: 4387082.406
Latitude: 39.615708521 N
Longitude: 18.966100772 E
Height: 0.18 m
Width: 0.47 m
Length: 0.76 m
Depth: 863.47 m
Image: sasi-20260420-132603-er1m7l04-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 6716
Range: -67.13 m
Altitude: 40.31 m
Heading: 181.23 °
Date-time: 20/04/2026 13:32:11.230



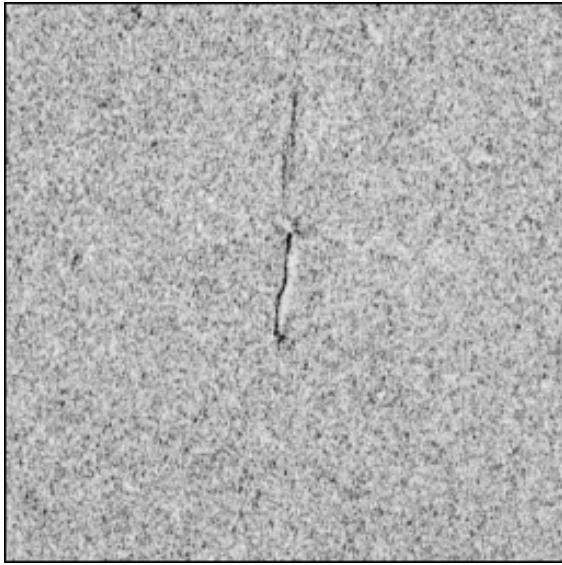
Name: EER001_T125
Easting: 325608.817
Northing: 4386048.979
Latitude: 39.606443161 N
Longitude: 18.968679130 E
Height: nmh
Width: 0.95 m
Length: 4.30 m
Depth: 860.38 m
Image: sasi-20260420-110901-er1m7l06-1-L-WN-000_CH[1_2]
Description: Elongated object
Ping ID: 1215
Range: -145.91 m
Altitude: 40.07 m
Heading: 181.33 °
Date-time: 20/04/2026 11:10:07.720



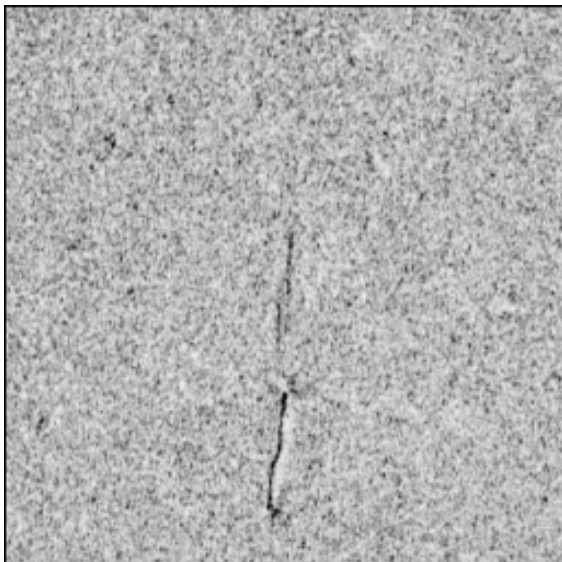
Name: EER001_T126
Easting: 326870.283
Northing: 4386122.556
Latitude: 39.607361626 N
Longitude: 18.983344964 E
Height: nmh
Width: 0.95 m
Length: 1.12 m
Depth: 877.90 m
Image: sasi-20260419-094815-er1m7l14-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1408
Range: -85.34 m
Altitude: 39.96 m
Heading: 181.32 °
Date-time: 19/04/2026 09:49:32.050



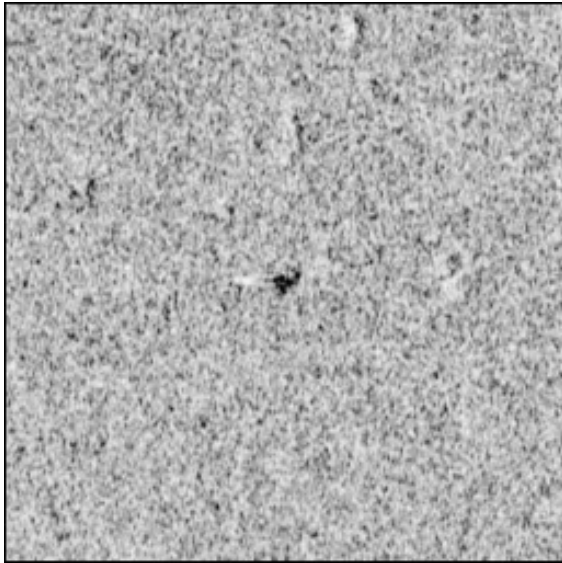
Name: EER001_T127
Easting: 326427.201
Northing: 4385792.239
Latitude: 39.604297510 N
Longitude: 18.978273395 E
Height: nmh
Width: 0.29 m
Length: 3.09 m
Depth: 869.69 m
Image: sasi-20260419-130040-er1m7l11-1-L-WN-000_CH[1_2]
Description: Linear object
Ping ID: 951
Range: 71.12 m
Altitude: 40.22 m
Heading: 1.27 °
Date-time: 19/04/2026 13:01:31.990



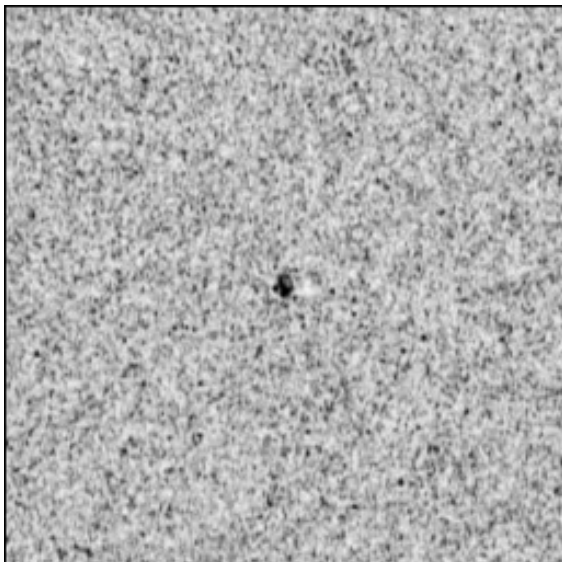
Name: EER001_T128
Easting: 326547.904
Northing: 4385369.788
Latitude: 39.600517865 N
Longitude: 18.979789059 E
Height: 0.14 m
Width: 0.19 m
Length: 6.42 m
Depth: 876.05 m
Image: sasi-20260419-122734-er1m7l12-1-L-WN-000_CH[1_2]
Description: Linear object
Ping ID: 2917
Range: -90.38 m
Altitude: 40.22 m
Heading: 181.33 °
Date-time: 19/04/2026 12:30:13.910



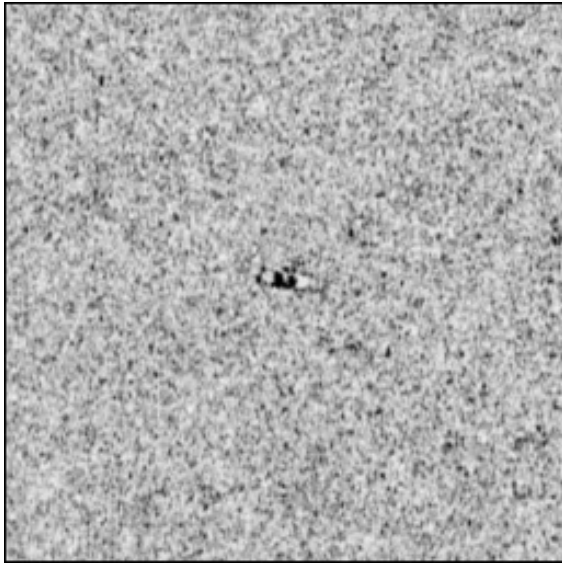
Name: EER001_T129
Easting: 326547.403
Northing: 4385360.991
Latitude: 39.600438556 N
Longitude: 18.979785536 E
Height: nmh
Width: 0.25 m
Length: 5.91 m
Depth: 876.02 m
Image: sasi-20260419-122734-er1m7l12-1-L-WN-000_CH[1_2]
Description: Linear object
Ping ID: 3016
Range: -90.61 m
Altitude: 40.12 m
Heading: 181.33 °
Date-time: 19/04/2026 12:30:19.340



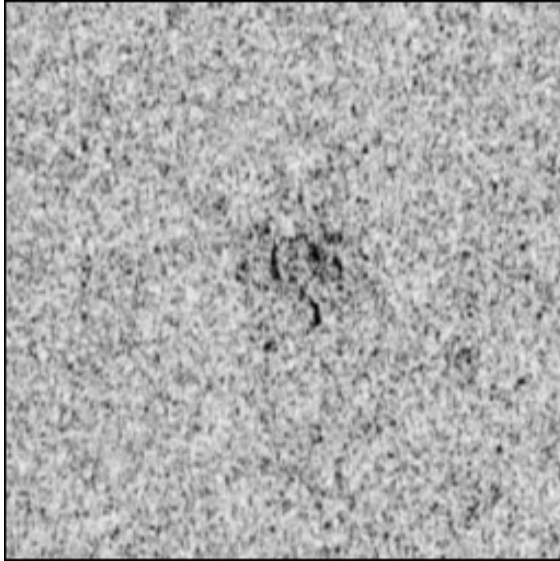
Name: EER001_T130
Easting: 325698.017
Northing: 4385449.407
Latitude: 39.601062320 N
Longitude: 18.969875240 E
Height: 0.17 m
Width: 0.67 m
Length: 0.83 m
Depth: 861.66 m
Image: sasi-20260419-175724-er1m7l07-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 6478
Range: 196.20 m
Altitude: 39.58 m
Heading: 1.26 °
Date-time: 19/04/2026 18:03:22.210



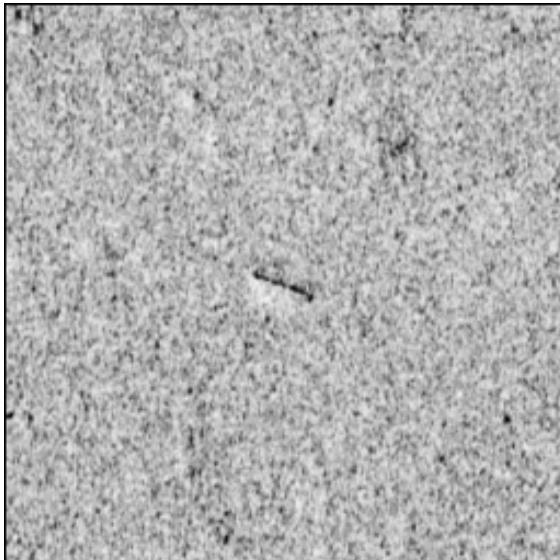
Name: EER001_T131
Easting: 326450.335
Northing: 4384728.401
Latitude: 39.594722542 N
Longitude: 18.978821278 E
Height: 0.17 m
Width: 0.73 m
Length: 0.95 m
Depth: 869.10 m
Image: sasi-20260419-123038-er1m7l12-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 6913
Range: -173.64 m
Altitude: 40.28 m
Heading: 181.38 °
Date-time: 19/04/2026 12:36:56.910



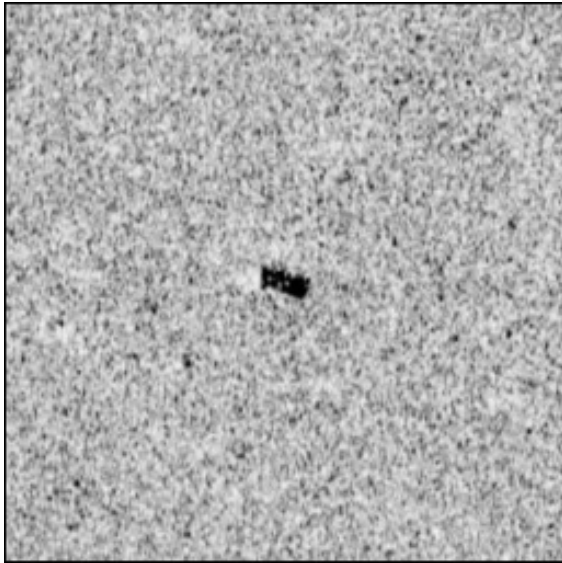
Name: EER001_T132
Easting: 325883.527
Northing: 4384577.572
Latitude: 39.593249371 N
Longitude: 18.972263659 E
Height: nmh
Width: 0.81 m
Length: 2.66 m
Depth: 865.60 m
Image: sasi-20260419-174043-er1m7l08-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 3843
Range: -135.58 m
Altitude: 40.12 m
Heading: 181.45 °
Date-time: 19/04/2026 17:44:13.790



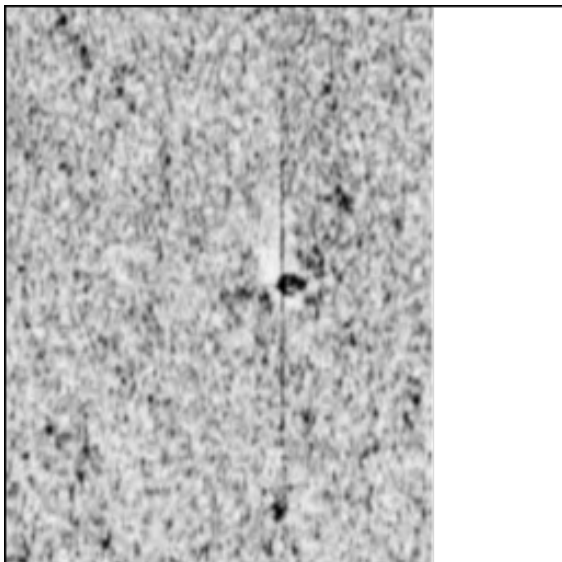
Name: EER001_T133
Easting: 323359.050
Northing: 4390754.356
Latitude: 39.648351973 N
Longitude: 18.941233616 E
Height: nmh
Width: 0.32 m
Length: 3.24 m
Depth: 790.15 m
Image: sasi-20260421-175321-er1m8l04-1-L-WN-000_CH[1_2]
Description: Probable rope
Ping ID: 2097
Range: -98.08 m
Altitude: 39.69 m
Heading: 181.34 °
Date-time: 21/04/2026 17:55:16.370



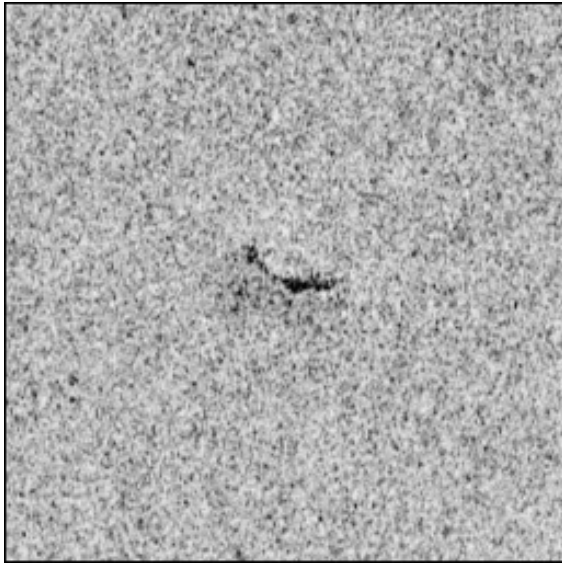
Name: EER001_T134
Easting: 323420.173
Northing: 4390734.536
Latitude: 39.648186123 N
Longitude: 18.941950870 E
Height: 0.05 m
Width: 0.20 m
Length: 2.69 m
Depth: 791.09 m
Image: sasi-20260421-062557-er1m8l05-1-L-WN-000_CH[1_2]
Description: Linear object
Ping ID: 4269
Range: 196.38 m
Altitude: 39.97 m
Heading: 1.36 °
Date-time: 21/04/2026 06:29:52.050



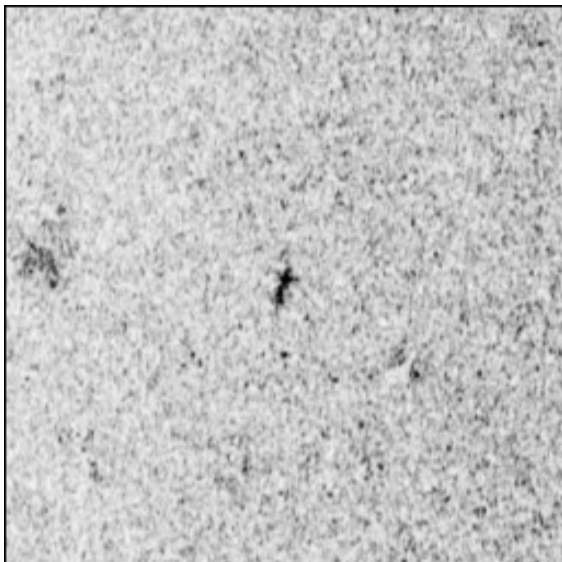
Name: EER001_T135
Easting: 322903.179
Northing: 4390676.574
Latitude: 39.647557306 N
Longitude: 18.935944470 E
Height: 0.33 m
Width: 0.63 m
Length: 1.90 m
Depth: 787.91 m
Image: sasi-20260421-224354-er1m8l01-1-L-WN-000_CH[1_2]
Description: Rectangular object
Ping ID: 1912
Range: 109.74 m
Altitude: 39.76 m
Heading: 1.34 °
Date-time: 21/04/2026 22:45:39.580



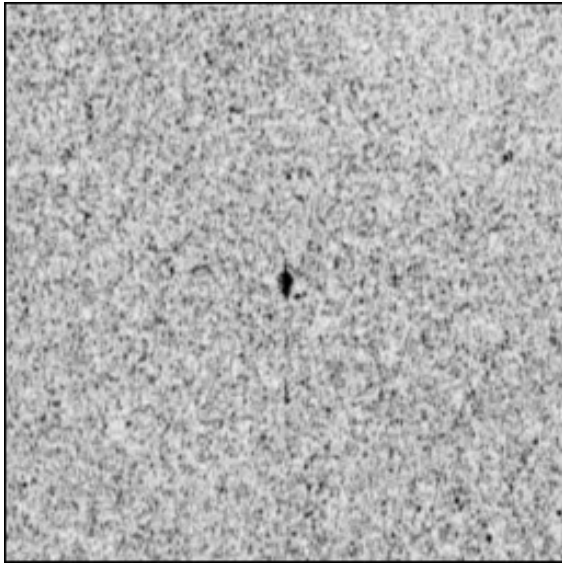
Name: EER001_T136
Easting: 324734.463
Northing: 4390218.171
Latitude: 39.643806803 N
Longitude: 18.957396694 E
Height: 0.07 m
Width: 0.50 m
Length: 0.76 m
Depth: 825.46 m
Image: sasi-20260420-180252-er1m8l14-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 2642
Range: -213.71 m
Altitude: 39.98 m
Heading: 181.27 °
Date-time: 20/04/2026 18:05:16.760



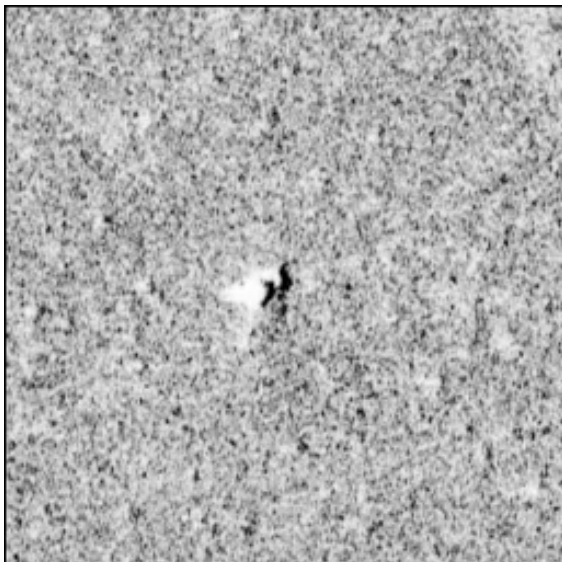
Name: EER001_T137
Easting: 323339.970
Northing: 4389876.941
Latitude: 39.640447321 N
Longitude: 18.941245768 E
Height: nmh
Width: 0.77 m
Length: 4.90 m
Depth: 803.07 m
Image: sasi-20260421-180002-er1m8l04-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 4811
Range: -98.67 m
Altitude: 39.37 m
Heading: 181.26 °
Date-time: 21/04/2026 18:04:26.290



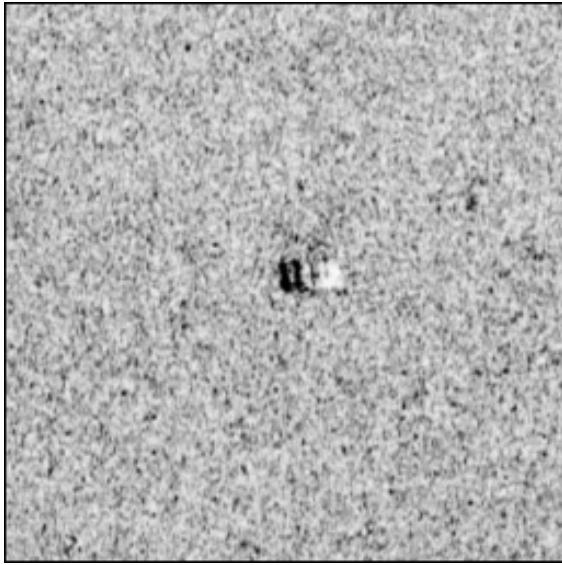
Name: EER001_T138
Easting: 323086.538
Northing: 4388960.724
Latitude: 39.632144853 N
Longitude: 18.938539153 E
Height: nmh
Width: 0.43 m
Length: 1.41 m
Depth: 812.71 m
Image: sasi-20260421-195337-er1m8l03-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1141
Range: 188.05 m
Altitude: 40.48 m
Heading: 1.25 °
Date-time: 21/04/2026 19:54:41.390



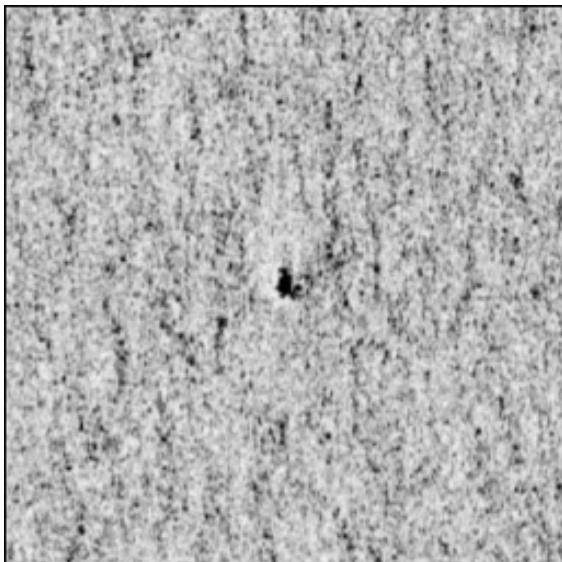
Name: EER001_T139
Easting: 323283.888
Northing: 4388867.901
Latitude: 39.631349807 N
Longitude: 18.940862138 E
Height: nmh
Width: 0.56 m
Length: 1.08 m
Depth: 821.46 m
Image: sasi-20260421-181410-er1m8l04-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 876
Range: -133.71 m
Altitude: 40.48 m
Heading: 181.24 °
Date-time: 21/04/2026 18:14:59.830



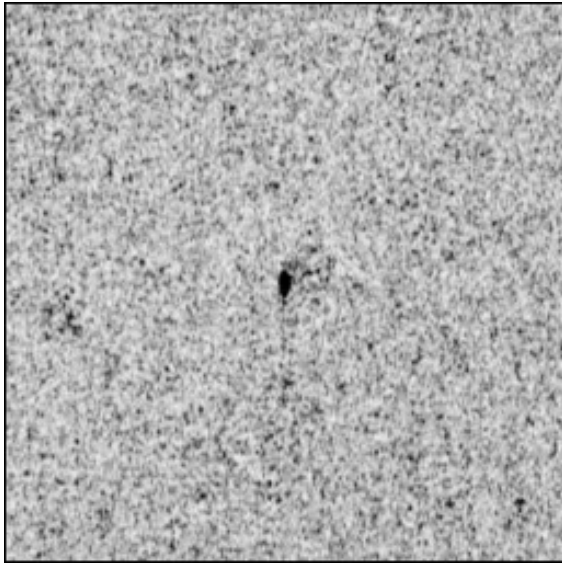
Name: EER001_T140
Easting: 323082.329
Northing: 4388444.562
Latitude: 39.627496183 N
Longitude: 18.938628125 E
Height: 0.40 m
Width: 0.55 m
Length: 2.39 m
Depth: 822.74 m
Image: sasi-20260421-194623-er1m8l03-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 3173
Range: 180.28 m
Altitude: 39.88 m
Heading: 1.30 °
Date-time: 21/04/2026 19:49:17.280



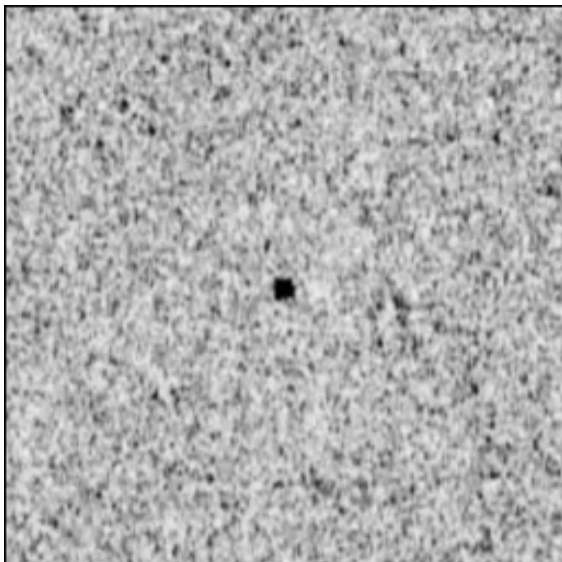
Name: EER001_T141
Easting: 324173.052
Northing: 4388329.282
Latitude: 39.626682903 N
Longitude: 18.951359754 E
Height: 0.23 m
Width: 0.84 m
Length: 1.28 m
Depth: 833.01 m
Image: sasi-20260420-232753-er1m8l10-1-L-WN-000_CH[1_2]
Description: Rectangular object
Ping ID: 3373
Range: -131.10 m
Altitude: 39.84 m
Heading: 181.27 °
Date-time: 20/04/2026 23:30:57.830



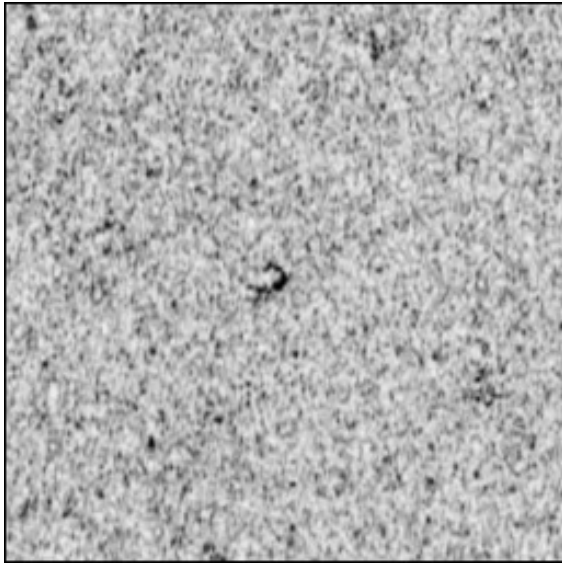
Name: EER001_T142
Easting: 324505.972
Northing: 4387623.417
Latitude: 39.620395175 N
Longitude: 18.955423575 E
Height: nmh
Width: 1.00 m
Length: 1.14 m
Depth: 846.12 m
Image: sasi-20260420-210414-er1m8l12-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1166
Range: -81.52 m
Altitude: 40.03 m
Heading: 181.31 °
Date-time: 20/04/2026 21:05:18.210



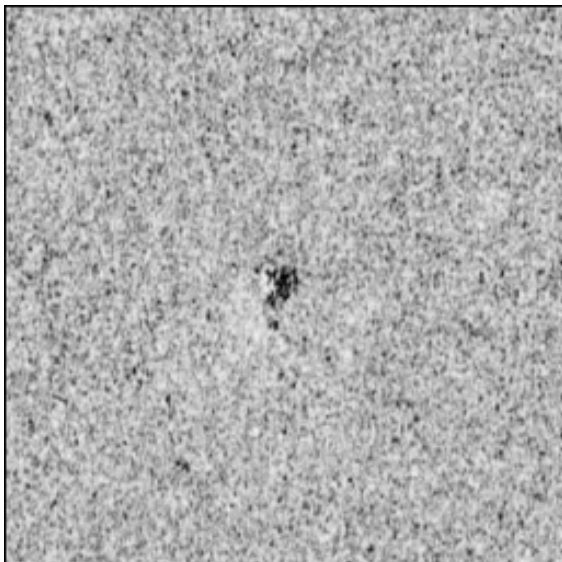
Name: EER001_T143
Easting: 324135.738
Northing: 4387479.906
Latitude: 39.619026937 N
Longitude: 18.951150901 E
Height: nmh
Width: 0.52 m
Length: 1.09 m
Depth: 847.88 m
Image: sasi-20260420-233844-er1m8l10-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1211
Range: -149.55 m
Altitude: 40.47 m
Heading: 181.29 °
Date-time: 20/04/2026 23:39:50.410



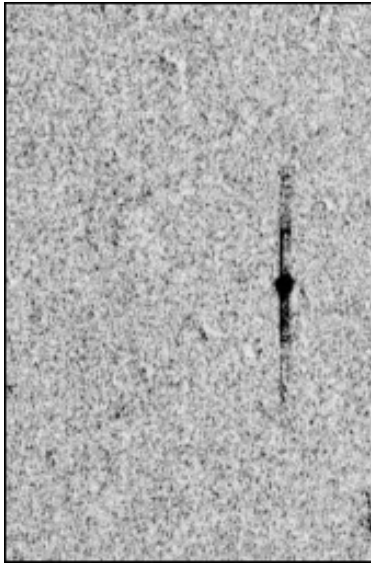
Name: EER001_T144
Easting: 323500.071
Northing: 4387197.585
Latitude: 39.616353937 N
Longitude: 18.943824992 E
Height: nmh
Width: 0.46 m
Length: 0.59 m
Depth: 838.63 m
Image: sasi-20260421-044327-er1m8l06-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 6075
Range: -179.25 m
Altitude: 39.99 m
Heading: 181.31 °
Date-time: 21/04/2026 04:49:00.780



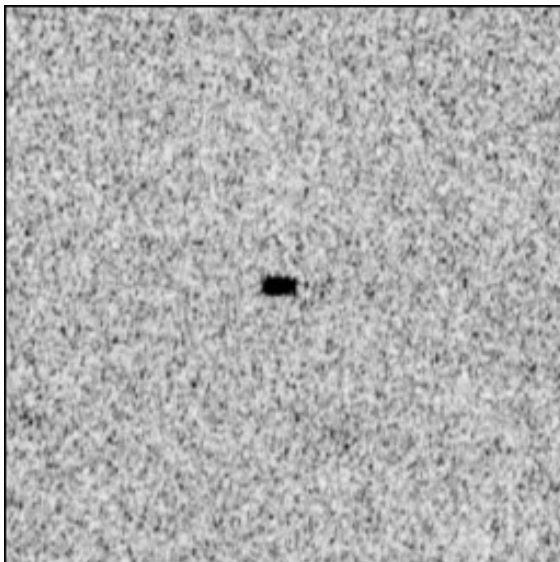
Name: EER001_T145
Easting: 323084.663
Northing: 4387198.208
Latitude: 39.616273816 N
Longitude: 18.938988385 E
Height: nmh
Width: 0.28 m
Length: 1.05 m
Depth: 831.08 m
Image: sasi-20260421-192950-er1m8l03-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 7029
Range: 149.73 m
Altitude: 40.07 m
Heading: 1.28 °
Date-time: 21/04/2026 19:36:15.660



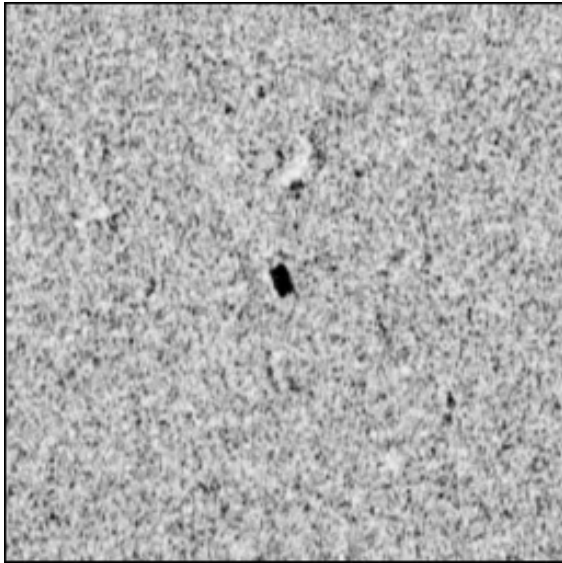
Name: EER001_T146
Easting: 324017.320
Northing: 4386879.429
Latitude: 39.613595538 N
Longitude: 18.949931718 E
Height: 0.13 m
Width: 1.42 m
Length: 1.60 m
Depth: 846.25 m
Image: sasi-20260421-004019-er1m8l09-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 3576
Range: 111.17 m
Altitude: 40.04 m
Heading: 1.29 °
Date-time: 21/04/2026 00:43:35.040



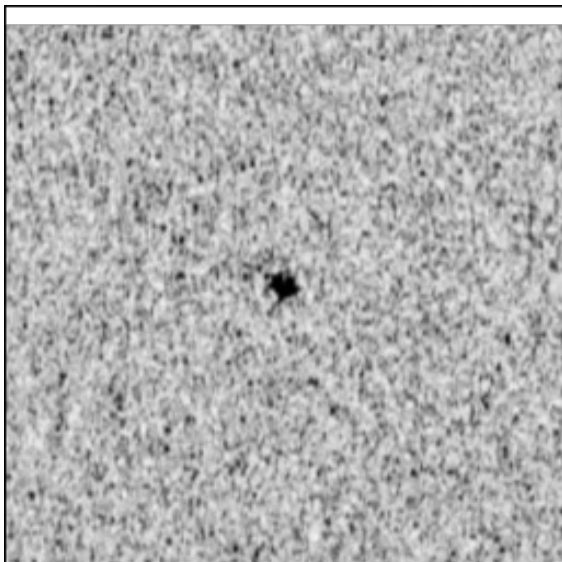
Name: EER001_T147
Easting: 324058.038
Northing: 4386763.029
Latitude: 39.612555765 N
Longitude: 18.950436697 E
Height: nmh
Width: 1.17 m
Length: 1.27 m
Depth: 848.37 m
Image: sasi-20260420-234333-er1m8l10-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 4147
Range: -212.07 m
Altitude: 40.03 m
Heading: 181.30 °
Date-time: 20/04/2026 23:47:20.900



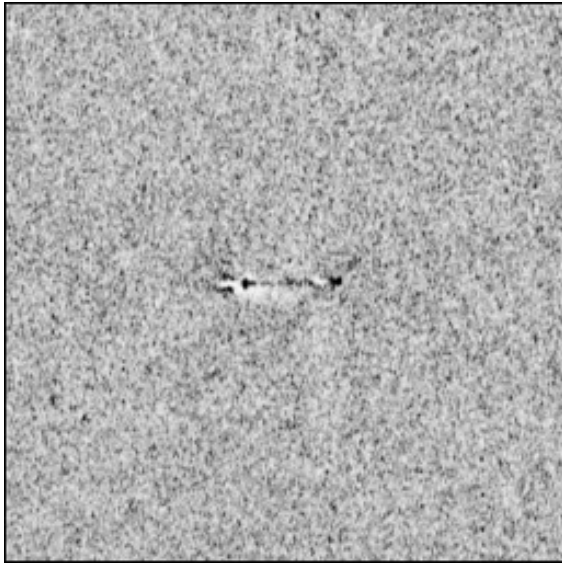
Name: EER001_T148
Easting: 324015.618
Northing: 4386627.227
Latitude: 39.611324199 N
Longitude: 18.949978916 E
Height: nmh
Width: 0.67 m
Length: 1.15 m
Depth: 846.09 m
Image: sasi-20260421-004019-er1m8l09-1-L-WN-000_CH[1_2]
Description: Rectangular object
Ping ID: 696
Range: 107.17 m
Altitude: 40.09 m
Heading: 1.29 °
Date-time: 21/04/2026 00:40:56.990



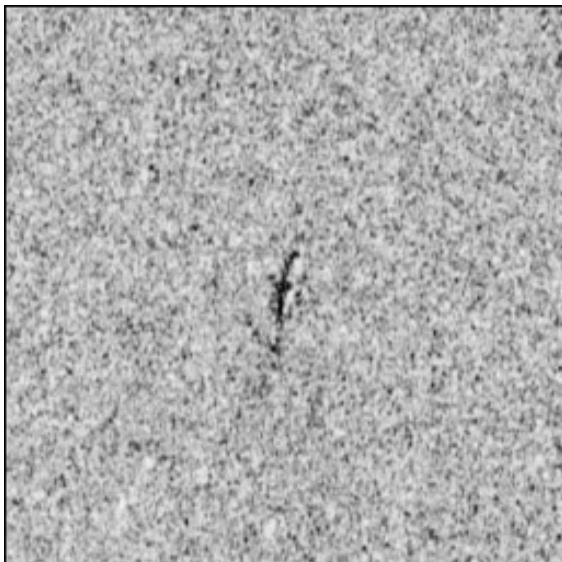
Name: EER001_T149
Easting: 323989.548
Northing: 4386593.378
Latitude: 39.611014042 N
Longitude: 18.949684407 E
Height: 0.08 m
Width: 0.67 m
Length: 1.20 m
Depth: 845.89 m
Image: sasi-20260421-004019-er1m8l09-1-L-WN-000_CH[1_2]
Description: Rectangular object
Ping ID: 302
Range: 132.81 m
Altitude: 39.91 m
Heading: 1.29 °
Date-time: 21/04/2026 00:40:35.420



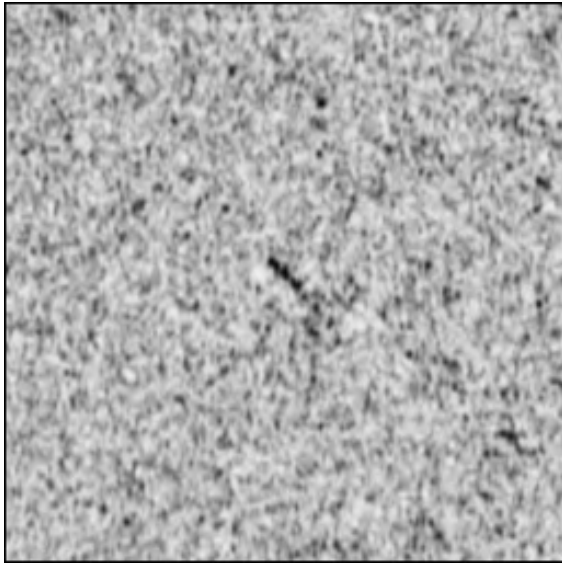
Name: EER001_T150
Easting: 323118.357
Northing: 4385835.181
Latitude: 39.604007307 N
Longitude: 18.939744632 E
Height: 0.14 m
Width: 0.73 m
Length: 0.78 m
Depth: 829.63 m
Image: sasi-20260421-191608-er1m8l03-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 6350
Range: 84.82 m
Altitude: 40.70 m
Heading: 1.24 °
Date-time: 21/04/2026 19:22:01.540



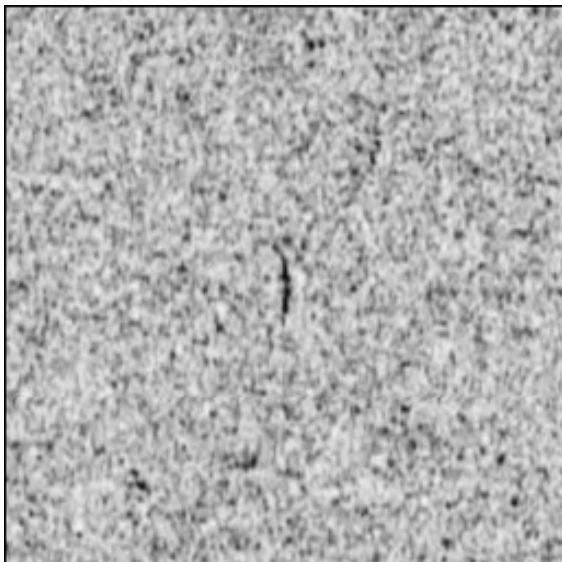
Name: EER001_T151
Easting: 323034.122
Northing: 4385735.662
Latitude: 39.603093782 N
Longitude: 18.938790666 E
Height: 0.27 m
Width: 0.47 m
Length: 5.20 m
Depth: 829.33 m
Image: sasi-20260421-191608-er1m8l03-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 5269
Range: 168.15 m
Altitude: 39.72 m
Heading: 1.24 °
Date-time: 21/04/2026 19:20:58.010



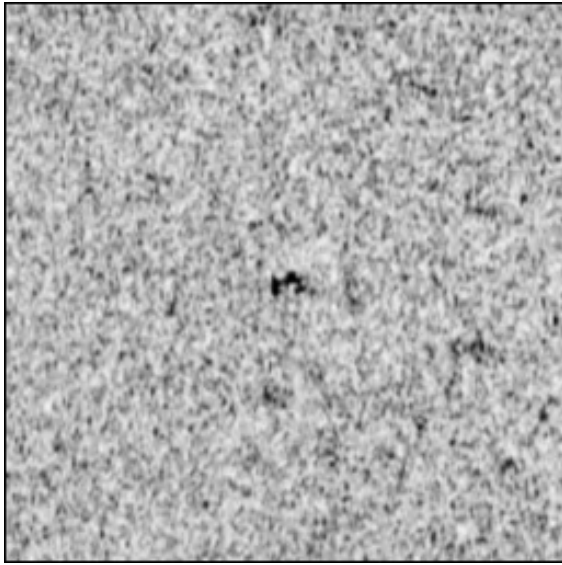
Name: EER001_T152
Easting: 322793.780
Northing: 4385761.099
Latitude: 39.603273139 N
Longitude: 18.935986186 E
Height: nmh
Width: 0.61 m
Length: 2.90 m
Depth: 826.21 m
Image: sasi-20260421-215256-er1m8l01-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1455
Range: 107.82 m
Altitude: 39.72 m
Heading: 1.30 °
Date-time: 21/04/2026 21:54:16.230



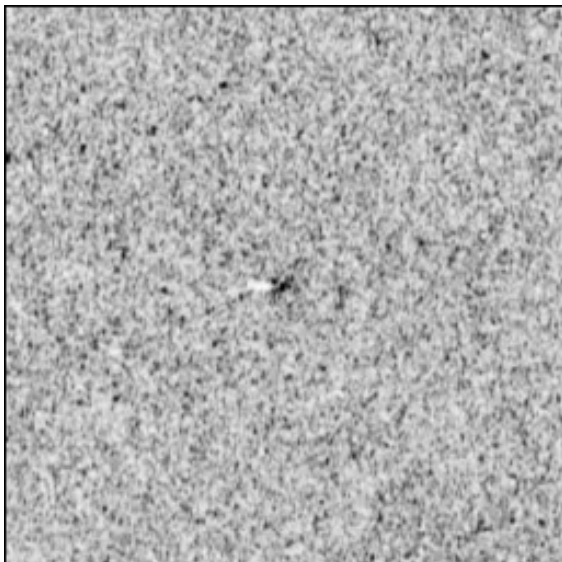
Name: EER001_T153
Easting: 324421.488
Northing: 4385636.335
Latitude: 39.602484866 N
Longitude: 18.954966627 E
Height: nmh
Width: 0.18 m
Length: 0.99 m
Depth: 847.82 m
Image: sasi-20260420-212325-er1m8l12-1-L-WN-000_CH[1_2]
Description: Linear object
Ping ID: 2872
Range: -121.70 m
Altitude: 39.85 m
Heading: 181.30 °
Date-time: 20/04/2026 21:26:04.060



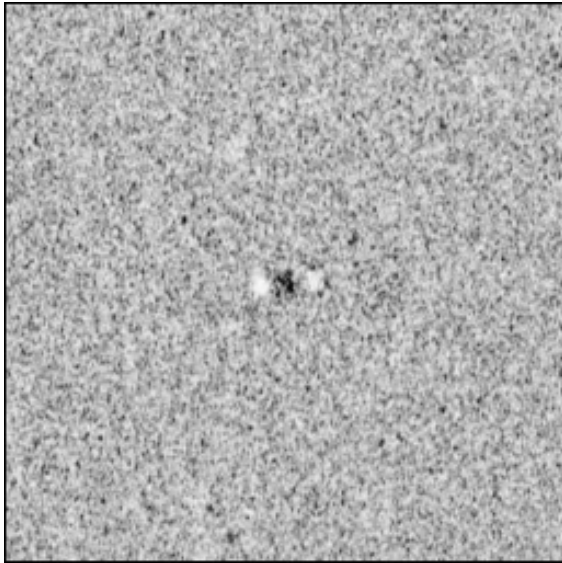
Name: EER001_T154
Easting: 322901.032
Northing: 4385062.434
Latitude: 39.597004141 N
Longitude: 18.937421347 E
Height: nmh
Width: 0.19 m
Length: 1.92 m
Depth: 828.51 m
Image: sasi-20260421-212537-er1m8l02-1-L-WN-000_CH[1_2]
Description: Linear object
Ping ID: 2556
Range: -129.50 m
Altitude: 40.03 m
Heading: 181.40 °
Date-time: 21/04/2026 21:27:57.000



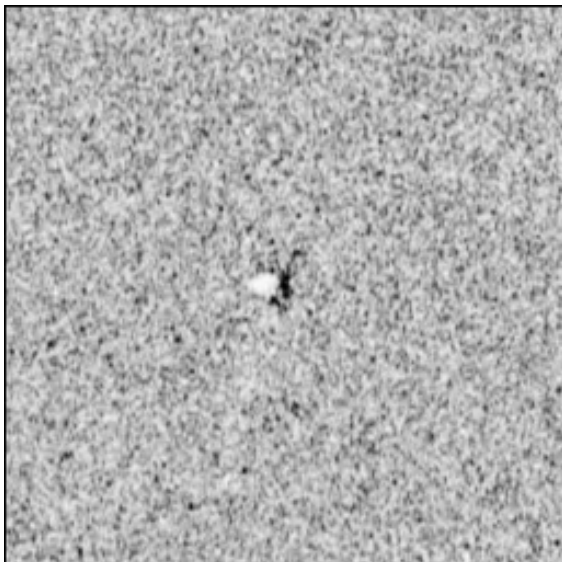
Name: EER001_T155
Easting: 324092.970
Northing: 4384821.422
Latitude: 39.595079453 N
Longitude: 18.951358819 E
Height: nmh
Width: 0.62 m
Length: 0.91 m
Depth: 841.14 m
Image: sasi-20260420-000416-er1m8l10-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 3648
Range: -131.34 m
Altitude: 40.06 m
Heading: 181.35 °
Date-time: 21/04/2026 00:07:36.190



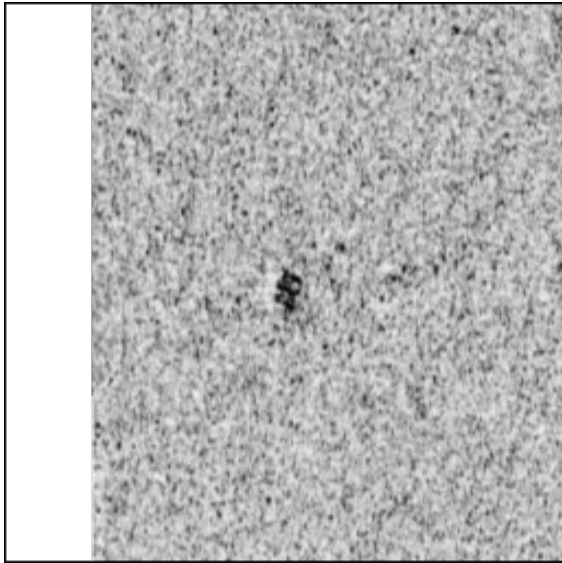
Name: EER001_T156
Easting: 323347.535
Northing: 4384648.579
Latitude: 39.593369717 N
Longitude: 18.942728666 E
Height: 0.28 m
Width: 0.44 m
Length: 0.67 m
Depth: 834.23 m
Image: sasi-20260421-052224-er1m8l05-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 4199
Range: 130.87 m
Altitude: 40.17 m
Heading: 1.43 °
Date-time: 21/04/2026 05:26:14.010



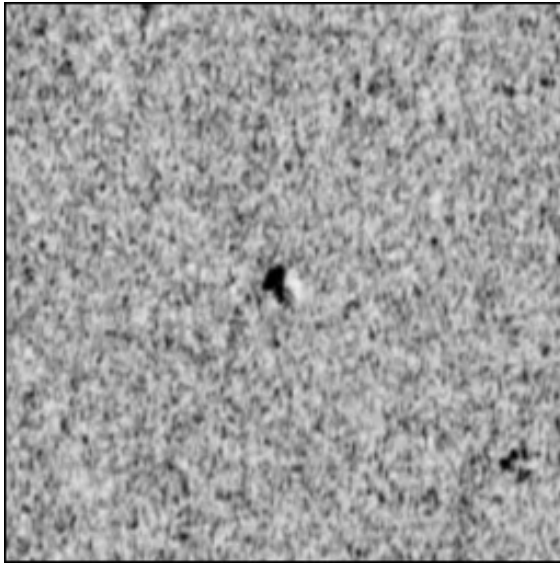
Name: EER001_T157
Easting: 323671.089
Northing: 4385356.359
Latitude: 39.599809652 N
Longitude: 18.946306182 E
Height: 0.31 m
Width: 0.88 m
Length: 1.18 m
Depth: 835.23 m
Image: sasi-20260421-025859-er1m8l07-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1791
Range: 120.27 m
Altitude: 39.63 m
Heading: 1.28 °
Date-time: 21/04/2026 03:00:37.480



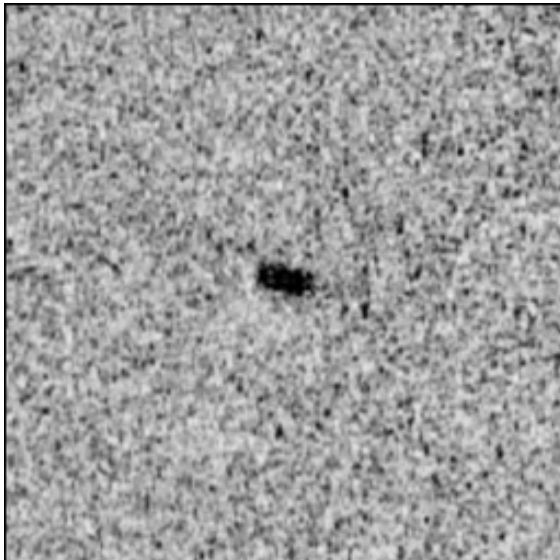
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Easting: 324055.381
Northing: 4385983.283
Latitude: 39.605533889 N
Longitude: 18.950612858 E
Height: 0.41 m
Width: 0.53 m
Length: 1.00 m
Depth: 842.68 m
Image: sasi-20260421-022651-er1m8l08-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1828
Range: 108.77 m
Altitude: 40.55 m
Heading: 181.25 °
Date-time: 21/04/2026 02:28:29.610



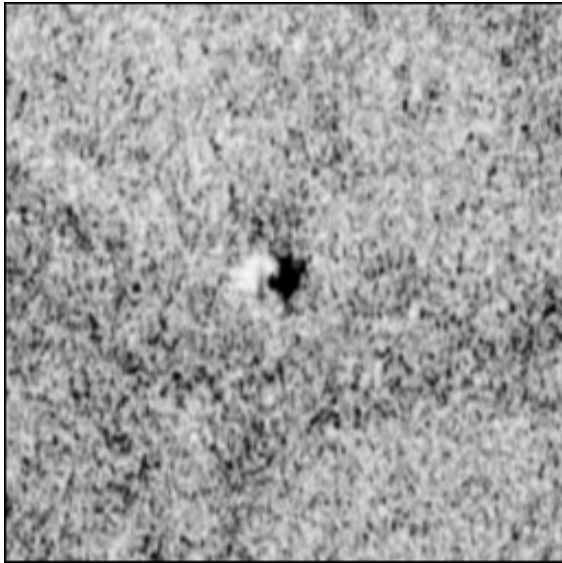
Name: EER001_T159
Easting: 324124.360
Northing: 4384643.538
Latitude: 39.593484117 N
Longitude: 18.951771366 E
Height: 0.11 m
Width: 0.88 m
Length: 1.38 m
Depth: 839.20 m
Image: sasi-20260421-023934-er1m8l08-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 3142
Range: 209.95 m
Altitude: 40.31 m
Heading: 181.30 °
Date-time: 21/04/2026 02:42:27.530



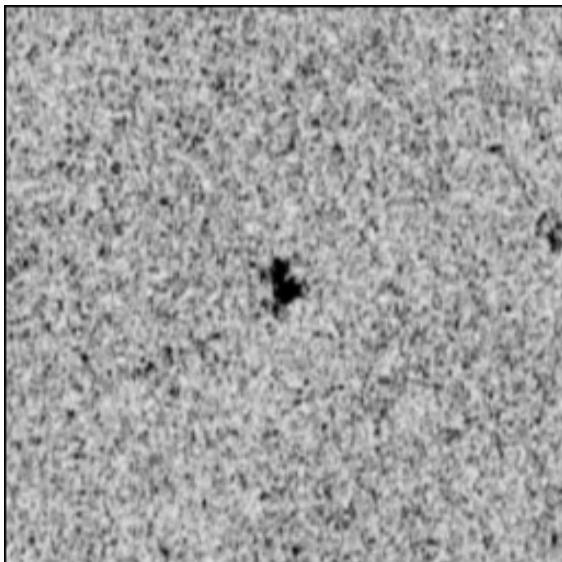
Name: EER001_T160
Easting: 322002.226
Northing: 4390388.629
Latitude: 39.644777498 N
Longitude: 18.925527858 E
Height: 0.09 m
Width: 0.53 m
Length: 0.98 m
Depth: 769.06 m
Image: sasi-20260424-152917-er1m5l03-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 4673
Range: -206.15 m
Altitude: 40.07 m
Heading: 1.31 °
Date-time: 24/04/2026 15:33:33.940



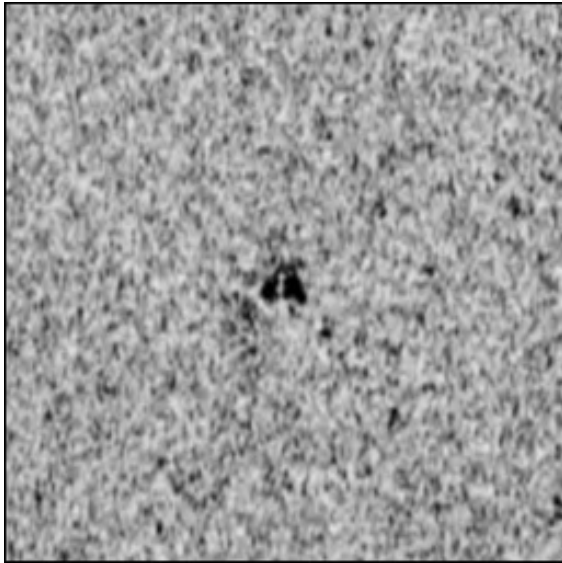
Name: EER001_T161
Easting: 322899.611
Northing: 4390672.428
Latitude: 39.647519240 N
Longitude: 18.935904016 E
Height: nmh
Width: 0.91 m
Length: 1.75 m
Depth: 787.29 m
Image: sasi-20260421-225627-er1m5l10-1-L-WN-000_CH[1_2]
Description: Rectangular object
Ping ID: 6528
Range: 48.64 m
Altitude: 40.12 m
Heading: 181.29 °
Date-time: 21/04/2026 23:02:25.470



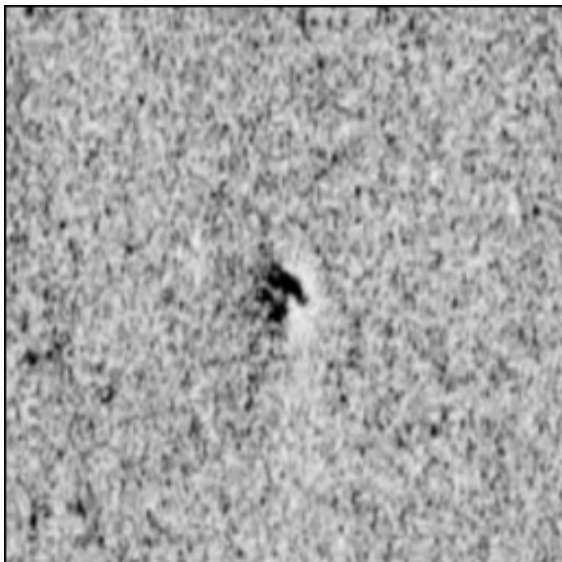
Name: EER001_T162
Easting: 322985.590
Northing: 4388411.747
Latitude: 39.627180702 N
Longitude: 18.937510433 E
Height: 0.24 m
Width: 0.92 m
Length: 1.71 m
Depth: 813.20 m
Image: sasi-20260421-232510-er1m5l10-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 932
Range: 184.54 m
Altitude: 39.77 m
Heading: 181.34 °
Date-time: 21/04/2026 23:26:02.910



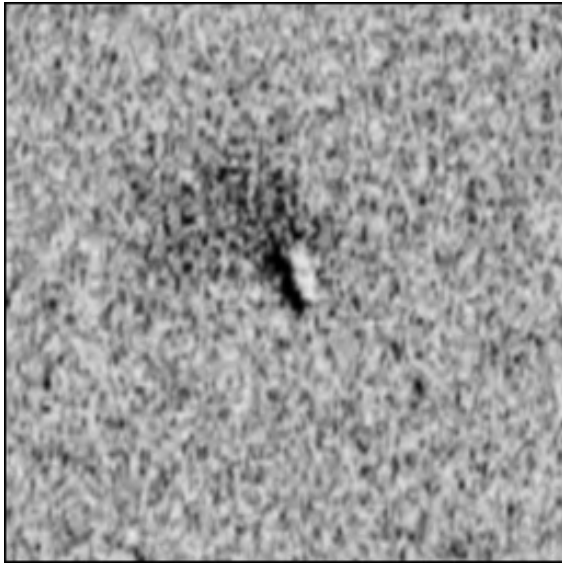
Name: EER001_T163
Easting: 322634.673
Northing: 4388256.321
Latitude: 39.625708516 N
Longitude: 18.933465858 E
Height: nmh
Width: 1.10 m
Length: 1.42 m
Depth: 810.29 m
Image: sasi-20260422-015943-er1m5l08-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1249
Range: 137.89 m
Altitude: 40.31 m
Heading: 181.19 °
Date-time: 22/04/2026 02:00:49.860



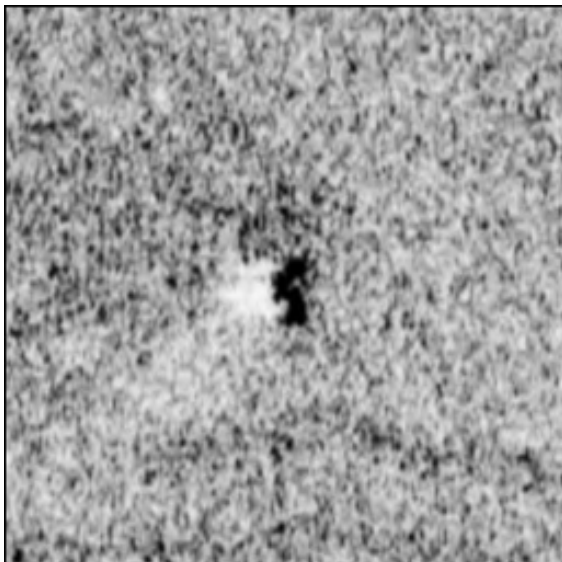
Name: EER001_T164
Easting: 322470.086
Northing: 4388231.672
Latitude: 39.625452445 N
Longitude: 18.931555995 E
Height: 0.05 m
Width: 0.99 m
Length: 1.11 m
Depth: 813.39 m
Image: sasi-20260422-005300-er1m5l09-1-L-WN-000_CH[1_2]
Description: Irregular object
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Altitude: 40.37 m
Heading: 1.25 °
Date-time: 22/04/2026 00:53:07.320



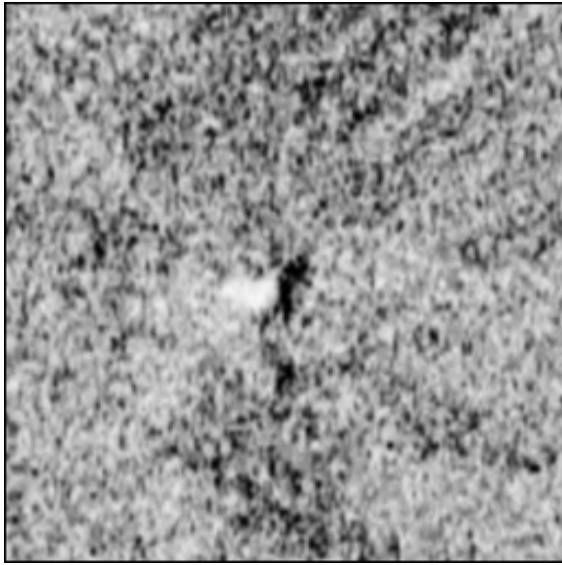
Name: EER001_T165
Easting: 322442.669
Northing: 4387262.496
Latitude: 39.616719805 N
Longitude: 18.931496670 E
Height: nmh
Width: 1.15 m
Length: 1.32 m
Depth: 823.13 m
Image: sasi-20260422-004037-er1m5l09-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 2589
Range: 192.85 m
Altitude: 40.01 m
Heading: 1.30 °
Date-time: 22/04/2026 00:42:59.180



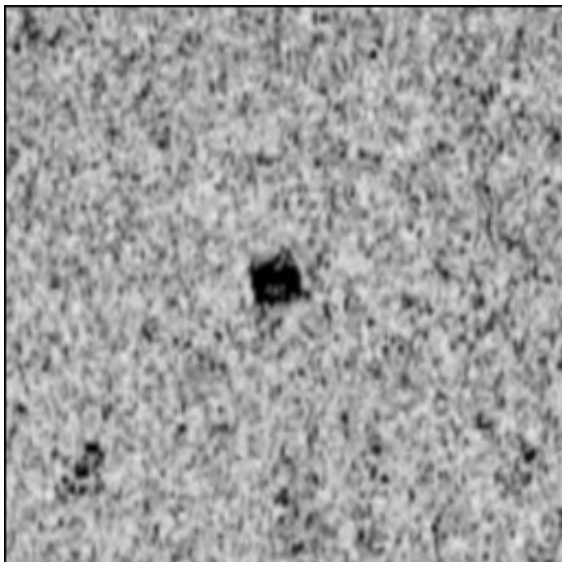
Name: EER001_T166
Easting: 322112.949
Northing: 4385939.735
Latitude: 39.604740553 N
Longitude: 18.928013095 E
Height: 0.16 m
Width: 0.53 m
Length: 1.53 m
Depth: 816.52 m
Image: sasi-20260424-171823-er1m5l05-1-L-WN-000_CH[1_2]
Description: Elongated object
Ping ID: 2164
Range: -112.05 m
Altitude: 40.19 m
Heading: 1.28 °
Date-time: 24/04/2026 17:20:21.790



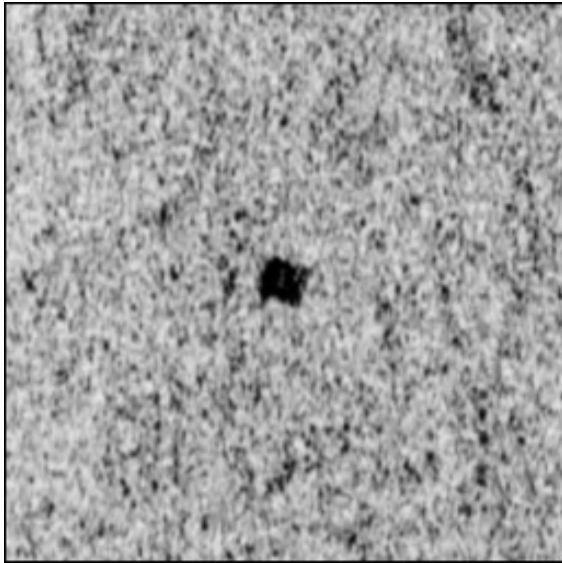
Name: EER001_T167
Easting: 321788.994
Northing: 4388335.509
Latitude: 39.626245899 N
Longitude: 18.923597349 E
Height: 0.25 m
Width: 0.99 m
Length: 1.63 m
Depth: 785.30 m
Image: sasi-20260424-134345-er1m5l02-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1278
Range: 188.42 m
Altitude: 40.59 m
Heading: 181.42 °
Date-time: 24/04/2026 13:45:00.260



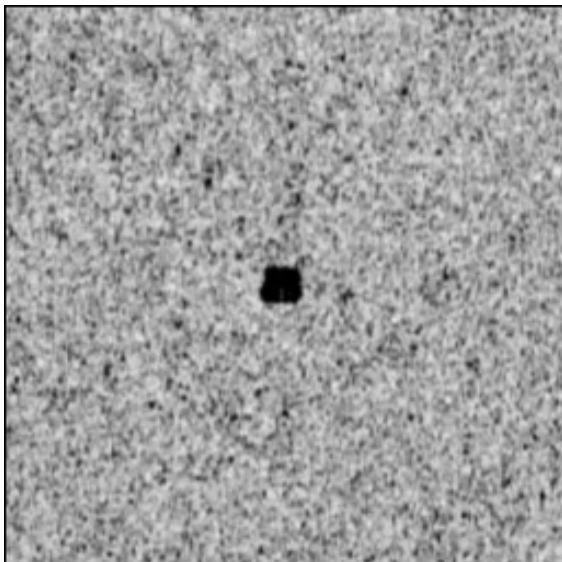
Name: EER001_T168
Easting: 321748.597
Northing: 4387923.378
Latitude: 39.622526476 N
Longitude: 18.923237942 E
Height: 0.29 m
Width: 0.76 m
Length: 1.59 m
Depth: 789.76 m
Image: sasi-20260424-134841-er1m5l02-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 716
Range: 160.52 m
Altitude: 39.37 m
Heading: 181.28 °
Date-time: 24/04/2026 13:49:20.180



Name: EER001_T169
Easting: 321707.664
Northing: 4387955.967
Latitude: 39.622811399 N
Longitude: 18.922752563 E
Height: nmh
Width: 1.02 m
Length: 1.03 m
Depth: 789.29 m
Image: sasi-20260424-134841-er1m5l02-1-L-WN-000_CH[1_2]
Description: Square object
Ping ID: 354
Range: 118.18 m
Altitude: 39.46 m
Heading: 181.28 °
Date-time: 24/04/2026 13:49:00.340



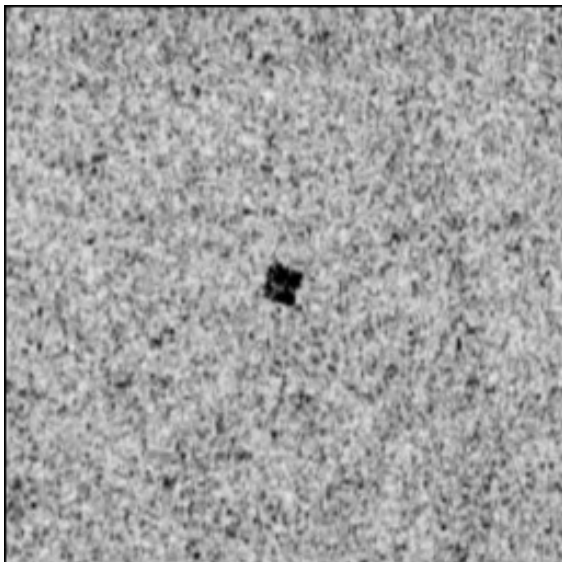
Name: EER001_T170
Easting: 321765.843
Northing: 4387499.418
Latitude: 39.618712537 N
Longitude: 18.923552886 E
Height: nmh
Width: 0.94 m
Length: 1.31 m
Depth: 798.27 m
Image: sasi-20260424-134841-er1m5l02-1-L-WN-000_CH[1_2]
Description: Square object
Ping ID: 5541
Range: 187.76 m
Altitude: 40.56 m
Heading: 181.28 °
Date-time: 24/04/2026 13:53:45.660



Name: EER001_T171
Easting: 321790.164
Northing: 4386613.439
Latitude: 39.610739820 N
Longitude: 18.924074462 E
Height: nmh
Width: 1.19 m
Length: 1.32 m
Depth: 813.58 m
Image: sasi-20260424-144514-er1m5l03-1-L-WN-000_CH[1_2]
Description: Square object
Ping ID: 9658
Range: -76.22 m
Altitude: 40.34 m
Heading: 1.29 °
Date-time: 24/04/2026 14:54:03.800



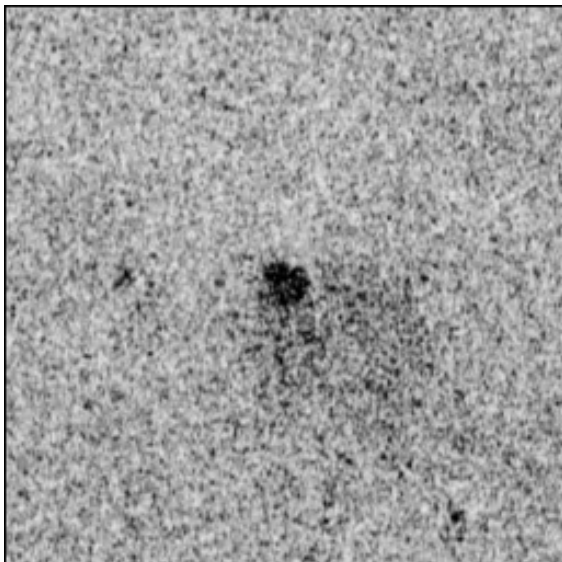
Name: EER001_T172
Easting: 321682.572
Northing: 4386728.743
Latitude: 39.611755675 N
Longitude: 18.922790874 E
Height: nmh
Width: 1.13 m
Length: 8.46 m
Depth: 811.12 m
Image: sasi-20260424-135912-er1m5l02-1-L-WN-000_CH[1_2]
Description: Elongated object
Ping ID: 2913
Range: 117.52 m
Altitude: 40.15 m
Heading: 181.30 °
Date-time: 24/04/2026 14:01:51.870



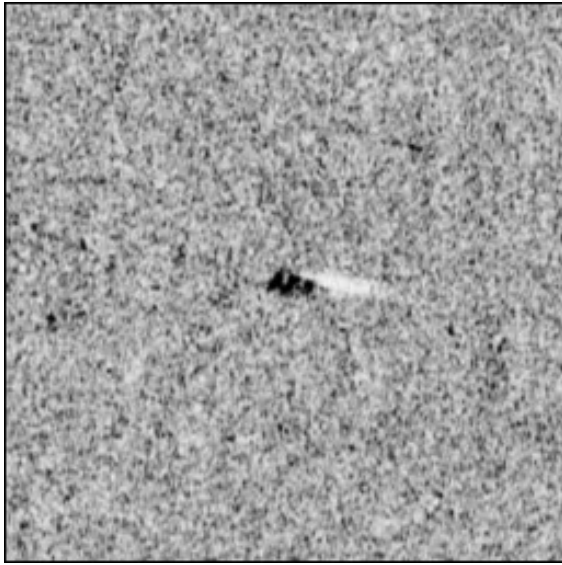
Name: EER001_T173
Easting: 321793.996
Northing: 4386642.744
Latitude: 39.611004491 N
Longitude: 18.924111183 E
Height: nmh
Width: 0.98 m
Length: 1.03 m
Depth: 813.79 m
Image: sasi-20260424-144514-er1m5l03-1-L-WN-000_CH[1_2]
Description: Square object
Ping ID: 9993
Range: -79.42 m
Altitude: 40.53 m
Heading: 1.29 °
Date-time: 24/04/2026 14:54:22.190



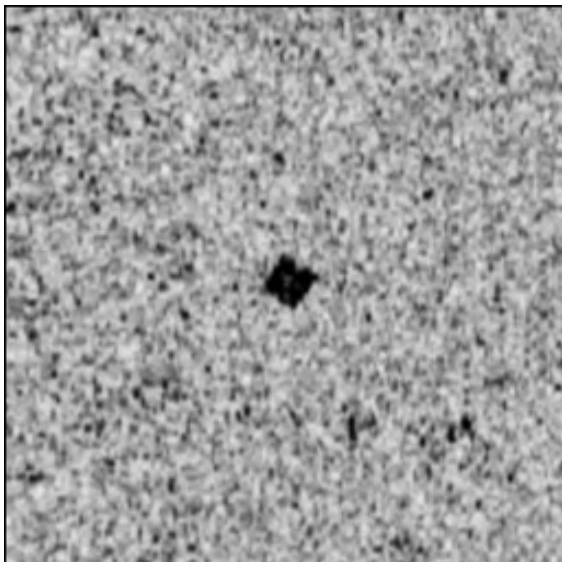
Name: EER001_T174
Easting: 321976.611
Northing: 4390886.746
Latitude: 39.649257425 N
Longitude: 18.925095400 E
Height: 0.64 m
Width: 1.70 m
Length: 1.89 m
Depth: 772.08 m
Image: sasi-20260424-153453-er1m5l03-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 4242
Range: -168.51 m
Altitude: 40.09 m
Heading: 1.32 °
Date-time: 24/04/2026 15:38:45.460



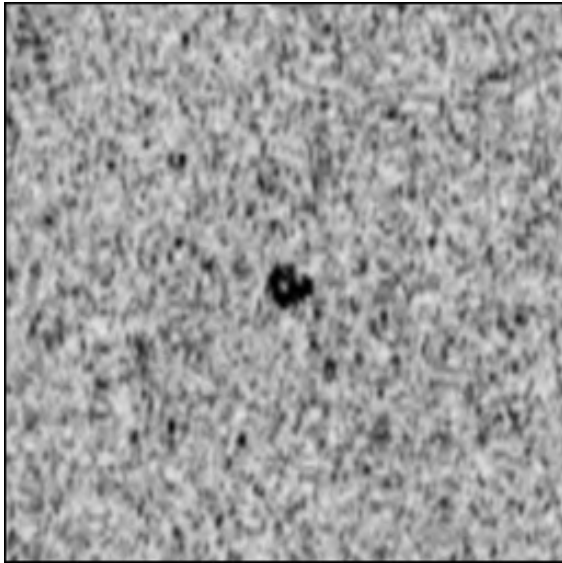
Name: EER001_T175
Easting: 322411.314
Northing: 4390481.073
Latitude: 39.645694934 N
Longitude: 18.930267824 E
Height: nmh
Width: 1.77 m
Length: 1.97 m
Depth: 783.88 m
Image: sasi-20260422-012835-er1m5l08-1-L-WN-000_CH[1_2]
Description: Circular object
Ping ID: 9902
Range: -139.25 m
Altitude: 40.40 m
Heading: 181.34 °
Date-time: 22/04/2026 01:37:38.400



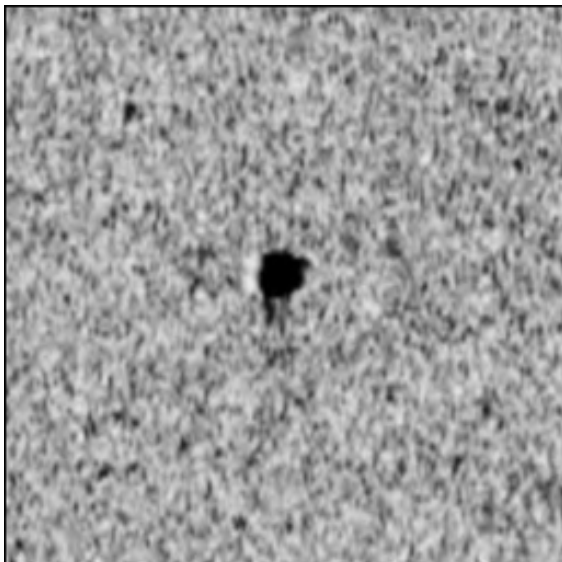
Name: EER001_T176
Easting: 321971.713
Northing: 4390385.077
Latitude: 39.644739165 N
Longitude: 18.925173425 E
Height: 0.49 m
Width: 1.34 m
Length: 1.82 m
Depth: 769.05 m
Image: sasi-20260424-152917-er1m5l03-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 4624
Range: -175.26 m
Altitude: 40.05 m
Heading: 1.31 °
Date-time: 24/04/2026 15:33:31.250



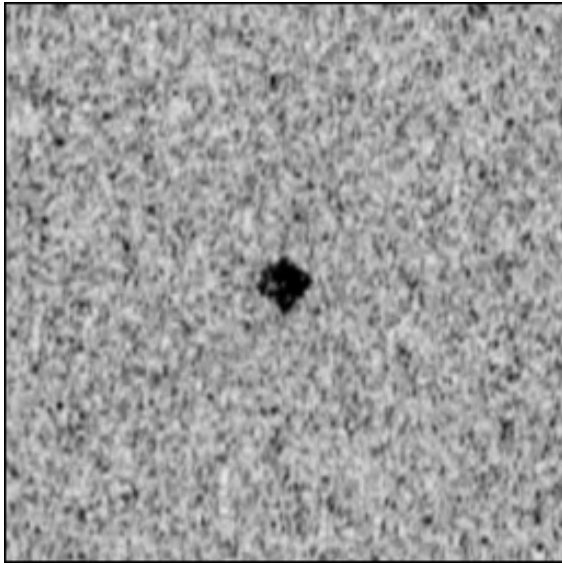
Name: EER001_T177
Easting: 321776.241
Northing: 4386981.947
Latitude: 39.614055143 N
Longitude: 18.923813213 E
Height: nmh
Width: 1.06 m
Length: 1.20 m
Depth: 809.13 m
Image: sasi-20260424-145545-er1m5l03-1-L-WN-000_CH[1_2]
Description: Square object
Ping ID: 2357
Range: -54.13 m
Altitude: 40.55 m
Heading: 1.28 °
Date-time: 24/04/2026 14:57:54.670



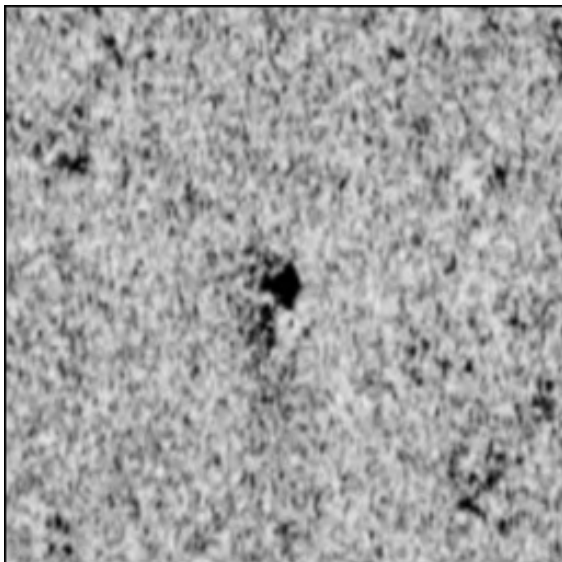
Name: EER001_T178
Easting: 321971.145
Northing: 4385141.734
Latitude: 39.597525489 N
Longitude: 18.926576789 E
Height: nmh
Width: 0.90 m
Length: 0.93 m
Depth: 813.64 m
Image: sasi-20260424-164504-er1m5l04-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 7145
Range: 141.71 m
Altitude: 40.17 m
Heading: 181.27 °
Date-time: 24/04/2026 16:51:36.150



Name: EER001_T179
Easting: 322016.979
Northing: 4384840.524
Latitude: 39.594822756 N
Longitude: 18.927191142 E
Height: 0.07 m
Width: 1.10 m
Length: 1.32 m
Depth: 805.93 m
Image: sasi-20260424-165205-er1m5l04-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 2896
Range: 195.36 m
Altitude: 40.00 m
Heading: 181.32 °
Date-time: 24/04/2026 16:54:44.110



Name: EER001_T180
Easting: 321802.352
Northing: 4386708.700
Latitude: 39.611600130 N
Longitude: 18.924190722 E
Height: nmh
Width: 1.08 m
Length: 1.27 m
Depth: 813.66 m
Image: sasi-20260424-144514-er1m5l03-1-L-WN-000_CH[1_2]
Description: Square object
Ping ID: 10702
Range: -86.63 m
Altitude: 40.36 m
Heading: 1.29 °
Date-time: 24/04/2026 14:55:03.650



Name: EER001_T181
Easting: 321866.893
Northing: 4387966.223
Latitude: 39.622936895 N
Longitude: 18.924603804 E
Height: nmh
Width: 0.93 m
Length: 1.89 m
Depth: 806.38 m
Image: sasi-20260424-174031-er1m5l05-1-L-WN-000_CH[1_2]
Description: Irregular object
Ping ID: 1047
Range: 180.24 m
Altitude: 40.16 m
Heading: 1.31 °
Date-time: 24/04/2026 17:41:27.540

		GEOPHYSICAL SURVEY ACTIVITIES, BLOCK 2, "LOT01" S/V ECO ONE Geophysical survey - Final Survey Report				
Prepared by	Checked by	Approved by	Date	IDP	File:	Rev. 01
N. Chicco	S. Sandroni	S. Sandroni	09/06/2026	EER001	EER001_Geophysical_Survey_Report_REV01.doc	P. 98/ 98

END OF DOCUMENT

 Thinking Ahead. Staying One Step Ahead. 	SITE MEMORANDUM		
IDP: EER001	Project: GEOPHYSICAL SURVEY ACTIVITIES BLOCK 2, "LOT01" - OFFSHORE GREECE		
GEOGRAPHIC LOCATION: Ionian Sea		AREA: Offshore Greece	
CLIENT: ENERGEAN	VESSEL: Eco One		
ISSUED BY: Nicola Chicco		DATE: 20/04/2026	

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GEOPHYSICAL SURVEY ACTIVITIES

BLOCK 2

"LOT01"

OFFSHORE GREECE

SITE MEMORANDUM – MISSION M03 - POSSIBLE RUINS OF AN ANCIENT SHIPWRECK



IDP	Delivery Date	Survey area	Contract No.
EER001	20/04/2026	Offshore Greece	2600012533
LIGHTHOUSE DOCUMENT CONTROL			
Prepared by	Checked by		Approved by
N. Chicco	S. Sandroni		S. Sandroni

 Thinking Ahead. Staying One Step Ahead. GAS	SITE MEMORANDUM	
IDP: EER001	Project: GEOPHYSICAL SURVEY ACTIVITIES BLOCK 2, "LOT01" - OFFSHORE GREECE	
GEOGRAPHIC LOCATION: Ionian Sea		AREA: Offshore Greece
CLIENT: ENERGEAN	VESSEL: Eco One	
ISSUED BY: Nicola Chicco		DATE: 20/04/2026

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LIGHTHOUSE Thinking Ahead. Staying One Step Ahead. GAS	SITE MEMORANDUM		
IDP: EER001	Project: GEOPHYSICAL SURVEY ACTIVITIES BLOCK 2, "LOT01" - OFFSHORE GREECE		
GEOGRAPHIC LOCATION: Ionian Sea		AREA: Offshore Greece	
CLIENT: ENERGEAN	VESSEL: Eco One		
ISSUED BY: Nicola Chicco		DATE: 20/04/2026	

1 INTRODUCTION

In the period between 16nd and 17th April 2026, SV Eco One with the means of the "Hugin 4500+" AUV (Autonomous Underwater Vehicle), surveyed the M03 mission of the Geophysical Survey Activities within Block 2 - LOT01 (Offshore Greece).

The possible ruins of an ancient shipwreck have been observed during this mission.

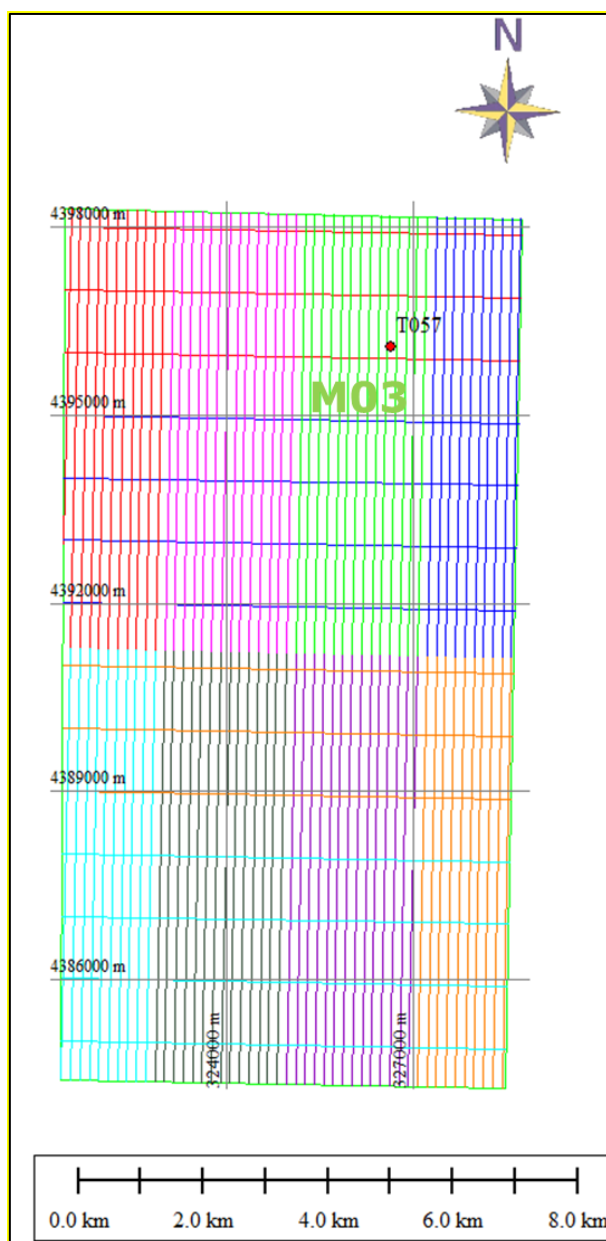


Figure 1 – Mission Plan: Surveyed area

LIGHTHOUSE Thinking Ahead. Staying One Step Ahead. GAS	SITE MEMORANDUM	
IDP: EER001	Project: GEOPHYSICAL SURVEY ACTIVITIES BLOCK 2, "LOT01" - OFFSHORE GREECE	
GEOGRAPHIC LOCATION: Ionian Sea		AREA: Offshore Greece
CLIENT: ENERGEAN	VESSEL: Eco One	
ISSUED BY: Nicola Chicco		DATE: 20/04/2026

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Table 1 – Project Information

Mission	M03- EER001_D466_M03_M04
Project	GEOPHYSICAL SURVEY ACTIVITIES BLOCK 2 - "LOT01" OFFSHORE GREECE
Vessel / Equipment	S/V Eco One; AUV Hugin 4500+
Geodetic Datum	WGS84 – UTM34N

2 RESULTS

The possible ruins of an ancient shipwreck, identified as T057, have been detected during the M03 Mission. It is a 23.7 meter long x 8.3 meters width target. The shipwreck appears partially buried, lays upside down on the seabed, rising about 60 centimetres above the seabed (as measured on MBES data due to the absence of a shadow in the HiSAS data).

It seems extremely degraded.

The position and dimensions of the target are summarised in Table 2.

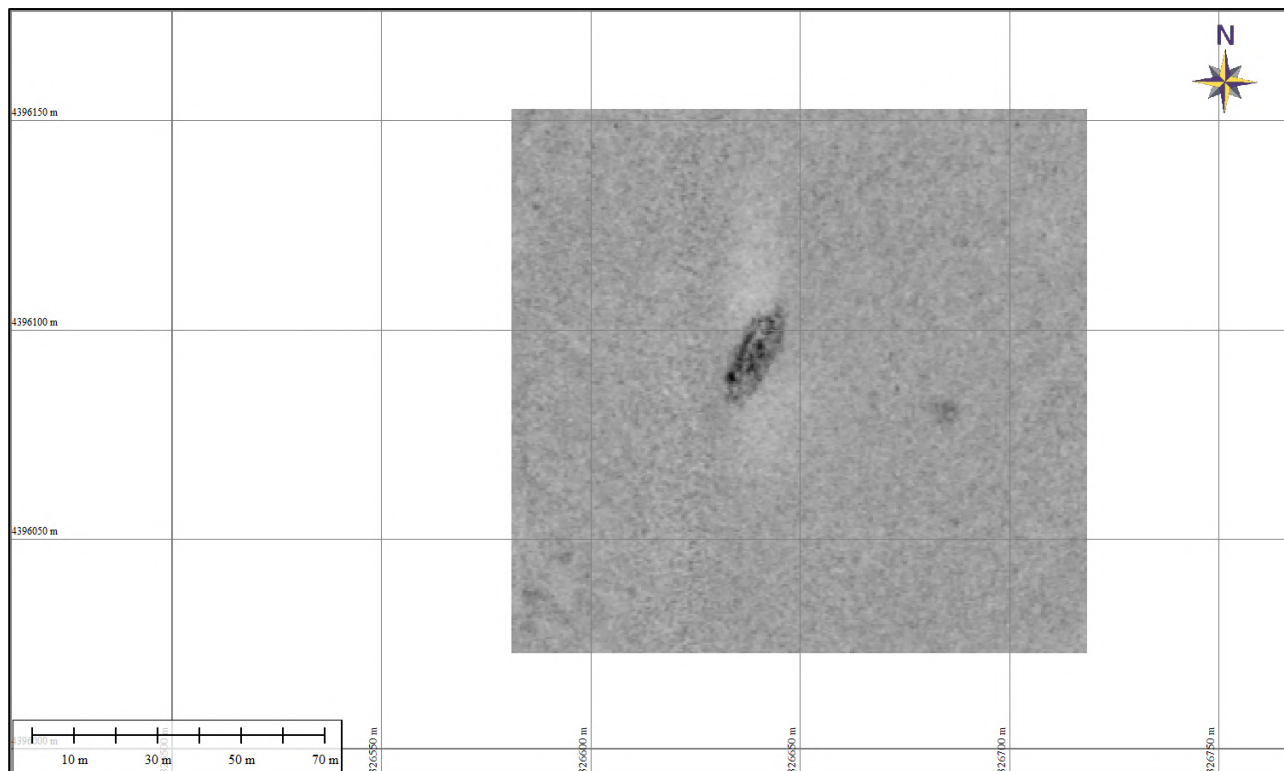


Figure 2 – HISAS data: possible ancient shipwreck and related target

 Thinking Ahead. Staying One Step Ahead.		SITE MEMORANDUM			
IDP: EER001		Project: GEOPHYSICAL SURVEY ACTIVITIES BLOCK 2, "LOT01" - OFFSHORE GREECE			
GEOGRAPHIC LOCATION: Ionian Sea				AREA: Offshore Greece	
CLIENT: ENERGEAN		VESSEL: Eco One			
ISSUED BY: Nicola Chicco				DATE: 20/04/2026	

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Table 2 – TARGET Dimensions and position (WGS84-UTM34N)

Sonar contact No	Dimensions (m) (LxWxH)	Easting (m)	Northing (m)	Description	WD (m)
EER001_T057	23.7x8.3x0.6	326640.24	4396094.99	Possible ruins of an ancient shipwreck	880

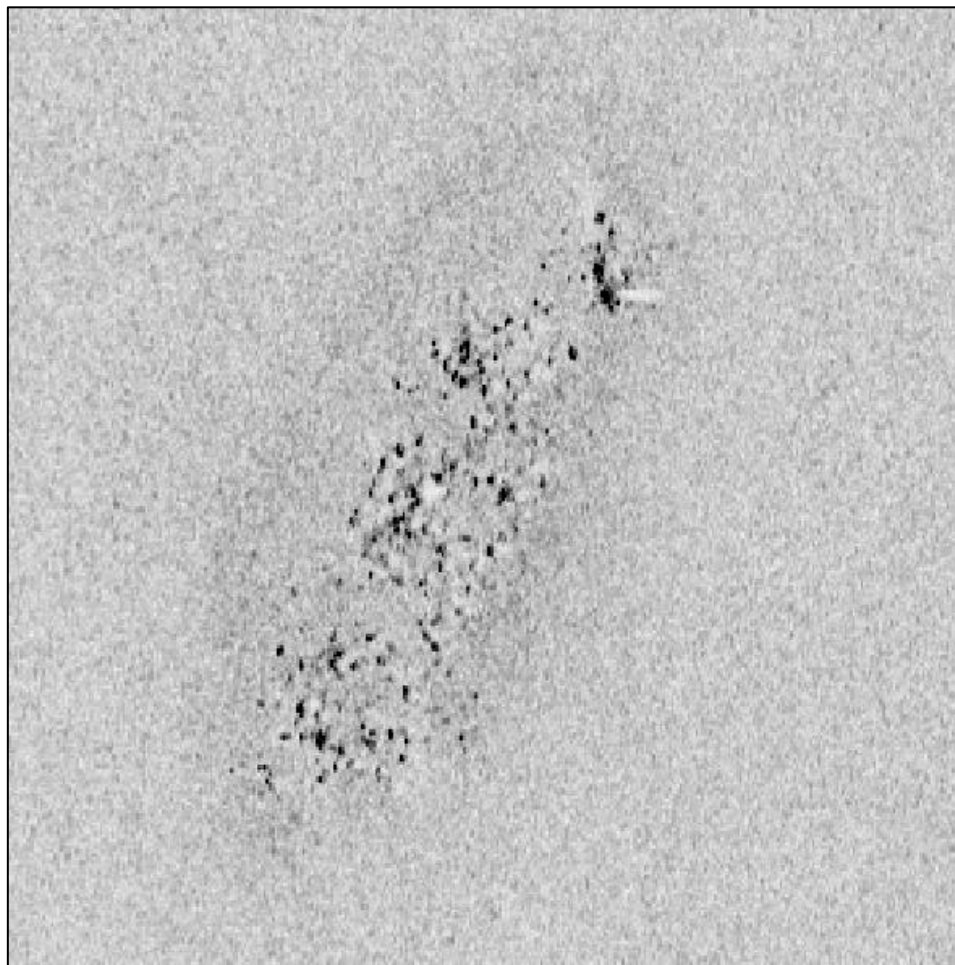


Figure 3 – High-resolution image of a possible ancient shipwreck’s ruins.

LIGHTHOUSE Thinking Ahead. Staying One Step Ahead. GAS	SITE MEMORANDUM		
IDP: EER001	Project: GEOPHYSICAL SURVEY ACTIVITIES BLOCK 2, "LOT01" - OFFSHORE GREECE		
GEOGRAPHIC LOCATION: Ionian Sea		AREA: Offshore Greece	
CLIENT: ENERGEAN	VESSEL: Eco One		
ISSUED BY: Nicola Chicco		DATE: 20/04/2026	

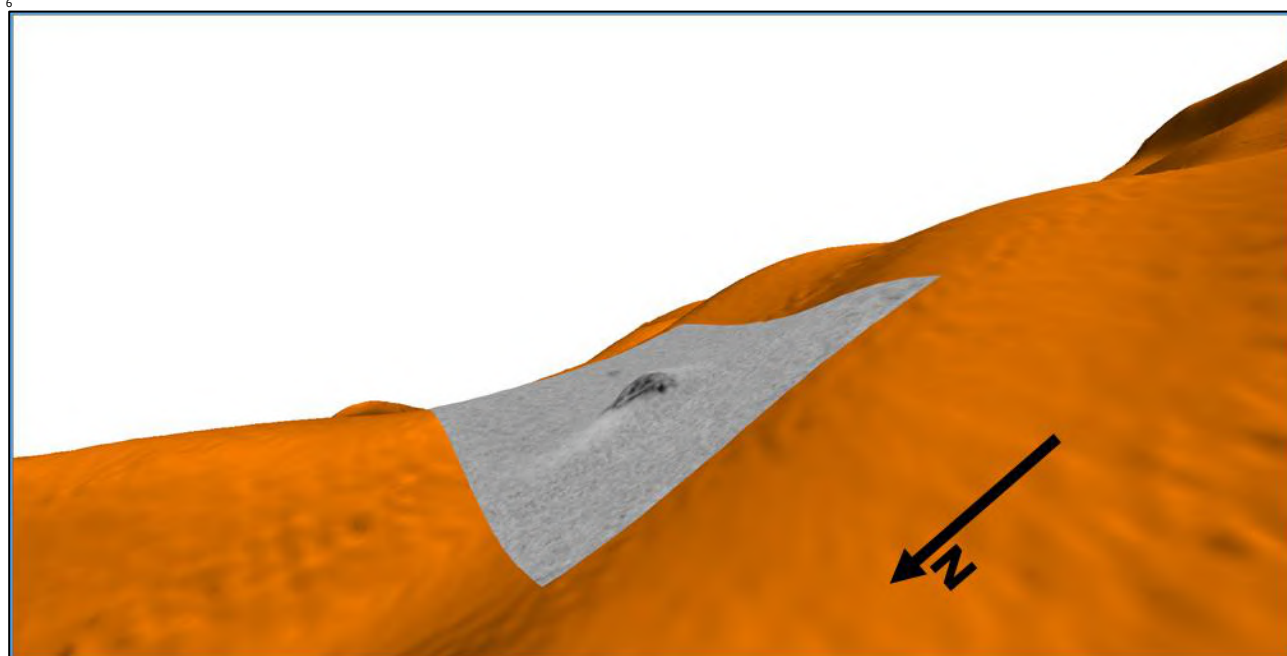
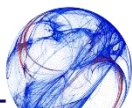


Figure 4 – 3D image of a possible shipwreck with HISAS data superimposed on MBES data



Archaeological Baseline Assessment

Provision of Environmental Baseline Study (EBS) for Exploration Well Asopus-1A in Block 2 – Ionian Sea

Rethymno, Crete, Greece

June 30th, 2026

Disclaimer

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Research Team

Alexis Tourtas. PhD	Research Associate Laboratory of Geophysical Satellite Remote Sensing & Archaeoenvironment Institute for Mediterranean Studies Foundation for Research and Technology Hellas Nik. Foka 130, Rethymno, Crete, Greece https://ims.forth.gr/en/profile/view?id=181
Nikos Papadopoulos, PhD	Research Director Head of the Laboratory of Geophysical Satellite Remote Sensing & Archaeoenvironment Institute for Mediterranean Studies Foundation for Research and Technology Hellas Nik. Foka 130, Rethymno, Crete, Greece nikos@ims.forth.gr +30 2831106019 https://ims.forth.gr/en/profile/view?id=59

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Executive Summary

This Archaeological Baseline Assessment presents the results of the underwater cultural heritage assessment undertaken for the proposed ASOPUS-1A exploration well within Block 2 of the northern Ionian Sea.

The assessment combined a review of published archaeological and historical evidence with the interpretation of marine geophysical and visual inspection datasets acquired during the offshore survey programme. These included multibeam bathymetry (MBES), High Resolution Synthetic Aperture Sonar (HISAS), sub-bottom profiler (SBP), magnetometer data and CathX imagery, allowing both the regional archaeological context and the immediate project area to be evaluated.

The study demonstrates that Block 2 lies within a maritime corridor of considerable archaeological significance. The Strait of Otranto and the northern Ionian Sea have served as major routes for navigation and maritime exchange from antiquity onwards, while recent deep-water investigations have confirmed the presence of exceptionally well-preserved shipwrecks and other submerged archaeological remains throughout the wider region.

Detailed interpretation of the geophysical and visual inspection data identified a single underwater cultural heritage site (Target T057) within the surveyed area. The site is interpreted as the remains of an ancient merchant vessel associated with a cargo of transport amphorae, with both exposed and buried archaeological deposits preserved on the seabed. Although the available evidence does not permit secure typological or chronological attribution, the observable characteristics are consistent with an ancient shipwreck of high archaeological significance.

Target T057 is situated approximately 8.3 km from the proposed ASOPUS-1A well location. No archaeological sites, anomalies or geophysical signatures indicative of underwater cultural heritage were identified within the project footprint or within the 500 m assessment area surrounding the proposed drilling location. The available survey data therefore provide a high level of confidence that the proposed drilling activities will not directly affect any known underwater cultural heritage resources.

1. Introduction

1.1 Background

The present study has been prepared in support of the Environmental Baseline Study (EBS) and Environmental and Social Impact Assessment (ESIA) for the proposed ASOPUS-1A exploration well within Block 2 of the Hellenic offshore concession area in the northern Ionian Sea.

The project forms part of an offshore hydrocarbon exploration programme and involves the evaluation of subsurface geological formations through exploratory drilling. In support of environmental studies, geohazard assessment and engineering design, a comprehensive marine geophysical survey programme was undertaken within the study area. The resulting datasets provide a robust basis for the identification, assessment and management of underwater cultural heritage resources.

The northern Ionian Sea occupies a region of considerable archaeological and historical significance. Situated between the Greek mainland, the Ionian Islands and the Strait of Otranto, the area forms part of a broader maritime corridor that has facilitated communication, navigation and exchange between the Adriatic and the wider Mediterranean for millennia. As a result, the seabed of the region has the potential to preserve a wide range of archaeological remains, including shipwrecks, anchors, cargo assemblages and other evidence of past maritime activity.

1.2 Aim and Objectives

The aim of the present study is to establish an archaeological baseline for the proposed development area and to assess the potential effects of the ASOPUS-1A exploration well on underwater cultural heritage resources.

The specific objectives of the study are:

- to review the archaeological and historical context of the wider study area;
- to assess the archaeological potential of the project area;
- to review and interpret available geophysical and visual inspection datasets for evidence of underwater cultural heritage;
- to identify known and previously unrecorded archaeological resources within the survey area;

- to assess potential impacts associated with the proposed development;
- to propose appropriate mitigation and management measures;
- to develop a Cultural Heritage Management Plan for the project.

1.3 Study Area

The study focuses on Block 2 of the northern Ionian Sea and, more specifically, on the marine geophysical survey area and the location of the proposed ASOPUS-1A exploration well. The archaeological assessment considers both the immediate project footprint and the wider regional context within which underwater cultural heritage resources may occur.

1.4 Scope of Assessment

The assessment incorporates information derived from published archaeological literature, historical sources and project-specific geophysical datasets. Particular emphasis has been placed on the interpretation of multibeam bathymetry (MBES), High Resolution Synthetic Aperture Sonar (HISAS), sub-bottom profiler (SBP), magnetometer and CathX imagery acquired during the offshore survey programme.

The study evaluates both known archaeological resources and the potential presence of previously unidentified underwater cultural heritage. The assessment further considers the possible effects of the proposed development on such resources and identifies measures necessary to ensure their protection.

1.5 Report Structure

The report is structured as follows:

- Chapter 2 outlines the methodology employed in the assessment.
- Chapter 3 presents the project description and study area.
- Chapter 4 reviews the archaeological and historical context of the wider region.
- Chapter 5 presents the results of the archaeological assessment of the geophysical and visual inspection datasets.
- Chapter 6 assesses the potential impacts of the proposed development on underwater cultural heritage resources.

- Chapter 7 presents recommended mitigation measures.
- Chapter 8 sets out the Cultural Heritage Management Plan.
- Chapter 9 presents the conclusions of the study.

1.6 Legislative and Policy Framework

The protection and management of underwater cultural heritage within Greece is governed principally by Law 4858/2021, *Code of Legislation for the Protection of Antiquities and Cultural Heritage in General*. Under the provisions of this legislation, all antiquities located within Greek territory, territorial waters and areas under Greek jurisdiction are afforded legal protection, irrespective of whether they have been previously identified or formally designated.

Responsibility for the protection, management and archaeological investigation of underwater cultural heritage rests with the Ephorate of Underwater Antiquities (EUA), which constitutes the competent authority for the assessment and management of submerged archaeological resources.

The present assessment has also been informed by the principles of the UNESCO Convention on the Protection of the Underwater Cultural Heritage (2001). Although the convention primarily addresses the protection of underwater cultural heritage through preservation in situ and the prevention of unnecessary disturbance, it also promotes the identification, documentation and appropriate management of submerged archaeological resources during marine development activities.

At the project level, the assessment has been undertaken within the framework of the Environmental Baseline Study (EBS) and Environmental and Social Impact Assessment (ESIA) for the proposed ASOPUS-1A exploration well. Particular consideration has been given to the identification of underwater cultural heritage resources, the assessment of potential impacts and the development of appropriate mitigation and management measures consistent with national legislation and international best practice.

Accordingly, the present study seeks to ensure that cultural heritage considerations are integrated into project planning and implementation and that any archaeological resources identified within the study area are appropriately protected and managed.

2. Methodology

2.1 Assessment Approach

The present study was undertaken as an archaeological baseline assessment in support of the Environmental Baseline Study (EBS) and the subsequent Environmental and Social Impact Assessment (ESIA) for the proposed ASOPUS-1A exploration well within Block 2 of the Hellenic offshore concession area.

The assessment was designed to establish baseline conditions relating to underwater cultural heritage within the study area, identify known and potential archaeological resources, evaluate their significance, and provide the information necessary for the assessment of potential project impacts. The study follows a precautionary approach, recognising that the absence of previously recorded archaeological sites does not necessarily indicate the absence of submerged cultural heritage resources.

The assessment was undertaken through the integration of multiple sources of information, including a review of published archaeological literature, examination of available archaeological and historical data, analysis of marine geophysical survey datasets, and evaluation of visual inspection records acquired during offshore survey operations. The combined use of regional archaeological information and project-specific survey data provides the basis for the identification and assessment of underwater cultural heritage resources within the study area.

The methodology adopted reflects current international approaches to the assessment and management of underwater cultural heritage within offshore development projects and is consistent with the principles established by the UNESCO Convention on the Protection of the Underwater Cultural Heritage (UNESCO, 2001).

2.2 Sources of Information

The archaeological assessment was based on the review and integration of a range of published, archival and project-specific sources.

Published archaeological and historical literature was consulted in order to establish the broader cultural and historical context of the northern Ionian Sea and the Corfu-Otranto corridor. Particular attention was given to studies relating to ancient navigation, maritime connectivity, shipwreck distributions, deep-water archaeology and previous investigations undertaken within the wider Ionian-Adriatic region.

In addition, project-specific datasets generated during offshore geophysical investigations were reviewed to identify anomalies potentially associated with underwater cultural heritage. These datasets included multibeam bathymetry, synthetic aperture sonar imagery, sub-bottom profiling data, magnetometer records and visual inspection data acquired using remotely operated camera systems.

The integration of regional archaeological information with high-resolution marine survey data allows for the assessment of both known and previously unrecorded cultural heritage resources and provides a robust basis for archaeological interpretation.

2.3 Geophysical and Visual Survey Datasets

The archaeological assessment incorporated the review of geophysical and visual survey datasets acquired within the project area. The survey programme was designed primarily to support offshore engineering and environmental investigations but also generated information of considerable archaeological value.

Multibeam Echosounder (MBES)

Multibeam echosounder data provide detailed bathymetric information and enable the characterisation of seabed morphology. The resulting digital terrain models allow the identification of seabed features that may be associated with archaeological remains, including mounds, depressions, wreck structures and other seabed anomalies.

In addition to target identification, bathymetric data contribute to the assessment of site formation processes, sediment distribution and local seabed conditions that may influence archaeological preservation.

High Resolution Synthetic Aperture Sonar (HISAS)

High Resolution Synthetic Aperture Sonar (HISAS) provides detailed acoustic imagery of the seabed and constitutes one of the principal datasets used for archaeological target detection. The high spatial resolution of the system allows the identification of small seabed features and facilitates the recognition of shapes, dimensions and acoustic characteristics commonly associated with shipwrecks and other anthropogenic remains.

Within offshore archaeological investigations, synthetic aperture sonar imagery is particularly valuable for the detection of partially exposed archaeological material and for the discrimination of cultural features from natural seabed formations.

Sub-Bottom Profiler (SBP)

Sub-bottom profiling data were reviewed in order to identify anomalies located beneath the seabed surface and to evaluate local sedimentary conditions.

From an archaeological perspective, SBP data are particularly important because they provide information regarding the burial depth of archaeological remains and the presence of sedimentary deposits capable of concealing cultural material. The technique therefore contributes to the assessment of both visible and buried archaeological resources.

Magnetometer

Magnetometer data were acquired to detect variations in the Earth's magnetic field caused by the presence of ferrous materials. Such anomalies may indicate shipwrecks, anchors, pipelines, cables or other metallic objects located on or beneath the seabed.

Although many ancient shipwrecks may not produce strong magnetic signatures, magnetometer data provide an important supplementary dataset for archaeological interpretation and target verification.

CathX Visual Inspection System

Visual inspection data acquired using the CathX camera system provided direct observations of selected seabed targets and were used to verify interpretations derived from the geophysical datasets.

Visual inspection represents the most reliable method for confirming the archaeological character of geophysical anomalies and allows the identification of diagnostic features that may not be evident within acoustic datasets alone. These observations were particularly important in the assessment of archaeological target T057.

The archaeological interpretation of geophysical anomalies presented in this report is based on the analysis of remote sensing datasets and available visual inspection data. While such methods provide a robust basis for the identification and assessment of potential underwater cultural heritage resources, archaeological interpretations remain subject to the limitations inherent in non-intrusive survey techniques. Consequently, chronological, typological and functional interpretations proposed in this study should be regarded as provisional pending direct archaeological investigation and examination of the material remains.

2.4 Archaeological Assessment Criteria

The interpretation of geophysical anomalies was undertaken through a process of comparative analysis that considered morphological characteristics, acoustic signatures, spatial context and visual observations.

Particular attention was given to anomalies displaying one or more of the following characteristics:

- Distinct anthropogenic morphology;
- Regular or elongated plan form;
- Seabed mounds inconsistent with surrounding geology;
- Concentrations of discrete objects;
- Associated acoustic shadowing indicative of relief above the seabed;
- Evidence for structural remains or cargo assemblages;
- Visual confirmation of cultural material.

Potential archaeological targets identified through the review process were evaluated according to their likelihood of representing submerged cultural heritage and their potential archaeological significance.

The assessment of significance considered factors including archaeological integrity, preservation, rarity, research value, representativeness and contribution to the understanding of regional maritime history. This approach is consistent with internationally recognised principles for the assessment and management of underwater cultural heritage (UNESCO, 2001; Maarleveld et al., 2013).

2.5 Limitations

The present assessment is based on the interpretation of available documentary, geophysical and visual inspection data and does not include intrusive archaeological investigation, excavation or artefact recovery.

As with all remote sensing-based assessments, interpretations are constrained by the resolution and coverage of the available datasets and by the visibility of archaeological remains on or beneath the seabed. It is therefore possible that archaeological resources remain undetected, particularly where remains are deeply buried or obscured by sedimentary deposits.

Nevertheless, the combination of extensive geophysical coverage, high-resolution acoustic datasets and targeted visual inspection provides a robust basis for the identification and assessment of underwater cultural heritage resources within the study area. The results are considered sufficient for the purposes of baseline characterisation and impact assessment within the framework of the proposed offshore exploration project.



3. Project and Study Area

3.1 Project Overview

The present archaeological assessment has been undertaken in support of the Environmental Baseline Study (EBS) and Environmental and Social Impact Assessment (ESIA) for the proposed ASOPUS-1A exploration well within Block 2 of the Hellenic offshore concession area in the northern Ionian Sea.

The project forms part of an offshore hydrocarbon exploration programme within Block 2 of the Hellenic offshore concession area in the northern Ionian Sea and involves the evaluation of subsurface geological formations through exploratory drilling. In support of environmental studies, geohazard assessment and engineering design, a comprehensive marine geophysical survey programme was undertaken within the study area. The resulting datasets provide a robust basis for the identification, assessment and management of underwater cultural heritage resources.

For the purposes of the archaeological assessment, three spatial scales have been considered:

- **Block 2**, representing the regional study area and archaeological baseline area (approximately 1,889 km²);
- **The geophysical survey area**, covering approximately 320 km² and representing the principal area investigated through marine geophysical methods;
- **The proposed well location and associated infrastructure footprint**, representing the area in which potential project impacts on underwater cultural heritage may occur.

The assessment has been undertaken to identify known and potential underwater cultural heritage resources within these areas and to evaluate their significance in relation to the proposed offshore development.

3.2 Location and Extent of the Study Area

Block 2 is located in the northern Ionian Sea, approximately 20 km west of the island of Corfu and adjacent to the maritime boundary between Greece and Italy. The block occupies a strategically important position within the wider Corfu-Otranto corridor, one of the principal maritime gateways connecting the Adriatic basin with the eastern Mediterranean. This location has historically facilitated maritime communication, trade and navigation and

forms the basis for the archaeological significance of the wider region discussed in Chapter 4.

The regional study area encompasses approximately 1,889 km² of offshore marine environment. Within this broader area, a detailed geophysical survey was undertaken across approximately 320 km² of seabed in order to support environmental, engineering and archaeological assessment.

The proposed ASOPUS-1A well is situated within the surveyed area at a water depth of approximately 842.5 m. The location lies within a deep-water marine environment characterised by limited modern seabed disturbance and considerable archaeological potential due to its position within a long-established maritime communication corridor.

The spatial relationship between Block 2, the geophysical survey area and the proposed well location is illustrated in Figures 1, 2 and 3.

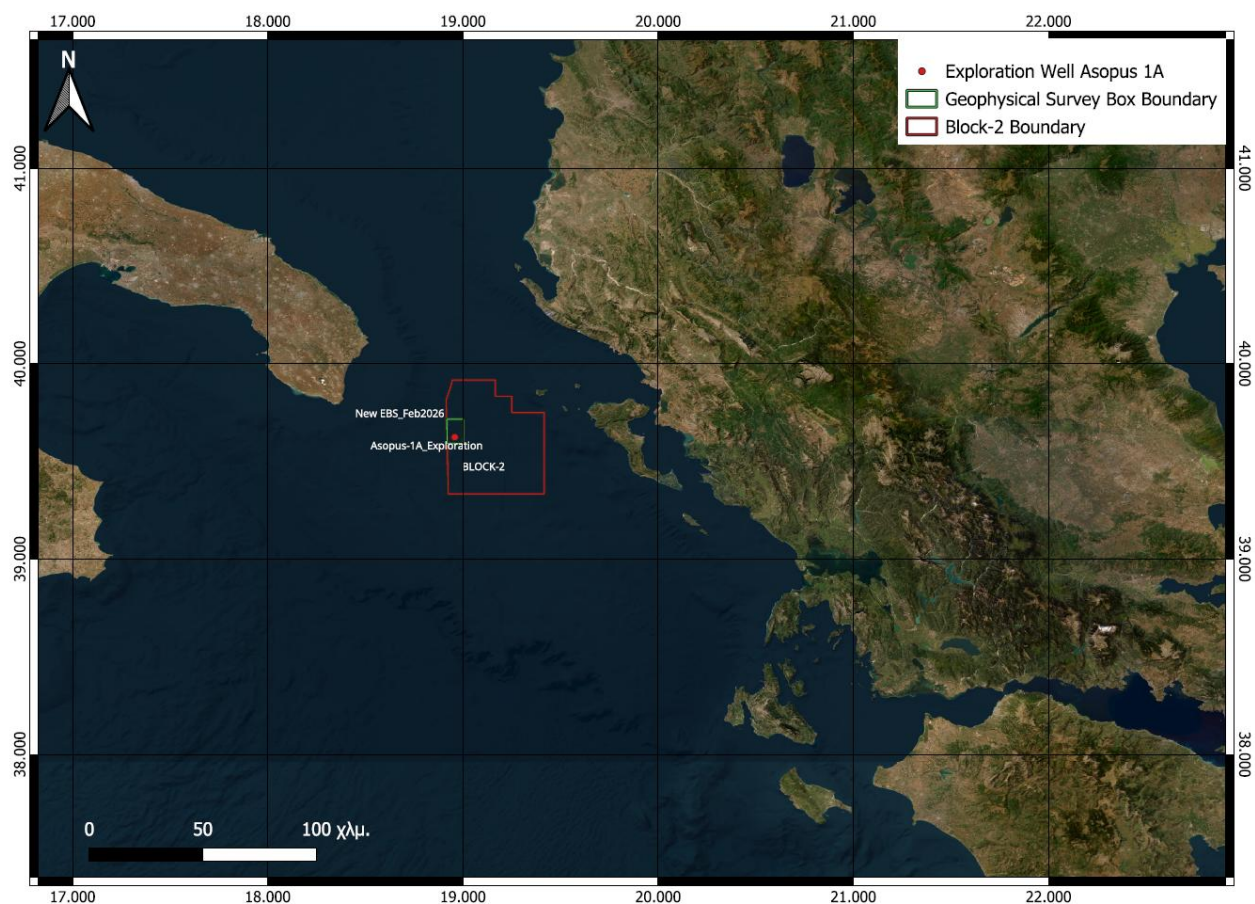


Figure 1. Area of interest. Source: Lighthouse S.p.A. (2024)

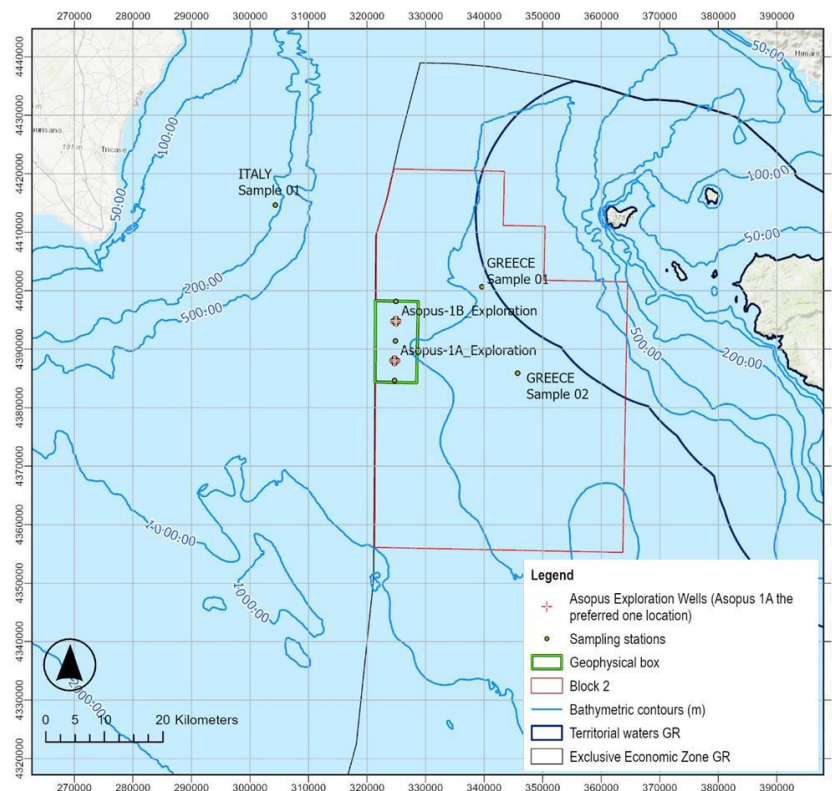


Figure 2. Overview of the surveyed area (green polygon) within BLOCK 2. Source: Lighthouse S.p.A. (2024)

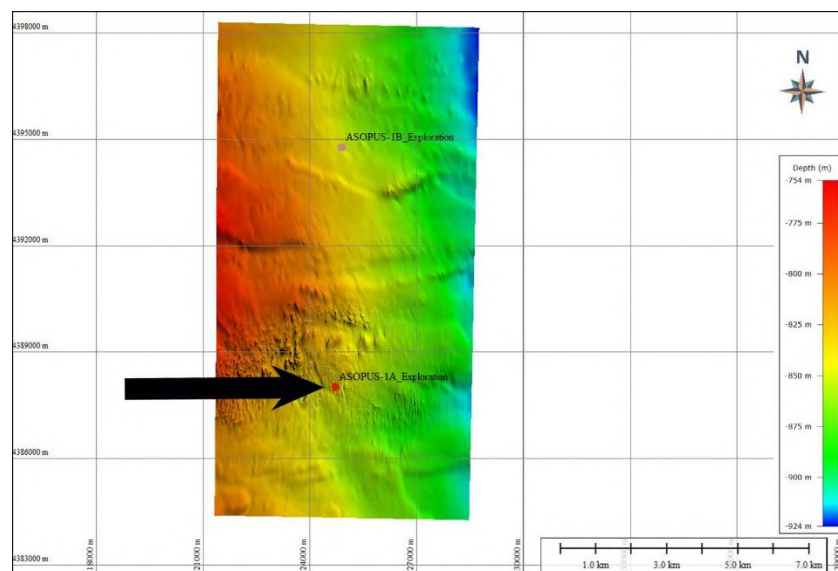


Figure 3. Location of the proposed ASOPUS-1A exploration well within the survey area. Adapted from Lighthouse S.p.A. (2024).

3.3 Physical Environment

Bathymetry

The study area is situated within a deep-water sector of the northern Ionian Sea. Water depths within the survey area range between approximately 754 m and 924 m below Lowest Astronomical Tide (LAT), while the proposed ASOPUS-1A well location is situated at approximately 842.5 m water depth.

The seabed exhibits significant topographic variation and is characterised by a combination of relatively flat sedimentary surfaces, localised escarpments and areas of increased relief associated with underlying geological structures. These variations influence sediment distribution, seabed stability and the preservation of archaeological material.

Seabed Characteristics

Interpretation of multibeam bathymetry and acoustic imagery indicates that the seabed comprises a combination of fine-grained sedimentary deposits and areas of exposed or partially exposed bedrock. The survey identified numerous geological features including tectonic scarps, rocky outcrops and sediment-filled depressions that reflect the complex geological evolution of the region.

From an archaeological perspective, sedimentary environments are particularly important because they may facilitate the burial and preservation of submerged cultural heritage resources. Archaeological remains located within such environments may survive as partially exposed features or may be completely concealed beneath seabed sediments while remaining detectable through acoustic or sub-bottom imaging techniques.

Archaeological Preservation Potential

Deep-water environments are increasingly recognised as important repositories of underwater cultural heritage. Reduced levels of direct human disturbance, limited fishing activity in some areas and relatively stable environmental conditions may contribute to the long-term preservation of archaeological remains.

Recent investigations elsewhere in the northern Ionian Sea have demonstrated that shipwreck sites may survive in good condition at depths exceeding 1,000 m, with substantial portions of archaeological deposits preserved beneath sediment accumulations while retaining exposed structural and cargo-related elements visible within geophysical datasets (Kourkoumelis and Sakellariou, 2015). The environmental conditions present within Block 2 are therefore considered capable of supporting the preservation of both exposed and buried archaeological remains.

3.4 Geological Setting

The study area lies within the South Apulia Basin and forms part of the broader tectonic framework of the southern Adria microplate. The region is characterised by a complex geological history associated with the interaction of the Apulian and Hellenic tectonic systems.

Geophysical investigations indicate that the seabed morphology reflects both tectonic and sedimentary processes. Structural features observed within the survey area include fault-related escarpments, localised relief and sediment-filled basins that have developed through long-term geological activity. These geological conditions contribute to the diversity of seabed environments present within the study area and influence patterns of sediment accumulation and preservation.

Although the geological characteristics of the area are primarily relevant to hydrocarbon exploration, they are also significant from an archaeological perspective because seabed morphology and sedimentary processes play an important role in determining the visibility, burial and preservation of submerged cultural heritage resources.

3.5 Previous Investigations

Prior to the present study, no formally recorded underwater archaeological sites were known from within the immediate project area. However, the wider northern Ionian Sea has been the subject of several archaeological and marine geophysical investigations that demonstrate the archaeological significance of offshore environments within the region.

Particularly important are the investigations undertaken along the Greece-Italy POSEIDON pipeline corridor, which resulted in the discovery of previously unknown deep-water shipwrecks at depths exceeding 1,000 m (Kourkoumelis and Sakellariou, 2015). These investigations demonstrated the effectiveness of integrating archaeological assessment into offshore infrastructure projects and highlighted the archaeological potential of marine geophysical datasets acquired primarily for engineering purposes.

Additional archaeological investigations within the Ionian and Adriatic Seas have identified numerous shipwrecks and other underwater cultural heritage resources associated with long-term maritime activity. Collectively, these studies indicate that the wider region possesses considerable archaeological potential and that submerged cultural heritage resources may occur within offshore environments that have not yet been systematically investigated.

The archaeological and historical significance of the wider northern Ionian Sea is discussed in detail in Chapter 4.

3.6 Available Data for Archaeological Assessment

The archaeological assessment was undertaken using a comprehensive suite of marine geophysical and visual inspection datasets acquired during the offshore survey programme.

The survey achieved full coverage of the investigation area through the acquisition of high-resolution bathymetric, acoustic and geophysical data. The principal datasets reviewed during the archaeological assessment included:

Dataset	Archaeological Application
Multibeam Echosounder (MBES)	Bathymetry and seabed morphology
High Resolution Synthetic Aperture Sonar (HISAS)	Detection and characterisation of seabed targets
Sub-Bottom Profiler (SBP)	Identification of buried features and sedimentary context
Magnetometer	Detection of ferrous anomalies
CathX Visual Inspection System	Ground-truthing and visual verification

The survey programme was designed to identify seabed hazards and anthropogenic features including shipwrecks, debris, pipelines, cables and other objects of potential significance.

A total of eight autonomous underwater vehicle (AUV) missions were completed, resulting in full geophysical coverage of the survey area. In addition, seventeen locations were subject to targeted visual inspection using the CathX camera system.

The combination of extensive geophysical coverage and targeted visual inspection provides a robust basis for the identification and assessment of underwater cultural heritage resources within the study area and forms the foundation of the archaeological evaluation presented in Chapter 5.

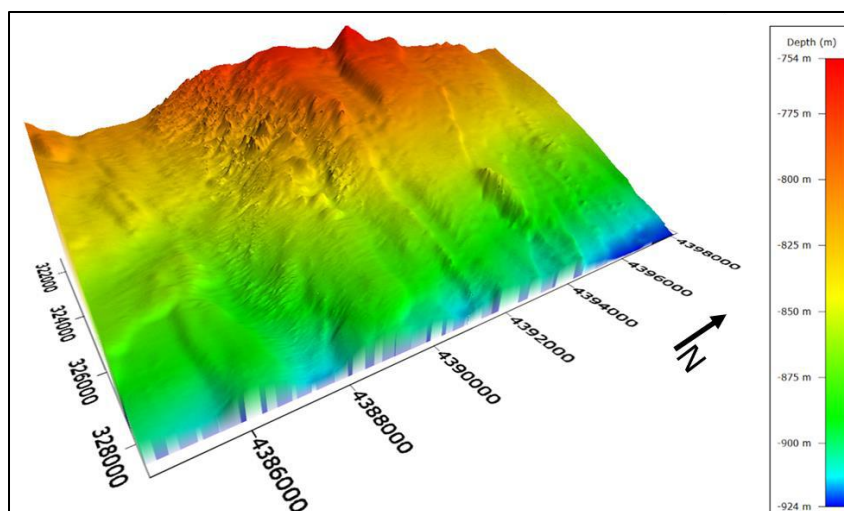


Figure 4. 3D Bathymetric DTM of the study area (2x2 m cell). Source: Lighthouse S.p.A. (2024)

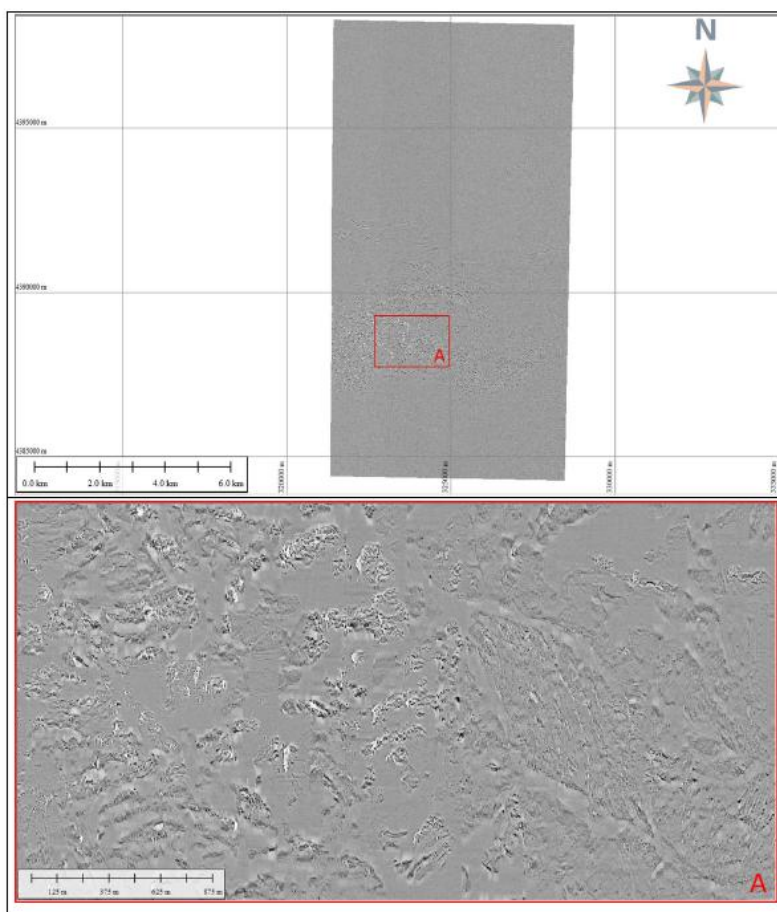


Figure 5. 2D HISAS mosaic of the study area (0.5x0.5 m cell). Source: Lighthouse S.p.A. (2024)

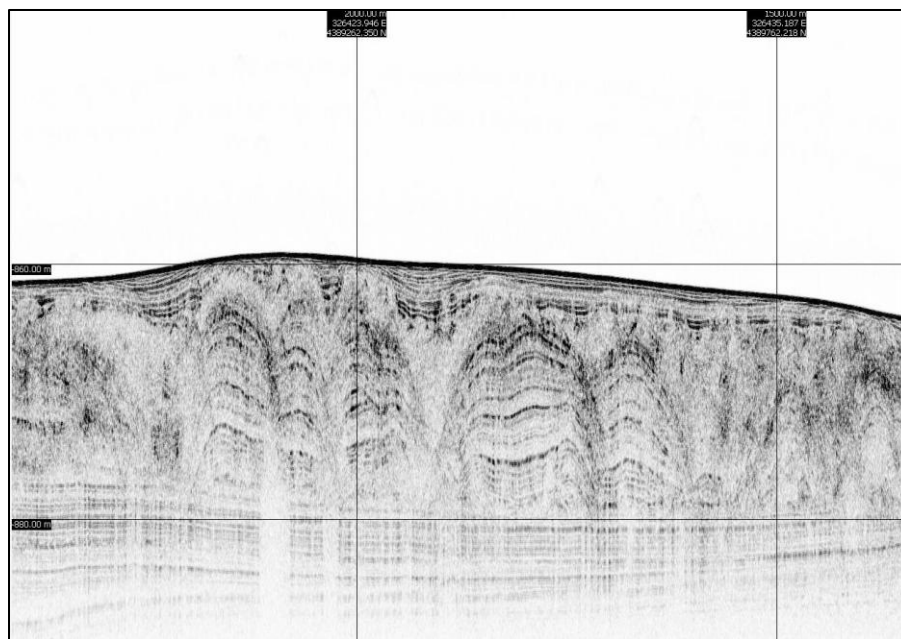


Figure 6. SBP line M07_l10: Example of MTD material on SBD data. Source: Lighthouse S.p.A. (2024)

4. Archaeological and Historical Context

4.1 The Northern Ionian Sea as a Maritime Cultural Landscape

The northern Ionian Sea constitutes a maritime space shaped by long-term interactions between human communities and the marine environment. Rather than functioning solely as a physical barrier separating landmasses, the sea has historically acted as a medium of communication facilitating the movement of people, goods, technologies and ideas across considerable distances. Within this framework, maritime landscapes may be understood as culturally constructed spaces formed through navigation, trade, fishing, migration and other maritime practices that connect coastal communities and distant regions.

The study area lies within the wider maritime zone extending between western Greece, southern Italy and the Adriatic Sea. This region occupies a strategic position within the eastern Mediterranean and encompasses one of the principal maritime gateways of the Mediterranean basin: the Strait of Otranto. Through this narrow passage, maritime traffic moving between the Adriatic and Ionian Seas has been channelled for millennia, creating a dynamic network of routes linking the eastern Mediterranean with southern Italy and the Adriatic hinterland.

The geographical configuration of the region has played a fundamental role in shaping patterns of maritime connectivity. The island of Corfu, situated at the entrance to the Adriatic, occupies a strategic position along routes linking the Greek mainland with southern Italy and the western Mediterranean. Similarly, the Strait of Otranto forms a natural gateway through which maritime traffic has historically passed when travelling between the Adriatic basin and the wider Mediterranean. As a result, the northern Ionian Sea developed as a zone of interaction in which maritime movement and communication became integral elements of the cultural landscape.

Recent approaches within maritime archaeology increasingly emphasise that seascapes should not be viewed merely as spaces separating terrestrial regions but as environments actively shaped by human activity. Maritime routes, navigation practices, exchange networks and shipwreck distributions collectively contribute to the formation of maritime cultural landscapes that extend beyond the limits of individual coastal sites. Within this perspective, offshore environments constitute meaningful cultural spaces that preserve evidence of past maritime activity and provide valuable insights into long-term patterns of connectivity and mobility.

The northern Ionian Sea is particularly well suited to such an approach. Positioned between the eastern Mediterranean, southern Italy and the Adriatic basin, the region has repeatedly

facilitated the movement of people, commodities and ideas across large distances. Archaeological and historical evidence demonstrates that maritime interaction within the wider Ionian-Adriatic region spans several millennia and reflects the enduring importance of maritime communication for economic, political and cultural development.

Although archaeological research has traditionally focused on coastal settlements, harbours and nearshore shipwrecks, recent investigations have demonstrated that offshore environments also preserve important evidence of past maritime activity. These studies highlight the role of offshore spaces as integral components of broader maritime cultural landscapes rather than empty areas situated between coastal centres (Kourkoumelis and Sakellariou, 2015).

4.2 Maritime Connectivity and Navigation Networks

The strategic position of the northern Ionian Sea has favoured maritime connectivity since prehistory, linking the eastern Mediterranean, the Adriatic basin and the Italian peninsula through a network of maritime routes that evolved over time but remained fundamentally oriented towards communication and exchange. The region occupies a pivotal location within the wider Ionian-Adriatic basin, functioning as both a transit zone and a gateway between different cultural and economic spheres.

Archaeological evidence indicates that maritime interaction across the Ionian-Adriatic region began long before the establishment of Greek colonies. During the Bronze Age, contacts between the Aegean world, the western Greek mainland and the Adriatic area reflected in the circulation of materials, technologies and cultural influences. Recent studies emphasise that the Adriatic-Ionian basin should be understood as an interconnected maritime system rather than a series of isolated coastal zones, with maritime mobility playing a fundamental role in the development of regional exchange networks (De Mitri, 2024).

The establishment of Greek colonies in the western Mediterranean during the Archaic period further strengthened the importance of maritime routes through the Ionian Sea. Corcyra (modern Corfu), situated at the entrance to the Adriatic, became one of the principal maritime nodes connecting the Greek world with southern Italy and the Adriatic coast. Its geographical position allowed it to function as an intermediary station for vessels travelling between the eastern and western Mediterranean while also controlling access to the Adriatic basin.

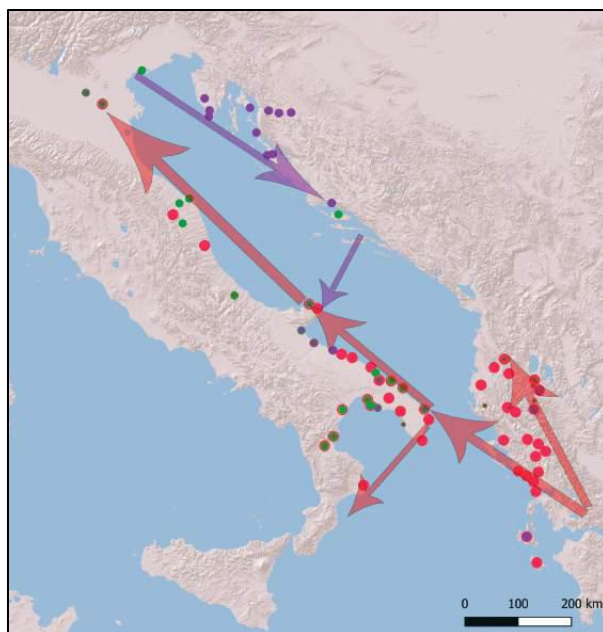


Figure 7. Ionian-Adriatic basin in the Bronze Age: more entangled sites (source: C. De Mitri 2024, Fig 5)



Figure 8. Strait of Otranto and Ionian Sea: probable route of the wreck and main sites with Corinthian ceramics from the late 8th and early 7th century BC (source: C. De Mitri 2024, Fig 6)

During the Classical and Hellenistic periods, increasing political, economic and cultural interaction between Greece, Magna Graecia and the Adriatic contributed to the intensification of maritime traffic throughout the region. The Ionian Sea facilitated the circulation of agricultural products, ceramics, raw materials and manufactured goods, while also supporting the movement of people, military expeditions and colonial ventures. Archaeological evidence from both coastal sites and shipwreck assemblages demonstrates

the existence of extensive maritime networks linking the Adriatic and Ionian regions with broader Mediterranean exchange systems (Jurišić, 2000).

The integration of the region into the Roman Empire resulted in a further expansion of maritime communication. Roman maritime transport networks connected production centres and markets across the Mediterranean, creating an unprecedented degree of economic integration. The Adriatic and Ionian Seas formed an essential component of this system, facilitating connections between the eastern Mediterranean, southern Italy, North Africa and the Adriatic provinces. Shipwreck evidence demonstrates that the movement of amphora-borne commodities, including wine, olive oil and other agricultural products, was particularly intensive during the Roman period (Jurišić, 2000).

Long-distance maritime connectivity continued during Late Antiquity, when commercial exchange remained closely associated with major maritime corridors linking the eastern Mediterranean with Italy and the Adriatic. Recent deep-water archaeological investigations in the northern Ionian Sea have identified Late Roman shipwrecks carrying North African amphorae, providing direct evidence for the continued use of offshore navigation routes in the region during the fourth century AD (Kourkoumelis 2013; Kourkoumelis and Sakellariou, 2015).

The strategic importance of the northern Ionian Sea persisted throughout the Byzantine, Venetian and Ottoman periods and continued into the modern era. Commercial shipping, military operations and regional communication networks remained dependent upon the maritime corridor connecting the Ionian and Adriatic Seas through the Strait of Otranto. As a result, the region accumulated a long and diverse record of maritime activity, traces of which survive in the form of shipwrecks and other underwater cultural heritage resources distributed across both coastal and offshore environments.

The archaeological evidence supporting this long-term maritime connectivity and the significance of the Corfu-Otranto corridor are discussed in the following section.

4.3 The Corfu-Otranto Corridor and the Archaeological Record of the Northern Ionian Sea

The Strait of Otranto forms the narrow passage between the Adriatic and Ionian Seas and has historically served as a major corridor for maritime communication, trade and navigation between the Adriatic and the wider Mediterranean. Situated between the coast of Apulia in southern Italy and the island of Corfu, the corridor has channelled maritime traffic between the Adriatic basin and the wider Mediterranean for millennia. Consequently, the

waters extending west of Corfu and into the northern Ionian Sea formed an integral component of long-distance maritime communication systems linking the eastern Mediterranean, southern Italy, the Adriatic and, ultimately, the wider Mediterranean world. The strategic significance of this corridor derives not only from its geographical position but also from its role as a crossroads of navigation, trade, migration and military activity. Any vessel travelling between the Adriatic and the eastern Mediterranean necessarily operated within or in proximity to this maritime zone, creating conditions that favoured the accumulation of a rich and diverse underwater archaeological record.

Despite its historical importance, the archaeological investigation of offshore areas within the northern Ionian Sea remained limited for much of the twentieth century. Archaeological research traditionally focused on coastal settlements, harbours, anchorages and shallow-water shipwrecks, while deep-water environments were largely inaccessible due to technological limitations. As a result, the apparent scarcity of offshore archaeological sites often reflected a lack of investigation rather than an absence of past human activity. This perception has changed significantly over the last two decades through the application of marine geophysical survey techniques, remotely operated vehicles (ROVs) and integrated geoarchaeological methodologies. These developments have transformed understanding of submerged cultural landscapes by demonstrating that deep-water environments preserve important archaeological remains and can contribute substantially to the reconstruction of ancient navigation patterns and maritime connectivity.

A significant milestone in this process was the development of collaborative projects between the Ephorate of Underwater Antiquities (EUA) and the Hellenic Centre for Marine Research (HCMR). Since 2000, these collaborations have undertaken a series of archaeological investigations employing advanced marine survey technologies, contributing substantially to the development of deep-water archaeological research in the eastern Mediterranean (Kourkouvelis and Sakellariou, 2015). These projects demonstrated that marine geophysical datasets acquired for scientific or engineering purposes could also be used to identify archaeological remains and evaluate their significance. The emergence of deep-water archaeology has fundamentally altered perceptions of maritime cultural landscapes. Previously, offshore areas were often viewed as transitional spaces separating coastal centres. Contemporary research increasingly recognises them as active cultural spaces shaped by navigation, exchange and repeated maritime practices. Shipwrecks constitute some of the most visible archaeological manifestations of these processes, preserving evidence of trade, technology, seafaring traditions and patterns of mobility. The ability to identify such remains in deep-water environments has therefore expanded the spatial scope of archaeological investigation and highlighted the importance of offshore zones within broader maritime landscapes.

Particularly important for the present study are the investigations conducted in association with the Greece-Italy POSEIDON natural gas pipeline project. These investigations provide perhaps the closest regional and methodological parallel to the current assessment. The project originated from a collaboration between the EUA, HCMR and IGI POSEIDON S.A. and involved the archaeological evaluation of marine geophysical data acquired during engineering surveys undertaken along the proposed pipeline route (Kourkouvelis and Sakellariou, 2015). Approximately 200 km² of bathymetric, side-scan sonar and sub-bottom profiling data were examined from an archaeological perspective in order to identify targets potentially associated with submerged cultural heritage.

The significance of the POSEIDON investigations lies not only in the discoveries themselves but also in the methodology employed. Following detailed interpretation of the geophysical datasets, twelve targets were selected from several hundred anomalies identified during the survey. Selection criteria included the morphology of the targets, their acoustic reflectivity and their compatibility with the surrounding seabed environment. These targets were subsequently investigated through visual inspection using the ROV *Max Rover*, capable of operating at depths of up to 2,000 m (Kourkouvelis and Sakellariou, 2015).

The investigations resulted in the identification of three previously unknown shipwreck sites, including two Late Roman wrecks and one post-medieval vessel. All three sites were located at depths exceeding 1,000 m, demonstrating that important archaeological remains survive within deep-water environments of the northern Ionian Sea. The discoveries also illustrated the effectiveness of integrating archaeological interpretation into offshore infrastructure projects and highlighted the potential archaeological value of datasets originally acquired for engineering purposes (Kourkouvelis and Sakellariou, 2015).

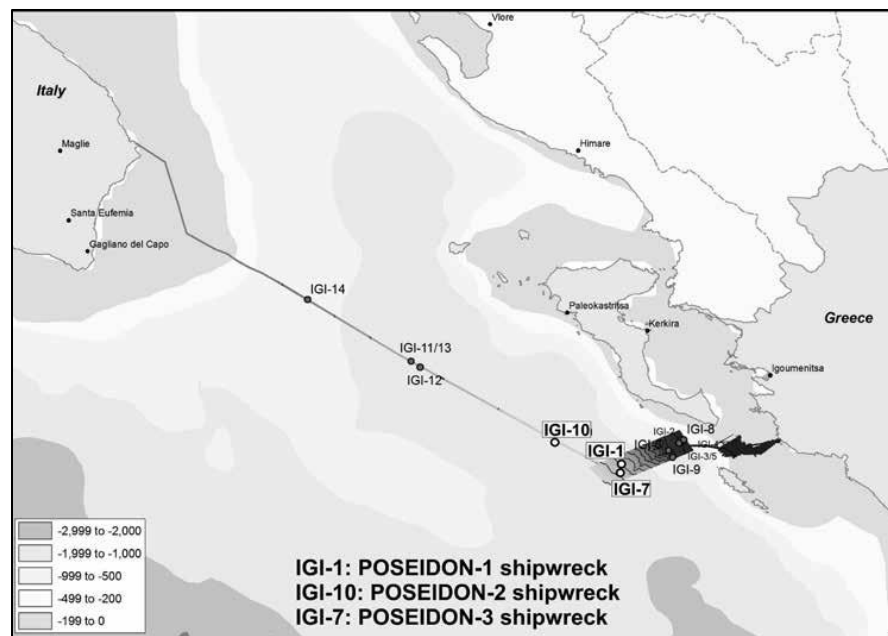


Figure 9. The location of the targets inspected during the deepwater archaeological survey that was conducted by the Ephorate of Underwater Antiquities (EUA) of the Hellenic Ministry of Culture, Education and Religious Affairs, in collaboration with the Hellenic Centre for Marine Research (HCMR). Source: Kourkoumelis & Sakellariou 2015, Fig. 1

The most significant of these discoveries was the wreck designated Poseidon 1. Located at a depth of approximately 1,175 m, the site survives as an elongated mound measuring approximately 15-20 m in length and between 5 and 10 m in width. Much of the wreck remains buried beneath sediment deposits, although visible elements include amphora fragments, anchors and structural remains associated with the vessel. The burial of substantial portions of the site beneath sediment is particularly important because it suggests favourable preservation conditions and the potential survival of archaeological deposits in relatively undisturbed contexts.

Analysis of amphora fragments recovered from Poseidon 1 revealed the presence of North African transport containers, including Africana II C2, Africana I C and Africana IIIA/Keay 25.1 types, dating principally to the fourth century AD (Kourkoumelis and Sakellariou, 2015). These finds indicate participation in long-distance commercial networks linking North Africa, southern Italy and the eastern Mediterranean. The cargo also demonstrates the movement of agricultural products across considerable distances and provides direct archaeological evidence for maritime exchange operating through the northern Ionian Sea during Late Antiquity.

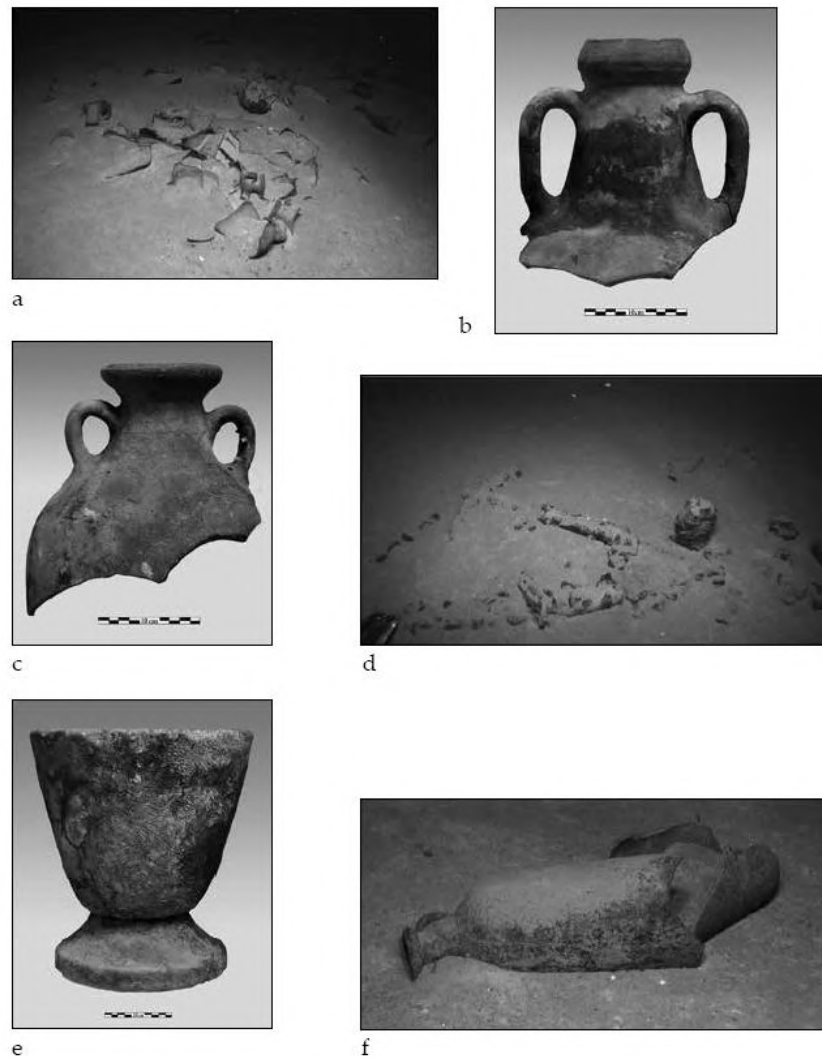


Figure 10. The Poseidon 1 shipwreck: a. The mound of the main cargo concentration; b. Africana II C 2 amphora neck; c. Africana I C amphora neck; d. Two iron anchors; e. A marble mortar (holmos); f. Africana III A (Keay 25.1 type) amphora.
Source: Kourkoumelis & Sakellariou 2015, Fig.2

The second Late Roman shipwreck, Poseidon 2, was discovered at approximately 1,370 m depth. Although less extensively documented, the site also preserved amphora remains associated with a commercial cargo and further reinforced the interpretation of the northern Ionian Sea as an active maritime corridor during the Roman period. Together, the two sites provide direct archaeological evidence for long-distance navigation and commercial exchange within the offshore waters of the region.

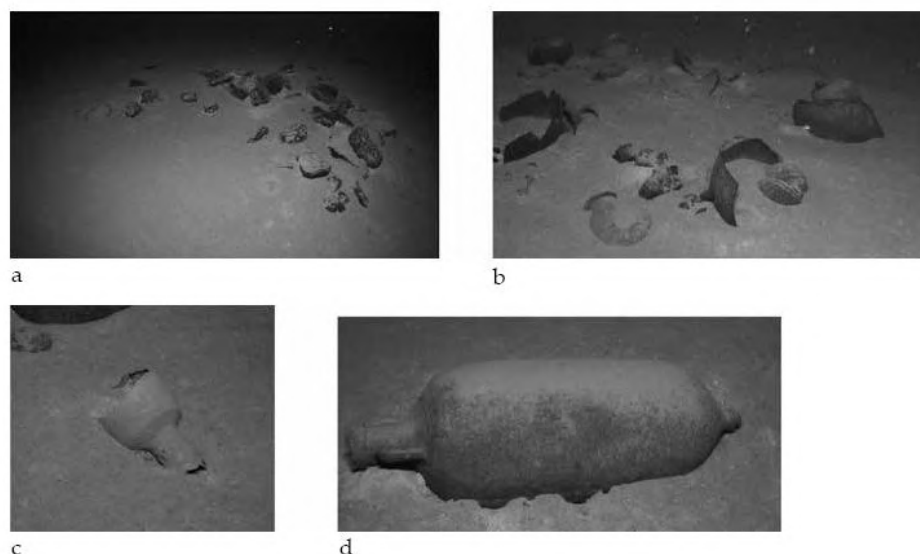


Figure 11. The Poseidon 2 shipwreck: a. The concentration of black stones and amphorae sherds; b. The concentration of amphorae and coarse ware; c. A bronze vase; d. Keay 61 A amphora. Source: Kourkouvelis & Sakellariou 2015, Fig.3

The implications of the POSEIDON discoveries extend beyond the identification of individual shipwrecks. Perhaps the most important conclusion reached by the investigators concerns the reconstruction of navigation routes through the northern Ionian Sea. Traditionally, vessels travelling between the Adriatic and the eastern Mediterranean were often assumed to have remained close to the coast or to have utilised routes passing through the Corfu Channel. The location of the POSEIDON wrecks suggests a more complex pattern of navigation. According to Kourkouvelis and Sakellariou (2015), the distribution of the sites may indicate that vessels crossed substantial portions of the northern Ionian Sea through offshore routes west of Corfu before continuing towards southern Italy or entering the Adriatic.

This interpretation has important implications for archaeological assessments of offshore development areas. It demonstrates that significant archaeological remains may occur well beyond the limits of traditionally recognised coastal navigation zones and highlights the necessity of considering offshore environments as integral components of maritime cultural landscapes. In this respect, the POSEIDON investigations represent a particularly relevant precedent for the present study, illustrating both the archaeological value of offshore geophysical datasets and the potential for the discovery of previously unknown cultural heritage resources within areas subject to energy infrastructure development.

Additional evidence for the archaeological significance of the wider Ionian region is provided by recent investigations undertaken within the Inner Ionian Sea. Geraga et al. (2020) documented a substantial assemblage of underwater cultural heritage resources ranging chronologically from antiquity to the twentieth century. Their study recorded thirty-six known

shipwrecks within the region, eleven of which were systematically investigated using marine geophysical techniques and ground-truthing methods. The results demonstrate the long-term and continuous use of Ionian maritime routes and provide further evidence for the archaeological richness of the wider maritime landscape.

Particularly noteworthy is the diversity of the documented shipwreck assemblage. The recorded sites include ancient merchant vessels, modern wrecks and remains associated with both World Wars, illustrating the enduring strategic and economic importance of the Ionian Sea. The authors emphasise that maritime activity has left a cumulative archaeological signature spanning more than two millennia and highlight the need for integrated management approaches capable of balancing cultural heritage protection with contemporary maritime uses, including fisheries, shipping and hydrocarbon exploration (Geraga et al., 2020).

The archaeological significance of the Corfu-Otranto corridor has been reinforced further by recent discoveries from the Strait of Otranto itself. Of particular importance is the identification of an Early Archaic shipwreck discovered within the Otranto Channel and recently published by Davidde (2023). The vessel carried a substantial cargo of Corinthian ceramics, including transport amphorae and other ceramic vessels dating to the late eighth and early seventh centuries BC. The assemblage provides rare archaeological evidence for maritime activity during the early phases of Greek expansion towards the western Mediterranean and demonstrates that navigation through the Otranto corridor was already established during the Archaic period (Davidde, 2023). The discovery significantly extends the chronological depth of the archaeological record within the region and contributes to a growing body of evidence indicating that the waters between Corfu and southern Italy functioned as a major maritime communication zone over a period exceeding two millennia.



Figure 12. Recovery of amphora from the early Archaic shipwreck discovered within the Otranto Channel. Source: <https://www.archaeology.wiki/blog/2026/06/11/the-shipwreck-in-the-strait-of-ottranto/>

The importance of the Otranto wreck lies not only in its chronology but also in its geographical position. Together with the Late Roman wrecks identified during the POSEIDON investigations, it contributes to a growing body of evidence indicating that the waters between Corfu and southern Italy functioned as a major maritime communication zone over an extended period. The archaeological record therefore reflects a long history of navigation, commerce and cultural interaction that transcends individual periods and demonstrates the persistent significance of the corridor within Mediterranean maritime systems.

Collectively, the available archaeological evidence demonstrates that the Corfu-Otranto corridor cannot be regarded as an archaeologically empty offshore space. Instead, it constitutes a maritime landscape characterised by intensive and long-term human activity. Shipwrecks dating from the Archaic period to modern times illustrate the enduring importance of the region for navigation, trade and communication and confirm the preservation of archaeological remains within both coastal and deep-water environments. Importantly, many of the most significant discoveries have resulted from the archaeological assessment of datasets acquired for engineering and infrastructure projects rather than from dedicated archaeological surveys. This observation strongly suggests that the archaeological record of the northern Ionian Sea remains substantially underexplored and that additional submerged cultural heritage resources are likely to survive within offshore areas that have not yet been systematically investigated. Consequently, the wider study area should be regarded as possessing significant archaeological potential despite the relatively limited number of previously recorded sites within its immediate vicinity.

4.4 Archaeological Potential of the Study Area

The assessment of archaeological potential within offshore environments is inherently constrained by the uneven distribution of archaeological investigations and the limited visibility of submerged cultural heritage resources. Consequently, the absence of previously recorded archaeological sites cannot be interpreted as evidence for the absence of archaeological remains. This consideration is particularly relevant in the northern Ionian Sea, where recent discoveries have demonstrated that significant archaeological sites may survive in deep-water environments and may only become apparent through the analysis of marine geophysical datasets.

Several factors indicate that Block 2 possesses archaeological potential. First, the study area is situated within the wider Corfu-Otranto corridor, one of the principal maritime gateways linking the Adriatic basin with the eastern Mediterranean. Archaeological and historical evidence demonstrates the long-term use of this maritime zone for navigation,

trade and communication, suggesting that maritime activity may have occurred across both coastal and offshore environments.

Second, archaeological discoveries from the wider northern Ionian Sea demonstrate the presence of submerged cultural heritage resources within comparable offshore settings. Particularly significant are the shipwrecks identified during the POSEIDON pipeline investigations, which provided direct evidence for ancient maritime activity at depths exceeding 1,000 m and demonstrated that important archaeological remains may survive well beyond traditionally recognised coastal navigation corridors (Kourkoumelis and Sakellariou, 2015). The recent discovery of the Archaic shipwreck in the Otranto Channel further reinforces the long-term archaeological significance of the region and extends the documented record of maritime activity to at least the seventh century BC (Davidde , 2023).

Third, environmental conditions within deep-water settings may favour archaeological preservation. The presence of sediment accumulation has reduced direct human interference and limited physical disturbance may contribute to the survival of both exposed and buried archaeological remains. Evidence from the POSEIDON shipwrecks demonstrates that substantial portions of archaeological sites may remain concealed beneath seabed sediments while preserving exposed structural and cargo-related elements.

Finally, the archaeological record of the northern Ionian Sea remains incomplete. Many of the most important discoveries made during the last two decades have resulted from the archaeological assessment of datasets acquired for engineering and infrastructure projects rather than from dedicated archaeological surveys. This observation strongly suggests that additional archaeological resources are likely to remain undiscovered within offshore areas that have not yet been systematically investigated.

Based on the available evidence, the archaeological potential of Block 2 is assessed as **moderate to high**, particularly with regard to submerged cultural heritage associated with maritime activity. Consequently, anomalies identified during marine geophysical investigations should be regarded as potentially significant until their character has been evaluated through detailed analysis and, where appropriate, visual verification. The geophysical investigations undertaken within Block 2 therefore provide an important opportunity to assess archaeological potential at a local scale and form the basis for the cultural heritage assessment presented in the following chapter.

5. Archaeological Assessment of Survey Data

5.1 Introduction

The archaeological assessment presented in this chapter is based on the review and interpretation of marine geophysical and visual inspection datasets acquired during the offshore survey programme within Block 2. The objective of the assessment was to identify anomalies potentially associated with underwater cultural heritage resources, evaluate their archaeological significance and establish baseline conditions within the survey area.

The assessment incorporated the analysis of multibeam bathymetry (MBES), High Resolution Synthetic Aperture Sonar (HISAS), sub-bottom profiler (SBP), magnetometer and CathX visual inspection data. Particular attention was given to anomalies displaying characteristics commonly associated with shipwrecks, cargo concentrations, structural remains or other anthropogenic features.

The review of the available datasets identified a single target displaying clear archaeological characteristics. This anomaly, designated T057, was subjected to additional geophysical analysis and visual inspection and is interpreted as the remains of an ancient shipwreck. The archaeological significance of this site is discussed below.

5.2 Review of Survey Results

The offshore survey achieved comprehensive geophysical coverage of the investigation area through the acquisition of high-resolution bathymetric, acoustic and geophysical data. The primary objectives of the survey included the identification of seabed features and anthropogenic objects that might influence engineering design, environmental assessment and project implementation.

Numerous seabed anomalies were identified during the survey programme. The majority of these features were interpreted as natural geological formations, localised seabed irregularities or modern anthropogenic debris lacking archaeological significance. However, one anomaly, designated T057, exhibited characteristics distinguishing it from other identified targets and warranted additional archaeological assessment.

The target was initially detected during Mission M03 of the geophysical survey programme and subsequently became the subject of a dedicated site memorandum due to its potential archaeological significance. Subsequent review of HISAS, MBES, SBP and CathX data confirmed the presence of a coherent anthropogenic feature consistent with the remains of a shipwreck site.

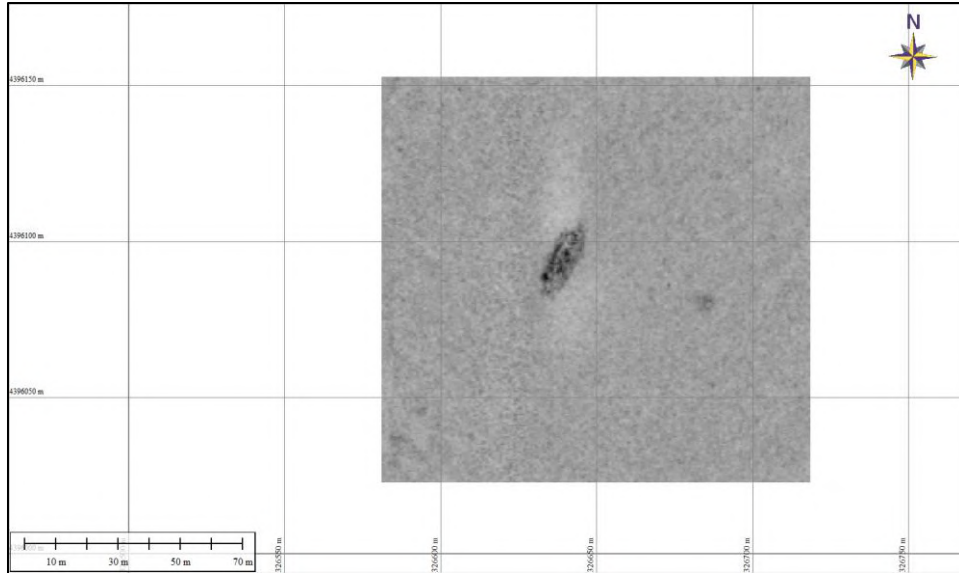


Figure 13. HISAS data: possible ancient shipwreck and related target. Source: Lighthouse S.p.A. (2024)

5.3 Archaeological Targets Identified within the Survey Area

The archaeological review of the available geophysical and visual inspection datasets identified a single target displaying characteristics consistent with underwater cultural heritage. Target T057 exhibits a coherent elongated morphology, measures approximately 23.7 m in length and 8.3 m in width, and rises approximately 0.6 m above the surrounding seabed. The anomaly is associated with a concentration of partially buried amphorae documented during visual inspection and with additional buried components identified through sub-bottom profiling. The combined geophysical and visual evidence strongly supports the interpretation of the site as the remains of an ancient shipwreck. Consequently, T057 is considered to possess high archaeological potential and is assessed as being of high archaeological significance. It represents the principal underwater cultural heritage resource identified within the survey area and forms the focus of the present assessment.

5.4 Target T057

5.4.1 Location and Setting

Target T057 was identified during Mission M03 of the offshore geophysical survey programme. The target is located at coordinates 326640.24 m E and 4396094.99 m N (WGS84 UTM Zone 34N) at a water depth of approximately 880 m. The site lies within a deep-

water sector of Block 2 characterised by fine-grained sedimentary deposits and localised seabed relief.

The target occurs as an isolated anomaly within the wider survey area and is not associated with any known modern infrastructure or seabed installation. Its location within a deep-water environment is comparable to several significant archaeological discoveries made elsewhere in the northern Ionian Sea, including the shipwrecks identified during the POSEIDON pipeline investigations.

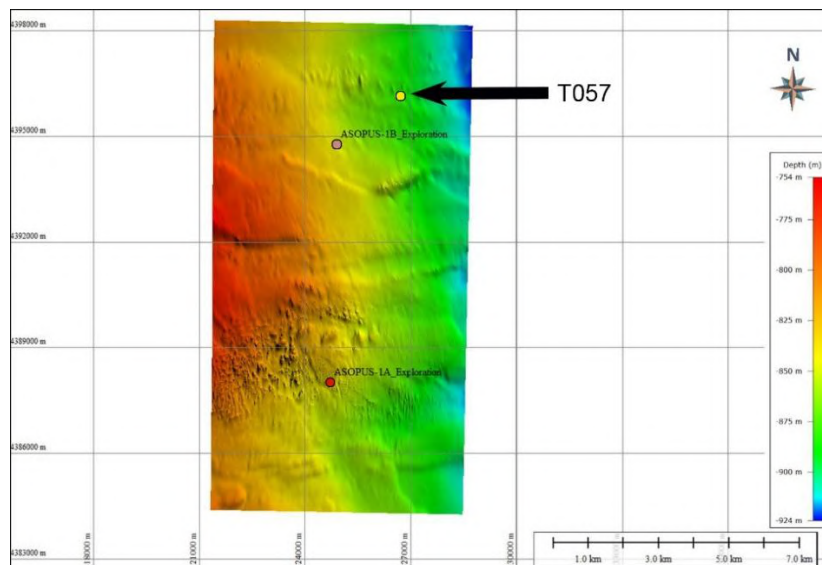


Figure 14. Location of T057. Adapted from Lighthouse S.p.A. (2024).

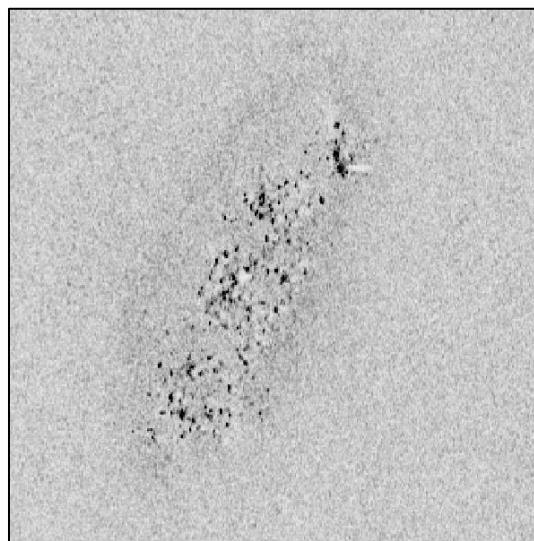


Figure 15. High-resolution image of a possible ancient shipwreck's ruins. Source: Lighthouse S.p.A. (2024)

5.4.2 Geophysical Characteristics

T057 was initially identified within HISAS imagery as a distinct elongated feature displaying strong acoustic reflectivity and clear morphological separation from the surrounding seabed. The anomaly measures approximately 23.7 m in length and 8.3 m in width and forms a coherent feature rather than a dispersed debris concentration. The dimensions and morphology are consistent with those expected from the remains of a small to medium-sized ancient merchant vessel.

Multibeam bathymetric data indicate that the anomaly rises approximately 0.6 m above the surrounding seabed. Although the feature exhibits limited vertical relief, it forms a distinct seabed mound clearly distinguishable from the adjacent sedimentary environment.

Sub-bottom profiler data further indicate the presence of buried material beneath the visible anomaly. This observation suggests that a substantial component of the archaeological deposit may remain concealed beneath seabed sediments and that the exposed remains indicated within acoustic and visual datasets likely represent only part of the original site.

The combined geophysical evidence indicates the presence of a coherent archaeological feature exhibiting both exposed and buried components and possessing dimensions consistent with a shipwreck site.

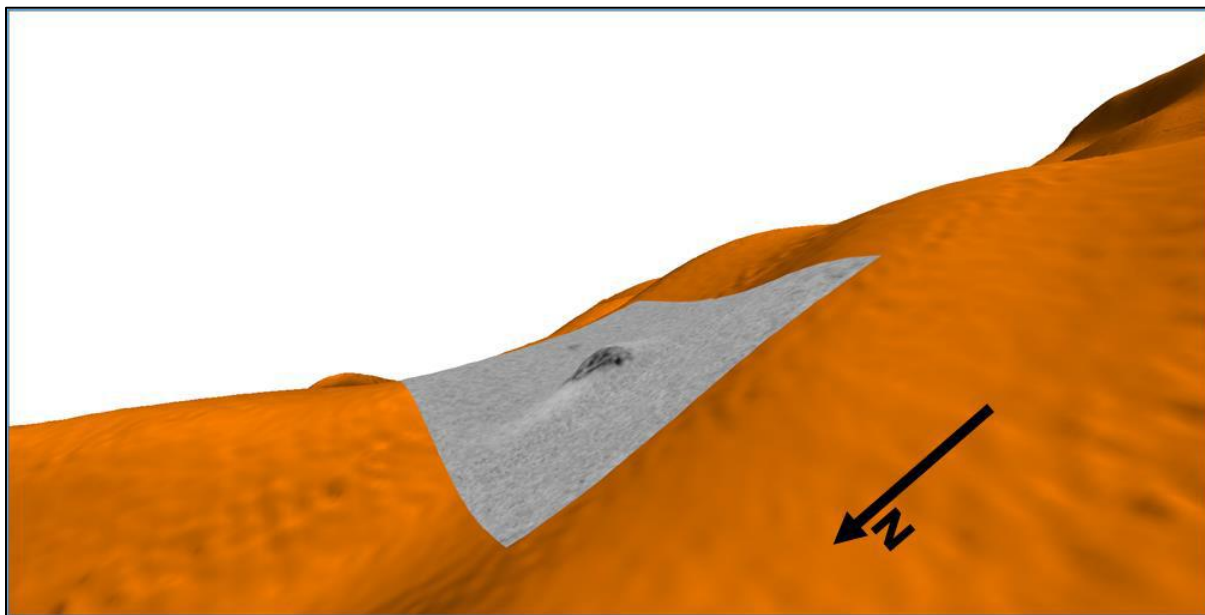


Figure 16. 3D image of a possible shipwreck with HISAS data superimposed on MBES data. Source: Lighthouse S.p.A.

(2024)

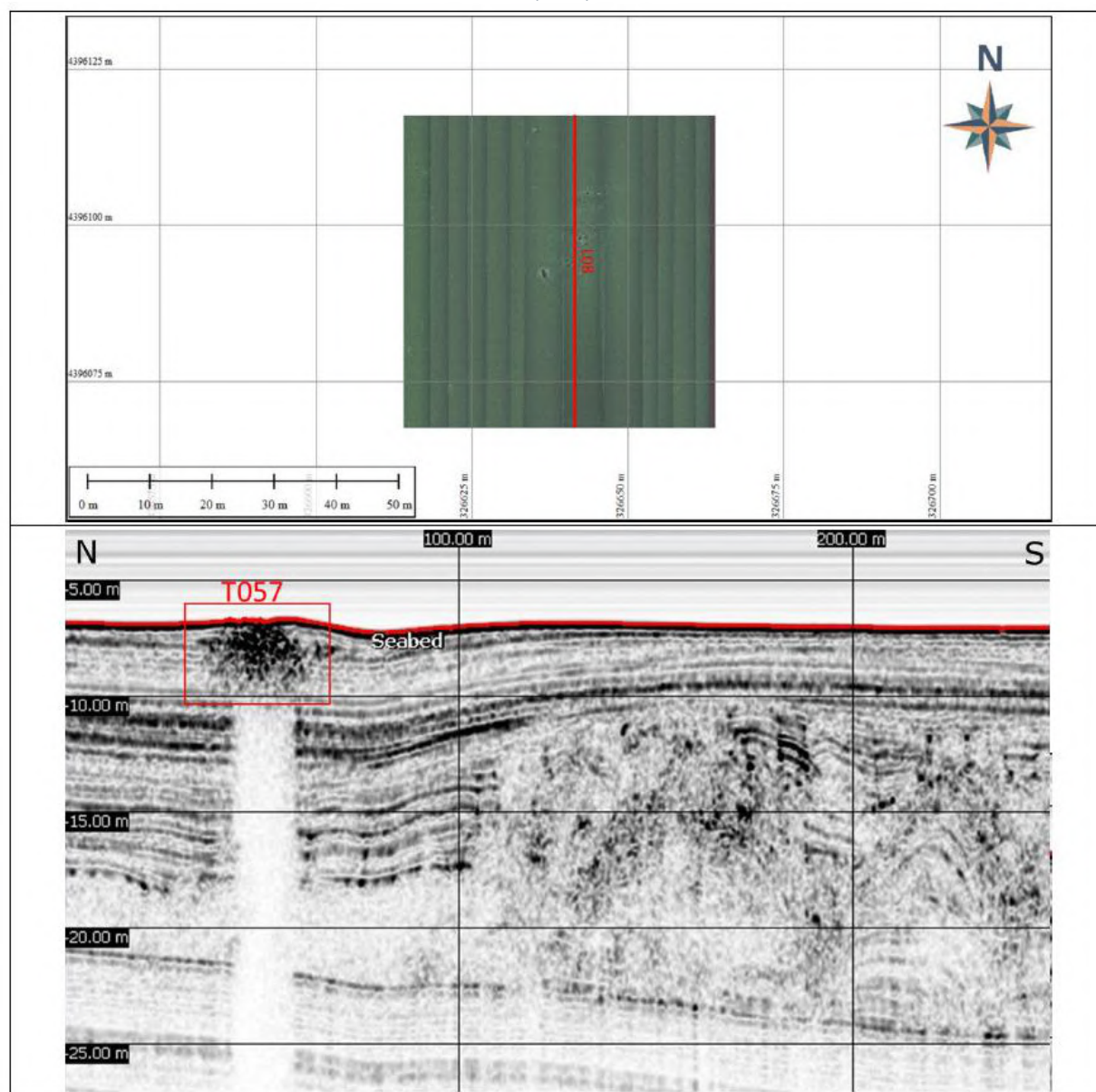


Figure 17. SBP line T057_I08: buried part of the target T057 identified on the seismic data during Visual Inspection. Source: Lighthouse S.p.A. (2024)

5.4.3 Visual Inspection

Following identification of the anomaly, a targeted visual inspection was undertaken using the CathX camera system. The imagery revealed a concentration of partially buried amphorae associated with the anomaly and confirmed the archaeological character of the site.

The observed amphorae appear clustered within the central portion of the target and are partially embedded within seabed sediments. In addition to the cargo remains, the imagery suggests the presence of a pale elongated feature corresponding to the principal acoustic anomaly identified within the HISAS data. This feature may represent degraded structural remains or sediment-covered portions of the vessel.

The visual inspection provided direct confirmation that the anomaly is cultural rather than geological in origin and established the presence of diagnostic archaeological material within the site.

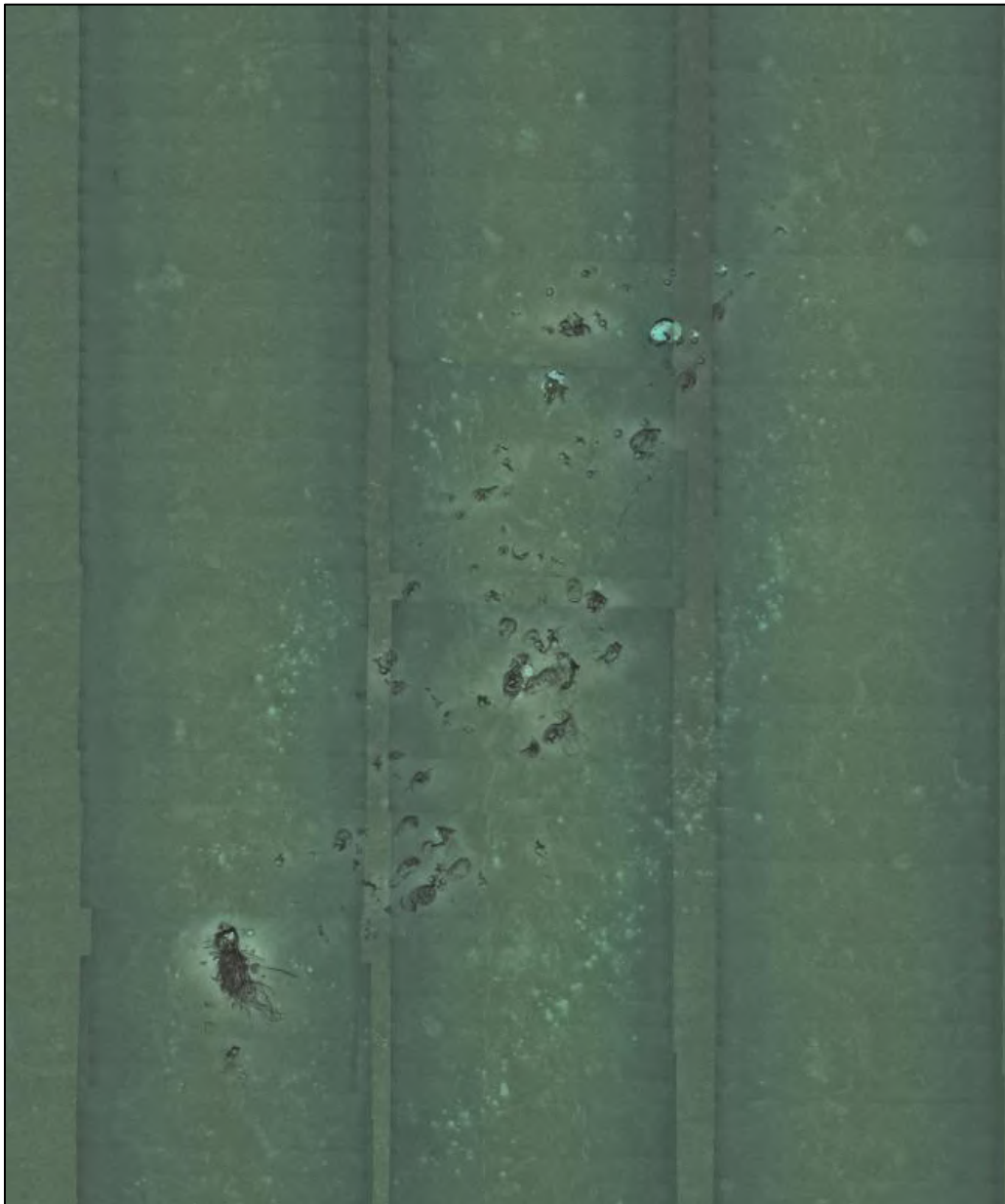


Figure 18. CathX photomosaic of the wreck. Source: Lighthouse S.p.A. (2024)

5.4.4 Archaeological Interpretation

The available evidence strongly supports interpretation of T057 as an ancient shipwreck site. The dimensions of the anomaly, its elongated morphology, the presence of associated amphora cargo, the identification of buried components and the results of visual inspection collectively indicate the remains of a vessel rather than an isolated cargo deposit or natural seabed feature.

The feature appears partially buried and may represent the remains of a vessel lying on the seabed. The limited relief observed within bathymetric data and the apparent degradation of structural elements suggest that the wooden components of the vessel have largely deteriorated, while portions of the cargo and associated deposits remain preserved within the seabed.

The site exhibits notable similarities to the deep-water shipwrecks identified during the Greece-Italy POSEIDON pipeline investigations. In both cases, archaeological remains were detected through marine geophysical survey techniques and subsequently confirmed through visual observations. The partially buried character of the site, the preservation of cargo remains and the occurrence within a deep-water environment are consistent with broader patterns observed in the northern Ionian Sea and elsewhere in the Mediterranean.

The identification of amphorae is particularly significant because such cargoes are commonly associated with maritime trade and transport. While the available imagery does not permit precise chronological attribution, the presence of transport amphorae strongly suggests an ancient date and supports interpretation of the site as a merchant vessel engaged in regional or long-distance maritime exchange.

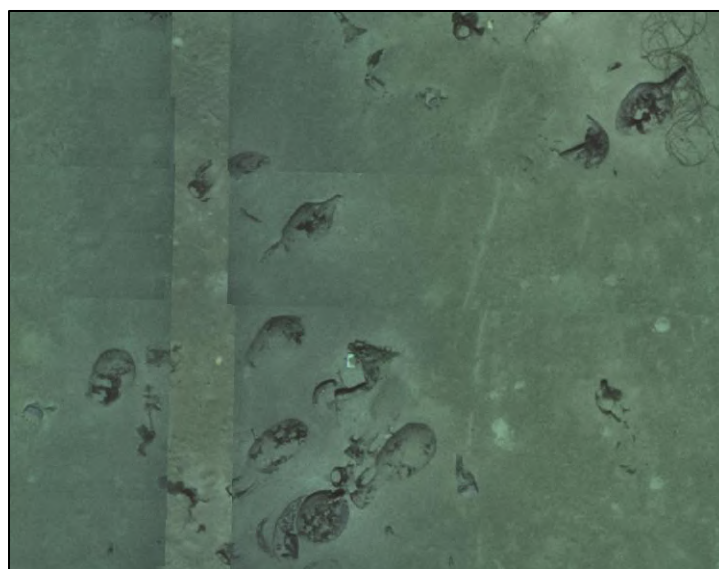


Figure 19. Detail of the shipwreck area with visible amphorae. Source: Lighthouse S.p.A. (2024)

The amphorae visible within the CathX imagery exhibit elongated ovoid bodies, narrow necks and pointed bases characteristic of transport amphorae. Although the available imagery does not permit secure typological identification, the observable morphology appears broadly consistent with amphora forms associated with the Adriatic production sphere, including Lamboglia 2 and Dressel 6A types. Such containers were widely employed in the transport of wine and other commodities between the late Hellenistic and Early Imperial periods. Given the limitations of the available evidence, this attribution should be regarded as provisional pending detailed archaeological investigation and direct examination of the material.

The discovery of T057 contributes to the growing body of evidence indicating that offshore sectors of the northern Ionian Sea preserve important archaeological resources and that significant shipwreck sites may survive well beyond traditionally recognised coastal navigation corridors. The site therefore represents an important addition to the archaeological record of the wider Corfu-Otranto maritime corridor.

5.5 Significance Assessment

T057 is assessed as being of high archaeological significance.

This assessment reflects the integrity of the site, the presence of diagnostic cargo remains, the apparent preservation of both exposed and buried archaeological deposits and the rarity of comparable discoveries within the immediate project area. The site possesses considerable research value and has the potential to contribute to the understanding of ancient navigation, maritime trade and shipbuilding within the northern Ionian Sea.

The deep-water context of the site further enhances its significance. Such environments are comparatively under-investigated and have only recently become accessible through advances in marine survey technology. Consequently, well-preserved deep-water shipwreck sites constitute a relatively rare archaeological resource within the eastern Mediterranean.

From a project perspective, T057 represents the principal underwater cultural heritage receptor identified within the survey area and should therefore be considered a sensitive archaeological resource requiring protection from potential project-related impacts.

5.6 Summary

The review of available geophysical and visual inspection datasets identified a single archaeological site within the survey area. Target T057 is interpreted as the remains of an

ancient shipwreck located at a depth of approximately 880 m and associated with a cargo of transport amphorae.

The combination of geophysical and visual evidence provides strong support for this interpretation and indicates the presence of both exposed and buried archaeological remains. The site is considered to be of high archaeological significance and constitutes the principal underwater cultural heritage resource identified during the assessment.

The implications of the proposed development for T057 and other potential underwater cultural heritage resources are assessed in the following chapter.

6. Conclusions

The present study has assessed the archaeological potential of the proposed ASOPUS-1A exploration well area within Block 2 of the northern Ionian Sea and evaluated the potential effects of the proposed development on underwater cultural heritage resources.

The wider project area occupies a region of considerable archaeological and historical significance situated within the maritime corridor connecting the Adriatic and Ionian Seas. This corridor has functioned as an important route for maritime communication, trade and navigation from prehistory through the modern era and forms part of a broader maritime cultural landscape extending across the northern Ionian Sea and the Strait of Otranto.

The archaeological baseline assessment incorporated the review of published archaeological sources together with the interpretation of marine geophysical and visual inspection datasets acquired during the offshore survey programme. These datasets included multibeam bathymetry (MBES), High Resolution Synthetic Aperture Sonar (HISAS), sub-bottom profiler (SBP), magnetometer and CathX imagery.

The assessment identified a single underwater cultural heritage site within the surveyed area. Target T057 has been interpreted as the remains of an ancient shipwreck associated with a cargo of transport amphorae and partially buried archaeological deposits. The combined geophysical and visual evidence strongly supports the interpretation of the site as an ancient shipwreck of high archaeological significance.

Target T057 is located approximately 8.3 km northeast from the proposed ASOPUS-1A well location and therefore lies well beyond the area likely to be affected by drilling operations. No archaeological sites or targets were identified within the immediate project footprint or within the 500 m assessment area surrounding the proposed well location.

References

- Davidde, B. (Ed.). (2023). *Recuperati dagli abissi: il relitto alto-arcaico del canale d'Otranto*. Gangemi editore SpA international.
- De Mitri, C. (2024) 'Adriatic trade from Protohistory to the Roman period: an objectscape overview', in Ugarković, M., Konestra, A., Čelhar, M., & Korić, M. (Eds.). (2024). *Between Global and Local: Adriatic Connectivity from Protohistory to the Roman Period: Proceedings of the Conference Stari Grad, 28th-29th October 2022*. Institut zu arheologiju, pp. 7-32.
- Geraga, Maria, Dimitris Christodoulou, Dimitrios Eleftherakis, George Papatheodorou, Elias Fakiris, Xenophon Dimas, Nikos Georgiou et al. (2020) "Atlas of shipwrecks in Inner Ionian Sea (Greece): A remote sensing approach." *Heritage* 3, no. 4: 1210-1236.
- Jurišić, M. (2000). *Ancient Shipwrecks of the Adriatic, Maritime transport during the first and second centuries AD*. Oxford: Archaeopress.
- Kourkoumelis, D., (2013). Transports maritimes et amphores de transport en mer Ionienne, Une première approche, *Proceedings of the International Congress, Immensa Arequora, Ricerche archeologiche, archeometriche e informatiche per la ricostruzione dell'economiae dei commerci nel bacino occidentale del Mediterraneo (metà IV sec. a.C.-I sec. d.C.)*, Università La Sapienza, Roma: ed. Quasar, 469-475.
- Kourkoumelis, D., Sakellariou, D., 2015. Two Roman Shipwrecks from the North Ionian Sea, *Proceedings of Per Terram, Per Mare, Seaborne Trade and the Distribution of Roman Amphorae in the Mediterranean*, Uppsala: Ålströms förlag, 219-227.
- Maarleveld, T.J., Guérin, U. and Egger, B. (eds.) (2013) *Manual for Activities Directed at Underwater Cultural Heritage: Guidelines to the Annex of the UNESCO 2001 Convention*. Paris: UNESCO.
- UNESCO (2001) *Convention on the Protection of the Underwater Cultural Heritage*. Paris: UNESCO.

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AUV Geophysical & ESBS Survey on Block 2

REPORT Current Meter Data Analysis



IDP	Delivery Date	Survey area	Contract No.
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LIGHTHOUSE DOCUMENT CONTROL			
Prepared by		Checked by	Approved by
Blumetocean Srl		S. Sandroni	M. Forastiere

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29/05/2026	B1	Issued for Client Comment	All

		AUV Geophysical & ESBS Survey on Block 2 CURRENTMETER DATA ANALYSIS				
Prepared by	Checked by	Approved by	Date	IDP	File:	Rev. B1
Bluemetocean	S. Sandroni	M. Forastiere	29/05/2026	EER001	EER001_SPCM_REPOR T_B1.doc	P. 2/ 13

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		AUV Geophysical & ESBS Survey on Block 2 CURRENTMETER DATA ANALYSIS				
Prepared by	Checked by	Approved by	Date	IDP	File:	Rev. B1
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1.0.0 INTRODUCTION

1.1.0 Scope of Work

The present document is aimed at processing and describing the deepwater sea current measurements collected in the Ionian Sea through two (2) Single Point Current Meters (hereinafter SPCM). A dedicated mooring line was deployed in April 2026: Figure 1 shows a general sketch of the mooring line together with a map showing the geographical deployment location.

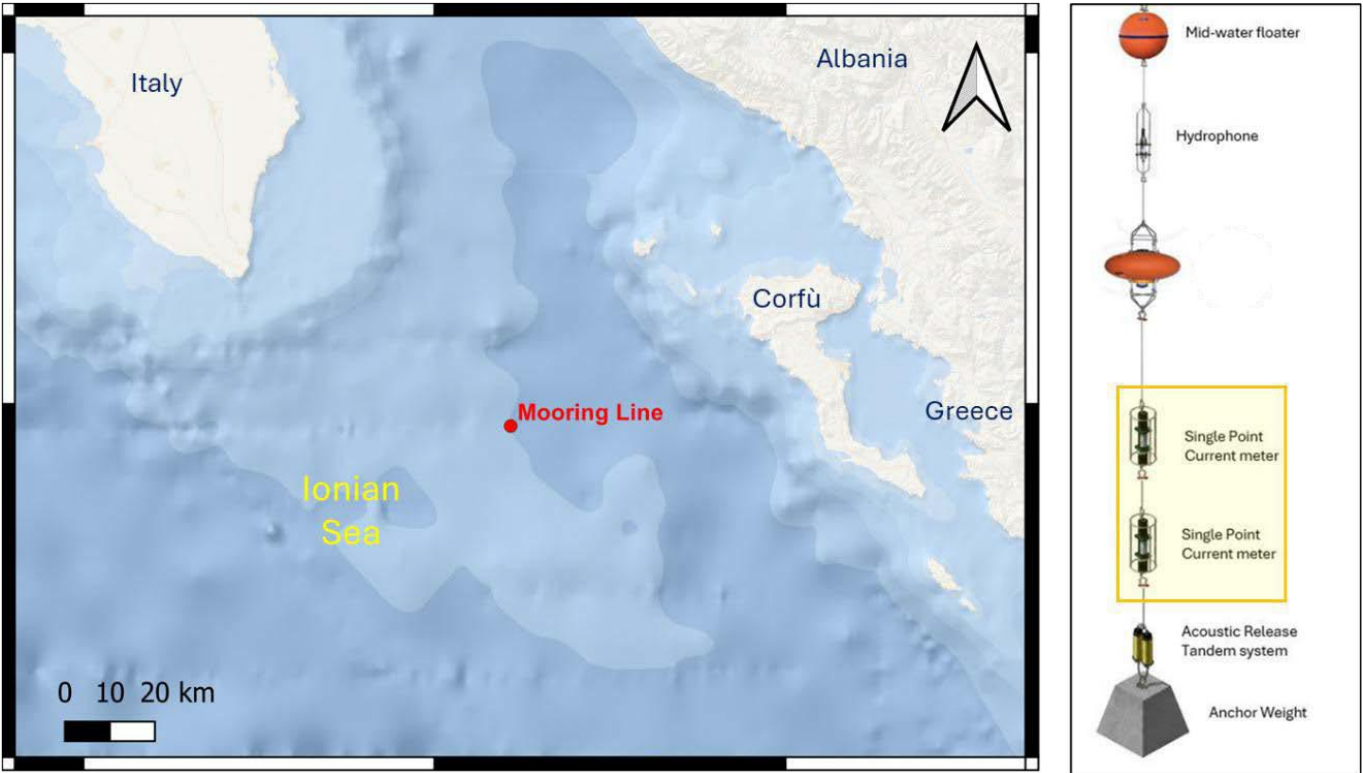


Figure 1 – Geographical location of the mooring line deployed in the Ionian Sea and sketch showing the position of the two Single Point Current Meters along the mooring line.

1.2.0 References

[1] G. Civitarese et al., 'Biogeochemical fluxes through the Strait of Otranto (Eastern Mediterranean)', Continental Shelf Research, vol. 18, no. 7, pp. 773–789, Jun. 1998, doi: 10.1016/S0278-4343(98)00016-8.

[2] L. Ursella, V. Kovačević, and M. Gačić, 'Tidal variability of the motion in the Strait of Otranto', Ocean Sci., vol. 10, no. 1, pp. 49–67, Feb. 2014, doi: 10.5194/os-10-49-2014.

[3] V. Kovačević, M. Gačić, and P.-M. Poulain, 'Eulerian current measurements in the Strait of Otranto and in the Southern Adriatic', Journal of

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2.0.0 PRESENTATION AND VALIDATION OF THE DATA

2.1.0 General background

The mooring line was deployed offshore in the Ionia Sea halfway between Italy and Corfù island at coordinates (333412.13 mE, 4374226.35 mN). The deployment started on April 5th , 2026 and the entire mooring line was recovered on April 27th , 2026.

The set of sensors deployed along the mooring line is listed below and sketched in Figure 2:

- ✓ Hydrophone;
- ✓ Single-point current meter ("upper");
- ✓ Single-point current meter ("lower").

The two SPCM were located at approximately 12 m (upper) and 7 m (lower) from the seabed level. The validation presented in this report deals with the data recorded by each of the two SPCM sensors.

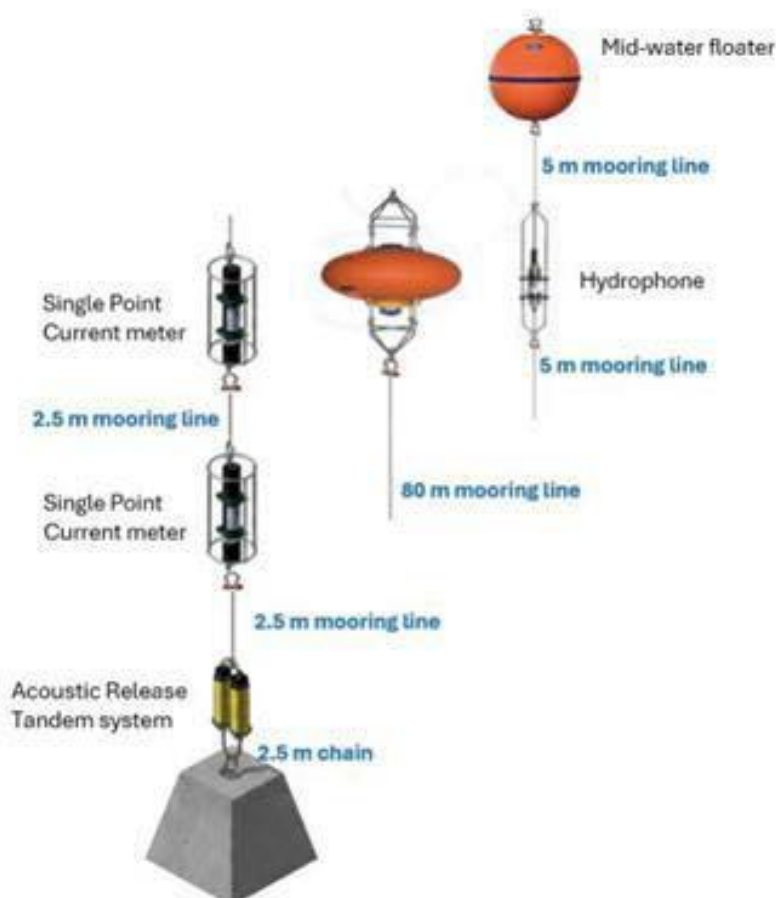


Figure 2 – Sketch showing the position of the two Single Point Current Meters along the mooring line and the approximate relative distances with respect to the seabed level

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The sensors (i.e., Nortek Aquadopp 2MHz) measure water velocity using the physical principle of the Doppler effect, transmitting a frequency-modulated sound pulse, known as a "chirp." The sound pulse is not reflected directly by the water, but by suspended particles in the water column. These particles are considered passively transported by the current and are assumed to move at the same speed as the surrounding water. The Aquadopp has 3 beams emitting an acoustic signal at 2 MHz, each beam measures the velocity along its own direction, then the instrument mathematically combines the three beam velocities to reconstruct east velocity (u), north velocity (v) and vertical velocity (w) in m/s.

Both the SPCM ("upper" and "lower") were set with a sampling interval of 10 minutes (600 sec) and an averaging interval (the time window over which the instrument internally averages acoustic measurements before storing one output record) of 3 minutes.

The time series of recorded velocities are shown in the following figures, before processing the data for quality control (hereinafter QC) and validation.

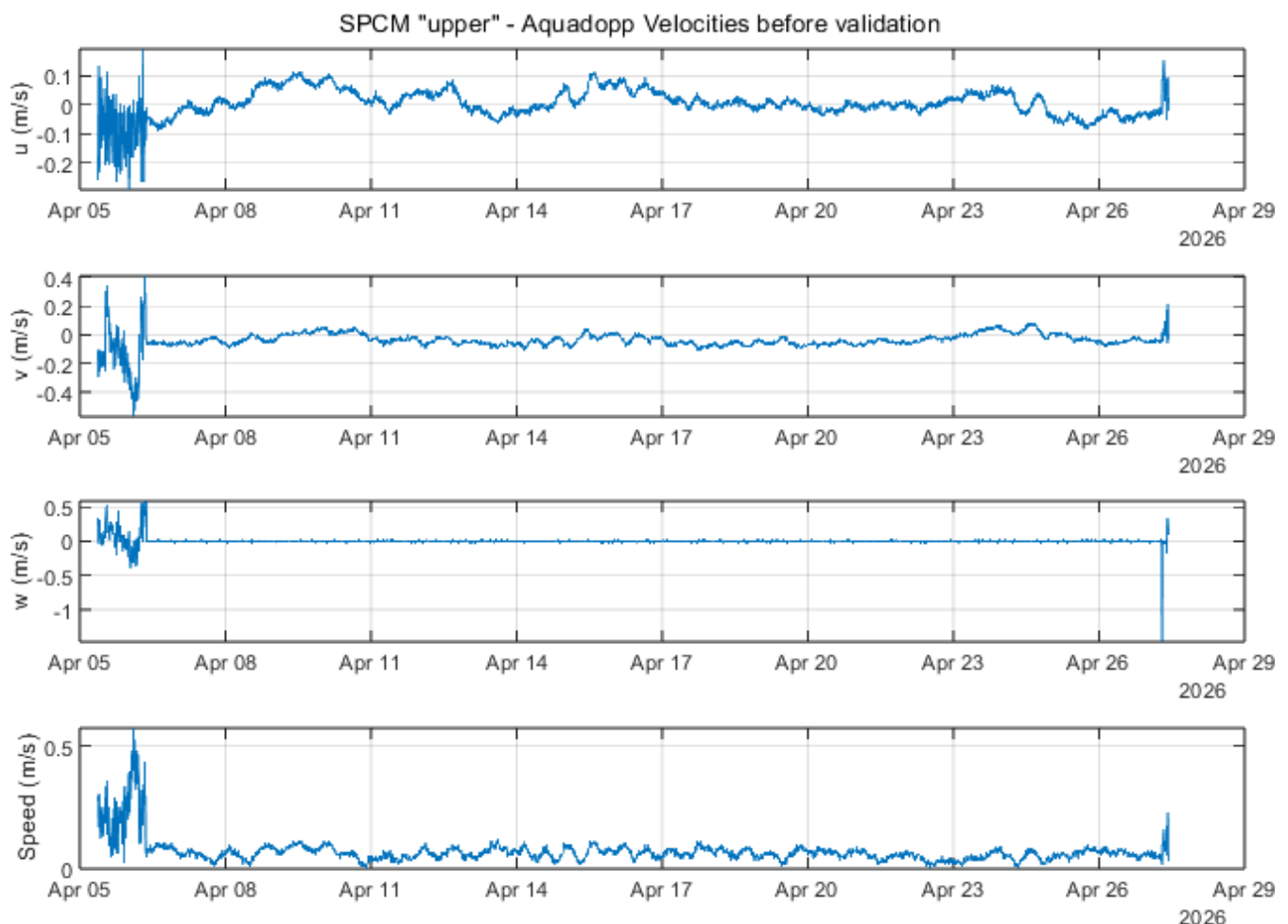


Figure 3 – SPCM "upper" before QC and data validation – time series of velocities record by the sensors

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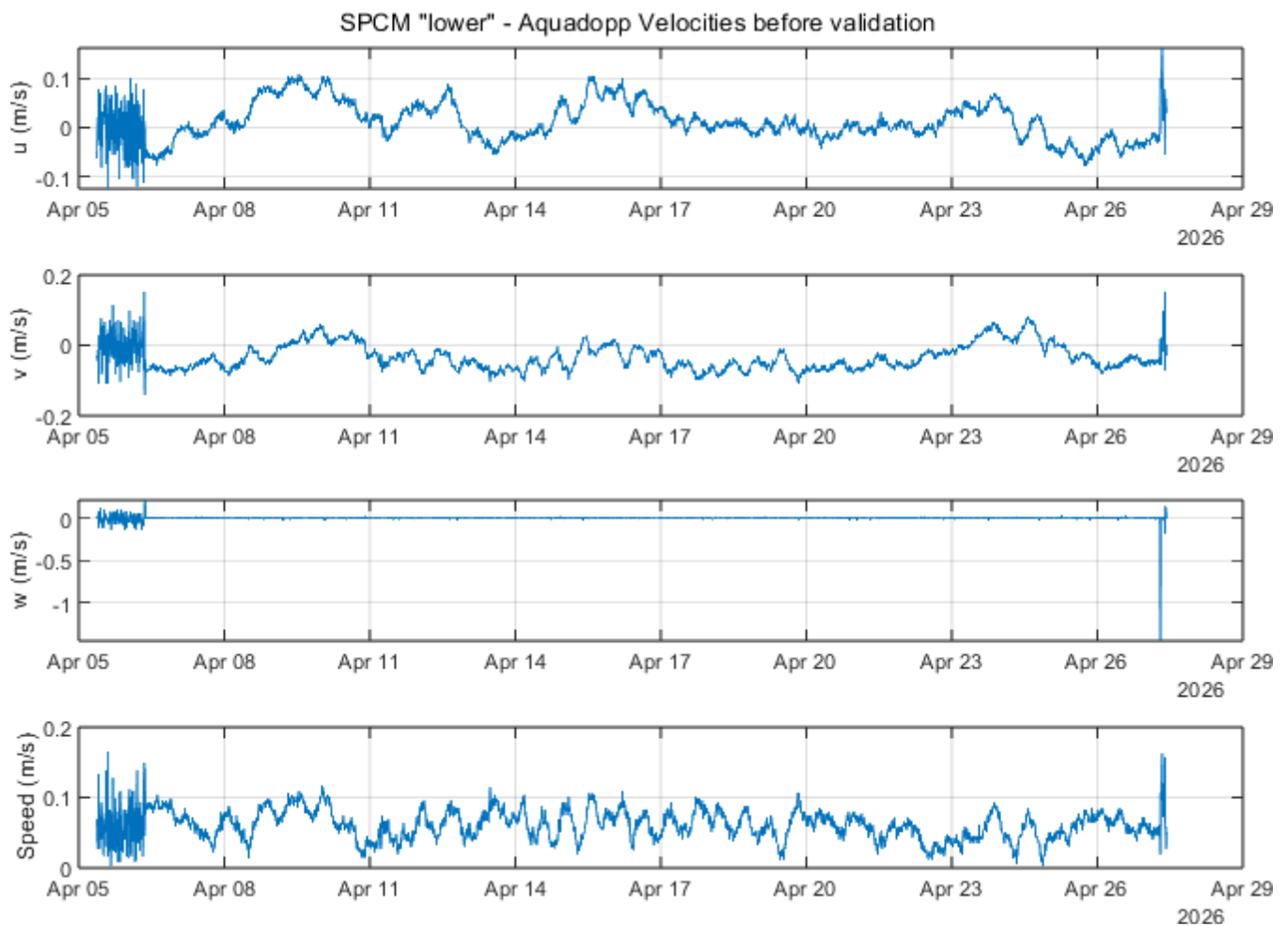


Figure 4 – SPCM “lower” before QC and data validation – time series of velocities record by the sensors

2.2.0 Quality control and data validation

The current speed and direction, sea temperature and pressure values detected by the two SPCM sensors were analyzed, graphed, and appropriately validated to correct the data (where possible) and purge the database of objectively incorrect data. The SPCM datasets were quality controlled using a combination of automated physical and instrument-based tests. The QC procedure included checks for missing values, instrument error codes, unrealistic velocity magnitudes, excessive instrument tilt, temporal spikes, rapid rate-of-change anomalies, pressure discontinuities, unrealistic temperature values, low battery voltage, and beam amplitude inconsistencies. Quality flags were assigned following standard oceanographic conventions:

- 1 = good,
- 2 = probably good,
- 3 = suspect,
- 4 = bad, and
- 9 = missing.

Cleaned datasets were then generated by retaining only data flagged as good or probably good.

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2.3.0 Validated data

Validated data are presented below as follows:

- Time series of velocity components (u, v, w in m/s) and combined current speed (m/s) and flowing direction (°N) are shown in Figure 5 and Figure 6;
- Time series of seawater pressure (dBar) and temperature (°C) in Figure 7 and Figure 8.

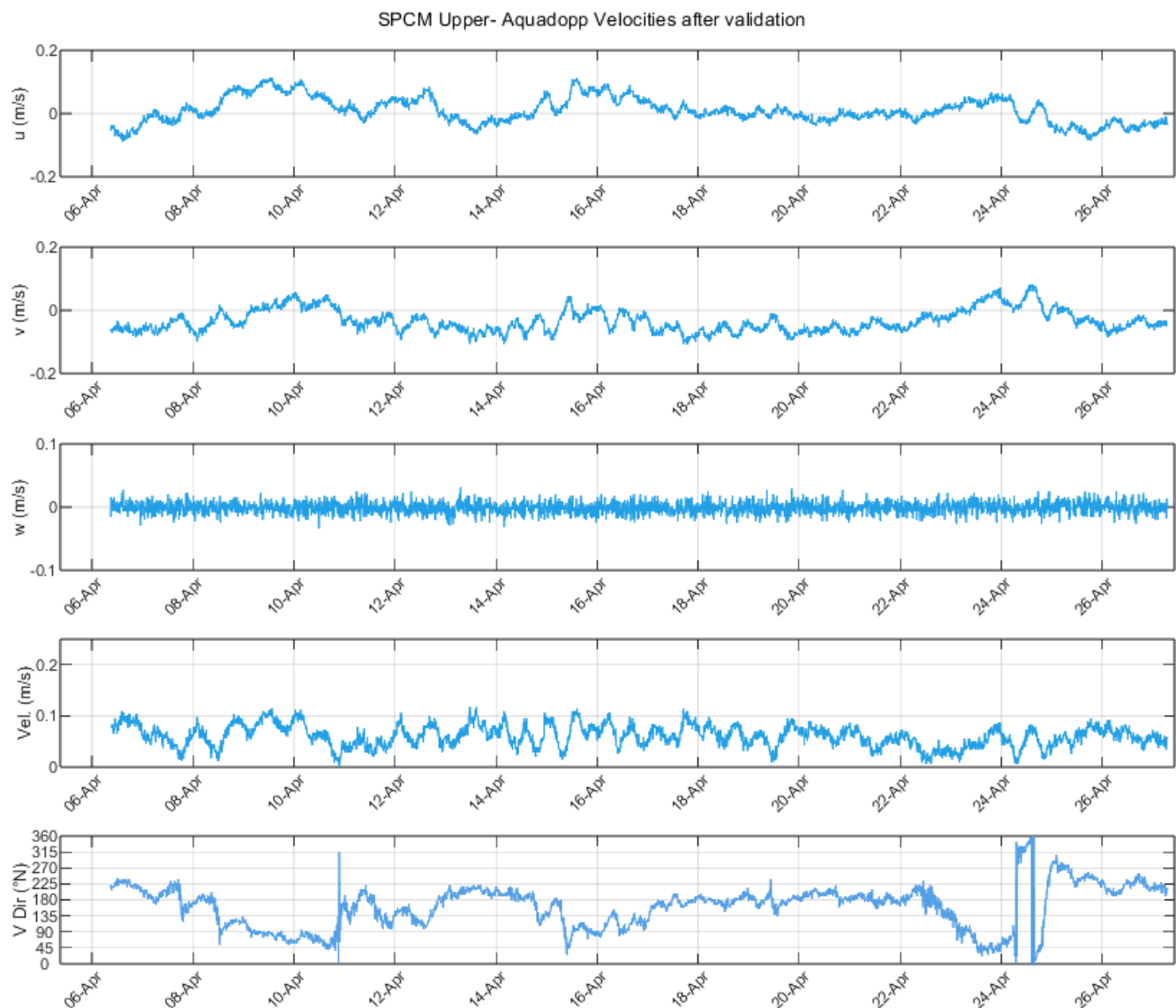


Figure 5 – SPCM “upper” validated data: time series of velocities components (u, v, w in m/s) and current speed (m/s) and flowing direction (°N)

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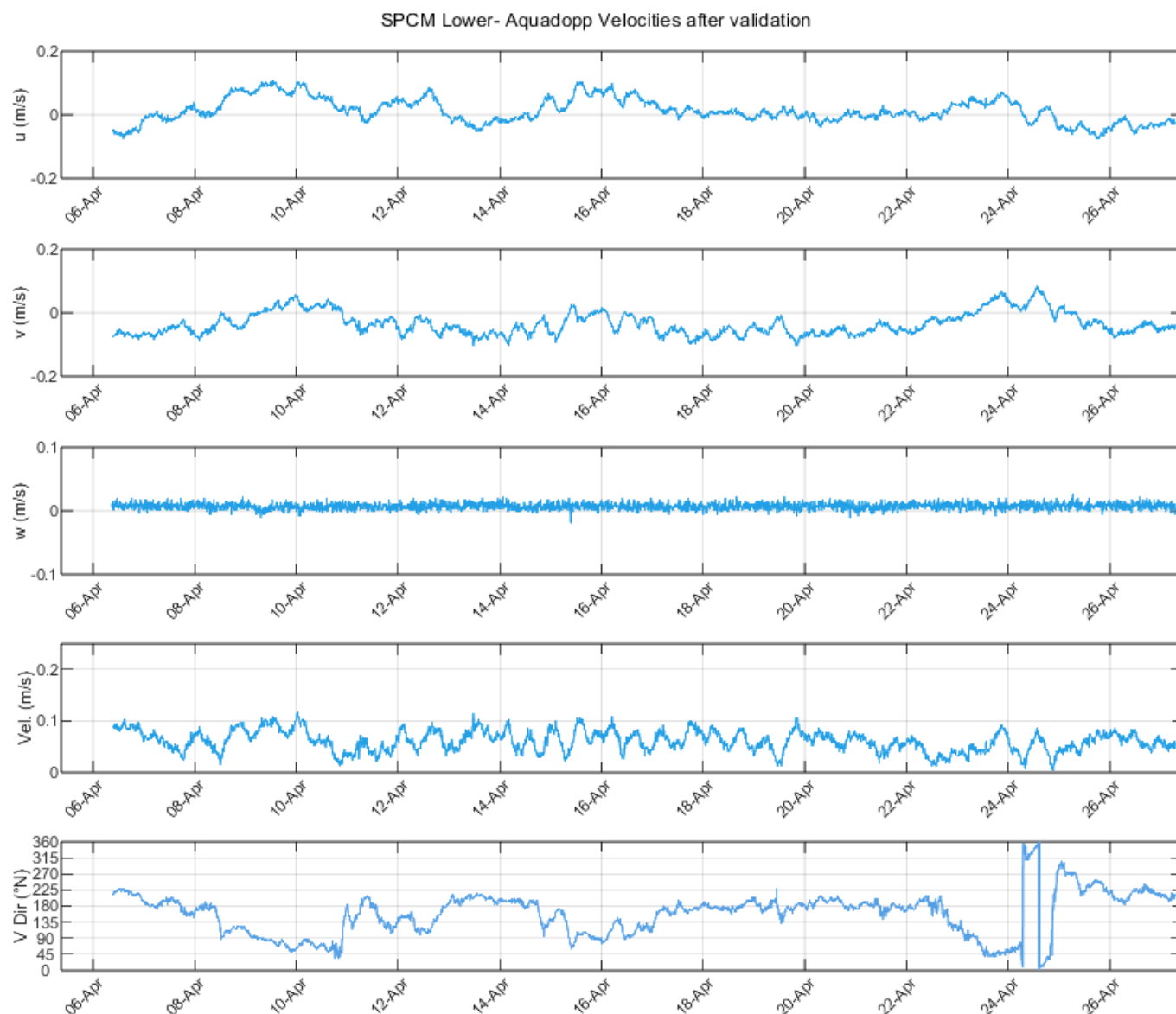


Figure 6 – SPCM “lower” validated data: time series of velocities components (u, v, w in m/s) and current speed (m/s) and flowing direction (°N)

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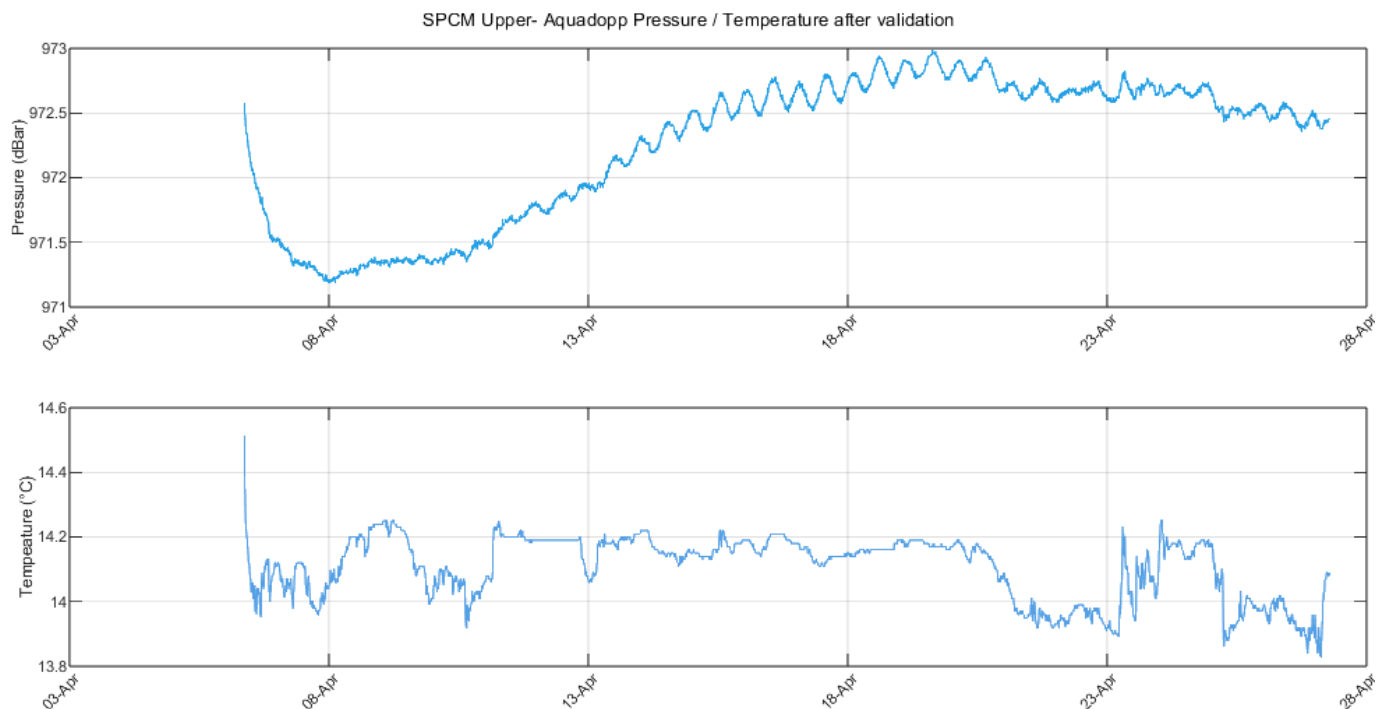


Figure 7 – SPCM “upper” validated data: time series of seawater pressure (dBar) and temperature (°C)

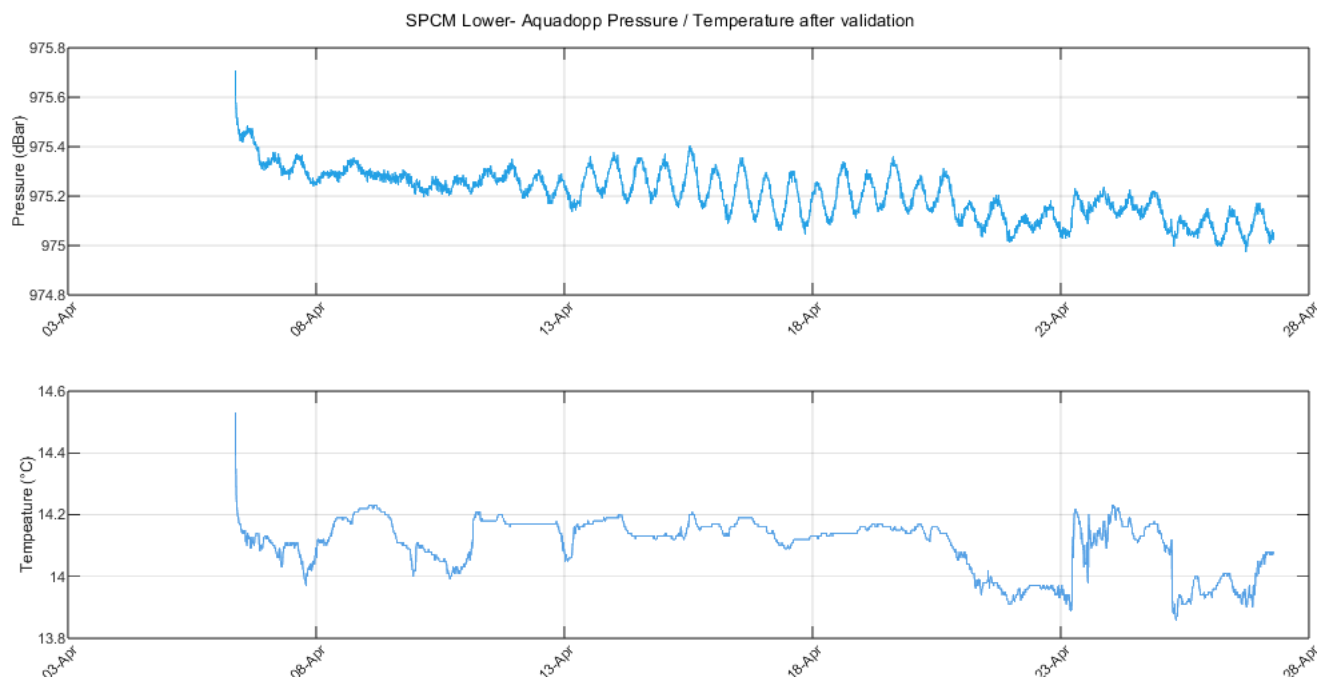


Figure 8 – SPCM “lower” validated data: time series of seawater pressure (dBar) and temperature (°C)

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3.0.0 BASIC STATISTICS

Statistics of current speed is reported in Table 3-1 for each of the two SPCM analyzed. The corresponding current roses are presented in Figure 3-1. The sea currents recorded by the two sensors

show a very similar behavior, with current speeds generally below 0.10 m/s generally flowing towards

south-southeast with few events of currents flowing towards the western and north-western sectors. The maximum current speed recorded over the period is 0.12 m/s.

The behavior of the current described by the measurements is in very good agreement with what is expected, based on scientific knowledge and the relevant scientific literature [1], [2], [3].

Sensor	Min V (m/s)	Mean V (m/s)	Max V (m/s)	Non-Exceedance Percentiles						
				1%	5%	10%	50%	90%	95%	99%
SPCM "upper"	0.001	0.061	0.116	0.014	0.025	0.032	0.061	0.088	0.096	0.106
SPCM "lower"	0.004	0.061	0.115	0.016	0.027	0.034	0.061	0.088	0.094	0.102

Figure 9 – Basic statistics of current speed at SPCM "upper" and SPCM "lower"

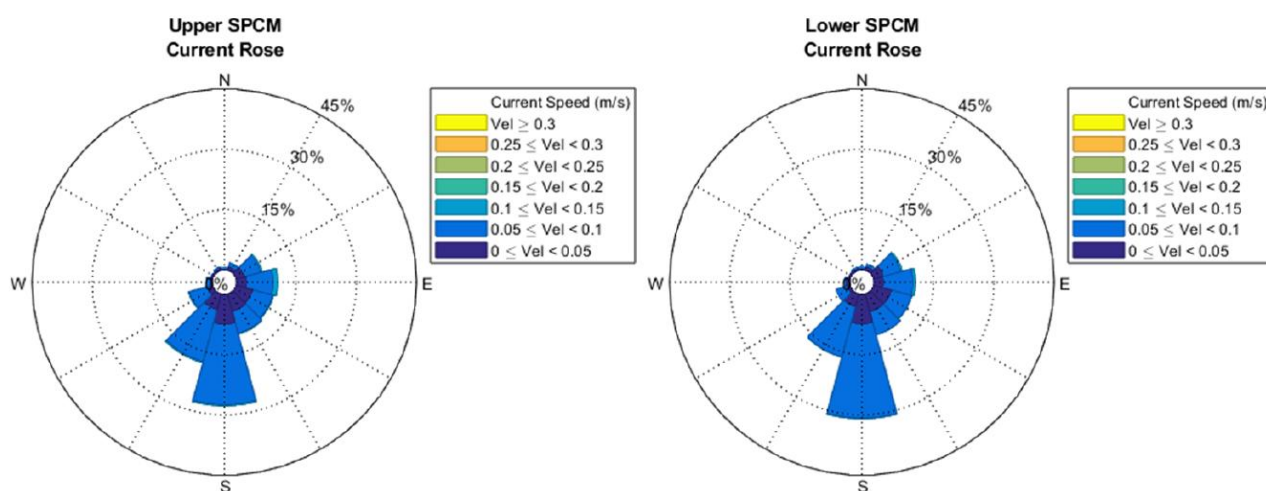


Figure 10 – Current rose at SPCM "upper" and SPCM "lower"

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4.0.0 CONCLUSIONS

The present document is aimed at processing and describing the deepwater sea current measurements collected in the Ionian Sea through two (2) Single Point Current Meters (hereinafter SPCM). The mooring line was deployed offshore in the Ionia Sea halfway between Italy and Corfù island at coordinates (333412.13 mE, 4374226.35 mN). The deployment started on April 5th , 2026 and the entire mooring line was recovered on April 27th , 2026.

The SPCM datasets were quality controlled using a combination of automated physical and instrument-based tests. The QC procedure included checks for missing values, instrument error codes, unrealistic velocity magnitudes, excessive instrument tilt, temporal spikes, rapid rate-of-change anomalies, pressure discontinuities, unrealistic temperature values, low battery voltage, and beam amplitude inconsistencies.

The validated data were analysed for basic statistics of sea current speed and direction, and results show that the sea currents recorded by the two sensors have a very similar behavior, with current speeds generally below 10 cm/s and mainly flowing towards south-southeast with few events of currents flowing towards the western and north-western sectors. The maximum current speed recorded over the period is 0.12 m/s.

The behavior of the current described by the measurements is in very good agreement with what is expected, based on scientific knowledge and the relevant scientific literature [1], [2], [3].

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AUV Geophysical & ESBS Survey on Block 2

NOISE REPORT Acoustic Data Analysis



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Revision History

Date	Rev.No.	Detailed Description of Change	Ref. Section
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29/06/2026	B1	Issued for Client Comment	All

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1.0.0 INTRODUCTION

1.1.0 Scope of Work

The present document is aimed to provide a detailed analysis of the raw data recorded during an acoustic monitoring program implemented in April 2026 to investigate the presence and distribution of mesopelagic ichthyofauna species and to characterize the underwater acoustic environment within the survey area, located offshore in the central Ionian Sea (Figure 1).

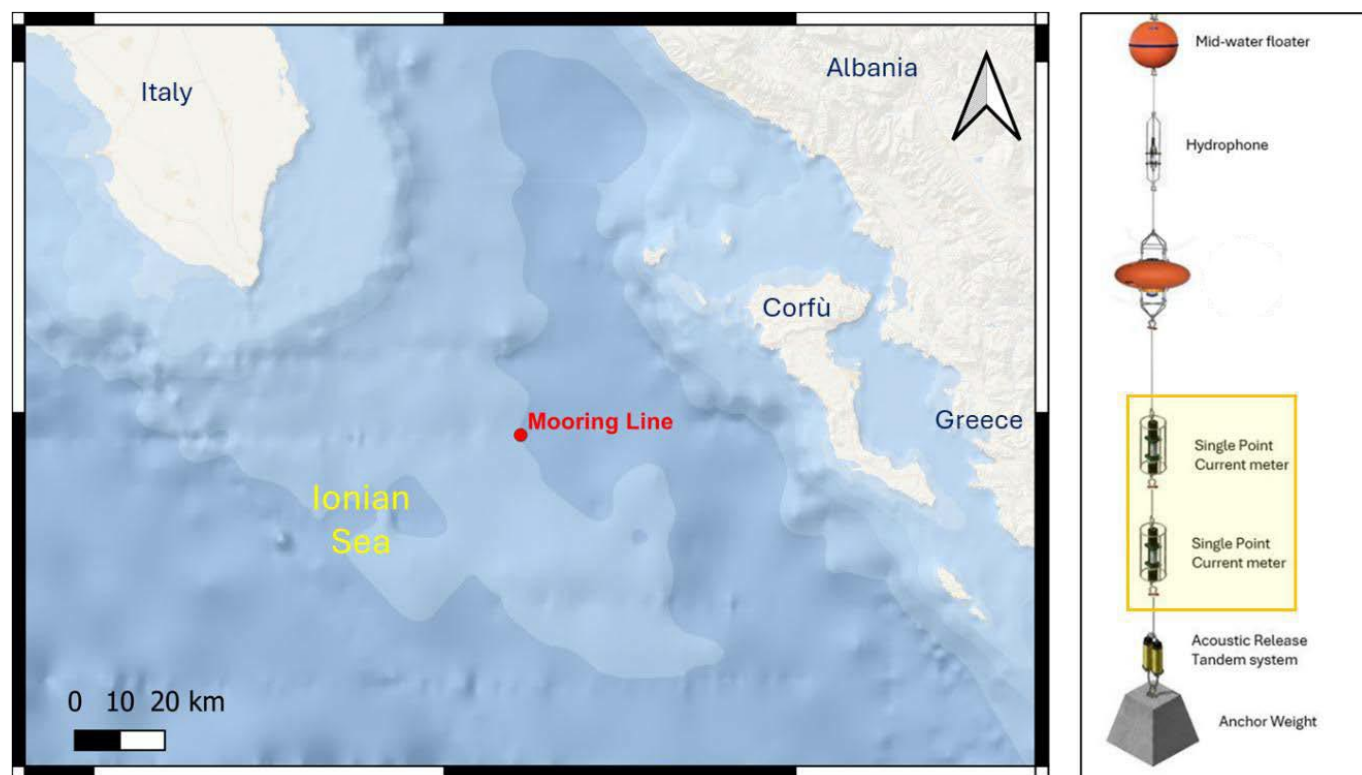


Figure 1 – Geographical location of the mooring line deployed in the Ionian Sea and sketch showing the position of the two Single Point Current Meters along the mooring line.

Scope of work is to perform a detailed analysis of acoustic data collected during the underwater Passive Acoustic Monitoring (PAM) in order to identify and distinguish biological sound sources associated with ichthyofauna and to establish an environmental acoustic baseline in accordance with industry-standard practices.

This technical report is aimed at providing updated baseline knowledge of marine mammal presence as well as an updated baseline of underwater soundscape of the area during the deployment period.

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1.2.0 Report Structure

The report is organized as follows: the underwater PAM system and the data collected are described in Section **Error! Reference source not found.**, the existing knowledge about marine mammals and soundscape of the area is given in Section **Error! Reference source not found.**, Section **Error! Reference source not found.** provides a brief summary of the methodology adopted, while Section **Error! Reference source not found.** goes into details about the data analysis. Finally, Section **Error! Reference source not found.** presents the obtained results.

1.3.0 References

- [1] EMODnet Bathymetry Consortium, 'EMODnet Digital Bathymetry (DTM 2022)'. EMODnet Bathymetry Consortium, 2022. doi: 10.12770/FF3AFF8A-CFF1-44A3-A2C8-1910BF109F85.
- [2] R. R. Reeves and G. N. di Sciara, 'International Union for Conservation of Nature and Natural Resources', *Nature*, 2006.
- [3] D.S. Pace, R. Tizzi, and B. Mussi, 'Cetaceans Value and Conservation in the Mediterranean Sea', *J Biodivers Endanger Species*, vol. 01, no. s1, 2013, doi: 10.4172/2332-2543.S1-004.
- [4] S. Panigada, O. Boisseau, A. Canadas, C. Lambert, S. Laran, and R. McLanaghan, 'Estimates of abundance and distribution of cetaceans, marine mega-fauna and marine litter in the Mediterranean Sea from 2018-2019 surveys.' Ed. ACCOBAMS - ACCOBAMS Survey Initiative Project, Monaco.
- [5] O. Boisseau, C. Lacey, T. Lewis, A. Moscrop, M. Danbolt, and R. McLanaghan, 'Encounter rates of cetaceans in the Mediterranean Sea and contiguous Atlantic area', *Journal of the Marine Biological Association of the United Kingdom*, vol. 90, no. 8, pp. 1589–1599, Dec. 2010, doi: 10.1017/S0025315410000342.
- [6] O. Boisseau, J. Reid, C. Ryan, A. Moscrop, R. McLanaghan, and S. Panigada, 'Acoustic estimates of sperm whale abundance in the Mediterranean Sea as part of the ACCOBAMS Survey Initiative', *Front. Mar. Sci.*, vol. 11, Jan. 2024, doi: 10.3389/fmars.2024.1164026.
- [7] E. Pirotta, J. M. Brotons, M. Cerdà, S. Bakkers, and L. E. Rendell, 'Multi-scale analysis reveals changing distribution patterns and the influence of social structure on the habitat use of an endangered marine predator, the sperm whale *Physeter macrocephalus* in the Western Mediterranean Sea', *Deep Sea Research Part I: Oceanographic Research Papers*, vol. 155, p. 103169, Jan. 2020, doi: 10.1016/j.dsr.2019.103169.
- [8] G. Notarbartolo di Sciara, A. Frantzis, G. Bearzi, and R. Reeves, 'Physeter macrocephalus (Mediterranean subpopulation), Sperm Whale', *The IUCN Red List of Threatened Species 2012: e.T16370739A16370477*, 2012.
- [9] W. M. X. Zimmer, 'Passive Acoustic monitoring of Cetaceans.' Cambridge University Press, 355pp., 2011.
- [10] V. Pöyhönen, K. Thomisch, K. M. Kovacs, C. Lydersen, and H. Ahonen, 'High Arctic "hotspots" for sperm whales (*Physeter macrocephalus*) off western and northern Svalbard, Norway, revealed by multi-year Passive Acoustic Monitoring (PAM)', *Sci Rep*, vol. 14, no. 1, p. 5825, Mar. 2024, doi: 10.1038/s41598-024-56287-9.
- [11] D. S. Pace *et al.*, 'Trumpet sounds emitted by male sperm whales in the Mediterranean Sea', *Sci Rep*, vol. 11, no. 1, p. 5867, Mar. 2021, doi: 10.1038/s41598-021-84126-8.

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[12] IUCN, 'Ziphius cavirostris (Mediterranean subpopulation): Cañadas, A. & Notarbartolo di Sciara, G.: The IUCN Red List of Threatened Species 2018: e.T16381144A50286386'. Jan. 27, 2018. doi: 10.2305/IUCN.UK.2018-2.RLTS.T16381144A50286386.en.

[13] D. Cholewiak, A. I. DeAngelis, D. Palka, P. J. Corkeron, and S. M. Van Parijs, 'Beaked whales demonstrate a marked acoustic response to the use of shipboard echosounders', *R. Soc. open sci.*, vol. 4, no. 12, p. 170940, Dec. 2017, doi: 10.1098/rsos.170940.

[14] C. Tardy, D. Ody, O. Gimenez, and S. Planes, 'Abundance of fin whales (*Balaenoptera physalus*) in the north-western Mediterranean Sea, using photo-identification and microsatellite genotyping', *Marine Ecology*, vol. 44, no. 1, p. e12737, Feb. 2023, doi: 10.1111/maec.12737.

[15] S. Panigada, P. Gauffier, and G. Notarbartolo di Sciara, 'Balaenoptera physalus (Mediterranean subpopulation)', *The IUCN Red List of Threatened Species e.T16208224A50387979*, 2021.

[16] V. Sciacca *et al.*, 'Annual Acoustic Presence of Fin Whale (*Balaenoptera physalus*) Offshore Eastern Sicily, Central Mediterranean Sea', *PLOS ONE*, vol. 10, no. 11, p. e0141838, Nov. 2015, doi: 10.1371/journal.pone.0141838.

[17] E. Fakiris *et al.*, 'UNCOVERING THE SOUNDSCAPE OF THE IONIAN SEA: ACOUSTIC MONITORING DATA REANALYSIS, ACQUIRED DURING THE HELPE'S 2D/3D MARINE SEISMIC SURVEYS, 2016-2023', *Conference Proceedings*.

[18] A. J. Debich *et al.*, 'Passive Acoustic Monitoring for Marine Mammals in the Virginia Capes Range Complex October 2012 – April 2015'.

[19] S. Ferri *et al.*, 'A wave glider for passive acoustic monitoring of cetaceans and anthropogenic sources in the central Mediterranean Sea', *Sci Rep*, vol. 16, no. 1, p. 2347, Dec. 2025, doi: 10.1038/s41598-025-32142-3.

[20] E. A. Harris, 'Detection and Identification of Marine Mammals in Passive Acoustic Recordings from SCORE using a Visual Processing Approach Established for HARP Data'.

[21] S. M. Wiggins, B. J. Thayre, J. S. Trickey, S. Baumann-Pickering, and J. A. Hildebrand, 'Beaked Whale Passive Acoustic Tracking Offshore of Cape Hatteras 2017'.

[22] J. Stanistreet *et al.*, 'Spatial and seasonal patterns in acoustic detections of sperm whales *Physeter macrocephalus* along the continental slope in the western North Atlantic Ocean', *Endang. Species. Res.*, vol. 35, pp. 1–13, Jan. 2018, doi: 10.3354/esr00867.

[23] S. M. Wiggins and J. A. Hildebrand, 'High-frequency Acoustic Recording Package (HARP) for broad-band, long-term marine mammal monitoring', *International Symposium on Underwater Technology 2007 and International Workshop on Scientific Use of Submarine Cables & Related Technologies 2007*, vol. UT07, pp. 551–557, 2007.

[24] J. L. Keating and J. Barlow, 'Summary of PAMGuard beaked whale click detectors and classifiers used during the 2012 Southern California behavioral response study. NOAA Technical Memorandum NMFS.', vol. NOAA-TM-NMFS-SWFSC-517, Sep. 2013.

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[25] V. Dulau, A. Gannier, and J. Goold, 'Diving and Feeding Behaviour of Sperm Whales (*Physeter macrocephalus*) in the Northwestern Mediterranean Sea', *Aquatic Mammals*, vol. 30, pp. 419–426, Dec. 2004, doi: 10.1578/AM.30.3.2004.419.

[26] G. Schorr, E. Falcone, D. Moretti, and R. Andrews, 'First Long-Term Behavioral Records from Cuvier's Beaked Whales (*Ziphius cavirostris*) Reveal Record-Breaking Dives', *PloS one*, vol. 9, p. e92633, Mar. 2014, doi: 10.1371/journal.pone.0092633.

[27] T. Awbery *et al.*, 'Spatial Distribution and Encounter Rates of Delphinids and Deep Diving Cetaceans in the Eastern Mediterranean Sea of Turkey and the Extent of Overlap With Areas of Dense Marine Traffic', *Front. Mar. Sci.*, vol. 9, Jul. 2022, doi: 10.3389/fmars.2022.860242.

[28] EU Commission, 'Commission Decision of 1 September 2010 on criteria and methodological standards on good environmental status of marine waters (notified under document C(2010) 5956) Text with EEA relevance', 2010.

[29] A. Andriolo *et al.*, 'Marine Mammal Bioacoustics Using Towed Array Systems in the Western South Atlantic Ocean', in *Advances in Marine Vertebrate Research in Latin America*, vol. 22, M. R. Rossi-Santos and C. W. Finkl, Eds, in Coastal Research Library, vol. 22. , Cham: Springer International Publishing, 2018, pp. 113–147. doi: 10.1007/978-3-319-56985-7_5.

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2.0.0 UNDERWATER ACOUSTIC SURVEY DATA

Deployment of a passive acoustic monitoring (PAM) system along a mooring line was conducted for twenty days during April 2026, to define a baseline of the soundscape of the area and study the presence of marine mammals.

2.1.0 System Description

A mooring line was deployed offshore in the Ionia Sea halfway between Italy and Corfù island at coordinates (333412.13 mE, 4374226.35 mN), at about 1000m water depth, see Figure 1 1.

The Passive Acoustic Monitoring consisted of two sensors:

- GP1190 broadband hydrophone;
- RTS Sylence-LP sound recorder.

The mooring line is sketched in Figure 2, with the approximate relative distances with respect to the seabed level. The hydrophone is located at about 96.7 m from the seabed level. The deployment started on April 6th , 2026 and the entire mooring line was recovered on April 27th , 2026.

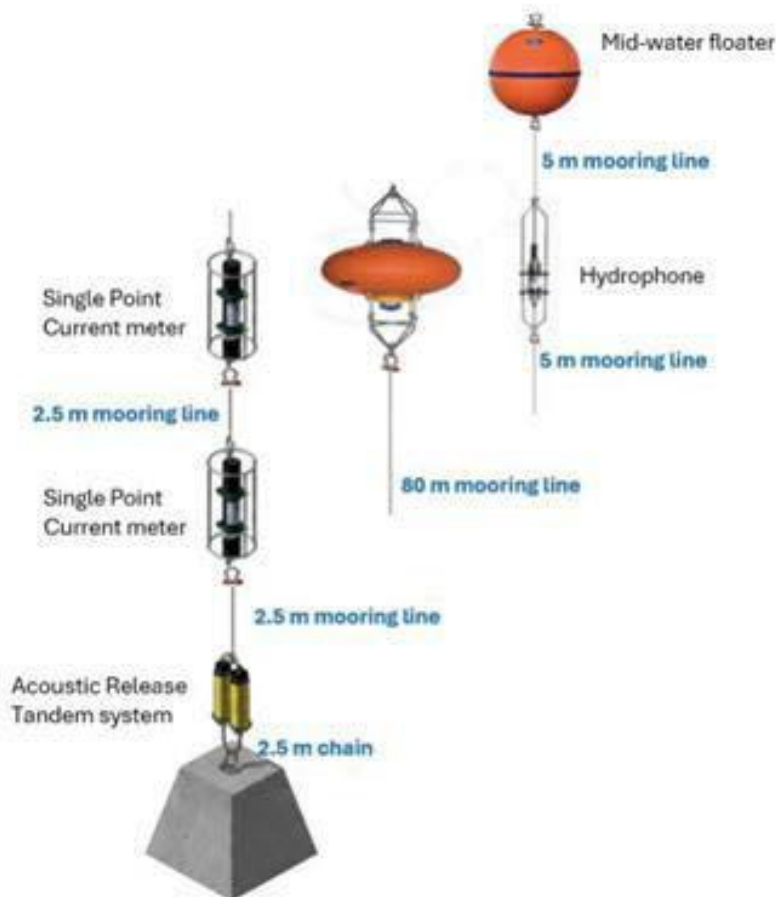


Figure 2 – Sketch showing the position of the two Single Point Current Meters along the mooring line and the approximate relative distances with respect to the seabed level

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Table 1 – Setting of the PAM equipment as laid

Equipment	Setup	Value
GP 1190 + SYLENCE LP	Sampling Rate	256 kHz
	Bit Depth	24-bit
	Gain	15 dB
	High Pass Filter	3 Hz
	Duty Cycle	100%
	Recording Rate	Continuous
	Recording Interval	Continuous

2.2.0 Data Collection

Acoustic data acquisition started on the 6th April 2026 and recordings were acquired continuously up to the 27th April 2026, when the mooring line was recovered. The continuous recording setting yielded a total of 1,467 files of 1200 seconds in a “.wav” format (approximately 2 TB of data), acquired at a sampling rate of 256 kHz (see Table 1).

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3.0.0 EXISTING DATA AND KNOWLEDGE

This chapter summarizes the knowledge about the expected soundscape and about the marine mammal species that populate the study area, and that emit vocalizations that might likely be recorded at 1000 m water depth.

3.1.0 Cetaceans

The Ionian Sea is inhabited by many different species of marine mammals that are generally categorized according to their habitat preferences: coastal (near shore waters), neritic or slope (continental shelf/slope), oceanic or pelagic (open sea). Given the location of the mooring line (see Figure 3), it is possible that coastal or pelagic marine mammals may be present in the acoustic data recorded during the survey.

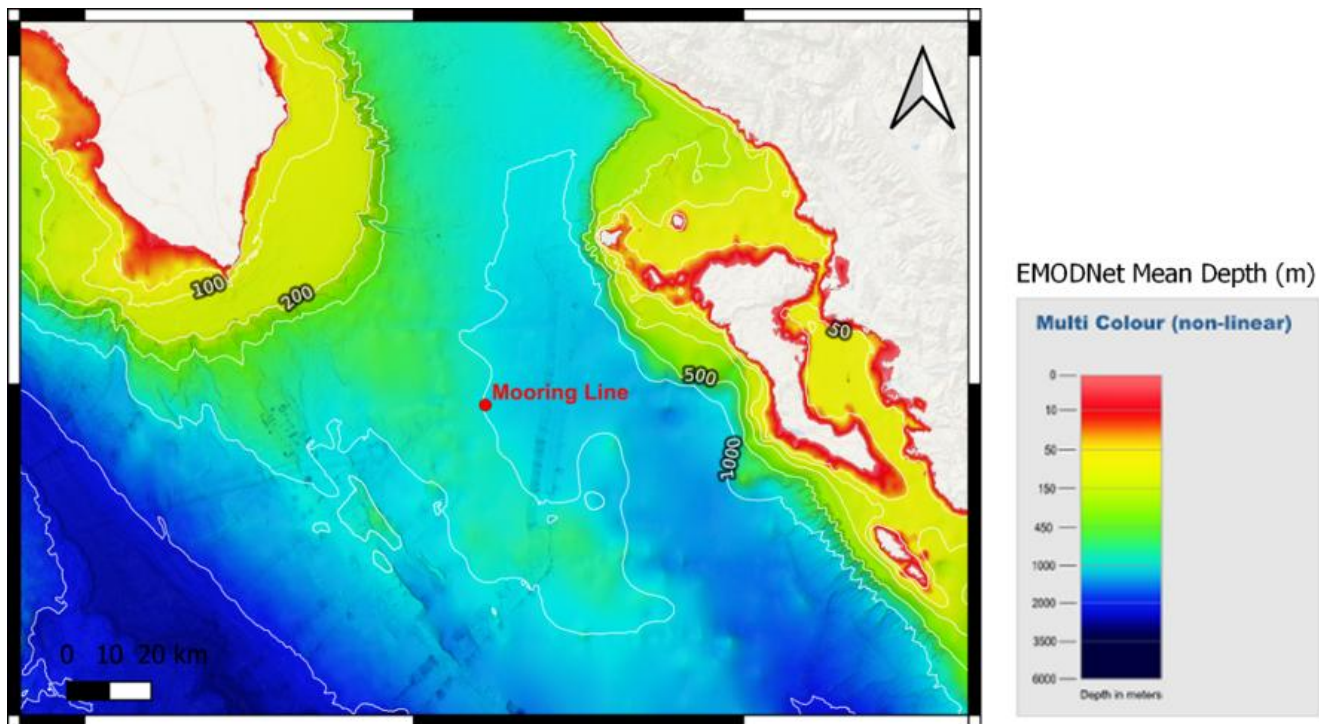


Figure 3 – Mooring line location and bathymetry of the study area (EMODNet DTM 2022 [1])

According to the existing literature based on both acoustic and aerial surveys [2], [3], [4], [5], the main slope species in the area include Risso's Dolphin (*Grampus griseus*), Long-finned Pilot Whale (*Globicephala melas*), and Sperm Whale (*Physeter macrocephalus*), which are mostly present near the shelf edge where depths quickly drop from about 500 m to 1500 m. Among pelagic species, Fin Whale (*Balaenoptera physalus*), Striped Dolphin (*Stenella coeruleoalba*), and Cuvier's beaked whale (*Ziphius cavirostris*) are likely to be present in the central Ionian sea. Rough-toothed Dolphin (*Steno bredanensis*) has been recorded in both coastal and open waters in parts of the eastern Mediterranean, and could also be found diving in deep water.

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Given the above, the species most relevant for the purposes of the present study are:

- Sperm Whale (*Physeter Macrocephalus*)
- Cuvier's Beaked Whale (*Ziphius Cavirostris*)
- Fin Whale (*Balaenoptera physalus*)
- Risso's Dolphin (*Grampus griseus*)
- Striped Dolphin (*Stenella coeruleoalba*)
- Rough-toothed Dolphin (*Steno bredanensis*)
- False Killer Whale (*Pseudorca crassidens*)

Note that Sperm Whale is the species expected to be the most relevant in terms of presence in the area, Cuvier's Beaked Whale is very likely to be detected since it is a deep diver capable of very long immersion times. Risso's Dolphin have been seen at water depth > 600 m, but they are quite rare to spot. False Killer Whale are considered as visitors in the Mediterranean Sea [2], and is very rarely spotted in the study area. The Mediterranean Fin Whale population is concentrated in the western basin, but it can be found diving everywhere in the Mediterranean Sea [3].

The above listed marine mammals were grouped in the following classes for the purposes of this study:

- 1) Sperm whale,
- 2) Cuvier's Beaked whale,
- 3) Other odontocetes and
- 4) Fin Whale.

A brief summary of the current status of knowledge about vocalization characteristics is given in the following subsections for each species or group of species.

3.1.1 Sperm Whale

Sperm whales (*Physeter macrocephalus*) are the largest of the toothed whales, and are found in all deep waters of the Mediterranean Sea. The estimated density updated to 2024 ([6]) is of approximately 2,500-2,800 individuals in the Mediterranean Sea. This species is considered in suspected decline in the Mediterranean Sea and listed as Endangered in the IUCN (International Union for Conservation of Nature) Red List [7] [8].

Sperm whales are especially suitable for acoustic monitoring because they produce strong, regular clicking sounds that can be detected from distances of up to 20 km. These whales use underwater sounds to explore their surroundings, locate prey, and communicate with other members of their species. Their vocalizations consist of brief, multi-pulse clicks, with only a few milliseconds separating each pulse. These clicks typically carry energy between 2 and 20 kHz, with a dominant frequency around 9 kHz [9]. The clicks can be organized into various temporal patterns that serve both echolocation and communication purposes, such as codas and buzzes. Codas are sequences of clicks that are generally weaker and have lower peak frequencies compared to standard clicks. Buzzes, on the other hand, are made up of rapidly repeated clicks with little or no variation in frequency. Regular clicks are mainly used for navigation and hunting, buzzes are linked to prey capture attempts, and slower click patterns are believed to play a role in social communication [3] [4] [10] [11] [6].

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3.1.2 Cuvier’s Beaked Whale

The Ionian Sea, particularly the Hellenic Trench where a marine conservation and protection area is established, is a crucial habitat for deep-diving Cuvier's beaked whales (*Ziphius cavirostris*). This specie is currently considered a regular living Mediterranean, and its conservation status is considered “vulnerable”[12], according to the IUCN criteria adopted for the Mediterranean Sea. There is indeed a long listed story of both individual and mass strandings (such as events in 1996, 2011, 2022 and 2025), often linked to anthropogenic underwater noise pollution from naval sonar and seismic surveys [13].

Beaked whales emit echolocation clicks that are clearly different from those of other species. Each click lasts roughly 200 microseconds and covers a frequency range from about 20 to over 60 kHz, with the strongest energy around 40 kHz. A distinctive feature of these clicks is their upward sweep in frequency. They also occur at a consistent inter-click interval (ICI) of approximately 0.3–0.4 seconds [9].

3.1.3 Other Odontocetes

This generic class includes different species of odontocetes, among them: Long-finned Pilot Whale (*Globicephala melas*), Risso’s Dolphin (*Grampus griseus*), Striped Dolphin (*Stenella coeruleoalba*) and Rough-toothed Dolphin (*Steno bredanensis*).

During the last ACCOBAMS acoustic survey (named Song of Whale, in summer 2018) that covered the eastern and western parts of the Mediterranean basin, dolphin clicks and/or whistles were detected throughout the study area (with highest densities in the western basin (Figure 4). The maximum densities were detected in the western basin, moving to the est a gradient of group size was marked. However, multiple groups of dolphins were detected acoustically in the Hellenic Trench.

All these species can be found diving in deepwater and are known to commonly produce whistles. Pilot whale vocalizations routinely include pulsed calls, while Risso’s Dolphin produces whistles combined with continuous click trains and burst pulse.

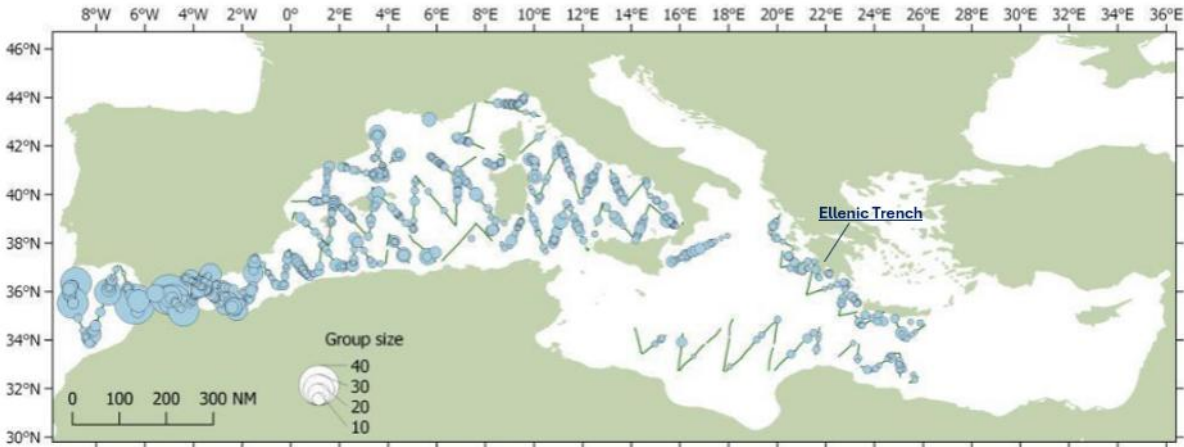


Figure 4 – Acoustic detections of small/medium odontocetes made during the acoustic surveys of summer 2018. The surface area of the symbols is proportionate to group size

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3.1.4 Fin Whale

The Fin Whale (*Balaenoptera physalus*) is considered to be the only mysticete species regularly present in the Mediterranean Sea. Abundance estimates of Fin Whales, according to a survey from the ACCOBAMS Survey Initiative in 2018, resulted in an estimate of about 3,200 [14]. This species is listed as Endangered in the IUCN Red List [15]. The most of the population density is concentrated in the western Mediterranean, but there are clear evidence of fin whale acoustic presence in the Ionian Sea, offshore Eastern Sicily [16].

According to the current knowledge of the Mediterranean fin whale acoustic emissions, their vocalizations may be grouped into two main call types:

- type “A”, also known as “classic pulse”, a downsweep signal from 23 to 17 Hz, which lasts about 1 second;
- type “B”, often called “back-beat”, with a constant frequency from 18 to 20 Hz, lasting about 0.8–1 second [16].

Given the very low frequency of emission of mysticetes, a dedicated analysis of the acoustic data focused on the low-frequency bands was made in order to look for these specific vocalizations.

3.2.0 Underwater Soundscape

The Ionian Sea soundscape was the focus of a noise monitoring program carried out from 2016 to 2023 within the HELPE Marine Seismic Surveys initiative. Thirteen monitoring stations were deployed in coastal zones surrounding Marine Protected Areas (see Figure 5), covering the shoreline from the southwestern Peloponnese to Corfu Island in the northwestern Ionian. The findings, presented in [17], indicate that the highest peak sound pressure levels (SPL_{peak}) occurred in the Inner Ionian (129.2 dB re 1 µPa), followed by the South Ionian (127.7 dB re 1 µPa) and the North Ionian (127.1 dB re 1 µPa). The authors attribute these noise levels primarily to shipping activity, which is especially heavy in the Inner Ionian, although additional human-related sources such as military operations and sonar use are also noted.

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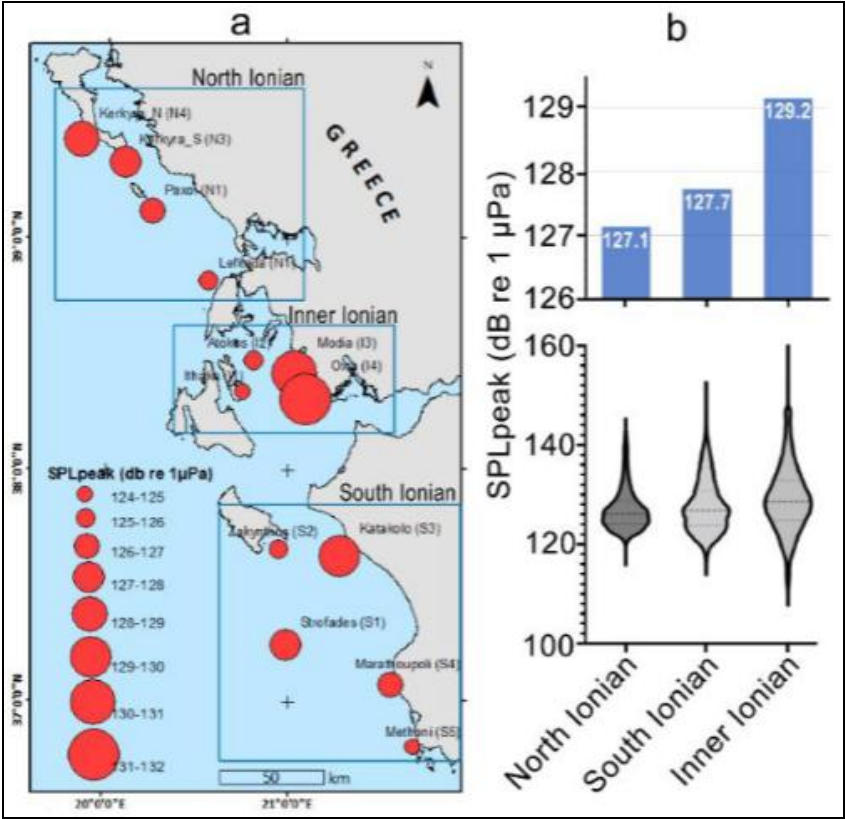


Figure 5 – (a) Map showing the average SPLpeak for all recordings in each one of the 13 stations. (b) Bar-chart and violin plots comparing the SPLpeak value statistical distribution between the 3 ecoregions, i.e. North Ionian, South Ionian and Inner Ionian. From [17]

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4.0.0 METHODOLOGY FOR DATA ANALYSIS

4.1.0 Background

Many marine species produce sound as means of communication and, in some cases, echolocation. Marine mammal vocalisations vary widely in frequency and duration. These sounds occur in complex soundscapes filled with overlapping noise from other species, natural processes (e.g., wind, waves, rain), and human activities. Such dynamic environments can lead to misclassifications when using automated algorithms, especially outside their training domain.

This study strongly relies on the PAMGuard software [5], which is used at two separate stages:

- 1) Preliminary analysis, including noise monitoring, click and whistle detection;
- 2) Detailed analysis of the detected clicks, involving the setting of a proper Click Classifier based on scientific literature.

PAMGuard is an open-source software, providing a flexible toolbox that enables non-specialists to perform acoustic detection, classification, and localisation of bio-acoustic signals. The software is developed with a human-in-the-loop framework, such that the involvement of the specialist is still significant, but the amount of human input differs significantly between studies, ranging from a simple review of a data subset to the careful selection of individual sounds. It is a modular software, so it can be adapted to a wide range of analytical needs.

The methodology adopted in the present study is described in the following section.

4.2.0 Methodology

The approach of investigation applied earlier to similar datasets from passive acoustic monitoring surveys ([18], [10], [19], [20], [21]) is used here to fulfil the scope of investigating the soundscape and identify marine mammal species. The methodology is a combination of automated and manual methods.

For detecting cetaceans in the suborder of odontocetes, the analysis was focused on the high-frequency bands (2 - 48 kHz). The following steps have been performed:

- I. Preliminary analysis: detecting potential bio-acoustic signals (clicks and whistles) and analyzing background noise;
- II. Assessment and manual scan of long-term spectral averages (LTSAs);
- III. Detailed analysis: classification of detected clicks;
- IV. Underwater noise analyses.

For detecting cetaceans in the suborder of mysticetes (specific for detecting Fin Whale), the analysis was focused on the low-frequency bands (1 Hz - 1 kHz). The following steps have been performed:

- I. Preliminary analysis: detecting potential bio-acoustic signals (calls);
- II. Assessment and manual scan of long-term spectral averages (LTSAs);
- III. Detailed analysis: classification of detected calls.

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5.0.0 ACOUSTIC DATA ANALYSIS

The entire dataset of acoustic recordings was analyzed for investigating the presence of acoustic signals from multiple marine mammal species and anthropogenic noise. This chapter describes in detail the analyses performed in each task of the methodology, while results are presented in dedicated Section 6.

5.1.0 Data Quality

The entire bulk of data collected was found to be error free, exception made for the first and the last deployment days (6th April and 27th April, respectively), most certainly because of operational vessels and deployment operations themselves. These two days were discarded from the analyses presented in this report.

5.2.0 TASK I: PRELIMINARY LOGGING AND AUTOMATED DETECTION

The wav-files collected during the survey were analyzed using PAMGuard, and processed with detectors of clicks and whistles. For effective analysis, the data were divided into two sets of frequency band, and each band was analyzed for the sounds of an appropriate subset of species or sources:

- 1) high-frequency (2-48 kHz) for detecting odontocetes,
- 2) low-frequency (1 Hz – 1 kHz) for detecting mysticetes (mainly Fin Whale).

5.2.1 High-Frequency marine mammals (Odontocetes)

The task consisted of processing the sound recordings in PAMGuard using frequency band filters and the Basic Click Detector module without any classifiers, with aim of having an overview of the soundscape at such a deepwater site.

The wav-files collected during the survey were analyzed using PAMGuard. Knowing that the clicks main frequency range of the species of odontocetes that are expected to be found in this area is 2-40kHz, the raw data were down sampled to 96 kHz, i.e. 48 kHz Nyquist frequency. Then, a high pass frequency band filter (12th order Butterworth at 2 kHz) was applied to reduce energy at low frequencies.

A trigger frequency filter for the click detector module was set at 2 kHz threshold (high pass 6th order Butterworth) because the main energy in sperm whale clicks is typically above this threshold, and sperm whale is the main specie expected to be track inside the data (see Section 3.1). The general PAMGuard Basic Click Detector parameters were kept at default values, including the signal-to-noise ratio (10 dB).

5.2.2 Low-Frequency marine mammals (Mysticetes)

The task consisted of processing the sound recordings in PAMGuard using frequency band filters and the Basic Whistle&Moan Detector module, for detecting calls from fin whales.

The wav-files collected during the survey were analyzed using PAMGuard. Knowing that the frequency range of fin whale calls is 10-60 Hz, the raw data were down sampled to 2 kHz, i.e. 1 kHz Nyquist frequency. Then, a low pass frequency band filter (12th order Butterworth at 100 Hz) was applied to reduce energy at high frequencies. The Basic Whistle & Moans Detector was used with default values.

Since no recognizable fin whale calls were found in any of the recordings, further results of this low-frequency analysis are not presented in this report.

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5.3.0 TASK II: LTSA

To visualize the acoustic data, frequency spectra were calculated for all data using a time average of 60 seconds. These data, called Long-Term Spectral Averages (LTSAs), provide a compressed spectrogram view allowing efficient visual examination of long datasets [22], [23].

During this task LTSAs were examined for each day of deployment as a means to inspect the automatic detections of marine mammal and anthropogenic sounds. For each day, by means of the visual scanning of LTSAs, a subset of days was identify in which the spectra showed clear tracks of bioacoustics signals to be further investigated in the subsequent tasks.

During the visual analysis of LTSA, other informative tools of PAMGuard were utilized:

- Spectrogram (see example in Figure 6): a visual time-frequency representations of the hydrophone recordings, mapping acoustic energy across frequencies (y-axis) over time (x-axis). It is generated with a FFT 1024-point Hanning Window.
- Waveform and power spectrum of each click (see example in Figure 7);
- Wigner plot of each single click (see example in Figure 7): it is a high-resolution time-frequency analysis graph used in acoustics to track how a signal's frequency content changes over time.

When a sound of interest was identified in the LTSA, the corresponding spectrogram was examined and the single waveform of the sound – as extracted by PAMGuard – was visualized together with the Wigner plot as a first attempt of identification of the potential species or source of the sound.

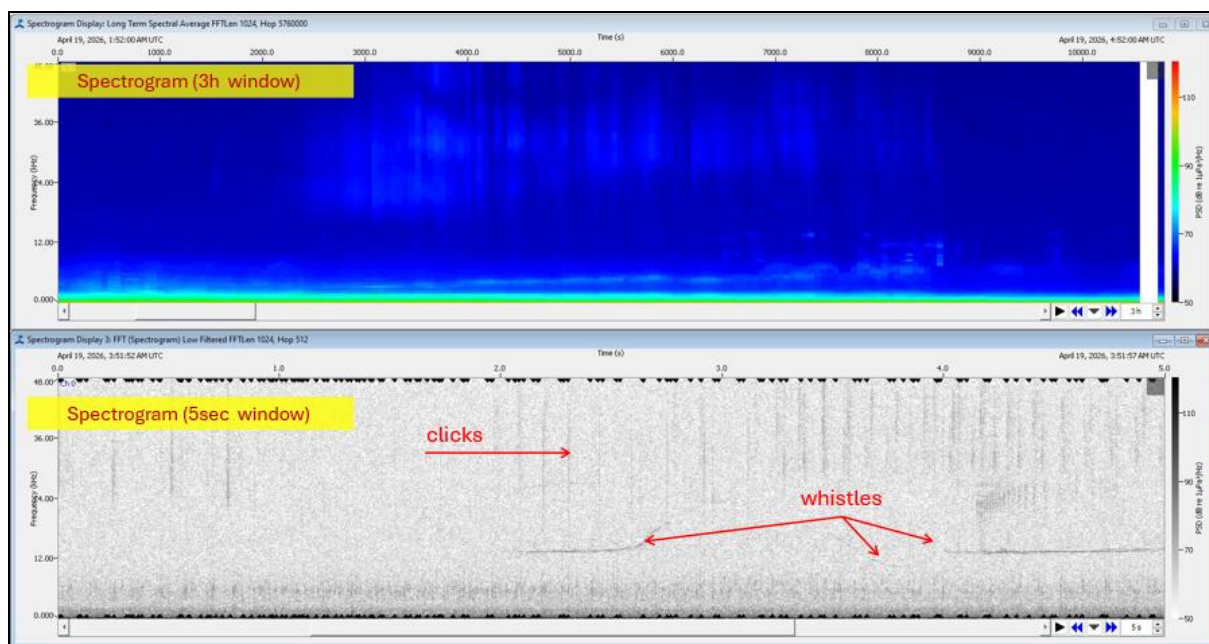


Figure 6 – PAMGuard visualization of LTSA (upper panel) and spectrogram (lower panel). In this example on day April 19th the spectrogram shows evident acoustic signs of simultaneous high-frequency clicks and whistles (probable Risso’s Dolphin or other odontocetes)

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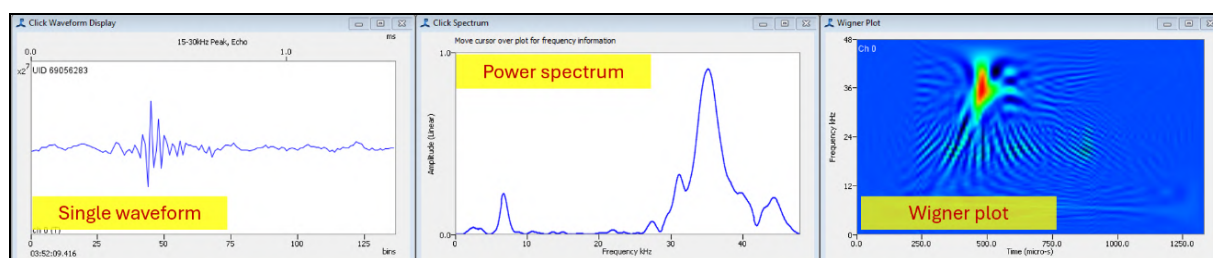


Figure 7 – PAMGuard Click Detector allows for inspection of single waveform, power spectrum and Wigner plot for each single detected click

5.4.0 TASK III: DETAILED CLASSIFICATION

A detailed classification of detected acoustic signals was conducted through the usage of the PAMGuard Classifier in combination with a QC control and statistical analysis through MATLAB scripts.

In this detailed analysis, the clicks detected by the Basic Click Detector during the preliminary analysis are re-analyzed through a set of classifiers properly defined according to the specific purpose of identify the clicks of biological origin, and classify it according to the mammal species expected in the area described in Section 3.1.

The setting of the click classifier is a crucial step of this process, it requires a basic knowledge of the characteristics of marine mammal sounds, which can be sought in the acoustic repertoires made available by the relevant scientific community. For the present study, several scientific research publications with similar targets were taken as reference ([24], [10], [16], [18], [19], [21], [22]) and their classification settings were tested on the recordings where the visual scan of LTSAs showed a clear evidence of effective marine mammal sounds detection.

The process required an intensive iterative work of visualization of both LTSA and spectrograms and, in some cases, listening to the sound signals classified by also looking at the single waveforms and Wigner plot shapes. This extensive work was conducted on a limited number of days where the LTSA showed clear bioacoustics signals, with the aim of achieving a robust sensitivity and then a setup of the Click Classifier considered satisfactory for the purposes of this study.

The following set of four classifiers was defined. Since the PAMGuard classifier works in a hierarchical manner, each classifier is prioritized according to the list:

1. 30-50 kHz Upsweep, designed to detect the up-sweep characteristic in clicks from Cuvier's beaked whales using the zero crossing parameter;
2. 2-15 kHz Peak, developed to identify sperm whales (*Physeter macrocephalus*). Note that propeller cavitation noise is also classified in this category;
3. 15-30 kHz Peak, designed for other odontocetes as Risso's dolphins and striped dolphins.
4. 30-50 kHz Peak, developed for Cuvier's beaked whales for which the up-sweep click characteristic was not present or detectable.

The above described set of classifiers was then reproduced and applied to each deployment day, leading to a database of classified clicks for each day of survey. The results for each day were stored as a database of binary files, and each daily database from PAMGuard went through a final post-processing step to further reduce false detections using a custom-made script in MATLAB, according to expected Inter-Click-Interval (ICI) values for each class of odontocetes, and to discard single clicks or tight click clusters (i.e., click sequences of very low ICI). Furthermore, sets of clicks discriminated as real presence of mammals were grouped as "encounters", considering a biological valid minimum time gap between each encounter of 8 minutes for sperm whales, 3 minutes for other odontocetes [25], [26], [27].

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5.5.0 TASK IV: DETAILED CLASSIFICATION

Analysis for assessing the baseline underwater noise measured during the PAM survey was conducted according to the Marine Strategy Framework Directive (MSFD, [28]) and industry standard practices. Under MSFD guidance, underwater continuous low-frequency anthropogenic noise is assessed using sound pressure levels measured in the one-third octave bands centered at 63 Hz and 125 Hz. These frequency bands are representative of the dominant frequency range of commercial shipping noise, which is considered the principal source of chronic underwater noise in many European marine waters. The reported metric is the band-limited sound pressure level expressed in dB re 1 μ Pa, where the reference pressure is 1 μ Pa.

Percentile levels are used to describe the statistical distribution of sound levels over a monitoring period. In this study we adopted the L10 (peak level event), L50 (median level noise), and L90 (background level noise), defined as the sound pressure level exceeded for 10, 50 and 90% of the measurement period. They are used to quantify how acoustic environments fluctuate over time. The L90 reflects the quietest, most continuous periods and is widely used to define the natural ambient or background noise level of the ocean, stripping away loud transient events.

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6.0.0 RESULTS

6.1.0 Preliminary Analysis

The preliminary analysis was conducted with PAMGuard software, and includes:

- production of long term averaged spectra (LTSAs),
- preliminary click detection.

The outcomes of the analysis were stored in binary files for further post-processing through MATLAB scripts, but the software allows to consult the results through the GUI of a specific Viewer module that provides the user with a datagram, i.e. a clear overview of the processed files. Figure 8 shows an example of the datagram obtained for the deployment day April 15th.

This chapter presents the results from these preliminary analyses, in terms of LTSAs (some examples), number of generic click detected in the raw data.

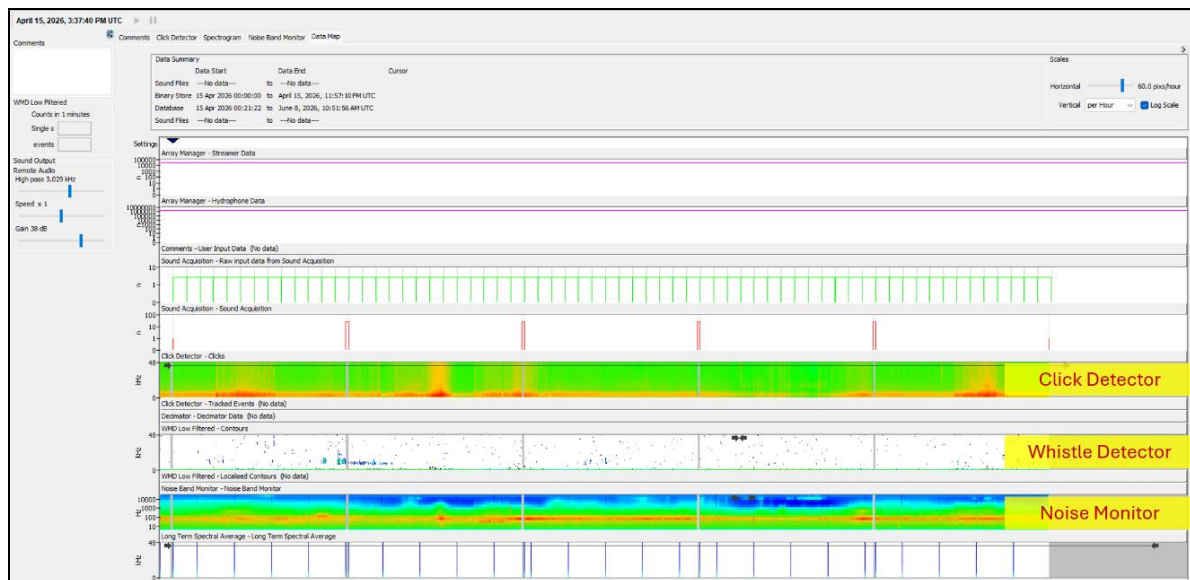


Figure 8 – PAMGuard Viewer mode - Example of datagram for the deployment day 15th April, 2026, whit highlighted the result of the Click detector, the Whistle detector and the Noise Monitor

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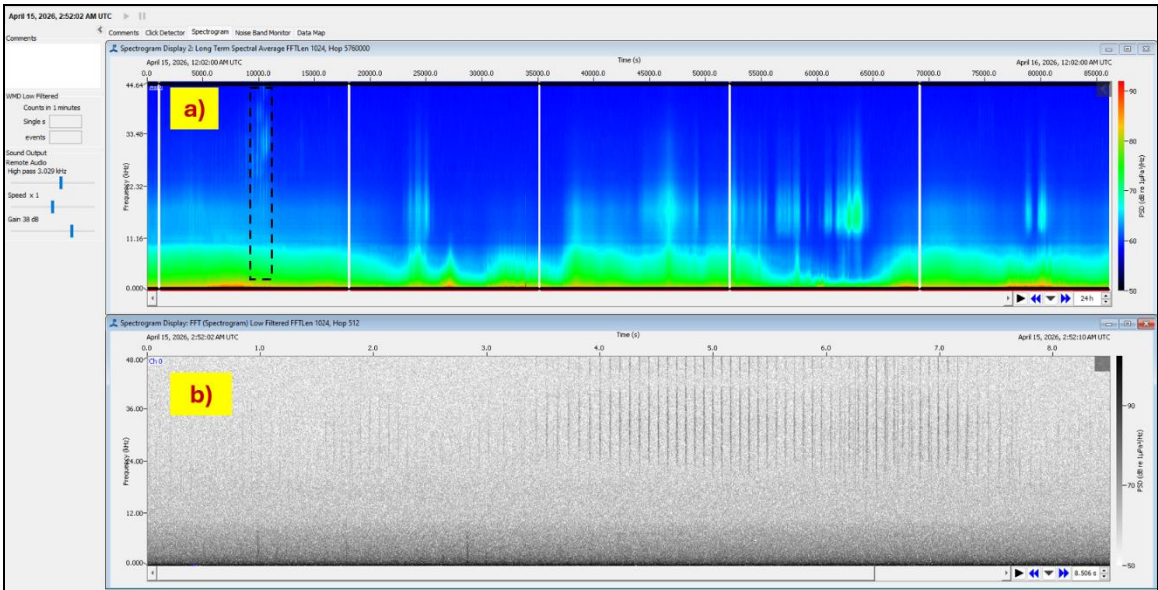


Figure 9 – PAMGuard Viewer mode - Example of visualization of LTSA (panel above) and spectrogram (panel below) for the deployment day 15th April, 2026. The polygon in dashed line highlights the portion of the LTSA showed in the spectrogram. Signs of click from odontocetes are evident

6.1.1 Long-term average spectra (LTSA)

Long-term average spectra provide a compressed spectrogram view allowing efficient visual examination of long datasets [23] [22]. Figure 10 and Figure 11 show two examples of LTSA with visible signals clearly distinguishable from background noise. In some cases, it is also possible to distinguish the clicks of sperm whales, as shown in Figure 11.

LTSA's for each deployment day are reported in Appendix A attached to this report.

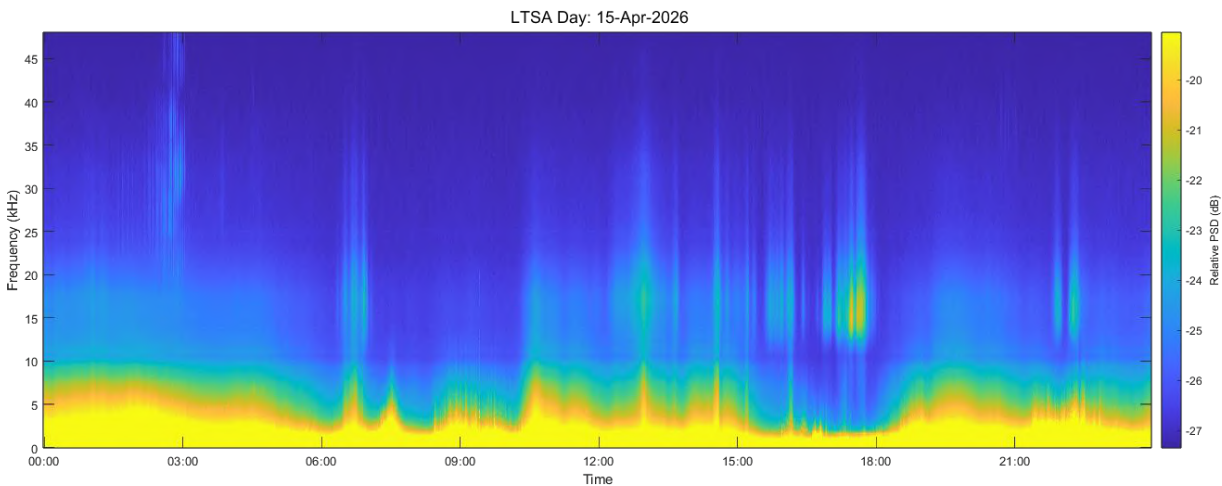


Figure 10 – Long term average spectrum on day 15th April 2026 showing clear signs of vocalizations from different species: potential Beaked Whale (energy peak centered around 40 kHz) at 03:00, Sperm Whale (energy peak centered in the range 12-15 kHz) during several hours of the day (from 06:30 to 18:00)

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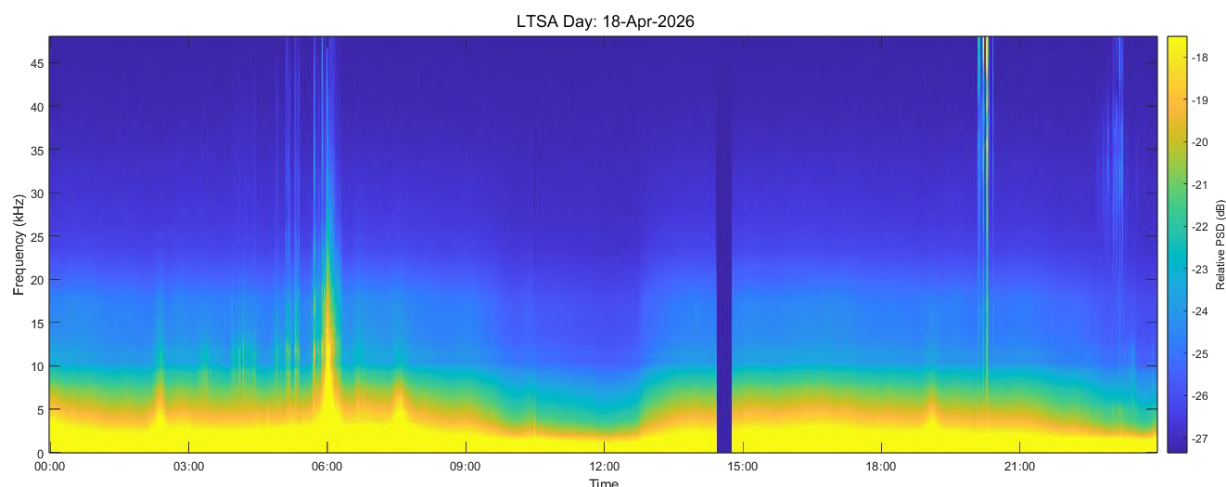


Figure 11 – Long term average spectrum on day 18th April 2026 showing clear signs of vocalizations from different species: Sperm Whale (energy peak centered in the range 12-15 kHz) during several hours of the day (from 02:00 to 07:00), and a potential Beaked Whale (energy peak centered around 40 kHz) at 20:00

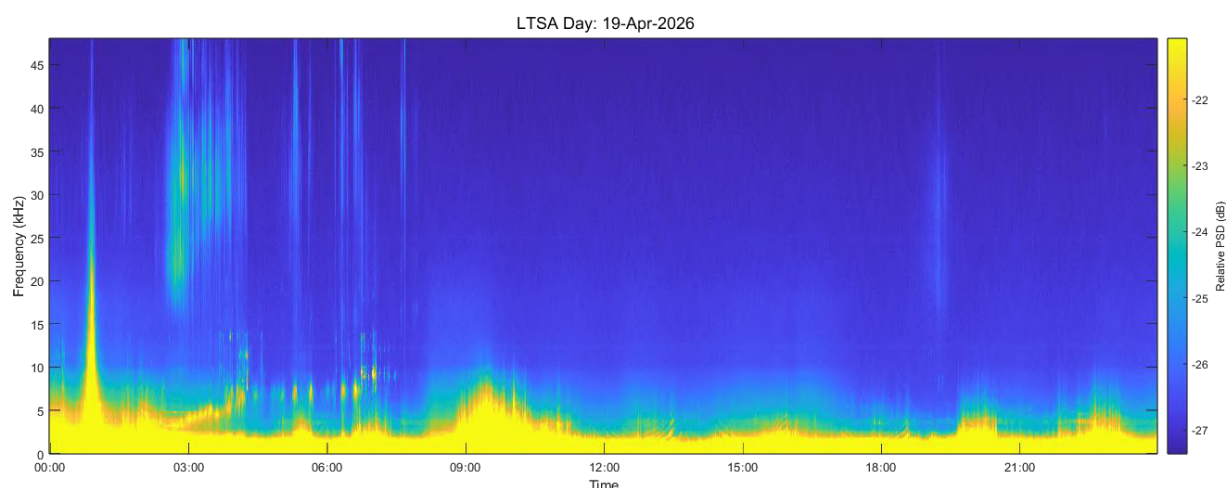


Figure 12 – Long term average spectrum on day 19th April 2026 showing clear signs of high-frequency vocalizations (clicks and whistles) from not well identified odontocetes, probably a Risso's Dolphin, during several hours of the day (from 03:00 to 07:00)

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6.1.2 Preliminary click detection

The Basic Click Detector used with default PAMGuard settings has detected a significant amount of generic clicks to be further investigated to identify the source (biological or anthropical), and eventually classified in case of biological sources. Bar plot showing the number of clicks per minute for each deployment day are shown in the following figures.

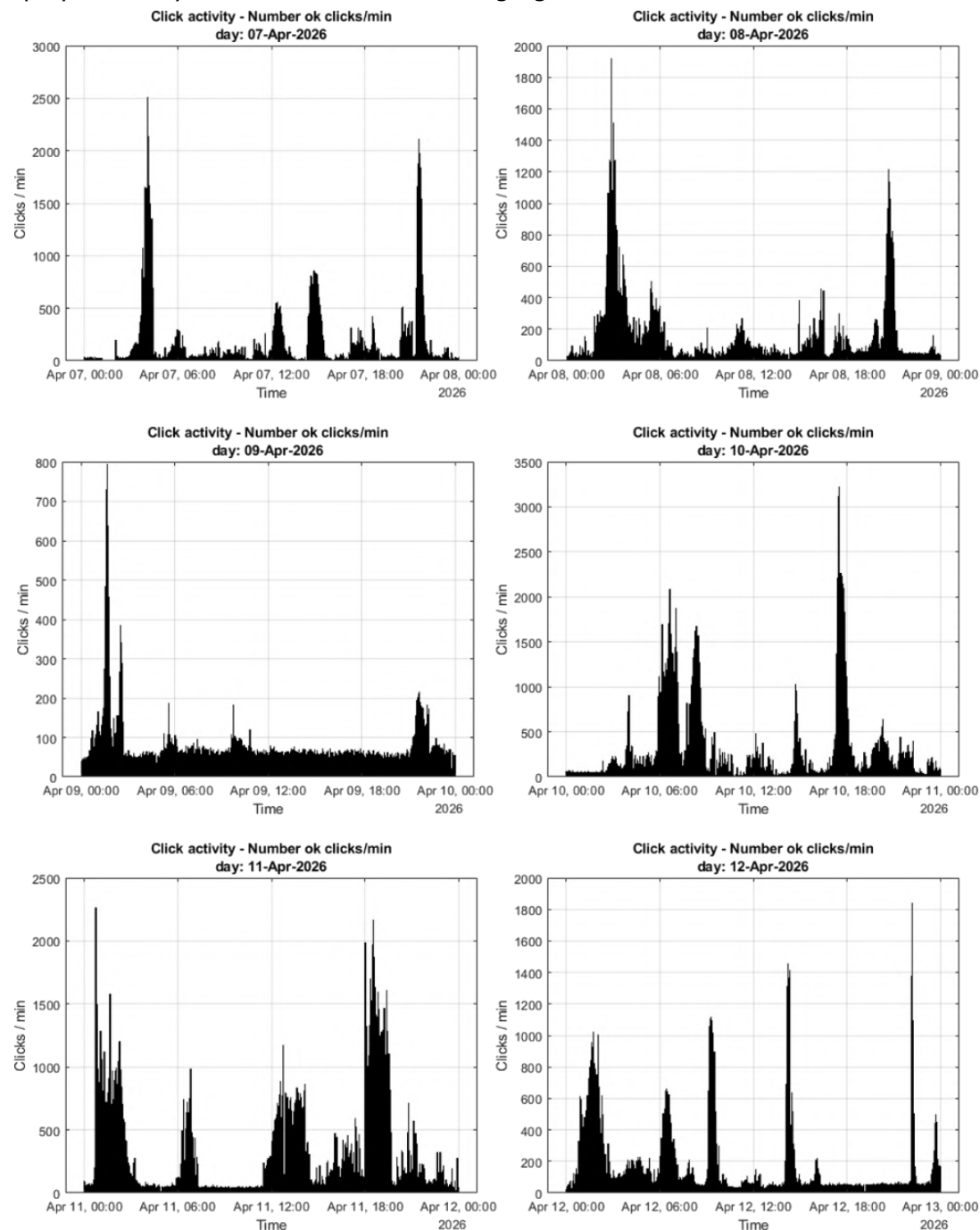


Figure 13 – Preliminary results from the Basic Click Detector - number of generic click/min. detected by the Basic Click Detector of PAMGuard during days from 7th to 12th April, 2026

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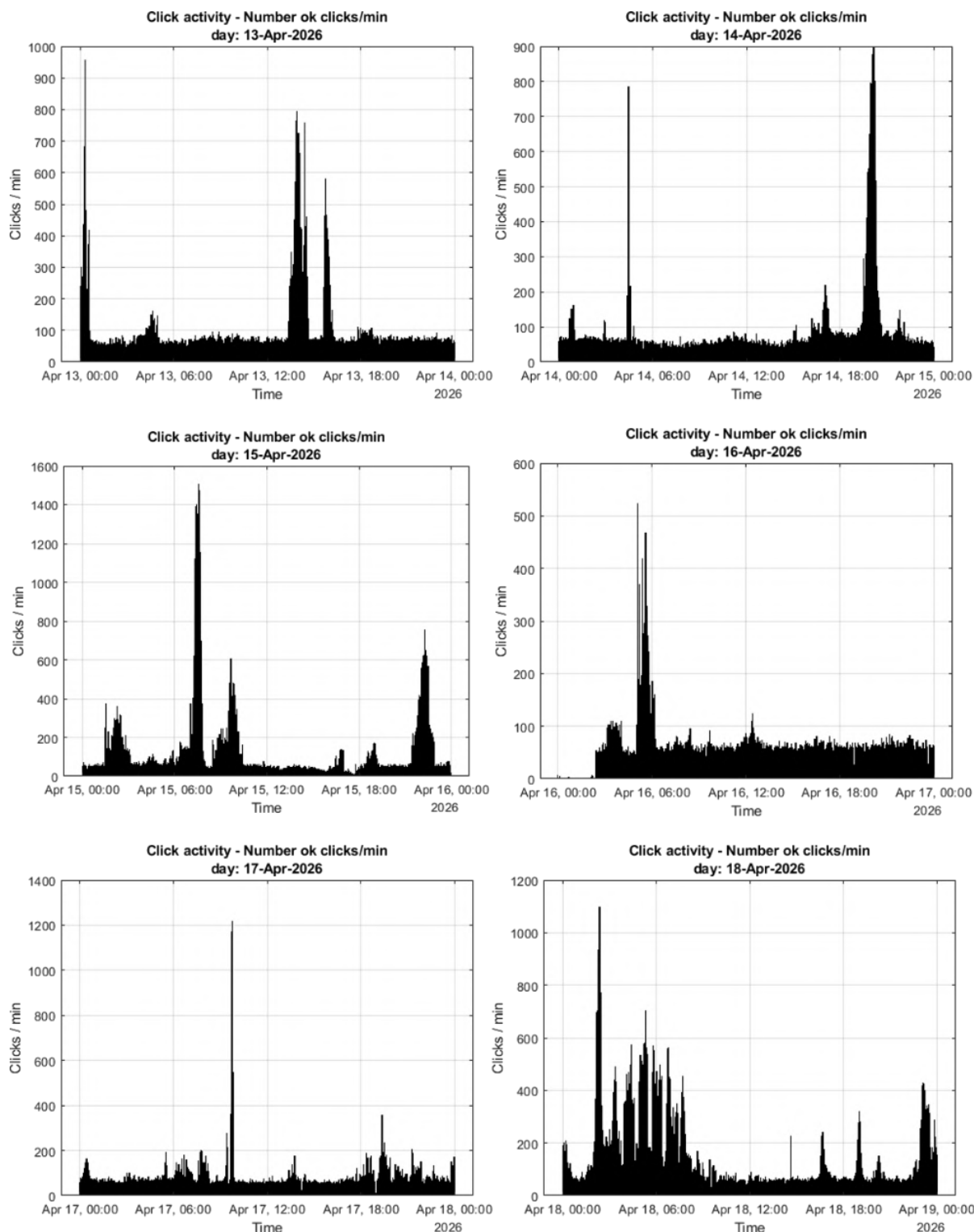


Figure 14 – Preliminary results from the Basic Click Detector - number of generic click/min. detected by the Basic Click Detector of PAMGuard during days from 13th to 18th April, 2026

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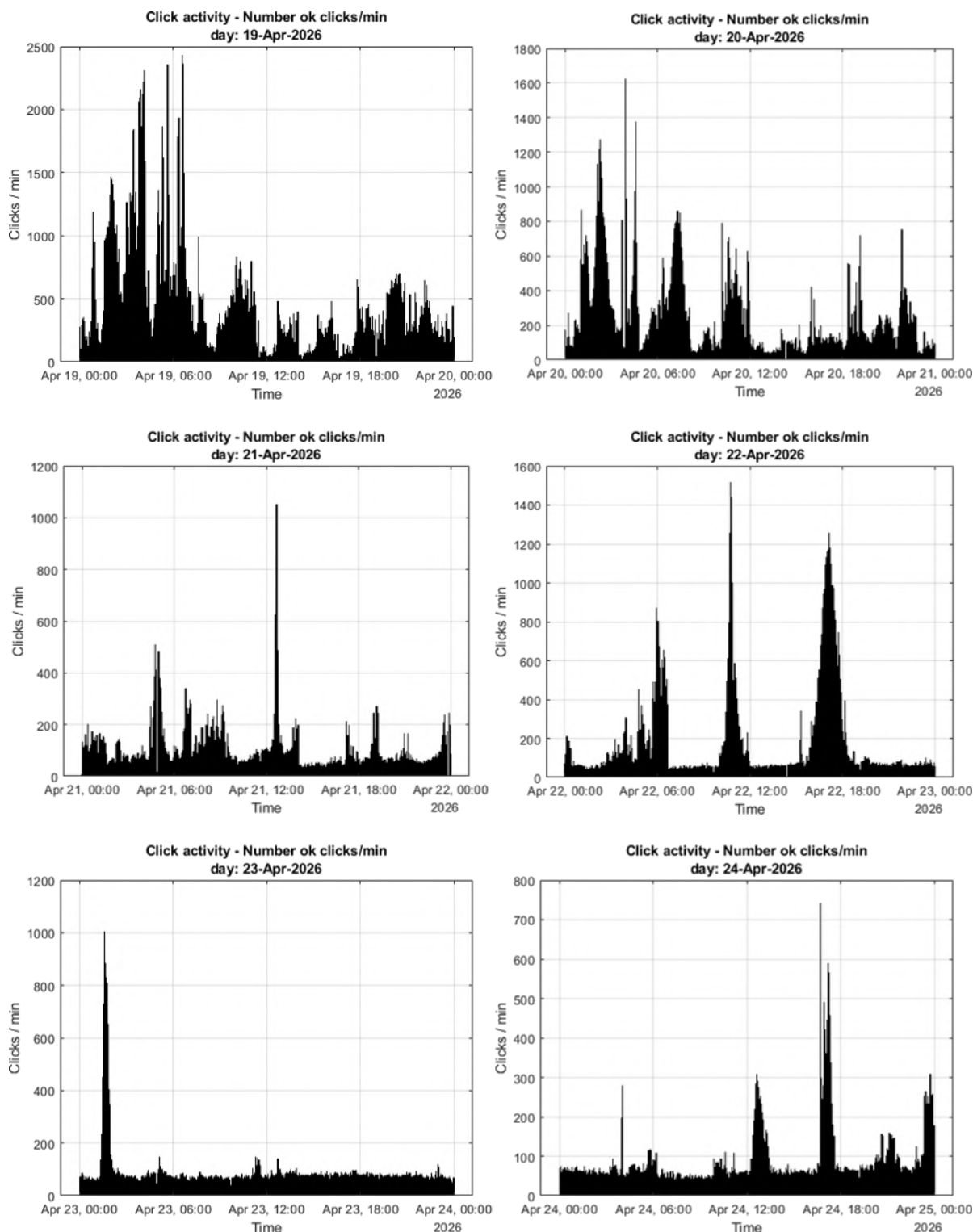


Figure 15 – Preliminary results from the Basic Click Detector - number of generic click/min. detected by the Basic Click Detector of PAMGuard during days from 19th to 24th April, 2026

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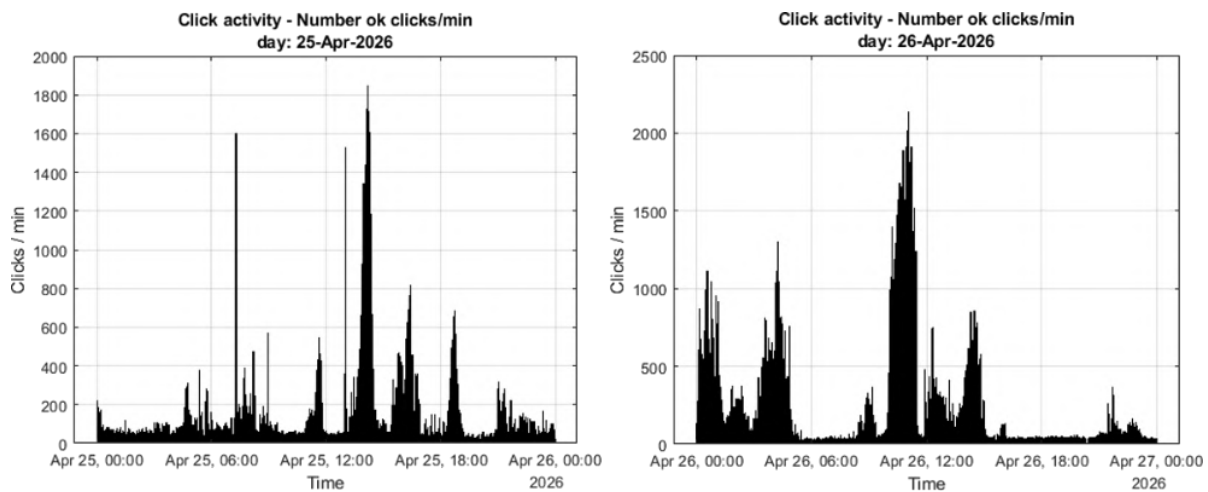


Figure 16 – Preliminary results from the Basic Click Detector - number of generic of click/min. detected by the Basic Click Detector of PAMGuard during days 25th and 26th April, 2026.

6.2.0 Detailed Classification of Marine Mammal Sounds

In this detailed analysis stage, the clicks detected by the Basic Click Detector during the preliminary analysis are re-analyzed through a set of classifiers properly defined for identifying biological sound sources, classifying odontocete species and discarding of false positives related to background noise signals.

The classification process led to the identification of 74% of false positive for sperm whale, 78% for Cuvier's beaked whale and about 79% for all other odontocetes. The remaining clicks were then grouped in encounters of one or more individuals, discarding single clicks or tight click clusters.

A graphical summary of the results is reported in Figure 17: the heatmap shows hourly encounter presence for each day of the deployment period for sperm whale (upper panel), Cuvier's beaked whale (central panel) and other odontocetes (lower panel). Each row of the heatmap represents one day and colored cells indicate hours during which at least one encounter was detected. E.g., on April 9th no sperm whale sounds were recorded but a potential beaked whale was recorded around 18:30; on April 12th sperm whale encounters occurred predominantly during the early night and continued into the morning hours. The figure reveals both diel patterns and day-to-day variability in species occurrence.

In summary, the results show that:

- Sperm whales sounds were recorded almost every day of the deployment, without any evidence of diel pattern through daily hours. In several cases, the signals came from a social group of sperm whales (e.g., Figure 18).
- At least thirteen (13) encounters of Cuvier's beaked whale (Ziphius) were clearly recorded during the deployment period, recognizable thanks to the peculiar upsweep in frequency identified through the Wigner plot (e.g., April 22nd, see Figure 19).
- Some of the encounters classified as "other odontocetes" could be almost certainly assigned to Risso's Dolphin (Grampus) in at least one case (April 19th as shown in Figure 11), according to the repertoire found in literature coming from sounds recorded in the Atlantic Ocean [29], but we cannot be sure about the sound similarity with the subpopulation of the Mediterranean Sea.
- A sort of correlation was found between sudden underwater noise events and the appearance of bioacoustics signs from odontocetes. An example is shown in Figure 21, showing the LTSA

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and spectrogram of day April 8th: a sudden sound (probably an explosion) at 2:08 AM followed by high-frequency clicks classified as Ziphius.

- Unidentified odontocete whistles were detected throughout the recordings.
- The low-frequency analysis performed with the aim of detecting fin whale calls did not produce any positive results, suggesting that no fin whale calls were recorded during the 20-days deployment period.

For further details on the daily results, Figure 22 - Figure 28 show bar plots of number of verified clicks per hours for each class of species, and for each deployment day. Furthermore, integral results in terms of clicks per minute and encounters for each day are given in Appendix B attached to this report.

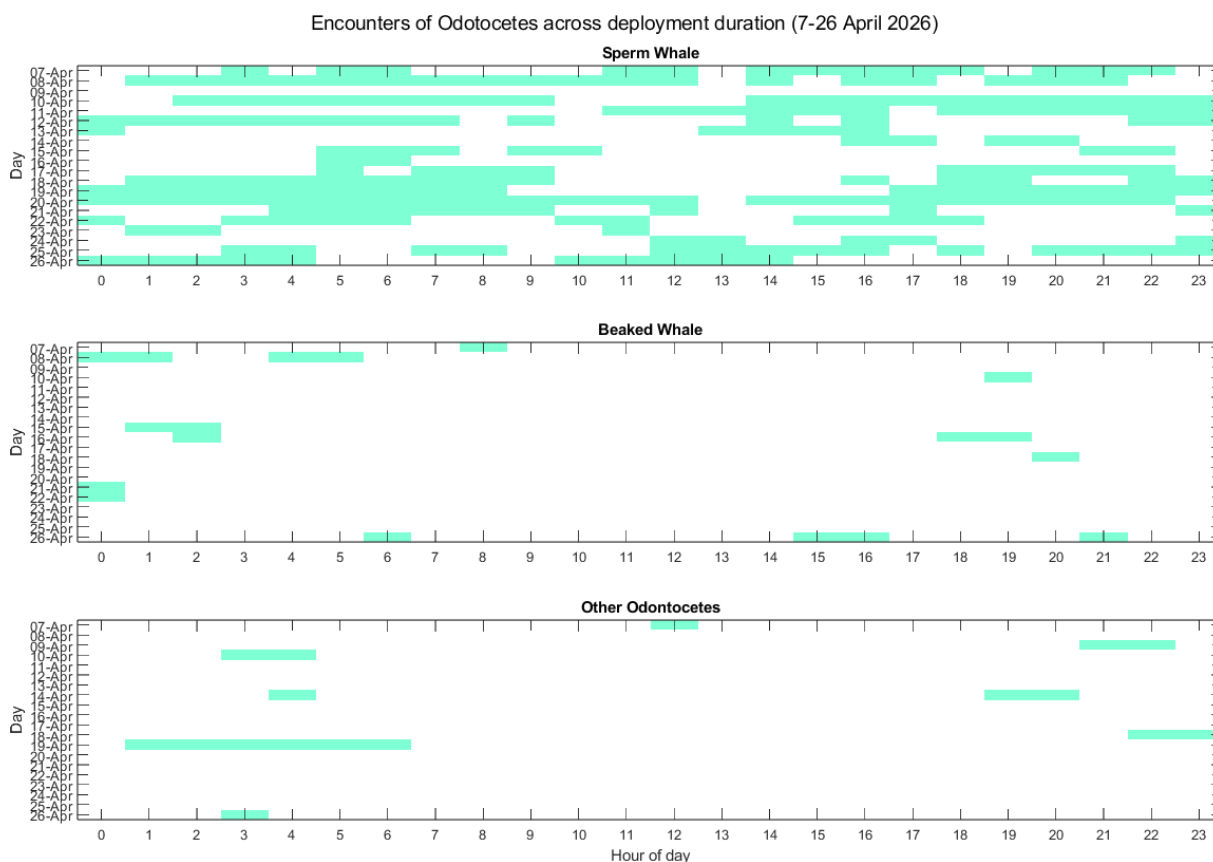


Figure 17 – Detailed classification: summary of odontocetes encounters according to classified acoustic signals during the deployment period and across the daily hours, for sperm whale (upper panel), Cuvier’s beaked whale (central panel) and other odontocetes (lower panel). Colored cells indicate hours during which at least one verified encounter was detected

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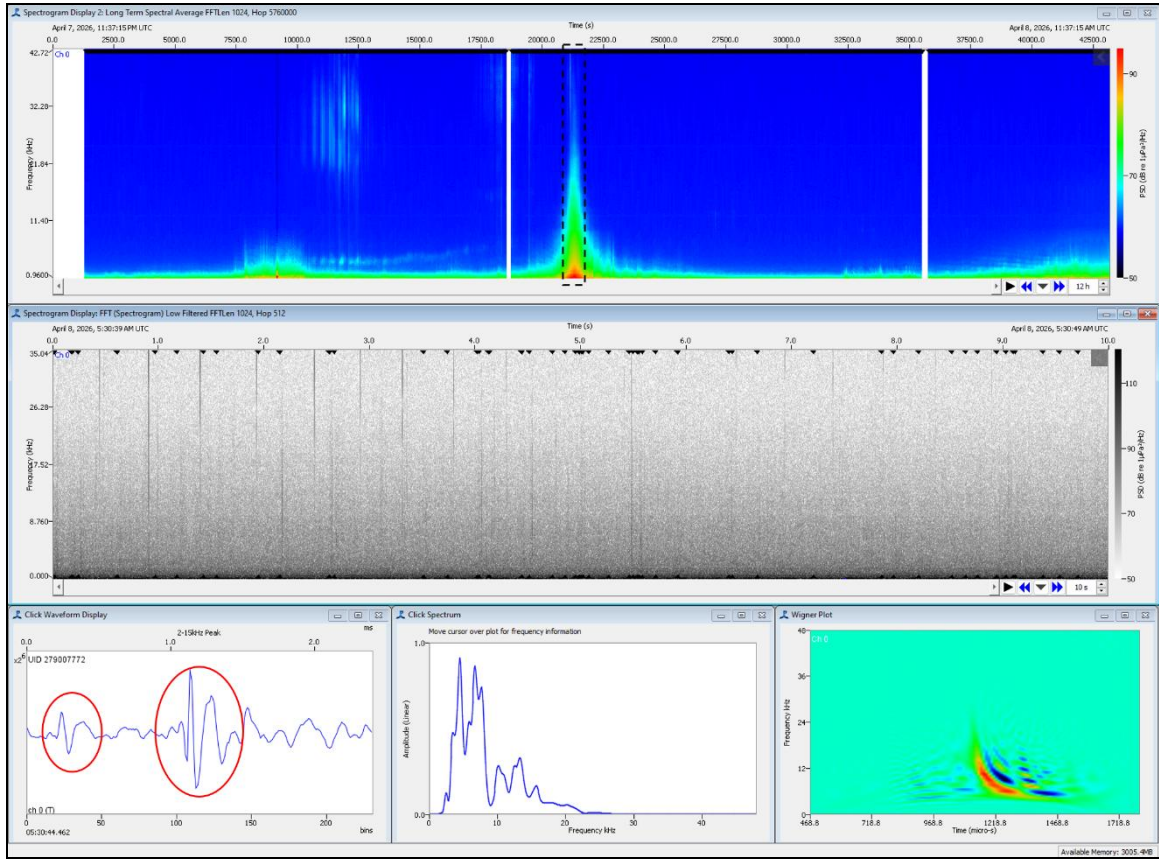


Figure 18 – Deployment day April 8th – Clicks from multiple sperm whales

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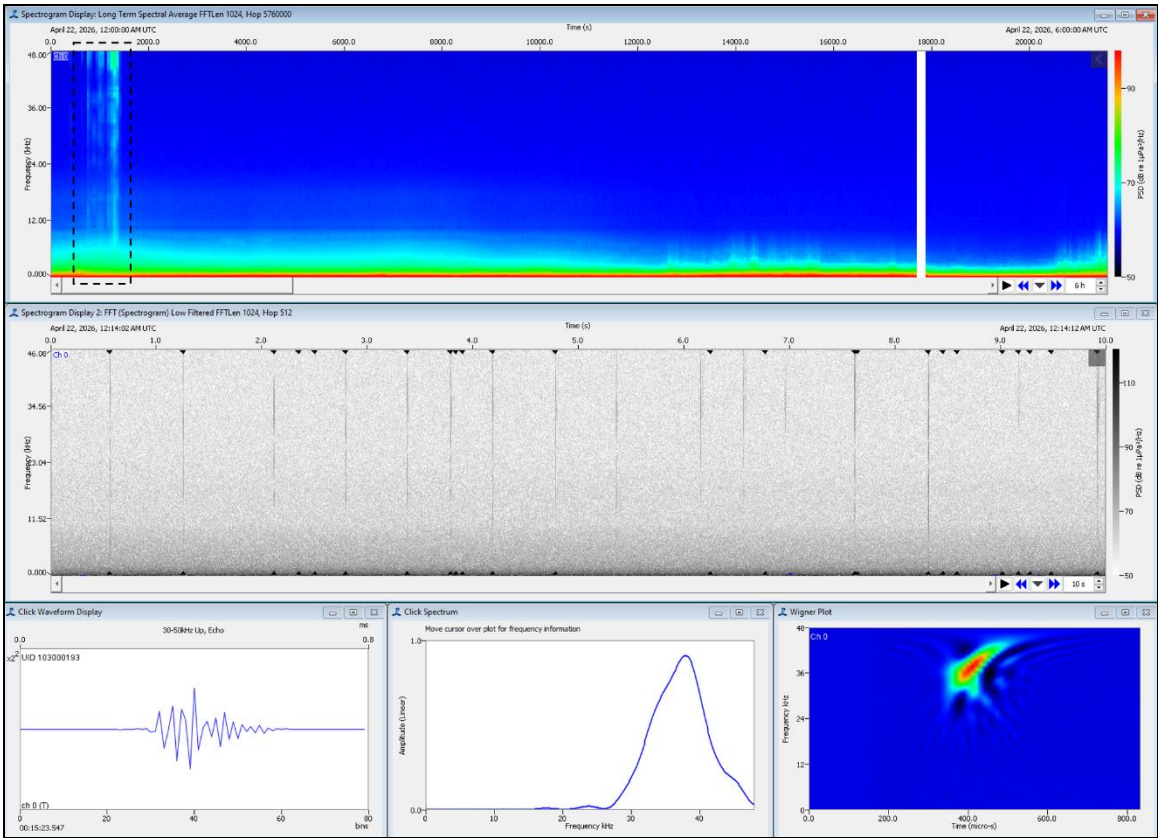


Figure 19 – Deployment day April 22nd - Cuvier’s Beaked Whale clicks recorded, shown in LTSA (upper panel) and spectrogram (lower panel) and typical waveform (lower left) , power spectrum (lower central) and Wigner plot (lower right) associated to one click

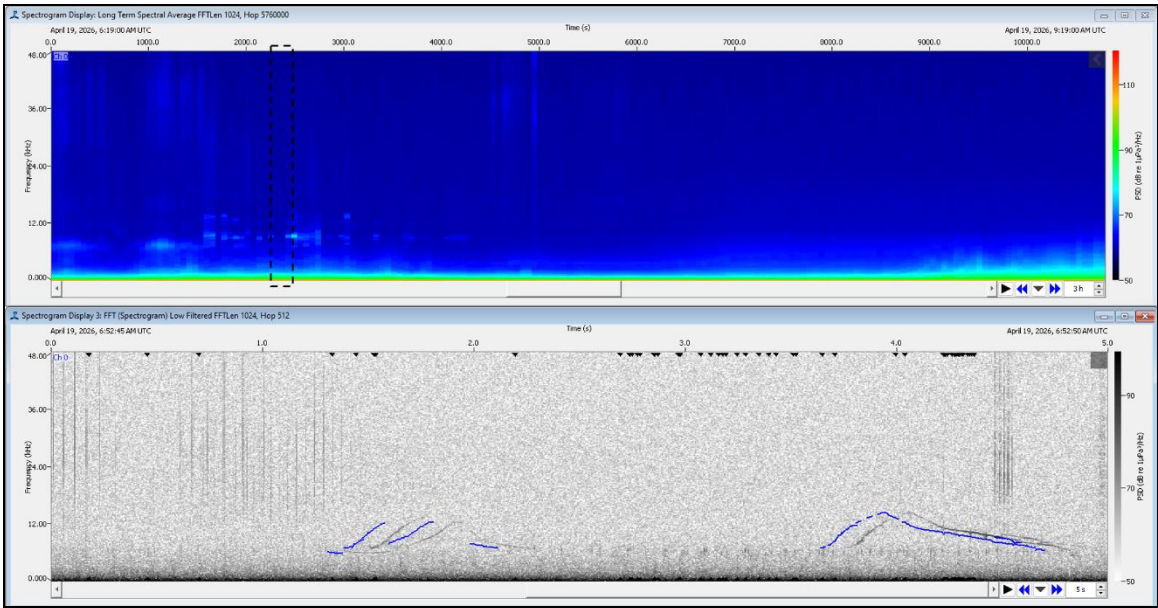


Figure 20 – Deployment day April 19th – Risso’s Dolphin (Grampus griseus) clicks and whistles recorded

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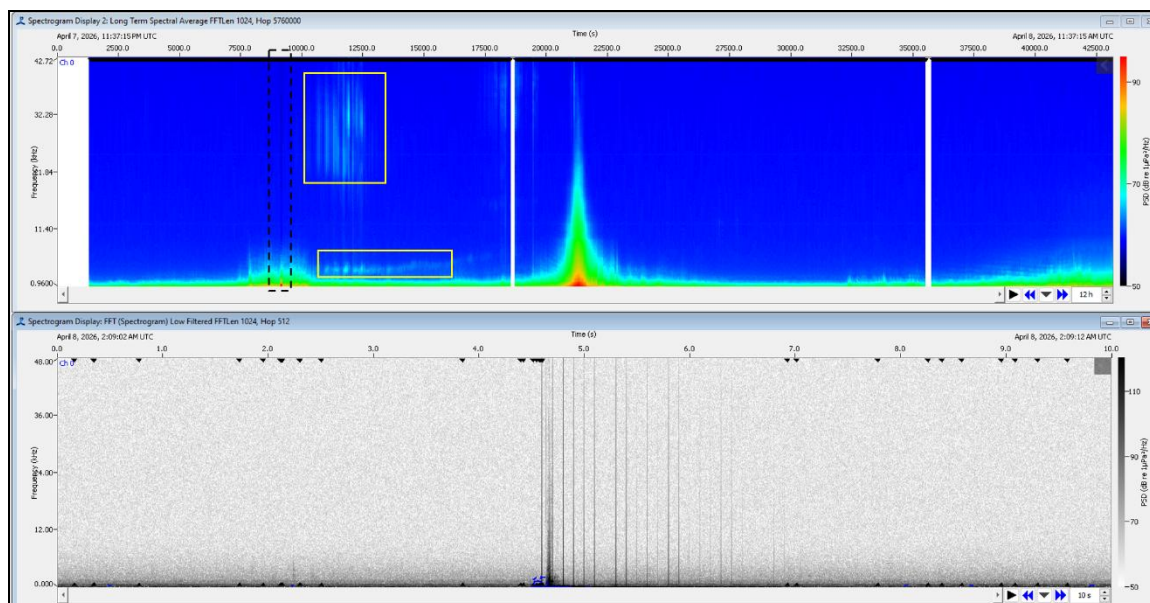


Figure 21 – Deployment day April 8th, LTSA with the sign of a sudden noise highlighted by the dashed black line and acoustic sounds from mammals highlighted by the yellow boxes (upper panel) and spectrogram showing the sudden noise at 2:08 AM (probable explosion, lower panel)

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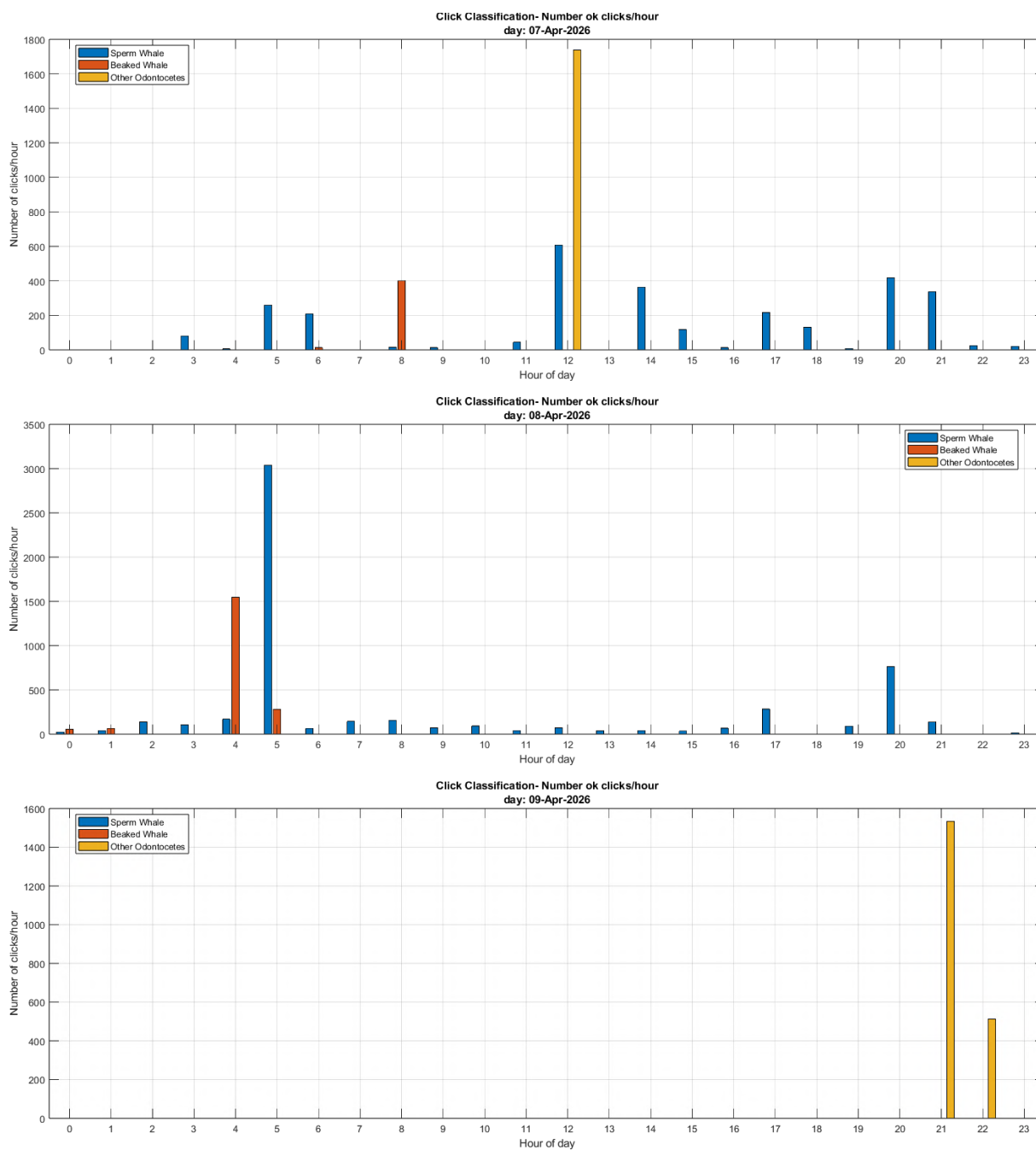


Figure 22 – Detailed classification - bar plots of number of verified clicks per hours for each class of species for deployment days April 7th (upper panel), 8th (central panel) and 9th April

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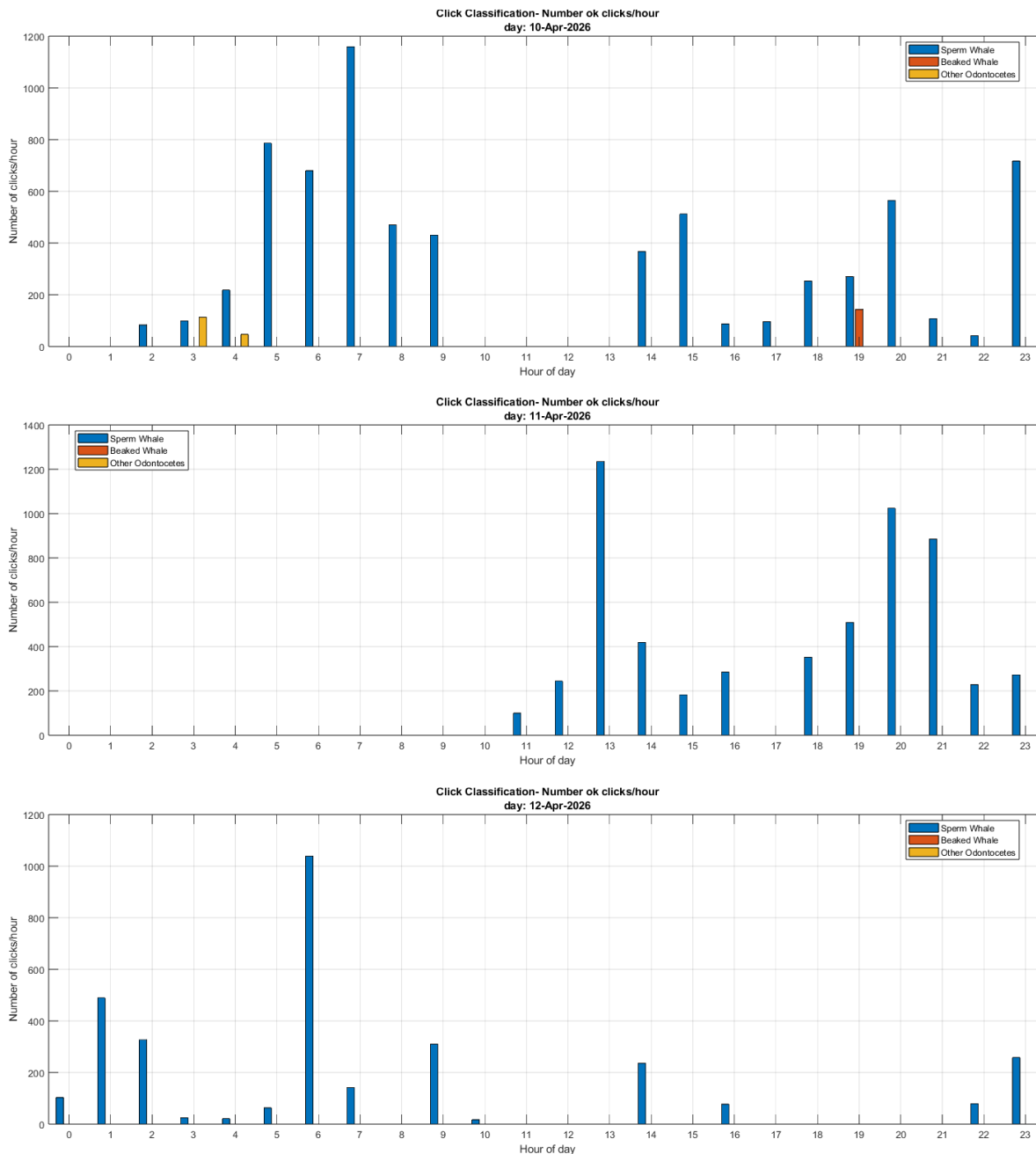


Figure 23 – Detailed classification - bar plots of number of verified clicks per hours for each class of species for deployment days April 10th (upper panel), 11th (central panel) and 12th April

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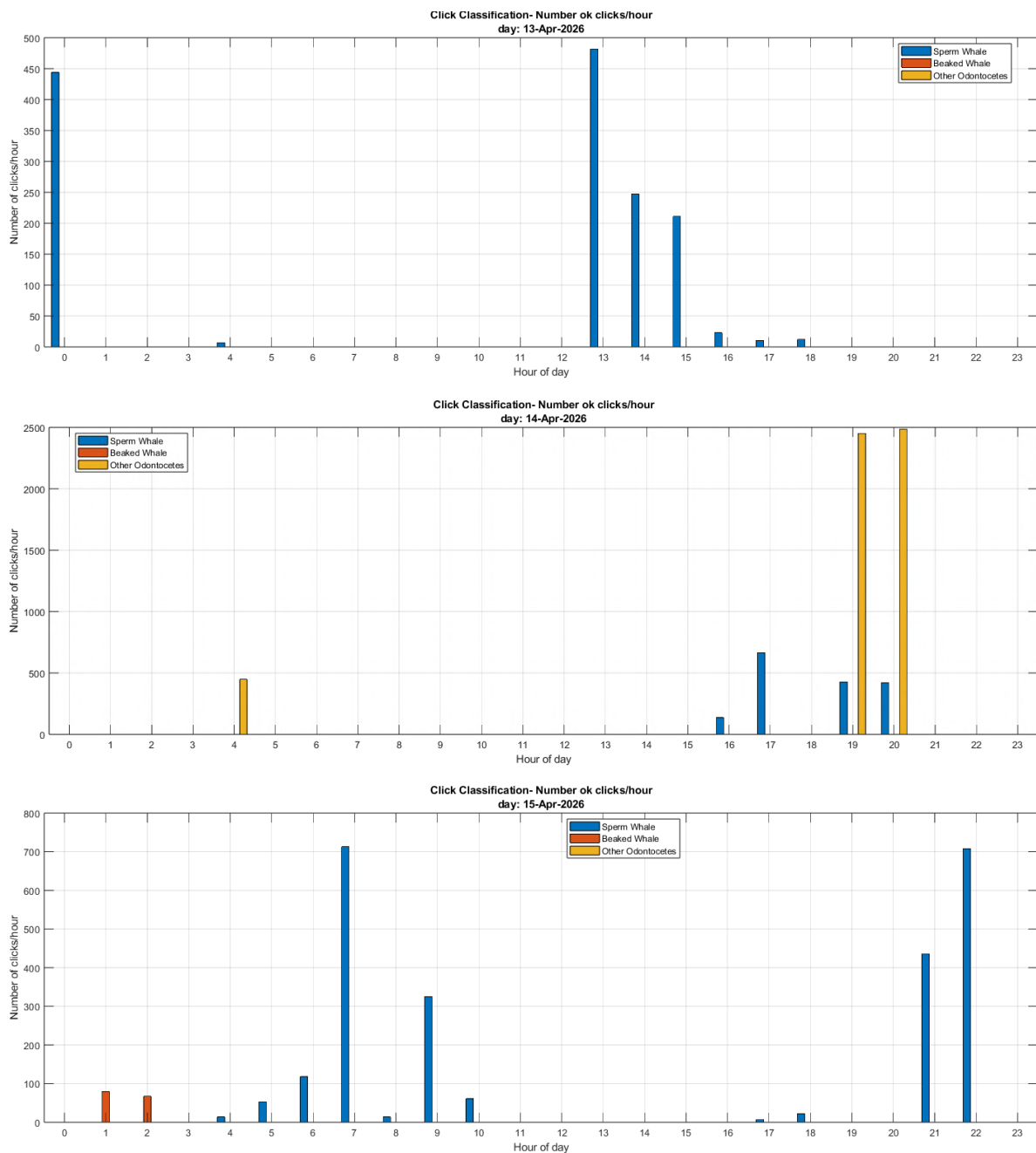


Figure 24 – Detailed classification - bar plots of number of verified clicks per hours for each class of species for deployment days April 13th (upper panel), 14th (central panel) and 15th April

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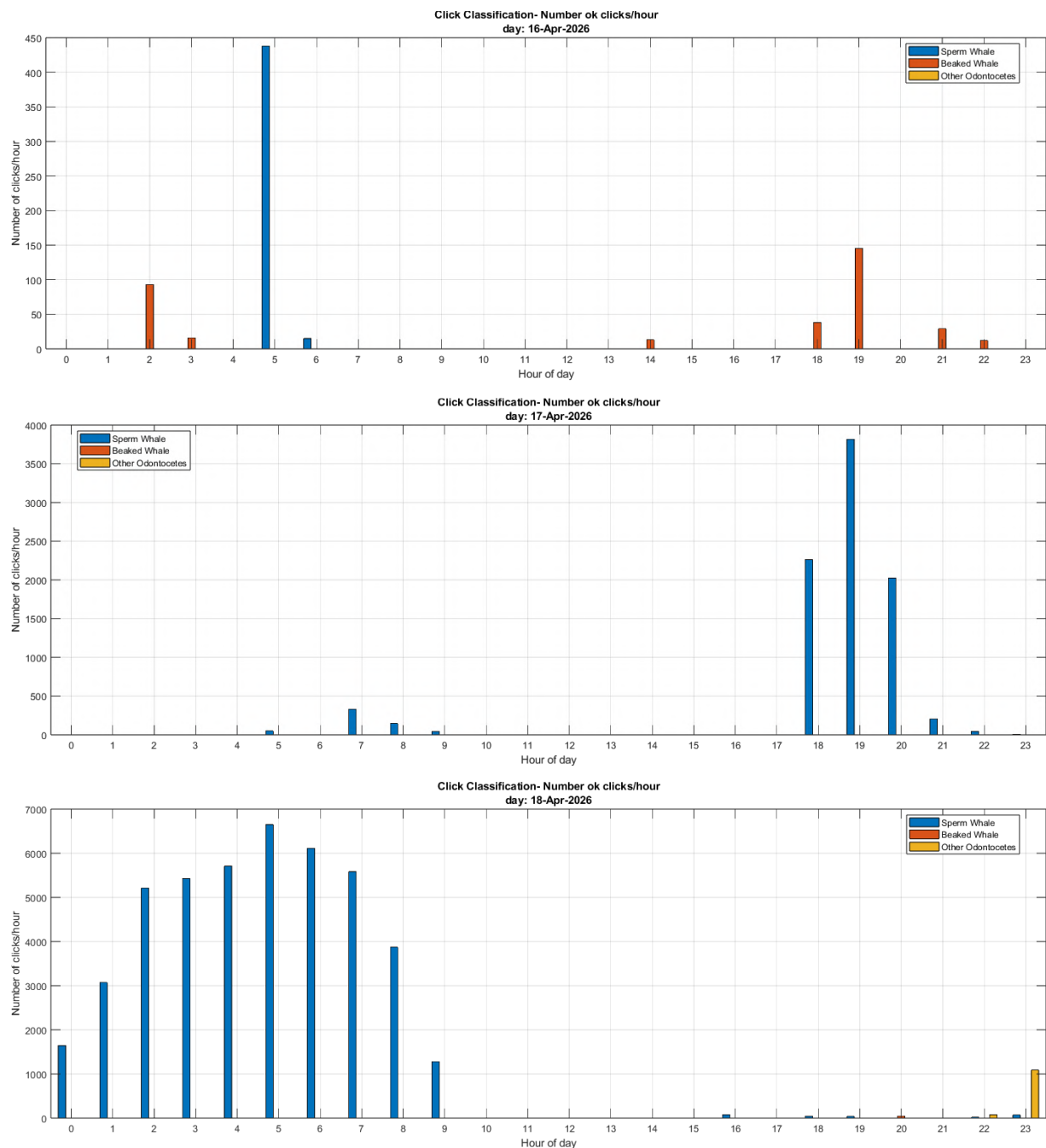


Figure 25 – Detailed classification - bar plots of number of verified clicks per hours for each class of species for deployment days April 16th (upper panel), 17th (central panel) and 18th April

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Figure 26 – Detailed classification - bar plots of number of verified clicks per hours for each class of species for deployment days April 19th (upper panel), 20th (central panel) and 21th April.

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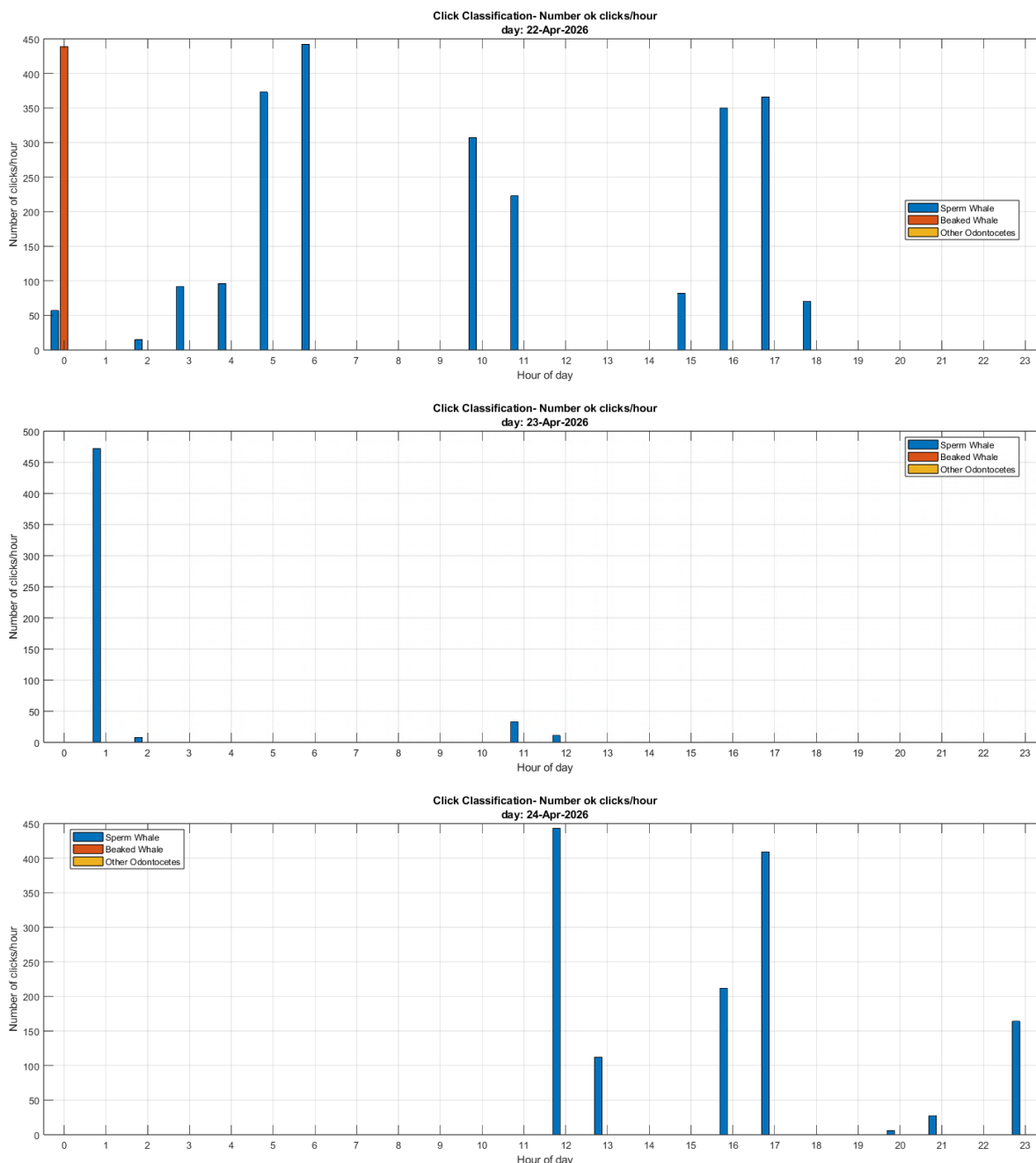


Figure 27 – Detailed classification - bar plots of number of verified clicks per hours for each class of species for deployment days April 22th (upper panel), 23th (central panel) and 24th April.

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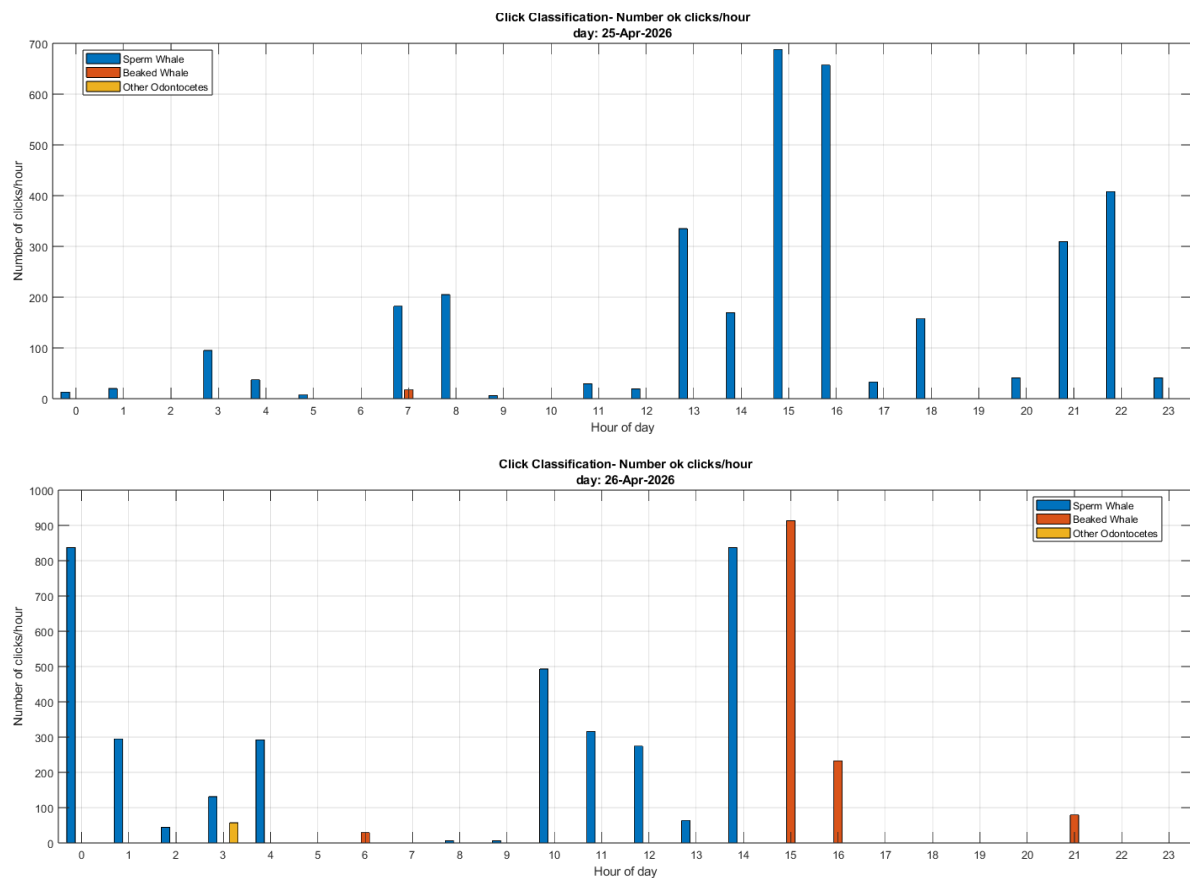


Figure 28 – Detailed classification - bar plots of number of verified clicks per hours for each class of species for deployment days April 25th (upper panel), 26th (lower panel).

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6.3.0 Underwater Noise

Estimated levels of underwater noise are here reported as calculated from the post-processing of the PAMGuard Noise Monitor.

Daily values levels L10, L50 and L90 are shown in Table 2 and Figure 29 for root mean square sound pressure (SPLrms), in Table 3 and Figure 30 for peak sound pressure (SPLpeak). The results for SPLpeak shows L90 average value over the period is at 63Hz-centered band of 100.5 ± 1.2 dB re 1 μ Pa, which is in the range of values typical of moderately shipping-traffic area. It is lower with respect to the peak levels measured in coastal waters around Marine Protected Areas in the Ionian coastal area (see Section 3.2), where vessel traffic is higher. The estimate is considered entirely consistent with a soundscape strongly influenced by distant vessel noise, since propeller cavitation noise in the SOFAR channel is the main source of continuous low frequency sound. As reference for this study, Figure 31 shows the map of annual average vessel density and monthly average during the month of April 2024, available through retrieved from the European Marine Observation and Data Network (EMODnet)'s Human Activities Data Portal, highlighting a quite consistent traffic in the close vicinity of the mooring line location.

The results for SPLrms shows L90 average value over the period is at 63Hz-centered band of 89.8 ± 1.2 dB re 1 μ Pa. The average difference L10-L90 is 7.2 dB, with maximum values of 9.4 dB indicating a disturbed soundscape characterized by intermittent noise events. Such events are likely traceable in ship noise, but also in military tests of acoustic systems for submarine detection, or seismic surveys related to offshore fossil or renewable energy developments. Figure 32 and Figure 33 respectively show example of an explosive sound and probable high-frequency active sonar found in the recorded data. Note that an explosion appears as a vertical spike in the LTSA that, when expanded in the spectrogram, has a sharp onset with a reverberant decay.

Daily noise monitoring summary plots are reported in Appendix C attached to this report.

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Table 2 – Underwater noise analysis – daily values of L₁₀, L₅₀ and L₉₀ for centered 63 Hz and 125 Hz third-octave bands for root mean square sound pressure level (SPL_{rms}).

Deployment day	SPL _{rms}					
	63 Hz			125 Hz		
	L ₁₀	L ₅₀	L ₉₀	L ₁₀	L ₅₀	L ₉₀
7-Apr	96.6	92.4	89.4	92.2	88.3	85.4
8-Apr	96.9	90.8	88.3	89.8	87.6	85.1
9-Apr	95.4	92.3	89.6	91.4	88.7	85.0
10-Apr	95.6	93.1	89.8	91.4	88.7	85.1
11-Apr	96.1	92.6	89.1	92.4	89.4	86.9
12-Apr	96.6	91.3	88.4	91.5	86.9	83.3
13-Apr	98.2	94.2	91.0	91.6	88.1	85.4
14-Apr	97.9	92.6	89.1	91.8	87.5	84.7
15-Apr	98.6	95.6	93.0	91.9	89.4	87.3
16-Apr	95.7	92.8	90.5	90.6	88.1	86.7
17-Apr	95.5	90.7	88.0	90.8	87.8	85.3
18-Apr	97.4	93.3	89.9	91.1	88.7	85.8
19-Apr	99.1	93.0	90.0	91.7	88.5	86.6
20-Apr	98.6	92.6	89.3	91.1	88.7	85.2
21-Apr	96.9	93.1	90.8	92.1	90.2	88.4
22-Apr	96.3	91.6	88.1	91.7	88.2	84.2
23-Apr	96.7	92.7	90.6	90.4	87.0	84.8
24-Apr	98.1	93.3	90.7	90.7	88.5	86.4
25-Apr	97.5	93.5	91.5	90.4	87.7	85.2
26-Apr	97.8	92.1	89.4	90.9	87.9	85.7
AVERAGE	97.1	92.7	89.8	91.3	88.3	85.6
STD.	1.1	1.1	1.2	0.7	0.8	1.2

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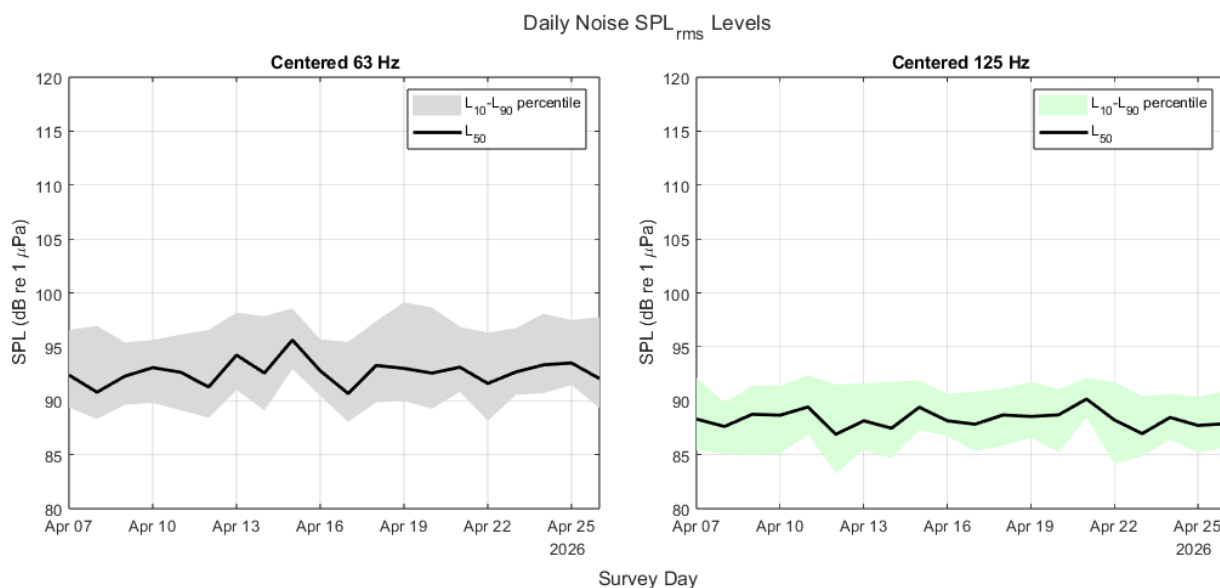


Figure 29 – Underwater noise analysis: daily values of L₁₀, L₅₀ and L₉₀ for centered 63 Hz and 125 Hz third-octave bands for root mean square sound pressure level (SPL_{rms}).

Table 3 – Underwater noise analysis – daily values of L₁₀, L₅₀ and L₉₀ for centered 63 Hz and 125 Hz third-octave bands of peak sound pressure level (SPL_{peak}).

Deployment day	SPL _{peak}					
	63 Hz			125 Hz		
	L ₁₀	L ₅₀	L ₉₀	L ₁₀	L ₅₀	L ₉₀
7-Apr	107.5	103.1	99.9	103.8	99.6	96.6
8-Apr	107.8	101.7	99.0	101.4	98.9	96.4
9-Apr	106.3	103.0	100.2	102.9	100.0	96.3
10-Apr	106.7	103.9	100.5	103.0	100.0	96.5
11-Apr	107.0	103.3	99.8	103.9	100.8	98.0
12-Apr	107.5	102.1	99.1	102.9	98.2	94.6
13-Apr	109.5	105.2	101.9	103.4	99.5	96.7
14-Apr	108.8	103.5	100.1	103.5	99.0	95.9
15-Apr	109.6	106.4	103.6	103.5	100.8	98.4
16-Apr	106.6	103.5	101.0	102.3	99.5	97.7
17-Apr	106.3	101.5	98.7	102.5	99.1	96.5
18-Apr	108.4	104.1	100.6	102.9	100.0	96.9
19-Apr	110.1	103.9	100.6	103.5	99.9	97.6
20-Apr	109.4	103.2	99.9	102.7	99.9	96.4
21-Apr	107.9	103.9	101.4	103.8	101.5	99.5
22-Apr	107.2	102.5	98.9	103.2	99.5	95.4
23-Apr	107.7	103.6	101.1	101.9	98.3	96.0
24-Apr	108.9	104.2	101.3	102.2	99.7	97.5
25-Apr	108.2	104.3	102.0	102.0	99.0	96.3
26-Apr	108.6	102.9	100.0	102.5	99.2	96.8
AVERAGE	108.0	103.5	100.5	102.9	99.6	96.8
STD.	1.2	1.1	1.2	0.7	0.8	1.1

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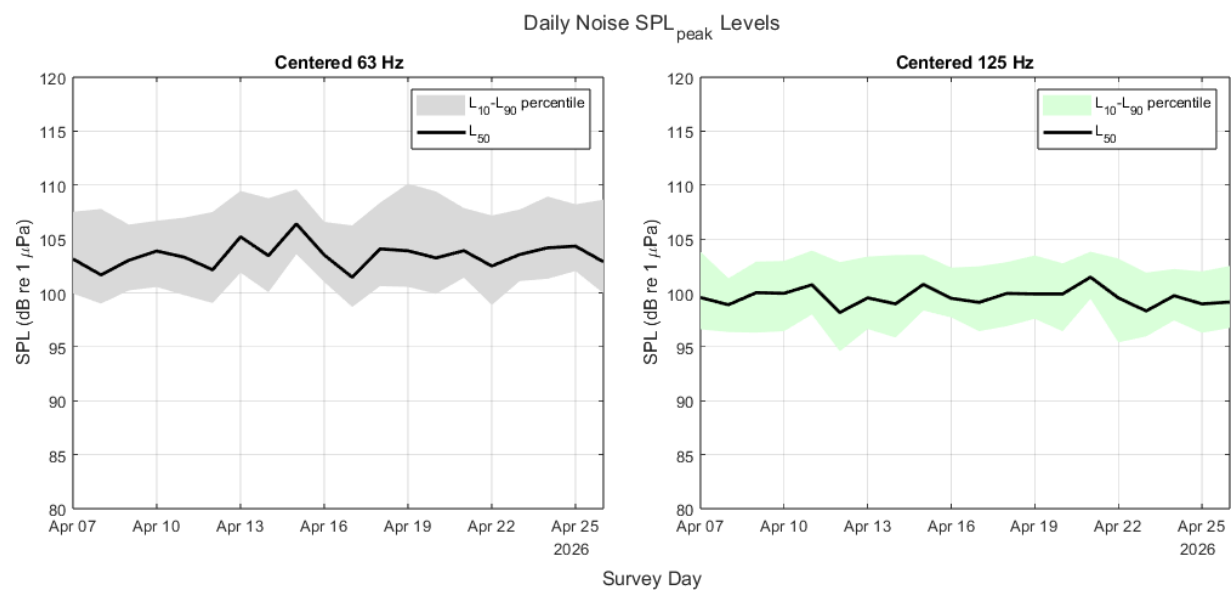


Figure 30 – Underwater noise analysis: daily values of L₁₀, L₅₀ and L₉₀ for centered 63 Hz and 125 Hz third-octave bands for peak sound pressure level (SPL_{peak}).

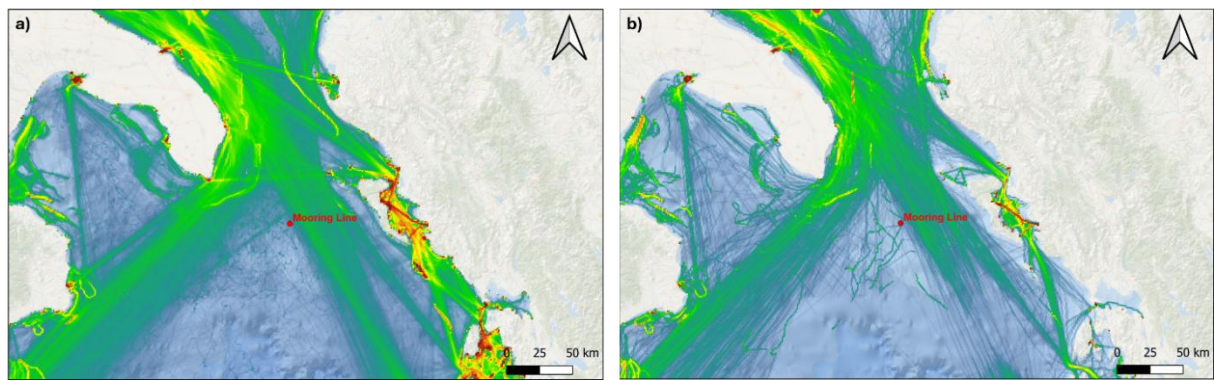


Figure 31 – Vessel density a) annual average and b) April 2024 monthly average. AIS data elaborated by EMODNet (<https://emodnet.ec.europa.eu/en/human-activities>)

LIGHTHOUSE GAS		AUV Geophysical & ESBS Survey on Block 2 ACOUSTIC DATA ANALYSIS				ENERGEAN
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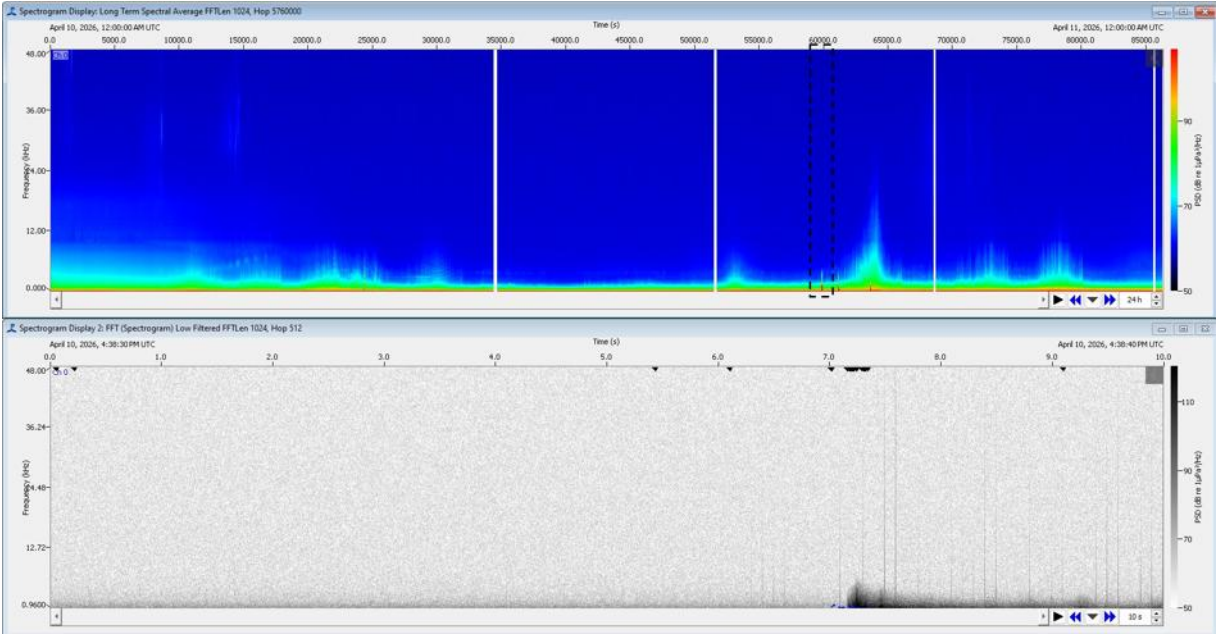


Figure 32 – Example of underwater noise of anthropic origin, probably airgun source, on 10th April. LTSA on the upper panel, spectrogram on the lower panel.

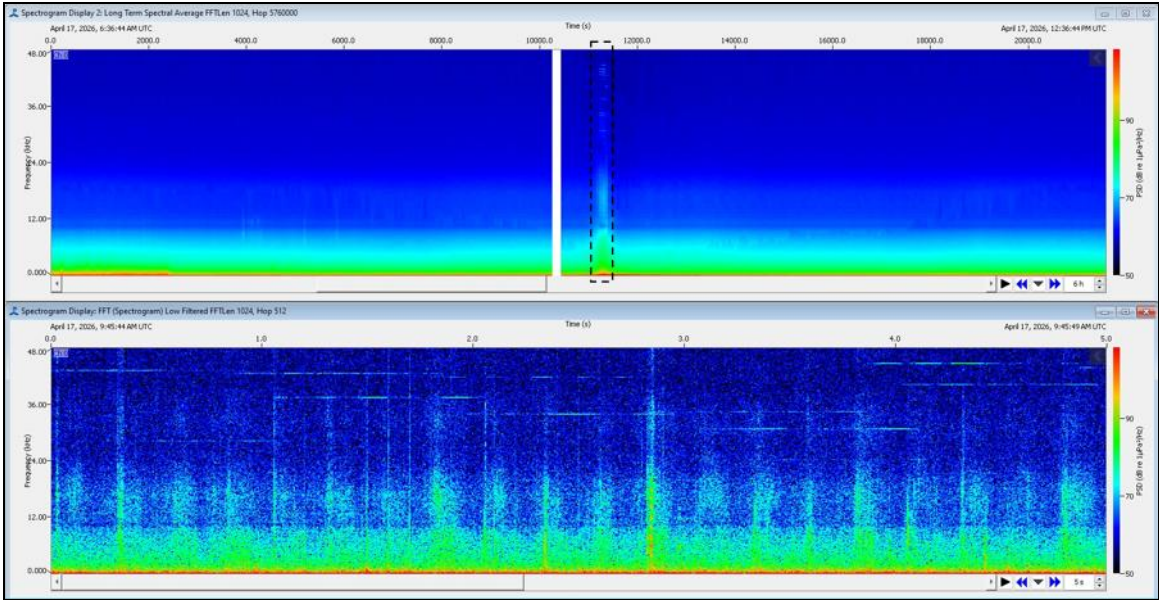
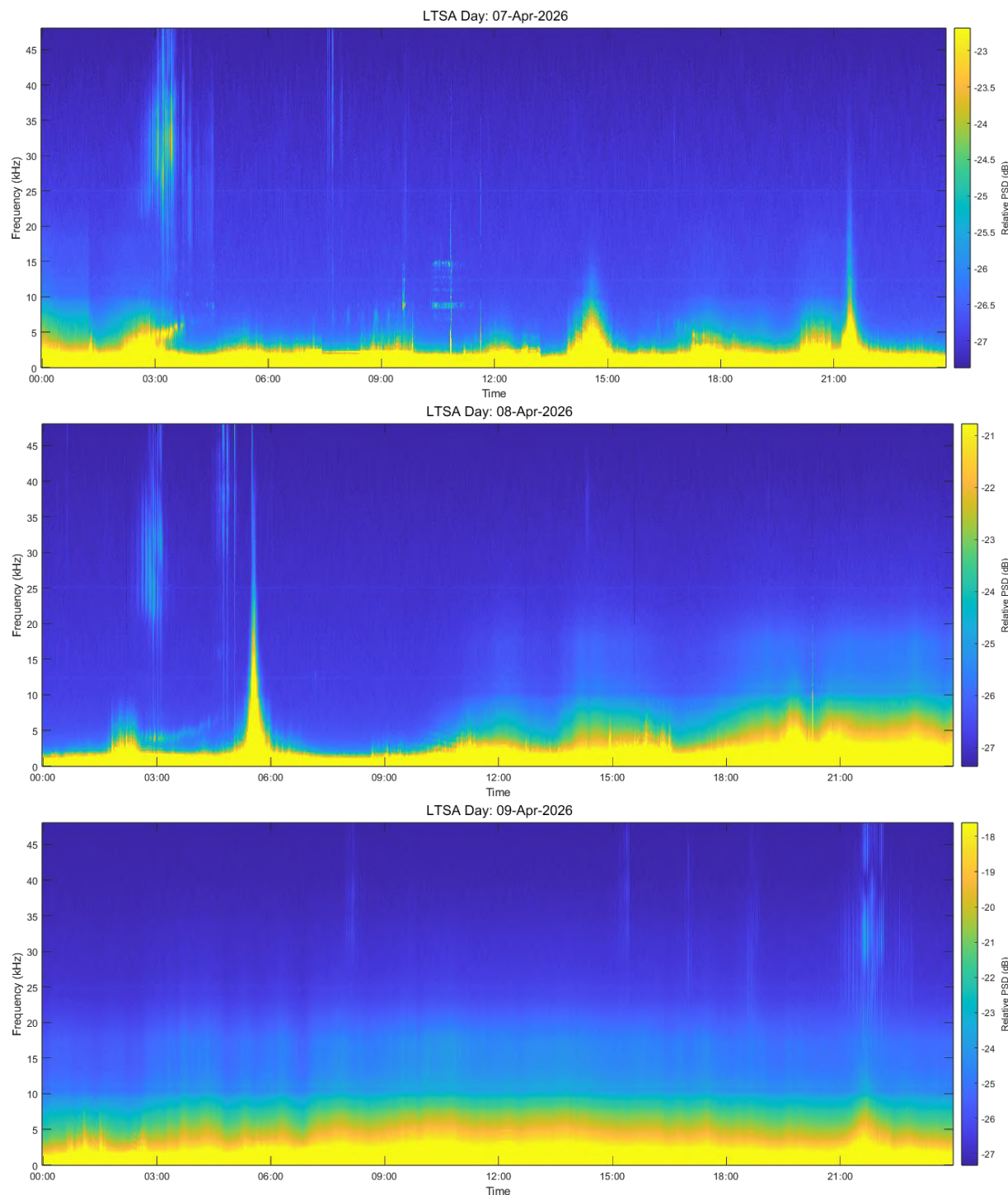


Figure 33 – Example of underwater noise of anthropic origin, probably ship noise superimposed to high-frequency active sonar, on 17th April. LTSA on the upper panel, spectrogram on the lower panel.

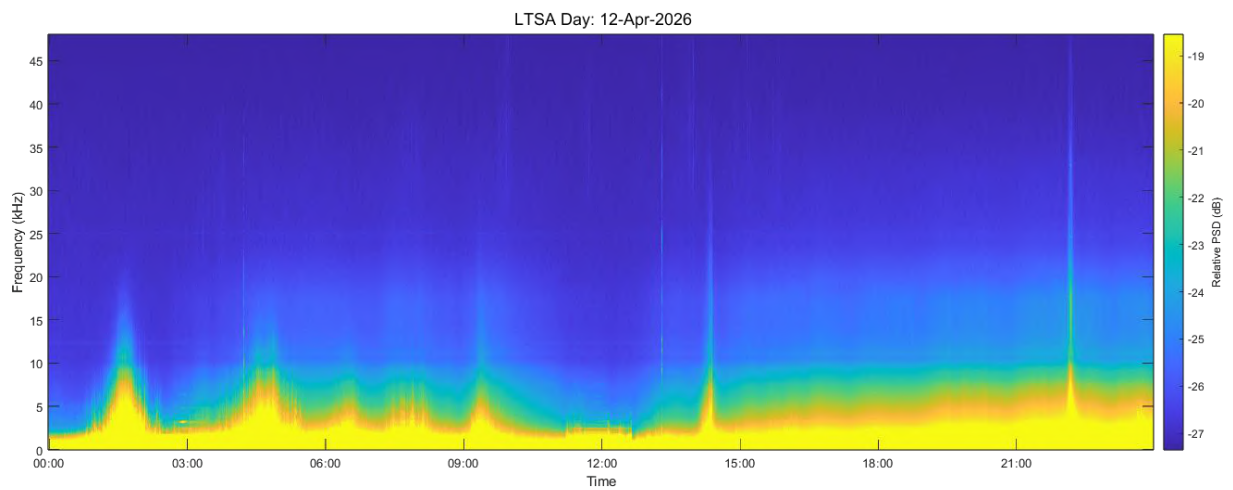
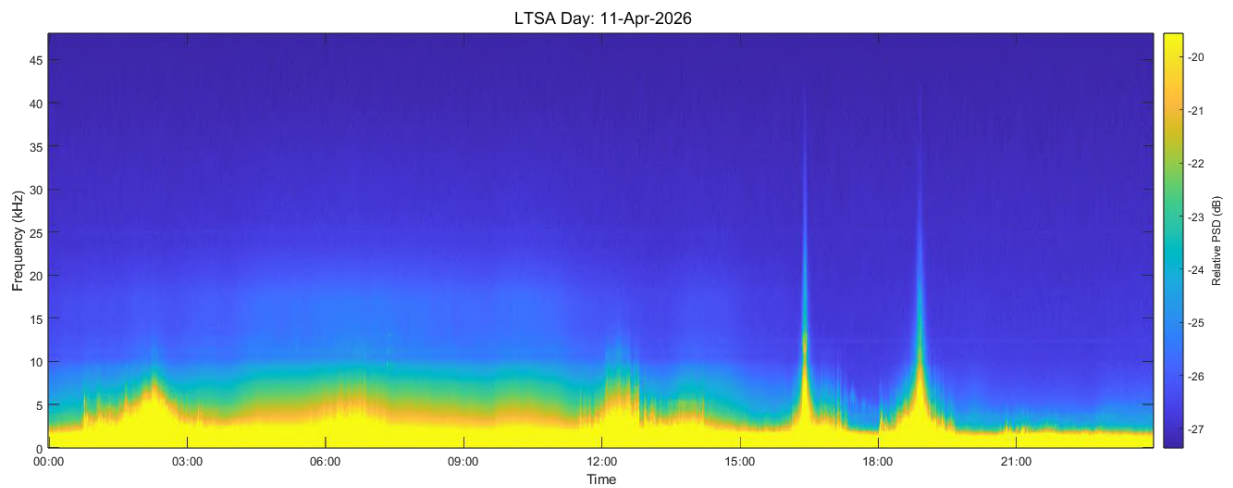
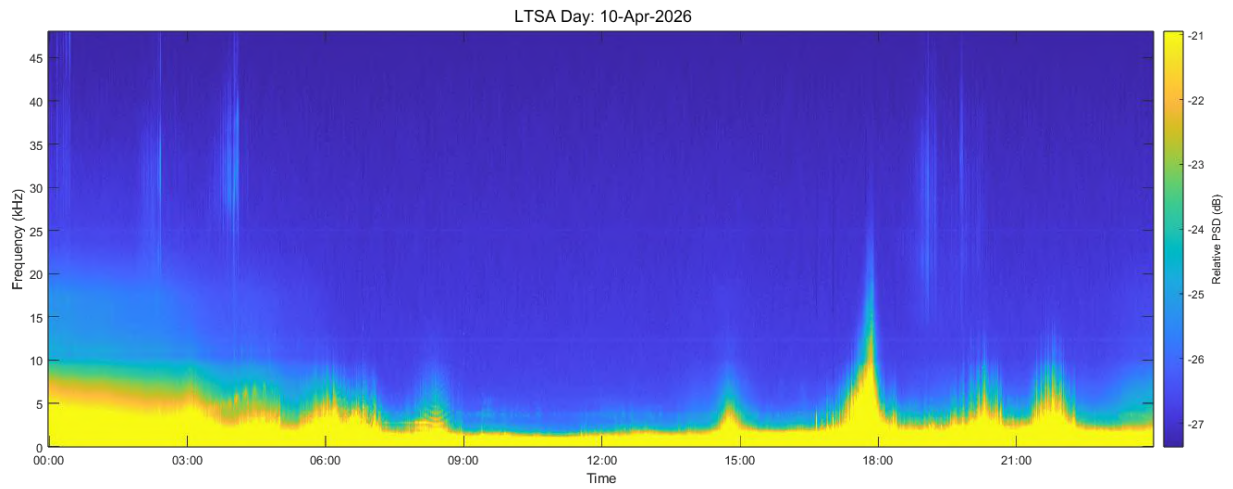
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APPENDIX A – LONG-TERM AVERAGED SPECTRA

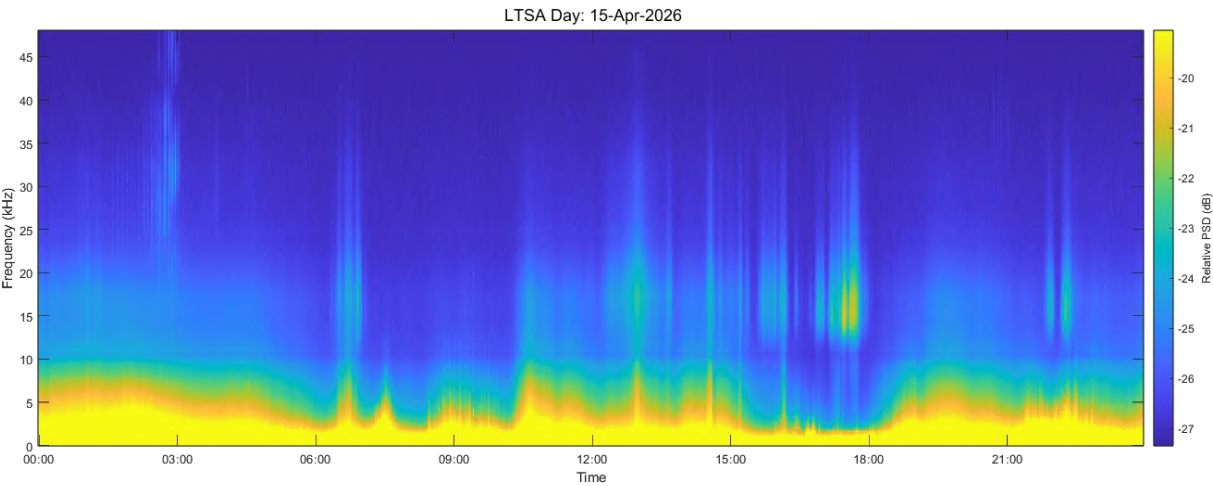
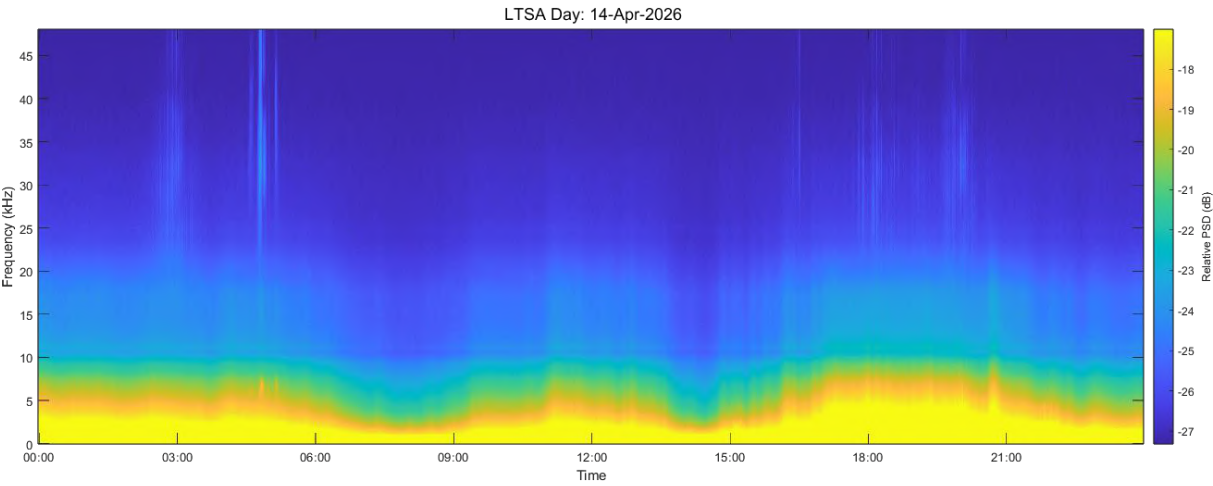
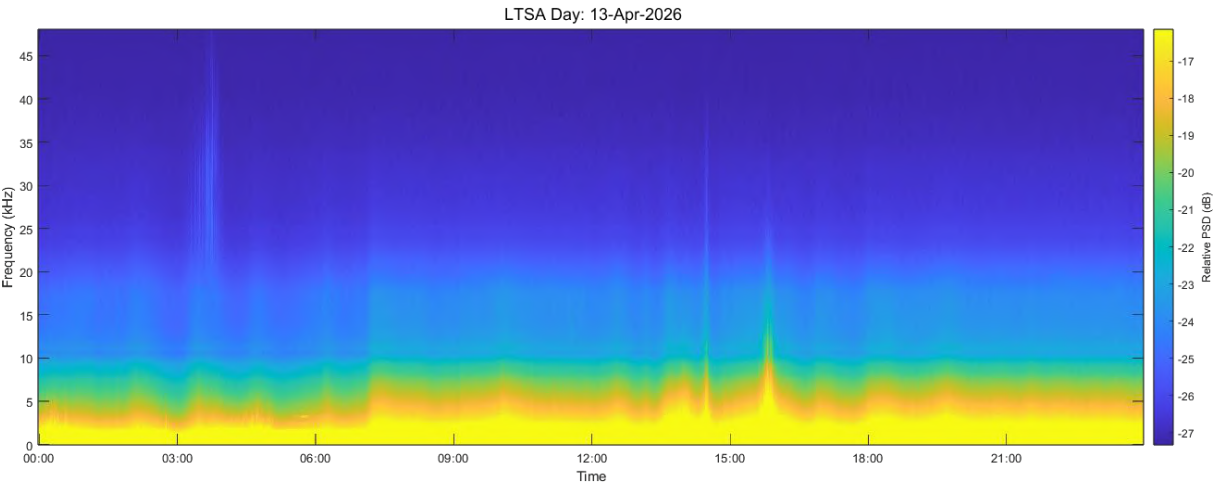
This appendix provides long-term average spectra calculated for each deployment day. LTSAs were calculated for all data using a time average of 60 seconds and frequency bin size of 46.87 Hz. These plots are computed from PAMGuard binary output. Color scale represents relative power spectral density (dB, arbitrary reference).



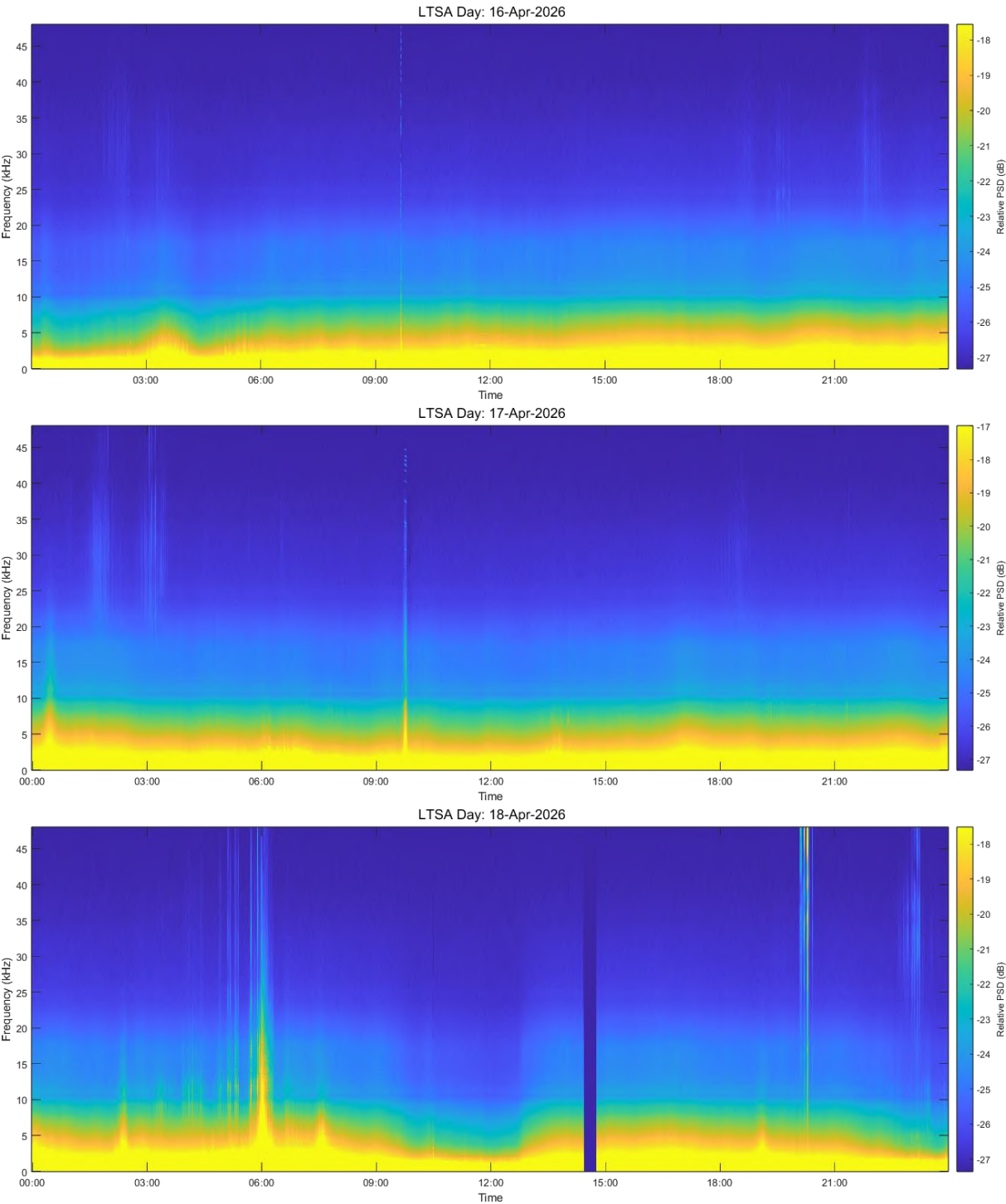
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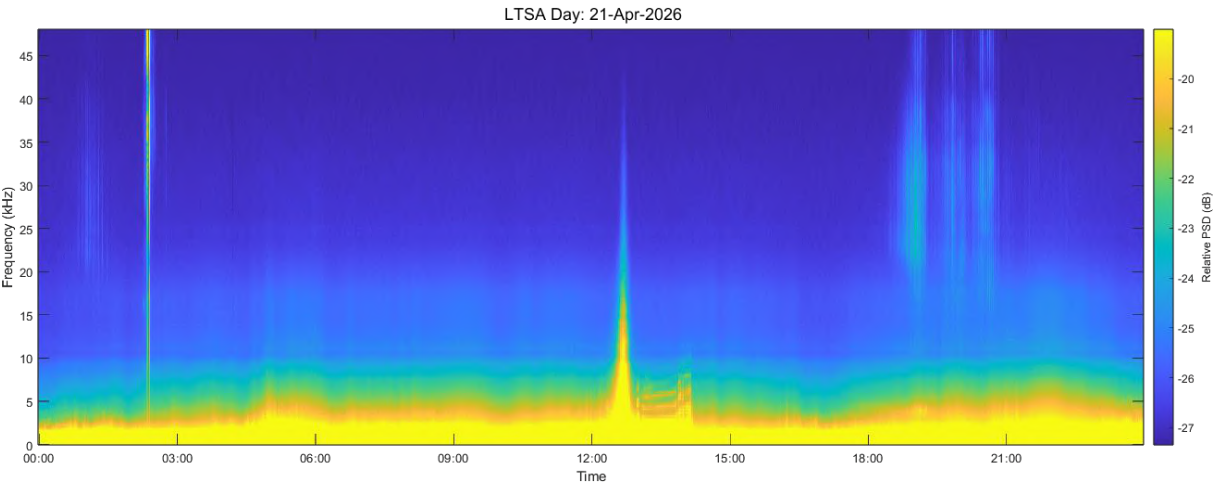
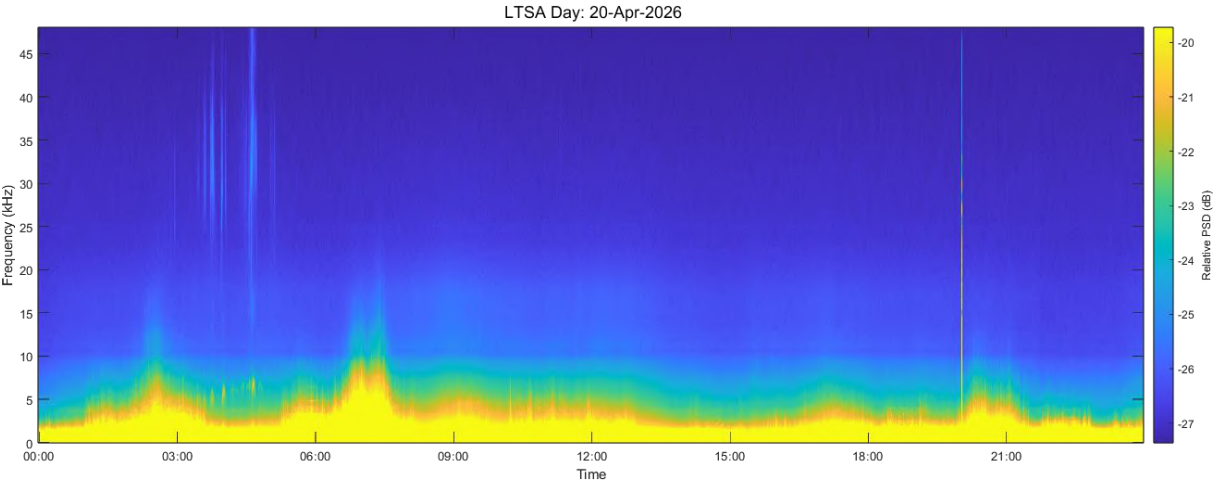
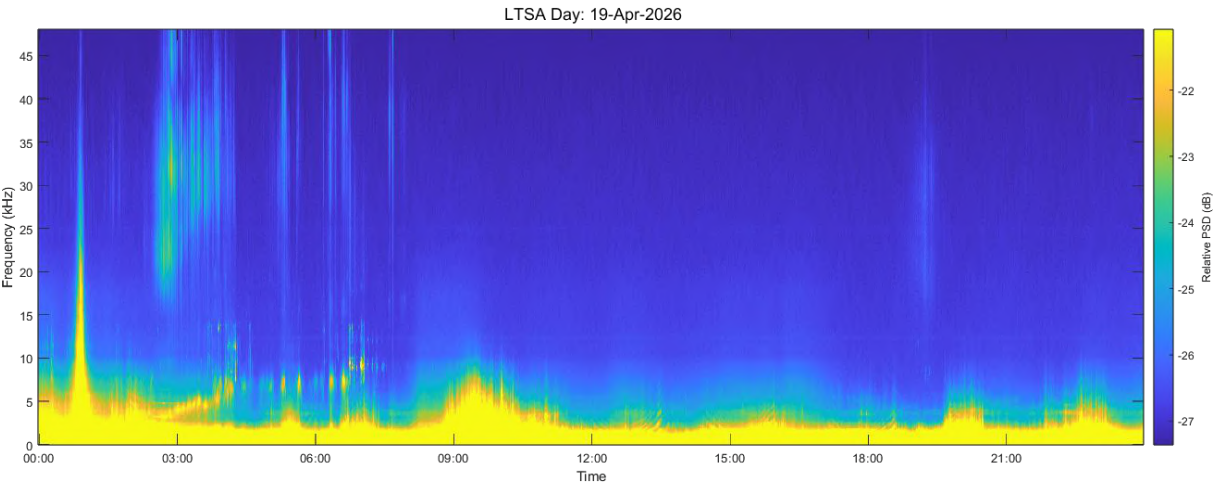
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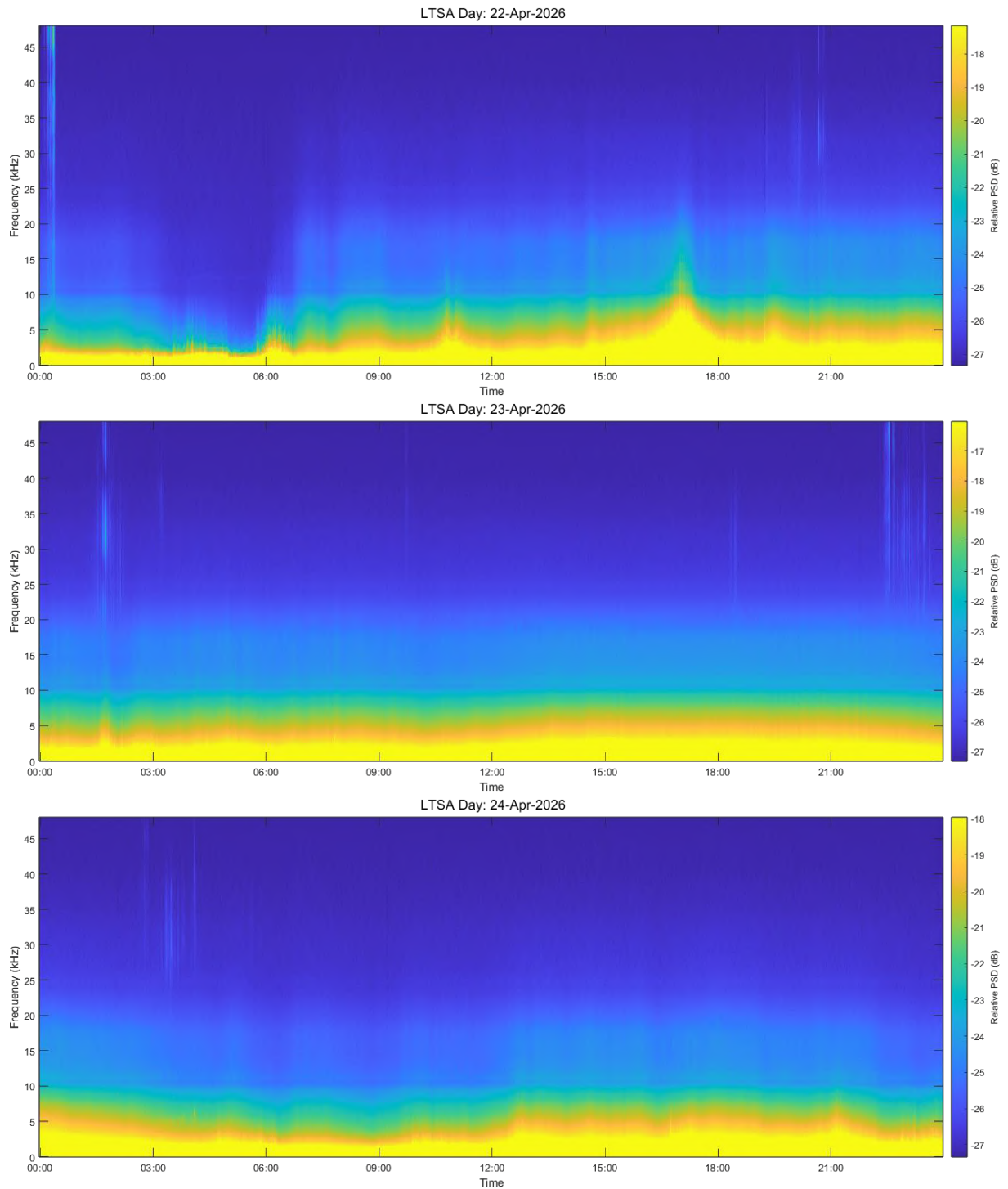
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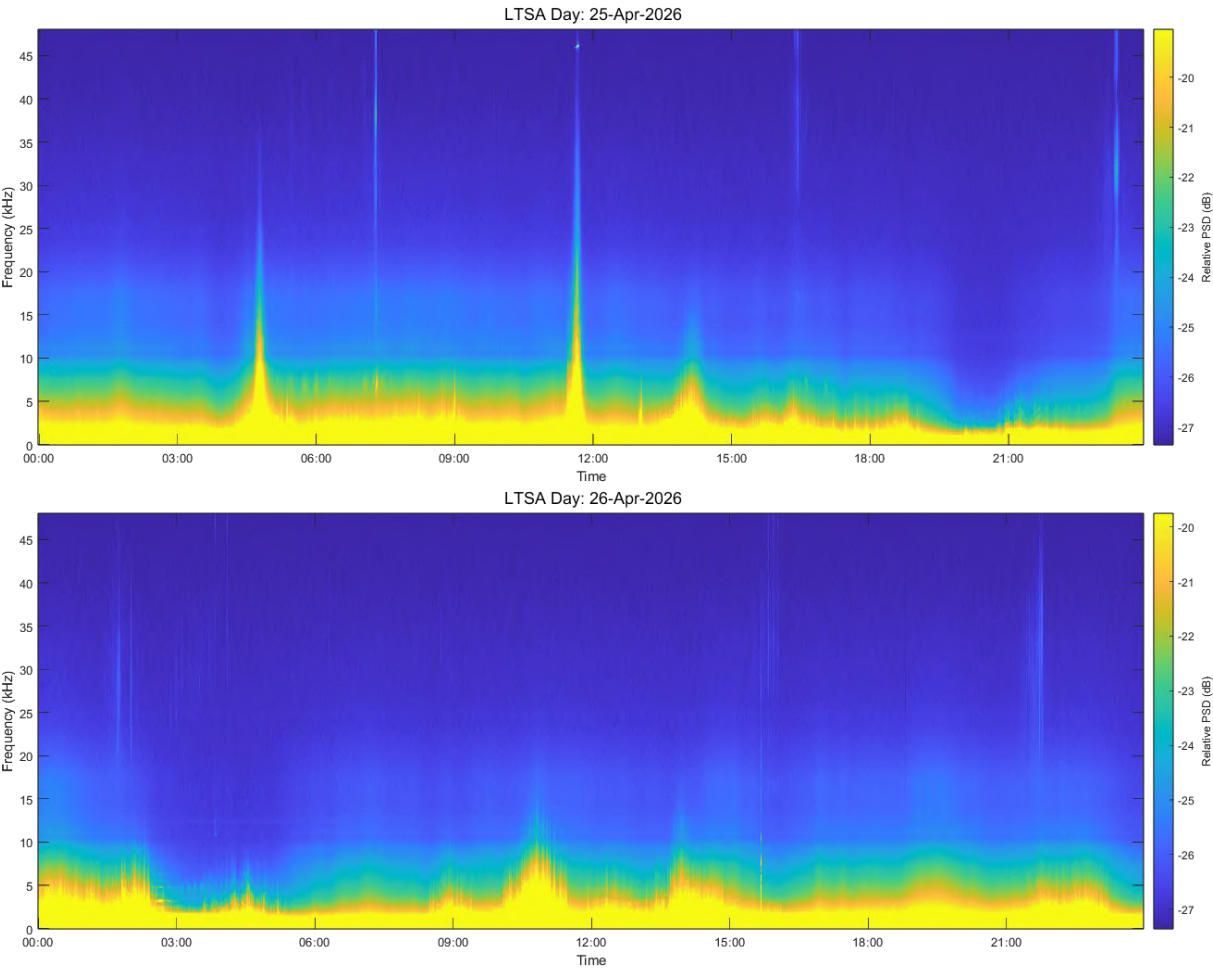
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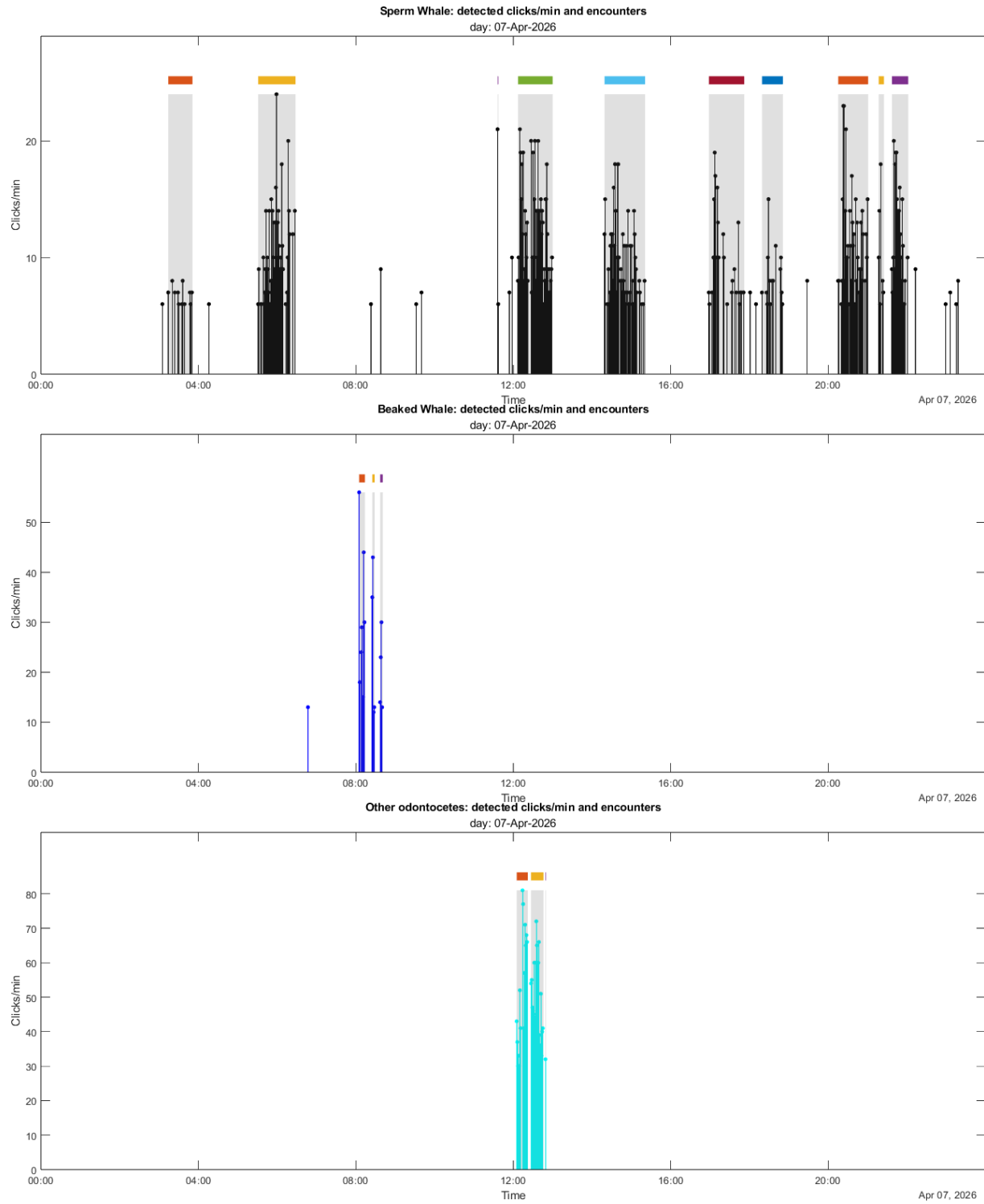
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APPENDIX B – CLASSIFIED CLICKS AND DETECTED ENCOUNTERS

This appendix provides for each day the number of clicks per minute classified for each of the three class of species (i.e., Sperm Whale, Beaked Whale, Other odontocetes) of odontocetes identified in the sound records, and the number of encounters in which the click trains have been grouped.

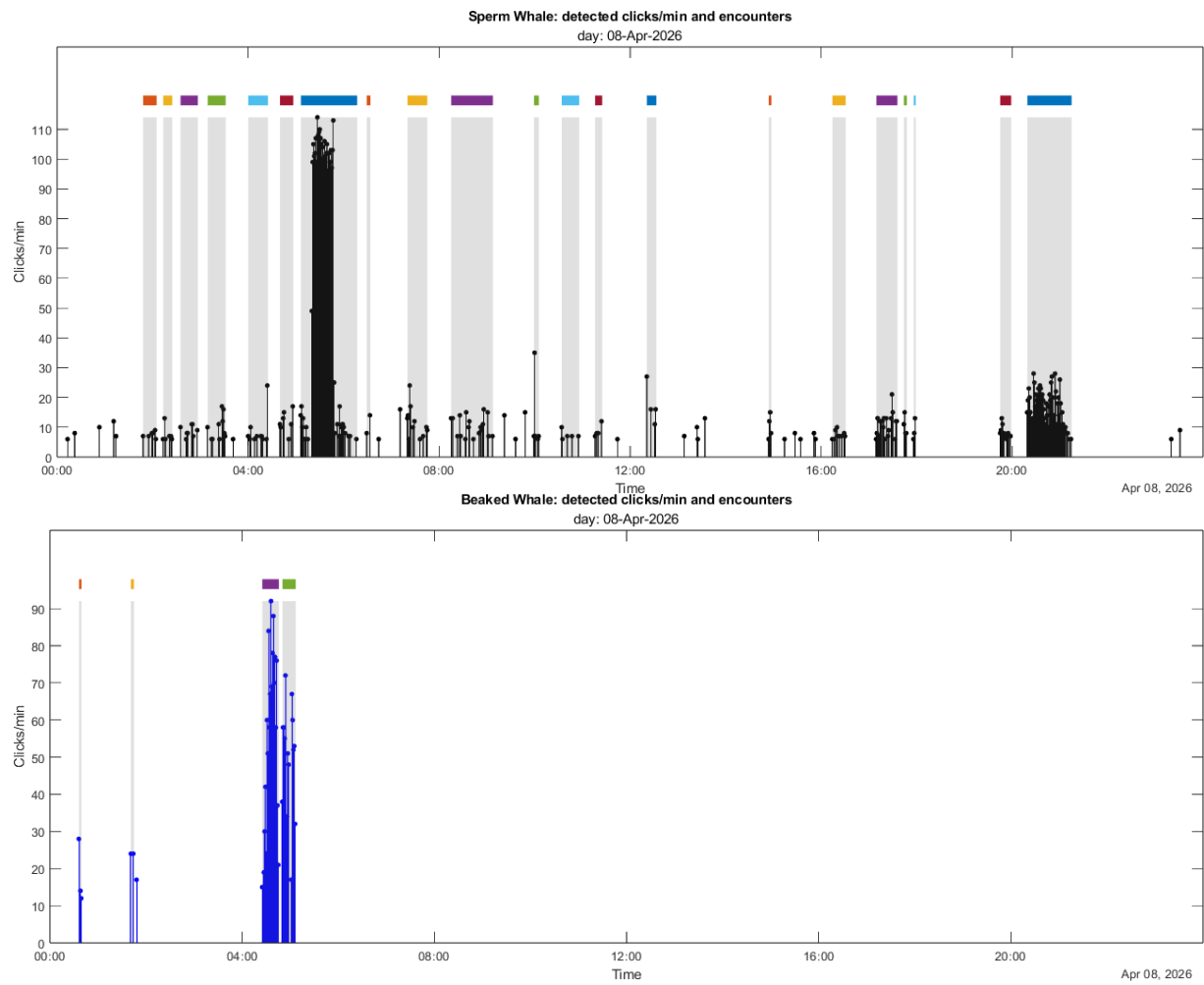
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April 7th



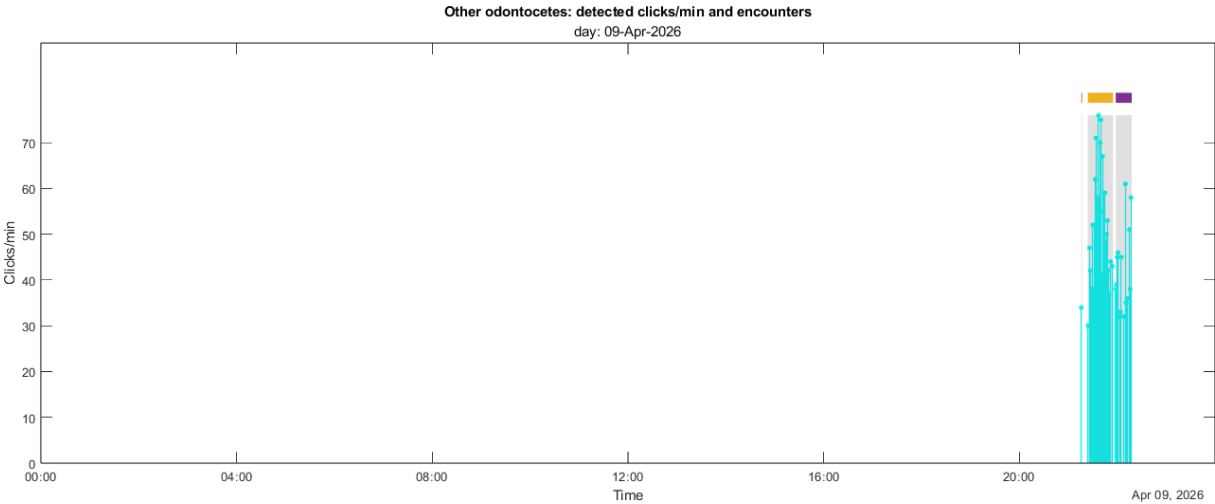
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April 8th



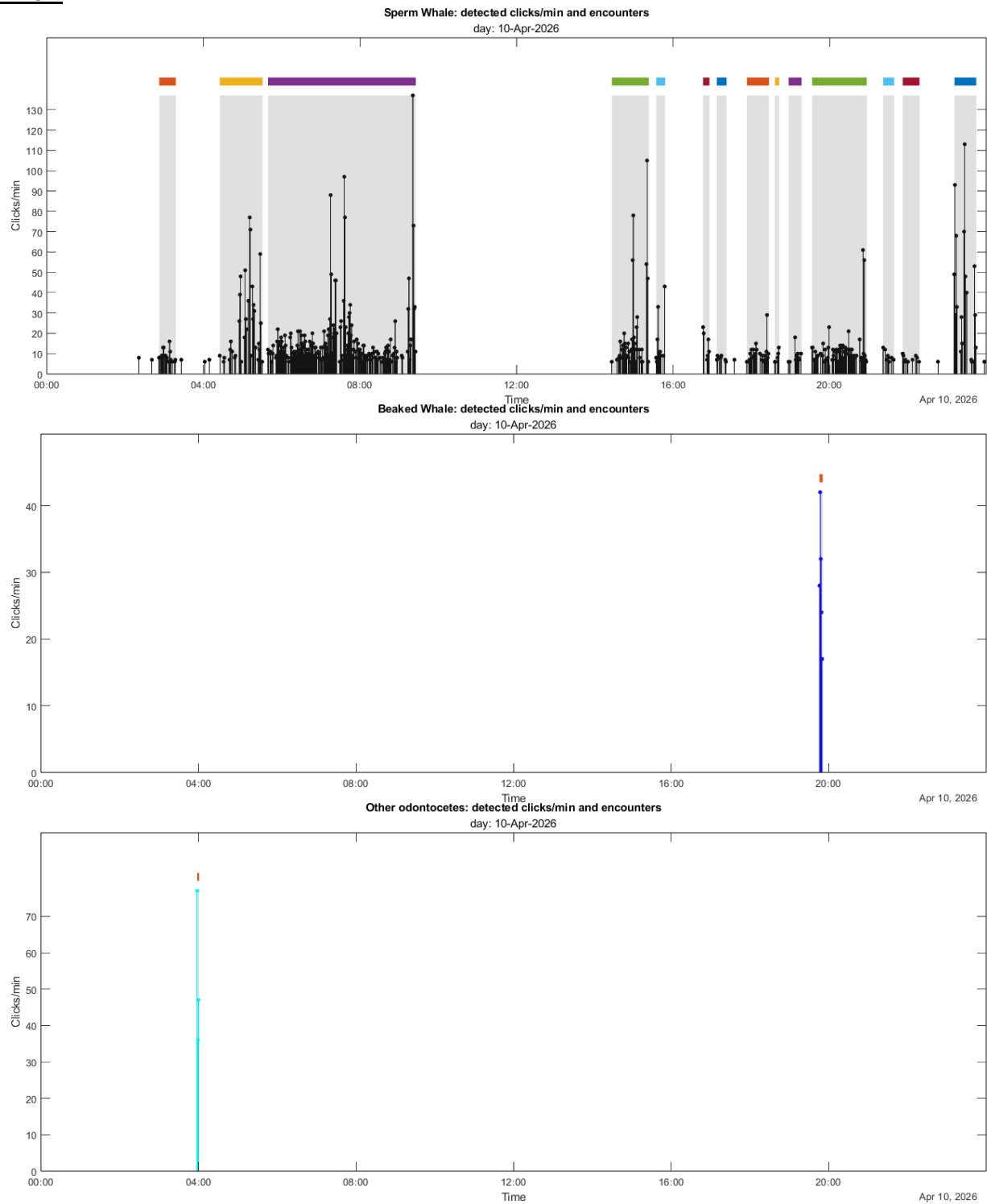
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April 9th



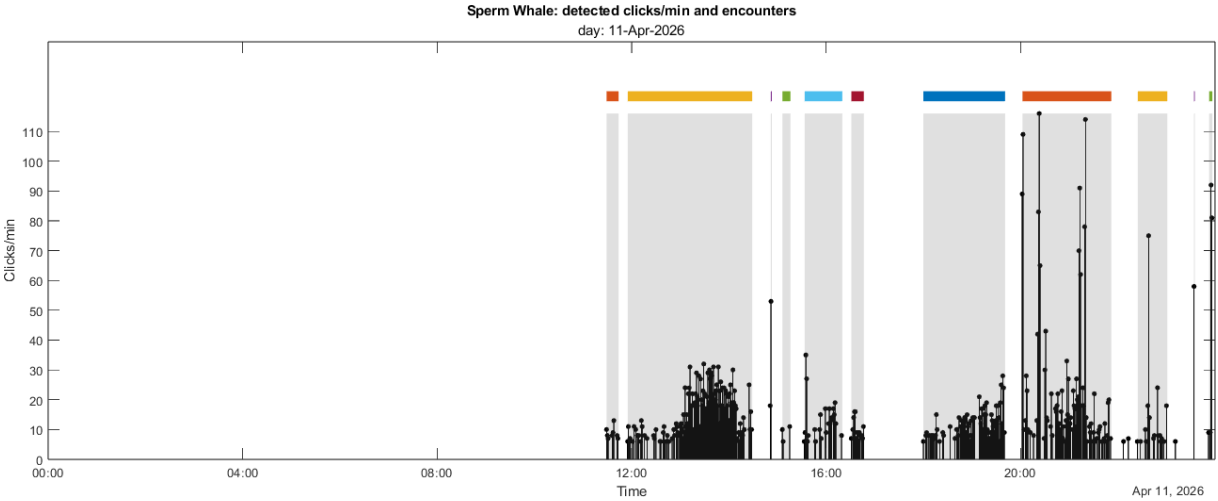
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April 10th



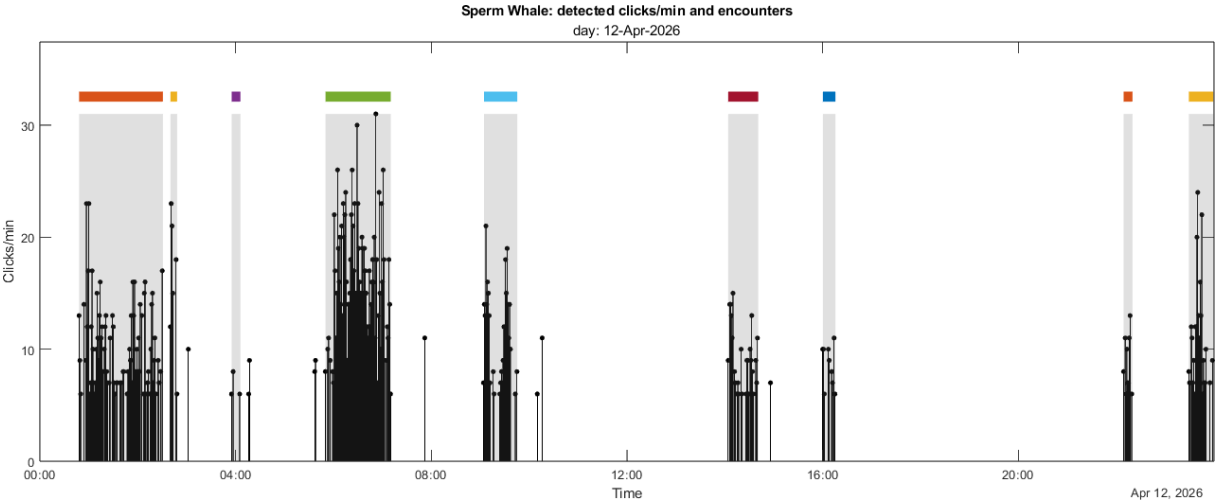
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April 11th



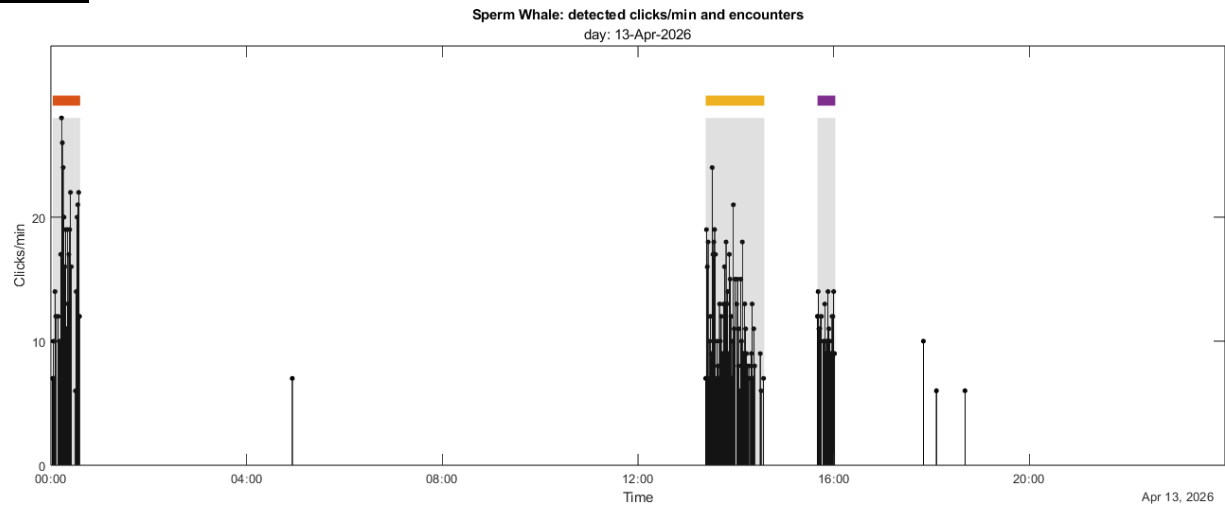
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April 12th



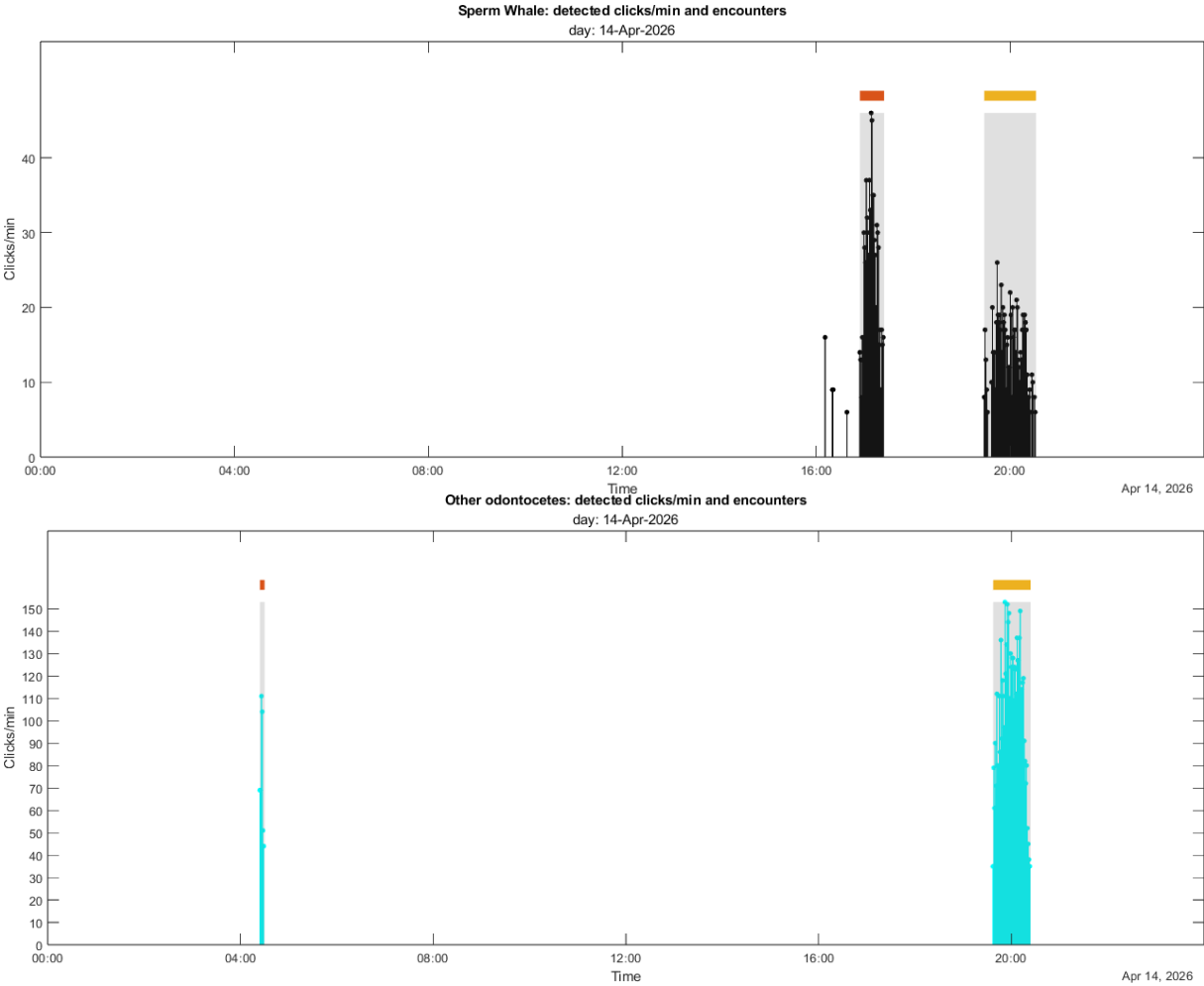
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April 13th



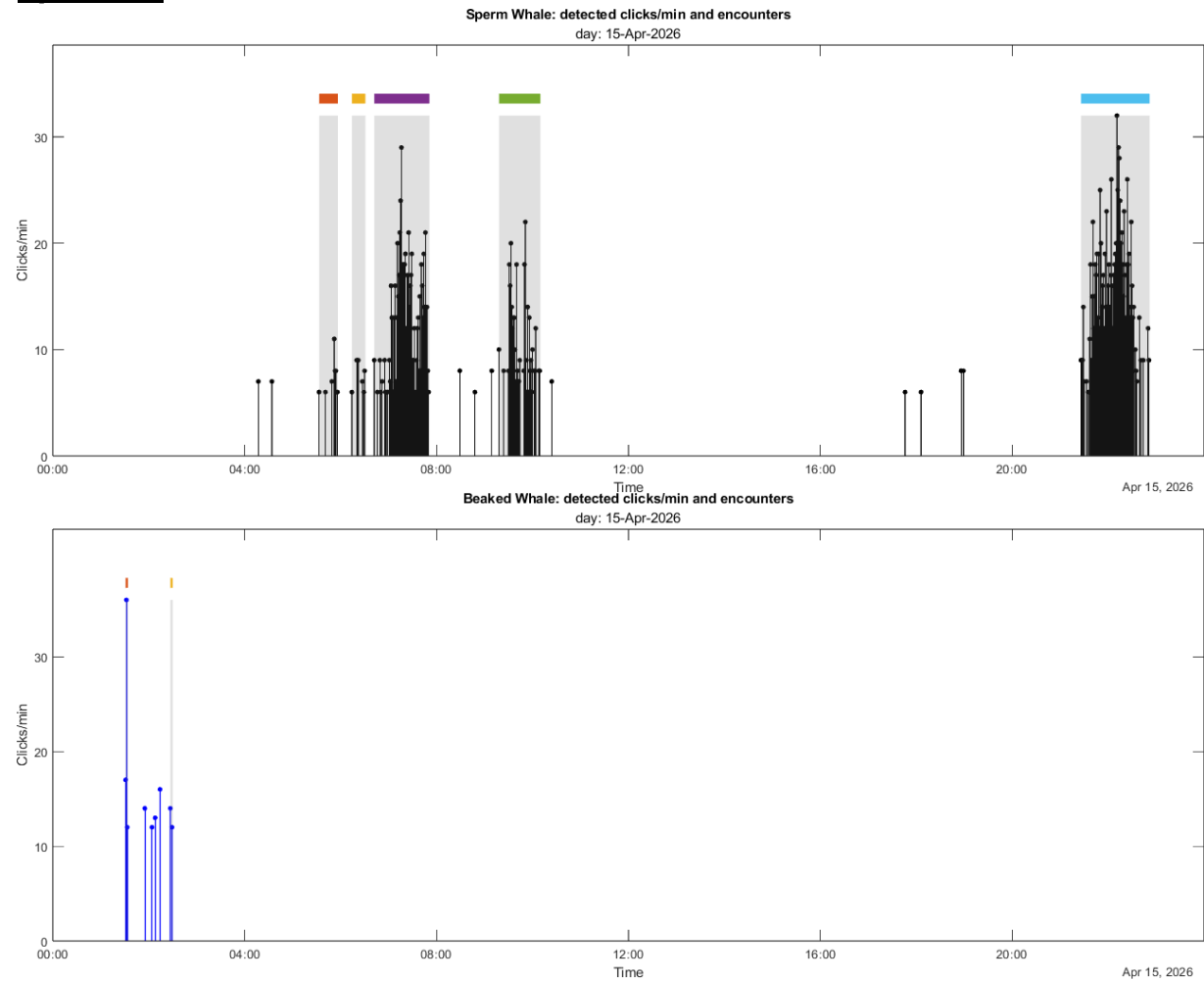
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April 14th



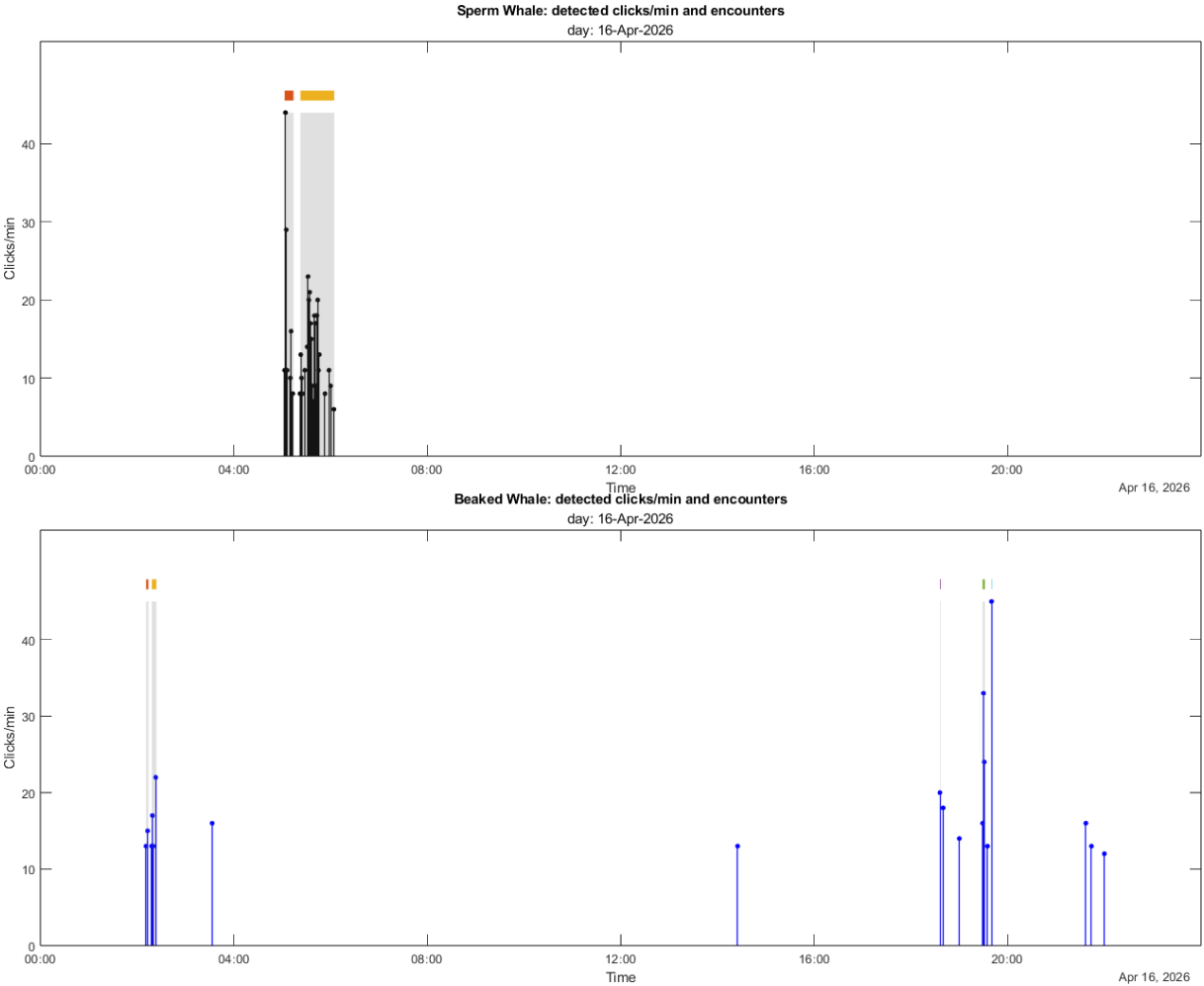
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April 15th



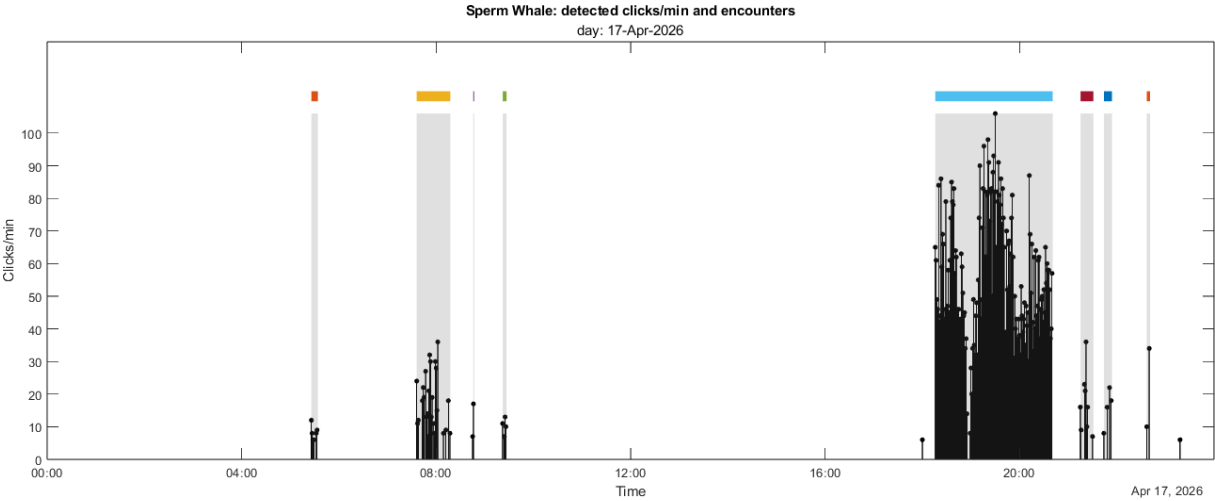
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April 16th



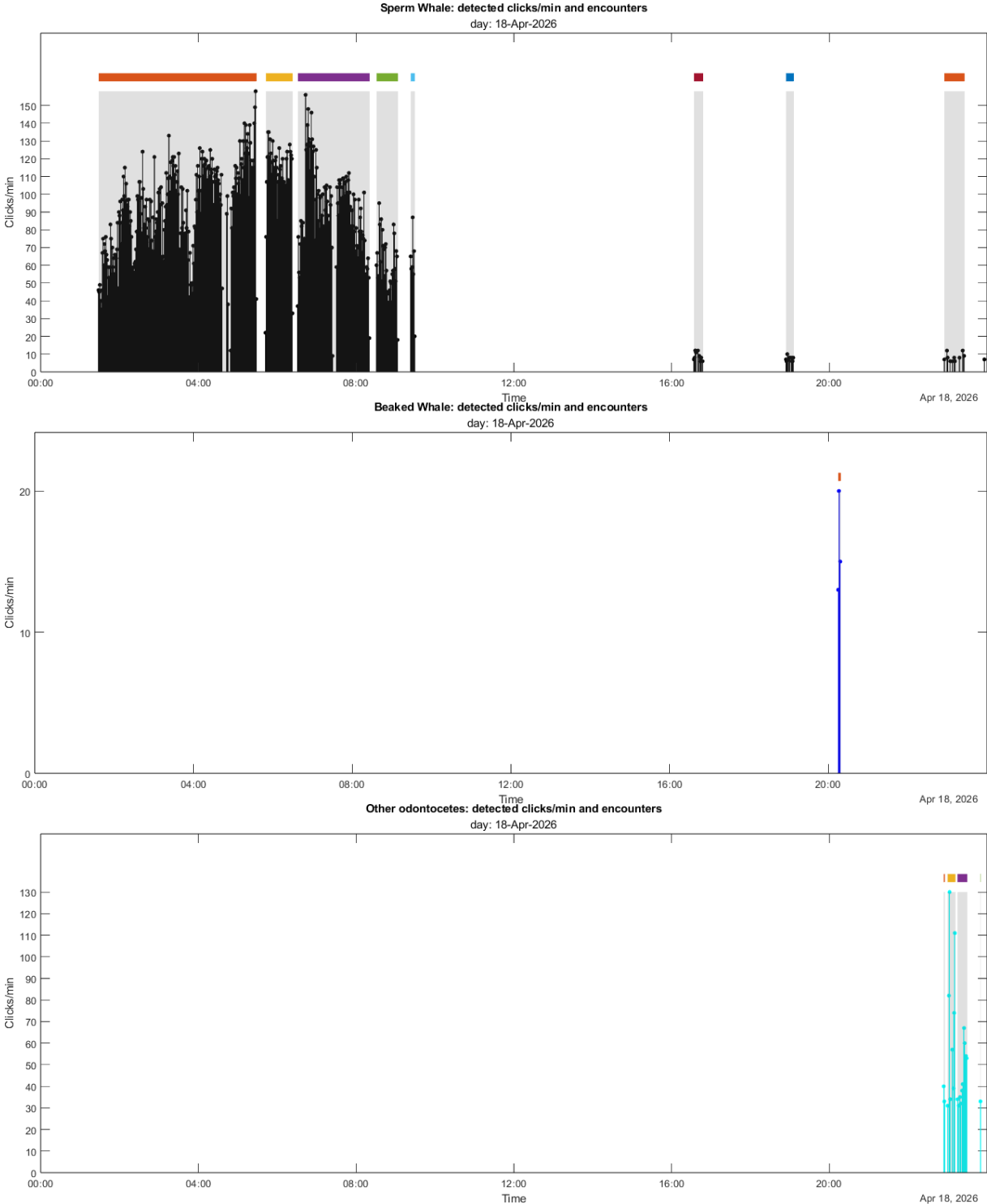
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April 17th



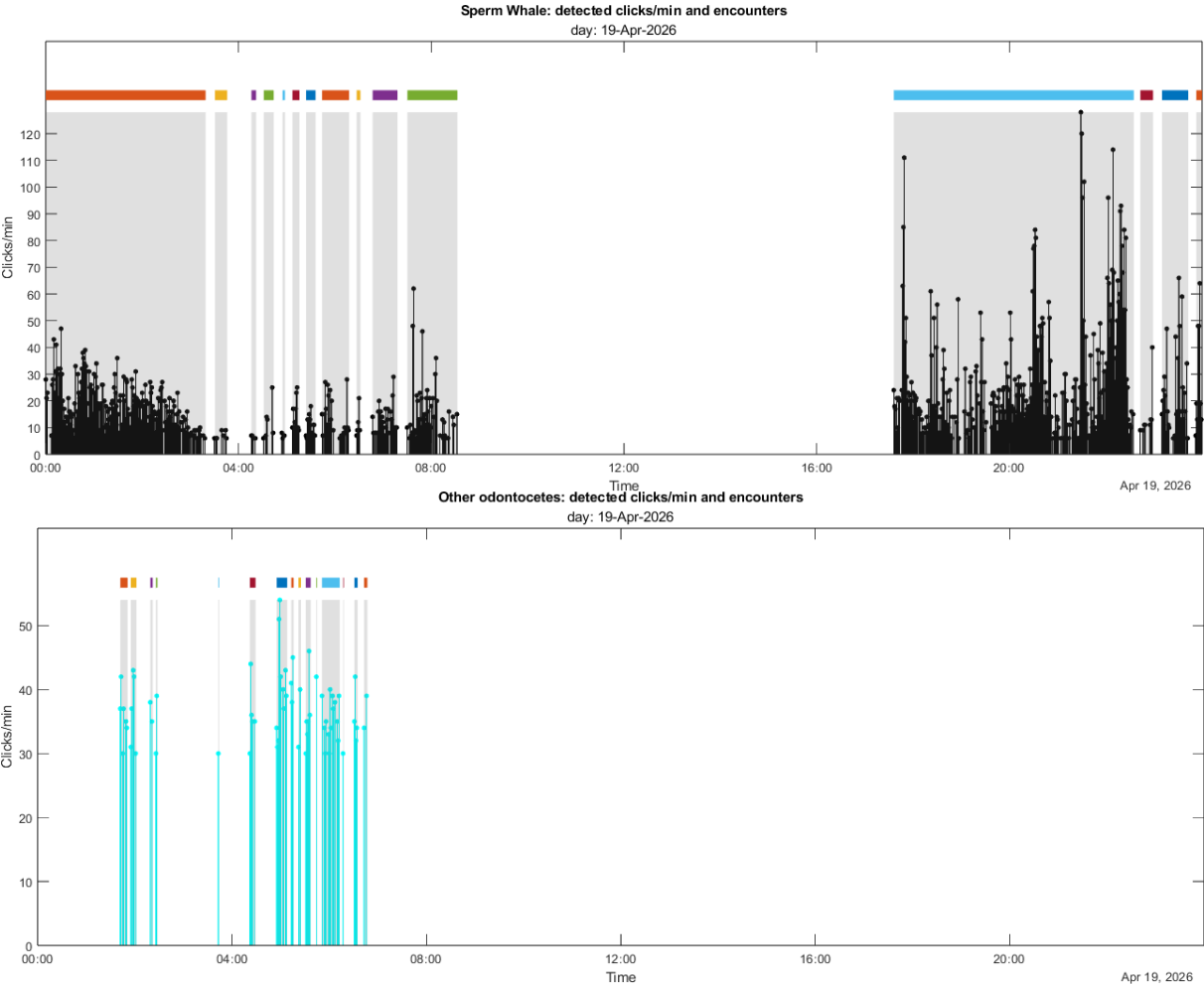
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April 18th



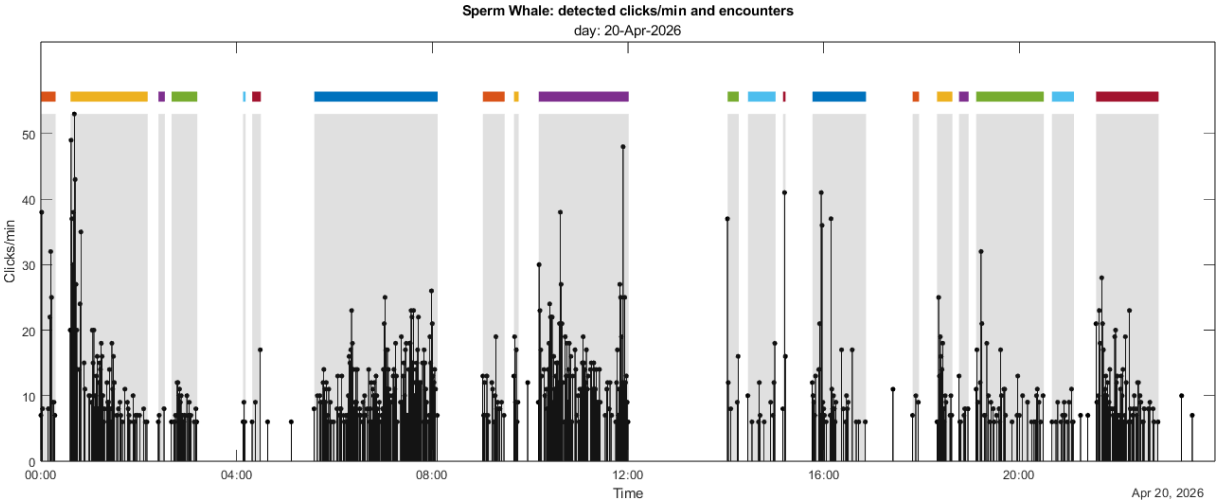
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April 19th



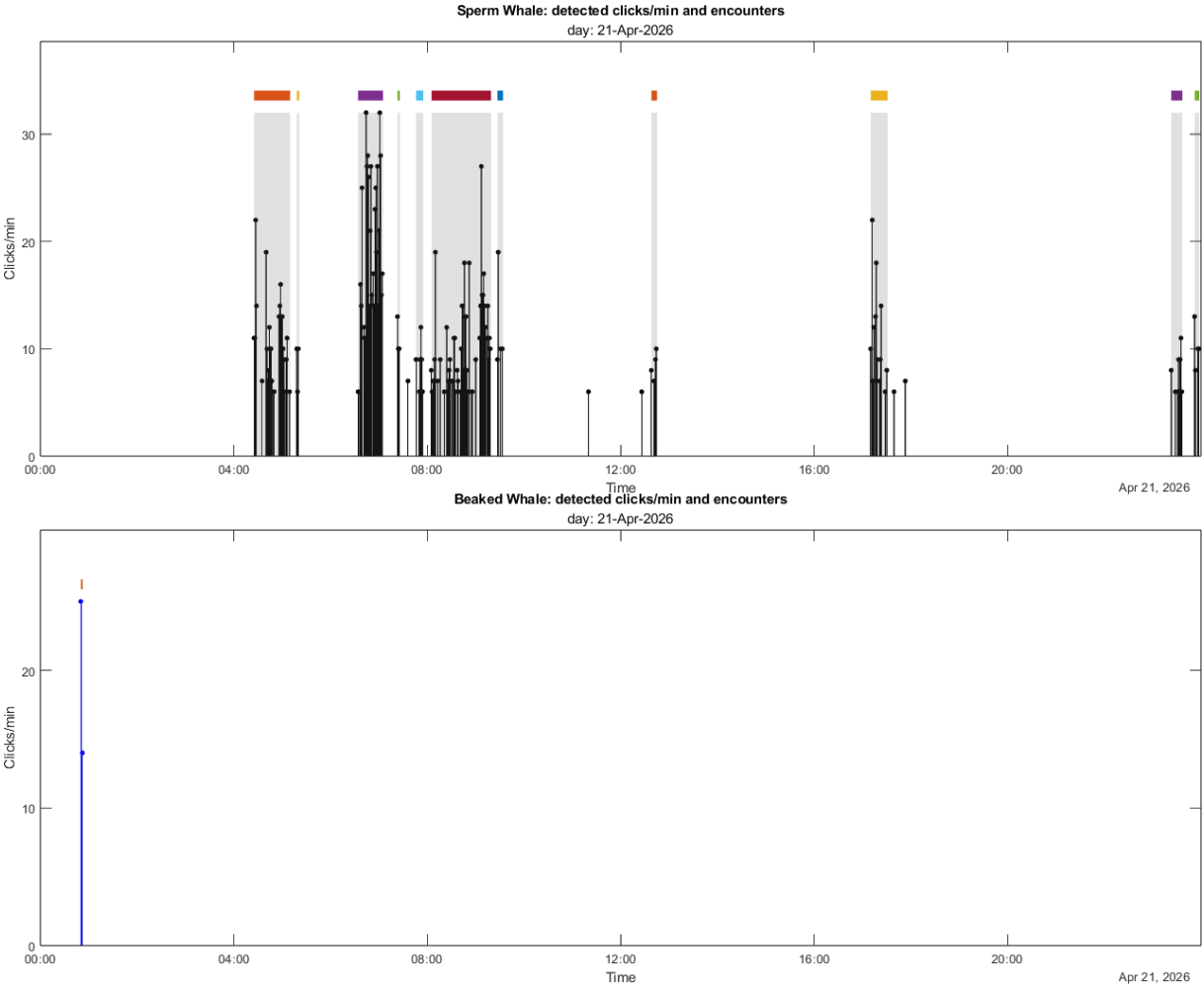
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April 20th



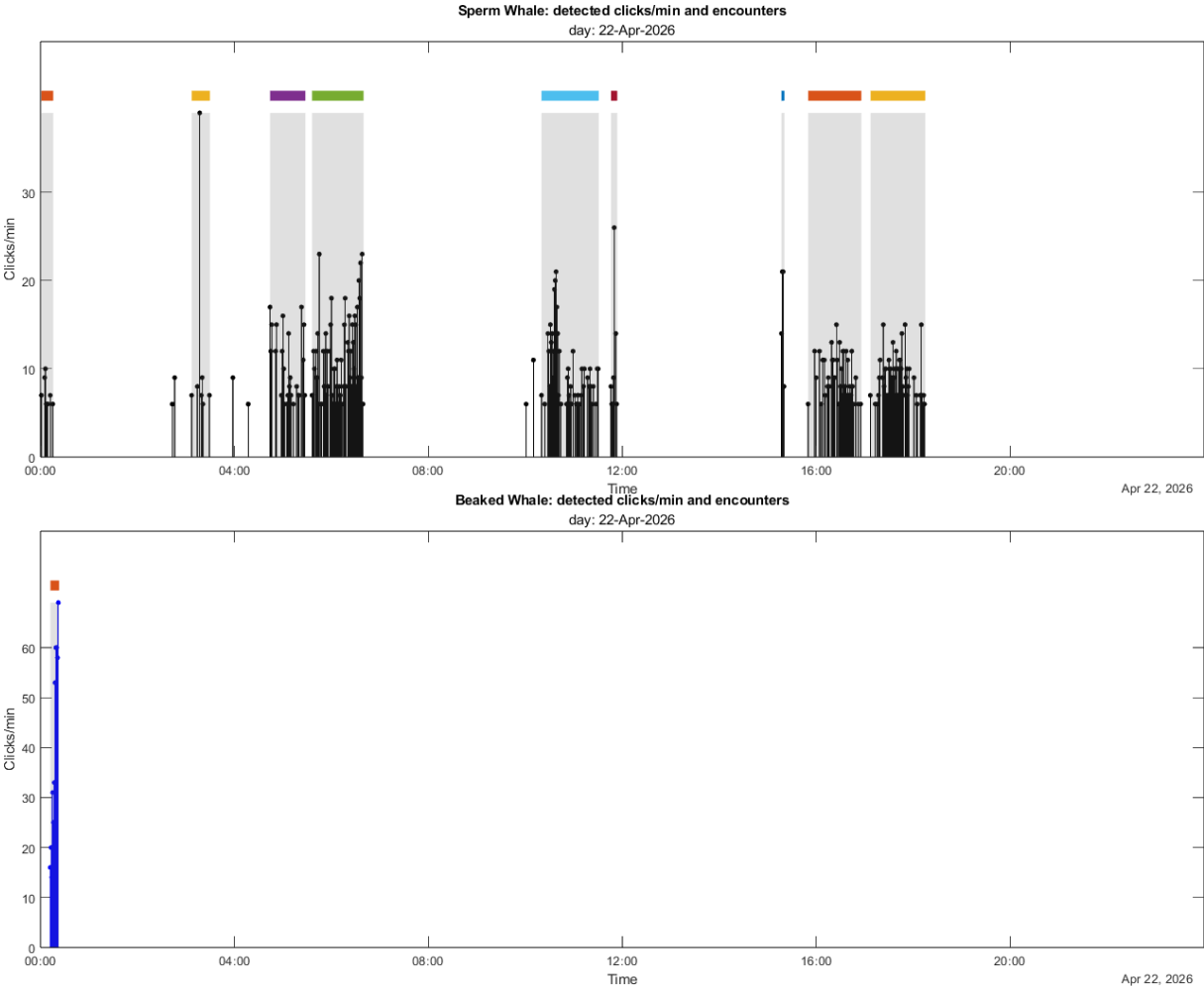
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April 21st



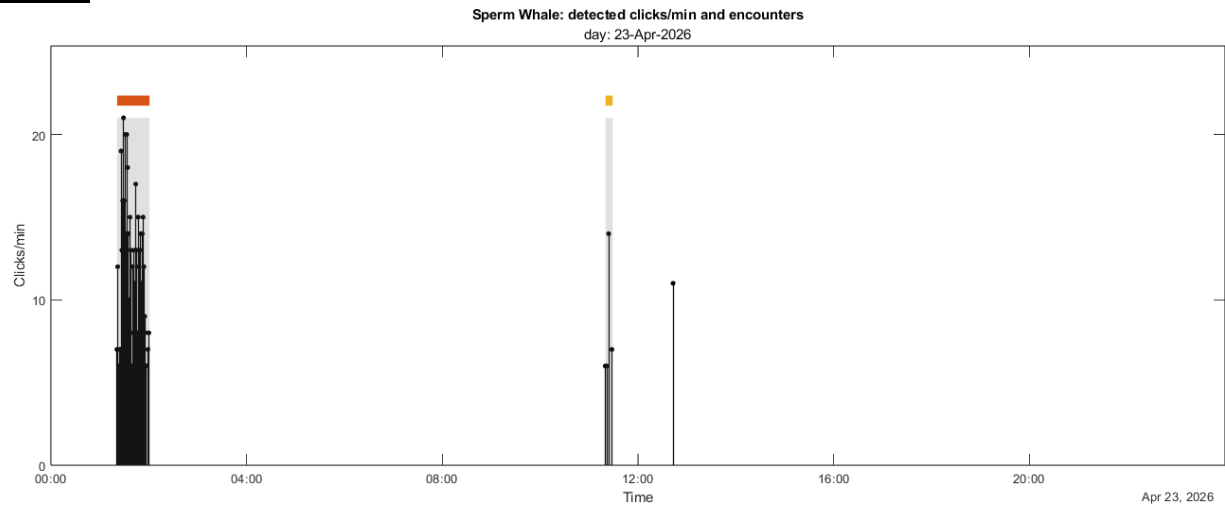
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April 22nd



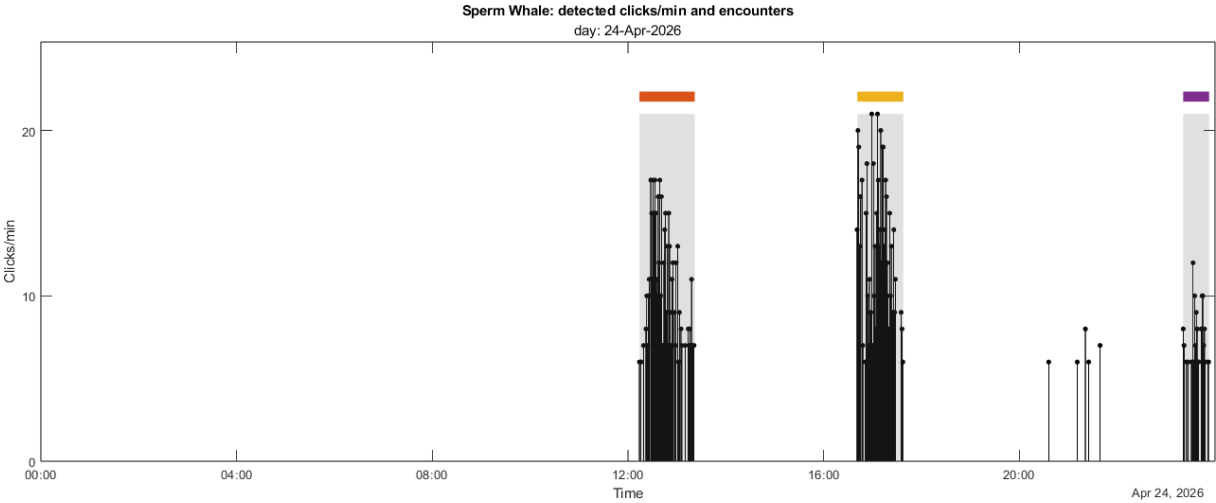
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April 23rd



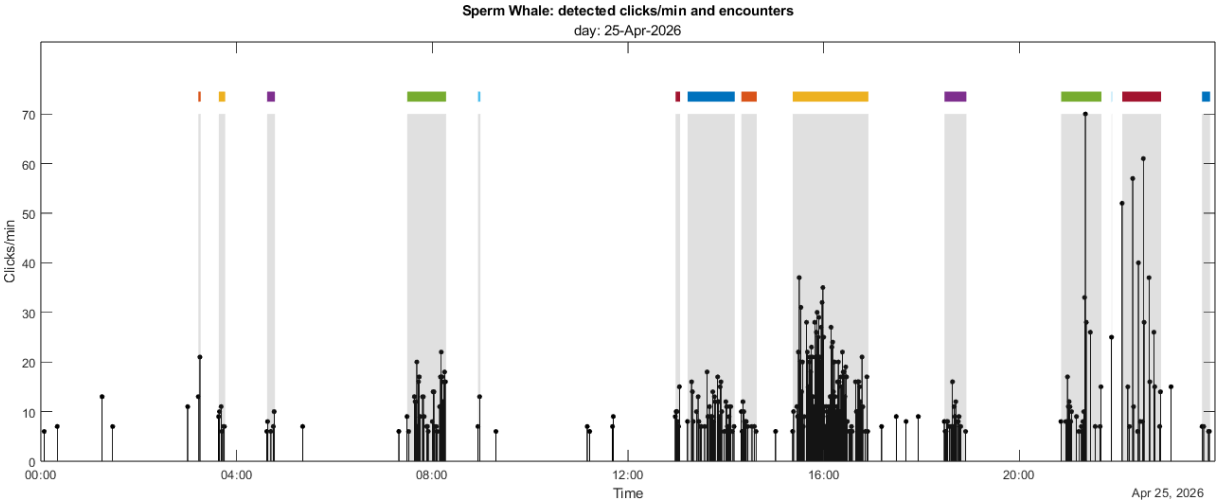
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April 24th



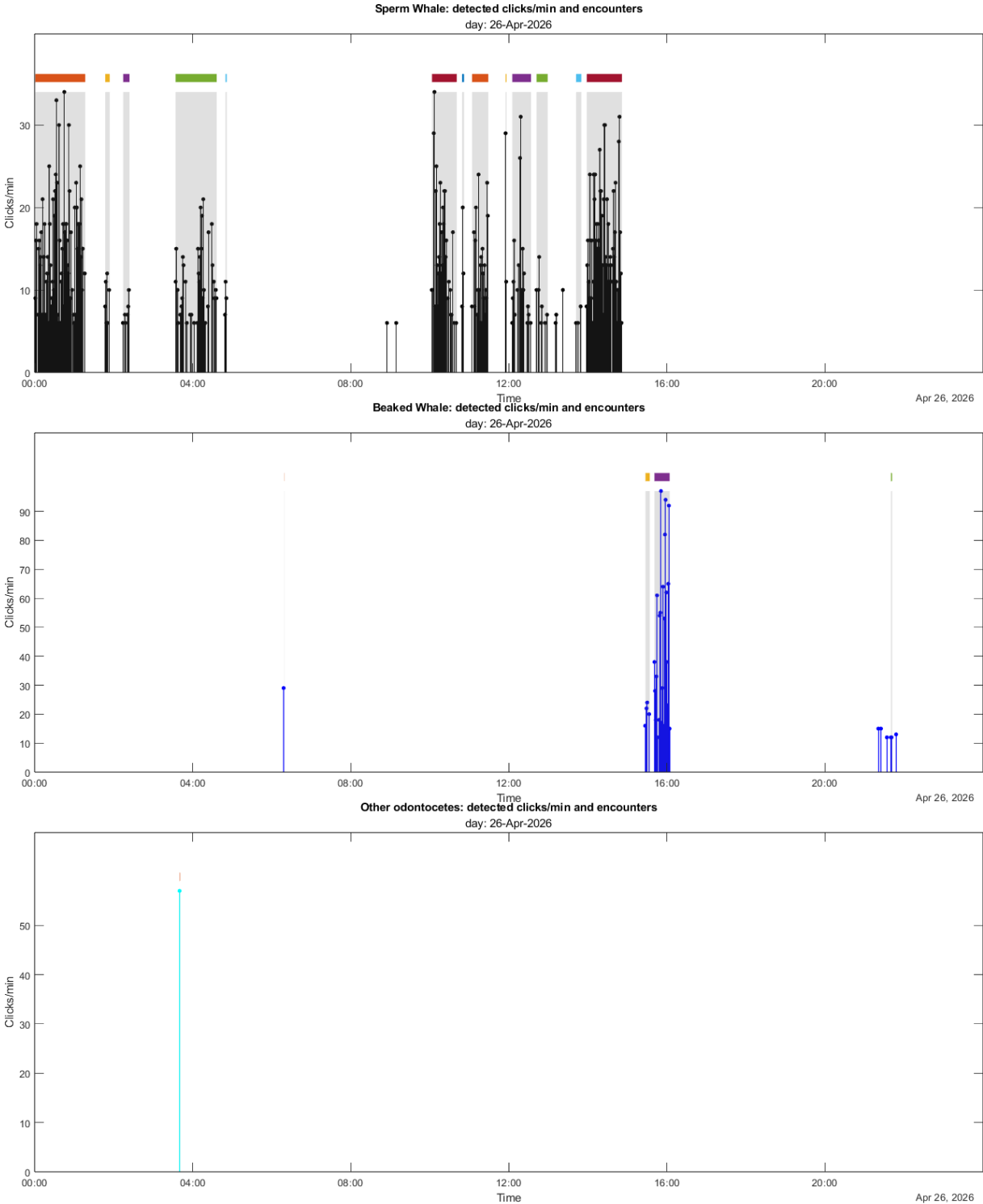
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April 25th



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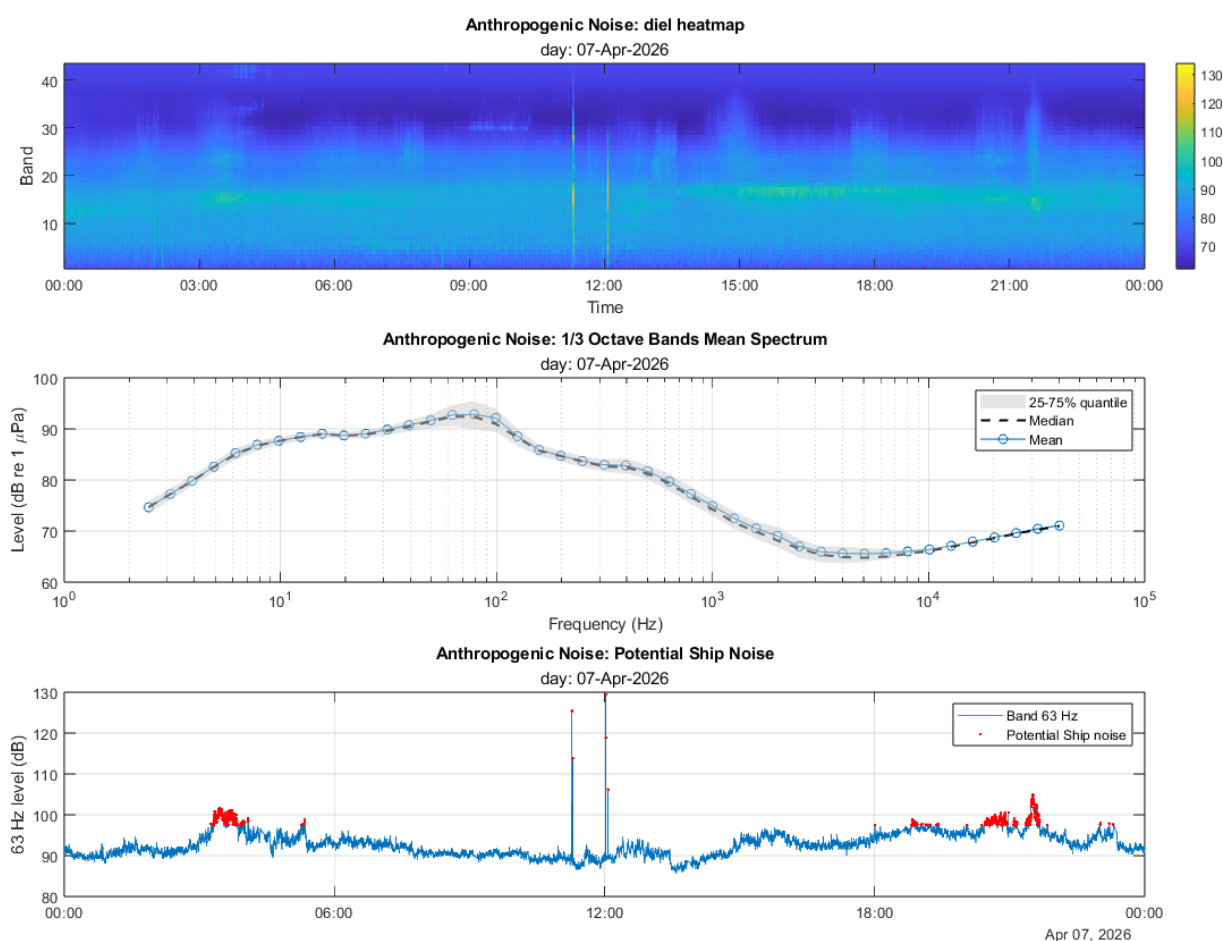
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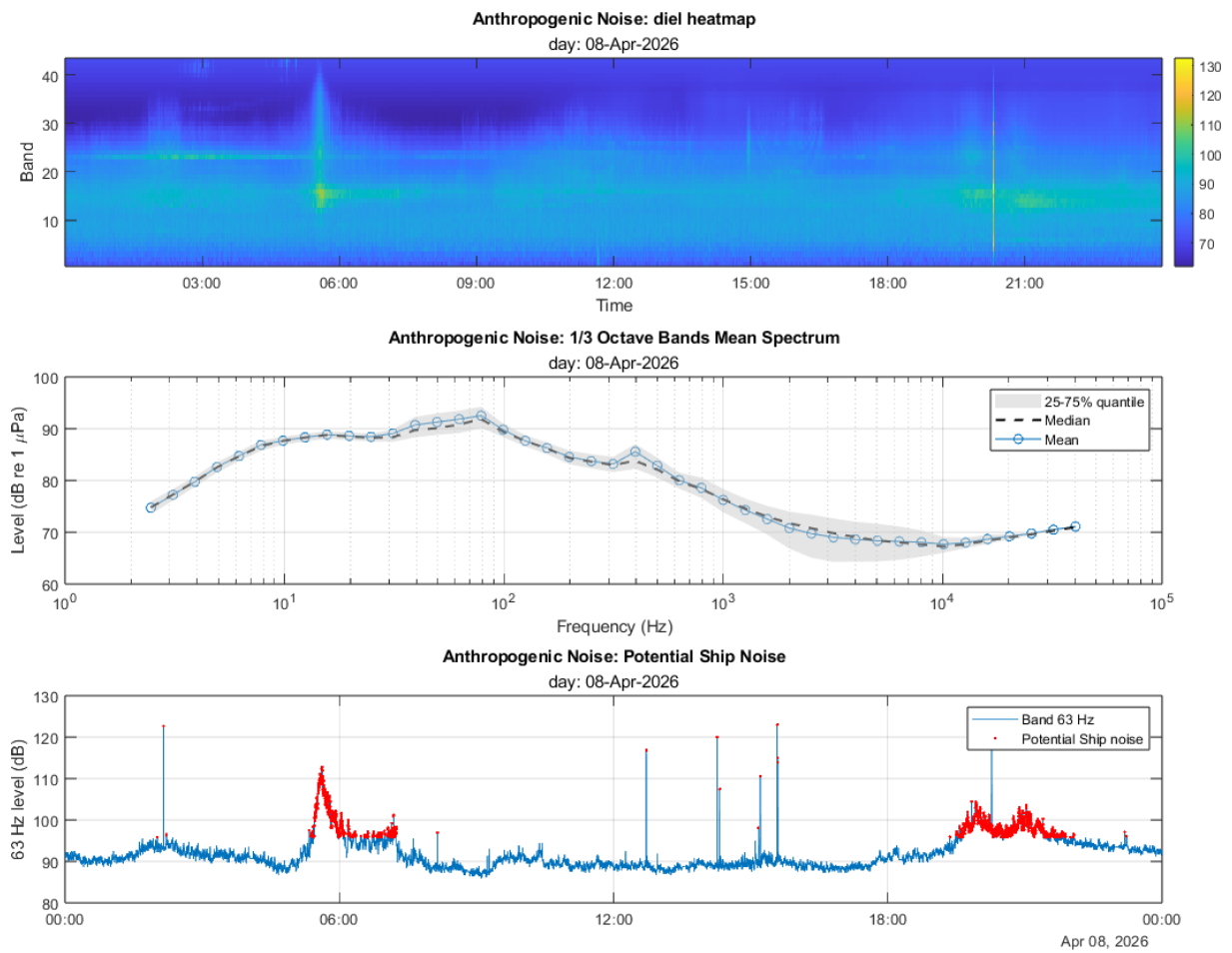
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APPENDIX C – AMBIENT NOISE MONITORING

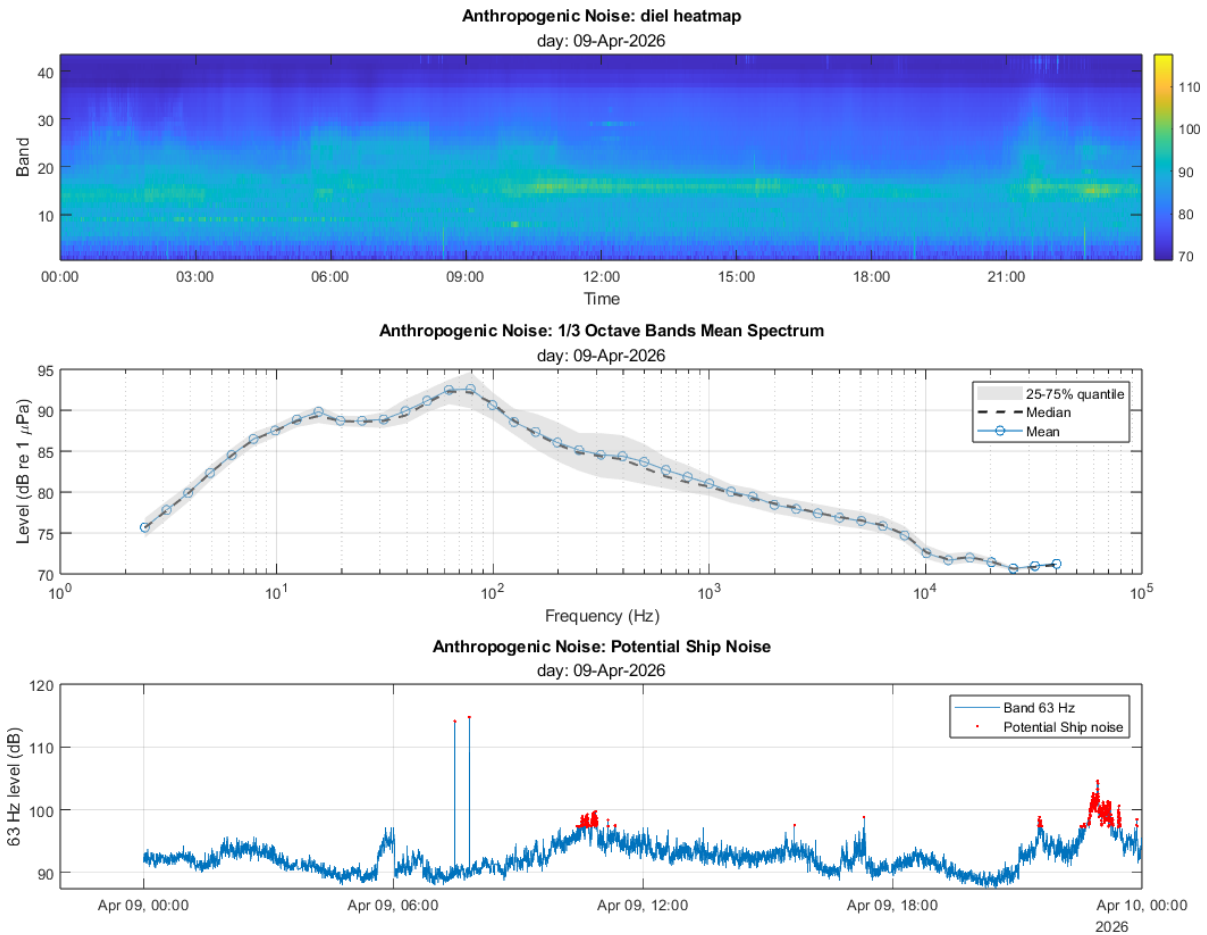
Daily noise monitoring summary plots showing: 1) Top panel: temporal evolution of calibrated third-octave band sound pressure levels (SPL, dB re 1 μ Pa) across the 14 monitored frequency bands. Bands 5 and 6 are 63 Hz and 125 Hz – centered, respectively. 2) Central panel: mean third-octave spectrum for the day, with the median and interquartile range (25–75%) indicating variability in noise levels. 3) Bottom panel: temporal variation in the 63 Hz third-octave band, commonly used as an indicator of low-frequency shipping noise. Red markers indicate periods of elevated sound pressure level potentially associated with vessels.



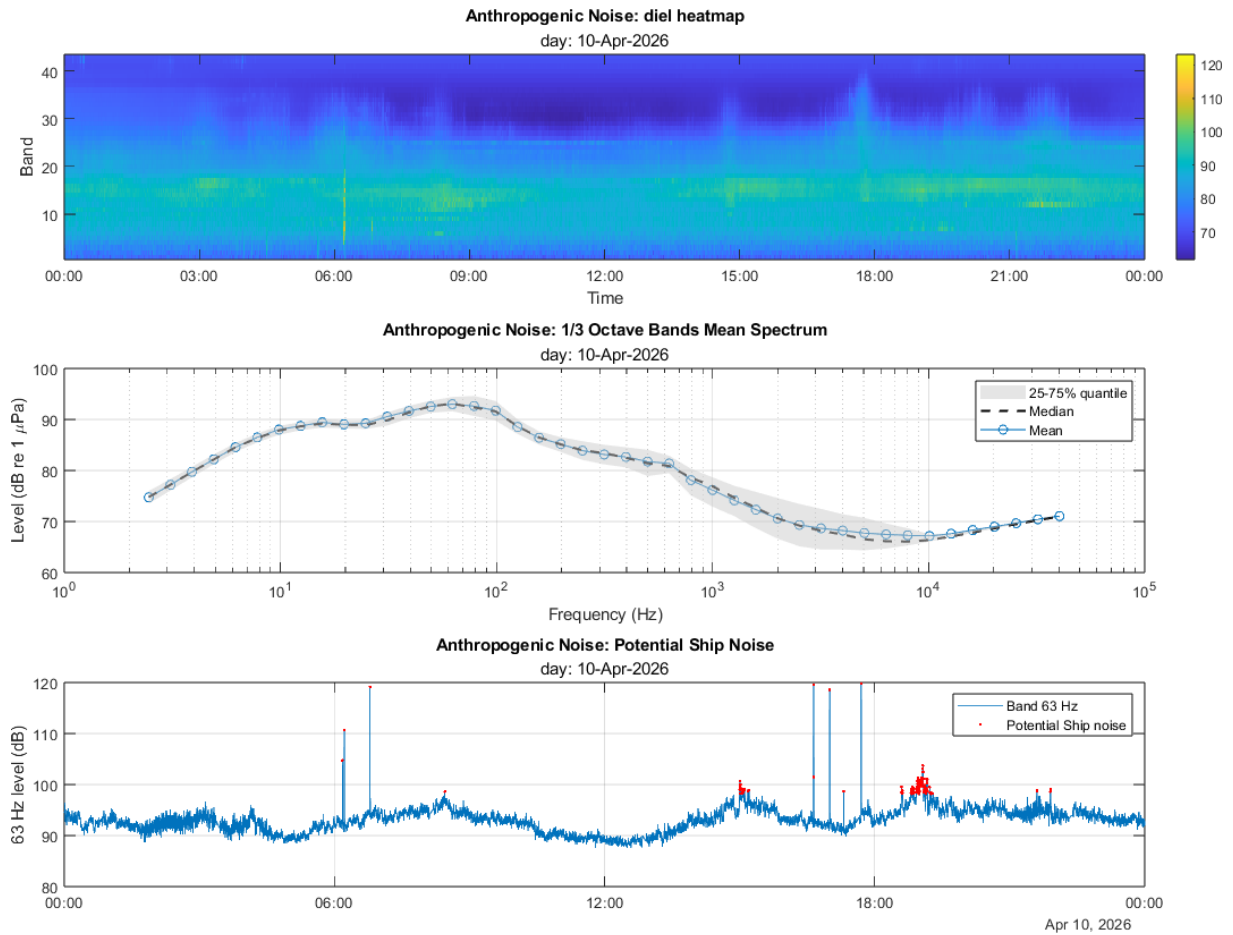
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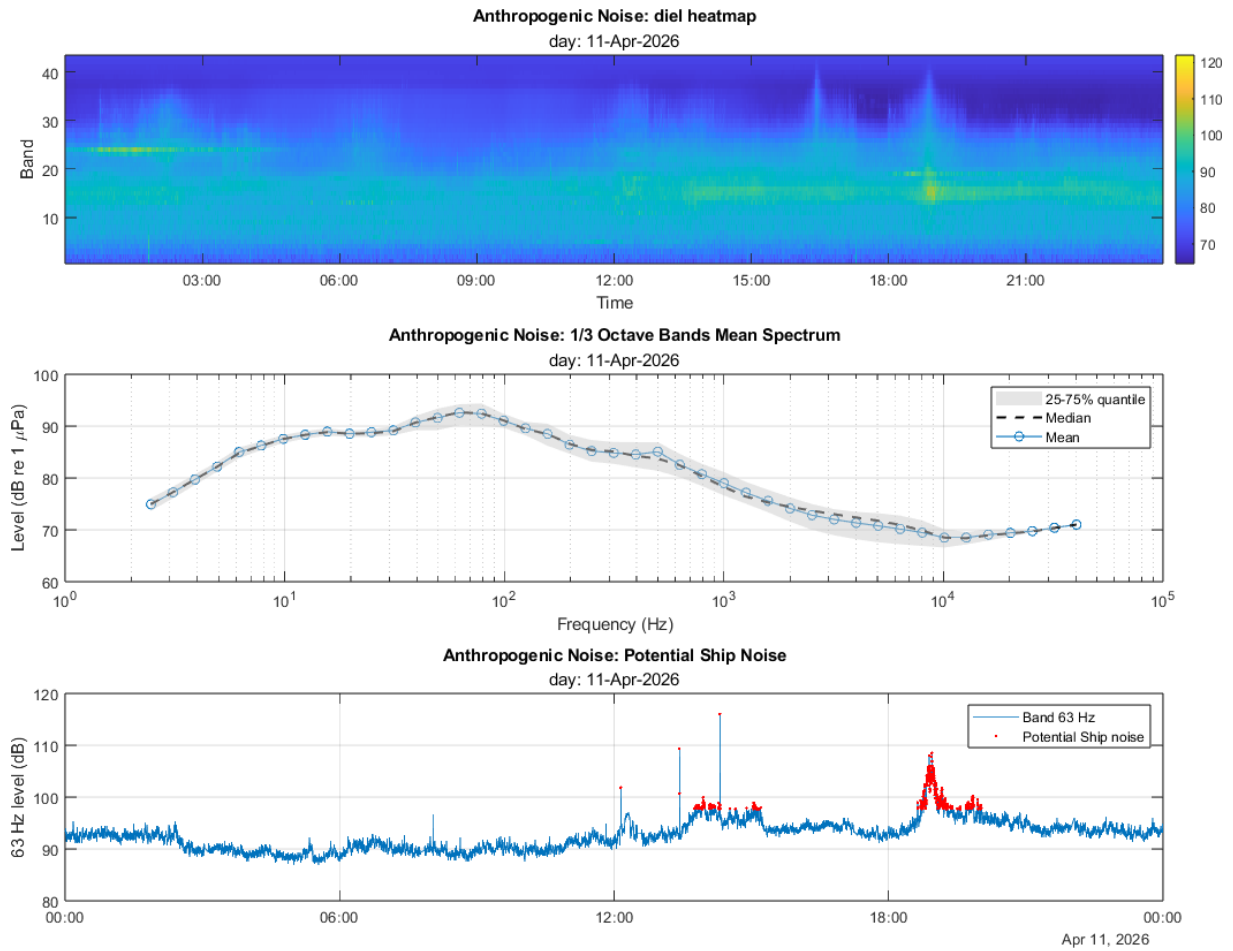
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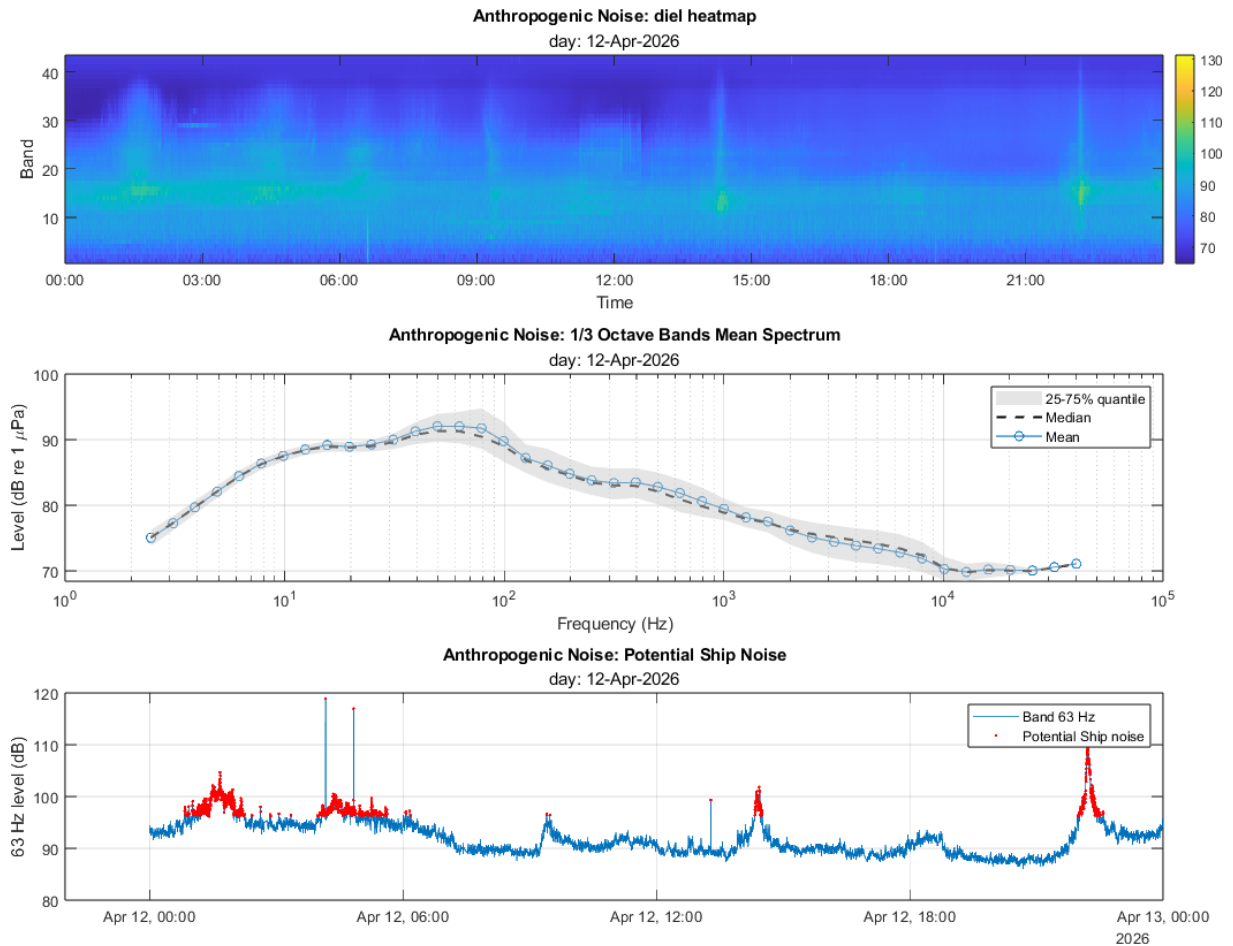
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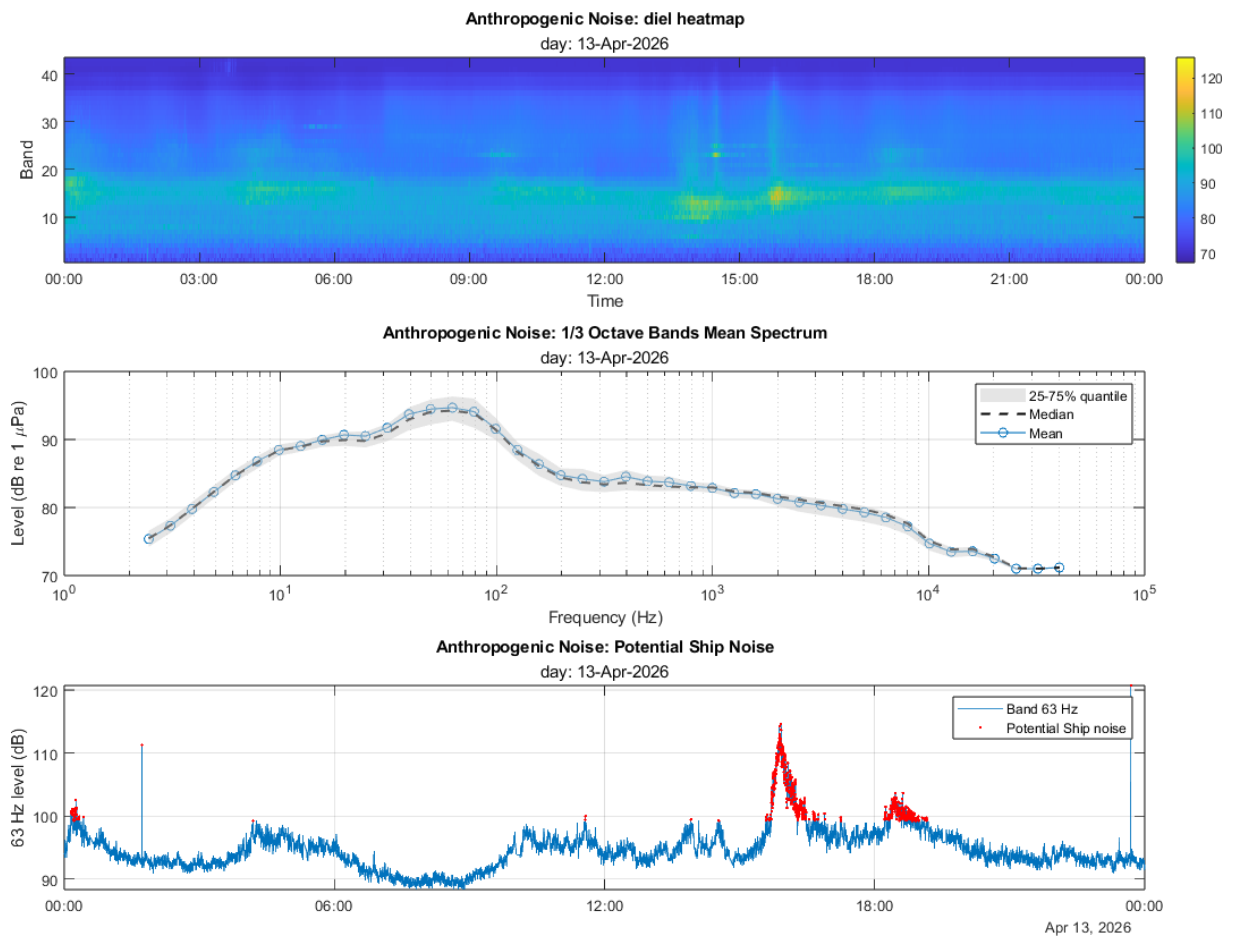
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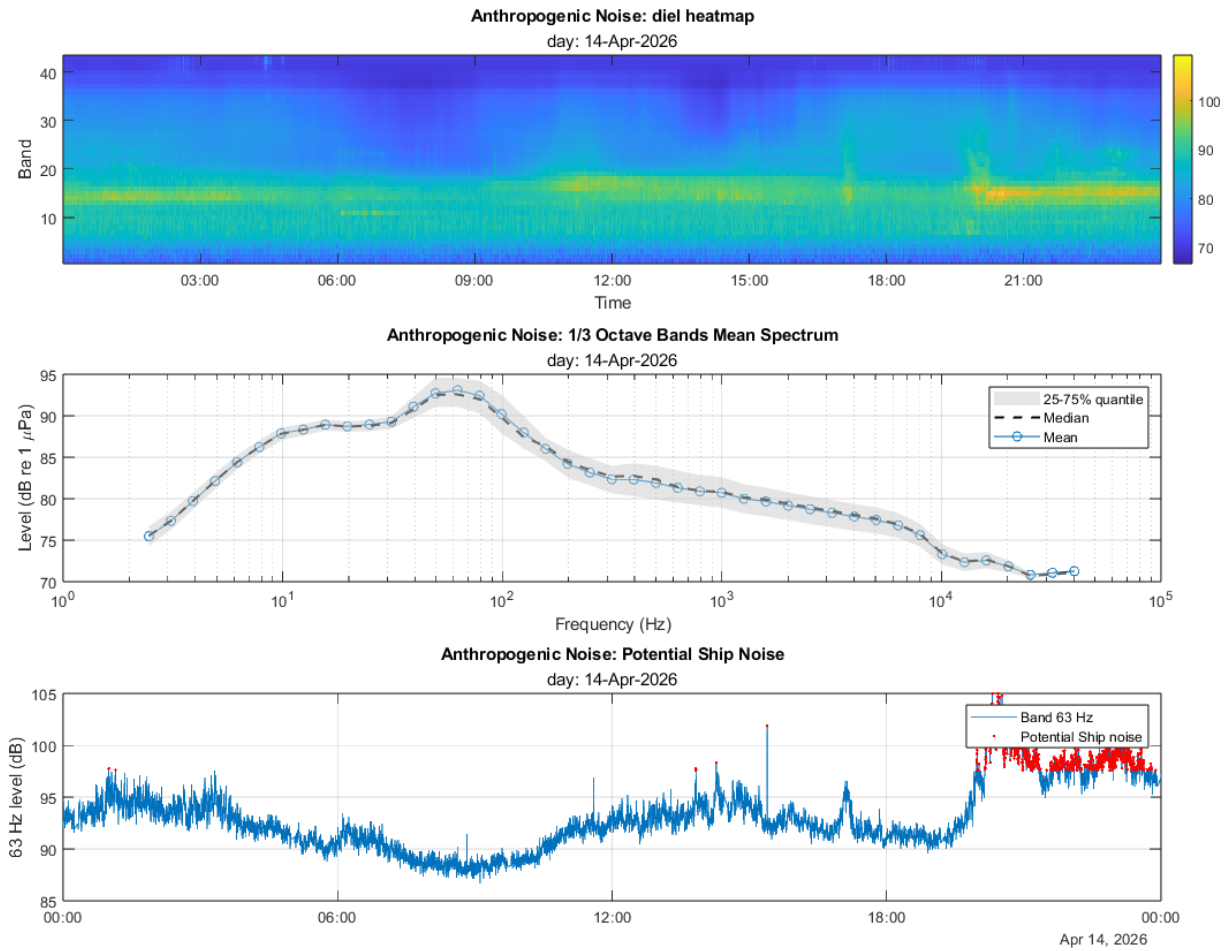
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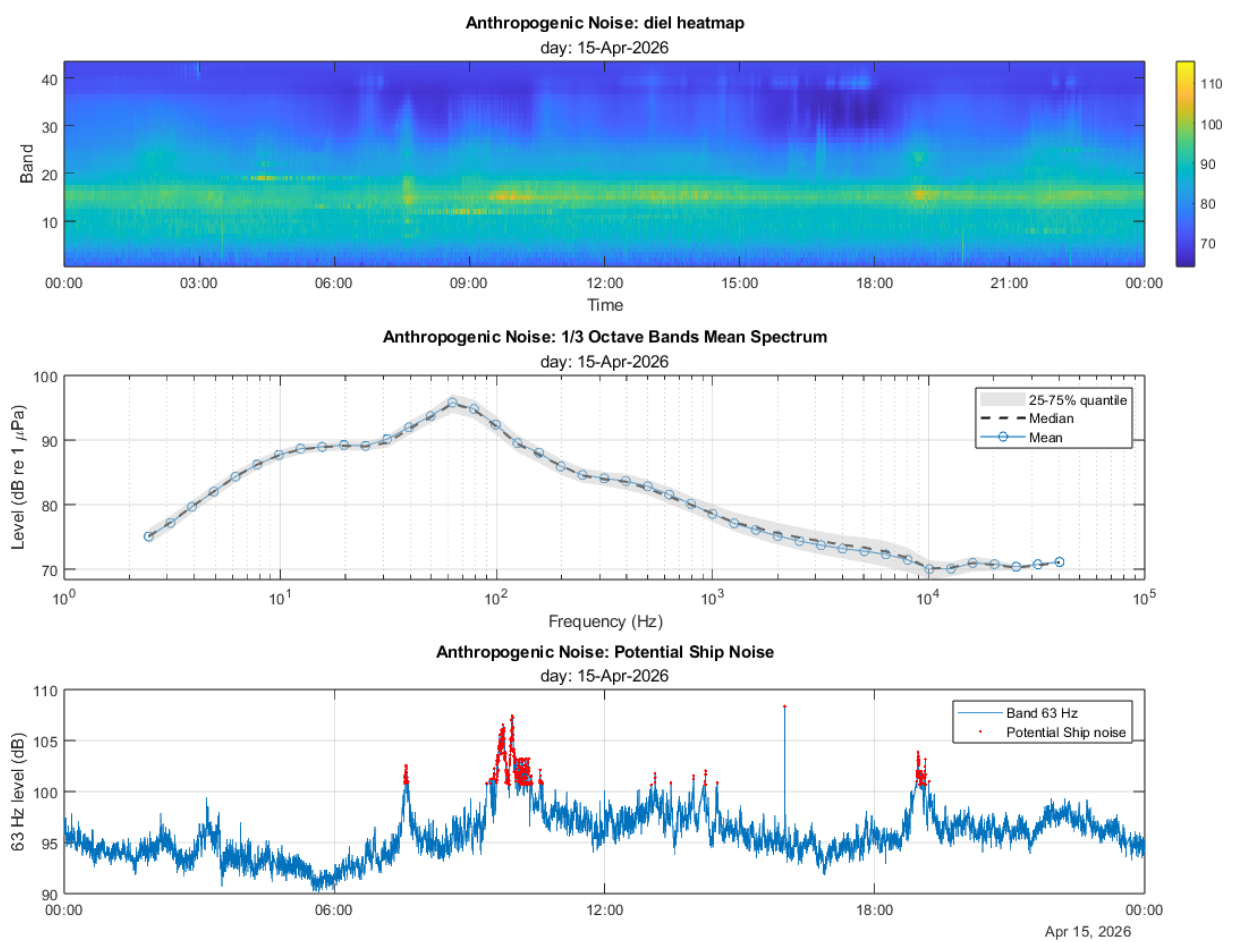
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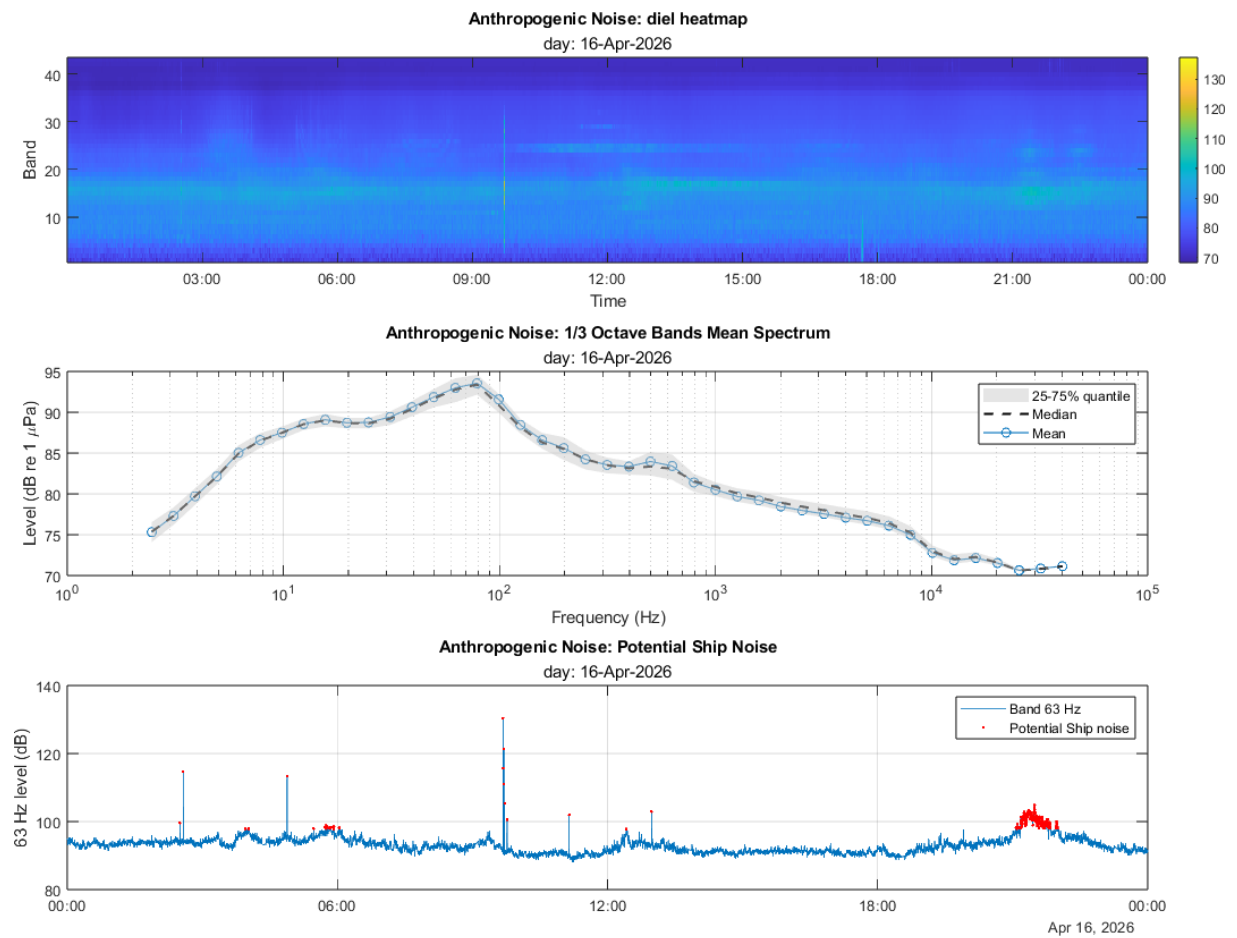
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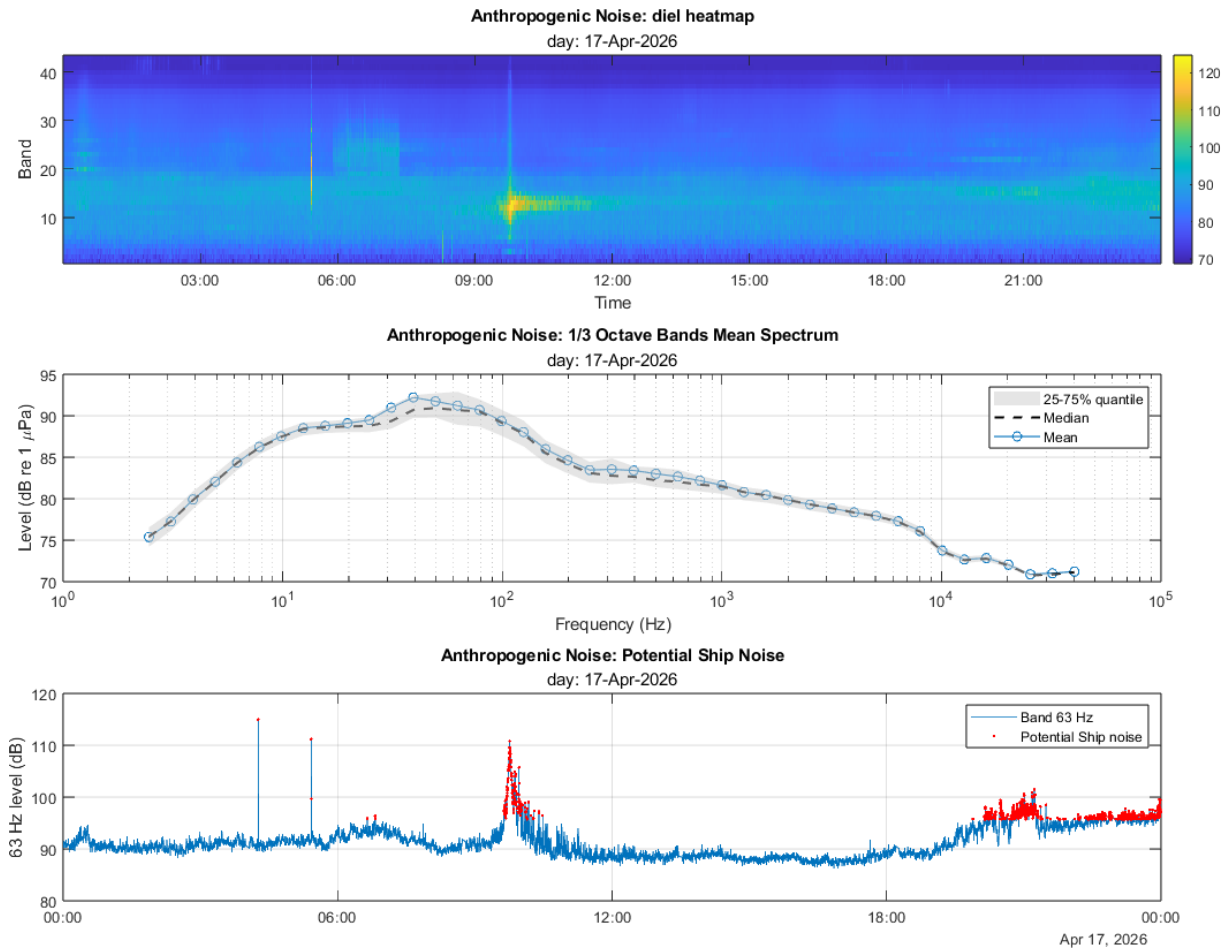
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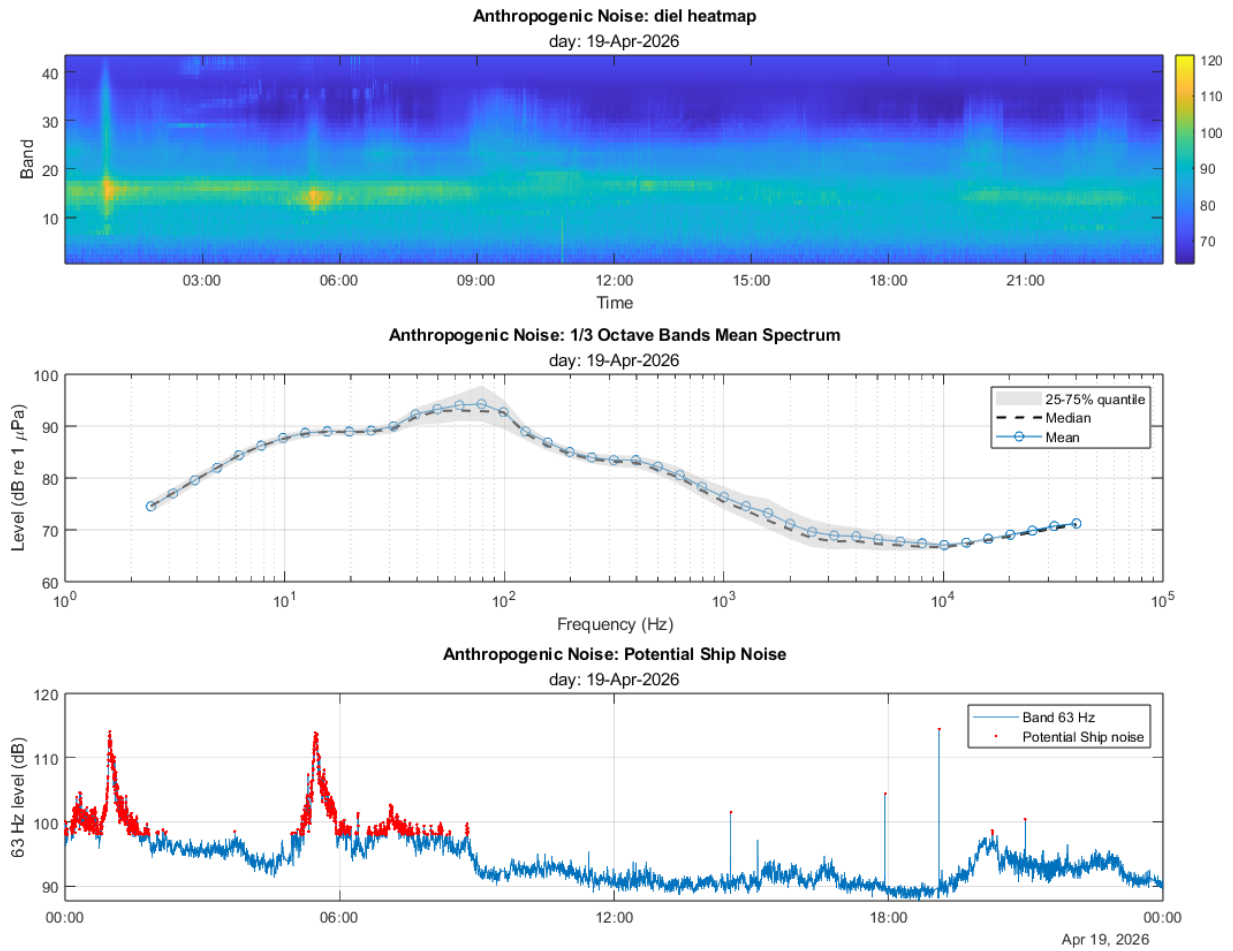
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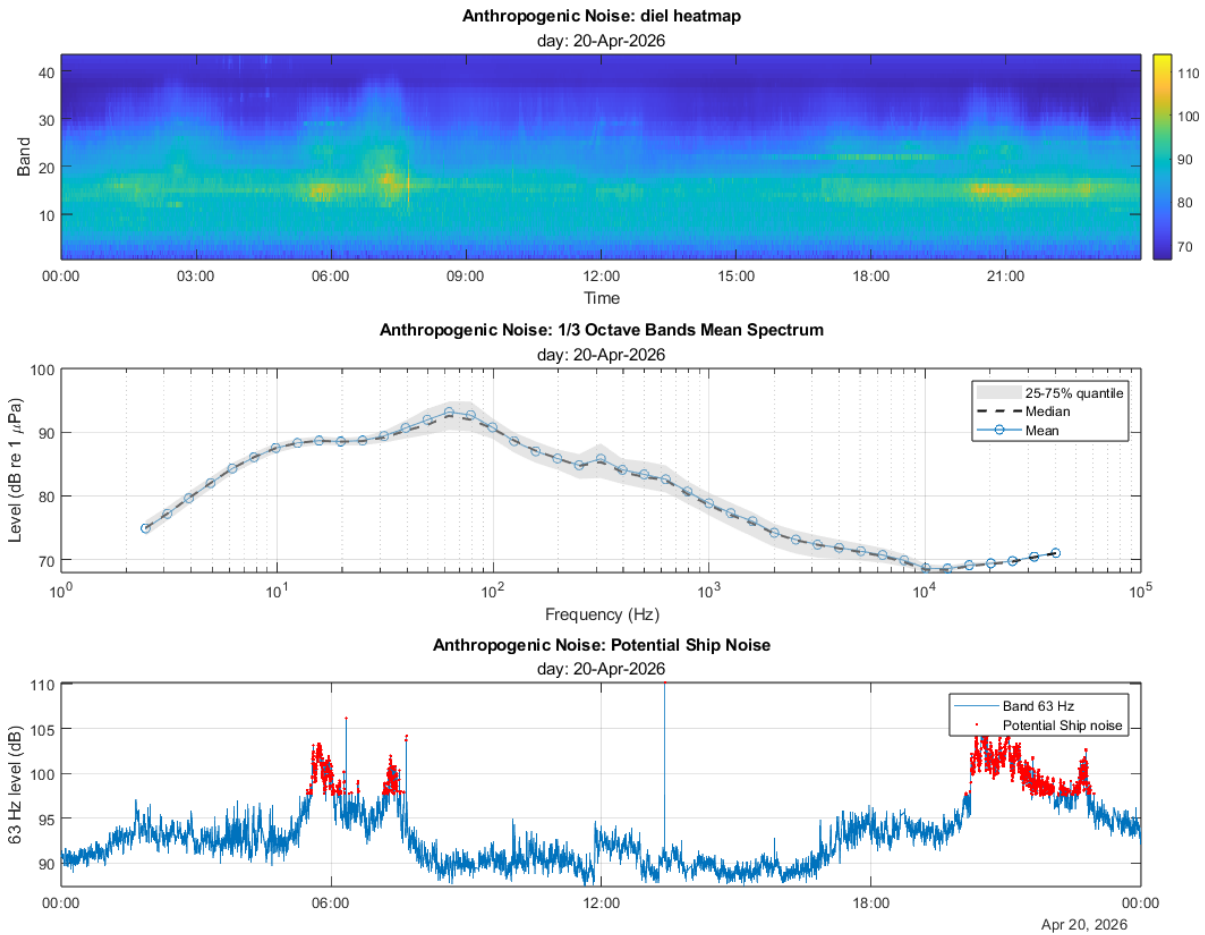
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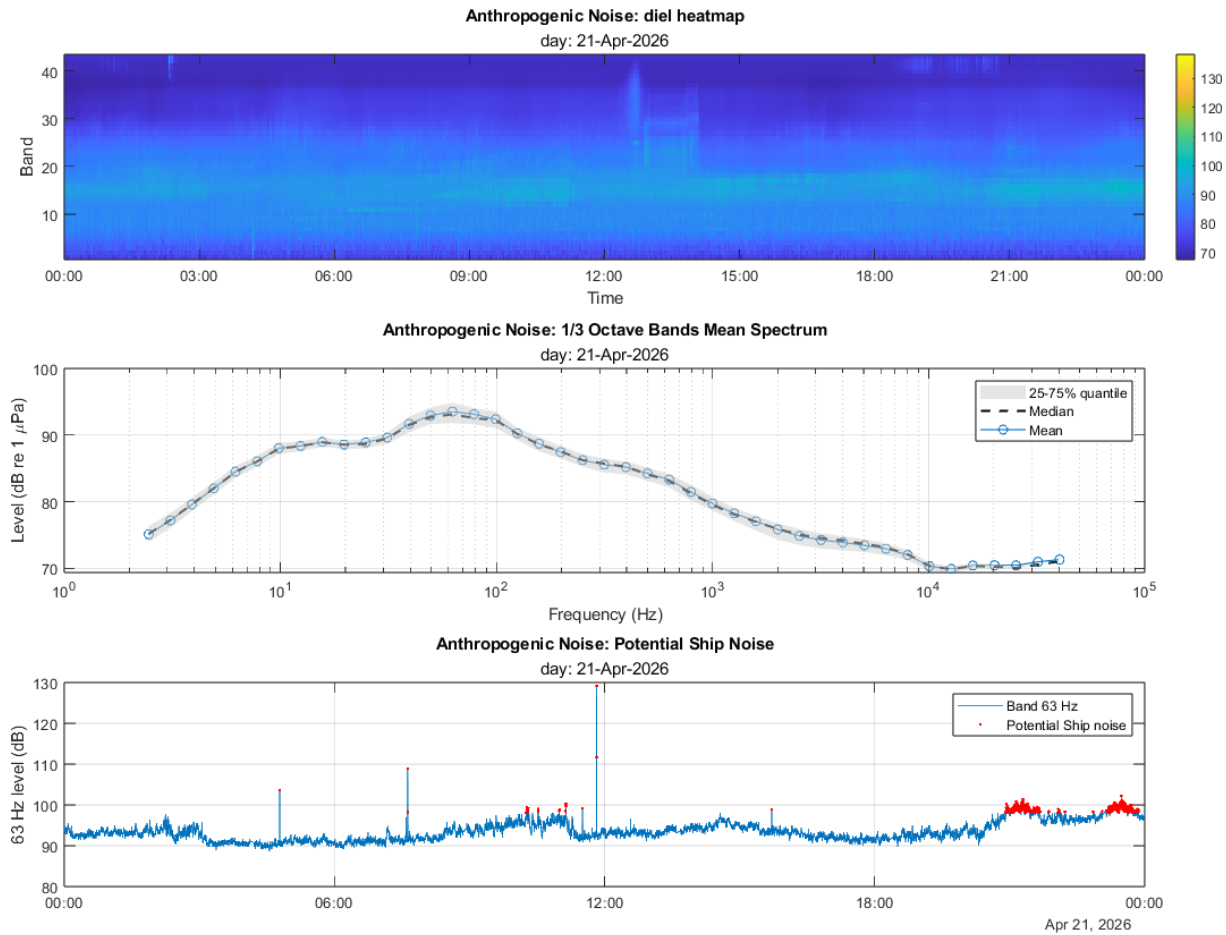
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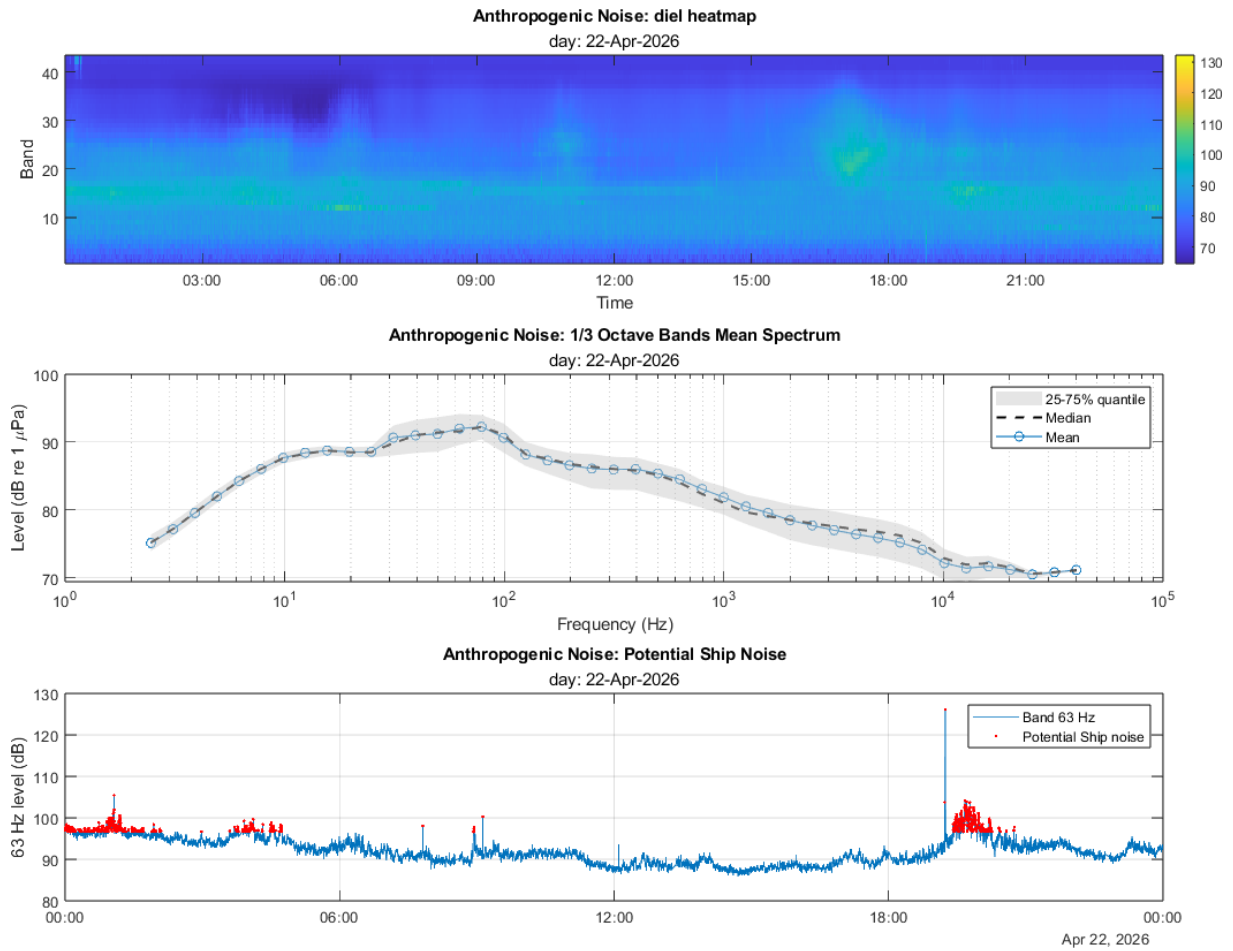


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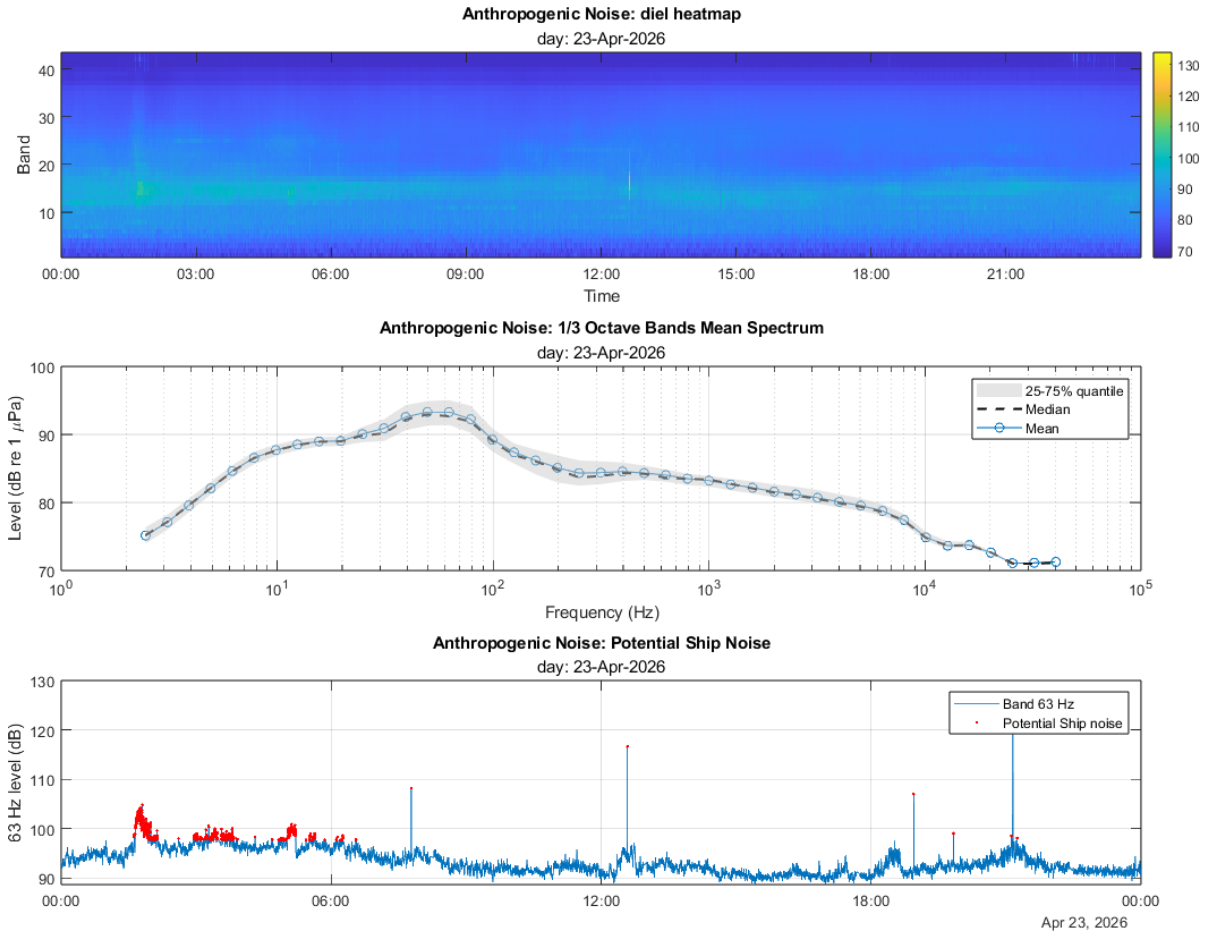


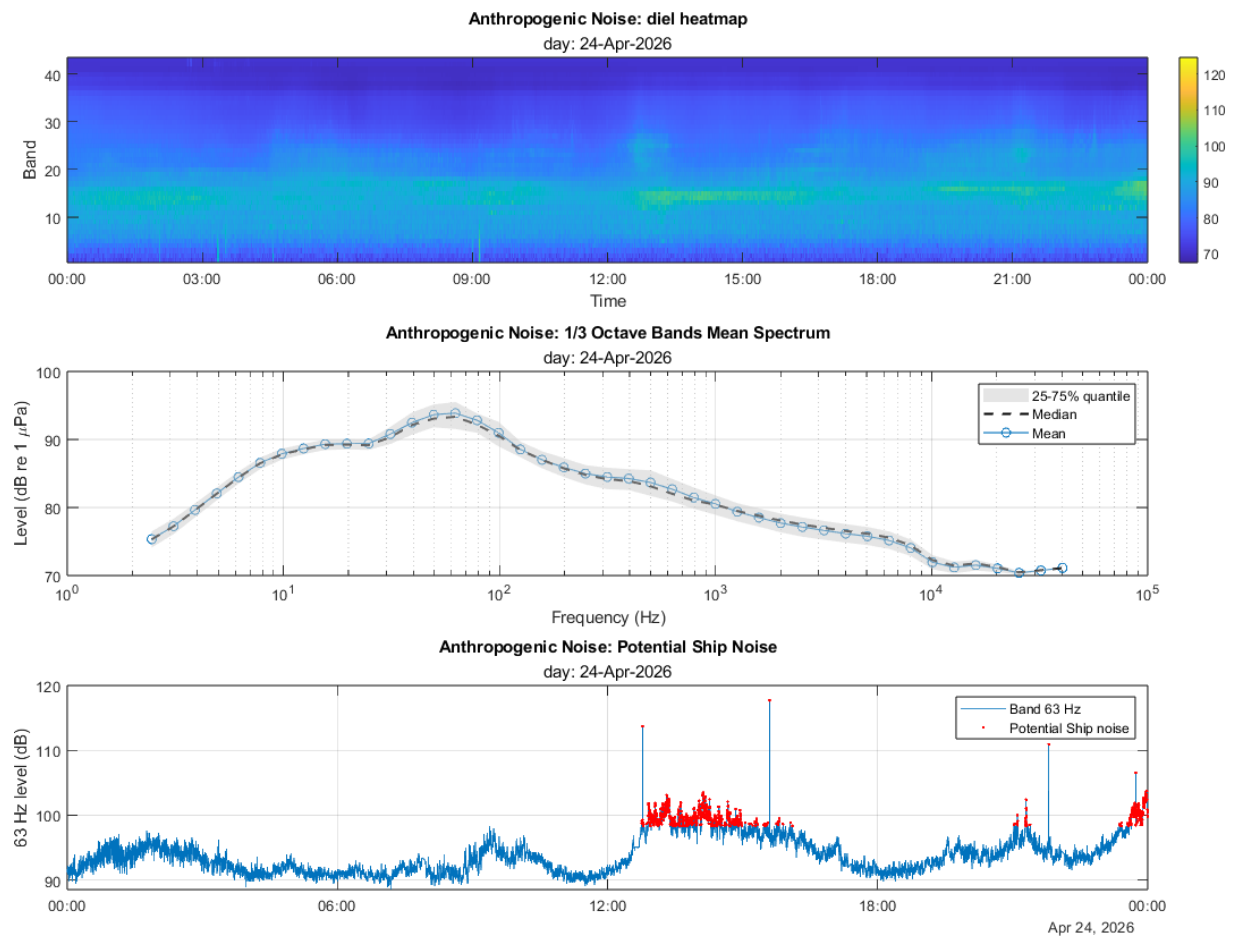
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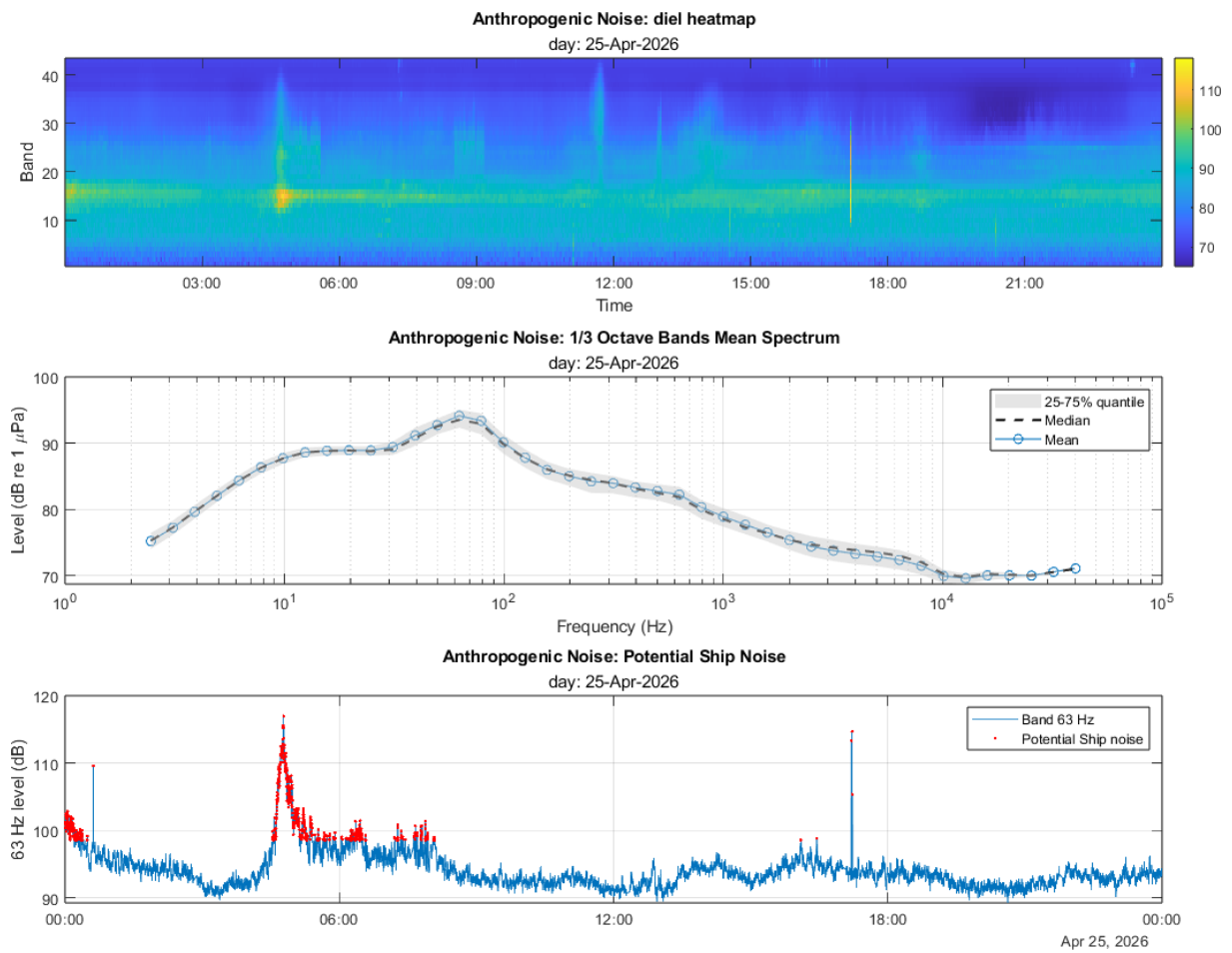


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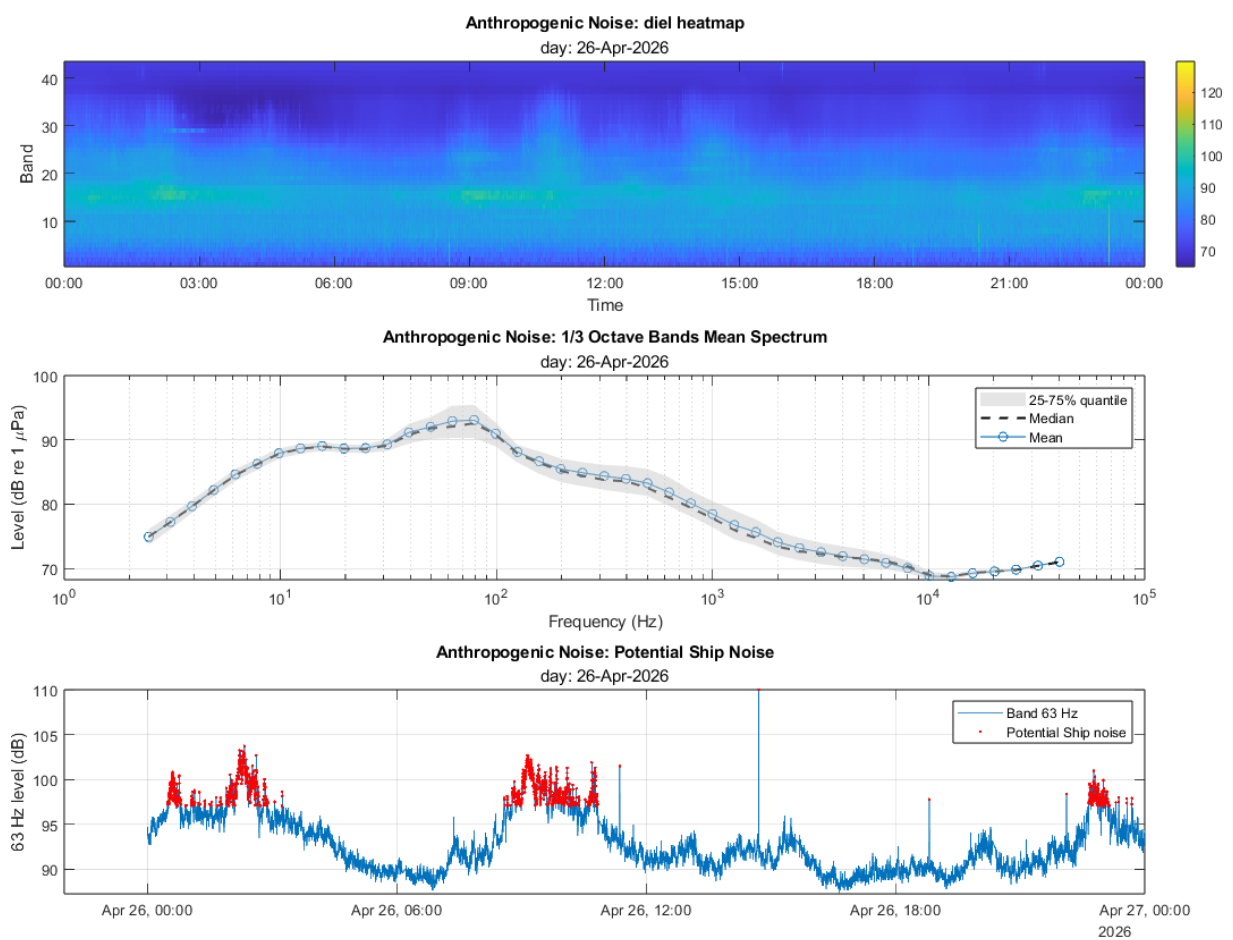




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OFFSHORE ENVIRONMENTAL SURVEY "LOT02"

IMPLEMENTATION OF FIELD ACTIVITIES IN SUPPORT TO THE ESBS FOR EXPLORATION WELLS ASOPUS-1A AND ASOPUS-1B IN BLOCK 2 – IONIAN SEA

Environmental Baseline Report

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Simone Di Giacomo David Bigazzi Monica Armeni		David Bigazzi Monica Armeni	Stefano Sandroni

Revision History

Date	Rev.No.	Detailed Description of Change	Ref. Section
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24/06/2026	B1	Issued for COMPANY Comments	All

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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1.0.0 ABBREVIATIONS AND REFERENCED DOCUMENTS

1.1.0 Abbreviations and Acronyms

A list of the abbreviations included in this document is presented in Table 1.

Table 1 – Abbreviations and Acronyms

Abbreviation	Description
°C	Degrees Celsius
ACCOBAMS	Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic Area
AFM	Auto Fire Module
ASCII	American Standard Code for Information Interchange
AUV	Autonomous Underwater Vehicle
AVH	Company
CRP	Common Reference Point
CSR	COMPANY Site Representative
CTD	Multi-parametric probe
D.Lgs	Decreto Legislativo (Legislative Decree)
d.s.	Dry sediment
DCM	Deep Chlorophyll Maximum
DGNSS	Differential Global Navigation Satellite System
DO	Dissolved Oxygen
DPR	Daily Progress Report
EC	European Commission
EIA	Environmental Impact Assessment
EQR	Ecological Quality Ratio
ERL	Effect Range Low
ESBS	Environmental and Social Baseline Survey
ETS	Eco Tech Systems Srl
FTU	Formazin Turbidity Unit
GPS	Global Positioning System
h	Height
HCMR	Hellenic Centre for Marine Research
HDPE	High Density Polyethylene
HISAS	High-resolution Synthetic Aperture Sonar
HSE	Health, Safety and Environment
ID	Identifier
IDP	Internal Project Identifier
IHO	International Hydrographic Organization
IMCA	International Marine Contractor's Association
IMO	International Maritime Organisation
IOGP	International Association of Oil & Gas Producers
ISM	International Safety Management
ISO	International Standards Organisation
JCGM	Joint Committee for Guides in Metrology
JNCC	Joint Nature Conservation Committee
km	Kilometres
LGH	Lighthouse S.p.A.
LoQs	Limits of Quantification

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Abbreviation	Description
m	Meters
MARPOL	International Convention for the Prevention of Pollution from Ships
MAW	Modified Atlantic Water
MBES	Multi Beam Echo Sounder
MSFD	Marine Strategy Framework Directive
min	Minutes
MMO	Marine Mammals Observer
MSL	Mean Sea Level
mV	millivolt
MWS	Multi-Water Sampler
N.A.	Not Available
N	Nitrogen
nm	Nautical miles
N-tot	Total Nitrogen
OPITO	Offshore Petroleum Industry Training Organization
ORP	Oxidation-Reduction Potential
P	Phosphorous
P-tot	Total Phosphorous
PAHs	Polycyclic Hydrocarbon Aromatics
PE	Polyethylene
PSU	Practical Salinity Units
QA/QC	Quality Assurance / Quality Control
r	Spearman correlation
SACs	Special Areas of Conservations
SBP	Sub-Bottom Profiler
SDS	Sediment Data Summary
SOLAS	Safety of Life at Sea
SOW	Scope of Work
SpA	Società Per Azioni
SQA-MA	Environmental Quality Standards
T	Temperature
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbon
TSS	Total Suspended Solids
UNESCO	United Nations Educational, Scientific and Cultural Organization
US EPA	United States Environmental Protection Agency
USBL	Ultra-Short Base Line
UTC	Universal Time Coordinated
UTM	Universal Transverse Mercator
UV	Ultraviolet
WD	Water Depth
WGS 84	World Geodetic System 1984
WMDW	Western Mediterranean Deep Water
WP2	Zooplankton net

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1.2.0 Reference Documentation

The field survey and this EBS Report have been prepared in accordance with the Project Execution Plan (PEP), which incorporates the requirements of the Scope of Works (SOW), defines the applicable project deliverables, and establishes the reference documentation basis listed in the following tables.

Table 2 – COMPANY Documentation

Ref No.	DOCUMENT TITLE	DOCUMENT NUMBER (Rev.)
[1]	General Technical Document	GRC-BL2-SW-HSE-002_Rev01
Note: Latest available revision is considered, unless noted otherwise.		

Table 3 – CONTRACTOR Documentation

Ref No.	DOCUMENT TITLE	DOCUMENT NUMBER
[1]	Environmental Survey Project Execution Plan	EER001-PRJ-EBS-PEP
[2]	Management of Change	GQF09j
[3]	Mobilization Checklist	GQF09r
[4]	Underwater Acoustic Positioning	GWP09
[5]	Data Processing and Reporting	GWP10
[6]	Environmental Survey	GWP15
[7]	Line Labelling	GWP24
[8]	Data Security	GWP26
[9]	DGNSS Positioning	GWI01a
[10]	Ixsea Octans Gyrocompass	GWI07e
[11]	Onboard Diary Compilation	GWI40a
[12]	Sound Velocity	GWF02b
[13]	Pressure_Comparison	GWF02f
[14]	HSE Plan	EER001_PRJ_HSE-PLAN
[15]	Emergency Response Plan	EER001_PRJ_HSE_ERP
[16]	Risk Assessment	EER001_PRJ_HSE-RA
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Table 4 – Main International Codes, Standards, Regulations and Papers

Code	Document Name
ACCOBAMS	Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic Area
D. Lgs 81	Testo Unico sulla salute e sicurezza sul lavoro
D. Lgs 272	Principi generali in materia di sicurezza ed igiene del lavoro inerenti le operazioni e i servizi portuali
EPA 823-B-95-001	QA/QC Guidance for Sampling and Analysis of Sediments, Water, and Tissues for Dredged Material Evaluations
I449EN	Protocol for the Protection of the Mediterranean Sea against Pollution resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil (Offshore Protocol)
IHO S-44	Standards for Hydrographic Surveys, Special Publication No 44, 5th Edition, February 2008
IMCA	Standard for Underwater Acoustic Positioning (2011) IMO Regulations
IMCA S003	Guidelines for the Use of Multibeam Echosounder for Offshore Surveys
IMCA S016	Guidance on Mobilisation Requirements for Offshore Survey Operations
IMCA S017	Guidance on Vessel USBL System for Use in Offshore Survey, Positioning and DP Operations
IMO Regulations	International Maritime Organisation for the Safety and Security of Shipping & Prevention of Marine and Atmospheric Pollution
IOGP 373-19-IMCA S015	Guidelines for DGNSS Positioning in the Oil and Gas Industry
IOGP SSDM V2	Seabed Survey Data Model – Recommended GIS Data Structure for Seabed Survey Deliverables
ISM Code	International Management Code for Safe Operation of Ships & Pollution Prevention
ISO 9000	Quality Management Systems – Fundamentals and Vocabulary
ISO 9001	Quality Management Systems – Requirements
ISO 9004	Managing for the sustained success of an organization – A quality management approach
ISO 14001	Environmental Management System
ISO 19011	Guidelines for auditing management systems
ISO 19115	Geographic Information - Metadata - Part 1: Fundamentals - Part 2: Extensions for acquisition and processing
ISO 19901-7	Petroleum and Natural Gas Industries – Specific Requirements for Offshore Structures – Part 7: Stationkeeping Systems for Floating Offshore Structures and Mobile Offshore Units
ISO 19901-8	Petroleum and natural gas industries - Specific requirements for offshore structures - Part 8: Marine soil investigations

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Code	Document Name
ISO 19901-10	Petroleum and Natural Gas Industries – Specific Requirements for Offshore Structures – Part 10: Marine Geophysical Investigations
ISO 45001	Occupational health and safety management systems -- Requirements with guidance for use
JCGM 200	International Vocabulary of Metrology
JNCC	Guidelines for Minimising the Risk of Injury and Disturbance to Marine Mammals from Seismic Surveys
MARPOL 73/78	International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978
OPITO	Offshore Petroleum Industry Training Organization, Industry Training and Competency Standards
OSIG	Guidance Notes for the Planning and Execution of Geophysical and Geotechnical Ground Investigations for Offshore Renewable Energy Developments
RINA	Rules for Classification of Ships
SOLAS Convention	International Convention for the Safety of Life at Sea
Note: Latest available revision is considered, unless noted otherwise	

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2.0.0 PROJECT DESCRIPTION

2.1.0 Introduction

This Final EBS Report presents the environmental sampling activities and results related to Block 2 area (Asopus-1A and Asopus-1B wells, including respective “Blank” stations) and Reference Stations (Othonoi Ref, Kerkyra Ref, Italy Ref), in the Ionian Sea, commissioned by Energean SpA (the Company).

The offshore area of Block 2 is located approximately 20 km west of the Island of Corfu (Kerkyra), in the Northern Ionian Sea, at water depths ranging from approximately 750 to 1200 m. Administratively, Block 2 falls within the Regional Unit (RU) of Corfu (Figure 1), which is part of the Ionian Islands Region (IIR). The western boundary of the block coincides with the maritime delimitation line between the continental shelf areas of Italy and Greece, as defined by the Bilateral Agreement of 24 May 1977, which establishes this boundary according to the principle of the median line.

The Environmental Baseline Survey (EBS) was undertaken to contribute to the characterisation of the environmental and social baseline conditions within the wider Block 2 area and the immediate vicinity of the proposed well locations, integrating site-specific data collected during the survey. This baseline will support the accurate identification and, where feasible, quantification of potential environmental impacts associated with drilling, testing, and related offshore and logistical operations at the Asopus-1A and Asopus-1B wells.

The survey area included:

- A primary zone centered on each proposed well location, extending radially to cover seabed, water column, and surface receptors;
- Stations designed to characterize spatial variability in physical, chemical and biological, parameters;
- Reference / control locations outside the anticipated impact footprint, where required, to support comparative analysis.

The operations were performed by LIGHTHOUSE S.p.A. (LGH, hereinafter also referred to as the CONTRACTOR), appointed by the COMPANY to execute the full Scope of Work, including environmental baseline surveys. EcoTechSystems Srl (ETS) carried out the environmental survey activities, including offshore sampling operations, management and coordination of the analytical programme, data elaboration and interpretation, and preparation of the present reporting documentation.

This EBS Report presents the results of the environmental sampling campaign, including laboratory analyses and their interpretation, and provides an integrated baseline characterization of the survey area. The report summarises physic-chemical and biochemical (water), as well as physical (sedimentological), chemical and biological (water and sediment) findings, assesses environmental quality conditions and potential anthropogenic influences.

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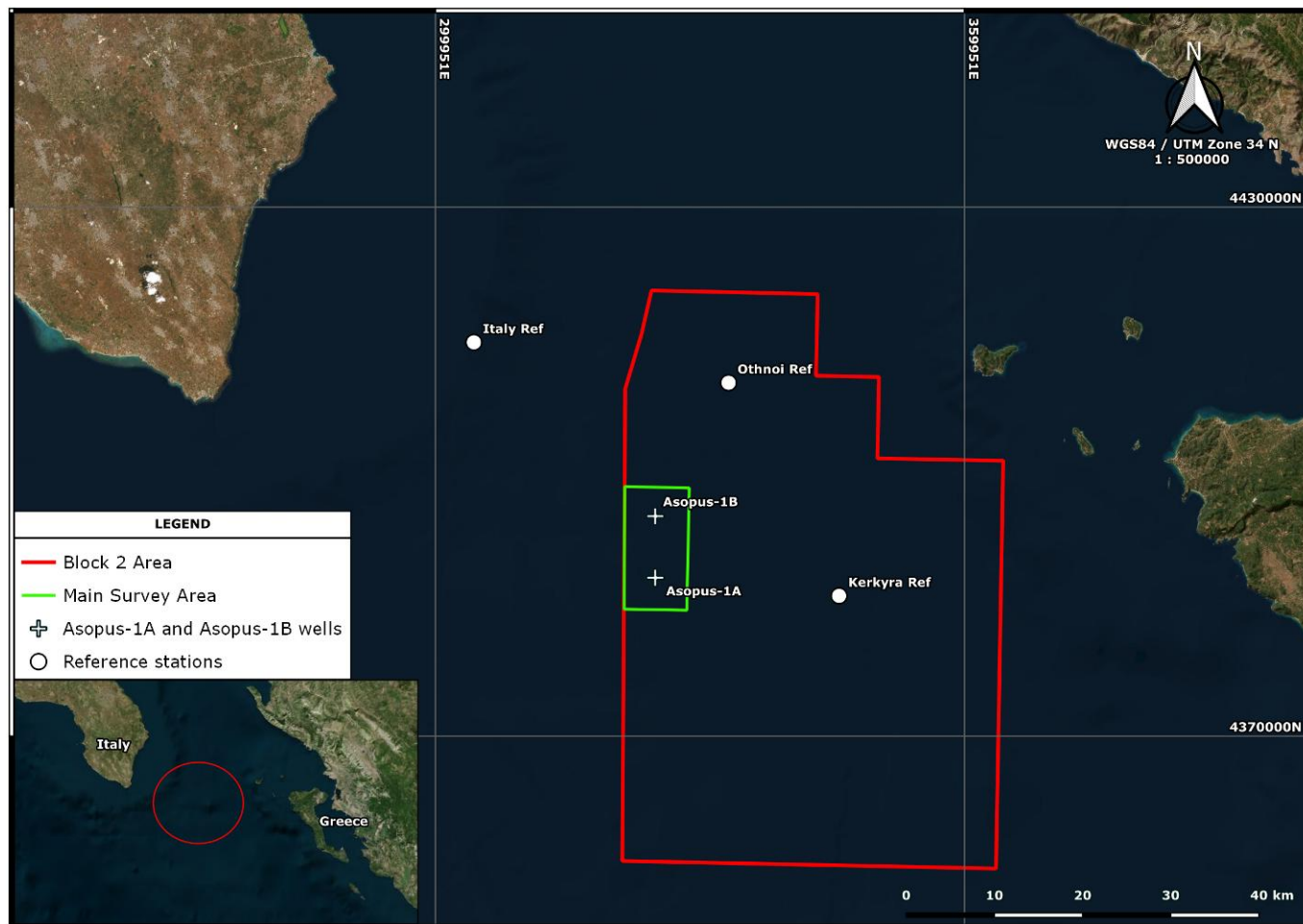


Figure 1 – Project Area General Location

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2.2.0 Scope of Work Summary

The purpose of the environmental and social baseline survey is to establish a comprehensive dataset characterizing the pre-drilling environmental status of the site. This dataset will serve as a reference for detecting and assessing potential environmental impacts associated with future exploration drilling operations. The environmental survey was designed to acquire detailed information on the physic-chemical, biochemical and biological properties of the water column and sediments, as well as taxonomic composition, diversity indices, and population densities of plankton and benthic communities. More in detail, data acquisition focused on the following key components:

- Water Column Characterization – physic-chemical parameters: Depth, Temperature, Conductivity, Salinity, pH, Dissolved Oxygen (DO), Turbidity, Fluorescence in terms of Chlorophyll-a concentration, and transparency as Secchi Disk depth; chemical variables: Total Organic Carbon (TOC), Total Suspended Solids (TSS), Nutrients, Heavy and Trace Metals, Hydrocarbons: C6 – C10, C10 – C40 and Polycyclic Aromatic Hydrocarbons (PAHs); and biological parameters: Phytoplankton, Zooplankton, Ichthyoplankton and eDNA;
- Sediment Characterization – *in-situ* sediment description (Temperature, pH, ORP and Visual description), grain-size analysis, Total Organic Carbon (TOC), Nutrients, Metals and Metalloids, Hydrocarbons: C ≤ 12, C > 12 (and TPH) and Polycyclic Aromatic Hydrocarbons (PAHs) and Microplastics;
- Benthic Fauna Characterization – encompassing qualitative and quantitative assessments of macrofaunal assemblages, species diversity, abundance, and community structure.

2.3.0 Survey Geodetic System

The following parameters were used during the survey activities, for data processing and final deliverables (Table 5).

Table 5 – Project Projection Parameters

DATUM	
Ellipsoid	World Geodetic System 1984
Datum	WGS 84
Semi-major axis (a)	6 356 752.314 m
Semi-Minor Axis	1/f = 298.2572236
Inverse Flattening (1/f)	6 356 752.314 m
Eccentricity	0.00669438
PROJECTION PARAMETERS	
Grid Projection	Universal Transverse Mercator
Grid System	UTM – Zone 34 North
Central Meridian (CM)	WGS84
Latitude of Origin	0° Equator

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DATUM	
UTM Zone	34 North
Scale Factor on CM	0.9996
False Easting	500 000m
False Northing	0 m
Unit	Meter
Angular Units	Degrees (°) Grid (unless otherwise stated)

The survey was referred to Mean Sea Level (MSL) vertical datum.

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3.0.0 CHRONOLOGY OF OPERATIONS, EQUIPMENT AND PERSONNEL

3.1.0 Time Schedule

Mobilization of environmental survey personnel and equipment commenced from the Port of Crotona (Italy) on 24 March 2026. Field activities were undertaken within Block 2, encompassing the Asopus-1A and Asopus-1B well areas and the Reference Stations (Othonoi Ref, Kerkyra Ref and Italy Ref). The main environmental survey was performed between 25 and 31 March 2026, while environmental sampling activities at Italy Ref were completed on 27 April 2026, during the subsequent geophysical survey campaign. A summary of the survey activities is presented below.

Table 6 – Environmental Survey: Operation Summary

Survey date	Activity
24/03/2026	ESBS equipment and personnel Mobilization
29/03/2026 – 31/03/2026	Water quality (field parameters) and Water Column Sampling
25/03/2026 – 31/03/2026	Sediment Quality Sampling and Benthos (Infauna) Sampling
02/04/2026	EBS equipment and personnel Demobilization
27/04/2026	Italy Ref station - Water quality (field parameters) and Water Column Sampling / Sediment Quality Sampling and Benthos (Infauna) Sampling

3.2.0 Personnel List

CONTRACTOR survey Personnel involved in the Environmental activities is listed in the following tables (Table 7 and Table 8).

Table 7 – Onboard Personnel

Name	Duty	Company
Paschalis Kokkinis	Client rep	ENERGEAN
Marco Basciano	Party Chief	LGH
Cristian Cenciarini	Surveyor	LGH
Muhammad Omer Afzal	Surveyor	LGH
Emiliano Dalli	Surveyor	LGH
Giovanni Beccaria	Surveyor	LGH
Marcello Giustozzi	Pam operator	LGH
James Davies	Pam operator	LGH
Simone Di Giacomo	Environmental Technician / Biologist	ETS
Dario Deriu	Environmental Technician / Biologist	ETS
Federico Andreoli	Environmental Technician / Biologist	ETS
Luigi Barbetti	Environmental Technician / Biologist	ETS

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Name	Duty	Company
Pietro Leanza	Ornithologist	ENERGEAN
Stratis Bourdakis	Ornithologist	ENERGEAN
Aleksandra Pierożyńska	MMO	ENERGEAN
Kalliopi Glikopoulou	MMO	ENERGEAN

Table 8 – Onshore Personnel

Name	Duty	Company
M. Forastiere	Project Director	LGH
N. Venza	Key Account and Project Manager	LGH
S. Sandroni	Data Interpretation and Final Reports Manager	LGH
S. Sandroni	Charting and Reporting	LGH

3.3.0 Equipment List

All planned field activities related to the EBS (including seawater and sediment sampling, plankton and macrozoobenthos collection, and onboard eDNA filtration) were carried out aboard the vessel M/N ECO ONE, equipped with a dedicated crane and winch system suitable for the deployment and recovery of sampling instruments, as well as an appropriate surface positioning system.

The equipment used during the Environmental survey onboard the M/N ECO ONE vessel is listed in the table below (Table 9).

Further details on the full equipment spread mobilised onboard the M/N ECO ONE vessel for EBS in Area Block 2 were provided in the Mobilisation Report.

Table 9 – Environmental Survey: Equipment List

System	Equipment	Quantity Primary	Quantity Spare
Primary Surface Positioning	DGNSS Receiver Hemisphere R330	1	1
Secondary Surface Positioning	Septentrio AsteRx-U3 Marine	1	-
Primary Heading sensor	HiPAP 351P-MGC	1	-
Secondary Heading sensor	Septentrio AsteRx-U3 Marine	1	-
USBL Transponder	Kongsberg cNODE MiniS	1	1
SVP/CTD	Hydro-Tech SVP1500	1	
Multiparametric Probe	Seabird SBE19 Plus	1	1
Barometer	SIAP+MICROS Digital Barometer	1	-
Geo Winch	Buccella Hydraulic 2500m Dyneema rope	1	-

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System	Equipment	Quantity Primary	Quantity Spare
Total Station	TOPCON GPT-3002LN	1	-
Underwater Positioning	HiPAP 351P-MGC	1	-
Primary Sediment Sampler	Van Veen Grab 40lt (0,20m2)	1	1
Secondary Sediment Sampler	Box Corer (0,10m2)	1	-
Primary Water Sampler	Rosetta General Oceanic 1018 (MWS12)	1	-
Secondary Water Sampler	Single-Fire Niskin Bottle	1	1
Plankton Sampler (standard)	200 micron mesh WP2 plankton net	1	1
Plankton Sampler (ichthyoplankton)	335 µm mesh WP2 plankton net	1	1
Passive Acoustic Monitoring	Co.L.Mar Passive Acoustic Monitoring System or equivalent (vertical and tower spread)	1	1
Secchi Disk	ETS Prototype	1	-
Multi-parametric Probe	Sea-Bird SBE 19 Plus	1	-

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4.0.0 FIELD SAMPLING DESIGN AND METHODOLOGY

4.1.0 Sampling Design and Station Selection

In order to define the environmental baseline of the Block 2 Area, the sampling design was established based on the planned locations of the future extraction wells, identified as Asopus-1A and Asopus-1B. Two monitoring sub-areas were therefore delineated within Block 2, each centred on the respective well site, with sampling stations distributed in the surrounding area of each location to characterise local environmental conditions.

The sampling plan and the distribution of the sampling stations are described in greater detail below.

Asopus-1A – Water sampling stations (Physic-chemical parameters, eDNA, Phytoplankton, Zooplankton):

- D1a: central station, located at the well centre;
- D3a: 500 m north of the well centre, along the prevailing current direction;
- D5a: 500 m south of the well centre, along the prevailing current direction;
- D6a: blank station, approximately 2 km south of the well centre;
- D6b: blank station, approximately 2 km north of the well centre, shared with the monitoring area of the adjacent Asopus-1B well.

Asopus-1A – Sediment sampling stations (Physico-chemical parameters, Microplastics, Macrozoobenthos, AUV mosaics for biocenotic support):

- D1a: well centre station;
- D2a (East), D3a (North), D4a (West) and D5a (South): stations located 500 m from the well centre and positioned along two orthogonal transects, each station corresponding to one of the four cardinal directions;
- D6a: blank station located approximately 2 km south of the well centre.
- D6b: blank station located approximately 2 km north of the well centre, shared with the monitoring area of the Asopus-1B well.

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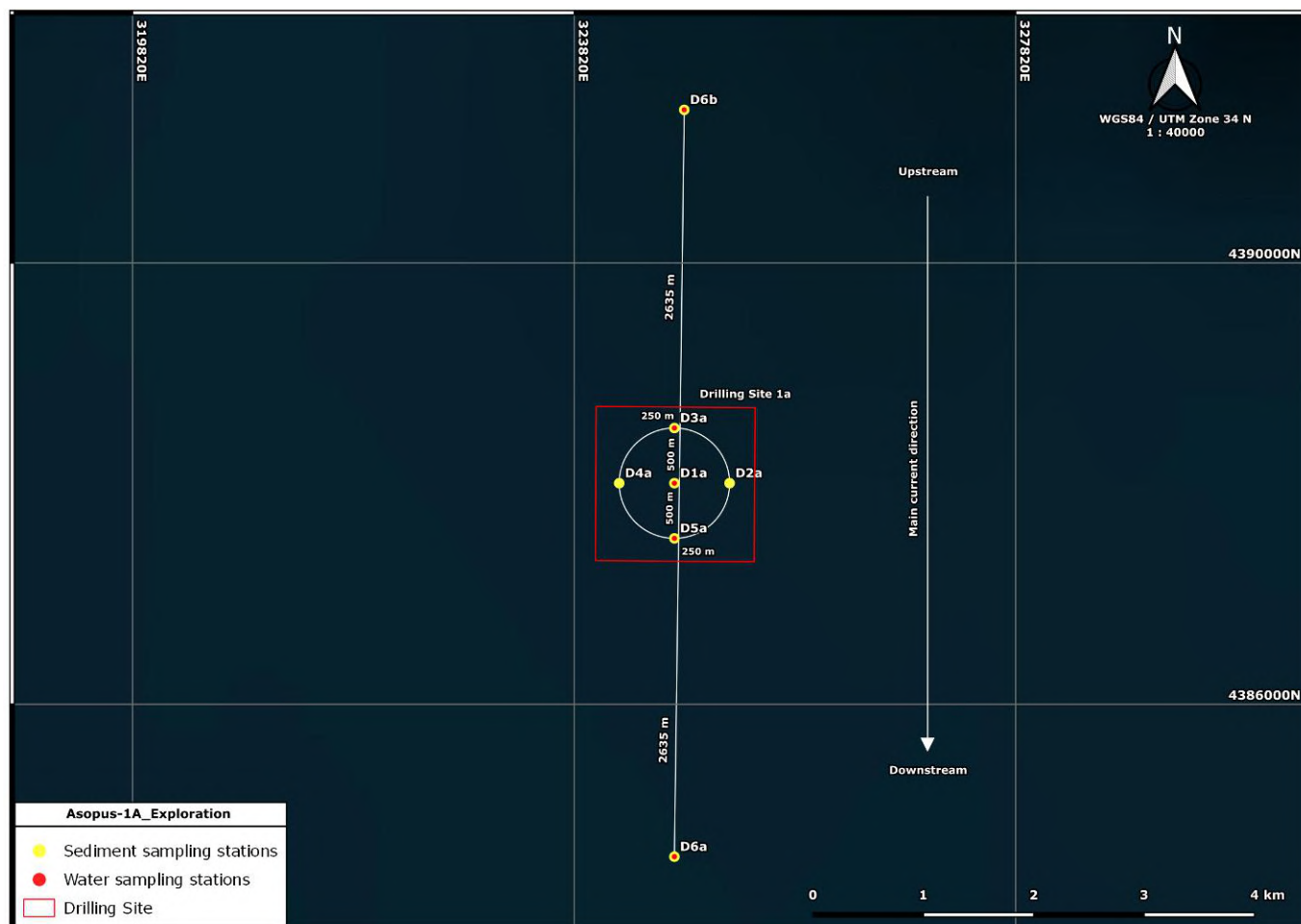


Figure 2 - Asopus-1A well site: sampling stations

The coordinates of all sampling stations are reported in Table 10.

Table 10 – Theoretical and Real Coordinates of Sampling Stations of Asopus-1A (Datum: WGS84, Projection: UTM zone 34N)

Matrix	Area	Well	Station ID	Depth [m]	Date [dd/mm/yyyy]	Theoretical Coordinates [WGS84-UTM34N]		Real Coordinates [WGS84-UTM34N]	
						Easting [m]	Northing [m]	Easting [m]	Northing [m]
Seawater and Plankton *including eDNA	BLOCK 2	ASOPUS -1A	D1a	820.96	30/03/2026	324729.00	4388004.00	324731.39	4388001.68
			D3a	816.32	30/03/2026	324729.00	4388504.00	324737.94	4388494.76
			D5a	818.23	30/03/2026	324729.00	4387504.00	324733.47	4387503.21
			D6a	822.14	30/03/2026	324729.00	4384619.00	324733.40	4384624.90
Sediment and Macrozoobenthos			D1a	825.8	26/03/2026	324729.00	4388004.00	324714.79	4387992.35
			D2a	831.6	26/03/2026	325229.00	4388004.00	325209.48	4387995.14

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Matrix	Area	Well	Station ID	Depth [m]	Date [dd/mm/yyyy]	Theoretical Coordinates [WGS84-UTM34N]		Real Coordinates [WGS84-UTM34N]	
						Easting [m]	Northing [m]	Easting [m]	Northing [m]
			D3a	816.3	27/03/2026	324729.00	4388504.00	324718.19	4388485.56
			D4a	823.6	27/03/2026	324229.00	4388004.00	324222.30	4387989.69
			D5a	832.2	25/03/2026	324729.00	4387504.00	324707.39	4387497.13
			D6a	842.9	25/03/2026	324729.00	4384619.00	324699.00	4384602.25

Asopus-1B – Water sampling stations (Physico-chemical parameters, eDNA, Phytoplankton, Zooplankton):

- D1b: central station, located at the well centre;
- D3b: 500 m north of the well centre, along the prevailing current direction;
- D5b: 500 m south of the well centre, along the prevailing current direction;
- D7b: blank station approximately 2 km south of the well centre;
- D6b: blank station approximately 2 km south of the well centre, shared with the monitoring area of the adjacent Asopus-1A well.

Asopus-1B – Sediment sampling stations (Physico-Chemical parameters, Microplastics, Macrozoobenthos, AUV mosaics for biocenotic support):

- D1b: well centre station;
- D2b (East), D3b (North), D4b (West) and D5b (South): stations located 500 m from the well centre and positioned along two orthogonal transects, each station corresponding to one of the four cardinal directions;
- D7b: blank station located approximately 2 km north of the well centre.
- D6b: blank station located approximately 2 km south of the well centre, shared with the monitoring area of the Asopus-1A well.

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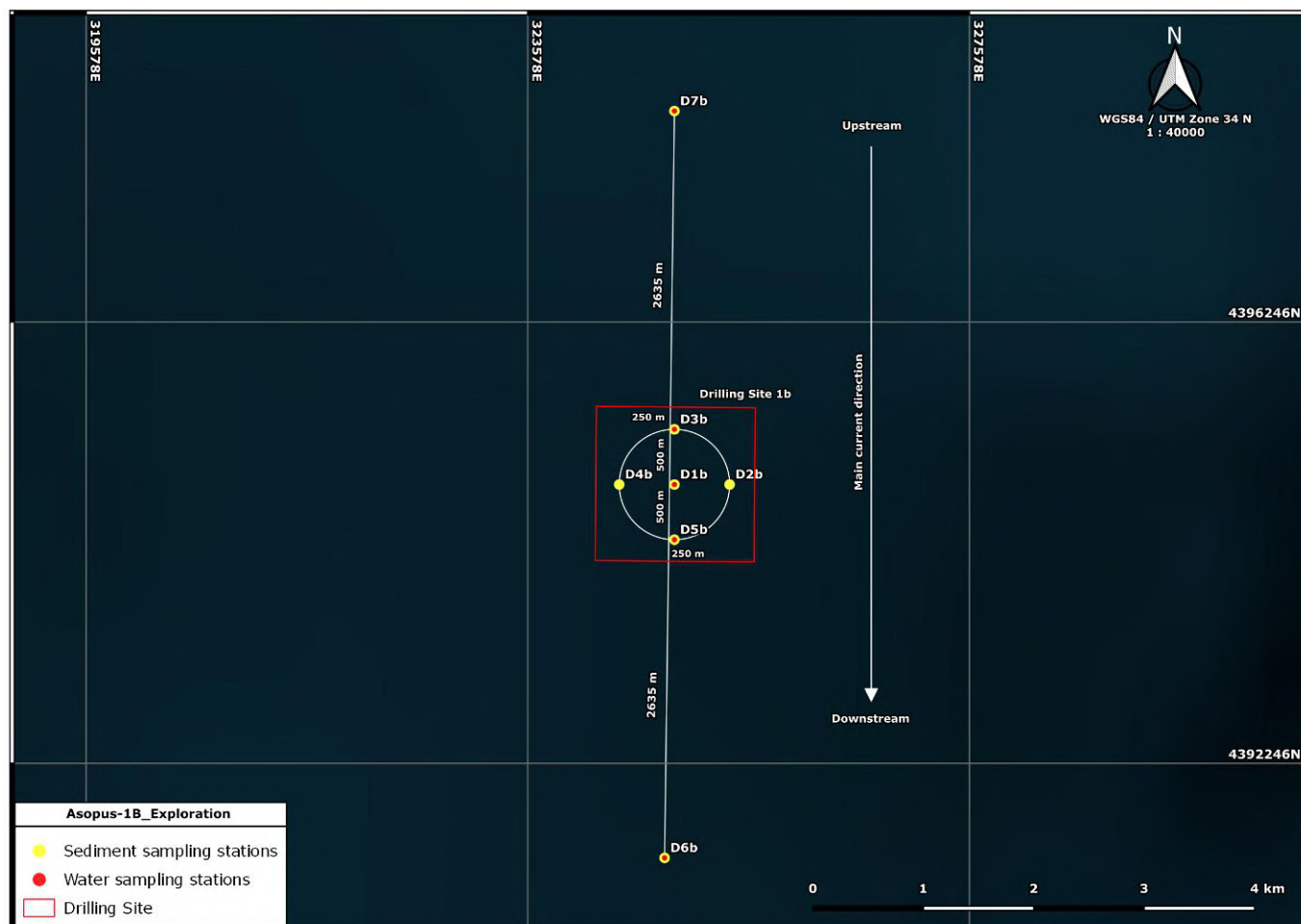


Figure 3 - Asopus-1B well site: sampling stations

The coordinates of all sampling stations are reported in Table 11.

Table 11 - Theoretical and Real Coordinates of Sampling Stations of Asopus-1B (Datum: WGS84, Projection: UTM zone 34N)

Matrix	Area	Well	Station ID	Depth [m]	Date [dd/mm/yyyy]	Theoretical Coordinates [WGS84-UTM33N]		Real Coordinates [WGS84-UTM33N]	
						Easting [m]	Northing [m]	Easting [m]	Northing [m]
Seawater and Plankton *including eDNA	BLOCK 2	ASOPUS -1B	D1b	828.23	30/03/2026	324907.00	4394772.00	324909.29	4394768.78
			D3b	822.54	30/03/2026	324907.00	4395272.00	324910.18	4395246.28
			D5b	816.71	30/03/2026	324907.00	4394272.00	324905.12	4394243.06
			D6b	804.55	30/03/2026	324818.00	4391388.00	324819.37	4391370.63
			D7b	826.18	29/03/2026	324907.00	4398157.00	324897.32	4398131.39
Sediment and			D1b	830.6	28/03/2026	324907.00	4394772.00	324898.36	4394747.61

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Matrix	Area	Well	Station ID	Depth [m]	Date [dd/mm/yyyy]	Theoretical Coordinates [WGS84-UTM33N]		Real Coordinates [WGS84-UTM33N]	
						Easting [m]	Northing [m]	Easting [m]	Northing [m]
Macrozoobenthos			D2b	839.8	28/03/2026	324907.00	4394772.00	325419.76	4394759.63
			D3b	835.0	28/03/2026	324907.00	4395272.00	324913.68	4395263.14
			D4b	820.5	28/03/2026	324907.00	4394772.00	324401.81	4394758.96
			D5b	825.1	28/03/2026	324907.00	4394272.00	324896.83	4394243.34
			D6b	811.0	28/03/2026	324818.00	4391388.00	324814.41	4391363.63
			D7b	833.3	29/03/2026	324907.00	4398157.00	324903.07	4398121.82

Finally, ichthyoplankton sampling was carried out in accordance with the standard survey protocol to complete the characterisation of the local pelagic ecosystem. Three oblique transects, each approximately 1 km in length, were conducted: two located approximately 500 m east of the Asopus-1A well sites (TR1a) and Asopus-1B (TR1b) and one located approximately 500 m east of the shared Blank station D6b between the two wells (TR6b), as illustrated in Figure 4.

Three additional Reference stations were included to characterise baseline environmental conditions in areas unaffected by planned extraction activities: Othonoi Ref, Kerkyra Ref, and Italy Ref. The Othonoi Ref and Kerkyra Ref stations, located towards the Greek coastlines of Othonoi Island and Corfu, respectively, and the Italy Ref station, located towards the southern Apulian coast of Italy, were sampled following the same standardised protocol (Figure 4).

Water-column sampling was performed at each of the selected seawater survey locations, namely D1a, D3a and D5a (Asopus-1A), D1b, D3b and D5b (Asopus-1B), D6a, D6b and D7b (Blank Stations), and Othonoi Ref, Kerkyra Ref and Italy Ref (Reference Stations). At each station, vertical water-column profiles were acquired and water samples for chemical analyses and phytoplankton community assessment were collected at three discrete depths:

- 1 m below the surface (or simply “Surface”);
- mid-depth (or simply “Middle”);
- 1 m above the seabed, or at the closest safe distance achievable where required to prevent contact with the substrate and safeguard equipment integrity (hereinafter referred to as “Bottom”).

At the same locations, Zooplankton was sampled via vertical net tows in the upper 200 m of the water column, and eDNA samples were collected at the bottom depth.

Sediment sampling was performed at all survey stations, including D1a – D5a (Asopus-1A), D1b – D5b (Asopus-1B), D6a, D6b and D7b (Blank Stations), and Othonoi Ref, Kerkyra Ref and Italy Ref (Reference Stations), following a standardised protocol. At each station, a single sediment sample was collected for physico-chemical characterisation, while two replicate samples were collected for benthic community analyses.

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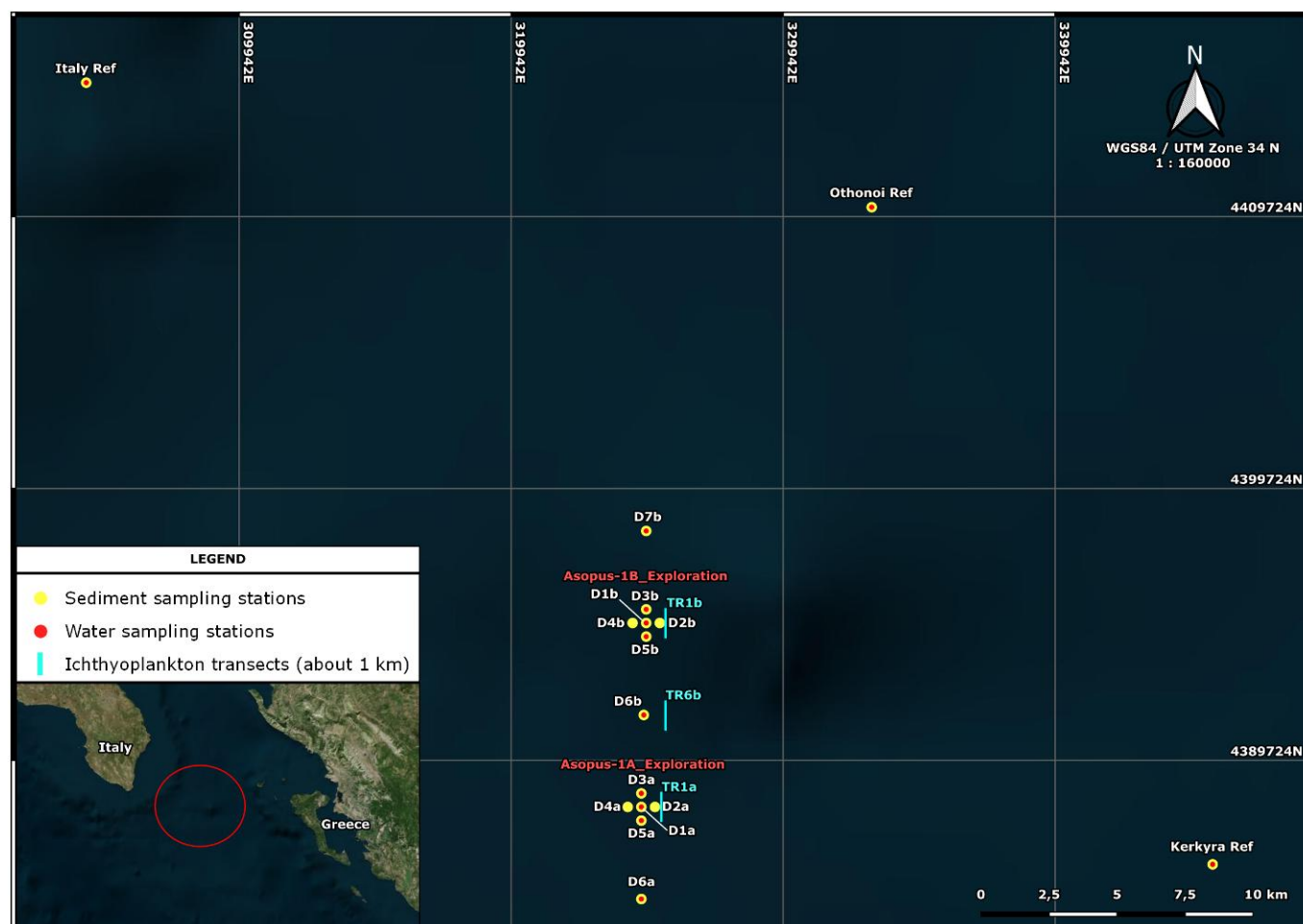


Figure 4 – Theoretical Sampling Station, Ichthyoplankton transect and additional Reference station locations

The coordinates of all ichthyoplankton transects are reported in Table 12.

Table 12 - Theoretical and Real Coordinates of ichthyoplankton transects (Datum: WGS84, Projection: UTM zone 34N)

Area	Well	Transect ID	Depth [m]	Date [dd/mm/yyyy]	Start/End	Theoretical Coordinates [WGS84-UTM34N]		Real Coordinates [WGS84-UTM34N]	
						Easting [m]	Northing [m]	Easting [m]	Northing [m]
BLOCK 2	ASOPUS -1A/1B	TR1a	131.47	30/03/2026	Start	325236.68	4387422.36	325236.68	4387422.36
				30/03/2026	End	325262.40	4388075.17	325262.40	4388075.17
		TR1b	117.19	30/03/2026	Start	325399.89	4394210.39	325399.89	4394210.39
				30/03/2026	End	325411.34	4394924.75	325411.34	4394924.75
		TR6b	118.88	30/03/2026	Start	325293.24	4390847.24	325293.24	4390847.24
				30/03/2026	End	325293.24	4390847.24	325293.24	4390847.24

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Area	Well	Transect ID	Depth [m]	Date [dd/mm/yyyy]	Start/End	Theoretical Coordinates [WGS84-UTM34N]		Real Coordinates [WGS84-UTM34N]	
						Easting [m]	Northing [m]	Easting [m]	Northing [m]
				30/03/2026	End	325300.08	4391316.48	325300.08	4391316.48

The coordinates of all Reference stations are reported in Table 13.

Table 13 - Theoretical and Real Coordinates of Sampling Stations of Reference area (Datum: WGS84, Projection: UTM zone 34N)

Matrix	Area	Station ID	Bot. Depth [m]	Date [dd/mm/yyyy]	Theoretical Coordinates [WGS84-UTM34N]		Real Coordinates [WGS84-UTM34N]	
					Easting [m]	Northing [m]	Easting [m]	Northing [m]
Seawater and Plankton *including eDNA	IONIAN SEA	Othonoi-Ref	922.42	31/03/2026	339643.00	4400634.00	339636.13	4400659.16
		Kerkyra-Ref	1095.36	31/03/2026	345736.00	4385893.00	345721.30	4385919.90
		Italy-Ref	145.00	27/04/2026	304317.00	4414647.00	304313.65	4414649.24
Othonoi-Ref		1065.04	31/03/2026	339643.00	4400634.00	339632.45	4400663.55	
Kerkyra-Ref		1134.16	31/03/2026	345736.00	4385893.00	345716.40	4385915.53	
Italy-Ref		145.00	27/04/2026	304317.00	4414647.00	304312.00	4414652.43	
Sediment and Macrozoobenthos								

4.2.0 Seawater and Plankton Sampling

4.2.1 Physic-chemical Characteristics of the Water Column (CTD Profiles)

At each water sampling station, a vertical *in situ* profile of seawater main physic-chemical characteristics was obtained using a SBE19*plus* multi probe (Sea-Bird Electronics, Inc.; Figure 5). The multi probe was equipped with the standard CTD sensors (i.e., conductivity, temperature and pressure) plus auxiliary pH, dissolved oxygen (DO), turbidity and fluorescence sensors (technical specifications shown in Table 14).

All the CTD sensors were calibrated before the sampling campaign, according to international standard procedures (UNESCO, 1988, 1993).

Water profiling was performed according to standard national and international methods (UNESCO, 1988).

Specifically, all measurements were carried out continuously, starting from just below the air-sea interface until the lowest possible distance from the bottom (keeping the instrument in safe conditions). In order to maximize data quality, the probe was held just below the sea surface for a sufficient period to allow sensor acclimatization prior to deployment. Appropriate descent rate was

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kept to ensure high-quality measurements (not exceeding 0.5 m s^{-1}). Contacts with the seabed was avoided in order to ensure reliability of results and integrity of the equipment.

Data were recorded and stored in the internal probe memory and later downloaded on PC for processing and elaboration (UNESCO, 1991). Water transparency was measured at each station with a Secchi disk according to Cicero & Di Girolamo (2001).

The data recorded in the internal memory of the CTD probe were downloaded and processed using the Seasoftware suite (Sea-Bird Electronics Inc.) following international standard procedures (Fofonoff & Millard, 1983; UNESCO, 1991). The Seasoftware package includes SeaTerm for data acquisition and PC communication, Seasave for real-time data acquisition and display, and SBE Data Processing for data processing. During processing, the data were filtered, averaged over depth intervals (generally every 1 m; every 0.5 m in the most coastal station), and derived variables (e.g., depth and salinity) were extracted, producing an output in ASCII format.

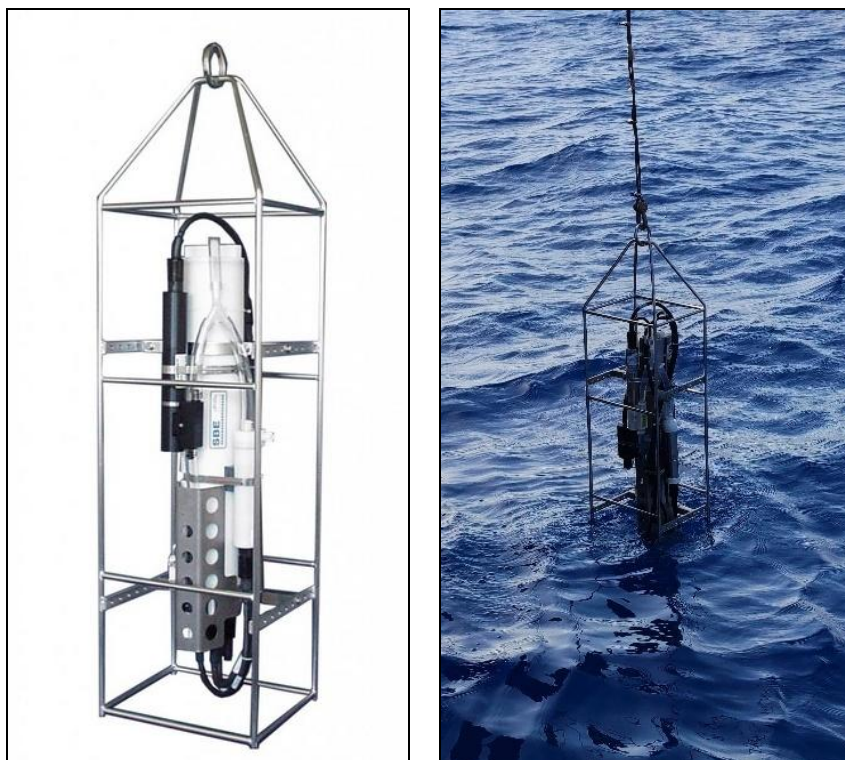


Figure 5 – CTD Probe, manufacturer's product image (left) and offshore deployment during field operations (right)

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Table 14 – CTD Multi-Probe Technical Specifications

Sensor	Brand	Model	Range	Resolution	Accuracy
Conductivity	SeaBird Electronics inc.	SBE 19 plus	C: 0 – 9 S/m	C: 0.00005 S/m	C: 0.0005 S/m
Temperature			T: -5 – +35 °C	T: 0.0001 °C	T: 0.005 °C
Pressure			P: 0 – 7000 m	P: 0.002% of full scale range	P: 0.1% of full scale range
pH	AMT Analysenmesstechnik GmbH	pH-combined sensor	2 – 11	0.01	0.05
Dissolved Oxygen	SeaBird Electronics inc.	SBE 43	120 % of surface saturation	0.01% of saturation	2% of saturation
Fluorescence	Seapoint	Chlorophyll Fluorometer	0 – 5; 0 – 15; 0 – 50; 0 – 150 µg/l Chl-a (selectable with “Jumper” cables)	0.0003	0.003 µg/l Chl-a
Turbidity	Seapoint	Turbidity Meter	0 – 25; 0 – 125; 0 – 500; < 750 FTU	0.03 FTU	0.05 FTU

4.2.2 Seawater Sampling for Chemical and Biochemical Characterization (and water eDNA)

At each seawater sampling station, seawater samples were collected using a Rosette multi-sampler, equipped with a battery of 12 Niskin type hydrological bottles of 5 litres capacity. The sampling device was lowered at selected depth, activated for sample collection and recovered onboard. Specifically, samples were collected at the following depths:

- 1 m below sea level (“Surface”);
- mid water depth (halfway between the seabed and sea level; indicated as: “Middle”);
- 1 m from sea bottom or at sufficient distance to avoid contact with the substrate and ensure data reliability and equipment integrity (indicated as: “Bottom”).

To prevent cross-contamination between different locations, the Niskin bottles and the Rosette multi-sampler were thoroughly rinsed with ambient seawater (at each location) by repeated immersion prior to sampling.

A Niskin bottle was deployed at the depth of maximum chlorophyll concentration (determined from CTD fluorescence) to better characterise the phytoplankton community.

Once onboard, water samples were immediately transferred into appropriate containers for subsequent analyses as detailed in next paragraphs. Subsamples were stored at temperatures indicated in reference international methods in order to avoid sample modification and ensure the reliability of results.

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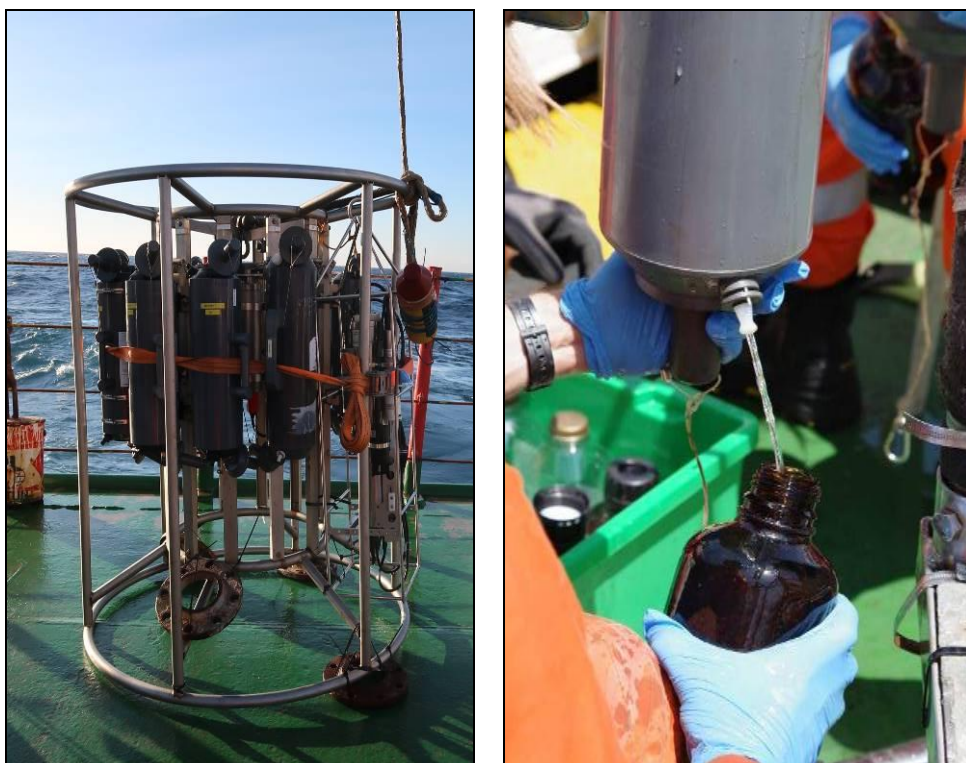


Figure 6 – Rosette multi-sampler (left) and water samples collection into appropriate containers (right)

The seawater collected at each sampling depth was transferred directly from the Niskin bottles to the sampling containers, accurately and preventing sample contamination. Water samples were then stored in different containers depending on the target analytes. Total organic carbon (TOC) and nutrients were collected in 500 mL plastic bottles, and kept frozen. Total Suspended Solids (TSS) were collected in 1000 mL plastic bottles, and stored at 4 °C. Polycyclic aromatic hydrocarbons (PAHs) and other hydrocarbons were preserved in 1 L amber glass bottles and stored at 4 °C, with acidification when required. Volatile hydrocarbons were sampled in 40 mL glass vials, acidified to pH < 2 with HCl, and kept refrigerated at 4 °C. Samples for Chlorophyll-a analysis were filtered on board and the filters were frozen, while metals were sampled in 100 mL plastic bottles, acidified to pH < 1 with HNO₃, and kept at 4 °C. All samples were transported to the laboratories at 4 – 6 °C. Table 15 provides a detailed overview of the used containers for each sub-sample, together with the associated transport and storage conditions, as well as the analytical methods and relevant Limits of Quantification (LoQs).

Following water collection, the water samples dedicated to water eDNA analysis were filtered on board according to the following procedure:

- a first filtration was performed through 180 µm nylon filters;
- a further filtration was performed through 0.45 µm PES filters;
- the obtained filters were folded and transferred it into 2 mL tubes, stored in a dark, refrigerated environment at -20 °C until lab eDNA analyses.

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Figure 7 –Pressure pump for water filtration

Each seawater sub-sample was labelled as in the example below:

AREA: Block 2 – Offshore Greece PROJECT: EER001 ESBS SAMPLE ID: D1a-Surface DATE: 30/03/2026 MATRIX: WATER ANALYSIS: TSS	AREA: Ionian Sea PROJECT: EER001 ESBS SAMPLE ID: Othonoi Ref-Bottom DATE: 31/03/2026 MATRIX: WATER ANALYSIS: Metals
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in which:

- AREA: Block 2 – Offshore Greece (Asopus-1A and Asopus-1B wells) / Ionian Sea (Reference stations: Othonoi Ref, Kerkyra Ref, Italy Ref);
- PROJECT: EER001 ESBS (Project Acronym - Environmental Social Baseline Survey);
- SAMPLE D1a, D3a, D5a, D6a, D1b, D3b, D5b, D6b, D7b; Othonoi Ref, Kekryra Ref, Italy Ref (name of the station); Surface / Middle / Bottom;

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- DATE: DATE: date of sampling;
- MATRIX: Water;
- ANALYSIS: TSS / TOC, Nutrients / Metals / Hydrocarbons C10-C40 / PAHs / Hydrocarbons C6-C10 / Chlorophyll a / eDNA (only at "Bottom" sampling depth).

4.2.3 Phytoplankton and Zooplankton Sampling

Phytoplankton samples were collected from water sampling Niskin bottles (according to ISPRA/SIBM, 2010) at the same three sampling depths: "Surface", "Middle" and "Bottom". One replicate of 500 mL was taken at each depth, transferred into dark glass bottles and immediately fixed with Lugol's iodine solution at a 2 % final concentration. Lugol's solution serves three main purposes: fixation and preservation of organisms, staining of chloroplasts, and increasing the specific gravity of cells to enhance sedimentation. Samples were stored at 4 °C until analysis.

Zooplankton samples were collected using a WP2 zooplankton net (mouth Ø 57 cm, 200 µm mesh). The net was deployed and maintained in a vertical position by a suitable ballast. Sampling was performed according to ISPRA/SIBM (2010) following the vertical tow technique. The net was deployed to the lowest possible distance from the seabed avoiding contact with sediments and then retrieved at a constant speed of approximately 0.1m s⁻¹. Once recovered, the net was be washed with seawater in order to collect organisms in the bottom container.

A single replicate was collected at each seawater sampling station. In waters deeper than 200 m, the net was deployed until 200 m depth. In shallower waters (< 200 m), a condition encountered only at the Italy Ref station, sampling encompassed the entire water column by lowering the equipment as close to the seabed as possible while maintaining a safe clearance to avoid substrate contact, thereby ensuring data reliability and preserving equipment integrity.

For ichthyoplankton, sampling was performed using a WP2 plankton net (mouth Ø 57 cm, 335 µm mesh) following UNESCO (1975) and Smith & Richardson (1977) protocols. Oblique tows at approximately 45° were conducted from about 100 m depth to the surface at low vessel speed (up to 2 knots), with a duration of about 7–10 minutes, corresponding to roughly 1 km.

The content of each jar was fixed with ethanol 70 % solution and stored at +4 °C.

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Figure 8 – Zooplankton (left) and Ichthyoplankton Sampling (right) Using WP2 net

After the plankton net recovery onboard, zooplankton and ichthyoplankton organisms collected in the bottom container were transferred into a PE container and fixed with appropriate fixative solution (ISPRA/SIBM, 2010). Plankton samples were labelled as in the example below:

AREA: Block 2 – Offshore Greece PROJECT: EER001 ESBS SAMPLE ID: D1a-Surface DATE: 30/03/2026 MATRIX: WATER ANALYSIS: Phytoplankton	AREA: Ionian Sea PROJECT: EER001 ESBS SAMPLE ID: Othonoi Ref DATE: 31/03/2026 MATRIX: WATER ANALYSIS: Zooplankton	AREA: Block 2 – Offshore Greece PROJECT: EER001 ESBS SAMPLE ID: TR6b DATE: 30/03/2026 MATRIX: WATER ANALYSIS: Ichthyoplankton
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- PROJECT: EER001 ESBS (Project Acronym - Environmental Social Baseline Survey);
- SAMPLE D1a, D3a, D5a, D6a, D1b, D3b, D5b, D6b, D7b; Othonoi Ref, Kekryra Ref, Italy Ref (name of the station); Surface / Middle / Bottom (sampling depth; only for phytoplankton); TR1a, TR1b and TR6b (name of transects for Ichthyoplankton sampling);

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- DATE: date of sampling;
- MATRIX: Water;
- ANALYSIS: Phytoplankton / Zooplankton / Ichthyoplankton.

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4.3.0 Sediment and Macrozoobenthos Sampling

4.3.1 Surface Sediment Sampling for Physical, Chemical Characterization (and Microplastics)

Grab samples were acquired as described in ISPRA guidelines as per Technical Specifications (Cicero & Di Girolamo, 2001; US-EPA, 2001).

Surface sediment sampling was carried out with a Van Veen grab of 0.1 m² grabbing area (Figure 9). The grab was lowered using a controlled-speed winch, equipped with transponder located at 3.5 m from the sampler (in order to be easily mounted on deck and recovered onboard together with the sampler) for regulating the length of the cable released according to the depth of the seabed.

Sub-sampling of surface sediments was carried out in accordance with US-EPA, 2001, Methods for Collection, Storage and Manipulation of Sediments for Physical and Chemical Analyses: Technical Manual, and with Cicero & Di Girolamo (ICRAM, 2001). The grab is equipped with special doors located on the upper part of the shells which allow sub-sampling operations avoiding the dispersion of surface sediments. The inside of the grab and all parts of the instrument potentially in contact with the sample were thoroughly rinsed before each use to avoid cross-contamination. Once the seabed was reached, it was gently retrieved to ensure proper sediment collection and to avoid any disturbance or resuspension.

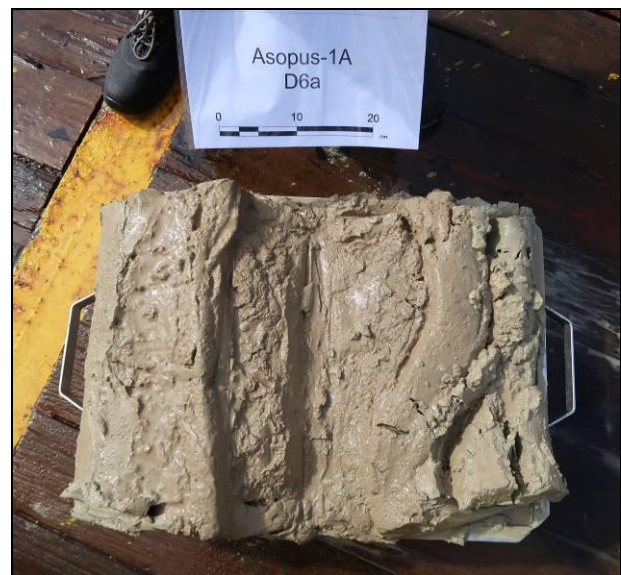


Figure 9 – Van Veen Grab Deployment (left) and Sample Description prior to Sub-Sampling (right)

Sediments from the first grab cast were divided into two equal portions: one half was allocated to physical and chemical analyses, while the other half was used for the first macrobenthic replicate (R1). Sediments from the second grab cast were used only partially, with one half allocated to the second macrobenthic replicate (R2).

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Once recovered, the first sediment sample was photographed and the main macroscopic characteristics were described (e.g., Schnurrenberger *et al.*, 2003): Stratigraphic Description and Physical Characteristics (i.e., muddy/sandy appearance, degree of hydration); presence of sedimentological structures; colour (by comparing the colour of sediment with a Munsell soil colour charts); odour; presence of vegetal debris / shell fragments; residues, concretions, or other coarse material (organic and inorganic); chromatic and/or textural variations.

In addition, measurements of the following physico-chemical variables of the sediment will be carried out using portable probes:

- pH and Temperature: measured using an XS Instruments pH 70 Vio probe, equipped with a Polymer Plast combined pH electrode (for pH measurement) and an NT55 electrode (for temperature measurement);
- Redox Potential (ORP): measured using an XS Instruments pH 70 Vio probe, equipped with a "Standard ORP" electrode.



Figure 10 – Measurement of physico-chemical properties of sediments and comparing the colour of sediment with a Munsell soil colour charts

For each sampling station, a descriptive sheet of the sediment's macroscopic appearance / field log was completed in accordance with the guidelines provided in Annex B2 of D.M. 24/01/1996. All the main relevant data including date, time, sample code, sediment macroscopic description and the specific photographic documentation, were used to produce a Sediment Data Summary (SDS), for each sediment sample (**APPENDIX G: SEDIMENT DATA SHEETS**).

Surface sediment aliquots were collected and homogenized using an inert spatula, following the procedures described in Cicero and Di Girolamo (2001). The homogenized material was then transferred into high-density polyethylene (HDPE) or glass containers and preserved according to the target analytes, in compliance with international reference standards and the Technical Specification, to ensure the integrity of the samples' physicochemical properties.

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Samples for granulometric, Total Organic Carbon (TOC), Metal, Nutrient, Polycyclic Aromatic Hydrocarbon (PAH), Organochlorine Pesticide, TPH Heavy Fraction (Hydrocarbons C > 12), Polycyclic Aromatic Hydrocarbons (PAHs) and Microplastics analyses were stored at -20 °C, while samples intended for light hydrocarbon (C ≤ 12) were preserved at 4–6 °C with MeOH. Macrozoobenthos samples were also refrigerated, after fixing with 70 % ethanol solution. All samples were transported to the laboratories at 4 – 6 °C. Table 16 provides a detailed overview of the used containers for each sub-sample, together with the associated transport and storage conditions, as well as the analytical methods and relevant Limits of Quantification (LoQs).

Each sediment sub-sample was labelled as in the example below:

AREA: Block 2 – Offshore Greece PROJECT: EER001 ESBS SAMPLE ID: D1a DATE: 26/03/2026 MATRIX: SEDIMENT ANALYSIS: Hydrocarbons C < 12	AREA: Ionian Sea PROJECT: EER001 ESBS SAMPLE ID: Othonoi Ref DATE: 31/03/2026 MATRIX: SEDIMENT ANALYSIS: Hydrocarbons C < 12
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- PROJECT: EER001 ESBS (Project Acronym - Environmental Social Baseline Survey);
- SAMPLE D1a, D2a, D3a, D4a, D5a, D6a, D1b, D2b, D3b, D4b, D5b, D6b, D7b; Othonoi Ref, Kekryra Ref, Italy Ref (name of the station); Surface / Middle / Bottom
- DATE: DATE: date of sampling;
- MATRIX: Sediment;
- ANALYSIS: Granulometry, TOC, Metals and Nutrients (TN and TP) / Hydrocarbons C < 12 / Hydrocarbons C > 12 and PAHs / Microplastics

4.4.0 Benthic macroinvertebrates

According to the reference methodology (UNI EN ISO 16665:2014 and Cicero & Di Girolamo, 2001), sampling of macrobenthic species was carried out by Van Veen grab (sampling surface 0.2 m²).

As previously stated in paragraph **Errore. L'origine riferimento non è stata trovata.** at each sampling station two independent grab casts, each with an equal surface area of 0.1 m², were performed to sub-sampling benthic macroinvertebrates, obtaining two distinct replicates; in full compliance with standard methodologies and guidelines.

The material from the first grab constituted the first replicate (R1) for benthic infauna, while the material from the second grab constituted the second replicate (R2).

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At each station, organisms belonging to the category of benthic macroinvertebrates were separated from the sediment contained in the grab by rinsing with running seawater over a 0.5 mm mesh sieve, according to the method described by Cicero and Di Girolamo (2001) and in compliance with the SOW, in order to preserve the integrity of the sample (Figure 11).

The macrobenthos samples obtained after sediment sieving were carefully transferred, using plastic spatulas and seawater wash bottles, into HDPE containers. Fragile specimens were transferred to the corresponding container using appropriate tweezers, minimizing potential structural damage and thus facilitating subsequent taxonomic identification. The content of each jar was fixed with ethanol 70 % solution and stored at +4 °C.



Figure 11 – Benthos Sieve set-up prior to operations (left) and during Sample Washing and Processing (right)

Each macrozoobenthos sub-sample was labelled as follows:

AREA: Block 2 – Offshore Greece PROJECT: EER001 ESBS SAMPLE ID: D1a R1 DATE: 26/03/2026 MATRIX: SEDIMENT ANALYSIS: Macrozoobenthos	AREA: Block 2 – Offshore Greece PROJECT: EER001 ESBS SAMPLE ID: D1a R2 DATE: 26/03/2026 MATRIX: SEDIMENT ANALYSIS: Macrozoobenthos
---	---

in which:

- AREA: Block 2 – Offshore Greece (Asopus-1A and Asopus-1B wells) / Ionian Sea (Reference stations: Othonoi Ref, Kerkyra Ref, Italy Ref);

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- PROJECT: EER001 ESBS (Project Acronym - Environmental Social Baseline Survey);
- SAMPLE D1a R1, D1a R2, D2a R1, D2a R2 etc. (name of station and number of replicate);
- DATE: DATE: date of sampling;
- MATRIX: Sediment;
- ANALYSIS: Macrozoobenthos.

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4.5.0 Laboratory and Analytical Methodology

4.5.1 Seawater and Plankton

The following table (Table 15) lists the methods for handling and storing water samples, both on board the vessel and in the laboratory (and during shipment), including the recommended holding times within which analyses should be conducted, depending on the type of analysis to be performed (including water eDNA and plankton). The analytical methods and relevant Limits of Quantification (LoQs) are also reported.

Total suspended solids (TSS) were determined according to APHA Standard Methods 2540 D (2020) by filtering a known volume of sample through a glass fibre filter, followed by drying at 103–105 °C and gravimetric determination of the retained residue. TOC was quantified by high-energy oxidation and infrared CO₂ detection (UNI EN 1484:1999).

Total organic carbon (TOC) was determined according to UNI EN 1484:1999 by catalytic oxidation of organic carbon to carbon dioxide, followed by instrumental quantification of the generated CO₂.

Total Nitrogen (N-Tot) was determined via high-temperature catalytic combustion and chemiluminescence (UNI EN ISO 20236:2022). Total Phosphorus (P-Tot) was analysed by ICP-MS after digestion (ISO 17294-2:2023). Orthophosphates were determined according to APHA Standard Methods 4500 P E using the ascorbic acid method, based on the formation of a phosphomolybdenum blue complex measured spectrophotometrically. Nitrite and nitrate were determined using colorimetric spectrophotometric methods (APHA Standard Methods 4500 E - B; 2021). NH₄⁺ was quantified using the spectrophotometric method (APHA Standard Methods 4500 F; 2021).

Trace metals (As, Ba, Cd, Co, Cr-Tot, Cr-VI, Cu, Fe, Pb, Hg, Ni, Sn, Zn) were quantified by ICP-MS after digestion (ISO 17294-2:2023).

Light hydrocarbons (C₆–C₁₀) were analysed by gas chromatography with flame ionization detection (GC-FID) in accordance with EPA 5021 A 2014 and EPA 8015 C 2007. Heavy hydrocarbons (C₁₀–C₄₀) by solvent extraction and GC-FID (UNI EN ISO 9377-2:2002). PAHs were determined by GC-MS after liquid-liquid extraction (EPA 8270E:2018, EPA 3510C:1996).

Chlorophyll-a and pheophytin were quantified spectrophotometrically after acetone extraction (APHA 10200H).

eDNA was extracted from filtered water using Qiagen PowerWater DNA Isolation Kit (or equivalent), multi-marker PCR amplification, Illumina MiSeq sequencing, and bioinformatic analysis.

Phytoplankton community composition was assessed through taxonomic identification and quantitative analysis using an inverted microscope (Zeiss Axiovert 40C), following the Utermöhl method (Zingone et al., 2010) as described in ISPRA/SIBM (2010). Cell counts obtained from the analysed settling chambers were subsequently expressed as cells per litre (cells L⁻¹) for each identified *taxon* and main investigated group.

Mesozooplankton and ichthyoplankton samples were subsampled, and organisms were counted and identified to the lowest possible taxonomic level under stereomicroscopy, with particular focus on copepod species and developmental stages, following the ICES (2000) Zooplankton Methodology Manual. Results were normalised to individuals per cubic metre (ind. m⁻³) based on the filtered

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water column (zooplankton) and on the linear distance travelled during each sampling transect (ichthyoplankton).

Table 15 – Summary of Seawater and Plankton sample handling and storage

Laboratory Parameters	Seawater Characterization (Chemical / Biochemical)	SEAWATER						
		Parameter	Container/Size	Handling/Storage/Preservation	Holding Times	Analytical Method	LoQ	Unit
		Total Suspended Solids (TSS)	1000 mL Plastic bottle	ship on ice and store at 4°C	7 days	APHA Standard Methods for the examination of Water and Wastewater, 2020, 2540 D, 24th ed.	5	mg/L
		Total organic carbon (TOC)	500-mL plastic bottle	Freeze immediately, ship on ice, and store at –20 °C until analysis	28 days	UNI EN 1484 1999	1	mg/L
		Total nitrogen (TN)				UNI EN ISO 20236 2022	1	mg/L
		Total phosphorus (TP)				ISO 17294-2:2023	10	µg/L
		Orthophosphate				APHA Standard Methods for the examination of Water and Wastewater, 2021 4500 P E, 24th ed.	0.001	mg/L
		Ammoniacal nitrogen (Ammonium)				APHA Standard Methods for the examination of Water and Wastewater, 2021, 4500 F, 24th ed.	0.002	mg/L
		Nitrous nitrogen (Nitrite)				APHA Standard Methods for the examination of Water and Wastewater, 2021, 4500 NO2 B, 24th ed.	0.002	mg/L
		Nitric nitrogen (Nitrate)				APHA Standard Methods for the examination of Water and Wastewater, 2021, 4500 NO3, 24th ed.	0.005	mg/L
		Heavy and Trace Metals (Ba, As, Cd, Cr tot, Cu, Co, Fe, Pb, Hg, Ni, Sn, Zn)	100-mL plastic bottle	Preserve with HNO ₃ (to pH <1); ship on ice and store at 4°C	1 month	ISO 17294-2:2023	0.5-5	µg/L
		TPH Light Fraction (Hydrocarbons C6-C10)	1 x 40-mL glass vial	HCl (to pH <2); ship on ice and store at 4°C	28 days	EPA 5021 A 2014+ EPA 8015 C 2007	20	µg/L
		TPH Heavy Fraction (Hydrocarbons C10-C40)	1-L amber glass bottle	HCl (to pH <2); ship on ice and store at 4°C	7 days	UNI EN ISO 9377-2:2002	25	µg/L
		Polycyclic Aromatic Hydrocarbons (16 Priority PAHs)	1-L amber glass bottle	ship on ice and store at 4°C	7 days	EPA 3510 C 1996 + EPA 8270 E 2018	0.003-0.04	µg/L
	Water eDNA	eDNA (seawater) - only at Bottom	6-L seawater	Filtered on board and Frozen	90 Days	DNA extraction using Qiagen PowerWater® DNA Isolation Kit (or equivalent), multi-marker PCR amplification, Illumina MiSeq sequencing, and bioinformatic analysis	-	-
	Plankton	Phytoplankton	500-mL amber glass bottle	Fix with Lugol’s iodine solution to a final concentration of 2%; ship and store at room temperature	Stored at room temperature or refrigerated at 4 °C, in dark containers or protected from light	HASLE, G.R. 1978 Phytoplankton Manual	-	cell/L
		Zooplankton	1-L plastic bottle	fixed with ethanol 70 % solution; stored at +4 °C	60 Days	ICES (2000) Zooplankton Methodology Manual	-	ind/m³
		Ichthyoplankton	1-L plastic bottle	fixed with ethanol 70 % solution; stored at +4 °C	60 Days	ICES (2000) Zooplankton Methodology Manual	-	ind/m³

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4.5.2 Sediment and Infauna

The following section summarizes the methodologies applied for laboratory analyses of collected marine sediments and benthic macroinvertebrates (infauna). Table 16 lists all analysed variables along with their respective methods and LoQ.

Grain size analysis was performed in accordance with UNI EN 933-1:2012 and ISO 13320:2009, using sieve analysis for the coarse fractions and sedimentation for the fine fractions, with determination of the percentage weight distribution of the granulometric classes.

Carbonates in marine sediments were determined according to DM 13/09/1999 Official Methods for Soil Analysis – Method V.2, based on the reaction of the sample with an excess of acid followed by quantification via back-titration of the residual acid or measurement of the evolved CO₂.

Total Organic Carbon (TOC) was determined after acid pretreatment and combustion at 900 °C with NDIR detection (UNI EN 15936:2022).

Total Nitrogen (N-Tot) was analysed by catalytic combustion and chemiluminescence (UNI EN ISO 21663:2021). Total Phosphorus (P-Tot) was measured via microwave acid digestion (EPA 3051A:2007) and ICP-OES quantification (EPA 6010D:2018).

Metals (Al, As, Ba, Cd, Cr-Tot, Cr-VI, Cu, Fe, Pb, Hg, Ni, Sn, V, Zn) were analysed by ICP-OES after digestion (EPA 3051A/6010D). Hg and Cd by ICP-MS following UNI EN 16171:2016/16173:2012.

Light hydrocarbons (C ≤ 12) were analysed by headspace GC-FID (EPA 5021A:2014 / 8015C:2007); heavy hydrocarbons (C > 12) by florisil cleanup and GC-FID (EPA 3550C:2007 / 8015C:2007). PAHs were extracted by accelerated solvent extraction (EPA 3545A:2007) and analysed by GC-MS (EPA 8270E:2018).

Microplastics in marine sediments were determined according to UNI EN ISO 24187:2023 through density separation and/or sieving of the sediment matrix, followed by filtration, identification, and quantification of microplastic particles under stereomicroscopy and/or spectroscopic analysis.

The abundance and diversity (community structure) of macrozoobenthic organisms were assessed using optical microscopy (5–100×), in accordance with UNI EN ISO 16665:2014. Quantitative results were subsequently normalised to the sampled seabed area and expressed as individuals per square metre (ind. m⁻²).

Table 16 – Summary of sediment sample handling and storage; analytical methods and LoQs

Laboratory Parameters	Sediment Characterization (Physical / Chemical)	SEDIMENT						
		Parameter	Container/Size	Handling/Storage/Preservation	Holding Times	Analytical Method	LoQ	Unit
		Particle size	500-ml plastic jar	Freeze immediately, ship on ice, and store at –20 °C until analysis	Indefinite	UNI EN 933-1:2012 + ISO 13320:2009	0.1	%
		Specific weight				ASTM D5057-17	0.1	kg dm ⁻³
		Humidity				UNI EN 14346 A 2007	0.1	%
		Carbonates			1 month	DM 13/9/99 SO 185 GU 248 del 21/10/99 met V.2	0.1	%
		Total organic carbon (TOC)			1 month	UNI EN 15936:2022	0.1	% d.w.
		Heavy and Trace Metals (Al, As, Ba, Cd, Cr tot, Cr VI, Cu, Fe, Pb, Hg, Ni, Sn, V, Zn)				EPA 3051 A 2007 + EPA 6010 D 2018 + UNI EN 16173-2012 + UNI EN 16171:2016	0.03-1	mg/kg d.w.
		Total Nitrogen (TN)				UNI EN 21663:2021	0.1	% d.w.
		Total Phosphorus (TP)				EPA 3051 A 2007 + EPA 6010 D 2018	2.5	mg/kg d.w.
		TPH Light Fraction (Hydrocarbons C≤12)	40 ml glass vials	Preserve MeOH; ship on ice and store at 4°C	14 days	EPA 5021 A 2014 + EPA 8015 C 2007	1	mg/kg d.w.
		TPH Heavy Fraction (Hydrocarbons C>12)	500-ml glass bottle	Freeze immediately, ship on ice, and store at –20 °C until analysis	30 days	EPA 3550 C 2007 + EPA 8015 C 2007	5	mg/kg d.w.
		Polycyclic Aromatic Hydrocarbons (16 Priority PAHs and ΣPAHs)				EPA 3545 A 2007 + EPA 8270 E 2018	1	µg/kg d.w.
	Microplastics (5mm - 1µm)	500 ml glass bottle	Freeze immediately, ship on ice, and store at –20 °C until analysis	3 month	UNI EN ISO 24187: 2023	-	Presence/Absence	
	Benthic Fauna	Macrozoobenthos	1000-ml platic jar	Sieved onboard and fixed with ethanol 70 % solution; stored at +4 °C	60 Days	UNI EN ISO 16665:2014	1	ind./m²

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4.6.0 Data Processing Procedures for Analytical Results

4.6.1 Comparison of Analytical Results with the Applicable Environmental Regulations

4.6.1.1 Seawater

For the preliminary assessment of marine water quality, average concentrations derived from duplicate water samples collected at each station and depth were compared with the applicable environmental quality standards:

- the Environmental Quality Standards (AA-EQS) for Other Surface Waters established by Directive 2013/39/EU (as applied in Greece), as reported in the Technical Report "*Marine Strategy Framework Directive (2008/56/EC) – First Six-Year Cycle of Implementation (2012–2018) and Adaptation to the Requirements of Directive (EU) 2017/845/EC*" issued by the Ministry of Environment and Energy, Special Secretariat for Water (2018);
- the Environmental Quality Standards (SQA-MA) reported in Tables 1/A and 1/B of the Italian D.Lgs 172/2015, "*Implementation of Directive 2013/39/EU amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy*".

For the water-column dataset, compliance with the applicable Environmental Quality Standards (SQA-MA and AA-EQS) is assessed directly within the results tables presented in the following sections, where measured concentrations are reported and visually highlighted whenever the corresponding regulatory thresholds are exceeded.

4.6.1.2 Sediments

For the preliminary assessment of sediment quality, average concentrations calculated from the analytical results of the two independent surface sediment replicates collected at each sampling station, were compared with:

- the Sediment Quality Guidelines (SQGs) adopted in Greece by the Hellenic Centre for Marine Research (HCMR), based on the Effects Range-Low (ERL) values proposed by Long *et al.* (1995), as referenced in the Technical Report "*Marine Strategy Framework Directive (2008/56/EC) – First Six-Year Cycle of Implementation (2012–2018) and Adaptation to the Requirements of Directive (EU) 2017/845/EC*" issued by the Ministry of Environment and Energy, Special Secretariat for Water (2018);
- the Environmental Quality Standards (SQA-MA) reported in Tables 2/A, 3/A and 3/B of the Italian D.Lgs 172/2015, "*Implementation of Directive 2013/39/EU amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy*".

For the sediment dataset, compliance with the applicable Environmental Quality Standards (SQA-MA) and/or threshold values (ERL) is assessed directly within the summary tables presented in the following sections, where measured concentrations are reported and visually highlighted whenever the corresponding reference criteria are exceeded.

4.6.2 Calculation of Biotic Indices and Assessment of Ecological Quality (zooplankton and macrozoobenthos)

For all mesozooplankton and macrozoobenthic samples, the following community metrics were determined:

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- a) total and per-species number of individuals;
- b) number of species;
- c) specific diversity index (Shannon-Wiener, 1949);
- d) dominance index (Simpson, 1949);
- e) species richness index (Margalef, 1958);
- f) evenness index (Pielou, 1966).

In addition, for macrozoobenthic communities only, the AZTI Marine Biotic Index (AMBI) and the Multivariate-AMBI (M-AMBI) were calculated for each station in accordance with the provisions of Ministerial Decree (D.M.) No. 260/2010 (Technical criteria for the classification of the ecological status of surface water bodies, amending the technical standards of Legislative Decree No. 152/2006).

These methodologies are described in detail in APPENDIX A: ANALYTICAL METHODOLOGIES (A.3 Zooplankton Community and A.5 Macrozoobenthos Community).

4.6.3 Statistical Analysis Methodologies

The following statistical analyses were carried out with reference to the different variables investigated within the collected samples:

- Primary Variables and Diversity Indices: number of individuals and species, Shannon-Wiener diversity, Simpson's diversity and Pielou's evenness (using the PRIMER6 & PERMANOVA+ software);
- *n*MDS – Non-metric Multidimensional Scaling (based on the macrozoobenthos and phytoplankton species / abundance matrix);
- Cluster Analysis - based on the zooplankton species / abundance matrix;
- SIMPER – Similarity Percentages (Macrozoobenthos);
- BEST and distLM (relationship between environmental variables and biotic data);
- Draftsman plot / Spearman correlation (sediment and water environmental variables);
- PERMANOVA (Permutational Multivariate Analysis of Variance), performed on species / abundance matrices of the planktonic and macrobenthic communities;
- Canonical Analysis of Principal Coordinates (CAP), executed on chemical variables measured in the water column.

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5.0.0 RESULTS

This chapter presents a comprehensive account of the results obtained during the present EBS, including physic-chemical, chemical and biological (phyto- / zoo- and Ichthyo-plankton) characterisation of seawater, as well as the physical, chemical and benthic biocenosis (macrozoobenthos) characterisation of sediments, including microplastics.

5.1.0 Seawater and Plankton Results

5.1.1 Summary of Results

The investigated water column showed a well-developed thermo-haline stratification throughout the study area, with highly comparable conditions among the Asopus-1A and Asopus-1B well-site areas, Blank stations and Reference Stations, the latter showing only local differences related to bathymetry, location and sampling period. Surface waters were characterized by temperatures of approximately 16 °C, decreasing to ~14 °C in deeper layers, while salinity increased from < 38.8 PSU in the upper water column to subsurface maxima exceeding 39.1 PSU. This vertical structure was consistent with the presence of Modified Atlantic Water (MAW) in the upper layer, underlain by Levantine Intermediate Water (LIW), while deeper waters likely reflected transitional conditions resulting from mixing between LIW and Eastern Mediterranean Deep Water (EMDW). Conductivity closely mirrored the thermo-haline structure, pH remained weakly variable (generally 8.17 – 8.29), whereas Dissolved Oxygen (DO) exhibited a marked oxycline associated with the thermo-halocline, with concentrations ranging between 3.77 and 4.87 mL L⁻¹ and saturation values consistently below 100 %, indicating slight to moderate undersaturation throughout the investigated water column. Chlorophyll fluorescence was generally low, with a Deep Chlorophyll Maximum (DCM) typically occurring between ~70 and 100 m depth and peak concentrations around 0.3 µg L⁻¹ Chl-a. Turbidity remained low across all stations, generally below 0.5 FTU, with only near-surface values occasionally exceeding 1 FTU.

Total Suspended Solids (TSS) showed limited spatial variability across all station groups, with average concentrations between 10.19 ± 1.76 mg L⁻¹ around Asopus-1B and 11.01 ± 2.46 mg L⁻¹ around Asopus-1A (and intermediate average values at the Blank and Reference Stations). Total Organic Carbon (TOC) was below the analytical LoQ in all samples except Surface and Middle sampling depths at Italy Ref.

Nutrient concentrations were generally low. Ammonium (NH₄⁺) reached a maximum of 0.065 mg L⁻¹ N at Italy Ref Surface, while Nitrite (NO₂⁻) remained below the LoQ in almost all samples and never exceeded 0.003 mg L⁻¹ N. Nitrate (NO₃⁻) was detected only sporadically, with a maximum concentration of 0.510 mg L⁻¹ N at Italy Ref Surface. Orthophosphate (PO₄³⁻) reached a maximum of 0.0167 mg L⁻¹ P at D1b Surface, whereas Total Phosphorus (P-Tot) attained 90 µg L⁻¹ at D5b Surface. Comparison with the reference values adopted within the Greek MSFD implementation framework showed only limited exceedances for NO₃⁻ and PO₄³⁻; the former exceeded the reference value only at D5b Middle and Italy Ref Surface, while the latter exceeded its reference value at D1b Surface, D7b Middle and Bottom, Kerkyra Ref Surface and Middle, and at all Sampling Depths of Italy Ref.

Among metals and metalloids, Cd, Cr VI, Co, Hg and Sn were consistently below the analytical LoQ, while Cr-Tot and Pb were only sporadically detected. Cu and Ni were generally low and detected in a limited number of samples, except at Italy Ref, where maxima of 30.0 and 10.0 µg L⁻¹ were recorded. As, Ba, Fe and Zn were quantifiable in all samples. As and Ba showed limited variability, ranging from 1.0 to 5.5 µg L⁻¹ and between 7.0 and 12.0 µg L⁻¹. Greater variability characterized Fe

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(33 – 290 $\mu\text{g L}^{-1}$) and Zn (24 – 160 $\mu\text{g L}^{-1}$). Comparison with the AA-EQS of Directive 2013/39/EU (as applied in Greece) and the Italian SQA-MA values (D.Lgs. 172/2015) identified only limited exceedances for As, Pb and Ni. As exceeded the Italian SQA-MA of 5 $\mu\text{g L}^{-1}$ in two samples around Asopus-1A and five around Asopus-1B. Pb exceeded the applicable threshold of 1.3 $\mu\text{g L}^{-1}$ (reported for both Greek and Italian regulations) only at Italy Ref Middle and Bottom, while Ni exceeded the corresponding reference value of 8.6 $\mu\text{g L}^{-1}$ (both considered regulations) only at Italy Ref Bottom. All remaining metals complied with the applicable regulatory standards.

Total Petroleum Hydrocarbons (TPH), including both light-chain ($\text{C} \leq 10$) and heavy-chain ($\text{C}_{10} - \text{C}_{40}$) fractions, and all investigated Polycyclic Aromatic Hydrocarbons (PAHs), including their sum, were below the analytical LoQs at all Sampling Depths and Stations. Consequently, all hydrocarbon compounds were also below the applicable regulatory reference values where available.

The phytoplankton community exhibited significant differences among the three investigated sampling depths (Surface, Middle and Bottom), suggesting that light availability may contribute to shaping its vertical distribution. Significant spatial variability was also observed among the Asopus-1A area, the Asopus-1B area and the Reference Stations, likely reflecting local environmental and hydrographic conditions. Overall, the phytoplankton assemblage was dominated by the “Other taxa” category, which accounted on average for 1.71×10^5 cells L^{-1} (72.01 %) and was mainly represented by Cryptophyceae and undetermined microflagellates ($< 10 \mu\text{m}$). Bacillariophyceae constituted the second most abundant group, with a mean abundance of 3.50×10^4 cells L^{-1} (14.75 %), largely represented by *Pseudo-nitzschia delicatissima*. Numerous dead cells of this species were observed throughout the study area (and were excluded from abundance estimates), suggesting the decline of a recent bloom event. Dinophyceae and Coccolithophyceae were comparatively less abundant, with mean densities of 9.52×10^3 cells L^{-1} (4.01 %) and 2.19×10^4 cells L^{-1} (9.23 %), respectively. This community structure is consistent with that typically observed in offshore marine environments, where small flagellates and diatoms generally represent the dominant components of the phytoplankton assemblage.

The identified mesozooplankton communities exhibited high taxonomic diversity and a homogeneous spatial distribution across the investigated stations, with no evidence of significant differences among the Asopus-1A and Asopus-1B well areas and the Reference stations. Community structure was consistent with the oligotrophic conditions typical of the offshore eastern Mediterranean and appeared to be primarily driven by large-scale hydrological and bathymetric factors. Zooplankton assemblages were largely dominated by holoplankton, accounting on average for 98.18 % of total abundance. Copepods represented the main component (93.49 %), while the remaining holoplanktonic taxa contributed 4.69 %. Meroplankton was scarce, accounting for only 1.82 % of total abundance. Qualitative analyses identified 127 copepod taxa, including nauplii, copepodites and adults, together with 53 taxa belonging to the non-copepod holoplanktonic component. In contrast, the meroplanktonic fraction showed markedly lower diversity, with only 14 identified taxa. The predominance of copepods and other holoplanktonic organisms confirmed the open-sea character of the ecosystem, while the limited contribution of meroplankton indicated a weak coastal influence, overall depicting a well-structured offshore pelagic community representative of the natural conditions of the study area.

The results concerning the ichthyoplankton component revealed a community structure consistent with the deep pelagic environments of the investigated sector. The taxonomic composition was dominated by mesopelagic and bathypelagic species, typical of oligotrophic oceanic ecosystems characterized by great water depths, whereas the occurrence of coastal taxa was limited.

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5.1.2 Detailed description of results – Seawater

The following sections describe the results obtained from the analyses carried out on seawater samples collected for the physical, chemical and biological characterization of the investigated area, for each sampling station and investigated depth (Surface, Middle and Bottom). The full analytical datasets for each replicate are provided in APPENDIX I: DATASETS.

Whenever applicable, the results of chemical analyses were assessed against the Annual Average Environmental Quality Standards (AA-EQS) established for Greek marine waters under Directive 2013/39/EU, as applied in Greece and reported within the MSFD implementation framework (Ministry of Environment and Energy, 2018). For completeness and supporting evaluation purposes, results were also compared with the Environmental Quality Standards for marine-coastal waters (SQA-MA) laid down in Italian Legislative Decree (D.Lgs) 172/2015, considering the location of one reference sampling station toward the Italian coast.

The results are organized according to thematic groups of parameters and presented in dedicated summary tables, accompanied by graphical outputs in the form of bar charts. Where available, the relevant regulatory threshold values are reported below each summary table; when no reference standard exists, this condition is indicated as “n.d.” (not defined).

For clarity and consistency, any exceedance of regulatory thresholds is highlighted using the adopted colour-coding scheme. Where multiple standards apply, the most conservative limit is prioritised; where limits are equivalent, priority is given to the Greek regulatory framework. In the graphical representations, horizontal reference lines corresponding to the applicable regulatory limits are included when relevant, allowing immediate visual comparison between measured concentrations and the corresponding environmental quality standards.

5.1.2.1 *Physic-chemical characteristics of the water Column*

In the following paragraphs, the vertical profiles of the main physic-chemical variables of the water column are described. These variables are presented in two ways: as vertical sections (transects) that cross the stations in the coast-offshore direction, as illustrated in Figure 12, and as individual vertical profiles for each variable, organized by station (from Figure 13 to Figure 24). The complete dataset is provided in APPENDIX I: DATASETS.

5.1.2.1.1 TEMPERATURE

Within the area surrounding the Asopus-1A well site (stations D1a, D3a and D5a), the water column showed a warm, vertically homogeneous surface mixed layer down to ~40 m, with temperatures around 16 °C (max 16.06 °C at D3a). Below, a short thermocline separated this layer from a nearly homogeneous interval extending to ~95 m, with slightly lower temperature. Between ~95 and 140 m, a sharp thermal gradient and an underlying subsurface thermal inversion were observed, followed by an almost constant decrease toward the seabed, reaching minimum values of 14.09 °C at D1a and D5a, with a weak deep inversion below ~700 m. The average temperature was 14.97 ± 0.62 °C.

Within the area surrounding the Asopus-1B well site (stations D1b, D3b and D5b), the upper thermocline observed at Asopus-1A was not clearly developed. Instead, a single homogeneous upper layer extended to ~80 m. The deeper structure was comparable to that observed around Asopus-1A, although the deep inversion was less pronounced. The maximum temperature was

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16.21 °C at D1b and D5b within the subsurface inversion layer, while the minimum value was 14.09 °C at D1b. The average temperature was 15.03 ± 0.67 °C.

The blank stations (D6a, D6b and D7b) showed broadly comparable thermal structures, with a weaker subsurface inversion at D6a and a less evident deep inversion at D6b and D7b. Temperatures ranged from 13.99 °C at D6a to 16.22 °C at D7b, with an average value of 15.02 ± 0.67 °C, indicating only minor differences with respect to the well-site areas (and higher similarity with Asopus-1B area).

The Reference Stations showed similar vertical thermal patterns, with differences mainly related to bathymetry and sampling period. Kerkyra Ref, the deepest station, recorded the lowest bottom temperature (13.82 °C, at ~1100 m), whereas Italy Ref, the shallowest station and surveyed approximately one month later, recorded the highest surface temperature in the study area (17.36 °C), likely reflecting seasonal atmospheric warming. Average temperatures were 14.93 ± 0.73 °C at Othonoi Ref, 14.79 ± 0.76 °C, at Kerkyra Ref, and 15.88 ± 0.95 °C, at Italy Ref.

5.1.2.1.2 SALINITY

Across the Asopus-1A stations the water column showed a vertically homogeneous upper layer extending to ~95 m depth (< 38.8 PSU), with minima of 38.78 PSU at D1a and D3a. Below this layer, a well-defined halocline was observed, locally affected by small-scale instabilities within the depth interval corresponding to the subsurface thermocline and thermal inversion, suggesting mixing between distinct water masses. Salinity increased to maxima centred at ~200 m depth (39.10 PSU at all stations), then gradually decreased below ~250 m toward the lower water column, with a slight near-bottom increase associated with the deep thermal inversion (suggesting the presence of a distinct deeper dewater mass). The average was 38.95 ± 0.09 PSU.

In the waters surrounding Asopus-1B the vertical salinity structure was broadly comparable to that observed at Asopus-1A, although the homogeneous upper layer (with minima of 38.78 PSU at all three stations) extended to ~70 – 80 m depth (since the halocline occurred at slightly shallower depths). The salinity maximum was more pronounced and shallower than at Asopus-1A, with values exceeding 39.1 PSU (max 39.17 PSU at all stations), centred at ~160 m. As observed for temperature, the deep salinity inversion was less marked. The average was 38.99 ± 0.11 PSU.

Among the blank stations, salinity patterns reflected their position relative to the well-site areas: D6b and D7b were closer to the Asopus-1B structure, whereas D6a was more consistent with Asopus-1A, although with slightly higher surface minima (38.81 PSU). Overall, salinity ranged from 38.78 PSU in the surface layer at D6b and D7b to 39.16 PSU at the subsurface maximum (~150 – 180 m). The average was intermediate between that of the two well areas: 38.97 ± 0.10 PSU.

At the Reference Stations, Othonoi Ref and Kerkyra Ref showed vertical salinity distributions broadly consistent with the well-site and blank stations, with the maximum shallower at the former and below 200 m at the latter. Kerkyra Ref recorded the lowest bottom salinity, whereas Italy Ref showed the absolute minimum across all stations below 100 m depth (38.63 PSU), together with a slightly more saline surface layer, likely reflecting its shallower water column and different location. Average values were 38.95 ± 0.11 PSU, 38.92 ± 0.11 PSU and 38.82 ± 0.09 PSU, respectively.

5.1.2.1.3 CONDUCTIVITY

Seawater conductivity, directly linked to salinity through the concentration of dissociated ions, is also influenced by pressure and temperature, as these factors affect ionic mobility. The

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interrelationship among salinity, temperature, conductivity, and pressure is mathematically defined according to the standard formulation adopted in 1978 (Lewis, 1980; UNESCO, 1988).

Consistently with this dependency, in proximity of the Asopus-1A well site, as across all sampling stations, the vertical conductivity profile closely followed the temperature structure, with only minor departures related to salinity increases. In this area, conductivity ranged from 4.65 to 4.83 S m⁻¹ (average: 4.74 ± 0.06 S m⁻¹) with a minimum recorded at D1a in correspondence with the thermal minimum, and a maximum at the salinity peak at D3a.

Within the Asopus-1B area, conductivity showed a comparable vertical pattern, ranging from 4.65 to 4.87 S m⁻¹ and averaging 4.75 ± 0.07 S m⁻¹, with the minimum at D1b at the thermal minimum and the maximum at D3b within the subsurface thermal inversion (located along the halocline).

The blank stations displayed values consistent with both well-site areas, with only minor differences reflecting local thermo-haline variability, ranging from 4.64 S m⁻¹ at the bottom of D6a (coinciding with the thermal minimum) to 4.88 S m⁻¹ at the thermo-haline peak in D7b. The average value was 4.75 ± 0.07 S m⁻¹.

At the Reference Stations, conductivity reflected their different thermos-haline conditions, ranging from a minimum of 4.63 S m⁻¹ at Kerkyra Ref, associated with lower bottom temperatures, to a maximum of 4.95 S m⁻¹ at Italy Ref, corresponding to the surface thermal maximum. Average values were 4.74 ± 0.07, 4.72 ± 0.07 and 4.81 ± 0.11 S m⁻¹, respectively.

5.1.2.1.4 pH

Around the Asopus-1A well site, pH values were nearly uniform within the upper homogeneous layer, with a surface maximum of 8.28 at D3a. Values decreased markedly across the halocline and then more gradually below it, becoming nearly stable below ~400 m. A further slight drop occurred at the deep thermo-haline inversion, with minimum values of 8.17 at the bottom of D1a and D5a. The average pH was 8.21 ± 0.02.

In the Asopus-1B well site area, the vertical pattern was broadly comparable, although a weak downward decrease persisted through most of the water column. At the deep thermo-haline inversion, pH showed a small abrupt increase followed by a similarly limited decrease. The maximum value was recorded at the surface of D3b (8.28), while the minimum occurred at the bottom of D1b and D5b (8.17). The average pH was 8.20 ± 0.02.

The blank stations showed the same main vertical structure, with only minor local deviations. The highest value was recorded at the surface of D6b (8.29), whereas minimum values occurred at the bottom of all three stations (8.18). The average pH was 8.21 ± 0.02, confirming very limited differences with respect to the well-site areas.

At the Reference Stations, pH remained weakly variable, with minor differences related to local conditions, with surface maxima and near-bottom minima: 8.22 – 8.29 at Othonoi Ref, 8.19 – 8.26 at Kerkyra Ref, and 8.23 – 8.27 at Italy Ref. The latter showed the highest average pH despite the narrow overall range, while Kerkyra Ref displayed a deeper anomaly marked by a more pronounced inversion below ~800 m. Average values were 8.23 ± 0.02, 8.21 ± 0.02 and 8.25 ± 0.02, respectively.

5.1.2.1.5 DISSOLVED OXYGEN (DO)

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Prepared by	Checked by	Approved by	Date	IDP	File:	Rev. B1
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In the waters surrounding the Asopus-1A well site, Dissolved Oxygen (DO) was nearly uniform within the upper homogeneous layer, where the highest concentrations were recorded, reaching 4.87 mL L⁻¹ at D3a. A well-defined oxycline occurred below this layer, broadly overlapping the halocline. Below it, DO remained relatively stable, with a slight decrease below ~400 m and a local increase at the deep thermo-haline inversion. The minimum value was 3.86 mL L⁻¹ at D5a, immediately above the deep inversion. The average concentration was 4.19 ± 0.27 mL L⁻¹.

Across the Asopus-1B sampling stations, the vertical DO distribution was broadly comparable, although the decrease below the oxycline was more gradual and a double inversion occurred between ~600 m and the bottom. A maximum of 4.87 mL L⁻¹ was recorded at the surface of D5b, while the minimum occurred at D3b above the deepest inversion (3.92 mL L⁻¹). The average was 4.17 ± 0.22 mL L⁻¹.

The blank stations showed comparable vertical DO profiles, with D6a more closely matching the Asopus-1A pattern and D6b the Asopus-1B pattern. At D7b, DO was slightly lower in the upper half of the water column and moderately more variable in the lower half. Values ranged from a surface maximum of 4.84 mL L⁻¹ at D6b to a deep minimum of 3.85 mL L⁻¹ at D6a, immediately above the deep inversion. The average concentration was 4.14 ± 0.22 mL L⁻¹, indicating only minor differences from the well-site areas.

At the Reference Stations, the main DO pattern was preserved, although the deep inversion observed around the well sites and blank stations was not detected. Italy Ref essentially reproduced the upper-water-column structure of the other stations. Minimum and maximum values occurred at the bottom and surface, respectively, of both Greek-side Reference Stations, with identical ranges at Othonoi Ref and Kerkyra Ref (3.77–4.80 mL L⁻¹). Average DO values were 4.10 ± 0.27 mL L⁻¹ at Othonoi Ref, 4.08 ± 0.29 mL L⁻¹ at Kerkyra Ref, and 4.53 ± 0.25 mL L⁻¹ at Italy Ref.

If considered in terms of saturation percentage, the distribution closely resembled that of DO concentrations. At all stations, saturation remained below 100%, indicating slight to moderate undersaturation throughout the investigated water column. Values ranged from 68.28 to 89.16 % around Asopus-1A, from 69.31 to 88.78 % around Asopus-1B, and from 67.83 to 88.63 % at the blank stations, with comparable averages of 75.41 ± 5.53 %, 75.21 ± 4.53 % and 74.62 ± 4.67 %, respectively. The Reference Stations showed the same general condition, with lower averages at Othonoi Ref and Kerkyra Ref (73.69 ± 5.86 % and 73.17 ± 6.20 %) and a higher average at Italy Ref (82.90 ± 5.95 %), consistent with its shallower water column.

5.1.2.1.6 FLUORESCENCE

Around the Asopus-1A well site, chlorophyll fluorescence profiles (expressed as Chl-a equivalent concentrations) were characterized by a well-defined Deep Chlorophyll Maximum (DCM) between ~70 and 100 m depth, within the lower portion of the surface mixed layer and above the halocline. Peak concentrations were around 0.3 µg L⁻¹ Chl-a, reaching a maximum of 0.33 µg L⁻¹ Chl-a at D3a. Surface values were lower, while concentrations below the DCM rapidly declined toward the sensor background level (minimum: 0.03 µg L⁻¹ Chl-a). The average concentration was 0.07 ± 0.07 µg L⁻¹ Chl-a.

Around the Asopus-1B well site, a comparable pattern was observed only at D5b. At D1b and D3b, fluorescence remained more uniformly distributed throughout the upper mixed layer rather than forming a distinct DCM. Nevertheless, maximum concentrations were similar among the three stations (up to 0.25 µg L⁻¹ Chl-a) and occurred at shallower depths (generally above ~75 m), consistent with the reduced thickness of the upper homogeneous layer. The average concentration was 0.05 ± 0.06 µg L⁻¹ Chl-a.

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The blank stations displayed intermediate characteristics. D6b exhibited the most pronounced DCM, with concentrations reaching $0.30 \mu\text{g L}^{-1}$ Chl-a, whereas D6a and D7b showed a more uniform distribution throughout the upper water column. Despite these local differences, concentrations below the productive layer decreased to background values, and the average concentration ($0.06 \pm 0.06 \mu\text{g L}^{-1}$ Chl-a) remained comparable to those observed at the well-site areas.

The Reference Stations showed patterns consistent with those observed elsewhere in the study area. Othonoi Ref recorded the highest fluorescence peak among the Reference Stations ($0.27 \mu\text{g L}^{-1}$ Chl-a), whereas Kerkyra Ref exhibited the deepest development of the productive layer, extending to ~95 – 100 m depth. Italy Ref showed a higher mean fluorescence mainly because its shallower profile was limited to the upper, more productive portion of the water column, yielding an average of $0.16 \pm 0.09 \mu\text{g L}^{-1}$ Chl-a versus $0.06 \pm 0.06 \mu\text{g L}^{-1}$ Chl-a at both Othonoi Ref and Kerkyra Ref.

5.1.2.1.7 TURBIDITY

Turbidity was generally low throughout the study area and showed a highly consistent vertical pattern across all station groups. Values exceeded 1 FTU only within the upper few metres of the water column and rapidly decreased below ~8 – 10 m depth, remaining consistently below 0.5 FTU down to the seabed.

Around the Asopus-1A well site, turbidity ranged from 0.32 to 1.19 FTU, with the maximum recorded at the surface of D1a and an average value of 0.36 ± 0.05 FTU. Around the Asopus-1B well site, values ranged from 0.32 to 1.89 FTU, peaking at the surface of D5b, with an average of 0.35 ± 0.07 FTU. The blank stations showed a comparable distribution, ranging from 0.32 to 1.58 FTU, with the maximum recorded at the surface of D7b and an average of 0.36 ± 0.05 FTU.

At the Reference Stations, turbidity ranged from 0.31 to 2.16 FTU, with the highest value recorded at Othonoi Ref. Average values remained consistent with those observed elsewhere in the study area. The widespread occurrence of values closes to 0.3 FTU throughout the deeper portions of the profiles, including the absolute minimum of 0.31 FTU at Kerkyra Ref, likely reflects the sensor background signal under the optical conditions characterising the investigated waters.

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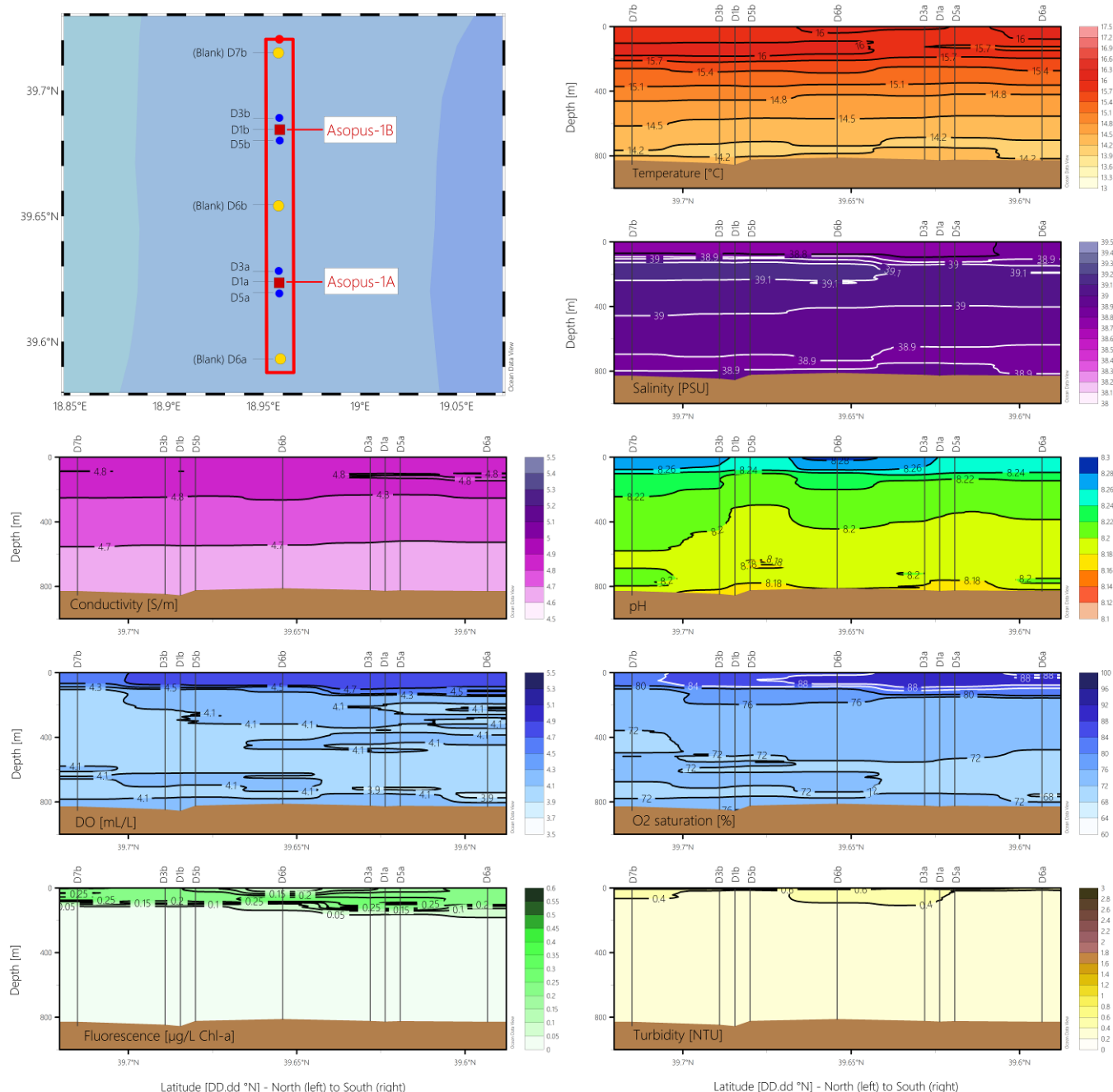


Figure 12 – Physic-chemical variables of the water column in vertical section. Asopus-1A, Asopus-1B and Blank stations are represented, as they are aligned along the transect; Reference Stations are excluded. Station names are shown on the map and above each variable panel

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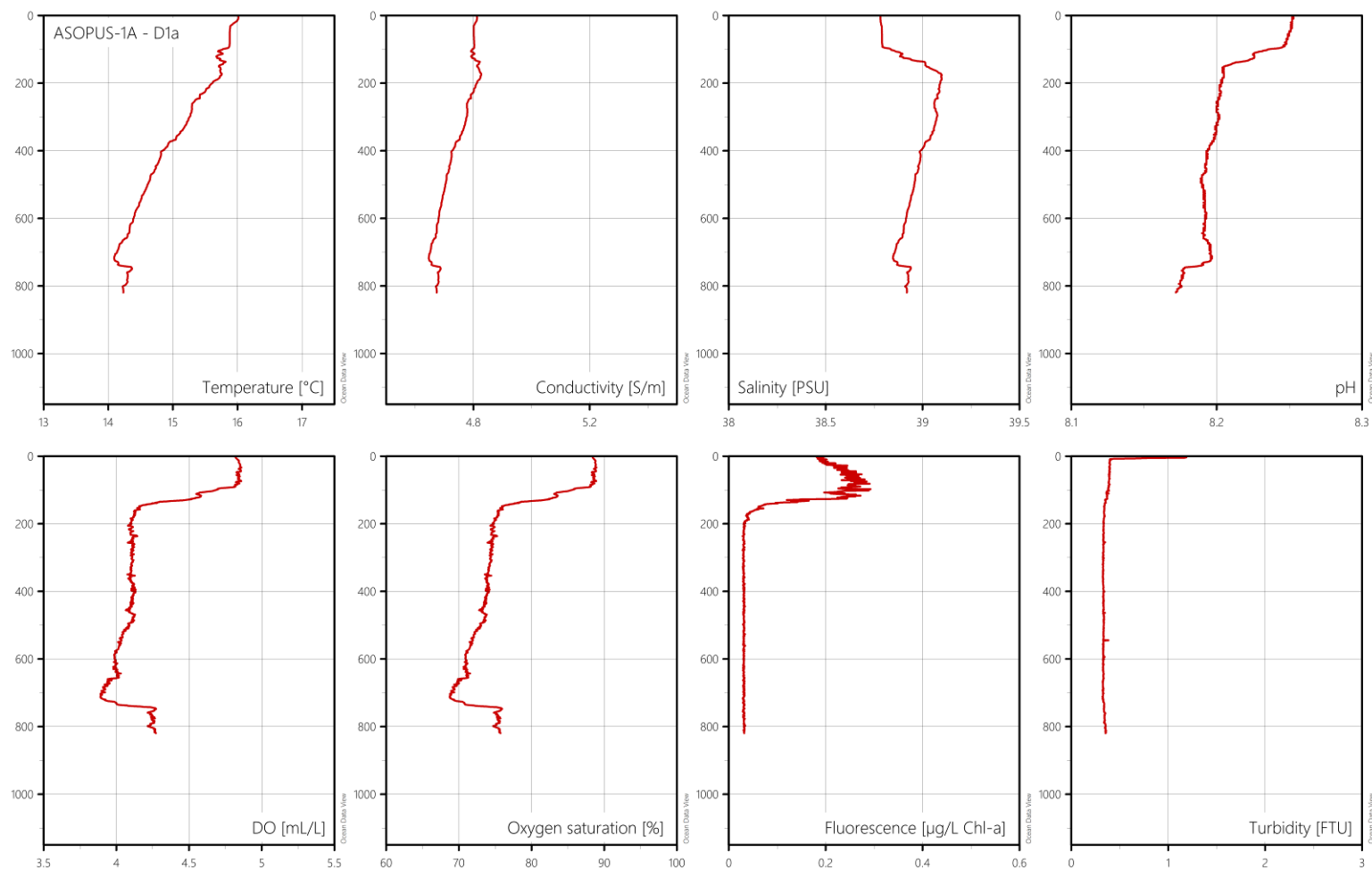


Figure 13 – Vertical profiles of the main physico-chemical variables of the water column, well Asopus-1A – station D1a

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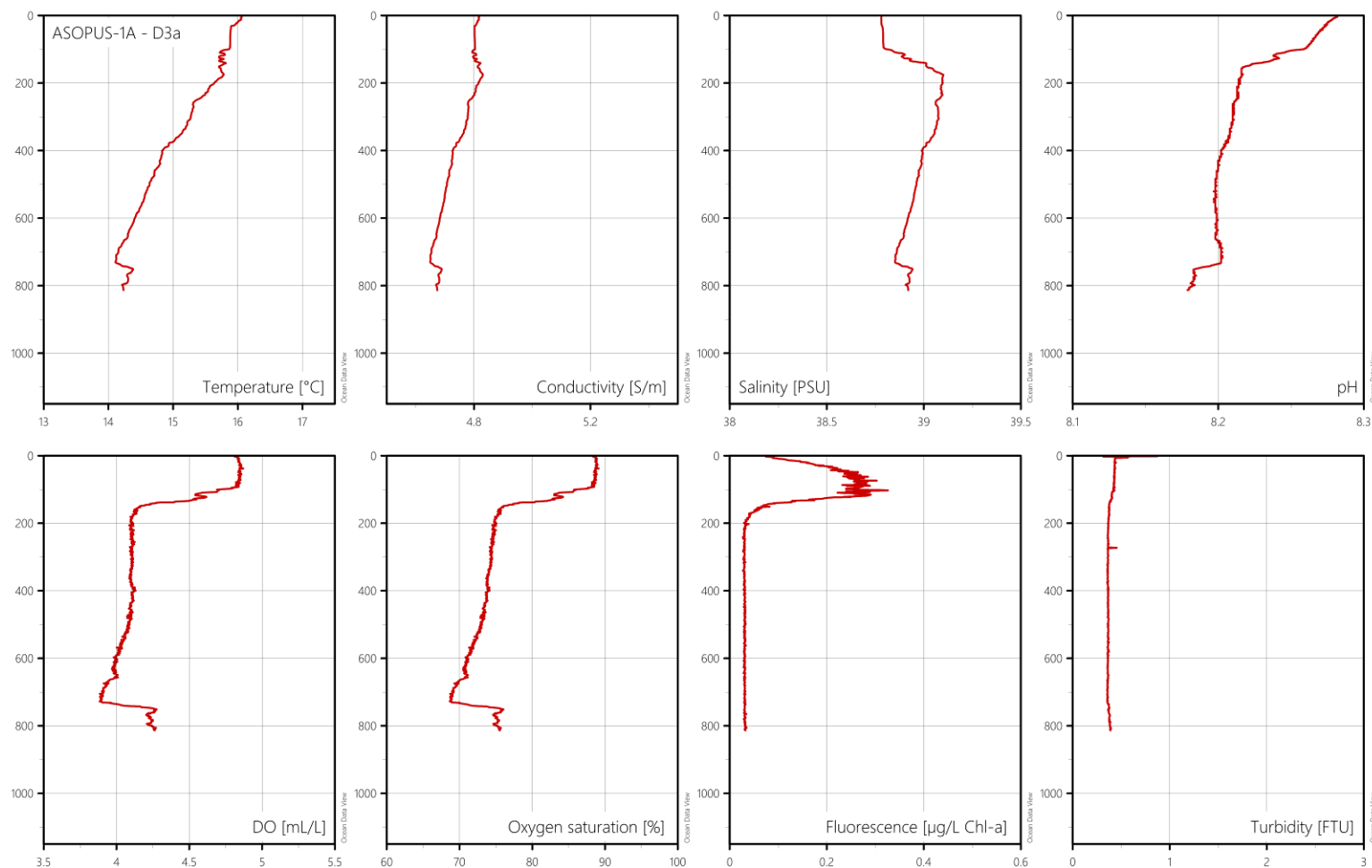


Figure 14 – Vertical profiles of the main physico-chemical variables of the water column, well Asopus-1A – station D3a

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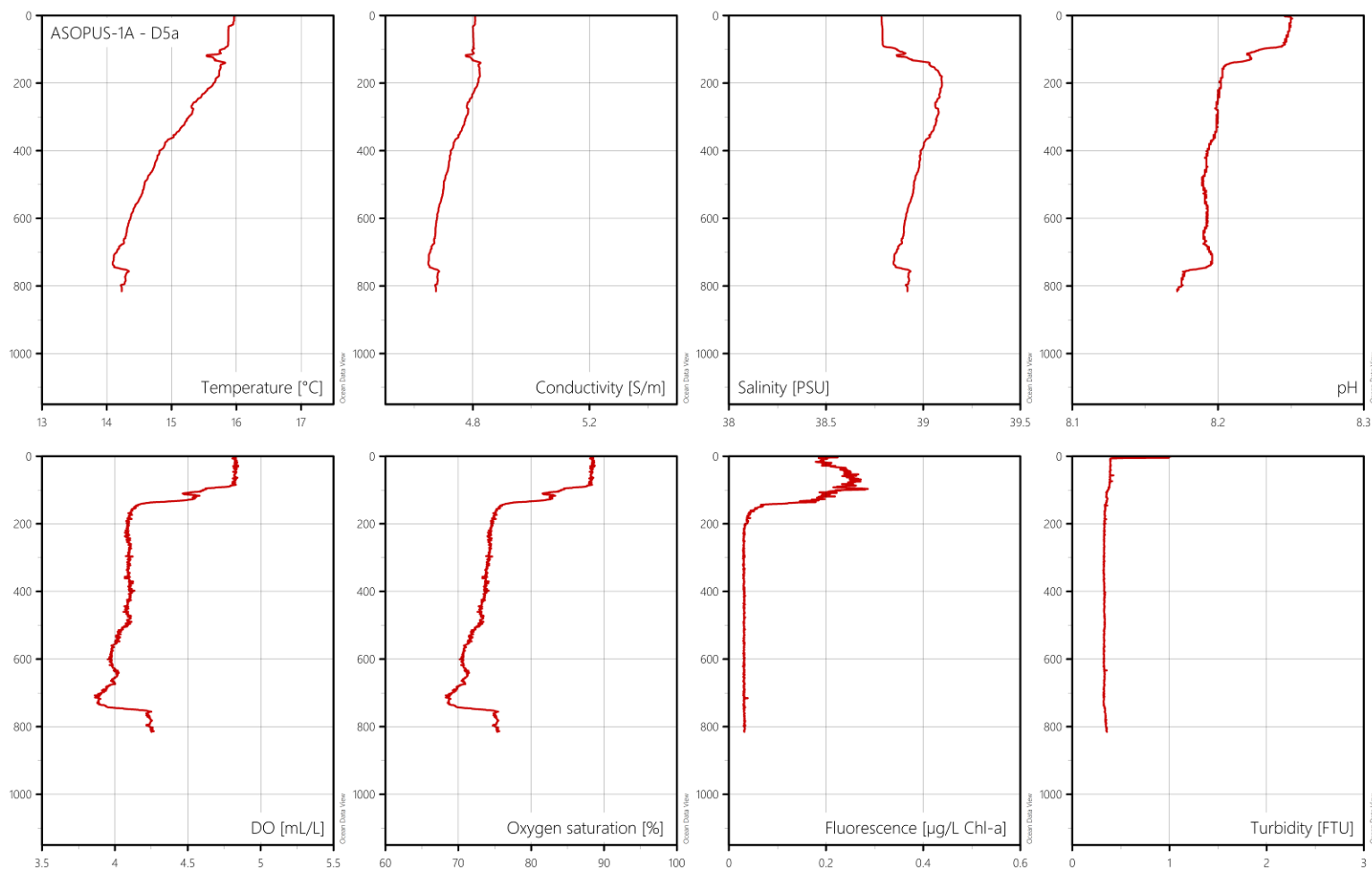


Figure 15 – Vertical profiles of the main physico-chemical variables of the water column, well Asopus-1A – station D5a

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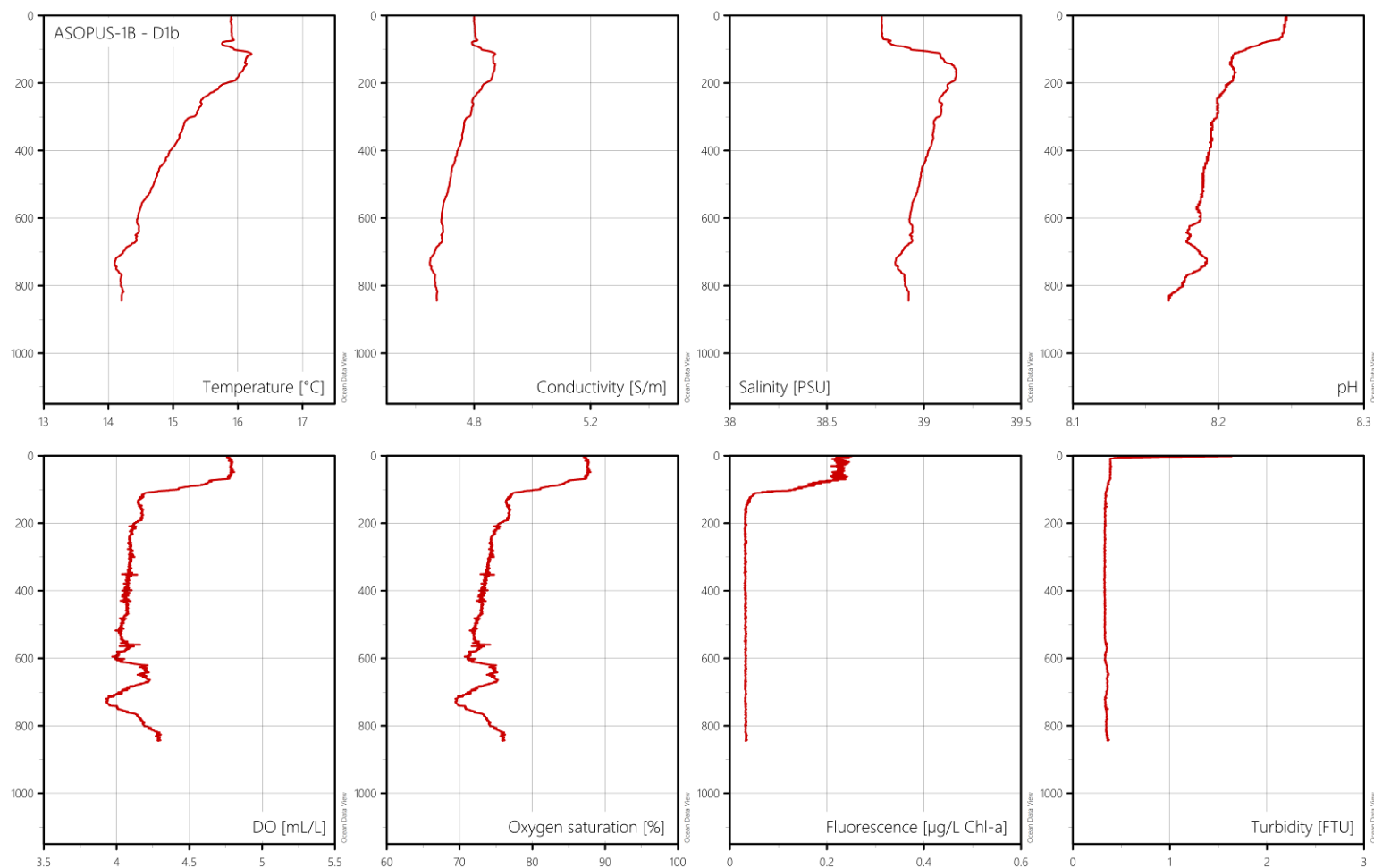


Figure 16 – Vertical profiles of the main physico-chemical variables of the water column, well Asopus-1B – station D1b

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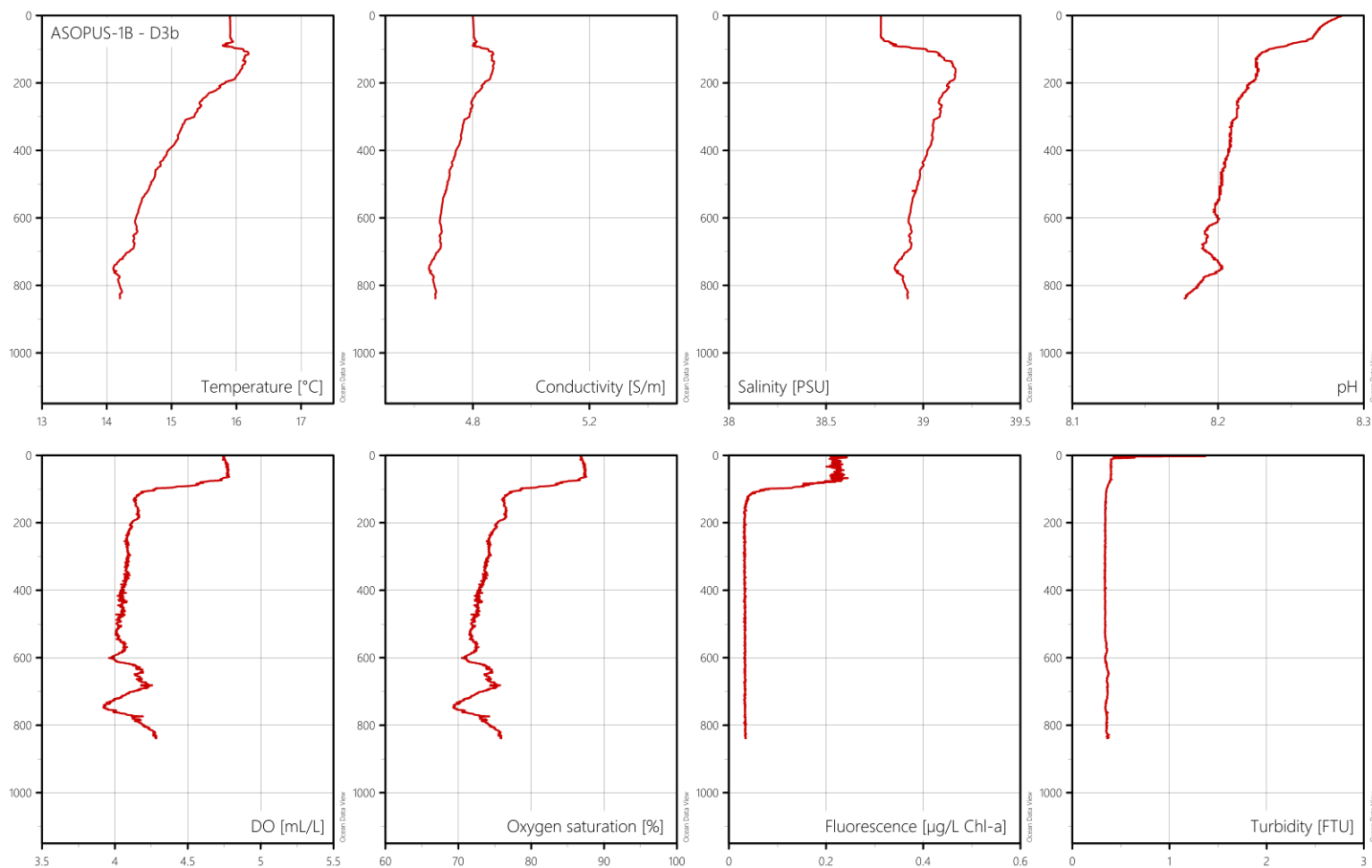


Figure 17 – Vertical profiles of the main physico-chemical variables of the water column, well Asopus-1B – station D3b

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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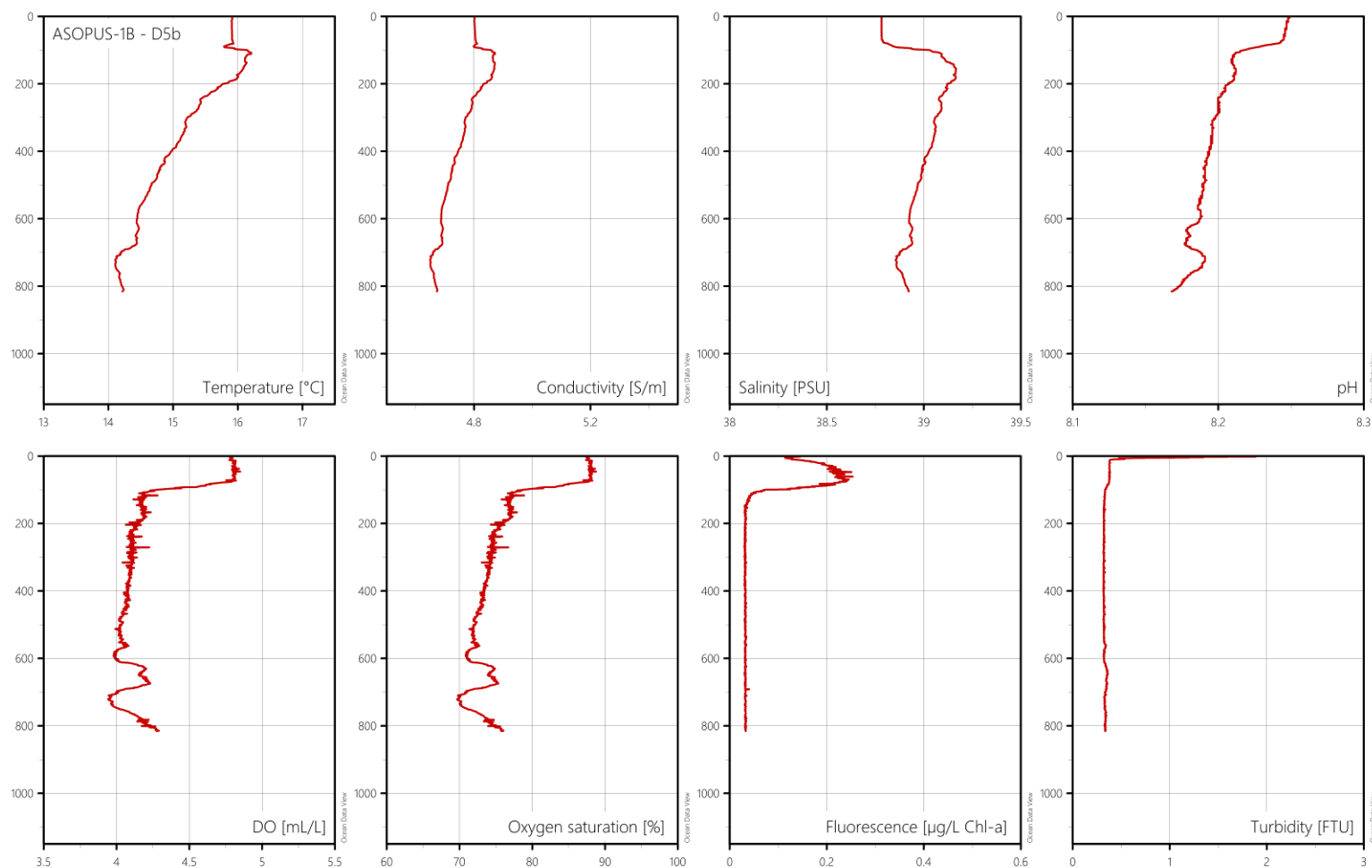


Figure 18 – Vertical profiles of the main physico-chemical variables of the water column, well Asopus-1B – station D5b

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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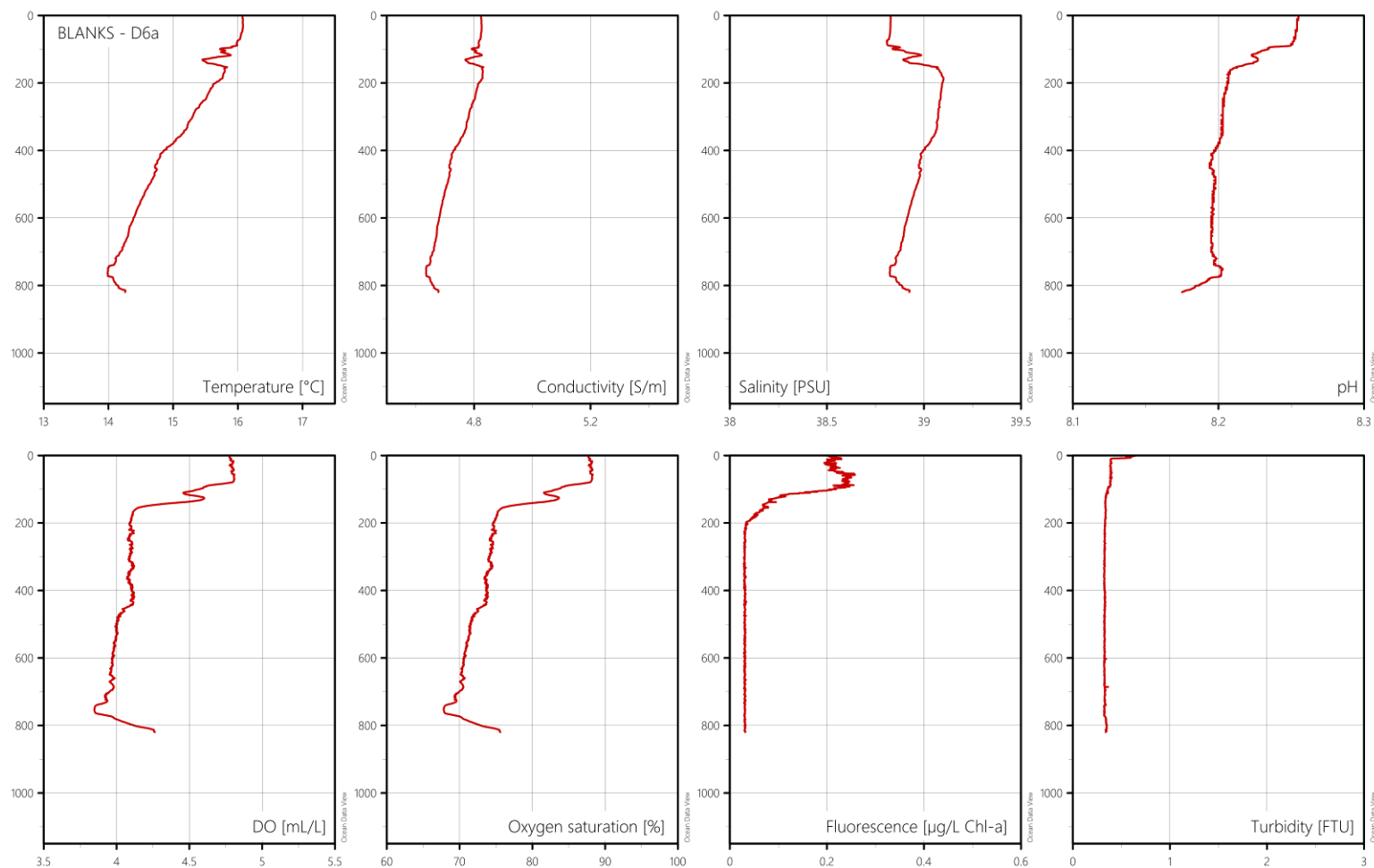


Figure 19 – Vertical profiles of the main physic-chemical variables of the water column, Blank stations – station D6a

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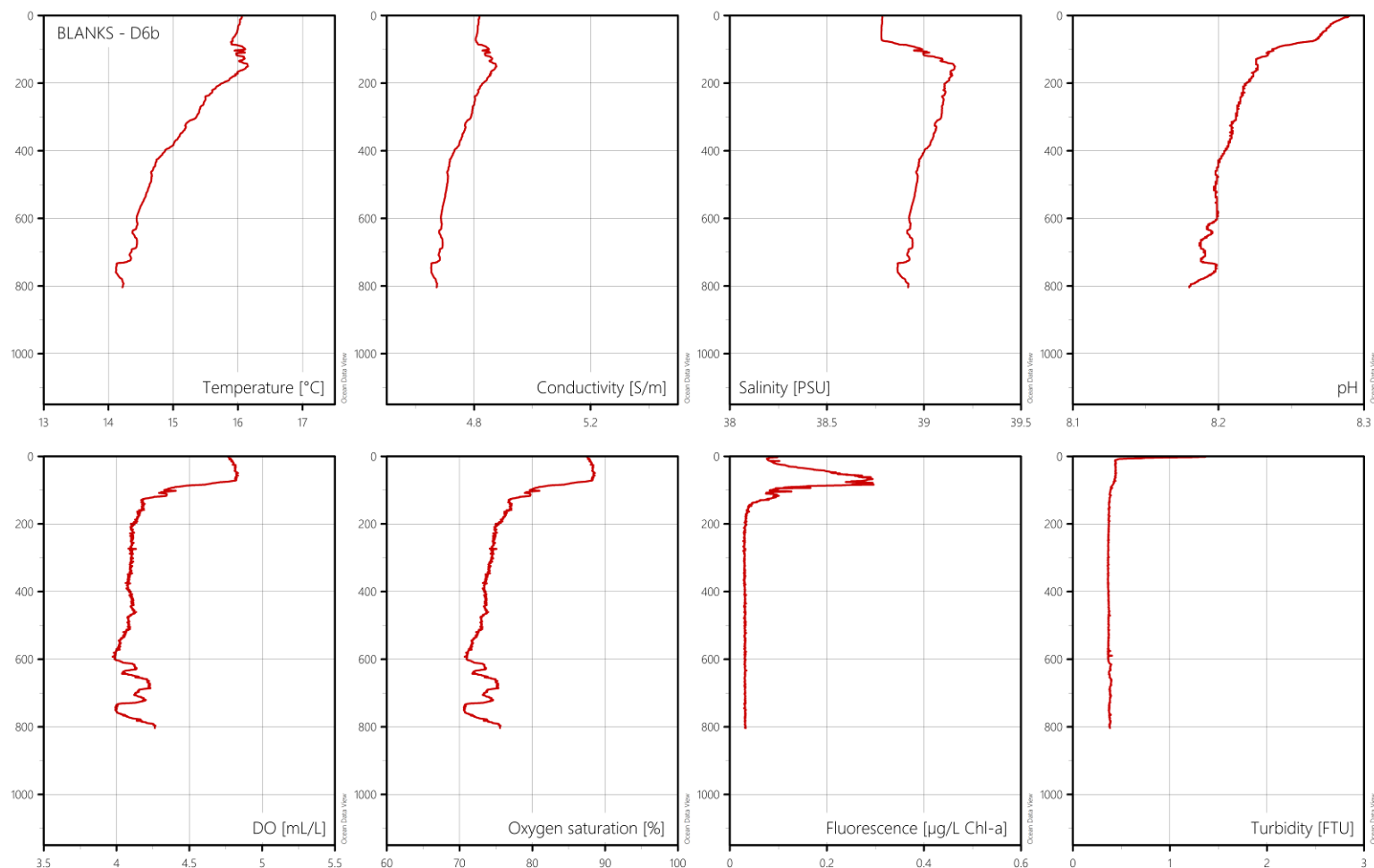


Figure 20 – Vertical profiles of the main physico-chemical variables of the water column, Blank stations – station D6b

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
Prepared by	Checked by	Approved by	Date	IDP	File:	Rev. B1
S.D.G./D.B./M.A.	D.B./M.A.	S. Sandroni	24/06/2026	EER001	EER001-EBS_Final_Report_REV_B1	P. 64/ 223

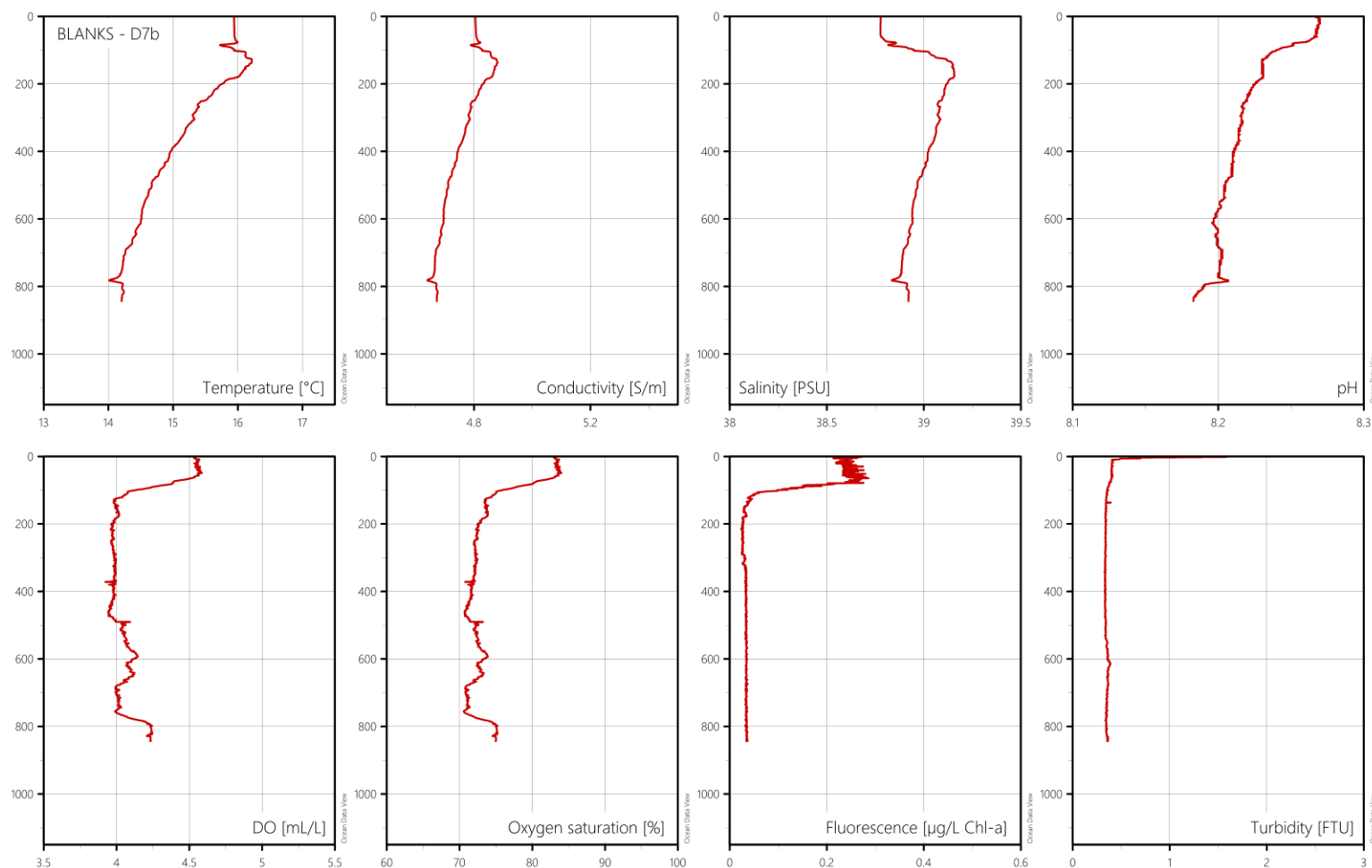


Figure 21 – Vertical profiles of the main physic-chemical variables of the water column, Blank stations – station D7b

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
Prepared by	Checked by	Approved by	Date	IDP	File:	Rev. B1
S.D.G./D.B./M.A.	D.B./M.A.	S. Sandroni	24/06/2026	EER001	EER001-EBS_Final_Report_REV_B1	P. 65/ 223

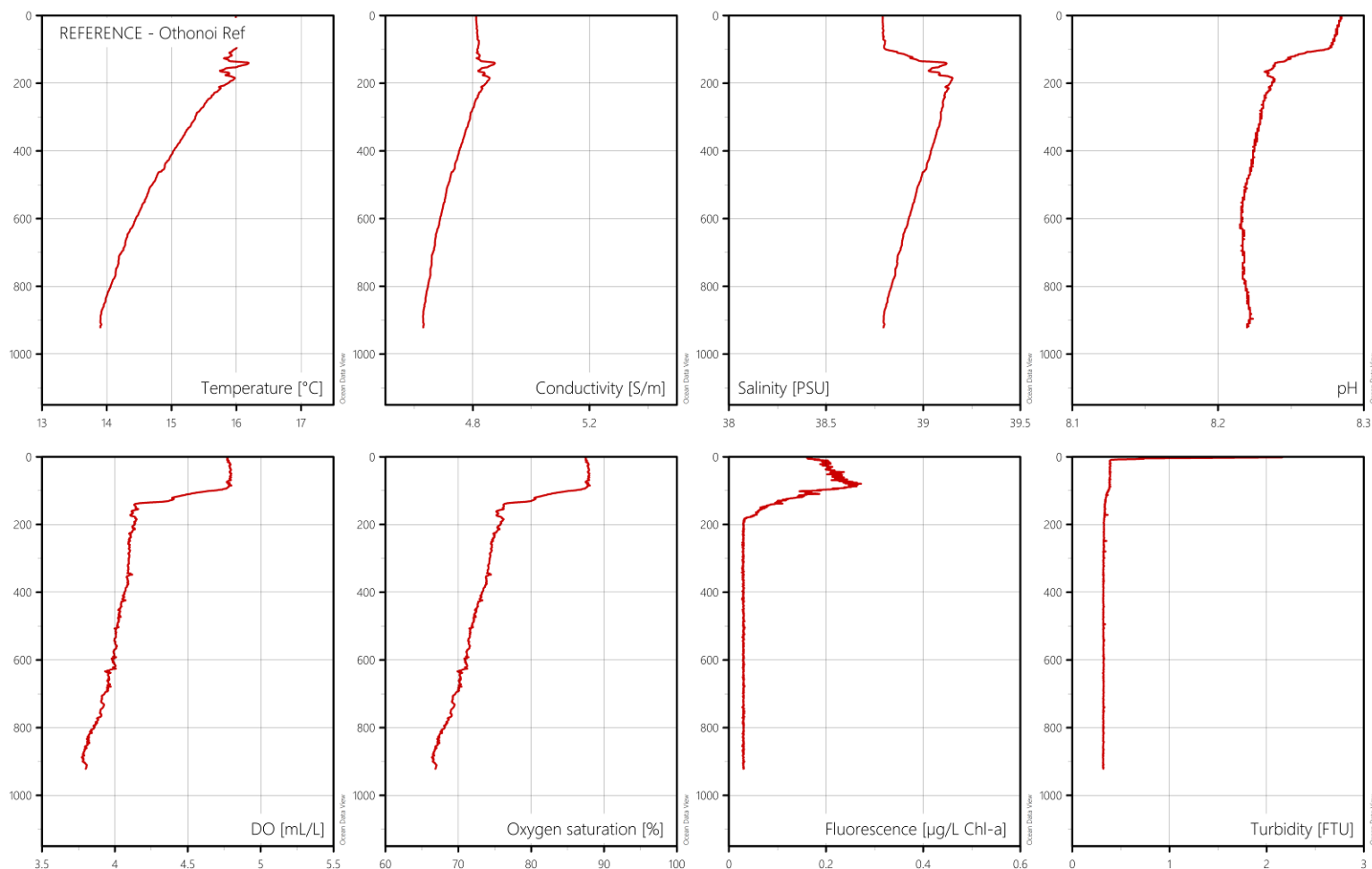


Figure 22 – Vertical profiles of the main physico-chemical variables of the water column, Reference stations – Othonoi Ref

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Prepared by	Checked by	Approved by	Date	IDP	File:	Rev. B1
S.D.G./D.B./M.A.	D.B./M.A.	S. Sandroni	24/06/2026	EER001	EER001-EBS_Final_Report_REV_B1	P. 66/ 223

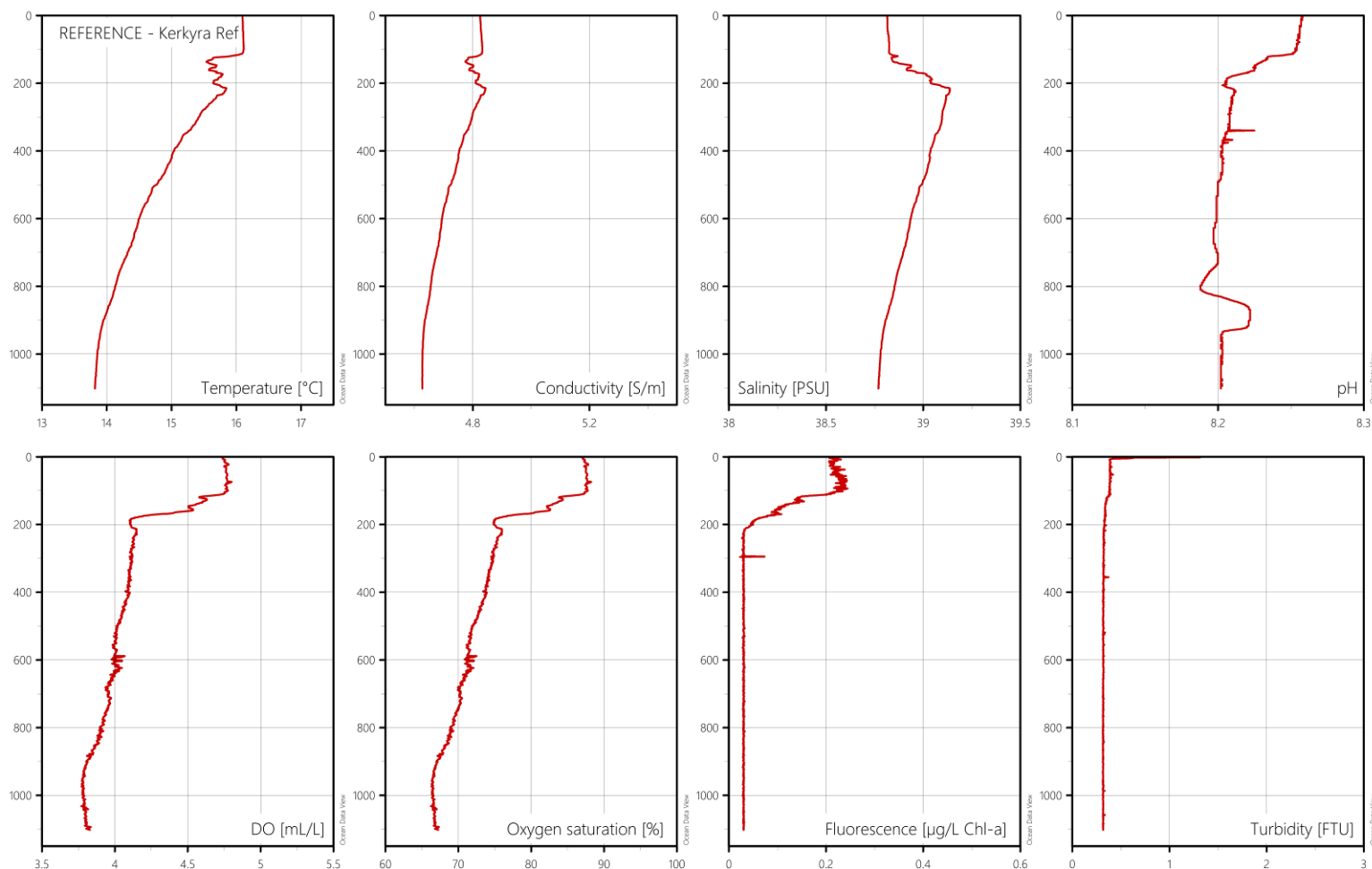


Figure 23 – Vertical profiles of the main physic-chemical variables of the water column, Reference stations – Kerkyra Ref

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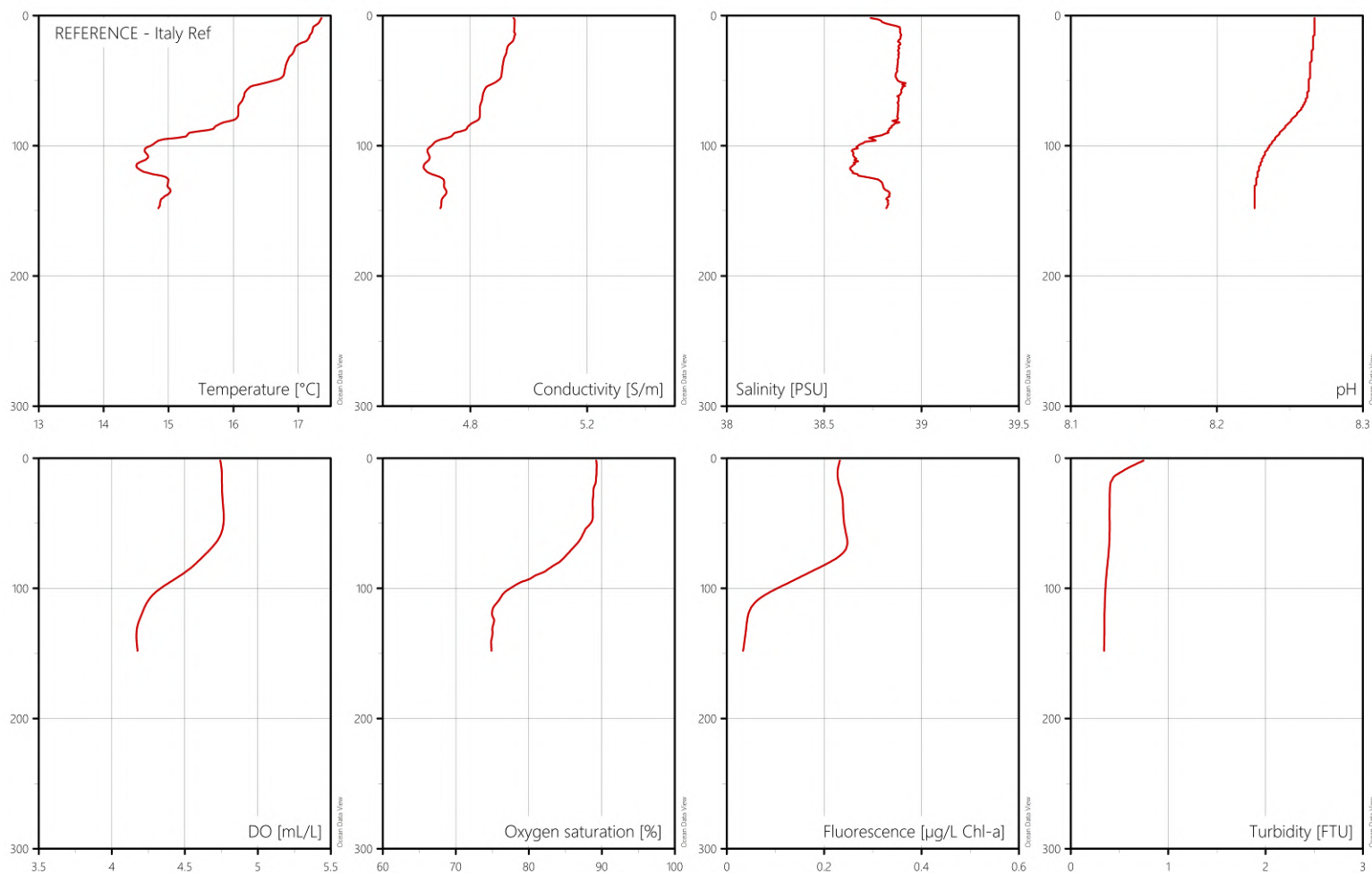


Figure 24 – Vertical profiles of the main physico-chemical variables of the water column, Reference stations – Italy Ref

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5.1.2.2 Chemical Characteristics of Seawater

5.1.2.2.1 TOTAL SUSPENDED SOLIDS (TSS) AND TOTAL ORGANIC CARBON (TOC)

Around the Asopus-1A well site, Total Suspended Solids (TSS) ranged from 7.8 mg L⁻¹ at the Bottom sampling depth of D3a to 15.0 mg L⁻¹ at the Middle depth of D5a, with an average of 11.01 ± 2.46 mg L⁻¹. Concentrations did not exhibit the same vertical distribution across the three stations.

Within the Asopus-1B well site area, TSS showed comparable concentrations, ranging from 7.8 mg L⁻¹ at the Surface of D5b to 13.0 mg L⁻¹ at the Surface of D1b. The average value was 10.19 ± 1.76 mg L⁻¹, confirming the absence of a systematic vertical gradient.

The blank stations showed similarly limited variability, with an overall average of 10.22 ± 2.11 mg L⁻¹, consistent with both well-site areas.

At the Reference Stations, TSS ranged from 6.0 mg L⁻¹ at the Surface of Othonoi Ref to 15.0 mg L⁻¹ at its Middle sampling depth, corresponding to the absolute minimum and maximum observed across the study area, although the overall Reference Station average remained comparable to the other groups (10.46 ± 2.76 mg L⁻¹), confirming the limited spatial variability of TSS.

Total Organic Carbon (TOC) concentrations were below the analytical Limit of Quantification (LoQ) in all samples collected at all sampling depths and sampling stations (i.e., < 1 mg L⁻¹), except at Italy Ref, where quantifiable concentrations were detected only at the Surface and Middle depths, with values of 1.3 and 1.2 mg L⁻¹, respectively.

The results described above are summarized in Table 17; TSS concentrations is graphically illustrated in Figure 25, where the Asopus-1A and Asopus-1B stations are presented separately, each including the corresponding Blank Stations and all three Reference Stations. TOC is not graphically represented due to the predominance of concentrations below the analytical LoQ.

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S.D.G./D.B./M.A.	D.B./M.A.	S. Sandroni	24/06/2026	EER001	EER001- EBS_Final_Report_REV_B1	P. 69/ 223

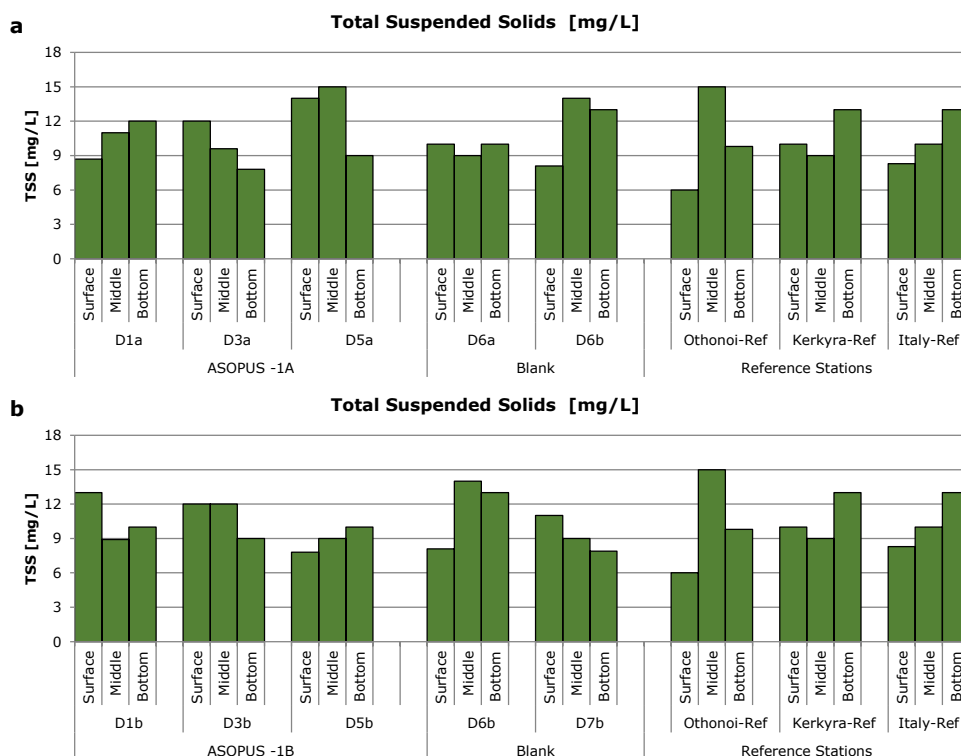


Figure 25 – Total Suspended Solids (TSS) in seawater samples collected at the Asopus-1A (a) and Asopus-1B (b) station groups; each panel includes the respective Blank Stations and all three Reference Stations

5.1.2.2.2 NUTRIENTS

Among the investigated Nitrogen nutrients, Ammonium (NH_4^+) around the Asopus-1A well site, NH_4^+ was detected only in four samples: at the Surface of D3a and at all three Sampling Depths of D1a. The highest concentrations were recorded at the Middle and Bottom depths of D1a ($0.010 \text{ mg L}^{-1} \text{ N}$), with an average value of $0.004 \pm 0.004 \text{ mg L}^{-1} \text{ N}$.

Around the Asopus-1B well site, NH_4^+ exceeded the LoQ only at the Middle depths of D3b and D5b, reaching a maximum of $0.010 \text{ mg L}^{-1} \text{ N}$ at D3b. The average concentration was $0.002 \pm 0.003 \text{ mg L}^{-1} \text{ N}$.

The Blank stations followed the same general pattern, with most samples below the LoQ, especially at D6a, where NH_4^+ was never quantifiable; the maximum was $0.004 \text{ mg L}^{-1} \text{ N}$ at D6b (Surface) and the average was $0.002 \pm 0.001 \text{ mg L}^{-1} \text{ N}$, consistent with the well-site areas.

At the Reference Stations, Othonoi Ref and Kerkyra Ref showed values comparable to the other stations, with 50 % of samples below the LoQ. Conversely, at Italy Ref NH_4^+ was quantifiable at all three Sampling Depths and reached the highest concentration recorded in the study area at the Surface ($0.065 \text{ mg L}^{-1} \text{ N}$). Average concentrations were $0.002 \pm 0.001 \text{ mg L}^{-1} \text{ N}$ at Othonoi Ref, $0.004 \pm 0.005 \text{ mg L}^{-1} \text{ N}$ at Kerkyra Ref, and $0.024 \pm 0.036 \text{ mg L}^{-1} \text{ N}$ at Italy Ref.

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Prepared by	Checked by	Approved by	Date	IDP	File:	Rev. B1
S.D.G./D.B./M.A.	D.B./M.A.	S. Sandroni	24/06/2026	EER001	EER001- EBS_Final_Report_REV_B1	P. 70/ 223

Nitrite (NO_2^-) concentrations were below the analytical LoQ at all Sampling Stations and Depths around the Asopus-1A well site. Around Asopus-1B, NO_2^- was quantifiable only at the Bottom of D1b and at the Middle and Bottom depths of D3b, reaching a maximum of $0.003 \text{ mg L}^{-1} \text{ N}$ at the latter. The average concentration for the Asopus-1B area was $0.002 \pm 0.001 \text{ mg L}^{-1} \text{ N}$.

At the Blank stations, NO_2^- was detected only at the Bottom of D7b ($0.003 \text{ mg L}^{-1} \text{ N}$), yielding an average concentration of $0.001 \pm 0.001 \text{ mg L}^{-1} \text{ N}$.

At the Reference Stations, NO_2^- remained below the LoQ in all samples.

Nitrate (NO_3^-) showed a distribution similar to Nitrite, remaining below the LoQ at all Sampling Stations and Depths around the Asopus-1A well site. Around Asopus-1B, NO_3^- was quantifiable at Surface and Middle at D3b, and Middle Depth at D5b, where the maximum was recorded ($0.063 \text{ mg L}^{-1} \text{ N}$). The average concentration for the Asopus-1B area was $0.011 \pm 0.020 \text{ mg L}^{-1} \text{ N}$.

At the Blank stations, NO_3^- was also quantifiable at only three Sampling Depths, with no detections at D7b. The maximum value was $0.017 \text{ mg L}^{-1} \text{ N}$ at D6b Surface, and the average concentration was $0.005 \pm 0.005 \text{ mg L}^{-1} \text{ N}$.

At the Reference Stations, NO_3^- was more frequently detected, although it remained below the LoQ at the Bottom of all three stations. The highest concentration in the study area was recorded at Italy Ref Surface ($0.510 \text{ mg L}^{-1} \text{ N}$). Average concentrations were $0.018 \pm 0.018 \text{ mg L}^{-1} \text{ N}$ at Othonoi Ref, $0.010 \pm 0.009 \text{ mg L}^{-1} \text{ N}$ at Kerkyra Ref, and $0.173 \pm 0.292 \text{ mg L}^{-1} \text{ N}$ at Italy Ref, the latter reflecting the higher Surface concentration recorded at this station.

Total Nitrogen (N-Tot) concentrations were below the LoQ in all samples collected across the study area, including both well-site areas, the Blank stations and the Reference Stations. Therefore, no vertical or spatial distribution pattern could be identified for this nitrogen nutrient.

Among the Phosphorus nutrients, Orthophosphate (PO_4^{3-}) was detected in almost all samples around Asopus-1A, except at D5a Bottom, where it was below the LoQ. Where quantifiable, concentrations generally increased with depth, reaching $0.0035 \text{ mg L}^{-1} \text{ P}$ at D1a Bottom. The average was $0.0021 \pm 0.0008 \text{ mg L}^{-1} \text{ P}$.

Around Asopus-1B, concentrations were higher on average ($0.0056 \pm 0.0042 \text{ mg L}^{-1} \text{ P}$). A depth-related increase was observed at D3b and D5b, whereas D1b showed the opposite pattern, with the maximum value at the Surface ($0.0167 \text{ mg L}^{-1} \text{ P}$).

The Blank stations showed slightly higher concentrations than both well-site areas (average: $0.0065 \pm 0.0034 \text{ mg L}^{-1} \text{ P}$), without a consistent vertical trend. The only value below the LoQ occurred at D6a Surface, while the maximum was recorded at D7b Middle ($0.0102 \text{ mg L}^{-1} \text{ P}$).

At the Reference Stations, orthophosphate concentrations were generally higher than in the well-site and Blank stations, except at Othonoi Ref, which showed lower and nearly uniform values ($0.0061 \pm 0.0003 \text{ mg L}^{-1} \text{ P}$). Kerkyra Ref and Italy Ref showed higher averages, 0.0125 ± 0.0045 and $0.0123 \pm 0.0006 \text{ mg L}^{-1} \text{ P}$, respectively, with the maximum Reference value recorded at Kerkyra Ref Middle ($0.0161 \text{ mg L}^{-1} \text{ P}$).

Total Phosphorus (P-Tot) was detected in all samples around Asopus-1A, ranging from $12 \text{ } \mu\text{g L}^{-1}$ at D1a Middle to $78 \text{ } \mu\text{g L}^{-1}$ at D1a Surface, with an average of $30.11 \pm 19.41 \text{ } \mu\text{g L}^{-1}$ and no consistent vertical pattern.

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Around Asopus-1B, P-Tot was below the LoQ only at D3b Bottom and reached $90 \mu\text{g L}^{-1}$ at D5b Surface; the average was slightly higher than at Asopus-1A ($36.11 \pm 25.78 \mu\text{g L}^{-1}$), again without a coherent depth-related trend.

The Blank stations showed comparable values, averaging $26.11 \pm 16.36 \mu\text{g L}^{-1}$, with Surface samples below the LoQ at D6a and D6b and a maximum of $54 \mu\text{g L}^{-1}$ at D6b Middle.

At the Reference Stations, several values were below the LoQ, and concentrations were generally lower than in the well-site areas. Othonoi Ref showed the highest Reference value and average ($46 \mu\text{g L}^{-1}$ at Middle; $24.00 \pm 20.81 \mu\text{g L}^{-1}$), while Kerkyra Ref and Italy Ref averaged 9.00 ± 6.93 and $11.33 \pm 5.51 \mu\text{g L}^{-1}$, respectively.

For assessment purposes, nutrient concentrations were compared with the reference values reported within the Greek MSFD implementation framework (Ministry of Environment and Energy, 2018). Among the nutrients investigated, reference values were available only for NO_3^- and PO_4^{3-} , equal to 0.062 mg L^{-1} and 0.0095 mg L^{-1} , respectively. As described above, NO_3^- exceeded the reference value only at D5b Middle ($0.063 \text{ mg L}^{-1} \text{ N}$) and Italy Ref Surface ($0.510 \text{ mg L}^{-1} \text{ N}$). PO_4^{3-} exceeded the corresponding reference value at D1b Surface ($0.0167 \text{ mg L}^{-1} \text{ P}$), D7b Middle and Bottom, Kerkyra Ref Surface and Middle, and at all Sampling Depths of Italy Ref, with the highest value recorded at Kerkyra Ref Middle ($0.0161 \text{ mg L}^{-1} \text{ P}$). These exceedances were sporadic and spatially inconsistent, occurring at both well-site and Reference Stations and therefore considered representative of natural oceanographic and biogeochemical variability rather than localized nutrient enrichment.

Results are summarized in Table 17 and illustrated in Figure 26 and Figure 27; NO_2^- is not shown, as concentrations were below the analytical LoQ at nearly all sampling stations and depths.

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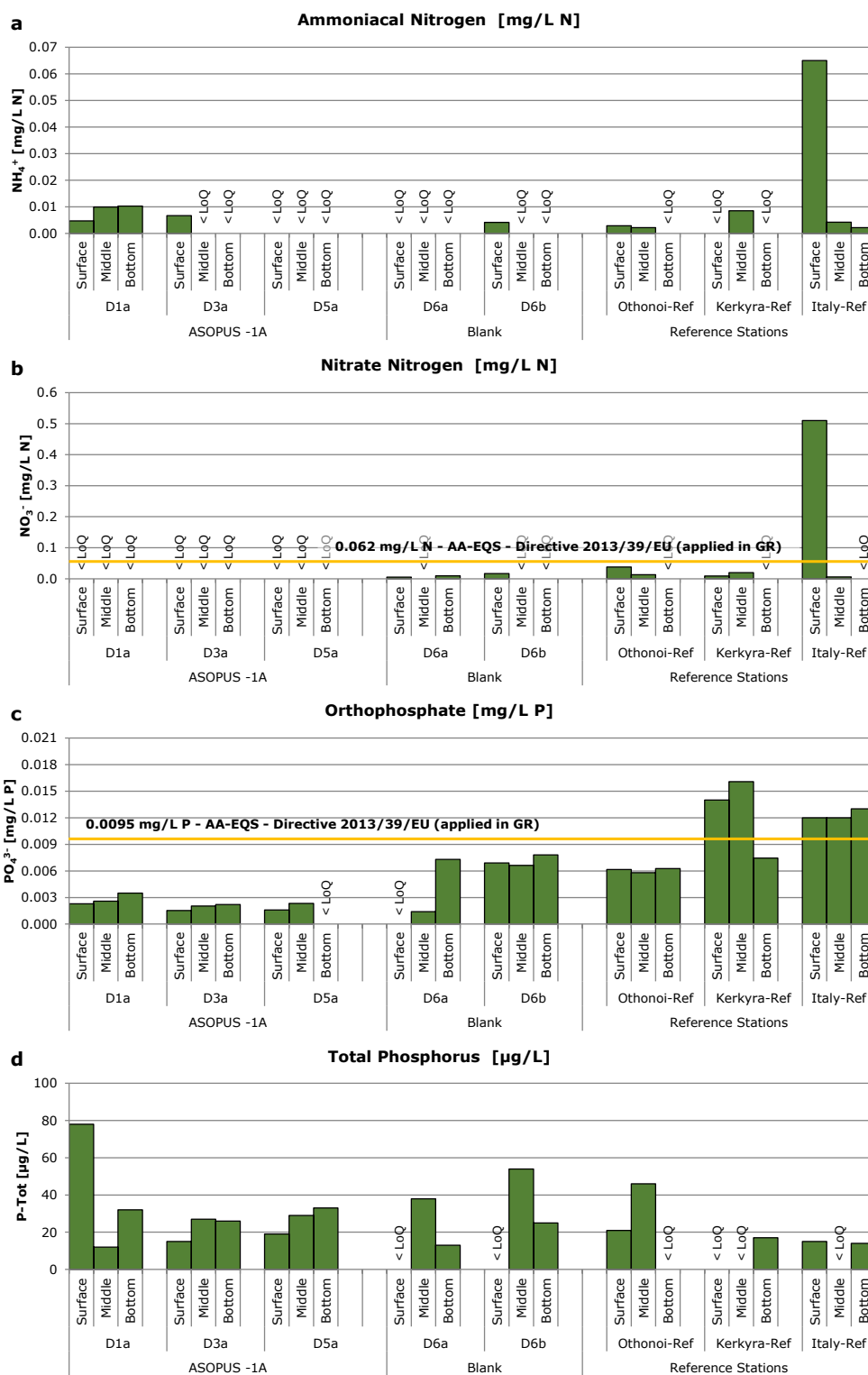


Figure 26 – Nutrient concentrations in seawater samples collected at the Asopus-1A station group; each panel includes the respective Blank Stations and all three Reference Stations

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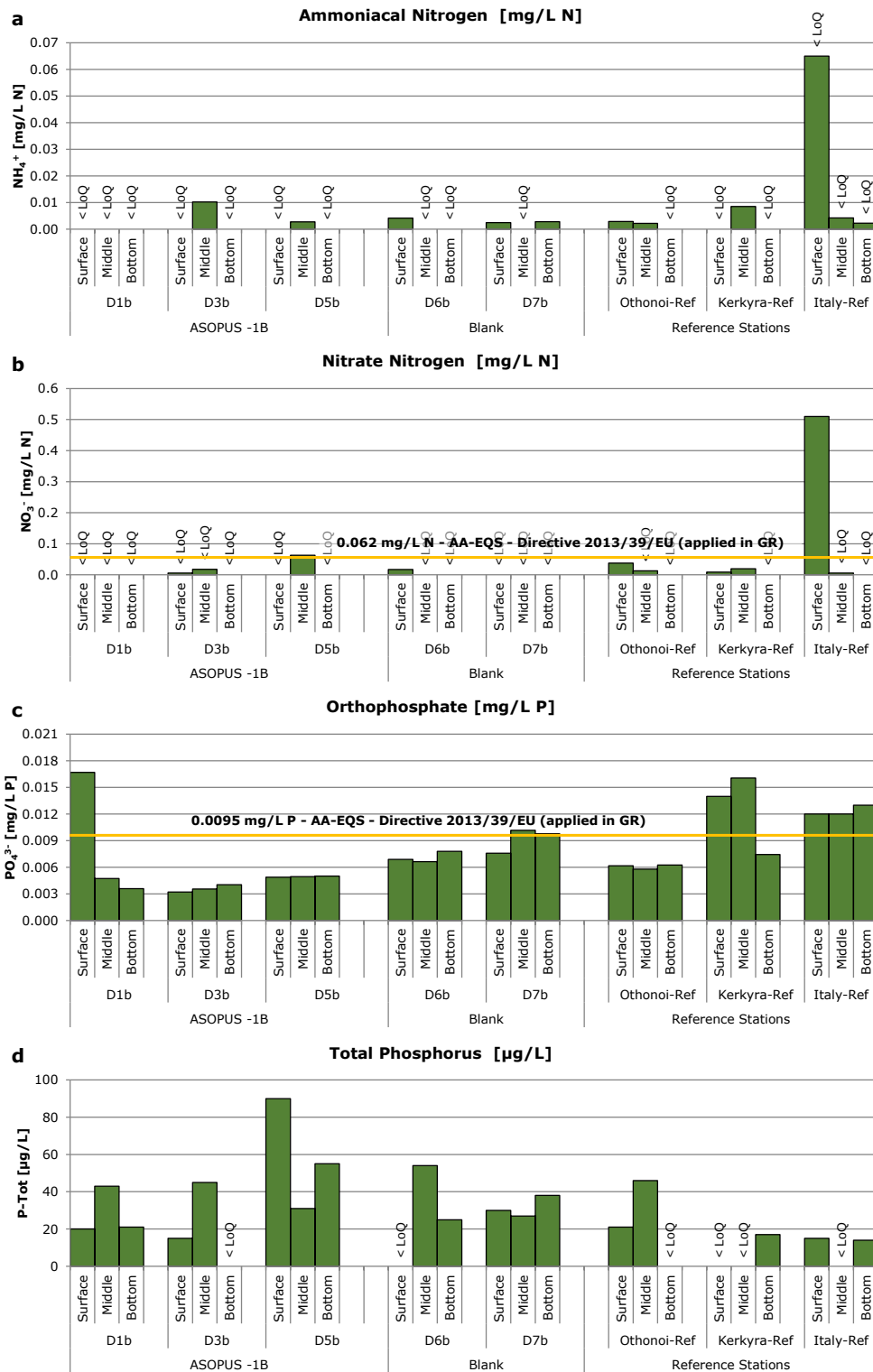


Figure 27 – Nutrient concentrations in seawater samples collected at the Asopus-1B station group; each panel includes the respective Blank Stations and all three Reference Stations

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Table 17 – Total Suspended Solids (TSS), Total Organic Carbon (TOC) and Nutrient concentrations in seawater samples

Area	Well	Station ID	Sampling depth	TSS	TOC	NUTRIENTS						
				Total Suspended Solids	Total Organic Carbon	Total Phosphorus	Ammoniacal Nitrogen	Nitrite Nitrogen	Nitrate Nitrogen	Total Nitrogen	Orthophosphate	
BLOCK 2	ASOPUS -1A	M.U.		[mg/L]		[µg/L]	[mg/L N]					[mg/L P]
		D1a	Surface	8.7	< 1	78	0.005	< 0.002	< 0.005	< 1	0.0023	
			Middle	11.0	< 1	12	0.010	< 0.002	< 0.005	< 1	0.0026	
			Bottom	12.0	< 1	32	0.010	< 0.002	< 0.005	< 1	0.0035	
		D3a	Surface	12.0	< 1	15	0.007	< 0.002	< 0.005	< 1	0.0015	
			Middle	9.6	< 1	27	< 0.002	< 0.002	< 0.005	< 1	0.0020	
			Bottom	7.8	< 1	26	< 0.002	< 0.002	< 0.005	< 1	0.0022	
		D5a	Surface	14.0	< 1	19	< 0.002	< 0.002	< 0.005	< 1	0.0016	
			Middle	15.0	< 1	29	< 0.002	< 0.002	< 0.005	< 1	0.0023	
			Bottom	9.0	< 1	33	< 0.002	< 0.002	< 0.005	< 1	< 0.001	
		ASOPUS -1B	D1b	Surface	13.0	< 1	20	< 0.002	< 0.002	< 0.005	< 1	0.0167
				Middle	8.9	< 1	43	< 0.002	< 0.002	< 0.005	< 1	0.0047
				Bottom	10.0	< 1	21	< 0.002	0.002	< 0.005	< 1	0.0036
			D3b	Surface	12.0	< 1	15	< 0.002	< 0.002	0.005	< 1	0.0032
				Middle	12.0	< 1	45	0.010	0.002	0.018	< 1	0.0036
	Bottom			9.0	< 1	< 10	< 0.002	0.003	< 0.005	< 1	0.0041	
	D5b		Surface	7.8	< 1	90	< 0.002	< 0.002	< 0.005	< 1	0.0049	
			Middle	9.0	< 1	31	0.003	< 0.002	0.063	< 1	0.0049	
			Bottom	10.0	< 1	55	< 0.002	< 0.002	< 0.005	< 1	0.0050	
	Blanks	D6a	Surface	10.0	< 1	< 10	< 0.002	< 0.002	0.005	< 1	< 0.001	
			Middle	9.0	< 1	38	< 0.002	< 0.002	< 0.005	< 1	0.0014	
			Bottom	10.0	< 1	13	< 0.002	< 0.002	0.010	< 1	0.0073	
		D6b	Surface	8.1	< 1	< 10	0.004	< 0.002	0.017	< 1	0.0069	
			Middle	14.0	< 1	54	< 0.002	< 0.002	< 0.005	< 1	0.0066	
			Bottom	13.0	< 1	25	< 0.002	< 0.002	< 0.005	< 1	0.0078	
		D7b	Surface	11.0	< 1	30	0.002	< 0.002	< 0.005	< 1	0.0076	
			Middle	9.0	< 1	27	< 0.002	< 0.002	< 0.005	< 1	0.0102	
Bottom			7.9	< 1	38	0.003	0.003	< 0.005	< 1	0.0098		
IONIAN SEA	Reference Stations	Othonoi-Ref	Surface	6.0	< 1	21	0.003	< 0.002	0.038	< 1	0.0062	
			Middle	15.0	< 1	46	0.002	< 0.002	0.013	< 1	0.0058	
			Bottom	9.8	< 1	< 10	< 0.002	< 0.002	< 0.005	< 1	0.0063	
		Kerkyra-Ref	Surface	10.0	< 1	< 10	< 0.002	< 0.002	0.009	< 1	0.0140	
			Middle	9.0	< 1	< 10	0.009	< 0.002	0.020	< 1	0.0161	
			Bottom	13.0	< 1	17	< 0.002	< 0.002	< 0.005	< 1	0.0074	
		Italy-Ref	Surface	8.3	1.3	15	0.065	< 0.002	0.510	< 1	0.0120	
			Middle	10.0	1.2	< 10	0.004	< 0.002	0.006	< 1	0.0120	
			Bottom	13.0	< 1	14	0.002	< 0.002	< 0.005	< 1	0.0130	
Directive 2013/39/EU (applied in GR)												
AA-EQS other surface waters				n.d.	n.d.	n.d.	n.d.	n.d.	0.062	n.d.	0.0095	
Legislative Decree No. 172/2015 (Annex 1, Tables 1/A and 1/B)												
SQA-MA (Tab 1/A)				n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
SQA-MA (Tab 1/B)				n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	

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5.1.2.2.3 HEAVY AND TRACE METALS

Among the investigated trace and heavy metals, Cadmium (Cd), Hexavalent Chromium (Cr VI), Cobalt (Co), Mercury (Hg) and Tin (Sn) were consistently below the analytical LoQ at all Sampling Depths and Stations. Total Chromium (Cr-Tot) was detected only at D3b Middle ($1.7 \mu\text{g L}^{-1}$), while Lead (Pb) was quantifiable in only two samples, both from Italy Ref (16 and $12 \mu\text{g L}^{-1}$ at Middle and Bottom depths, respectively).

Copper (Cu) was quantifiable in few samples, with low and broadly comparable averages around Asopus-1A ($1.06 \pm 1.05 \mu\text{g L}^{-1}$), Asopus-1B ($1.31 \pm 2.43 \mu\text{g L}^{-1}$) and the Blank stations ($1.92 \pm 1.33 \mu\text{g L}^{-1}$). Among the Reference Stations, Cu averaged $1.63 \pm 1.96 \mu\text{g L}^{-1}$ at Othonoi Ref, remained $< \text{LoQ}$ at Kerkyra Ref, and was markedly higher at Italy Ref ($17.27 \pm 13.12 \mu\text{g L}^{-1}$), where the absolute maximum was recorded at Bottom depth ($30.0 \mu\text{g L}^{-1}$).

Nickel (Ni) showed a broadly similar distribution, with limited detections and low averages around Asopus-1A ($0.77 \pm 0.40 \mu\text{g L}^{-1}$), Asopus-1B ($0.69 \pm 0.57 \mu\text{g L}^{-1}$) and the Blank stations ($1.13 \pm 0.50 \mu\text{g L}^{-1}$). Among the Reference Stations, Ni averaged $1.30 \pm 0.20 \mu\text{g L}^{-1}$ at Othonoi Ref, remained $< \text{LoQ}$ at Kerkyra Ref, and was higher at Italy Ref ($5.43 \pm 4.76 \mu\text{g L}^{-1}$), where the absolute maximum was recorded at Bottom depth ($10.0 \mu\text{g L}^{-1}$).

Unlike the trace metals discussed above, Arsenic (As), Barium (Ba), Iron (Fe) and Zinc (Zn) were quantifiable at all Sampling Depths and Stations.

Arsenic (As) showed limited spatial variability, with comparable average concentrations around Asopus-1A ($4.91 \pm 0.34 \mu\text{g L}^{-1}$), Asopus-1B ($4.84 \pm 0.75 \mu\text{g L}^{-1}$) and the Blank stations ($4.42 \pm 0.24 \mu\text{g L}^{-1}$). The highest concentrations ($5.5 \mu\text{g L}^{-1}$) were recorded at D1b Bottom and D5b Surface, whereas all Reference Stations exhibited lower values, particularly Kerkyra Ref, which showed both the lowest average concentration ($1.20 \pm 0.20 \mu\text{g L}^{-1}$) and the absolute minimum value ($1.0 \mu\text{g L}^{-1}$ at Middle depth).

Barium (Ba) displayed a similarly limited range of variability. Average concentrations were slightly lower around Asopus-1A ($7.80 \pm 0.77 \mu\text{g L}^{-1}$) and at the Blank stations ($7.98 \pm 0.64 \mu\text{g L}^{-1}$) than around Asopus-1B ($8.56 \pm 1.42 \mu\text{g L}^{-1}$). Among the Reference Stations, Kerkyra Ref and Italy Ref exhibited the lowest and highest average concentrations (7.40 ± 0.26 and $8.83 \pm 0.06 \mu\text{g L}^{-1}$, respectively). The absolute minimum and maximum values were recorded at D3a Middle/Bottom ($7.0 \mu\text{g L}^{-1}$) and D3b Middle ($12.0 \mu\text{g L}^{-1}$), respectively.

Iron (Fe) exhibited substantially greater variability than As and Ba. Average concentrations were $53.56 \pm 21.51 \mu\text{g L}^{-1}$ around Asopus-1A, $77.89 \pm 66.69 \mu\text{g L}^{-1}$ around Asopus-1B and $93.89 \pm 80.05 \mu\text{g L}^{-1}$ at the Blank stations. Among the Reference Stations, Kerkyra Ref showed the lowest average concentration ($48.33 \pm 12.34 \mu\text{g L}^{-1}$), whereas Othonoi Ref exhibited the highest ($132.00 \pm 59.09 \mu\text{g L}^{-1}$). The absolute minimum and maximum values were recorded at D3a ($33 \mu\text{g L}^{-1}$) and D6a Middle ($290 \mu\text{g L}^{-1}$), respectively.

A comparable pattern emerged for Zinc (Zn), with average concentrations of $37.56 \pm 19.77 \mu\text{g L}^{-1}$ around Asopus-1A, $56.33 \pm 34.57 \mu\text{g L}^{-1}$ around Asopus-1B and $36.78 \pm 9.55 \mu\text{g L}^{-1}$ at the Blank stations. Kerkyra Ref again exhibited the lowest average concentration ($33.33 \pm 4.04 \mu\text{g L}^{-1}$), whereas Othonoi Ref showed the highest ($114.33 \pm 62.58 \mu\text{g L}^{-1}$). Italy Ref displayed concentrations more comparable to those observed around Asopus-1B. The absolute minimum and maximum values were $24 \mu\text{g L}^{-1}$ at D3a and D5a Middle and $160 \mu\text{g L}^{-1}$ at Othonoi Ref Bottom, respectively.

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For assessment purposes, metal concentrations were compared with the AA-EQS of Directive 2013/39/EU, as applied in Greece, and with the SQA-MA values reported in Annex 1, Tables 1/A and 1/B of Italian D.Lgs 172/2015. Arsenic (As) exceeded the Italian SQA-MA of 5 µg L⁻¹ in two samples around Asopus-1A (D1a Middle and D3a Middle) and five around Asopus-1B (D1b and D3b, both at Surface and Bottom, and D5b at Surface), with values between 5.1 and 5.5 µg L⁻¹; several other samples, including Blank stations and Othonoi Ref, were close to this threshold. Lead (Pb) and Nickel (Ni) exceeded both applicable reference values only at Italy Ref: Pb at Middle and Bottom depths (16 and 12 µg L⁻¹ vs 1.3 µg L⁻¹) and Ni at Bottom depth (10 µg L⁻¹ vs 8.6 µg L⁻¹). All other investigated metals exhibited concentrations consistently below the respective regulatory threshold values.

Concentrations of all the investigated metals are provided in Table 18. Figure 28, Figure 29, Figure 30 and Figure 31 illustrate only those elements quantified in a sufficient number of samples to allow interpretation of their spatial distribution. Metals consistently below the analytical LoQ (Cd, Cr VI, Co, Hg and Sn) and those only sporadically detected (Cr-Tot and Pb) are therefore excluded.

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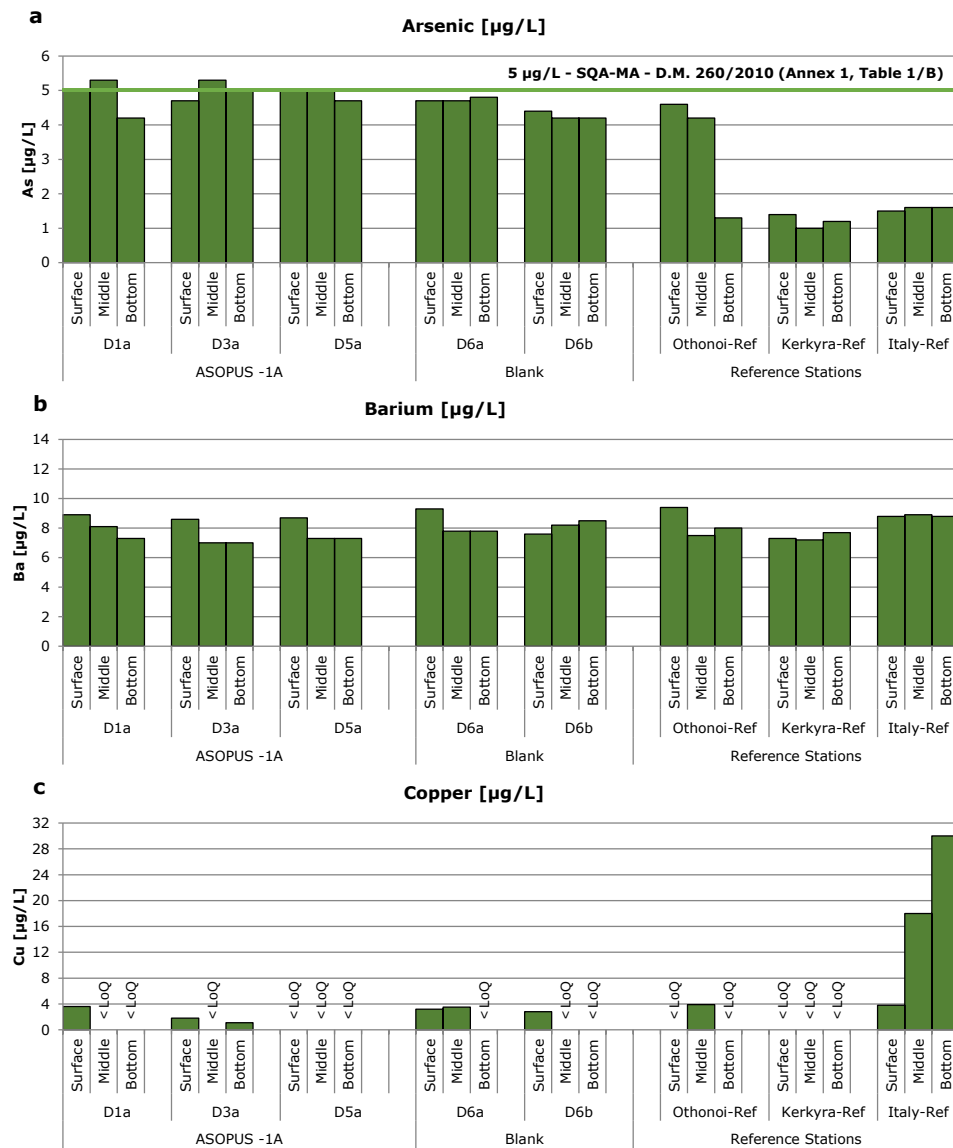


Figure 28 – Concentrations of As (a), Ba (b) and Cu (c) in seawater samples collected at the Asopus-1A station group, including the associated Blank Stations and all three Reference Stations

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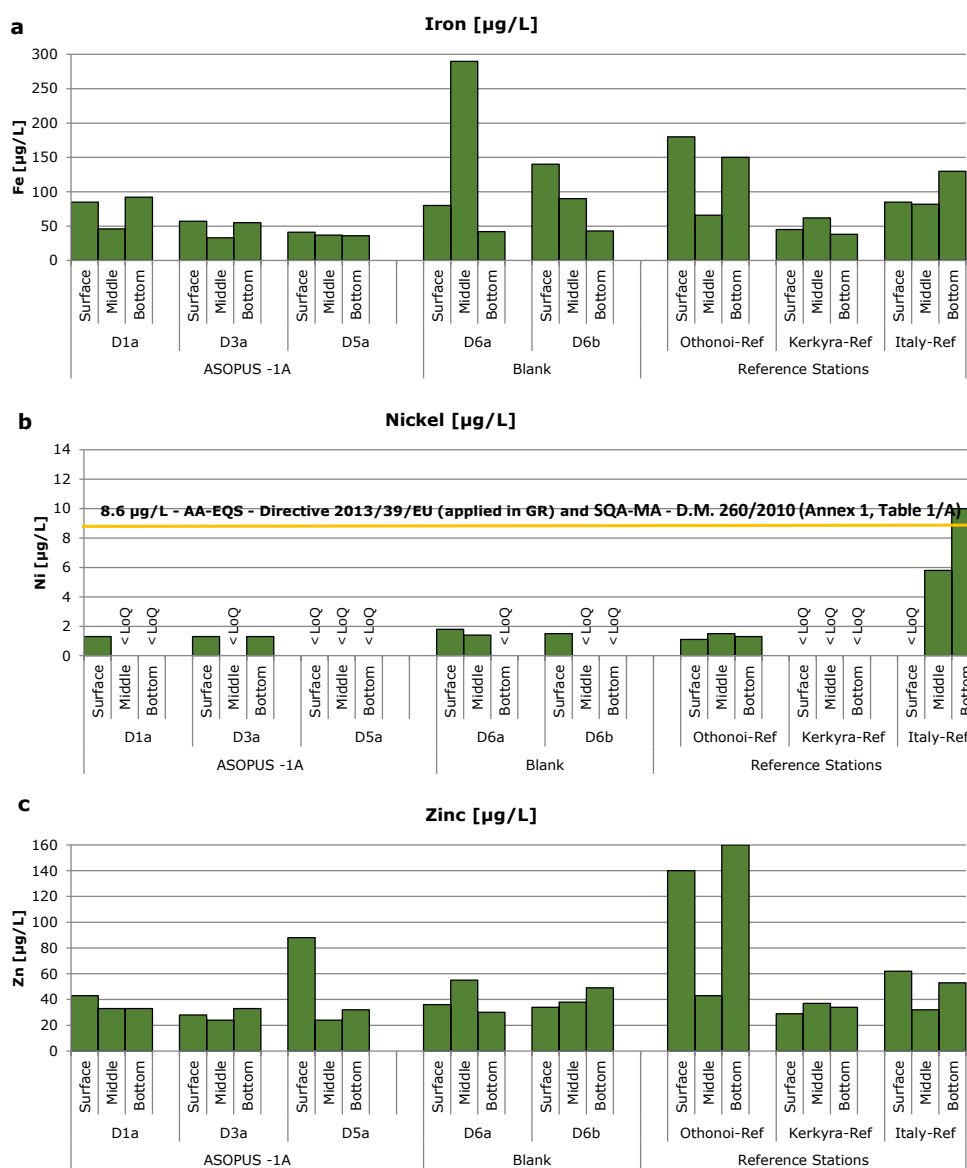


Figure 29 – Concentrations of Fe (a), Ni (b) and Zn (c) in seawater samples collected at the Asopus-1A station group, including the associated Blank Stations and all three Reference Stations

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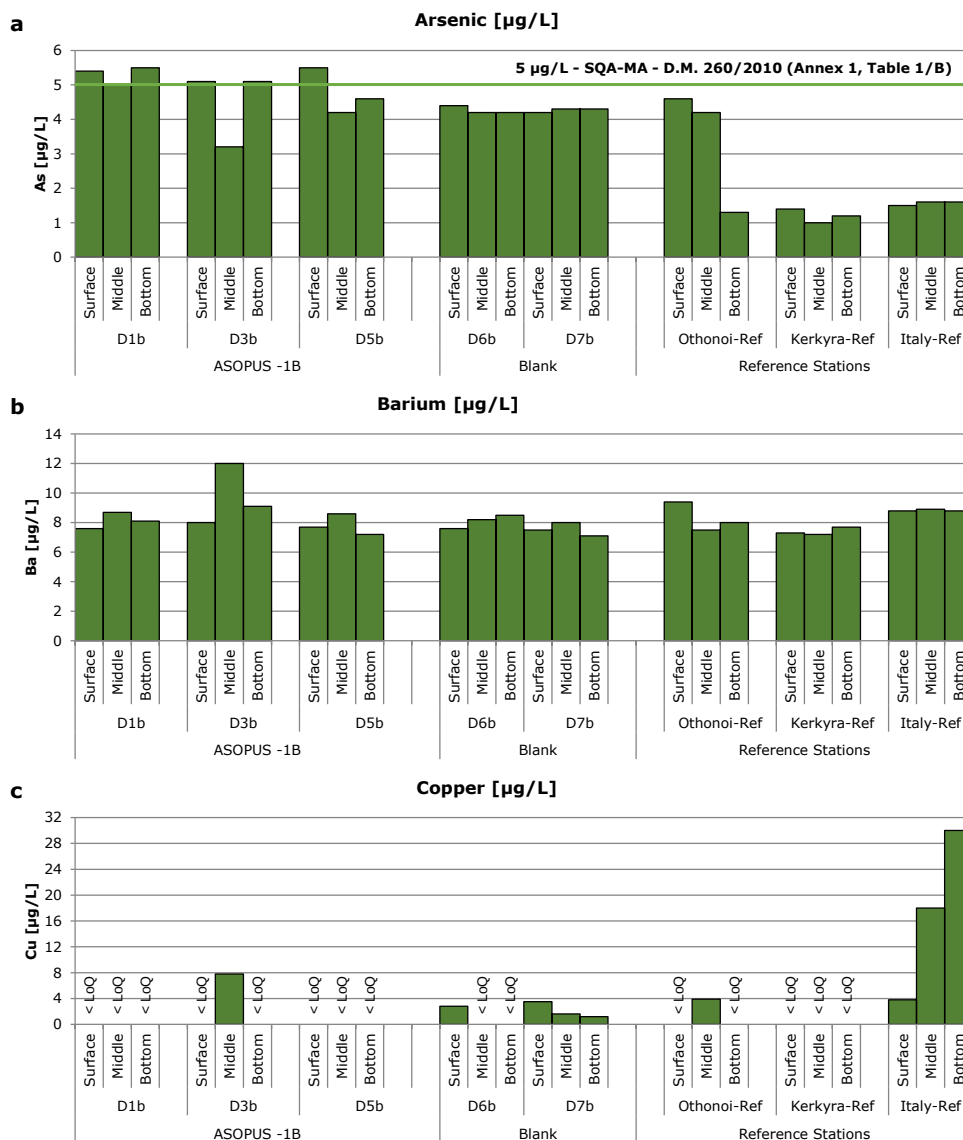


Figure 30 – Concentrations of As (a), Ba (b) and Cu (c) in seawater samples collected at the Asopus-1B station group, including the associated Blank Stations and all three Reference Stations

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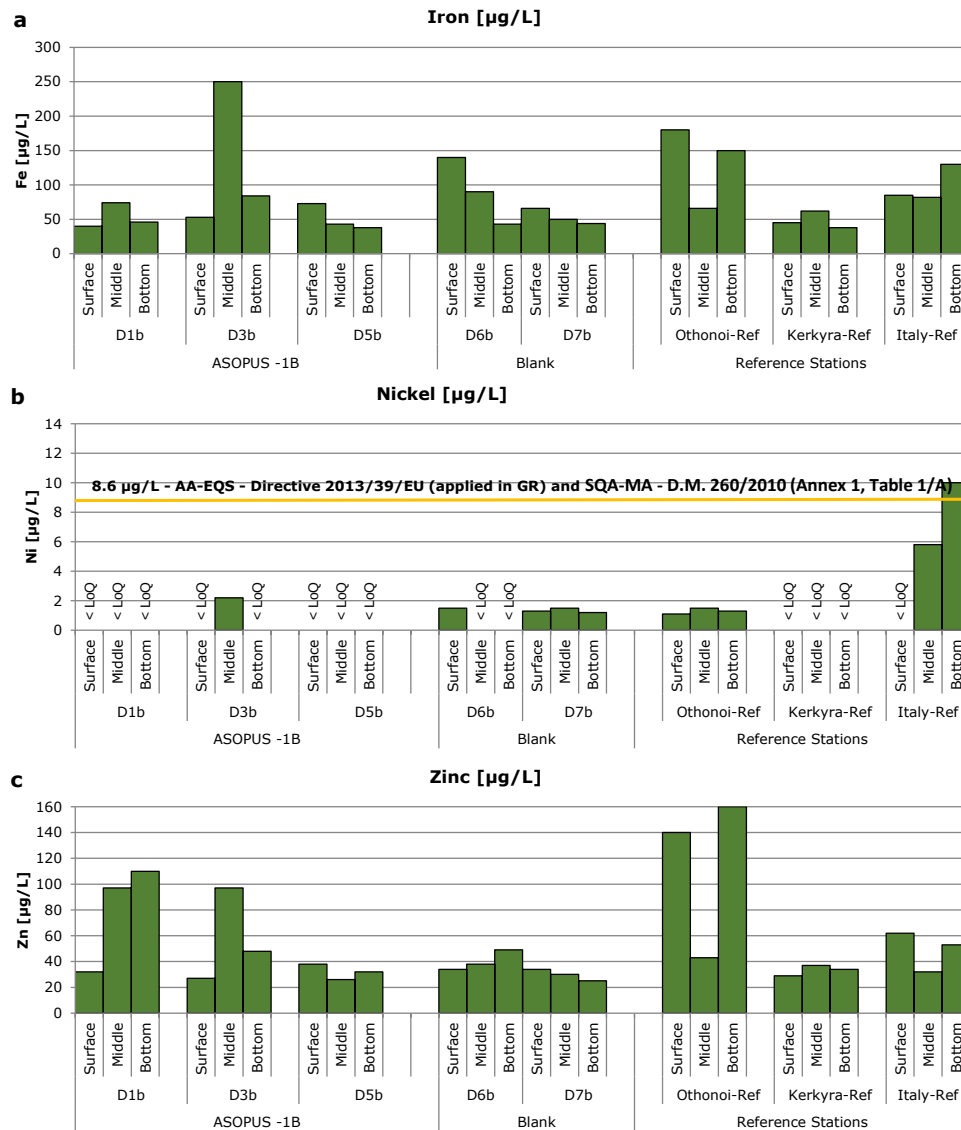


Figure 31 – Concentrations of Fe (a), Ni (b) and Zn (c) in seawater samples collected at the Asopus-1B station group, including the associated Blank Stations and all three Reference Stations

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Table 18 – Heavy and Trace Metal concentrations in seawater samples collected at the Asopus-1A and Asopus-1B station groups, including the associated Blank Stations and all three Reference Stations

Area	Well	Station ID	Sampling depth	HEAVY AND TRACE METALS													
				Arsenic	Barium	Cadmium	Chromium VI	Cobalt	Copper	Iron	Lead	Mercury	Nickel	Tin	Total Chromium	Zinc	
BLOCK 2	ASOPUS -1A	M.U.		[µg/L]													
		D1a	Surface	5.0	8.9	< 0.2	< 0.5	< 1	3.6	85	< 1	< 0.1	1.3	< 1	< 1	43	
			Middle	5.3	8.1	< 0.2	< 0.5	< 1	< 1	46	< 1	< 0.1	< 1	< 1	< 1	33	
			Bottom	4.2	7.3	< 0.2	< 0.5	< 1	< 1	92	< 1	< 0.1	< 1	< 1	< 1	33	
		D3a	Surface	4.7	8.6	< 0.2	< 0.5	< 1	1.8	57	< 1	< 0.1	1.3	< 1	< 1	28	
			Middle	5.3	7.0	< 0.2	< 0.5	< 1	< 1	33	< 1	< 0.1	< 1	< 1	< 1	24	
			Bottom	5.0	7.0	< 0.2	< 0.5	< 1	1.1	55	< 1	< 0.1	1.3	< 1	< 1	33	
		D5a	Surface	5.0	8.7	< 0.2	< 0.5	< 1	< 1	41	< 1	< 0.1	< 1	< 1	< 1	88	
			Middle	5.0	7.3	< 0.2	< 0.5	< 1	< 1	37	< 1	< 0.1	< 1	< 1	< 1	24	
			Bottom	4.7	7.3	< 0.2	< 0.5	< 1	< 1	36	< 1	< 0.1	< 1	< 1	< 1	32	
		ASOPUS -1B	D1b	Surface	5.4	7.6	< 0.2	< 0.5	< 1	< 1	40	< 1	< 0.1	< 1	< 1	< 1	32
				Middle	5.0	8.7	< 0.2	< 0.5	< 1	< 1	74	< 1	< 0.1	< 1	< 1	< 1	97
	Bottom			5.5	8.1	< 0.2	< 0.5	< 1	< 1	46	< 1	< 0.1	< 1	< 1	< 1	110	
	D3b		Surface	5.1	8.0	< 0.2	< 0.5	< 1	< 1	53	< 1	< 0.1	< 1	< 1	< 1	27	
			Middle	3.2	12.0	< 0.2	< 0.5	< 1	7.8	250	< 1	< 0.1	2.2	< 1	1.7	97	
			Bottom	5.1	9.1	< 0.2	< 0.5	< 1	< 1	84	< 1	< 0.1	< 1	< 1	< 1	48	
	D5b		Surface	5.5	7.7	< 0.2	< 0.5	< 1	< 1	73	< 1	< 0.1	< 1	< 1	< 1	38	
			Middle	4.2	8.6	< 0.2	< 0.5	< 1	< 1	43	< 1	< 0.1	< 1	< 1	< 1	26	
			Bottom	4.6	7.2	< 0.2	< 0.5	< 1	< 1	38	< 1	< 0.1	< 1	< 1	< 1	32	
	Blank	D6a	Surface	4.7	9.3	< 0.2	< 0.5	< 1	3.2	80	< 1	< 0.1	1.8	< 1	< 1	36	
			Middle	4.7	7.8	< 0.2	< 0.5	< 1	3.5	290	< 1	< 0.1	1.4	< 1	< 1	55	
			Bottom	4.8	7.8	< 0.2	< 0.5	< 1	< 1	42	< 1	< 0.1	< 1	< 1	< 1	30	
		D6b	Surface	4.4	7.6	< 0.2	< 0.5	< 1	2.8	140	< 1	< 0.1	1.5	< 1	< 1	34	
			Middle	4.2	8.2	< 0.2	< 0.5	< 1	< 1	90	< 1	< 0.1	< 1	< 1	< 1	38	
			Bottom	4.2	8.5	< 0.2	< 0.5	< 1	< 1	43	< 1	< 0.1	< 1	< 1	< 1	49	
		D7b	Surface	4.2	7.5	< 0.2	< 0.5	< 1	3.5	66	< 1	< 0.1	1.3	< 1	< 1	34	
			Middle	4.3	8.0	< 0.2	< 0.5	< 1	1.6	50	< 1	< 0.1	1.5	< 1	< 1	30	
			Bottom	4.3	7.1	< 0.2	< 0.5	< 1	1.2	44	< 1	< 0.1	1.2	< 1	< 1	25	
IONIAN SEA	Reference Stations	Othonoi-Ref	Surface	4.6	9.4	< 0.2	< 0.5	< 1	< 1	180	< 1	< 0.1	1.1	< 1	< 1	140	
			Middle	4.2	7.5	< 0.2	< 0.5	< 1	3.9	66	< 1	< 0.1	1.5	< 1	< 1	43	
			Bottom	1.3	8.0	< 0.2	< 0.5	< 1	< 1	150	< 1	< 0.1	1.3	< 1	< 1	160	
		Kerkyra-Ref	Surface	1.4	7.3	< 0.2	< 0.5	< 1	< 1	45	< 1	< 0.1	< 1	< 1	< 1	29	
			Middle	1.0	7.2	< 0.2	< 0.5	< 1	< 1	62	< 1	< 0.1	< 1	< 1	< 1	37	
			Bottom	1.2	7.7	< 0.2	< 0.5	< 1	< 1	38	< 1	< 0.1	< 1	< 1	< 1	34	
		Italy-Ref	Surface	1.5	8.8	< 0.2	< 0.5	< 1	3.8	85	< 1	< 0.1	< 1	< 1	< 1	62	
			Middle	1.6	8.9	< 0.2	< 0.5	< 1	18.0	82	16	< 0.1	5.8	< 1	< 1	32	
			Bottom	1.6	8.8	< 0.2	< 0.5	< 1	30.0	130	12	< 0.1	10.0	< 1	< 1	53	
Directive 2013/39/EU (applied in GR)																	
AA-EQS other surface waters				n.d.	n.d.	0.2	n.d.	n.d.	n.d.	n.d.	1.3	n.d.	8.6	n.d.	n.d.	n.d.	
Legislative Decree No. 172/2015 (Annex 1, Tables 1/A and 1/B)																	
SQA-MA (Tab 1/A)				n.d.	n.d.	0.2	n.d.	n.d.	n.d.	n.d.	1.3	n.d.	8.6	n.d.	n.d.	n.d.	
SQA-MA (Tab 1/B)				5	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	4	n.d.	

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5.1.2.2.4 PETROLEUM HYDROCARBON FRACTIONS AND SUM (C6 – C10, C10 – C40 AND TPH) AND POLYCYCLIC AROMATIC HYDROCARBONS (PAHS)

Among hydrocarbons, Total Petroleum Hydrocarbons (TPH) were analysed as both light-chain hydrocarbons ($C \leq 10$) and heavy-chain hydrocarbons (C10 – C40), together with Polycyclic Aromatic Hydrocarbons (PAHs), including individual compounds and their sum (Σ PAHs).

Both TPH fractions and all investigated PAHs were below their respective analytical LoQs at all Sampling Depths and Sampling Stations, including both well-site areas, Blank stations and Reference Stations, with no exceptions.

For assessment purposes, it is noted that neither Directive 2013/39/EU, as applied in Greece, nor Italian D.Lgs 172/2015 define reference standards for TPH or its investigated fractions. Conversely, both regulatory frameworks provide standards for selected PAHs, namely Anthracene, Benzo(a)pyrene, Fluoranthene and Naphthalene, with identical reference values. Since all hydrocarbon compounds were below the LoQs, they were also below the above mentioned applicable regulatory reference values where available.

All concentration results for both hydrocarbon fractions and their sum (C6 – C10, C10 – C40 and TPH) are reported in Table 20, while PAH concentrations are presented in Table 20. No graphical representation is provided, as concentrations were below the respective analytical LoQs in all the collected samples.

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Table 19 – Hydrocarbon concentrations (C≤10, C10 – C40 and TPH) in seawater samples collected at the Asopus-1A and Asopus-1B station groups, including the associated Blank Stations and all three Reference Stations

Area	Well	Station ID	Sampling depth	PETROLEUM HYDROCARBON FRACTIONS AND TOTAL			
				Hydrocarbons C≤10	Hydrocarbons C-10-C-40	Total Petroleum Hydrocarbons (TPH)	
BLOCK 2	ASOPUS -1A	M.U.		[mg/L]	[µg/L]		
		D1a	Surface	< 0.1	< 25	< 30	
			Middle	< 0.1	< 25	< 30	
			Bottom	< 0.1	< 25	< 30	
		D3a	Surface	< 0.1	< 25	< 30	
			Middle	< 0.1	< 25	< 30	
			Bottom	< 0.1	< 25	< 30	
		D5a	Surface	< 0.1	< 25	< 30	
			Middle	< 0.1	< 25	< 30	
			Bottom	< 0.1	< 25	< 30	
		ASOPUS -1B	D1b	Surface	< 0.1	< 25	< 30
				Middle	< 0.1	< 25	< 30
	Bottom			< 0.1	< 25	< 30	
	D3b		Surface	< 0.1	< 25	< 30	
			Middle	< 0.1	< 25	< 30	
			Bottom	< 0.1	< 25	< 30	
	D5b		Surface	< 0.1	< 25	< 30	
			Middle	< 0.1	< 25	< 30	
			Bottom	< 0.1	< 25	< 30	
	Blanks	D6a	Surface	< 0.1	< 25	< 30	
			Middle	< 0.1	< 25	< 30	
			Bottom	< 0.1	< 25	< 30	
		D6b	Surface	< 0.1	< 25	< 30	
			Middle	< 0.1	< 25	< 30	
			Bottom	< 0.1	< 25	< 30	
		D7b	Surface	< 0.1	< 25	< 30	
			Middle	< 0.1	< 25	< 30	
			Bottom	< 0.1	< 25	< 30	
IONIAN SEA	Reference Stations	Othonoi-Ref	Surface	< 0.1	< 25	< 30	
			Middle	< 0.1	< 25	< 30	
			Bottom	< 0.1	< 25	< 30	
		Kerkyra-Ref	Surface	< 0.1	< 25	< 30	
			Middle	< 0.1	< 25	< 30	
			Bottom	< 0.1	< 25	< 30	
		Italy-Ref	Surface	< 0.1	< 25	< 30	
			Middle	< 0.1	< 25	< 30	
			Bottom	< 0.1	< 25	< 30	
Directive 2013/39/EU (applied in GR)							
MAC-EQS other surface waters				n.d.	n.d.	n.d.	
Legislative Decree No. 172/2015 (Annex 1, Tables 1/A and 1/B)							
SQA-MA (Tab 1/A)				n.d.	n.d.	n.d.	
SQA-MA (Tab 1/B)				n.d.	n.d.	n.d.	

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5.1.3 Correlation among analytical results – Seawater

The multivariate analysis of the physico-chemical variables in the water column revealed a moderate spatial differentiation among sampling sites, suggesting the presence of environmental gradients mainly associated with nutrient distribution and the particulate fraction.

PERMANOVA analysis showed statistically significant differences exclusively among the different sampling sites, particularly between the well area stations (Asopus-1A and Asopus-1B) and the Reference sites ($p = 0.001$). Conversely, no significant differences were detected among the different sampling depths within each investigated station (Surface, Middle, Bottom; $p > 0.05$), indicating substantial homogeneity of the water column with respect to the investigated parameters.

In the CAP ordination plot (Figure 32), Asopus-1A and Asopus-1B stations were clearly separated from the reference sites along the first two canonical axes, highlighting differences in the physico-chemical characteristics of the water column. In particular, the Reference stations showed a stronger association with variables such as ammoniacal nitrogen, orthophosphates, and some dissolved metals, suggesting conditions mainly influenced by the natural biogeochemical dynamics of nutrients. In contrast, the stations located in proximity to the wells appeared to be more strongly correlated with total suspended solids, total phosphorus, barium, and arsenic, indicating a greater influence of the particulate fraction and sediment resuspension processes.

Moreover, the observed variations were sufficiently pronounced to distinguish the stations located near the wells from the control stations (Blank), although not enough to produce a clear separation among them.

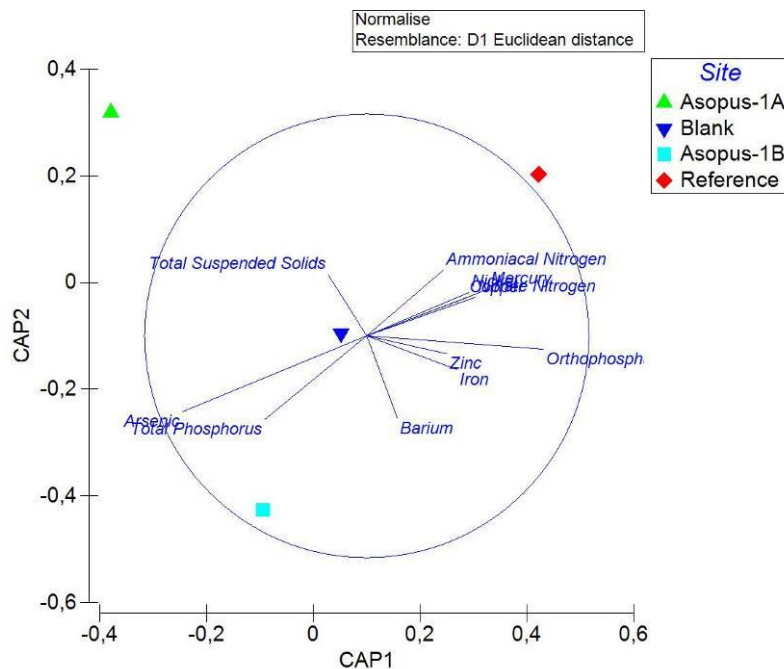


Figure 32 – Canonical Analysis of Principal Coordinates (CAP) of chemical variables measured in the water column

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Overall, the observed pattern likely reflects the natural spatial heterogeneity of a wide and dynamic marine system such as the investigated area, which is characterized by variable hydrodynamic conditions, water mixing processes, and particulate matter distribution. Therefore, the detected differences appear to be attributable to the natural environmental variability of the system rather than to specific impact factors or anthropogenic disturbance sources.

5.1.4 Detailed description of results – Phytoplankton

5.1.4.1 Abundance and diversity of phytoplankton community

The species / abundance matrix of the phytoplankton community is presented in APPENDIX C: PHYTOPLANKTON DATA, where data are expressed as cells L⁻¹.

Figure 33 showed pronounced spatial variability of phytoplankton abundance between the stations included in the well Asopus-1A, the stations considered as “Blank” and the area of Reference stations.

Within the Asopus-1A area, total phytoplankton abundance ranged from a minimum of 1.69×10^5 cells L⁻¹ at the Middle sampling depth of station D1a to a maximum of 3.09×10^5 cells L⁻¹ recorded at the Surface of the same station. In the corresponding Blank stations (D6a and D6b), the lowest phytoplankton abundance was observed at the Bottom sampling depth of station D6b, whereas the highest value (3.77×10^5 cells L⁻¹) was recorded at the Surface of the same station.

When phytoplankton abundance was disaggregated into the four major taxonomic categories, the community within the Asopus-1A area was largely dominated by the “Other taxa” group. This fraction exhibited a minimum abundance of 1.00×10^5 cells L⁻¹ at the Surface of station D3a, (accounting for 37.75 % of the total phytoplankton abundance), and a maximum abundance of 2.06×10^5 cells L⁻¹ at the Surface of station D1a (66.56 %). Bacillariophyceae represented the second most abundant group, ranging from values below 10^3 cells L⁻¹ (2.79 %) at the Bottom of station D5a to 1.30×10^5 cells L⁻¹ (48.98 %) at the Surface of station D3a. Dinophyceae and Coccolithophyceae were consistently less abundant, remaining below 10^5 cells L⁻¹ at all sampling depths and stations surrounding the Asopus-1A well site.

A comparable taxonomic pattern was observed at the Blank stations of this well-site. The “Other taxa” group remained dominant, with abundances ranging from 4.61×10^4 cells L⁻¹ (58.56% of total phytoplankton abundance) at the Bottom of station D6b to 2.87×10^5 cells L⁻¹ (76.10%) at the Surface of the same station. Bacillariophyceae, Dinophyceae, and Coccolithophyceae exhibited lower abundances, consistently remaining below 10^5 cells L⁻¹ across all sampling depths and stations.

Figure 34 showed pronounced spatial variability of phytoplankton abundance between the stations included in the well Asopus-1B, the stations considered as “Blank” and the area of Reference stations.

Total phytoplankton abundance within the Asopus-1B area ranged from a minimum of 1.29×10^5 cells L⁻¹ at the Middle sampling depth of station D1b to a maximum of 3.40×10^5 cells L⁻¹ at the Surface of station D3b. At the associated Blank stations (D6b and D7b), phytoplankton abundance varied between 7.87×10^4 cells L⁻¹ at D6b Bottom sampling depth and 3.77×10^5 cells L⁻¹ at the Surface of the same station.

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When phytoplankton abundance was partitioned among the four major taxonomic categories, the community within the Asopus-1B area was largely dominated by the “Other taxa” group, which ranged from 1.03×10^5 cells L⁻¹ (75.52 %) at the Bottom sampling depth of D3b to 2.95×10^5 cells L⁻¹ (86.96 %) at the Surface of the same station. Bacillariophyceae represented the second most abundant group, with abundances ranging from $< 10^4$ cells L⁻¹ at D1b (Bottom) to 4.34×10^4 cells L⁻¹ (17.02 %) at the Surface of the same station. Dinophyceae and Coccolithophyceae constituted minor components of the phytoplankton assemblage, generally occurring at abundances below 10^4 cells L⁻¹. The highest abundances recorded for these groups were 2.21×10^4 cells L⁻¹ for Dinophyceae at the Surface of D5b and 2.99×10^4 cells L⁻¹ for Coccolithophyceae at the Middle depth of D3b.

The associated Blank Stations (D6b and D7b) displayed a comparable taxonomic structure, with the “Other taxa” group representing the dominant component of the phytoplankton assemblage. Abundances ranged from 4.61×10^4 cells L⁻¹ (58.56 %) at the Bottom depth of D6b to 2.87×10^5 cells L⁻¹ (76.10 %) at the Surface of the same station. Bacillariophyceae, Dinophyceae and Coccolithophyceae constituted subordinate fractions of the community, with abundances consistently below 1×10^5 cells L⁻¹ across all sampling depths.

Within the Reference Stations, total phytoplankton abundance ranged from 1.46×10^5 cells L⁻¹ in at the Othonoi Ref Bottom sampling depth to 4.16×10^5 cells L⁻¹ at the Surface of Kerkyra Ref. As observed at both well-site areas and the associated Blank Stations, the phytoplankton community was dominated by the “Other taxa” group, whose abundance varied from 1.06×10^5 cells L⁻¹ (72.13 %; Othonoi Ref, Bottom) to 2.82×10^5 cells L⁻¹ at Kerkyra Ref (Surface). Bacillariophyceae represented the second most abundant taxonomic group, with abundances ranging from $< 1 \times 10^5$ cells L⁻¹ at the Bottom depth of Othonoi Ref to 1.12×10^5 cells L⁻¹ (26.90 %) at the Surface of Kerkyra Ref. Consistent with the patterns observed throughout the study area, Dinophyceae and Coccolithophyceae constituted minor components of the phytoplankton assemblage, with abundances remaining below 1×10^5 cells L⁻¹ at all sampling depths across the Reference Stations.

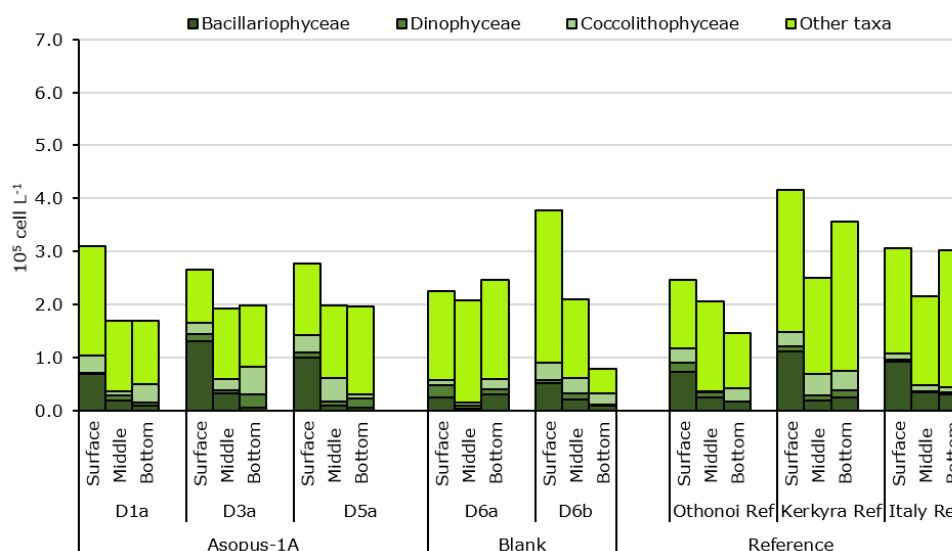


Figure 33 – Abundance of phytoplankton community along stations of Asopus-1A, Blank and Reference stations

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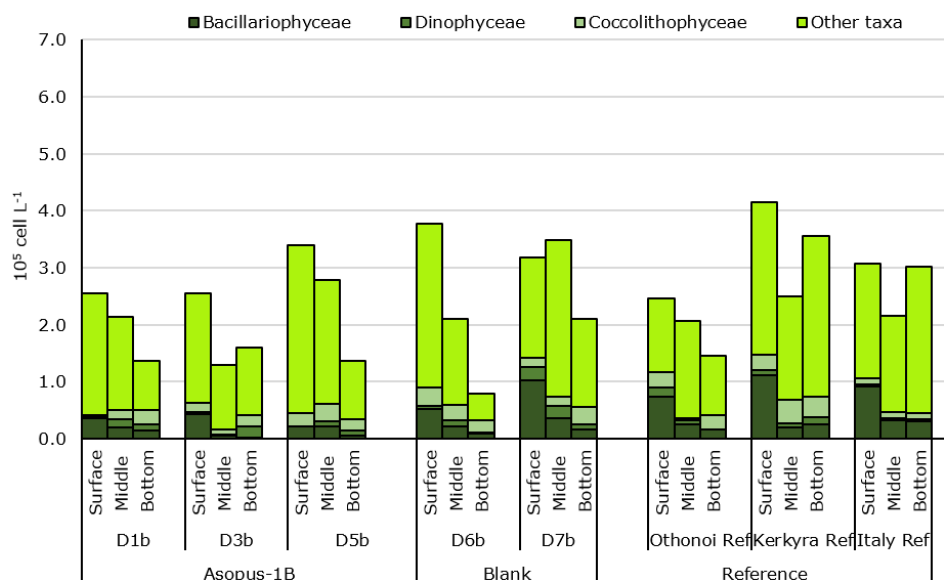


Figure 34 – Abundance of phytoplankton community along stations of Asopus-1B, Blank and Reference stations

Overall phytoplankton taxonomic richness comprised 114 identified *taxa*, including 29 Bacillariophyceae, 38 Dinophyceae, 18 Coccolithophyceae and 29 *taxa* grouped within the “Other taxa” category.

Within the Asopus-1A area (Figure 35), Dinophyceae and the “Other taxa” category represented the most taxonomically diverse components of the phytoplankton community. Dinophyceae richness ranged from 4 *taxa* at the Surface of station D3a to 12 *taxa* at the Surface of station D5a. The “Other taxa” category varied between 5 *taxa*, recorded at the Bottom of D3a and at all sampling depths of D5a, and 10 *taxa*, observed at both the Surface and Middle depth of D1a. Coccolithophyceae exhibited comparatively lower richness, with a minimum of 1 *taxon* at the Surface of D3a and a maximum of 6 *taxa* recorded at the Bottom of D3a and D5a and at the Middle depth of D1a and D3a. Bacillariophyceae were the least diverse group, ranging from a single *taxon* at the Bottom of D1a to a maximum of 5 *taxa* at the Middle depth of D5a. A broadly similar pattern was observed at the associated Blank Stations (D6a and D6b), where Dinophyceae again constituted the most diverse phytoplankton group. Richness varied from 5 *taxa* at the Surface of D6b to 12 *taxa* at the Middle depth of the same station. The “Other taxa” category ranged from 5 to 8 *taxa*, recorded, respectively, at the Middle and at the Surface depth of D6b. Coccolithophyceae richness varied between 2 *taxa* at the Bottom of D6a and 5 *taxa* at the Middle and Bottom depths of D6b. Bacillariophyceae were represented by a minimum of 1 *taxon* at the Surface of D6a and a maximum of 4 *taxa* at the Middle depth of D6a and at the Bottom of both D6a and D6b.

Within the Asopus-1B area (Figure 36), Dinophyceae represented the most taxonomically diverse phytoplankton group, with richness ranging from 5 *taxa* at the Surface of D1b to 10 *taxa* at the Bottom depth of the same station and at the Middle depth of D5b. The “Other taxa” category ranged from 3 *taxa* at the Bottom of D1b to 9 *taxa* at the Surface of the same station. Coccolithophyceae showed lower richness, with minimum values recorded at the Middle depth of D1b and D3b and at the Bottom of D3b and D5b, while the maximum richness of 6 *taxa* was observed in the Bottom

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waters of D1b. Bacillariophyceae ranged from 1 *taxon* at the Middle and Bottom depths of D3b to 6 *taxa* at the Bottom of D1b. The associated Blank Stations (D6b and D7b) displayed a comparable taxonomic richness pattern, with Dinophyceae again representing the most diverse group, ranged from 5 *taxa* at the Surface of D6b to 12 *taxa* at the Middle depth of the same station. The “Other taxa” category showed their minimum of 4 *taxa* at the middle waters of D7b and their maximum richness value of the Surface of station D6b. Coccolithophyceae ranged from 3 *taxa* at the Bottom of D7b to 7 *taxa* at the Middle depth of the same station. Bacillariophyceae were represented by a minimum of 1 *taxon* at the Surface of D6b and reached a maximum richness of 7 *taxa* at the Bottom of D6b.

Among the Reference Stations (shown in bot Figure 35 and Figure 36), the category of “Other taxa” exhibited a higher taxonomic diversity than others, with the lowest value (4) observed at the Middle and Bottom waters of Kerkyra Ref, compared to the highest value (7) recorded at the Surface of the same station and at Othonoi Ref (Middle and Surface). Dinophyceae were characterized by a lower (1) value at the Surface and at the Bottom of Kerkyra Ref and an higher (9) value recorded at the Middle sampling depth of Othonoi Ref. Coccolithophyceae was characterized by a minimum (1) detected at the Bottom waters of Kerkyra Ref, whereas the maximum (5) was recorded at the Surface of Othonoi Ref. Finally, only 2 Bacillariophyceae *taxa* were identified at the Middle and Bottom of Othonoi Ref and Kerkyra Ref, whereas, the maximum (5) was detected at the Surface of Othonoi Ref.

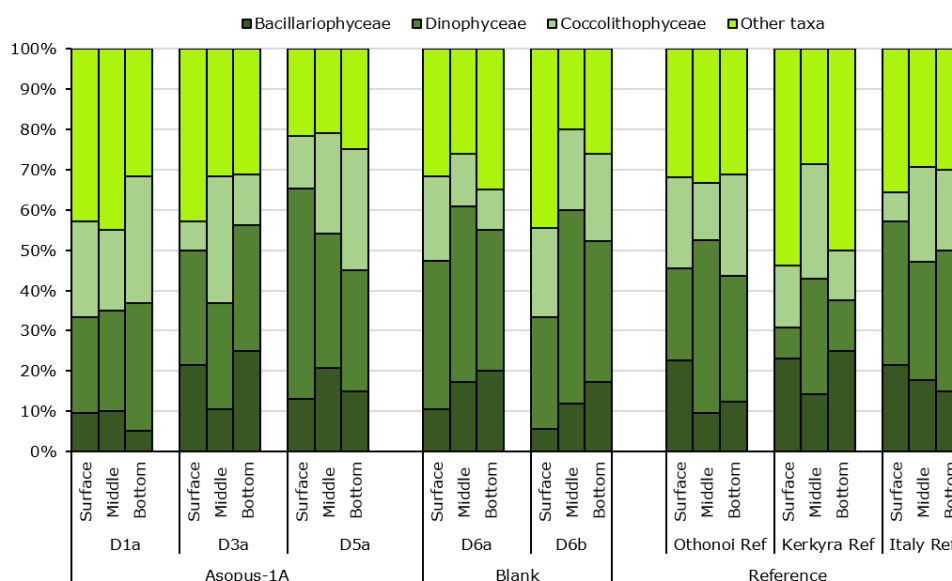


Figure 35 – Taxonomic composition of the phytoplankton community in Asopus-1A, Blank and Reference stations

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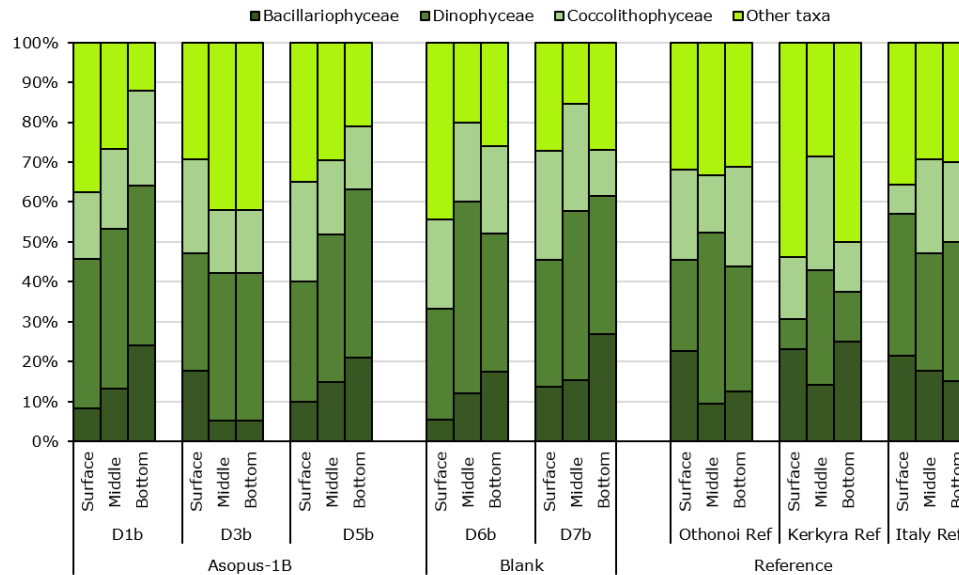


Figure 36 – Taxonomic composition of the phytoplankton community in Asopus-1B, Blank and Reference stations

MSD analysis (Figure 37) revealed marked differences in phytoplankton community structure among the samples collected at different depths. Consistently, PERMANOVA performed on the species-abundance matrix revealed statistically significant differences based on depth of the column water, with reduction of light's intensity across column water emerging as a potential driving factor ($p < 0.05$). Statistically significant differences were, also, detected either between the stations of the Asopus-1A, Asopus-1B and Reference stations (Figure 38), suggesting the geographical distance between these areas as a potential factor to make variability, in terms of phytoplanktonic community ($p < 0.05$).

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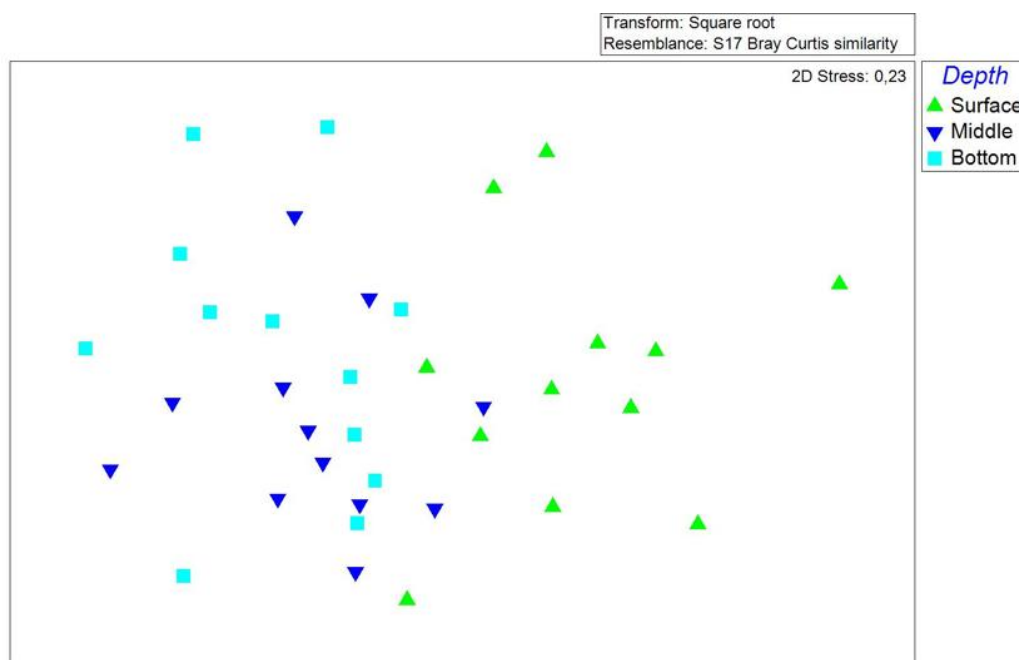


Figure 37 – MSD analysis based on the species/abundance matrix of the phytoplankton community related to the factor depth

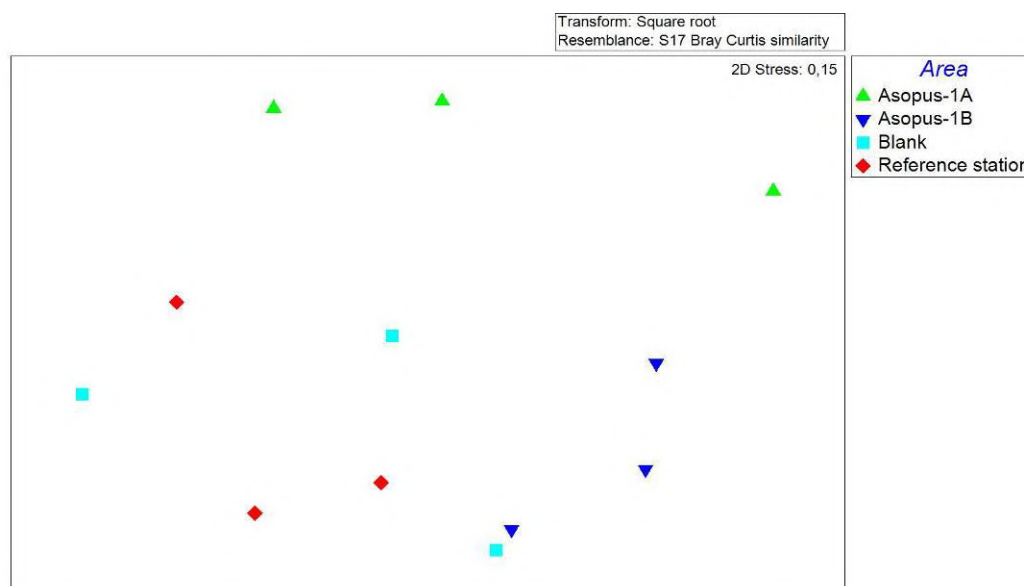


Figure 38 – MSD analysis based on the species/abundance matrix of the phytoplankton community related to the factor area

The main identified phytoplankton species in the collected samples are shown in the photographs below.

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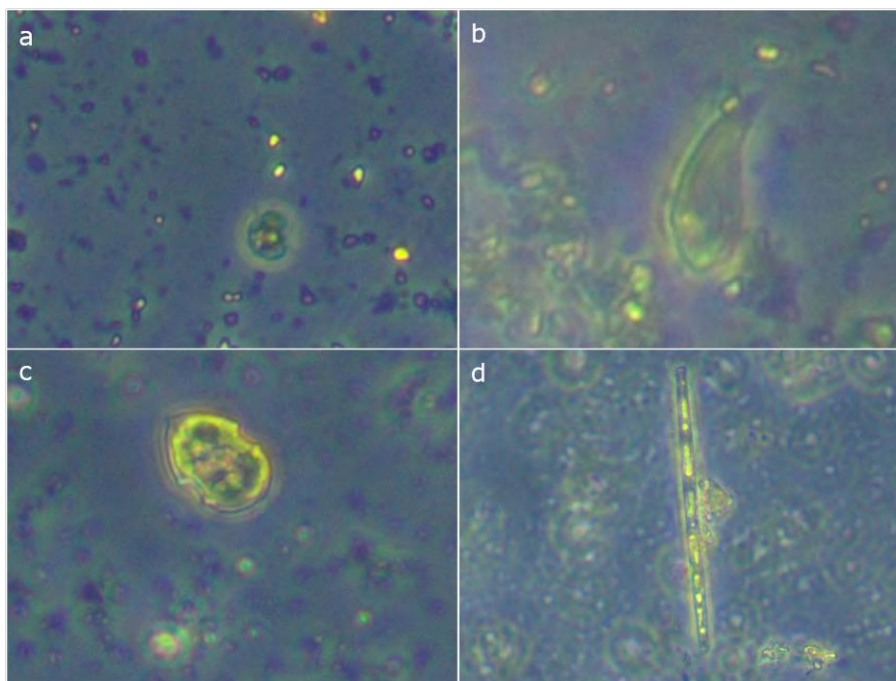


Figure 39 – Some representative taxa of the station D1a: Microflagellates indet. (a), Cryptophyceae (b), *Heterocapsa minima* (c) and *Thalassionema nitzschioides* (d)

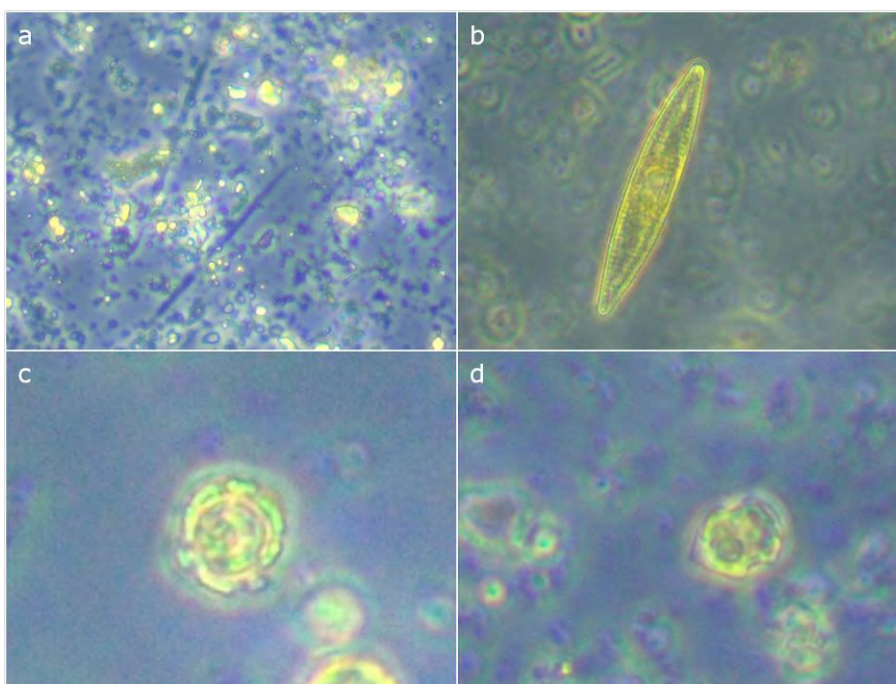


Figure 40 – Some representative taxa of the station D3a: *Pseudo-nitzschia delicatissima* complex. (a), *Achnanthes* sp. (b), *Gephyrocapsa huxleyi* (c) and *Katodinium* sp. (d)

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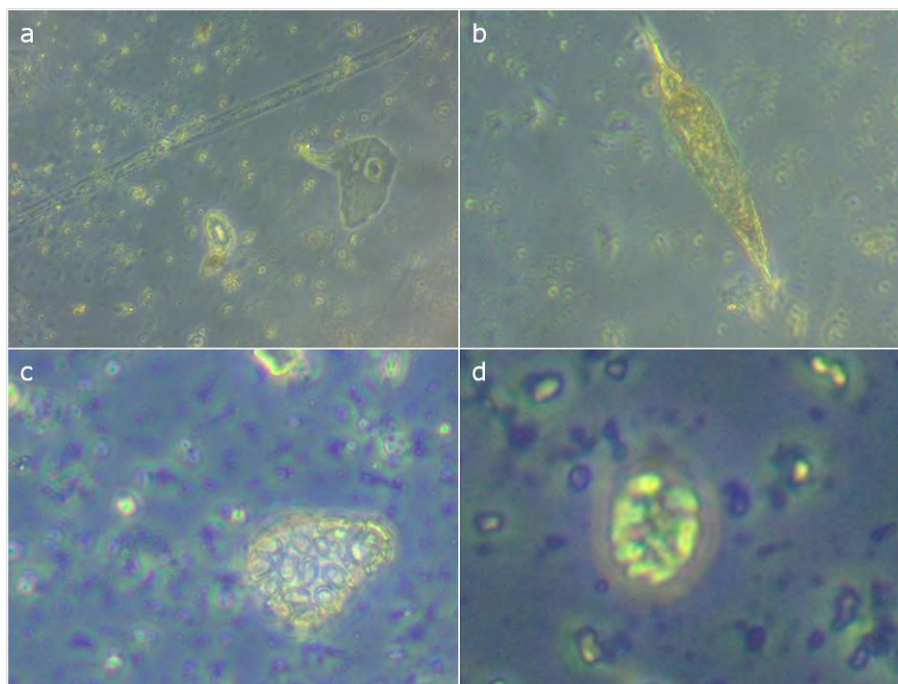


Figure 41 – Some representative taxa of the station D5a: *Proboscia alata* (a), *Oxytoxum scolopax* (b), *Syracosphaera pulchra* (c) and *Euglenophyceae* nd. (d)

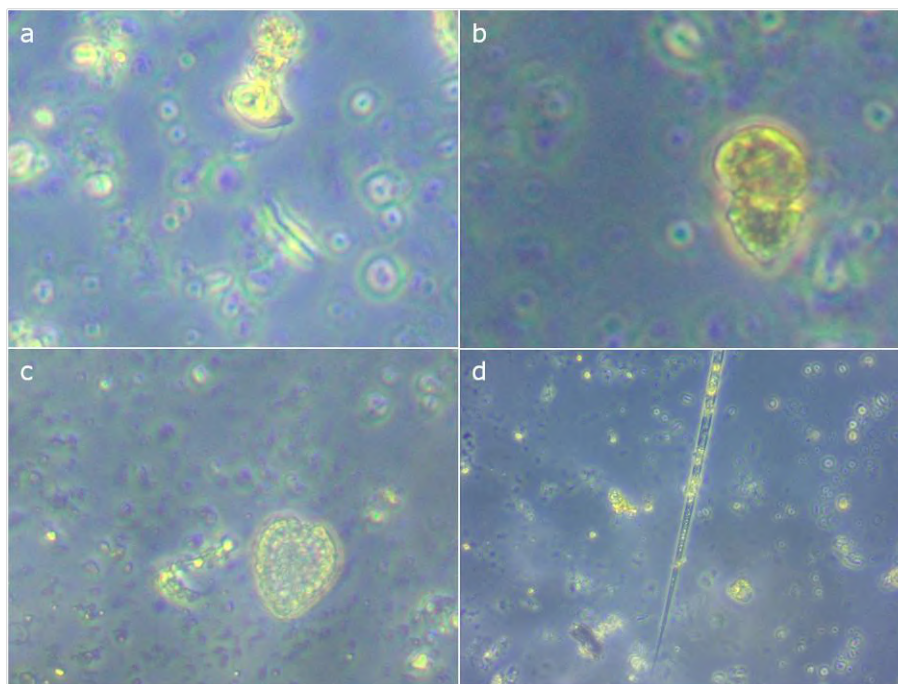


Figure 42 – Some representative taxa of the station D6a: *Cryptophyceae* nd. (a), *Gymnodinium* sp. (b), *Calyptosphaera* sp. (c) and *Haslea Wawriake* (d)

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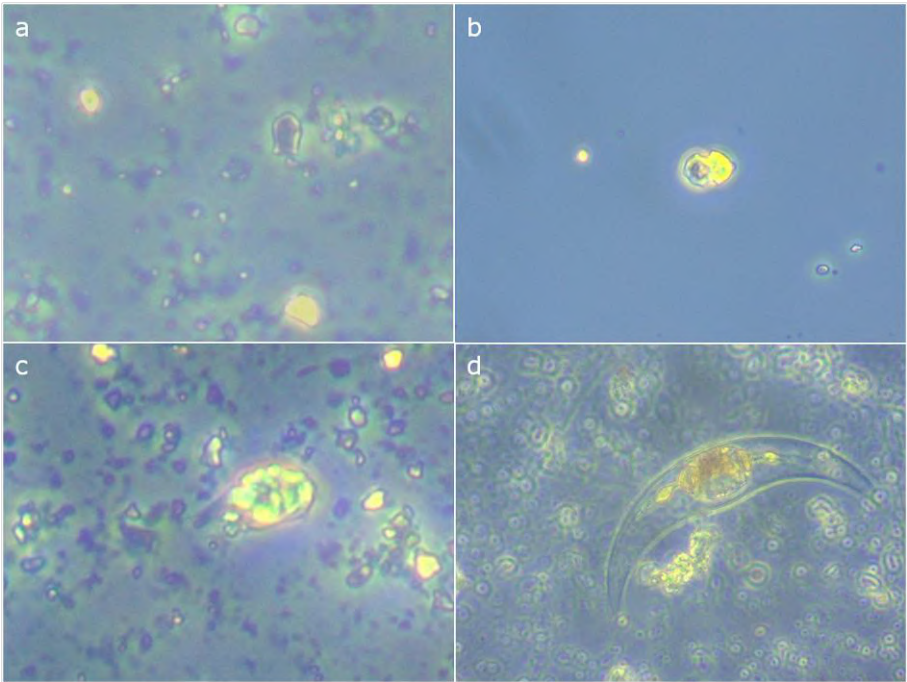


Figure 43 – Some representative taxa of the station D1b: *Ollicola vangoorii* (a), *Heterocapsa* sp. (b), Euglenophyceae nd. (c) and *Neocalyptrella robusta* (d)

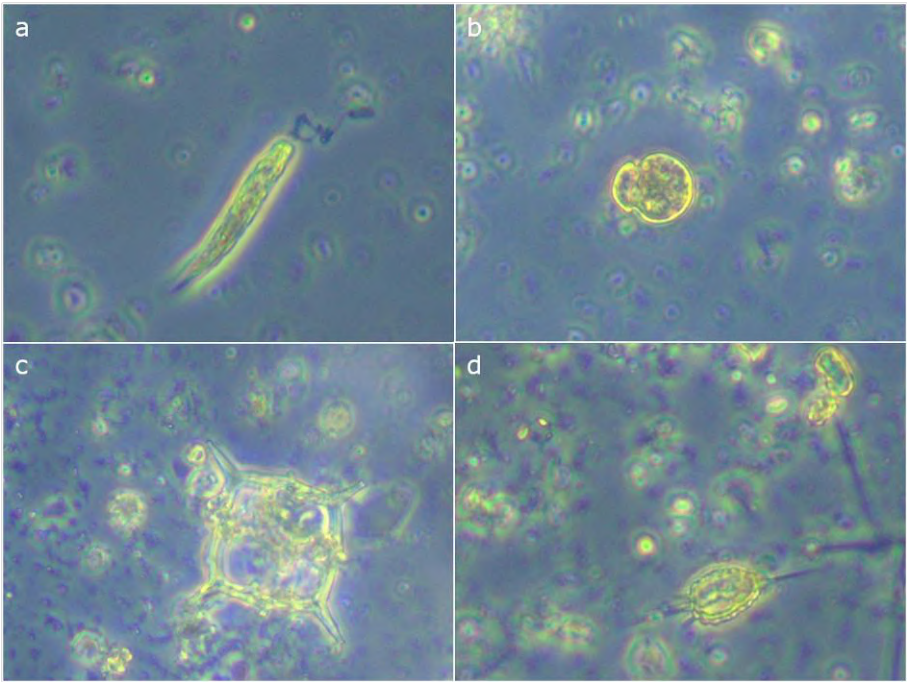


Figure 44 – Some representative taxa of the station D3b: *Euglena* sp. (a), *Oxytoxum viride* (b), *Dictyocha fibula* (c) and *Chrysochromulina parkeae* (d)

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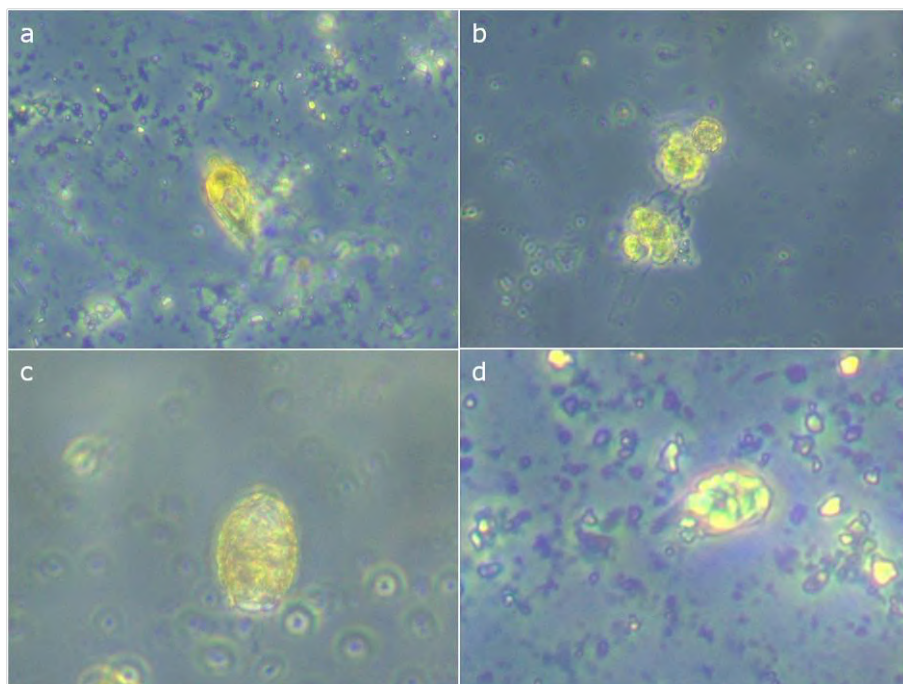


Figure 45 – Some representative taxa of the station D5b: *Oxytoxum variabile* (a), *Leptocylindrus mediterraneus* (b), *Helicosphaera carterii* (c) and Euglenophyceae nd. (d)

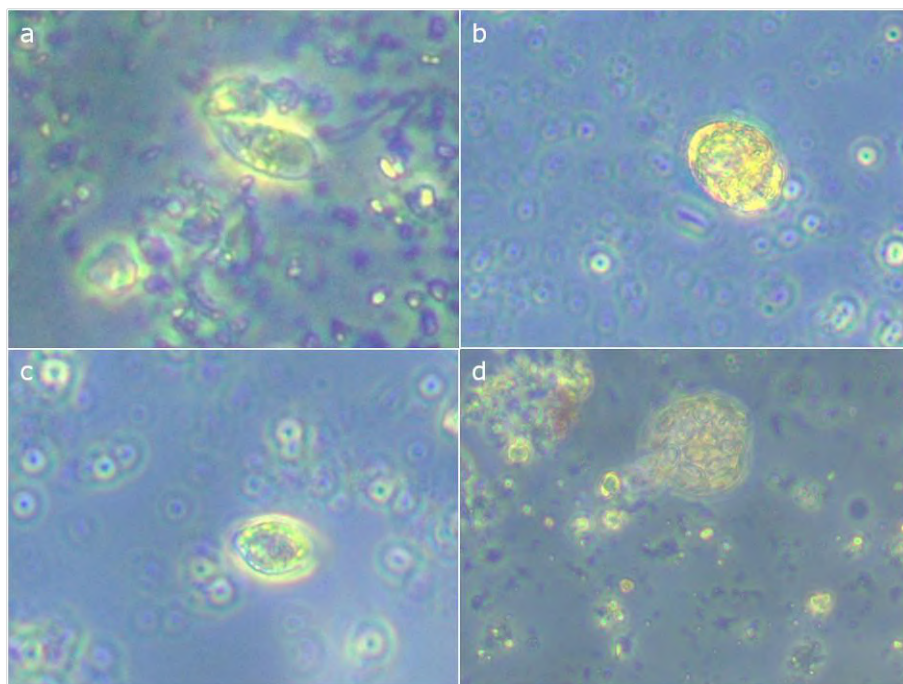


Figure 46 – Some representative taxa of the station D6b: *Leucocryptos marina* (a), *Amphidinium* sp. (b), *Microflagellates* nd. (c) and *Syracosphaera hystrica* (d)

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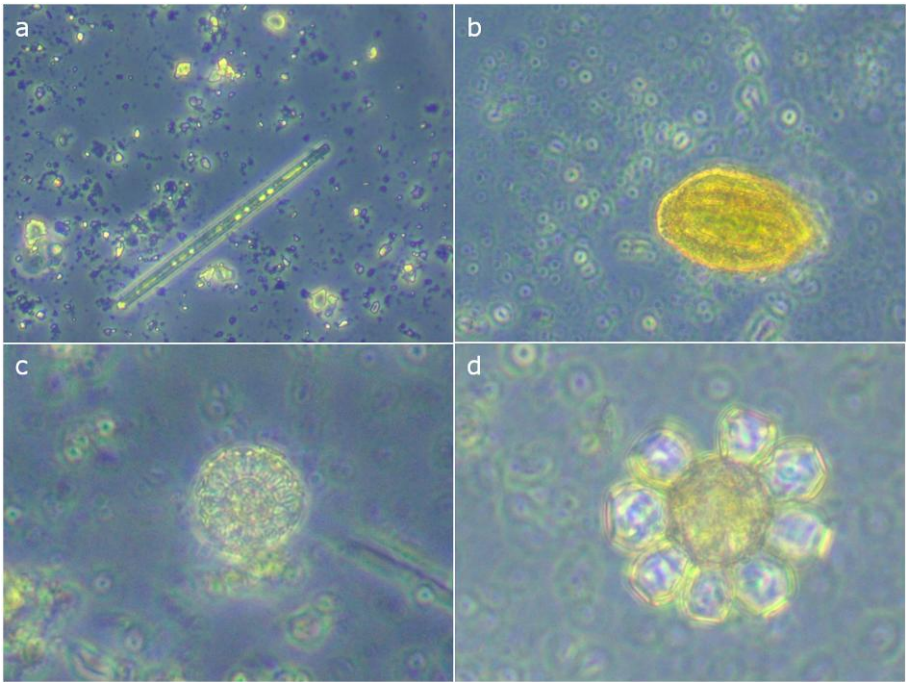


Figure 47 – Some representative taxa of the station D7b: *Thalassionema* sp. (a), *Torodinium* sp. (b), *Discosphaera tubifera* (c) and *Scyphosphaera apsteinii* (d)

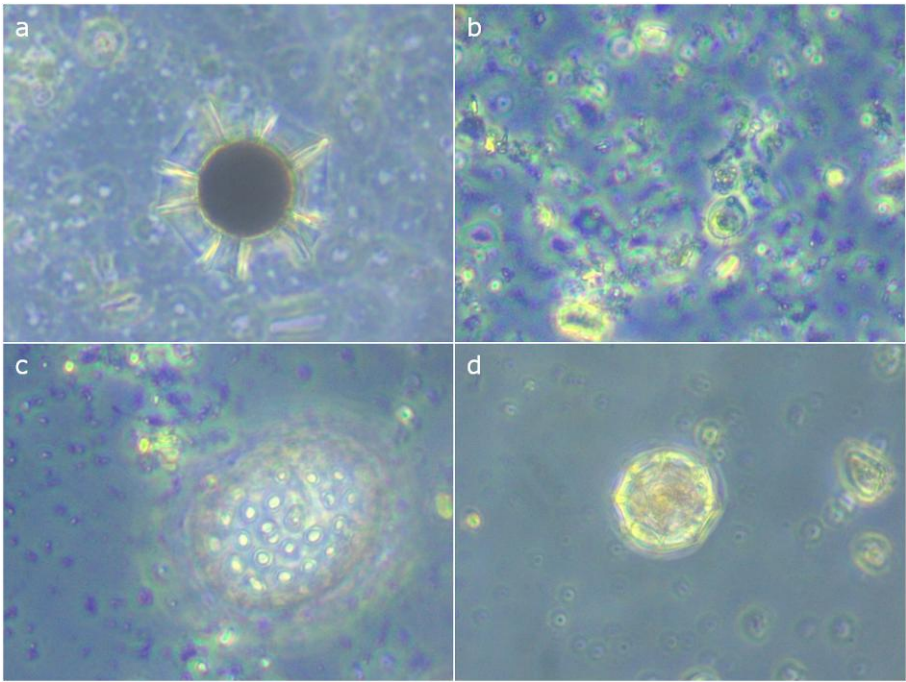


Figure 48 – Some representative taxa of the station Othonoi Ref: *Lingulaulax polyedra*(a), Microflagellates nd. (b), *Umbilicosphaera sibogae* (c) and *Pterosperma cristatum* (d)

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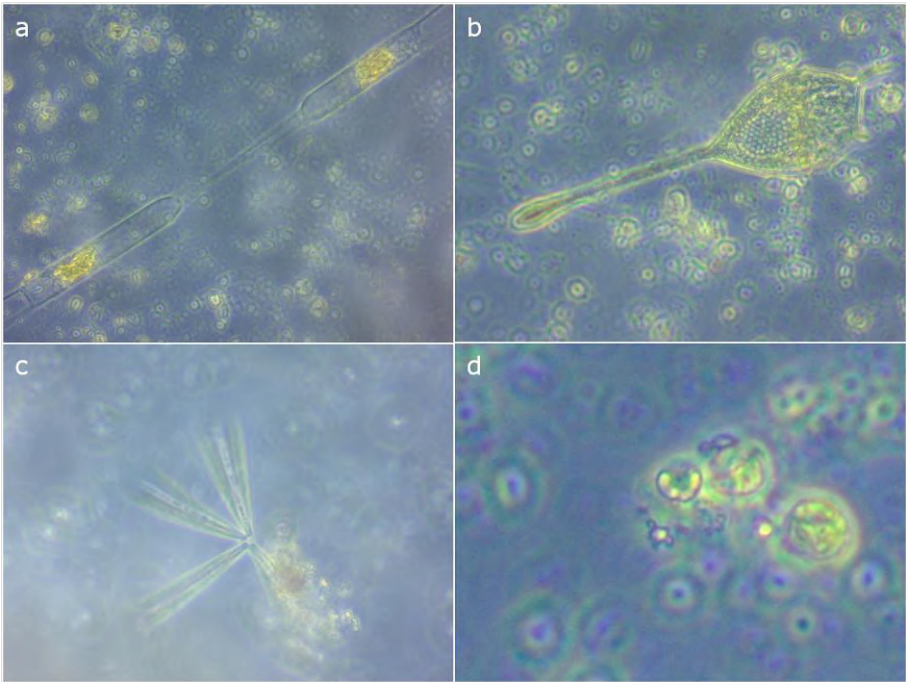


Figure 49 – Some representative taxa of the station Kerkyra Ref: *Hemialulus hauckii* (a), *Tripos teres* (b), *Thalassionema nitzschioides* (c) and *Microflagellates nd* (d)

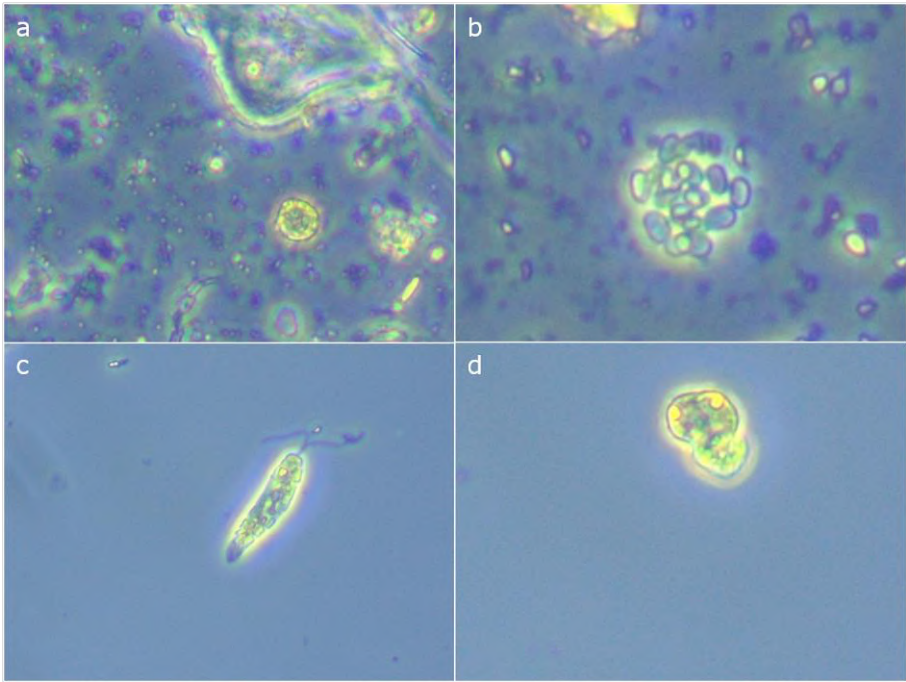


Figure 50 – Some representative taxa of the station Italy Ref: *Gephyrocapsa huxleyi* (a), *Synechococcus* sp. (b), *Eutreptiella* sp. (c) and *Gymnodinium* sp. (d)

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5.1.4.2 Relationship between environmental variables and the phytoplankton community

The BEST (BIO-ENV, BVSTEP procedure) analysis was applied to identify the subset of environmental variables most strongly associated with the structure of the phytoplankton community. The analysis was performed by comparing the biological similarity matrix with the Euclidean distance matrix calculated from the chemical variables of the water column using Spearman rank correlation. Among the twelve environmental variables considered (total suspended solids, nutrients, and trace metals), the best explanatory subset consisted of Total Phosphorus, Ammoniacal Nitrogen, and Orthophosphate, yielding a correlation coefficient of $\rho = 0.21$.

The selection of these three variables highlights the predominant role of nutrients in shaping the distribution and composition of the phytoplankton community. From an ecological perspective, this finding is consistent with observations from oligotrophic marine ecosystems, where the availability of nitrogen and phosphorus is one of the primary factors limiting phytoplankton growth. Variations in nutrient concentrations can promote different taxonomic groups, influencing both community abundance and species composition. Furthermore, the exclusive selection of nutrient-related variables in the optimal solution suggests that the trace metals considered (arsenic, barium, copper, iron, mercury, nickel, and zinc) do not exhibit a significant relationship with the observed biological patterns at the spatial and temporal scales investigated.

Nevertheless, the relatively low correlation coefficient obtained ($\rho = 0.21$) indicates that the identified chemical variables explain only a limited fraction of the overall biological variability. This result suggests that phytoplankton community structure is not driven solely by nutrient availability but rather by the interaction of multiple environmental factors. This aspect is particularly relevant considering the characteristics of the investigated water column. In deep marine environments, depth represents a major ecological gradient that drives significant variations in physical and chemical conditions, including light availability, temperature, water density, nutrient concentrations, and vertical mixing processes.

Phytoplankton distribution is generally restricted to the illuminated upper layers of the water column, whereas deeper waters are often characterized by higher nutrient concentrations resulting from the remineralization of sinking organic matter. Consequently, differences among sampling depths may reflect not only variations in water chemistry but also ecological processes related to vertical stratification, the occurrence of Deep Chlorophyll Maximum, vertical transport of cells, and water mass dynamics.

The weak correlation observed may therefore be attributable to the influence of environmental variables not included in the analysis, such as water column stability, thermocline depth, photosynthetically active radiation (PAR), and local hydrodynamic processes. In addition, part of the biological variability may be driven by biotic factors, including interspecific competition, seasonal succession patterns, and grazing pressure exerted by zooplankton.

Overall, the results indicate that nutrient availability is the principal chemical factor associated with phytoplankton distribution. However, community structure appears to be influenced by a more complex set of ecological and oceanographic processes, in which vertical gradients within the water column and the physical characteristics of the deep marine environment play a key role.

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5.1.5 Detailed description of results – Mesozooplankton

5.1.5.1 Abundance and diversity of mesozooplankton community

The qualitative and quantitative analyses performed on the mesozooplankton community of the whole study area showed broadly comparable values between the stations located in the Asopus-1A well area and those located in the Asopus-1B well area. The reference stations (Othonoi Ref, Kerkira Ref and Italy Ref) also exhibited abundance values consistent with those observed in proximity to the aforementioned wells in Block 2.

The species / abundance matrix of the zooplankton community is presented in APPENDIX D: ZOOPLANKTON DATA, where data are expressed as ind. m⁻³.

Specifically, an average abundance of individuals per cubic metre (ind. m⁻³) of 264.22 ± 97.50 ind. m⁻³ was recorded at the Asopus-1A well stations, while 328.97 ± 134.02 ind. m⁻³ was recorded at the Asopus-1B well stations. The reference stations Othonoi Ref, Kerkira Ref, and Italy Ref showed abundance values of 314.06 ind. m⁻³, 293.68 ind. m⁻³, and 281.46 ind. m⁻³, respectively, which are quantitatively consistent with those observed in the two well areas.

In the upper 200 m of the water column, corresponding to the investigated layer, surface and subsurface / intermediate waters prevailed. These waters are normally subject to stratification, mesoscale variability, and limited trophic input, consistent with the oligotrophic nature of the Eastern Ionian sector of the Mediterranean Sea. This hydrological setting supports planktonic communities typical of deep pelagic waters, generally characterized by low biomass and high species diversity (Siokou-Frangou et al., 1999).

With regard to the structure of the mesozooplankton community (Figure 51 and Figure 52), the holoplanktonic component was clearly dominant (contributing 96.65 – 99.14 % of the total abundance in Othonoi Ref and D3a, respectively), with copepods representing the main component of this ecological category (89.76 – 96.47 % of the total abundance in D3b and D1b, respectively). Meroplankton, in contrast, contributed only marginally to the investigated mesozooplankton community (contributing 0.86 – 3.35 % of the total abundance in D3a and Othonoi Ref, respectively). This distribution of the different ecological groups within the community was essentially consistent both in Block 2 (Asopus-1A and Asopus-1B wells) and at the Reference stations (Othonoi Ref, Kerkyra Ref, Italy Ref).

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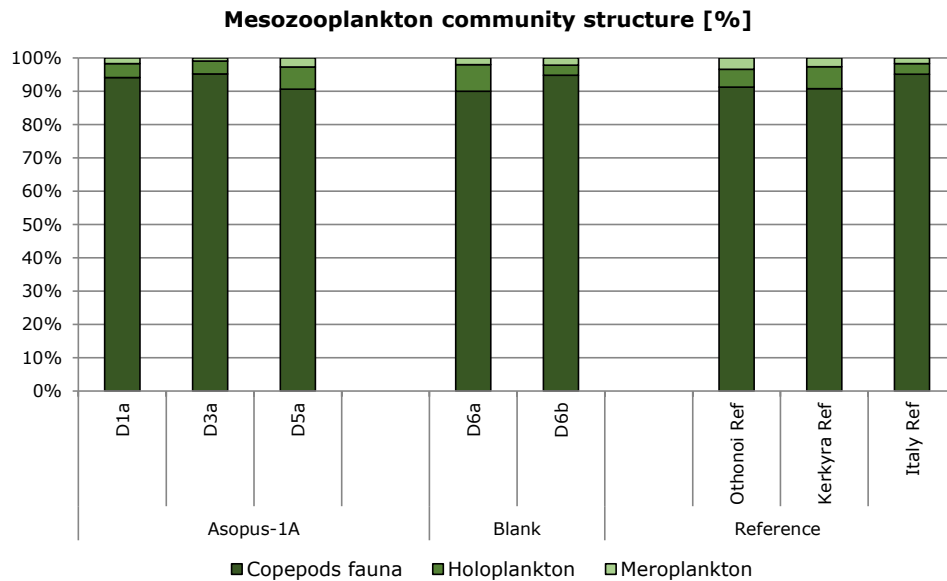


Figure 51 – Percentage composition of the mesozooplankton community, based on the main ecological categories (holoplankton and meroplankton). Within the holoplankton, the copepod component was analysed separately, as it represents a significantly representative fraction of the community – Asopus-1A, Blank and Reference stations

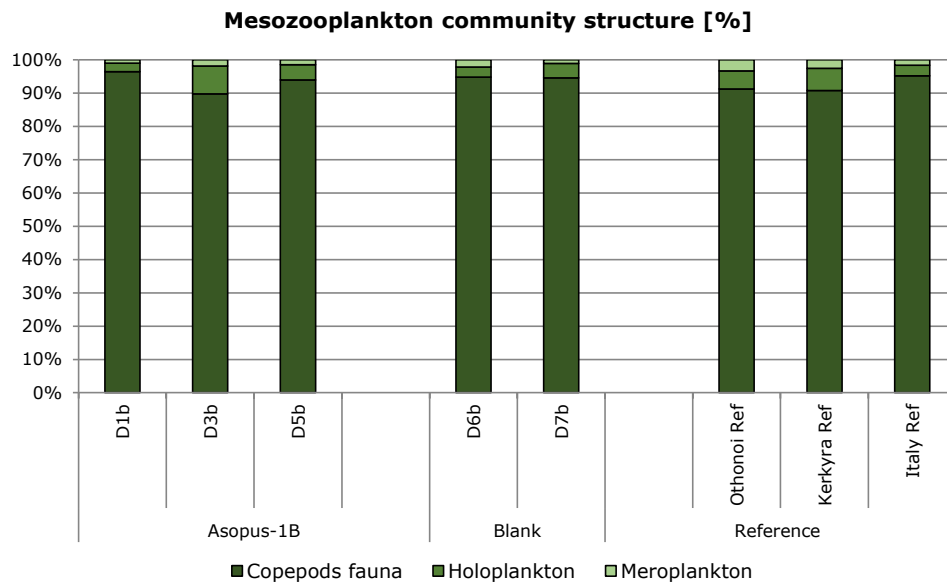


Figure 52 – Percentage composition of the mesozooplankton community, based on the main ecological categories (holoplankton and meroplankton). Within the holoplankton, the copepod component was analysed separately, as it represents a significantly representative fraction of the community – Asopus-1B, Blank and Reference stations

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Cluster analysis (Figure 53) revealed similarity values ranging between 55 % and 70 % across the different station groups, indicating an overall homogeneity among the mesozooplankton communities. The stations did not cluster consistently according to the sampled areas. All stations investigated in Block 2, including the control points (Blank; D6a, D6b, and D7b) located farther from the wells, showed assemblages comparable to those observed at the Reference stations (Othonoi Ref, Kerkyra Ref, and Italy Ref).

ANOSIM results further indicated weak and statistically non-significant differences among the compared station groups. The global test statistic was $R = 0.19$; considering that the ANOSIM R statistic typically ranges from -1 to +1, with values close to 1 indicating strong separation between groups and values close to 0 indicating high overlap, the result suggests limited differentiation among the analysed communities.

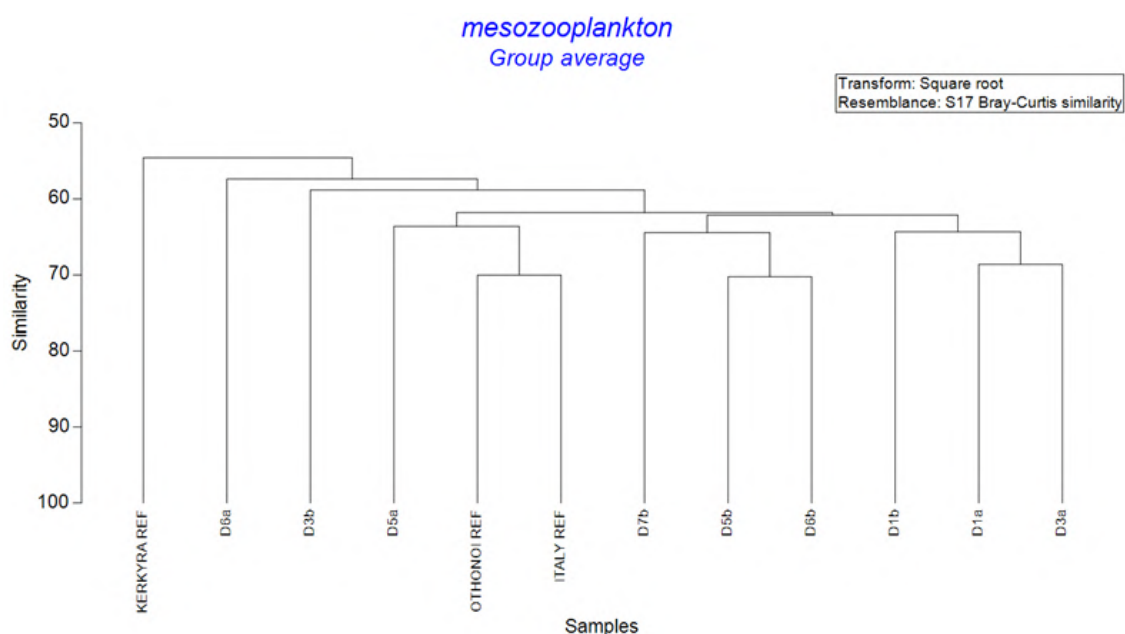


Figure 53 – Cluster analysis (Bray–Curtis similarity) of the mesozooplankton communities in the Block 2 area (Asopus-1A and Asopus-1B wells) and at the Reference stations (Othonoi Ref, Kerkyra Ref, and Italy Ref)

With regard to the qualitative analysis of the copepod component, a total of 127 *taxa* were identified, representing the three main developmental stages: nauplii, copepodites, and adults. Naupliar stages were likely underestimated in the counts, as they often present sizes smaller than 200 μm , corresponding to the mesh size of the net used, which is more suitable for the analysis of the adult component and larger juvenile stages.

The observed biodiversity included copepods belonging to the main planktonic orders (Calanoida, Cyclopoida, Mormonilloida, Harpacticoida, and Siphonostomatoida) distributed across 28 families and representative of the main planktonic trophic groups. Adult *taxa* that could be identified to species level accounted for 92 *taxa*. The sampled taxonomic richness was high and characterized by the occurrence of numerous rare or sporadic species, typical of meso- and bathypelagic

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environments and of considerable ecological interest. Among these, species belonging to the families Aetideidae (*Aetideus armatus*, *A. giesbrechti*, *Chiridius poppei*, *Euchirella messinensis messinensis*, and *E. rostrata*), Arietellidae (*Arietellus pavoninus*), and Augaptilidae (*Augaptilus glacialis*, *A. longicaudatus*, *Euaugaptilus hecticus*, *Haloptilus longicornis*, *H. ornatus*, and *H. spiniceps*) were recorded.

The mean percentage taxonomic composition of adults and copepodites highlighted the presence of a recurrent group of dominant families across all sampling stations within the investigated areas (Asopus-1A, Asopus-1B, and Reference sites). In particular, Clausocalanidae consistently accounted for at least 50 % of the collected individuals, increasing up to 65 % when only juvenile copepodite stages were considered. Augaptilidae, Lucicutiidae, Corycaeiidae, and Oithonidae also contributed substantially to the assemblage structure.

The species characterizing the adult copepod community (Figure 54 and Figure 55) were largely consistent with the composition observed in the juvenile stages (Figure 56 and Figure 57), indicating a close correspondence between the adult and copepodite fractions. The Italy Ref monitoring station showed a higher incidence of Paracalanidae, particularly among juvenile stages. This pattern suggests a stronger contribution of neritic waters in this area, in agreement with the wide distribution of the genus *Paracalanus* in the coastal and neritic sectors of the Mediterranean Sea.

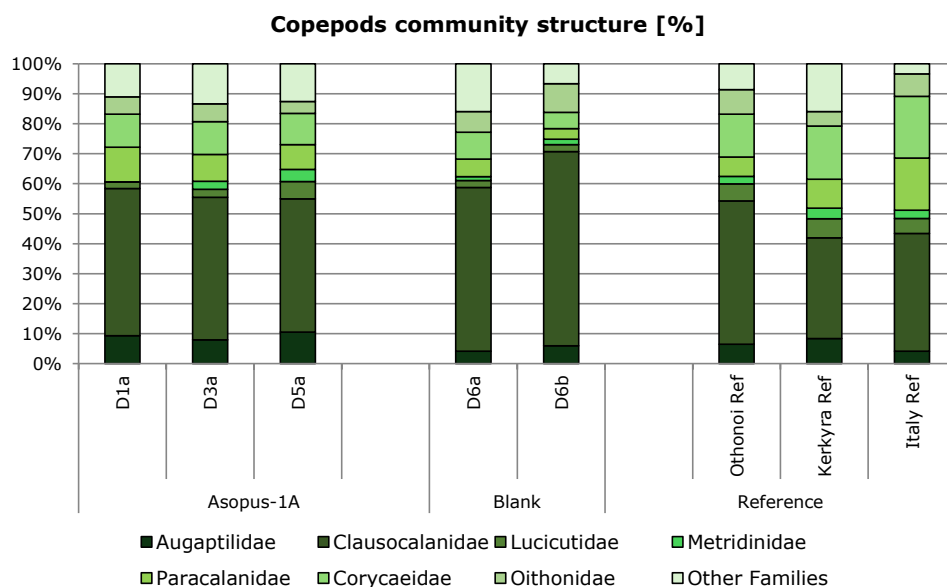


Figure 54 – Percentage composition of the copepod crustacean component, based on the main families. Percentage abundances of the adult copepod community are shown for the different sampling stations – Asopus-1A and Reference stations

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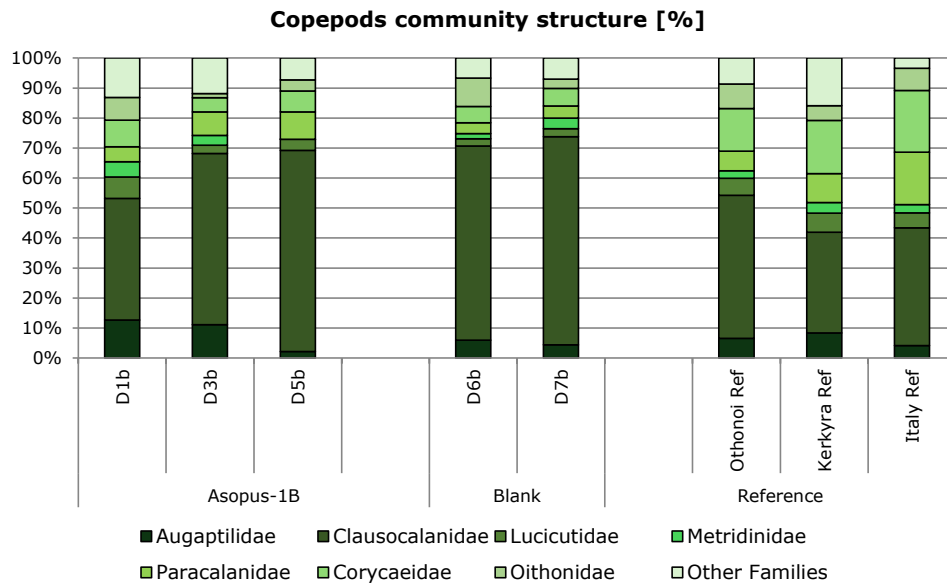


Figure 55 – Percentage composition of the copepod crustacean component, based on the main families. Percentage abundances of the adult copepod community are shown for the different sampling stations – Asopus-1B and Reference stations

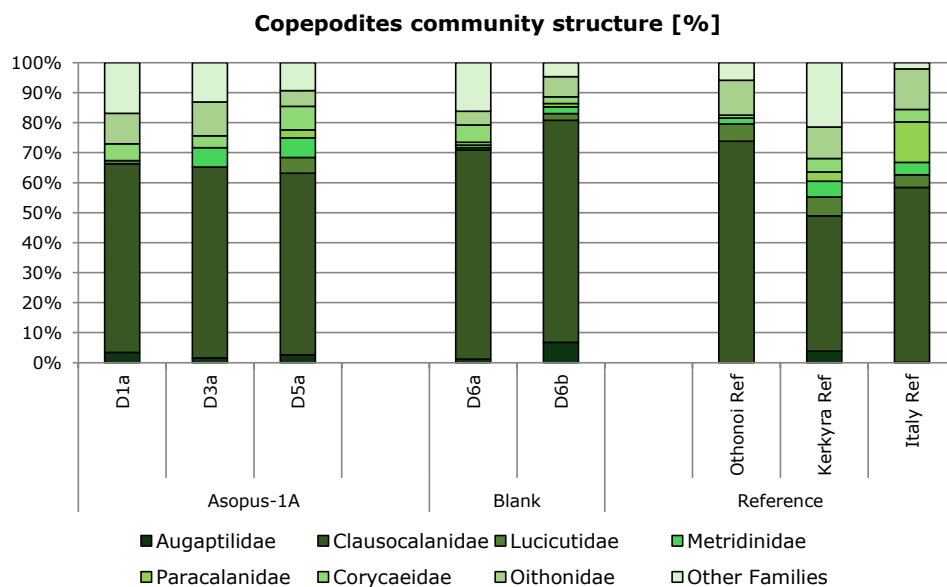


Figure 56 – Percentage composition of the copepod crustacean component according to the main families. Percentage abundances of the juvenile community (copepodites) are shown for the different sampling stations – Asopus-1A and Reference stations

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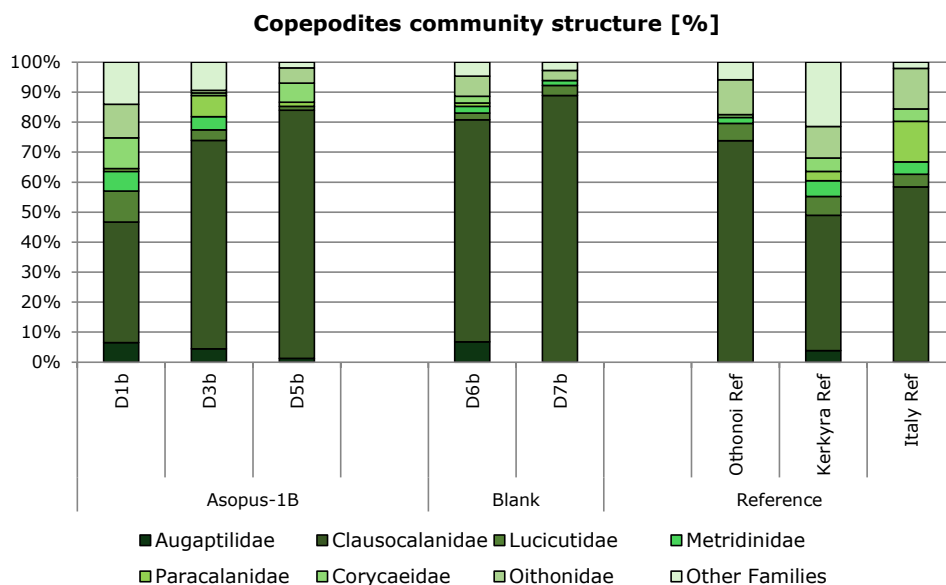


Figure 57 – Percentage composition of the copepod crustacean component according to the main families. Percentage abundances of the juvenile community (copepodites) are shown for the different sampling stations – Asopus-1B and Reference stations

Within the adult copepod community, the calanoid copepods *Clausocalanus paululus* (Asopus-1A: mean abundance 40.96 ind. m⁻³; Asopus-1B: mean abundance 54.14 ind. m⁻³; Reference stations: mean abundance 26.03 ind. m⁻³) and *Haloptilus longicornis* (Figure 58a; Asopus-1A: mean abundance 18.72 ind. m⁻³; Asopus-1B: mean abundance 14.46 ind. m⁻³; Reference stations: mean abundance 10.85 ind. m⁻³) reached the highest abundances. *C. paululus* is a subtropical circumglobal species reported from the Mediterranean Sea within the 0–800 m depth layer, although mainly concentrated in the upper 200 m. It has been recorded in both neritic and oceanic waters, where it may represent one of the most abundant species within the copepod community (Avancini *et al.*, 2006; Vives & Shmeleva, 2007). In contrast, *H. longicornis* is a typically mesopelagic species capable of performing diel vertical migrations, occupying the upper water layers during nighttime.

Other *taxa* that were particularly representative of the copepod community in terms of abundance included the corycaeid *Agetus limbatus* (Asopus-1A: mean abundance 6.73 ind. m⁻³; Asopus-1B: mean abundance 4.74 ind. m⁻³; Reference stations: mean abundance 13.23 ind. m⁻³), the paracalanid *Calocalanus styliremis* (Asopus-1A: mean abundance 8.31 ind. m⁻³; Asopus-1B: mean abundance 4.74 ind. m⁻³; Reference stations: mean abundance 8.11 ind. m⁻³), the corycaeid *Farranula rostrata* (Asopus-1A and Asopus-1B: mean abundance 5.76 ind. m⁻³ in both areas; Reference stations: mean abundance 10.67 ind. m⁻³), the lucicutiid *Lucicutia flavicornis* (Asopus-1A: mean abundance 5.76 ind. m⁻³; Asopus-1B: mean abundance 5.52 ind. m⁻³; Reference stations: mean abundance 8.96 ind. m⁻³), and the mormonilloid *Neomormonilla minor* (Asopus-1A: mean abundance 6.72 ind. m⁻³; Asopus-1B: mean abundance 5.38 ind. m⁻³; Reference stations: mean abundance 1.91 ind. m⁻³). The latter species is characterized in the Mediterranean Sea by a broad vertical distribution and has been regularly collected in the Tyrrhenian Sea at depths ranging between 300 and 1850 m.

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Of particular ecological interest was the identification, within Mediterranean biogeographical sector 6 (Ionian Sea), of isolated specimens of *Arietellus pavoninus* (Figure 58b) and *Augaptilus glacialis* (Figure 58c). These taxa are generally considered rare in the Mediterranean Sea, oceanic in distribution, and associated with deep environments, including mesopelagic, bathypelagic, and abyssal waters. This finding confirms that monitoring activities conducted in deep pelagic areas can provide valuable information on plankton biodiversity, helping to fill knowledge gaps regarding the distribution of rare or poorly documented species.

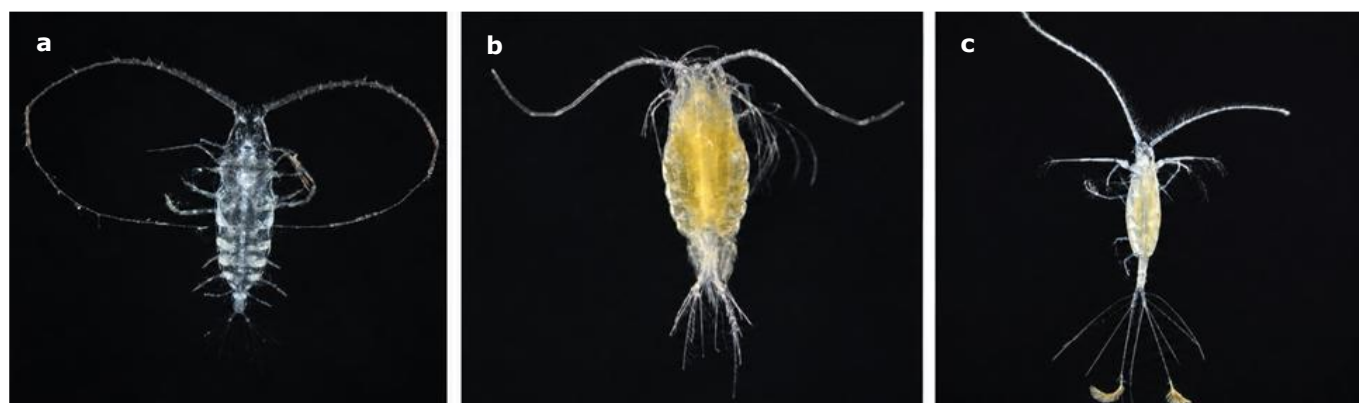


Figure 58 – *Haloptilus longicornis* (a); *Arietellus pavoninus* (b); *Augaptilus glacialis* (c)

The remaining non-copepod holoplanktonic component of the mesozooplankton showed high biological diversity, with a total of 53 identified *taxa*, although abundance values were on average approximately one order of magnitude lower than those recorded for the copepod community. Abundances ranged from a minimum of 7.9 ind. m⁻³ at station D1b to a maximum of 23.7 ind. m⁻³ at station D5b (both located within the Asopus-1B well area).

Part of the identified taxa exhibited cosmopolitan features and broad ecological tolerance, including organisms belonging to Hydrozoa, Pteropoda (e.g. *Cavolina sp.*; Figure 59a), Polychaeta (e.g. *Tomopteris sp.*; Figure 59b), Chaetognatha, Appendicularia, and Thaliacea, which are typical of the epipelagic zone of the oceanic province. Other taxa were more closely associated with mesopelagic environments, such as Euphausiacea (e.g. *Euphausia sp.*; Figure 59c) and Mysida, or with bathypelagic waters, such as some amphipod species (e.g. *Anchylomera blossevillei*; Figure 59d), a group that is well represented and diversified in this sector of the Mediterranean Sea.

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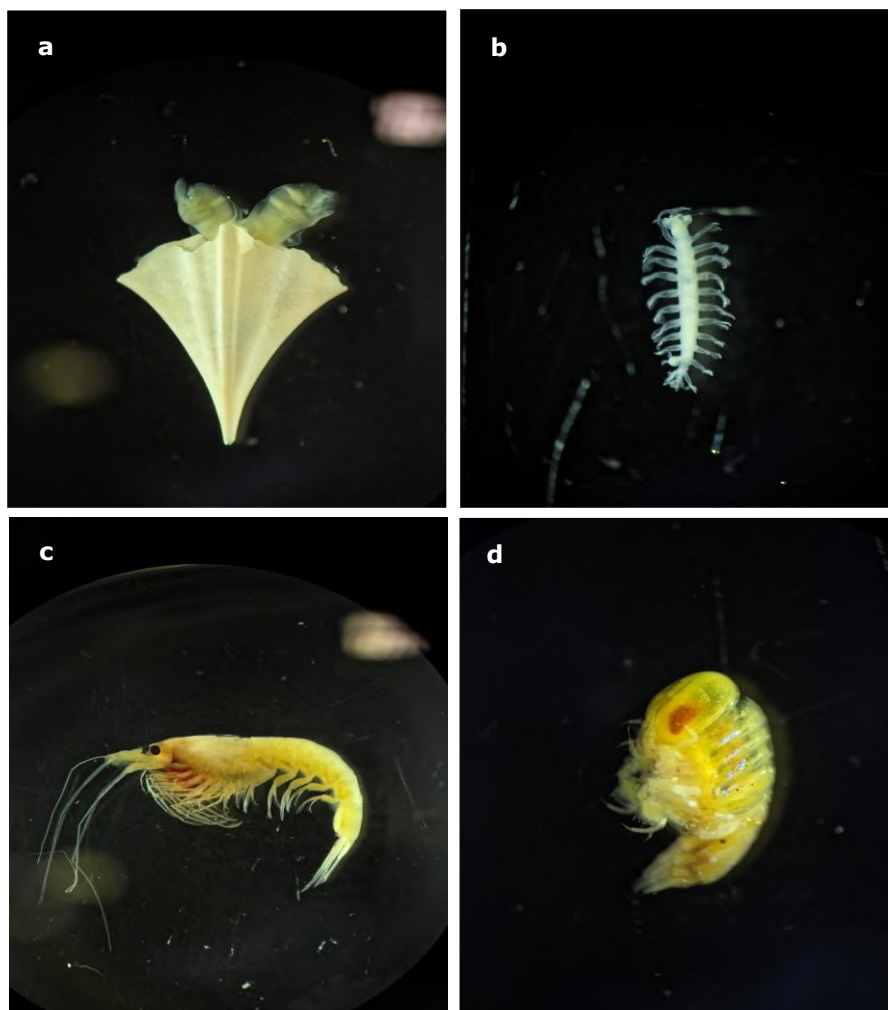


Figure 59 – *Cavolina sp.* (a); *Tomopteris sp.* (b); *Euphasia sp.* (c); *Anchylomera blossevillei* (d)

The meroplanktonic component was extremely scarce (14 *taxa*), particularly with regard to decapod crustaceans. This evidence further supports the interpretation of a mesozooplankton community typical of offshore waters, characterized by a limited contribution of neritic elements and by the absence, in the analysed samples, of larvae attributable to coastal benthic species. Among the most representative *taxa* were mainly larval stages of Asteroidea (e.g. Brachiolaria larvae; Figure 60a), Holothuroidea (e.g. Auricularia larvae; Figure 60b), and representatives of the class Polychaeta (e.g. *Harmothoe sp.*; Figure 60c).

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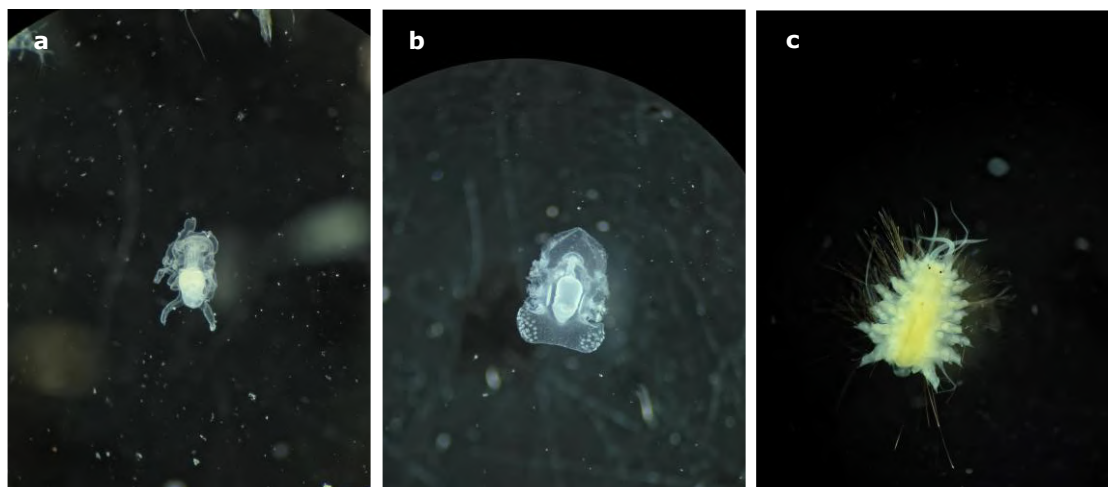


Figure 60 – Brachiolaria larvae (a); Auricularia larvae (b); Harmothoe sp. (c)

Overall, the results indicate a highly diverse mesozooplankton assemblage typical of deep offshore Ionian waters, with no clear spatial differentiation among the sampled areas and reference stations. The observed patterns appear mainly consistent with the bathymetric and hydrological features of the study area.

Table 21 – Absolute values of species number (S) and mean values of abundance (N° ind. m⁻²) and diversity indices: Shannon-Wiener index H' (log_e), Pielou evenness index (J'), Simpson index (λ), and Margalef richness index (d)

Site	Station	S	N	d	J'	H'(log _e)	λ
Asopus-1A	D1a	81	306	13.98	0.68	2.99	0.10
	D3a	90	407	14.81	0.70	3.17	0.10
	D5a	87	245	15.64	0.73	3.26	0.09
Asopus-1B	D1b	87	315	14.95	0.73	3.25	0.07
	D3b	107	155	21.02	0.67	3.15	0.12
	D5b	85	512	13.46	0.62	2.76	0.15
Blank	D6a	91	177	17.38	0.67	3.02	0.11
	D6b	80	455	12.91	0.59	2.60	0.18
	D7b	85	306	14.67	0.57	2.51	0.22
Reference	Othonoi Ref	79	344	13.35	0.73	3.18	0.09
	Kerkyra Ref	102	324	17.48	0.73	3.37	0.06
	Italy Ref	80	296	13.89	0.70	3.05	0.09

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5.1.5.2 Relationship between environmental variables and the zooplankton community

The BEST analysis, conducted on water-column physico-chemical variables in relation to the species / abundance matrix of the zooplankton community, identified six variables as the best explanatory combination (Total Suspended Solids, Total Phosphorus, Orthophosphate, Barium, Iron, and Mercury), with a Spearman correlation coefficient of $\rho = 0.51$. This result indicates a moderate relationship between zooplankton community structure and the environmental gradient, suggesting that the community responds to an integrated set of trophic and physicochemical factors rather than to single isolated variables.

From the DistLM analysis, performed using the variables identified as explanatory in the BEST procedure, Total Phosphorus emerged as one of the most relevant drivers, being the only variable showing a statistically significant effect in the marginal test ($p = 0.012$). In an oligotrophic context, phosphorus represents a potentially limiting nutrient for primary productivity and for the pelagic food web. Even small variations in its concentration can influence phytoplankton composition and, consequently, food availability for zooplankton, with potential effects on biomass, taxonomic composition, and trophic strategies (Krom *et al.*, 1991). In oligotrophic environments, relatively small changes in phosphorus availability may therefore be ecologically amplified, leading to shifts in dominance between opportunistic taxa and more specialized species (Thingstad *et al.*, 2005).

Overall, the investigated zooplankton community structure appears to be primarily regulated by a weak but significant gradient in nutrient availability and water-column transparency, with total phosphorus playing an important role as a potential limiting factor and indirect regulator of the pelagic food web.

5.1.6 Detailed description of results – Ichthyoplankton

Analyses of the ichthyoplankton component revealed overall low values of both species diversity and abundance across each of the three surveyed transects in the Block 2 area (TR1a, TR1b, and TR6b), consistent with expectations for communities typical of deep pelagic waters. This pattern suggests a system characterized by a limited presence of larval stages and a predominance of taxa associated with mesopelagic and bathypelagic habitats, in agreement with the oceanographic conditions of the investigated sector.

The larval component was dominated by a single epipelagic species, *Sardina pilchardus*, together with Scombridae larvae that could not be identified at genus level, likely belonging to highly mobile taxa widely distributed in temperate Mediterranean waters. The remaining diversity was mainly attributable to mesopelagic species, including *Cyclothone braueri*, *Maurollicus muelleri*, and several representatives of the family Myctophidae (e.g. *Hygophum benoiti*; Figure 61a), groups that are known to be abundant and structurally important components of deep scattering layer communities. These were complemented by taxa typical of the meso- to bathypelagic domain, such as the paralepidids *Arctozenus risso* and *Paralepis coregonoides*, together with the myctophid *Lampanyctus pusillus* (Figure 61b). These species are characterized by broad vertical distributions and trophic behaviors linked to intermediate and deep layers of the water column.

Overall, the observed ichthyoplankton structure reflects a community minimally influenced by neritic inputs and consistent with open-ocean, deep pelagic environments, where larval dynamics are strongly shaped by distance from the coast and water-column depth.

The species / abundance matrix of the ichthyoplankton community is presented in APPENDIX E: ICHTHYOPLANKTON DATA, where data are expressed as cells L⁻¹.

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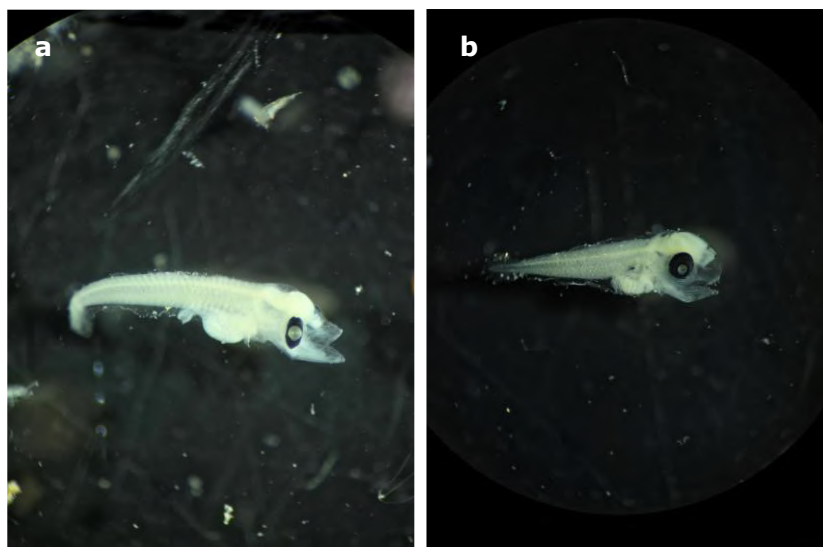


Figure 61 – *Hygophum benoiti* (a); *Lampanyctus pusillus* (b)

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5.2.0 Sediments and Infauna Results

5.2.1 Summary of Results

Field measurements performed immediately after sample recovery indicated sediment temperatures of 13.5 – 15.6 °C, limited pH variability (7.79 – 7.93) and consistently negative ORP values (–169.4 to –120.9 mV), indicative of reducing conditions typical of fine-grained marine sediments. Macroscopic observations suggested highly homogeneous sedimentological conditions throughout the study area, with sediments generally described as “Clayey silt”, medium hydrated, odourless and devoid of shell fragments, plant remains or other noteworthy features.

Grain-size laboratory analyses confirmed the absence of Gravel from all samples, while sand generally represented a minor fraction (< 15 %), except at Italy Ref (23.5 %). Pelitic fractions clearly predominated throughout the study area, with Silt and Clay together accounting for approximately 86 – 100% of the sediment matrix. According to both Folk and Shepard classifications, sediments were predominantly assigned to the “Mud” and “Silty clay” classes, respectively, confirming the granulometric homogeneity of the study area, with Italy Ref exhibiting a slightly coarser texture. Among the other physic-chemical variables investigated in the sediment samples, moisture content showed moderate variability across the study area, with generally higher values at Asopus-1B, Blank and Reference Stations than around Asopus-1A, whereas sediment density remained remarkably uniform, reflecting the overall homogeneity of the investigated fine-grained deposits.

TOC concentrations were generally low, reaching a maximum of 0.78 % d.s. at station D3b and remaining below the analytical LoQ at several stations, particularly within the Reference area. Carbonate contents exhibited limited spatial variability, ranging from approximately 26 % d.s. at D1a to 34 % d.s. at Italy Ref. Similarly, N-Tot and P-Tot showed relatively homogeneous distributions throughout the study area, with N-Tot generally around 0.30% d.s. and P-Tot ranging between 312 mg kg⁻¹ d.s. (Italy Ref) and 447 mg kg⁻¹ d.s. (D3b), without any evident differences between well-site, Blank and Reference Stations. Overall, the investigated sediments were characterized by low organic-matter content and relatively uniform nutrient concentrations, consistent with the oligotrophic nature of the study area.

Among metals and metalloids, Cr VI remained consistently below the analytical LoQ, whereas Sn and Hg were only sporadically detected at very low concentrations. Al and Fe were by far the most abundant elements, occurring at concentrations within the order of magnitude of 10⁴ mg kg⁻¹ d.s., while the remaining investigated metals generally occurred within the order of magnitude of 10¹ mg kg⁻¹ d.s. Spatial variability was generally limited, although the Asopus-1B area tended to exhibit slightly higher concentrations for several elements than Asopus-1A and the associated Blank Stations, whereas Italy Ref frequently showed comparatively lower values. Exceedances of the applicable reference values were identified for As, Ni and Cr-Tot. As concentrations ranged from 4.4 to 14.0 mg kg⁻¹ d.s., exceeding the HCMR ERL value throughout most of the study area and, at selected stations, the Italian SQA-MA threshold (D.Lgs. No. 172/2015, Table 3/B), with the maximum concentration recorded at D5a. Ni concentrations ranged from 21.1 to 62.6 mg kg⁻¹ d.s. and exceeded the HCMR ERL value at all investigated stations, with the highest concentration observed at Othonoi Ref. Cr-Tot concentrations reached up to 67.0 mg kg⁻¹ d.s. at Othonoi Ref and exceeded the Italian SQA-MA threshold (D.Lgs. No. 172/2015, Table 3/B) at a limited number of stations. All remaining investigated metals and metalloids showed concentrations consistently below the applicable regulatory reference values.

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Hydrocarbon concentrations in surface sediments were generally low throughout the study area. The light hydrocarbon fraction ($C \leq 12$) remained below the analytical LoQ at all stations, whereas the heavier fraction ($C > 12$) and the corresponding Total Petroleum Hydrocarbons (TPH) were detected at low concentrations, ranging from 8.5 to 20 mg kg⁻¹ d.s., with the maximum concentration observed at D4a. No evident differences were observed among well-site, Blank and Reference Stations, and spatial variability was limited overall. Italy Ref represented the only exception, with both parameters consistently below the analytical LoQ.

Most investigated PAHs were below the analytical LoQ at all stations. Only a limited number of compounds were sporadically detected, mainly Fluoranthene and Pyrene, which represented the most frequently quantified PAHs, occurring at four and five stations, respectively. The highest individual concentrations were recorded for Benzo(b)fluoranthene and Benzo(g,h,i)perylene at Italy Ref, and for Fluoranthene at D6a. Detectable PAHs were confined to a small number of stations, with the highest diversity of quantified compounds and the highest Σ PAHs concentration observed at Italy Ref (11.7 $\mu\text{g kg}^{-1}$ d.s.), followed by the Blank Station D6a (7.28 $\mu\text{g kg}^{-1}$ d.s.). All remaining stations showed either no quantifiable PAHs or only isolated detections, resulting in substantially lower Σ PAHs concentrations and no consistent spatial pattern among well-site, Blank and Reference Stations.

All measured concentrations of petroleum hydrocarbons (including both hydrocarbon fractions and TPH) and PAHs (including Σ PAHs) remained well below the applicable reference values adopted in Greece (ERL, HCMR; Long *et al.*, 1995) and the Italian Environmental Quality Standards (SQA-MA; D.Lgs. 172/2015), providing no evidence of hydrocarbon contamination within the investigated sediments.

Qualitative micro-Raman/FTIR screening did not identify any synthetic polymer particles within the investigated size range (1 μm – 5 mm), providing no evidence of detectable microplastic occurrence in any sediment sample collected at the Asopus-1A and Asopus-1B well areas, the Blank stations or the Reference Stations. No regulatory threshold values are currently available for microplastics in marine sediments under the Greek or Italian regulatory frameworks considered in the present study.

Analyses of macrobenthic communities revealed an overall homogeneous ecological structure across the Asopus-1A and Asopus-1B well areas, Blank stations and Reference Stations, with no statistically significant differences among station groups. The observed variability was primarily attributable to natural small-scale heterogeneity of the sedimentary environment.

Benthic communities were characterized by low abundance, reduced species richness and limited diversity, consistent with conditions typically observed in oligotrophic Mediterranean bathyal environments. The ecosystem was dominated by the Mediterranean Upper Bathyal Mud biocenosis (EUNIS code: ME65). A total of 116 individuals belonging to 19 *taxa* were recorded, with Annelida overwhelmingly dominating both abundance (94.8 %) and species richness (73.7 %). Community structure was largely dominated by the sipunculan *Golfingia sp.*, a *taxon* commonly associated with fine-grained bathyal sediments.

Ecological-quality indices reflected the naturally low-diversity character of these deep-sea communities. M-AMBI values ranged from “Bad” to “Moderate”, whereas AMBI classified most stations as “Undisturbed”, with only isolated cases of “Slightly” or “Moderately disturbed” conditions. Overall, the results were consistent with a naturally oligotrophic bathyal ecosystem rather than with evidence of ecological disturbance.

Consistent with the macrozoobenthic analyses, AUV surveys revealed a generally homogeneous benthic landscape throughout the study area, dominated by the Mediterranean Upper Bathyal Mud

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biocoenosis (EUNIS code: ME65), characterized by fine-grained sediments and benthic assemblages adapted to deep-sea conditions. The seafloor was commonly associated with traces of burrowing and tubicolous organisms, occasional specimens of deep-sea fishes belonging to the family Macrouridae, and locally with facies attributable to the sea anemone *Andresia partenopea*.

A limited rocky outcrop attributable to the Mediterranean Upper Bathyal Rock biocoenosis (EUNIS code: ME15) was identified at station D4a (Asopus-1A area). This habitat hosted deep-water coral assemblages attributable to *Antipathella subpinnata* and/or *Callogorgia verticillata*, representing a localized increase in habitat heterogeneity and ecological complexity within the predominantly muddy bathyal environment.

The analysis of AUV mosaics revealed a generally limited presence of marine litter in the investigated areas, with most stations showing no evidence of marine debris. The detected items were discontinuously and locally distributed, with no significant accumulation patterns associated with the Asopus-1A and Asopus-1B well areas compared to the Blank and Reference stations. The observed distribution suggests that the occurrence of marine litter on the seafloor is primarily controlled by local processes of transport, deposition, and retention of materials, as well as by point-source anthropogenic inputs.

5.2.2 Detailed description of results – Sediments

5.2.2.1 Sediment field measurements and sediment classification

5.2.2.1.1 FIELD MEASUREMENTS OF PHYSIC-CHEMICAL VARIABLES

Sediment temperature, measured immediately after grab recovery and onboard sample preparation prior to subsampling, ranged from 13.5 °C at the Blank station shared by both well-site areas (D6b) to 15.6 °C, at Italy Ref, broadly reflecting bottom-water temperatures at the sediment–water interface, with some influence from atmospheric conditions during handling and inspection.

Sediment pH, measured directly in the field following grab recovery, showed limited variability, with values ranging from 7.79 (recorded at both D4a and Othonoi Ref) to 7.93 (only at D6a), consistent with those typically reported for fine-grained bathyal marine sediments.

The Oxidation–Reduction Potential (ORP), measured in situ in the collected sediment samples prior to subsampling, was consistently negative, ranging from –169.4 mV at station D5b to –120.9 mV at D3a, indicating generally reducing conditions characteristic of fine-grained marine sediments throughout the study area.

The temperature, pH, and ORP values measured in all surface sediment samples are presented in the following table (Table 22) and have also been included, along with information on the macroscopic characteristics of the sediments, in the dedicated APPENDIX G: SEDIMENT DATA SHEETS.

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Table 22 – Surface sediment Temperature, pH and red-ox potential (ORP)

Area	Well	Station ID	Temperature [°C]	pH	ORP [mV]
BLOCK 2	ASOPUS -1A	D1a	13.9	7.82	-153.4
		D2a	13.8	7.83	-168.9
		D3a	13.9	7.88	-120.9
		D4a	13.7	7.79	-167.4
		D5a	14.3	7.84	-168.3
	ASOPUS -1B	D1b	13.8	7.85	-162.3
		D2b	14.4	7.84	-157.6
		D3b	13.8	7.86	-167.6
		D4b	13.7	7.92	-148.9
		D5b	13.6	7.92	-169.4
	Blank	D6a	14.1	7.93	-146.6
		D6b	13.5	7.87	-158.7
		D7b	14.3	7.84	-159.4
IONIAN SEA	Ref. Stations	Othonoi-Ref	13.9	7.79	-138.6
		Kerkyra-Ref	13.8	7.92	-123.4
		Italy-Ref	15.6	7.91	-154.4

5.2.2.1.2 MACROSCOPIC DESCRIPTION

Macroscopic field observations indicated a highly homogeneous sedimentary environment across the entire study area. Sediments collected at all stations associated with the Asopus-1A and Asopus-1B well-site areas, as well as at Blank and Reference Stations, were macroscopically classified by field operators as Clayey Silt, with the sole exception of Italy Ref, where the sediment was described as Slightly Sandy Clayey Silt. In all samples, the estimated sand content was below 25 %, while sediment colour was consistently recorded as 5Y 5/3 according to the Munsell Soil Color Chart.

Other macroscopic features showed similarly limited variability throughout the study area. No plant remains or macroalgal debris, shell fragments, chromatic variations or dimensional heterogeneities were observed in any of the collected samples. All sediments were described as medium hydrated and odourless, i.e., with no evidence of anomalous odours or other noteworthy macroscopic characteristics.

Overall, the field observations indicated remarkably uniform sedimentological conditions throughout the investigated area, characterised by the predominance of fine-grained cohesive sediments typical of deep offshore depositional environments.

These observations are reported in APPENDIX G: SEDIMENT DATA SHEETS, in conjunction with physic-chemical data measured in the field, within sediment samples.

5.2.2.1.3 GRAIN-SIZE DISTRIBUTION AND SEDIMENT CLASSIFICATION

With regard to the investigated sedimentary fractions, Gravel, the coarsest class, was completely absent from all analysed samples. Concentrations were consistently below the LoQ at all stations associated with the Asopus-1A and Asopus-1B well-site areas, the Blank stations, and the Reference Stations.

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Concerning the finer sediment fractions, Sand represented a relatively minor component throughout most of the study area. Around Asopus-1A, concentrations ranged from 5.6 % at D2a to 11.4 % at D4a, with an average of 8.82 ± 2.35 %. Slightly higher values were observed around Asopus-1B, where Sand varied between 9.4 % (D3b) and 13.8 % (D4b), averaging 10.84 ± 1.88 %. The Blank stations exhibited a comparable range (6.5 % at D6a to 13.9 % at D7b) and an average of 9.20 ± 4.06 %. Greater variability characterised the Reference Stations, where Sand ranged from < LoQ at Othonoi Ref to 23.5 % at Italy Ref, yielding an average of 9.37 ± 12.40 %.

Among the pelitic fractions, Silt constituted a major component of all analysed sediments. Around Asopus-1A, concentrations ranged from 42.2 % at D3a to 50.6 % at D2a, with an average of 45.14 ± 3.21 %. Around Asopus-1B, Silt ranged from 36.3 % at D2b to 46.5 % at D5b, with an average of 42.14 ± 4.54 %. Comparable values were recorded at the Blank stations, where percentages varied between 37.1 % (D7b) and 47.9 % (D6a), averaging 42.83 ± 5.40 %. The Reference Stations exhibited the greatest variability, with values ranging from 31.8 % at Italy Ref to 48.9 % at Othonoi Ref and an average of 42.27 ± 9.30 %. Overall, Blank and Reference Stations showed Silt contents broadly comparable to those observed around both well sites, although Italy Ref was distinguished by markedly lower Silt percentages.

Clay represented the dominant granulometric fraction throughout the study area. Around Asopus-1A, concentrations ranged between 43.8% (D2a) and 48.8% (D3a), with an average of 46.04 ± 2.01 %. Around Asopus-1B, percentages ranged from 43.0% (D4b) to 52.3% (D2b), with an average of 47.02 ± 4.42 %. Similar values characterised the Blank stations, where clay varied from 45.6 % at D6a to 49.3 % at D6b, averaging 47.97 ± 2.06 %. The Reference Stations showed a wider range, from 44.7% at Italy Ref to 51.1% at Othonoi Ref, yielding an average of 48.37 ± 3.30 %. Overall, clay contents were remarkably similar among the Asopus well-site areas, Blank stations and Reference Stations.

According to the Wentworth (1922) grain-size scale and the Folk classification scheme (1954, 1974), sediments were predominantly classified as "Mud" throughout the study area, including most stations around Asopus-1A, two stations near Asopus-1B, two Blank stations and the Greek Reference Stations. The only departures from this pattern were represented by "Sandy mud" sediments at D4a and D5a around Asopus-1A, D1b, D2b and D4b around Asopus-1B, D7b among the Blank stations, and Italy Ref, the latter reflecting its comparatively higher sand content. A similar picture emerged from the Shepard (1954) classification, as modified by Schlee (1973), which assigned most sediments to the "Silty clay" class. Exceptions were limited to D2a within the Asopus-1A area, D6a among the Blank stations, and D3b – D5b around Asopus-1B, all classified as "Clayey silt". Overall, both classification schemes consistently indicated the predominance of fine cohesive sediments across all station groups, with a slightly coarser character at Italy Ref.

The primary grain-size fractions and sediment classifications are reported in Table 23 and illustrated in Figure 62. Detailed percentage values for individual sub-fractions are provided in the corresponding dataset within APPENDIX I: DATASETS.

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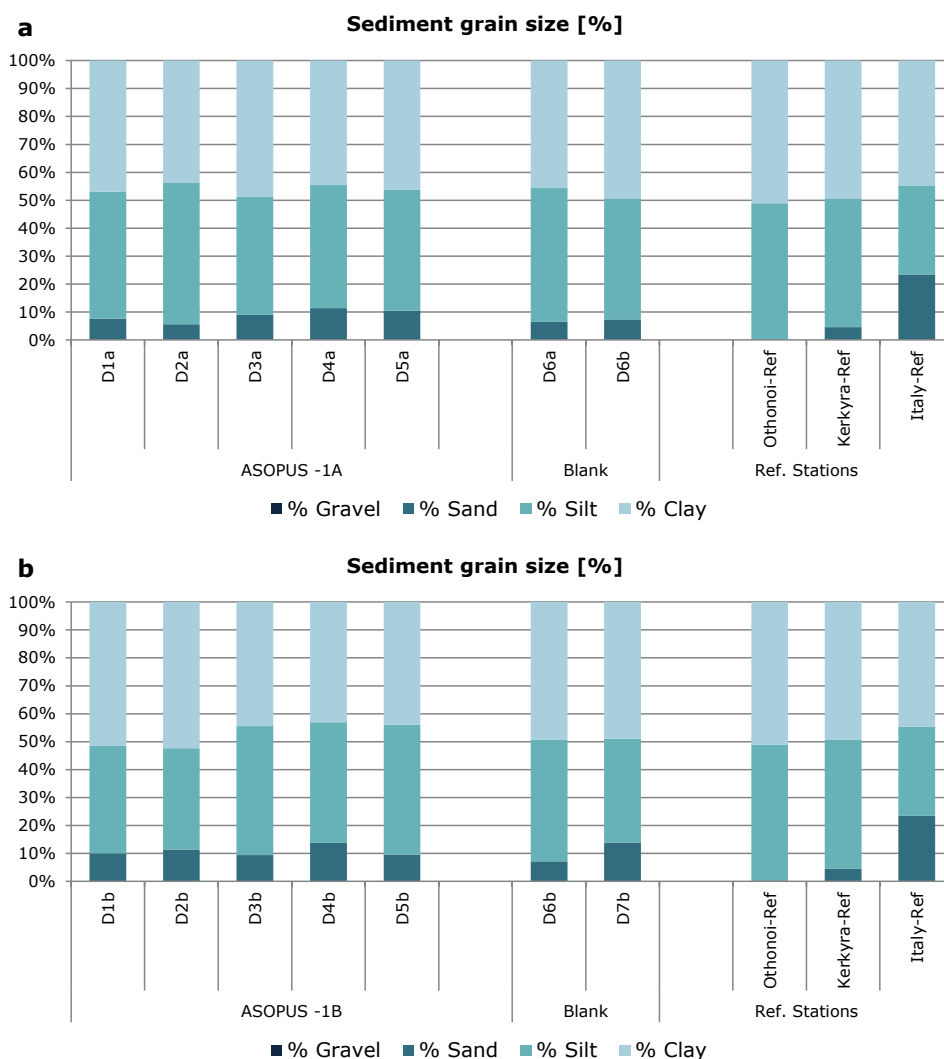


Figure 62 – Granulometric characteristics of surface sediments

5.2.2.1.4 OTHER PHYSICAL CHARACTERISTICS OF SEDIMENTS

Sediment Moisture content showed moderate variability across the study area. Around Asopus-1A, values ranged from 32.8 % at D1a to 40.9 % at D4a, with an average of 36.38 ± 3.50 %. Higher values were generally observed around Asopus-1B, where moisture ranged from 44.7 % at D3b to 47.8 % at D5b, averaging 45.98 ± 1.20 %. The Blank stations exhibited the widest range, from 36.3 % at D7b to 50.1 % at D6a, with an average of 43.00 ± 6.90 %. Similarly elevated values characterized the Reference Stations, where moisture ranged between 44.0 % at Italy Ref and 48.4 % at Othonoi Ref, yielding an average of 46.87 ± 2.50 %.

Sediment Density exhibited very limited spatial variability throughout the study area. Around Asopus-1A, values ranged from 1.8 kg dm^{-3} to 1.9 kg dm^{-3} , averaging $1.82 \pm 0.04 \text{ kg dm}^{-3}$, while around Asopus-1B they varied between 1.8 and 1.9 kg dm^{-3} , with an average of $1.86 \pm 0.05 \text{ kg dm}^{-3}$. The Blank stations showed consistently high values ($1.90 \pm 0.00 \text{ kg dm}^{-3}$), whereas the

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Reference Stations ranged from 1.7 kg dm⁻³ at Italy Ref to 1.9 kg dm⁻³ at Kerkyra Ref, averaging 1.80 ± 0.10 kg dm⁻³. Overall, sediment density remained remarkably uniform across all station groups, with the slightly lower value observed at Italy Ref likely reflecting its comparatively higher sand content relative to the remaining stations.

Data for moisture content and sediment density are reported in Table 23.

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Table 23 – Grain size distribution of the main fractions (gravel, sand, silt, clay), Folk (1954, 1974) and Shepard (1954) classification, and other physical characteristics of surface sediments

Area	Well	Station ID	% Gravel	% Sand	% Silt	% Clay	Sediment Classification according to Folk	Sediment Classification according to Shepard	Moisture [%]	Density [Kg/dm^3]
BLOCK 2	M.U.									
	ASOPUS -1A	D1a	< 0.1	7.6	45.5	46.9	MUD	SILTY CLAY	32.8	1.8
		D2a	< 0.1	5.6	50.6	43.8	MUD	CLAYEY SILT	33.0	1.9
		D3a	< 0.1	9.0	42.2	48.8	MUD	SILTY CLAY	37.1	1.8
		D4a	< 0.1	11.4	44.1	44.5	SANDY MUD	SILTY CLAY	40.9	1.8
		D5a	< 0.1	10.5	43.3	46.2	SANDY MUD	SILTY CLAY	38.1	1.8
	ASOPUS -1B	D1b	< 0.1	10.0	38.5	51.5	SANDY MUD	SILTY CLAY	45.4	1.9
		D2b	< 0.1	11.4	36.3	52.3	SANDY MUD	SILTY CLAY	46.5	1.9
		D3b	< 0.1	9.4	46.2	44.4	MUD	CLAYEY SILT	44.7	1.8
		D4b	< 0.1	13.8	43.2	43.0	SANDY MUD	CLAYEY SILT	45.5	1.8
		D5b	< 0.1	9.6	46.5	43.9	MUD	CLAYEY SILT	47.8	1.9
	Blanks	D6a	< 0.1	6.5	47.9	45.6	MUD	CLAYEY SILT	50.1	1.9
		D6b	< 0.1	7.2	43.5	49.3	MUD	SILTY CLAY	42.6	1.9
		D7b	< 0.1	13.9	37.1	49.0	SANDY MUD	SILTY CLAY	36.3	1.9
IONIAN SEA	Ref. Stations	Othonoi-Ref	< 0.1	0.1	48.9	51.1	MUD	SILTY CLAY	48.4	1.8
		Kerkyra-Ref	< 0.1	4.6	46.1	49.3	MUD	SILTY CLAY	48.2	1.9
		Italy-Ref	< 0.1	23.5	31.8	44.7	SANDY MUD	SILTY CLAY	44.0	1.7

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5.2.2.2 Chemical Characteristics of Sediment

5.2.2.2.1 ORGANIC CARBON, CARBONATES AND NUTRIENTS (N-Tot AND P-Tot)

Total Organic Carbon (TOC) concentrations were generally low throughout the study area and frequently below the analytical LoQ. Around Asopus-1A, only D3a and D4a yielded quantifiable concentrations (0.18 and 0.19 % d.s., respectively), while the remaining stations were below the LoQ, resulting in an average concentration of 0.10 ± 0.07 % d.s. Around Asopus-1B, TOC was quantifiable at four of the five stations, with a maximum of 0.78 % d.s. at D3b and an average of 0.41 ± 0.26 % d.s., the highest among the investigated station groups. Blank stations exhibited intermediate values, ranging from < LoQ at D7b to 0.41 % d.s. at D6a (average: 0.19 ± 0.19 % d.s.). At the Reference Stations, TOC varied between < LoQ at Othonoi Ref and 0.52 % d.s. at Italy Ref, averaging 0.35 ± 0.26 % d.s. Overall, TOC concentrations remained low across the study area, with slightly higher values at Asopus-1B and the Reference Stations.

Carbonate content showed limited variability and consistently moderate concentrations. Around Asopus-1A, values ranged from 32 % at D3a to 34 % at D1a and D2a, with an average of 33.2 ± 0.8 % d.s. Slightly lower concentrations characterized Asopus-1B, ranging between 26 % at D3b and 30 % at D2b (average: 28.2 ± 1.5 % d.s.). Blank stations showed intermediate values between 28 % and 33 % (average: 30.7 ± 2.5 % d.s.). Similarly, the Reference Stations ranged from 27 % at Kerkyra Ref to 32 % at Othonoi Ref, averaging 30.0 ± 2.6 % d.s. Overall, carbonate contents were broadly comparable among station groups, with slightly higher values at Asopus-1A.

Total Nitrogen (N-Tot) concentrations exhibited relatively limited variability throughout the study area. Around Asopus-1A, values ranged from 0.29 % d.s. at D2a to 0.32 % d.s. at D1a, D4a and D5a, averaging 0.31 ± 0.01 % d.s. Similar concentrations were observed at the Blank stations (0.26 – 0.35 % d.s.; average: 0.31 ± 0.05 % d.s.) and around Asopus-1B (0.22 – 0.37 % d.s.; average: 0.28 ± 0.06 % d.s.). Greater variability was observed among the Reference Stations, where concentrations ranged from 0.19 % d.s. at Kerkyra Ref to 0.64 % d.s. at Italy Ref, yielding an average of 0.36 ± 0.24 % d.s. Excluding Italy Ref, N-Tot concentrations were broadly comparable across all station groups.

Total Phosphorus (P-Tot) concentrations were similarly homogeneous throughout the study area. Around Asopus-1A, values ranged from 365 mg kg⁻¹ d.s. at D4a to 447 mg kg⁻¹ d.s. at D5a, with an average of 398 ± 33 mg kg⁻¹ d.s. Around Asopus-1B, concentrations varied between 371 mg kg⁻¹ d.s. at D1b and 396 mg kg⁻¹ d.s. at D3b, averaging 385 ± 10 mg kg⁻¹ d.s. Blank stations showed a somewhat wider range (332 – 404 mg kg⁻¹ d.s.), with an average of 366 ± 36 mg kg⁻¹ d.s. Among the Reference Stations, concentrations ranged from 312 mg kg⁻¹ d.s. at Italy Ref to 402 mg kg⁻¹ d.s. at Othonoi Ref (average: 354 ± 45 mg kg⁻¹ d.s.). Overall, P-Tot content exhibited limited spatial variability and no clear differences between well-site, Blank and Reference Station groups.

Concentrations of TOC, N-Tot, and P-Tot are reported in Table 24 and graphically presented in Figure 63 and Figure 64.

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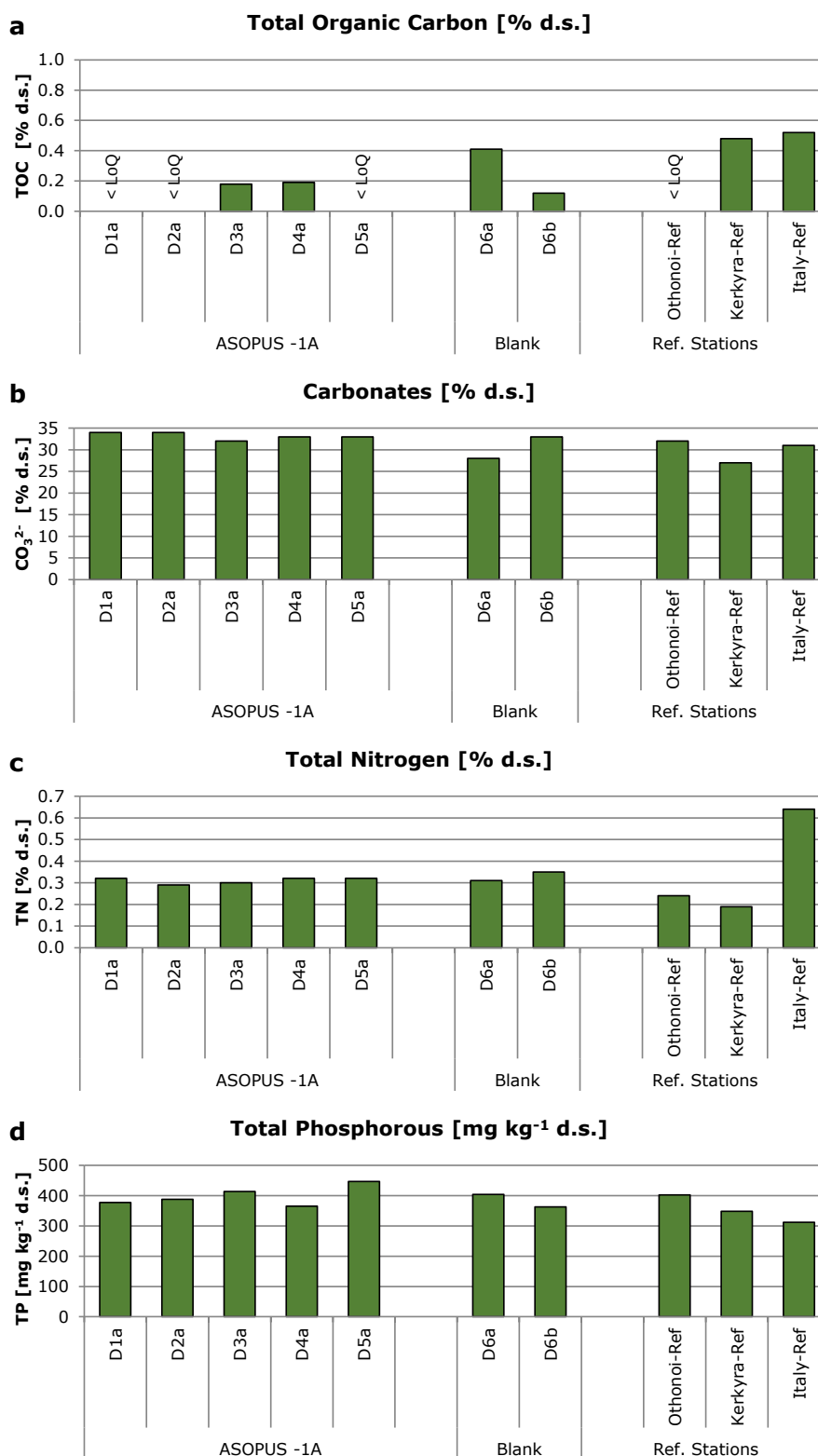


Figure 63 – TOC, N-Tot, and P-Tot concentrations in surface sediments collected at the Asopus-1A station group; each panel includes the respective Blank Stations and all three Reference Stations

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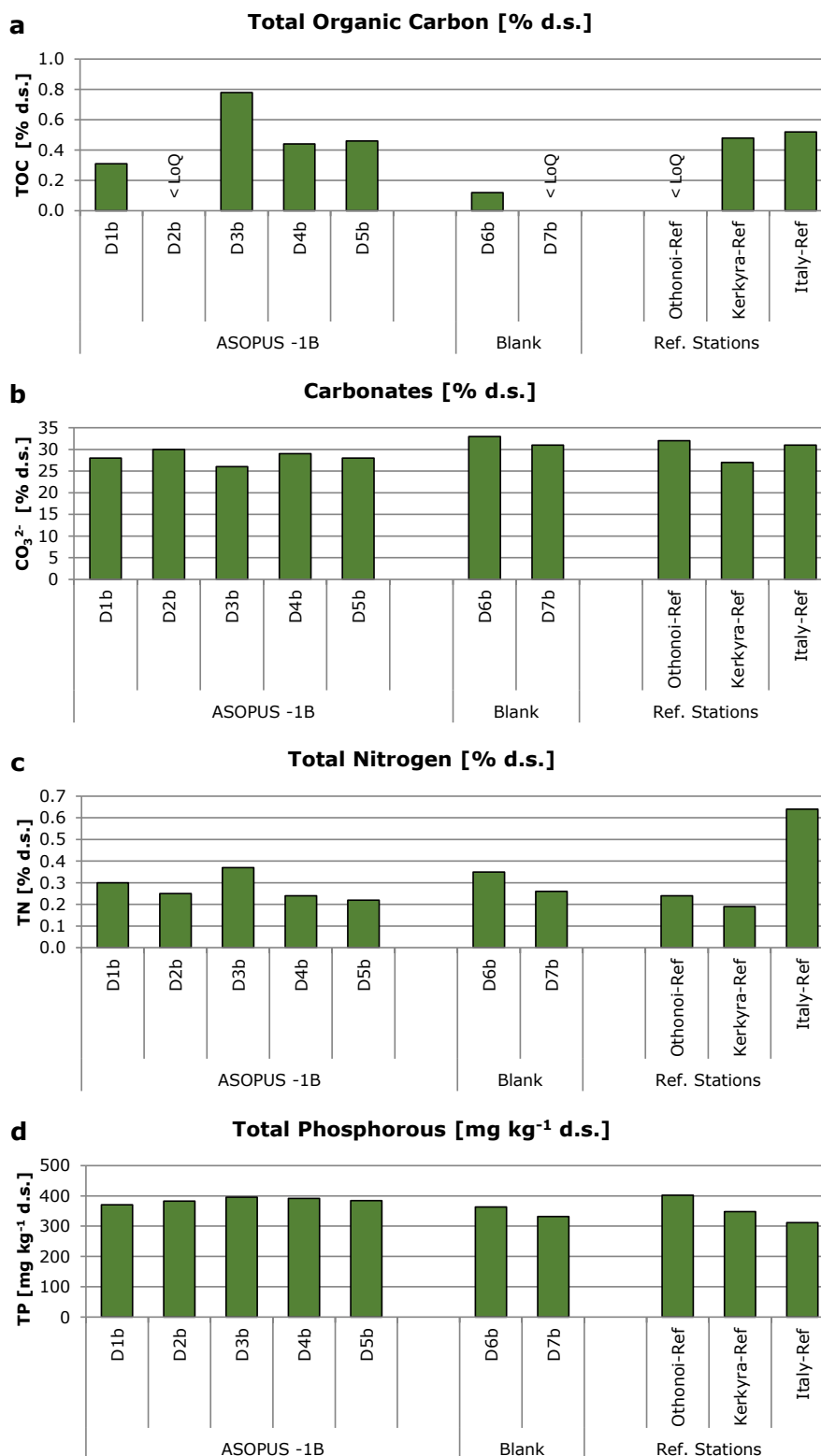


Figure 64 – TOC, N-Tot, and P-Tot concentrations in surface sediments collected at the Asopus-1B station group; each panel includes the respective Blank Stations and all three Reference Stations

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Table 24 – TOC, Total Nitrogen (N-Tot) and Total Phosphorous (P-Tot) content in surface sediments

Area	Well	Station ID	ORGANIC CARBON, CARBONATES AND NUTRIENTS			
			TOC	Carbonates	N-Tot	P-Tot
BLOCK 2	M.U.		[% d.s.]		[mg/Kg d.s.]	
	ASOPUS -1A	D1a	< 0.1	34	0.32	377
		D2a	< 0.1	34	0.29	388
		D3a	0.18	32	0.30	414
		D4a	0.19	33	0.32	365
		D5a	< 0.1	33	0.32	447
	ASOPUS -1B	D1b	0.31	28	0.30	371
		D2b	< 0.1	30	0.25	383
		D3b	0.78	26	0.37	396
		D4b	0.44	29	0.24	392
		D5b	0.46	28	0.22	384
	Blank	D6a	0.41	28	0.31	404
		D6b	0.12	33	0.35	363
		D7b	< 0.1	31	0.26	332
IONIA N SEA	Ref. Stations	Othonoi-Ref	< 0.1	32	0.24	402
		Kerkyra-Ref	0.48	27	0.19	348
		Italy-Ref	0.52	31	0.64	312

5.2.2.2.2 METALS AND METALLOIDS

Among the investigated metals and metalloids, Cr VI was consistently below the analytical LoQ at all stations. Tin (Sn) was also predominantly below the LoQ, with only two quantifiable concentrations recorded and a maximum of 1.04 mg kg⁻¹ d.s. at Othonoi Ref. Mercury (Hg) was largely below the LoQ as well, with only sporadic detections and a maximum concentration of 0.12 mg kg⁻¹ d.s. at D6a. Cadmium (Cd), although quantifiable at all stations, occurred at uniformly low concentrations, ranging from 0.064 mg kg⁻¹ d.s. at Kerkyra Ref to 0.150 mg kg⁻¹ d.s. at both D2a and D6a.

The highest concentrations were recorded for Aluminium (Al) and Iron (Fe), both occurring within the order of magnitude of 10⁴ mg kg⁻¹ d.s. Al ranged from 9750 mg kg⁻¹ d.s. at Italy Ref to 27400 mg kg⁻¹ d.s. at Othonoi Ref, with average concentrations of 20060 ± 4725 mg kg⁻¹ d.s. around Asopus-1A, 23480 ± 1933 mg kg⁻¹ d.s. around Asopus-1B, 18333 ± 4852 mg kg⁻¹ d.s. at the Blank stations and 18617 ± 8825 mg kg⁻¹ d.s. at the Reference Stations. Fe showed a comparable distribution, ranging from 14300 mg kg⁻¹ d.s. at Italy Ref to 26300 mg kg⁻¹ d.s. at D5a, with average concentrations of 22380 ± 2963 mg kg⁻¹ d.s., 22000 ± 1271 mg kg⁻¹ d.s., 20133 ± 1250 mg kg⁻¹ d.s. and 19233 ± 4636 mg kg⁻¹ d.s. for Asopus-1A, Asopus-1B, Blank and Reference Stations, respectively.

Most of the remaining quantified elements occurred within the order of magnitude of 10¹ mg kg⁻¹ d.s. Arsenic (As) ranged from 4.4 mg kg⁻¹ d.s. at D6a to 14.0 mg kg⁻¹ d.s. at D5a, with average concentrations of 9.58 ± 3.69 mg kg⁻¹ d.s. around Asopus-1A, 12.40 ± 0.55 mg kg⁻¹ d.s. around Asopus-1B, 9.47 ± 4.39 mg kg⁻¹ d.s. at the Blank stations and 12.00 ± 1.00 mg kg⁻¹ d.s. at the Reference Stations. Barium (Ba) ranged from 21.3 mg kg⁻¹ d.s. at Italy Ref to 77.6 mg kg⁻¹ d.s. at D6a, averaging 43.06 ± 3.62, 48.42 ± 4.26, 50.97 ± 23.21 and 37.00 ± 16.01 mg kg⁻¹ d.s. across the four station groups, respectively.

Copper (Cu) ranged from 11 mg kg⁻¹ d.s. at Italy Ref to 26 mg kg⁻¹ d.s. at D4b. Average concentrations were 16.20 ± 2.28 mg kg⁻¹ d.s. around Asopus-1A, 22.00 ± 2.45 mg kg⁻¹ d.s.

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around Asopus-1B, 19.00 ± 3.61 mg kg⁻¹ d.s. at the Blank stations and 19.00 ± 7.21 mg kg⁻¹ d.s. at the Reference Stations. Lead (Pb) ranged from 10 mg kg⁻¹ d.s. at D4a to 20 mg kg⁻¹ d.s. at D5b and Othonoi Ref, with average concentrations of 12.80 ± 2.17 , 17.40 ± 1.95 , 13.33 ± 1.15 and 16.33 ± 4.04 mg kg⁻¹ d.s. for Asopus-1A, Asopus-1B, Blank and Reference Stations, respectively. Nickel (Ni) ranged from 21.1 mg kg⁻¹ d.s. at Italy Ref to 62.6 mg kg⁻¹ d.s. at Othonoi Ref, averaging 41.96 ± 2.88 , 49.50 ± 2.37 , 43.10 ± 4.55 and 45.17 ± 21.53 mg kg⁻¹ d.s., respectively. Total Chromium (Cr-Tot) varied between 21 mg kg⁻¹ d.s. at Italy Ref and 67 mg kg⁻¹ d.s. at Othonoi Ref, with average concentrations of 45.20 ± 4.97 , 51.60 ± 2.97 , 44.67 ± 3.51 and 45.00 ± 23.07 mg kg⁻¹ d.s., respectively. Vanadium (V) ranged from 24 mg kg⁻¹ d.s. at Italy Ref to 58 mg kg⁻¹ d.s. at Othonoi Ref, averaging 38.80 ± 6.14 , 46.00 ± 3.67 , 35.33 ± 8.62 and 40.33 ± 17.04 mg kg⁻¹ d.s., respectively. Zinc (Zn) ranged from 42 mg kg⁻¹ d.s. at Italy Ref to 78 mg kg⁻¹ d.s. at Othonoi Ref, with average concentrations of 55.40 ± 5.46 , 60.40 ± 3.78 , 55.67 ± 7.02 and 59.00 ± 18.08 mg kg⁻¹ d.s. for the four station groups.

Overall, Asopus-1B generally exhibited slightly higher concentrations than Asopus-1A and the Blank stations, whereas the Reference Stations were more heterogeneous due to the comparatively lower concentrations observed at Italy Ref.

For assessment purposes, concentrations were compared with the Sediment Quality Guidelines adopted in Greece (HCMR), based on the ERL values proposed by Long et al. (1995), and with the Italian Environmental Quality Standards (SQA-MA) reported in Legislative Decree (D.Lgs) No. 172/2015. Arsenic (As) exceeded the HCMR ERL value (8.2 mg kg⁻¹ d.s.) at most stations, with the only exceptions being D3a, D4a and D6a; it also exceeded the Italian SQA-MA value reported in Table 3/B (12 mg kg⁻¹ d.s.) at D1a, D5a, D3b, D5b and Othonoi Ref. Nickel (Ni) exceeded the HCMR ERL value (20.9 mg kg⁻¹ d.s.) at all investigated stations. Total Chromium (Cr-Tot) exceeded the Italian SQA-MA value reported in Table 3/B (50 mg kg⁻¹ d.s.) at D5a, D3b, D4b, D5b and Othonoi Ref. All remaining investigated metals and metalloids remained below the applicable regulatory threshold values.

Individual concentrations of metals and metalloids are reported in Table 25 and graphically represented from Figure 65 to Figure 70, with exceedances of the applicable threshold levels explicitly highlighted. For consistency across tables and figures, concentrations exceeding the applicable reference values are highlighted using a regulatory-specific colour scheme. In graphical representations, each applicable environmental quality standard and/or threshold value is identified by a coloured horizontal reference line, while in tables the same colour coding is applied to values exceeding the corresponding criterion. Where identical threshold values occur under different regulatory frameworks, a single colour code and reference line are adopted, following the HCMR Sediment Quality Guidelines (Greece).

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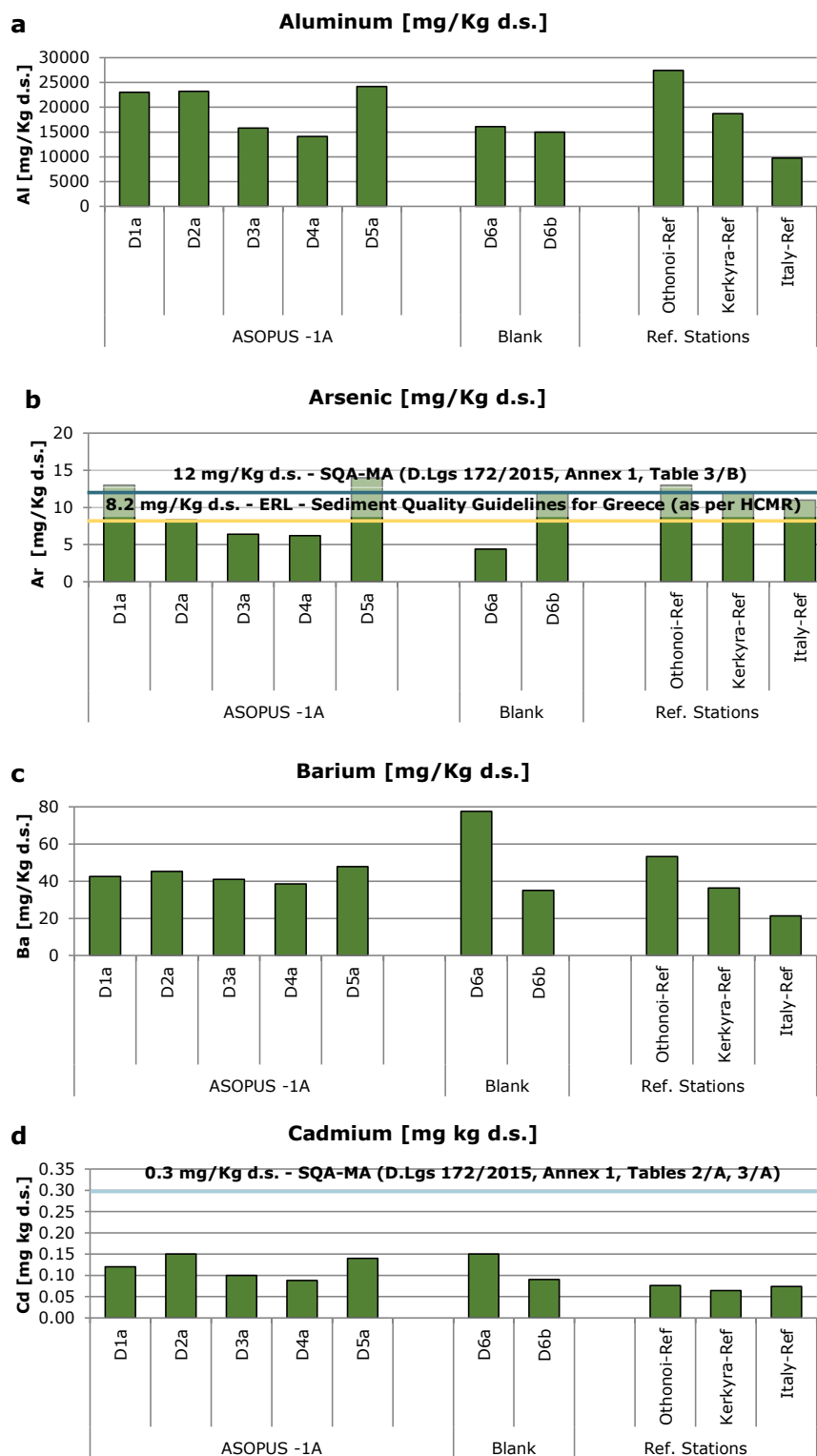


Figure 65 – Metal and metalloid concentrations in surface sediments collected at the Asopus-1A station group: Al (a), As (b), Ba (c) and Cd (d). Each panel includes the associated Blank Stations and all three Reference Stations

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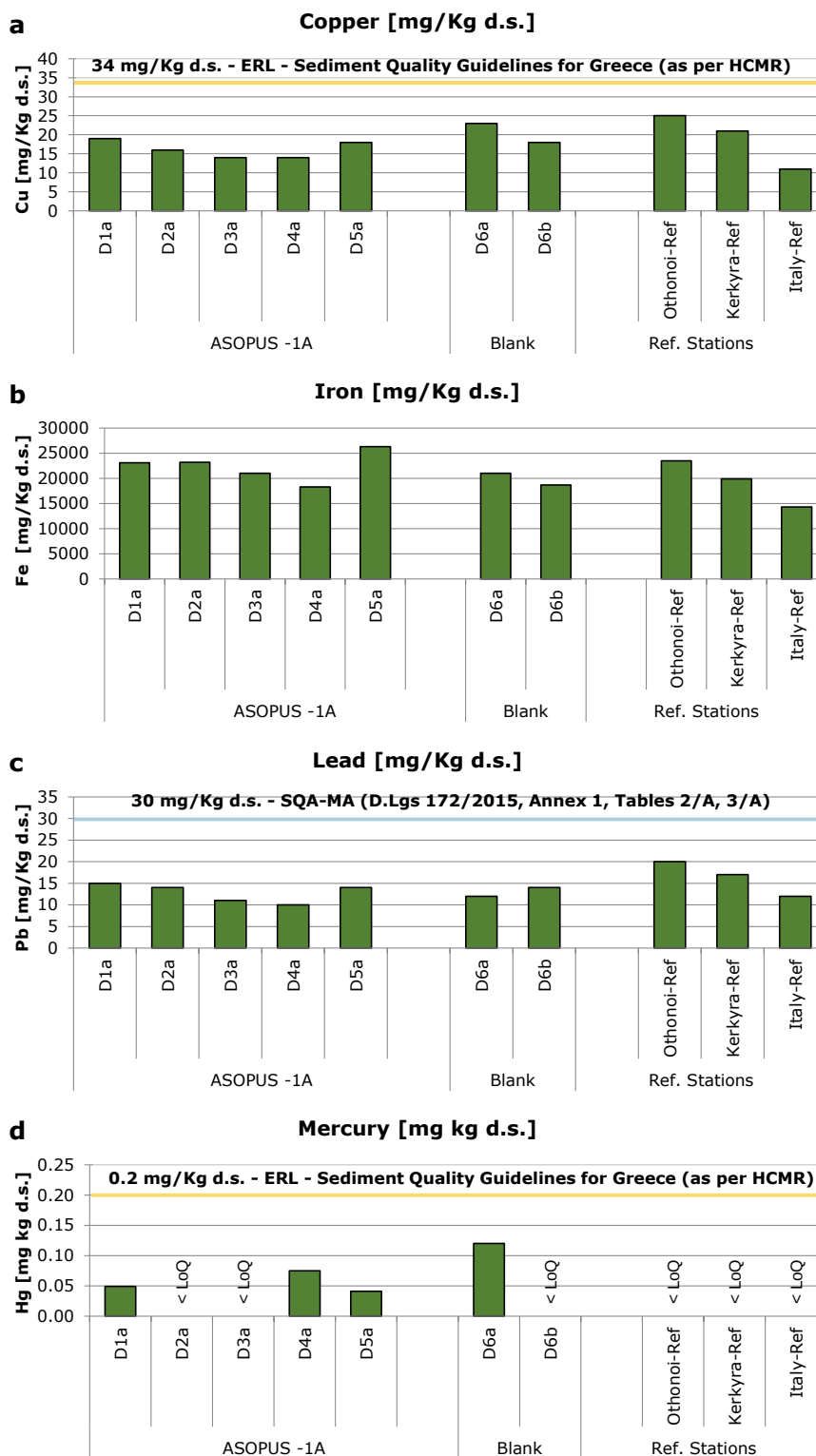


Figure 66 – Metal and metalloid concentrations in surface sediments collected at the Asopus-1A station group: Cu (a), Fe (b), Pb (c) and Hg (d). Each panel includes the associated Blank Stations and all three Reference Stations

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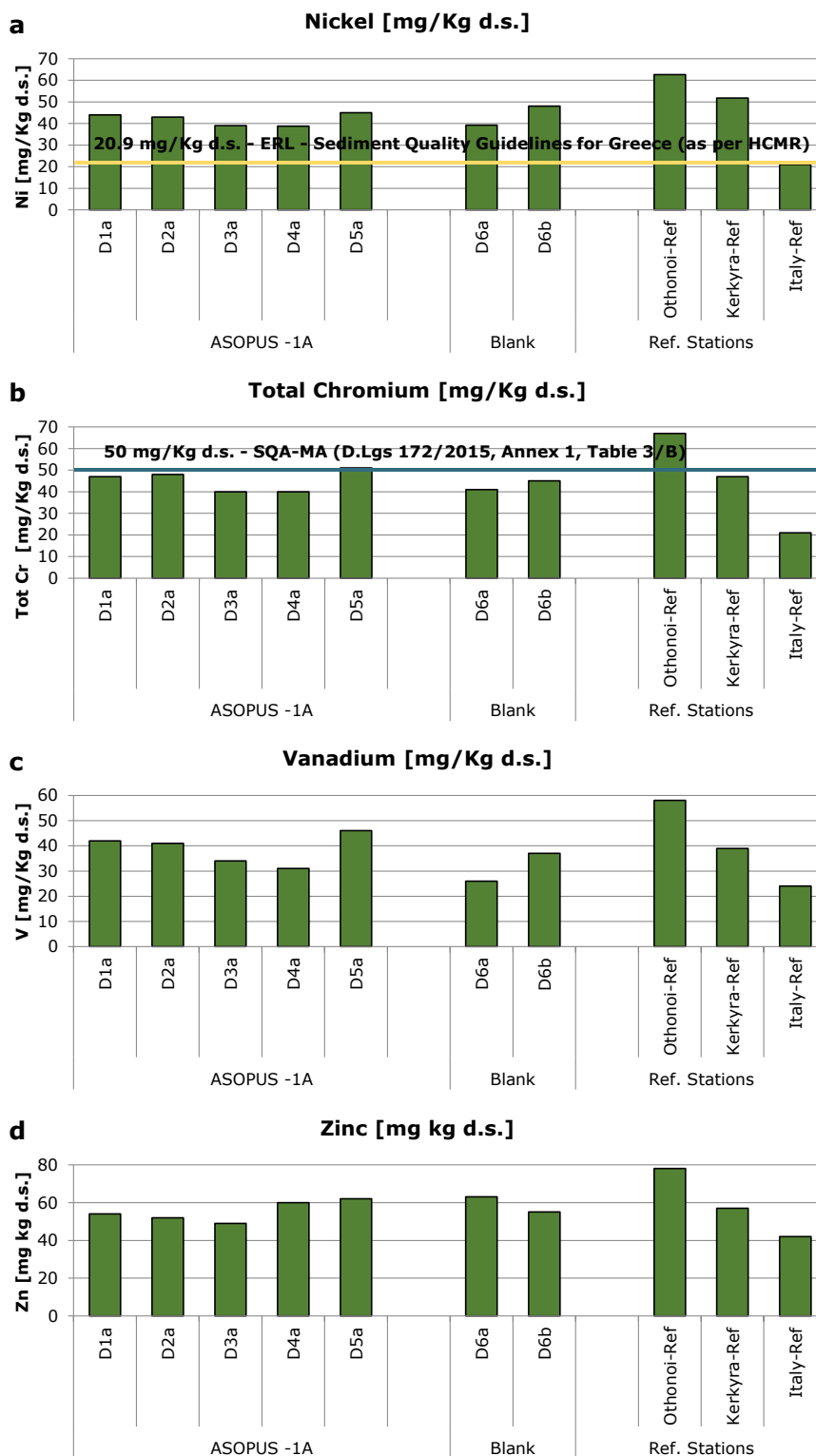


Figure 67 – Metal and metalloid concentrations in surface sediments collected at the Asopus-1A station group: Ni (a), Cr-Tot (b), V (c) and Zn (d). Each panel includes the associated Blank Stations and all three Reference Stations

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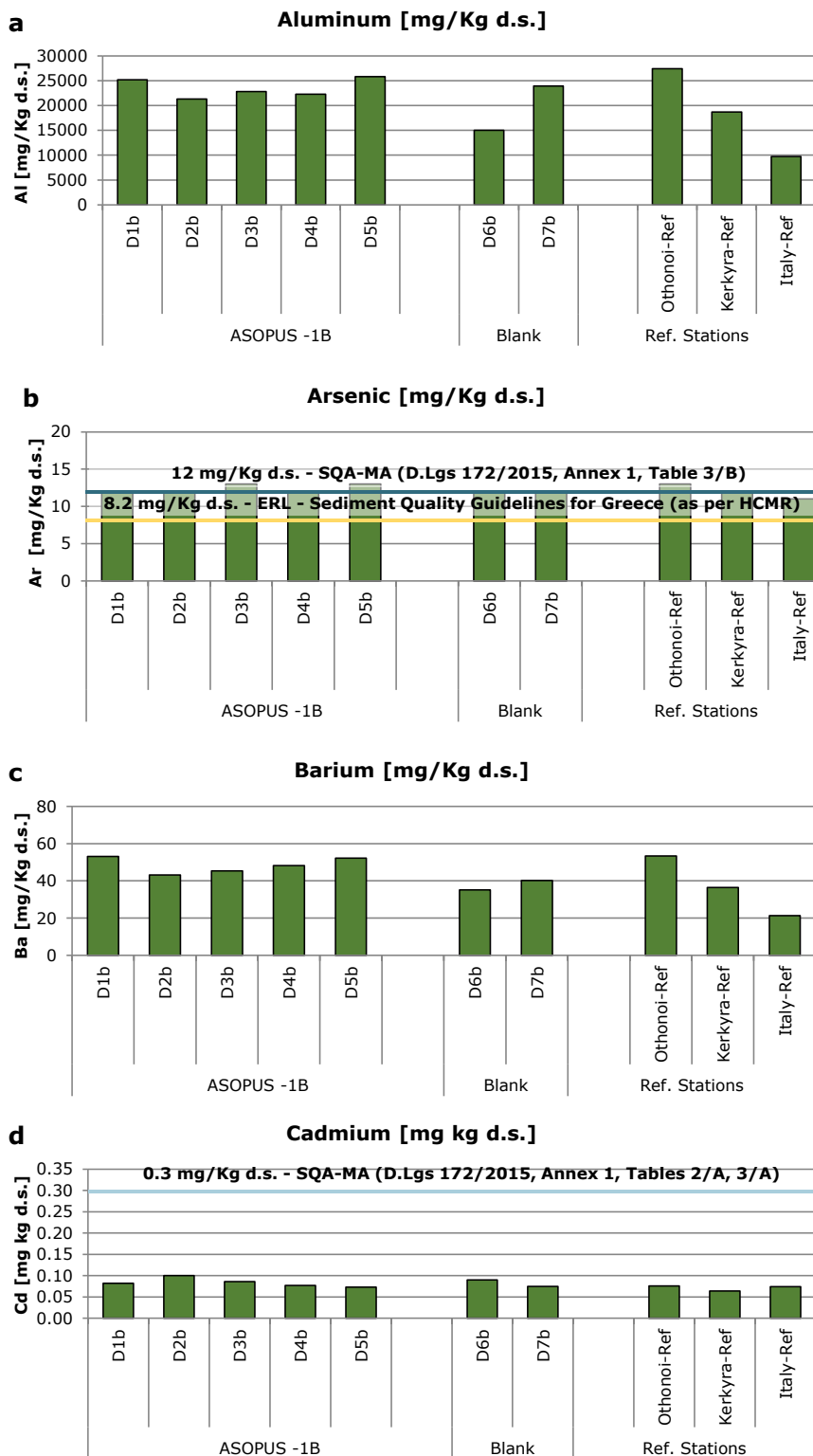


Figure 68 – Metal and metalloid concentrations in surface sediments collected at the Asopus-1B station group: Al (a), As (b), Ba (c) and Cd (d). Each panel includes the associated Blank Stations and all three Reference Stations

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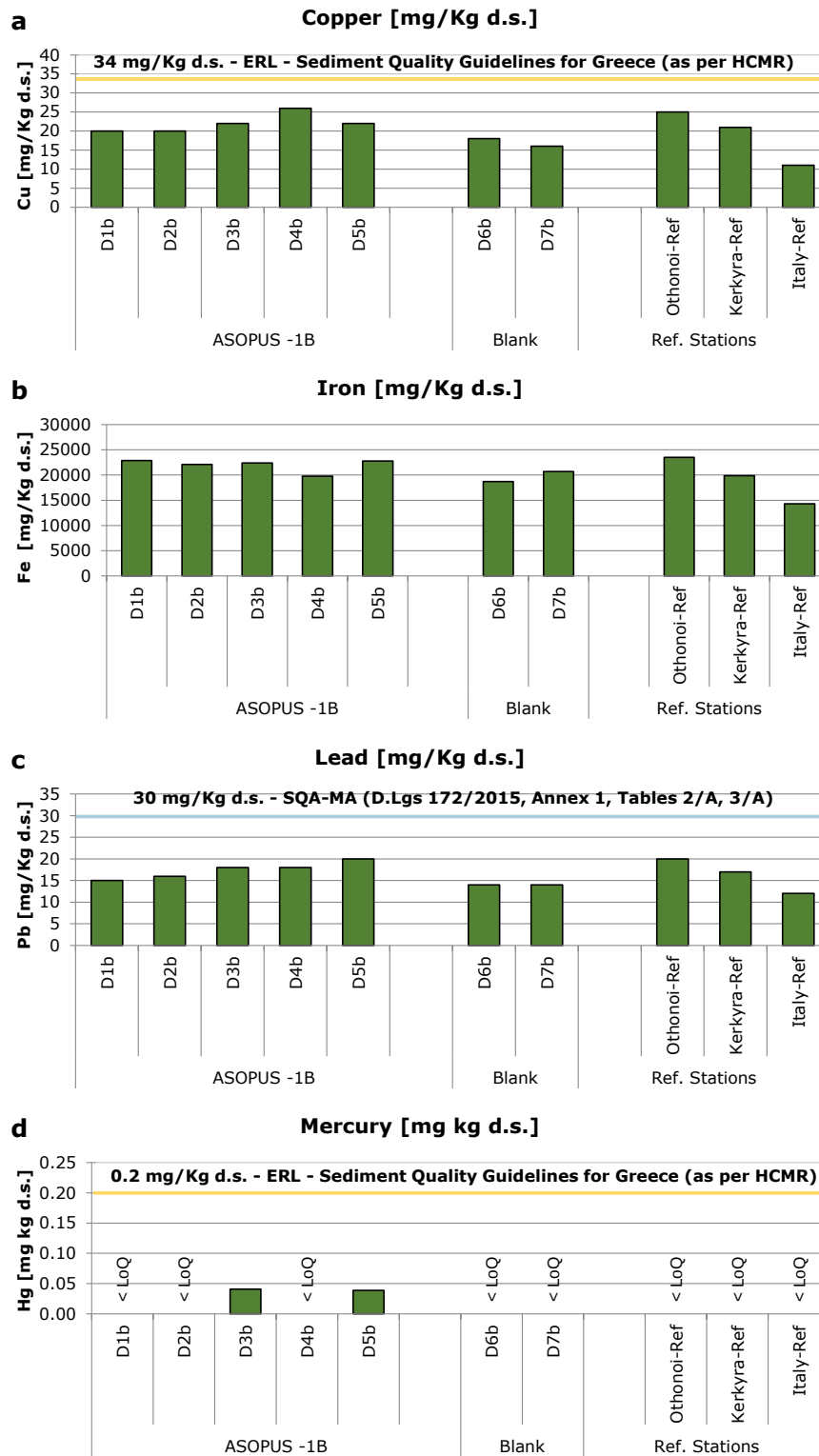


Figure 69 – Metal and metalloid concentrations in surface sediments collected at the Asopus-1B station group: Cu (a), Fe (b), Pb (c) and Hg (d). Each panel includes the associated Blank Stations and all three Reference Stations

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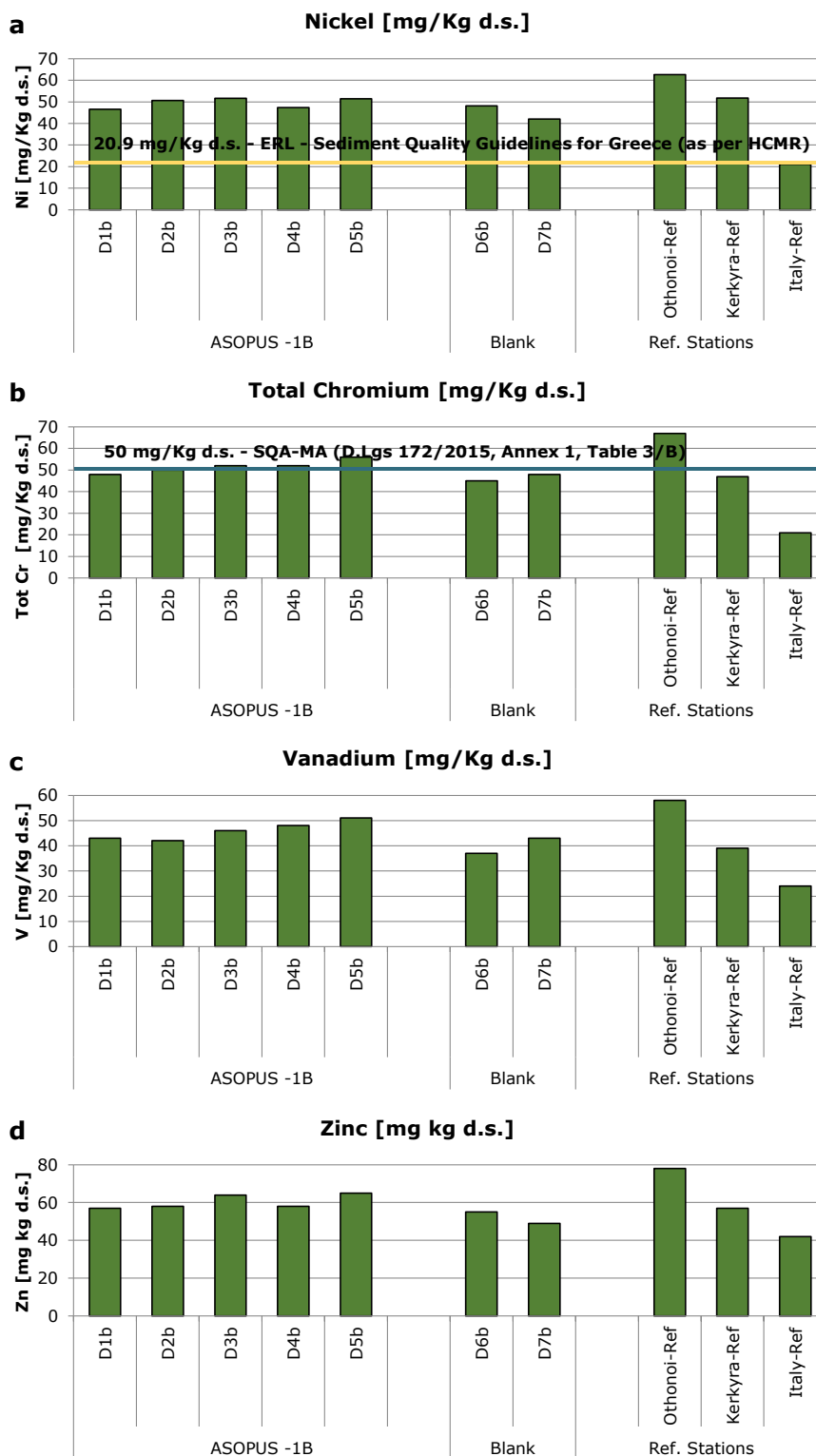


Figure 70 – Metal and metalloids concentrations in surface sediments collected at the Asopus-1B station group: Ni (a), Cr-Tot (b), V (c) and Zn (d). Each panel includes the associated Blank Stations and all three Reference Stations

Table 25 – Concentrations of Metals and Metalloids in surface sediments

Area	Well / Group of Stations	Station ID	METALS AND METALLOIDS													
			Aluminum	Arsenic	Barium	Cadmium	Chromium VI	Copper	Iron	Lead	Mercury	Nickel	Tin	Total Chromium	Vanadium	Zinc
BLOCK 2	M.U.		[mg/Kg d.s.]	[mg/Kg d.s.]	[mg/Kg d.s.]	[mg/Kg d.s.]	[mg/Kg d.s.]	[mg/Kg d.s.]	[mg/Kg d.s.]	[mg/Kg d.s.]	[mg/Kg d.s.]	[mg/Kg d.s.]	[mg/Kg d.s.]	[mg/Kg d.s.]	[mg/Kg d.s.]	[mg/Kg d.s.]
	ASOPUS -1A	D1a	23000	13.0	42.6	0.120	< 0.1	19	23100	15	0.049	44.0	< 1	47	42	54
		D2a	23200	8.3	45.2	0.150	< 0.1	16	23200	14	< 0.03	43.0	< 1	48	41	52
		D3a	15800	6.4	41.0	0.100	< 0.1	14	21000	11	< 0.03	39.0	< 1	40	34	49
		D4a	14100	6.2	38.6	0.088	< 0.1	14	18300	10	0.075	38.8	< 1	40	31	60
		D5a	24200	14.0	47.9	0.140	< 0.1	18	26300	14	0.041	45.0	< 1	51	46	62
	ASOPUS -1B	D1b	25200	12.0	53.1	0.082	< 0.1	20	22900	15	< 0.03	46.6	< 1	48	43	57
		D2b	21300	12.0	43.2	0.100	< 0.1	20	22100	16	< 0.03	50.6	< 1	50	42	58
		D3b	22800	13.0	45.4	0.086	< 0.1	22	22400	18	0.041	51.6	< 1	52	46	64
		D4b	22300	12.0	48.2	0.077	< 0.1	26	19800	18	< 0.03	47.3	< 1	52	48	58
		D5b	25800	13.0	52.2	0.073	< 0.1	22	22800	20	0.039	51.4	1.01	56	51	65
	Blanks	D6a	16100	4.4	77.6	0.150	< 0.1	23	21000	12	0.12	39.2	< 1	41	26	63
		D6b	15000	12.0	35.1	0.090	< 0.1	18	18700	14	< 0.03	48.1	< 1	45	37	55
		D7b	23900	12.0	40.2	0.075	< 0.1	16	20700	14	< 0.03	42.0	< 1	48	43	49
IONIA N SEA	Ref. Stations	Othonoi-Ref	27400	13.0	53.3	0.076	< 0.1	25	23500	20	< 0.03	62.6	1.04	67	58	78
		Kerkyra-Ref	18700	12.0	36.4	0.064	< 0.1	21	19900	17	< 0.03	51.8	< 1	47	39	57
		Italy-Ref	9750	11.0	21.3	0.074	< 0.1	11	14300	12	< 0.03	21.1	< 1	21	24	42
Sediment Quality Guidelines for Greece (as per HCMR). In the absence of European or national legislation, the ERL values from Long et al., 1995 are used as general reference limits																
ERL (Effects Range-Low)			n.d.	8.2	n.d.	1.2	n.d.	34.0	n.d.	46.7	0.2	20.9	n.d.	81	n.d.	150
Legislative Decree No. 172/2015 (Annex 1, Tables 2/A, Table 3/A and 3/B)																
SQA-MA (Tab 2/A)			n.d.	n.d.	n.d.	0.3	n.d.	n.d.	n.d.	30	0.3	n.d.	n.d.	n.d.	n.d.	n.d.
SQA-MA (Tab 3/A)			n.d.	n.d.	n.d.	0.3	n.d.	n.d.	n.d.	30	0.3	n.d.	n.d.	n.d.	n.d.	n.d.
SQA-MA (Tab 3/B)			n.d.	12	n.d.	n.d.	2	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	50	n.d.	n.d.

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5.2.2.2.3 TOTAL HYDROCARBONS ($C \leq 12$ – $C > 12$ AND TPH)

The light hydrocarbon fraction ($C \leq 12$) remained consistently below the analytical LoQ at all investigated stations. In contrast, the heavier hydrocarbon fraction ($C > 12$) was quantifiable throughout most of the study area, although always at relatively low concentrations.

Around the Asopus-1A well area, $C > 12$ hydrocarbons ranged from 15.0 mg kg⁻¹ d.s. at D2a and D5a to 20.0 mg kg⁻¹ d.s. at D4a, with an average concentration of 17.2 ± 2.4 mg kg⁻¹ d.s. Around the Asopus-1B well area, concentrations varied between 13.0 mg kg⁻¹ d.s. at D4b and D5b and 15.0 mg kg⁻¹ d.s. at D2b and D3b, yielding an average of 14.0 ± 1.0 mg kg⁻¹ d.s. Blank stations exhibited values ranging from 8.5 mg kg⁻¹ d.s. at D7b to 16.0 mg kg⁻¹ d.s. at D6a, with an average of 12.2 ± 3.8 mg kg⁻¹ d.s. Reference Stations showed a concentration below the LoQ at Italy Ref and a maximum of 14.0 mg kg⁻¹ d.s. at Kerkyra Ref; the corresponding average concentration was 9.5 ± 4.9 mg kg⁻¹ d.s.

Given the non-detectability of lighter hydrocarbon fraction, Total Petroleum Hydrocarbons (TPH) concentrations entirely reflected the contribution of the heavier fraction ($C > 12$). Consequently, TPH exhibited the same minimum and maximum concentrations, identical spatial distribution patterns, and the same average values and standard deviations reported for the $C > 12$ fraction.

Overall, concentrations showed limited spatial variability and no consistent differences among well-site, Blank and Reference Stations. The highest concentrations were recorded around the Asopus-1A well area, whereas the lowest values occurred at Italy Ref.

Neither the Greek Sediment Quality Guidelines adopted by HCMR nor the Italian Environmental Quality Standards (D.Lgs 172/2015) provide threshold values for the investigated hydrocarbon fractions or TPH in marine sediments. Therefore, no comparison with regulatory reference values was possible and no exceedances could be identified.

Concentrations of both hydrocarbon fractions are reported in Table 26, whereas only $C > 12$ and TPH concentrations are graphically presented, as they were analytically detected (Figure 71 and Figure 72).

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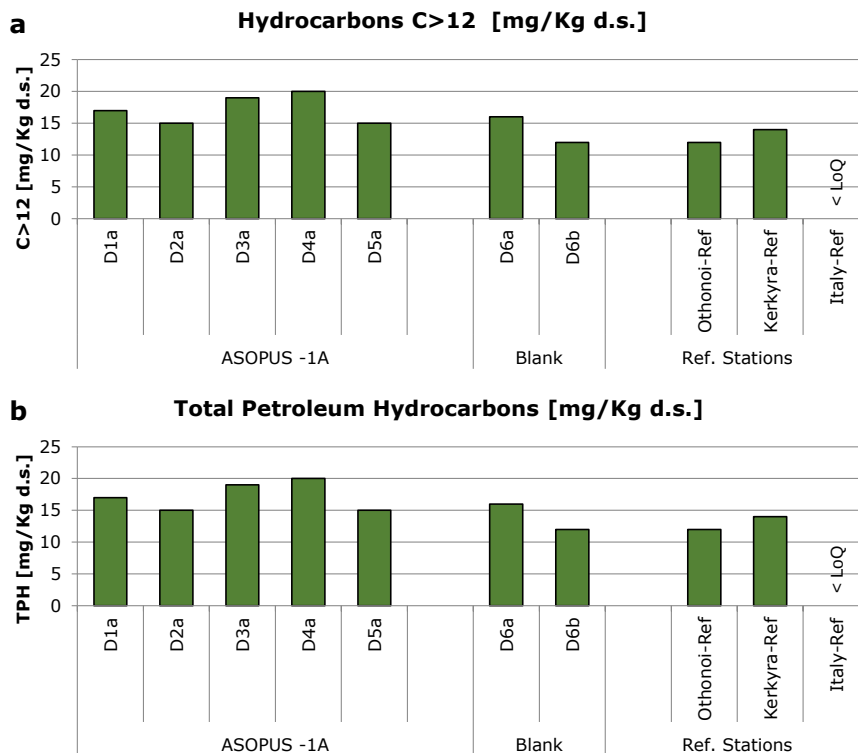


Figure 71 – Hydrocarbons in surface sediments collected at the Asopus-1A station group: C>12 (a), Total Petroleum Hydrocarbons (TPH) (b). Each panel includes the associated Blank Stations and all three Reference Stations

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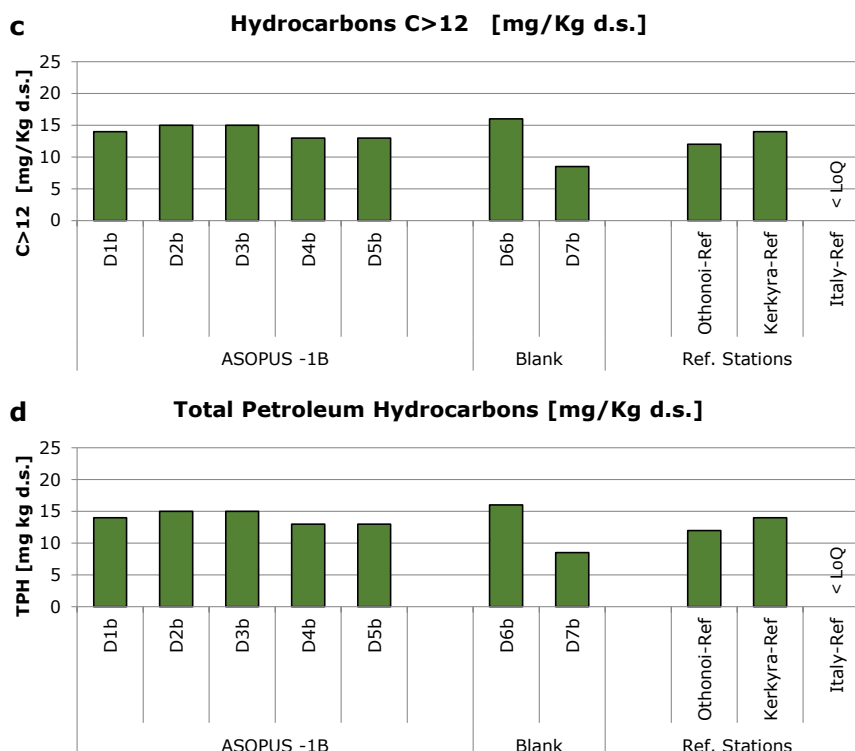


Figure 72 – Hydrocarbons in surface sediments collected at the Asopus-1B station group: C>12 (a), Total Petroleum Hydrocarbons (TPH) (b). Each panel includes the associated Blank Stations and all three Reference Stations

Table 26 – Concentrations of Hydrocarbon Fractions (C≤12, C>12) and their sum (TPH) in surface sediments

Area	Well	Station ID	PETROLEUM HYDROCARBON FRACTION AND TOTAL		
			Hydrocarbons C≤12	Hydrocarbons C>12	Total Petroleum Hydrocarbons (TPH)
BLOCK 2	M.U.		[mg/Kg d.s.]		
	ASOPUS -1A	D1a	< 1	17	17
		D2a	< 1	15.0	15.0
		D3a	< 1	19.0	19.0
		D4a	< 1	20.0	20.0
		D5a	< 1	15.0	15.0
	ASOPUS -1B	D1b	< 1	14.0	14.0
		D2b	< 1	15.0	15.0
		D3b	< 1	15.0	15.0
		D4b	< 1	13.0	13.0
		D5b	< 1	13.0	13.0
	Blank	D6a	< 1	16.0	16.0
		D6b	< 1	16.0	16.0
		D7b	< 1	8.5	8.5
IONIAN SEA	Ref. Stations	Othonoi-Ref	< 1	12.0	12.0
		Kerkyra-Ref	< 1	14.0	14.0
		Italy-Ref	< 1	< 5	< 5

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5.2.2.2.4 POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)

Most of the investigated PAHs were consistently below the analytical LoQ at all stations. In particular, Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)pyrene, Benzo(k)fluoranthene, Dibenzo[a,h]anthracene, Fluorene and Naphthalene were never quantified.

Only eight compounds showed quantifiable concentrations in one or more samples: Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Chrysene, Fluoranthene, Indeno(1,2,3-c,d)pyrene, Phenanthrene and Pyrene. Among these, Fluoranthene and Pyrene were the most frequently detected PAHs, both quantified at five stations (D3b, D4b, D6a, Kerkyra Ref and Italy Ref). Fluoranthene reached a maximum concentration of $1.8 \mu\text{g kg}^{-1}$ d.s. at both D6a and Italy Ref, averaging $0.50 \pm 0.00 \mu\text{g kg}^{-1}$ d.s. around Asopus-1A, $0.96 \pm 0.36 \mu\text{g kg}^{-1}$ d.s. around Asopus-1B, $0.93 \pm 0.75 \mu\text{g kg}^{-1}$ d.s. at the Blank stations and $1.27 \pm 0.55 \mu\text{g kg}^{-1}$ d.s. at the Reference Stations. Pyrene reached a maximum of $2.0 \mu\text{g kg}^{-1}$ d.s. at Italy Ref, with corresponding average concentrations of 0.50 ± 0.00 , 1.02 ± 0.43 , 0.97 ± 0.81 and $1.30 \pm 0.52 \mu\text{g kg}^{-1}$ d.s. for Asopus-1A, Asopus-1B, Blank and Reference Stations, respectively.

The remaining quantified PAHs were more sporadic. Chrysene reached a maximum concentration of $1.3 \mu\text{g kg}^{-1}$ d.s. at Italy Ref and was also detected at D6a, while Phenanthrene reached $1.4 \mu\text{g kg}^{-1}$ d.s. at both D6a and Kerkyra Ref. Benzo(a)anthracene was quantified only at D6a ($1.1 \mu\text{g kg}^{-1}$ d.s.). Benzo(b)fluoranthene, Benzo(g,h,i)perylene and Indeno(1,2,3-c,d)pyrene were detected exclusively at Italy Ref, where they reached concentrations of 2.6, 2.1 and $2.0 \mu\text{g kg}^{-1}$ d.s., respectively.

The Σ PAHs concentration was quantifiable only at five stations, reaching the highest values at D6a ($7.28 \mu\text{g kg}^{-1}$ d.s.) and Italy Ref ($11.70 \mu\text{g kg}^{-1}$ d.s.) and including lower values at D3b, D4b and Kerkyra Ref. Average Σ PAHs concentrations were $0.50 \pm 0.00 \mu\text{g kg}^{-1}$ d.s. around Asopus-1A, $1.26 \pm 1.05 \mu\text{g kg}^{-1}$ d.s. around Asopus-1B, $2.76 \pm 3.91 \mu\text{g kg}^{-1}$ d.s. at the Blank stations and $5.40 \pm 5.73 \mu\text{g kg}^{-1}$ d.s. at the Reference Stations.

Overall, PAH detections were sporadic and confined to a limited number of stations, with the highest diversity of quantified compounds and the highest Σ PAHs concentration observed at Italy Ref, followed by D6a. Comparison with the Sediment Quality Guidelines adopted in Greece by HCMR, based on the ERL values proposed by Long et al. (1995), and with the Italian Environmental Quality Standards (SQA-MA) reported in Legislative Decree (D.Lgs.) No. 172/2015 (Tables 2/A and 3/A), showed that all individual PAH concentrations and Σ PAHs values remained well below the applicable threshold values. Consequently, no exceedances were recorded at any station.

Concentrations of all analysed PAHs are reported in Table 27. For graphical representation, only those individual PAHs with a higher number of values exceeding the LoQ are shown, together with the summation (Σ PAHs) of all the individual PAH concentrations (Figure 73 and Figure 74).

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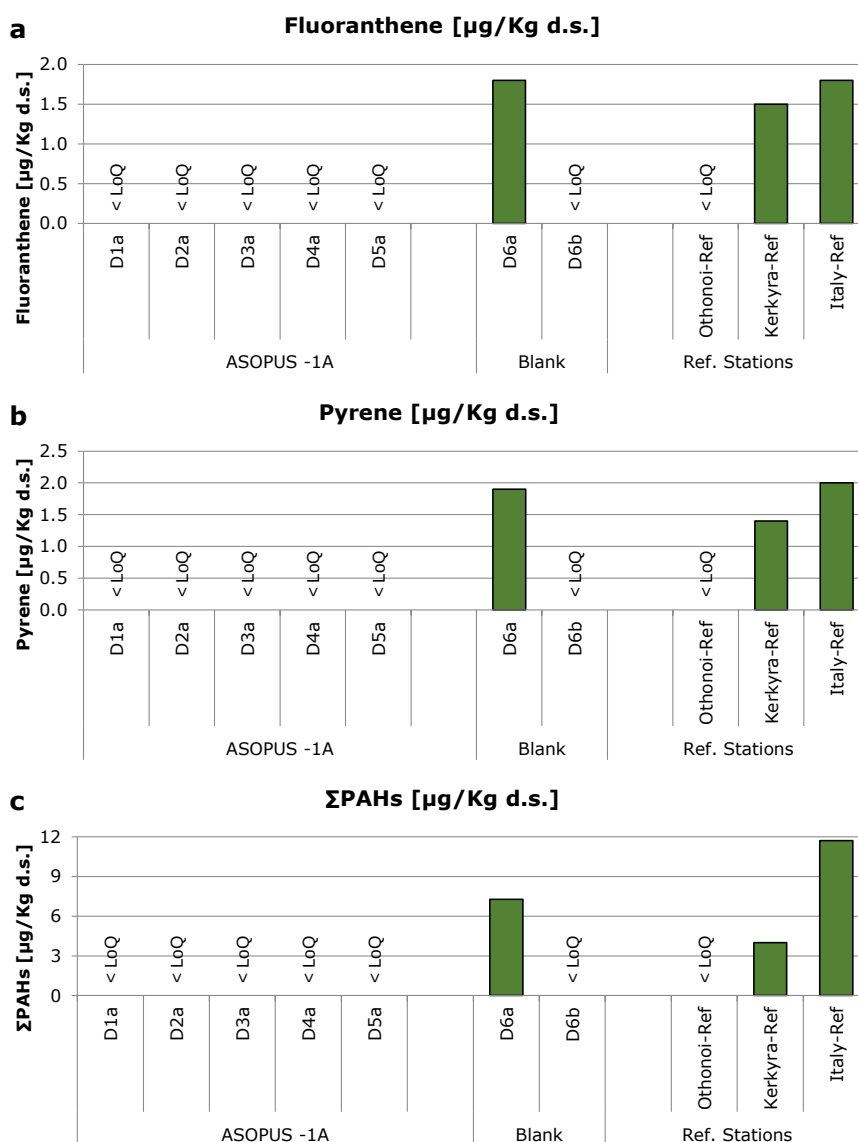


Figure 73 – Polycyclic Aromatic Hydrocarbons (PAHs) in surface sediments collected at the Asopus-1A station group: Fluoranthene (a), Pyrene(b) and Σ PAHs (c). Each panel includes the associated Blank Stations and all three Reference Stations

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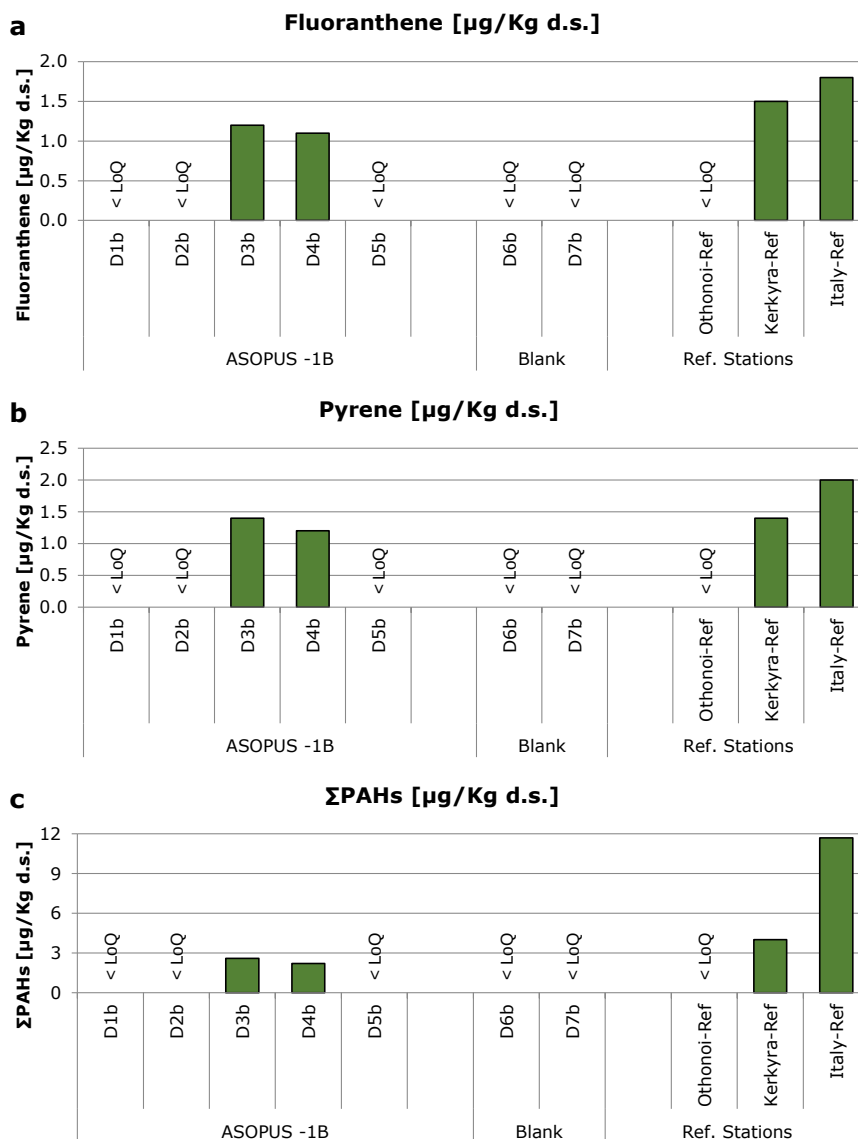


Figure 74 – Polycyclic Aromatic Hydrocarbons (PAHs) in surface sediments collected at the Asopus-1B station group: Fluoranthene (a), Pyrene(b) and Σ PAHs (c). Each panel includes the associated Blank Stations and all three Reference Stations

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Table 27 – Polycyclic Aromatic Hydrocarbons (PAHs) in surface sediments

Area	Well	Station ID	Bottom Depth [m]	POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)																	
				Acenaphthene	Acenaphthylene	Anthracene	Benzo (a)anthracene	Benzo (a)pyrene	Benzo (b)fluoranthene	Benzo (g,h,i)perylene	Benzo (k)fluoranthene	Chrysene	Dibenzo [a,h]anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	ΣPAHs	
BLOCK 2	ASOPUS -1A	M.U.		[µg/Kg d.s.]																	
		D1a	825.75	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		
		D2a	831.61	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		
		D3a	816.32	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		
		D4a	823.60	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		
		D5a	832.24	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		
		ASOPUS -1B	D1b	830.59	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
			D2b	839.75	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
			D3b	835.04	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1.20	< 1	< 1	< 1	< 1	1.40	2.60
			D4b	820.52	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1.10	< 1	< 1	< 1	< 1	1.20	2.20
	D5b		825.10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
	Blanks	D6a	842.94	< 1	< 1	< 1	1.10	< 1	< 1	< 1	< 1	1.10	< 1	1.80	< 1	< 1	< 1	1.40	1.90	7.28	
		D6b	811.00	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
		D7b	833.27	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
IONIAN SEA	Ref. Stations	Othonoi-Ref	1065.04	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		
		Kerkyra-Ref	1134.16	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1.50	< 1	< 1	< 1	1.10	1.40	4.00		
		Italy-Ref	145.00	< 1	< 1	< 1	< 1	< 1	2.60	2.10	< 1	1.30	< 1	1.80	< 1	2.00	< 1	< 1	2.00	11.70	
Sediment Quality Guidelines for Greece (as per HCMR). In the absence of European or national legislation, the ERL values from Long et al., 1995 are used as general reference limits																					
ERL (Effects Range-Low)				16	44	85.3	261	430	n.d.	n.d.	n.d.	384	63.4	600	19	n.d.	160	240	665	4200	
Legislative Decree No. 172/2015 (Annex 1, Tables 2/A, Table 3/A and 3/B)																					
SQA-MA (Tab 2/A)				n.d.	n.d.	24	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	35	n.d.	n.d.	n.d.		
SQA-MA (Tab 3/A)				n.d.	n.d.	24	n.d.	30	40	55	20	n.d.	n.d.	110	n.d.	70	35	n.d.	n.d.	n.d.	
SQA-MA (Tab 3/B)				n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	

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5.2.2.3 Microplastics in Sediment (Qualitative Analysis)

Microplastics were consistently not detected throughout all investigated stations, including both well-site areas (Asopus-1A and Asopus-1B), the Blank stations and the three Reference Stations (Othonoi Ref, Kerkyra Ref and Italy Ref). Given the uniform absence of detectable microplastics, no statistical analyses could be performed, nor was any classification of polymer types, particle morphologies, size classes or colours possible.

At present, neither the Sediment Quality Guidelines adopted in Greece (HCMR) nor the Italian Environmental Quality Standards (D.Lgs. No. 172/2015) provide threshold values or environmental quality criteria for microplastics in marine sediments. Consequently, no comparison with regulatory standards could be undertaken. Nevertheless, the analytical results indicate that microplastic concentrations, if present, were below the analytical detection capability of the adopted methodology at all investigated stations.

All analytical results for organochlorine pesticides are presented in Table 28. Since microplastics were reported as Not Detected at all sampling stations, no graphical representation is provided.

Table 28 – Microplastics in surface sediments (1 µm – 5 mm), qualitative identification by micro-Raman and FTIR spectroscopy

Area	Well	Station ID	Microplastics (micro-Raman/FTIR)
BLOCK 2	ASOPUS -1A	M.U.	presence/absence/classification
		D1a	Not Detected
		D2a	Not Detected
		D3a	Not Detected
		D4a	Not Detected
		D5a	Not Detected
	ASOPUS -1B	D1b	Not Detected
		D2b	Not Detected
		D3b	Not Detected
		D4b	Not Detected
		D5b	Not Detected
	Blanks	D6a	Not Detected
		D6b	Not Detected
		D7b	Not Detected
IONIAN SEA	Ref. Stations	Othonoi-Ref	Not Detected
		Kerkyra-Ref	Not Detected
		Italy-Ref	Not Detected

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5.2.3 Correlation among analytical results – Sediment

Multivariate analyses performed on bathyal marine sediments from the investigated area reveal an environmental structure strongly controlled by the interaction of sedimentological, geochemical, and biogeochemical factors typical of deep-sea systems in the eastern Mediterranean. These environments are characterized by high oligotrophy, physical stability, and limited organic matter availability, conditions that represent the main limiting factors for the structure and functioning of deep benthic ecosystems (Danovaro *et al.*, 2010).

Correlation matrix analysis revealed a clear grain size–bathymetric gradient, with a dominance of the fine fraction increasing with depth ($r = 0.65$). This pattern is consistent with low-energy bathyal environments, where fine-grained sediments prevail and enhanced particle deposition occurs.

Biogeochemical parameters show strong relationships with sedimentary structure. Total organic carbon (TOC) is strongly negatively correlated with carbonates ($r = -0.81$), indicating a clear separation between biogenic carbonate sediments and fine-grained, organic-rich deposits. In addition, total nitrogen exhibits a marked decrease with depth ($r = -0.91$), confirming the progressive reduction in trophic availability in deeper sectors. In oligotrophic bathyal environments, organic matter availability represents one of the main limiting factors and drives strong gradients in the structure of associated communities (Danovaro *et al.*, 2010).

Geochemical variables reveal a distinct cluster of metals (Cr, Ba, V, Fe, Ni, Zn, Pb), which are strongly intercorrelated, suggesting a common predominantly lithogenic origin and a strong control exerted by the fine sediment fraction and pelitic depositional processes. In deep marine environments, numerous trace metals are associated with clay particles and Fe–Mn oxides, which regulate their transport, accumulation, and bioavailability (Horowitz, 1991; Förstner & Wittmann, 1981). This behaviour is consistent with low-energy depositional systems, where the pelitic fraction represents the primary geochemical carrier.

Hydrocarbons (TPH and Σ PAHs) show relationships with organic matter content and depth, indicating a stronger association with shallower sediments enriched in TOC. This is consistent with the strong affinity of hydrocarbons for particulate organic matter and their transport linked to fine particles, which control their distribution in marine sediments (Bouloubassi *et al.*, 2001).

Overall, the bathymetric gradient and the dominance of fine-grained sediments regulate organic matter accumulation and nutrient distribution, whereas metals and hydrocarbons reflect pelitic depositional processes and their association with the sediment organic fraction. These results confirm that, in bathyal systems of the eastern Mediterranean, sedimentary and geochemical structure is tightly linked to vertical organic matter transfer processes and depositional dynamics.

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5.2.4 Detailed description of results – Infauna

5.2.4.1 Abundance and diversity of macrozoobenthos

In the present study, considering jointly the sampling stations located in the vicinity of the Block 2 area (Asopus-1B well and Asopus-1A well) and the reference stations (Othonoi Ref, Kerkyra Ref, and Italy Ref), a total of 116 benthic macroinvertebrate organisms were collected. Samples were taxonomically identified to the highest possible resolution, allowing the recognition of 19 distinct *taxa*. A complete list of the species recorded in each sample is reported in APPENDIX F: INFAUNA DATA, where organism abundance is expressed as individuals per square meter (ind. m⁻²).

Overall, both in terms of total abundance and species richness (Figure 75), the *phylum* Annelida contributed by far the largest proportion relative to the total, representing 94.8 % of total abundance and 73.7 % of the total number of species. This was followed by crustaceans (*phylum* Arthropoda), which accounted for 3.4 % of total abundance and 15.8 % of species richness. No organisms belonging to the *phylum* Mollusca were identified. The other identified *phyla* (Echinodermata and Nemertea) collectively contributed marginally, accounting for 1.7 % of total abundance and 10.5 % of the total number of species.

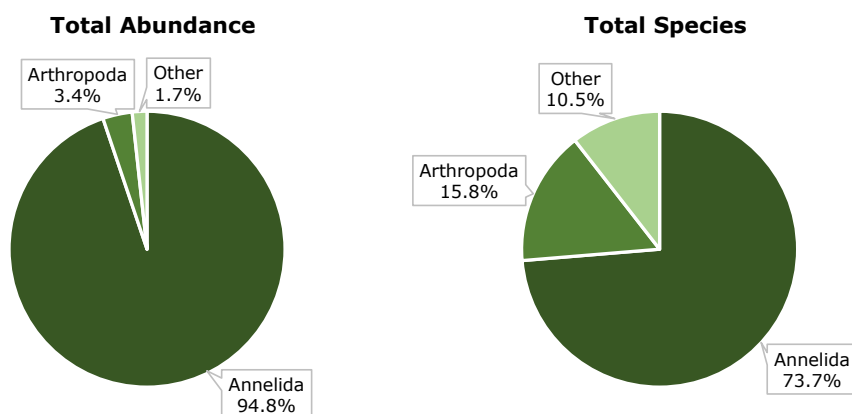


Figure 75 – Taxonomic composition of the macrozoobenthos, expressed as the percentage contribution of taxonomic groups to total abundance (left) and to total species richness (right), for the entire study area (Asopus-1A and Asopus-1B; Reference stations: Othonoi Ref, Kerkyra Ref and Italy Ref)

The *nMDS* plot (Figure 76), constructed from the species / abundance matrix of the macrobenthic community, shows a relatively homogeneous distribution of sampling points within the ordination space, with no clear spatial patterns evident either between the stations associated with the two different wells within Block 2 area (Asopus-1A and Asopus-1B) or between the control stations (also located within the Block 2 area) and the Reference stations (Othonoi Ref, Kerkyra Ref, and Italy Ref). Indeed, the PERMANOVA analysis did not reveal statistically significant differences among station groups ($p > 0.05$). The minor differences observed in the *nMDS* plot may be attributable both to spatial variability, particularly between the stations located within the Block 2 area and the reference stations, and to the presence of natural microheterogeneity within the sediment matrix.

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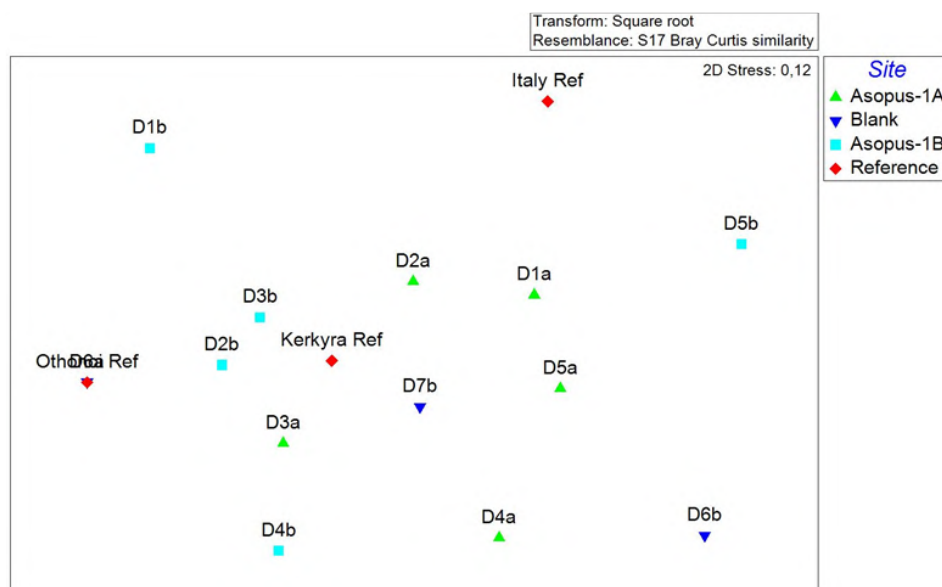


Figure 76 – nMDS plot based on the species / abundance matrix of the macrobenthic community, for the entire study area (Block 2: Asopus-1A and Asopus-1B; Reference stations: Othonoi Ref, Kerkyra Ref and Italy Ref)

All investigated sampling stations exhibited low levels of abundance and species richness, consistent with values typically recorded in Mediterranean bathyal environments.

Specifically, the sampling stations located in the vicinity of the Asopus-1A well area showed comparable abundance values, ranging from a minimum of 20 ind. m⁻² at station D3a to a maximum of 90 ind. m⁻² at station D4a. In the corresponding control stations (Blank) associated with this well (stations D6a and D6b), the absolute minimum value (5 ind. m⁻²) and the absolute maximum value (100 ind. m⁻²) recorded within the Block 2 area for the Asopus-1A well were observed, respectively. Given the substantial overlap among the data, no statistically significant differences were detected among the investigated stations. Only control station D6a showed a greater deviation from the other stations in terms of abundance. However, this deviation appears to be attributable to the natural heterogeneity of the sediment matrix rather than to differentiation associated with a clear ecological pattern. Similarly, species richness values were highly comparable among the different stations investigated within the Block 2 area surrounding the Asopus-1A well. In particular, values ranged from 2 species (stations D2a, D3a, and D4a) to 3 species (stations D1a and D5a). The associated control stations showed values that were only slightly different and represented the extremes of the range observed in the investigated stations: 1 species at control station D6a and 6 species at control station D7b.

Regarding the sampling stations located near the Asopus-1B well area, a situation entirely comparable to that described for the Asopus-1A well was observed, with abundance values ranging from a minimum of 10 ind. m⁻² at station D2b to a maximum of 45 ind. m⁻² at station D5b. In the corresponding control stations (Blank) associated with this well (stations D6b and D7b), abundance values consistent with those recorded at the other stations of the well were detected (100 ind. m⁻² and 50 ind. m⁻², respectively). Also in this case, as reported for the Asopus-1A well, no statistically significant differences were found among the investigated stations. In terms of species richness,

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highly similar values were also observed among the different stations within the Asopus-1B well area. Specifically, values ranged from 1 species (stations D2b and D7b) to 7 species (station D5b).

With regard to the Reference stations (Othonoi Ref, Kerkyra Ref, and Italy Ref), despite the marked spatial variability (stations located at considerable distances both from each other and from the Block 2 area) and bathymetric variability (the Italy Ref station being characterized by a depth of approximately 145 m, thus representing a transition zone between the circalittoral and upper bathyal zones rather than a strictly bathyal environment, unlike all the other investigated stations), comparable levels of abundance and species richness were also recorded among these stations. Furthermore, these values were consistent with those observed at the sampling stations within the Block 2 area, for both the Asopus-1A and Asopus-1B wells. Specifically, abundance and species richness values corresponded to 5 ind. m⁻² and 1 species at Othonoi Ref, 20 ind. m⁻² and 1 species at Kerkyra Ref, and 50 ind. m⁻² and 5 species at Italy Ref.

Figure 77 and Figure 78 show the abundance and species richness values for the stations associated with the Asopus-1A and Asopus-1B wells, respectively, the control stations associated with each well (Blank), and the reference stations (Othonoi Ref, Kerkyra Ref, and Italy Ref). Control station D6b is reported in both figures because it is shared between the Asopus-1A and Asopus-1B wells, while the reference stations are repeated in both figures in order to provide the most comprehensive comparative framework possible.

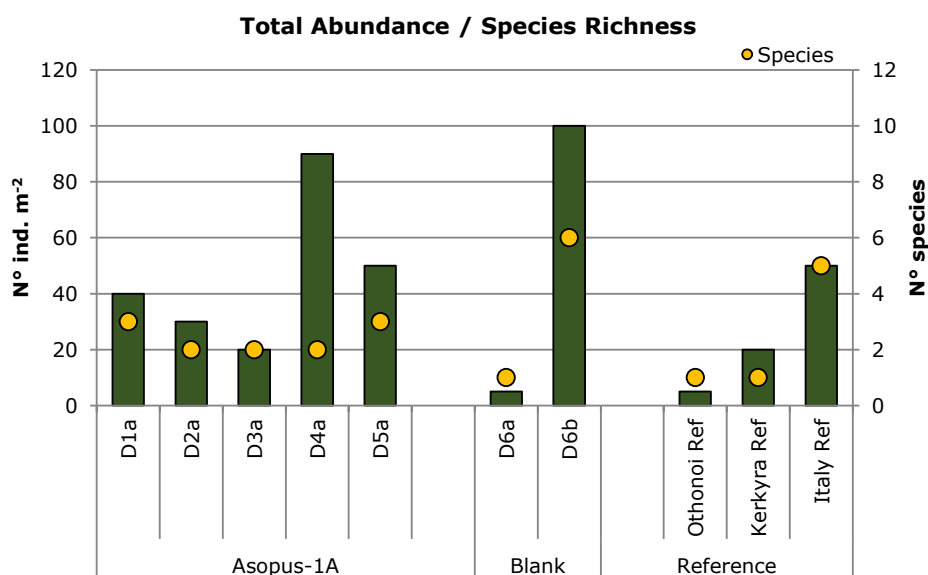


Figure 77 – Mean abundances of the macrobenthic community and total number of species recorded at the sampling stations – Asopus-1A and Reference stations

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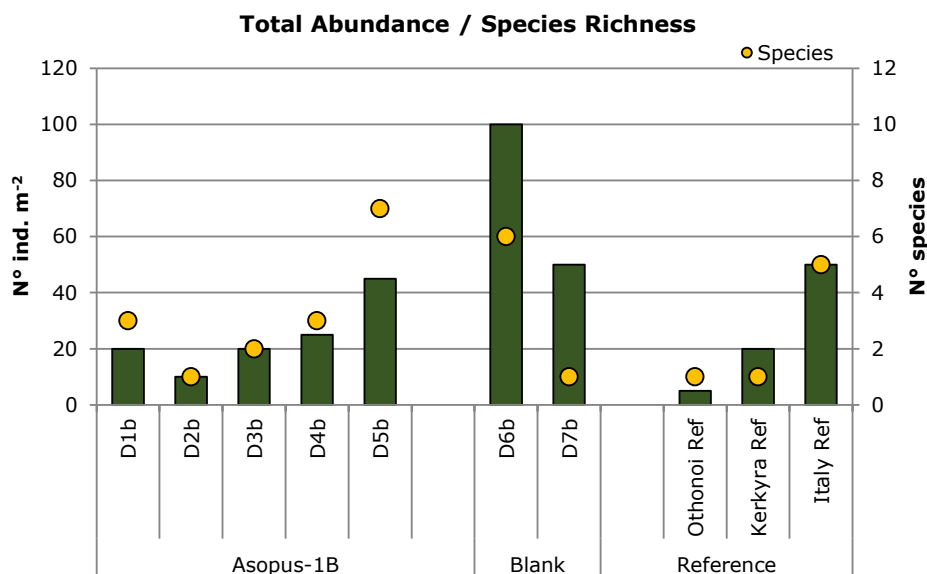


Figure 78 – Mean abundances of the macrobenthic community and total number of species recorded at the sampling stations – Asopus-1B and Reference stations

The results of the Shannon–Wiener diversity index calculation ($H' \log_e$, Figure 79a and Figure 80a), both for the Block 2 area (Asopus-1A well and Asopus-1B well) and for the Reference stations (Othonoi Ref, Kerkyra Ref, Italy Ref), were consistent with the findings related to total abundance and species richness, showing low diversity levels across all sampling stations.

Specifically, within the Asopus-1A well area, H' values ranged from 0.21 (station D4a) to 0.74 (station D1a). The associated control stations (Blank) showed comparable values, ranging from 0 (station D6a; presence of a single species) to 1.08 (station D6b).

Regarding the Asopus-1B well area, H' values were comparable to those described above for the Asopus-1A well, ranging from a minimum of 0.56 (station D3b) to a maximum of 1.83 (station D5b). An H' value equal to 0 was recorded at station D2b due to the presence of a single species. Similarly, the associated control stations (Blank) exhibited comparable values, ranging from 0 (station D7b; presence of a single species) to 1.08 (station D6b; control station shared with the Asopus-1A well).

The Reference stations Othonoi Ref and Kerkyra Ref showed H' values equal to 0, due to the occurrence of a single species within the analysed samples. In contrast, the Italy Ref station showed an H' value of 1.36. These values were consistent with those described for the Block 2 area.

The Pielou's evenness index (J'), with reference to the stations located around the Asopus-1A well (Figure 79b), showed values deviating from 1 at most investigated stations, indicating a clear dominance of one species over the others identified. Indeed, at these stations (D1a, D2a, D3a, D4a, and D5a), a marked predominance of the sipunculan *Golfingia sp.* was observed. The same pattern was recorded at the control station D6b, whereas at control station D6a the J' index could not be calculated due to the presence of a single species (N.D.).

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In contrast, for the Asopus-1B well, the Pielou's evenness index (Figure 80b) showed values close to 1 at most stations, indicating a relatively even distribution of individuals among the few identified species, except for station D2b, where the index could not be quantified due to the presence of a single species (N.D.). With regard to the associated control stations (Blank), the dominance of the sipunculan *Golfingia sp.* was observed at station D6b (previously described as shared with the Asopus-1A well), while the J' index could not be calculated at station D7b (N.D.; presence of a single species).

The Reference stations Othonoi Ref and Kerkyra Ref showed non-quantifiable J' values due to the presence of a single species at both stations (N.D.). Conversely, the Italy Ref station showed a J' value close to 1, indicating a good evenness in the distribution of organisms among the identified species.

These results are consistent with the general pattern observed in the distribution of macrobenthic communities in the Mediterranean Sea, although some local-scale exceptions occur. In particular, Rowe, *et al.* (1982) reported that both abundance and biomass decrease sharply with increasing depth between 203 and 3659 m, in relation to sedimentological characteristics, with bathyal muds and fine silts typically supporting low-density communities.

Johnson *et al.* (2007) further linked faunal density and biomass to surface primary productivity, observing a decline in both parameters with increasing depth, attributable to the reduced downward flux of particulate organic carbon (POC) to the seafloor. Additionally, increasing hydrostatic pressure and decreasing temperature with depth further reduce metabolic rates and benthic productivity.

More recent studies (e.g., Pilditch, 2015) confirm that abundance and diversity decrease with depth, highlighting that this reduction is more pronounced for macrofauna and megafauna than for meiobenthos.

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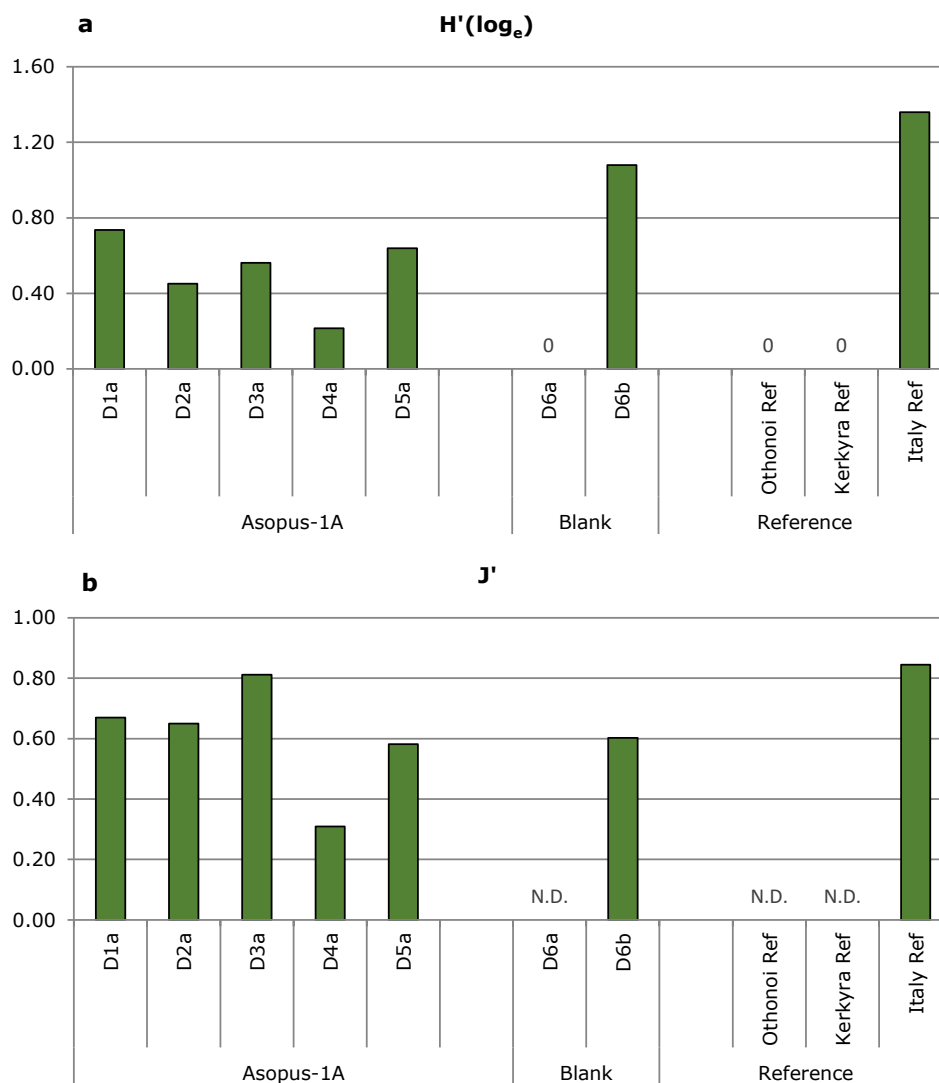


Figure 79 – Graphical representation of Shannon-Wiener diversity index $H'(\log_e)$; a) and Pielou evenness index (J'); b) of the macrobenthic community – Asopus-1A and Reference stations

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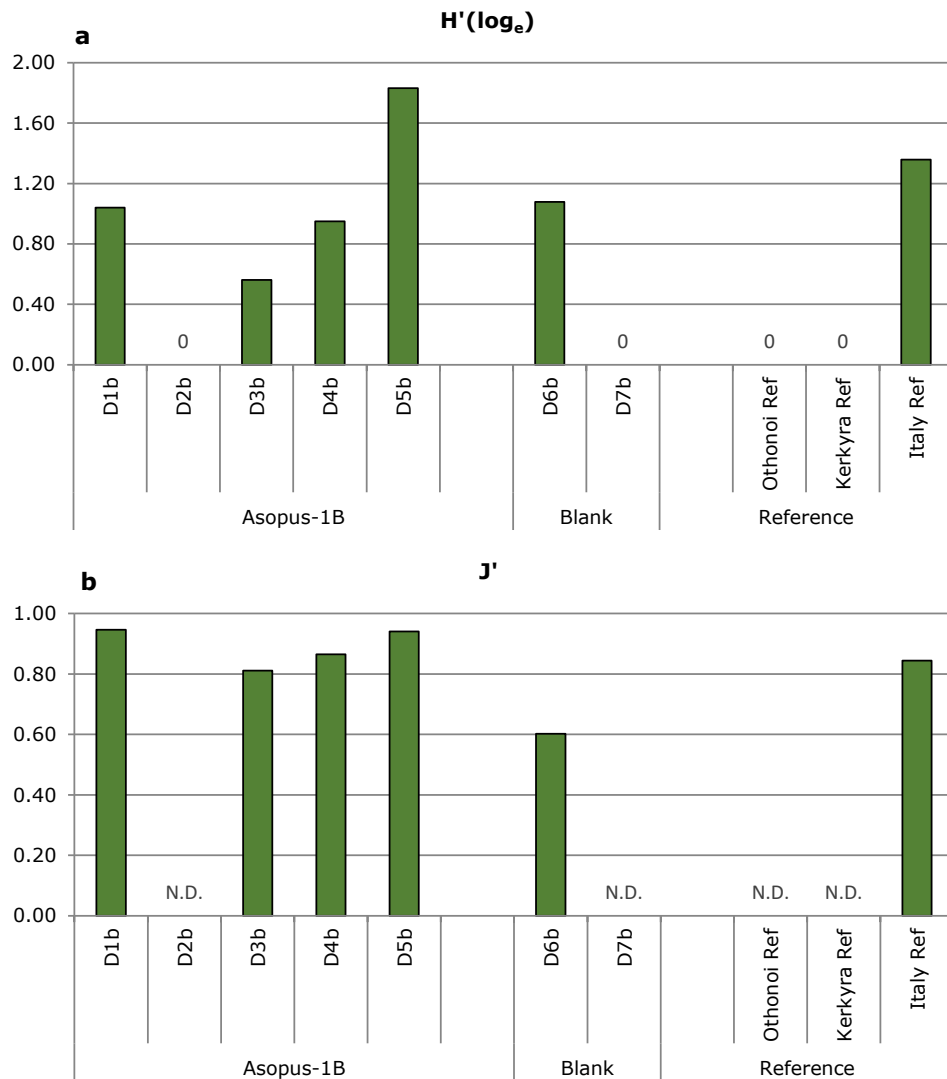


Figure 80 – Graphical representation of Shannon-Wiener diversity index $H'(\log_e)$; a) and Pielou evenness index (J' ; b) of the macrobenthic community – Asopus-1B and Reference stations

In the following table (Table 29), for each sampling station, the total number of species (S) and the mean values of abundances (N) and structural indices are reported: Shannon-Wiener index $H'(\log_e)$, Pielou's evenness index (J'), Simpson's index (λ), and Margalef's richness index (d).

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Table 29 – Absolute values of species number (S) and mean values of abundance (N° ind. m⁻²) and diversity indices: Shannon-Wiener index H' (log_e), Pielou evenness index (J'), Simpson index (λ), and Margalef richness index (d)

Site	Station	S	N	d	J'	H'(log _e)	λ
Asopus-1A	D1a	3	40	0.54	0.67	0.74	0.59
	D2a	2	30	0.29	0.65	0.45	0.72
	D3a	2	20	0.33	0.81	0.56	0.63
	D4a	2	90	0.22	0.31	0.21	0.90
	D5a	3	50	0.51	0.58	0.64	0.66
Asopus-1B	D1b	3	20	0.67	0.95	1.04	0.38
	D2b	1	10	0.00	N.D.	0.00	1.00
	D3b	2	20	0.33	0.81	0.56	0.63
	D4b	3	25	0.62	0.87	0.95	0.44
	D5b	7	45	1.58	0.94	1.83	0.19
Blank	D6a	1	5	0.00	N.D.	0.00	1.00
	D6b	6	100	1.09	0.60	1.08	0.51
	D7b	1	50	0.00	N.D.	0.00	1.00
Reference	Othonoi Ref	1	5	0.00	N.D.	0.00	1.00
	Kerkyra Ref	1	20	0.00	N.D.	0.00	1.00
	Italy Ref	5	50	1.02	0.84	1.36	0.32

The macrobenthic community structure at all investigated stations (Figure 81 and Figure 82), including both those within the Block 2 area (Asopus-1A and Asopus-1B wells) and the Reference sites (Othonoi Ref, Kerkyra Ref, and Italy Ref), was characterized by a clear dominance of the *phylum* Annelida, mainly represented by the order Sipuncula (*Golfingia sp.*).

This predominance is consistent with patterns commonly observed in deep muddy bottoms. In fact, the sipunculid *Golfingia sp.* is a benthic organism typical of muddy sediments in the Mediterranean Sea and the northeastern Atlantic, where it lives buried within fine sediments. It is a detritivorous deposit feeder that feeds on organic particles and microorganisms within the sediment, contributing to bioturbation processes and to the recycling of organic matter in deep-sea sediments. Its occurrence is frequently associated with low hydrodynamic environments and high detrital accumulation, and it also shows a considerable tolerance to environmentally stressful conditions and reduced sediment oxygenation (Murina *et al.*, 1999).

The structure of benthic communities in Mediterranean bathyal environments is strongly controlled by the reduced flux of organic matter to the seafloor, typical of an oligotrophic basin. Under such conditions, macrobenthic biomass and diversity are generally low, and communities are dominated by opportunistic and tolerant *taxa*, particularly annelids and nematodes, which are better adapted to limited trophic availability and fine, poorly oxygenated sediments. The control exerted by particulate organic carbon (POC) flux on deep-sea benthic community structure is well documented in the Mediterranean Sea, where spatial and bathymetric variations in flux directly influence the abundance and composition of benthic groups (Danovaro *et al.*, 1999; Gooday, 2002).

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The fine granulometry of bathyal sediments and the resulting reduced interstitial circulation promote low redox potential conditions, further limiting the occurrence of more sensitive *taxa* such as many molluscs and peracarid crustaceans, which require higher oxygen availability and stable sediment conditions (Levin *et al.*, 2001). In deep-sea systems, moreover, low temperature, high pressure, and increased dissolved CO₂ concentrations influence carbonate chemistry, making CaCO₃ precipitation energetically more costly and potentially less favourable for the formation and maintenance of calcareous structures (Mucci, 1983; Morse & Mackenzie, 1990; Millero, 1995).

Overall, the results indicate a macrobenthic community typical of muddy Mediterranean bathyal environments, characterized by low taxonomic complexity and the strong dominance of a limited number of taxa.

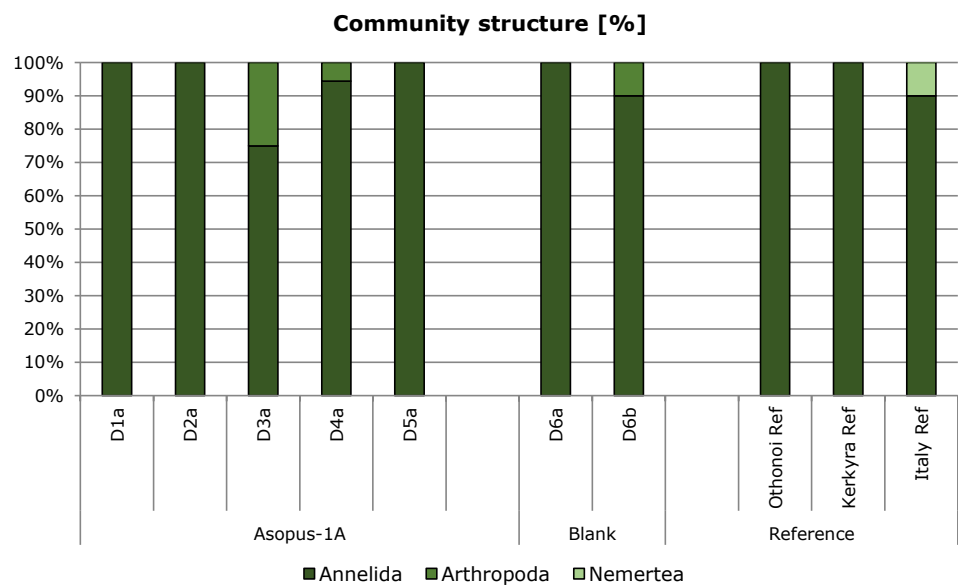


Figure 81 – Macrobenthic community structure across the sampling stations – Asopus-1A and Reference stations

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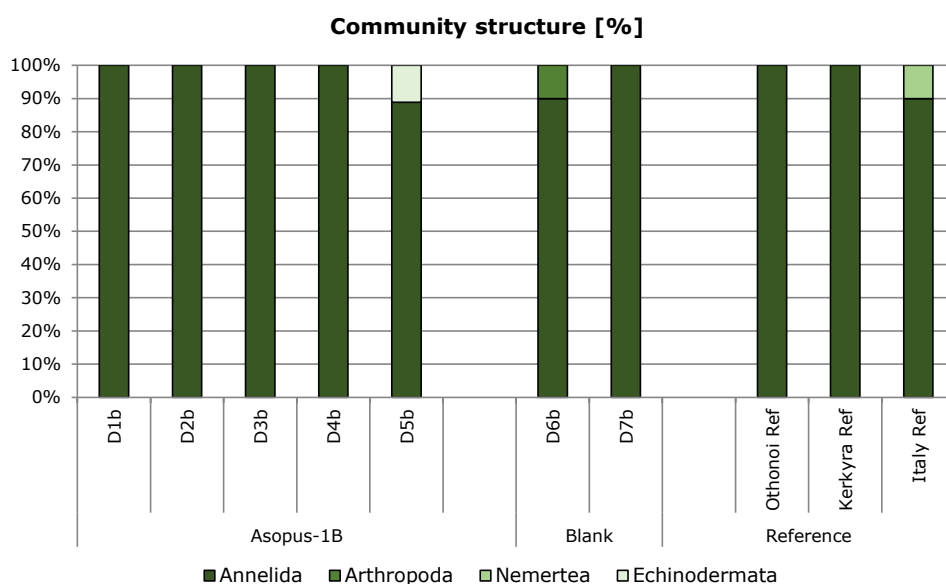


Figure 82 – Macrobenthic community structure across the sampling stations – Asopus-1B and Reference stations

The entire Block 2 area (Asopus-1A and Asopus-1B wells) and the Reference stations (Othonoi Ref, Kerkyra Ref, and Italy Ref) were characterized by the presence of a Mediterranean Upper Bathyal Mud biocoenosis (EUNIS Code: ME65) – VB: Mediterranean bathyal muds (Pérès & Picard, 1964). Bathyal muds are predominantly composed of yellow or grey-blue clayey sediments, which are relatively compact and sparsely inhabited.

At all investigated stations, the bathyal benthic biocenosis was characterized by the presence of carbonate oozes, mainly consisting of skeletal material from planktonic organisms such as coccolithophores, foraminifera, and pteropod molluscs (Figure 83). The distribution of biogenic oozes primarily depends on the availability of skeletal material, the dissolution processes affecting the skeletons, and dilution by other sediment types, such as turbidites or clays. The supply of biogenic material is largely controlled by primary productivity, defined as the production of organic matter through photosynthesis and chemosynthesis in the ocean's surface waters. Primary productivity is high near the Equator and in coastal upwelling zones (John O. Rafferty, 2021). Carbonate oozes are mainly found between 1000 and 4500 m depth; below this limit, they tend to dissolve rapidly. This threshold, known as the Calcite Compensation Depth (CCD), represents the depth at which the rate of carbonate accumulation equals the rate of carbonate dissolution (John O. Rafferty, 2021). In the Mediterranean Sea, carbonate oozes occur within sediments of abyssal plains and deep slopes, particularly in oligotrophic areas where pelagic sedimentation is dominated by organic matter and calcareous microfossils. Geochemical studies conducted on deep-sea sediments (1000 – 4087 m) show that their composition includes a high fraction of calcium carbonate associated with planktonic remains, confirming the importance of carbonate oozes as a characteristic sedimentary component of the deep Mediterranean basin (R. Pedrosa-Pàmies *et al.*, 2015).

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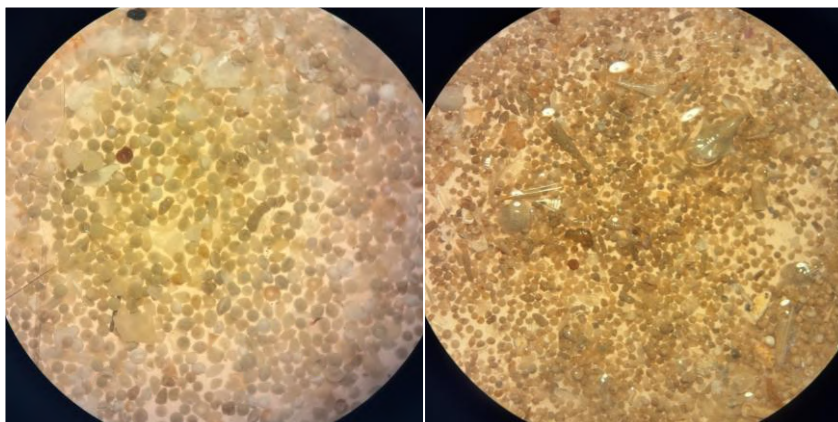


Figure 83 – Carbonate oozes, consisting of skeletal material from planktonic organisms (coccolithophores, foraminifera and pteropod molluscs)

Among the most representative species identified in the analysed samples, in addition to the sipunculid *Golfingia* sp. (Figure 84a), the presence of strictly mud-dwelling polychaetes was recorded, including *Neopseudocapitella brasiliensis* (Figure 84b), *Paradiopatra quadricuspis* (Figure 84c), and *Aricidea (Acmira) assimilis* (Figure 84d).



Figure 84 – *Golfingia* sp. (a), *Neopseudocapitella brasiliensis* (b), *Paradiopatra quadricuspis* (c), *Aricidea (Acmira) assimilis* (d)

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5.2.4.2 Assessment of Ecological Quality (EQRs)

The results of the M-AMBI index (Table 30), calculated for each investigated station in the Block 2 area (Asopus-1A and Asopus-1B wells) and at the Reference stations (Othonoi Ref, Kerkyra Ref, and Italy Ref), indicate ecological status ranging from “Bad” to “Moderate”.

In particular, with regard to the Asopus-1A well, all investigated stations exhibited a “Poor” ecological status, while the associated control stations (Blank; D6a and D6b) showed a “Bad” and “Moderate” ecological status, respectively.

Similarly, all sampling stations in the Asopus-1B area displayed a “Poor” ecological status, with the exception of stations D2b (“Bad” ecological status) and D5b (“Moderate” ecological status). The associated control stations (Blank; D6b and D7b) exhibited ecological statuses of “Moderate” (as also reported above for Asopus-1A) and “Poor”, respectively.

Finally, the Reference stations (Othonoi Ref, Kerkyra Ref, and Italy Ref) showed ecological statuses classified as “Bad”, “Poor”, and “Moderate”, respectively.

Table 30 – Application of the M-AMBI index at the sampling stations. Reported are the values of AMBI, diversity (H'), number of taxa (S), M-AMBI, and the corresponding Ecological Status – Asopus-1A, Asopus-1B and Reference stations

Site	Stations	AMBI	H'	S	M-AMBI	Status
	Bad	6	0	0	0.00	Bad
	High	0.5	4.8	50	1.00	High
Asopus-1A	D1a	0.75	1.06	3	0.31	Poor
	D2a	0.00	0.65	2	0.29	Poor
	D3a	0.00	0.81	2	0.31	Poor
	D4a	0.00	0.31	2	0.27	Poor
	D5a	0.88	0.92	3	0.30	Poor
Asopus-1B	D1b	0.75	1.50	3	0.35	Poor
	D2b	3.50	0.00	1	0.10	Bad
	D3b	0.75	0.81	2	0.28	Poor
	D4b	1.00	1.37	3	0.33	Poor
	D5b	1.58	2.64	7	0.47	Moderate
Blank	D6a	3.50	0.00	1	0.10	Bad
	D6b	0.75	1.56	6	0.39	Moderate
	D7b	0.00	0.00	1	0.23	Poor
Reference	Othonoi Ref	3.50	0.00	1	0.10	Bad
	Kerkyra Ref	0.00	0.00	1	0.23	Poor
	Italy Ref	0.38	1.96	5	0.43	Moderate

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The results of the AMBI index (Table 31), showing discordance with those obtained from the M-AMBI index, allowed the identification of a disturbance gradient ranging from “Undisturbed” to “Moderately disturbed”.

Specifically, all sampling stations in the Asopus-1A well area exhibited an “Undisturbed” environmental status, similarly to the associated control station D6b. In contrast, the other associated control station, D6a, showed a “Moderately disturbed” environment.

Regarding the Asopus-1B well, all stations displayed an “Undisturbed” condition, with the exception of stations D2b (“Moderately disturbed”) and D5b (“Slightly disturbed”). Both associated control stations (Blank; D6b and D7b) were characterised by an “Undisturbed” environment.

Finally, the Reference stations Kerkyra Ref and Italy Ref showed an “Undisturbed” status, whereas the Othonoi Ref station was classified as “Moderately disturbed”.

Table 31 – Results of the application of the AMBI index at the sampling stations. The table reports the percentages of organisms belonging to the five ecological groups, the percentage of organisms not assigned to any ecological group (N.A.), as well as species richness and diversity – Asopus-1A, Asopus-1B and Reference stations

Site	Stations	I(%)	II(%)	III(%)	IV(%)	V(%)	Mean AMBI	Disturbance Clasification	S	H'	N.A. (%)
Asopus-1A	D1a	87.50	0.00	0.00	0.00	12.50	0.75	Undisturbed	3	1.06	0.00
	D2a	100.00	0.00	0.00	0.00	0.00	0.00	Undisturbed	2	0.65	0.00
	D3a	100.00	0.00	0.00	0.00	0.00	0.00	Undisturbed	2	0.81	0.00
	D4a	100.00	0.00	0.00	0.00	0.00	0.00	Undisturbed	2	0.31	5.60
	D5a	80.00	10.00	0.00	0.00	10.00	0.88	Undisturbed	3	0.92	0.00
Asopus-1B	D1b	75.00	25.00	0.00	0.00	0.00	0.75	Undisturbed	3	1.50	0.00
	D2b	100.00	0.00	0.00	0.00	0.00	3.50	Moderately disturbed	1	0.00	0.00
	D3b	75.00	0.00	25.00	0.00	0.00	0.75	Undisturbed	2	0.81	0.00
	D4b	80.00	0.00	0.00	0.00	20.00	1.00	Undisturbed	3	1.37	0.00
	D5b	44.40	33.30	11.10	0.00	11.10	1.58	Slightly disturbed	7	2.64	0.00
Blank	D6a	100.00	0.00	0.00	0.00	0.00	3.50	Moderately disturbed	1	0.00	0.00
	D6b	89.50	0.00	5.30	0.00	5.30	0.75	Undisturbed	6	1.56	5.00
	D7b	100.00	0.00	0.00	0.00	0.00	0.00	Undisturbed	1	0.00	0.00
Reference	Othonoi Ref	100.00	0.00	0.00	0.00	0.00	3.50	Moderately disturbed	1	0.00	0.00
	Kerkyra Ref	100.00	0.00	0.00	0.00	0.00	0.00	Undisturbed	1	0.00	0.00
	Italy Ref	77.80	11.10	11.10	0.00	0.00	0.38	Undisturbed	5	1.96	10.00

However, these results should be interpreted with caution and are purely indicative of the actual ecological status. The AMBI and M-AMBI indices were originally developed for coastal marine environments, which typically exhibit higher abundances and diversity. Deep-sea environments, by contrast, are naturally characterized by low abundances and low diversity, and do not display the same community features as coastal habitats on which these indices are based. Therefore, although

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the values provide an indication of benthic conditions, they cannot be considered fully representative of ecological quality in deep-sea environments.

5.2.4.3 Relationship between environmental variables and the macrobenthic community

As Multivariate analyses revealed relationships between macrobenthic community structure and the sedimentological and geochemical characteristics of muddy bathyal seafloors across the entire investigated areas (Block 2: Asopus-1A and Asopus-1B wells; Reference stations).

The BEST analysis, performed on sedimentological variables (% sand, % silt, % clay) and depth, showed that the combination of depth and % clay content provided the best explanatory set for the observed biological variability, although with a relatively weak correlation ($p = 0.15$). This result suggests that benthic community distribution is partially influenced by the bathymetric gradient and fine sediment grain size. Indeed, in deep Mediterranean muddy environments, the predominance of fine-grained sediments promotes more stable conditions and a higher capacity for organic matter accumulation, thereby influencing macrobenthic community composition and favouring deposit-feeding taxa and organisms adapted to deep oligotrophic conditions (Basso *et al.*, 2004).

The second BEST analysis, based on geochemical variables and contaminants (carbonates, nutrients, metals, and hydrocarbons), identified barium and total chromium as the combination most strongly correlated with biological community structure ($p = 0.34$). This higher correlation compared to that obtained using only sedimentological variables suggests that sediment geochemical processes may play a significant role in shaping macrobenthic fauna distribution.

The DistLM analysis, performed using the variables identified as significant in the BEST analyses (depth, % clay, barium, and total chromium), confirmed this trend. In marginal tests, barium was the only statistically significant predictor ($p = 0.026$), explaining approximately 15 % of the total biological variability. The other variables (% clay, depth, and total chromium) were not significant when considered individually. The full model, including all four variables, explained approximately 35.5 % of the observed variation in community structure ($R^2 = 0.355$). Although a substantial proportion of variability remains unexplained (a common situation in deep-sea Mediterranean ecosystems, which are characterised by relatively stable environmental conditions and limited trophic availability) these results indicate that sedimentological and geochemical processes represent important ecological drivers of deep macrobenthic communities.

From an ecological perspective, the role of barium appears particularly relevant. In deep marine sediments, barium commonly occurs as biogenic barite (BaSO_4), formed during the degradation of organic matter in the water column and within sediments. Numerous studies in the Mediterranean Sea have demonstrated that particulate biogenic barium represents an important proxy for organic carbon fluxes and mesopelagic remineralisation processes (Jacquet *et al.*, 2021).

The distribution of Ba in the Mediterranean is closely linked to biogeochemical processes, fine particulate deposition, and organic matter degradation (Jacquet *et al.*, 2021). In deep oligotrophic environments such as the eastern Ionian Sea, where trophic availability is a major limiting factor for benthic ecosystems, relatively elevated Ba concentrations may therefore reflect areas of enhanced organic matter accumulation and fine sediment deposition. In this context, barium does not primarily act as a contaminant, but rather as an indirect tracer of trophic and depositional dynamics influencing macrobenthic community structure.

Under conditions of high organic matter accumulation, sediment oxygen consumption may increase, leading to suboxic conditions that typically reduce benthic abundance and diversity, while favouring tolerant and opportunistic species (Danovaro *et al.*, 1999; Levin *et al.*, 2001). However, barium

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should not necessarily be interpreted as a direct cause of reduced abundance, but rather as an indirect indicator of specific trophic and sedimentary conditions affecting macrobenthic communities.

Overall, the results suggest that bathyal benthic community distribution in the investigated areas is controlled by a combination of sedimentological and geochemical factors, with fine sediments and processes linked to the deep sedimentary organic matter cycle playing a key ecological role.

5.3.0 Seabed Habitats (AUV investigation)

The AUV mosaic analyses, integrated with qualitative and quantitative investigations of the macrozoobenthos, allowed a detailed characterization of the biocenotic structure of Asopus-1A and Asopus-1B wells area and the Reference stations (Othonoi Ref, Kerkyra Ref, Italy Ref). Across the entire Block 2 area and all reference stations, biocenotic complexity was found to be low, with a homogeneous environmental setting and poorly diversified benthic facies.

Indeed, all investigated stations showed the presence of a *Mediterranean Upper Bathyal Mud biocenosis* – EUNIS (2022) code: ME65. This bathyal biocenosis is characterized by fine sediments hosting benthic communities adapted to low light conditions, high pressure, and reduced availability of fresh organic matter. Bathyal muddy assemblages generally exhibit low infaunal diversity; however, these organisms play a key role in nutrient recycling and in maintaining the productivity of deep-sea sediments (Tyler *et al.*, 2009; Vanreusel *et al.*, 2016).

Both in the Asopus-1A and Asopus-1B wells (Block 2 area) and in the Reference stations (Othonoi Ref, Kerkyra Ref, Italy Ref), the muddy seafloor was characterized by the recurrent presence of traces of tubicolous and burrowing organisms, as well as the identification of deep-sea fish specimens belonging to the family Macrouridae. Locally, particularly within the Block 2 area, reduced facies attributable to the sea anemone *Andresia partenopea* were observed. Near the Asopus-1B well (station D1b), a specimen of the decapod *Paromola cuvieri* was also recorded.

At station D4a of the Asopus-1A well area, within a predominantly bathyal muddy seafloor, a limited area characterized by rocky aggregations was observed: *Mediterranean Upper Bathyal Rock* – EUNIS (2022) code: ME15.

Mediterranean bathyal rocks, occurring at depths greater than 200 m, represent a type of deep benthic habitat characterized by hard substrates. According to the EUNIS (2022) classification, this habitat is primarily distinguished from circalittoral rocks (MC15) by its depth of occurrence and, consequently, by the biological communities it supports. Unlike circalittoral rocks, where coralligenous formations (MC151 or MC251) may develop due to the presence of photophilic bioconstructors, bathyal rocks occur in environments where light is absent or extremely limited. For this reason, communities associated with ME15 are typical of bathyal environments, with benthic assemblages adapted to low-light conditions, more stable temperatures, and higher pressures. Deep-sea corals may be present on bathyal rocky substrates, including some belonging to deep coralligenous assemblages, but they are not photophilic bioconstructors like those typical of coralligenous habitats. These deep coral species contribute to habitat structural complexity and benthic biodiversity, although their ecology is strongly influenced by the absence of light and the limited availability of resources at greater depths. Specifically, the rocky formation identified at station D4a (Asopus-1A well) was characterized by the presence of corals attributable to *Antipathella subpinnata* or *Callogorgia verticillata*.

This habitat may also function as a nursery and refuge area for several ecologically and commercially important nekto-benthic species, representing a biodiversity hotspot in environments

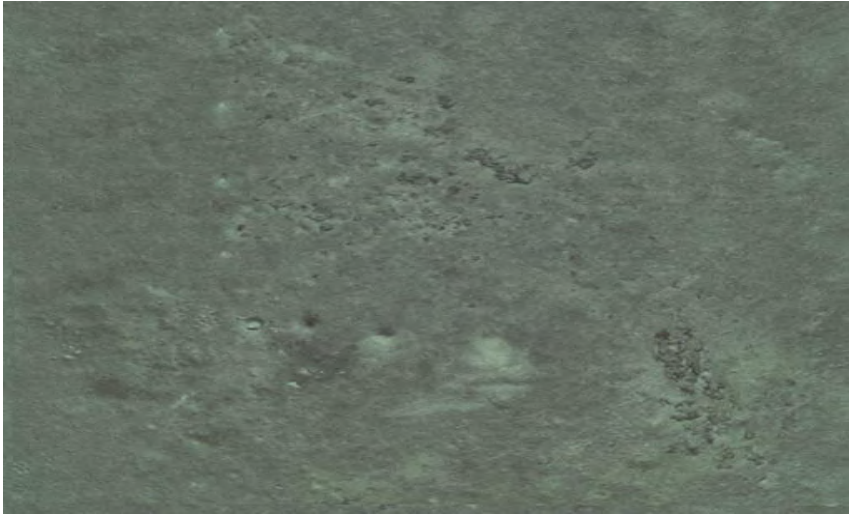
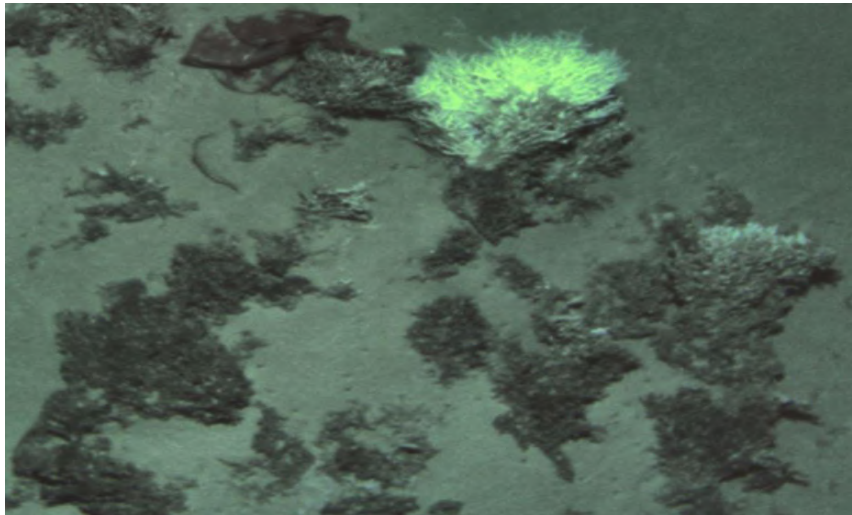
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characterized by inherently low biological diversity due to limited light availability, high pressure, low temperatures, and, above all, reduced and discontinuous supply of organic matter from the surface.

In the following tables (Table 32 to Table 36), representative screenshots are provided, organized with their corresponding coordinates (WGS84-UTM34N - m) and depths (m). The EUNIS (2022) biocenotic classification is also reported, together with a detailed description of the identified habitat type and any associated facies or recorded species.

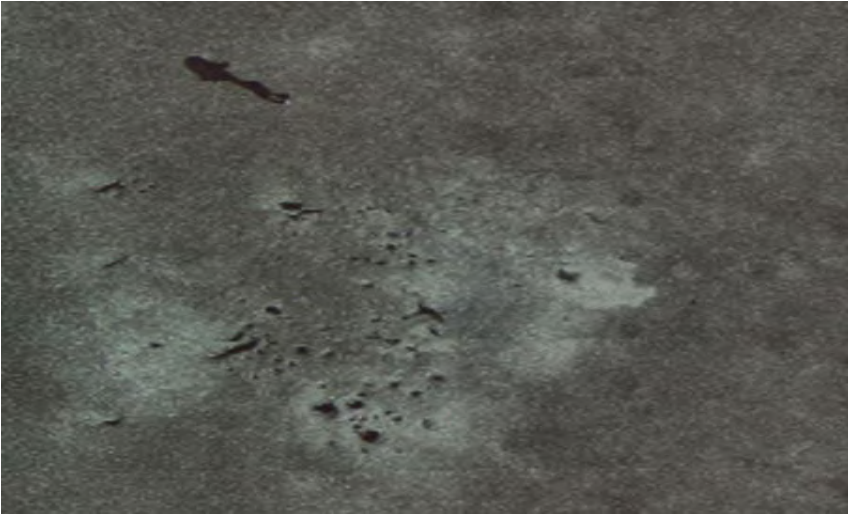
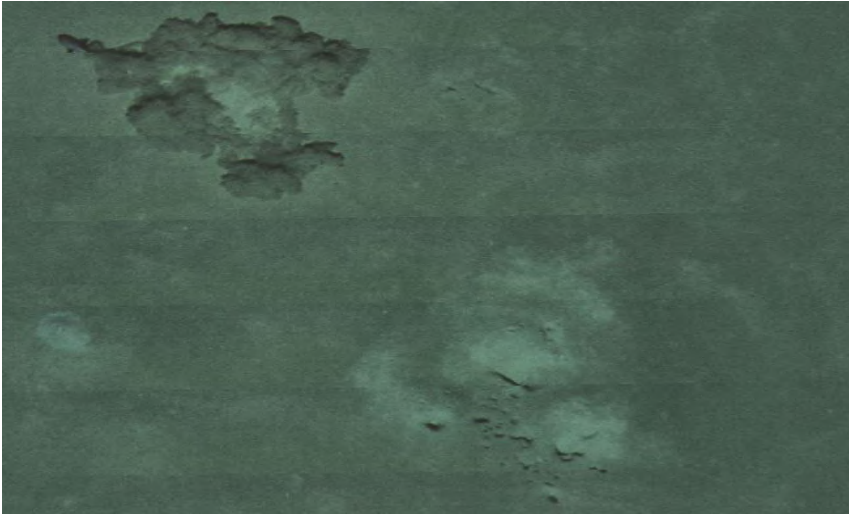
LIGHTHOUSE GAS		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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Table 32 – Detailed table referring to stations D1a, D2a, D3a and D4a (Asopus-1A); representative screenshots are reported, organised with the corresponding coordinates (WGS84-UTM32N - m) and depths (m). The EUNIS (2022) biocenotic classification is provided, along with a detailed description of the identified habitat type and any associated facies or species recorded

Asopus-1A (D1a, D2a, D3a, D4a)	
EUNIS code: ME65 - Mediterranean Upper Bathyal Mud (D1a, D2a, D3a, D4a) / EUNIS code: ME15 - Mediterranean Upper Bathyal Rock (D4a)	
D1a WGS84-UTM34N (m): 324731.39 E 4388001.68 N - Depth: 825.8 m 	D2a WGS84-UTM34N (m): 325209.48 E 4387995.14 N - Depth: 831.6 m 
D3a WGS84-UTM34N (m): 324737.94 E 4388494.76 N - Depth: 816.3 m 	D4a WGS84-UTM34N (m): 324222.3 E 4387989.69 N - Depth: 823.6 m 
Vast expanses of clayey mud, generally compact, yellowish or bluish-grey in color, relatively cohesive, sparsely populated by tubicolous and burrowing organisms. Presence of several deep-sea fish specimens belonging to the family Macrouridae (e.g., D2a). At station D4a, the presence of a small aggregation of bathyal rocks colonized by several corals was recorded, probably belonging to <i>Antipathella subpinnata</i> or <i>Callogorgia verticillata</i> .	

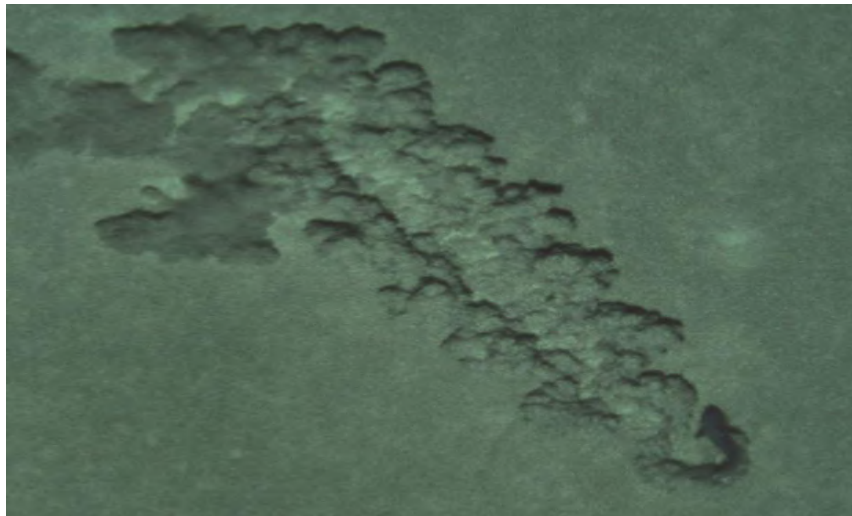
LIGHTHOUSE GAS		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
Prepared by	Checked by	Approved by	Date	IDP	File:	Rev. B1
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Table 33 – Detailed table referring to stations D5a, D6a and D6b (Asopus-1A); representative screenshots are reported, organised with the corresponding coordinates (WGS84-UTM32N - m) and depths (m). The EUNIS (2022) biocenotic classification is provided, along with a detailed description of the identified habitat type and any associated facies or species recorded

Asopus-1A (D5a, D6a, D6b)			
EUNIS code: ME65 - Mediterranean Upper Bathyal Mud			
D5a WGS84-UTM34N (m): 324707.39 E 4387497.13 N - Depth: 832.2 m	Blank	D6a WGS84-UTM34N (m): 324699 E 4384602.25 N - Depth: 842.9 m	
			
D6a WGS84-UTM34N (m): 324699 E 4384602.25 N - Depth: 842.9 m	Blank	D6b WGS84-UTM34N (m): 324814.41 E 4391363.63 N - Depth: 811.0 m	Blank
			
Vast expanses of clayey mud, generally compact, yellowish or bluish-grey in color, relatively cohesive, sparsely populated by tubicolous and burrowing organisms. Presence of several deep-sea fish specimens belonging to the family Macrouridae. Presence of several actinarian specimens probably attributable to <i>Andresia partenopea</i> (D6a).			

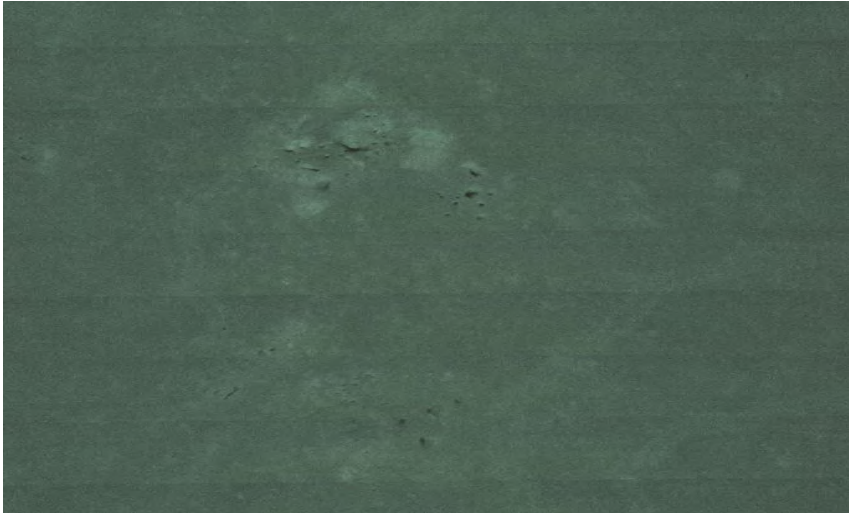
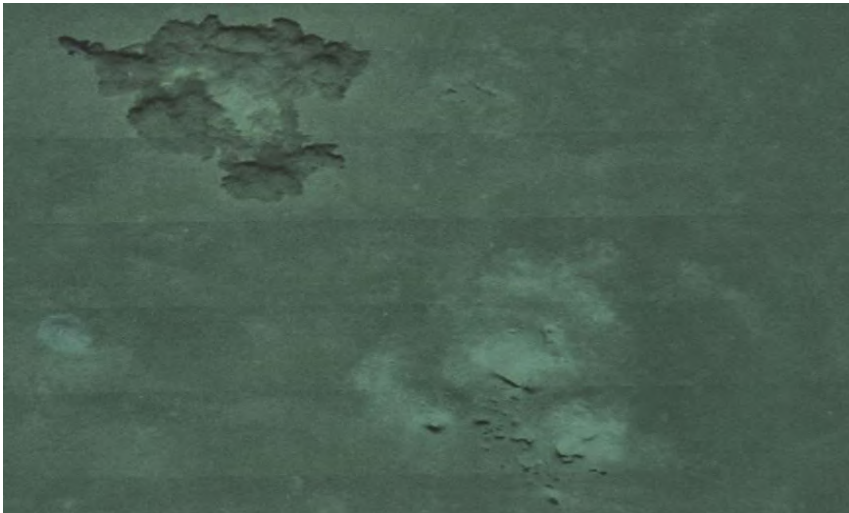
LIGHTHOUSE GAS		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
Prepared by	Checked by	Approved by	Date	IDP	File:	Rev. B1
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Table 34 – Detailed table referring to stations D1b, D2b and D3b (Asopus-1B); representative screenshots are reported, organised with the corresponding coordinates (WGS84-UTM32N - m) and depths (m). The EUNIS (2022) biocenotic classification is provided, along with a detailed description of the identified habitat type and any associated facies or species recorded

Asopus-1B (D1b, D2b, D3b)	
EUNIS code: ME65 - Mediterranean Upper Bathyal Mud	
D1b WGS84-UTM34N (m): 324898.36 E 4394747.61 N - Depth: 830.6 m 	D1b WGS84-UTM34N (m): 324898.36 E 4394747.61 N - Depth: 830.6 m 
D2b WGS84-UTM34N (m): 325419.76 E 4394759.63 N - Depth: 839.8 m 	D3b WGS84-UTM34N (m): 324913.68 E 4395263.14 N - Depth: 835.0 m 
Vast expanses of clayey mud, generally compact, yellowish or bluish-grey in color, relatively cohesive, sparsely populated by tubicolous and burrowing organisms. Presence of several deep-sea fish specimens belonging to the family Macrouridae. At station D1b, a specimen of the decapod <i>Paromola cuvieri</i> was recorded.	

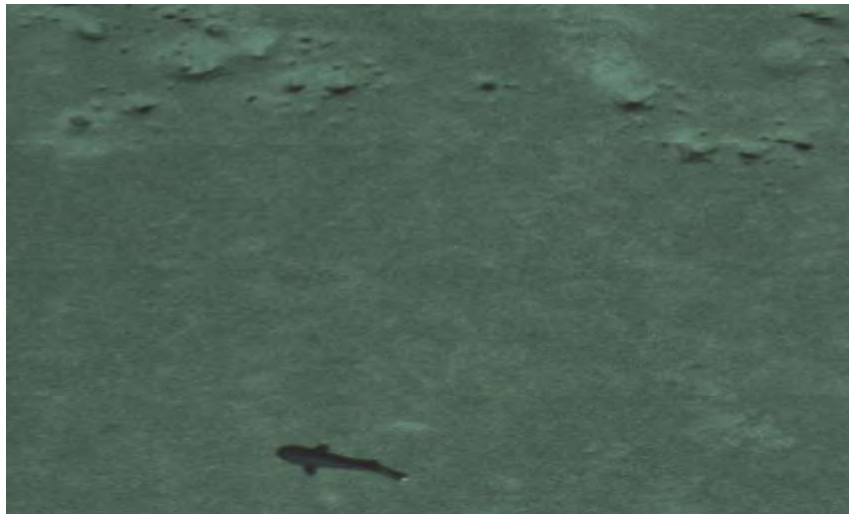
LIGHTHOUSE GAS		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
Prepared by	Checked by	Approved by	Date	IDP	File:	Rev. B1
S.D.G./D.B./M.A.	D.B./M.A.	S. Sandroni	24/06/2026	EER001	EER001-EBS_Final_Report_REV_B1	P. 158/ 223

Table 35 – Detailed table referring to stations D4b, D5b, D6b and D7b (Asopus-1B); representative screenshots are reported, organised with the corresponding coordinates (WGS84-UTM32N - m) and depths (m). The EUNIS (2022) biocenotic classification is provided, along with a detailed description of the identified habitat type and any associated facies or species recorded

Asopus-1B (D4b, D5b, D6b, D7b)			
EUNIS code: ME65 - Mediterranean Upper Bathyal Mud			
D4b	WGS84-UTM34N (m): 324401.81 E 4394758.96 N - Depth: 820.5 m	D5b	WGS84-UTM34N (m): 324896.83 E 4394243.34 N - Depth: 825.1 m
			
D6b	WGS84-UTM34N (m): 324814.41 E 4391363.63 N - Depth: 811.0 m	D7b	WGS84-UTM34N (m): 324903.07 E 4398121.82 N - Depth: 833.3 m
Blank 		Blank 	
Vast expanses of clayey mud, generally compact, yellowish or bluish-grey in color, relatively cohesive, sparsely populated by tubicolous and burrowing organisms. Presence of several deep-sea fish specimens belonging to the family Macrouridae.			

LIGHTHOUSE GAS		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
Prepared by	Checked by	Approved by	Date	IDP	File:	Rev. B1
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Table 36 – Detailed table referring to Reference stations (Othonoi Ref, Kerkyra Ref and Italy Ref); representative screenshots are reported, organised with the corresponding coordinates (WGS84-UTM32N - m) and depths (m). The EUNIS (2022) biocenotic classification is provided, along with a detailed description of the identified habitat type and any associated facies or species recorded

Reference stations (Othonoi Ref, Kerkyra Ref, Italy Ref)			
EUNIS code: ME65 - Mediterranean Upper Bathyal Mud			
Othonoi Ref	WGS84-UTM34N (m): 339632.45 E 4400663.55 N - Depth:1065.04 m		Kerkyra Ref
			
		WGS84-UTM34N (m): 345716.4 E 4385915.53 N - Depth: 1134.16 m	
			
		WGS84-UTM34N (m): 304317 E 4414647 N - Depth: 148.0 m	
			
Vast expanses of clayey mud, generally compact, yellowish or bluish-grey in color, relatively cohesive, sparsely populated by tubicolous and burrowing organisms. Presence of several deep-sea fish specimens belonging to the family Macrouridae.			

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
Prepared by	Checked by	Approved by	Date	IDP	File:	Rev. B1
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5.4.0 Marine Litter (AUV investigation)

The results obtained from the analysis of mosaics acquired via AUV allowed the characterization of the presence and distribution of marine litter across the different study areas, enabling a comparative assessment among the investigated units: the Asopus-1A and Asopus-1B wells, the Blank stations, and the Reference stations. The identification and classification of litter items were performed according to the MSFD Joint List, ensuring a standardized and consistent approach for the categorization of the different types of observed items. Item abundances were expressed per km², in accordance with the JRC Technical Report 2023 (“Guidance on the Monitoring of Marine Litter in European Seas”), based on the objects identified within each AUV-surveyed area for each station.

In the area of the Asopus-1A well, most of the analysed stations (D1a, D2a, D3a, and D5a) showed no evidence of marine litter. However, at station D4a a localized presence of litter was recorded, with the identification of a fishing net (J54: plastic nets and fragments of nets > 50 cm) and textile material (J145: other textiles), with abundances of 1190.48 items km⁻² and 2380.95 items km⁻², respectively.

In the vicinity of the Asopus-1B well, three stations showed no presence of marine litter (D1b, D3b, and D4b). The remaining stations instead exhibited a limited but diverse contribution of items. Specifically, at station D2b a wooden object was observed (J172: other processed wooden items > 50 cm), while at D4b a plastic fragment was identified (J241: other identifiable non-foamed plastic items). Station D5b showed the presence of a plastic bag (J4: small plastic bags). Abundances ranged between 333.33 items km⁻² and 357.14 items km⁻².

Regarding the control stations, most stations (D6a and D7b) showed no evidence of marine litter. However, station D6b exhibited a higher typological diversity of items, including a plastic bottle (J8: plastic drink bottles > 0.5 L), metal cans (J175: metal drink cans; J176: metal food cans), and glass bottles (J200: glass bottles), the latter showing the highest recorded abundance (1481.48 items km⁻²). This indicates a localized accumulation of waste mainly associated with consumer-related materials.

Finally, among the Reference stations, Othonoi Ref and Italy Ref showed no evidence of marine litter, whereas at Kerkyra Ref a single cardboard item was detected (J148: cardboard boxes), with an abundance of 357.14 items km⁻².

Overall, the results indicate a highly heterogeneous spatial distribution of marine litter, with a predominance of absence of debris across most stations and the occurrence of localized hotspots, particularly associated with plastic materials and consumer-related items.

Table 37 reports the results of the AUV mosaic analysis across the investigated areas (Asopus-1A and Asopus-1B wells, Blank stations, and Reference stations), including the surveyed area, presence/absence of marine litter, item categories classified according to the MSFD Joint List, and corresponding abundances (total and items km⁻²).

Table 38-Table 43 present, for each analysed station, images of individual marine litter items extracted from the AUV mosaics. For each item, a detailed description, its location, and its main identifying characteristics are provided.

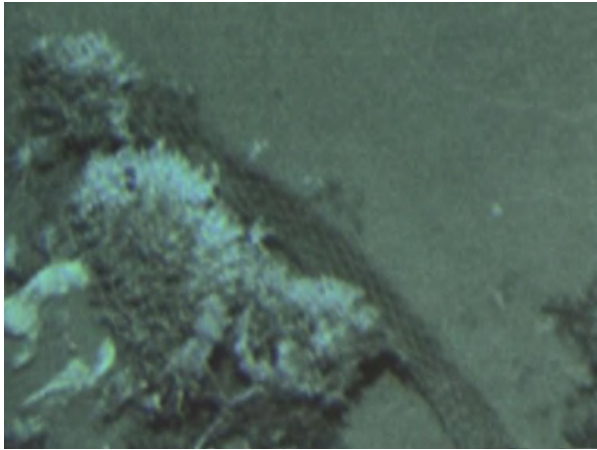
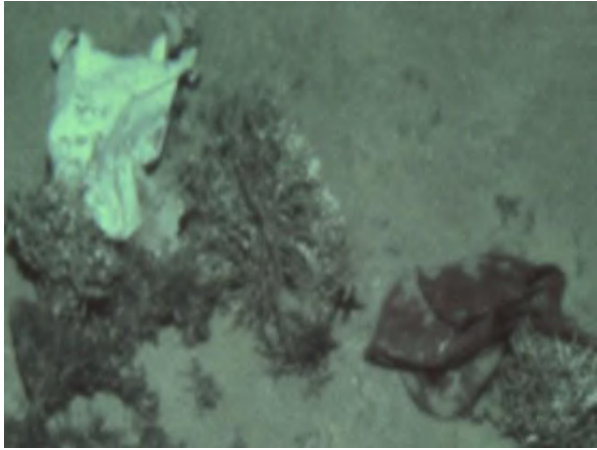
		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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Table 37 – Results of the AUV mosaic analysis across the investigated areas (Asopus-1A and Asopus-1B wells, Blank stations, and Reference stations), including the surveyed area, presence/absence of marine litter, item categories classified according to the MSFD Joint List, and corresponding abundances (total and items km⁻²)

Site	Station	Surveyed area (Km ²)	Litter Category according to MSFD Joint List		Abundance	
			J-Code	Category	Total Abundance	items Km ⁻²
Asopus-1A	D1a	0.00140	No evidence of marine litter was detected			
	D2a	0.00270	No evidence of marine litter was detected			
	D3a	0.00270	No evidence of marine litter was detected			
	D4a	0.00084	J54	Plastic nets and pieces of net > 50 cm	1	1190.48
			J145	Other Textiles	2	2380.95
	D5a	0.00270	No evidence of marine litter was detected			
Asopus-1B	D1b	0.00300	No evidence of marine litter was detected			
	D2b	0.00280	J172	Other processed wooden items > 50 cm	1	357.14
	D3b	0.00240	No evidence of marine litter was detected			
	D4b	0.00300	J241	Other identifiable non-foamed plastic	1.00	333.33
	D5b	0.00280	J4	Small plastic bags	1.00	357.14
Blank	D6a	0.00280	No evidence of marine litter was detected			
	D6b	0.00270	J8	Plastic drink bottles > 0.5 L	1	370.37
			J175	Metal drink cans	1	370.37
			J176	Metal food cans	1	370.37
			J200	Glass bottles	4	1481.48
	D7b	0.00320	No evidence of marine litter was detected			
Reference	Othonoi Ref	0.00290	No evidence of marine litter was detected			
	Kerkyra Ref	0.00280	J148	Carboard boxes	1	357.14
	Italy Ref	0.00280	No evidence of marine litter was detected			

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Table 38 – Asopus-1A - station D4a: images of individual marine litter items extracted from the AUV mosaics. For each item, a detailed description, its location, and its main identifying characteristics are provided

Asopus-1A - Station D4a	
WGS84-UTM34N (m): 324222.3 E 4387989.69 N - Depth: 823.6 m - Surveyed Area (Km ²): 0.00084	
WGS84-UTM34N (m): 324246.83 E 4388027.67 N 	<u>Litter Category according to MSFD Joint List</u> J-code: J54 Category: Plastic nets and pieces of net > 50 cm FG: Fishing Gears <u>Abundance and characteristics of marine litter items</u> Size (cm): 100 x 10 Totale Abundance: 1 Abundance (Km²): 1190.48 items Km⁻²
WGS84-UTM34N (m): 324248.22 E 4388026.28 N 	<u>Litter Category according to MSFD Joint List</u> J-code: J145 Category: Other Textiles <u>Abundance and characteristics of marine litter items</u> Size (cm): 50 x 30 and 40 x 20 Totale Abundance: 2 Abundance (Km²): 2380.95 items Km⁻²
Notes: Interactions between marine litter and benthic fauna were recorded	

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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Table 39 – Asopus-1A and Asopus-1B - station D6b (Blank): images of individual marine litter items extracted from the AUV mosaics. For each item, a detailed description, its location, and its main identifying characteristics are provided

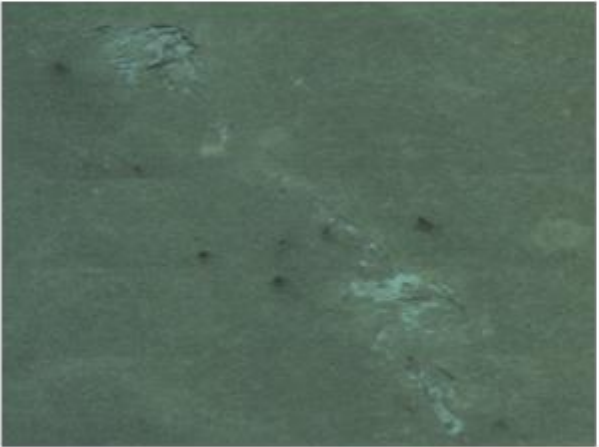
Asopus-1A and Asopus-1B - Station D6b (Blank)	
WGS84-UTM34N (m): 324814.41 E 4391363.63 N - Depth: 811.0 m - Surveyed Area (Km ²): 0.0027	
WGS84-UTM34N (m): 324817.11 E 4391377.43 N 	<u>Litter Category according to MSFD Joint List</u> J-code: J8 Category: Plastic drink bottles > 0.5 L SUP: Single Use Plastic <u>Abundance and characteristics of marine litter items</u> Size (cm): 35 Totale Abundance: 1 Abundance (Km²): 370.37 items Km⁻²
WGS84-UTM34N (m): 324248.22 E 4388026.28 N 	<u>Litter Category according to MSFD Joint List</u> J-code: J175 - J176 - J200 Category: Metal drink cans - Metal food cans - Glass bottles <u>Abundance and characteristics of marine litter items</u> Size (cm): < 50 cm Totale Abundance: 1 - 1 - 4 Abundance (Km²): 370.37 - 370.37 - 1481.48 items Km⁻²

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Table 40 – Asopus-1B - station D2b: images of individual marine litter items extracted from the AUV mosaics. For each item, a detailed description, its location, and its main identifying characteristics are provided

Asopus-1B - Station D2b	
WGS84-UTM34N (m): 325419.76 E 4394759.63 N - Depth: 839.8 m - Surveyed Area (Km ²): 0.0028	
WGS84-UTM34N (m): 325421.01 E 4394748.90 N 	<u>Litter Category according to MSFD Joint List</u> J-code: J172 Category: Other processed wooden items > 50 cm <u>Abundance and characteristics of marine litter items</u> Size (cm): 150 x 10 Totale Abundance: 1 Abundance (Km²): 357.14 items Km⁻²

Table 41 – Asopus-1B - station D4b: images of individual marine litter items extracted from the AUV mosaics. For each item, a detailed description, its location, and its main identifying characteristics are provided

Asopus-1B - Station D4b	
WGS84-UTM34N (m): 324401.81 E 4394758.96 N - Depth: 820.5 m - Surveyed Area (Km ²): 0.0030	
WGS84-UTM34N (m): 324426.27 E 4394768.42 N 	<u>Litter Category according to MSFD Joint List</u> J-code: J241 Category: Other identifiable non-foamed plastic items <u>Abundance and characteristics of marine litter items</u> Size (cm): 260 x 15 Totale Abundance: 1 Abundance (Km²): 333.33 items Km⁻²

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Table 42 – Asopus-1B - station D5b: images of individual marine litter items extracted from the AUV mosaics. For each item, a detailed description, its location, and its main identifying characteristics are provided

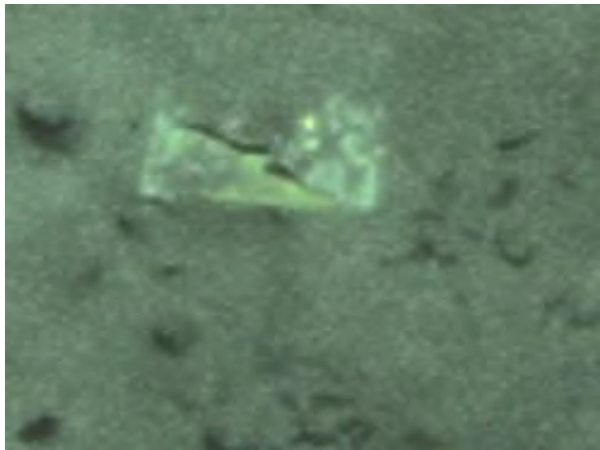
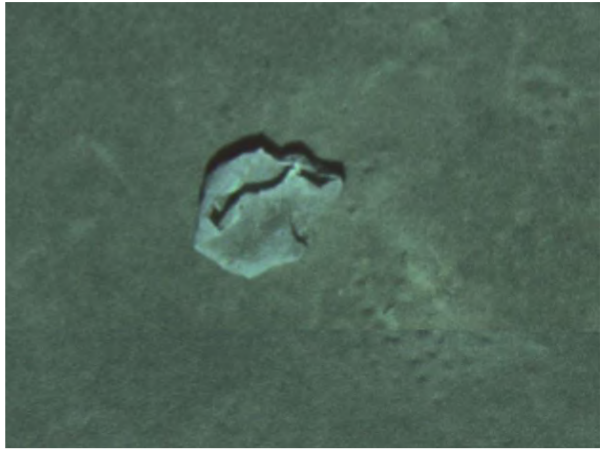
Asopus-1B - Station D5b	
WGS84-UTM34N (m): 324896.83 E 4394243.34 N - Depth: 825.1 m - Surveyed Area (Km ²): 0.0028	
WGS84-UTM34N (m): 324887.39 E 4394292.82 N 	<u>Litter Category according to MSFD Joint List</u> J-code: J4 Category: Small plastic bags SUP: Single Use Plastic <u>Abundance and characteristics of marine litter items</u> Size (cm): 20 x 15 Totale Abundance: 1 Abundance (Km²): 357.14 items Km⁻²

Table 43 – Kerkyra Ref – Reference station: images of individual marine litter items extracted from the AUV mosaics. For each item, a detailed description, its location, and its main identifying characteristics are provided

Kerkyra Ref - Reference station	
WGS84-UTM34N (m): 345716.4 E 4385915.53 N - Depth: 1134.16 m - Surveyed Area (Km ²): 0.0028	
WGS84-UTM34N (m): 345750.18 E 4385914.47 N 	<u>Litter Category according to MSFD Joint List</u> J-code: J148 Category: Carboard boxes <u>Abundance and characteristics of marine litter items</u> Size (cm): 50 x 50 Totale Abundance: 1 Abundance (Km²): 357.14 items Km⁻²

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6.0.0 DISCUSSION

6.1.0 Seawater and Plankton Discussion

6.1.1 Seawater Discussion

The integrated analysis of the vertical distributions of temperature and salinity revealed a hydrographic setting consistent with the characteristic thermo-haline structure of the Northern Ionian Sea. Despite minor local differences related to bathymetry and sampling period, all investigated stations exhibited a remarkably coherent vertical organization of the water column, indicating the predominance of basin-scale oceanographic processes over local variability.

The upper water column was characterized by a relatively warm and vertically homogeneous surface layer extending to approximately 70 – 100 m depth, with temperatures generally ranging between 16 and 17 °C and salinities below 38.8 PSU. These characteristics appeared consistent with the presence of Modified Atlantic Water (MAW), which enters the Mediterranean through the Strait of Gibraltar and progressively increases in temperature and salinity along its eastward circulation pathway through the Sicily Channel and Ionian Sea (Malanotte-Rizzoli *et al.*, 1997, 1999; Millot & Taupier-Létage, 2005; Fedele *et al.*, 2022). Beneath the MAW, a pronounced thermo-haline transition developed between approximately 100 and 250 m, with salinity reaching or exceeding 39.10 PSU. These values were possibly indicative of the presence of the Levantine Intermediate Water (LIW), one of the dominant intermediate water masses of the Eastern Mediterranean, as reported, among others, by Malanotte-Rizzoli *et al.* (1997, 1999), Menna *et al.* (2021), Fedele *et al.*, (2022), Mallil *et al.* (2022). According to these authors, the Northern Ionian Sea represents one of the principal pathways of LIW propagation from the Levantine Basin towards the Adriatic Sea. Below, temperature and salinity gradually decreased with increasing depth, approaching respectively 13.8 – 14.1 °C and 38.8 – 38.9 PSU, likely suggesting the occurrence of transitional waters resulting from progressive mixing between LIW and deeper Eastern Mediterranean Deep Water (EMDW), rather than a pure EMDW core.

Overall, the vertical distribution of the remaining investigated physic-chemical variables reflected the thermo-haline structure of the water column. pH exhibited a gradual decrease with depth, consistent with increased salinity and reduced oxygenation, reflecting natural acid–base equilibria modulated by salinity, nutrient availability, and organic matter (Carstensen & Duarte, 2019), with values within the expected range for oligotrophic marine environments (Hinga, 2002).

Vertical DO profiles indicated well oxygenated conditions (< 90 %) within the surface layer associated with the presence of the MAW, decreasing to moderate undersaturation at depth, reaching values lower than 70 % in bottom waters. The weak thermo-haline inversions observed below approximately 600 – 700 m, accompanied by slight increases in DO, may reflect the influence of relatively recently ventilated deep waters associated with the Adriatic / Ionian thermohaline circulation. Similar features were interpreted as signatures of deep-water renewal processes involving Adriatic-derived waters contributing to the formation and ventilation of EMDW within the Ionian Basin (Malanotte-Rizzoli *et al.*, 1997; Theocharis *et al.*, 2002). Although bottom DO concentrations and saturation levels were lower than those reported in the literature (e.g., Tomczak & Godfrey, 2005), DO remained above 2.8 mg L⁻¹ (2 mL L⁻¹), the hypoxia threshold proposed by Diaz & Rosenberg (1995) and Wu (2002), and well above 2 mg L⁻¹ (1.4 mL L⁻¹), indicated by Rabalais *et al.* (1999) and Justić *et al.* (2003) as the onset level of hypoxic conditions.

Fluorescence profiles showed generally low Chl-a equivalent concentrations, with a Deep Chlorophyll Maximum (DCM) mainly developed between ~70 and 100 m depth and peak values not exceeding

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0.33 $\mu\text{g L}^{-1}$ Chl-a. Such values suggest low phytoplankton biomass, reflecting the oligotrophic character of the area, typical of systems in which nutrient scarcity in surface waters constrains primary production (Barbieux *et al.*, 2019).

The consistently low turbidity recorded across the study area indicated high water transparency and limited suspended particulate input throughout the water column. Although previous studies have emphasized that persistent turbidity and enhanced sedimentation may severely affect benthic ecosystems (Berry *et al.*, 2003), even the highest values recorded at the time of sampling were not suggestive of conditions likely to result in significant adverse effects on benthic communities.

With regard to laboratory analyses of seawater samples, Total Suspended Solids (TSS) showed moderate concentrations and limited spatial variability, with comparable average values across the two well-site areas (Asopus-1A and Asopus-1B), Blank stations and Reference Stations. In contrast, Total Organic Carbon (TOC) was consistently below the analytical detection limit at all stations and depths, with an only isolated quantifiable value at Italy Ref. This pattern was consistent with the low organic-carbon availability typical of oligotrophic marine settings (Hansell & Carlson, 2001) and remained well below concentrations commonly reported for more productive marine systems (Deuser, 1971; Hill & Wheeler, 2002; Sempéré *et al.*, 2001).

The Mediterranean Sea is widely recognized as one of the most nutrient-depleted large marine basins (e.g., Redfield *et al.*, 1963; Powley *et al.*, 2017a, 2017b). In this study, nutrient concentrations were generally low, confirming the oligotrophic character of the Ionian Sea and, more broadly, of the Central and Eastern Mediterranean sub-basins, in agreement with previous reports (e.g., Miller *et al.*, 1970; Cescon & Macchi, 1973; Weiss *et al.*, 1983). Total Nitrogen (N-Tot) was consistently below the analytical LoQ, while Nitrite (NO_2^-) and Nitrate (NO_3^-) were mostly unquantifiable, especially around the Asopus-1A well site; Ammonium (NH_4^+) was only sporadically detected. Orthophosphate (PO_4^{3-}) was quantifiable in almost all samples, although generally at low concentrations, whereas Total Phosphorus (P-Tot) was detected in most samples without a coherent vertical pattern.

Overall, these results highlight the oligotrophic nature of the study site, characterized by low concentrations of dissolved inorganic nutrients as well as minimal suspended organic matter. This nutrient scarcity is consistent with limited primary productivity (as indicated by Chlorophyll-a concentrations, suggested by measured fluorescence) and reduced remineralisation processes throughout the water column.

Regarding heavy and trace metals in the water column, most of the investigated elements: Cadmium (Cd), Hexavalent Chromium (Cr VI), Cobalt (Co), Mercury (Hg) and Tin (Sn) were consistently below the analytical LoQ at all Sampling Stations and Depths. Similarly, Total Chromium (Cr-Tot) and Lead (Pb) were only sporadically detected, while Copper (Cu) and Nickel (Ni) were quantifiable in a limited number of samples and generally occurred at low concentrations throughout the study area, although both elements exhibited comparatively higher values at Italy Ref. In contrast, Arsenic (As), Barium (Ba), Iron (Fe) and Zinc (Zn) were detected at all Sampling Stations and Depths. Among these, As and Ba showed limited spatial variability and broadly comparable concentrations across the well-site areas, Blank stations and Reference Stations, whereas Fe and Zn exhibited greater variability, albeit without any consistent depth-related trend. Fe and Zn also showed the highest concentrations among the investigated metals, reflecting their natural abundance in the surveyed waters. Comparison with the applicable Environmental Quality Standards highlighted only limited exceedances. As exceeded the Italian SQA-MA value (D.Lgs. No. 172/2015) in a limited number of samples around both well-site areas; however, comparable concentrations, slightly below the regulatory threshold, were also recorded at Blank stations and at Othonoi Ref, suggesting a diffuse concentration gradient across the study area rather than a discrete enrichment

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associated with the proposed well locations. Although the measured concentrations were moderately higher than those typically reported for open-ocean seawater (Neff, 1997; 2002), substantially higher natural As levels have been documented in marine environments under specific geochemical and hydrographic conditions (Wang *et al.*, 2023). Exceedances of both the AA-EQS of Directive 2013/39/EU (as applied in Greece) and the Italian SQA-MA were observed only at Italy Ref for Pb and Ni, affecting two and one sampling depths, respectively. Although the measured Pb concentrations exceeded values classically reported for open-ocean seawater (Bruland, 1983), and Ni concentrations were higher than those commonly reported for open Mediterranean waters (Middag *et al.*, 2022), similar isolated exceedances of these elements have occasionally been reported during environmental monitoring in Italian coastal waters (e.g., ARPA Sicilia, 2020, 2022; ARPA Sardegna, 2023). Overall, the distribution patterns of As, Pb and Ni showed no evidence of a systematic relationship with the proposed well locations. As concentrations exhibited a broadly homogeneous distribution across the study area, whereas the Pb and Ni exceedances were confined to a single offshore Reference Station and occurred against a background of generally low or non-detectable concentrations elsewhere. Taken together, these observations indicate that the recorded exceedances are more likely attributable to natural geochemical variability and background fluctuations than to widespread contamination or influences associated with the proposed well sites.

With regard to organic compounds investigated in the water column, the absence of quantifiable concentrations of petroleum hydrocarbons (i.e., C ≤ 10, C10 – C40 and TPH) and PAHs throughout the study area indicated that hydrocarbon contamination was not evident at the time of sampling. All analysed compounds remained below their analytical LoQs at all stations and depths and, where applicable, below the Environmental Quality Standards established by Directive 2013/39/EU (AA-EQS for other surface waters, as applied in Greece) and by D.Lgs. No. 172/2015 (Annex 1, Tables 1/A and 1/B). Collectively, these findings were consistent with the offshore setting of the investigated area and provided no indication of hydrocarbon-related pressures affecting water-column quality.

6.1.2 Phytoplankton Discussion

Phytoplankton community, in terms of abundance, differed, significantly, between the three sampling depths (surface, middle and bottom). Most stations were characterized by higher phytoplanktonic abundances in the surface sampling depth than those recorded in deeper waters (middle and bottom sampling depth). This significant variability across the water column could be suggested by the role of the light intensity to limit the distribution of many microalgae in the higher depth (Pahlow *et al.*, 2009). Significant variability of the phytoplanktonic abundance was also detected between both the well-site areas (Asopus-1A, Asopus-1B) and the station Italy Ref, included within Reference area, located far distant from each other, and this could be explained by hydrographic characteristic of water masses and circulation in the northern Ionian Sea (Budillon *et al.*, 2010; Lavigne *et al.*, 2018). Phytoplanktonic community was dominated by the category of the “Other *taxa*”, mainly constituted by class Cryptophyceae and Microflagellates (cell size < 10 µm). These types of microalgae are indicators of oligotrophic conditions, since they tend to become dominant over greater cells size species in such conditions, as confirmed by previous studies carried out in the Ionian Sea (Caroppo *et al.*, 2016; Casotti *et al.*, 2003). The second most abundant group was constituted by the class of Bacillariophyceae, mainly represented by the species *Pseudo-nitzschia delicatissima* complex (maximum abundance of 1.30×10^5 cells L⁻¹ in the Surface depth of D3a). This complex is known to include cryptic species that cannot be reliably distinguished using inverted light microscopy alone (Giulietti *et al.*, 2021). The presence of dead cells of this species, observed in all sampling depth of that survey area (obviously not counted to estimate the total phytoplanktonic abundance), could suggest sinking of silicious and carbonate matter on the seabed inside area of Ionian Sea across vertical fluxes depending on production processes occurring in the

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photic layer, such as spring and autumn blooms. Fluxes are characterized by discontinuous and short-time events correlated with the end phase of micro-phytoplankton blooms (Boldrin et al., 2002; Giordani et al., 2002; Stavrakakis et al., 2013). The abundances of the Dinophyceae, mainly represented by indeterminate forms, and Coccolithophyceae, mainly constituted by the species *Gephyrocapsa huxleyi*, remained low, but, at the opposite, in terms of taxonomic richness, the higher number of taxa identified are included in the class of Dinophyceae followed by other groups, as already observed in previous studies dealing with phytoplankton communities in other Eastern Mediterranean basins (Ignatiades et al., 2009; Siokou-Frangou et al., 1999).

6.1.3 Mesozooplankton Discussion

The mesozooplankton assemblages observed in the investigated offshore sector of the Ionian Sea were characterized by high taxonomic diversity and a generally homogeneous spatial distribution across both the Asopus-1A and Asopus-1B well areas and the Reference stations. The absence of marked qualitative and quantitative differences among stations suggests that the structure of the mesozooplankton community is primarily regulated by large-scale hydrological and bathymetric drivers rather than by local environmental variability.

The investigated water column, encompassing the upper epipelagic and intermediate layers, reflects the oligotrophic conditions typical of the eastern Mediterranean basin. In such environments, limited nutrient availability tends to constrain plankton biomass while simultaneously promoting high levels of biodiversity and ecological specialization. The marked predominance of the holoplanktonic component, particularly copepods, represents a typical feature of oceanic mesozooplankton communities associated with stratified pelagic ecosystems, where relatively stable hydrological conditions favour the persistence of taxa adapted to low-productivity environments.

The close correspondence observed between the composition of juvenile and adult copepod fractions suggests the presence of relatively stable populations and indicates that the investigated area represents a suitable habitat for the completion of the life cycle of numerous oceanic species. At the same time, the co-occurrence of epipelagic and mesopelagic taxa reflects the transitional ecological nature of the sampled layer, within which species associated with different vertical domains may overlap as a consequence of migratory processes and interactions among water masses.

The non-copepod holoplanktonic component clearly reflects the oceanic character of the investigated system. The occurrence of hydrozoans, pteropods, chaetognaths, appendicularians, thaliaceans, euphausiids, mysids, and pelagic polychaetes highlights the presence of a structurally complex pelagic trophic network. Many of these groups are known to respond rapidly to hydrological and trophic variability, thus representing important ecological indicators of pelagic ecosystem functioning.

The scarcity of the meroplanktonic component, particularly larvae attributable to coastal benthic taxa, further supports the interpretation of a typically offshore community weakly influenced by neritic inputs. This pattern appears consistent with the bathymetric setting of the area and with the distance from coastal environments.

6.1.4 Ichthyoplankton Discussion

The results concerning the ichthyoplankton component indicate an overall pattern consistent with deep pelagic environments within the investigated sector. In general, the observed structure appears to be influenced by distance from the coast and water column depth, with a marginal contribution from neritic inputs.

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From an ecological perspective, the predominance of mesopelagic and bathypelagic species (*Cyclothone braueri*, *Maurolicus muelleri*, *Lampanyctus pusillus*) highlights the central role of deep scattering layer communities as a structural component of the pelagic ecosystem. These organisms represent a key element in vertical trophic fluxes, contributing to energy transfer between deep and surface layers through migratory behaviour and adaptive feeding strategies. The presence of epipelagic *taxa* (*Sardina pilchardus*) further confirms a degree of vertical and horizontal connectivity among different ecological domains of the water column.

However, it is important to emphasize that the available dataset does not allow for robust statistical analyses or detailed quantitative comparisons among areas or transects. The limited overall abundance and the sporadic distribution of *taxa*, renders statistical inference unreliable for comparative assessments or for the identification of significant spatial patterns. Consequently, the interpretations provided should be considered strictly qualitative.

Despite these limitations, the collected evidence remains ecologically informative and consistent with the oceanographic characteristics of the deep Ionian sector. The observed taxonomic composition is typical of open, oligotrophic, and deep-water systems, where the occurrence of coastal fish larvae is generally reduced and communities are dominated by *taxa* adapted to low-productivity conditions.

6.2.0 Sediment and Infauna Discussion

6.2.1 Sediment Discussion

Field measurements performed immediately after sample recovery indicated sediment temperatures broadly reflecting bottom-water conditions at the sediment–water interface, although partially influenced by atmospheric exposure during onboard handling. Sediment pH exhibited very limited variability and remained within the range typically reported for fine-grained bathyal marine sediments. Similarly, ORP values were consistently negative throughout the study area, indicating reducing conditions within the superficial sediment layer. Such conditions are commonly associated with cohesive fine-grained deposits, where limited permeability restricts oxygen penetration into pore waters and promotes the development of reducing micro-environments (e.g., Zaldívar *et al.*, 2008).

Grain-size analyses confirmed the pervasive dominance of pelitic sediments throughout the study area, with Silt and Clay together exceeding 85 % at all stations and approaching 100 % at the Greek Reference Stations. This texture is consistent with the deep offshore setting of the investigated area, where low-energy hydrodynamic conditions favour the deposition and preservation of fine-grained suspended particles (Reading, 1996; Boggs, 2012; Nichols, 2009). Gravel was absent in all samples, while Sand represented only a minor component at most stations, generally remaining below 15 %. Only Italy Ref showed a modest departure from the otherwise uniform sedimentary texture, with relatively higher sand content and lower silt percentages compared with the other stations, likely reflecting its shallower setting and greater proximity to the Italian coast, where local hydrodynamic conditions may favour the retention of somewhat coarser terrigenous particles. The close agreement between the Folk (1954, 1974) and Shepard (1954) classifications and the measured grain-size distributions further supported the predominance of fine cohesive sediments throughout the study area. The widespread occurrence of “Mud” and “Silty clay” facies, together with the limited representation of coarser textural classes, was consistent with sediment accumulation under the low-energy depositional conditions typical of the bathyal Ionian Sea (Poulos *et al.*, 1999; Perri *et al.*, 2015). The granulometric homogeneity observed throughout the study area was mirrored by the measured physical and chemical characteristics of the sediments. The predominance of pelitic deposits, together with the generally elevated moisture

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content and remarkably uniform density values, further supported the occurrence of cohesive seabed conditions and an efficient retention of pore water and associated particulate material.

Within this framework, although frequently quantifiable, TOC concentrations remained consistently low throughout the study area, indicating limited accumulation of organic matter within the surface sediment layer. Such values were consistent with the oligotrophic conditions that characterize the Ionian Sea and the broader Eastern Mediterranean, where limited nutrient availability constrains primary productivity and the supply of organic matter to the seafloor (Powley et al., 2017a, 2017b). Consequently, pressures on benthic communities associated with organic enrichment are expected to be negligible (Hyland *et al.*, 2005). The relatively homogeneous distributions of Total Nitrogen (N-Tot) and Total Phosphorus (P-Tot), together with the absence of localized concentration peaks around either well-site area, further supported this interpretation. N-Tot concentrations suggested relatively stable inputs of organic matter and associated remineralisation processes (Gruber, 2008), whereas the widespread occurrence of P-Tot was consistent with P being predominantly retained within particulate and sediment-bound pools rather than occurring in dissolved forms (Schulz & Zabel, 2006). Carbonate contents likewise exhibited limited spatial variability and concentrations typical of carbonate-bearing pelitic sediments. Their relatively uniform distribution, together with the overall consistency observed for TOC, N-Tot and P-Tot, further corroborated the homogeneity of depositional conditions throughout the investigated area. Collectively, these findings indicate the absence of significant organic or nutrient enrichment and are fully consistent with a generally oligotrophic benthic environment.

The distribution of metals and metalloids in surface sediments showed limited spatial variability throughout the study area, with generally comparable concentrations among Asopus-1A, Asopus-1B, Blank and Reference Stations. Asopus-1B tended to exhibit slightly higher concentrations for several elements, whereas Italy Ref frequently showed lower values, likely reflecting its relatively coarser sediment texture and lower pelitic content. Cadmium (Cd), Mercury (Hg), Hexavalent Chromium (Cr VI) and Tin (Sn) occurred at very low concentrations, frequently below the analytical LoQ, while Aluminium (Al) and Iron (Fe) were by far the most abundant elements, reflecting their predominantly lithogenic origin and natural abundance within the sediment matrix (Louma, 1990; Loring, 1991). The remaining investigated metals and metalloids generally occurred within the order of magnitude of 10^1 mg kg⁻¹ d.s., consistent with the overall granulometric homogeneity of the sediments. Comparison with the applicable sediment quality criteria highlighted exceedances for Arsenic (As), Nickel (Ni) and Total Chromium (Cr-Tot). As exceeded the HCMR ERL value adopted in Greece (Long *et al.*, 1995) at most sampling stations and the Italian SQA-MA threshold (D.Lgs. 172/2015, Table 3/B) at five stations. Ni exceeded the HCMR ERL value throughout the study area, whereas Cr-Tot exceeded the Italian SQA-MA threshold at five stations, including both well-site and Reference Stations. All remaining investigated elements remained below the applicable reference values. The widespread occurrence of As and Ni exceedances, together with the distribution of Cr-Tot exceedances across well-site, Blank and Reference Stations, showed no evidence of localized enrichment associated with the proposed drilling locations. Rather, the absence of clear concentration gradients, the offshore setting of all sampling stations, and the lack of existing offshore infrastructures or major nearby anthropogenic inputs collectively suggest that the observed metal distribution was more consistent with natural geochemical variability than with contamination. This interpretation was further supported by the predominance of fine-grained pelitic sediments, which normally favour trace-element retention through adsorption processes (Horowitz, 1991; Förstner and Wittman, 1981; Que, *et al.*, 2024). In particular, the quantified As concentrations fell within ranges reported for uncontaminated marine sediments, where natural background levels may reach ~ 15 mg kg⁻¹ d.w. in coastal settings and up to ~ 40 mg kg⁻¹ d.w. in deep-sea environments (e.g., Kalia and Khambholja, 2015), in line with similar Mediterranean cases attributed to environmental background conditions (e.g., Dall'Aglio *et al.*, 2001; Arienzo *et al.*, 2020; Armiento *et al.*, 2022). Similarly, Ni and Cr-Tot concentrations were consistent with values reported for marine

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sediments from other sectors of the Eastern Mediterranean, indicating that the distribution of these elements is largely controlled by sediment provenance and by their affinity for fine-grained sediment fractions, often resulting in naturally elevated concentrations unrelated to anthropogenic contamination (De Lazzari *et al.*, 2004; Amorosi, 2012; Ilijanić *et al.*, 2014). Comparable concentrations have also been documented in semi-closed East Mediterranean Gulfs, including the Aegean Sea, where naturally elevated Ni and Cr levels have been linked to geological background and sediment composition (Stamatis *et al.*, 2019).

With regard to the investigated sediment hydrocarbons, the complete absence of quantifiable concentrations of the light hydrocarbon fraction ($C \leq 12$) and the uniformly low concentrations of the heavier fraction ($C > 12$) suggested a negligible accumulation of hydrocarbon compounds within the surface sediment layer. Consistently, most investigated PAHs remained below the analytical LoQ, while the few quantifiable concentrations were sporadic, low and showed no coherent spatial distribution. The highest diversity of detected compounds and the highest Σ PAHs concentrations were recorded at Italy Ref and, to a lesser extent, at D6a, with no discernible pattern indicative of localized hydrocarbon enrichment or geochemical anomalies associated with the planned well locations. Although the study area hosts proven natural-gas accumulations within the subsurface geological formations, the absence of anomalous concentration patterns suggests that no measurable geochemical signature related to the underlying gas accumulations was present in the investigated sediments at the time of sampling. Such a result may indicate either that any natural fluid or gas migration processes were absent, episodic or insufficient to generate detectable accumulation within surface sediments, or that potential subsurface fluid and gas migration did not produce a measurable geochemical imprint on the investigated hydrocarbon categories (Judd & Hovland, 2007). No sediment quality criteria are currently provided by either the HCMR guidelines or the Italian Environmental Quality Standards (D.Lgs. No. 172/2015) for the investigated hydrocarbon fractions ($C \leq 12$, $C > 12$) and TPH. Conversely, individual PAHs and Σ PAHs concentrations remained several orders of magnitude below the applicable reference values adopted by HCMR (Long *et al.*, 1995) and the Italian Environmental Quality Standards (D.Lgs. No. 172/2015). Overall, the predominance of non-detects and the low concentrations measured where compounds were quantified were consistent with background conditions typical of offshore oligotrophic environments characterized by limited anthropogenic pressure, indicating that at the time of sampling hydrocarbon-related compounds exerted negligible influence on sediment quality within the investigated area.

Microplastics were not detected in any sediment sample collected throughout the study area, including the well-site (Asopus-1A and Asopus-1B), Blank and Reference Stations. Qualitative micro-Raman / FTIR screening did not identify any synthetic polymer particles within the investigated size range (1 μm – 5 mm). The absence of detectable microplastics throughout the study area provided no evidence of measurable microplastic contamination at the time of sampling and indicated that synthetic polymer particles were not a significant component of the investigated surface sediments and, consistent with the offshore setting of the investigated area and the apparent absence of significant local sources of plastic debris.

6.2.2 Infauna Discussion

Multivariate analyses did not reveal distinct ecological patterns either among the stations associated with the two wells in the Block 2 area (Asopus-1A and Asopus-1B) or between these and the Reference stations (Othonoi Ref, Kerkyra Ref, and Italy Ref). The slight variations observed are primarily attributable to natural spatial heterogeneity and micro-scale substrate variability, rather than to true ecological gradients.

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Overall, all investigated stations exhibited low values of abundance, species richness, and diversity, consistent with those typically recorded in Mediterranean bathyal environments. The macrobenthic communities are therefore simplified and taxonomically poor, both within the Block 2 area and at the Reference sites. In particular, the community structure is dominated by the phylum Annelida, with a marked prevalence of the sipunculid *Golfingia sp.*, a typical inhabitant of deep muddy sediments.

The entire system can be assigned to the *Mediterranean Upper Bathyal Mud biocenosis* (EUNIS code: ME65), characterized by fine-grained sediments and strongly limiting environmental conditions in terms of light availability, temperature, and organic matter supply. Furthermore, this biocenosis was characterized by the presence of carbonate oozes composed of skeletal remains of planktonic organisms such as coccolithophores, foraminifera, and pteropod molluscs.

From an ecological perspective, this configuration implies a poorly structured trophic network, with a limited number of functional interactions and a strong dependence on the sedimentation of organic matter from the overlying water column. This pattern is consistent with the literature on Mediterranean bathyal systems, where the reduced input of organic matter, high hydrostatic pressure, low temperatures, and oligotrophic conditions strongly constrain benthic productivity. The fine sediment granulometry and generally reduced redox conditions further contribute to community simplification, limiting the occurrence of more sensitive taxa such as many molluscs and peracarid crustaceans.

Moreover, the results of the statistical analyses performed on sediment physicochemical variables and the studied macrobenthic communities confirm that bathyal benthic community distribution in the investigated areas is controlled by a combination of sedimentological and geochemical factors, with fine-grained sediments and processes linked to the deep sedimentary organic matter cycle playing a key ecological role.

The application of the M-AMBI index generally indicates an ecological status ranging from “Poor” to “Moderate”, whereas the AMBI suggests conditions from “Undisturbed” to “Moderately disturbed”. This discrepancy reflects the limitations of these indices when applied to deep-sea environments, as they were originally developed for coastal systems. In bathyal settings, the naturally low ecological complexity may lead to either underestimation or overestimation of ecological status. Consequently, these results should be considered indicative and not fully representative of the ecological quality of deep-sea ecosystems.

6.2.3 Seabed Habitat Discussion

Video Integrated surveys based on AUV mosaics and macrobenthic analyses confirmed an overall homogeneous biocenotic structure across the study area, both within Asopus-1A and Asopus-1B wells area and at the Reference stations (Othonoi Ref, Kerkyra Ref, and Italy Ref). All investigated settings are dominated by bathyal muddy environments, attributable to the *Mediterranean Upper Bathyal Mud biocenosis* (EUNIS code: ME65), which represents the main structural component of the studied ecosystem.

From a faunistic perspective, the muddy seafloor is characterized by the recurrent presence of traces of tubicolous and burrowing organisms, typical of low-energy deep-sea sediments, as well as by the occurrence of adapted nektobenthic fauna, including representatives of the family Macrouridae. The localized presence of the burrowing sea anemone *Andresia partenopea* highlights the ability of certain species to exploit specific ecological niches. Similarly, the occasional occurrence of the decapod *Paromola cuvieri* suggests the use of the seafloor as a foraging and/or transit area by mobile nektobenthic organisms.

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A particularly relevant ecological feature is the presence of hard substrates within the muddy matrix near station D4a of the Asopus-1A well area. These rocky outcrops are attributable to the *Mediterranean Upper Bathyal Rock biocenosis (EUNIS ME15)*. Although spatially limited, these habitats significantly increase structural complexity and environmental heterogeneity. They host communities typical of deep hard-substrate environments, including deep-sea corals, and contribute to the development of three-dimensional microhabitats that enhance sessile organism colonization and provide shelter for nekto-benthic species. In an otherwise low-diversity and highly homogeneous bathyal setting, these structures act as local biodiversity hotspots, with potential positive implications for ecological connectivity and trophic interactions.

Overall, the system can be interpreted as a functionally coherent mosaic of bathyal biocenoses, dominated by low-diversity muddy environments but locally enriched by high-complexity rocky elements. This configuration reflects the typical equilibrium of Mediterranean deep-sea ecosystems, where structural stability is driven by persistent environmental conditions, while ecological resilience depends on the presence of microhabitats that enhance functional diversity and support more complex biological assemblages.

The biocenotic map of the different study areas (Block 2 area and reference stations) is presented below. This map is based on a final integrated assessment combining macrobenthic analyses and AUV survey data. This integrated approach allowed the delineation of the main benthic biocenoses, habitat types, and facies occurring at the investigated sites. The colour scheme used to represent biocenoses in the maps follows the standards established by the EUNIS classification system (2022).

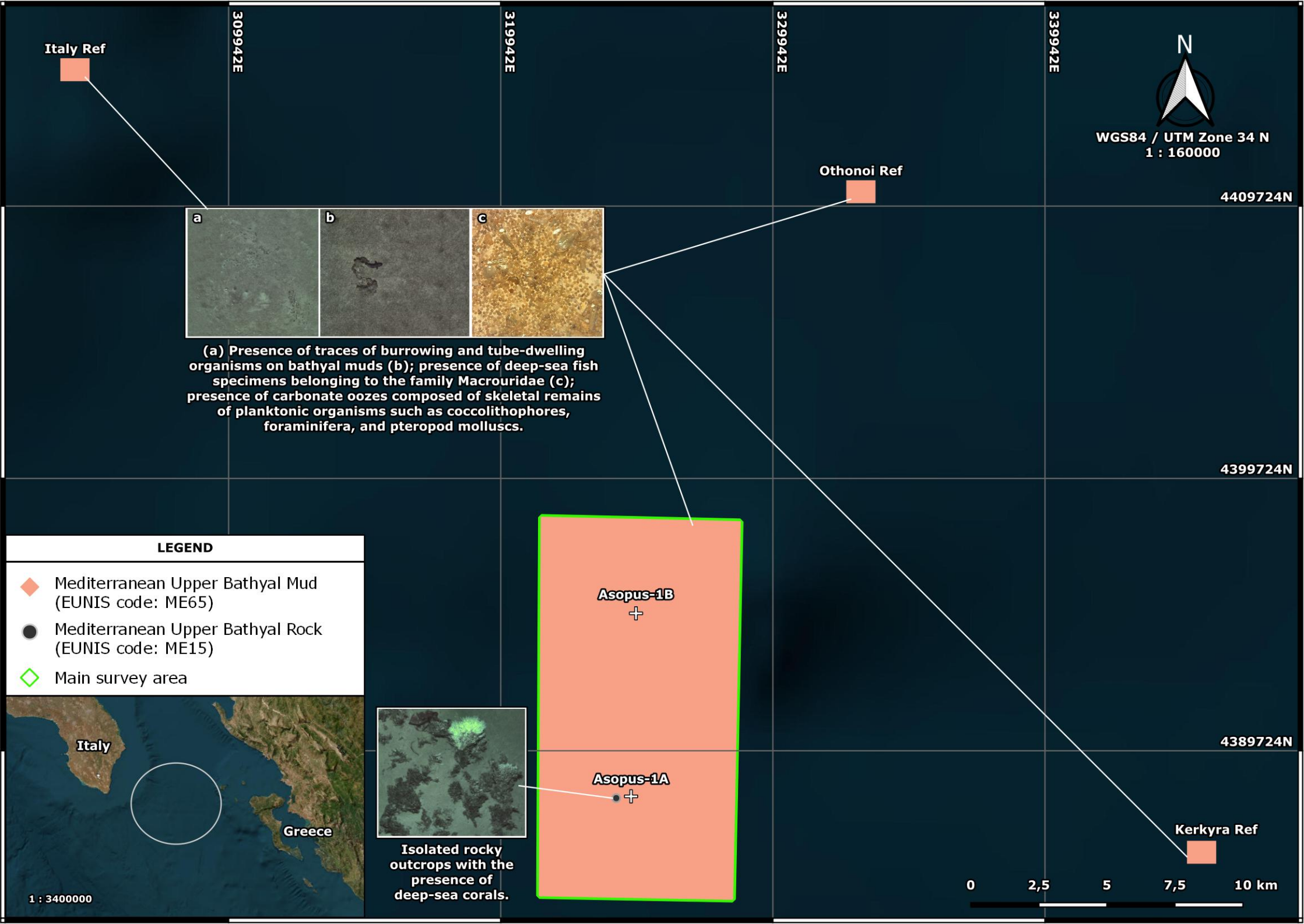


Figure 85 – Biocenotic Map – Asopus-1A and Asopus-1B wells area and Reference stations (Othonoi Ref, Kerkyra Ref, Italy Ref)

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6.2.4 Marine Litter Discussion

The analysis of the AUV-derived mosaics revealed a heterogeneous spatial distribution of marine litter across the investigated areas. No evidence of litter was detected at most of the surveyed stations, suggesting a generally low occurrence of litter items on the seafloor within the study area. Nevertheless, the presence of localized accumulations indicates that the deposition and persistence of marine litter on the seabed are influenced by both environmental and anthropogenic factors, which may result in an uneven distribution of materials.

In the Asopus-1A well area, marine litter occurrence was limited and localized, being mainly associated with fishing-related activities and other anthropogenic sources. In the Asopus-1B well area, the litter items identified comprised different material categories, suggesting the presence of multiple sources, although no significant accumulation patterns were observed. The Blank stations generally showed an absence of marine litter, with the exception of one station (D6b), where a greater diversity of materials was recorded. This finding is likely related to consumer-derived waste and to local environmental conditions favouring the retention and accumulation of debris. Finally, among the Reference stations, only an occasional litter item was detected at the Kerkyra Ref station.

Overall, the results indicate that marine litter occurrence within the investigated areas is characterized by a patchy spatial distribution. No evidence of widespread accumulations or patterns systematically associated with the well areas emerged when compared with the Blank and Reference stations. Instead, the observed distribution suggests that marine litter occurrence is primarily controlled by local processes of transport, deposition, and retention of materials on the seafloor.

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7.0.0 CONCLUSIONS

Seawater – Physic-chemical vertical profiles

- Temperature and salinity distributions reflected the characteristic thermo-haline structure and water masses of the Northern Ionian Sea, with a homogeneous MAW surface layer ($\sim 16\text{--}17\text{ }^{\circ}\text{C}$; $< 38.8\text{ PSU}$) down to $\sim 70\text{--}100\text{ m}$, an underlying LIW-like salinity maximum ($> 39.1\text{ PSU}$) between ~ 100 and 250 m , and cooler, less saline deep waters likely transitional toward EMDW;
- pH showed a gradual decrease with depth, remaining within the range expected for oligotrophic Mediterranean environments and reflecting the natural stratification of the water column;
- Dissolved Oxygen (DO) was highest within the upper MAW layer and decreased with depth to moderate bottom undersaturation ($< 70\%$); minor DO increases associated with deep thermo-haline inversions suggested the influence of recently ventilated waters linked to Adriatic–Ionian circulation, while concentrations remained well above hypoxia thresholds proposed in the literature;
- Fluorescence profiles showed a Deep Chlorophyll Maximum (DCM) generally between ~ 70 and 100 m depth, with Chl-a equivalent peaks around $0.3\text{ }\mu\text{g L}^{-1}$, indicating low phytoplankton biomass and reflecting the oligotrophic character of the study area;
- Turbidity remained consistently low throughout the water column, indicating high water transparency and limited suspended particulate inputs, with only slight increases in the upper layers likely linked to surface dynamics and associated optical interference.

Seawater – Chemical characteristics

- TSS showed moderate concentrations and limited spatial variability across the study area, while TOC remained below the analytical detection limit in almost all samples, indicating low suspended organic matter;
- N-Tot consistently below the LoQ, mostly unquantifiable NO_2^- and NO_3^- , sporadic NH_4^+ detections, and generally low PO_4^{3-} and P-Tot concentrations indicated a generally limited availability of the analyzed nutrients throughout the water column, in line with the nutrient-depleted and oligotrophic character of the study area;
- Heavy and trace metals showed element-specific behaviours, ranging from consistently non-quantifiable concentrations (Cd, Cr VI, Co, Hg and Sn), to sporadic detections generally at low levels (Cr-Tot, Pb, Cu and Ni), and widespread quantification across the study area (As, Ba, Fe and Zn); the relatively widespread but modest exceedances of the As SQA-MA were likely attributable to the natural geochemical background of the area, whereas Pb and Ni exceedances of both AA-EQS and SQA-MA were isolated occurrences restricted to Italy Ref, with no evidence of extensive metal contamination;
- All investigated hydrocarbons, including TPH fractions and PAHs, were consistently below their analytical LoQs and, where applicable, regulatory thresholds, providing no evidence of hydrocarbon contamination in the water column.

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Phytoplankton community

- Significative differences, in terms of abundance, were presented across bathymetric gradient and along spatial gradient (between the areas Asopus-1A, Asopus-1B and Reference station);
- In all the different sampled areas, Phytoplankton community was dominated by the class Cryptophyceae, Microflagellates (both included in the "Other taxa") and the species *Pseudo-nitzschia-delicatissima* complex (included in the class Bacillariophyceae), followed by other taxonomic groups presented at lower abundances;
- A lot of dead cells of *Pseudo-nitzschia-delicatissima* complex was found in all analyzed samples, suggesting the record of this species at the end of their bloom;
- Phytoplankton distribution appeared closely linked to nutrient (particularly P-Tot) and organic carbon (TOC) gradients, and to the physic-chemical processes regulating their availability and persistence within the water column.

Zooplankton community

- The investigated mesozooplankton communities exhibited high biodiversity and a substantially homogeneous spatial distribution across both the well areas (Asopus-1A and Asopus-1B) and the Reference stations;
- the observed assemblages were consistent with the oligotrophic conditions and with the hydrological and bathymetric characteristics typical of the offshore sector of the Ionian Sea;
- the occurrence of epipelagic, mesopelagic, and rare deep-water taxa highlights the high ecological complexity and vertical connectivity of the investigated system;
- the limited meroplanktonic component indicates a weak influence of neritic inputs and confirms the typically oceanic character of the sampled communities.

Ichthyoplankton community

- The ichthyoplankton community is consistent with deep pelagic environments, with its structure primarily influenced by distance from the coast and water column depth;
- the taxonomic composition highlights the dominance of mesopelagic and bathypelagic species, typical of the deep scattering layer and oligotrophic oceanic systems;
- the presence of epipelagic species supports significant vertical and horizontal connectivity within the water column;
- overall, the results are consistent with a deep offshore, low-productivity system characterized by a reduced neritic contribution.

Sediment – Physical and Chemical characteristics

- Sediments were uniformly dominated by pelitic deposits, with Silt and Clay together exceeding 85 % at all stations and approaching 100 % at the Greek Reference Stations; only Italy Ref exhibited a slightly coarser sediment texture;

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- TOC, N-Tot, P-Tot and Carbonate contents exhibited low concentrations and limited spatial variability, indicating the absence of organic or nutrient enrichment and confirming the oligotrophic nature of the benthic environment;
- Among Metals and metalloids, Al and Fe were by far the most abundant elements, reflecting their lithogenic origin, whereas Cd, Hg, Cr VI and Sn occurred at very low concentrations or remained below the analytical LoQ; exceedances of the applicable sediment quality criteria were identified for As, Ni and Cr-Tot; however, their spatial distribution, the absence of concentration gradients towards the planned well locations, and their consistency with concentrations reported from other Mediterranean offshore (and coastal) environments suggest natural geochemical variability rather than localized contamination;
- Hydrocarbon concentrations in surface sediments were consistently low, with the light fraction ($C \leq 12$) always below the analytical LoQ, only low concentrations of the heavier fraction ($C > 12$) and resulting TPH, and sporadic, low-level detections of a limited number of PAHs; all PAHs remained well below the applicable HCMR and Italian reference values, providing no evidence of hydrocarbon contamination or of measurable geochemical signatures associated with the underlying natural-gas accumulations;
- No microplastics were detected in any sediment sample, providing no evidence of detectable microplastic contamination, in line with the offshore character of the investigated area and its distance from major anthropogenic sources.

Macrobenthos Community

- Multivariate analyses did not reveal significant ecological differences between the stations located within the Block 2 area (Asopus-1A and Asopus-1B wells) and the Reference stations (Othonoi Ref, Kerkyra Ref, and Italy Ref);
- the macrobenthic communities showed low abundance, reduced diversity, and a simplified community structure, typical of Mediterranean bathyal environments;
- the investigated areas can be attributed to the *Mediterranean Upper Bathyal Mud biocenosis (EUNIS ME65)*, characterized by fine-grained sediments with the presence of carbonate oozes;
- The distribution of bathyal benthic communities in the investigated areas is controlled by a combination of sedimentological and geochemical factors, with fine-grained sediments and processes linked to the deep sedimentary organic matter cycle playing a key ecological role;
- the M-AMBI index suggests an ecological status ranging from “Bad” to “Moderate”; however, its interpretation in deep-sea environments remains limited.

Seabed Habitat

- Integrated AUV surveys and macrobenthic analyses confirmed a substantial biocenotic homogeneity between the Block 2 area and the Reference stations;
- the investigated environments are dominated by the *Mediterranean Upper Bathyal Mud biocenosis (EUNIS ME65)*;

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- benthic communities are characterized by the presence of burrowing and tube-dwelling organisms, as well as by nektobenthic fauna adapted to deep-sea environments;
- the localized occurrence of hard substrates at station D4a (Asopus-1A) increases the structural complexity of the system and supports communities associated with bathyal rock habitats (EUNIS ME15), including deep-sea corals;
- overall, the studied ecosystem appears as a stable and functionally coherent bathyal mosaic, dominated by muddy environments but locally enriched by rocky elements that enhance environmental complexity.

Marine Litter

- The analysis of the AUV-derived mosaics revealed a generally low occurrence of marine litter across the investigated areas, with many stations showing no evidence of litter on the seafloor;
- Marine litter distribution was heterogeneous and patchy, characterized by localized occurrences rather than widespread accumulations;
- The identified litter items were mainly associated with fishing-related activities and consumer-derived materials.

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8.0.0 BIBLIOGRAPHY

Amorosi, A., 2012, Chromium and nickel as indicators of source-to-sink sediment transfer in a Holocene alluvial and coastal system (Po Plain, Italy). *Sedimentary Geology*, 280, 260–269. <https://doi.org/10.1016/j.sedgeo.2012.04.011>.

Anderson, M.J., Gorley, R.N. and K.R. Clarke, 2008, PERMANOVA+ for PRIMER: Guide to Software and Statistical Methods.

Arienzo, M., Ferrara, L., Toscanesi, M., Giarra, A., Donadio, C. & M. Trifuoggi, 2020, Sediment contamination by heavy metals and ecological risk assessment: The case of Gulf of Pozzuoli, Naples, Italy, *Marine Pollution Bulletin*, 155, 1-7, <https://doi.org/10.1016/j.marpolbul.2020.111149>.

Armiento, G., Barsanti, M., Caprioli, R., Chiavarini, S., Conte, F., Crovato, C., De Cassan, M., Delbono, I., Montereali, M. R., Nardi, E., Parrella, L., Pezza, M., Proposito, M., Rimauro, J., Schirone, A., & F. Spaziani, 2022, Heavy metal background levels and pollution temporal trend assessment within the marine sediments facing a brownfield area (Gulf of Pozzuoli, Southern Italy), *Environ Monit Assess*, 194:814, 21 pp., <https://doi.org/10.1007/s10661-022-10480-3>.

ARPA Sardegna, 2023, *Annuario dei dati ambientali della Sardegna, Edizione 2023*, 117 pp., sardegnaambiente.it/documenti/21_393_20241120132208.pdf.

ARPA Sicilia, 2020, *Annuario dei dati ambientali, Edizione 2020*, <https://www.arpa.sicilia.it/download/annuario-dei-dati-ambientali-di-arpa-sicilia-edizione-2020/>

ARPA Sicilia, 2022, *Annuario dei dati ambientali, Edizione 2022*, 187 pp., <https://www.arpa.sicilia.it/documentazione-ambientale/gli-annuari-regionali-dei-dati-ambientali/>

Barbieux, M., Uitz, J., Gentili, B., Pasqueron de Fommervault, O., Mignot, A., Poteau, A., Schmechtig, C., Taillandier, V., Leymarie, E., Penkerch, C., D'Ortenzio, F., Claustre, H., and A. Bricaud, 2019, Bio-optical characterization of subsurface chlorophyll maxima in the Mediterranean Sea from a Biogeochemical-Argo float database, *Biogeosciences*, 16, 1321–1342, <https://doi.org/10.5194/bg-16-1321-2019>.

Basso, D., Thomson, J., & Corselli, C., 2004, Indications of low macrobenthic activity in the deep sediments of the eastern Mediterranean Sea. *Scientia Marina*, 68(S3), 53–62.

Boggs Jr., S., 2012, *Principles of sedimentology and stratigraphy*, 5th ed.: Upper Saddle River, New Jersey, Pearson Education, Ltd., 585 pp.

Boldrin, A., Miserocchi, S., Rabitti, S., Turchetto, M. M., Balboni, V., and Socal, G. (2002). Particulate matter in the southern Adriatic and Ionian Sea: characterisation and downward fluxes. *Journal of Marine Systems*, 33, 389–410.

Borja, A., Franco, J. and V. Perez, 2000, A marine biotic index to establish the ecological quality of soft-bottom benthos within European estuarine and coastal environments. *Mar. Poll. Bull.* 40, 1100–1114.

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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Bouloubassi, I., Fillaux, J. and A. Saliot, 2001, Hydrocarbons in surface sediments from the Changjiang (Yangtze River) estuary, East China Sea. *Marine Chemistry*, 75(1–2), 1–16.

Boxshall, G.A. and S.H. Halsey, 2004, An introduction to Copepod Diversity. The Ray Society, London.

Boxshall, G.A., Halsey, S.H., 2004, An introduction to Copepod Diversity. The Ray Society, London.

Bruland, K.W., 1983. Trace Elements in Seawater. In: Riley, J.P. and Chester, R. (Eds.), *Chemical Oceanography*, Vol. 8. Academic Press, London, pp. 157–220.

Budillon, G., Bue, N. L., Siena, G., and Spezie, G. (2010). Hydrographic characteristics of water masses and circulation in the Northern Ionian Sea. *Deep Sea Research Part II: Topical Studies in Oceanography*, 57(5-6), 441-457.

Caroppo, C., Cerino, F., Auriemma, R., and Cibic, T. (2016). Phytoplankton dynamics with a special emphasis on harmful algal blooms in the Mar Piccolo of Taranto (Ionian Sea, Italy). *Environmental Science and Pollution Research*, 23(13), 12691-12706.

Carstensen, J. and C.M. Duarte, 2019, *Environmental Science and Technology*, DOI: 10.1021/acs.est.8b03655.

Casotti, R., Landolfi, A., Brunet, C., d'Ortenzio, F., Mangoni, O., Ribera d'Alcalà, M., and Denis, M. (2003). Composition and dynamics of the phytoplankton of the Ionian Sea (eastern Mediterranean). *Journal of Geophysical Research: Oceans*, 108(C9).

Cescon B., G. Macchi (1973). Distribution of dissolved oxygen and nutrients in the Gulf of Taranto. *Thalassia Jugoslavica*, 9, 75-85.

Cicero, A. M., & Di Girolamo I., 2001, Metodologie analitiche di riferimento del Programma di Monitoraggio dell'ambiente marino costiero (Triennio 2001-2003). Roma, Ministero dell'Ambiente e della Tutela del Territorio, ICRAM.

Dall'Aglio, M., Ferretti, O., Manfredi Frattarelli, F. and I. Niccolai, 2001, The link between continental and marine geochemistry as shown by mercury and arsenic anomalies in sediments from Southern Tuscany and Tyrrhenian Sea, 427-433, In: *Mediterranean Ecosystems: Structures and Processes*, Springer Milano.

Danovaro R., Dinat A., Duineveld G. and A. Tselepides, 1999, Benthic response to particulate fluxes in different trophic environments: a comparison between the Gulf of Lions–Catalan Sea (western-Mediterranean) and the Cretan Sea (eastern-Mediterranean), *Progress in Oceanography*, Volume 44, Issues 1–3, Pages 287-12, ISSN 0079-6611.

Daskalopoulou, K., Calabrese, S., Grassa, F., Kyriakopoulos, K., Parello, F., Tassi, F. and D'Alessandro, W., 2018, Origin of methane and light hydrocarbons in natural fluid emissions: A key study from Greece, *Chemical Geology*, 479, pp. 286–301.
<https://doi.org/10.1016/j.chemgeo.2018.01.027>.

De Lazzari, A., Rampazzo, G. and B. Pavoni, 2004, Geochemistry of sediments in the Northern and Central Adriatic Sea, *Estuar. Coast. Shelf Sci.* 59, pp. 429–440.

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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Deuser, W., G., 1971, Organic-carbon Budget of the Black Sea, Deep-Sea Research, Vol.18, Pergamon Press, 995 – 1004.

Diaz, R. J. And R. Rosenberg, 1995, Marine benthic hypoxia: a review of its ecological effects and behavioural responses of marine macrofauna, Oceanography and Marine Biology Annual Review, 33, 245–303.

European Environment Agency, 2022, EUNIS marine habitat classification review 2022., <https://eunis.eea.europa.eu/>.

Fedele, G., Mauri, E., Notarstefano, G. and P.M. Poulain, 2022, Characterization of the Atlantic Water and Levantine Intermediate Water in the Mediterranean Sea using 20 years of Argo data. Ocean Science, 18, pp. 129–142, <https://doi.org/10.5194/os-18-129-2022>.

Folk, R.L., 1954, "The distinction between grain size and mineral composition in sedimentary rocks nomenclature. Jour Geol.,:344-359

Folk, R.L., 1974, Petrology of Sedimentary Rocks. Hernphill Publishing Co., Austin, 194 p.

Förstner, U. and G.T.W. Wittmann, 1981, Metal Pollution in the Aquatic Environment. Berlin, Heidelberg: Springer-Verlag, 486 pp, <https://doi.org/10.1007/978-3-642-69385-4>.

Frank J. Millero, 1995, Thermodynamics of the carbon dioxide system in the oceans, Geochimica et Cosmochimica Acta, Volume 59, Issue 4, Pages 661-677, ISSN 0016-7037.

Giordani, P., Helder, W., Koning, E., Miserocchi, S., Danovaro, R., and Malaguti, A. (2002). Gradients of benthic–pelagic coupling and carbon budgets in the Adriatic and Northern Ionian Sea. *Journal of Marine Systems*, 33, 365-387.

Giulietti, S., Romagnoli, T., Siracusa, M., Bacchiocchi, S., Totti, C. and Accoroni, S. (2021). Integrative taxonomy of the Pseudo-nitzschia (Bacillariophyceae) populations in the NW Adriatic Sea, with a focus on a novel cryptic species in the P. delicatissima species complex. *Phycologia*, 60(3), 247-264.

Gooday, A.J., 2002, Biological Responses to Seasonally Varying Fluxes of Organic Matter to the Ocean Floor: A Review. *Journal of Oceanography* 58, 305–332.

Gruber, N., 2008, The Marine Nitrogen Cycle: Overview and Challenges. In: Douglas G Capone, D. G., Bronk, D. A., Mulholland, M. R. and E. J. Carpenter, Nitrogen in the Marine Environment (2nd Edition), 1-50.

Harris, R.P., Wiebe, P.H., Lenz, J., Skjoldal, H.R., Huntley, M., ICES 2000, eds. Zooplankton Methodology Manual. Academic Press, New York 684 pp.

Hasle, G.R. and E.E. Syvertsen, 1997, Marine diatoms. In: Tomas C.R. (ed.), Identifying marine phytoplankton. Academic Press, San Diego: 5–385.

Hill, J., K. and P. A. Wheeler, 2002, Organic carbon and nitrogen in the northern California current system: comparison of offshore, river plume, and coastally upwelled waters, *Progress in Oceanography*, 53, 369 – 387.

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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Hinga, 2002, Effects of pH on coastal marine phytoplankton, Marine Ecology Progress Series, Vol. 238: 281 – 300.

Horowitz, A.J., 1991, A primer on sediment-trace element chemistry, Second revised edition, Lewis Publishers: Chelsea, ISBN 0-87371-499-7. viii, 136 pp.

Hyland, J., Balthis, L., Karakassis, I., Magni, P., Petrov, A., Shine, J., Vestergaard, O. and R. Warwick, 2005, Organic carbon content of sediments as an indicator of stress in the marine benthos, Mar. Ecol. Prog. Ser., 295, 91 – 103.

Ignatiades, L., Gotsis-Skretas, O., Pagou, K., and Krasakopoulou, E. (2009). Diversification of phytoplankton community structure and related parameters along a large-scale longitudinal east-west transect of the Mediterranean Sea. *Journal of Plankton Research*, 31(4), 411-428.

Ilijanić, N., Miko, S., Petrinc, B. and Z. Franić, 2014, Metal deposition in deep sediments from the Central and South Adriatic Sea, *Geologia Croatica*, 67(3), 185–205, <https://doi.org/10.4154/GC.2014.14>.

Jacquet, S. H. M., Lefèvre, D., Tamburini, C., Garel, M., Le Moigne, F. A. C., Bhairy, N., and Guasco, S., 2021, On the barium–oxygen consumption relationship in the Mediterranean Sea: implications for mesopelagic marine snow remineralization, *Biogeosciences*, 18, 2205–2212.

Jacquet, S. H. M., Tamburini, C., Garel, M., Dufour, A., Van Vambeke, F., Le Moigne, F. A. C., Bhairy, N., and Guasco, S., 2021, Particulate biogenic barium tracer of mesopelagic carbon remineralization in the Mediterranean Sea (PEACETIME project), *Biogeosciences*, 18, 5891–5902.

John P. Rafferty, 2021, *Geology: Landforms, Minerals and Rocks*. Britannica pp. 190 to 200.

Johnson, N. A., Campbell, J. W., Moore, T. S., Rex, M. A., Etter, R. J., McClain, C. R., & Dowell, M. D., 2007, The relationship between the standing stock of deep-sea macrobenthos and surface production in the western North Atlantic. *Deep-Sea Research I* 54 (2007) 1350–1360

Judd, A. and Hovland, M., 2007. *Seabed Fluid Flow: The Impact on Geology, Biology and the Marine Environment*. Cambridge University Press, Cambridge, 475 pp.

Justić, D., Rabalais, N.N. and R.E. Turner, 2003, Simulated responses of the Gulf of Mexico hypoxia to variations in climate and anthropogenic nutrient loading, *Journal of Marine Systems* 42 (2003) 115 – 126.

Kalia, K. and D.B. Khambholja, 2015, Arsenic contents and its biotransformation in the marine environment. In S. J. S. Flora (Ed.), *Handbook of Arsenic Toxicology*, Chapter 28, pp. 675–694, Elsevier, <https://doi.org/10.1016/B978-0-12-418688-0.00028-9>.

Krom M. D., Kress N., Brenner S., Gordon L. I., (1991), Phosphorus limitation of primary productivity in the eastern Mediterranean Sea, *Limnology and Oceanography*, 36.

Lavigne, H., Civitarese, G., Gačić, M., and d'Ortenzio, F. (2018). Impact of decadal reversals of the north Ionian circulation on phytoplankton phenology. *Biogeosciences*, 15(14), 4431-4445.

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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Lisa A. Levin, Ron J. Etter, Michael A. Rex, Andrew J. Gooday, Craig R. Smith, Jesús Pineda, Carol T. Stuart, Robert R. Hessler and David Pawson, 2001, Environmental Influences on Regional Deep-Sea Species Diversity1. Annual Review Ecology, Evolution, and Systematics. 32:51-93.

Long, E., MacDonald, D., Smith, S. and F. Calder, 1995, Incidence of adverse biological effects within ranges of chemical concentrations in marine and estuarine sediments, Environmental Management, 19, 81–97.

Loring, D. H., 1991, Normalization of heavy-metal data from estuarine and coastal sediments, Journal du Conseil, 48(1), 101–115, <https://doi.org/10.1093/icesjms/48.1.101>.

Luoma, S. N., 1990, Processes affecting metal concentrations in estuarine and coastal marine sediments, in: Furness, R. W. and P. S. Rainbow (Eds), Heavy Metals in the Marine Environment, CRC Press, Inc. Boca Raton: 51-66.

Malanotte-Rizzoli, P., Manca, B. B., Ribera d’Alcalà, M., Theocharis, A., Brenner, S., Budillon, G. and E. Ozsoy, 1999, The eastern Mediterranean in the 80s and in the 90s: The big transition in the intermediate and deep circulations, Dyn. Atmos. Oceans, 29, 365 – 395.

Malanotte-Rizzoli, P., Manca, B.B., Ribera d'Alcalà, M., Theocharis, A., Bergamasco, A., Bregant, D., Budillon, G., Civitarese, G., Georgopoulos, D., Michelato, A., Sansone, E., Scarazzato, P. and E. Souvermezoglou, 1997, A synthesis of the Ionian Sea hydrography, circulation and water mass pathways during POEM-Phase I, Progress in Oceanography, 39(3), 153 – 204.

Mallil, K., Testor, P., Bosse, A., Margirier, F., Houpert, L., Le Goff, H., Mortier, L. & Louanchi, F., 2022. The Levantine Intermediate Water in the western Mediterranean and its interactions with the Algerian Gyres: insights from 60 years of observation. Ocean Science, 18, 937–952. <https://doi.org/10.5194/os-18-937-2022>.

Margalef R., 1958, Information theory in ecology. Gen Syst. 3: 36-71.

Menna, M., Poulain, P.M., Ciani, D., Doglioli, A.M., Notarstefano, G. & Gerin, R., 2021. On the Circulation and Thermohaline Properties of the Eastern Mediterranean Sea. Frontiers in Marine Science, 8, Article 671469. <https://doi.org/10.3389/fmars.2021.671469>.

Middag, R., Rolison, J.M., George, E., Gerringa, L.J.A., Rijkenberg, M.J.A. and C.H. Stirling, 2021, Basin scale distributions of dissolved manganese, nickel, zinc and cadmium in the Mediterranean Sea. Marine Chemistry, 238, 104063. <https://doi.org/10.1016/j.marchem.2021.104063>.

Miller A. R., P. Tchernia, Il. Charnock, D. A. McGill (1970). Mediterranean Sea atlas of temperature, salinity, oxygen profiles and data from cruises of R/V Vatalantis and R/V chain, with distribution of nutrient chemical properties. Woods Hole Oceanographie Institution Atlas Series, vol. 3. Woods Hole, MA, 1900 pp.

Millot C. and I. Taupier-Letage, 2005, Circulation in the Mediterranean Sea. In: A. Salot., Editor, The Mediterranean Sea. The Handbook of Environmental Chemistry, Water Pollution, Part K. vol. 5, Springer, GmbH, Heidelberg, Germany 29-66.

Mucci, A., 1983, The solubility of calcite and aragonite in seawater at various salinities, temperatures, and one atmosphere total pressure. American Journal of Science, 283(7), 780–799

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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Murina G.V.V., Pancucci-Papadopoulou M.A. and A. Zenetos, 1999, The phylum Sipuncula in the eastern Mediterranean: composition, ecology, zoogeography. *Journal of the Marine Biological Association of the United Kingdom*, 79(5):821-830.

Muxika I., Borja A. and J. Bald., 2007, Using historical data, expert judgement and multivariate analysis in assessing reference conditions and benthic ecological status, according to the European Water Framework Directive. *Marine Pollution Bulletin*. 55(1–6): 16–29.

Neff, J.M., 1997, Ecotoxicology of arsenic in the marine environment, *Environmental Toxicology and Chemistry*, 16(5), pp. 917–927. <https://doi.org/10.1002/etc.5620160511>.

Neff, J.M., 2002, Arsenic in the Ocean. In: *Bioaccumulation in Marine Organisms*, Elsevier, Chapter 3, pp. 57–78. ISBN 9780080437163. <https://doi.org/10.1016/B978-008043716-3/50004-X>.

Nichols, G., 2009, *Sedimentology and Stratigraphy*, 2nd ed, Wiley-Blackwell,. 419 pp.

Pahlow, M., and Oschlies, A. (2009). Chain model of phytoplankton P, N and light colimitation. *Marine Ecology Progress Series*, 376, 69-83.

Pedrosa-Pàmies, R., Parinos, C., Sanchez-Vidal, A., Gogou, A., Calafat, A., Canals, M., Bouloubassi, I., and Lampadariou, N., 2015, Composition and sources of sedimentary organic matter in the deep eastern Mediterranean Sea, *Biogeosciences*, 12, 7379–7402, <https://doi.org/10.5194/bg-12-7379-2015>.

Pérès, J. M. & Picard, J., 1964, Nouveau manuel de bionomie benthique de la Mer Méditerranée. *Recueil des Travaux de la Station Marine d'Endoume* 31, 1–137.

Perri, F., Critelli, S., Dominici, R., Muto, F. and M. Ponte, 2015, Sourceland controls and dispersal pathways of Holocene muds from boreholes of the Ionian Basin, Calabria, southern Italy, *Geological Magazine*, 152(6), 957–972. <https://doi.org/10.1017/S0016756814000818>.

Pielou E.C., 1966, The measurement of diversity in different types of biological collections. *Journal of Theoretical Biology*. 13: 131-144.

Poulos, S.E., Lykousis, V., Collins, M.B., Rohling, E.J. and C.B. Pattiaratchi, 1999, Sedimentation processes in a tectonically active environment: the Kerkyra–Kefalonia submarine valley system (NE Ionian Sea), *Marine Geology*, 160(1–2), 25–44, [https://doi.org/10.1016/S0025-3227\(99\)00016-X](https://doi.org/10.1016/S0025-3227(99)00016-X).

Powley, H. R., Krom, M. D. and P. Van Cappellen, 2017a, Understanding the unique biogeochemistry of the Mediterranean Sea: Insights from a coupled phosphorus and nitrogen model, *Global Biogeochem. Cycles*, 31, 1010–1031, <https://doi.org/10.1002/2017GB005648>.

Powley, H. R., Van Cappellen, P. and M. D. Krom, 2017b, Chapter 3: Nutrient Cycling in the Mediterranean Sea: The Key to Understanding How the Unique Marine Ecosystem Functions and Responds to Anthropogenic Pressures, 47 – 77, in: Fuerst-Bjeliš, B., Ed., *Mediterranean Identities - Environment, Society, Culture*, InTech, 428 pp, <https://doi.org/10.5772/intechopen.70878>.

Que, W., Yi, L., Wu, Y. and Q. Li, 2024, Analysis of heavy metals in sediments with different particle sizes and influencing factors in a mining area in Hunan Province. *Scientific Reports*, 14(1), 20318, <https://doi.org/10.1038/s41598-024-71502-3>.

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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Rabalais, N.N., Turner, R.E., Justić, D., Dortch, Q. and W.J.Jr. Wiseman, 1999, Characterization of Hypoxia, Topic 1: Report for the Integrated Assessment on Hypoxia in the Gulf of Mexico, NOAA Coastal Ocean Program Decision Analysis Series No. 15, NOAA Coastal Ocean Program, Silver Spring, MD, 167 pp.

Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005-2020, Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS.

Razouls C., de Bovée F., Kouwenberg J. and N. Desreumaux, 2005-2020, Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS.

Reading, H. G. (Ed.), 1996, Sedimentary Environments: Processes, Facies and Stratigraphy. Third Edition, Blackwell Science, 688 pp.

Redfield A. C., B. H. Ketchum, F. A. Richards (1963). The influence of organisms on the composition of seawater. in: The sea, ideas and observations, vol. 2, edited by M. N. Hill. Interscience, New York, 26-77.

Rose, M., 1933, Faune de France (26), Copépodes Pélagiques. Paris, 374 pp.

Rowe, G. T., Polloni, P. T., & Haedrich, R. L., 1982, The deep-sea macrobenthos on the continental margin of the northwest Atlantic Ocean. Deep-Sea Research, Vol. 29, No. 2A, pp. 257 to 278, 1982

Schulz, H., D. and M. Zabel, 2006, Marine Geochemistry, 2nd revised, updated and extended Edition, Springer, 582 pp.

Sempéré, R., Panagiotopoulos, C., Lafont, R., Marroni, B. and F. Van Wambeke, 2001, Total organic carbon dynamics in the Aegean Sea, Journal of Marine Systems 33–34, 355 – 364.

Shannon C. E., Weaver W., 1949, “The mathematical theory of communication” University of Illinois Press, Urbana, Illinois, 117.

Shepard, F.P., 1954, Nomenclature Based on Sand-Silt-Clay Ratios. Journal of Sedimentary Petrology, 24, 151-158.

Simpson E. H., 1949, Measurement of diversity. Nature. 163, 688.

Siokou-Frangou, I., Gotsis-Skretas, O., Christou, E. D., & Pagou, K. (1999). Plankton characteristics in the Aegean, Ionian and NW Levantine seas. In: *The Eastern Mediterranean as a laboratory basin for the assessment of contrasting ecosystems* (pp. 205-223). Dordrecht: Springer Netherlands.

Stamatis, N., Kamidis, N., Pigada, P., Sylaios, G. and E. Koutrakis, 2019, Quality Indicators and Possible Ecological Risks of Heavy Metals in the Sediments of Three Semi-Closed East Mediterranean Gulfs, Toxics, 7(2), Article 30, <https://doi.org/10.3390/toxics7020030>.

Stavrakakis, S., Gogou, A., Krasakopoulou, E., Karageorgis, A. P., Kontoyiannis, H., Rousakis, G., and Lykousis, V. (2013). Downward fluxes of sinking particulate matter in the deep Ionian Sea (NESTOR site), eastern Mediterranean: seasonal and interannual variability. *Biogeosciences*, 10(11), 7235-7254.

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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Theocharis, A., Klein, B., Nittis, K. and W. Roether, 2002, Evolution and status of the Eastern Mediterranean Transient (1997–1999). *Journal of Marine Systems*, 33–34, pp. 91–116.

Tomas, C. R. (Ed.). (1997). *Identifying marine phytoplankton*. Elsevier.

Tomczak M. and J.S. Godfrey, 2005, *Regional Oceanography: An Introduction*. Pergamon, Oxford.

Vives, F. and A. Shmeleva, 2007, Crustacea. Copépodos marinos I. Calanoida. In: Ramos, M.A. (ed.), *Fauna Ibérica. Museo Nacional de la Ciencias Naturales CSIC, Madrid*, 1152 pp.

Vives, F. and A. Shmeleva, 2010, Crustacea. Copépodos marinos II. Non Calanoida. In: Ramos, M.A. (ed.), *Fauna Ibérica. Museo Nacional de la Ciencias Naturales CSIC, Madrid*, 486 pp.

Wang, N., Ye, Z., Huang, L., Zhang, C., Guo, Y. and Zhang, W., 2023, Arsenic Occurrence and Cycling in the Aquatic Environment: A Comparison between Freshwater and Seawater, *Water*, 15(1), 147. <https://doi.org/10.3390/w15010147>.

Weiss R.F., W. S. Broecker, H. Craig, D. Spencer (1983). *GEOSECS, Indian Ocean Expedition, Vol. 5. Hydrographie data 1977-1978*. National Science Foundation, Washington, DC.

Wu, R.S.S., 2002, Hypoxia: from molecular Responses to Ecosystem Responses. *Marine Pollution Bulletin*, 45, 35–45.

Zaldivar, J.-M., Cardoso, A.C., Viaroli, P., Newton, A., deWit, R., Ibanez, C., Reizopoulou, S., Somma, F., Razinkovas, A., Basset, A., Jolmer, M. and N. Murray, 2008, Eutrophication in transitional waters, an overview, *Transit Waters Monogr* 1: 1–78.

Zingone, A., Totti, C., Sarno, D., Cabrini, M., Caroppo, C., Giacobbe, M. G. and Socal, G. (2010). **CAPITOLO 21. FITOPLANCTON: METODICHE DI ANALISI QUALI-QUAN-TITATIVA**. Metodologie di studio del plancton marino.

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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APPENDIX A: ANALYTICAL METHODOLOGIES

A.1 Seawater Quality

A.1.1 Total Suspended Solids (TSS)

According to APHA Standard Methods for the Examination of Water and Wastewater (Method 2540 D, 24th Edition, 2020), Total Suspended Solids (TSS) were determined gravimetrically by filtration through a pre-weighed glass-fibre filter, followed by drying at 103 – 105 °C to constant weight. TSS concentration was subsequently calculated from the mass of solids retained on the filter and the volume of water filtered.

A.1.2 Total Organic Carbon (TOC)

According to standard method UNI EN 1484 1999, Total Organic Carbon (TOC) in the water samples was analyzed using organic carbon oxidation to carbon dioxide through combustion, by the addition of an appropriate oxidant and using high-energy radiation. The final determination of CO₂ was carried out by infrared spectrometry.

A.1.3 Nutrients

Determination of Total Nitrogen (N-Tot) in water samples was performed by high-temperature catalytic combustion, converting all nitrogen compounds to nitric oxide (NO), which was subsequently quantified using chemiluminescence detection. This procedure was adopted following method UNI EN ISO 20236 2022.

Total phosphorus (P-Tot) in water samples was carried out, in accordance with method ISO 17294-2:2023, by inductively coupled plasma mass spectrometry (ICP-MS) following appropriate sample digestion, to convert all forms of phosphorus, both organic and inorganic, into an oxidized measurable state, typically inorganic phosphate (PO₄³⁻), which can be reliably quantified by ICP-MS.

Ammonium (NH₄⁺) was determined by the phenate method (APHA 4500-NH₃ F, 2021), based on the formation of indophenol blue through the reaction of ammonia with phenol and hypochlorite under catalytic conditions, followed by spectrophotometric measurement.

According to APHA Standard Methods for the Examination of Water and Wastewater (Method 4500-NO₂⁻ B, 24th Edition, 2021), nitrite (NO₂⁻) was determined colorimetrically through diazotization with sulfanilamide and subsequent coupling with N-(1-naphthyl)-ethylenediamine dihydrochloride to form a coloured azo dye, which was quantified by spectrophotometric measurement.

Nitrate (NO₃⁻) concentrations were quantified using the APHA 4500-NO₃⁻ method (2021), which involves reduction of nitrate to nitrite and subsequent colorimetric determination through formation of an azo dye measured spectrophotometrically.

Orthophosphate (PO₄³⁻) was measured by the ascorbic acid method (APHA 4500-P E, 2021), based on the formation of a phosphomolybdenum complex subsequently reduced to an intensely blue-coloured compound and quantified by spectrophotometry.

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A.1.4 Metals and Metalloids

The analysis of barium (Ba), arsenic (As), cadmium (Cd), total chromium (Cr-Tot), copper (Cu), cobalt (Co), iron (Fe), lead (Pb), mercury (Hg), nickel (Ni), tin (Sn) and zinc (Zn) in seawater samples was performed according to ISO 17294-2:2023. The method is based on the determination of trace and major elements by inductively coupled plasma mass spectrometry (ICP-MS) following appropriate sample preparation and acidification procedures to ensure analyte stability and accurate quantification. Hexavalent chromium (Cr VI) was determined separately using a dedicated spectrophotometric method based on selective colorimetric detection of the hexavalent chromium species.

A.1.5 Total Hydrocarbons: Hydrocarbons C6 – C10, Hydrocarbons C10 – C40

According to EPA Methods 5021A (2014) and 8015C (2007), light hydrocarbons (C6–C10) were determined by headspace gas chromatography with flame ionization detection (GC-FID), following transfer of volatile hydrocarbons from the aqueous phase to the headspace under controlled conditions.

According to UNI EN ISO 9377-2:2002, heavy hydrocarbons (C10–C40) were determined following solvent extraction and purification of the sample, with subsequent quantification by gas chromatography with flame ionization detection (GC-FID).

A.1.5 Polycyclic Aromatic Hydrocarbons (PAHs)

Polycyclic aromatic hydrocarbons (PAHs), including Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(e)pyrene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Chrysene, Dibenzo[a,e]pyrene, Dibenzo[a,h]anthracene, Dibenzo[a,h]pyrene, Dibenzo[a,i]pyrene, Dibenzo[a,l]pyrene, Fluoranthene, Fluorene, Indeno(1,2,3-c,d)pyrene, Naphthalene, Perylene, Phenanthrene, Pyrene and their summation (Σ PAHs), were determined following liquid–liquid extraction of seawater samples (EPA 3510C:1996). The extracted compounds were subsequently separated, identified and quantified by gas chromatography coupled with mass spectrometry (GC-MS) in accordance with EPA Method 8270E:2018.

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A.2 Phytoplankton community

Laboratory analysis aimed to determine the taxonomy and relative abundance of the main identified species. Observations were carried out using an inverted optical microscope (Zeiss Axiovert 40C), following the Utermöhl method as described by Zingone et al. in the ISPRA/SIBM manual (2010). This method, widely recognized as a standard for quantitative phytoplankton analysis, enables accurate identification and enumeration of microalgae in preserved samples. Subsamples of 25 mL were allowed to settle in sedimentation chambers for at least 24 hours under static conditions. Microscopic observations were conducted at two different magnifications:

- 200X magnification was used for the identification and counting of less abundant and larger-sized species on sedimentation chamber volume;
- 400X magnification was applied for the detection and enumeration of more abundant or smaller-sized species, by scanning the chamber along randomly selected 40 visual fields.

Taxonomic identification was carried out using standard taxonomic keys (Hasle, 1978; Tomas, 1997), down to the lowest possible taxonomic level. Identified taxa were grouped into four main groups: Bacillariophyceae (diatoms), Dinophyceae (dinoflagellates), Coccolithophyceae (coccolithophores), and other taxa. The latter group includes organisms belonging to Cryptophyceae, Chlorophyceae, Chrysophyceae, Cyanophyceae, Dictyochophyceae, Euglenophyceae, and other minor classes.

At the end of the microscopic analysis, phytoplankton density (C) was estimated according to the sampling procedure, using the following equations:

- Counting based on calibrated microscope field size:

$$C = (N \times 1000 \times A) / (n \times v \times a)$$

Where:

C = phytoplankton density (cells/L)

N = total number of counted cells across all fields

A = total area of the sedimentation chamber (mm²)

n = number of fields counted

v = volume of the sedimented sample (mL)

a = area of a single visual field (mm²)

- Counting based on sedimentation chamber volume:

$$C = (N \times 1000) / v$$

Where:

C = phytoplankton density (cells/L)

N = total number of cells counted in the entire chamber

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v = volume of the sedimented sample (mL)

This methodology ensures statistically robust data suitable for ecological assessments and long-term monitoring of phytoplankton communities, particularly in marine and coastal ecosystems.

A.3 Zooplankton community

Quantitative analyses and identification of individuals were carried out under a stereomicroscope using a 10 ml mini Bolgorov counting chamber while for the remaining zooplankton compartment, subsamples (1/8 – 1/16 depending on wet biomass) were sorted and subsequently identified under a stereomicroscope (Leica M80 model) using a counting grid Petri dish. When necessary, dissections of the organisms and observations under the microscope were carried out. Particular attention was given to the taxonomic identification of copepod crustaceans, holoplanktonic component and meroplanktonic larvae. As regards copepods, in addition to the specific identification, the developmental stage was noted for each individual, from juveniles (nauplii and copepodites) to adults. Taxonomic determination was made at species level only on adults and juveniles when possible, using renowned taxonomic keys and updated geographical check lists (Rose, 1933; Boxshall, 2004; Vives & Shmeleva, 2007 and 2010; Razouls *et al.*, 2005-2025) and specific publications.

Following standard methodology, each sample was randomly sub-sampled into equal aliquots using a Folsom Plankton Splitter. In relation to the remarkable abundance of the material to be analysed, setting the number of 600 specimens as the minimum quantity of organisms counted and determined at the lowest possible taxonomic level. This amount was considered representative of the entire community, allowing an error estimate of less than 10% (ICES, 2000).

Based on the counting data, abundance values (expressed as ind. m⁻³) were calculated as $(n \times k) / v$, where n represents the number of individuals counted and k the subsampling factor, accounting for the fraction of the sample analysed. (ICRAM, 2001).

The remaining material in each sample was fully examined to detect and identify rare species. These procedures were essential to obtain comprehensive qualitative and quantitative data on the biodiversity and trophic structure of the zooplankton community investigated.

For all analysed samples, the following metrics were determined:

- I) total and per-species number of individuals;
- II) number of species;
- III) specific diversity index (Shannon-Wiener, 1949);
- IV) dominance index (Simpson, 1949);
- V) species richness index (Margalef, 1958);
- VI) evenness index (Pielou, 1966).

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A.4 Ichthyoplankton community

Ichthyoplankton samples were examined under a stereomicroscope and all fish eggs and larvae were sorted, counted and identified to the lowest possible taxonomic level, following the procedures described in the ICES Zooplankton Methodology Manual (ICES, 2000). Whenever species-level identification was not possible, organisms were assigned to the lowest reliable taxonomic category based on their developmental stage and morphological characteristics.

Quantitative analyses were performed on the entire sample whenever feasible, while subsampling procedures were adopted for particularly abundant samples. The abundance of each taxon was subsequently standardised according to the volume of water filtered during sampling and expressed as individuals m^{-3} (larvae) or eggs m^{-3} .

A.5 Sediment Quality

A.5.1 Sediment Classification (Particle Size Analysis)

Sediment grain-size distribution was determined according to UNI EN 933-1:2012 and ISO 13320:2009. After sample preparation and homogenisation, coarse particles were analysed by mechanical sieving, while the fine fraction was characterised by laser diffraction, allowing quantification of the gravel, sand, silt and clay components of each sample.

A.5.2 Specific weight

Determined according to ASTM D5057-17. Sediment samples were dried and their bulk and/or particle density was measured using standard laboratory procedures, providing accurate and reproducible determination of specific weight.

A.5.3 Sediment humidity

Determined according to UNI EN 14346-A:2007. Sediment samples were weighed, dried at a controlled temperature until constant weight, and reweighed to calculate moisture content, providing accurate and reproducible determination of sediment water content.

A.5.4 Total Organic Carbon (TOC)

Total Organic Carbon (TOC) was determined by first applying an acid pre-treatment to eliminate inorganic carbon, followed by high-temperature catalytic combustion at 900 °C. The resulting CO₂ was then quantified using non-dispersive infrared (NDIR) detection, in accordance with the UNI EN 15936:2022 standard.

A.5.5 Nutrients

Total Nitrogen (N-Tot) was determined according to UNI EN ISO 21663:2021, utilizing high temperature catalytic combustion at elevated temperatures to convert all nitrogen species into reactive nitrogen oxides. These were subsequently quantified via chemiluminescence detection.

Total Phosphorus (P-Tot) analysis involved microwave assisted acid digestion following EPA Method 3051A (2007) to oxidize all phosphorus species. Quantification was performed using ICP OES in accordance with EPA Method 6010D (2018), ensuring multi element detection with high precision and appropriate calibration and quality control.

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A.5.6 Metals and Metalloids

Sediment samples were subjected to microwave-assisted acid digestion according to EPA Method 3051A (2007). Aluminium (Al), Arsenic (As), Barium (Ba), Total Chromium (Cr-Tot), Copper (Cu), Cobalt (Co), Iron (Fe), Lead (Pb), Nickel (Ni), Tin (Sn), Vanadium (V) and Zinc (Zn) were subsequently determined by inductively coupled plasma optical emission spectrometry (ICP-OES) following EPA Method 6010D (2018). Mercury (Hg) and Cadmium (Cd) were determined by inductively coupled plasma mass spectrometry (ICP-MS) in accordance with UNI EN 16171:2016, following sample digestion according to UNI EN 16173:2012. Hexavalent chromium (Cr-VI) was determined separately by selective spectrophotometric analysis, based on the formation of a coloured complex specific to the Cr(VI) species and subsequent spectrophotometric quantification.

A.5.7 Total Hydrocarbons: Hydrocarbons C ≤ 12, Hydrocarbons C > 12

Light hydrocarbons (C ≤ 12) were analyzed by gas chromatography with flame ionization detection (FID) for the qualitative and quantitative determination of nonhalogenated hydrocarbons, based on their volatility and chemical properties (EPA 8015C:2007). Sample preparation employed the headspace sampling technique to extract volatile hydrocarbons (up to C12) from aqueous and solid matrices, minimizing sample handling and potential losses (EPA 5021A:2014).

Heavy Hydrocarbons (C > 12) were analyzed using method EPA 8015C:2007 and EPA 3550C:2007, which involves an extraction step, followed by purification on florisil, and subsequent analysis by gas chromatography with flame ionization detection (GC-FID).

A.5.8 Polycyclic Aromatic Hydrocarbons (PAHs)

The analysis of Polycyclic Aromatic Hydrocarbons (PAHs) in sediment samples was performed by gas chromatography–mass spectrometry (GC-MS) according to EPA 8270E:2018, following extraction by accelerated solvent extraction (ASE) as described in EPA 3545A:2007.

A.5.8 Microplastics

Microplastics in marine sediment samples were qualitatively investigated in accordance with UNI EN ISO 24187:2023, which establishes the general principles for the analysis of microplastics in environmental matrices. The analysis was performed by micro-Raman and/or Fourier-transform infrared (FTIR) spectroscopy, allowing the detection and chemical identification of particles ranging from 5 mm to 1 µm. Results were reported as presence/absence, together with the identification of the polymer type for any detected particles.

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A.6 Macrozoobenthos Community

The abundance and diversity (community structure) of macrozoobenthic organisms were assessed using optical microscopy (5–100×), in accordance with UNI EN ISO 16665:2014 and with the reference methodologies of the Coastal Marine Environment Monitoring Program (Cicero and Di Girolamo, 2001). The analyses of abundance and diversity allowed for the compilation of a complete species list, including the key species of the identified biocenoses, the number of individuals per species, and the overall community structure. Taxonomic classification was performed down to the lowest possible systematic level. Where species-level identification was not feasible, higher taxonomic levels (e.g., genus, family) were used.

For all analysed samples, the following metrics were determined:

- I) total and per-species number of individuals;
- II) number of species;
- III) specific diversity index (Shannon-Wiener, 1949);
- IV) dominance index (Simpson, 1949);
- V) species richness index (Margalef, 1958);
- VI) evenness index (Pielou, 1966).

The abundances recorded in individual replicates were normalized to a surface area of 0.1 m².

The specific diversity index (H'), also known as the Shannon-Wiener index (Shannon-Weiner, 1949), is a biodiversity metric that quantifies the degree of species diversity within a community. It is calculated using the following formula:

$$H' = - \sum p_i \log_e p_i$$

where $p_i = n_i/N$, n_i is the number of individuals of the i -th species (or taxon), and N is the total number of individuals.

The Simpson dominance index (Lambda or c), also known as the "Simpson index" (Simpson, 1949), provides information on the relative importance of different taxa within the macrozoobenthic community and was calculated as:

$$c = \sum (n_i / N)^2$$

The Margalef species richness index is a biotic index based on the ratio between the number of species and the total number of individuals. The Margalef index (d) depends on the number of taxa present in the community and increases with taxonomic richness:

$$d = (S - 1) / \log N$$

where S is the total number of species in the community, and N is the total number of individuals.

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The Pielou index (J') expresses how individuals are distributed among species (evenness). Also known as the equitability index, it is derived from the Shannon-Weaver index but focuses solely on the distribution of individuals within the community. While H' considers both richness and abundance, J' evaluates only the latter:

$$J' = H' / H_{\max}$$

where H' is the Shannon index and $H_{\max}$ is the maximum diversity (i.e., $\log_2$ of the number of species).

Furthermore, in accordance with the provisions of Ministerial Decree (D.M.) 260/10 (Technical criteria for the classification of the status of surface water bodies – Amendment of the technical standards of Legislative Decree 152/2006), M-AMBI index values were calculated for each station. This index is able to describe the complexity of soft-bottom benthic communities and to classify the ecological status of benthic biocenoses.

The calculation of the M-AMBI index (Muxika et al., 2007) takes into account AMBI values (Borja et al., 2000), the Shannon-Weaver (1949) diversity index (H'), and species richness (S), treating these three components through multivariate statistical analysis. The output of the multivariate analysis is a single value, ranging between 0 and 1 according to the degree of disturbance of the benthic compartment and biodiversity, corresponding to the Ecological Quality Ratio (EQR).

The first of the three components required for the computation of the M-AMBI index is AMBI, from which the index itself is derived. AMBI is a biotic index, with values ranging from 0 (unpolluted or undisturbed environment) to 7 (extremely polluted or disturbed environment), and is applied to soft-bottom benthic communities. It is essentially based on the percentage contribution of species within the sample, previously assigned to five ecological groups according to their tolerance or sensitivity to an environmental stress gradient, and allows coastal marine environments to be classified as follows:

1. undisturbed ($0 \leq \text{AMBI} \leq 1$);
2. slightly disturbed ($1 \leq \text{AMBI} \leq 3.5$);
3. moderately disturbed ($3.5 \leq \text{AMBI} \leq 5$);
4. heavily disturbed ($5 \leq \text{AMBI} \leq 6$);
5. extremely disturbed ($6 \leq \text{AMBI} \leq 7$).

The ecological groups to which species are assigned are defined as follows:

- Group I: Species highly sensitive to organic enrichment and present only under optimal environmental conditions. This group includes specialist carnivores and some tube-dwelling detritivorous polychaetes;
- Group II: Species indifferent to organic enrichment, consistently present at low densities without marked temporal variations. These include suspension feeders, some non-selective carnivores, and burrowers;

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- Group III: Species tolerant of excessive organic enrichment in sediments. These species may occur under normal conditions, but their populations are stimulated by increased organic matter. They are mainly surface detritivores;
- Group IV: Second-order opportunistic species; mainly small sub-surface detritivorous polychaetes, such as cirratulids;
- Group V: First-order opportunistic species; detritivores that proliferate in poorly oxygenated and reduced sediments.

For the calculation of both the AMBI and M-AMBI indices, the software “AZTI Marine Biotic Index – New Version AMBI 6.0” was used. The M-AMBI index value, in particular, allows the ecological status of a water body to be classified from bad (M-AMBI = 0) to high (M-AMBI = 1).

Table 4.3.1/b of D.M. 260/10 presents:

- the reference values for each metric composing the M-AMBI;
- the M-AMBI class boundaries, expressed in terms of EQR, between high and good status, and between good and moderate status.

The indicated reference values and class boundaries are valid for the three macrotypes of water bodies (high, medium, and low stability).

Macrotype	Reference values			RQE	
	AMBI	H'	S	High/Good	Good/Moderate
1 – 2 – 3	0.5	4.8	50	0.81	0.61

A.7 Statistical analysis methodologies

A.7.1 Primary Variables and Diversity Indices

Univariate statistical analysis was undertaken on macrozoobenthos and plankton (phytoplankton and zooplankton) data. A range of primary variables and derived indices were calculated which attempt to quantify the species richness, evenness and a combination of both. The primary variables (number of individuals and species) and diversity indices (Shannon-Wiener diversity, Simpson's diversity and Pielou's evenness) were calculated for both the sample data and the pooled replicates for infaunal station data using the PRIMER6 & PERMANOVA+ software.

A.7.2 Multivariate Statistical Analysis

A range of multivariate statistical analyses were conducted on the environmental (sediment) and biota data. Multivariate analyses were used to investigate the structure of macrobenthic and plankton communities across the different stations and to highlight similarities and / or differences in terms of species diversity and composition. All analyses performed on the biological community were based on a Bray-Curtis dissimilarity matrix, calculated from data previously square-root transformed to reduce the influence of highly abundant species. In contrast, the sediment and water

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environmental data were first normalized and then processed using a Euclidean distance-based matrix.

A.7.3 PERMANOVA (Permutational Multivariate Analysis of Variance)

PERMANOVA, performed on species / abundance matrices of the planktonic and macrobenthic communities, is a non-parametric statistical test used to assess statistically significant differences between multivariate groups based on distance or similarity matrices. It relies on a dissimilarity matrix (in this case Bray-Curtis) calculated between samples. The method partitions the total variability among and within groups, evaluates statistical significance through random permutations of the data, and generates a p-value based on the permutation distribution.

A.7.4 Canonical Analysis of Principal Coordinates (CAP)

To assess chemical differences among stations along the studied gradient, *Canonical Analysis of Principal Coordinates* (CAP) was applied. This is a constrained ordination technique that identifies directions in the data space that best separate predefined groups. The analysis was performed on chemical variables measured in the water column, using a similarity matrix among stations and selecting the principal axes that maximize group discrimination. The significance of the group separation was tested through permutations, and the results were graphically represented on the canonical axes, facilitating the interpretation of chemical patterns along the gradient.

A.7.5 Cluster Analysis

Cluster analysis was performed on the zooplankton species / abundance matrix in order to assess similarity among sampling stations based on species composition and abundance. The matrix was processed using an appropriate similarity coefficient for ecological data (i.e., Bray-Curtis), and the results were displayed as a hierarchical dendrogram, which allowed the identification of groups of stations with similar characteristics.

A.7.6 nMDS – Non-metric Multidimensional Scaling

The *nMDS* plot, based on the macrozoobenthos and phytoplankton species / abundance matrix, is a non-parametric multivariate ordination technique used to visualize relationships among samples in space, based on a similarity or distance matrix. The main objective is to represent, as accurately as possible, the structure of the multivariate data in a visual space, where the distance between points reflects the degree of dissimilarity among the original samples.

A.7.7 SIMPER – Similarity Percentages

The SIMPER analysis was applied to macrozoobenthic and zooplankton species / abundance matrix. It was performed on the appropriately transformed species-by-sample matrix using the Bray-Curtis dissimilarity index. SIMPER was used to identify the species contributing most to the differences and/or similarities among sample groups previously identified through multivariate analyses, thereby allowing an ecological interpretation of the observed variations in benthic community structure.

A.7.8 Draftsman plot (Spearman correlation)

Relationships among sediment and water environmental variables were explored using Draftsman plots in PRIMER-e, based on Spearman's rank correlation coefficient. This approach was applied to identify correlations, outliers, and multicollinearity among variables.

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A.7.9 Relationship between environmental variables and biotic data (BEST and distLM)

The BEST analysis (BIO-ENV + Stepwise) is an approach commonly used in ecology to correlate biological data (e.g., species communities) with environmental variables, in order to identify which environmental factors best explain the structure of the biological community. In the present study, the physicochemical characteristics of the sediments were considered and related to the macrozoobenthos, mesozooplankton and phytoplankton species / abundance matrix.

DistLM (*Distance-based Linear Model*) is a multivariate analysis used to examine and quantify the relationship between a biological data matrix and a set of explanatory environmental variables through distance-based linear models. It is a multivariate regression method that operates on similarity / dissimilarity matrices, making it particularly suitable for complex ecological data characterized by many zeros and nonlinear structures. DistLM is employed to identify which environmental variables best explain the variation in biological composition, to select the most influential variables, and to assess the statistical significance of each variable as well as of the overall model.

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APPENDIX B: LABORATORY TEST REPORTS

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APPENDIX C: PHYTOPLANKTON DATA

Phytoplankton [cell L ⁻¹]						Block-2 Area															
						Asopus-1A									Blank						
						D1a			D3a			D5a			D6a			D6b			
						Surface	Middle	Bottom	Surface	Middle	Bottom	Surface	Middle	Bottom	Surface	Middle	Bottom	Surface	Middle	Bottom	
Phylum	Class	Order	Family	Genus	Specie	Author															
Heterokontophyta	Bacillariophyceae	Achnanthes	Achnanthaceae	Achnanthes	<i>Achnanthes</i> sp.	Bory, 1822	0	0	0	0	0	40	0	0	0	0	0	80	0	0	0
Heterokontophyta	Bacillariophyceae	Thalassiosiphysales	Catenulaceae	Amphora	<i>Amphora</i> sp.	C.G. Ehrenberg ex F.T. Kützing, 1844	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Chaetocerotanae incertae sedis	Chaetocerotaceae	Chaetoceros	<i>Chaetoceros danicus</i>	Cleve, 1889	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Chaetocerotanae incertae sedis	Chaetocerotaceae	Chaetoceros	<i>Chaetoceros decipiens</i>	Cleve, 1873	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Chaetocerotanae incertae sedis	Chaetocerotaceae	Chaetoceros	<i>Chaetoceros</i> sp.	C.G. Ehrenberg, 1844	0	0	0	0	0	0	0	0	2707	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Coscinodiscales	Coscinodiscaceae	Coscinodiscus	<i>Coscinodiscus</i> sp.	C.G. Ehrenberg, 1839	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Bacillariales	Bacillariaceae	Cylindrotheca	<i>Cylindrotheca closterium</i>	(Ehrenberg) Reimann & J.C.Lewin, 1964	0	0	0	0	0	0	0	2707	0	0	80	0	0	0	
Heterokontophyta	Bacillariophyceae	-	-	-	Centric Bacillariophyceae n.d. < 20 µm	Haeckel, 1878	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	-	-	-	Centric Bacillariophyceae n.d. > 20 µm	Haeckel, 1878	0	120	0	0	0	0	0	0	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	-	-	-	Pennate Bacillariophyceae n.d. > 20 µm	Haeckel, 1878	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Naviculales	Naviculaceae	Haslea	<i>Haslea wawriakae</i>	(Hustedt) Simonsen, 1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Hemiaulales	Hemiaulaceae	Hemiaulus	<i>Hemiaulus hauckii</i>	Grunow ex Van Heurck, 1882	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Thalassiosirales	Lauderieaceae	Lauderia	<i>Lauderia mediterranea</i>	H.Peragallo, 1888	0	0	0	80	0	0	0	0	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Leptocylindrales	Leptocylindraceae	Leptocylindrus	<i>Leptocylindrus danicus</i>	Schutt, 1900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Leptocylindrales	Leptocylindraceae	Leptocylindrus	<i>Leptocylindrus mediterraneus</i>	H.Peragallo, 1888	0	0	0	0	0	0	0	0	0	0	200	0	0	0	
Heterokontophyta	Bacillariophyceae	Naviculales	Naviculaceae	Navicula	<i>Navicula</i> spp.	J.B.M. Bory de Saint-Vincent, 1822	0	0	0	0	0	80	0	0	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Rhizosoleniales	Rhizosoleniaceae	Neocalyptrella	<i>Neocalyptrella robusta</i>	Norman ex Ralfs in Pritchard, 1861	0	0	0	0	0	0	0	0	40	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Paraliales	Paraliaceae	Paralia	<i>Paralia sulcata</i>	(Ehrenberg) Cleve, 1873	0	0	0	0	40	0	0	0	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Naviculales	Pleurosigmataceae	Pleurosigma	<i>Pleurosigma</i> spp.	W. Smith, 1852	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Rhizosoleniales	Rhizosoleniaceae	Proboscia	<i>Proboscia alata</i>	(Brightwell) Sundström, 1986	80	0	0	0	0	0	0	40	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Bacillariales	Bacillariaceae	Pseudo-nitzschia	<i>Pseudo-nitzschia delicatissima</i>	(Cleve) Heiden, 1928	67686	18952	8122	129958	32489	5415	97468	5415	2707	24367	2707	18952	51442	16245	8122
Heterokontophyta	Bacillariophyceae	Bacillariales	Bacillariaceae	Pseudo-nitzschia	<i>Pseudo-nitzschia pseudodelicatissima</i>	(Hasle) Hasle, 1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Rhizosoleniales	Rhizosoleniaceae	Rhizosolenia	<i>Rhizosolenia fallax</i>	B.G.Sundström, 1986	0	0	0	0	0	0	2707	0	0	0	80	0	0	80	
Heterokontophyta	Bacillariophyceae	Rhizosoleniales	Rhizosoleniaceae	Rhizosolenia	<i>Rhizosolenia</i> sp.	T. Brightwell, 1858	0	0	0	0	0	0	0	0	0	0	0	0	50	0	
Heterokontophyta	Bacillariophyceae	Thalassiosirales	Skeletonemaceae	Skeletonema	<i>Skeletonema</i> sp.	R.K. Greville, 1865	0	0	0	0	0	0	0	0	0	0	0	0	0	40	
Heterokontophyta	Bacillariophyceae	Thalassionematales	Thalassionemataceae	Thalassionema	<i>Thalassionema frauenfeldii</i>	(Grunow) Tempère & Peragallo, 1910	0	0	0	0	0	0	0	80	0	0	0	0	0	0	
Heterokontophyta	Bacillariophyceae	Thalassionematales	Thalassionemataceae	Thalassionema	<i>Thalassionema nitzschoides</i>	(Grunow) Mereschowsky, 1902	0	0	0	0	0	0	80	120	0	0	80	0	0	0	
Heterokontophyta	Bacillariophyceae	Thalassionematales	Thalassionemataceae	Thalassionema	<i>Thalassionema</i> sp.	A. Grunow ex C. Mereschowsky, 1902	0	0	0	40	0	200	0	0	0	80	0	10830	0	550	160
Heterokontophyta	Bacillariophyceae	Thalassiosirales	Thalassiosiraceae	Thalassiosira	<i>Thalassiosira gravida</i>	Cleve, 1896	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Myzozoa	Dinophyceae	Gonyaulacales	Pyrocystaceae	Alexandrium	<i>Alexandrium</i> sp.	Halim, 1960	0	0	0	0	0	0	0	0	0	0	0	0	40	0	0
Myzozoa	Dinophyceae	Gonyaulacales	Pyrocystaceae	Alexandrium	<i>Alexandrium minutum</i>	Halim, 1960	40	0	0	0	0	0	80	0	0	0	0	0	0	0	0
Myzozoa	Dinophyceae	Amphidinales	Amphidiniaceae	Amphidinium	<i>Amphidinium acutissimum</i>	J.Schiller, 1932	0	0	0	80	40	160	40	2707	0	0	0	80	0	0	0
Myzozoa	Dinophyceae	Amphidinales	Amphidiniaceae	Amphidinium	<i>Amphidinium</i> sp.	Claparède & Lachmann, 1859	0	0	0	0	0	0	0	0	0	0	0	40	0	0	0
Myzozoa	Dinophyceae	Gonyaulacales	Ostreopsidaceae	Centrodinium	<i>Centrodinium</i> sp.	Kofoid, 1907	0	0	0	0	0	0	0	0	0	0	0	0	0	50	0
Myzozoa	Dinophyceae	Gymnodinales	Gymnodiniaceae	Cochlodinium	<i>Cochlodinium</i> sp.	Schütt, 1896	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Myzozoa	Dinophyceae	Gonyaulacales	Ostreopsidaceae	Coolia	<i>Coolia monotis</i>	Meunier, 1919	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Myzozoa	Dinophyceae	Peridinales	Oxytoxaceae	Corythodinium	<i>Corythodinium</i> sp.	Loeblich Jr. & Loeblich III, 1966	0	0	200	0	0	0	0	0	0	0	0	0	0	0	0
Myzozoa	Dinophyceae	-	-	-	Athebate Dinophyceae < 20 µm	Fritsch, 1927	200	5415	5415	0	2707	5415	120	5415	5415	0	5415	8122	5415	3384	920
Myzozoa	Dinophyceae	-	-	-	Athebate Dinophyceae > 20 µm	Fritsch, 1927	0	200	40	0	80	0	160	0	0	13537	360	280	0	150	680
Myzozoa	Dinophyceae	-	-	-	Thecate Dinophyceae < 20 µm	Fritsch, 1927	0	80	0	0	0	0	5415	80	0	2707	0	80	0	200	80
Myzozoa	Dinophyceae	-	-	-	Thecate Dinophyceae > 20 µm	Fritsch, 1927	0	0	80	5415	80	0	80	40	80	80	40	0	200	150	40
Myzozoa	Dinophyceae	Dinophysales	Dinophysaceae	Dinophysis	<i>Dinophysis acuminata</i>	Claparède & Lachmann, 1859	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0
Myzozoa	Dinophyceae	Gymnodinales	Gymnodiniaceae	Gymnodinium	<i>Gymnodinium</i> spp.	F.Stein, 1878	0	0	0	2707	2707	5415	40	200	2707	120	120	520	240	6769	160
Myzozoa	Dinophyceae	Gymnodinales	Gyrodiniaceae	Gyrodinium	<i>Gyrodinium fusiforme</i>	Kofoid & Swezy, 1921	40	0	80	40	0	40	0	0	0	160	0	0	0	0	40
Myzozoa	Dinophyceae	Gymnodinales	Gyrodiniaceae	Gyrodinium	<i>Gyrodinium</i> spp.	Kofoid & Swezy, 1921	0	0	0	0	0	0	200	0	0	0	0	160	0	150	160
Myzozoa	Dinophyceae	Peridinales	Heterocapsaceae	Heterocapsa	<i>Heterocapsa minima</i>	A.J.Pomroy, 1989	0	2707	0	5415	0	13537	0	0	5415	0	40	0	0	0	0
Myzozoa	Dinophyceae	Peridinales	Heterocapsaceae	Heterocapsa	<i>Heterocapsa rotundata</i>	(Lohmann) Gert Hansen, 1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Myzozoa	Dinophyceae	Peridinales	Heterocapsaceae	Heterocapsa	<i>Heterocaps</i>																

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Phytoplankton [cell L ⁻¹]							Block-2 Area														
							Asopus-1A									Blank					
							D1a			D3a			D5a			D6a			D6b		
							Surface	Middle	Bottom	Surface	Middle	Bottom	Surface	Middle	Bottom	Surface	Middle	Bottom	Surface	Middle	Bottom
Phylum	Class	Order	Family	Genus	Specie	Author															
Haptophyta	Coccolithophyceae	Prymnesiales	Prymnesiaceae	Prymnesium	<i>Prymnesium</i> spp.	Massart, 1920	5415	0	8122	0	5415	16245	5415	0	80	80	0	0	5415	0	0
Haptophyta	Coccolithophyceae	Syracosphaerales	Rhabdosphaeraceae	Rhabdosphaera	<i>Rhabdosphaera</i> sp.	Haeckel, 1894	40	0	0	0	0	0	0	0	2707	0	0	0	0	100	0
Haptophyta	Coccolithophyceae	Zygodiscales	Pontosphaeraceae	Scyphosphaera	<i>Scyphosphaera apsteinii</i>	Lohmann, 1902	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Haptophyta	Coccolithophyceae	Syracosphaerales	Syracosphaeraceae	Syracosphaera	<i>Syracosphaera hystrica</i>	Kamptner, 1941	0	0	0	0	0	0	0	0	0	0	0	0	0	50	0
Haptophyta	Coccolithophyceae	Syracosphaerales	Syracosphaeraceae	Syracosphaera	<i>Syracosphaera pulchra</i>	Lohmann, 1902	0	80	240	0	2707	0	0	120	160	40	80	0	240	550	80
Haptophyta	Coccolithophyceae	Syracosphaerales	Syracosphaeraceae	Syracosphaera	<i>Syracosphaera</i> sp.	Lohmann, 1902	0	2707	120	0	0	0	0	80	0	0	0	0	0	0	0
Haptophyta	Coccolithophyceae	Coccolithales	Calcidiscaceae	Umbilicosphaera	<i>Umbilicosphaera sibogae</i>	(Weber Bosse) Gaarder, 1970	0	0	0	0	40	0	0	40	0	0	0	0	0	0	0
Cyanobacteria	Cyanophyceae	Chroococcales	Microcystaceae	Aphanocapsa	<i>Aphanocapsa</i> sp.	C.Nägeli, 1849	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chlorophyta	Chlorodendrophyceae	Chlorodendrales	-	-	Chlorodendrales n.d.	Melkonian, 1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chlorophyta	Chlorophyceae	-	-	-	Chlorophyceae n.d.	Wille, 1884	2707	13537	0	5415	2707	5415	5415	0	0	2707	2707	0	13537	0	2707
Ochrophyta	Chrysophyceae	-	-	-	Chrysophyceae n.d.	Pascher, 1914	0	0	0	8122	5415	0	0	0	0	0	0	0	0	0	0
Cryptophyta	Cryptophyceae	-	-	-	Cryptophyceae n.d.	Fritsch, 1927	83931	97468	100176	75809	116420	108298	92053	121835	159739	108298	186814	165154	224718	148910	29782
Chlorophyta	Pyramimonadophyceae	Pyramimonadales	Pyramimonadaceae	Cymbomonas	<i>Cymbomonas</i> sp.	J.Schiller, 1913	0	2707	0	0	0	0	0	2707	0	0	0	0	0	0	0
Ochrophyta	Dictyochophyceae	Dictyochales	Dictyochaceae	Dictyocha	<i>Dictyocha fibula</i>	Ehrenberg, 1839	0	80	0	0	200	0	0	0	40	0	0	0	240	200	0
Ochrophyta	Dictyochophyceae	-	-	-	Dictyochophyceae n.d.	P.C. Silva, 1980	0	0	0	0	0	0	0	0	0	0	0	80	0	0	0
Ochrophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon	<i>Dinobryon</i> sp.	Ehrenberg, 1834	0	0	0	0	0	0	0	0	0	0	0	0	50	0	0
Cercozoa	Thecofilosea	Ebriales	Ebriaceae	Ebria	<i>Ebria tripartita</i>	(Schumann) Lemmermann, 1899	0	0	0	0	0	0	0	0	0	0	0	40	0	0	0
Euglenozoa	Euglenophyceae	Euglenales	Euglenaceae	Euglena	<i>Euglena</i> sp.	Ehrenberg, 1830	0	0	0	0	0	0	0	0	0	40	0	0	0	0	0
Euglenozoa	Euglenophyceae	-	-	-	Euglenophyceae n.d.	Schoenichen, 1925	21660	0	0	80	0	0	0	5415	80	0	80	120	8122	200	5415
Euglenozoa	Euglenophyceae	Eutreptiales	Eutreptiaceae	Eutreptia	<i>Eutreptia</i> sp.	Perty, 1852	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Euglenozoa	Euglenophyceae	Eutreptiales	Eutreptiaceae	Eutreptiella	<i>Eutreptiella</i> sp.	A.M.Cunha, 1913	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cryptophyta	Cryptophyta incertae sedis	-	Katablepharidaceae	Leucocryptos	<i>Leucocryptos marina</i>	(Braarud) Butcher, 1967	5415	2707	2707	0	0	0	0	0	0	0	0	0	0	0	0
Ochrophyta	Chrysophyceae	Ochromonadales	Ochromonadaceae	Ochromonas	<i>Ochromonas</i> sp.	Vysotskii, 1887	5415	0	0	0	0	0	2707	0	0	0	0	0	0	0	0
Ochrophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Ollicola	<i>Ollicola vangoorii</i>	(W.Conrad) Vørs, 1992	0	13537	8122	10830	8122	2707	35197	8122	5415	5415	2707	21660	10830	0	8122
Cyanobacteria	Cyanophyceae	Oscillatoriales	-	-	Oscillatoriales n.d.	Cavalier-Smith, 2002	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0
Ochrophyta	Chrysophyceae	Chromulinales	Paraphysomonadaceae	Paraphysomonas	<i>Paraphysomonas</i> sp.	De Saedeleer, 1930	2707	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cercozoa	Imbricatea	Euglyphida	Paulinellidae	Paulinella	<i>Paulinella ovalis</i>	(A.Wulff) P.W.Johnson, P.E.Hargraves & J.M.Sieburth, 1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chlorophyta	Prasinophyceae	-	-	-	Prasinophyceae n.d.	T. Christensen ex Ø. Moestrup & J. Throndsen, 1988	0	0	5415	0	0	0	0	0	0	0	0	0	0	0	0
Chlorophyta	Pyramimonadophyceae	Pseudoscourfieldiales	Pycnococcaceae	Pseudoscourfieldia	<i>Pseudoscourfieldia</i> sp.	I.Manton, 1975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chlorophyta	Pyramimonadophyceae	Pyramimonadales	Pterospermataceae	Pterosperma	<i>Pterosperma cristatum</i>	J.Schiller, 1926	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chlorophyta	Pyramimonadophyceae	Pyramimonadales	Pterospermataceae	Pterosperma	<i>Pterosperma</i> spp.	Pouchet, 1893	0	40	0	0	0	0	0	0	0	0	80	0	40	0	80
Ochrophyta	Pelagophyceae	Sarcinochrysidales	-	-	Sarcinochrysidales n.d.	Gayral & Billard, 1977	0	0	2707	0	0	0	0	0	0	0	0	0	0	0	0
Cyanobacteria	Cyanophyceae	Synechococcales	Synechococcaceae	Synechococcus	<i>Synechococcus</i> sp.	Nägeli, 1849	75809	0	0	0	0	0	0	0	0	51442	0	80	29782	0	0
Cryptophyta	Cryptophyceae	Pyrenomonadales	Geminigeraceae	Teleaulax	<i>Teleaulax</i> sp.	Hill, 1991	2707	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chlorophyta	Chlorodendrophyceae	Chlorodendrales	Chlorodendraceae	Tetraselmis	<i>Tetraselmis</i> spp.	F.Stein, 1878	5415	2707	0	0	0	0	0	0	0	0	0	0	0	0	0
Microflagellates n.d. <10 µm	-	-	-	-	Microflagellates n.d. <10 µm	-	10830	21660	18952	5415	2707	18952	29782	32489	8122	10830	13537	27074	24367	20306	18952

LIGHTHOUSE GAS		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				ENERGEAN	
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S.D.G./D.B./M.A.	D.B./M.A.	S. Sandroni	24/06/2026	EER001	EER001-EBS_Final_Report_REV_B1	P. 207/ 223	

Phytoplankton [cell L ⁻¹]							Ionian Sea								
							Reference station								
							Othonoi Ref			Kerkyra Ref			Italy Ref		
							Surface	Middle	Bottom	Surface	Middle	Bottom	Surface	Middle	Bottom
Phylum	Class	Order	Family	Genus	Specie	Author									
Haptophyta	Coccolithophyceae	Syracosphaerales	Syracosphaeraceae	Syracosphaera	<i>Syracosphaera hystrica</i>	Kamptner, 1941	0	40	0	0	0	0	0	80	120
Haptophyta	Coccolithophyceae	Syracosphaerales	Syracosphaeraceae	Syracosphaera	<i>Syracosphaera pulchra</i>	Lohmann, 1902	0	80	0	0	5415	40	0	160	80
Haptophyta	Coccolithophyceae	Syracosphaerales	Syracosphaeraceae	Syracosphaera	<i>Syracosphaera</i> sp.	Lohmann, 1902	0	0	0	0	0	0	0	0	0
Haptophyta	Coccolithophyceae	Coccolithales	Calcidiscaceae	Umbilicosphaera	<i>Umbilicosphaera sibogae</i>	(Weber Bosse) Gaarder, 1970	80	0	0	0	0	0	0	0	0
Cyanobacteria	Cyanophyceae	Chroococcales	Microcystaceae	Aphanocapsa	<i>Aphanocapsa</i> sp.	C.Nägeli, 1849	0	0	0	0	0	0	0	8122	0
Chlorophyta	Chlorodendrophyceae	Chlorodendrales	-	-	Chlorodendrales n.d.	Melkonian, 1990	0	0	0	0	0	0	0	0	0
Chlorophyta	Chlorophyceae	-	-	-	Chlorophyceae n.d.	Wille, 1884	5415	2707	2707	70394	8122	16245	5415	0	8122
Ochrophyta	Chrysophyceae	-	-	-	Chrysophyceae n.d.	Pascher, 1914	0	0	0	0	0	0	0	0	0
Cryptophyta	Cryptophyceae	-	-	-	Cryptophyceae n.d.	Fritsch, 1927	119128	165154	102883	135372	165154	262623	94761	157032	246378
Chlorophyta	Pyramimonadophyceae	Pyramimonadales	Pyramimonadaceae	Cymbomonas	<i>Cymbomonas</i> sp.	J.Schiller, 1913	0	0	0	0	0	0	0	0	0
Ochrophyta	Dictyochophyceae	Dictyochales	Dictyochaceae	Dictyocha	<i>Dictyocha fibula</i>	Ehrenberg, 1839	0	0	40	0	80	0	0	0	0
Ochrophyta	Dictyochophyceae	-	-	-	Dictyochophyceae n.d.	P.C. Silva, 1980	40	0	0	0	0	0	0	0	80
Ochrophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon	<i>Dinobryon</i> sp.	Ehrenberg, 1834	0	0	0	0	0	0	0	0	0
Cercozoa	Thecofilosea	Ebriales	Ebriaceae	Ebria	<i>Ebria tripartita</i>	(Schumann) Lemmermann, 1899	0	0	0	0	0	0	0	0	0
Euglenozoa	Euglenophyceae	Euglenales	Euglenaceae	Euglena	<i>Euglena</i> sp.	Ehrenberg, 1830	0	0	0	40	0	80	0	0	0
Euglenozoa	Euglenophyceae	-	-	-	Euglenophyceae n.d.	Schoenichen, 1925	0	0	0	80	0	0	40	0	0
Euglenozoa	Euglenophyceae	Eutreptiales	Eutreptiaceae	Eutreptia	<i>Eutreptia</i> sp.	Perty, 1852	0	0	0	0	0	0	0	0	0
Euglenozoa	Euglenophyceae	Eutreptiales	Eutreptiaceae	Eutreptiella	<i>Eutreptiella</i> sp.	A.M.Cunha, 1913	40	0	0	0	0	0	0	80	80
Cryptophyta	Cryptophyta incertae sedis	-	Katablepharidaceae	Leucocryptos	<i>Leucocryptos marina</i>	(Braarud) Butcher, 1967	0	0	0	0	5415	0	0	0	0
Ochrophyta	Chrysophyceae	Ochromonadales	Ochromonadaceae	Ochromonas	<i>Ochromonas</i> sp.	Vysotskii, 1887	0	0	0	0	0	0	0	0	0
Ochrophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Ollicola	<i>Ollicola vangoorii</i>	(W.Conrad) Vers, 1992	5415	2707	0	10830	0	2707	0	2707	2707
Cyanobacteria	Cyanophyceae	Oscillatoriales	-	-	Oscillatoriales n.d.	Cavaller-Smith, 2002	0	0	0	0	0	0	0	0	0
Ochrophyta	Chrysophyceae	Chromulinales	Paraphysomonadaceae	Paraphysomonas	<i>Paraphysomonas</i> sp.	De Saedeleer, 1930	0	0	0	0	0	0	0	0	0
Cercozoa	Imbricatea	Euglyphida	Paulinellidae	Paulinella	<i>Paulinella ovalis</i>	(A.Wulff) P.W.Johnson, P.E.Hargraves & J.M.Sieburth, 1988	0	0	0	0	2707	0	0	0	0
Chlorophyta	Prasinophyceae	-	-	-	Prasinophyceae n.d.	T. Christensen ex Ø. Moestrup & J. Throndsen, 1988	0	0	0	0	0	0	0	0	0
Chlorophyta	Pyramimonadophyceae	Pseudoscurfieldiales	Pycnococcaceae	Pseudoscurfieldia	<i>Pseudoscurfieldia</i> sp.	I.Manton, 1975	0	0	0	0	0	0	0	0	0
Chlorophyta	Pyramimonadophyceae	Pyramimonadales	Pterospermataceae	Pterosperma	<i>Pterosperma cristatum</i>	J.Schiller, 1926	80	0	0	0	40	0	0	0	0
Chlorophyta	Pyramimonadophyceae	Pyramimonadales	Pterospermataceae	Pterosperma	<i>Pterosperma</i> spp.	Pouchet, 1893	0	0	0	0	0	0	0	0	0
Ochrophyta	Pelagophyceae	Sarcinochrysidales	-	-	Sarcinochrysidales n.d.	Gayral & Billard, 1977	0	0	0	0	0	0	0	0	0
Cyanobacteria	Cyanophyceae	Synechococcales	Synechococcaceae	Synechococcus	<i>Synechococcus</i> sp.	Nägeli, 1849	0	0	0	51442	0	0	100176	0	0
Cryptophyta	Cryptophyceae	Pyrenomonadales	Geminigeraceae	Teleaulax	<i>Teleaulax</i> sp.	Hill, 1991	0	0	0	0	0	0	0	0	0
Chlorophyta	Chlorodendrophyceae	Chlorodendrales	Chlorodendraceae	Tetraselmis	<i>Tetraselmis</i> spp.	F.Stein, 1878	0	0	0	0	0	0	0	0	0
Microflagellates n.d. <10 µm	-	-	-	-	Microflagellates n.d. <10 µm	-	8122	5415	8122	5415	13537	18952	21660	13537	10830

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report							
Prepared by	Checked by	Approved by	Date	IDP	File:		Rev. B1		
S.D.G./D.B./M.A.	D.B./M.A.	S. Sandroni	24/06/2026	EER001	EER001-EBS_Final_Report_REV_B1		P. 208/ 223		

APPENDIX D: ZOOPLANKTON DATA

Mesozooplankton [N° ind. m ⁻³]							Block-2 Area									Ionian Sea		
							Asopus-1A			Asopus-1B			Blank			Reference stations		
Phylum	Class	Order	Family	Genus	Specie	Author	D1a	D3a	D5a	D1b	D3b	D5b	D6a	D6b	D7b	Othonoi Ref	Kerkyra Ref	Italy Ref
Arthropoda	Copepoda	Calanoida	Acartiidae	Acartia	<i>Acartia (Acartia) negligens</i>	Dana, 1849-1852	0.14	0.00	1.28	0.00	0.66	2.56	0.00	0.00	1.28	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Acartiidae		Acartiidae n.d. copepodites	Sars G.O., 1903	0.00	1.28	0.00	2.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
Arthropoda	Copepoda	Calanoida	Aetideidae	Aetideus	<i>Aetideus armatus</i>	(Boeck, 1873)	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Aetideidae	Aetideus	<i>Aetideus giesbrechti</i>	Cleve, 1904	0.08	0.00	0.00	1.28	0.64	0.00	0.12	0.00	0.00	0.00	0.20	0.00
Arthropoda	Copepoda	Calanoida	Aetideidae	Chiridius	<i>Chiridius poppei</i>	Giesbrecht, 1893	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Arthropoda	Copepoda	Calanoida	Arietellidae	Arietellus	<i>Arietellus pavoninus</i>	Sars G.O., 1905	0.00	0.00	0.00	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Aetideidae	Euchirella	<i>Euchirella messinensis messinensis</i>	(Claus, 1863)	0.00	0.00	0.00	0.00	0.02	0.00	1.28	0.00	0.00	0.00	0.58	0.00
Arthropoda	Copepoda	Calanoida	Aetideidae	Euchirella	<i>Euchirella rostrata</i>	(Claus, 1866)	0.24	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.00
Arthropoda	Copepoda	Calanoida	Augaptilidae	Augaptilus	<i>Augaptilus glacialis</i>	Sars G.O., 1900	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Augaptilidae	Augaptilus	<i>Augaptilus longicaudatus</i>	(Claus, 1863)	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	19.20	0.00
Arthropoda	Copepoda	Calanoida	Augaptilidae	Euaugaptilus	<i>Euaugaptilus hecticus</i>	(Giesbrecht, 1892)	0.00	0.06	0.02	0.10	0.02	0.06	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Augaptilidae	Haloptilus	<i>Haloptilus longicornis</i>	(Claus, 1863)	23.04	26.88	19.20	29.44	12.16	7.68	5.76	10.24	12.80	20.48	0.56	11.52
Arthropoda	Copepoda	Calanoida	Augaptilidae	Haloptilus	<i>Haloptilus ornatus</i>	(Giesbrecht, 1892)	0.00	0.00	0.24	0.06	0.02	0.00	0.10	0.02	0.00	0.00	0.06	0.00
Arthropoda	Copepoda	Calanoida	Augaptilidae	Haloptilus	<i>Haloptilus spiniceps</i>	(Giesbrecht, 1892)	0.00	1.28	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Augaptilidae	Haloptilus	<i>Haloptilus spp</i> copepodites	Giesbrecht, 1898	3.84	1.28	0.00	8.96	3.20	2.56	0.82	15.36	0.00	0.00	3.84	0.18
Arthropoda	Copepoda	Calanoida	Augaptilidae		Augaptilidae n.d. copepodites	Sars G.O., 1905	0.00	1.28	2.56	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.82	0.00
Arthropoda	Copepoda	Calanoida	Calanidae	Calanus	<i>Calanus helgolandicus helgolandicus</i>	(Claus, 1863)	0.00	0.00	0.00	0.00	0.00	0.00	0.64	0.00	0.02	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Calanidae	Calanus	<i>Calanus helgolandicus helgolandicus</i> copepodites	(Claus, 1863)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Calanidae	Nannocalanus	<i>Nannocalanus minor</i>	(Claus, 1863)	0.00	1.28	0.00	1.28	0.02	0.00	0.00	0.02	0.00	2.56	0.00	1.28
Arthropoda	Copepoda	Calanoida	Calanidae	Mesocalanus	<i>Mesocalanus tenuicornis</i>	(Dana, 1849-1852)	0.12	0.26	0.00	1.28	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Calanidae	Neocalanus	<i>Neocalanus gracilis</i>	(Dana, 1849-1852)	0.00	1.28	0.18	0.06	1.28	7.68	0.32	2.56	0.14	2.56	1.28	0.14
Arthropoda	Copepoda	Calanoida	Calanidae	Neocalanus	<i>Neocalanus gracilis</i> copepodites	(Dana, 1849-1852)	0.34	0.00	0.06	0.00	0.00	0.00	0.08	0.10	0.00	2.56	0.00	0.38
Arthropoda	Copepoda	Calanoida	Calanidae		Calanidae n.d. copepodites	Dana, 1846	5.12	6.40	1.28	2.56	2.56	0.10	5.12	0.00	1.28	0.00	14.08	2.56
Arthropoda	Copepoda	Calanoida	Candaciidae	Candacia	<i>Candacia bispinosa</i>	Claus, 1863	0.38	0.14	0.12	0.14	0.02	0.02	0.10	0.02	0.00	0.00	0.14	0.00
Arthropoda	Copepoda	Calanoida	Candaciidae	Candacia	<i>Candacia simplex</i>	(Giesbrecht, 1889)	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
Arthropoda	Copepoda	Calanoida	Candaciidae		Candaciidae n.d. copepodites	Giesbrecht, 1892-1893	1.28	1.28	0.00	0.00	0.00	0.00	0.64	0.00	0.00	0.00	0.40	0.10
Arthropoda	Copepoda	Calanoida	Centropagidae	Centropages	<i>Centropages violaceus</i>	(Claus, 1863)	0.00	1.28	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Clausocalanidae	Clausocalanus	<i>Clausocalanus arcuicornis arcuicornis</i>	(Dana, 1849-1852)	1.28	1.28	1.28	5.12	2.56	5.12	4.48	7.68	6.40	7.68	0.00	6.40
Arthropoda	Copepoda	Calanoida	Clausocalanidae	Clausocalanus	<i>Clausocalanus furcatus</i>	(Brady, 1883)	2.56	2.56	1.28	10.24	3.84	20.48	0.64	2.56	10.24	1.28	0.00	0.24
Arthropoda	Copepoda	Calanoida	Clausocalanidae	Clausocalanus	<i>Clausocalanus jobei</i>	Frost & Fleminger, 1968	0.00	1.28	0.00	2.56	1.28	0.00	0.64	0.00	0.00	2.56	0.36	2.56
Arthropoda	Copepoda	Calanoida	Clausocalanidae	Clausocalanus	<i>Clausocalanus lividus</i>	Frost & Fleminger, 1968	0.20	3.84	1.28	1.28	4.48	15.36	1.92	2.56	5.12	10.24	0.06	5.12
Arthropoda	Copepoda	Calanoida	Clausocalanidae	Clausocalanus	<i>Clausocalanus mastigophorus</i>	(Claus, 1863)	2.56	7.68	2.56	0.00	0.02	2.56	0.00	0.22	0.00	0.00	0.30	0.04
Arthropoda	Copepoda	Calanoida	Clausocalanidae	Clausocalanus	<i>Clausocalanus parapergens</i>	Frost & Fleminger, 1968	3.84	3.84	3.84	0.00	1.28	5.12	3.84	7.68	7.68	5.12	0.70	6.40
Arthropoda	Copepoda	Calanoida	Clausocalanidae	Clausocalanus	<i>Clausocalanus paululus</i>	Farran, 1926	53.76	57.60	25.60	42.24	10.88	97.28	26.88	87.04	33.28	25.60	34.56	17.92
Arthropoda	Copepoda	Calanoida	Clausocalanidae	Clausocalanus	<i>Clausocalanus pergens</i>	Farran, 1926	1.28	0.00	1.28	1.28	0.00	0.00	0.00	0.00	0.00	0.00	5.12	0.00
Arthropoda	Copepoda	Calanoida	Clausocalanidae	Clausocalanus	<i>Clausocalanus spp</i>	Giesbrecht, 1888	3.84	1.28	1.28	5.12	3.20	10.24	0.00	2.56	2.56	0.08	0.00	0.00
Arthropoda	Copepoda	Calanoida	Clausocalanidae	Clausocalanus	<i>Clausocalanus spp</i> copepodites	Giesbrecht, 1888	71.68	101.12	58.88	55.04	49.92	163.84	48.64	166.40	135.68	89.60	55.04	71.68
Arthropoda	Copepoda	Calanoida	Clausocalanidae	Ctenocalanus	<i>Ctenocalanus vanus</i>	Giesbrecht, 1888	0.00	3.84	1.28	0.00	1.28	0.00	0.00	0.00	0.00	0.00	2.56	0.00
Arthropoda	Copepoda	Calanoida	Clausocalanidae	Ctenocalanus	<i>Ctenocalanus vanus</i> copepodites	Giesbrecht, 1888	0.00	0.00	0.00	0.00	0.64	2.56	0.00	2.56	0.00	7.68	0.00	0.14
Arthropoda	Copepoda	Calanoida	Eucalanidae	Pareucalanus	<i>Pareucalanus sewelli</i>	(Fleminger, 1973)	1.28	1.28	0.28	0.04	0.04	0.04	0.64	0.04	0.04	0.02	0.28	0.04
Arthropoda	Copepoda	Calanoida	Eucalanidae	Pareucalanus	<i>Pareucalanus sewelli</i> copepodites	(Fleminger, 1973)	0.00	0.00	0.00	0.00	0.08	0.02	0.14	0.02	0.00	0.00	0.18	0.00
Arthropoda	Copepoda	Calanoida	Eucalanidae		Eucalanidae n.d. copepodites	Giesbrecht, 1893	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Euchaetidae	Euchaeta	<i>Euchaeta acuta</i>	Giesbrecht, 1893	0.22	0.22	0.10	1.28	0.04	0.14	0.64	0.02	1.28	0.04	0.22	0.36
Arthropoda	Copepoda	Calanoida	Euchaetidae	Euchaeta	<i>Euchaeta marina</i>	(Prestandrea, 1833)	0.00	0.62	2.56	0.10	1.24	0.30	0.10	0.12	0.22	0.10	0.40	0.10
Arthropoda	Copepoda	Calanoida	Euchaetidae	Euchaeta	<i>Euchaeta spinosa</i>	Giesbrecht, 1893	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00
Arthropoda	Copepoda	Calanoida	Euchaetidae	Euchaeta	<i>Euchaeta spp</i> copepodites	Philippi, 1843	0.36	0.28	7.68	1.28	0.24	0.48	0.32	0.20	0.30	0.00	0.84	0.00
Arthropoda	Copepoda	Calanoida	Euchaetidae	Paraeuchaeta	<i>Paraeuchaeta hebes</i>	(Giesbrecht, 1888)	0.18	0.00	1.28	0.12	0.76	5.12	0.00	0.06	0.20	1.28	0.04	0.02
Arthropoda	Copepoda	Calanoida	Euchaetidae	Paraeuchaeta	<i>Paraeuchaeta spp</i> copepodites	Scott A., 1909	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Euchaetidae		Euchaetidae n.d. copepodites	Giesbrecht, 1893	3.84	3.84	0.00	2.56	2.56	0.58	0.00	5.12	1.28	5.12	0.00	0.66

LIGHTHOUSE GAS		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report					ENERGEAN		
Prepared by	Checked by	Approved by	Date	IDP	File:		Rev. B1		
S.D.G./D.B./M.A.	D.B./M.A.	S. Sandroni	24/06/2026	EER001	EER001-EBS_Final_Report_REV_B1		P. 209/ 223		

Mesozooplankton [N° ind. m ⁻³]							Block-2 Area									Ionian Sea		
							Asopus-1A			Asopus-1B			Blank			Reference stations		
Phylum	Class	Order	Family	Genus	Specie	Author	D1a	D3a	D5a	D1b	D3b	D5b	D6a	D6b	D7b	Othonoi Ref	Kerkyra Ref	Italy Ref
Arthropoda	Copepoda	Calanoida	Lucicutiidae	Lucicutia	<i>Lucicutia flavicornis</i>	(Claus, 1863)	5.12	7.68	7.68	6.40	0.64	15.36	2.56	5.12	0.10	7.68	10.24	8.96
Arthropoda	Copepoda	Calanoida	Lucicutiidae	Lucicutia	<i>Lucicutia gaussae</i>	Grice, 1963	0.08	1.28	0.00	0.00	0.06	0.00	0.04	0.08	0.06	0.06	0.70	0.02
Arthropoda	Copepoda	Calanoida	Lucicutiidae	Lucicutia	<i>Lucicutia gemina</i>	Farran, 1926	0.00	1.28	0.00	1.28	0.64	0.00	0.64	0.02	2.56	2.56	0.00	0.00
Arthropoda	Copepoda	Calanoida	Lucicutiidae	Lucicutia	<i>Lucicutia spp</i> copepodites	Giesbrecht, 1898	1.28	0.00	5.12	14.08	2.56	2.56	0.50	5.12	5.12	7.68	7.68	5.12
Arthropoda	Copepoda	Calanoida	Heterorhabdidae	Heterorhabdus	<i>Heterorhabdus papilliger</i>	(Claus, 1863)	0.42	1.28	1.28	1.28	0.02	0.02	0.00	0.00	1.28	1.28	0.20	0.54
Arthropoda	Copepoda	Calanoida	Heterorhabdidae	Mesorhabdus	<i>Mesorhabdus spp</i>	Sars G.O., 1905	0.00	0.00	0.00	0.00	0.00	0.00	0.64	0.00	0.00	2.56	0.00	0.00
Arthropoda	Copepoda	Calanoida	Paracalanidae	Mecynocera	<i>Mecynocera clausi</i>	Thompson I.C., 1888	6.40	2.56	1.70	1.28	1.28	0.02	0.42	2.56	0.02	1.28	7.68	10.24
Arthropoda	Copepoda	Calanoida	Paracalanidae	Mecynocera	<i>Mecynocera clausi</i> copepodites	Thompson I.C., 1888	0.00	0.00	0.00	0.00	2.56	0.26	0.66	0.00	0.00	0.00	2.56	0.04
Arthropoda	Copepoda	Calanoida	Phaennidae	Phaenna	<i>Phaenna spinifera</i>	Claus, 1863	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Metridinidae	Pleuromamma	<i>Pleuromamma abdominalis abdominalis</i>	(Lubbock, 1856)	0.00	0.00	0.02	2.56	0.08	0.02	0.64	0.00	0.02	0.02	2.56	0.08
Arthropoda	Copepoda	Calanoida	Metridinidae	Pleuromamma	<i>Pleuromamma borealis</i>	Dahl F., 1893	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Metridinidae	Pleuromamma	<i>Pleuromamma gracilis gracilis</i>	Claus, 1863	0.00	0.10	2.56	3.84	1.28	0.00	0.82	2.56	7.68	5.12	1.28	2.56
Arthropoda	Copepoda	Calanoida	Metridinidae	Pleuromamma	<i>Pleuromamma robusta robusta</i>	(Dahl F., 1893)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00
Arthropoda	Copepoda	Calanoida	Metridinidae	Pleuromamma	<i>Pleuromamma spp</i> copepodites	Giesbrecht in Giesbrecht & Schmeil, 1898	0.00	10.24	6.40	8.96	3.20	0.00	0.64	5.12	2.56	2.56	6.40	5.12
Arthropoda	Copepoda	Calanoida	Paracalanidae	Calocalanus	<i>Calocalanus contractus</i>	Farran, 1926	0.00	3.84	0.00	0.00	0.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Paracalanidae	Calocalanus	<i>Calocalanus pavoninus</i>	Farran, 1936	0.00	1.28	0.00	0.00	0.00	2.56	0.00	0.00	0.02	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Paracalanidae	Calocalanus	<i>Calocalanus plumatus</i>	Shmeleva, 1965	0.00	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Paracalanidae	Calocalanus	<i>Calocalanus styliremis</i>	Giesbrecht, 1888	12.80	12.80	2.56	7.68	0.64	5.12	5.08	7.68	2.56	7.68	10.24	6.40
Arthropoda	Copepoda	Calanoida	Paracalanidae	Calocalanus	<i>Calocalanus spp</i> copepodites	Giesbrecht, 1888	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00
Arthropoda	Copepoda	Calanoida	Paracalanidae	Paracalanus	<i>Paracalanus denudatus</i>	Sewell, 1929	3.84	8.96	1.28	2.56	1.28	17.92	1.28	2.56	3.84	2.56	2.56	0.28
Arthropoda	Copepoda	Calanoida	Paracalanidae	Paracalanus	<i>Paracalanus nanus</i>	Sars G.O., 1925	10.24	3.84	8.96	2.56	1.92	15.36	1.92	0.00	5.12	8.96	0.00	10.24
Arthropoda	Copepoda	Calanoida	Paracalanidae	Paracalanus	<i>Paracalanus parvus parvus</i>	(Claus, 1863)	0.00	0.00	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.84	5.12
Arthropoda	Copepoda	Calanoida	Paracalanidae	Paracalanus	<i>Paracalanus parvus parvus</i> copepodites	(Claus, 1863)	0.00	0.00	2.56	1.28	2.56	2.56	0.00	2.56	0.00	0.00	0.00	16.64
Arthropoda	Copepoda	Calanoida	Pontellidae	Pontellina	<i>Pontellina plumata</i> copepodites	Dana, 1849-1852	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Scolecitrichidae	Scaphocalanus	<i>Scaphocalanus curtus</i>	(Farran, 1926)	0.00	0.00	0.06	0.00	0.02	0.00	0.00	0.00	0.00	0.00	2.56	0.00
Arthropoda	Copepoda	Calanoida	Scolecitrichidae	Scaphocalanus	<i>Scaphocalanus spp</i>	Sars G.O., 1900	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Scolecitrichidae	Scaphocalanus	<i>Scaphocalanus spp</i> copepodites	Sars G.O., 1900	0.66	1.28	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Scolecitrichidae	Scolecithricella	<i>Scolecithricella dentata</i>	(Giesbrecht, 1893)	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Scolecitrichidae	Scolecithricella	<i>Scolecithricella vittata</i>	(Giesbrecht, 1893)	0.00	0.00	0.00	0.00	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Scolecitrichidae	Scolecithricella	<i>Scolecithricella spp</i> copepodites	Sars G.O., 1902	0.00	0.00	0.00	0.00	0.00	0.00	4.48	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Scolecitrichidae	Scolecithrix	<i>Scolecithrix bradyi</i>	Giesbrecht, 1888	0.70	2.56	0.00	2.56	0.08	2.56	0.24	0.00	0.08	0.00	0.74	0.00
Arthropoda	Copepoda	Calanoida	Scolecitrichidae		Scolecitrichidae n.d.	Giesbrecht, 1893	3.84	0.00	0.00	6.40	0.00	0.00	0.38	0.00	0.00	0.00	0.38	0.00
Arthropoda	Copepoda	Calanoida	Spinocalanidae	Spinocalanus	<i>Spinocalanus abyssalis abyssalis</i>	Giesbrecht, 1888	0.00	2.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Calanoida	Spinocalanidae	Spinocalanus	<i>Spinocalanus spinosus</i>	Farran, 1908	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Arthropoda	Copepoda	Calanoida	Spinocalanidae		Spinocalanidae n.d.	Vervoort, 1951	0.00	0.00	1.28	0.00	0.00	0.00	0.12	0.00	1.28	0.00	0.82	0.00
Arthropoda	Copepoda	Cyclopoida	Corycaeidae	Agetus	<i>Agetus flaccus</i>	(Giesbrecht, 1891)	0.00	5.12	0.08	2.56	0.06	2.56	0.22	0.12	0.18	8.96	0.62	0.20
Arthropoda	Copepoda	Cyclopoida	Corycaeidae	Agetus	<i>Agetus limbatus</i>	(Brady, 1883)	8.96	11.52	1.28	0.00	1.92	7.68	5.14	7.68	6.40	12.80	16.64	10.24
Arthropoda	Copepoda	Cyclopoida	Corycaeidae	Agetus	<i>Agetus typicus</i>	Krøyer, 1849	2.56	0.04	1.28	2.56	0.04	0.00	0.14	0.00	1.28	0.00	1.28	0.04
Arthropoda	Copepoda	Cyclopoida	Corycaeidae	Corycaeus	<i>Corycaeus clausi</i>	Dahl F., 1894	0.16	0.30	0.00	0.00	0.02	2.56	0.00	2.56	0.16	0.00	0.00	0.00
Arthropoda	Copepoda	Cyclopoida	Corycaeidae	Ditrichocorycaeus	<i>Ditrichocorycaeus brehmi</i>	(Steuer, 1910)	0.00	1.28	0.00	0.00	0.00	0.08	0.00	0.00	0.00	2.56	0.00	0.00
Arthropoda	Copepoda	Cyclopoida	Corycaeidae	Onychocorycaeus	<i>Onychocorycaeus giesbrechti</i>	(Dahl F., 1894)	0.00	1.28	1.28	1.28	0.64	2.56	0.20	0.16	0.00	2.56	2.56	21.76
Arthropoda	Copepoda	Cyclopoida	Corycaeidae	Onychocorycaeus	<i>Onychocorycaeus ovalis</i>	(Claus, 1863)	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Cyclopoida	Corycaeidae	Urocorycaeus	<i>Urocorycaeus furcifer</i>	(Claus, 1863)	0.62	0.00	1.28	2.56	0.02	0.02	0.10	0.00	0.06	1.28	8.96	0.12
Arthropoda	Copepoda	Cyclopoida	Corycaeidae	Farranula	<i>Farranula curta</i>	(Farran, 1911)	1.28	12.80	6.40	0.00	0.00	0.00	0.64	0.00	0.00	0.00	14.08	6.40
Arthropoda	Copepoda	Cyclopoida	Corycaeidae	Farranula	<i>Farranula rostrata</i>	(Claus, 1863)	11.52	3.84	3.84	3.84	3.20	5.12	3.84	7.68	8.96	15.36	2.56	14.08
Arthropoda	Copepoda	Cyclopoida	Corycaeidae	Farranula	<i>Farranula spp</i> copepodites	Wilson C.B., 1932	1.28	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.28	0.00
Arthropoda	Copepoda	Cyclopoida	Corycaeidae		Corycaeidae n.d. copepodites	Dana, 1846	5.12	6.40	7.68	14.08	0.64	12.80	3.82	5.12	0.00	1.28	5.12	5.12
Arthropoda	Copepoda	Cyclopoida	Lubbockidae	Lubbockia	<i>Lubbockia aculeata</i>	Giesbrecht, 1891	0.00	0.00	0.00	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Cyclopoida	Oncaeidae	Oncaea	<i>Oncaea media media</i>	Giesbrecht, 1891	0.00	0.00	2.56	0.00	0.12	0.00	0.64	2.56	0.00	0.00	0.00	0.18
Arthropoda	Copepoda	Cyclopoida	Oncaeidae	Oncaea	<i>Oncaea mediterranea mediterranea</i>	Claus, 1863	0.10	1.28	3.84	0.10	0.64	0.00	0.26	0.02	0.00	0.00	0.50	0.14
Arthropoda	Copepoda	Cyclopoida	Oncaeidae	Oncaea	<i>Oncaea scottodicarloi</i>	Heron & Bradford-Grieve, 1995	1.28	0.00	0.00	0.00	0.00	2.56	0.64	2.56	1.28	0.06	0.00	0.08
Arthropoda	Copepoda	Cyclopoida	Oncaeidae	Oncaea	<i>Oncaea venusta venusta</i>	Philippi, 1843	0.04	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00

LIGHTHOUSE GAS		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				ENERGEAN	
Prepared by	Checked by	Approved by	Date	IDP	File:	Rev. B1	
S.D.G./D.B./M.A.	D.B./M.A.	S. Sandroni	24/06/2026	EER001	EER001-EBS_Final_Report_REV_B1	P. 210/ 223	

Mesozooplankton [N° ind. m ⁻³]							Block-2 Area									Ionian Sea		
							Asopus-1A			Asopus-1B			Blank			Reference stations		
Phylum	Class	Order	Family	Genus	Specie	Author	D1a	D3a	D5a	D1b	D3b	D5b	D6a	D6b	D7b	Othonoi Ref	Kerkyra Ref	Italy Ref
Arthropoda	Copepoda	Cyclopoida	Oncaeidae	Oncaea	<i>Oncaea spp copepodites</i>	Philippi, 1843	3.84	6.40	0.00	3.84	1.28	2.56	0.00	5.12	1.28	0.00	10.24	1.28
Arthropoda	Copepoda	Cyclopoida	Oncaeidae	Triconia	<i>Triconia conifera</i>	(Giesbrecht, 1891)	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Cyclopoida	Oncaeidae		Oncaeidae n.d.	Giesbrecht, 1893	0.00	0.00	0.00	0.00	0.00	0.00	0.56	0.00	0.00	2.56	7.68	0.46
Arthropoda	Copepoda	Cyclopoida	Oithonidae	Oithona	<i>Oithona decipiens</i>	Farran, 1913	0.00	2.56	1.28	0.00	0.64	2.56	0.00	7.68	0.00	2.56	0.58	0.40
Arthropoda	Copepoda	Cyclopoida	Oithonidae	Oithona	<i>Oithona plumifera</i>	Baird, 1843	0.00	0.00	0.00	0.00	0.00	0.00	7.68	0.00	0.00	2.56	0.04	0.04
Arthropoda	Copepoda	Cyclopoida	Oithonidae	Oithona	<i>Oithona setigera setigera</i>	Dana, 1853-1855	5.12	2.56	2.56	6.40	0.64	5.12	0.00	12.80	3.84	5.12	0.90	3.84
Arthropoda	Copepoda	Cyclopoida	Oithonidae	Oithona	<i>Oithona tenuis</i>	Rosendorn, 1917	0.00	0.00	0.00	1.28	0.00	0.00	0.00	5.12	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Cyclopoida	Oithonidae	Oithona	<i>Oithona spp copepodites</i>	Baird, 1843	11.52	17.92	5.12	15.36	0.64	10.24	3.24	15.36	5.12	15.36	12.80	16.64
Arthropoda	Copepoda	Cyclopoida	Sapphirinidae	Copilia	<i>Copilia mediterranea</i>	(Claus, 1863)	0.00	0.00	0.00	0.06	0.64	0.00	0.00	0.00	0.00	0.00	0.04	0.00
Arthropoda	Copepoda	Cyclopoida	Sapphirinidae	Copilia	<i>Copilia spp</i>	Dana, 1849-1852	0.02	0.16	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Cyclopoida	Sapphirinidae	Sapphirina	<i>Sapphirina angusta</i>	Dana, 1849-1852	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00
Arthropoda	Copepoda	Cyclopoida	Sapphirinidae	Sapphirina	<i>Sapphirina auronitens</i>	Claus, 1863	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.08	0.00
Arthropoda	Copepoda	Cyclopoida	Sapphirinidae	Sapphirina	<i>Sapphirina intestinata</i>	Giesbrecht, 1891	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
Arthropoda	Copepoda	Cyclopoida	Sapphirinidae	Sapphirina	<i>Sapphirina metallina</i>	Dana, 1849-1852	0.70	2.56	0.12	0.02	0.04	0.00	0.08	0.02	2.56	1.28	0.14	0.00
Arthropoda	Copepoda	Cyclopoida	Sapphirinidae	Sapphirina	<i>Sapphirina spp copepodites</i>	Thompson J.V., 1829	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.08	0.00
Arthropoda	Copepoda	Cyclopoida	Sapphirinidae	Vetтория	<i>Vetтория granulosa</i>	(Giesbrecht, 1891)	0.04	0.00	0.00	0.00	0.02	2.56	0.00	0.00	0.00	0.00	0.02	0.00
Arthropoda	Copepoda	Cyclopoida	Sapphirinidae	Vetтория	<i>Vetтория longifurca</i>	(Rose & Vaissière, 1952)	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	1.28	0.00	0.00	0.00
Arthropoda	Copepoda	Cyclopoida	Sapphirinidae	Vetтория	<i>Vetтория parva</i>	(Farran, 1936)	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Mormonilloida	Mormonillidae	Mormonilla	<i>Mormonilla phasma</i>	Giesbrecht, 1891	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Mormonilloida	Mormonillidae	Neomormonilla	<i>Neomormonilla minor</i>	(Giesbrecht, 1891)	6.40	12.80	1.28	7.68	1.28	7.68	6.40	7.68	2.56	5.12	0.28	0.32
Arthropoda	Copepoda	Harpacticoida	Peltidiidae	Clytemnestra	<i>Clytemnestra gracilis</i>	(Claus, 1891)	0.00	0.00	0.00	1.28	0.00	0.00	0.64	2.56	0.00	0.00	0.06	0.00
Arthropoda	Copepoda	Harpacticoida	Ectinosomatidae	Microsetella	<i>Microsetella norvegica</i>	(Boeck, 1865)	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Copepoda	Harpacticoida	Miraciidae	Macrosetella	<i>Macrosetella gracilis</i>	(Dana, 1848)	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.02	0.00
Arthropoda	Copepoda	Siphonostomatoida	Rataniidae	Ratania	<i>Ratania flava</i>	Giesbrecht, 1893	0.18	0.00	2.56	0.24	0.64	0.00	0.00	0.00	0.00	0.00	3.84	0.80
Arthropoda	Copepoda				Copepoda nauplius	Milne Edwards, 1840	0.00	1.28	0.00	0.02	0.64	0.02	0.00	0.00	1.28	0.00	0.04	0.00
Annelida	Polychaeta	Phyllodocida	Lopadorrhynchidae	<i>Lopadorrhynchus</i>	<i>Lopadorrhynchus krohnii</i>	(Claparède, 1870)	0.02	0.32	0.00	0.00	0.04	0.02	0.00	0.02	0.04	0.02	0.02	0.00
Annelida	Polychaeta	Phyllodocida	Phyllodocidae	<i>Vanadis</i>	<i>Vanadis crystallina</i>	Greeff, 1876	0.04	0.04	0.32	0.06	0.06	0.32	0.02	0.00	0.02	0.12	0.06	0.02
Annelida	Polychaeta	Phyllodocida	Phyllodocidae	<i>Vanadis</i>	<i>Vanadis formosa</i>	Claparède, 1870	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.04	0.00	0.04	0.00
Annelida	Polychaeta	Phyllodocida	Phyllodocidae	<i>Krohnia</i>	<i>Krohnia lepidota</i>	(Krohn, 1845)	0.00	0.00	0.02	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Annelida	Polychaeta	Phyllodocida	Phyllodocidae	<i>Plotohelmis</i>	<i>Plotohelmis capitata</i>	(Greeff, 1876)	0.02	0.06	0.02	0.00	0.06	0.00	0.32	0.04	0.02	0.14	0.12	0.04
Annelida	Polychaeta	Phyllodocida	Typhloscolecidae	<i>Sagitella</i>	<i>Sagitella kowalewskii</i>	Wagner, 1872	0.32	0.32	0.00	0.00	0.00	0.32	0.00	0.02	0.00	0.32	0.32	0.00
Annelida	Polychaeta	Phyllodocida	Typhloscolecidae	<i>Typhloscolex</i>	<i>Typhloscolex muelleri</i>	Busch, 1851	0.00	0.32	0.00	0.04	0.00	0.00	0.02	0.02	0.04	0.00	0.00	0.00
Annelida	Polychaeta	Phyllodocida	Pontodoridae	<i>Pontodora</i>	<i>Pontodora pelagica</i>	Greeff, 1879	0.00	0.00	0.96	0.06	0.00	0.32	0.02	0.12	0.02	0.04	0.02	0.00
Annelida	Polychaeta	Phyllodocida	Tomopteridae	<i>Tomopteris</i>	<i>Tomopteris sp.</i>	Eschscholtz, 1825	0.34	0.08	0.14	0.12	1.92	1.60	0.04	0.32	0.64	0.64	0.44	0.32
Arthropoda	Malacostraca	Amphipoda	Hyperidae		Hyperidae n.d.	Dana, 1852	0.32	0.32	0.10	0.02	0.32	0.04	0.08	0.02	0.32	0.32	0.02	0.00
Arthropoda	Malacostraca	Amphipoda	Oxycephalidae	<i>Streetsia</i>	<i>Streetsia challengerii</i>	Stebbing, 1888	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Malacostraca	Amphipoda	Phronimidae	<i>Phronima</i>	<i>Phronima stebbingi</i>	Vosseler, 1901	0.00	0.00	0.00	0.00	0.04	0.02	0.00	0.00	0.02	0.00	0.00	0.00
Arthropoda	Malacostraca	Amphipoda	Phrosinidae	<i>Anchylomera</i>	<i>Anchylomera blossevillei</i>	H. Milne Edwards, 1830	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00
Arthropoda	Malacostraca	Amphipoda	Phrosinidae	<i>Primno</i>	<i>Primno macropa</i>	Guérin-Ménéville, 1836	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.00
Arthropoda	Malacostraca	Amphipoda	Phrosinidae	<i>Phrosina</i>	<i>Phrosina semilunata</i>	Risso, 1822	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Malacostraca	Amphipoda	Scinidae	<i>Scina</i>	<i>Scina borealis</i>	(G.O. Sars, 1883)	0.02	0.00	0.00	0.06	0.32	0.02	0.00	0.00	0.02	0.00	0.00	0.00
Arthropoda	Malacostraca	Amphipoda	Scinidae	<i>Scina</i>	<i>Scina crassicornis</i>	(Fabricius, 1775)	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Arthropoda	Malacostraca	Amphipoda	Vibiliidae	<i>Vibilia</i>	<i>Vibilia sp.</i>	H. Milne Edwards, 1830	0.00	0.00	0.00	0.00	0.00	0.02	0.10	0.00	0.06	0.02	0.00	0.00
Arthropoda	Malacostraca	Amphipoda	Vibiliidae	<i>Vibilia</i>	<i>Vibilia viatrix</i>	Bovallius, 1887	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Malacostraca	Decapoda	Luciferidae	<i>Lucifer</i>	<i>Lucifer typus</i>	H. Milne Edwards, 1837	0.02	0.00	0.00	0.02	0.00	0.00	0.02	0.02	0.00	0.02	0.06	0.00
Arthropoda	Malacostraca	Euphausiacea	Euphausiidae		Calyptopis larvae	Dana, 1850	0.00	0.06	0.04	0.32	0.00	0.00	0.00	0.32	0.02	0.00	0.00	0.00
Arthropoda	Malacostraca	Euphausiacea	Euphausiidae		Furcilia larvae	Dana, 1850	0.32	0.96	0.04	0.12	0.04	1.28	0.12	0.64	0.10	0.32	1.28	0.10
Arthropoda	Malacostraca	Euphausiacea	Euphausiidae	<i>Euphausia</i>	<i>Euphausia sp.</i>	Dana, 1850	0.00	0.00	0.00	0.06	0.02	3.52	0.00	0.00	0.04	0.00	0.06	0.00
Arthropoda	Malacostraca	Euphausiacea	Euphausiidae	<i>Stylocheiron</i>	<i>Stylocheiron abbreviatum</i>	G.O. Sars, 1883	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00
Arthropoda	Malacostraca	Euphausiacea	Euphausiidae	<i>Stylocheiron</i>	<i>Stylocheiron affine</i>	Hansen, 1910	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Malacostraca	Euphausiacea	Euphausiidae	<i>Stylocheiron</i>	<i>Stylocheiron carinatum</i>	G.O. Sars, 1883	0.04	0.00	0.02	0.00	0.00	0.32	0.02	0.00	0.32	0.00	0.00	0.00
Arthropoda	Malacostraca	Euphausiacea	Euphausiidae	<i>Stylocheiron</i>	<i>Stylocheiron maximum</i>	Hansen, 1908	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00

LIGHTHOUSE GAS		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				ENERGEAN	
Prepared by	Checked by	Approved by	Date	IDP	File:	Rev. B1	
S.D.G./D.B./M.A.	D.B./M.A.	S. Sandroni	24/06/2026	EER001	EER001-EBS_Final_Report_REV_B1	P. 211/ 223	

Mesozooplankton [N° ind. m ⁻³]							Block-2 Area									Ionian Sea		
							Asopus-1A			Asopus-1B			Blank			Reference stations		
Phylum	Class	Order	Family	Genus	Specie	Author	D1a	D3a	D5a	D1b	D3b	D5b	D6a	D6b	D7b	Othonoi Ref	Kerkyra Ref	Italy Ref
Arthropoda	Malacostraca	Euphausiacea	Euphausiidae	<i>Stylocheiron</i>	<i>Stylocheiron sp.</i>	G.O. Sars, 1883	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Malacostraca	Euphausiacea	Euphausiidae	<i>Stylocheiron</i>	<i>Stylocheiron suhmii</i>	G.O. Sars, 1883	0.02	0.08	0.02	0.04	0.04	0.64	0.06	0.04	0.10	0.64	0.64	0.06
Arthropoda	Malacostraca	Mysida			Mysida larvae	Boas, 1883	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Malacostraca	Mysida	Mysidae	<i>Euchaetomera</i>	<i>Euchaetomera tenuis</i>	G.O. Sars, 1883	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Malacostraca	Mysida	Mysidae	<i>Siriella</i>	<i>Siriella thompsonii</i>	(H. Milne Edwards, 1837)	0.00	0.00	0.32	0.04	0.00	0.00	0.00	0.00	0.04	0.02	0.00	0.02
Arthropoda	Ostracoda				Ostracoda n.d.	Latreille, 1806	5.76	7.36	5.12	3.20	4.16	10.24	7.68	7.04	7.36	9.28	8.64	5.76
Chaetognatha					Chaetognatha juv		1.92	2.24	4.16	1.92	1.60	2.24	2.88	1.92	1.28	3.84	4.16	1.60
Chaetognatha					Chaetognatha n.d.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chaetognatha	Sagittoidea	Aphragmophora	Sagittidae	<i>Flaccisagitta</i>	<i>Flaccisagitta enflata</i>	(Grassi, 1881)	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chaetognatha	Sagittoidea	Aphragmophora	Sagittidae	<i>Pseudosagitta</i>	<i>Pseudosagitta lyra</i>	(Krohn, 1853)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.32	0.04
Chordata	Appendicularia	Copelata	Fritillariidae	<i>Fritillaria</i>	<i>Fritillaria pellucida</i>	(Busch, 1851)	0.00	0.96	0.00	0.00	0.64	0.00	0.00	0.00	0.00	0.32	0.32	0.12
Chordata	Appendicularia	Copelata	Oikopleuridae	<i>Oikopleura</i>	<i>Oikopleura (Vexillaria) dioica</i>	Fol, 1872	0.32	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.64	0.00	0.96	0.22
Chordata	Appendicularia	Copelata	Oikopleuridae	<i>Oikopleura</i>	<i>Oikopleura (Coecaria) longicauda</i>	(Vogt, 1854)	2.24	0.96	1.60	1.28	1.28	0.96	0.64	1.28	0.32	1.60	2.88	0.64
Chordata	Thaliacea	Doliolida	Doliolidae	<i>Doliolina</i>	<i>Doliolina sp.</i>	Borgert, 1894	0.00	0.00	0.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chordata	Thaliacea	Pyrosomatida			Pyrosomatida n.d.	Jones, 1848	0.00	0.00	0.02	0.00	0.64	0.08	0.00	0.32	0.04	0.04	0.32	0.18
Chordata	Thaliacea	Salpida	Salpidae	<i>Thalia</i>	<i>Thalia democratica</i>	(Forskål, 1775)	0.32	0.32	0.32	0.06	0.06	0.32	0.00	0.32	0.32	0.32	0.00	0.04
Cnidaria	Hydrozoa	Siphonophorae	Abylidae	<i>Bassia</i>	<i>Bassia bassensis</i>	(Quoy & Gaimard, 1833)	0.00	0.32	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Cnidaria	Hydrozoa	Siphonophorae	Diphyidae	<i>Chelophyes</i>	<i>Chelophyes appendiculata</i>	(Eschscholtz, 1829)	0.00	0.00	0.32	0.00	0.00	0.32	0.32	0.12	0.08	0.10	0.06	0.02
Cnidaria	Hydrozoa	Siphonophorae	Diphyidae	<i>Eudoxoides</i>	<i>Eudoxoides spiralis</i>	(Bigelow, 1911)	0.32	1.28	1.60	0.00	0.96	0.64	0.96	0.64	1.28	0.32	0.02	0.06
Cnidaria	Hydrozoa	Siphonophorae	Hippopodiidae	<i>Hippopodius</i>	<i>Hippopodius hippopus</i>	(Forsskål, 1776)	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.32	0.00	0.00	0.64	0.14
Cnidaria	Hydrozoa	Anthoathecata	Oceaniidae	<i>Turritopsis</i>	<i>Turritopsis nutricula</i>	McCrary, 1857	0.08	0.00	0.04	0.00	0.00	0.00	0.02	0.04	0.00	0.00	0.00	0.00
Cnidaria	Hydrozoa	Trachymedusae	Rhopalonematidae	<i>Rhopalonema</i>	<i>Rhopalonema velatum</i>	Gegenbaur, 1857	0.00	0.02	0.06	0.00	0.00	0.02	0.00	0.02	0.02	0.02	0.00	0.00
Mollusca	Gastropoda	Pteropoda	Cavoliniidae	<i>Cavolinia</i>	<i>Cavolinia sp.</i>	Abildgaard, 1791	0.00	0.02	0.00	0.00	0.00	0.06	0.02	0.00	0.02	0.00	0.02	0.00
Mollusca	Gastropoda	Pteropoda	Creseidae	<i>Creseis</i>	<i>Creseis acicula</i>	(Rang, 1828)	0.00	0.00	0.00	0.08	0.06	0.32	0.00	0.00	0.06	0.00	0.00	0.00
Mollusca	Gastropoda	Pteropoda			Gymnosomata n.d.	Blainville, 1824	0.32	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Mollusca	Gastropoda	Pteropoda			Pteropoda larvae	Cuvier, 1804	0.00	0.00	0.00	0.00	0.00	0.00	0.64	0.00	0.00	0.00	0.00	0.00
Mollusca	Gastropoda	Littorinimorpha	Atlantidae	<i>Atlanta</i>	<i>Atlanta peronii</i>	Lesueur, 1817	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.02	0.00
Annelida		Sipuncula			Pelagosphaera larvae	Stephen, 1965	0.64	0.32	0.08	0.96	0.32	1.28	0.64	0.18	0.96	0.96	0.64	0.32
Annelida	Polychaeta	Phyllodocida	Polynoidae		Polynoidae n.d.	Kinberg, 1856	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Annelida	Polychaeta	Phyllodocida	Polynoidae	<i>Harmothoe</i>	<i>Harmothoe sp.</i>	Kinberg, 1856	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annelida	Polychaeta	Spionida	Spionidae		Spionidae n.d.	Grube, 1850	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
Annelida	Polychaeta	Spionida	Spionidae	<i>Laonice</i>	<i>Laonice cirrata</i>	(M. Sars, 1851)	0.00	0.00	0.32	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annelida	Polychaeta		Oweniidae	<i>Owenia</i>	<i>Owenia fusiformis</i>	Delle Chiaje, 1844	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.32	0.00	0.00	0.00	0.00
Arthropoda	Malacostraca	Decapoda	Polybiidae	<i>Polybius</i>	<i>Polybius sp.</i>	Leach, 1820	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Malacostraca	Decapoda	<i>Acanthephyridae</i>	<i>Acanthephyra</i>	<i>Acanthephyra purpurea</i>	A. Milne-Edwards, 1881	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00
Cnidaria	Hydrozoa	Anthoathecata	Rathkeidae	<i>Podocorynoides</i>	<i>Podocorynoides minima</i>	(Trinci, 1903)	0.00	0.32	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Echinodermata	Asteroidea				Bipinnaria larvae	de Blainville, 1830	0.32	0.64	0.00	0.64	0.64	3.20	2.24	0.64	0.32	0.32	0.00	0.08
Echinodermata	Asteroidea				Brachiolaria larvae	de Blainville, 1830	1.60	2.24	4.48	0.00	0.96	0.00	0.32	7.36	0.00	7.68	5.44	3.52
Echinodermata	Holothuroidea				Auricularia larvae	de Blainville, 1834	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.64	0.00	0.32
Echinodermata	Holothuroidea				Doliolaria larvae	de Blainville, 1834	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.00
Mollusca	Gastropoda				Gastropoda n.d.	Cuvier, 1795	2.56	0.00	1.60	1.60	0.64	2.88	0.32	1.28	1.92	1.60	2.24	0.64

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APPENDIX E: ICHTHYOPLANKTON DATA

Ichthyoplankton [N° ind. m ⁻³]							Block-2 Area		
							Asopus-1A	Asopus-1B	Blank
Phylum	Class	Order	Family	Genus	Specie	Author	TR1a	TR1b	TR6b
Chordata					Actinopterygii eggs		0.05	0.06	0.05
Chordata	Teleostei	Stomiiformes	Sternoptychidae	Maurolicus	<i>Maurolicus muelleri</i> eggs	(Gmelin, 1789)	0.00	0.00	0.05
Chordata					Actinopterygii larvae		0.00	0.00	0.02
Chordata					Actinopterygii yolk larvae		0.01	0.00	0.02
Chordata	Teleostei	Aulopiformes	Paralepididae	Arctozenus	<i>Arctozenus risso</i>	(Bonaparte, 1840)	0.02	0.00	0.00
Chordata	Teleostei	Myctophiformes	Myctophidae	Ceratoscopelus	<i>Ceratoscopelus maderensis</i>	(Lowe, 1839)	0.01	0.00	0.00
Chordata	Teleostei	Stomiiformes	Gonostomatidae	Cyclothone	<i>Cyclothone braueri</i>	Jespersen & Tåning, 1926	0.02	0.01	0.05
Chordata	Teleostei	Myctophiformes	Myctophidae	Hygophum	<i>Hygophum benoiti</i>	(Cocco, 1838)	0.03	0.02	0.02
Chordata	Teleostei	Myctophiformes	Myctophidae	Lampanyctus	<i>Lampanyctus pusillus</i>	(Johnson, 1890)	0.01	0.00	0.02
Chordata	Teleostei	Myctophiformes	Myctophidae	Myctophum	<i>Myctophum punctatum</i>	Rafinesque, 1810	0.00	0.03	0.02
Chordata	Teleostei	Aulopiformes	Paralepididae	Paralepis	<i>Paralepis coregonoides</i>	Risso, 1820	0.01	0.00	0.00
Chordata	Teleostei	Clupeiformes	Alosidae	Sardina	<i>Sardina pilchardus</i>	(Walbaum, 1792)	0.01	0.01	0.02
Chordata	Teleostei	Scombriformes	Scombridae		Scombridae n.d.	Rafinesque, 1815	0.00	0.01	0.00

APPENDIX F: INFAUNA DATA

Macrozoobenthos [N° ind. m ⁻²]							Block-2 Area																												Ionian Sea					
							Asopus-1A								Asopus-1B								Blank						Reference station											
							D1a		D2a		D3a		D4a		D5a		D1b		D2b		D3b		D4b		D5b		D6a		D6b		D7b		Othonoi Ref		Kerkyra Ref		Italy Ref			
Phylum	Class	Order	Family	Genus	Specie	Author	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2						
Annelida	Polychaeta		Paraonidae	Aricidea	<i>Aricidea (Acmira) assimilis</i>	Tebble, 1959	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Annelida	Polychaeta		Paraonidae	Cirrophorus	<i>Cirrophorus furcatus</i>	(Hartman, 1957)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Annelida	Polychaeta		Capitellidae	Dasybranchus	<i>Dasybranchus caducus</i>	(Grube, 1846)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Annelida	Polychaeta	Phyllodocida	Glyceridae	Glycera	<i>Glycera lapidum</i>	Quatrefages, 1866	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Annelida	Polychaeta	Eunicida	Lumbrineridae	Lumbrinerides	<i>Lumbrinerides carpinei</i>	(Ramos, 1976)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Annelida	Polychaeta	Eunicida	Lumbrineridae	Lumbrineris	<i>Lumbrineris lusitanica</i>	Martins, Carrera-Parra, Quintino & Rodrigues, 2012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Annelida	Polychaeta		Magelonidae	Magelona	<i>Magelona wilsoni</i>	Glémarec, 1967	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Annelida	Polychaeta		Capitellidae	Neopseudocapitella	<i>Neopseudocapitella brasiliensis</i>	Rullier & Amoureux, 1979	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Annelida	Polychaeta	Eunicida	Onuphidae	Paradiopatra	<i>Paradiopatra quadricuspis</i>	(M. Sars in G.O. Sars, 1872)	10.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Annelida	Polychaeta		Paraonidae	Paraonides	<i>Paraonides myriamae</i>	Katzmann & Laubier, 1975	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Annelida	Polychaeta		Capitellidae	Pseudoleiicapitella	<i>Pseudoleiicapitella fauveli</i>	Harmelin, 1964	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Annelida	Polychaeta		Opheliidae	Tachytrypane	<i>Tachytrypane jeffreysi</i>	McIntosh in Jeffreys, 1876	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Annelida		Sipuncula	Aspidosiphonidae	Aspidosiphon	<i>Aspidosiphon (Aspidosiphon) muelleri muelleri</i>	Diesing, 1851	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Annelida		Sipuncula	Golfingiidae	Golfingia	<i>Golfingia sp.</i>	Lankester, 1885	20.00	40.00	20.00	30.00	20.00	10.00	100.00	70.00	30.00	50.00	0.00	20.00	20.00	0.00	20.00	10.00	10.00	20.00	20.00	10.00	0.00	10.00	30.00	110.00	80.00	20.00	10.00	0.00	10.00					
Arthropoda	Ostracoda				Ostracoda n.d.	Latreille, 1806	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Arthropoda	Malacostraca	Cumacea			Cumacea n.d.	Krøyer, 1846	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Arthropoda	Malacostraca	Isopoda	Paranthuridae	Paranthura	<i>Paranthura costana</i>	Bate & Westwood, 1866	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Echinodermata	Ophiuroidea	Ophiurida	Ophiuridae	Ophiura	<i>Ophiura sp.</i>	Lamarck, 1801	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Nemertea					Nemertea n.d.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

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APPENDIX G: SEDIMENT DATA SHEETS

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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APPENDIX H: CORRELATIONS

Table 44 – BEST analysis, conducted between sediment grain-size variables and phytoplankton community

BEST	
Biota and Environment matching	
Rank correlation method: Spearman	
Method: BVSTEP	
Termination criteria:	
rho > 0.95	
delta rho < 0.001	
Variables	
1 Total Suspended Solids	
2 Total Phosphorus	
3 Ammoniacal Nitrogen	
4 Nitrate Nitrogen	
5 Orthophosphate	
6 Arsenic	
7 Barium	
8 Copper	
9 Iron	
10 Mercury	
11 Nickel	
12 Zinc	
Best results	
0.21	
Corr. Selections	
2;3;5	

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Table 45 – BEST analysis, conducted between sediment grain-size variables and zooplankton community

BEST
Biota and Environment matching
Rank correlation method: Spearman
Method: BVSTEP
Termination criteria:
rho > 0.95
delta rho < 0.001
Variables
1 Total Suspended Solids
2 Total Phosphorus
3 Ammoniacal Nitrogen
4 Nitrate Nitrogen
5 Orthophosphate
6 Arsenic
7 Barium
8 Copper
9 Iron
10 Mercury
11 Nickel
12 Zinc
Best results
0.51
Corr. Selections
1;2;5;7;9;10

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Table 46 – DistLM analysis, conducted using the most influential environmental variables identified by the previous BEST analysis and zooplankton community

DistLM (Distance based linear models)							
Zooplankton community (specie / abundance matrix)							
MARGINAL TESTS							
Variable	SS(trace)	Pseudo-F	p	Prop.			
Total Suspended Solids	807.010	0.998	0.476	0.091			
Total Phosphorus	1355.400	1.798	0.012	0.152			
Orthophosphate	700.030	0.854	0.705	0.079			
Barium	843.220	1.048	0.349	0.095			
Iron	877.460	1.095	0.312	0.099			
Mercury	1124.900	1.448	0.091	0.126			
SEQUENTIAL TESTS							
Variable	R ²	SS(trace)	Pseudo-F	p	Prop.	Cumul.	res.df
Total Suspended Solids	0.091	807.010	0.998	0.449	0.091	0.091	10
Total Phosphorus	0.225	1194.400	1.560	0.041	0.134	0.225	9
Orthophosphate	0.308	733.810	0.953	0.561	0.083	0.308	8
Barium	0.400	819.430	1.074	0.401	0.092	0.400	7
Iron	0.486	764.090	1.002	0.493	0.086	0.486	6
Mercury	0.576	800.120	1.060	0.440	0.090	0.576	5
Specified solution							
R ²							
0.58							

Table 47 –Spearman’s rank correlation coefficients (r) between sediment environmental variables and contaminants. Positive and negative values indicate direct and inverse relationships, respectively

Variables in sediment	Depth	% Sand	% Silt	% Clay	TOC	Carbonates	N-Tot	P-Tot	Aluminum	Arsenic	Barium	Cadmium	Copper	Iron	Lead	Mercury	Nickel	Cr-Tot	Vanadium	Zinc	TPH	C>12	ΣPAHs
Depth																							
% Sand	-0.86																						
% Silt	0.65	-0.82													Spearman correlation (-0.5 > r > 0.5)								
% Clay	0.35	-0.32	-0.28																				
TOC	-0.22	0.27	0.00	-0.45																			
Carbonates	-0.15	-0.04	0.04	0.01	-0.81																		
N-Tot	-0.91	0.68	-0.52	-0.28	0.26	0.17																	
P-Tot	0.43	-0.48	0.53	-0.07	-0.17	0.08	-0.38																
Aluminum	0.56	-0.46	0.36	0.18	-0.17	-0.12	-0.63	0.41															
Arsenic	0.08	0.04	-0.17	0.21	0.05	-0.12	-0.08	-0.05	0.56														
Barium	0.45	-0.50	0.52	-0.02	0.03	-0.31	-0.47	0.59	0.42	-0.28													
Cadmium	0.02	-0.24	0.38	-0.22	-0.35	0.40	0.02	0.56	0.02	-0.40	0.46												
Copper	0.60	-0.52	0.49	0.06	0.25	-0.51	-0.60	0.41	0.60	0.31	0.65	-0.09											
Iron	0.60	-0.59	0.49	0.17	-0.31	0.05	-0.58	0.76	0.83	0.31	0.54	0.45	0.44										
Lead	0.42	-0.35	0.31	0.08	0.28	-0.44	-0.46	0.15	0.72	0.70	0.19	-0.40	0.77	0.40									
Mercury	0.04	-0.13	0.31	-0.30	0.12	-0.11	0.03	0.21	-0.29	-0.65	0.63	0.49	0.12	-0.04	-0.39								
Nickel	0.84	-0.76	0.54	0.38	-0.10	-0.23	-0.77	0.41	0.73	0.46	0.36	-0.18	0.76	0.62	0.78	-0.22							
Cr-Tot	0.78	-0.69	0.56	0.24	-0.19	-0.12	-0.77	0.51	0.87	0.46	0.46	-0.06	0.75	0.74	0.77	-0.20	0.94						
Vanadium	0.55	-0.45	0.35	0.18	-0.12	-0.09	-0.59	0.38	0.91	0.69	0.20	-0.23	0.63	0.67	0.85	-0.48	0.84	0.92					
Zinc	0.62	-0.66	0.60	0.10	0.04	-0.23	-0.50	0.55	0.55	0.20	0.60	-0.01	0.75	0.54	0.60	0.23	0.78	0.79	0.63				
C>12	0.51	-0.49	0.51	-0.04	-0.19	0.12	-0.44	0.60	0.05	-0.44	0.36	0.42	0.09	0.41	-0.23	0.40	0.23	0.20	-0.03	0.27			
TPH	0.51	-0.49	0.51	-0.04	-0.19	0.12	-0.44	0.60	0.05	-0.44	0.36	0.42	0.09	0.41	-0.23	0.40	0.23	0.20	-0.03	0.27	1.00		
ΣPAHs	-0.67	0.52	-0.35	-0.28	0.53	-0.27	0.71	-0.43	-0.63	-0.24	-0.14	-0.03	-0.23	-0.65	-0.27	0.30	-0.66	-0.71	-0.65	-0.34	-0.50	-0.50	

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Table 48 – BEST analysis, conducted between sediment grain-size variables and macrobenthic community

BEST	
Biota and Environment matching	
Rank correlation method: Spearman	
Method: BVSTEP	
Termination criteria:	
$\rho > 0.95$	
$\Delta \rho < 0.001$	
Variables	
1 Depth	
2 % Sand	
3 % Silt	
4 % Clay	
Best results	
0.15	
Corr. Selections	
1;4	

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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Table 49 – BEST analysis conducted, between sediment chemical variables and macrobenthic community

BEST	
Biota and Environment matching	
Rank correlation method: Spearman	
Method: BVSTEP	
Termination criteria:	
rho > 0.95	
delta rho < 0.001	
Variables	
6 Carbonates	
7 Total Nitrogen	
8 Total Phosphorus	
9 Aluminum	
10 Arsenic	
11 Barium	
12 Cadmium	
13 Copper	
14 Iron	
15 Lead	
16 Mercury	
17 Nickel	
18 Total Chromium	
19 Vanadium	
20 Zinc	
21 Hydrocarbons C>12	
22 Total Petroleum Hydrocarbons (TPH)	
23 ΣPAHs	
Best results	
0.34	
Corr. Selections	
11;18	

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Table 50 – DistLM analysis, conducted using the most influential environmental variables identified by the previous BEST analysis and macrobenthic community

DistLM (Distance based linear models)							
Macrozoobenthos community (species / abundance matrix)							
MARGINAL TESTS							
Variable	SS(trace)	Pseudo-F	p	Prop.			
Depth	2633.500	1.920	0.083	0.121			
% Clay	2358.800	1.695	0.110	0.108			
Barium	3264.800	2.461	0.026	0.149			
Total Chromium	2008.100	1.418	0.210	0.091			
SEQUENTIAL TESTS							
Variable	R ²	SS(trace)	Pseudo-F	p	Prop.	Cumul.	res.df
Depth	0.120	2633.500	1.920	0.088	0.121	0.121	14
% Clay	0.194	1613.600	1.192	0.273	0.074	0.194	13
Barium	0.314	2625.700	2.105	0.084	0.120	0.315	12
Total Chromium	0.354	869.320	0.678	0.687	0.094	0.355	11
Specified solution							
R ²							
0.35							

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APPENDIX I: DATASETS

		Implementation of Field Activities in support to the ESBS for Exploration Wells Asopus-1A and Asopus-1B in Block 2 – Ionian Sea Environmental Baseline Report				
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