



## EMODnet Thematic Lot n° 2 - Geology

6th Bi-monthly Report

Reporting Period: 30 August – 3 November 2014

Date: 30/11/2014

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## 1. Highlights in this reporting period

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- **Project Meeting in Sliema, Malta on September 30- October 1 2014.**
- **Participation in the EMODnet event prior to the EurOcean Conference on 6th October.**
- **Major updates to WP4 (Sea-bed geology) and WP7 (minerals) information.**
- **Submission and acceptance of the EMODnet-Geology Annual Report.**

## 2. Meetings held since last report

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September 30 – October 1 2014, Sliema, Malta. Full Project Meeting hosted by the Continental Shelf Department of the Maltese Ministry for Transport and Infrastructure. . The meeting was opened by Minister for Transport and Infrastructure, Joe Mizzi. Presentations were made by the Project Co-ordinator and workpackage leaders plus progress reports by each partner. All but two of the project partners were represented, with a total of 66 participants.

### 3. Work package updates

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#### ***WP1 – Project Management.***

The 2nd Project meeting was held in Sliema, Malta on 30 September – 1 October (see Section 2). The Project Annual Report was compiled and submitted to the EC and EMODnet Secretariat on 28th October. The Project Co-ordinator attended the EMODnet event at the EurOcean Conference in Rome on 6th October.

#### ***WP2 – Geological data specification and sourcing.***

The Project partners gave updates on any additional sources of information that will be used in the Project at the meeting in Malta.

#### ***WP3. Sea-bed substrate.***

An exercise was conducted to compare the data coverage with the sea area coverage included in the Marine Strategy Framework Directive (MSFD). The results show the variation between data coverage and the mapping scales between the sea areas, with in total about 20 % of the MSFD seas mapped at 1:250 000 or more detailed scale. Data gaps represent about 40 % of the MSFD area.

#### ***WP4. Sea-floor geology.***

Index maps showing the status of mapping the pre-Quaternary and Quaternary geology of the European Seas have been compiled.

EMODNET2 - WP4,  
sea-floor geology: pre-Quaternary

- Draft -

Data Covered Area

Update: 25.09.2014

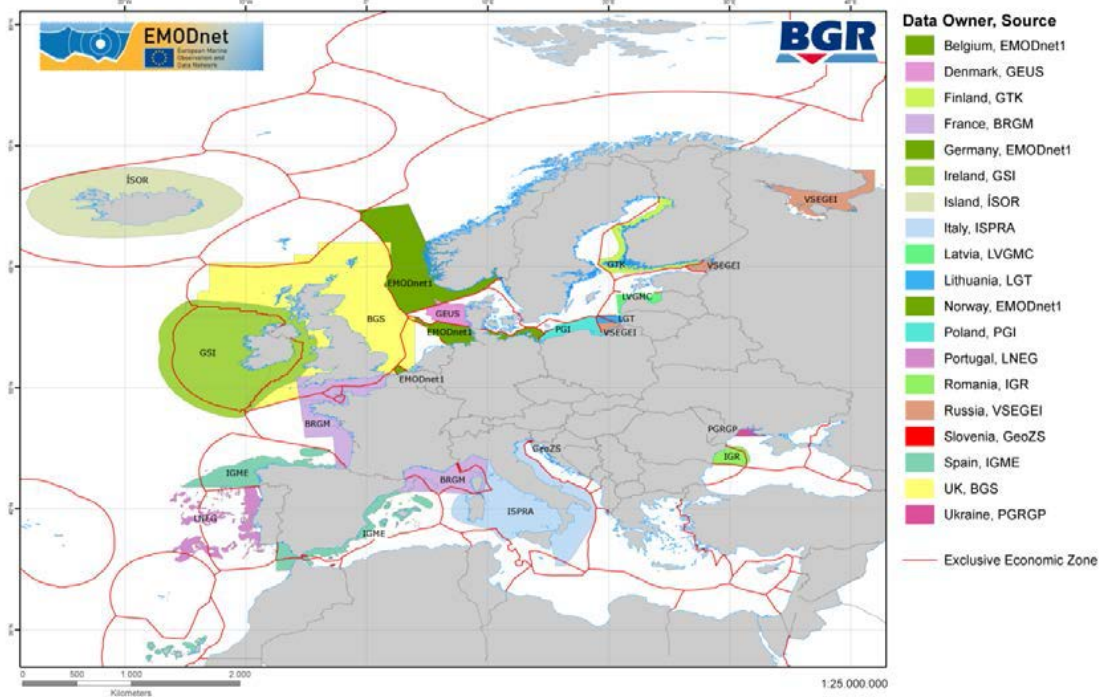


Figure 1. Status of sea-floor geology (pre-Quaternary) available for Workpackage 4.

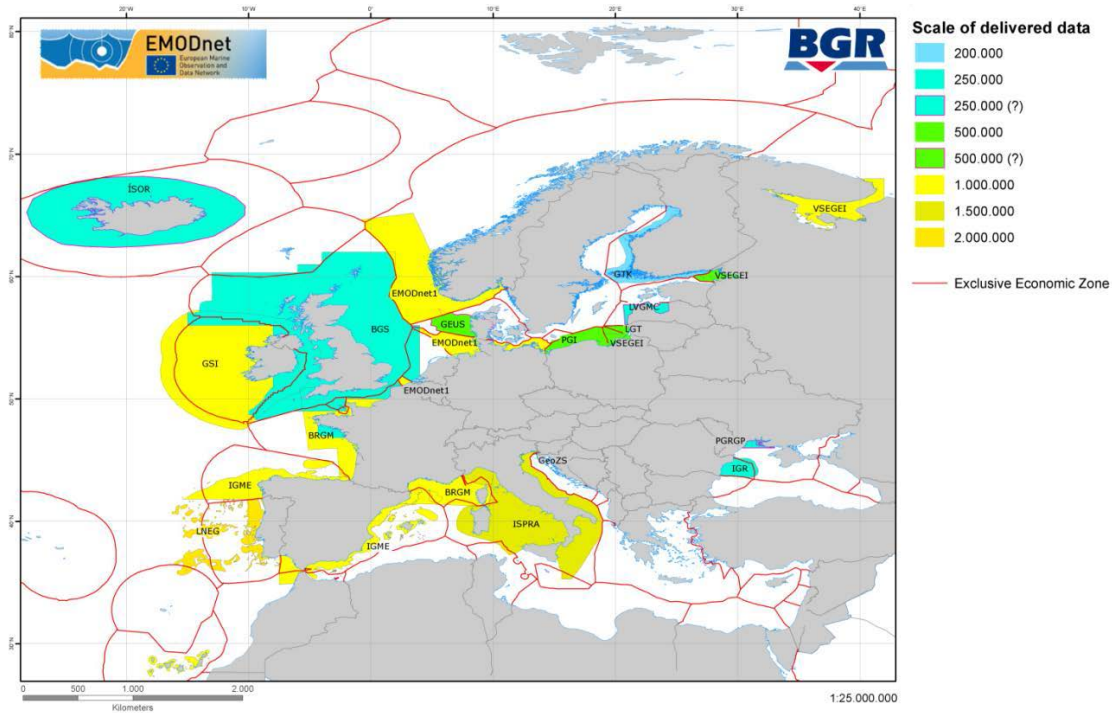


Figure 2. Overview of the scale at which data have been compiled at national level.

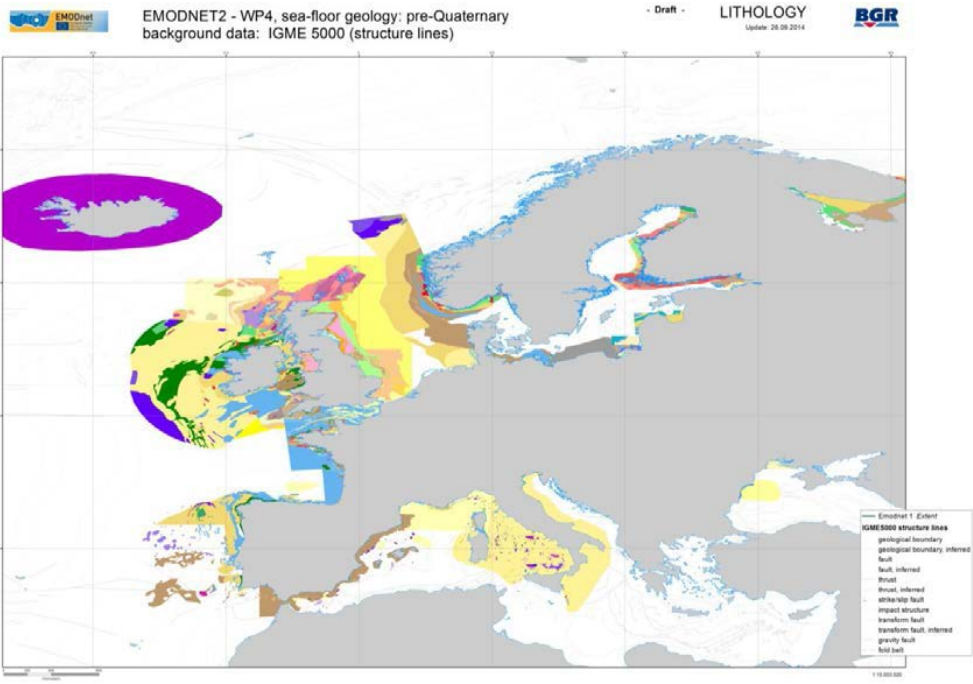


Figure 3. Status of lithological information.

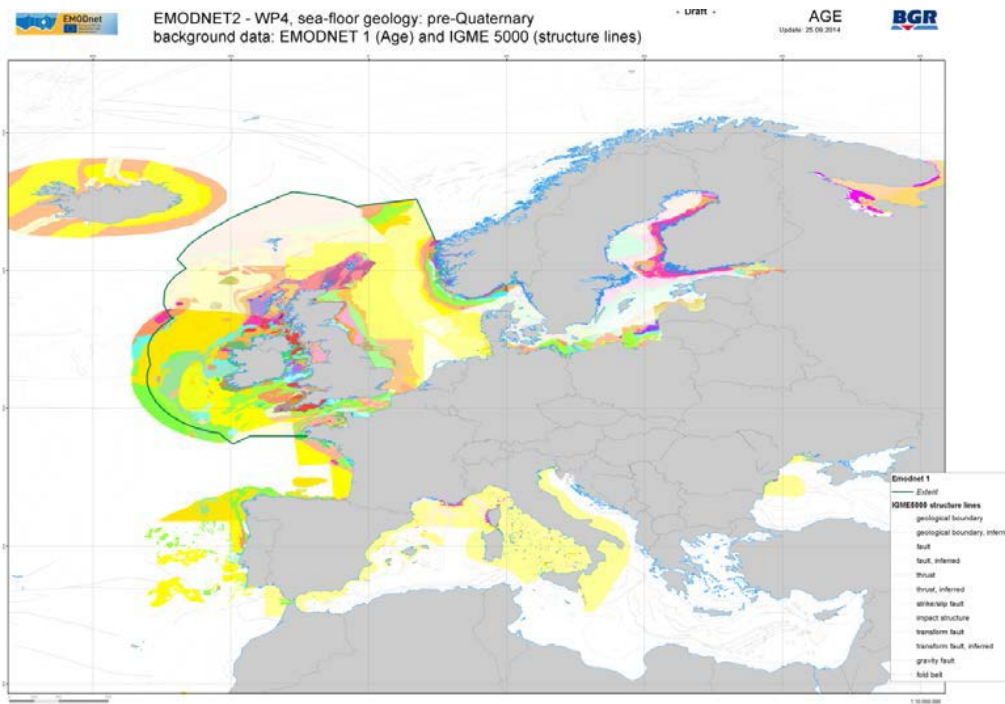
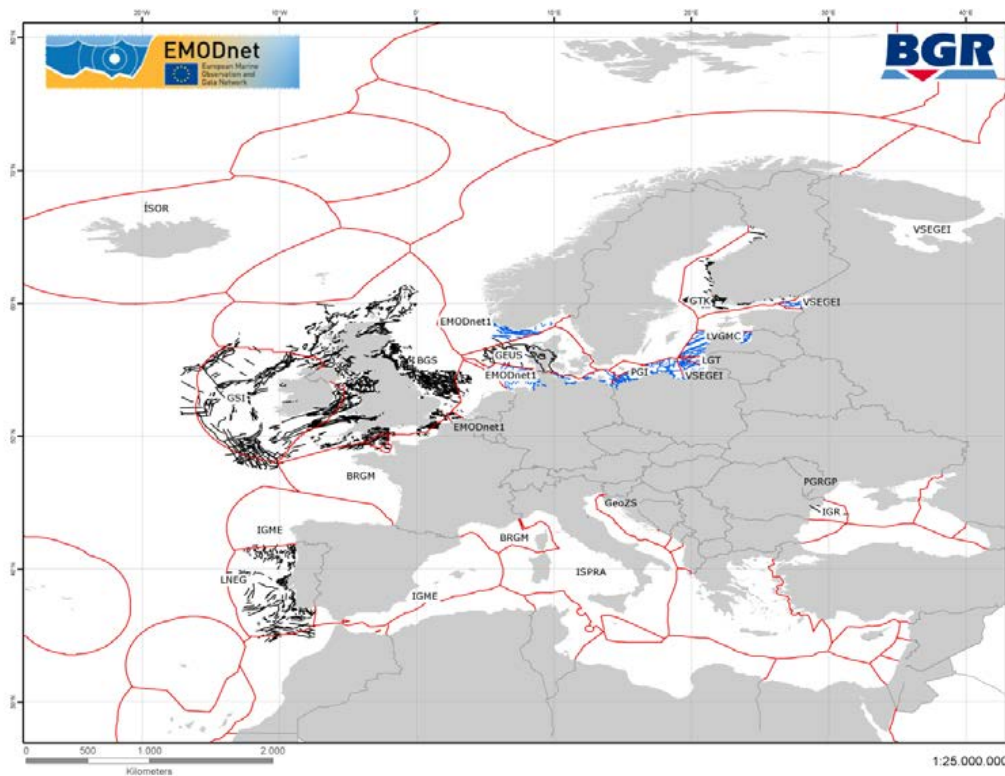


Figure 4. Status of pre-Quaternary age information.





**Figure 5.** Status of information available for geological faults that can be represented at 1:250 000 scale.

### ***WP5. Coastal behaviour.***

The GIS map (shapefile) and metadata for coastal behaviour, as produced for the greater North Sea and the Baltic Sea in the ur-EMODnet-Geology Project (using EUROSION data supplemented with new data for Norway, Lithuania, Poland, Belgium and the Netherlands), was expanded to cover the coastlines of the European Seas that are included in the full EMODnet-Geology Project. Data for Bulgaria (part), Cyprus (part), France (part), Greece, Italy, Malta, Portugal, Romania (part), Slovenia and Spain are now included (Figure 13). Data for Albania, Bulgaria (part), Croatia, Cyprus (part), Faroe Islands, Georgia, Iceland, Montenegro, Romania (part), Russia (part), Turkey, Ukraine and the United Kingdom are being compiled and will be added as they become available.

### ***WP6. Geological events and probabilities.***

The WP leader distributed the Guidelines for constructing WP6 information on 24 September 2014. The Guidelines were discussed at the project meeting in Malta in October 2014 and based on feedback from the project team will be revised and re-distributed by the end of the year. It was agreed to continue to rely on the European-Mediterranean Seismological Centre (EMSC) for the project's earthquake catalogue to avoid duplication. However, attributes that better characterise earthquakes have been identified and will be provided in the future development of Workpackage 6 outputs.

During the discussions related to Workpackage 6 it became clear that several of the features related to geological events and probabilities could also be represented in some of the other workpackages (e.g



landslides, pockmarks). It was therefore decided to create a Working Group, consisting of a subset of the project partners, which is tasked with identifying and defining these features to prevent duplications or overlaps.

### ***WP7. Minerals.***

Workpackage 7 progress was presented at the EMODnet-Geology Project meeting in Malta on September 30<sup>th</sup> 2014. Mapping completed to date was shown and the proposed workflow for 2015 was discussed. Additional or updated data was requested for inclusion in the workpackage from all partners. It was reiterated that data can be submitted for all potential deposit types that are considered a marine mineral deposit on or under the sea bed and which are available without constraint. These data do not have to represent a deposit type that is under exploration, as the workpackage is responsible for mapping the geological occurrences of marine minerals and their spatial extent according to the agreement with the Human Activities Project described above.

Partners' attention was drawn to two international web viewers that host up-to-date locations of three deposit types: Polymetallic Nodules, Polymetallic Sulphides and Fe-Mn Crust. Discussions during the Malta meeting resulted in the decision that participating countries ensure they QC and submit these data to the Workpackage leaders for inclusion. Websites: <http://www.mapserver.isa.org.jm/GIS/> <http://vents-data.interridge.org/ventfields-geofield-map>

Any additional data submitted will be included in the collated deposit-type layers compiled to date and will be presented at the next project meeting. The new or updated data will then be assessed against that previously submitted under the ur-EMODnet-Geology Project and a decision will be made regarding the publishing of the data for the current EMODnet-Geology Project in 2015. The deposit types will either replace those published during the preparatory phase or will be published separately for the current project, thus highlighting progress since the first phase of EMODnet.

An example of the type of map information being compiled is shown below (aggregates). Similar maps have been compiled for hydrocarbon deposits, gas hydrates, marine placer deposits, phosphorite deposits, polymetallic nodules, and cobalt-rich ferromanganese crusts.

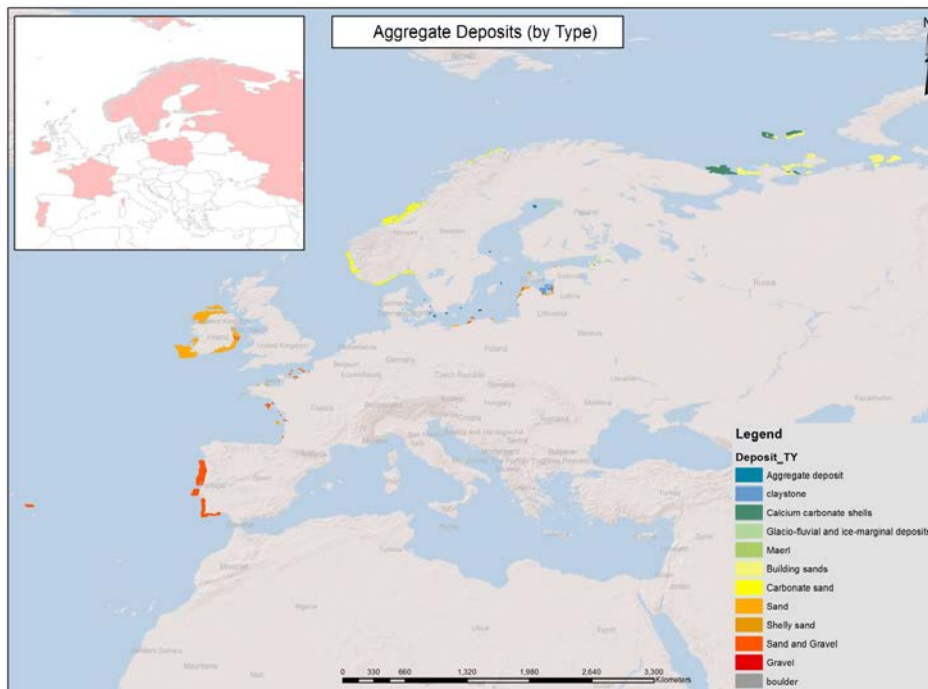


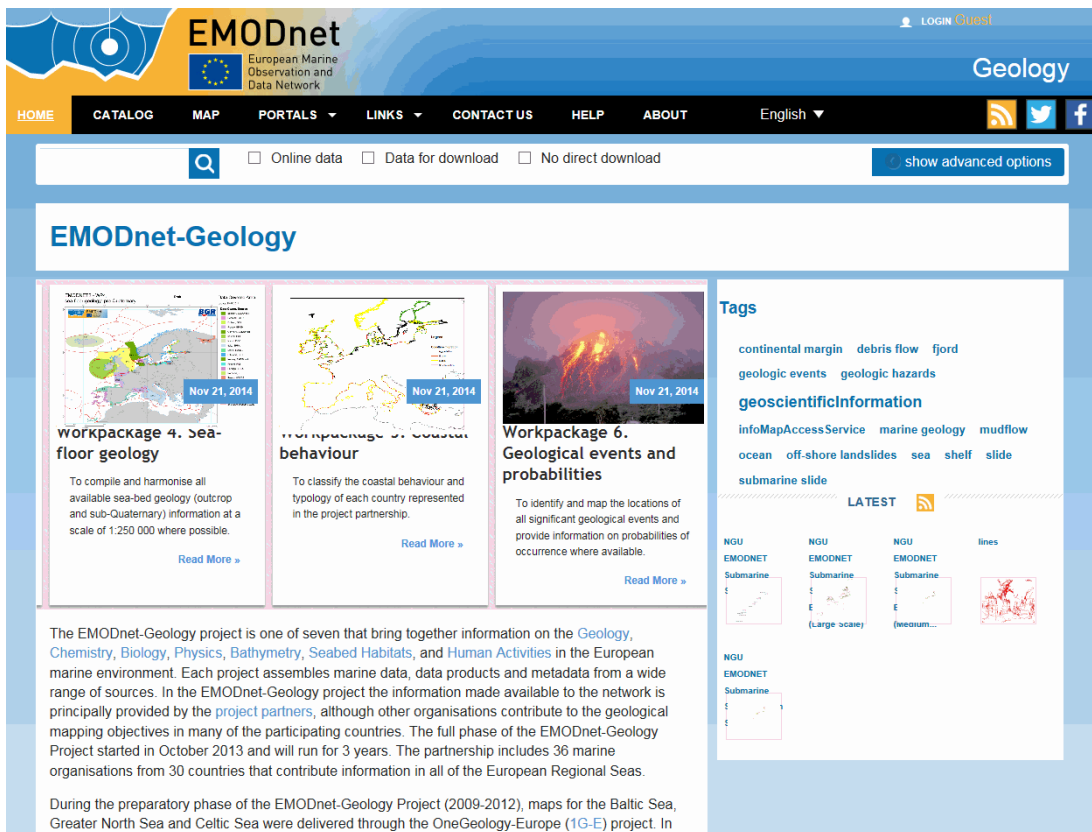
Figure 6. Information compiled for aggregate deposits in the European seas.

## ***WP8. Web Services and Technology.***

Following an assessment of available open-source software, it has been decided to use 'GeoNetwork'. <http://geonetwork-opensource.org/>. This is a catalog application to manage spatially referenced resources. It provides powerful metadata editing and search functions as well as an embedded interactive web map viewer. It is currently used in numerous Spatial Data Infrastructure initiatives across the world. GeoNetwork has been developed to connect spatial information communities and their data using a modern architecture, which is at the same time powerful and low cost, based on the principles of Free and Open Source Software (FOSS) and International and Open Standards for services and protocols (a.o. from ISO/TC211 and OGC).

The software provides an easy to use web interface to search geospatial data across multiple catalogs, combine distributed map services in the embedded map viewer, publish geospatial data using the online metadata editing tools and optionally the embedded GeoServer map server. Administrators have the option to manage user and group accounts, configure the server through web based and desktop utilities and schedule metadata harvesting from other catalogs.

The prototype of the portal was reviewed by selected members of the project team and the EMODnet Secretariat and will be re-launched at the end of November 2014.



The screenshot shows the EMODnet-Geology portal home page. At the top, there is a navigation bar with the EMODnet logo, the text 'European Marine Observation and Data Network', and the word 'Geology'. Below this is a secondary navigation bar with links for HOME, CATALOG, MAP, PORTALS, LINKS, CONTACT US, HELP, and ABOUT. A search bar is located below the navigation, with options for 'Online data', 'Data for download', and 'No direct download', and a 'show advanced options' button. The main content area features three featured workpackages, each with a map and a 'Read More' link:

- Workpackage 4. Sea-floor geology**: To compile and harmonise all available sea-bed geology (outcrop and sub-Quaternary) information at a scale of 1:250 000 where possible.
- Workpackage 5. Coastal behaviour**: To classify the coastal behaviour and typology of each country represented in the project partnership.
- Workpackage 6. Geological events and probabilities**: To identify and map the locations of all significant geological events and provide information on probabilities of occurrence where available.

Below these workpackages is a paragraph of text: "The EMODnet-Geology project is one of seven that bring together information on the Geology, Chemistry, Biology, Physics, Bathymetry, Seabed Habitats, and Human Activities in the European marine environment. Each project assembles marine data, data products and metadata from a wide range of sources. In the EMODnet-Geology project the information made available to the network is principally provided by the project partners, although other organisations contribute to the geological mapping objectives in many of the participating countries. The full phase of the EMODnet-Geology Project started in October 2013 and will run for 3 years. The partnership includes 36 marine organisations from 30 countries that contribute information in all of the European Regional Seas." Below this is another paragraph: "During the preparatory phase of the EMODnet-Geology Project (2009-2012), maps for the Baltic Sea, Greater North Sea and Celtic Sea were delivered through the OneGeology-Europe (1G-E) project. In".

On the right side of the page, there is a 'Tags' section with a list of tags: continental margin, debris flow, fjord, geologic events, geologic hazards, geoscientific information, infoMapAccessService, marine geology, mudflow, ocean, off-shore landslides, sea, shelf, slide, submarine slide. Below the tags is a 'LATEST' section with a grid of small map thumbnails, each labeled 'NGU EMODNET Submarine'.

**Figure 7.** Home page of the EMODnet-Geology portal currently under development with a view to re-launching in late November 2014.

## ***WP9. Dissemination.***

The Project Co-ordinator contributed to the EMODnet Project brochure prepared for the EurOcean event and to the promotional video being made by the EMODnet Secretariat. See section 6 for other Outreach and Communication Activities.

## ***WP10. Liaison with other EMODnet lots.***

The Co-ordinator of the Seabed Habitats Project attended the EMODnet-Geology Project meeting in September 2014 to discuss the outputs required to make progress in compiling the habitat maps for the project. Contact with the Co-ordinator of the Human Activities Project to agree the types of information that would be submitted to both projects regarding mineral localities and exploration is ongoing.

## **4. Specific challenges or difficulties encountered during the reporting period**

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No difficulties were encountered during the reporting period.

## 5. User Feedback

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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.

*[Provide information in table - attach the documentation/full user feedback to the report]*

Date	Name	Organization	Type of user feedback (e.g. technical, case study etc.)	Response time to address user request

## 6. 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 should be reported under indicator 11 in Section 7.

[Provide information in table - Maximum 1 page]

Date	Media	Title	Short description and/or link to the activity
September 2014	Keynote lecture	Vallius, H. 2014. Sediment and Habitat mapping of the Baltic Sea. The 12th Colloquium on Baltic Sea Marine Geology September 8 – 12, 2014, Warnemünde, Germany.	Keynote lecture at Baltic Sea Conference.
September 2014	Poster	Kaskela, A., Alanen, U., Kotilainen, A., and Stevenson, A. 2014. The sea-bed substrate data of the European seas as part of the European marine observation and data network (EMODnet) Geology Project. The 12th Colloquium on Baltic Sea Marine Geology September 8 – 12, 2014, Warnemünde, Germany.	Poster at Baltic Sea Conference.
October 2014	Position paper	Land Beneath the Waves. Submerged landscapes and sea level change. A joint geoscience-humanities strategy for European Continental Shelf Prehistoric Research. Fleming, N.C., Cagatay, M.N., Chiocci, F.L., Galanidou, N., Jons, H., Lericolais, G., Missiaen, T., Moore, F., Rosentau, A., Sakellariou, D., Skar, B., Stevenson, A., Weerts, H. 2014. Chu, N.C. and McDonough, N. (Eds) Position Paper 21 of the European Marine Board, Ostend, Belgium. 171 pp. ISBN 978-94-920430-3-0.	European Marine Board Position Paper on submerged landscapes. <a href="http://www.marineboard.eu/in/publications/Land%20Beneath%20the%20Waves-244">http://www.marineboard.eu/in/publications/Land%20Beneath%20the%20Waves-244</a> .

## 7. 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.



***Indicator 1 - Volume of data made available through the portal***

***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).***

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

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