



EMODnet Thematic Lot n°2 – Seabed Habitats

(CINEA/EMFAF/2022/3.5.2/SI2.900370)

Start date of the project: 25/09/2023 (24 months)

Phase V

Quarterly Progress Report (1)

Reporting Period: 25/9/2023 – 31/12/2023

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1. Highlights in this quarter

[List the quarterly progress for each of the tasks specified in Section 1.4.2 of the Tender Specifications; provide an explanation for any tasks in which progress has not been noted. Provide in the table a list of all Milestones and Deliverables as from the technical workplan in numerical order, the date due, status and date delivered. Max 2 pages]

Task 1: Maintain and improve a common method of access to data held in repositories

With help from the previous WP2 lead (JNCC), ISPRA have designed a new data collation tracker, which allows us to track data acquisition, preparation, and upload status. The data acquisition status can also be summarised efficiently to report against Indicator 3. All consortium members have begun work to gather and format the data described in the project proposal.

According to the deliverable D2.03, due by the project month 2, point data, map and the EFH templates (tables and shapefiles) were updated by JNCC and ISPRA. Most of the updates were requested to make the ESH products fully compliant with the EurOBIS environment as, in the current phase, all the unrestricted habitats point data will be directly uploaded into this repository. D2.04 (guidance, tutorials and webinars), due by month 4th is ongoing and most of the work, related to the updates, has been already carried out. Considering the updates produced within D02.03, during the kick off meeting it was agreed to maintain the tutorial and webinar already produced in the previous phases, as they fulfil the new templates.

Task 2: Construct products from one or more data sources that provide users with information about the distribution and quality of parameters in time and space

The EUSeaMap products (WP1) will be produced in 2025 and in the meantime, we have noted action points for preparation of the EUSeaMap update, i.e. regarding issues and points of improvement. The knowledge transfer from the previous WP1 lead (Ifremer) to the new lead in this phase (GEUS) has been started. Ifremer have transferred relevant tools and materials such as the updated EUSeaMap user guide, modeling codes (R+Arc), and relevant model input layers to GEUS, and a plan for in-person training has been agreed.

MI, Syke and other partners have been promoting ESH products via EMODnet news, Twitter and LinkedIn to ensure that potential users are aware of them.

MI presented an ESH Products poster at the Hydro 23 conference to raise awareness of EMODnet in the International hydrographic community and identify potential data providers.

The consortium has been contacted by EU Horizon projects MARCO-BOLO and GES4SEAS, and we have agreed to assist them in their work which uses our products, e.g. the Seagrass EOVI and EUSeaMap.

The consortium convened engagement with Biology and Geology thematic lots at the EMODnet Jamboree in order to agree a strategy for co-operation and development of joint outputs in the current phase.

Task 3: Develop procedures for machine-to-machine connections to data and data products.

Nothing to report for this quarter.

Task 4: Contribute data, data products and content to EMODnet central portal that allows users to find, view and download data and data products.

We continue to work closely with the CP team to facilitate the optimum display of ESH data and products on the CP map viewer, finding solutions to issues as they arise in a timely manner.

Task 5: Contributing static content to dedicated spaces in the Central Portal.

The consortium has engaged with the CP team at the EMODnet Jamboree in order to discuss and assess the requirements for static content as the transition to CP nears completion

Task 6: Ensure the involvement of regional sea conventions.

Syke participated in planning for the HELCOM Benthic Habitat Mapping Products workshop which will be held in spring 2024.

Task 7: Contribute to the implementation of EU legislation and broader initiatives for open data.

Convened and co-chaired a Townhall on EMODnet For EU Policy at the Jamboree which was well attended by policy makers, data users and the biodiversity research community.

Participated in the ICES Working Group For Marine Habitat Mapping with updates on habitat mapping initiatives and requirements.

Participated in Technical Subgroup on seabed habitats and sea-floor integrity (TG Seabed).

Task 8: Monitor quality/performance and deal with user feedback.

During this quarter we received several pieces of feedback through our inbox and via the JIRA helpdesk and have always responded and resolved any issues promptly. For example, we have answered several technical queries relating to inputs to EUSeaMap and have also signposted users to appropriate seabed habitats data in direct response to queries. We also receive alerts about web performance problems and resolve them as necessary.

Status of the Milestones and Deliverables listed in the workplan

Milestone/Deliverable in numerical order	WP	Date due	Status (To do/ Delivered/ Delayed)	Date delivered	If Delayed: reason for delay and expected delivery date
D1.01: Modified substrate data product including biogenic substrate and data not possible to include in EMODnet Geology	1	26/07/2025	To do		

product, but which would improve the broad-scale seabed habitat map for Europe (EUSeaMap) [dependent on new product from Geology]					
D1.02 : Confidence layer for modified substrate data product published	1	26/09/2025	To do		
D1.03 : Tool to spatially simplify EUSeaMap	1	26/05/2025	To do		
D1.04 : Updated broad-scale seabed habitat map	1	26/09/2025	To do		
D1.05 : Confidence assessment for updated broad-scale seabed habitat map, in all considered classifications	1	26/09/2025	To do		
D2.01 : An expanded library of maps of communities, biocenoses, biotopes and habitats for all of Europe and Caribbean Sea ingested and converted to a standard format, with metadata for every map	2	26/08/2025	To do		
D2.02 : An expanded collation of point records of communities, biocenoses, biotopes and habitats for all of Europe and Caribbean Sea ingested and converted to a standard format, with metadata for every dataset	2	26/08/2025	To do		
D2.03 : Updated and integrated templates for habitat map data exchange formats	2	26/11/2023	To do		
D2.04 : Webinars, tutorials or other forms	2	26/01/2024	To do		

of training material on the EMODnet Seabed Habitats data submission process					
D2.05 : An expanded library of modelled maps of specific habitats for all of Europe ingested and converted to a standard format, with metadata for every dataset	2	26/08/2025	To do		
D2.06 : Controlled vocabulary lists for classification systems published on NERC Vocabulary Server, as required	2	26/08/2025	To do		
D2.07 : An Expanded library of maps of Essential Fish habitats maps for major fish species in the North Sea, Macaronesia, Eastern Mediterranean Sea and, where possible, other European basins, ingested and converted to a standard format, with metadata for every map	2	26/08/2025	To do		
D2.08 : An expanded library of coastal wetlands habitats for all of Europe ingested and converted to a standard format, with metadata for every dataset	2	26/08/2025	To do		
D3.01 : A list of products to be created or updated and product specifications (New)	3	26/03/2024	To do		
D3.02 : A combined, harmonized data product showing the best evidence for extent and distribution of the	3	26/05/2025	To do		

Essential Ocean Variable “Live hard coral cover” in Europe and Caribbean Sea, with metadata (Update and new)					
D3.03 : A combined, harmonized data product showing the best evidence for extent and distribution of the Essential Ocean Variable “Seagrass cover” in Europe and Caribbean Sea, with metadata (Updated and new)	3	26/06/2025	To do		
D3.04 : A combined, harmonized data product showing the best evidence for extent and distribution of the Essential Ocean Variable “Macroalgal canopy cover” in Europe, with metadata (Update and new)	3	26/07/2025	To do		
D3.05 : A combined, harmonized data product showing the best evidence for extent and distribution of the Essential Ocean Variable “Mangrove cover” in Caribbean, with metadata (Update and new)	3	26/08/2025	To do		
D3.06 : A combined, harmonized data product showing the best evidence for the extent of coastal wetland type in Europe and the Caribbean, with metadata (Update and new)	3	26/05/2025	To do		
D3.07 : Evaluation of EFH approaches to	3	26/05/2025	To do		

determine map suitability to combine into products useful for fisheries management and biodiversity conservation (Update and new)					
D3.08 : Create a harmonised map of potential VMEs and potential degraded habitats (New)	3	26/08/2025	To do		
D3.09 : Combined, harmonized data products showing the best evidence for extent and distribution of habitats defined in other classifications in all regions, with metadata, depending on stakeholder needs (New)	3	26/08/2025	To do		
D3.10 : An updated combined, harmonized data product showing the best evidence for the extent of biogenic substrate in all regions, with metadata (Update)	3	26/01/2025	To do		
D3.11 : Report detailing the construction of the Essential Ocean Variable data products (Update)	3	26/08/2025	To do		
D3.12 : Report detailing the construction of the biogenic habitat data product (Update)	3	26/05/2025	To do		
D3.13 : Report detailing the construction of the coastal wetlands habitats data product (Update)	3	26/05/2025	To do		
D3.14 : Report(s) detailing the construction of the data products defined by	3	26/09/2025	To do		

stakeholder needs (New)					
D3.15 : Report detailing the construction of the Essential Fish Habitat data products (New)	3	26/09/2025	To do		
D3.16 : Report detailing the construction of the harmonisation of Vulnerable Marine Ecosystems (VME) and other priority habitats (New)	3	26/09/2025	To do		
D4.01 : Geoserver OGC spatial web-services (WMS, WFS, WCS) and a GeoNetwork INSPIRE-compliant metadata instance	4	25/09/2023	Delivered	25/09/2023	
D4.02 : Access all unrestricted habitat ground-truthing data from the EMODnet Biology database via web services	4	24/09/2025	To do		
D4.03 : A publicly available list of all new data and products collected and created under WP1, WP2 & WP3 that have been published via EMODnet Seabed Habitats in year 1	4	24/09/2024	To do		
D4.04 : A publicly available list of all new data and products collected and created under WP1, WP2 & WP3 that have been published by EMODnet Seabed Habitats in year 2.	4	24/09/2025	To do		
D4.05 : Direct link to services from the Regional Sea	4	24/09/2024	To do		

Conventions where feasible					
D5.01 : Evidence of engagement with RSCs and relevant working groups to gather feedback and needs of habitat data requirements and products that will help Member States to fulfil reporting obligations	5	26/09/2023 – 26/09/2025	To do		
D5.02 : Infographics illustrating the spatial distribution, resolution and availability of ESH product and data holdings	5	26/09/2024	To do		
D5.03 : Infographic on viewing, accessing and downloading ESH product and data holdings	5	26/11/2024	To do		
D5.04 : Promotion of data provider contributions in co-operation with the Central Portal via, news items and social media.	5	26/09/2023 – 26/09/2025	To do		
D5.05 : Use cases on the EMODnet Central Portal.	5	26/09/2023 – 26/09/2025	To do		
D5.06 : Updated prominent summary of the data and data products available from EMODnet Seabed Habitats on the CP (with WP4)	5	26/09/2024	To do		
D6.01 : Progress reports to CINEA, DG MARE and EMODnet Secretariat	6	15th of Jan, Apr, Jul & Oct each year	To do		
D6.02 : Interim report	6	26/09/2024	To do		
D6.03 : Final report	6	26/09/2025	To do		

2. Identified issues: status and actions taken

[Provide an **overview of issues** identified by CINEA/ DG MARE/ Secretariat (Table A) in the past quarter - new as well as pending ones, the status of those issues, and actions taken to address them and/or roadmap with remaining actions planned to resolve the issues. In Table B, provide information about any issues and challenges identified by yourself.]

A. Priority issue(s) identified and communicated by CINEA/ DG MARE/ SECRETARIAT				
Priority issue	Status (Pending/ Resolved)	Action(s) taken/ remaining actions planned	Date due	Date resolved
EM-88 (Sub-task) Seabed Habitats - Web Services MetadataUrl and DataUrl fields	pending	All metadata url issues resolved. No current outstanding problems but issue remains open as regular checks occur	none	
EM-146 (Sub-task) Seabed Habitats Quality of Service Monitoring: Several of the services did not meet the 99% availability this quarter, and one of the WMS didn't meet the performance requirement of 5 sec.	pending	substantial work has gone into investigating the causes of the performance issues and the development of a solution (the so-called 'self-healing' GeoServer. However, this solution is relatively novel and has come across several hurdles. We are currently undertaking some data cleansing to find and eliminate any geometry issues and to add an additional Geoserver instance to help share the load.	none	
EM-391 (Sub-task) SBH review of the new CP Map Viewer	pending	tasks complete to date but this issue remains open for future requests for SBH to review the CP	none	
EM-644 (Sub-task) Seabed Habitats to provide input to the Tools & Guidelines section	pending	Tools and guidelines have been added to the central portal. Report uploads are in progress	none	
EM-665 (Task) TWG12 - CP & SBH to investigate if CP viewer can deal with layer group styles	pending	we have investigated this but it does not resolve the duplicated legend issue for group layers in the central portal. A temporary solution has been proposed and work is underway.	none	

EM-874 (Sub-task) Seabed Habitats to provide metadata records relevant to Ocean Hackathon 2023	Resolved	Relevant metadata links were provided.	none	11/8/2023
EM-905 (Bug) High - Geoserver 2x Server Side Request Forgery issues (CVE-2023-43795 & CVE-2023-41339)	Pending	Update of the Seabed Habitats Geoserver is planned for 04/01/2024.	none	

B. Issues / challenges identified by the thematic assembly group itself

Priority issue / challenge	Status (Pending/ Resolved)	Action(s) taken / remaining actions planned	Date due	Date resolved
EM-317 (Improvement) 'Seabed Habitats' missing from list of Topics on Newsroom	pending	This is a issue/suggestion that SBH made related to the functionality of the CP. We believe this is done so the issue can be closed	none	
EM-412 (New Feature) In the layer catalogue on new central portal, indicate which layer groups contain active layers	pending	This is a issue/suggestion that SBH made related to the functionality of the CP	none	
EM-513 (New Feature) In the layer catalogue, add the ability toggle entire layer groups on or off	pending	This is a issue/suggestion that SBH made related to the functionality of the CP	none	
EM-515 (New Feature) Ability to filter habitat layers by habitat type or map ID	pending	This is a issue/suggestion that SBH made related to the functionality of the CP. The majority of the filters have been enabled but still missing a gui freetext filter.	none	
EM-621 (Improvement) manual sorting of layers, rather than alphabetically	pending	This is a issue/suggestion that SBH made related to the functionality of the CP	none	
EM-623 (Improvement) improve access to metadata and download	pending	This is a issue/suggestion that SBH made related to the functionality of the CP	none	
EM-798 (Task) Products catalogue - metadata not updated	pending	Issue flagged by SBHs whereby changes we implement to our metadata are not being carried through to the products catalogue. We have provided some examples for the central team to look at		
EM-882 (Task) New and updated Seabed Habitats products for CP viewer	Resolved	New and updated products added to CP viewer as planned.	none	11/14/2023

<p>We have found a problem with the new version of the EMODnet DTM. There are areas, typically bays and estuaries, with depth values that are too high to a sometimes surprising degree. It appears that in all these areas GEBCO 2022 is used. This problem will lead to classification errors in EUSeaMap, and we cannot publish EUSeaMap with such classification errors (they cover too large an area).</p>	<p>pending</p>	<p>We have reported the problem to EMODnet Bathymetry and discussed it with them. Their view is that the problem should be solved by GEBCO first, and as a result future versions of the EMODnet DTM will de facto be corrected.</p>		
<p>We have submitted a number of habitat point datasets to EMODnet Biology during this phase, however since this lacks occurrence data it requires significant technical updates to the EMODnet Biology systems to facilitate the display of this data through their web services. Until this is done we cannot progress our plan to submit the habitat point data via this route.</p>	<p>pending</p>	<p>Seabed Habitats and Biology have had a number of discussions about this and will continue work on this in 2024.</p>		

3. Communication assets

[In Table A, list peer reviewed publications directly (co-)authored by consortium and project partners in the reporting period. In Table B, list all non-peer reviewed publications (co-)authored. In all cases, indicate the type of publication, provide the full reference incl. title, volume and issue etc., and whether the publication is open or closed access.]

A. (Co-)Authored peer-reviewed publications in the quarter					
Date of publication	Type of publication	Full reference	ISBN	DOI	Is it open access? Yes/No
18/11/2023	Paper	Riccardo Arosio, Andrew J. Wheeler, Fabio Sacchetti, Janine Guinan, Sara Benetti, Eimear O’Keeffe , Katrien J. J. van Landeghem, Luis A. Conti, Thomas Furey & Aaron Lim (2023) The geomorphology of Ireland’s continental shelf, Journal of Maps, 19:1		https://www.tandfonline.com/doi/full/10.1080/17445647.2023.2283192	Yes
20/12/2023	Peer-reviewed scientific report	Michela Giusti, Michela Angiolillo, Simonepietro Canese, Leonardo Tunesi . Unexpected mobility activities of the sedentary sea pen		https://doi.org/10.21203/rs.3.rs-3754589/v1	Yes

		Pteroeides griseum (Cnidaria: Scleralcyonacea).			
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B. Other/non-peer reviewed types of publications (co-)authored in the quarter					
Date of publication	Type of publication	Full reference	ISBN	DOI	Is it open access? Yes/No
Oct 2023	Conference proceedings	Fabien Caroir, Frank Chanier, Fabien Paquet, Julien Bailleul, Dimitris Sakellariou , Virginie Gaullier, Agnès Maillard and Louise Watremez. Architecture and spatio-temporal evolution of progradation sequences related to the last glacial cycles in Oreoi-Artemision Channel, Greece.		https://www.researchgate.net/publication/375795480_Architecture_and_spatio-temporal_evolution_of_progradation_sequences_related_to_the_last_glacial_cycles_in_Oreoi-Artemision_Channel_Greece	Yes

Nov 2023	Conference proceedings	Annunziatellis, A. et al. Underwater photogrammetry: Full Motion Video and integration of machine learning algorithms a case study applied to MSFD seabed habitat monitoring. Conference: Marine Geological & Habitat Mapping (GEOHAB) May 16 th – 20 th 2022, Venice, Italy.	http://dx.doi.org/10.13140/RG.2.2.27369.06247	Yes
10/11/2023	Technical Report	Vasquez Mickaël, Ségeat Benjamin, Cordingley Ashley, Tilby Emily, Wikström Sofia, Ehrnsten Eva, Al Hamdani Zyad, Agnesi Sabrina, Andersen Mikkel Skovgaard, Annunziatellis Aldo, Askew Natalie, Bekkby Trine, Bentes Luis, Daniels Elyana, Doncheva Valentina, Drakopoulou Vivi, Ernstsén Verner Brandbyge, Gonçalves Jorge, Karvinen Ville, Laamanen-Nicolas Leena, Lillis Helen, Loukaidi Valia, Manca Eleonora, McGrath Fergal, Mo Giulia, Monteiro Pedro, Muresan Mihaela, Nygard Henrik, O'Keefe Eimear, Pelembe Tara, Radicioli Martina, Sakellariou Dimitris, Teaca Adrian, Todorova Valentina, Tunesi Leonardo, Woods Helen (2023). EUSeaMap 2023, A European broad-scale seabed	https://doi.org/10.13155/97116	Yes

		habitat map, Technical Report. EASME/EMFF/2020/3.1.11/Lot3/SI2.84 3624 – EMODnet Thematic Lot n° 3 – Seabed Habitats - D1.15			
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For a compressive overview of publications referring to/making use of EMODnet data and/or data products, please consult Google Scholar.

4. Monitoring indicators

[Refer to the standardised monitoring tool, i.e. Europa Analytics, to complete the indicators excel template, and provide a short explanation in the table below on the numbers and trends for each indicator when possible/applicable. Indicate clearly if monitoring was carried out using tools other than Europa Analytics.]

Comments on the progress indicators in the indicators spreadsheet		
Progress indicator	Means of collecting figures	Comment
1. Current status and coverage of total available thematic data A) Volume and coverage of available data	Custom postgresql views and geoserver layers including vocabulary keyword tagging) with python scripting	No new data uploaded during the quarter as per workplan.
What is your opinion on the data coverage within EMODnet for your thematic?	N/A	Point data coverage is concentrated in the EEZs of countries where project partners are based. There is likely to be much more data to be found in countries like Spain, Poland, Croatia, etc. We will also look to improve the coverage in these areas during the current phase.
B) Usage of data in this quarter	Custom geoserver layers (including vocabulary keyword tagging), with python scripting, geoserver server-side logging and data download logging	Overall downloads, WMS and map visualisations are higher than in the previous quarter but WFS requests are slightly down. Reasons are uncertain but a there was a bulk upload of data towards the end of last quarter so there may be a greater number of users accessing the new data.
2. Current status and coverage of total number of data products	Custom postgresql views and geoserver layers	No new data uploaded during the quarter as per workplan.

A) Volume and coverage of available data products	including vocabulary keyword tagging) with python scripting	
B) Usage of data products in this quarter	Custom geoserver layers (including vocabulary keyword tagging), with python scripting, geoserver server-side logging and and data download logging	Overall increase in the number of downloads, WMS, map visualisations and WFS hits for most sub-themes compared to the previous quarter. This is possibly due to users downloading/utilising the new Seabed habitats data products that were released towards the end of the previous quarter e.g. EUSeaMap 2023, updated biogenic substrate and essential ocean variable composite products.
3. Internal and external organisations supplying/approached to supply data and data products within this quarter	Tracking tables in SharePoint.	The first data delivery of this project phase is planned at the end of February 2024, no data to report for Q4 2023.
4. Online 'Web' interfaces to access or view data	N/A	No changes since last quarter.
5.1 Daily number of page views of EMODnet Thematic entry page	Europa Analytics	
5.2 Quarterly total number of visitors, page views, unique page views and percentage of returning visitors	Europa Analytics	

The monitoring numbers reported as part of the progress monitoring of EMODnet performance are collected through Europa Analytics, unless reported otherwise.

5. Annex: Other documentation attached

[List in Annex if you wish to provide any additional information.]