



EMODnet



European Marine
Observation and
Data Network

EMODnet Thematic Lot n°2 – Geology

CINEA/EMFAF/2024-25/3.6/4500124305

Start date of the project: 25/09/2025 (24 months)

Operational Phase

Quarterly Progress Report (Q1/2026)

Reporting Period: 01/01/2026 – 31/03/2026



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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. The current EMODnet Geology phase started on 25 September 2025, with detailed plans for each work package (WP) 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. No new or updated data products were published during the reporting period. In general, the data sets submitted by the project organisations will be added to the different EMODnet Geology data products and will be updated on the EMODnet Portal by the end of the project phase in 2027.

The Progress Indicator 2.A includes information based on the latest updates (by 24 September 2025). 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 3: Develop and improve procedures for machine-to-machine connections to data and data products, in a common manner across the EMODnet service. This was already fulfilled during the previous phase. At the beginning of the current phase in September 2025, we have continued with the existing architecture. When new components are added during this phase, we will ensure that the requirements specified under Task 3 are met.

Task 4: Fulfil the EMODnet Central Portal requirements that ensure all data and data products can be found, viewed and downloaded with ease (from the Central Portal). This was already fulfilled during the previous phase, and we are following the specifications communicated by the EMODnet portal team. We are continuing in the same way here in the current phase.

Task 5: Provide content for the reserved space for each thematic group within the EMODnet Central Portal, following any necessary requirements. During the reporting period EMODnet Geology and in particular WP8 Submerged landscapes published an EMODnet news article discussing the challenges of mapping submerged landscape features of European seas (<https://emodnet.ec.europa.eu/en/submerged-landscapes-european-seas>).

Task 6: Ensure coherence with the efforts of the Regional Sea Conventions (RSC)26 and other relevant actors. EMODnet Geology has been open to any possible collaboration with the RSC's.

Task 7: Contribute to the implementation of the EU legislation and broader initiatives for open data, particularly on issues of standardisation, interoperability and availability of reporting data, including by non-EU organisations, when relevant. 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. 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. Our services are monitored both by the EMODnet OGC monitor and by our own monitoring services (Zabbix). The monitoring report from January 2026 showed that Geology did not meet the uptime requirements for the fourth quarter of 2025. This was due to the network around the server environment being reconfigured during the night of 6–7 November, and again during the weekend of 28–30 November 2025. Firewall openings were temporarily missing during these periods. The new network has been established, and there are no plans to change it within the coming years. We respond to tasks from the EMODnet Central Help Desk within at least two days after the task is assigned to us. Communication with users takes place exclusively via the EMODnet Help Desk so that all history is documented.

Task 9: Dedicate specific resources to the EMODnet Central Portal Task Force. The consortium contributes to the EMODnet Central Portal Task Force under the guidance of the Central Portal team and the EMODnet Secretariat. The consortium is represented in the EMODnet Central Portal Task Force by representatives from the project's management and technical management and other staff as needed. EMODnet Geology is participating as part of the task force working on the tasks: EM-1196 – Review Data/Product Level Description, EM-1206 – Styling of Feature Catalogue Info in the EMODnet Product Catalogue, and EM-1207 – Format of Bibliographic References.

Highlights of the different work packages:

WP1 – Project management. During the first months of 2026, the project coordination focused primarily on administrative tasks. EMODnet-related meetings organised or attended by the coordination team during the reporting period included an EMODnet Geology Steering Group (SG) meeting (22.1.2026), EDITO Community Expert Group (CEG) meeting (17.3.2026), EMODnet Technical Working Group (TWG) meeting (19-20.3.2026), among others. Dissemination activities have included contributions to the EMODnet Annual Report 2025, as well as presentations at several events; further details are provided in the WP descriptions and Table 3. The coordination has been preparing a dissemination plan to support project communication and outreach and the aim is to present it to the network at the project meeting in June 2026.

WP2 – Geological data specification and sourcing. During the kick-off meetings the plans for the data specification and sourcing were presented and discussed. WP2 will continue throughout the whole phase. In general, the datasets will be processed and collected during Q2/2026 - Q3/2027 and used in final updates and/or new data products by end the end of the renewal phase by September 24, 2027.

WP3 – Seabed substrate. WP3, its data products, and related topics were presented on multiple occasions during Q1. Two oral presentations, first on EMODnet Geology focusing on seabed substrate and second on EMODnet Ingestion were delivered at the Nordic Geological Winter Meeting (NGWM) 2026 in Turku, Finland. Additionally, a poster on EMODnet Geology sedimentation rates was presented at Ocean Sciences Meeting 2026 (OSM26) in Glasgow, UK, and another poster on EMODnet Geology, seabed substrate, and the EMODnet related Finnish national project MERTINET was showcased at the Researcher Days of the Finnish Marine Research Infrastructure (FINMARI). EMODnet Seabed substrate data was used in an exemplary figure in a communication article that has been accepted in Nature geosciences about geological mapping in different extreme environments (Wajih et al., 2026).

WP3 held a meeting with the EMODnet Chemistry team regarding their available organic carbon data. A plan for collaboration was discussed and mutually agreed to be taken forward.

WP4 – Seafloor geology. The timeline for the reception of data in order to provide the WP 4 layers in time have been presented at the online Kick-off Meeting and the in-Person meeting in Brussels. The new WP 4 theme: Marine Lithotectonic Geology was presented at the meeting in Brussels and two prototype areas agreed to start and test the concept: (Western) Baltic Sea and the Mediterranean Sea. A small core working group was founded. At the moment a first draft of a vocabulary for Marine Lithotectonic Geology is in preparation.

WP 4 lead is a convener of EGU Session “Geological Mapping and Modelling: From Traditional Approaches to Extreme Frontiers (conveners: Asch (BGR), Calcagno (BRGM), Kaskela (GTK) and Zanani (HSGMS)). A poster on the WP 4 geomorphology vocabulary and its application was accepted and will be presented at EGU 2026: EMODnet Seafloor Geology: The wavy cruise towards a hierarchical, machine-readable geomorphology vocabulary (Asch, Blischke, Ersten, Hojgaard, Medialdea, Mortensen, Sakellariou, Heckmann, Schulz, Müller, and the EMODnet Geology network). In addition, a cross-WP abstract was submitted for the INQUA 2027 Congress: EMODnet Geology: Finding and applying a common denominator to present Europe’s seafloor geomorphology (Asch, Blischke, Breuer, Chiocci, Ersten, Hojgaard, Medialdea, Mortensen, Sakellariou, Heckmann, Müller, and the EMODnet Geology network).

WP5 – Coastal behaviour. During Q1, WP5 has continued discussion with the Geology’s technical management on display matters concerning the coastline migration plots. A suggestion was drafted to to incorporate vertical land motions available from in the coastline behaviour data set, with potential synergies to be examined together with WP6. Engagement continued with the EU Horizon 2020 funded CoCliCo (Coastal Climate Core Services) initiative, which develops an open source web platform providing insights into present and future coastal risks from sea level rise to storm surges, and coastal erosion. The relevance and complementarity of this work with WP6 will be assessed in the project meeting in June 2026. In addition, work on the coastal-ribbon questionnaire continued.

WP6 – Geological events and probabilities. Feedback on the questionnaire regarding WP6 issues was received from the network during the reporting period. Indications were provided concerning the Tsunami affected coast layer and the potential elaboration of a coastal flooding layer. Information is being conveyed into the WP6 Guidelines for the current phase. WP6 leader evidenced issues concerning layer metadata displayed on the Central Portal.

WP7 – Minerals. WP7 continued updating its guideline document. In addition, a poster titled “Harmonising European Marine Minerals Enabled by EMODnet Geology: Sustainable Resource Assessment and Critical Raw Materials” was presented at OSM26, contributing to the visibility and dissemination of WP7 activities.

WP8 – Submerged landscapes. On February 9-10, WP8 organised a hybrid working group meeting in Rome, Italy, with participants from 12 countries, to discuss further activities related to data collection and harmonisation. An important challenge is how to gather information about new submerged landscapes proxies, such as plant and animal remains and their ages. See more information from the related EMODnet News item: <https://emodnet.ec.europa.eu/en/submerged-landscapes-european-seas>.

WP9 – Data management, web portal and services. WP9 has continued its collaboration with WP5 regarding the visualization of coastal migration using satellite data. Charts showing shoreline positions over time for about 470,000 transects will illustrate the data underlying the final product. For geotechnical data, a prototype has been developed that currently contains only Danish data. The dataset is being expanded with UK data, which is being harvested from <https://www.marinedataexchange.co.uk/>. The specification for geophysical data is being updated. It has been proposed that these data should be classified according to resolution, and we will make a final decision on the classification at our partner meeting in June 2026. In addition, WP9 has this quarter participated in meetings for the EMODnet Technical Group and meetings related to EDITO2.

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: Web service operational	WP9	December 2025	Delivered	Dec 2025	
M2: WP Guides	All	March 2026	Delayed		To be delivered by WPs' schedules
M3: Dissemination plan	WP10/All	March 2026	Delayed		To be discussed in the project meeting in June 2026
M4: Data inventory/Project meeting	WP1/ WP2/ All	June 2026	To do		
M5: 1st Data product delivery	WP1/ WP9/All	September 2026	To do		
M6: Data inventory/Project meeting	WP1/ WP2/ All	December 2026	To do		
M7: Datasets to WP leads	All	March 2027	To do		
M8: Data delivery	WP1/ WP9/ All	24.9.2027	To do		
M9: Analysis on feedback	WP12/ All	September 2027	To do		
D1.1-8: Quarterly reports	WP1/ All	15.10.2025 15.1.2026 15.4.2026 15.7.2026 15.10.2026 15.1.2027 15.4.2027 15.7.2027	Delivered Delivered This Report To do (all the rest)	15.10.2025 14.1.2026	
D2.1 KO Minutes	WP1/all	31.12.2025	Delivered	9.10.2025, 12.12.2025	
D2.2: Interim report	WP1/all	24.9.2026			
D2.3: Final report	WP1/all	24.9.2027			
D3.1: First data products on Portal	WP9/WP1/all	December 2026			
D3.2: Final data products available	All WP's	24.9.2027			

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	A metadata URL has been corrected		28.1.2026
EM-142 - Geology Quality of Service Monitoring	Resolved	The monitoring report from January 2026 showed that Geology did not meet the uptime requirements for the fourth quarter of 2025. This was due to the network around the server environment being reconfigured during the night of 6–7 November, and again during the weekend of 28–30 November. Firewall openings were temporarily missing during these periods.		28.1.2026
EM-1196 - Review Data/product level description	Pending	The task force will handle this. Geology has agreed to participate.		
EM-1217 - High - Geoserver < 2.27.1 Unauthenticated XXE via WMS GetMap (CVE-2025-58360)	Resolved			28.1.2026
EM-1224 - Geology to assess if their data transport formats are not present in proposed controlled vocabularies of the metadata guidelines, and if so, add them to the SeaDataNet data transport formats vocabulary	Resolved			25.2.2026

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-1144 - Geology. Two new geotechnical data layers	Pending	A prototype is running in the development map viewer. we are in the process of collecting data from the partners	24.9.2027	

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-1188 - FileBeat for Geology	Pending			
EM-1200 - Update of “date of last revision” for geology	Pending			
EM-1204 - Webtools and whitelisting of emodnet-geology.eu	Pending	We are waiting for an EU official to approve the whitelisting		
EM-1206 - Styling of Feature Catalogue info in the EMODnet Product Catalogue	Pending	The new task force will take care of this. At the last TWG meeting, it was agreed that Geology will prepare a proposed solution that can be considered at the next TWG meeting.	24.9.2027	
EM-1207 - Format of Bibliographic References	Pending	The new task force will handle this. Geology, which has outlined a proposed solution, will take the lead and invite other members to discuss the solution.	24.9.2027	
EM-1211 - Change of Download Link	Resolved			8.1.2026
EM-1229 - Geology. Metadata links for the seabed substrate layer need to be updated.	Resolved			25.3.2026

3. Communication assets

A. (Co-)Authoried 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-)authoried in the quarter					
Date of publication	Type of publication	Full reference	ISBN	DOI	Is it open access? Yes/No
15.1.2026	Conference abstract	Kihlman, S., Kaskela, A.M., Kotilainen, A.T., Wasiljeff, J., Sainio, A., 2026. Harmonised marine geological data across Europe for sustainable ocean management: Insights from EMODnet Geology with focus on seabed substrate. In: Heinonen, J.S. & Aaltonen, M. (ed.), Abstracts of the 37th Nordic Geological Winter Meeting, 13th–15th January 2026, Turku, Finland. Bulletin of the Geological Society of Finland, Special Volume 2, p. 462. Oral. https://ngwm2026.fi/wp-content/uploads/2026/04/NGWM2026_abstractbook_final.pdf			Yes
15.1.2026	Conference abstract	Kotilainen, A.T. Jalli, H., Kihlman, S., Tikka, K., 2026. From Sleep to Deep: Awakening Marine Data through EMODnet Data Ingestion. In: Heinonen, J.S. & Aaltonen, M. (ed.), Abstracts of the 37th Nordic Geological Winter Meeting, 13th–15th January 2026, Turku, Finland.			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
		Bulletin of the Geological Society of Finland, Special Volume 2, p. 464. Oral. https://ngwm2026.fi/wp-content/uploads/2026/04/NGWM2026_abstractbook_final.pdf			
26.2.2026	Conference abstract	Kotilainen, A.T., Kaskela, A., Kihlman, S., Kotilainen, M.M., Moros, M., Sahiluoto, M., 2026. Seabed sedimentation rates – data from the European Seas. In Abstracts. The Ocean Sciences Meeting, 22-27 February 2026, Glasgow, Scotland. (Poster).			Yes
26.02.2026	Conference proceedings-abstract	Monteys, X., Mckeon, C. and EMODnet partners. 2026. Harmonising European Marine Minerals Enabled by EMODnet Geology: Sustainable Resource Assessment and Critical Raw Materials. The Ocean Sciences Meeting, 22-27 February 2026, Glasgow, Scotland. https://epro02.ativ.me/web/planner.php?id=OSM26			Yes
26.02.2026	Conference proceedings-abstract	Kaskela, A., Kihlman, S., Kotilainen, A.T., Monteys, X., McKeon, C., Sainio, A., Wasiljeff, J., and EMODnet Geology Team. 2026. EMODnet Geology - Building a Common Geological Understanding of Europe's Maritime Areas. The Ocean Sciences Meeting, 22-27 February 2026, Glasgow, Scotland. https://epro02.ativ.me/web/planner.php?id=OSM26			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	<p>EMODnet Geology has used its own Regions shapefile to assess the coverage of the products (WP3, WP4). Please note that our data products are updated regularly due to data improvements and these qualitative updates do not necessarily show as an increased data coverage. WP5 Coastal behaviour, WP6 Events and probabilities, WP7 Minerals and WP8 Submerged landscapes data products are excluded, as they primarily consist of line or point data, or areal data of such limited extent that they do not contribute to the overall coverage of sea area.</p> <p>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.</p>

Comments on the progress indicators in the indicators spreadsheet		
Progress indicator	Means of collecting figures	Comment
		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.
B) Usage of data products in this quarter	Analysis of logs on gateway server	Compared to previous quarter there are, as always, quite large fluctuations for the individual products, and this cannot be explained. The number of downloads of our predefined data packages has declined sharply, while at the same time usage of the WFS service has increased significantly. This indicates a shift in how users download data.
3. Internal and external organisations supplying/approached to supply data and data products within this quarter		The supplied datasets are mainly from the project consortium.
5.1 Daily number of page views of EMODnet Thematic entry page	Europa Analytics	The graph appears to indicate a slight increase in activity. There are no abnormal activities, and the activity pattern resembles the pattern from the previous quarter
5.2 Quarterly total number of visitors, page views, unique page views and percentage of returning visitors	Europa Analytics	The numbers indicate a slight upward trend in interest

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