



EMODnet



European Marine
Observation and
Data Network

EMODnet Thematic Lot n° 1 - Geology

EASME/EMFF/2020/3.1.11 - Lot 2/SI2.853812

Start date of the project: 25/09/2021 - (24 months)

EMODnet Phase IV – Quarterly Progress Report (1/8) Q3/2021

Reporting Period: 01/07/2021 – 30/09/2021



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1. Highlights in this quarter

Tasks specified in Section 1.4.1 of the Tender Specifications: All tasks were finalized by end of the previous phase (official phase III), including access to as complete set of data as possible during the 09/2019 – 09/2021 period (**task 1**), fully constructed data products in all themes of the project (**task 2**), fully operative machine-to-machine connections (**task 3**), fully maintained and developed web portal, ready for migration to Central Portal (**task 4**), full involvement in monitoring performance and dealing with user feedback (**task 6**), and operating a help desk (**task 7**). The only task which wasn't fully executed was **task 5**, ensuring the involvement of regional sea conventions, in this phase mainly due to the COVID-19 situation. The RSC issue will be dealt with during the new phase, mainly through the planned meetings between all EMODnet thematic lots and the RSC's, a forum which was dismantled some years ago.

Highlights of the different workpackages:

WP1. Project Management. During the last quarter of the previous phase (phase III) all data products were updated or completely new products were released. Data of the new sea area that was included in the geographical scope of EMODnet geology during the last phase, Caspian Sea, were included to the products of all work packages, except WP8 Submerged landscapes, by the end of this reporting quarter. WP8 will update its products with Caspian Sea data early in phase IV of EMODnet geology.

Final report of the previous phase was submitted on time on 24.9.2021.

WP2. Geological data specification and sourcing. The task was completed by month 3, additional updates were added during months 4-22 and used in final updates and/or new data products by end of phase III.

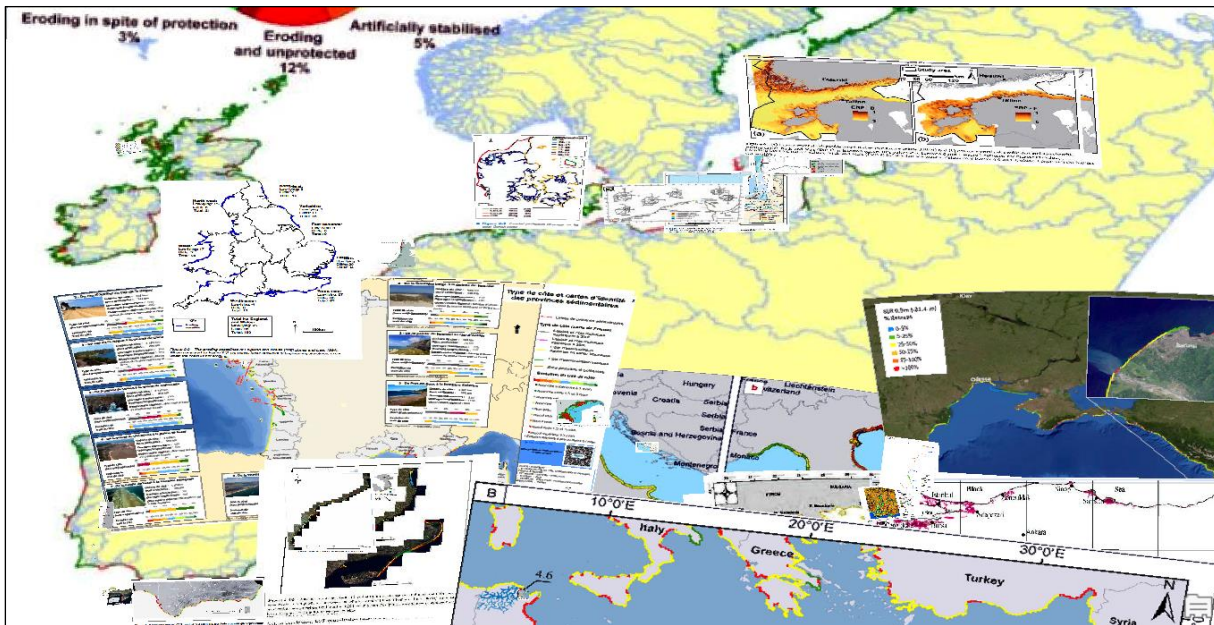
WP3. Sea-bed substrate. Seabed substrate information at a scale of 1:100 000 or more detailed from the European Seas, final product was delivered to portal on 21.9.2021.

A case-study on quantitative spatial prediction of sediment distribution across selected sea-basins "Exploring the suitability of historic datasets to produce robust quantitative sediment maps" was delivered on 24.9.2021.

WP4. Sea-floor geology. All themes (pre-Quaternary seafloor geology, geomorphology, and multiscale Quaternary) were updated and delivered on-line in September 2021.

New deliveries and/or updates between 1. July and 1. October 2021: Pre-Quaternary: Belgium (up-date); Geomorphology/general physiographic features: Ireland, Poland, Norway

WP5. Coastal behaviour. New coastal vulnerability map delivered with excellent spatial coverage; ready for harmonization in phase IV (2021-2023)



ArcGIS PRO project with almost 300 georeferenced published and unpublished coastal-vulnerability maps.

WP6. Geological events and probabilities. Delivery of landslides susceptibility map 31.7.2021. Official release of update of data products on the web portal 24.9.2021.

WP7. Minerals. Release of update of marine minerals data products on the portal 14.9.2021.

WP8. Submerged landscapes. Explanatory text and maps for website delivered 1.8.2021.

Since we are reporting status of the Milestones and Deliverables of Q3, but for the final Q of last phase (phase III) and first Q of the new phase (phase IV) (6 days only in the new phase) we include in the table below all deliverables of the earlier project phase (phase III) together with the ones for Q3/2021.

Status of the Milestones and Deliverables listed in the workplan

Milestone/Deliverable	WP	Date due	Status (Delivered/Delayed)	If Delayed: reason for delay and expected delivery date
M1. Data specification and sourcing ready	WP2	Month 3	Completed by month 3, additional updates during months 4-22.	
M2. Web portal updated T0+3 months	WP9	Month 3	Completed	
M3: Interim report and evaluation of progress	WP1	Month 13	Completed	
D 1.1 – D 1.6 (quarterly) Progress reports	WP1/all	M3, M6, M 9, M12, M15, M18	Delivered on time	
D2.1 Interim report	WP1	Month 12	Delivered 22.9.2020	
D2.2 Final report	WP1	24.9.2021	Delivered 24.9.2021	

D3.1 First data products/maps updated	WP's 1-9	Month 3	Delivery ongoing (see details for different WP's below)	First data products/maps were updated for internal use and evaluation during M1-M3. After that updates have been gradually added to maps on portal.
D3.1 Seabed substrate information at a scale of 1:100 000 or more detailed from the European Seas, first/ updated product	WP3	31.12.2020	Delivered	
D3.1 pre-Quaternary seafloor geology information up-dated and delivered to the portal	WP4	Dec. 2020	delivered	
D 3.1: New coastal vulnerability map	WP5	Ver. 0 by September 2021	delivered with excellent spatial coverage; ready for harmonization in next phase (2021-2023)	
D 3.1 Updates and new deliveries from Partners including data from the Caspian Sea	WP6	30.09.2020	Delivered	
D 3.1 Construction of harmonized layers	WP6	28.02.2021	Delivered	
D 3.1 Validation of harmonized layers by partners	WP6	30.04.2021	Delivered	
D 3.1 Points layers produced at different scales have been merged into layers without scale specification whenever possible (tsunamis, earthquakes)	WP6	30.06.2021	Delivered	
D 3.1 Preparation of test maps for validation by partners	WP6	30.06.2021	Delivered	
D 3.1 Validation by partners	WP6	23.07.2021	Delivered	
D 3.1 Delivery of data products to the portal, including earthquakes, fluid emissions and tectonics from the Caspian Sea	WP6	31.07.2021	Delivered	
D 3.1 Mineral data merged and updated	WP7	31.03.2021	Delivered	

D 3.1: Final merge and update to the portal	WP7	24.9.2021	Delivered	
D 3.1 Submissions received, QC:d and harmonised	WP8	01.06.2021	Delivered	
D8.3 – Delivery of palaeogeographic reconstruction case studies on portal.	WP8	30.06.2023	In progress, concerns phase IV	On schedule.
D3.1 New update delivered on Central Portal.	WP8	10.10.2022	In progress, concerns phase IV	On schedule.
D 3.1 Update delivered on Central Portal.	WP8	24.09.2022	In Progress, concerns phase IV	On schedule.
D 3.2 Sedimentation rates of recent sediments for the European Seas as point data, final product	WP3	30.4.2021	Delivered	
D 3.2 Final data products/maps available	WP's 1-9	Month 24	Delivered by all WP's, examples below	
D 3.2 Seabed substrate information at a scale of 1:100 000 or more detailed from the European Seas, final product	WP3	24.9.2021	Delivered 21.9.2021	
D 3.2 Quantitative spatial prediction of sediment distribution across selected sea-basin(s)	WP3	24.9.2021	Delivered	
D 3.2 All WP 4 themes (pre-Quaternary seafloor geology, geomorphology, and multiscale Quaternary) on-line.	WP4	Sept 2021	Delivered	
D 3.2 New map for coastline migration based on field data and aerial photography	WP5	Originally May 2020	Delivered March 18 th	Further updated with new data from Caspian Sea, Slovenia and Montenegro in summer 2021
D 3.2: Updated map for coastline migration based on newly provided field data and aerial photography	WP5	November 2021 (updates will be delivered in six-month cycles)	In progress during phase IV.	
D 3.2 New coastal type map	WP5	27 th May	Delivered	Data from Turkey was added in a summer 2021 update

D 3.2: Updated map for coastal type based on newly provided field data	WP5	November 2021 (updates will be delivered in six-month cycles)	in progress during phase IV.	
D 3.2 Delivery of landslides susceptibility map	WP6	31.07.2021	Delivered	
D 3.2 Official release of update of data products on the web portal	WP6	24.9.2021	Delivered	
D 3.2 Release of update of marine minerals data products on the portal	WP7	14.9.2021	Delivered	
D 3.2 Updated "Submerged Landscapes" data product 'live' on webportal and social media	WP8	24.06.2021	Delivered	
D 4 Executive Summary as part of the Final Report	WP1/all	September 2021	Delivered 24.9.2021	

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
WP9. Splitting up boreholes into boreholes and grab samples	Pending	The borehole index will be split in at least two categories (boreholes and grab samples).	1.1.2022	
WP9. Splitting up geophysical index into seismic and multibeam	Pending	The geophysical index will be split in categories seismic and multibeam.	1.1.2022	

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
WP1/all. The ongoing spread of the Covid-19 virus all over Europe might affect the progress of the project, especially staying on schedule/meeting the deadlines.	Resolved (partly)	We have organized our EMODnet Geology internal meetings as remote events.		
WP1/all. Some partners have encountered challenges in using necessary tools (e.g., software) caused by enforced remote working due to Covid-19.	Resolved (Partly)	There was enough flexibility in the set internal schedules, thus all deliverables and milestones were met according to project deadlines.		
WP1/all. There has been a fire at one partner's office building, which has challenged data handling and storage.		There was enough flexibility in the internal schedule and project deadlines were met.		
WP5. Finding a way to merge the field-based and satellite-based data products in the portal view, using the field-based data, where available and	resolved	preparation for release	release January 2022	issue resolved September 2021



up to date, and the satellite data where reliable to fill the gaps.				
WP6 lead has limited remote access to GIS resources	pending	Refurbishment of ISPRA office after extended fire	January 2022	
WP6. Not all symbols display correctly on the Portal	Resolved	A specific library of symbols suitable for Portal tools has been created using an external graphic file (SVG) in combination with the SLD file.	End of 2020	September 2021



3. User feedback (Contact Us form, online chat & other communication means)

Overview of user feedback and/or requests received in this quarter							
Date	Organisation	Type of user feedback (e.g. technical, case study, etc.) and short description of the feedback received	Means of contact	Response time	Status of user query: resolved/pending	Measures taken to resolve the query	Status: if not (yet) resolved/pending, explain reason why and expected timeline
21.07.2021	ISPRA Scientific Committee	Question regarding the possibility to be identified via user IP when accessing a portal to avoid being registered each time to download data	Online meeting	Immediate	Pending	Forward question to portal manager	The issue has to do with all portals, not only EMODnet Geology.
12.07.2021	Private	Download error	Email	24 hrs	Resolved	Guidance	
8.9.2021	Private	Download problem	Email	24 hrs	Resolved	Guidance	

4. Meetings/events held/attended & planned

A. Meetings/events organised and attended					
Date	Location	Type event (internal or external meeting, training/workshop)	Indicate if a ppt was given (yes/no + short description)	Meeting attended (A) / organised (O)	Short description and main results (# participants, agreements made, etc.)
26.8.2021	Remote, Teams-Meeting	Internal EMODnet 4 Geology WP3, GTK Meeting	no	O/A	discussions related to project progress, 5 participants
30.8.2021	Remote, Teams-Meeting	Internal EMODnet 4 Geology WP3, GTK Meeting	no	O/A	discussions related to the next phase of EMODnet Geology, 5 participants
13.09.2021	online	External workshop organized in cooperation with the Italian Geological Society	Yes (see section 5 Publications).	O/A	Presentation of a fluid emission database in Italian Seas, including data gathered by the Geological Survey of Italy within EMODnet Geology (56 participants)
30.9.2021	Remote, Teams-Meeting	EMODnet Geology Steering Group meeting	no	O/A	Information by project coordinator and discussion of EMODnet Geology issues, exchange of information. Planning of Kick-off meeting and phase IV of EMODnet Geology, 8 participants.
SUM				O	Total # of meetings organised = 4
SUM				A	Total # of meetings attended = 4

B. Meetings/events planned in the future				
Date	Location	Type event (meeting, training (workshop), etc.)	Meeting to be attended (A) / organised (O)	Short description and main expected outcomes
11-12.10.2021	On-line	EMODnet Geology Phase V Kick-off meeting	O/A	WP 1-12, Coordinator and WP lead presentations on the results of Phase III and the planning of Phase IV as well as presentation of long-, and short-term actions for partners. Expected outcome will be a successful execution of phase IV of the EMODnet Geology project.
11-12.10.2021	On-line	EMODnet-Geology partner meeting. WP8 update, timeline and milestones presented to all partners. Discussion.	O/A	Partners concur with the aims, timeline, milestones, and deliverables outlined by the WP leader. Workshops for the palaeogeographic reconstruction work to be agreed upon. First workshop scheduled January 2022.
9.11. 2021	Royal Netherlands Navy	planning meeting	O (co-organized)	Discussion of the possibility to organize a national or transnational (with Belgium) cross-thematic EMODnet meeting
18.11.2021	Virtual	Webinar	A	European Marine Sand and Aggregate Group (EMSAGG) webinar - 'Marine resource mapping in the UK and Europe',
January 2022	Online / Teams	Workshop	O	Workshop to discuss and identify the regional study areas to progress the palaeogeographic reconstruction element of the work package aims.

				Expected outcomes: 1) regional areas defined; 2) key partners identified to lead on those regional areas; 3) firm timeline and deliverables discussed.
17-19.5.2022	Utrecht	EMODnet Geology project meeting	O/A	Presentations and discussion of the first results and plans for the next 6 months of the project. Expected outcome is a smooth execution of the project according to agreed actions.
May 2022	Utrecht	EMODnet Geology general meeting and Seafloor geology workshop	A/O	Participation in EMODnet Geology General meeting, Presentations, and discussion of the first WP 4 results, Workshop with WP 4 participants about contents, achievements, and issues of Phase V

5. Communication assets

A. Communication products				
Date	Communication material	Short description (of the material, title, ...) of the asset	Main results	Name of event at which material was disseminated (if applicable)
September 2021	News release	"New update for download: Seabed substrate – the data now extends to the Caspian Sea" news in EMODnet Central Portal, and in EMODnet Geology Portal	Public dissemination	Publication of New update of seabed substrate data
September 2021	Tweets, and posts	Tweets (@GTK_Fi Twitter) and posts (GTK Facebook) about new update of sedimentation rates data	Public dissemination	Publication of New update of seabed substrate data
15. September 2021	Press release	Press release(es) on new EMODnet Geology WP 4 products: Quaternary and Geomorphology data layers	Information about EMODnet Geology WP 4 results and outreach to the public	

B. Planned communication products			
Date	Communication material	Short description (of the material, title, ...) and/or link to the asset	Main results expected
October 2021	Press release in Finland	Press release on the execution the project phase III	Public awareness of EMODnet Geology

List of known publications using EMODnet data or data products

Date	Type and name of journal, conference, ...	Publication title including DOI (if known)	Author(s)	Organisation(s)
30.7.2021	Journal of Maps	Geomorphology of the seafloor north east of the Maltese Islands, Central Mediterranean https://doi.org/10.1080/17445647.2021.1957034	M. Prampolini, P. Coratza, S. Rossi, C. Parenti, C. Galea, A. Caruana, and M. Soldati	Institute of Marine Sciences, National Research Council Bologna, Italy; Department of Chemical and Geological Sciences, University of Modena and Reggio Emilia, Modena, Italy; Continental Shelf Department, Ministry for Finance and Employment, Floriana, Malta
August 2021	Fisheries Research	Flatfish survivors have tales to tell: Cold seawater and reduced deployment duration contribute to the survival of European plaice (<i>Pleuronectes platessa</i>) discarded by Belgian beam trawlers. https://doi.org/10.1016/j.fishres.2021.105966	Uhlmann, S.S.; Ampe, B.; Van Bogaert, N.; Vanden Berghe, C.; Vanellander, B.	Flanders Research Institute for Agriculture, Fisheries and Food (ILVO)
August 2021	J Appl Ecol.	Auditory impairment from acoustic seal deterrents predicted for harbour porpoises in a marine protected area	Findlay, C.R., Aleynik, D., Farcas, A., Merchant, N.D., Risch, D. and Wilson, B.	Scottish Association for Marine Science (SAMS), University of Highland and Islands; Centre for Environment, Fisheries and Aquaculture Science (CEFAS)
August 2021	Front. Mar. Sci.	Environmental Factors Affecting Spatial Dinoflagellate Cyst Distribution in Surface Sediments Off Aveiro-Figueira da Foz (Atlantic Iberian Margin)	García-Moreiras, I., Oliveira, A., Santos, A. I., Oliveira, P.B., Amorim, A.	Universidade de Vigo, Spain; Instituto Hidrográfico, Portugal; Universidade de Lisboa, Portugal; Instituto Português do Mar e da Atmosfera (IPMA), Portugal
13.09.2021	Workshop at the 90 th congress of the Italian Geological Society	An inventory of fluid emissions in Italian seas.	D'Angelo S., Battaglini L., Fiorentino A.	ISPRA and Italian Geological Society

13.09.2021	Workshop at the 90 th congress of the Italian Geological Society	Overview of fluid emissions in Italian seas.	D'Angelo S., Battaglini L., Fiorentino A.	ISPRA and Italian Geological Society
14.09.2021	90 th congress of the Italian Geological Society	Volcanic and non-volcanic fluid emissions: data from EMODnet Geology	Fiorentino A., Battaglini L. & D'Angelo S.	Italian Geological Society
16.09.2021	90 th congress of the Italian Geological Society	Harmonization of geological data in the Adriatic Sea	Fiorentino A., Battaglini L., D'Angelo S., Pantaloni M. & Papasodaro F.	Italian Geological Society
accepted	Geological Society of London Special Issue: From Continental Shelf to Slope - Mapping the Oceanic Realm	A first approach to a Geomorphological Map of the German Seas	Breuer, Sonja*) & Asch, Kristine **)	*) Landesamt für Bergbau, Energie und Rohstoffe (LBEG) **) Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Hannover, Germany
In progress, to be published end of 2021/beginning of 2021	Geological Society of London Special Issue: From Continental Shelf to Slope - Mapping the Oceanic Realm	From Continental Shelf to Slope - Mapping the Oceanic Realm	Asch*), K., Kitazato*), H. and Vallius*), H.	*) Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Hannover, Germany **) University of Tokyo ***) Geological Survey of Finland (GTK)



6. Monitoring indicators

Comments on the progress indicators in the excel template		
Progress indicator	Means of collecting figures	Comment
1. Current status and coverage of total available thematic data A) Volume and coverage of available data If you don't use the provided sea-basin figures, please indicate why you do not use them, as from when, and what do you use instead and why?	Matomo/ other (Please state which monitoring tool was used to collate the information in each case)	About 1500 data points on sediment accumulation (sedimentation rate). We don't publish data with coverage, only point information on accumulation rate, no coverage. No data added during this reporting quarter, the map was updated for this phase on 27.4.2021.
B) Usage of data in this quarter		
2. Current status and coverage of total number of data products A) Volume and coverage of available data products If you don't use the provided sea-basin figures, please indicate why you do not use them, as from when, and what do you use instead and why?	ArcGIS Data products consisting primarily of points and lines have no coverage and are thus omitted. Total volume is based on a compressed file format.	There is no uniform digital definition (in GIS format) of the European sea areas and their boundaries used in the EMODnet Lots. Therefore, EMODnet Geology has used its own Regions shapefile to assess the coverage of the products (maps) (WP3, WP4). The latest seabed substrate data update (21.9.21) includes 4 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 covers about 43 % of the Geology Regions, data at scale 250 k covers about 12 % and more detailed scales cover less than 5 %. The coverages by sea-basin are indicated in the excel file (Indicator 2). The last update of the seabed substrate data was on 21 September 2021 The Pre-Quaternary Geology data covers almost 100% of the project sea areas. Quaternary Geology data covers from a few percent (Black Sea) up to nearly 80 percent (North Sea) of the different sea areas. Geomorphology data covers from a few percent (Arctic and Mediterranean Seas, both 6%) up to



		nearly 90 percent (Caspian Sea) of the different sea areas. General physiographic features cover between 8 (Black Sea) and 82 (North Sea) percent of the sea areas, but with an average of nearly 40 percent of coverage.
B) Usage of data products in this quarter		Map requests are implicit in WMS stats. We see a slight increase in usage per quarterly report except for a dip in the last one.
3. Organisations supplying/approached to supply data and data products within this quarter		No change since last report.
4. Online 'Web' interfaces to access or view data		No change since last report.
5. Statistics on information volunteered through download forms		Due to GDPR we do not register place of origin.
6. Published use cases		None in this reporting period.
8.1. Technical monitoring		Satisfactory both response time and up-time
8.2. Portal user-friendliness (Visual harmonization score)		73
9. Visibility & Analytics for web pages		We see a slight increase on all parameters except the contribute page which has moved to a less prominent location on the portal.
10. Visibility & Analytics for web sections		We see a slight increase on all parameters except the contribute page which has moved to a less prominent location on the portal.
11. Average visit duration for web pages		Users are more keen to accessing maps and downloads directly. This is a common trend to jump directly from Google to sub pages.

The monitoring numbers reported as part of the progress monitoring of EMODnet performance are collected through Matomo. In some cases, numbers from other monitoring systems may also be reported (e.g. Awstats, Google Analytics), and if so, must be reported in the table above. Each system uses different technical approaches and therefore has its strengths and shortcomings. Therefore, results are indicative and care should be taken when interpreting absolute numbers or comparing results from different tools. It is often more sensible to consider trends over time collected by the same monitoring tool.

7. Annex: Other documentation attached

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