

EMODnet-Geology

Geo-Seas International Conference
Cork, Ireland
9-10 October 2012

Alan Stevenson (British Geological Survey) and the project team



EMODnet



European Marine
Observation and
Data Network



What is EMODnet?

(European Marine Observation and Data Network)

- Established in 2007 by the European Commission
 - As part of the Integrated Maritime Policy Action Plan
 - To support 'Marine Knowledge 2020'
 - To support the aims of the Marine Strategy Framework Directive to achieve good environmental status in European waters by 2020
 - EC is advised by the Marine Observation and Data Expert Group (MODEG)



‘EMODnet design principles’

- **collect data once** and use it many times
- develop **standards** across and within disciplines
- process and validate data at different levels. Structures are already developing at national level but **infrastructure** at sea-basin and European level is needed
- provide **sustainable financing** at an EU level so as to extract maximum value from the efforts of individual Member States
- **build on existing efforts** where data communities have already organised themselves
- develop a **user-driven decision-making** process for priorities
- accompany data with statements on **ownership, accuracy and precision** and
- recognise that marine data is a **public good** and discourage cost-recovery pricing from public bodies



EMODnet projects

- In 2008, the EC issued two calls for preparatory actions to test the 'proof of concept' for a full EMODnet project
- Funded by maritime policy preparatory action (not FP)
- First urEMODnet call subdivided into 'lots'
 - Hydrography/bathymetry
 - Geology
 - Biology
 - Chemistry
 - Physical properties
- Second call to establish a broadscale habitat map of Europe



EMODnet - Geology

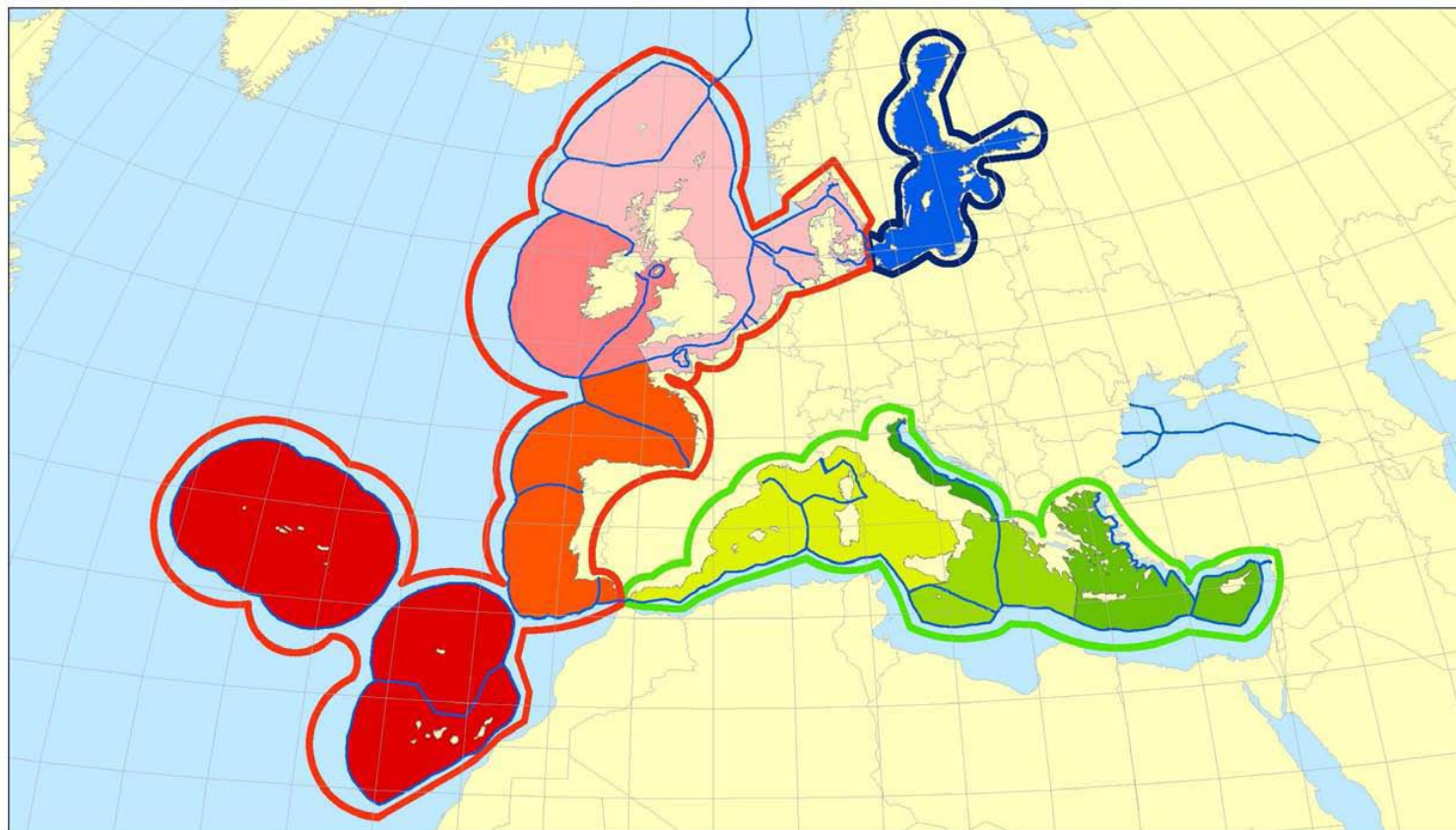
- 14 partners submitted proposal October 2008
 - Geological surveys of Finland, Latvia, Lithuania, Estonia, Poland, Germany, Denmark, Norway, Sweden, Netherlands, Belgium, France, Ireland and the UK.
 - All partners are members of EuroGeoSurveys Marine Geology Expert Group

- Co-ordinated by NERC/BGS



Main deliverables at 1:1 million scale

- Sea-bed sediments including rate of accumulation or sedimentation
- Sea-floor geology (age, lithology, origin)
- Boundaries and faults
- Rate of coastal erosion or sedimentation (coastal behaviour)
- Geological events and event probabilities (landslides, volcanic activity, earthquake epicentres)
- Seismic profiles (access to metadata/data – Geo-Seas)
- Minerals (including aggregates, oil and gas)
- All map outputs added to One-Geology Europe



Marine Regions

- Blue line: Baltic Sea
- Green line: Mediterranean Sea
- Red line: North east Atlantic Ocean

Marine Sub-Regions

- | | | |
|---------------------------------------|--|---|
| Blue box: Baltic Sea | Green box: Ionian Sea | Orange box: Bay of Biscay and the Iberian Coast |
| Dark green box: Adriatic Sea | Light green box: Western Mediterranean Sea | Pink box: Celtic Seas |
| Light green box: Aegean-Levantine Sea | Red box: Atlantic Ocean | Light pink box: Greater North Sea |



EMODnet

EMODnet-Geology website

emodnet-geology.eu - Microsoft Internet Explorer provided by The British Geological Survey

http://www.emodnet-geology.eu/

File Edit View Favorites Tools Help

Google emodnet geology Search More >> Sign In

Convert Select

Favorites Alan_Stevenson Coastal and Marine Databas... Suggested Sites coastal zone management o... CORDIS EESD Calls for Prop... Electronics Top People - [H] Free Hotmail Internet Explorer News

emodnet-geology.eu

Page Safety Tools

**EMODnet**
European Marine Observation and Data Network

Pilot portal for Geology
Data Discovery and Access Service

Menu
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[ur-EMODnet thematic groups](#)

EMODNET-Geology portal

In response to the EU Green Paper on Future Maritime Policy, the European Commission initiated the European Marine Observation and Data Network (EMODNET). The overall objective is to create pilot studies that assemble fragmented and inaccessible marine data into interoperable, contiguous and publicly available datasets for whole maritime basins.

The EMODNET-Geology project is one of six preparatory action projects that, in addition to marine geology, bring together information on marine chemistry, marine biology, hydrography, sea-bed habitats and physical properties. Each project defines the processes, technologies and approximate costs of implementing a fully functioning European Marine Observation and Data Network. For the EMODNET-Geology project, the project partners are compiling data layers for the Baltic Sea, Greater North Sea and Celtic Sea.

The delivery of the EMODNET-Geology data layers is being achieved through the adoption and adaption of technologies developed by the OneGeology-Europe (1G-E) project. The maritime map layers are being delivered using the 1G-E portal to allow the delivery of both onshore and offshore geological information via a single portal.

The geology data available includes:

- sea-bed sediments
- sea-floor geology
- boundaries and faults
- rates of coastal erosion or accumulation
- geological events (submarine slides, earthquakes etc.)
- minerals

Although the [OneGeology-Europe](#) is fully functional and has a full suite of map layers for onshore data, the offshore layers are added as they become available within the EMODnet-Geology project. The portal currently holds maps of sea-bed sediments, sea-floor geology (lithology and stratigraphy), geological boundaries and major faults and a coastal behaviour layer. The map layers for geological events and minerals will be added as soon as they are complete.

News
[EMODnet-Geology Draft Final Report](#) submitted on 22nd July

[Report of the 4th ur-EMODnet progress meeting, June 2011](#)

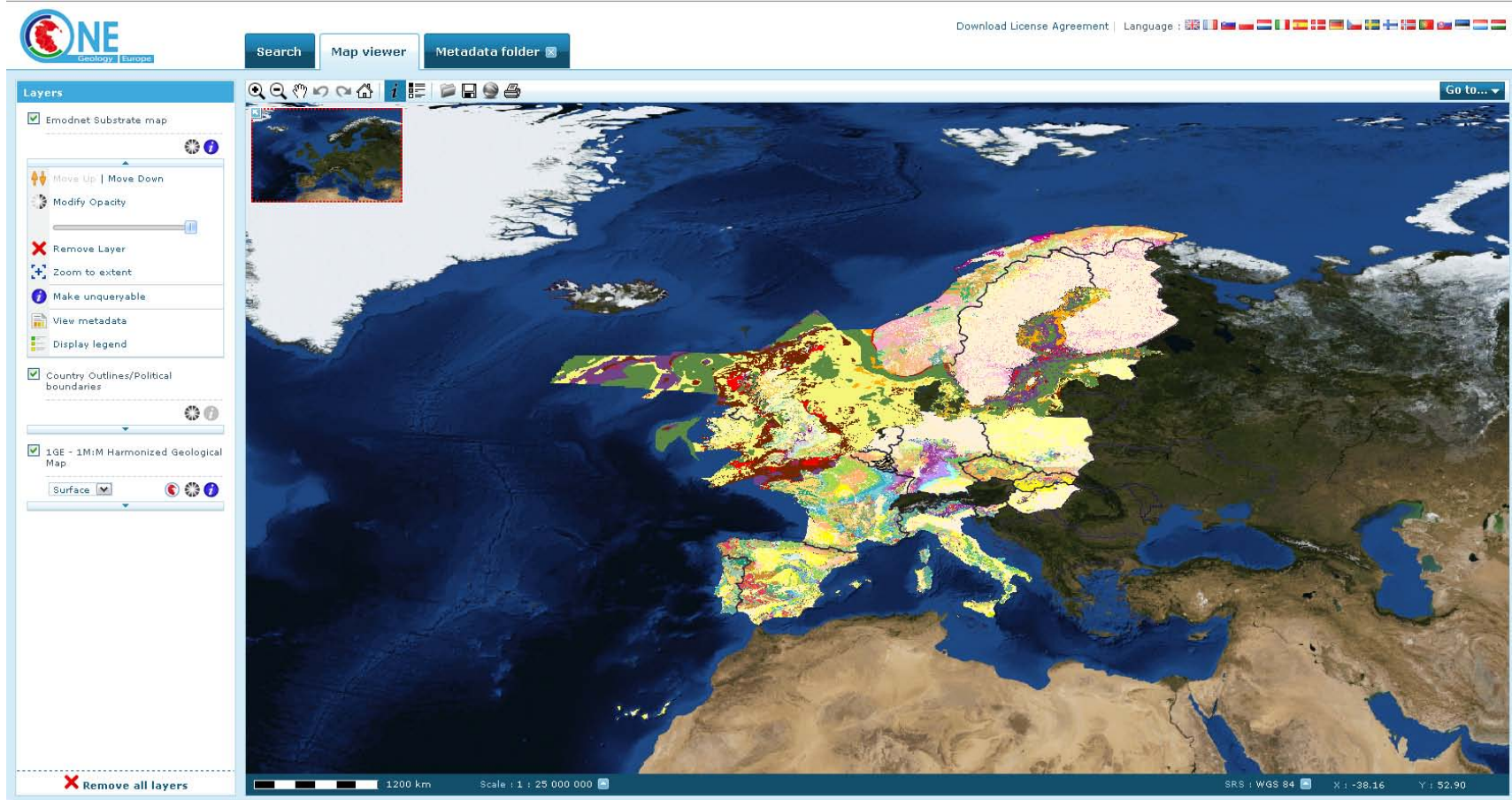
[EMODnet-Geology presented at 'GeoHab 2011' Conference in Helsinki, May 2011](#)





EMODnet

OneGeology-Europe Portal



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<http://portal.onegeology.org/>



EMODnet-Geology and One-GeologyEurope

- Share methodologies and communications objectives
- Utilises the Geological Metadata Profile (GMP) – based on ISO 19115 (data) and ISO 19119 (services) standards
- Uses GeoSciML (Geoscience Mark-up Language): INSPIRE standard for the exchange of geoscience interpretive (map) data over the internet
- Data standards are non-proprietary and provides WMS viewing and WFS download services compliant with INSPIRE implementation rules
- Delivering EMODNet-Geology maps which are fully integrated with other harmonised geological map layers
- OGE is registered as the European contribution to the geological layer for GEOSS and contributes to GMES.



OneGeology Europe - Client

Download License Agreement | Language :

Search

Map viewer

INSPIRE

Metadata Catalogue

Add harmonized map

Add high resolution maps

> Geological maps

> Applied maps

Add EMODnet maps

Add ProMine maps

Add PanGeo maps

Add external Layer (OGC)

Already added layers

Country Outlines/Political boundaries

BGR Emodnet Lithology

BGR Emodnet Stratigraphy

BGR Emodnet Lithology

BGR Emodnet Lithology

1GE - 1M:M Harmonized Geological Map

Search in the 1G-E metadata catalogue

General Information

Any text :

Keywords :

Ressource type :

Submit

Geographical location

More details

The Geological Metadata Catalogue, developed within the framework of the OneGeology-Europe eContent plus project, provides the means for searching (Metadata Search) national geological and applied geological map data ranging from the scale of 1:10,000 to 1:1 million. The Catalogue also offers a SW tool, fully multilingual, for creation and-or editing metadata records (Metadata Editor). The national geological map data, maintained and provided by 21 national geological survey organizations, are presented in this Metadata Catalogue in a form of datasets, dataset series or where available as on-line services.

In order to harmonise descriptions of national geological and applied geological maps or map series a new Geological Metadata Profile (GMP) was developed and utilised when collecting the metadata records. The GMP is fully based on the EN ISO 19115 (for datasets, series) and EN ISO 19119 (for services) international standards. The GMP is also compliant with the INSPIRE Metadata Regulation (Nr. 1205/2008).

In order to directly display a metadata record (geological or applied geological map) for which an on-line map service is available, the Metadata Catalogue is integrated into the OneGeology-Europe Portal. Both the OneGeology-Europe Portal and the Metadata Catalogue build together a unique multilingual system for discovery, view and use of geological data across Europe.



OneGeology Europe - Client

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Search Map viewer INSPIRE

ONE
Geology Europe

Metadata Catalogue

- Add harmonized map
- Add high resolution maps
 - > Geological maps
 - > Applied maps
- Add EMODnet maps**
- Add ProMine maps
- Add PanGeo maps
- Add external Layer (OGC)

Already added layers

- Country Outlines/Political boundaries
- 1GE - 1M:M Harmonized Geological Map

Add EMODnet maps

EMODnet Substrate map

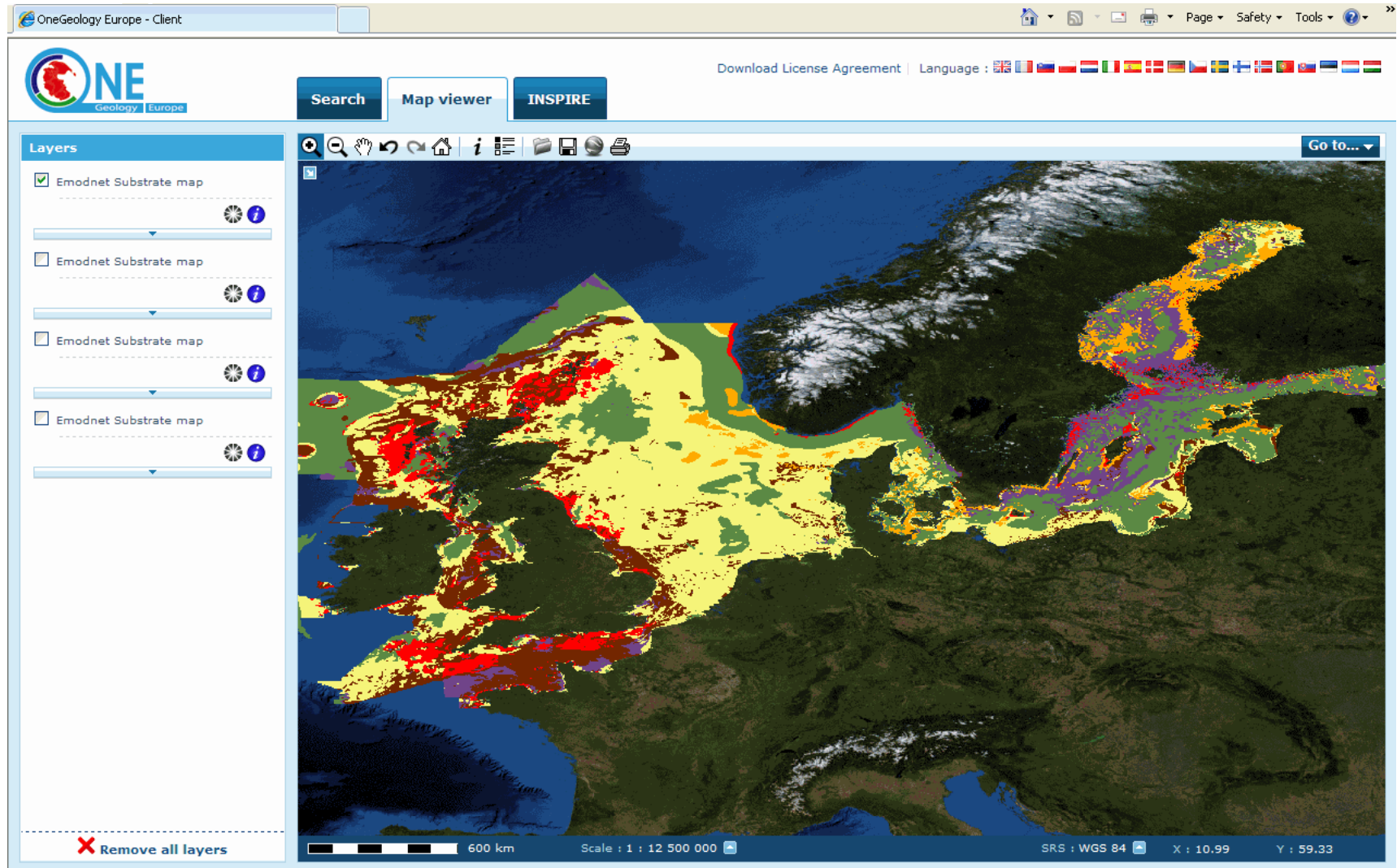
Sea-bed substrate map of the Baltic Sea, the Greater North Sea and the Celtic Seas at 1: 1 000 000 scale. The map is collated and harmonised from substrate information within the EMODNET-Geology project. The current map is collated from more than 200 separate sea-bed substrate maps. Where necessary, the existing substrate classifications (of individual maps) have been translated to a scheme that is supported by EUNIS. This EMODNET reclassification scheme consists of four substrate classes defined on the basis of the modified Folk triangle (mud to sandy mud; sand to muddy sand; coarse sediment; mixed sediment) and two additional substrate classes (diamicton, rock). The project will continue until July 2012 and further modifications may be made. This draft version was produced on 30 August 2010.

BGR EMODnet Lithology

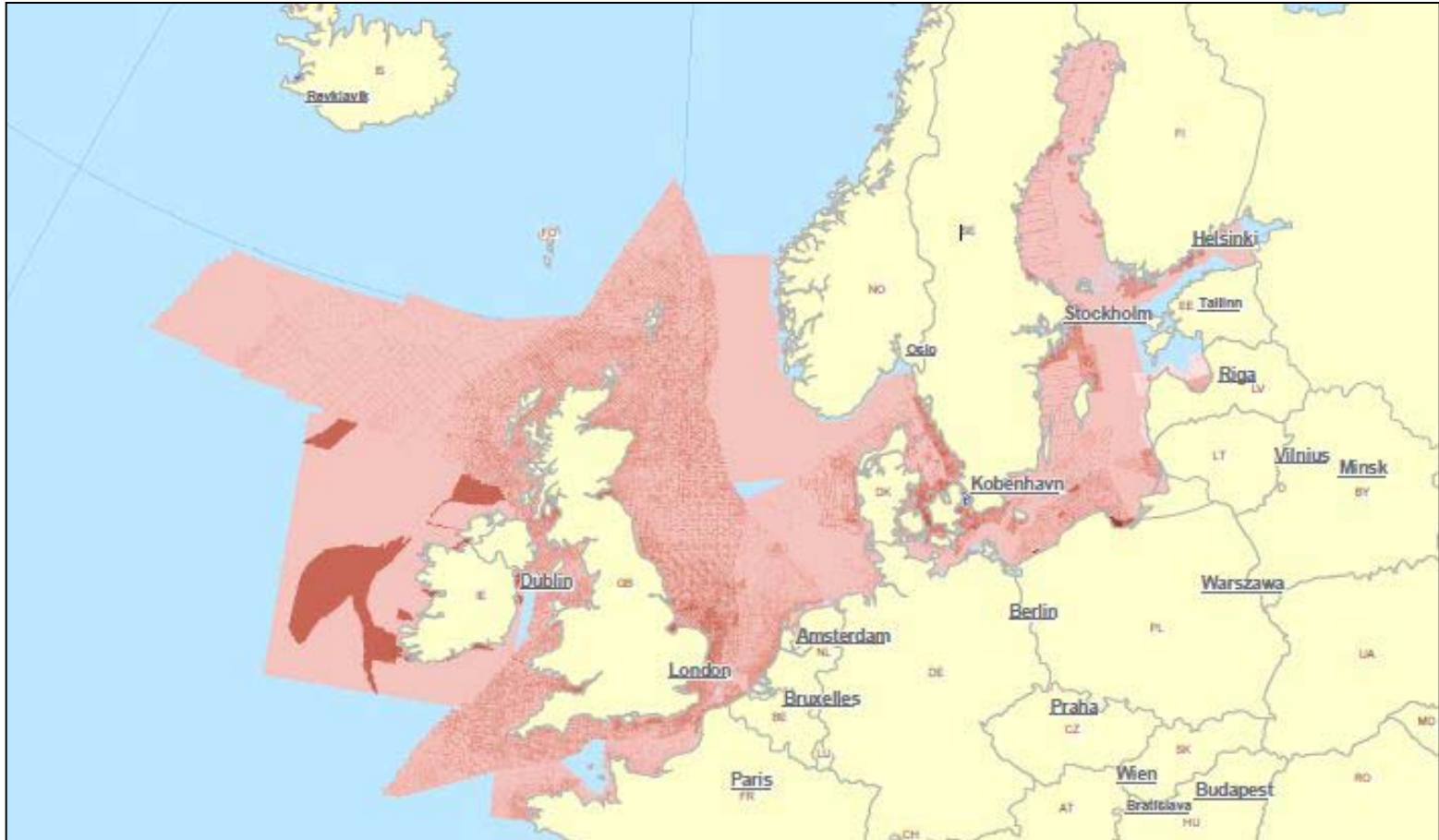


EMODnet

Sea-bed sediment layer



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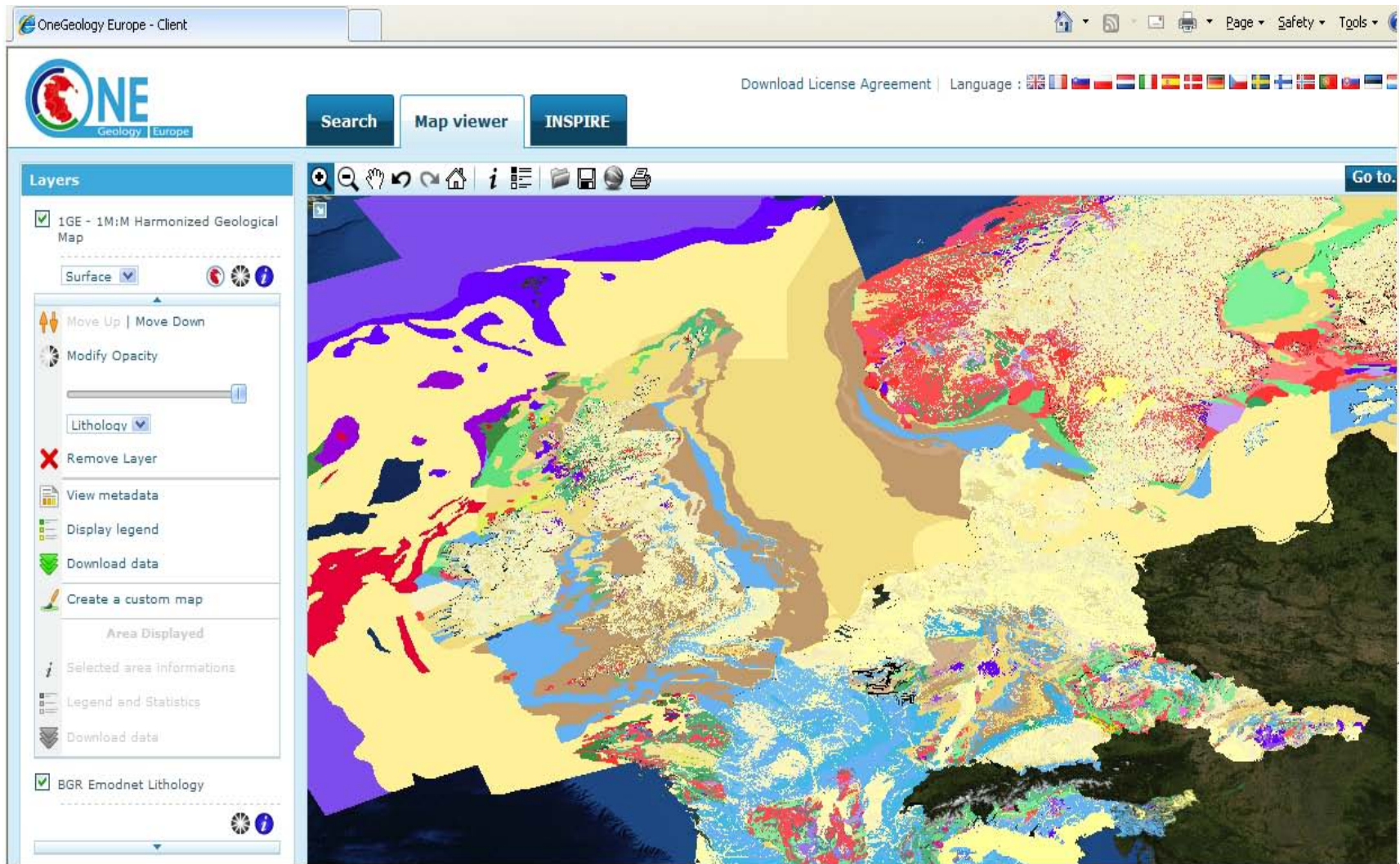


Confidence layer provides representation of quality, accuracy and completeness of the background data



EMODnet

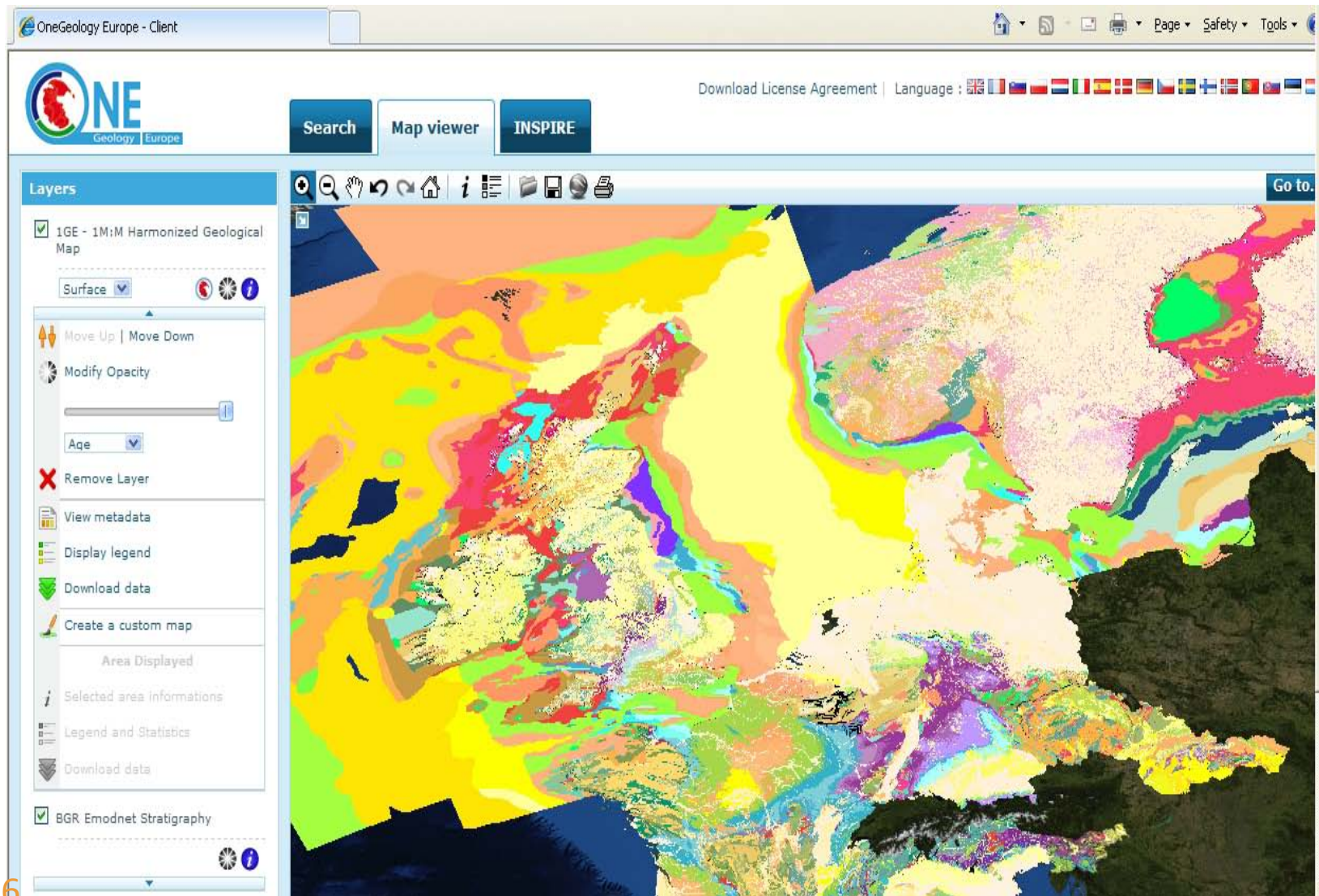
Bedrock lithology layer





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Bedrock stratigraphy layer



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[Search](#)
[Map viewer](#)
[Metadata folder](#)
[Download License Agreement](#) | Language :

Discovered datasets

✖ Emodnet Substrate map

Metadata of the discovered datasets and services

✖ Emodnet Substrate map

Metadata from GetCapabilities

- Server : EMODNET-Geology

- Online resource : <http://geomaps2.gtk.fi/ArcGIS/services/EMODNET-Geology/MapServer/WMSServer?language=eng>

- Layer name : Emodnet Substrate map

- Abstract : Sea-bed substrate map of the Baltic Sea, the Greater North Sea and the Celtic Seas at 1: 1 000 000 scale. The map is collated and harmonised from substrate information within the EMODNET-Geology project. The current map is collated from more than 200 separate sea-bed substrate maps. Where necessary, the existing substrate classifications (of individual maps) have been translated to a scheme that is supported by EUNIS. This EMODNET reclassification scheme consists of four substrate classes defined on the basis of the modified Folk triangle (mud to sandy mud; sand to muddy sand; coarse sediment; mixed sediment) and two additional substrate classes (diamicton, rock). The project will continue until July 2012 and further modifications may be made. This draft version was produced in 30.08.2010.

- Access constraints : The dataset has been compiled at 1:1 000 000 scale from background information that may have been compiled at a more detailed scale. The map therefore gives an overview of the marine regions in question. It is not suitable for local or regional scale analysis. Copyright: European Community represented by the European Commission. The holders of the intellectual property rights (IPR) to the data, which existed prior to the Contract being entered into, are the EMODNET-Geology partners. The EMODNET-Geology partners (the IPR holders) give no warranty, condition or representation as to the quality, accuracy or completeness of the data, information, or service, or its suitability for any use or purpose. All implied conditions relating to the quality or suitability of the information, and all liabilities arising from the supply of the information (including any liability arising in negligence) are excluded to the fullest extent permitted by law.

- Descriptive keywords : Substrate, Baltic Sea, North Sea, Celtic Sea, Northern Europe, EuroGeoSurveys, OneGeology-Europe, Harmonised data

- Extent (lat lon bounding box) :



Legend



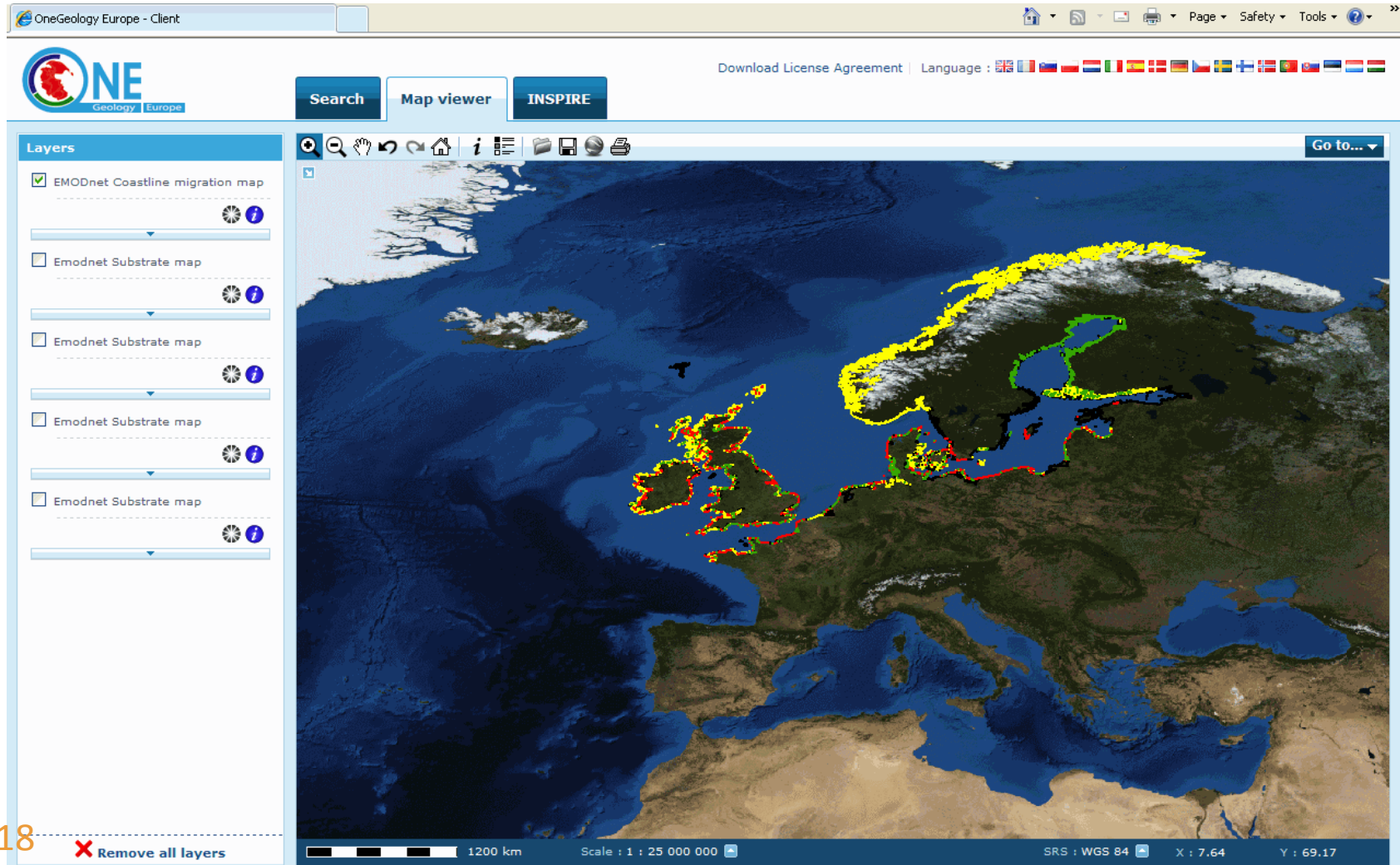
Contact

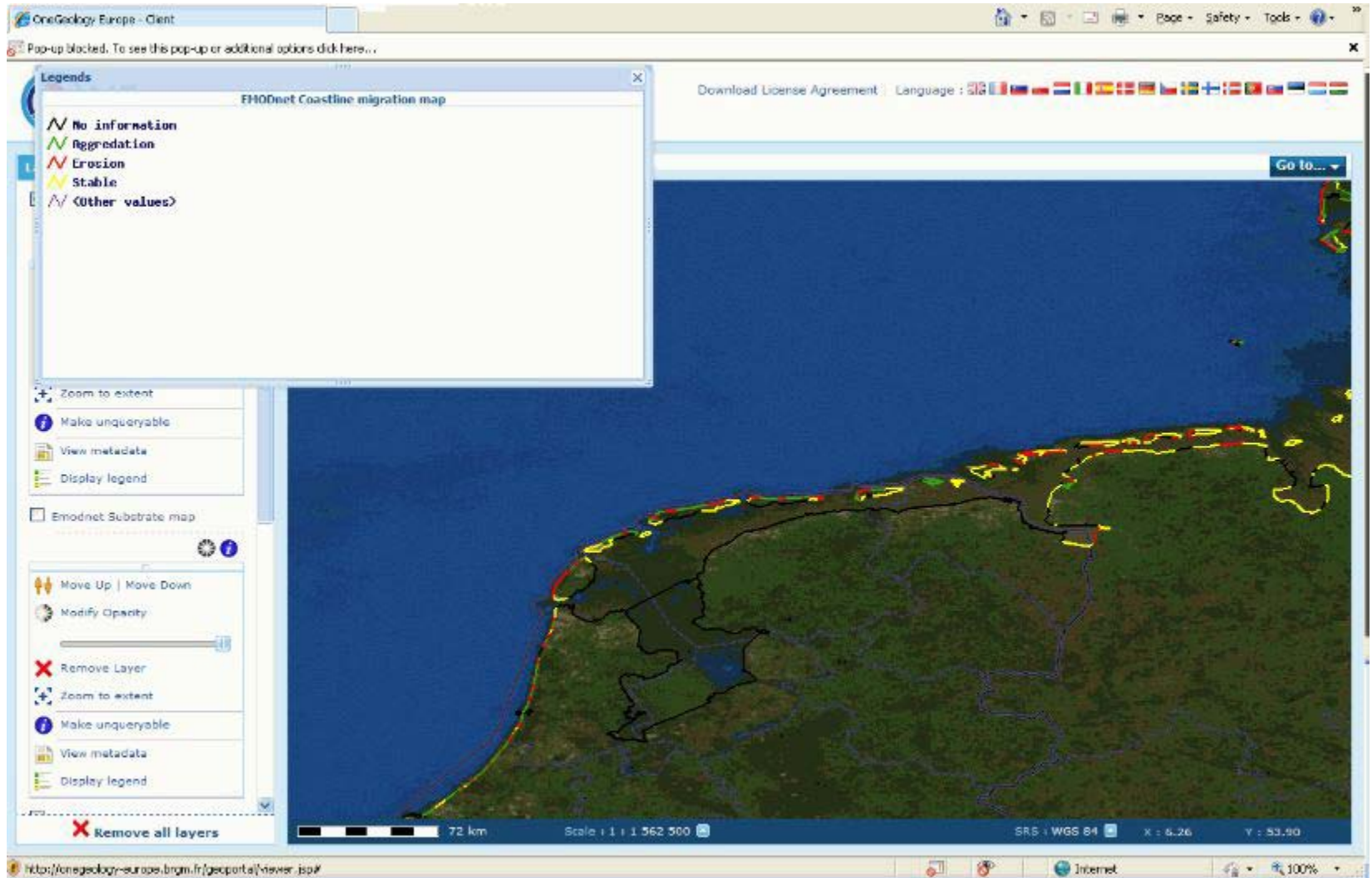
- Address : Aarno Kotilainen
Geological Survey of Finland
P.O. Box 96
FI-02151 Espoo
Finland

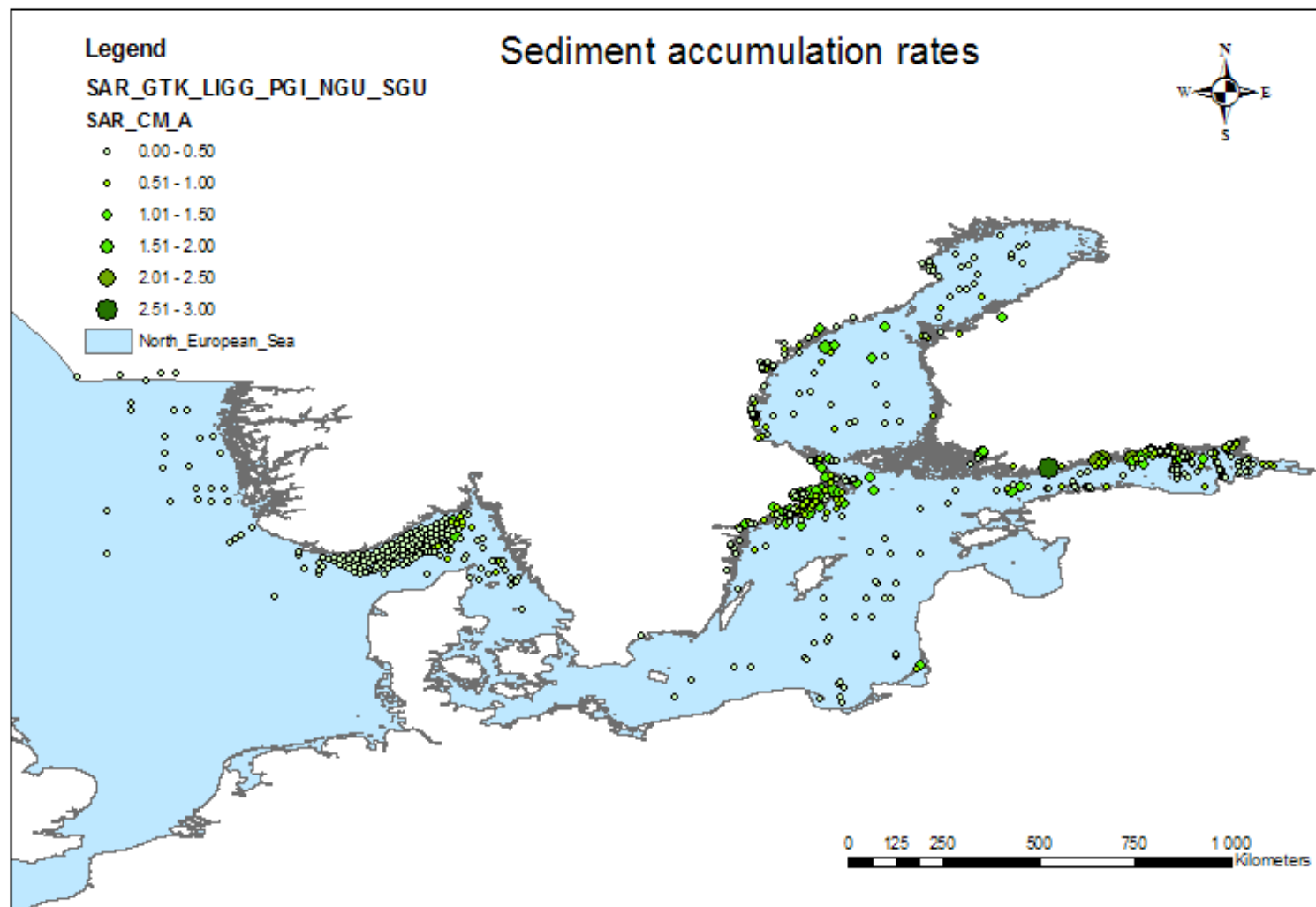
- @mail : aarno.kotilainen@gtk.fi

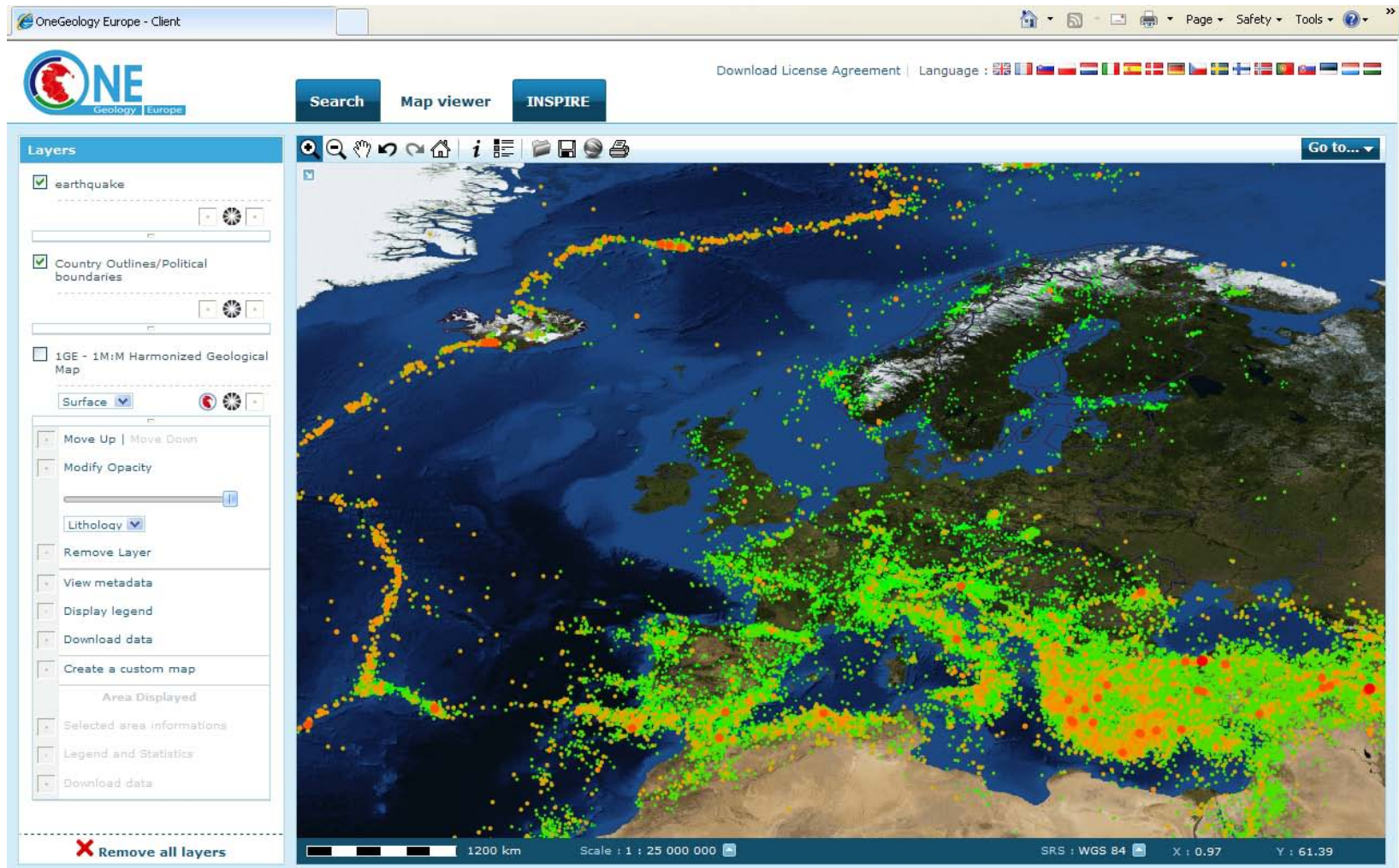


EUROSION data used, complemented by data from Norway. Updates of EUROSION have been provided by Lithuania, Belgium and Poland

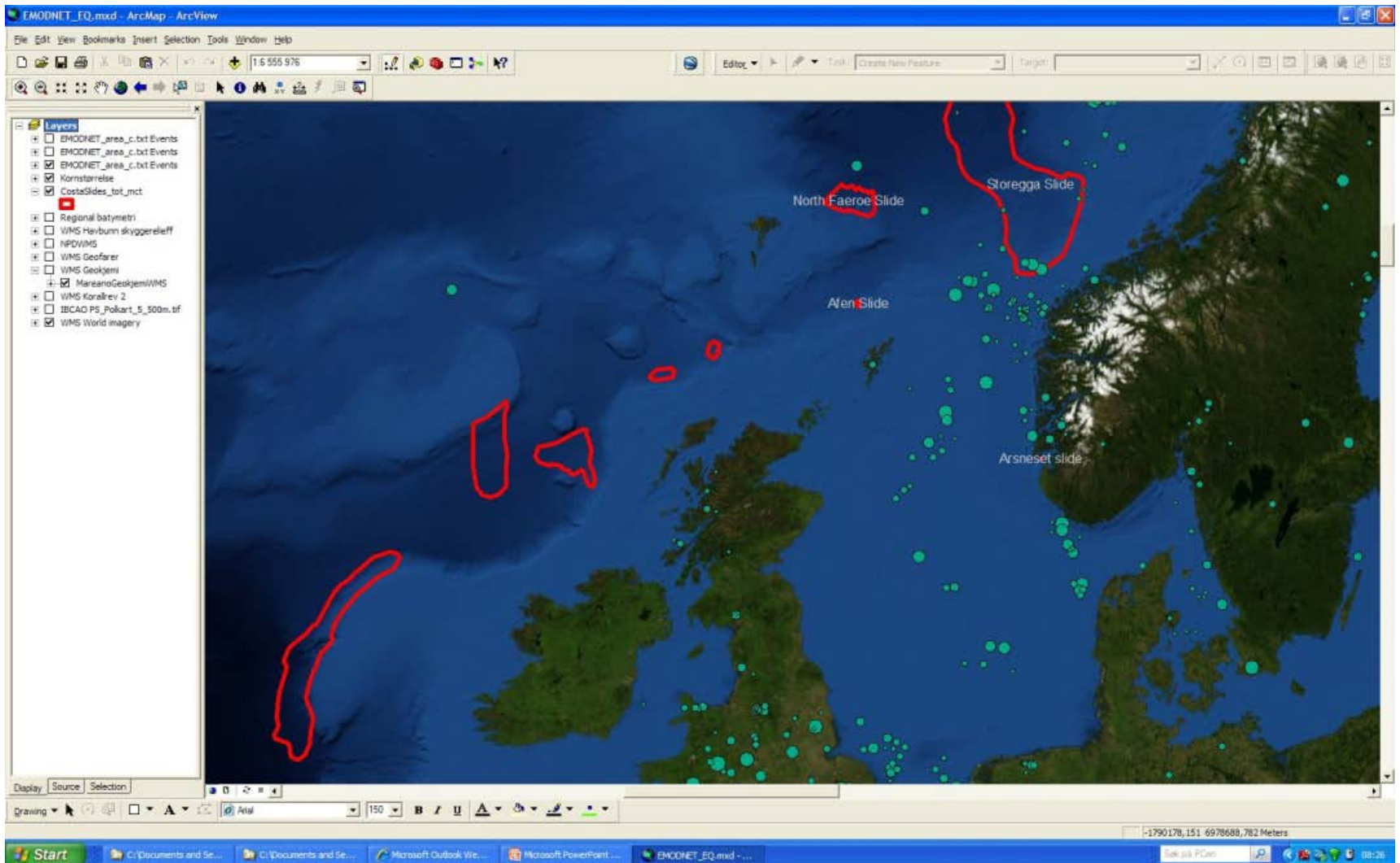


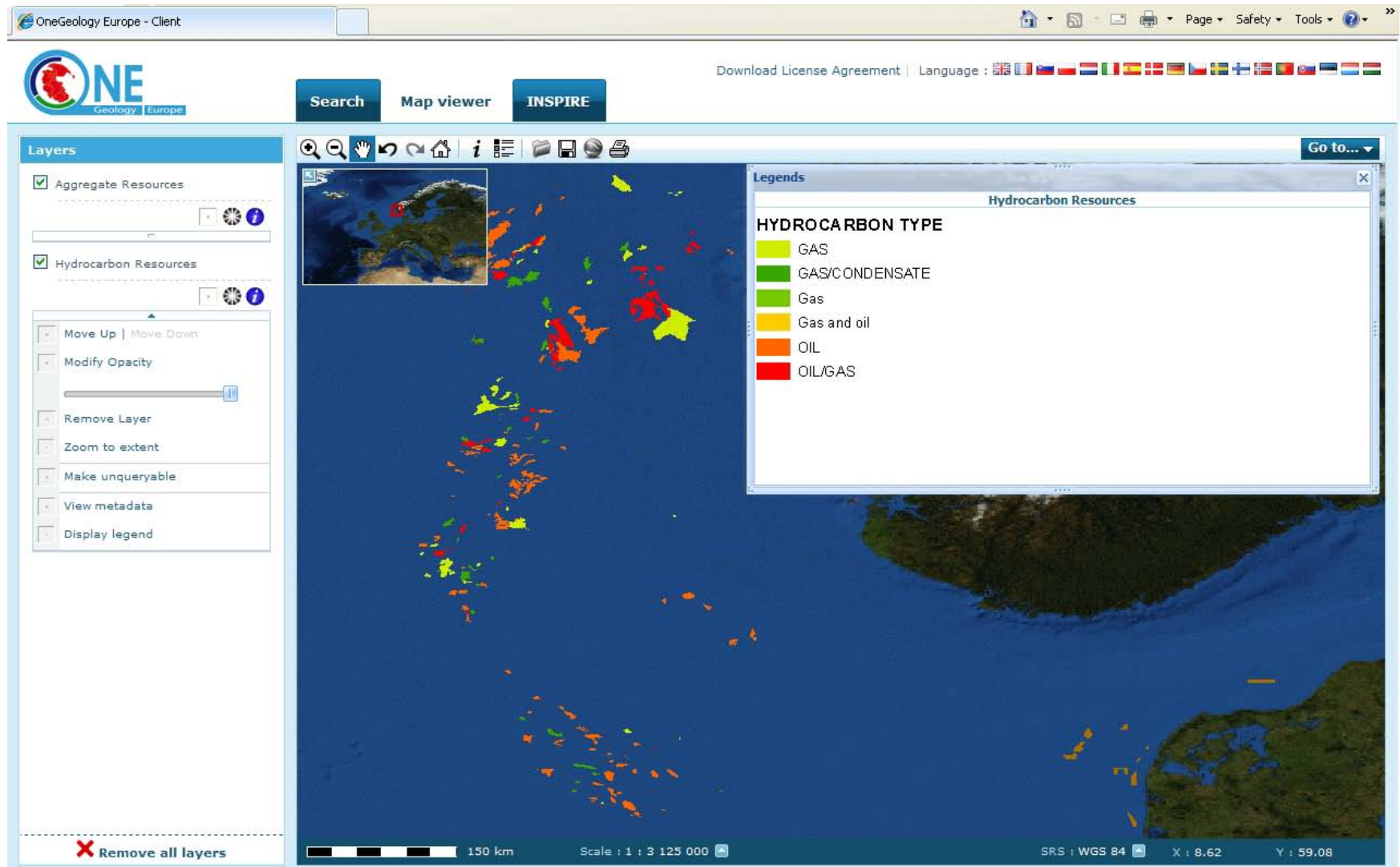






21 Courtesy of European Mediterranean Seismological Centre (EMSC)







- National programmes
 - German Federal Fishing Authority
 - Finnish Initial Assessment on the Current State of the Marine Environment of the Baltic Sea (preparation of MSFD)
 - Lithuanian Ministry of Environment
- Other EC-funded projects
 - EUSeaMap
 - MARSUNO (Maritime Surveillance in the Northern Sea Basins)
 - BLAST (Bringing Land and Sea Together)
 - SEABED (Phosphorus from the seabed and water quality)
 - South Baltic Programme (OFFER - Wind Energy in the Baltic Sea Region)
 - OneGeology-Europe
- Others
 - European Marine Sand and Gravel Group



Impact

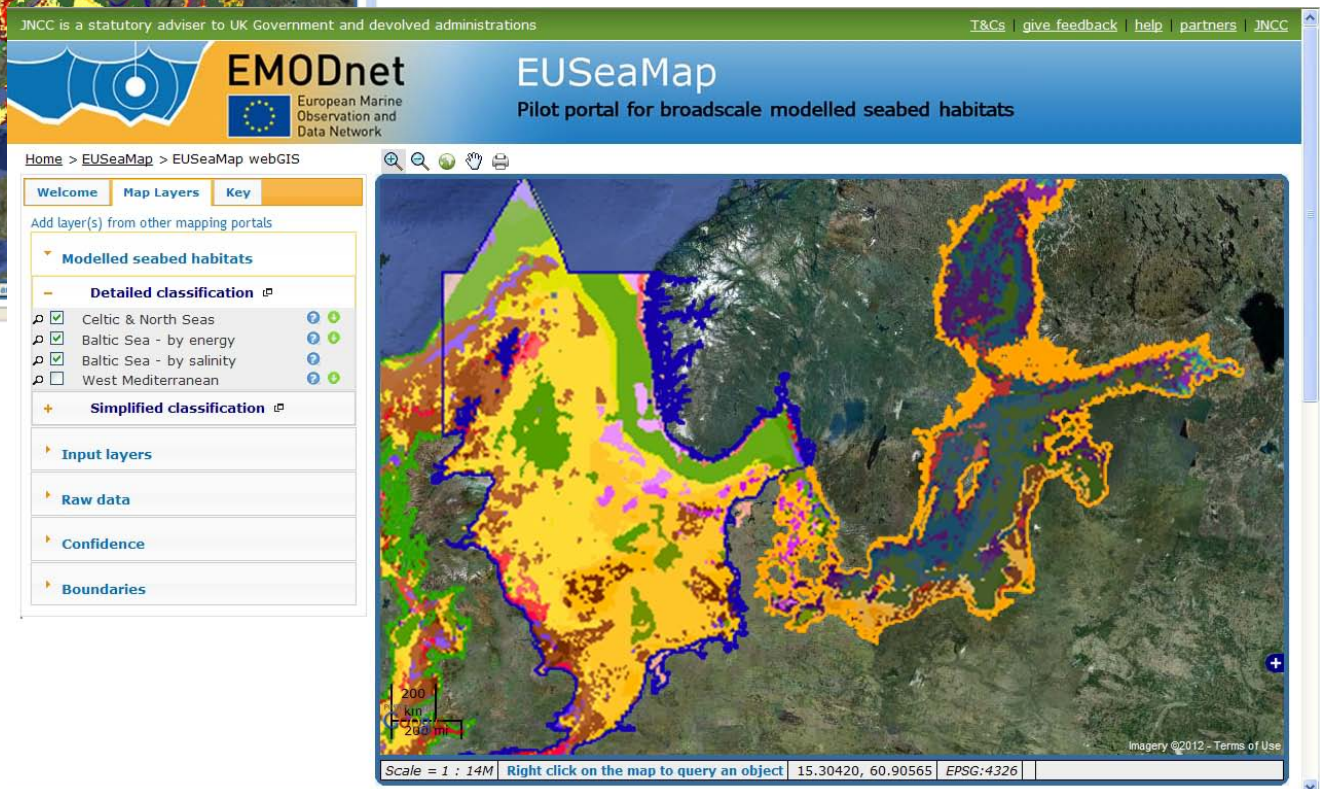
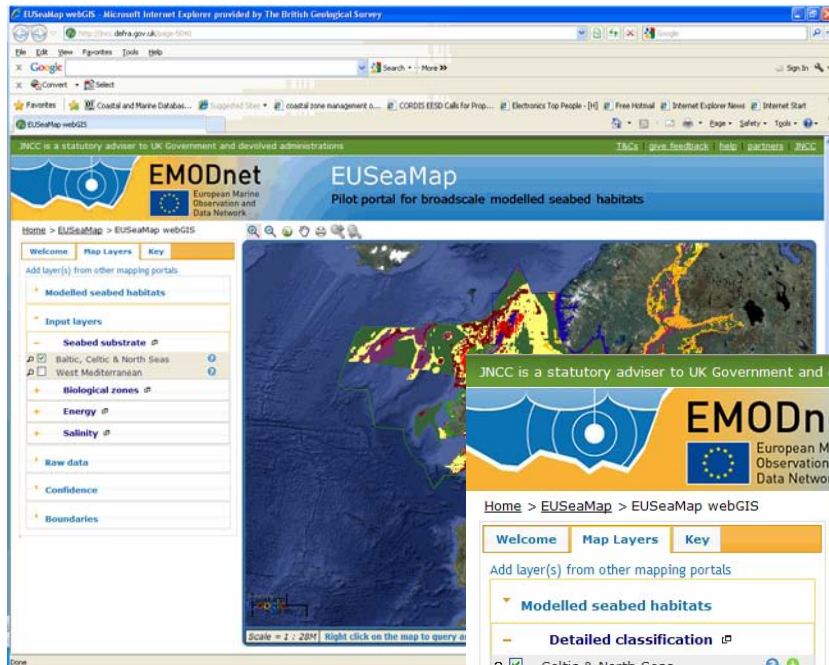
Maria Damanaki, European Commissioner for Maritime Affairs and Fisheries speaking at opening of the EurOcean 2010 Conference

Making data easy to find is our first priority. Preparatory actions under the Integrated Maritime Policy have therefore been exploring how consortia of laboratories could set up thematic assembly groups that would gather data collected within one sea basin, process them and make them available to all stakeholders. **For instance European national geological surveys have joined together to produce the first continuous seamless data layers of seafloor sediments in the Baltic, North Sea and Celtic seas. Another consortium is using this information to set up the first consolidated coherent European map of sea-bed habitats.**



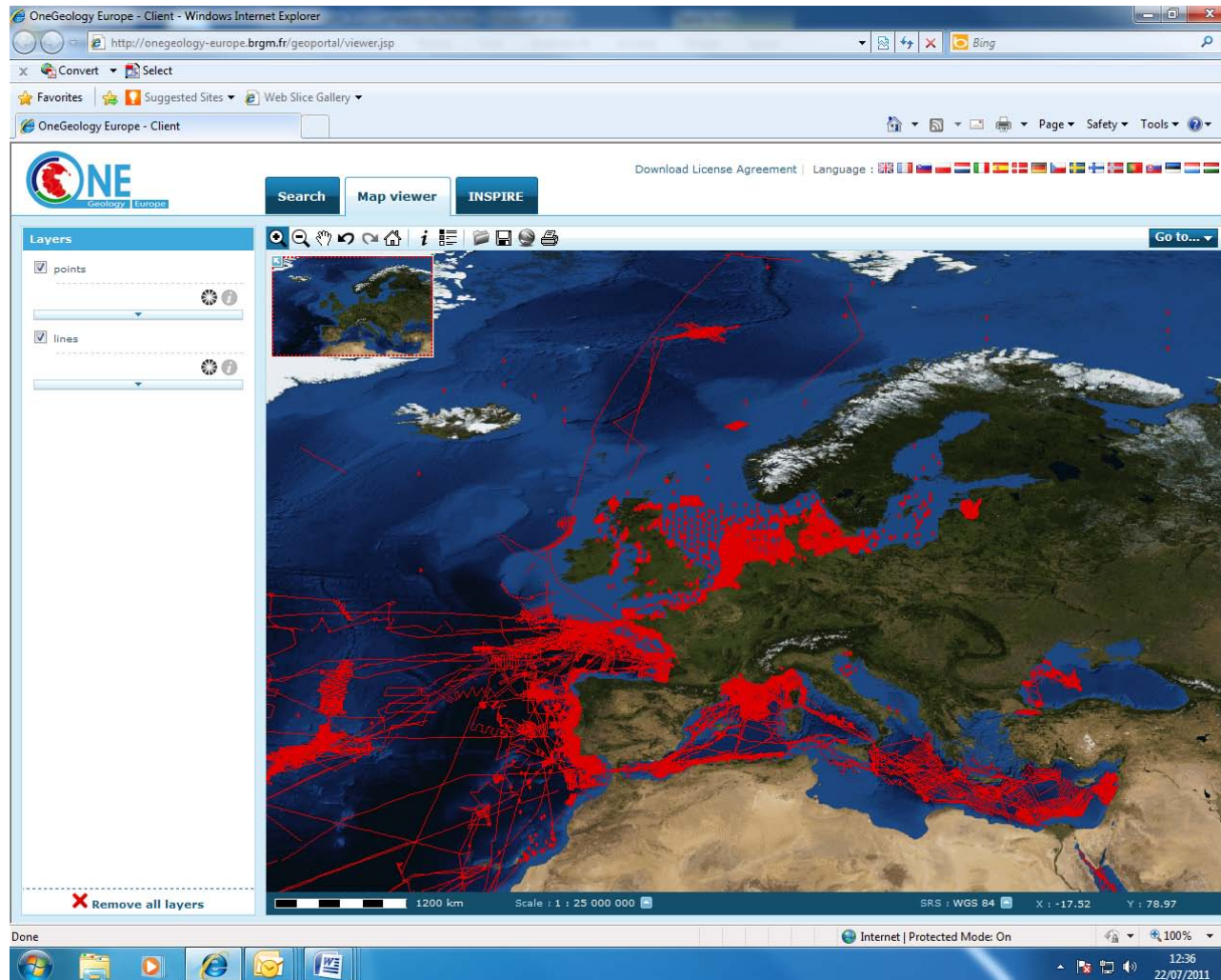
EMODnet

EUSeaMap





1G-E portal: importing WMS services from Geo-Seas





1G-E portal: importing WMS services from other EMODNET lots: EUSeaMap

The screenshot displays the EMODnet 1G-E portal interface, which is a web-based map viewer. The interface includes a top navigation bar with the EMODnet logo, a search bar, and buttons for 'Map viewer', 'INSPIRE', and 'Metadata folder'. A language selection bar is also present. The main map area shows a satellite view of Europe with a red dashed box indicating a zoomed-in area. The left sidebar contains a 'Layers' panel with a list of available layers, including 'Biological Zones - Mediterranean', 'Biological Zones - Baltic Sea', 'Biological Zones - Celtic and North Seas', 'Country Outlines/Political boundaries', 'Biological Zones - Celtic and North Seas', 'EMODnet Coastline migration map', and '1G-E - 1M:M Harmonized Geological Map'. The '1G-E - 1M:M Harmonized Geological Map' layer is selected, and its 'Surface' sub-layer is visible. The map viewer includes a scale bar (0 to 600 km) and a status bar at the bottom showing the scale (1:12 500 000), SRS (WGS 84), and coordinates (X: 10.30, Y: 36.59).

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Geo-Seas, Cork, October 9-10 2012



1G-E portal: importing WMS services from other EMODNET lots: Hydrography

The screenshot displays the EMODnet 1G-E portal interface. At the top, there is a navigation bar with the EMODnet logo, a search bar, and buttons for 'Map viewer', 'INSPIRE', and 'Metadata folder'. A language selection menu is also present. The main content area is divided into a left sidebar and a central map viewer. The sidebar contains a 'Layers' panel with a list of layers: 'polygons', 'lines', 'points', and 'MARIS WMS Server - SeaDataNet EMODnet Hydrography'. The 'lines' layer is checked. The map viewer shows a satellite map of Europe with red lines overlaid, representing hydrographic data. A scale bar and coordinates are visible at the bottom of the map. The interface also includes a 'Go to...' button and a 'Download License Agreement' link.



Final Report: Recommendations for full EMODnet

- expand areal coverage of the EMODnet-Geology maps (to include the Bay of Biscay and Iberian coast, Mediterranean, Black Sea, Norwegian Sea, Barents Sea, North East Atlantic, Eastern Gulf of Finland)
- highlight the significance of higher-resolution data quality (particularly multibeam echosounder bathymetry including backscatter)
- secure long-term updating of the geological maps
- improve the spatial resolution (sub-areas), building on the existing work



Final Report: Recommendations for full EMODnet

- increase the resolution of classification, and include different classification schemes for different users of geological data (e.g. bespoke particle-size analysis data for habitat mappers)
- provide coastal behavioural units in more detail (cliffy coasts, sand dunes, estuaries etc..) and incorporate temporal changes
- compile maps of geomorphological features
- include process related to geological data, especially relevant to mobile sediments on the sea floor and coastal units, and include time series (4D, climate change)
- include thematic maps for more users – i.e. aggregate industry, renewable energy industry, fisheries, defence, etc.



Next phase

- Proposal submitted on 10th September
- 36 partners from 30* countries including all European seas.
- Building on preparatory phase but with more detail (1:250,000 scale) and added information (e.g coastal behaviour, Quaternary geology)

*Norway, Sweden, Finland, Russia, Estonia, Latvia, Lithuania, Poland, Germany, Denmark (and Faroes), Netherlands, Belgium, France, UK, Ireland, Iceland, Spain, Portugal, Italy, Slovenia, Croatia, Montenegro, Albania, Greece, Bulgaria, Romania, Ukraine, Turkey, Cyprus and Malta



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