EMODnet Thematic Lot n° 1- Geology

EMODnet Phase III - Trimonthly Report

Reporting Period: 12/04/2017 – 11/07/2017

Date: 14/07/2017

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

Contents

1. Highlights in this reporting period

- Migrating the existing portal from BGS, UK, to facilities at GEUS, Denmark.
- Portal at GEUS up and running in mid-June 2017.
- Update of the inventory of available data from consortium partners by end of June 2017.
- Preparation of guidelines of the work of the different work packages initialized, is in good progress, and will be distributed to all partners by September 2017.
- Submerged landscapes, the new WP for Lot 1 - Geology organized during the kick-off meeting, and plans for the first year were identified during a workshop in Copenhagen on June 26-28 2017.

2. Meetings held since last report

Date	Location	Topic	Short Description
29. May 2017	EMODnet geology Steering Group meeting in Espoo, Finland	Project kick-off	All WP leaders were present at the kick-off meeting in planning the project kick-off
30-31. May 2017	EMODnet geology project kick-off meeting in Espoo, Finland	Project kick-off	Project coordination and all WP leaders introduced all consortium partners to the Service contract and project actions
26-28. June 2017	EMODnet Geology III WP8 Submerged landscape meeting in Copenhagen, Denmark	Discussion of the features to be included in the new WP and interactions with other WPs. This is a new topic which needs proper planning.	Participation by WP8 partners and WP3,4,6, and 8 leads. EMODnet geology coordination was represented by WP3 member XX (GTK)
4-7. July 2017	EMODnet Techincal Working group meeting in Genoa, Italy	Technical issues	The EMODnet geology coordination was represented by XX (GTK) and EMODnet geology lot by technical coordinator XX
10-12. April 2017	EMODnet Data Ingestion Wokshop in Limassol, Cyprus	Workshop	Participation in the meeting both as EMODnet Data Ingestion partner and as member in EMODnet 3 Geology lot

3. Work package updates

WP1. Project Management (Geological Survey of Finland – GTK)

The Project Co-ordinator attended the EASME EMODnet kick-off meeting in Brussels on 23 May 2017. (Already before official contract with EASME, the Project Co-ordinator attended the 7th EMODnet Steering Group Meeting in Brussels on 15-16 February 2017).
The Project Co-ordinator attended the GeoHab (Marine Geological and Biological Habitat mapping) 2017 Conference in Halifax, Canada on May 2nd to 4th 2017 to present the EMODnet 3 -Geology project to the GeoHab community, who work intensely with the seafloor mapping & research, and are thus important stakeholders.
The coordination organized the first EMODnet 3 Geology Steering Group meeting in Espoo, Finland on 23 May 2017, before the kick-off meeting, which was held in Espoo on 30-31 May 2017. During the kick-off meeting, all partners and subcontractors were introduced to the project, the service contract and the actions of the different WP: s, and time schedules for all actions were decided upon.

WP2. Geological data specification and sourcing (Geological Survey of Finland - GTK)

The consortium listed a table of 42 pages of mainly partner data that is available for the EMODnet project from the different partners. In the beginnig of the project the coordinator asked from all partners an update of this table, which was completed during the 3 first months of the project. Thus all available data is catalogized and available for the project. Although WP2 officially ended after 3 months of the project start, the process of identifying information that can be used in the EMODnet-Geology is ongoing and will continue until the end of the project.

WP3. Sea-bed substrate (Geological Survey of Finland - GTK)

WP3 draft timeline was prepared in May 2017, and was accepted by the EMODnet Seabed Habitats lot during the EASME kick-off meeting in Brussels on May 23rd. The plans and activities of this WP were presented to partners during the EMODnet III Geology Kick Off meeting in Espoo, 30th -31st May 2017 and preparation of WP3 Guidelines has started. Partners have executed data sourcing for WP3 deliverables (WP2 activity). WP3 and coordination representative participated in EMODnet Geology III WP8 Submerged landscape meeting in Copenhagen, 26th-28th June 2017. WP3 has discussed and agreed with EMODnet seabed habitats lot to organise a joint meeting about the seabed substrate layer. The meeting is planned to be organised in connection with the next EMODnet III Geology workshop (and Seabed habitats workshop) later in the autumn 2017.

WP4. Sea-floor geology. (Bundesanstalt fur Geowissenschaften und Rohstoffe – the Federal Institute for Geosciences and Natural Resources, Germany - BGR).

The plans and activities of this WP were presented to partners during the EMODnet III Geology Kick Off meeting in Espoo, 30th -31st May 2017 and preparation of WP4 Guidelines for the Quaternary and pre-Quaternary layer has started. Preparations for Kick-off of Harmonisation working groups is ongoing and synergies with WP 8 is in development (skype attendance of WP 8 workshop in Copenhagen 26-28. June, see point 2).
As in the previous phase of EMODnet Geology, cooperation among countries facing the Adriatic Sea (Italy, Slovenia, Croatia, Montenegro, Albania and Greece) will continue. Contacts have already been established during the kick-off meeting in Espoo. Up to now it has been agreed to deliver a harmonized version of WP4 products for the Adriatic Sea.

WP5. Coastal behaviour (Geological Survey of the Netherlands – TNO)

The plans and activities of this WP were presented to partners during the EMODnet III Geology Kick Off meeting in Espoo, 30th -31st May 2017 and preparation of WP5 Guidelines has started. TNO has nagotiated such that Deltares (NL) will act as a TNO subcontractor and will provide a full-coverage satellite-based database of coastline migration (including time series starting in the 1980s) to EMODnet. In return, partners can supply them with field data for validation. The plan is to have a full-coverage, validated data product at the end of this EMODnet phase.

WP6. Geological events and probabilities (Institituto Superiore per la Protezione e la Ricerca Ambientale –ISPRA)

The plans and activities of this WP were presented to partners during the EMODnet III Geology Kick Off meeting in Espoo, 30th -31st May 2017. It was noted that Guidelines of the previous EMODnet phase suit the needs of the higher resolution required in this phase, however, if later found necessary they will be revised accordingly. Feedback and updated data have been provided to the new Portal Manager and parteners have been asked to update their own or third party information. Connections among different types of geological events have been examined aimed at the improvement of understanding of data by users. Connections among different WPs have also been highlighted in particular regarding Geomorphology, a subject which crisscrosses WP3, WP4 and WP6. During the kick-off meeting, it was decided to establish a working group to tackle this specific issue.
Discussion has proceeded regarding the definition of Probabilities, taking into account the description provided by the INSPIRE data specification and the data available within the Project.

WP7. Minerals (The Geological Survey of Ireland - GSI)

The WP continues investigating further information relevant to the marine minerals WP.
Additionall minerals information were considered and outlined in the tender document (including data related to the marine mineral types: pegmatite, deep-sea metal-rich sediment, coal, shale), with plans as to how these will be presented. Options relating to requesting and representing these information were discuessed with the steering comittee and have been presented to all partners at our Kick-off meeting. Final WP information, data descriptions, requests and deadlines will be disseminated to all partners, in our WP Task-Guide, before end July 2017.
All project partners are actioned to locate new information on marine minerals, not yet submitted to the project; and to consider ways of filling out missing information in the data attribution tables.
Discussions with EMODnet Bathymetry, Habitat and Human lots activities have commenced. It is hoped these discussions will help us establish how to best represent cross thematic information, useful for specific (future) data product development and desk top studies.
The WP leader has opened discuessions with the Human Activities Lot leader and the Geology lots web-portal leader with relation to sharing data of shared interest. Primarily in reaction to the request that EMODnet Geology presents information on borehole and wells, already mapped to an extent by the Human Activities lot. Sharing data will avoid duplication of effort. It is also hoped data sharing will lead to increased usefulness of data, and increased visiblitiy to a variety of stakeholders. The Human Activities lot were contacted to establish how borehole and well information are gathered and mapped. So the Geology lot's WP9 Portal leader may consider these data in light of the wells and boreholes information aggregation they have proposed.
WP 7 continues to communicate EMODnet, Marine Geology and WP7 Minerals. We are planning for the dissemination of information during the comming year to include: online and published news articles; a poster and peer reviewed publication; sessions and presentation at national and international Earth and Ocean science fora.
The GSI, its associated seabed mapping programme INFOMAR and staff have been using social media such as Twitter and Facebook to disseminate information on the instigation of EMODnet III, the Geology component for which GSI are lead on WP7.

WP8. Submerged landscapes (NERC-British Geological Survey - BGS)

This is a new WP and thus it was seen as important to have a first workshop soon after project start. The workshop was arranged in Copenhagen on 26th-28th June 2017. During that workshop the first years programme was identified as:

- Identify and input archaeological data (SPLASHCOS),
- Identify what features are already in the EMODnet database (WP3-rocky areas, sedimentation rate, glacial features,WP4 Pre-Quaternary rocky o/c, Holocene, limestone karstified), WP7 (Aggregate data?),
- Countries – identify and collate data bases (as per contract),

Identify relevant data evidencing submerged landscapes (drainage channels polygons, lines, coastlines, isoanomalies.

- Identify key areas (available data to test guidelines for landscape mapping): UK Shelf (drainage/coastlines/palaeo environments), Baltic (Coastlines/palaeo environments/Holocene thickness), Aegean (Palaeoshorelines/drainage/lakes/springs/karst), Tyrrhenian Sea (Holocene thickness/drainage/coastlines/karstified limestone), Ireland (Karst/drainage),
- Determine GIS feature representation (point, line, polygon),
- Draft and test GIS guidelines

WP9. Data management, web portal and services (Geological Survey of Denmark and Greenland - GEUS)

The primary goal for WP9 in the first three months was migrating the existing portal at BGS to facilities at GEUS.dk. The task was completed mid-June with a revamped portal powered by a combination of a Wordpress CMS system and an EGDI maps and metadata catalogue as described in the tender.

In collaboration with the main portal, WP9 lead GEUS has held meetings with Trust IT regarding portal usability. GEUS has also participated in technical coordination meetings and had talks with other lots regarding exchange of data products and data indices. Dsicussions with EMODnet Human activities lot have been fruitful and they are willing to share their oil & gas borehole index with our lot using WFS. Also discussions with EMODnet HRSBM project has been fruitful and our technical coordinator will make a formal request on behalf of EMODnet Geology to have access to multibeam track lines containing backscatter details.

GEUS collaborate with external projects (EPOS, GeoSeas, INSPIRE, GeoERA) on index models and entities.

Data products from phase II were analyzed and migrated to a shared relational database for exploring data interconnection possibilities. GEUS is in the final phase of creating a borehole index model together with EPOS and working on a seismic index model inspired by work done in EPOS and GeoSeas.

WP10. Dissemination (Geological Survey of Finland - GTK)

During the first Steering Group meeting, which was held in Espoo on 29th May 2017, it was agreed that WP10 should produce a draft dissemination plan for the next two years by the next workshop. All WP leaders will provide examples on successful dissemination, which can be used to develop the plan. It was also emphasized that there is a need for a visually impressive EMODnet Geology poster /poster layout, which partners could use if they want to present the EMODnet Geology project in meetings and conferences. To advance this issued, the project leader will contact the EMODnet Secretariat for

EMODnet poster layout request, as it would be good if there would be a “standard layout” for posters for all EMODnet lots.
During the kick-off meeting all partners were informed about the importance of project dissemination and to ensure that all EMODnet Geology publicity is properly recorded, they were requested to inform project coordinator Henry Vallius and WP10 leader ZZ of any activities as soon as they happen, as this information is difficult to collect afterwards. All partners were also asked to bring to the next project meeting good ideas on marketing to the general public, children, schools etc.
EMODnet Annual Report 2016, published by the EMODnet Secretariat includes a full section on practical use cases showcasing how EMODnet is supporting concrete real-life use cases. One example is a use case of EMODnet 2 Geology WP3 products in the Gulf of Finland assessment. The development of EMODnet standard classifications for the seabed substrate allowed a digital map layer covering Russian, Finnish and Estonian waters to contribute towards the Gulf of Finland assessment published in 2016. The assessment was one of the most important outcomes of the Gulf of Finland Year arranged by the three countries in 2014. The map which shows that erosion, transportation, and accumulation bottoms have combined to give a patchy seabed substrate distribution also formed the basis of the regional spatial plan for the sea area created by the Regional Council of Kymenlaakso (in Finland).
The GSI, its associated seabed mapping programme INFOMAR and staff have been using social media such as Twitter and Facebook to disseminate information on the instigation of EMODnet III, the Geology component for which GSI are lead on WP7.

WP11. EMODnet collaboration (Geological Survey of Finland - GTK)

The EMODnet Geology lot has actively communicated with other EMODnet lots, especially the Seabed Habitats lot, the Human Activities lot as well as the High Resolution Seabed mapping Project, with which coperation plans have been drafted and agreed upon (see chapter 3). The three regional sea conventions (RSC) were all officially invited to our kick-off meeting, as was also the EMODnet High Resolution Seabed mapping Project and the Seabed Habitats lot. The RSC:s didn’t respond to the invitation, but the two EMODnet lots were represented at the kick-off meeting held in Espoo, Finland on 30-31 May 2017 by partners who are members both in these lots and the EMODnet Geology lot. During the kick-off meeting Rhys Cooper (BGS) gave an introductory presentation on both the EMODnet Data Ingestion and the EMODnet High Resolution Seabed Mapping projects to the EMODnet Geology partners.
As an outreach action it was decided at the kick-off meeting to submit a session proposal called “ Marine geoscience and geospatial data crossing borders” to the IUGS Resources for Future Generations Conference to be held on June 16-21, 2018 in Vancouver, BC, Canada. In case the session is accepted to the conference, partners were encouraged to submit abstracts to the session. The session is planned to be co-chaird by EMODnet Geology coordinator Henry Vallius (GTK), YY (GEUS) and WW (Geoscience Australia). WW is also invited to attend the next EMODnet Geology meeting, which will be held in Rome on 26-28. September 2017.

WP12. Project analysis and sustainability (Geological Survey of Finland - GTK and Geological Survey of Denmark and Greenland - GEUS)

During the kick-off meeting it was agreed upon that the objective of WP12 is to analyse each phase of the project and to provide a report of the lessons learned. This includes the analysis of the main barriers to the provision of data by data holders, the challenges related to rendering the interoperable data and the challenges related to producing contiguous data over the maritime basins. A plan to overcome these barriers and proposals of steps that can be improved will be provided in co-operation with other WPs.

To ensure the sustainability of the EMODnet Geology project, EGDI provides an appropriate platform for developing a long-term infrastructure. Priorities and effort required for improving the accuracy, precision and coverage of data and products will be considered, and the chosen portal technology will be reviewed. Full assessment of project implementation and recommendations for future steps provide an outcome that can assist the EC in developing its maritime strategy.

4. Specific challenges or difficulties encountered during the reporting period

WP1. Project Project management.

Subcontract of workpackage leader *Bundesanstalt fur Geowissenschaften und Rohstoffe – the Federal Institute for Geosciences and Natural Resources, Germany (BGR)* is – due to German administrative issues not yet signed at time of reporting, but is expected soon. The coordinator is waiting for signature.

Subcontract of *A.P.Karpinsky Russian Geological Research Institute (VSEGEI) Federal State Budgetary Enterprise* is not yet sigend at the time of reporting due to the delay caused by the translation of the whole Service Contract into Russian. The Subcontract has however been accepted by the subcontractor, and will be signed soon. The coordinator is waiting for signature.

5. User Feedback

No feedback available at present.

6. Outreach and communication activities

Date	Media	Title	Short description and/or link to the activity
May 4th 2017	*GeoHab 2017, Halifax, Canada*	*Henry Vallius and EMODnet Geology partners: Multi-scale harmonized geological maps of the European seas–3rd phase of the EMODNET-geology project*	*Presentation of the new phase of the EMODnet geology project to the GeoHab community*
May 3rd 2017	*GeoHab 2017, Halifax, Canada*	*YY and XX: Seabed geodiversity of the Baltic Sea*	*Case study from a regional sea (the Baltic Sea) on seabed geodiversity*
14th June 2017	*Baltic Sea Science Congress 2017, Rostock, Germany*	*YY and XX: Quantifying seabed geodiversity of the Baltic Sea*	*Case study from a regional sea (the Baltic Sea) on quantification of seabed geodiversity. Plenary lecture*
20-21 April 2017	*GEO, Workshop, Florence, Italy*	*GEO (Group on Earth Observations) data providers*	*Opportunity for EMODnet Geology to contribute marine geology data to GEO*
10-12 May 2017	*Congress of the Italian Association of Cartography (AIC), Genoa, Italy*	*Italian Geological Mapping of submerged areas and its contribution to EMODnet - European Marine Observation and Data Network*	*Presentation of the Italian Geological Mapping Project (CARG) and the products obtained from its elaboration and delivered within EMODnet Geology*

22-23 May 2017	*6th Annual Deep Sea Mining Summit, London, UK*	*WP7 at ADSMS*	EMODnet, marine geology and minerals specifically.
29 June 2017	*Digital Ocean, Galway, Ireland*		Publicising EMODnet, EMODnet Geology and the Minerals WP through brochures, pull-up banners and discussion.
30 June 2017	*Harnessing Our Ocean Wealth, Galway, Ireland*		"

7. Updates on Progress Indicators

Indicator 1 - Volume of data made available through the portal

- Seabed Substrate Map (205MB).
- Sea-floor Lithology (80MB).
- Coastal Behavior (43MB).
- Events & Probabilities (13MB).
- Minerals (21MB).

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

No indicators available at present.

Indicator 3 - Organisations that have been approached to supply data with no result, including type of data sought and reason why it has not been supplied

No indicators available at present.

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

- Seabed Substrate Map. Download count unknown (hosted at GTK).
    - Seabed substrate 1:250 000 – Europe, 30 orders/downloads
    - Seabed substrate 1:1 000 000 – Europe, 5 orders/downloads
- Sea-floor Lithology. Download count unknown (hosted at BGR).
- Coastal Behavior. Downloaded 46 times.
- Events & Probabilities. Downloaded 53 times.
- Minerals. Downloaded 47 times.

Indicator 5 - Organisations that have downloaded each data type

- GTK (WP3) have received enquiries/emails since April 2017 by:
  - Basque Centre for Climate Change (BC3)
  - CEFAS
  - Finnish Transport Agency

Indicator 6 - Using user statistics to determine the main pages utilised and to identify preferred user navigations routes

No indicators available at present.

Indicator 7 - List of what the downloaded data has been used for (divided into categories e.g. Government planning, pollution assessment and (commercial) environmental assessment, etc.)

Substrate info for Finnish navigational charts

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

- http://gtkdata.gtk.fi/arcgis/services/EMODnet/EMODnetGeologySubstrate/MapServer/WMSServer
- https://services.bgr.de/wms/geologie/emodnet2_prequaternary_seafloor_geology/
- http://www.gdngeoservices.nl/arcgis/services/eu/WP5_Coastal_Migration_22092016_3/MapServer/WmsServer
- http://emodnet-geology.eu/cgi-bin/BGS_ISPRA_EMODNET_Geology/ows
- https://secure.dcenr.gov.ie/arcgis/services/EMODNET/EMODnet_Geology_WP7_Minerals/MapServer/WmsServer

Indicator 11- Relevant scientific and/or popular articles

EMODnet Annual Report 2016, published by the EMODnet Secretariat includes a full section on practical use cases showcasing how EMODnet is supporting concrete real-life use cases. One example is in use of EMODnet 2 Geology WP3 products in the Gulf of Finland assessment. The development of EMODnet standard classifications for the seabed substrate allowed a digital map layer covering Russian, Finnish and Estonian waters to contribute towards the Gulf of Finland assessment published in 2016. The assessment was one of the most important outcomes of the Gulf of Finland Year arranged by the three countries in 2014. The map which shows that erosion, transportation, and accumulation bottoms have combined to give a patchy seabed substrate distribution also formed the basis of the regional spatial plan for the sea area created by the Regional Council of Kymenlaakso (in Finland).

Annex X

List in annex if you wish to provide any additional information