



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 (24 months)

Centralisation Phase

Quarterly Progress Report (Q2/2023)

Reporting Period: 01/04/2023 – 30/06/2023



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1. Highlights in this quarter

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

Collection and harmonisation of new datasets and first deliveries to the different work packages were scheduled for 2022, but deliveries continue until the end of the project. This has especially been the case for the remote sea areas, the Caspian Sea and Caribbean Sea. Our new Caspian Sea subcontractor Caspian Locus Limited Liability Company has managed to collect, harmonize and submit various data from the Azerbaijan sea areas to all of our work packages. Depending on the progress of releases of the different data products the new or updated azerbaijani data packages are included in the final updates of this contract (before 24. September 2023) or in connection with the first data releases of the new contract. Regarding the Caribbean Sea data releases by end of this contract are mainly partner data or such third party data that has been early enough collected and harmonised. During the next contract we will add data from regional geological survey organizations of the Caribbean Sea.

Below are listed some examples of realized deliveries/actions regarding deliveries during Q2.

WP3. Erosion data delivered from Norway, Italy, Iceland, Slovenia, Sweden, Croatia, Poland, Portugal, France.

WP3. Seabed substrate data updates delivered at Scales 5k, 10k, 15k, 20k, 25k, 50k, 100k, 250k 1M, from 12 partners: Azerbaijan, Belgium, Finland, France, Ireland, Italy, Latvia, Lithuania, Malta, Norway, Spain and Sweden, including data from the Caribbean Sea (at scales 25k and a full coverage at 1:500k).

WP4. Updates from France (geomorphology) and Poland (Quaternary), and new data contributions from Bulgaria (General physiographic features, Geomorphology), Cyprus (General physiographic features, geomorphology, Quaternary geology), Malta (General physiographic features), France (Geomorphology), and Azerbaijan (geomorphology, Quaternary Geology).

WP5. Data received from Azerbaijan (migration – field), Latvia (coastal type), UK, Netherlands and Norway (coastal vulnerability).

WP6. New data and updates were received during the reporting period from Azerbaijan, Iceland and Turkey.

WP7. Updates, including sub type information have been received from Latvia, Spain, Iceland, Denmark, Finland and Azerbaijan and Turkey.

WP8. Updates from Belgium, Iceland, Malta, Spain, and Turkey, as well as new data from the Caribbean Sea.

WP9 is responsible for the layers for boreholes/samples and geophysics. In this quarter data from Latvia, Estonia, Croatia, and Denmark were updated. The Danish data was from a survey in the Caribbean Sea area.

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

All new and updated data submitted by the partners are added to our different data products which are thus updated and further migrated to the Central portal. Our deliveries continue until the end of the project.

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, WFS, and CSW. All project partners can connect directly to the portal PostgreSQL-database and create advanced queries on the project's data products.

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 this quarter the sedimentation rates, boreholes and geophysics layers were updated. The structure of the attribute table for geophysics was also updated on the geoserver side but these changes are not visible on the Central Portal yet.

Task 5: Contributing content to dedicated spaces in Central Portal:

We have been working in close cooperation with the Central Portal to have our data products available to any desired spaces on the Central Portal.

Task 6: Ensure the involvement of regional sea conventions:

Despite earlier efforts to advertise EMODnet Geology to the RSC's we have not managed to involve RSC's with EMODnet Geology. There have been discussions with the Secretariat and other lots to have meetings between EMODnet thematic lots and the RSC's, a forum which was dismantled some years ago. This situation has not changed yet.

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

We have 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. On 16. June, we had a meeting with DG MARE and CINEA concerning future perspectives of EMODnet Geology.

Connection to the new CSA Geological Service for Europe (GSEU), which will use EMODnet Geology both as a source of data/information and as a platform to disseminate GSEU-generated new data/information, was discussed with DG MARE (ZK) on June 26th. It was outlined as well to the EMODnet Secretariat, and a meeting is planned for August 1.

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

We have been regularly monitoring and assessing the running systems in terms of performance and quality of service. User feedback has been handled, and problems have been resolved within the time limit specified by the help disk at the Central Portal. After the update to geoserver version 2.22.2 (EM-773) we had some memory issues on our server once a week. It seems to have something to do with our landslide susceptibility layer and we will see if we can avoid this by changing the tiling configuration. Most of the external users would probably not have noticed this since the Central Portal uses caching.

Task 9: Maintain the existing thematic web portal for a maximum of six months from the start of the projects:

The original thematic portal has been working for the last six months and is still running. All calls are redirected to the Central Portal, but we still keep the original web viewer for testing purposes. The database and web services work and are maintained as before.

Highlights of the different work packages:

WP1. Project Management When Russia started its war in Ukraine, we lost our Caspian Sea subtask leader as we had to end the contract with our Russian subcontractor VSEGEI. Our new Caspian Sea partner Caspian Locus Limited Liability Company (CLLLC) from Azerbaijan started immediately after signature of the subcontract between GTK and CLLLC with the work to access and harmonize data to the different work packages of EMODnet Geology. Harmonized Caspian Sea data was by CLLLC delivered to all WP's in late June.

Depending on the progress of releases/updates of the different data products the new or updated azerbaijani data packages are included in the final updates of this contract (before 24. September 2023) or in connection with the first data releases of the new contract.

The EMODnet Geology partners were harmonising and quality checking new national data for this phase of the project, including data from the Caribbean Sea. In order to incorporate also third parties from the Caribbean Sea area we want to connect with local geological surveys. Thus we have had discussions with Asociación de Servicios de Geología y Minería Iberoamericanos (ASGMI) in which many of the local surveys are members. Several surveys have informed us that they have marine geological data, and are interested in cooperation. During Q2 we prepared a meeting with the local actors and last week in July we will have a cooperation kick-off meeting in Santo Domingo, the Dominican Republic, where interested parties have been invited to participate. Delegates from geological survey organisations of Mexico, Costa Rica, Dominican Republic, Honduras, Guatemala, and Cuba have registered for attending the meeting in person, others will have the possibility to attend remotely. Travel funding for this meeting have been provided by the EMODnet Geology coordination.

EMODnet Geology had one Steering group meetings during the reporting period (3.4) and participated remotely in the 18th EMODnet Steering Committee Meeting (23.5), had a meeting with DG MARE (16.6), and had a full partnership project meeting in Torshavn, Faroe Islands (23-25.5).

EMODnet Geology participated in the EGU 2023 conference in Vienna, Austria, 24-28. April 2023. Several EMODnet Geology posters were presented during the conference.

WP2. Geological data specification and sourcing. This task was completed by month 12 (Q3 2022), but additional updates have been added during months 13-22 and used in final updates and/or new data products by end of this contract, or if added very late they will be included in first updates of the next contract (after 25. Sept 2023). Targeted focus has been on data from the remote sea areas, the Caribbean Sea and the Caspian Sea. Our new Caspian Sea subcontractor Caspian Locus Limited Liability Company (CLLLC) has managed to find data for all work packages and data were delivered to the different WP's in late June.

WP3. Sea-bed substrate. Draft compilation of the seabed substrate data was delivered to EMODnet habitat lot on June 30th.

Analysing the added value of surface features information in the Seabed substrate data from the European sea areas was presented at EGU General Assembly 2023 in Vienna, Austria, 24–28 April 2023.

WP4. Sea-floor geology. As cross-border harmonisation is essential in full-coverage maps WP 4 has improved the symbology (labels for lithology, age, event environment/process) for the BGR test viewer. The portrayal for Quaternary stratigraphy (Age) was also improved and will be used for the next upload of Quaternary data on BGR Geoviewer, to be further uploaded on the EMODnet Central Portal.

Work on the Harmonisation of the Quaternary in the Western Baltic Sea prototype area (Denmark, Sweden, Poland, Germany) and semantic and geometric harmonisation is progressing well.

WP5. Coastal behaviour. WP5 finalized a CSV file with updated satellite data on coastline migration: extended timeseries from 10 to 38 years to reduce influence of outliers and explain longer-term patterns; added North Africa, Syria, Lebanon, Israel, Caribbean and Macaronesia; built in rmse and outlier filtering to generate a class 'uncertain', next to landward/stable/seaward; derived coastal type (sand, mud, cliff, vegetated, other).

WP5 added UK, Netherlands and about half of Norway to the coastal vulnerability data product, finalizing the first portal map for this attribute.

WP6. Geological events and probabilities. WP6 harmonized layers including new data and updates have been displayed on a test website to be validated by Partners.

WP 7. Minerals GSEU-CSA project WP2-T2.2 offshore critical raw materials has started and GSI will lead a WP within this project with the objective to coordinate data into the EMODnet portal.

WP8. Submerged landscapes. Work on palaeoenvironmental indicators such as pollen at a European level is progressing well and filling in gaps in reconstructing the environment across exposed areas of continental shelf during periods of lower sealevel.

Collection of data from the Caribbean Sea area has proceeded well and revealed information on submerged springs and sea level index points as well as historical coastline positions and shelf sea extents since the Last Glacial Maximum.

WP9. Data management, web portal and services.

The EMODnet Help Desk system has sent us five tickets with issues from external users. EMODNET-1606 and EMODNET-1628 were questions about data quality and amount of data, EMODNET-1607 was about how to use the map viewer at the Central Portal and EMODNET-1625 and EMODNET-1628 were about things that had to be fixed at the EMODnet geology environment and the Central Portal. These issues were all solved.

A lot of tickets have been closed or are under review (EM-394, EM-525, EM-529, EM-559, EM-741, EM-745, EM-773, EM-778, EM-85). Many of these issues were about links to metadata, download and legends. EM-773 was of the highest priority and was about updating the version of geoserver due to security issues.

The Geology theme also wants to add new attributes to some of the datasets of boreholes, geophysics and seabed substrate (EM-775), change the functionality of the filtering method (EM-759, EM-797) and put Landslide Susceptibility into a third level in the menu (EM-780). These changes are under progress.

We also had a discussion with the Central Portal about diagrams that shows the position of the shoreline through time (EM-799). The solution to this is that EMODnet geology develops a service that shows the diagram when the user clicks on a link in the attribute table in the map viewer at the Central Portal. This diagram functionality is still in the planning phase.

Regarding the tickets mentioned above the Secretariat has informed us in their assessment of this report:

- that the INSPIRE Quality of Service statistics for Q2-2023 are available in EM-142 - Geology Quality of Service Monitoring. Several of the thematic's OGC services still did not meet the minimum INSPIRE availability requirements of 99%. The Secretariat has informed the thematic in the ticket.

- This is acknowledged by the thematic.

- that an updated evaluation on the INSPIRE metadata and data URL issue is provided in EM-14 - CINEA - Action on Web Services MetadataUrl and DataUrl fields (21/11/2019) [Previously JIRA ISSUE 33]. A number of new issues were detected, and the Secretariat has informed the thematic in EM-85 - Geology - Web Services MetadataUrl and DataUrl fields.

- This is acknowledged by the thematic and noted that this is the same ticket as EM-701 and can be closed.

- that the following issues (mentioned above) related to the thematic require follow-up by the central portal team:

- **EM-394** - Geology review of the new CP map viewer
- **EM-529** - Geology - EMODnet Catalogue Tags

- **EM-525** - Updating of EMODnet Geology - Seafloor Geology layers in the European Atlas of the Seas
- **EM-797** - Problem with filter for layers with more filter criteria
- **EM-823** - Geology to send email address

- that the following issues require follow-up by the thematic:

- **EM-775** - Revision of attributes and filters for geophysics and borehole indices
- **EM-799** - Diagram that shows the position of the shoreline through time
- **EM-809** - Geology: link + redirect

Comments from the thematic on these follow-up requests are:

- **EM-775:** The filters still do not work – there are a problem with the CQL filter. Central Portal is asked to look into this.
- **EM-799:** This is still under discussion. We are investigating where we are allowed to store data. The data already exist in a cloud, and it would be nice if they could just stay there - but can we ensure that things still work if another contractor takes over?
- **EM-809:** Comment: This ticket has been closed 11-08-2023

Two bugs, **EM-701** about broken links and **EM-712** about the functionality of the geonetwork server at EMODnet geology, are resolved.

Planning of wind farms is one of the main reasons that users visit the portal. They are especially interested in geotechnical data, but we are not able to provide this yet. At the semi-annual meeting for EMODnet Geology the partners agreed on to find out if geotechnical data can be added in the next phase. Several partners (The Netherlands, Belgium, United Kingdom, Finland and Denmark) said they would be able to provide geotechnical data. The Geological Survey of Denmark and Greenland has some contacts in the industry that we can contact to learn more about the requirements. When we know more about the requirements WP9 will send out a questionnaire to all the partners in EMODnet Geology to work out what can be provided.

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: Thematic data products updated T0+6 months	WP9, all WP's	25.03.2022	Delivered	25.03.2022	Our data products were ready for uploading to CP according to plan.
M2: Data specification and sourcing ready	All WP's	24.09.2022	Delivered	-	-
M3: Interim report and evaluation of progress	WP1&WP9	24.09.2022	Delivered	-	-
D1.1-7: Quarterly reports 3/2021, 4/2021, 1/2022, 2/2022, 3/2022, 4/2022, 1/2023	WP1/all	15.10.2021, 15.01.2022, 15.04.2022, 15.07.2022, 15.10.2022, 15.02.2023, 15.04.2023	Delivered (and accepted)	15.10.2021, 15.01.2022, 14.04.2022, 15.07.2022, 14.10.2022, 15.02.2023, 11.04.2023	Q4/2022 report postponed by CINEA to 15.02.23
D1.8: Quarterly report	WP1/all	15.07.2023	This Q report,	14.07.2023	-
D2.1: Interim report	WP1/all	24.9.2022	Delivered (and accepted)	22.9.2022	-
D2.2: Final report	WP1/all	24.9.2023 + 60d	To do	-	-
D3.1: Thematic data products/maps updated on Central portal	WP9/WP1/all	24.03.2022	Delivered	-	Our data products were ready for uploading to CP according to plan
D3.2: Final data products/maps available	All WP's	24.9.2023	To do	By 24.9.2023	-

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	Pending	This is the same as EM-701 and can be closed		
EM-394 - Geology review of the new CP map viewer	In Review	Waiting for review by the secretariat		
EM-525 - Updating of EMODnet Geology - Seafloor Geology layers in the European Atlas of the Seas	In Progress	Waiting for review by the secretariat		
EM-529 - Geology - EMODnet Catalogue Tags	In Review	Waiting for review by the secretariat		
EM-559 - Geology- Capture all layers in CP portal	Resolved			04-05-2023
EM-701 - Broken Links in EMODnet Viewer	In Review	Waiting for review by the secretariat		
EM-712 - The title in the EMODnet product catalogue is repeated several times	In Progress	We are continuously working on this. Last update in Jira was 04-07-2023		
EM-745 - Broken links in Geology Borehole and Grabs Layer GetFeatureInfo	Resolved			12-05-2023
EM-773 - Critical - Geoserver Remote Code Execution - CVE-2022-24816 & CVE-2023-25157	Resolved			01-05-2023
EMODNET-1606 - Inquiry: Data, regarding Underground Water Discharge (UWD) in Europe.	Resolved			17-05-2023
EMODNET-1607 - EMODNet seabed substrate	Resolved			15-06-2023
EMODNET-1625 - Seabed substrat Emodnet layers - Download problems	Resolved			08-06-2023
EMODNET-1628 - Sediment Samples	Resolved			16-06-2023

EMODNET-1635 - Quaternary geology lithology data - download impossible	Resolved			23-06-2023
Secretariat Assessment of Q1 report: We assume that the unit of measurement of the stats provided for the geographic sea basin coverage is "% area"	Resolved	In this report we indicated the unit of measurement to be "% area" in cell A19.		
Secretariat Assessment of Q1 report: How are the percentages provided in the narrative calculated, and how do they align with the percentages in the spreadsheet? ("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 %.")	Resolved	The narrative contains the percentages calculated against the total coverage (i.e. including all sea regions), the spreadsheet shows the percentages per sea region in question.		
Secretariat Assessment of Q1 report: Why is the coverage for the other layers/products (e.g., pre-quaternary geology; geomorphology; etc.) not added to the spreadsheet, following the description in the narrative?	Resolved	It is added to the spreadsheet in this Q report.		
Secretariat Assessment of Q1 report: The Secretariat notes that 0% of the data is restricted, but that no publication license is provided. Publication licenses are of vital importance to EMODnet usability. Can Geology try to supply publication licenses in the future?	Pending	We are working on this issue. For the moment we are collecting licence information from partners, but this task takes some time, and it might be finalized during end of 2023.		

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
Replace red-yellow-green with shades of blue to move away from intuitive good/bad in WP5 migration products	Pending (new)	Assign new colour scale	August 2023	
Identified issue (projection) with WP8 database – some data not displayed/downloadable on portal.	In Progress	Data expert @BGS to rectify. Liaison with WP9 to reschedule delivery.	Deadline postponed (Q3 or Q4)	
EM-741 - Legend problem for submerged landscapes	Resolved			24-04-2023
EM-775 - Revision of attributes and filters for geophysics and borehole indices	In Progress	The Central Portal has implemented this in the test environment. We need to test this.		
EM-778 - Legend does not work for Sea Floor Geology - General Physiographic features	Resolved			08-05-2023
EM-780 - Third level menu for Landslide Susceptibility	In Progress	The Central Portal is working on it		
EM-797 - Problem with filter for layers with more filter criteria	In Progress	The Central Portal is working on it		
EM-799 - Diagram that shows the position of the shoreline through time = timeseries visualization	Pending	This covers discussions about a new feature. Discussion with Secretariat started. No deadlines yet.		
Some partners have had limitations on reclassifying the Aggregate and Hydrocarbon data previously submitted according to “sub deposit type” for this Phase of EMODnet Geology	Resolved	They will be displayed as “unspecified”		01/07/2023

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

For a compressive 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		We don't publish data with coverage, only point information on accumulation rate, no coverage.
What is your opinion on the data coverage within EMODnet for your thematic? B) Usage of data in this quarter		No coverage of data, only for data products, see below.
2. Current status and coverage of total number of data products A) Volume and coverage of available data products		<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).</p> <p>Data products consisting primarily of points and lines. Landslide susceptibility is the only raster layer. Total volume is based on a compressed file format.</p> <p>WP3. No changes during this phase yet, the products are updated in next Q, by end of this contract. The latest seabed substrate 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). However, note that in the beginning of Q1 we still had the four products for Seabed substrates: 1:100k, 1:250k, 1:1M and multiscale. In the last part of Q1 and forward these four products are merged into a single downloadable product that contains the data for the three seabed substrate layers: "multiscale folk 5", "multiscale folk 7" and "multiscale folk 16".</p>

		<p>WP4: No changes during this phase yet, the products are updated in next Q, by end of this contract. No report on new numbers of area coverage, as the latest project contributions consists of a line feature layer (marine geology - geomorphological line features) on the BGR Portal. Due to the characteristics of the line geometry, we cannot assess its areal coverage.</p> <p>Coverage: Pre-Quaternary geology: complete; Quaternary Geology: rather good coverage, partly with excellent detail data, several data gaps remain; Geomorphology: Excellent detail data from mapping campaigns of numerous regions. General physiographic features: rather good coverage with several data gaps.</p>
B) Usage of data products in this quarter		<p>In the previous quarter both the old system for EMODnet Geology and the new system for the Central Portal were active (not at the same time though). Therefore, one must be cautious when data for Q1 and Q2 are compared. The way the statistics are calculated has also changed. Previously the number of wms and wfs calls were calculated from a general wms/wfs ratio based on the log on the gateway server. This ratio was influenced by other services and overexaggerated the number of wfs calls. This time the wfs and wms calls are calculated for each product and this has resulted in a big increase in wms calls and a big decrease in in wfs calls.</p>
3. Internal and external organisations supplying/approached to supply data and data products within this quarter		<p>Our whole consortium has supplied data to the different EMODnet Geology data products during the last quarters, and during the reporting quarter we have received Caspian Sea data to all WP's from Caspian Locus Limited Liability Company, Azerbaijan.</p>
5.1 Daily number of page views of EMODnet Thematic entry page	Europa Analytics	<p>The daily number of page views was about the same as last quarter. There is a slightly decrease in the summer period (holidays) and as peak in May when EMODnet Geology had their semi-annual meeting.</p>
5.2 Quarterly total number of visitors, page views, unique page views and percentage of returning visitors	Europa Analytics	<p>Usage is about the same as last quarter. There is a small increase in the numbers, but this can be explained with that the redirecting from the old web site was done in middle of January. The numbers from the beginning of January were thus anomalously low. The peak around May 22-26 probably reflects the EMODnet Geology project meeting on Faroe Islands. There EMODnet Geology was advertised in local radio as EMODnet Geology coordinator and two local partners were interviewed on local radio, which might have affected the number of visits too.</p>

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

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