



EMODnet



European Marine
Observation and
Data Network

EMODnet Thematic Lot n1 - Geology

EASME/EMFF/2018/1.3.1.8 - Lot 1/SI2.811048

Start date of the project: 25/09/2019 - (24 months)

EMODnet Phase III – Quarterly Progress Report (number 7/8)

Reporting Period: 01/01/2021 – 31/03/2021



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1. Highlights in this quarter

Task 1: Develop a common method of access to data held in repositories:

Progress January – March 2021

WP3 Substrate data

The partners have continued their work to harmonise seabed substrate datasets, which were not already compatible with the EMODnet seabed substrate requirements. Altogether 9 partners have distributed their new or updated seabed substrate data, scale of 1:100 000 or finer, to GTK. Additionally, 6 partners have provided data at lower resolution to be updated later in the project.

WP3 Sedimentation rate data

Altogether, 7 partners have provided new data on sedimentation rates.

WP4 Seafloor Geology, new deliveries:

Pre-Quaternary: Belgium, Sweden

Quaternary: Belgium, Croatia, Spain, Germany, Sweden (supplement)

Geomorphology: Croatia, Belgium, Germany, Estonia, Denmark (study area western Baltic Sea), France, Ireland

WP5. Coastal behaviour. New data from Caspian Sea, Slovenia, and Montenegro (will be added on portal in a summer 2021 update)

WP6 Geological events and probabilities

Data delivery from Albania and a number of updates and corrections from Spain, Norway, and Netherlands, as part of the harmonization and validation process of products which had already been delivered.

WP7 Minerals. New datasets received from Romania, Italy, Estonia, Denmark, and Albania. These data will be included in the final merge and update to the portal.

WP8 Submerged landscapes 4 new submissions received from Croatia, Ireland, Germany and UK.

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

The data listed in Task 1 above have been added to the data products and will according to the schedule in table 1 below be updated on the web portal.

The status of the Caspian Sea data is listed under WP1 Project management below:

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

In this reporting period, we focused on the release of a new data product "Coastal Migration from field data" making machine-to-machine connections accessible to users by registering the data product as a WMS, WFS, CSW and download service. We prepared for forthcoming product releases by helping other work packages. We also made minor updates to the existing data products – e.g. correcting visualization errors found in Geoserver when displaying polygons containing multi-polygons.

Task 4: Maintain and further develop a thematic web portal allowing users to find, visualise and download data and promote the data and data products of the portal:

The EMODnet Geology portal received content updates to reflect the current state of available data products. In corporation with GeoERA, the web-GIS was improved with support for new projections (e.g. EPSG:102100). Users can now search through layers to find relevant layers and users can download local sub-areas of the data products on the web-GIS by drawing a polygon. Adjustments to the legend display and layer menu implemented to improve user-experience.

Task 5: Ensure the involvement of regional sea conventions.

Regarding the RSC:s our last plan was to visit the Secretariat of the Barcelona Convention, but that has been delayed due to the COVID-19 outbreak. When we are rid of the pandemic the coordination will make a new try of visiting them. Other RSC:s have been contacted earlier and will be again, they are included in plans for later

visits. The Secretariat has offered to help EMODnet Geology in this task which we are grateful for and look forward to a meeting between the EMODnet Secretariat, EMODnet Geology coordinator, and the EMODnet Geology portal in order to ventilate ideas on this topic and to coordinate efforts.

Task 6: Install a process to monitor performance and deal with user feedback:

We are linked to a monitoring system hosted by the main portal (Piwik/Matomo). Here we can login and extract performance and user statistics. The portal offers users the possibility to write feedback. We participate in all statistical initiatives put forward by the EMODnet Secretariat and Steering Committee.

Task 7: Operate a help desk offering support to users:

We continuously run our help desk according to rules set in the Tender Specifications.

Highlights of the different workpackages:

WP1. Project Management. The EMODnet Geology project has in general proceeded well in relation to the set time schedule and deliverables. No major problems are to be expected in delivering the final updates and products on the EMODnet Geology portal by the end of this phase of the project. In order to obtain this, it has been necessary to do some adjustments and rearrangements in the practical work of most partner organisations due to the COVID-19 pandemic. The different problems that we encountered were thoroughly listed in our last quarterly report. Coordination of Q1 has in EMODnet Geology been partly hampered by COVID-19 infection of the coordinator, this was solved by appointment of a deputy coordinator at the GTK.

Caspian Sea. Updates on data from the Caspian Sea have throughout the winter been submitted by the Caspian Sea task leader VSEGEI to the different work packages. At this moment map products from the Caspian Sea are available on the EMODnet Geology portal on the coastal behaviour and marine minerals layers. It is clearly visible that Caspian Sea maps are better populated in the northern and middle parts of the sea as data have not been gained from any parties in Azerbaijan and Turkmenistan despite appropriate and relevant efforts by task leader VSEGEI. At the same time unfortunately, the Iran sanctions have hindered subcontracting in Iran.

For the rest of the work packages mainly short highlights, the rest is to be found in the table of this section.

WP2. Geological data specification and sourcing. New data are by partners and subcontractors continuously being delivered to the different work packages.

WP3. Seabed substrates. The seabed substrate product pages were in January 2021 updated on EMODnet Geology Portal with more informative content, e.g. updated product figures and attribute table explanations. A scientific publication (Mitchell et al., 2021) was published on a machine learning approach on sedimentation rates in the Baltic Sea (see publications in section 5). Active collaboration between WP3 and Seabed Habitats lot has continued.

WP4. Sea-floor geology. Progress and new methodological results on geomorphology mapping and data harmonization in the Western Baltic Sea.

WP5. Coastal behaviour. New map for coastline migration based on field data and aerial photography.

WP6. Geological events and probabilities. Harmonization of new and updated deliveries evidences continued implementation of products thanks to the active contribution of EMODnet Geology partners.

WP7. Minerals. Changes on the web mapping services, relative to display aspects on seabed minerals layers through transparencies, have improved the mapping outputs and overall appearance in dense regions.

WP8. Submerged landscapes. High level of ongoing submissions received from partners to this comparatively new work package.

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	Delivered	
M2: Web portal updated T0+3 months	WP9	Month 3	Delivered	
M3: Interim report and evaluation of progress	WP1	Month 13		
D 1.1 – D 1.6 (quarterly) Progress reports	WP1/ all	M3, M6, M9, M12, M15, M18	Delivered	
D2.1 Interim report	WP1	Month 12	Delivered 22.9.2020	
D2.2. Final report	WP1	Month 24		
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	31.12.2019	Delivered	
D3.1 pre-Quaternary seafloor geology information up-dated and delivered to the portal	WP4	Dec. 2020	delivered	
D 3.1: New map for coastline migration based on field data and aerial photography	WP5	Originally May 2020	Delivered March 18 th	New data from Caspian Sea, Slovenia and Montenegro will be added in a summer 2021 update
D 3.1: New coastal type map	WP5	May 27, pre-conference release data set in coordination with the EMODnet Secretariat	QC finalized, some country data to be added in April; data from Turkey to be added in a summer 2021 update	
D 3.1: New coastal vulnerability map	WP5	Version 0 by September 2021	Literature inventory completed, about 50% of used maps from literature georeferenced	
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	Ongoing	
D 3.1: Delivery of data products	WP6	31.07.2021		

D3.1: Mineral data merged and updated	WP7	31.03.2021	Delivered	
D3.1: Submission of update of submerged landscapes data to EMODnet web portal/QC and upload	WP8	1 st April 2021	Delayed	Delayed in order to incorporate 4 recent submissions. The next update includes updates and new submissions from Croatia, Ireland, Germany, UK, Netherlands, Turkey, Ukraine, Finland, Albania, Malta, and Belgium. Expected delivery date W/C 19 th April 2021.
D3.2. Final data products/maps available	WP's 1-9	Month 24	In preparation by all WP's, examples below	
D3.2. Seabed substrate information at a scale of 1:100 000 or more detailed from the European Seas, final product	WP3	24.9.2021		
D3.2. Sedimentation rates of recent sediments for the European Seas as point data, final product	WP3	30.4.2021		
D3.2. Quantitative spatial prediction of sediment distribution across selected sea-basin(s)	WP3	24.9.2021		
D 3.2 All WP 4 themes (pre-Quaternary seafloor geology, geomorphology, and multiscale Quaternary)	WP4	Sept 2021	in preparation	
D3.2 WP8 Submerged Landscapes, Explanatory text/outreach activities. Explanatory text/maps for website.	WP8	1 st August 2021	In progress.	In progress.
D3.2 WP8 Submerged Landscapes, Liaison with other EMODnet Work Packages to ensure consistency in common features/elements.	WP8	1 st April 2021	In Progress	A productive meeting was held with WP4 Leader K.A. on 12 th March 2021. Agreed outcomes and scheduled progress update meeting for 1 st August 2021.

2. Identified issues: status and actions taken

A. Priority issue(s) identified and communicated by EASME/ DG MARE/ SECRETARIAT				
Priority issue	Status (Pending/ Resolved)	Action(s) taken / remaining actions planned	Date due	Date resolved
The borehole and seismic indexes need a thorough quality assessment	Pending	In the following two quarters, we will work on strengthening the data indexes within EMODnet Geology. The borehole index will be split in at least two categories (boreholes and grab samples). The geophysical index will be split in categories seismic and multibeam.	2021-06-30	
JIRA-14 (prev. 33)	Resolved	We have good corporation with the Secretariat on structuring our OGC services and making orchestrating new data product releases together with the main portal.	2021-03-01	2021-03-01
JIRA-85#1	Resolved	All data products are now provided with metadata and download links, but as new data products arrive, we need to assure the proper registration procedures are followed every time.	2021-04-01	2021-04-01
JIRA-85#2	Pending	We are requested to offer standard INSPIRE compliant service xml documents to every layer (120) in our WMS and WFS. This work is pending.	2021-04-01	
JIRA-140	Resolved	According to JIRA, no further actions necessary.	2021-04-01	2021-04-01

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
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 organized the EMODnet Geology meeting and workshop in March 2021 as a remote meeting		
Some partners have encountered challenges in using necessary tools (e.g. software) caused by enforced remote working due to Covid-19.	Resolved (Partly)	There is flexibility in the schedule and deadlines.		
There is no uniform digital definition (in GIS format) of the European sea areas and their boundaries used in the EMODnet Lots	Resolved (suggested by GTK)	GTK provided EMODnet Geology Regions shapefile to EMODnet Secretariat (NT)		26.03.2021

<p>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 up to date, and the satellite data where reliable to fill the gaps.</p>	<p>Pending; the current portal allows for plotting the field-based map on top of the satellite-based map, which gives a good result for now</p>	<p>Currently, focus on technical implementation; quality filters have been defined</p>	<p>Originally February 2021, but this turned out to be unrealistic for a definitive solution; new due date August 2021</p>	
<p>WP6 lead has very limited remote access to GIS resources</p>	<p>pending</p>	<p>Restoration of ISPRA office after extended fire</p>	<p>August 2021</p>	

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
20.1.2021	DASSH	Request to access the data	email	~2 h	resolved		
19.3.2021	Waterford In Your Pocket	Comment on reliability of new map along the S Irish coast	Twitter	Via Secretariat	comparison of delivered source data to local data	checking and analysing time periods covered by different datasets, definitions of 'stability' and influence of spatial resolution taken time, due end of April	pending, GSI working on it with latest data

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.)
08.01.2021	Remote, Teams-Meeting	EMODnet Geology Steering Group meeting	no	O	Information by project coordinator and discussion of EMODnet Geology progress, exchange of information. 8 participants
08.01.2021	Remote, Teams-Meeting	Internal EMODnet 4 Geology WP3, GTK Meeting	no	O	discussions related to project progress
27.01.2021	Remote, Teams-Meeting	Internal EMODnet 4 Geology WP3, GTK Meeting	no	O	planning of the future work, 5 participants
27.01.2021	Remote, Zoom-Meeting	EuroGeoSurveys (EGS) Marine Geology Expert Group Annual Meeting	Yes, "Marine Geology, Geological Survey of Finland – Activity Report 2020", 1 slide on EMODnet	A	Discussions and presentations about marine geological surveys and research in European EGS partner countries, and about future collaboration. 20 participants.
02.02.2021	Remote-Meeting	Seabed substrate product meeting with EMODnet Geology and EMODnet Seabed Habitats	no	A	Discussions on EMODnet Geology seabed substrate product, and product delivery to Seabed Habitat Lot. EMODnet Geology (WP3) and EMODnet Seabed Habitats, 7 participants.
18.02.2021	Remote, Teams-Meeting	Internal EMODnet 4 Geology WP3, GTK Meeting	no	O	planning of the future work, 5 participants
18.02.2021	Remote-Meeting	meeting of institutions contributing to Italian WP6 deliveries (CNR-ISMAR, OGS, Universities of Genova, Palermo and RomaTRE)	No	O	discussion on characteristics and quality of features at the scale of the current phase of the Project (12 participants)

25-26. 02.2021	Remote-Meeting	IV meeting of Italian marine geologists	Yes, how the CARG Project database contributed to EMODnet Geology	A	State of the art on progresses of research in marine sciences in Italy (over 100 participants)
04.03.2021	Remote, Teams-Meeting	Internal EMODnet 4 Geology WP3, GTK Meeting	no	O	planning of the EMODnet Geology Meeting, 4 participants
09.03.2021	Remote, Teams-Meeting	Internal EMODnet 4 Geology WP3, GTK Meeting	no	O	planning of the EMODnet Geology Meeting, 4 participants
09.03.2021	Remote, Teams-Meeting	EMODnet Geology Steering Group meeting	no	O	Discussion of EMODnet Geology progress, exchange of information and preparation of EMODnet Geology plenary virtual meeting to be held on 10-12 March. 8 participants
10.03.2021	Remote-Meeting	External meeting		O	Dedicated EMODnet Geology CMEMS meeting with 65 attendants from EMODnet Geology, EuroGeoSurveys Earth Observation Expert Group and CMEMS, focus on validation of coastal services
10.03.- 12.03.2021	Remote, Teams-Meeting	EMODnet Geology Project meeting	Yes. General project issues and several WP presentations with updates on work package progresses and actions to be undertaken by Partners	O	Update on Project progress and discussion with all Partners of any problem occurred (ca. 60 participants)
11.03.2021	Remote-Meeting	WP 4 international Workshop	Yes. Presentations on the methods different partner organisation are using to create geomorphology data layers	0	Geomorphology of the Germany Baltic Sea: presentation of different approach and outlining advantages and disadvantages of the results
12.03.2021	MS Teams Online	EMODnet-Geology Partner Meeting	Yes. Overview of progress on WP8 to date, milestones, outreach activities, barriers to progress discussed.	A	Attended by all EMODnet-geology project partners online (part of the wider project meeting 10-12 th March 2021). The milestones were agreed, and way forward clarified with

					particular emphasis on the WP8 breakout session taking place 19 th April 2021.
17.03.2021	Remote, Teams-Lecture	“Aquatic Sedimentary Environments” lectures at Helsinki University, Department of Geosciences and Geography, Finland	Yes, “Acoustic-Seismic methods”, 1 slide on EMODnet	O	20 students
17.03.2021	Remote-Meeting	Internal meeting		O	Strategic meeting of TNO and Deltares on quality filtering of satellite output on the basis of validation results
17.03.2021	Remote-Meeting	Internal meeting		O	Strategic meeting of TNO and Edge Hill University on coastal vulnerability, with status assessment and roadmap to a beta deliverable of georeferenced maps
19.03.2021	Remote-Meeting	meeting of institutions contributing to Italian WP6 deliveries (CNR-ISMAR, OGS, Universities of Genova, Palermo and RomaTRE)	No	O	discussion on characteristics and quality of features at the scale of the current phase of the Project (15 participants)
26.03.2021	Remote, Teams-Meeting	Internal EMODnet 4 Geology WP3, GTK Meeting	no	O	planning of the future work, 5 participants
29.03.2021	Remote-Meeting	Webinar		A	SEArca event “Water is coming: the EU Strategy on climate adaptation – focus on coastal erosion and sea level rise”; address sand need for working-with-nature solutions in WP7 (volumes)
SUM				O	Total # of meetings organised = 16
SUM				A	Total # of meetings attended = 5

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
06.04.21	Remote, Teams-Meeting	Workshop	A	GTK (WP3 lead) – ISPRA meeting to check the Italian substrate data
08.04.2021	On-line	EMODnet Geology Steering Group Meeting	A	Information by project coordinator and discussion of EMODnet Geology issues, exchange of information
19.04.2021	MS Teams Online	WP8 Submerged Landscapes Breakout Meeting	O	Partner meeting for comprehensive update on work to date, upcoming milestones, and roadmap for potential palaeogeographic reconstruction work in future.
26.04.2021	On-line	EGU: presentation of geology portrayal methods, including EMODnet seafloor geology	A	Discussion of and solution to portrayal issues
28.04.2021	vEGU 2021 Online	External Conference Presentation	A	Presentation summarise the Submerged Landscapes Work package and the EMODnet-Geology project.
14.-18.06. 2021	On-line	EMODnet Jamboree	A	Information and exchange on EMODnet lots, EMODnet geology meeting, presentations of actual results of the compilation and classification seafloor geology and geomorphology. Posters from the different EMODnet Geology WP:s.
June 2021	vEMODnet Jamboree	External Conference Presentation	A	Presentation summarise the WP8 Submerged Landscapes part of the EMODnet-Geology project.

18-19.09.2021	2nd International Conference on Global Issues of Environment & Culture. Delphi, Greece Session 5: GEOARCHAEOLOGY https://huaxiahellas.com/conference-2021/	Conference	A	Project partners from Greece are organising this event and will be presenting WP8 related research/products. Depending on Covid restrictions, WP8 leader would like to attend for project promotion and to engage with new stakeholders.
28.04.2021	vEGU General Assembly 2021.	Conference	A	Abstract accepted to vEGU Session: GM6.7 Underwater paleo-landscape reconstruction by using multi-proxy approaches in the framework of NEPTUNE INQUA project.

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)
January 2021	EMODnet January Newsletter	"EMODnet Geology updated their seabed substrate data products" news in EMODnet Newsletter	Public dissemination	EMODnet January Newsletter published online

B. Planned communication products

Date	Communication material	Short description (of the material, title, ...) and/or link to the asset	Main results expected
June 2021	Poster at EMODnet Geology Jamboree	EMODnet Seafloor Geology and marine landforms: Building geomorphological data sets of the European Sea Floor	Information of and outreach to the EMODnet community
June 2021	Poster at EMODnet Geology Jamboree	From multi-source seamless mapping to composite maps serving multiple end-users: the southern North Sea case	Information of and outreach to the EMODnet community
June 2021	Poster at EMODnet Geology Jamboree	Towards semi-automated classification of seabed geomorphology using EMODnet bathymetry and seabed substrate data – case study in the Western Baltic Sea	Information of and outreach to the EMODnet community
April 2021	Twitter, EMODnet website article	Announcement coincident with the next update to the WP8 Submerged Landscapes database.	Increase in hits on the website and downloads of database.
August / September 2021	Twitter, EMODnet website article, press release	Announcement coincident with the next update to the WP8 Submerged Landscapes database.	Increase in hits on the website. Raising awareness. Academic interest.

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)
1.2.2021	Continental Shelf Research	Sedimentation rates in the Baltic Sea: A machine learning approach. https://doi.org/10.1016/j.csr.2020.104325	Mitchell, P.J., Spence, M.A., Aldridge, J., Kotilainen, A.T., Diesing, M.	Centre for Environment, Fisheries and Aquaculture Science (Cefas), UK; Geological Survey of Finland (GTK); Geological Survey of Norway (NGU)
In progress, to be published end 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)
Delivered and review In	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
accepted	EGU General Assembly 2021	Small-scale geological mapping on Earth: setting guidelines, standards, and portrayal rules. Experience from pan-European projects	Asch, K. *)	Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Hannover, Germany
9.12.2021 (!)	Story Map with WP3 seabed-substrate map. (note , this wasn't in our previous report; we came across it by accident as users don't always report back to us)	Spatial use North Sea (in Dutch)	Anonymous	Geodan Labs
25.02.2021	IV meeting of Italian marine geologists	Dalla banca dati CARG a EMODnet Geology (From the Italian Geological Mapping Project (CARG) database to EMODnet Geology)	Andrea Fiorentino & Loredana Battaglini	Geological Society of Italy

Available online first, official publication date 20 th May 2021	Peer-review publication Quaternary International	Lower Palaeolithic archaeology and submerged landscapes in Greece: The current state of the art.	P. Tsakanikou N. Galanidou D. Sakellariou	University of Southampton, UK University of Crete, Greece Hellenic Centre for Marine Research, Greece
Available online first, official publication date 20 th May 2021	Peer-review publication Quaternary International	Searching for Neolithic sites in the Bay of Kiladha, Greece.	Julien Beck, Despina Koutsoumba, Dimitris Sakellariou, Morgane Surdez, Flavio Anselmetti, Nikos Papadopoulos, Ioannis Morfis, Ioannis Panagiotopoulos, Grigoris Rousakis, Dimitris Oikonomou, Kleanthis Simyrdanis, Gianluca Cantoro, Athanasios Argyriou, Patrizia Birchler Emery, Ayla Krijnen, Konstantina Tsampouraki-Kraounaki,	University of Geneva, Switzerland; Ephorate of Underwater Antiquities, Greece; Hellenic Centre for Marine Research, Greece Tiefbauamt des Kantons Bern, Switzerland University of Bern, Switzerland Institute for Mediterranean Studies, Greece Vrije Universiteit Amsterdam, Netherlands

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	n/a	We do not acquire data in this project.
B) Usage of data in this quarter	n/a	We do not acquire data in this project.
2. Current status and coverage of total number of data products A) Volume and coverage of available data products	ArcGIS	<p>The trend is stable due to no major releases this quarter. We have two coverage products (WP3 seabed substrate and WP4 sea-floor geology). The distribution on sea basins is done using GIS tools by work package leads (GTK and BGR).</p> <p>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). This has been discussed with the Secretariat.</p> <p>WP3. The seabed substrate data at 1 M scale covers about 41 % 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).</p> <p>The last update of the seabed substrate data was in December 2020 and there have not been any updates during this reporting period (Q1/2021).</p> <p>WP4. The pre-Quaternary geology data covers between 83 and 100% of the Geology Regions, Quaternary geology covers between 3 and 72%, geomorphology between 4 and 15%, and general physiographic features between 8 and 43%. The coverages by sea-basin are indicated in the excel file (Indicator 2). Last update of the seafloor geology products was in September 2020 (pre-Quaternary). Next are to be expected April 2021.</p>
B) Usage of data products in this quarter	Web server log files	Trends indicate higher interest in Submerged landscapes, which could be due to an article or paper. We have to guess. WFS statistics are very difficult to measure correctly. Automated robots do intensive harvesting of data and metadata. Some users prefer to pull records in small batches others fetch one

		huge area in one request. We have taken a representative week and found a ratio of 55:45 between WMS and WFS. This way, we see a more realistic use trend of WFS
3. Organisations supplying/approached to supply data and data products within this quarter		none
4. Online 'Web' interfaces to access or view data		New layer was added to Coastal migration WMS/WFS: "Coastal migration from field data"
5. Statistics on information volunteered through download forms		Download count is similar to last quarter. Users are not required to state country of residence. Address is freetext
6. Published use cases		No new published use-cases during this reporting period but soon-to-come in Q1. E.g. INFOMAR data supports offshore energy development and marine spatial planning in the Irish offshore
8.1. Technical monitoring		Near-perfect uptime
8.2. Portal user-friendliness (Visual harmonization score)		73
9. Visibility & Analytics for web pages		Shows expected traffic due to few data product releases this time of year
10. Visibility & Analytics for web sections		Stable trend. Three pages were replaced last summer
11. Average visit duration for web pages		Stable trend

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.]