



EMODnet



European Marine
Observation and
Data Network

EMODnet Thematic Lot n° 1 - Geology

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

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EMODnet Phase III – Quarterly Progress Report (number 6/8)

Reporting Period: 01/10/2020 – 31/12/2020



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1. Highlights in this quarter

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

Data Deliveries from partner countries between October-December 2020:

WP3 Substrate data

- Denmark (update/corrections), scales: 250k, 100k, 25k, 5k
- Estonia, scale 50 k

WP3 Sedimentation rate data

- Croatia
- Turkey (provided data, but not suitable for purpose)
- Ukraine

WP4 Seafloor Geology

- Caspian Sea
- Latvia
- Malta

WP6 Geological events and probabilities

- Ireland: updates on earthquakes, fluid emissions, landslides
- Spain: updates on landslides and volcanoes

WP7 Minerals

- Denmark
- Albania

WP8 Submerged landscapes

- Netherlands (TNO)
- Turkey (İSTANBUL TEKNİK ÜNİVERSİTESİ)
- Ukraine (State Regional Geological Enterprise)
- Finland (GTK)
- Albania (Albanian Geological Survey)
- Malta (Ministry for Energy and Water Management)
- Belgium (Royal Belgian Institute of Natural Sciences)

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 and the previous reporting period, several data products underwent quality assessment and synchronization with EGDI. Central work on data products consists of adjusting Styled Layer Definitions to match exactly the styles provided by the work package leaders from their ArcGIS projects. Other QC consists of cross-checking the metadata records on all layers in Geoserver with the harvested metadata records in both central portal and EGDI metadata catalogue.

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 improved with minor bug fixes and usability improvements. 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.

Until now the Regional Sea conventions have shown virtually none interest for the information that we have tried to provide them about EMODnet Geology. Of all the RSC:s only the Barcelona Convention has answered our email stating that they couldn't attend our project meeting: the coordination of EMODnet Geology has planned to visit the Secretariats, HELCOM never answered to the offer of visiting them with information on EMODnet. Last plan was to visit the Secretariat of the Barcelona Convention, but that has been delayed due to the COVID-19 outbreak. As soon as we are rid of the pandemic the coordination will make a new try of visiting them. Other RSC:s, are included in plans for later visits.

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. In this quarter we added contact details to all work package leader's organisations.

Highlights of the different workpackages:

WP1. Project Management. Many changes in plans due to the COVID-19 pandemic. The partners have been contacted through a questionnaire where they were asked about activities in general, progress, data deliveries and especially how the corona pandemic has affected the progress of EMODnet Geology. We received 28 replies of which only a few felt that the pandemic has had virtually no affect on the project work. One of our partner organisations listed these issues, which were rather typical:

-Licensed software, such as ArcGIS, and geostatistical mapping software are installed on powerful computers at work (not available from/at home). Mainly the free software QGIS was used, but for some more complex analyses and mapping more advanced software are needed/recommended.

-Storing large amount of data becomes difficult on laptops (not enough disk space or slowing process of your laptop) slowing down the progress.

-The use of OneDrive, GoogleDrive or something similar is useful for storing data, but the transfer of data or working directly with these platforms is rather slow.

-For some of the work dedicated cooperation with IT or other specialized personnel is needed which is far less efficient from home slowing down the progress.

In some organisations staff were temporarily redeployed within the government during part of the year, which has delayed some of the work to the following financial year. For many partners data connections from distance home office has been the bottleneck. Regarding new data retrieval some research cruises have been cancelled or postponed, with the result of lack of or delay of new data for the project.

WP1. Project Management. Table 1 below describes the situation regarding status of the different data products listed for each work package separately.

Regarding data for the different data products from the Caspian Sea area the Russian subcontractor VSEGEI reports following assessment of work progress:

WP3 – Sea-bed substrate – 60% for the Russian sector, 30-40% for the Kazakhstan sector.

WP4 – Sea-floor geology – 60% for the Russian sector, 30% for the Kazakhstan sector.

WP5 – Coastal behaviour – we just started to work on this WP, 25% for the Russian sector. The data will be sent on the spring (May 2021).

WP6 – Geological events and Probabilities – based on data what we were able to find – 100% for whole the Caspian Sea; the data were submitted. We don't expect new data by the date.

WP7 – Minerals – based on data what we were able to find – 90% for whole the Caspian Sea; the data were submitted. We have received new data from the Kazakhstan colleagues. After revising we will update our deliverable if it is needed.

WP8 – Submerged Landscapes – we just started to work on this WP, 25% for the Russian sector. The data will be sent in spring (May 2021).

WP1. Project Management. Caspian Sea subtask. The Russian Caspian Sea subtask coordinator reports that they have faced difficulties with their planned subcontractors. Iran's contract still cannot be signed due to problems with payment procedure due to international economical sanctions (restrictions). VSEGEI can't use its Bank Account for payment operation, as it contradict to international agreements. Azerbaijan is in a political conflict, so the contract was not even discussed for a number of reasons including the pandemic and bureaucracy. VSEGEI signed a subcontract with Kazakhstan and discussed with them guidelines and all necessary deliverables, but Kazakhstani colleagues were not able to get all needed geological information from archives due to COVID-19 pandemic. Moreover a responsible project person (executor) was on sick leave (COVID-19). The Turkmenistan Geological Survey did not reply any of VSEGEI official letters.

WP1. Project Management. Many scientific contributions from the different WP's. For accepted papers see chapter 5 of this report.

WP2. Geological data specification and sourcing. The situation of available data was checked in the beginning of the project and data is being delivered to the different work packages. All data products/maps are in good progress according to the schedule in the table in this section.

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

WP3. Seabed substrates. A new update of the WP3 seabed substrate multiscale data is uploaded (2020) into the EMODnet portal. The new update includes a new 25 k dataset as well as updates to the published 50 k and 100 k datasets.

WP4. Sea-floor geology. Caspian Sea data now delivered for the Russian part.

WP5. Coastal behaviour. Updated and QCd field-observation-based coastline-migration map finalized. It will be published on the EMODnet portal in late January 2021.

WP6. Geological events and probabilities. This WP is coordinated by the Italian geological survey (ISPRA) which activities have been badly hit by the pandemic. However, the work on Geological events and probabilities is despite that proceeding well.

WP7. Minerals. WP7 Data was merged and updated in October 2020 - this is now reflected on the WP7 viewer.

WP8. Submerged landscapes. The WP is coordinated by UKRI-British Geological Survey which has been hit badly by lockdowns. Still work is proceeding very well, and the coverage of Submerged landscapes data is improving well through new data deliveries.

Remark for the table below. Deliverable D3.1 *First data products/maps updated* is scheduled for Month 3, Construction of the data products and services done by M12. D3.2 *Final data products/maps available* is scheduled for M24. Milestones are M1: Data specification and sourcing ready (Month 3); M2: Web portal updated (T0+3 months) and M3: Interim report and evaluation of progress (Month 13).

The products/maps have been internally updated by each responsible work package according to the work plan. In the table below are the status and a schedule for the release (making available) of each data product and map.

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
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	
D3.2 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 3.1 pre-Quaternary seafloor Geology information updated and delivered to the portal	WP4	September 2020	Delivered	
D 3.2 pre-Quaternary seafloor Geology information at all scales updated and delivered to the portal	WP4	September 2021		
D 3.2 Quaternary seafloor Geology information updated and delivered as multiscale layers to the portal	WP4	September 2021		
D 3.2 Quaternary seafloor Geology information updated and delivered as multiscale layers to the portal	WP4	September 2021		
D 3.2 geomorphology seafloor Geology information layer updated and delivered to the portal	WP4	September 2021		
D 3.1 Updated and QCd field-observation-based coastline-migration map, including new data for Belgium, Croatia and the Netherlands finalized	WP5	January 2021	New data from e.g. Denmark, Russia (including Caspian Sea) and Slovenia will be added in a summer 2021 update.	
D 3.2 Start-up of literature and map inventory on coastal resilience and vulnerability, jointly with Edge Hill University where three work students are collating reports and articles and georeferencing maps for a dedicated WP5 deliverable	WP5	September 2021		
D 3.1 Construction of harmonized layers	WP6	30.09.2020	Delayed	Due to the pandemic, limited access to GIS resources. Expected date 28/02/2021
Validation of harmonized layers by partners	WP6	30.04.2021		

Delivery of data products	WP6	31.07.2021		
D 3.1. Minerals data merged and updated	WP7	October 2020	Delivered. Additional data received after October 2020 will be included in the next merge/update in Q1 2021.	
D 3.1 WP8 Submerged Landscapes updated	WP8	30.09.2020	Delayed	Delayed due to the pandemic. Expected date 1. March 2021.
D 3.2 WP8 Explanatory text/outreach activities. Explanatory text/maps for website.	WP8	1 st August 2021	In progress.	In progress.
D 3.2 WP8 Submerged Landscapes; Liaison with other EMODnet Work Packages to ensure consistency in common features/elements.	WP8	1 st April 2021	In progress. Virtual meetings set up with WP4 lead. Harmonisation work in progress.	In progress.
D 3.2 WP8 Submerged Landscapes; submission to EMODnet web portal/QC and upload	WP8	1 st April 2021	In progress.	In progress.

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
WP5. The portal was asked by EASME to put the coastal behaviour map back online, i.e., the one which was based on field-data. The issue was indicated in Q1 2020 to 'hopefully solved by 31 May', so it would be important to follow-up with the Thematic Coordinator to provide an insight as to when resolution can be expected.	Resolved in several iterative steps.	Corrected data product now ready for launch.	May 2020	December 2020, with a planned release in January 2021
WP9 JIRA-85 We were asked to improve our metadata and data URLs.	Pending	Awaiting coordinated efforts with Secretariat	31.12.2020	
WP9 JIRA-33 We were asked to follow instructions for stress testing our services.	Pending	Awaiting stress test document link	01.10.2020	
WP9 JIRA-48 We were asked to make available a CSW for automatic metadata download.	Resolved	CSW available	10.11.2020	21.11.2020
WP9 JIRA-81 We were requested to align our web-GIS with Atlas of the Seas web-GIS.	Pending	We suggested to share an online document, where we keep necessary metadata in sync. Awaiting response.	11.11.2020	
WP9 Jira-104 We were requested to remove the BREXIT disclaimer from the portal.	Resolved	BREXIT disclaimer removed within 24 hrs.	26.11.2020	27.11.2020
WP9 JIRA-122 We were requested to supply email contact in case of downtime on our OGC services.	Resolved	Informed Secretariat the same day.	14.12.2020	14.12.2020
WP9 JIRA-129 We were asked to split previous quarterly figures to monthly for 2020 and send as a report.	Resolved	Report sent	18.12.2020	05.01.2020

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
WP3/all WPs. The ongoing spread of the Covid-19 virus all over	Resolved (partly)	We organized the EMODnet Geology		

Europe might affect the progress of the project, especially staying on schedule/meeting the deadlines.		meeting and workshop in September 2020 as a remote meeting		
WP3/all WPs. 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.		
WP5. Delay in release of field-information-based data product because of time-consuming projection issues.	Resolved	Corrected data product now ready for launch.	November 2020	December 2020
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.	Pending	Currently, focus on technical implementation	February 2021	
WP6/all WPs. Limited remote access to GIS resources	Pending	Concentrate activities during days in office	NA	
All WPs. Limited access to labs and archives of marine data.	Pending	Dependent of COVID situation		
All WPs. Earthquake in Turkey and Croatia affect work, mainly communications but also infrastructures, such as offices, labs and archives	Pending			
WP7. Display of overlapping hydrocarbon and aggregate data	Resolved	was fixed on the WP7 viewer using a "transparency" effect		01.10.2020
WP9. Our data product download function was suddenly unable to send directions to users doing download requests.	Resolved	We migrated to another email-server.	20.11.2020	04.12.2020

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
28.10.2020	Ull.edu.es	Service not responding	Email	2 hrs	Resolved	Service reboot	
10.11.2020	Lansstyrelsen.se	Product download	Email	2 hrs	Resolved	Bug corrected	
10.11.2020	MARIS B.V.	Better integration of the SPLASHCOS database into EMODnet WP8 layer.	Dick Schaap by email	Same day (10 th November 2020)	Pending.	Dialogue was opened immediately with Mr Schaap. Meeting to be confirmed between Mr Schaap, Jons Hauke, Heather Stewart (WP8 lead) and Bjarni Pjetursson (EMODnet Geology technical lead).	Pending. Delayed until January/February 2021 due to intervening festive period and return of Covid-19 lockdown measures due to new virulent strain of the virus.
13.11.2020 18.11.2020 20.11.2020	University of Firenze	Erasmus internship; state of the art map of the hazard and damage produced by submarine landslides at a global scale	email	30 min (each)	resolved	Explanation of how to download data from the portal; probably it was a connection problem which was solved in a few days	
18.11.2020	Unknown gmail	Product download	Email	1 hr	Resolved	Spam filter info	
20.11.2020	Unknown gmail	Product download	Email	30 hrs	Resolved	Spam filter info	

20.11.2020	Hydrographic Institute of the Republic of Croatia	Data on geomorphology of the Adriatic Sea for a publication	email	8 h	resolved	Feedback on enquiry	
25.11.2020	Marine Information and Data Centre (IHM)	Curious about use of WP3 data products and update status by the habitat-mapping community	During discussion	Immediate	Resolved		
2.12.2020	NatureScot	Next seabed substrate update	Query through EMODnet Seabed habitats helpdesk	3.12.2020	Resolved		
04.12.2020	Inogs.it	Product download	Email	1 hr	Resolved	Spam filter info	
08.12.2020	Zmmbulgaria.com	WebGIS feature request	Email	1 hr	Resolved	Upgrade browser	

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.)
1.10.2020	Remote, Zoom-meeting	EMODnet – Ingestion and safe-keeping of marine data 2 - plenary meeting	yes, “EMODnet Data Ingestion 2, Progress Report FINLAND”	A	yearly EMODnet – Ingestion and safe-keeping of marine data 2 project meeting, 57 participants
2.10.2020	Remote, Teams-Meeting	Internal EMODnet 4 Geology WP3, GTK Meeting	no	O	planning of the future work, 4 participants
27.10.2020	online	First (internal) meeting on artificial-intelligence-based seabed-sediment modelling for the southern North Sea	yes	O	6 (from RBINS, Cefas and TNO), planning of joint activities and agreement on periodic meetings to ensure alignment and added value
03.11.2020	Remote, Teams-Meeting	EMODnet Geology Steering Group meeting	no	A	Information by project coordinator and discussion of EMODnet Geology project issues, exchange of information and discussions related to project progress
5.11.2020	online	External meeting (EMOD-PACE) on coastal erosion in line with EMODnet Geology WP5	no	A	ca. 10, agreement on early activities (inventory of published field studies)
18-19.11.2020	Ireland (virtual)	Geoscience 2020: external meeting	Yes. Marine and coastal update with specific links to EMODnet Geology	O	500 people attended. Geological Survey Ireland organized the meeting
19.11.2020	Remote, Webex-Meeting	External EMOD-PACE (EMODnet Partnership for	Yes, "Data processing and	A	Discussions and presentations about Substrate data for habitat mapping in the project, 13 participants,

		China and Europe), WP4 Thematic project meeting (Substrate)	methods for the creation of a sediment layer in EMODnet Geology"		Chinese (NMDIS) and European partners (GTK, JNCC, IFREMER, EMOD-PACE WPO)
20.11.2020	Lecture, Zoom	Lecture at Åbo Akademi, Marin miljö-övervakning - course	Yes, 1 slide on EMODnet	A	Title of the presentation "How GTK's activities are related to management, control and protection of the sea. EMODnet was shortly presented among others. About 20 participants.
25.11.2020	online	External meeting on the se of actualized (Dutch) EMODnet WP3 data products to feed OSPAR	no	A	5, agreement on exchange of data and periodic communication
25.11.2020	Remote, Teams-Meeting	Internal EMODnet 4 Geology WP3, GTK Meeting	no	O	planning of the future work, 4 participants
26.11.2020	online	External workshop 'The future of sand'	yes, 'Offshore aggregate decision-support system'	A	ca. 150, explanation on mapping sand availability, panel discussion on sustainable use
1.12.2020	online	Internal kick-off meeting on coastal resilience and vulnerability	yes, 'EMODnet interns: tasks'	O	5, planning of search and database activities
02.12.2020	Remote, Teams-Meeting	EMODnet Geology Steering Group meeting	no	O/A	Information by project coordinator and discussion of EMODnet Geology project issues, exchange of information, discussion on project progress, updates and proposals (7 participants)
4.12.2020	online	External meeting on embedding EMODnet in the Digital Twin of the Oceans	no	A	ca. 10, inventory of common ambitions among themes, agreement on coordination (to be done by EMODnet geology) if project is awarded
16.-17.12.2020	online	International meeting	Yes, Title: EMODnet: Mapping the	A	Marginal Seas, past and future. 160 participants,

			European Shelf Geology		
23.12.2020	videoconference	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)
24.12.2020.	University of Crete	Interview "Conversations in Human Evolution".	No. Interview.	A	Prof. Nena Galanidou gave an interview that included the WP8 Submerged Landscapes work. https://conversationsinhumanevolution.wordpress.com/
30.12.2020	online	Annual national EMODnet Geology meeting		O/A	National coordination meeting arranged by the Geological Survey of Estonia (EGT)
SUM				O	Total # of meetings organised = 8
SUM				A	Total # of meetings attended = 12

B. Meetings/events planned in the future

Date	Location	Type event (meeting, training (workshop), etc.)	Meeting to be attended (A) / organised (O)	Short description and main expected outcomes
11.-13.3.	On-line	EMODnet Geology Meeting	(A)	Presentations of all workpackages, new actions
11.-13-3.	On-lines	Seabed Geology harmonisation Workshop	(O)	Discussion of and solution to harmonisation issues
08.02.2021		EMODnet Geology Steering Group Meeting	(A)	Information by project coordinator and discussion of Emodnet Geology issues, exchange of information
January 2021	virtual	Gebco week map the gaps	attended	Regional update including EMODnet Geology and Bathymetry updates

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)
25.11.2020	blog	Blog "Tietoa meristä meidän ja meriemme hyväksi" (in Finnish) about marine data advertising EMODnet, EMODnet Geology and EMODnet Data Ingestion. https://www.gtk.fi/tietoa-merista-meidan-ja-meriemme-hyvaksi/		Blog at GTK's website
5.10.2020	Recording of TV documentary	Disseminating information on submerged volcanic structures in Italian seas	programme still to be shown	RAI Petrolio – TV documentary series
4.11.2020	Public talk Faroe Islands	Public talk about the EMODnet project with focus on geology and bathymetry as part of the annual Researchers Night event.	Public visibility	Researchers Night

B. Planned communication products			
Date	Communication material	Short description (of the material, title, ...) and/or link to the asset	Main results expected
January 25	press release on field-observation-based map of coastline migration	New pan-European map of long-term coastline migration as measures in the field	peak in hits
March 2021	Story map in ISPRA geo-environmental atlas	Submarine volcanoes	Raising awareness on the presence of relevant volcanic structures which cannot be seen

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)
Accepted 19.10.2020 Available online 27.10.2020	Marine Pollution Bulletin	Sediment quality in the semi-enclosed Lumparn Bay, Åland Islands, Baltic Sea. https://doi.org/10.1016/j.marpolbul.2020.111798 EMODnet Geology Seabed substrate map used.	Henry Vallius	Geologian Tutkimuskeskus (Geological Survey of Finland).
Accepted 25.10.2020 Available online 07.11.2020	Quaternary Science Reviews	Salt pans as a new archaeological sea-level proxy: A test case from Dalmatia, Croatia https://doi.org/10.1016/j.quascirev.2020.106680 EMODnet Geology Submerged landscapes	Bechor, B., Sivan, D., Miko, S., Hasan, O., Grisonic, M., Rossi, I.R., Lorentzen, B., Artioli, G., Ricci, G., Ivelja, T., Spada, G., Brook, A.	Maritime Civilizations Department, L. Charney School of Marine Sciences University of Haifa, Israel; Croatian Geological Survey (HGI), Zagreb, Croatia; Department of Archaeology, University of Zadar, Croatia; Cornell Tree Ring Laboratory, Department of Classics, Cornell University, USA; Inter-Departmental Research Center for the Study of Cement Materials and Hydraulic Binders (CIRCe), University of Padova, Italy; Department of Geosciences, University of Padova, Italy; Zagreb University of Applied Sciences, Zagreb, Croatia; Dipartimento di Fisica e Astronomia "Augusto Righi", Bologna, Italy; Remote Sensing Laboratory, Department of Geography and Environmental Studies, University of Haifa, Israel
Accepted 29.09.2020	Quarterly Journal of Engineering Geology and Hydrogeology - In:	Uncertainty assessment applied to marine subsurface datasets.	Kint, L., Hademenos, V., De Mol, R., Stafleu, J.,	Royal Belgian Institute of Natural Sciences (RBINS), Renard Centre of Marine Geology, Ghent University,

Available online 26.11.2020	"Mapping the Geology and Topography	https://doi.org/10.1144/qjegh2020-028 EMODnet Geology; seabed substrates, geomorphology, coastal behaviour	van Heteren, S. & Van Lancker, V	Database, Document and Content Management, Ghent University, TNO – Geological Survey of the Netherlands
Accepted 27.11.2020	Geological Society of London Special Publication - " <i>From Continental Shelf to Slope - Mapping the Oceanic Realm.</i> " - K. Asch, H. Kitazato & H. Vallius. (Eds)	Collating European data on geological events in submerged areas: examples of correlation and interpretation from Italian seas https://doi.org/10.1144/SP505-2019-96 Geological events and probabilities	Loredana Battaglini, Silvana D'Angelo, Andrea Fiorentino	Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA) - Department for the Geological Survey of Italy. Via V. Brancati 48 - 00144 Roma
Revision submitted 22.10.2020 Accepted 01.12.2020	Quarterly Journal of Engineering Geology and Hydrogeology - In: " <i>Mapping the Geology and Topography of the European Seas (EMODnet).</i> "	EMODnet collation of geological events data provides evidences of their mutual relationships and connections with underlying geology: a few examples from Italian seas. https://doi.org/10.1144/qjegh2019-147 Geological events and probabilities	Fiorentino A., Battaglini L. & D'Angelo S.	Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA) - Department for the Geological Survey of Italy. Via V. Brancati 48 - 00144 Roma
Accepted 10.12.2020 Available online 14.12.2020	Continental Shelf Research	Sedimentation rates in the Baltic Sea: A machine learning approach https://doi.org/10.1016/j.csr.2020.104325 EMODnet Geology sediment accumulation rate	Mitchell, P.J., Spence, M.A., Aldridge, J., Kotilainen, A.T., and Diesing, M.	Centre for Environment, Fisheries and Aquaculture Science (Cefas), UK; Geological Survey of Finland; Geological Survey of Norway.

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	Matomo/ other (Please state which monitoring tool was used to collate the information in each case)	We do not acquire data in this project.
B) Usage of data in this quarter		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	Visual (The ICES polygons are not fit for doing masking)	We have two coverage products (substrate and sea-floor geology). The distribution on sea basins is done using visual evaluation by adding the ecoregions on top of the map.
B) Usage of data products in this quarter	Log counting by keywords 9 day sample x10. WFS-WMS ratio was 45% to 55%, which was used on the data product totals.	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 can see a correlation between. Multiscale product does not have separate service. Map requests are implicit in WMS stats.
3. Organisations supplying/approached to supply data and data products within this quarter		GTK (FI) data added to borehole index (available online Q1)
4. Online 'Web' interfaces to access or view data		No change since last report.
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		Perfect uptime and satisfactory response time
8.2. Portal user-friendliness (Visual harmonization score)		71
9. Visibility & Analytics for web pages		The trend is stable.
10. Visibility & Analytics for web sections		Decrease in contribute page view after making the page less prominent.
11. Average visit duration for web pages		The trend is stable.

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.]