



EMODnet



European Marine
Observation and
Data Network

EMODnet Thematic Lot n°2 – Geology

EASME/EMFF/2020/3.1.11/Lot2/SI2.853812

Start date of the project: 25/09/2021 (48 months),

Renewal of the contract 25/9/2023-24/9/2025

and

CINEA/EMFAF/2024-25/3.6/4500124305

Start date of the project: 25/9/2025 (24 months)

Operational Phase

Quarterly Progress Report (Q3/2025)

Reporting Period: 01/07/2025 – 30/09/2025



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1. Highlights in this quarter

Task 1: Maintain and improve a common method of access to data held in repositories. As the principal holders of marine geological information, the EMODnet Geology partnership ensures that data from all of the European regional seas are provided to the project. The project is built on information primarily held by the project organisations, but also connected to other owners of information by offering data delivery to EMODnet either through the EMODnet Data Ingestion or straight to the EMODnet Geology.

During the renewal phase of the contract, data deliveries from project organisations to the WP's continued until 24 September 2025. A new EMODnet Geology phase started on 25 September 2025, with detailed plans and schedules currently under preparation.

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. In general, the data sets submitted by the project members were added to the different EMODnet Geology data products and were updated on the EMODnet Portal by the end of the renewal phase of the project in 2025.

Task 3: Develop procedures for machine-to-machine connections to data and data products. We have several connections available to external applications - specifically OGC standards WMS, WMS-C, WFS, and CSW. All project organisations can connect directly to the portal PostgreSQL-database and create advanced queries on the data products of the project.

Task 4: Contribute data, data products and content to a central portal that allows users to find, view and download data and data products. In connection with the conclusion of the renewal phase on 24 September 2025, all data products from WP3 to WP9 have been updated during this quarter. The exception is WP5 Coastal behaviour, which has not updated its existing products but has fulfilled its obligations related to the launch of its new product, Coastal Resilience and Vulnerability, earlier this year.

The recent updates for WP3 Seabed substrate and WP4 Seafloor geology data products are included in the Progress Indicator 2.A (Section 4. Monitoring Indicators). Please note that the data products describing WP5 Coastal behaviour, WP6 Events and probabilities, WP7 Minerals and WP8 Submerged landscapes are missing from the Progress Indicator 2.A, because these features are mainly line or point data or if areal, then so small that they don't cover such areas that they would contribute to any percentage of coverage of whole sea areas.

Task 5: Contributing content to dedicated spaces in EMODnet Portal. We have been working closely with the EMODnet Portal to have our data products available to any desired spaces there.

Task 6: Ensure the involvement of regional sea conventions. EMODnet Geology has been open to any possible collaboration with the RSC's. In September 2025, the EMODnet Geology Coordinator and representative held an online meeting with the Director of the Mediterranean Science Commission (CIESM) to discuss the possibilities for future collaboration. It was agreed to continue the dialogue.

Task 7: Contribute to the implementation of EU legislation and broader initiatives for open data. EMODnet Geology has been working in close cooperation with DG MARE, CINEA, and the Secretariat to contribute to all joint EMODnet efforts on the implementation of EU legislation and broader initiatives for open data. More specifically our data products could be useful e.g., for Maritime Spatial Planning Directive, Marine Strategy Framework Directive, Habitats Directive, Biodiversity Strategy, Blue economy, Green Deal, Blue Growth and European Critical Raw Materials Act.

Several EMODnet Geology organisations are participating in HORIZON 2.5 - Climate, Energy and Mobility project Geological Service for Europe (GSEU), which enables synergy and direct feedback between these two projects. From the GSEU side, EMODnet Geology attributes are being queried and translated into applied attributes needed to build a geo-assessment matrix for determining seabed suitability to construction of

offshore windfarms. The former EMODnet Geology coordinator is in the Advisory Board of Horizon Europe (HE) project TRIDENT (until 12/2027) and thus acting as a link between the project and EMODnet.

EMODnet Geology coordination and/or representatives have been in direct communication with European Digital Twin of the Ocean (EDITO) to enable the use of the EMODnet Geology data layers and to promote the interaction between these initiatives.

Task 8: Monitor quality/performance and deal with user feedback. The ongoing monitoring of metadata and services (EM-85 and EM-142) by the EMODnet Portal revealed no issues requiring action from the Geology team. There have been periods of downtime caused by network errors, but these have been brief, and we have still met our uptime obligations.

Task 9: Maintain the existing thematic web portal for a maximum of six months from the start of the projects. The original thematic portal is now closed. The original thematic portal had been working for nearly two years since the launch of the central portal in January 2023.

Highlights of the different work packages:

WP1 – Project management. During the last quarter of the renewal phase EMODnet Geology focused on finalisation of its data products. During this period, the EMODnet Geology Steering Group (SG) held one online meeting. Final report and invoice of balance were submitted on time 24 September 2025.

The new phase of EMODnet Geology began on 25 September 2025. On 30.9-1.10.2025, EMODnet Geology held its kick-off meeting for a new phase online. During the meeting all WP's presented their plans and preliminary timetables for the new phase.

WP2 – Geological data specification and sourcing. WP2 continued through the end of the renewal phase. The deliverables were finalised by the end of the renewal phase on September 24, 2025.

The online kick-off meeting for the new phase discussed, among others, the plans for the data specification and sourcing, and the discussion will continue during the 2nd part of the kick-off, which will be held in connection with the EMODnet Jamboree in November 2025.

WP3 – Seabed substrate. All WP3 Seabed substrate data products were updated and published at the EMODnet portal accordingly to the project schedule. One partner delivered data to the Erosion index data layer. The names of all WP3 data layers displayed in the EMODnet portal's map viewer were revised to be more user-friendly in collaboration with WP9.

WP4 – Seafloor geology. The Caribbean Sea data (pre-Quaternary, Quaternary, geomorphology, general physiographic features) were compiled according to the WP4 and vocabularies, adapted to the WP 4 GIS-data structure and finally published through WP9 at the EMODnet portal. In addition to data received from the Caribbean Sea subgroup, new WP4 data were received from six project organisations including a data provider from the Caspian Sea area.

A commentary paper based on EGU 2025 session “Geologic Mapping in Challenging Environments: from Ocean Floors to Outer Space” has been submitted to Nature for a review. The paper includes contributions from WP 3 and 4, as well as input from key participants of the session.

WP5 – Coastal behaviour. During Q3 WP5 and WP9 discussed technical matters on how to realize shoreline migration plots on the portal. A proposed solution was tested, and WP5 is ready to implement it shortly.

WP6 – Geological events and probabilities. During Q3 the final WP6 layers were circulated to project organisations for their validation, which extended over two months (July and August 2025), due to mismatching holiday intervals in different countries. Final WP6 products were delivered to WP9 at the beginning of September 2025 and published on the Portal. Metadata corresponding to each WP6 layer were

updated on the EGDI website. Further data and updates received during the reporting period will be included in the next update since final layers were already undergoing validation. Two contributions concerning EMODnet Geology WP6 data and use case were presented at the Italian Geological Society Congress, held in Padova on September 16-18.

WP7 – Minerals. During this reporting period WP7 focused on finalisation of the merged datasets with new and updated data, update of the marine mineral theme assignments (primarily to critical marine minerals) and publication of the updated data on the portal.

WP8 – Submerged landscapes. WP8 has focused on finalizing its work before the end of the renewal phase and has prepared for a leadership transition, as the responsibility for the work package will shift from the British Geological Survey to the University of Tartu, Estonia. WP8 has developed an Arc StoryMap describing their work on submerged landscapes, which is planned to be released on the EMODnet Portal during Q4/2025.

WP9 – Data management, web portal and services. WP9 has been busy updating datasets during this quarter. However, there has also been time to develop a prototype for diagrams showing time series of shoreline positions. This work was initiated by WP5. WP9 will test with larger datasets before moving into production during this phase.

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
M1: Evaluation of the progress	WP9, all WP's	October 2024	Delivered	5-7.11.2024, Q4/2024 report	
M2: Data specification and sourcing ready	All WP's	June 2025	Delivered		
M3: Thematic data products updated on CP	WP1&WP9	24.9.2025	Delivered		
D1.1-8: Quarterly reports 3/2023, 4/2023, 1/2024, 2/2024, 3/2024, 4/2024, 1/2025, 2/2025	WP1/all	15.10.2023	Delivered	13.10.2023	
		15.1.2024	Delivered	15.1.2024	
		15.4.2024	Delivered	15.4.2024	
		15.7.2024	Delivered	12.7.2024	
		15.10.2024	Delivered	15.10.2024	
		15.1.2025	Delivered	15.1.2025	
		15.4.2025	Delivered	15.4.2025	
		15.7.2025	Delivered	15.7.2025	
15.10.2025*	This report	15.10.2025			
D2.1: Interim report (36 months)	WP1/all	24.9.2024	Delivered	1.10.2024	
D2.2: Final report (48 months)	WP1/all	24.9.2025	Delivered	24.9.2024	
D3.1: First data products/maps updated on Central Portal	WP9/WP1/all	January 2025	Delivered	December 2024	
D3.2: Final data products/maps available	All WP's	24.9.2025	Delivered	24.9.2024	

* The Status of the Milestones and Deliverables listed in the workplan above mainly reflects the aims of the Renewal phase of the contract 25/9/2023-24/9/2025 EASME/EMFF/2020/3.1.11/Lot2/SI2.853812, as most of the work carried out during Q3 was conducted under that phase. An exception is the Q3/2025 report (i.e. this report), which is actually part of the workplan for the new phase contract CINEA/EMFAF/2024-25/3.6/4500124305, which began on 25/9/2025.

2. Identified issues: status and actions taken

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-85 - Geology - Web Services MetadataUrl and DataUrl fields	Resolved	Ongoing monitoring by the EMODnet Portal. No actions required by Geology this time		01-10-2025
EM-142 - Geology Quality of Service Monitoring	Resolved	Ongoing monitoring by the EMODnet Portal. No actions required by Geology this time		30-09-2025
EM-525 - Updating of EMODnet Geology - Seafloor Geology layers in the European Atlas of the Seas	In Progress	This is currently assigned to the Central Portal		
EM-1132 - Thematics feedback to order sub-themes and/or layers	Resolved	The ticket is not closed but Geology has given feedback.	31-10-2025	21-07-2025
EM-1163 - Fix redirect from www.emodnet-geology.eu to emodnet.ec.europa.eu/en/geology	Resolved			28-07-2025
EM-1190 - Changes to layer names in Geology WMS need to be adopted in the European Atlas of the Seas	Resolved	In review by the EMODnet Portal Team		02-10-2025

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-799 - Diagram that shows the position of the shoreline through time	Pending	EMODnet Geology will implement this in phase 6.	24-09-2027	
EM-1144 - Geology. Two new geotechnical data layers	Pending	Will be implemented in phase 6. A prototype is running in the development map viewer.	24-09-2027	
EM-1160 - updates to the filters on the layers 'Boreholes and Grabs' and 'Geophysics'	Resolved			21-07-2025

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-1178 - Problems with WFS download in the map viewer for Geology	Resolved			26-08-2025
EM-1182 - Geology: Changes to filters and wfs calls for Marine Minerals	Resolved			03-09-2025
EM-1184 - Renaming of layers under Geological events and probabilities	Resolved			10-09-2025
EM-1188 - FileBeat for Geology	Pending	The Portal Team will come back to this during October, when they restart the work on the API usage statistics tool		
WP5: Replace red-yellow-green with shades of blue to move away from intuitive good/bad in WP5 migration products. This is also a better approach for color blinded users.	Resolved for Coastal Resilience, pending and in progress for Coastline Migration	Scripted for Coastal Resilience so that it can easily be implemented in Coastline Migration data products, with later deliveries.		
WP3: Misunderstanding between two project organisations with the sedimentation rates and seabed substrate data delivery.	Pending	The project organisations will discuss and work together for the next data delivery.		
WP8: Some LGM (last Glacial Maximum) lines are located onshore.	Resolved	These were deleted after discussions with the data providers.		31-08-2025
WP6: Information displayed in the field "Date" of attribute tables is not reported correctly.	Resolved	Adjustments concerning the way data are transferred from WP6 layers to Central Portal were made by WP9 lead	11/09/2025	11/09/2025

3. Communication assets

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	

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	
August 2025	Conference proceedings	Salazar, E., Medialdea, T., Palacín, A., Kaskela, A., Vallius, H., Rojas, M., Cabrera, M., Ramírez, A., Maldonado, C.H., Sánchez Barahona, J.S., Mendoza, S., Lobato, A., Somoza, L., González, F.J. 2025. Intercambio de información geocientífica y cartografía submarina del Mar Caribe en el proyecto EMODnet – Geology. XX Congreso Colombiano de Geología, Cali (Colombia), 13-15 Agosto 2025				
16-18.09.2025	Conference proceedings	Fiorentino A. Battaglini L. Orefice S. & Pensa A.: Elaboration of thematic maps from the EMODnet Geology database. SIMP-SGI Joint Congress, Padova.		https://doi.org/10.3301/ABSGI.2025.03	Yes	

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	
16-18.09.2025	Conference proceedings	Orefice S., Fiorentino A., Agate M., Battaglini L., Del Ben A., Busetti M., Civile D., Conti M., Crispini L., Dal Cin M., D'Angelo S., Ferrante V., Frisicchio V., Frugoni F., Giordano G., Locatelli M., Loreto M.F., Morelli D., Palmiotto C., Pantaloni M., Papasodaro F., Pensa A., Sgroi T., Sulli A., Vita L. & Volpi V.: Structural Map of seas surrounding Italy. SIMP-SGI Joint Congress, Padova.		https://doi.org/10.3301/ABSGI.2025.03	Yes	
18-20.09.2025	Conference proceedings	Szarafin T. et al., NOWE SPOJRZENIE NA MORSKIE MAPOWANIE GEOMORFOLOGICZNE POPRZEZ ZAAWANSOWANĄ WIZUALIZACJĘ DANYCH NA OBSZARZE POŁUDNIOWEGO BAŁTYKU (WYNIKI WSTĘPNE. <i>(A new perspective on marine geomorphological mapping through advanced data visualization in the southern Baltic Sea (preliminary results))</i>). Państwowy Instytut Geologiczny - Państwowy Instytut Badawczy. 89th Scientific Reunion of the Polish Geological Society, 18-20.9.2025, Gdansk, Poland.	ISBN 978-83-68623-50-5		Yes	
18-20.09.2025	Conference proceedings	Pączek U. et al., INFORMACJA GEOLOGICZNA Z OBSZARÓW MORSKICH RP NA KRAJOWYCH I EUROPEJSKICH PLATFORMACH WYMIANY DANYCH. <i>(Geological information from Polish maritime areas on national and European data exchange platforms)</i> Państwowy Instytut Geologiczny - Państwowy Instytut Badawczy. 89th Scientific Reunion of the Polish Geological Society, 18-20.9.2025, Gdansk, Poland.	ISBN 978-83-68623-50-5		Yes	

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
September 2025	StoryMap - Submerged Landscapes	Dakin. N., Cooper. R., Bonde. C. & EMODnet project. 2025 Submerged Landscapes: Discover ancient submerged landscapes across Europe		https://arcg.is/maOG40		Yes

For a comprehensive overview of publications referring to/making use of EMODnet data and/or data products, please consult Google Scholar.

4. Monitoring indicators

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	n/a	For geology “data products” and “data” are about the same. Users download data as a zip-file that contains all layers from the sub-theme but otherwise we do not combine data or recalculate data to create new products. The statistics for “data products” and “data” is the same. Geology has only reported the statistics for “data products” in the former reports. To keep continuity this is also the case here.
What is your opinion on the data coverage within EMODnet for your thematic?		
B) Usage of data in this quarter	n/a	This is described under usage of data products
2. Current status and coverage of total number of data products A) Volume and coverage of available data products	ArcGIS	EMODnet Geology has used its own Regions shapefile to assess the coverage of the products (maps) (WP3, WP4). Please note that our data products are updated regularly due to data improvements, these qualitative updates do not necessarily show as an increased data coverage. The latest seabed substrate data update (24.9.25) includes four data products at different scales: 1:1 000 000, 1: 250 000, 1: 100 000 and multiscale. The multiscale data includes 11 layers at varying scales (1:70 000 – 1: 1500). The seabed substrate data at 1 M scale has the largest coverage in all reported sea regions. Generally the data product coverage per sea region decreases as the resolution increases. The coverages by sea-basin are indicated in the excel file (Indicator 2). Please notice that in the excel file we have only included seabed substrate data that has extended to new areas. The latest Sea-floor Geology update (24.9.25) includes four data products: Quaternary Geology, Pre-Quaternary Geology, Geomorphology and General Physiographic Features. The Pre-Quaternary Geology data has the largest coverage of the sea regions. WP5 Coastal behaviour, WP6 Events and probabilities, WP7 Minerals and WP8 Submerged landscapes data products are excluded, as they primarily consist of line or

Comments on the progress indicators in the indicators spreadsheet		
Progress indicator	Means of collecting figures	Comment
		point data, or areal data of such limited extent that they do not contribute to the overall coverage of sea area.
B) Usage of data products in this quarter	Log from web server	The change in the number of calls to WFS and WMS varies significantly between the products. However, in general, it can be said that the number of calls to WMS has not changed much, whereas downloads of ZIP files and WFS calls have increased by approximately 50%—likely because the data products were recently updated.
3. Internal and external organisations supplying/approached to supply data and data products within this quarter		Supplied datasets are mainly from the project consortium. Data sets from the Azerbaijan area of the Caspian Sea have been provided by Caspian Locus Limited Liability Company.
5.1 Daily number of page views of EMODnet Thematic entry page	Europa Analytics	There are no major changes compared to the previous quarter. However, there has been a slight increase in activity related to the updating of Geology's products towards the end of this phase.
5.2 Quarterly total number of visitors, page views, unique page views and percentage of returning visitors	Europa Analytics	There are no major changes compared to the previous quarter. However, there has been a slight increase in activity related to the updating of Geology's products towards the end of this phase.

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