



EMODnet



European Marine
Observation and
Data Network

EMODnet Thematic Lot n° 1 - Geology

EASME/EMFF/2016/1.3.1.2 - Lot 1/SI2.750862

Start date of the project: 12/04/2017- (24 months)

EMODnet Phase III – Quarterly Progress Report (4/8)

Reporting Period: 01/01/2018 – 31/03/2018



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1 Highlights during the reporting period

*Provide a short summary of the key achievements and/or events of interest to a wider audience within this reporting period you wish to highlight. **Please make sure that progress in each of the tasks specified in Section 1.4.1 of the Tender Specifications is covered. For those tasks not experiencing significant progress, please state so.** You can also consider the indicators or any other of the reporting sections.*

- The first version of the harmonised seabed substrate map in scale 1:100 000 with confidence estimates was made available at the EMODnet 3 Geology portal on 23.03.2018. This is in line with what was agreed upon with the Seabed Habitats lot during the meeting in Athens on 2. October 2017. Other WP's are collecting harmonised data and creating products which will soon be launched on the portal.
- **Tasks specified in Section 1.4.1 of the Tender Specifications**
- **Task 1: Develop a common method of access to data held in repositories:**

In cooperation with other EU projects (EGDI, EPOS, ProSUM), we develop and implement a common method of access to data held in locally distributed repositories. In EMODnet Geology, we are in the data discovery phase, where 28 partners have been asked to share descriptions (metadata) and spatial location of true ground samples and geophysical surveys. We now have 12 of 19 borehole indexes delivered, harvested and merged into a first simple pan-European entity index viewable on the portal web map. We are currently creating similar indexes for geophysics (13 of 24 partners delivered) and backscatter (one or two partners can deliver). We are in dialogue with data managers in the EGDI, EPOS, and ProSUM to decide the best approach to have these data sets harmonized and make them seamlessly downloadable to users on request.
- **Task 2: Construct products from one or more data sources that provide users with information about the distribution of parameters in time and space:**

To allow users access more geological relevant data sets from within the portal, we added new external data sources to the map viewer under paragraph "Other Portals"; EMODnet Bathymetry, Geo-Seas, and Seismic Portal. Now, users can select between all free data layers available in these data sources.
- **Task 3: Develop procedures for machine-to-machine connections to data and data products:**

All data products are listed on the "Products" page with links and examples to web services, data download and online Web-GIS. These options are by identified use-cases selected to be the most efficient way in helping users access our products and services, whether it is desktop GIS software, handheld devices, large-scale data projects or casual data browsing.

We are making our data products cover even more use-cases by allowing registered users online access to a read-only database (PostgreSQL). This approach is to our knowledge without precedent but could for some users prove to be a highly efficient way to access and integrate EMODnet Geology data into their existing environment.

Regarding metadata, we have a running service (GeoNetwork) enrolled into nightly harvesting by EMODnet main portal and EGDI MICKA. This way, users browsing both EMODnet main portal and EGDI will easily discover our data products.
- **Task 4: Develop a web portal allowing users to find, visualise and download data:**

The web portal was constructed and up and running during the first three months of the project. We are continuously extending the functionality and usability of the portal. Data products are now well described and made easily available for both download, online map view, and as web services. On request, we can even offer users access to a PostgreSQL database where all data are available for SQL analysis. Most recently, we upgraded the layout and styling to align with the other EMODnet portals.

- **Task 5: Ensure the involvement of regional sea conventions:**

The three regional sea conventions (RSC's) have been officially invited to all our project meetings. Until mid-March we had got no response to our invitations, neither to our offer to present EMODnet Geology at HELCOM. On 16th March the Barcelona Convention answered to the last invitation to our project meeting: "Even though we are very interested to participate to this event, our tight schedule does not allow it." The coordination of EMODnet Geology will now be in contact with them, and hope that they will attend in the future, or we will pay a visit to their secretariat. Once we have contact with them we will see what they need from us.

- **Task 6: Facilitate interoperability with data distributed by non-EU organisations:**

An analysis on interoperability with data (standards and protocols) distributed by non-EU organisations is in progress. Now, we are co-operating with Geoscience Australia having a shared session called "Marine Geoscience and Geospatial Data Crossing Borders" at the IUGS Resources for Future Generations Conference (Vancouver, BC, Canada June 2018). The main driver for this action is international collaboration between various sea-floor mapping initiatives/programmes and brainstorming on a road map for future global seafloor mapping initiatives. We see that the European approach is best tested and well running, a single standard for one continent. Thus, co-operation with similar global initiatives is important at this moment, such that global standards and protocols in acquisition and processing of seafloor data into user-friendly products can be assured. For the same reason we will also approach the ambitious Seabed 2030 project by GEBCO and Nippon Foundation in order try to add a geological component to their agenda.

During the American Geophysical Union Fall Meeting future cooperation in this field was discussed with researchers from China, Korea, Australia and America.

- **Task 7: Install a process to monitor performance and deal with user feedback:**

We are now linked to a monitoring system hosted by the main portal (Piwik/Matomo). Here we can login and extract performance and user statistics. The portal offer users the possibility to write feedback. We receive a few each month and answer within 1-2 working days in case of questions. We participate in all statistical initiatives put forward by the EMODnet Secretariat and Steering Committee.

- **Task 8: Operate a help desk offering support to users:**

We continuously run our help desk according to rules set in the Tender Specifications. We receive on average four support questions per month which are handled within 1-2 working days.

2 Challenges encountered during the reporting period

Provide an overview of the main challenges encountered during the reporting period and the measures taken to address them, including those related to technical and data provision issues.

Main challenge	Measures taken
<p>WP1: Project management</p> <p>The 24 month time schedule of the project (in comparison with earlier 36 months) is in general rather challenging as the resources of the partners are limited and they have to provide data to many different work packages and even more data products.</p>	<p>Each partner has handled this in order of urgency, some deliveries of data have been scheduled for the first half of the second project year. Seabed substrate work package has updated the map and the other work packages are in the process of updating their data products from EMODnet phase II and the products will have final updates during the second year.</p>
<p>WP3: Seabed substrate</p> <p>The first version of the 1:100 000 sea-bed substrate data product with confidence estimates was delivered to the data portal in March 2018, but the time schedule was challenging.</p>	<p>As it is likely that some partners will provide new data into the data product and the product will be updated during the second year, certain update dates were agreed upon during the March workshop in Montenegro.</p>
<p>The seabed substrate data that is more detailed than 1:100 000 scale has been collected, but it has not been included in the data product yet, due to lack of time.</p>	<p>The data processing and compilation of the more detailed seabed data will commence during the second year of the project, and it will be included into the data product.</p>
<p>WP5: Coastal behaviour</p> <p>Main original challenge was caused by unavailability of detailed (better than 1:250,000) data for many areas</p>	<p>This challenge is being overcome by the new satellite-based approach of determining decadal coastline change.</p>
<p>New key challenge is validating these data in terms of coastal erosion and accretion, and translating this validated data product to coastal resilience and vulnerability, which have far more applied societal value.</p>	<p>Validation of satellite-based determination of coastal change is in progress and both literature and field checks will be performed in test areas during the second project year.</p>
<p>WP7: Minerals</p> <p>Not all partners have been able to make the submission deadline. Much pressure is put on all partners to deliver data by the end of the first project year, for most Work Packages. This is to ensure that WP leaders subsequently have new material to publish ahead of midterm report. This timeline is short and demand of partners may be too much.</p>	<p>We have encouraged partners to submit updates to data. We have indicated the importance of an update before publishing of a renewed WP service. If this is done prior to the receipt of all updates the result will be create an incorrect, unfinished map. A new service will not be published until all partners update data submitted during Phase 2</p>
<p>The GSI (WP7 lead) has undergone structural and staff changes. This has resulted in the transfer of two key data managers and GIS specialists from the marine section. These staff enabled the transfer of merged WP7 data to WMS, the assignment of CC's and DOI's for data and management of the services. Their roles have yet to be filled.</p>	<p>Recruitment of substitute contractors is in progress. It has been decided that the publication of a service, and the addition of DOI and CC licences for all WP's will now be taken on by GEUS as data administrator. This project decision reduces the issues caused by the challenge.</p>

3 User Feedback

List any useful feedback you received on your portal, your activities or those of other EMODnet projects/activities. Also provide any suggestions you have received for EMODnet case studies and/or future products/activities/events.

Date	Name	Organization	Type of user feedback (e.g. technical, case study etc.)	Response time
31.01.2018	*****	*****	Requesting Substrate Classification info	Solved within 24h/GTK
01.02.2018	*****	*****	Found problems with legends and metadata descriptions	Solved within 48h GTK+GEUS+ISPRA
05.02.2018	*****	*****	Looking for download link to sediment acc. rates	GEUS missed this in the mailbox. Solved on 10.04.2018
13.02.2018	*****	*****	Requesting Substrate Classification info	Solved within 24h/GTK
15.02.2018	*****	*****	Problems accessing the WMS interface	Solved within 10 days/GTK. Mail was first sent to wrong person.
01.03.2018	*****	*****	How to open Substrate map in non-ArcGIS software	Answered within 48h. /GTK

4 Meetings held/attended since last report

List here the internal and external meetings held/participated by the contractor since the last quarterly report. Please add short description on the meeting as well as the nature and volume of the audience.

[Please, provide information in table]

Date	Location	Title	Internal/External + Short Description
31. January - 1st February 2018	Iraklion, Crete	Meeting of WP8	Successful completion and agreement of the draft guidelines for WP8. Internal WP8 meeting.
12-16. February 2018	Ocean Science Meeting, Portland, Oregon, USA.	Seabed Mapping Data Translated into Standardised Marine Minerals Maps for Europe.	Poster on the WP7 Marine Minerals Maps of Europe (*****/***). Available via the EMODnet Geology web FTP.
22-23. February 2018	External meeting attended: CGMW General Assembly, Paris (UNESCO)	Cross-boundary Geological Mapping	The General Assembly of the Commission of the Geological Map of the world takes place bi-annually. Crossboundary mapping projects worldwide are being introduced and discussed. WP 4 leader gave a presentation and displayed a poster of the cross-boundary marine mapping of EMODnet.
20-21. March 2018	Alcudia, Mallorca, Spain	Technical Working Group Meeting	Technical issues
21. March 2018	NCK Days 2018, Haarlem, Netherlands	DINoloket, EMODnet and OpenEarth	Sprint session led by YY and XX (TNO) and WW (*****)
21. March 2018	NCK Days 2018, Haarlem, Netherlands	A new generation of marine geological maps in the Netherlands	Poster by S. van Heteren et al.
21-23. March 2018	Alcudia, Mallorca, Spain	9th EMODnet Steering Committee Meeting	Steering Committee meeting
26 March 2018	Budva, Montenegro	2nd WP 4 Geological Data Harmonisation Workshop	Issues on data harmonisation and vocabularies
26 March 2018	Budva, Montenegro	Meeting of the Adriatic Group of EMODnet	Discussion on the data available for the Adriatic pre-Pliocene geological map.
26-28 March 2018	Budva, Montenegro	EMODnet Geology 3 rd project meeting	Project meeting on progress and future actions of the different work packages

5 Outreach and communication activities

Please list all the relevant communications activities or products you have developed/executed during this period (including presentations, lectures, trainings, demonstrations and development of communication materials such as brochures, videos, etc.).

Relevant scientific and/or popular articles you know have been published using/referring to EMODnet must also be reported here.

Date	Media	Title	Short description and/or link to the activity
12-16. February 2018	Ocean Science Meeting, Portland, Oregon, USA.	Seabed Mapping Data Translated into Standardised Marine Minerals Maps for Europe.	Poster on the WP7 Marine Minerals Maps of Europe. Available via the EMODnet Geology web FTP
22.-23. February 2018	External meeting attended: CGMW General Assembly, Paris (UNESCO)	Cross-boundary Geological Mapping "EMODnet: An EU project to compile geological off-shore data"	The General Assembly of the Commission of the Geological Map of the world takes place bi-annually. Crossboundary mapping projects worldwide are being introduced and discussed. WP 4 leader gave a presentation and displayed a poster of the cross-boundary marine mapping of EMODnet.
21. March 2018	NCK Days 2018, Haarlem, Netherlands	DINOLOKET, EMODnet and OpenEarth	Sprint session led by YY and XX (TNO) and WW (*****)
21. March 2018	NCK Days 2018, Haarlem, Netherlands	A new generation of marine geological maps in the Netherlands	Poster by S. van Heteren et al.

EMODnet 3 Geology WP3 product, seabed substrate map/data product was used in a scientific study that was published online in Geomorphology Journal in July 2017, and in a research report that was published online in March 2018: Kaskela, A. & Rinne, H. 2018. Vedenalaisten Natura-luontotyyppien mallinnus Suomen merialueella (In Finnish). Geologian tutkimuskeskus, Tutkimustyöraportti 6/2018.

6 Updates on Progress Indicators

Using the indicator as a header list the metrics collated and the time interval. If there was no activity to report leave the section under the indicator header blank. Please note that this list can be subject to revision.

Indicator 1 - Volume of data made available through the portal

Seabed Substrates: Four layers totalling 106.499 features.

Seabed substrate datasets (1 m & 250 k) from previous phases of EMODnet Geology are available through new/updated EMODnet II Geology portal

- Sea-floor Geology: One layer (four variations) totalling 7.754 features
- Coastal behaviour: Two layers totalling 137.679 features
- Events & Probabilities: 12 layers totalling 10.155 features
- Mineral occurrences: 14 layers totalling 12.199 features

Indicator 2 - Organisations supplying each type of data broken down into country and organisation type (e.g. government, industry, science)

In the EMODnet Geology technical tender (chapter 5) members of the consortium have listed all the primary data, which has been made available for the EMODnet project according to the signed contract. The table was, updated during the three first months of the project. Additionally one of the six members of the consortium, that are not data suppliers to the EMODnet project, but will work on interpretations of coastal and marine data, mainly the submerged landscapes topic, has made available marine data for EMODnet - geology. In practice the European geological survey organisations (project partners) are in most cases administrators of the national geo data centres, so very few data are to be found outside the consortium. Those external sources, which might have additional data, are encouraged to submit their data through the EMODnet Data Ingestion portal or straight to EMODnet geology lot.

Additionally the EMODnet Geology consortium has now drafted a stakeholder questionnaire on possible data delivery to EMODnet geology as well as possible usage of EMODnet geology data products on web. This questionnaire will be distributed by consortium partners to all participating countries. Stakeholders are asked to respond to the coordinator who (GTK, Finland) who collects and analyses the obtained information.

Indicator 3 - Organisations that have been approached to supply data with no result

- SeaDataNet has expressed willingness to give WFS access to their borehole and geophysics indexes but until now has only granted point search access via WMS requests. Reason unknown. Pending.
- In June talks, EMODnet Human Activities expressed willingness to harvest more attributes for their hydrocarbon boreholes (e.g. link to contact/download). A new harvesting is pending.

Indicator 4 - Volume of each type of data and of each data product downloaded from the portal

- Sea-floor substrate: 10,594,477 KB
- Sea-floor: 1,049,620 KB
- Coastal Behaviour 885,280 KB
- Events & Probabilities. 784,650 KB
- Minerals 168,912 KB

Indicator 5 - Organisations that have downloaded each data type

- Academia/Research: 82
- Business and Private Company: 48
- Government/Public Administration: 4
- Others: 7

Indicator 6 - User statistics to determine the main pages utilised and identify user navigation routes

This is the Piwik <http://piwik.vliz.be/> top 5:

- Map-viewer: 1684 page views (1229 unique)
- Data-products: 1227 page views (1039 unique)
- Services: 263 page views (191 unique)
- The-project: 210 page views (166 unique)
- Contribute: 184 page views (133 unique)

As to "Navigations route", we can see that above pages are also in the top 10 of point-of-exit. This indicates that users find what they need within a few clicks. Statistics say:

3 min 31s average visit duration

32% visits have bounced (left the website after one page)

3.9 actions (page views, downloads, outlinks and internal site searches) per visit

Indicator 7 - List of what the downloaded data has been used for

Research
I looking to pair sea bottom substrate data with individual tracking data from Atlantic cod in the Irish and Celtic Sea.
Look at the sediment
I'd like to use them to relate the spatial abundance of some fishery resource to the substrate type.
EIS
EIS
EIS
relate date with divers interest. No commercial use
relate date with divers interest. No commercial use
relate date with divers interest. No commercial use
relate date with divers interest. No commercial use
Educational Project

To test how the download works
Independent Geological Study
Independent Geological Study
Research purposes
Research purposes
I plan to use the data for my PhD Research.
I plan to use the data for my PhD Research.
Personal Use
GIS software demonstration
GIS software demonstration
GIS software demonstration
Student study
Estimating foundation types for offshore wind farms and seabed penetration of jack-up vessels
Modelling sediment transport
Academic purposes (GIS course)
Reference
check in species distribution modelling
Used for studentwork in ecology project
Master Thesis - Optimizing the Design of Marine Protected Areas in Algarve
Master Thesis - Optimizing the Design of Marine Protected Areas in Algarve
Academic research - acoustic modelling/ecological impacts of underwater noise
Master Thesis - Optimizing the Design of Marine Protected Areas in Algarve
We want to do a kernel distribution based on the sighting points to see if cetaceans tend to be around the rocks of the Sagres - Albufeira areas
I would like to use data for personal studies as a young scientist from Greece, in order to boost our national blue growth and innovation.
Inform the ProAtlantic Project
As a reference layer in our GIS
check up

Research
research
Research
Habitat mapping of 10 commercial fish species within the FishHabII project
Plan Scientific Survey
Survey: assessing user friendliness portals.
IN
IN
Sites Searching
For master thesis project
to connect with marine mammals distribution
I just started my PhD on up scaling of coastal erosion and flooding risks to European scale. I am currently exploring the potential European data-sets that I could use for my study.
For master thesis project
I just started my PhD on up scaling of coastal erosion and flooding risks to European scale. I am currently exploring the potential European data-sets that I could use for my study.
Academic use
I need the data for my Final Master Work. It is a study about possible ubication for wave energy parks in Galicia.
research
Conservation research
Offshore renewable energy site planning.
Research
Research
Research
desk study
If possible I would like to include these data into a chart plotter I currently develop. The plotter is targeting fisheries.
study
NL Hydrography
NL Hydrography

NL Hydrography
Research
EMODnet project
Offshore wind farm design
Checking Belgium Data
research
We study coastal processes in our laboratory and are very interested in rates of coastal changes (retreat, accumulation).
Checking Belgium Data
research
Checking Belgium Data
General interest
research
I need the data for my dissertation project for University.
research
Checking Belgium Data
General interest
research
Research in Marine Ecology
Trawler Research
Trawler Research
I intend to use this map on an academic project in order to compare two methods of installation of offshore wind turbines foundations
I intend to use this map on an academic project in order to compare two methods of installation of offshore wind turbines foundations

I intend to use this map on an academic project in order to compare two methods of installation of offshore wind turbines foundations
My plan is to realize a distribution species modelling for Cystoseira
Use for research. We hope to build a map of seabed biogeochemistry of the Belgian Part of the North Sea.
For improving our understanding of the European seafloor
Offshore wind farm development
Offshore wind farm development
Offshore wind farm development
Testing
2 The Old Carthouses
research about rocky coast erosion
Unit 1, Sycamore Court, Royal Oak Yard,
Inventory data
I am hoping to use the data for modelling related research for my PhD
I am hoping to use the data for modelling related research for my PhD
Production of the EMODnet broad scale seabed habitat map at the scale 100K
Blogging
EMODnet Seabed habitats
Blogging
EMODnet Seabed habitats
Evaluation of underwater sound

Indicator 8 - List of web-services made available and organisations connected through these

We extended capabilities with WFS access. All services are now online and published on the portal under "Services".

7 Annex: Other documentation attached

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