



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 (Q4/2022)

Reporting Period: Reporting Period: 01/10/2022 – 31/12/2022



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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 to begin in Q1 or Q2 of 2022, continued through Q3 and Q4, but deliveries continue until the end of the project. This is especially true for the remote sea areas, the Caspian Sea and Caribbean Sea (see WP1 description). Releases of the different data products are scheduled for the period from end of Q2 to end of Q3. If partners haven't been able to deliver their data in time, the data will likely be included in the next phase.

Below some plans and realized deliveries are listed as examples.

WP3 has received updates during this and previous quarters and is expecting deliveries from the Caribbean Sea. Final version of the erosion guidelines was distributed in December 2022 in order to collect available erosion data.

During Q4 WP4 started work on the Western Baltic Sea prototype area (Denmark, Sweden, Poland, Germany) and semantic and geometric harmonisation of Quaternary geology layer.

WP5 Inclusion of southern Mediterranean, the Caribbean Sea and Macaronesia in satellite map on coastline migration.

WP6 Data updates were received during the reporting period from Ireland, Finland, Germany and Spain. Data harmonisation scheduled by February 2023, validation by June 2023 and final delivery after that.

WP7 has received updates during the previous quarters and are expecting data from the Caribbean Sea. A reminder to all partners on additional data will be sent out in early Q12023. Additionally WP7 has sourced Caribbean Sea marine minerals data from the International Seabed Authority and the Metallogenic Map of Central America and the Caribbean.

WP8 New submissions from e.g. Belgium Southern North Sea Fluvial terraces and escarpments, palaeocoastlines from Iceland, paleo topography from Central Mediterranean, paleo coastlines and other submerged landscapes features from Sea of Marmara, NW UK, data from World Atlas Of Last Interglacial Shorelines, and a case study from Ukraine 30-18 ka BP and 16.5-10.5 ka BP.

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 updated in order to be 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 we only had smaller issues to deal with. The download functionality in the web viewer was reviewed and corrected. We changed some references to metadata. The navigation menu for the static pages was reviewed. We also had the problem that our updates were not shown on the Central Portal map viewer because a cache at the Central Portal was refreshed too rarely but this is also solved now.

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 as well as our portal ready for all necessary measures regarding migration of EMODnet Geology data and products 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. However, we provided answers and ideas to questions about spatial resolution and riverine sediment supply to marine basins, asked by the Sea Basin Checkpoint Community by means of a spreadsheet.

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.

We are working on cooperation with the Seabed Habitats lot on "Vulnerable Marine Ecosystem (VME) Elements" of the Northeast Atlantic for ICES.

Connected 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.

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 hours.

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

We kept our thematic portal running for a maximum of six months from the start of the project to have it successfully migrated to the Central Portal – and in fact until the end of this reporting period.

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. Soon after that we started negotiations with an Azerbaijani team on subcontracting EMODnet Geology. In January 2023 a subcontract was signed between EMODnet Geology lead GTK and the Azerbaijani partner Caspian Locus Limited Liability Company who immediately started with the work to access and harmonize data to the different work packages of EMODnet Geology. Attempts on subcontracting entities from the other Caspian Sea countries (except Iran and Russia, which is impossible due to sanctions) remain, but are uncertain.

The partners were identifying, collating, and harmonising new national data for this phase of the project, including data from the Caribbean Sea. We have previously had discussions with ASGMI on Caribbean Sea data and during Varna project meeting we had a special session on Caribbean Sea data scoping. Earlier plans of cooperation included at least Colombia, Cuba, and Venezuela, who have informed us that they have marine geological data, and now also Brazil has informed us that data is available for inclusion to EMODnet .

EMODnet Geology had three Steering group meetings during the reporting period and participated remotely in the EMODnet Steering Committee meeting on 7th- 8th November.

A full EMODnet Geology partnership meeting was organised in Varna, Bulgaria, 7.-11.11.2022, where all WPs and their data products and national data deliveries were discussed. In addition, we had thematic sessions for ongoing/cross-thematic issues: Coastal ribbon, Vocabulary, Web portal (geometries & boreholes/all geophysics), Submerged landscapes, Caribbean Sea data and Seabed Erosion.

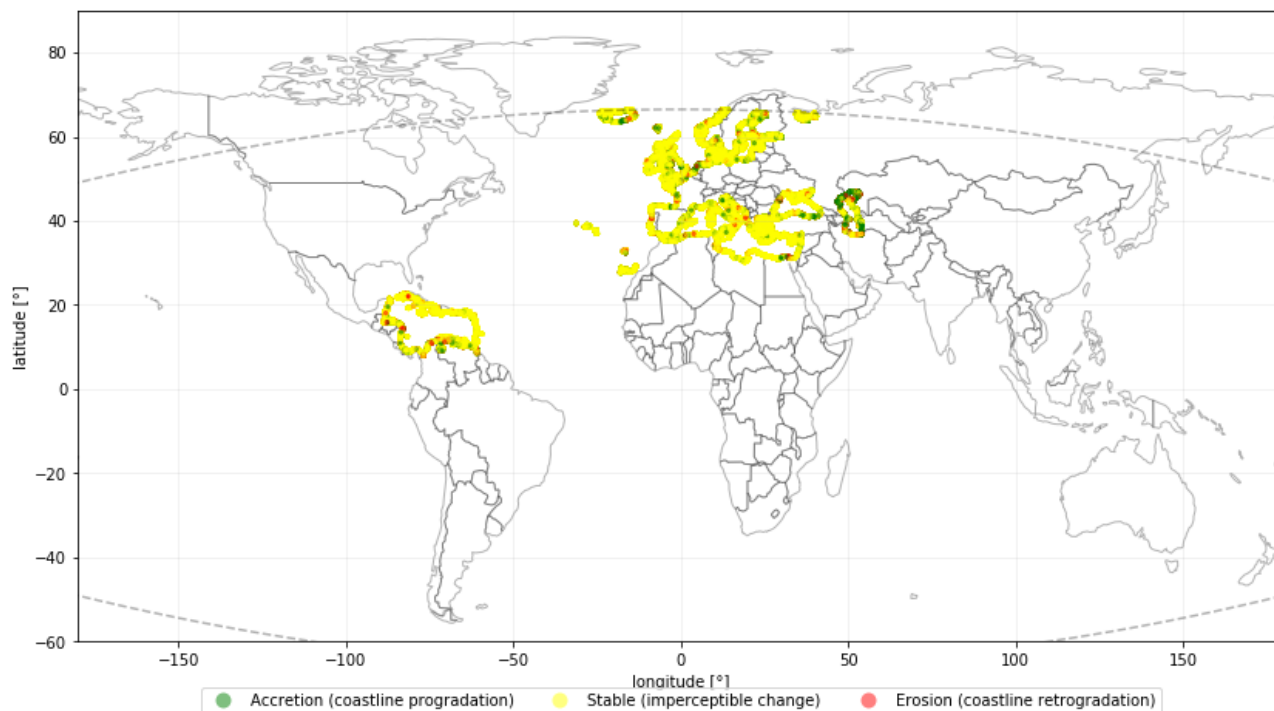
WP2. Geological data specification and sourcing. This task was completed by month 12 (Q3 2022), but additional updates will be added during months 13-22 and used in final updates and/or new data products by end of phase IV. Targeted focus is on data from the remote sea areas, the Caribbean Sea and the Caspian Sea. In October GTK requested from partners input to a data inventory for this phase of the project and could summarize the following: We estimate that we have received about 415.000 square kilometres of new and updated data during the first project year, as well as almost 11.000 kilometres of line data and a few hundred point data to the different work packages. The majority of data is, however, to be submitted during the second project year, estimated by partners to over 1.000.000 additional square kilometres, perhaps as much as 1.200.000 square kilometres. Part of the data is update on old data with lower resolution or quality, and doesn't necessarily add to the areal coverage. This corresponds to about 7 per cent of all EMODnet sea areas. But as we have several data products with areal coverage in different scales and they obviously overlap it is very difficult to give any exact percentage of areal increase. Still, we can expect a few per cent of increase. Also the amount of line kilometres and data points will most probably increase from the first year.

WP3. Sea-bed substrate. December 2022 Work Package 3: Seabed substrate Guidance Document III, Seabed erosion and related geodatabase were delivered to the project partners.

WP4. Sea-floor geology. WP4 is in preparation of a layer of increased symbology (labels for lithology, age, event environment/process) for the BGR test viewer in order to facilitate cross-border harmonisation, in particular in the prototype areas. This will improve our final EMODnet Geology data on Central Portal. Likewise in preparations is to implement optimized portrayal for the Quaternary seafloor geology on BGR Geoviewer and EMODnet Portal.

WP4 has started work on the Western Baltic Sea prototype area (Denmark, Sweden, Poland, Germany) and semantic and geometric harmonisation.

WP5. Coastal behaviour WP5. **Coastal behaviour.** Start-up of literature search for field data on riverine sediment supply to coasts. Draft case study on coastal landslide susceptibility in Liguria (Italy). Inclusion of southern Mediterranean, the Caribbean Sea and Macaronesia in satellite map on coastline migration. Expansion of its time series from 10 years (2007-2016) to 38 years (1984-2021), reducing the influence of outliers on trend curves. Implementation of latitude filter (to eliminate shorelines that may have ice cover) and addition of a fourth behaviour class, unknown-uncertain assessment in addition to landward migration, stable shoreline, seaward migration.



Draft coastline migration (satellite) map, pending final uncertainty assessment and map service (time-series) visualization.

WP6. Geological events and probabilities. WP6 data are provided to the Portal as layers relative to each feature (landslide, volcano, etc.) and to each geometry (polygon, line, point). Whenever updates are provided by Partners, they are included in the European wide layers which are then delivered again to WP9 lead.

Cross-WP activity including WP's 3, 4, 5, 6, and 8, reported by WP6: Discussions on coastal ribbon issues continued at the EMODnet Geology meeting in Varna (7-11 November 2022) and afterward. It turns out to be difficult to create a single questionnaire for all WPs. Therefore, WP6 lead will continue to enquire among Partners whether additional information useful to complement geological events data is available for the coastal ribbon on land and at sea, such as layering state, fracturing state, on land landslides inventory, landslides susceptibility maps.

WP 7. Minerals WP7 lead (GSI) is now a partner in the new Geological Service for Europe (CSA-GSEU) project WP2-T2.2 dealing with critical offshore raw materials. GSI will lead a WP within this project with the objective to integrate the results into the EMODnet Geology portal.

WP8. Submerged landscapes. The next portal update for WP8 is scheduled for February 2023 with new submissions from 4 partners at the last deadline in Summer 2022. This quarter, a dedicated WP8 workshop (8th November 2022) has taken place in-person for the regional, palaeogeographic working groups. A highlight of this meeting was the presentation by the Baltic Sea working group (Prof Alar Rosentau) who have significantly progressed work on the reconstruction for the 9000 cal a BP timeframe.

Partner TNO connected with Isabel Rivera-Collazo, Director of the Scripps Center for Marine Archaeology, for cooperation on Caribbean submerged landscapes.

WP9. Data management, web portal and services.

At the EMODnet-Geology project meeting in Varna changed formats for borehole and geophysics metadata were presented. After the meeting, the new formats were for consultation for a month and the comments were taken into consideration. The final formats are called Borehole index version 2.0 and Geophysics structure 2.0. The main changes were that new columns were added to differentiate between grab samples and boreholes and to differentiate between seismic and multibeam data. Also, some columns will be removed from the wms and wfs services because these columns contain very few and meaningless data. The columns still exist in the database and can be brought to live if needed.

Otherwise, the main tasks for WP9 had to do with the migration to the Central Portal: Configuration of the download functionality EM-559, revision of URLs EM-85. Changes to the static content EM-634 and EM-641. There were also issues with the caching of web viewer data EM-683 and monitoring EMODNET-1470.

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 have been 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	-	-
D1.1-3: Quarterly reports 4/2021, 1/2022, 2/2022, 3/2022	WP1/all	15.01.2022, 15.04.2022, 15.07.2022 15.10.2022	Delivered (and accepted)	15.01.2022, 14.04.2022 15.07.2022 14.10.2022	-
D1.4-8: Quarterly reports	WP1/all	15.01.2023, 15.04.2023, 15.07.2023	This Q report, To do To do	15.02.2023	-
D2.1: Interim report	WP1/all	24.9.2022	Delivered (and accepted)	22.9.2022	-
D2.2: Final report	WP1/all	24.9.2023	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	-	-

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
<p>Secretariat Assessment: Task 1: Maintain and improve a common method of access to data held in repositories.</p> <p>WP1:</p> <p>The Secretariat is missing a clear overview on the Caspian Sea subtask, and therefore would like to raise the following questions:</p> <ul style="list-style-type: none"> • Could the Geology portal provide an overview of: (1) which subcontractors from which countries are currently in progress and pending, and which ones will not take place; and (2) which of those partners and/or subcontractors have managed to deliver data on the Caspian Sea in the quarterly period. <p>•When is data delivery from countries around the Caribbean Sea foreseen (approximately)? What are the next steps?</p> <p>WP3:</p> <ul style="list-style-type: none"> • Has the Geology portal considered a use case on the use of WP3 substrate data in the report on the need for EIA (environmental impact assessment) in Finland? <p>WP4:</p> <ul style="list-style-type: none"> • It is advised that the EMODnet Geology lot contacts the EMODnet Communication team about this new release, so to align promotion activities. 	Resolved	<p>- 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. Soon after that we started negotiations with an Azerbaijani team on subcontracting EMODnet Geology. In January 2023 a subcontract was signed between EMODnet Geology lead GTK and the Azerbaijani partner Caspian Locus Limited Liability Company who immediately started with the work to access and harmonize data to the different work packages of EMODnet Geology. Currently we only have this partner in the Caspian Sea area. Attempts on subcontracting entities from the other Caspian Sea countries remain but are uncertain.</p> <p>- As it takes a while to start the process we expect to have the first data from the Azerbaijani partner delivered in mid - late spring.</p> <p>- Yes, we are aiming at using these cable surveys as a use cases, in progress.</p> <p>- Thank you, this is in progress by WP4.</p>		Jan 2023
<p>Secretariat Assessment: 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.</p> <ul style="list-style-type: none"> • Are new and updated data added to the different data products in batches, or how is this process tackled? 	Resolved	<p>No, usually not as batches but as as updates of available layers. This is explained in Task 2 of this report, please check. For instance WP6 data are provided to the Portal as layers relative to each feature (landslide, volcano, etc.) and to each geometry (polygon, line, point). Whenever updates are provided by Partners, they are included in the European wide layers which are then</p>		

		delivered again to WP9 lead for inclusion to the portal.		
<p>Indicator 2: Status/Volume and coverage of total number of products.</p> <ul style="list-style-type: none"> Please indicate the Manual download unit (cell C58), i.e., is it number of product downloads or requests? 	Resolved	The product is a zip file containing one or more datasets		
<p>Secretariat Assessment: <i>Indicator 6: Published use cases.</i></p> <ul style="list-style-type: none"> The Secretariat Communications team is looking forward to hearing from EMODnet Geology regarding the use case.? 	Pending/Resolved	We have a few new use cases under work. One on renewable offshore energy has been submitted to Secretariat. Rest is planned to be submitted in Q1 and Q2 2023.		
<p>Progress solving identified issues</p> <ul style="list-style-type: none"> EM-525 – ‘Updating of EMODnet Geology - Seafloor Geology layers in the European Atlas of the Seas’ is pending input from the Portal. The INSPIRE Quality of Service statistics for Q3-2022 are available in EM-140 – ‘Monitoring of INSPIRE Quality of Service Requirements’. The portal's OGC services met all INSPIRE requirements in this period and EM-142 – ‘Geology Quality of Service Monitoring’ was closed. An updated evaluation on the INSPIRE metadata and data URL issue for the Geology portal is provided in EM14 - EASME – ‘Action on Web Services MetadataUrl and DataUrl fields (21/11/2019) [Previously JIRA ISSUE 33]’. The portal has resolved all outstanding issues and EM-85 – ‘Geology - Web Services MetadataUrl and DataUrl fields’ was closed. 	<p>Pending</p> <p>Resolved</p> <p>Resolved</p>	<p>Unfortunately, we did not follow up on this issue in Q4 2022. We are working on it, and it should be solved in Q1 2023.</p> <p>This ticket was closed by the secretariat the October 3 because our CSW, WFS and WMS services met the requirements regarding response time and availability.</p> <p>All the URLs are revised and corrected, and the ticket EM-85 (the geology part of EM-14) was closed October 20. This and the task about cooperation with Central Portal is mentioned under WP9 highlights in the report.</p>	Q1 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
War and Russian army invasion in Ukraine have affected the progress of the project.	Partly resolved	<p>We have managed to subcontract a new partner from the Caspian Sea area, so that issue is partly resolved, however the issue has slowed down the progress considerably.</p> <p>Also the war has severely hindered the work of our Ukrainian subcontractor. Work under shelling and power outages is impossible.</p>		

Check WP6 metadata editors	Resolved	Issue concerning retirement of colleagues previously in charge as editors was clarified with Portal manager		14.10.2022
Identified issue (projection) with WP8 database – some data not displayed/downloadable on portal.	Pending	Data expert @BGS to rectify. Liaison with WP9 to reschedule delivery.	End February 2023	

3. User feedback

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
10.10.2022	Landesbetrieb für Küstenschutz, Nationalpark und Meeresschutz Schleswig-Holstein	Inquiry about original German North Sea sediment data included in the EMODnet geology Seabed substrate product	Dr. X X	1 day	Resolved	Known references of the original German maps were provided, and contact details of BSH, the original data supplier was given for further questions	
14.10.2022	HafenCity University Hamburg	Question if it is possible to derive coastal type from coastline shape.	email	One day	Ongoing discussion	No easy answer: looking into the possibility of a test.	pending
12.12.2022	Rijkswaterstaat	Link to EMODnet incorporated into Dutch National Growth Fund proposal for Digitizing the North Sea.	email	One week, several follow-ups	Text edited		resolved

4. Meetings/events held/attended & planned

A. Meetings/events organised and attended in the quarter					
Date	Location	Type event (internal or external meeting; training/ workshop)	Was a presentation given? (yes/no + short description)	Meeting attended (A) / organised (O)	Short description and main results (# participants, agreements made, etc.)
4.10.2022	Helsinki, Finland	Lecture, University of Helsinki, Faculty of Biological and Environmental Sciences	yes, Kotilainen Aarno: Evaluating future by history: using the information in seabed sediments	A	EMODnet, EMODnet Geology and EMODnet Ingestion were introduced to students during the lecture, 20 students
7.10.2022	Remote, Teams-Meeting	EMODnet Geology Steering Group meeting	no	O	Discussions related to the progress of the project
11.10.2022	Remote Teams meeting	Kick-off meeting CSA Geological Service for Europe WP5: Coastal Vulnerability and Windfarm Siting.	No	A	Discussion on separation of tasks, and specifically on how EMODnet data are used in GSEU and how GSEU map deliverables will feed into EMODnet Geology.
17.10.2022	videoconference	Meeting of institutions contributing to Italian WP6 deliveries	No	O	Discussion on the implementation of Italian contribution to WP6 products (18 participants, (CNR-ISMAR, OGS, INGV, ENEA, University Genova, Palermo, RomaTRE and Trieste)

19.10.2022	Internal, remote	EMODnet coordination (GTK)	Geology meeting	No	O	Discussions on progress of the project
20.10.2022	Online	Meeting with Dr SF (Bradford University, UK)		No	O	Meeting with Dr SF regards a potential case-study area in the eastern North Sea Basin to explore post-glacial marine palaeogeographic reconstruction. Existing research exchanged between the BGS and Bradford University partners. Planned new cores and sub-bottom seismic data planned for collection summer 2023. Unfortunately beyond inclusion for this Phase of EMODnet-Geology project, good demonstration of WP8 products being used for other projects.
20-21.10.2022	Remote	Workshop: EMODnet marine data for the offshore renewable energy sector in the Mediterranean Sea and Black Sea		Yes	A	EMODnet Geology input to the offshore renewable energy sector in the Mediterranean Sea and Black Sea
27.10.2022	Brussels	External meeting: EuroGeoSurveys 50 Years Conference		Yes: Green Sea, Great Deal?	A	Highlighted the interdisciplinary marine playing field of EMODnet for a global audience in the session on interdisciplinary science excellence (livestreamed via the EuroGeoSurveys YouTube channel); discussed cooperation on coastal vulnerability with David Applegate, Director of the United States Geological Survey.
27.10.2022	Brussels	External meeting: EuroGeoSurveys 50 Years Conference		Yes: Poster on EMODnet Geology	A	Presentation of EMODnet to a wide invited high level audience
3.11.2022	Remote Teams meeting	WP5 coastal vulnerability progress meeting		No	A	Plan for next few months of student work at Edge Hill University, preparation of presentation for EMODnet Geology Fall Meeting in Varna.

04.11.2022	Remote Teams meeting	EMODnet Geology 5 steering group meeting	No	A	discussion of EMODnet Geology issues (10 participants)
7.11.2022	Varna, Bulgaria	EMODnet Geology Steering Group meeting	no	O	Discussions related to the progress of the project
7.-11.11.2022	Varna, Bulgaria	EMODnet Geology project meeting	yes, by the coordinator and all WP leads.	A	Discussions related to the progress and the future work of the project
8.11. 2022	Varna, Bulgaria	internal	Yes: Cross-WP Workshop on status and results of the vocabulary group	O	Vocabulary/portrayal: Labels and portrayal discussed: new Quaternary colours accepted, decision made, not to create an international common code of abbreviations for geological units
8.11. 2022	Varna, Bulgaria	internal	Yes: Cross-WP Workshop on status and results of the coastal ribbon discussions	O	Coastal Ribbon: presentation of case study (Greece) and discussion of data inventory draft, no agreement for all WPs on definition of coastal ribbon achieved – possibly better each WP will send out an inventory
8.11. 2022	Varna, Bulgaria	Internal Workshop for palaeogeographic reconstruction	Yes. Overview slides for the seven regional working groups for palaeogeographic reconstruction, timeline, deliverables for the meeting and project.	O	Due to the ongoing effects of the pandemic lockdowns, this was the first time that the seven regional working groups could meet to progress activities for palaeogeographic reconstruction. Primary outcome was to provide a collaborative space for individuals to work on the task and also to hear from the Baltic Sea sub-group who have made most progress.
10.11.2022	Varna, Bulgaria	EuroGeoSurveys Marine Geology Expert Group meeting	yes, Kotilainen Aarno, A.T., Highlights 2022, Marine Geology, Geological Survey of Finland	A	EMODnet Geology and EMODnet Ingestion projects were advertised in the presentation
24.11.2022	videoconference	Meeting of institutions contributing to Italian WP6 deliveries	No	O	Discussion on the implementation of Italian contribution to WP6 products (18 participants, CNR-ISMAR, OGS, INGV, ENEA, University Genova, Palermo, RomaTRE and Trieste)

28.11.2022	Remote, Teams-Meeting	EMODnet Geology Steering Group meeting	no	O	Discussions related to the progress of the project
01.12.2022	Turku, Finland	Åbo Akademi University. Lecture on Marine Environmental Monitoring	Yes	O	Introduction of EMODnet and EMODnet Geology to some 20 University students by EMODnet Geology Coordinator (associate professor at the University)
6.12.2022	On-line	Internal, WP4	no	O	Meeting with partners from Iceland (ISOR) to clarify questions on the data delivery introduce
9.12.2022	Hybrid meeting, Teams & Espoo, Finland	Internal EMODnet 5 Geology WP3/GTK Meeting	no	O	Internal discussions related to the progress of the project
19.12.2022	Remote, Teams-Meeting	Internal EMODnet 5 Geology WP3/GTK Meeting	no	O	Internal discussions related to the seabed erosion
SUM				O	Total # of meetings organised = 14
SUM				A	Total # of meetings attended = 9

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
09.01.2023	Porto, Portugal	Horizon Europe TRIDENT kick-off meeting	A	EMODnet Geology coordinator as member of the project's Advisory Board gives a presentation on EMODnet Geology to the TRIDENT partnership. The project will collect data and that data will be submitted to EMODnet.

23.01.2023	Remote	Internal EMODnet Geology Steering Group meeting	O	SG meeting to prepare DG MARE/CINEA meeting
26.01.2023	Remote	EMODnet Sea-basin Checkpoint Workshop	A	Discussions on the EMODnet Sea-basin Checkpoints programme.
30.01.2023	Remote	Internal WP4 meeting	O	Kick-off Meeting to start working on complete Harmonisation of the Western Baltic Sea Quaternary Geology
03.02.2023	Remote	Meeting of institutions contributing to Italian WP6 deliveries.	O	Continue discussion on the implementation of Italian contribution to WP6 products (18 participants, CNR-ISMAR, OGS, INGV, ENEA, University Genova, Palermo, RomaTRE and Trieste).
03.02.2023	Remote	EMODnet Geology coordination meeting (GTK)	O	Discussions on EMODnet and EMFAF issues
06.02.2023	Remote	Internal WP4 meeting	O	Meeting with partners from Poland (ISOR) to start harmonisation of the Polish German border (Quaternary Geology)
06.02.2023	Remote	Internal planning	O	Planning meeting of the next EMODnet Geology project meeting, GTK - Jardfeingi
09.02.2022	Remote	Internal EMODnet Geology Steering Group meeting	O	Discussions related to the progress of the project (10 participants)
16.02.2023	Remote webinar	EMODnet Centralisation	A	Participation in the webinar
17.02.2023	Remote	EMODnet Geology WP3 internal meeting	O	Discussions on the progress of the work package and the project itself, attended by coordinator and WP3.
06.03.2023	Remote	EMODnet Chemistry Stakeholder Consultation meeting	A	EMODnet Geology participation (coordinator) in the consultation meeting and looking at plans of cooperation between lots
07.03.2023	International Maritime	Parliamentary Showcase Event.	A	WP8 representatives from the BGS will attend the new UK 'Centre for Seabed Mapping' showcase event in London. This will be an opportunity to

	Organization (IMO), London, UK.			demonstrate (via exhibition stall) Seabed Geology mapping initiatives including EMODnet-Geology at a national event.	
14-15.03.2023	Helsinki, Finland	International Conference	VELMU	O and A	Poster presentation of EMODnet and EMODnet Geology at the conference. Some 150 attendees (partly remote)
14-17.03.2023	Helsinki, Finland	GeoDays		A	Poster presentation of EMODnet and EMODnet Geology at the conference
20-21.03.2023	Paris, France	IODE-Conference		A	Attend to the conference with an EMODnet online poster.
20-21.03.2023	Paris, France	27th Session of the IOC Committee on International Oceanographic Data and Information Exchange (IODE)		A	Finnish delegates at the meeting (EMODnet invitation)
24.03.2023	videoconference	Meeting of institutions contributing to Italian WP6 deliveries		O	Continue discussion on the implementation of Italian contribution to WP6 products (18 participants, CNR-ISMAR, OGS, INGV, ENEA, University Genova, Palermo, RomaTRE and Trieste)
24-28.4.2023	Vienna	Conference		A and O	Session co-convenor: Geological Mapping of Extreme Environments with several EMODnet Geology contributions. Poster presentation of WP 4 results
24-28.4.2023	Vienna	EGU2023		O	Marine mapping: Finding and compiling spatial data on extreme environments – key information even for a general mapping project such as EMODnet geology
24-28.4.2023	Vienna	EGU2023		A	Five EMODnet Geology presentations in two different sessions of this very large congress (usually over 20.000 delegates)

22.-26.May 2023	Torshavn, Faroe Islands	Meeting	A and O	4 Harmonisation workshop on Prototype areas, in particular the Western Baltic Sea,
TBD March/ April 2023	Online	Meeting	O	WP8 to coordinate online meetings for all seven regional working groups working on palaeogeographic reconstructions.
22-26.5.2023	Torshavn, Faroe Islands	EMODnet Geology full partnership Project Meeting	O	Discussions on project progress and future steps
TBD	Online	Meeting	O	Schedule a meeting with Prof. F. Gamberi to discuss the METIQ project (reconstruction and Quaternary Evolution of the Italian territory) to see if any overlap / data that can be delivered via the EMODnet Geology portal.

5. Communication assets

A. Communication products developed				
Date	Communication material	Short description (of the material, title, ...) of the asset	Main results	Name of event at which material was disseminated (if applicable)
09.11.2022	Twitter	@GeomarResearch tweeted from the EMODnet-Geology project meeting in Varna.	2 retweets	
09.11.2022	Twitter	@HeatherMarGeo tweeted from the EMODnet-Geology project meeting in Varna	11 retweets, 304 impressions, 35 engagements.	

B. Planned communication products			
Date	Communication material	Short description (of the material, title, ...) and/or link to the asset	Main results expected
Q1 2023	Article	Digital Geodata and models of Europe's subsurface support the green transition and UN Sustainable Development Goals, written in collaboration with EuroGeoSurveys Expert Group Chairs	In review, importance and role of EMODnet highlighted.
Start March 2023	Twitter	Liaise with BGS Communication Team and GEUS on a communications plan for the next data release for WP8.	Increase visibility and stakeholder engagement for the project and work package. Raise awareness of the products to Early Career Researchers.

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
Online 29.11.2022	peer-reviewed paper	Vallius, H., Alliksaar, T., and Suuroja, S. 2022. Changes in heavy metal concentrations in the sediments of the Gulf of Finland over two decades. <i>Estonian Journal of Earth Sciences</i> , 2022, 71, 4, 177–188.	ISSN 1736-7557	https://doi.org/10.3176/earth.2022.12	Yes
29.12.2022	peer-reviewed paper	Dolan <i>et al.</i> 2022: Delivering seabed geodiversity information through multidisciplinary mapping initiatives: experiences from Norway. <i>GEUS Bulletin</i> 52. 8325		https://doi.org/10.34194/geusb.v52.8325	Yes

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
	e.g. paper; conference proceedings; book chapter; ...				

6. 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	Matomo/ Europe Analytics/ other Please specify	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>Updates on data products with coverage (WP's 3 and 4) are being processed and releases are planned for the mid- second part of the second year of the project (Q2-Q3 2023).</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).</p> <p>WP3: No changes during this Phase yet. The latest seabed substrate map 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).</p> <p>WP4: No changes during this Phase yet. No report on new numbers of area coverage, as the latest project contributions consists of a line feature layer (marine geology -</p>

		<p>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>Map requests are implicit in WMS stats. The numbers are fluctuating a lot. Generally, the usage goes up around new releases and now when there has not been updates for a longer period usage has dropped. Especially the downloads have gone down because no new data or updates have been added to the portal this, first year of the project. It seems that people want to handle the data themselves instead of using the web map viewer.</p> <p>Explanation in general on trends: Our data updates are planned for the mid- second part of the second year of the project, which might decrease interest by the beginning of the second year.</p>
3. Internal and external organisations supplying/approached to supply data and data products within this quarter		No change since last report, and as a reminder: our Russian partner All-Russia Geological Research Institute (VSEGEI) was excluded from the consortium on 30.8.2022 and is thus not a data provider anymore. No Russian data are expected in the future.
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		The geological data have been used by a wide range of disciplines and both public and private organisations. Examples of use are planning of offshore installations such as windfarms, habitat mapping and landslide susceptibility. The Danish Energinet off-shore renewable energy use-case is submitted to EMODnet Communications and is planned to be published in Q1 2023.

8.1. Technical monitoring		Satisfactory both response time and up-time
9. Visibility & Analytics for web pages		The usage has been fairly constant through the years. There generally is a small dip in usage in the third quarter due to summer vacation.
10. Visibility & Analytics for web sections		The usage has been fairly constant through the years. There generally is a small dip in usage in the third quarter due to summer vacation.
11. Average visit duration for web pages		There is a lot of fluctuation but no general trend.

The monitoring numbers reported as part of the progress monitoring of EMODnet performance are collected through Matomo and/or Europa Analytics, unless reported otherwise.

7. Annex: Other documentation attached
