

<https://www.youtube.com/watch?v=7taT9croynk&feature=youtu.be>

Introduction to EMODnet and EuroGOOS

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Marine Data Workshop
15-16 April 2015, Atlantic Hotel, Bremen, Germany



OPEN CALL - EMODnet Seabed Habitats wants your maps!

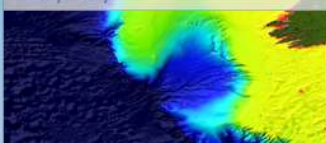
EMODnet Seabed Habitats is seeking to collect and collate seabed habitat maps from third parties wishing to increase the use for their data products. If you have habitat maps that you feel are relevant to EMODnet Seabed Habitats, please visit our [Contributing Data](#) webpage and contact us - we'd be happy to include your habitat map within the dataset.

The European Marine Observation and Data Network (EMODnet) is a long term marine data initiative from the European Commission Directorate-General for Maritime Affairs and Fisheries (DG MARE) underpinning its Marine Knowledge 2020 strategy. EMODnet is a consortium of organisations assembling European marine data, data products and metadata from diverse sources in a uniform way. The main purpose of EMODnet is to unlock fragmented and hidden marine data resources and to make these available to individuals and organisations (public and private), and to facilitate investment in sustainable coastal and offshore activities through improved access to quality-assured, standardised and harmonised marine data which are interoperable and free of restrictions on use.

The EMODnet data infrastructure is developed through a stepwise approach in three major phases. Currently EMODnet is in the 2nd phase of development with seven sub-portals in operation that provide access to marine data from the following themes: bathymetry, geology, physics, chemistry, biology, seabed habitats and human activities. EMODnet development is a dynamic process so new data, products and functionality are added regularly while portals are continuously improved to make the service more fit for purpose and user friendly with the help of users and stakeholders. Should you wish to contribute to the development of EMODnet as a data provider or user, please get in touch with us by sending a mail to info@EMODnet.eu.

[More information about the three development phases of EMODnet](#)

Bathymetry



Data on bathymetry (water depth), coastlines, and geographical location of underwater features: wrecks.

[Read more](#) [Portal](#)

Geology



Data on seabed substrate, sea-floor geology, coastal behaviour, geological events, and minerals.

[Read more](#) [Portal](#)

Seabed Habitats



Data on modelled seabed habitats based on seabed substrate, energy, biological zone, and salinity.

[Read more](#) [Portal](#)

Chemistry



Data on the concentrations of pesticides, heavy metals, and antifoulants, in water, sediments and biota.

[Read more](#) [Portal](#)

Biology



Data on temporal and spatial distribution of species abundance and biomass from several taxa.

[Read more](#) [Portal](#)

Physics



Data on salinity, temperature, waves, currents, sea-level, light attenuation, and FerryBoxes.

[Read more](#) [Portal](#)

Human Activities



Data on the intensity and spatial extent of human activities.

- Introduction to EMODnet
- Introduction EuroGOOS
- Focus on EMODnet Physics
- Hands-on (explore the portals)
- Challenge





Maria Damanaki, previous Commissioner for Maritime Affairs and Fisheries

(..) the data collected through these observations can only generate knowledge and innovation if Europe's engineers and scientists are able to find, access, assemble and apply them efficiently and rapidly. At present this is often not the case.

"You need data but the real challenge is to help scientist access and use it to innovate"

"Observational data can only generate innovation if data is interoperable and accessible"

"Budgets for data collection are enormous compared to budgets for bringing data together"



What is EMODnet?

Network of organisations assembling marine data, metadata & data products from diverse sources within Europe in a uniform way to

- make marine **data** more (i) easily accessible, (ii) free of restrictions on use and (iii) interoperable
- Develop **data products** of common interest
- **Initiated by the European Commission** in response to the EU GP on Future Maritime Policy, launched in June 2006 – now core part of **Marine Knowledge 2020** initiative

Core principles for development

- **Collect data once; use many times** -> reduce costs
 - “Sustainable” funding at a European level
 - **Free and unrestricted access** to data and data products
 - **Build on existing efforts** where data communities have already organised themselves - **develop new initiatives** where necessary to actively fill gaps and breakdown barriers
 - **Put the user first** when developing priorities
 - Develop data **standards across disciplines as well as within** them
 - Process and validate data at different scales: regional, basin and pan-European
 - EMODnet is a programme – not a project
 - **Aim = to unlock fragmented/hidden marine data**
-

Where are we?

2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Phase 1 – limited sea basins											
				Phase 2 - low resolution							
						Phase 3 - multi-resolution					

Phase I (2009-2013) - developed a prototype (so called ur-EMODnet) with coverage of a limited selection of sea-basins, parameters and data products at low resolution;

Phase II (2013-2016) - aims to move from a **prototype to an operational** service with **full coverage** of all **European sea-basins**, a wider selection of parameters and medium resolution data products;

Phase III (2015-2020) - will work towards providing a **seamless** multi-resolution digital map of the **entire seabed of European waters** providing **highest resolution possible** in areas that have been surveyed, including topography, geology, habitats and ecosystems; accompanied by **timely information** on physical, chemical and biological state of the overlying water column as well as **oceanographic forecasts**.

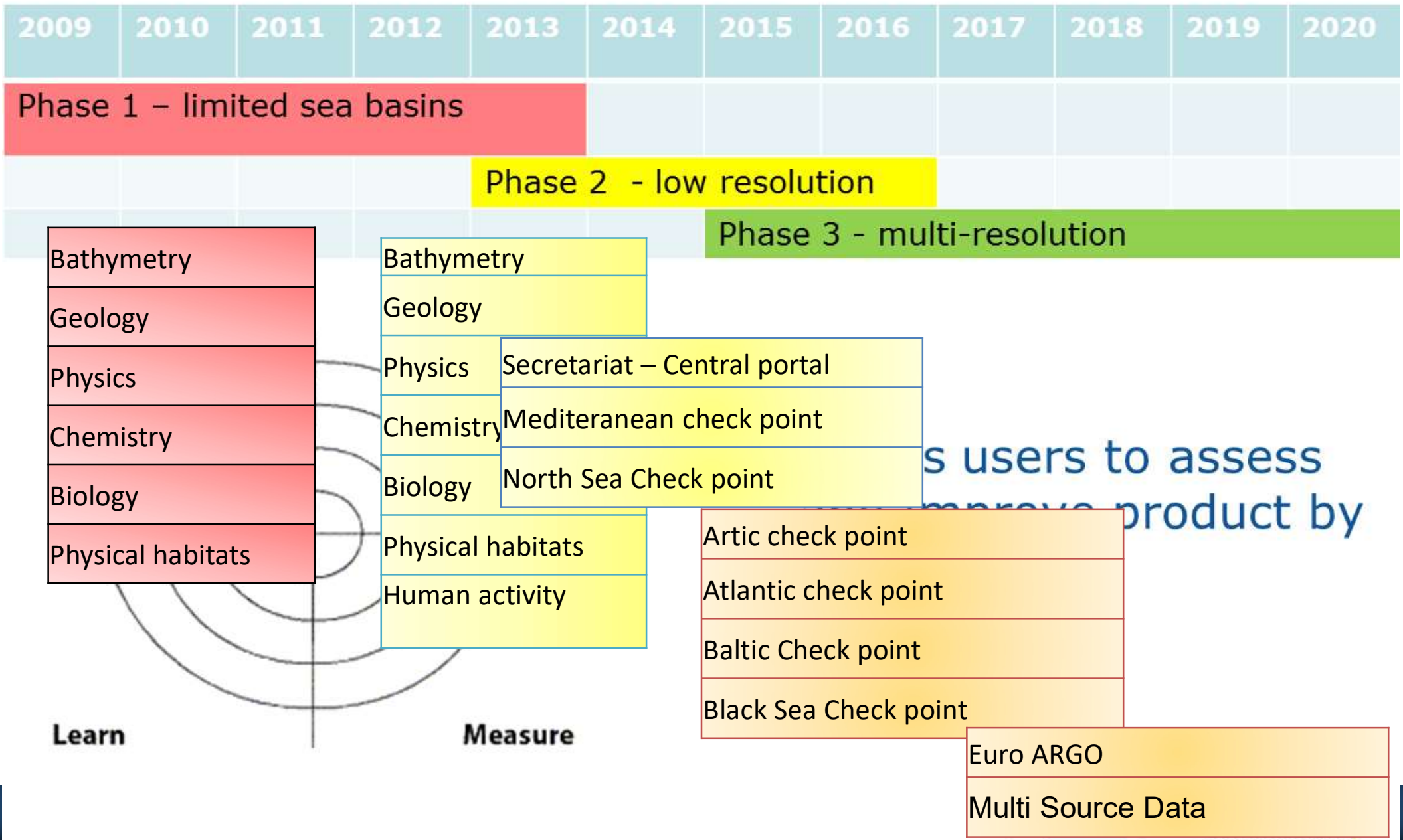


EMODnet



European Marine
Observation and
Data Network

prototype method



EMODnet Secretariat

Hosted by the Flemish Government at the InnovOcean site in Oostende, (Belgium)



European Marine Board

EMODnet Secretariat

UNESCO IOC -IODE

Flanders Marine Institute (VLIZ)



The EMODnet Secretariat

Overarching goal to develop a more efficient, effective, fit for purpose EMODnet which is better known and more widely used

1. Coordination & internal communication

- Steering Committee / internal updates / guide entry portal / support MODEG

2. Monitoring

- Test functionality / implement progress indicators / collect user-feedback / progress reports / report lessons learned / guide portals to improve them

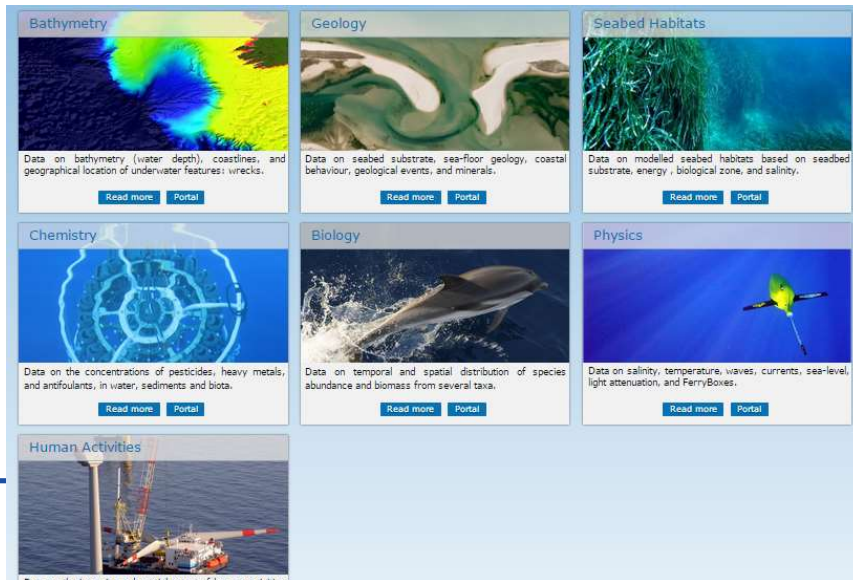
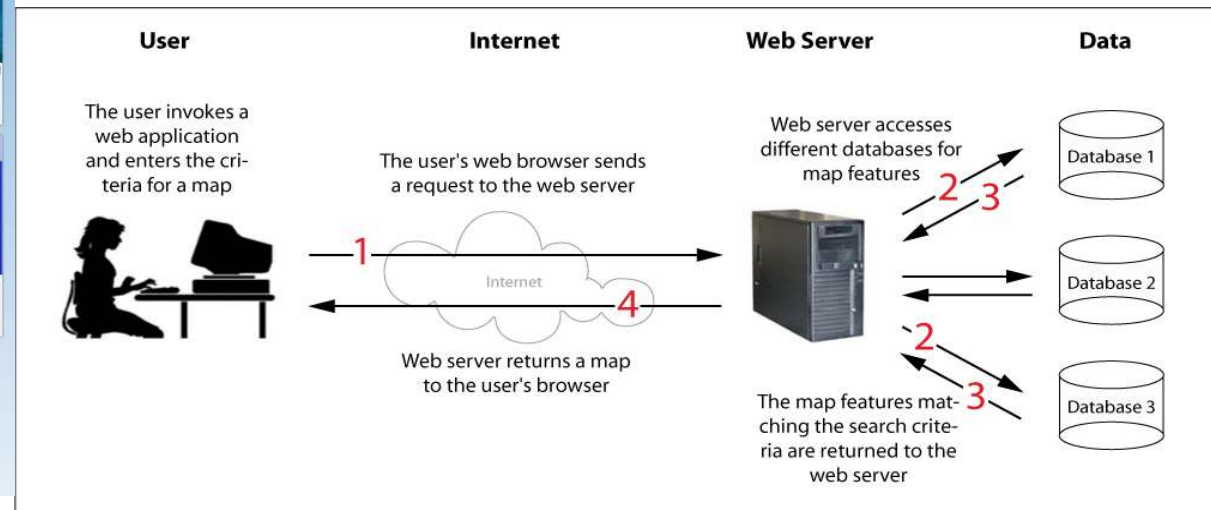
3. Dissemination and Outreach

- Prepare/give on-line demonstrations / videos / brochure/ posters etc.
-

The Central Portal

www.emodnet.eu

- Acts as a gateway to the other thematic and regional EMODnet portals
- Also develops own data products combining data from at least 2 thematic data portals



1. EMODnet Bathymetry

**EMODnet**
European Marine
Observation and
Data Network

Portal for Bathymetry

ApproachMetadata & DataData productsPromotionPartners

» Which sea regions?

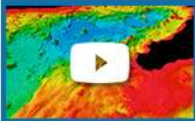
» Which information layers?

» Time frame?

Tools

Contact Extranet

Sitemap Home



New EMODnet DTM released with higher resolution of 1/8 * 1/8 arc minutes grid. Please have a look at the 3D fly thru of the Tyrrhenian Sea.

Home

Welcome to the EMODnet Bathymetry portal

The **EMODnet-Bathymetry portal** is being developed in the framework of the European Marine Observation and Data Network (EMODnet) as initiated by the European Commission. It provides services for discovery and requesting access to bathymetric data (survey data sets and composite DTMs) as managed by an increasing number of data providers from government and research. The portal also provides a service for viewing and downloading a harmonised Digital Terrain Model (DTM) for the European sea regions that is generated by the EMODnet Bathymetry partnership on the basis of the gathered data sources. The image below gives the workflow and direct access to each of the interrelated services.

Survey data sets



[Go TO: CDI Data Discovery and Access service](#)

Composite DTM's



[Go TO: Sextant Catalogue service](#)

Harmonised QA-QC and DTM processing

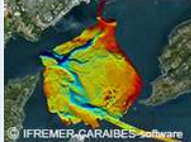
EMODnet DTM



[Go TO: Bathymetry Viewing and Download service](#)



MOW



IFREMER-CARAIBES software

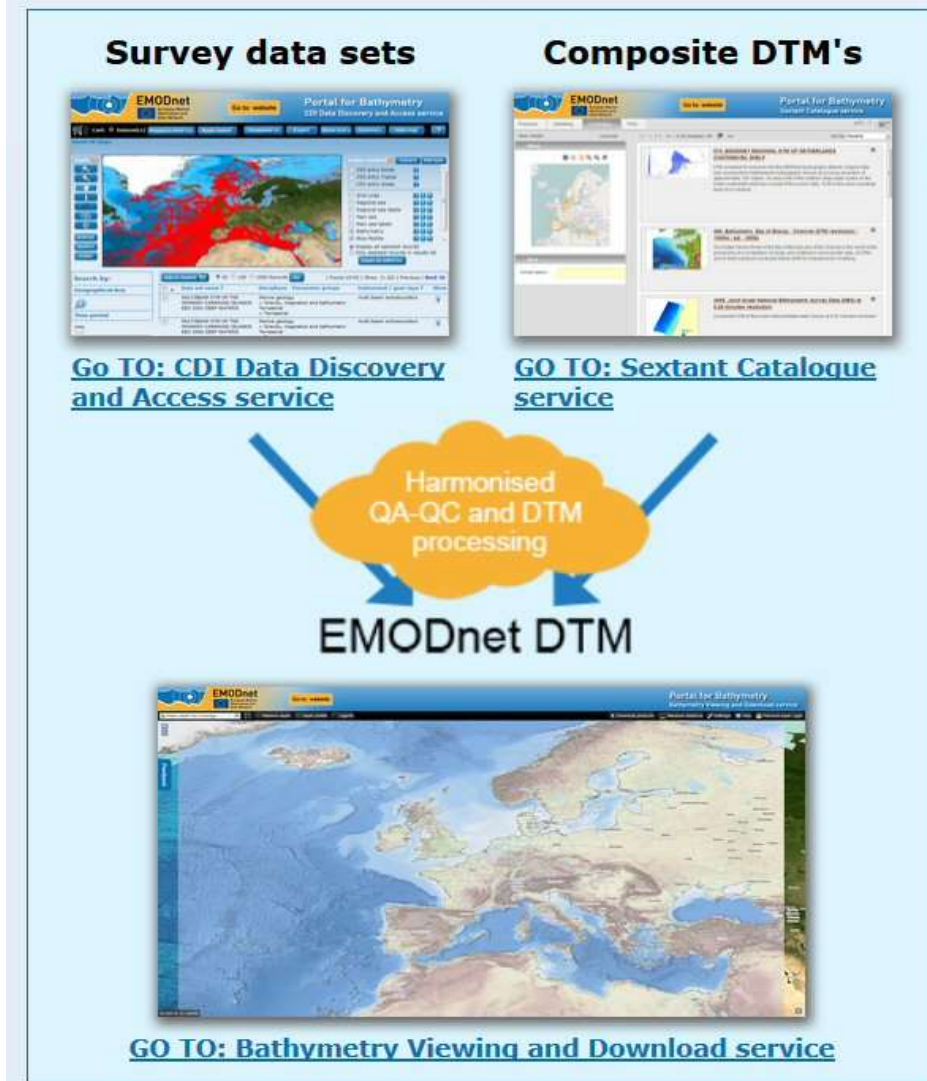
>> More background on EMODnet <<

1. EMODnet Bathymetry (1)

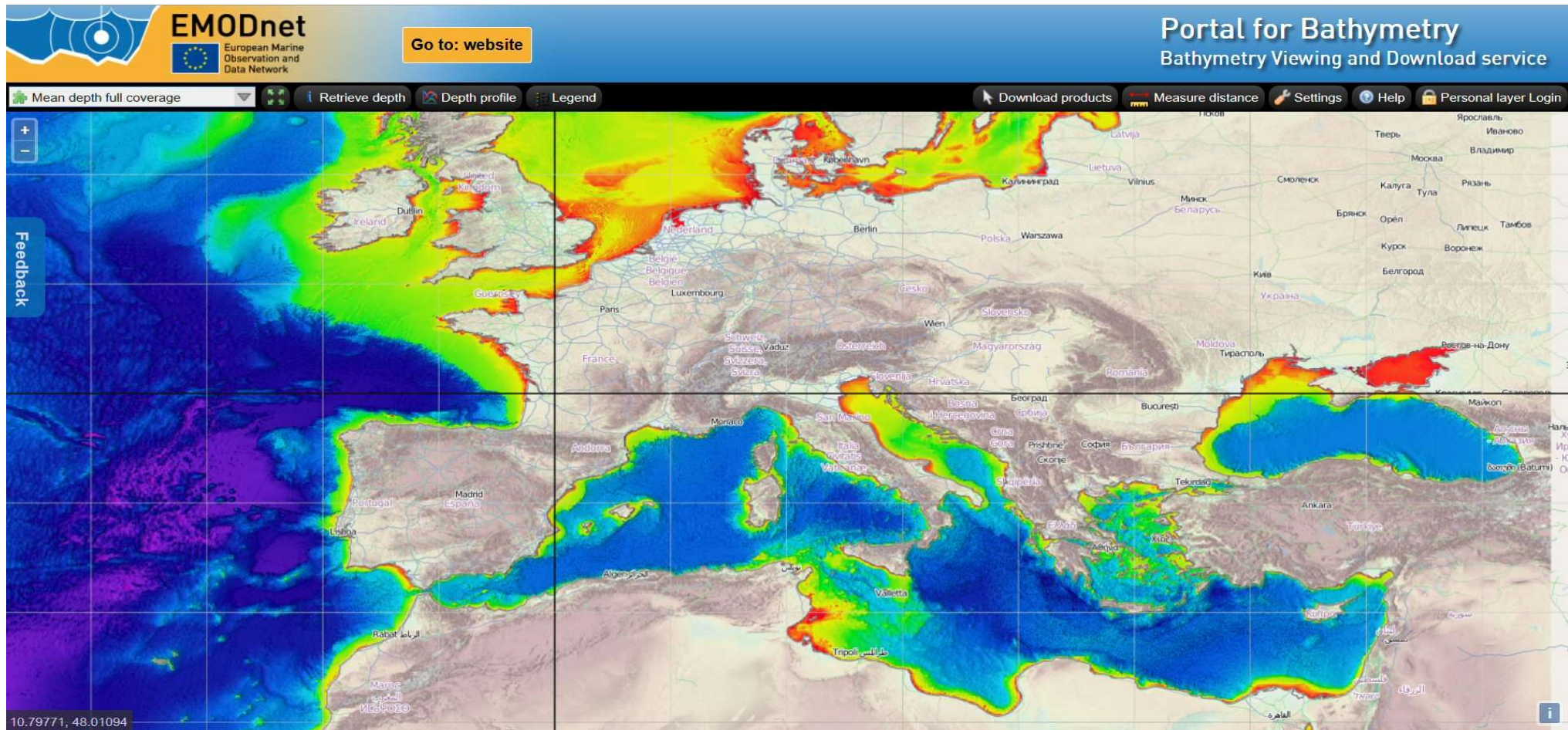
- Providing overview and access to bathymetric survey data
 - Generating and providing free access to a harmonised medium resolution Digital Terrain Model (DTM) for all European seas
 - Data (single beam, multibeam, plummets, LIDAR, ..) comes from national hydrographic services, marine research institutes and industry
 - Adopted SeaDataNet CDI Data Discovery and Access service for survey data sets
-

EMODnet Bathymetry (2)

- > 13.000 surveys indexed
- Makes use of > 6000 survey data sets from 29 data providers from 16 countries
- DTM can be downloaded freely in a range of formats: EMODnet ASCII, ESRI csv, NetCDF, SD, GeoTiff, XYZ
- Various functions for browsing DTM and retrieving information and WMS services
- Next release expected Summer 2015 including high resolution coastal pilots



EMODnet Bathymetry (3)



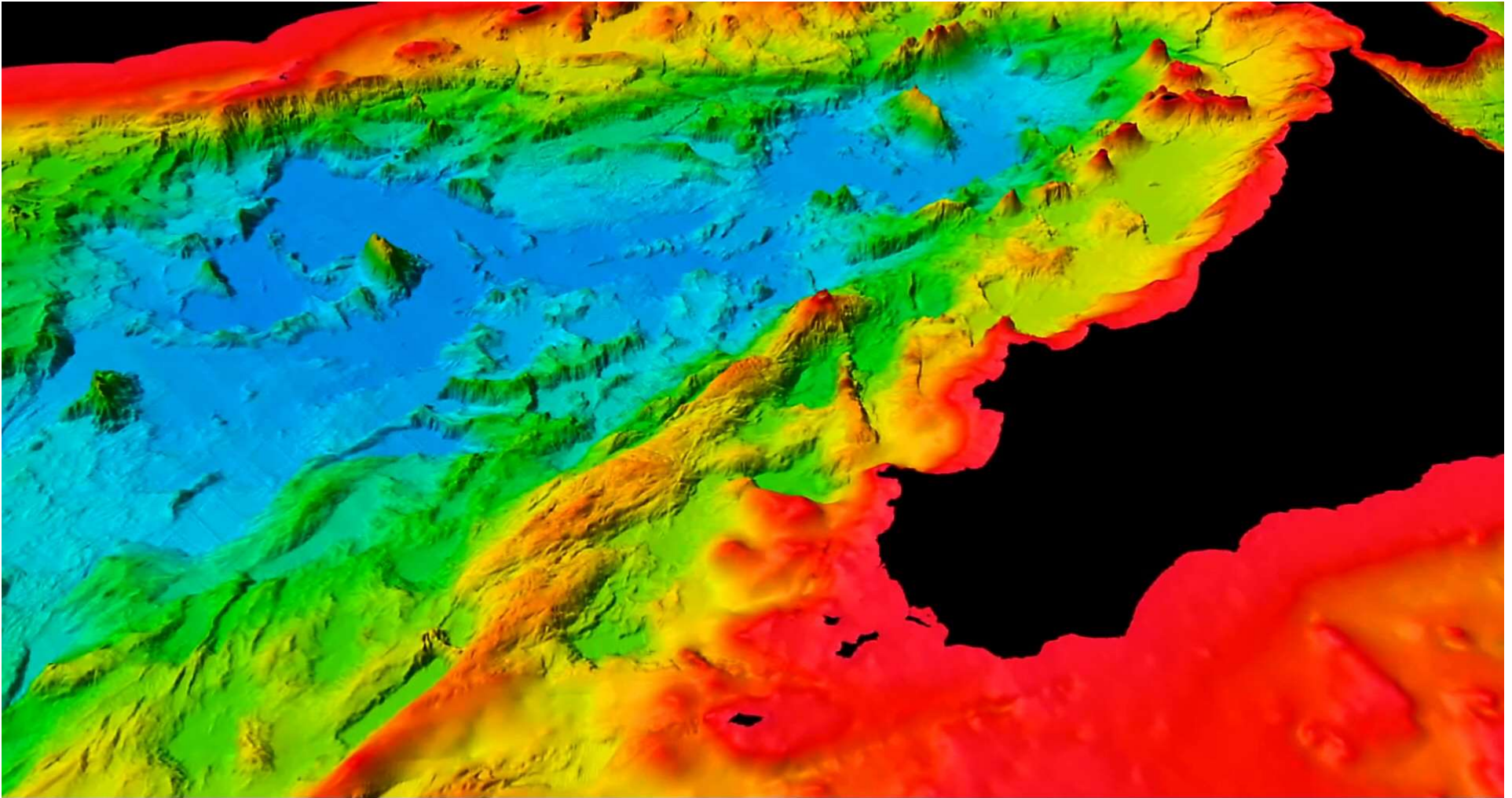
EMODnet DTM in rainbow colour

EMODnet Bathymetry (4)



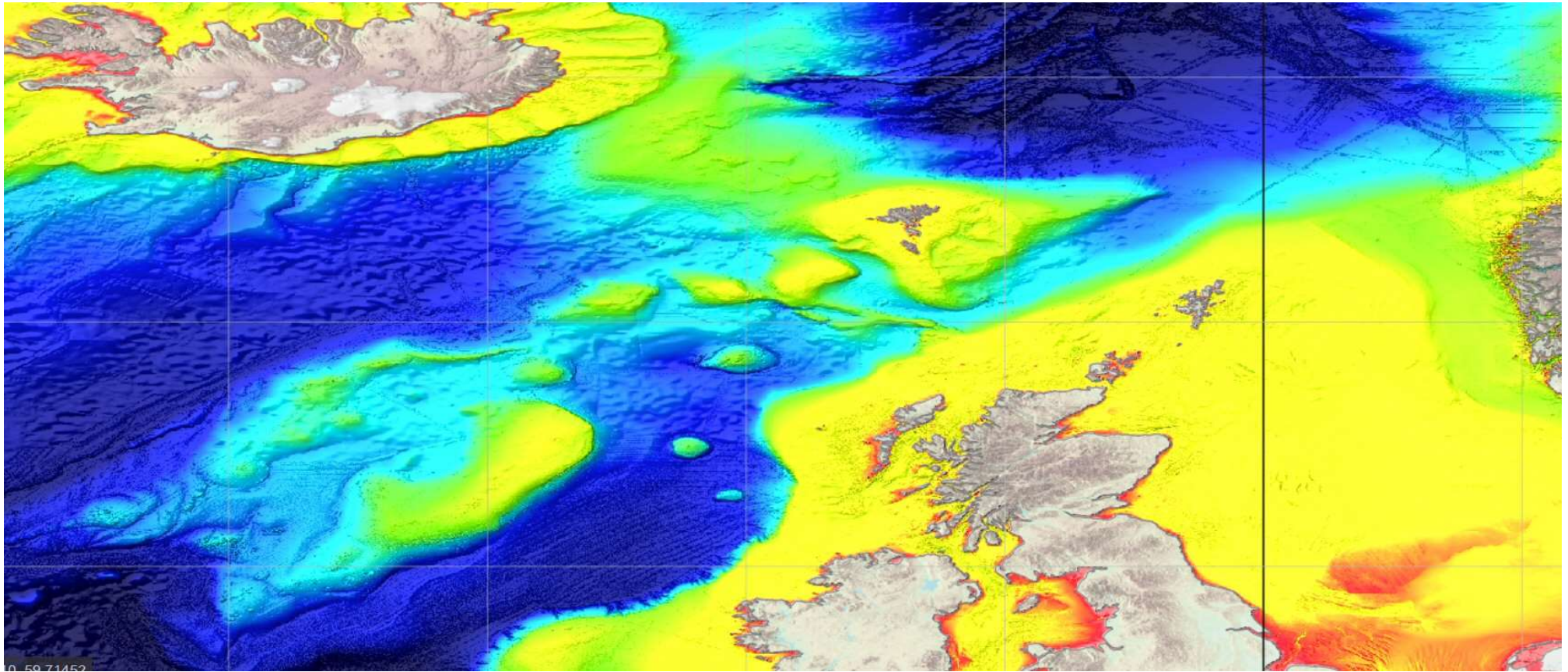
EMODnet DTM detail near Sicily in atlas colour

EMODnet Bathymetry (5)



3D visualization

EMODnet Bathymetry (6)



www.emodnet-bathymetry.eu

2. EMODnet Geology (1)

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Data Network

LOGIN Guest

Geology

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Online data Data for download No direct download show advanced options

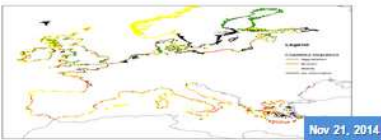
EMODnet-Geology



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.

Read More »



Workpackage 5. Coastal behaviour

To classify the coastal behaviour and typology of each country represented in the project partnership.

Read More »



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.

Read More »

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.

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 the current phase of the project, a portal will be developed that will serve information not only to 1G-E, but to a wider range of marine websites. The 1G-E portal allows the delivery of both onshore and offshore geological information via a single website.

The geology data available includes:

- sea-bed substrate
- sediment accumulation rate
- sea-floor geology
- bedrock lithology
- bedrock stratigraphy
- coastline migration
- mineral resources (oil and gas, aggregates, metallic minerals)
- geological events (earthquakes, submarine landslides, volcanic centres)

Further information about the EMODnet Programme is available on the [EMODnet Central Portal](#).

Tags

continental margin debris flow fjord geologic events geologic hazards
geoscientificInformation infoMapAccessService marine geology mudflow ocean
off-shore landslides sea shelf slide submarine slide

LATEST

BGR Emodnet
Stratigraphy

NGU EMODNET
Submarine
Pillbox Mountain

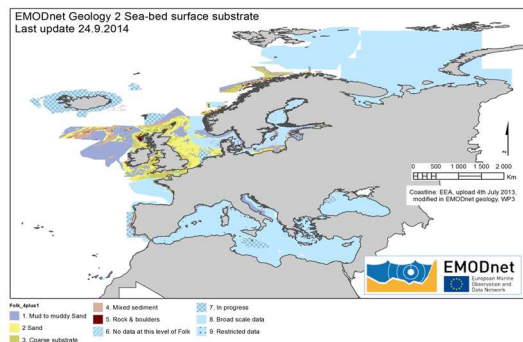
Aggregate
Resources

NGU EMODNET
Submarine
Pillbox Mountain

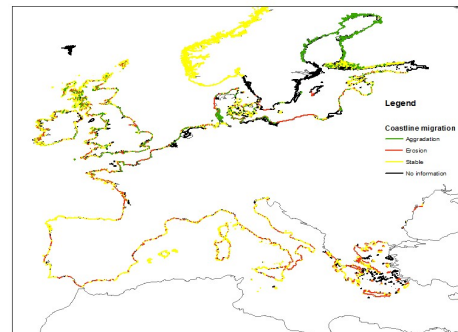
NGU EMODNET
Submarine
Pillbox Mountain

EMODnet Geology (2)

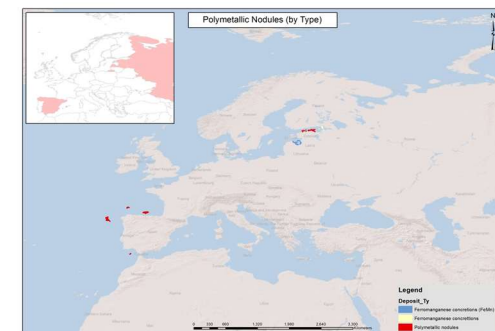
- Portal provides access to information primarily held by national geological surveys:
 - harmonised **sea-bed substrate** and bedrock geology at 1:250,000 scale where available;
 - Information on **coastal behaviour** (migration; erosion; accretion);
 - Locations of earthquake activity, volcanoes, submarine landslides. Links to updated sources of information using WMS;
 - **Mineral localities**; oil and gasfields; aggregate resources.



Seabed substrate



Coastal behaviour



Minerals

EMODnet Geology (3)

- Advantages
 - Central access to **geological information from 30 countries**;
 - Building on **open-source platform** providing access to national geological survey information and to **provide best available data and access to national data catalogues**.
 - Challenges
 - Accessing third party data held by industry, research community etc.
-

EMODnet Geology (4)

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Geology

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Online data Data for download No direct download show advanced options

FILTER

Organizations
TNO Geologische Dienst Nederland (10)
Geological Survey of Norway (8)
Geological Survey of Finland (5)
Marine Information Service (MARIS) (4)
Geological Survey of Ireland (3)
Federal Institute for Geosciences and Natural Resources (3)

Keywords
geoscientificInformation (17)
infoMapAccessService (10)
shelf (8)
continental margin (8)
fjord (8)
ocean (8)
sea (8)
+ Show more

Types
Dataset (25)
Service (11)

Service types
OGC:WMS (10)
OGC:WFS (1)

Scale denominators
240000000 (1)
20 (1)

Years
2015 (32)
2014 (4)

EMODnet2_Geology_WP3_Substrate_250k
Sea-bed substrate map of the European marine areas including e.g. Baltic Sea, Greater North Sea, Celtic Sea, White Sea, Barents Sea, Iberian Coast, Mediterranean at 1: 250 000 scale. The map is collated and harmonised from sea-bed substrate information within the EMODNET-Geology 2 project. Where necessary, the existing substrate classifications (of...
Environment


EMODNET_substrate_map_1M
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 indivi...
Environment


Sediment_accumulation_rates
Sediment accumulation rate map of the Baltic Sea and parts of the Greater North Sea. The map is collated and compiled within the EMODNET-Geology project. The current map is collated from more than 600 seabed sediment sampling sites. Estimations of modern sediment accumulation rates (cm/year) are based mainly on the 137Cs that could be used as a ti...
Environment


PREVIEW


www.emodnet-geology.eu

3. EMODnet Seabed habitats (1)



EMODnet

European Marine Observation and Data Network

Seabed Habitats

Home About Access Map Data Contributing Data News MESH Contact us Extranet

f in t



THE MESH WEBSITE HAS MOVED

New home for European Seabed Habitat Maps

The EMODnet Seabed Habitats website provides a single portal for the outputs of the EUSeaMap and MESH projects. Habitat maps from surveys and broad scale predictive habitat maps from European seas are available through the new EMODnet seabed habitats mapping portal. The pages of the MESH website and its excellent guide to marine habitat mapping are still available as an archive.

ABOUT

The EMODnet portal for Seabed Habitats is a free resource for marine habitat data in Europe.

Find out about the EMODnet Seabed Habitats portal, habitat mapping and the EUSeaMap project.

[Read more »](#)

ACCESS DATA

You can view and download habitat maps for European seas through the interactive mapping portal.

Data includes broad-scale predicted habitat maps and detailed habitat maps from surveys.

[Access data »](#)

DOCUMENTS

Find out more about the methods used in producing the EUSeaMap broad-scale habitat maps and see a list of the outputs produced by the EMODnet Seabed Habitats project.

[Read more »](#)

EMODNET CENTRAL PORTAL

The European Marine Observation and Data Network (EMODnet) is a consortium of organisations within Europe that assembles marine data, data products and metadata from diverse sources in a uniform way.

The EMODnet Central Portal provides access to marine data from the following themes: bathymetry, geology, physical parameters, chemistry, biology, human activities and seabed habitats. EMODnet is an initiative from the European Commission's Directorate-General for Maritime Affairs and Fisheries (DG MARE), as part of its Marine Knowledge 2020 strategy.

See the EMODnet Central Portal website for more.

EMODNET NEWS FEED

[WRMarineSpecies] #EurOBIS data in @EMODnet Biology portal now lists #biomass and #abundance <http://t.co/uMc77C0RVK> (hide/show columns on the download tab)
Fri, 10 Apr 2015 14:27

 @WRMarineSpecies [Retweeted by @EMODnet] #EurOBIS data in @EMODnet Biology portal now lists #biomass and #abundance <http://t.co/uMc77C0RVK> (hide/show columns on the download tab)

[EMODnet] Experts discuss if #marine #data in #Mediterranean meets user-needs #EMODnet MedSea Checkpoint <http://t.co/0nnLqyHhc8>
<http://t.co/mgKqOZ4a9>
Thu, 09 Apr 2015 08:33

 @EMODnet Experts discuss if #marine #data in #Mediterranean meets user-needs #EMODnet MedSea Checkpoint <http://t.co/0nnLqyHhc8>
<http://t.co/mgKqOZ4a9>

PARTNERSHIP

The EMODnet Seabed Habitats partnership comprises government agencies and research institutions with proven national and international expertise in marine seabed mapping and modelling.

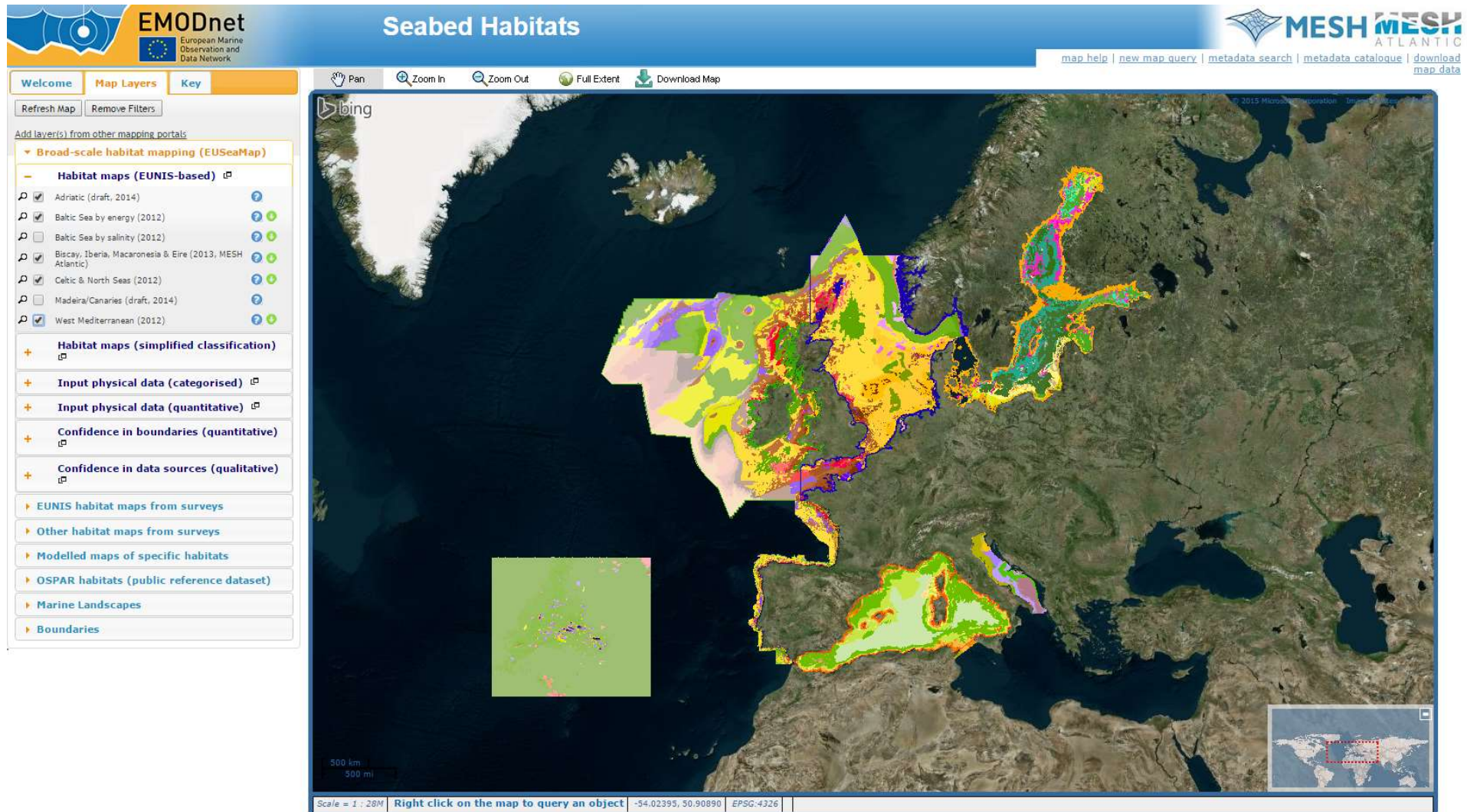
In phase 1 of the project (2009-2012) a consortium of seven partners from five countries joined together, led by the UK government's nature conservation advisor (JNCC). In phase 2 (2013-2016) a consortium of nine partners from nine countries is working together, under the leadership of French research institute Ifremer.

[Read more »](#)

3. EMODnet Seabed habitats (2)

- Building on the highly successful INTERREG IIB-funded [MESH](#) and [BALANCE](#) projects, EUSeaMap phase 1 (2009-2012)
 - The portal presents predicted broad-scale habitat maps Based on:
 - Maps from surveys
 - Modelled distributions of single habitats (e.g. Mediseh, Habmap)
 - Habitat sample data (e.g. Ospar's) - no biology in map form! (only samples)
 - Data come from?
 - A number of single organizations (habitat samples)
-

3. EMODnet Seabed habitats (3)



www.emodnet-seabedhabitats.eu

4. EMODnet Chemistry (1)



EMODnet
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Portal for Chemistry

[Home](#) [Data Access](#) [Data Products](#) [Partners](#) [Acknowledgment](#)

[>>Portal Services Map>>](#)

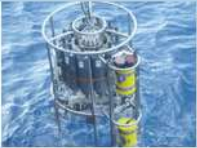
OVERVIEW
PRIVATE AREAS
REPORTS TO EU
MEETINGS
DOCUMENTS

[>>Emodnet Central Portal>>](#)

European Marine
Observation and Data
Network on EU maritime
forum

NEWS

- EMODnet Chemistry 2nd Year Meeting, 15-16 June 2015, Istanbul
- The SeaDataNet TTG and EMODnet TWG meeting 03-04 March, 2015, Trieste (Italy)
- 2nd MSFD-EMODnet meeting 27/02/2015 Brussels
- Data QA/QC and DIVA Products, 3rd September 2014, Paris
- 4th Steering Committee, Amsterdam
- European Atlas

OLD NEWS (show/hide)

PROJECT STATUS

15th of December, 2014

Project management
EMODnet Chemistry started in August 2013. The first annual meeting was organized in Split (Croatia) from 17 to 18 June, 2014 and the first Interim report has been approved by the EU Commission on September 4, 2014.

(read more / hide)

Search by Matrix of Chemicals vs Regions

EMODnet Chemistry has a focus on measurement data for groups of chemical variables. The Matrix below indicates per sea region and per chemicals group by map and table how many measurement data are available. **Hovering over a coloured square** in the table gives the exact number of data sets and a map with their geospatial distribution. **Clicking on a coloured square** triggers a query on the Common Data Index (CDI) Data Discovery and Access service that allows you to browse the metadata of these data sets in more detail, to narrow down your query and to request access to a selection of data sets.



Legend - number of measurement data sets for each variable per marine region.

1-50	51-250	251-1000	1001-2500
2501-5000	5001-10000	10001-25000	>25000

Group of Variables	Greater North Sea - Celtic Sea - Norwegian Sea	Baltic Sea	Iberian peninsula - Macaronesia	Mediterranean Sea	Black Sea - Sea of Azov

4. EMODnet Chemistry (2)

- EMODnet Chemistry has a focus on measurement data for groups of chemical variables.

The screenshot shows the EMODnet Portal for Chemistry website. The header features the EMODnet logo (European Marine Observation and Data Network) and the title 'Portal for Chemistry'. A navigation bar includes links for Home, Data Access, Data Products (highlighted), Partners, and Acknowledgment.

Left Sidebar:

- >>Portal Services Map>>**
 - OVERVIEW
 - PRIVATE AREAS
 - REPORTS TO EU
 - MEETINGS
 - DOCUMENTS
- >>Emodnet Central Portal>>**
 - European Marine Observation and Data Network on EU maritime forum
- NEWS**
 - EMODnet Chemistry 2nd Year Meeting, 15-16 June 2015, Istanbul
 - The SeaDataNet TTG and EMODnet TWG meeting 03-04 March, 2015, Trieste (Italy)
 - 2nd MSFD-EMODnet meeting 27/02/2015 Brussels
 - Data QA/QC and DIVA Products, 3rd September 2014, Paris
 - 4th Steering Committee, Amsterdam
 - European Atlas

Main Content Area:

Data Products

EMODNET regional products are under development. EMODNET data products are obtained with **SeaDataNet DIVA software tool** (Data-Interpolating Variational Analysis). The analyses products are stored as NetCDF CF files and made available as WMS layers for easy browsing and adding. The EMODNET Chemical portal core services give access to the integrated maps of selected parameters.

Viewing and Downloading Service



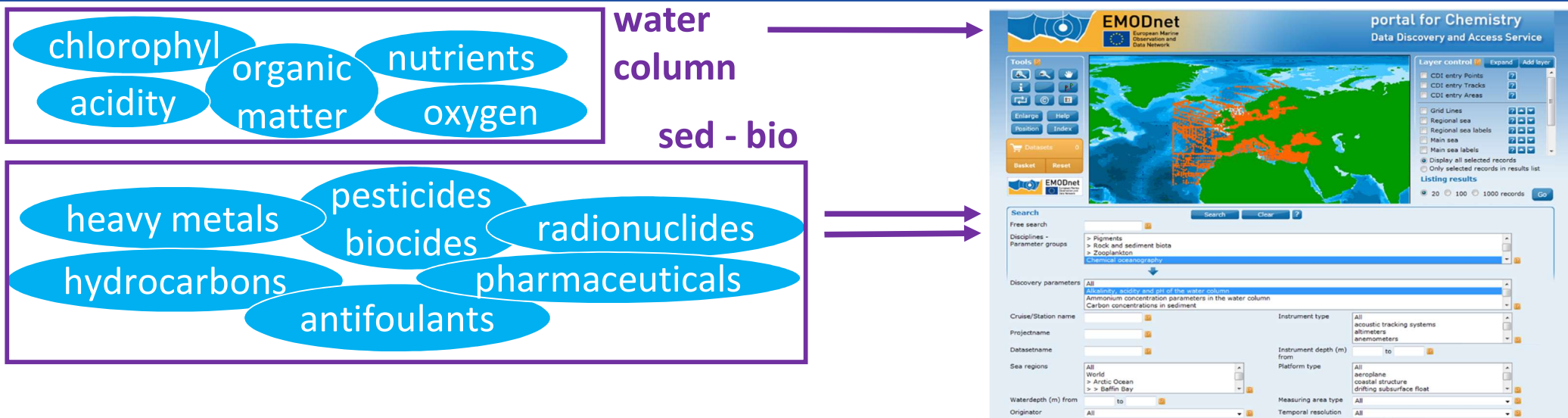
Discovery Service



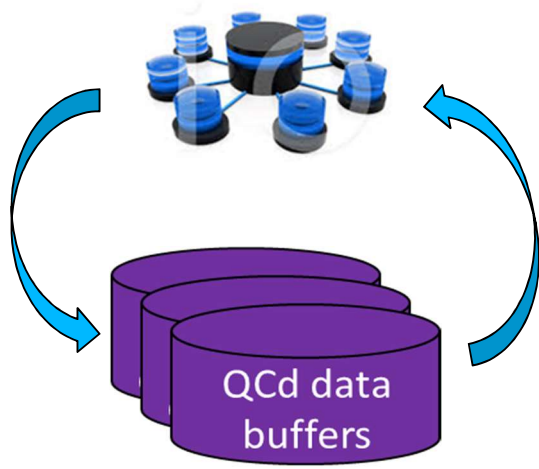
Viewing and Downloading Service help.

A WMS Registry listing all WMS services (NetCDF CF files available as WMS layers, CDI service available as WMS layers providing location of specific observation) guarantees full integration between EMODNET Chemical components (CDI, CAMIOON and VIEWER), but also between the EMODNET portals.

4. EMODnet Chemistry (1)



Methodology for Data Assembly

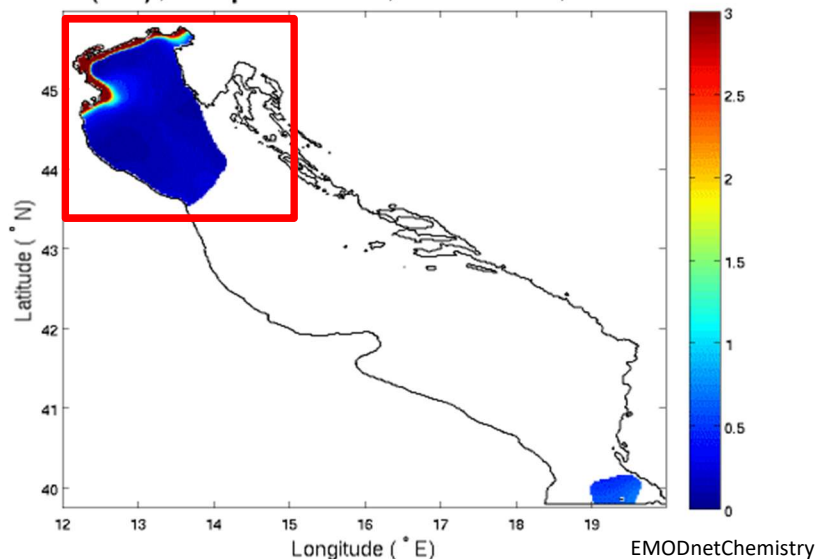


- **DIVA (Data-Interpolating Variational Analysis) concentration maps** for parameters with **homogeneous coverage**, measured at **basin scale**;

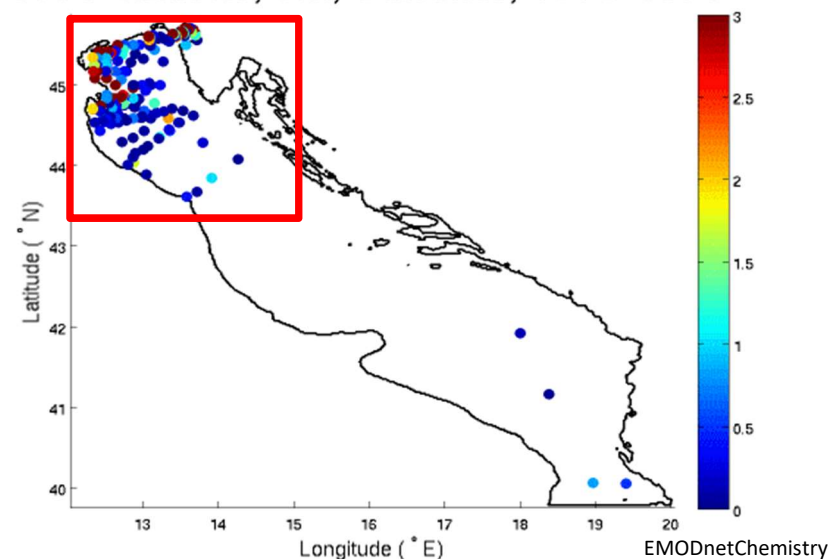
- Dynamic **plots** and coastal visualizations for not homogeneous data (**coastal points** repeated in time, datasets with **fragmented coverage**)

4. EMODnet Chemistry (2)

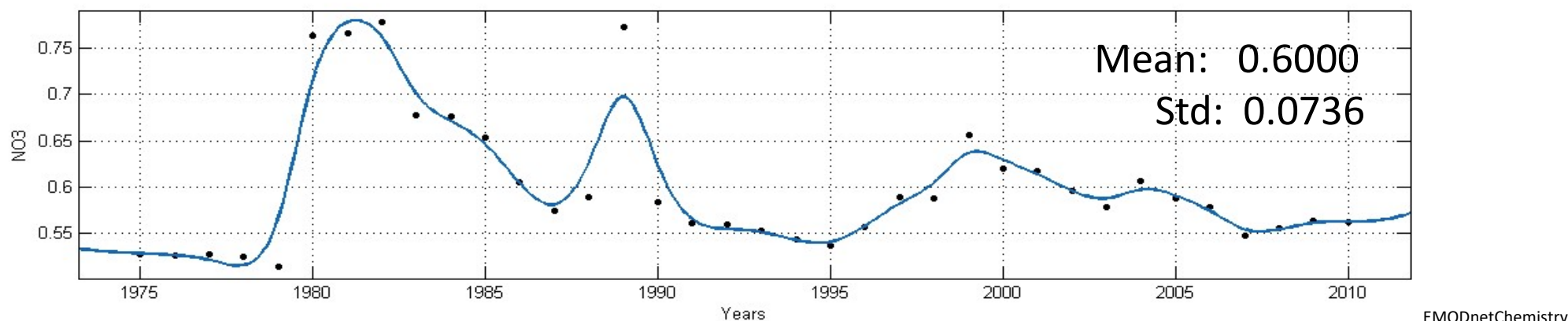
Nitrate (L2), Depth = 0m, Summer, 1970-1979



NO3 stations, 0m, Summer, 1970-1979



Horizontal distribution maps, produced with 10-year moving window



Mean summer NO3 at first 10 m, over the area N43.5-46, E12-15

5. EMODnet Biology (1)


EMODnet
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Biology
 Data Discovery and Access Service

[Data portal](#)
[Data catalog](#)
[Data products](#)
[Partners](#)
[Project](#)
[Contribute](#)

News



World Register of Marine Introduced Species (WRIMS) officially launched
 Added on: 2015-03-16 08:46:20 by Vandepitte, Leon
 WRIMS – a database of introduced and invasive alien marine species – has officially been released to the public. It includes more than 1,400 marine species worldwide, compiled through the collaboration with international initiatives and study of almost 2,500 publications. ... [\[Read more\]](#)



Upcoming: data product workshop
 Added on: 2015-03-06 15:21:49 by Claus, Simon
 A two day technical workshop on the the creation of EMODnet abundance gridded data products will be organised in Oostende 11 and 12 March 2015. On the agenda is also the creation of the Operational Oceanographic Products and Services to facilitate the ICES ecosystem assessments. [\[Read more\]](#)



Gridded abundance data products available
 Added on: 2014-10-07 12:12:18 by Claus, Simon
 A methodology to create the gridded abundance maps, using DIVA (Data-Interpolating Variational Analysis) has been tested. Currently preliminary data products are available for over 40 species from the North Sea, Baltic Sea and North East Atlantic. The products are made for benthos, zoo- and phytoplankton, birds, fish and mammals. [\[Read more\]](#)

[\[Add\]](#) [\[Older news...\]](#)

EMODnet Biology

This project website provides information on the biological project of the European Marine Observation and Data Network and gives access to the marine biological [data portal](#) and [metadata catalogue](#).

Marine biodiversity data are essential to measure and study the ecosystem health of maritime basins. These data are often collected with limited spatial and temporal scope and are scattered over different organizations in small datasets for a specific species group or habitat. Therefore there is a continuous need to assemble these individual datasets, and process them into interoperable biological data products for assessing the environmental state of overall ecosystems and complete sea basins.

The Maritime Policy Blue Book, welcomed by the European Council in 2007, announced that the European Commission would take steps to set up a [European Marine Observation and Data Network](#) to improve access to high quality marine data for private bodies, public authorities and researchers.

- 2009-2012: A set of preparatory actions on biological data, hydrographic data, physical data, chemical data, geological data and broad scale habitats has been launched for a limited set of Sea Basins. It aims at gathering experience for a later permanent operational system. The main objective of the biology project was the development of an online marine biological data portal allowing the access and download of marine biological data across Europe. The biological lot focused on gathering available information and on the temporal and spatial distribution of species composition, abundance and biomass of phytoplankton, zooplankton, angiosperms, macro-algae, invertebrate bottom fauna, bird communities, sea mammals and reptiles. You can [consult the final report](#) of the biology preparatory action.
- 2013-2016: In the follow up project, a consortium of 21 government agencies and research institutes with national and international expertise in marine biological data monitoring and data management will build further upon the work carried out during the biological preparatory action of EMODnet and will deliver data, metadata and data products of surveys in the water column and on the sea bed from phytoplankton, zooplankton, angiosperms, macroalgae, benthos, birds, mammals, reptiles and fish occurring in European marine waters. The EMODnet biological data portal will provide access to different thematic databases and to several long-term national marine biological monitoring datasets from all European regional seas. The project will identify and focus on biological data types, species, species attributes, sampling methods and biological indicators to support the variety of legislations, and will create biological data products to support environmental legislations including the Marine Strategy Framework Directive.



Odontella sinensis



Phoca vitulina



Molgula manhattensis



Gadus morhua



Mnemiopsis leidyi



Morus bassanus



Posidonia oceanica



Clupea harengus



Fulmar glaucus



Ulva rigida



M. norvegica



Chelonia mydas



Bugula simplex



Tursiops truncatus



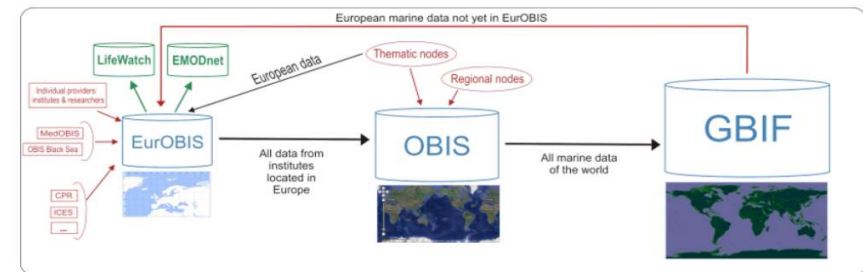
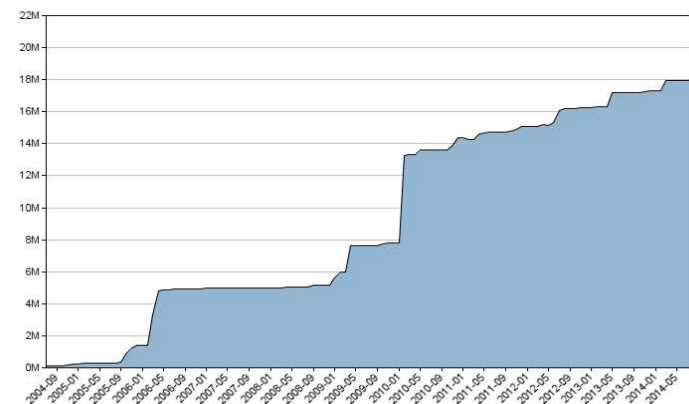
Solea solea



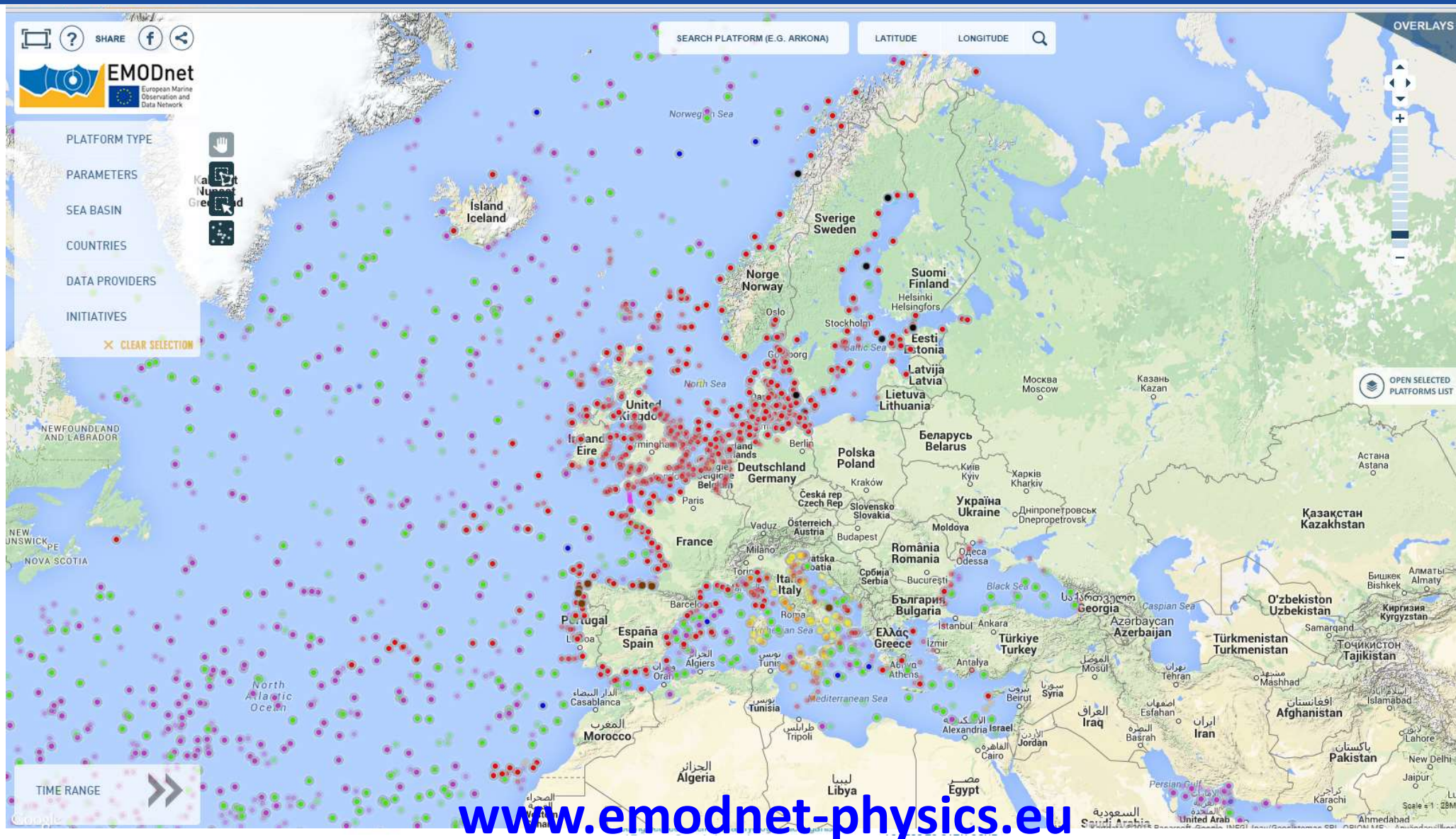
Antedon mediterranea

5. EMODnet Biology (2)

- Data on **temporal and spatial distribution of species abundance and biomass** from several species groups.
- Main components
 - WoRMS
 - EurOBIS-OBIS



6. EMODnet Physics (1)



7. EMODnet Human Activities (1)

**EMODnet Central Portal**
European Marine Observation and Data Network

HomeData PortalsData ServicesSea Basin CheckpointsPartnersAboutSecretariat

Human Activities

[Access the portal!](#)

Objectives

Human Activities is a new Lot not covered in EMODnet Phase I. Its main objective is to disseminate information on the geographical position, spatial extent, and attributes of a wide array of human activities related to the sea and its bed. Particular attention is given to providing historical time series (when possible) to indicate the temporal variation of activities. Through a single entry portal it is possible to view, query and download data and metadata from public and private sources all across Europe. The data is harmonised into interoperable formats that include agreed standards, common baselines or reference conditions; assessments of their accuracy and precision.

Data Sources and Methodology

Since this lot deals with a differentiated set of marine and maritime human activities, a multitude of public and private data sources at EU, international, national, and local level is feeding into our portal. Each partner of the consortium is in charge of surveying existing data sources for a given activity. The approach adopted is that as far as possible each activity should be covered by a single source that can provide data for all EU sea basins. This makes it possible to obtain complete and already harmonised datasets, thus reducing the risk of data gaps. When it is not possible to have a single source covering an entire activity, of course national and local sources will be surveyed. In addition, as a general rule, EU and other public sources are privileged in order not to duplicate existing initiatives, ensure data continuity and reliability, and provide data with as few restrictions as possible.

Data Products and Services

Users can view, query, and download datasets or subsets of them, via web GIS. Metadata are also available for download. The portal offers access to the following datasets:

[see available datasets](#)

Technical Infrastructure

The portal is based on free, open-source technology, using both MapServer and OpenLayers. MapServer is used as the geographic data rendering engine. MapServer is designed to render vector and raster data using advanced cartographic output. OpenLayers is a map viewing library that provides a JavaScript API which makes it easy to incorporate maps from a variety of sources into a webpage or application and configure map tools. The portal uses MySQL database technology to hold and serve the GIS data. Web Feature Services will be used to allow request for geographical features across the web using platform-independent calls.



Leading Partner



Total no. of partners 6

Data Available

- Hydro-carbon Extraction
- Ports
- Aggregate Extraction
- Dredging
- Fisheries Zones
- Protected Areas
- Waste Disposal
- Other Forms of Area Management / Designation
- Wind Farms

Back to Data Portals

[Hydrography](#)[Geology](#)[Seabed Habitats](#)

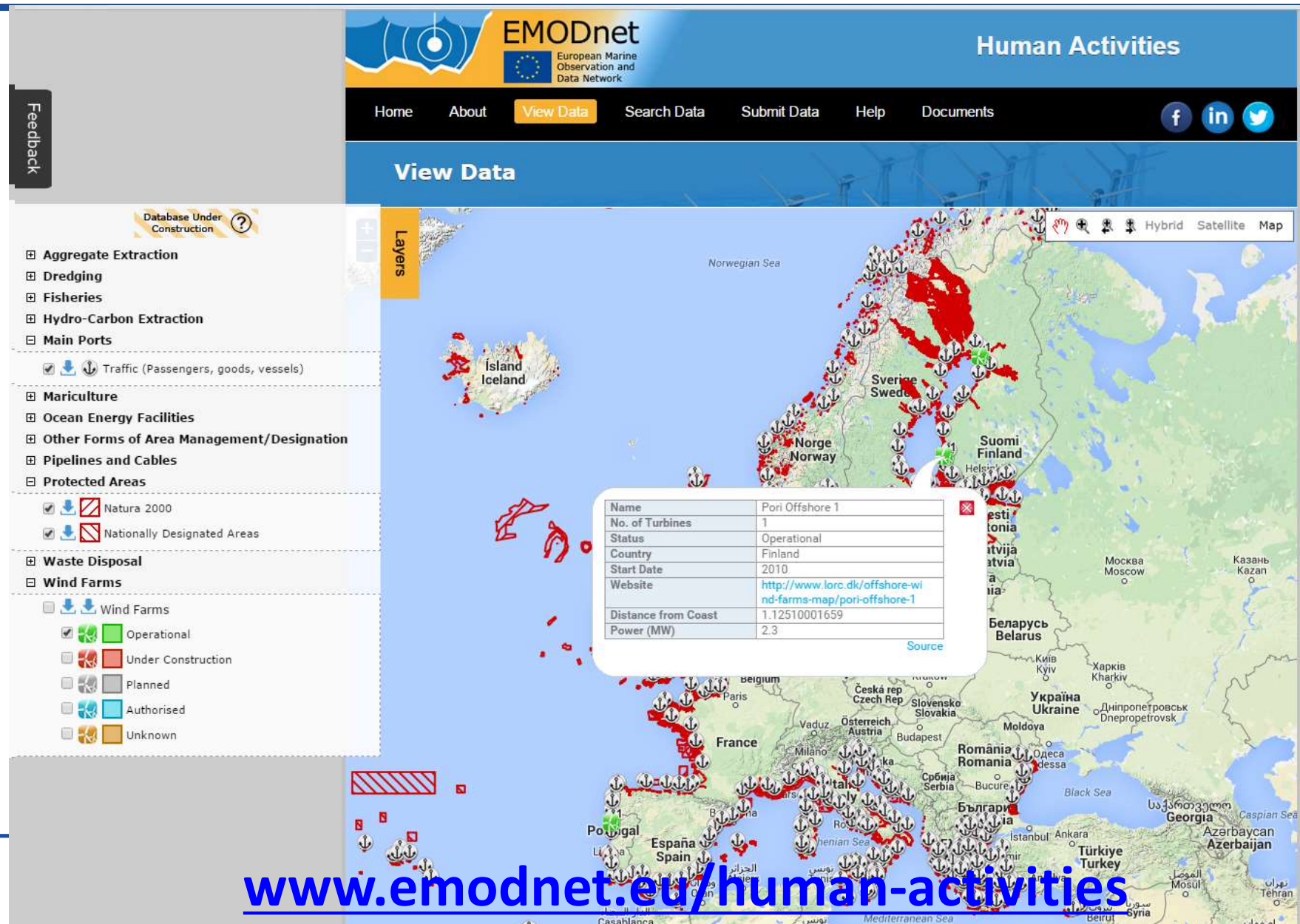
7. EMODnet Human Activities (2)

- Human Activities is a relatively **new Lot**
 - Its main objective is to provide information on the geographical position, spatial extent, and attributes of a wide array of **marine activities** (e.g. hydrocarbon extraction, renewable energy, mariculture, shipping, etc.)
 - Particular attention is given to providing **historical time series** (when possible) to indicate the temporal variation of activities.
 - Data from public and private data sources at EU, international, national, and local level
 - Priority = public sources (data continuity, no restrictions)
-

EMODnet Human Activities (3)

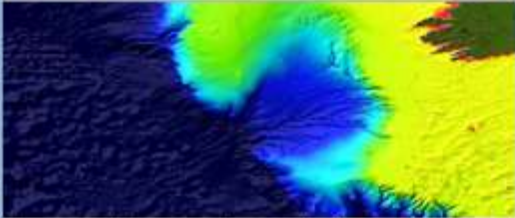
- **Status:**
 - making available as much data as possible
 - Future: implementation of interactive features for spatial analysis
 - **Main challenges**
 - not all sources are willing or allowed to share their data;
-

EMODnet Human Activities (4)

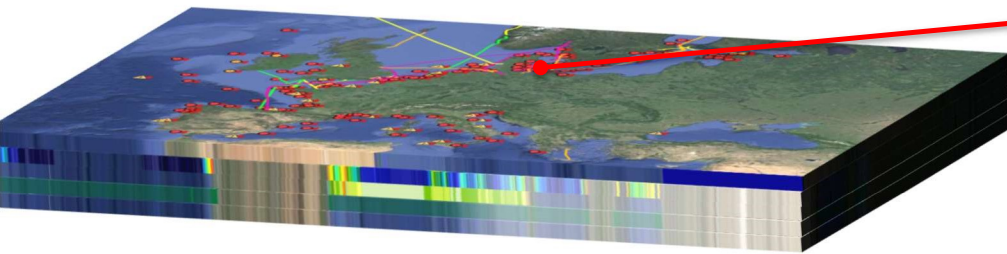


The Central Portal

www.emodnet.eu

<p>Bathymetry</p>  <p>Data on bathymetry (water depth), coastlines, and geographical location of underwater features: wrecks.</p> <p>Read more Portal</p>	<p>Geology</p>  <p>Data on seabed substrate, sea-floor geology, coastal behaviour, geological events, and minerals.</p> <p>Read more Portal</p>	<p>Seabed Habitats</p>  <p>Data on modelled seabed habitats based on seabed substrate, energy, biological zone, and salinity.</p> <p>Read more Portal</p>
<p>Chemistry</p>  <p>Data on the concentrations of pesticides, heavy metals, and antifoulants, in water, sediments and biota.</p> <p>Read more Portal</p>	<p>Biology</p>  <p>Data on temporal and spatial distribution of species abundance and biomass from several taxa.</p> <p>Read more Portal</p>	<p>Physics</p>  <p>Data on salinity, temperature, waves, currents, sea-level, light attenuation, and FerryBoxes.</p> <p>Read more Portal</p>
<p>Human Activities</p>  <p>Data on the intensity and spatial extent of human activities.</p>		

Use Case I: Query products simultaneously



Retrieve Data from specified coordinates at a given time or for a time interval

Physical Parameters

Bathymetry

Seabed Substrate

Marine Region

Species Abundance

Concluding remarks

- EMODnet is a long term marine data initiative
- Developed through stepwise approach – now halfway – the service is already useful and picking up speed to make it
 - ✓ Fully operational
 - ✓ Provide the best available data, free of restrictions on use
 - ✓ **Become more user friendly & fit for purpose**
- Can only be done together with the **DATA PROVIDERS AND USERS**
- Bringing observations, products, services and knowledge to users and public requires appropriate tools and guidance

www.emodnet.eu or via info@emodnet.eu

•



**Preparatory Actions for
European Marine Observation and Data Network MARE
2010/02 - Physical Parameters [SI2.579120]**

-

**Knowledge base for growth and innovation in ocean economy:
assembly and dissemination of marine data for seabed mapping
MARE/2012/10 - Lot 6 Physics [SI2.656795]**



A Novellino

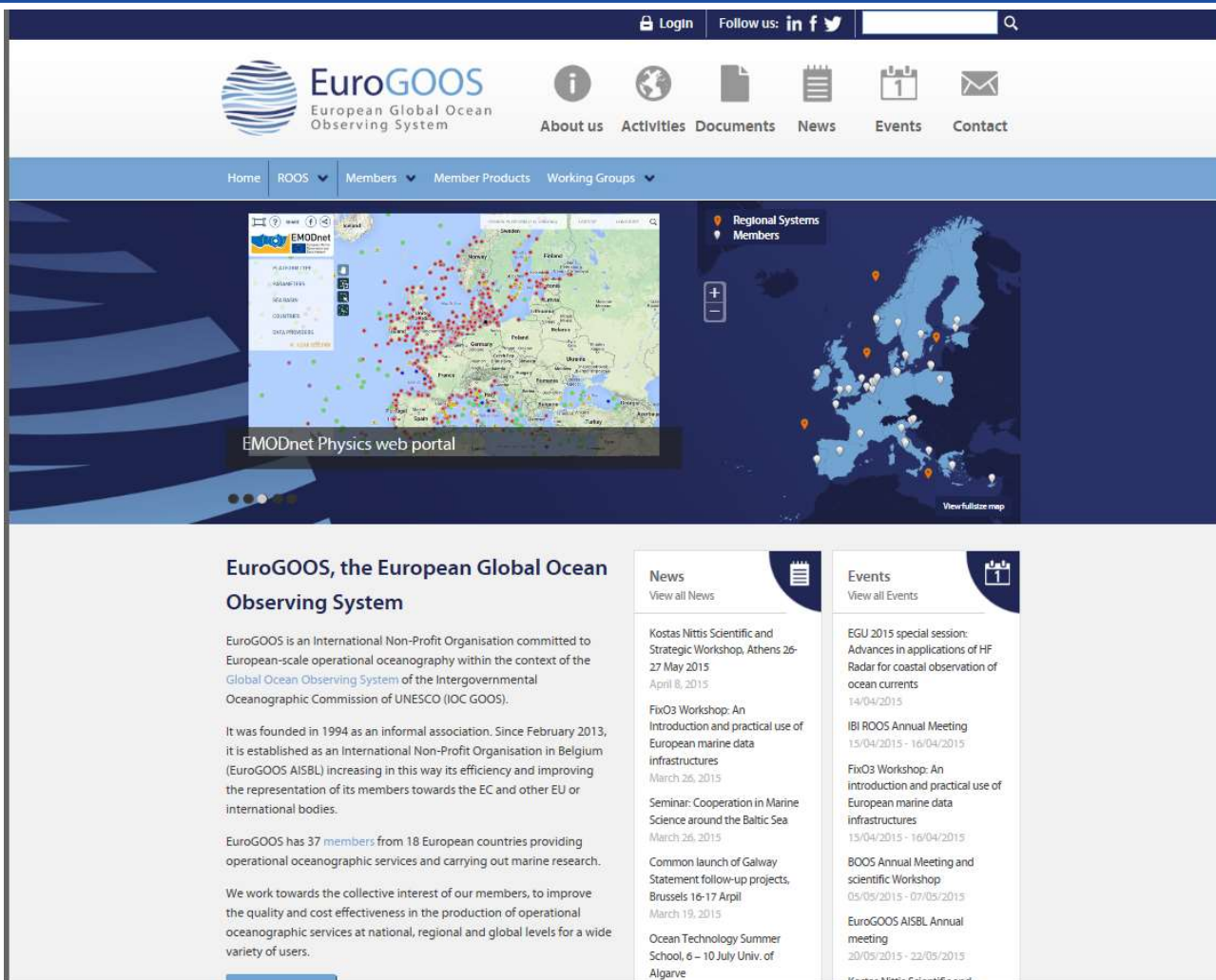
G Manzella

D Schaap

S Pouliquen

L Rickards

P Gorringe



The screenshot shows the EuroGOOS website interface. At the top, there is a navigation bar with links for Home, ROOS, Members, Member Products, and Working Groups. Below this, there is a large banner area featuring a map of Europe with numerous data points, labeled "EMODnet Physics web portal". To the right of the map, there is a section for "Regional Systems Members". Below the banner, the main content area is divided into three columns. The left column contains a section titled "EuroGOOS, the European Global Ocean Observing System" with a description of the organization's mission and founding. The middle column contains a "News" section with a list of recent events and workshops. The right column contains an "Events" section with a list of upcoming meetings and workshops.

EuroGOOS, the European Global Ocean Observing System

EuroGOOS is an International Non-Profit Organisation committed to European-scale operational oceanography within the context of the Global Ocean Observing System of the Intergovernmental Oceanographic Commission of UNESCO (IOC GOOS).

It was founded in 1994 as an informal association. Since February 2013, it is established as an International Non-Profit Organisation in Belgium (EuroGOOS AISBL) increasing in this way its efficiency and improving the representation of its members towards the EC and other EU or International bodies.

EuroGOOS has 37 members from 18 European countries providing operational oceanographic services and carrying out marine research.

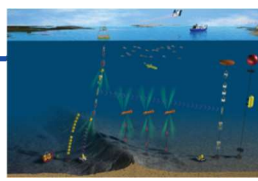
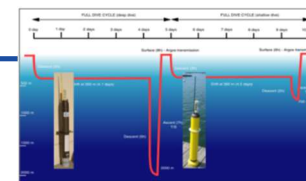
We work towards the collective interest of our members, to improve the quality and cost effectiveness in the production of operational oceanographic services at national, regional and global levels for a wide variety of users.

News
View all News

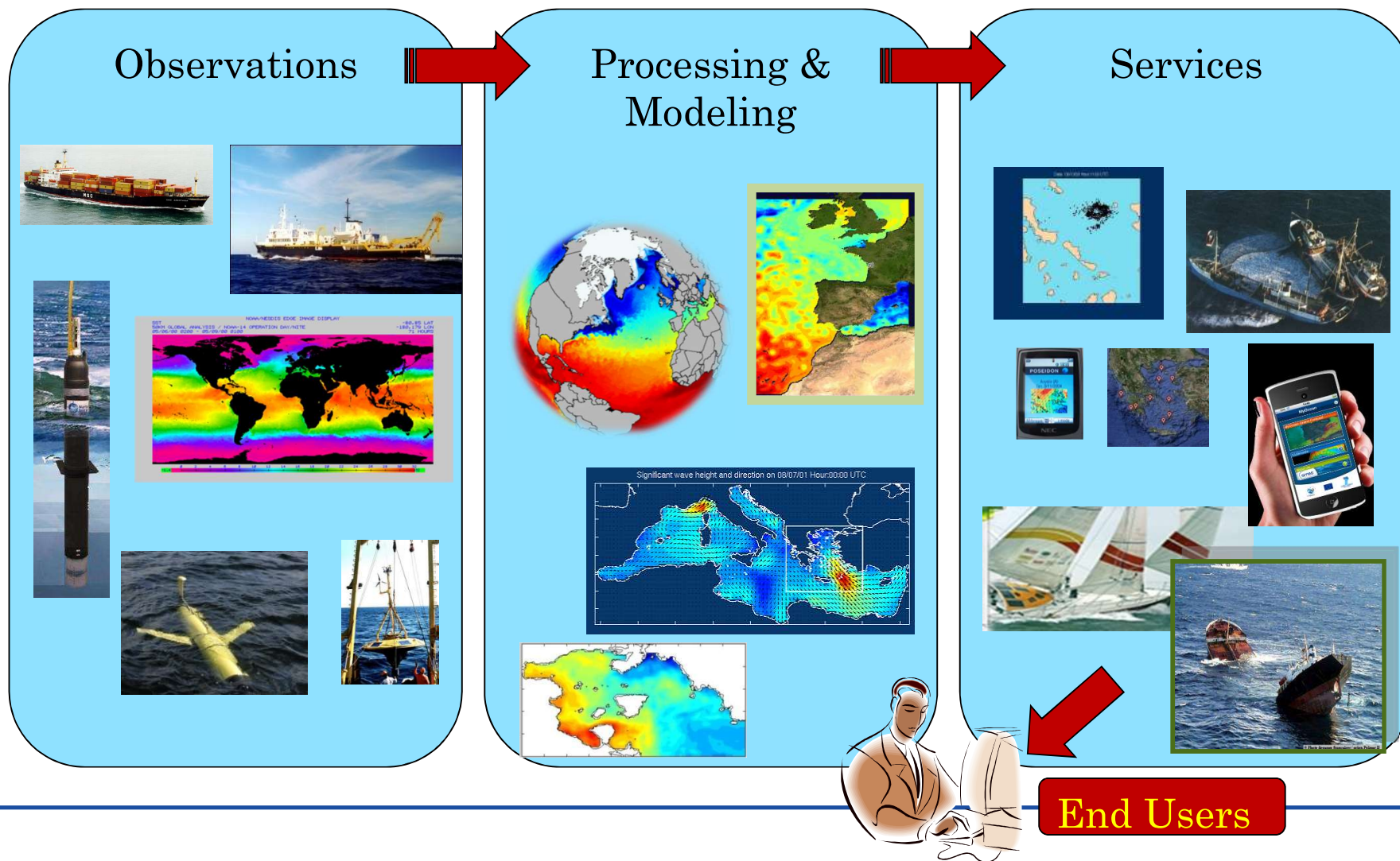
- Kostas Nittis Scientific and Strategic Workshop, Athens 26-27 May 2015
April 8, 2015
- FixO3 Workshop: An Introduction and practical use of European marine data infrastructures
March 26, 2015
- Seminar: Cooperation in Marine Science around the Baltic Sea
March 26, 2015
- Common launch of Galway Statement follow-up projects, Brussels 16-17 April
March 19, 2015
- Ocean Technology Summer School 6 – 10 July Univ. of Algarve

Events
View all Events

- EGU 2015 special session: Advances in applications of HF Radar for coastal observation of ocean currents
14/04/2015
- IBI ROOS Annual Meeting
15/04/2015 - 16/04/2015
- FixO3 Workshop: An introduction and practical use of European marine data infrastructures
15/04/2015 - 16/04/2015
- BOOS Annual Meeting and scientific Workshop
05/05/2015 - 07/05/2015
- EuroGOOS AISBL Annual meeting
20/05/2015 - 22/05/2015

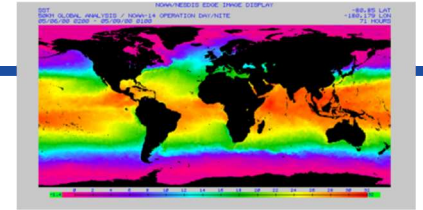
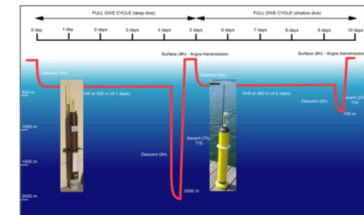
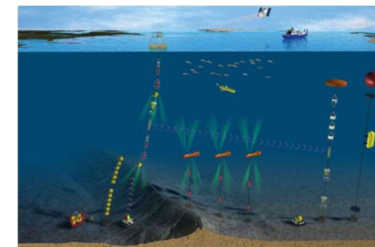


Operation Oceanography



Ocean Observations

- Technologically complex and high cost infrastructures. Variety of platforms/technologies:
 - Remote sensing (satellite and coastal radars)
 - Drifting-profiling floats
 - Fixed moorings (time-series stations)
 - Ships of opportunity
 - Gliders
 - Research vessels
 - Coastal networks
- Diversity of operators (national, local, research,) & funding mechanisms



Operation Oceanography

Operational Oceanography is not a new invention

An international conference established the basic principles of operational meteorology and oceanography:

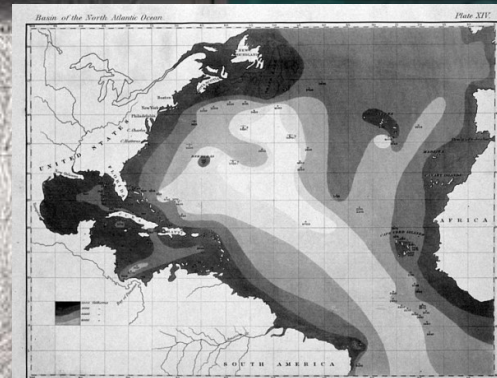
- Common standards/formats for data
- Common standards for data quality
- Free and open exchange of data

Modern principles, but when ?

- 
- Maury early became convinced that adequate scientific knowledge of the sea could be obtained only through international cooperation
 - Within a few years after the Brussels conference in 1853 nations all over the world were sending their oceanographic observations to Maury
 - These observations were evaluated and the results given worldwide distribution
 - Also as a result of the Brussels conference a large number of nations agreed to cooperate in the sharing of ocean data using uniform standards



Cmdr. Matthew Fontaine Maury, USN



Maury and the 1853 Brussels Conference

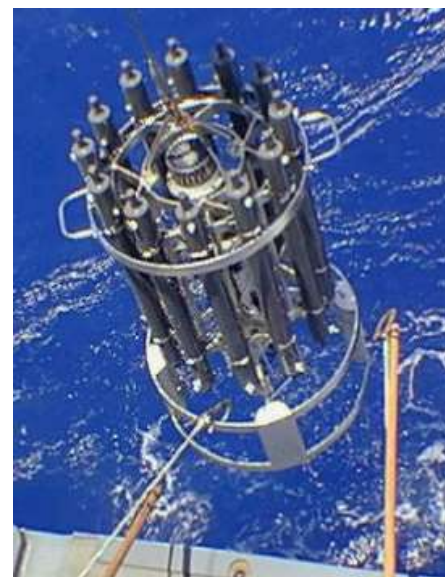
What happened in the past?

- Since 19th century a lot of measurements have been made by diverse communities for their own needs (Scientists, fishermen, commercial navigators...)

BUT

- Not done in an organized way
- Shared only among small communities
- Measured over limited periods and areas
- Not properly archived

Nowadays the ways of using data and the user needs have changed.....



- Global scale applications requiring an integrated observing system (climate change, ocean health monitoring, fisheries assessment,...)
- Important demand for real time data access
- Information Technology and Data Management techniques are no more an obstacle to information sharing

Core parameters :

Assimilation in global/regional models : T, S

Validation : Sea Level, Current, Oxygen, Chlorophyll, Nutrients , Wave.

Data accessible easily from a unique point

Data coherent in term of :

Data format

Data Quality

Processing chain (clearly documented)

Coherent at basin scale level

Data are available

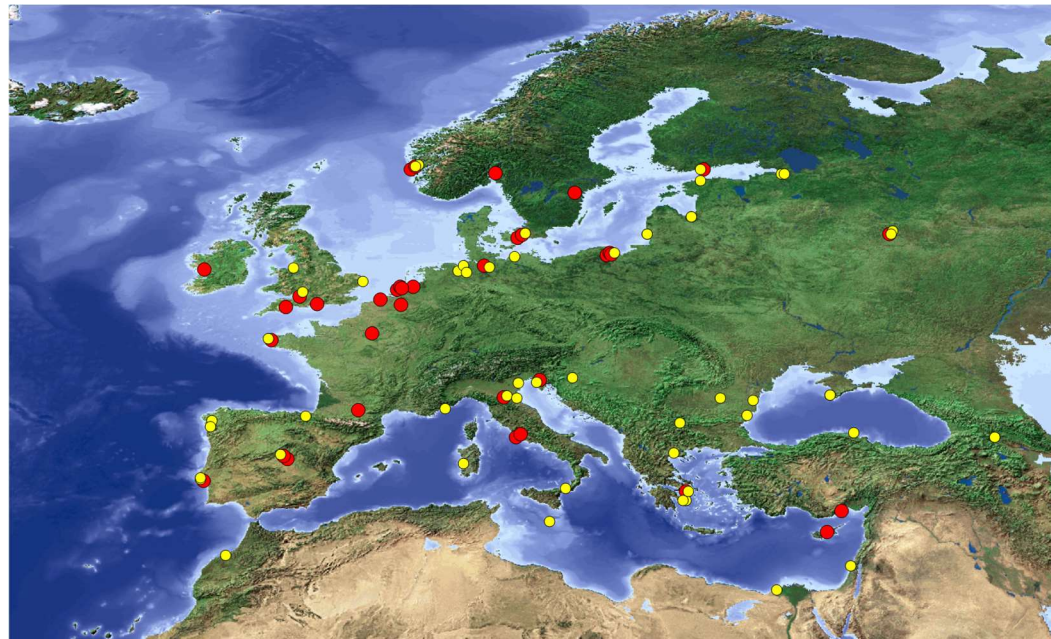
in real time/near real time (within less than 24 hours)

in delayed mode after calibration and /or validation with estimation of the accuracy

Long time series

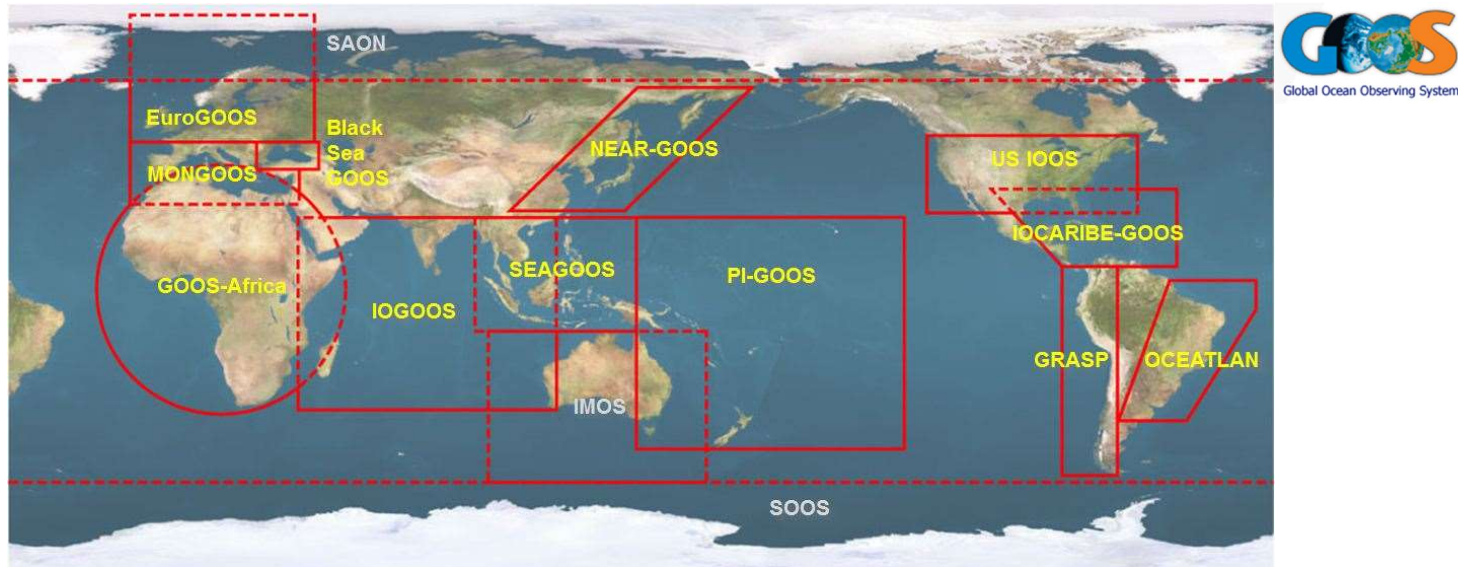
Coordination and cooperation is absolutely necessary

EuroGOOS AISBL is an International Non Profit Association of 37 national agencies, institutes and research organisations in Europe promoting and implementing Operational Oceanography. Founded in 1994, EuroGOOS operates in the framework of the Global Ocean Observing System (GOOS) of UNESCO/IOC



Part of the Global effort

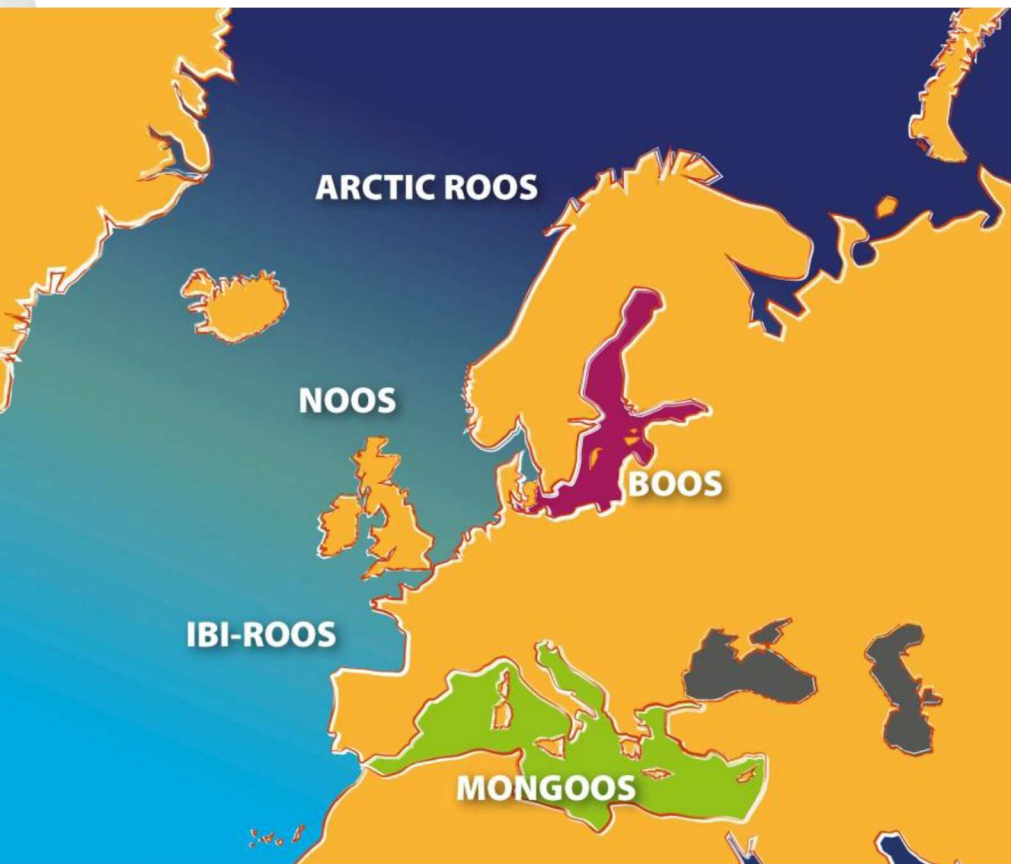
EuroGOOS is one of the twelve GOOS Regional Alliances (GRAs) that develop the system in different parts of the World Ocean.



GOOS is a platform for:

- International cooperation for sustained observations of the oceans
- Generation of oceanographic products and services
- Interaction between research, operational, and user communities

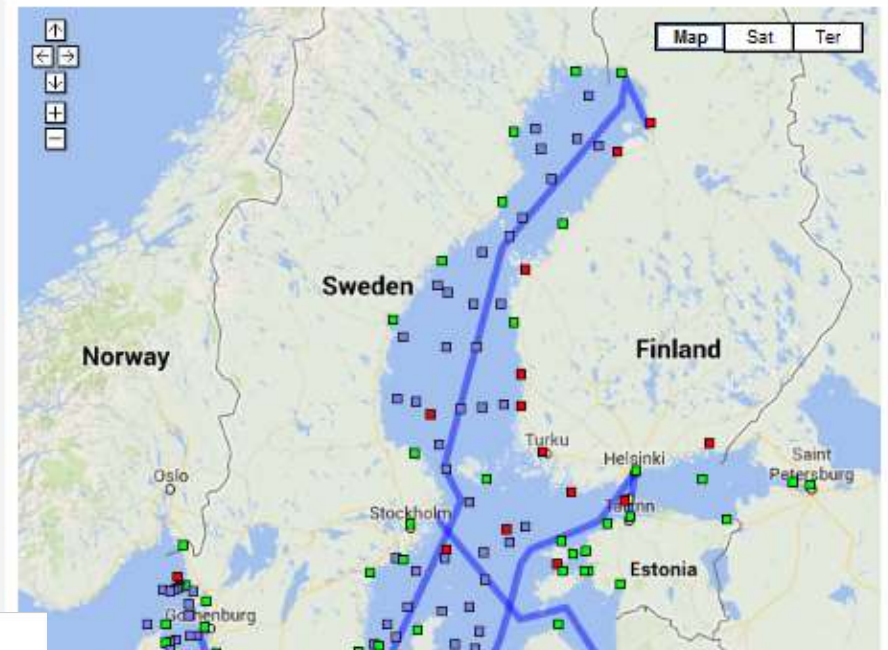
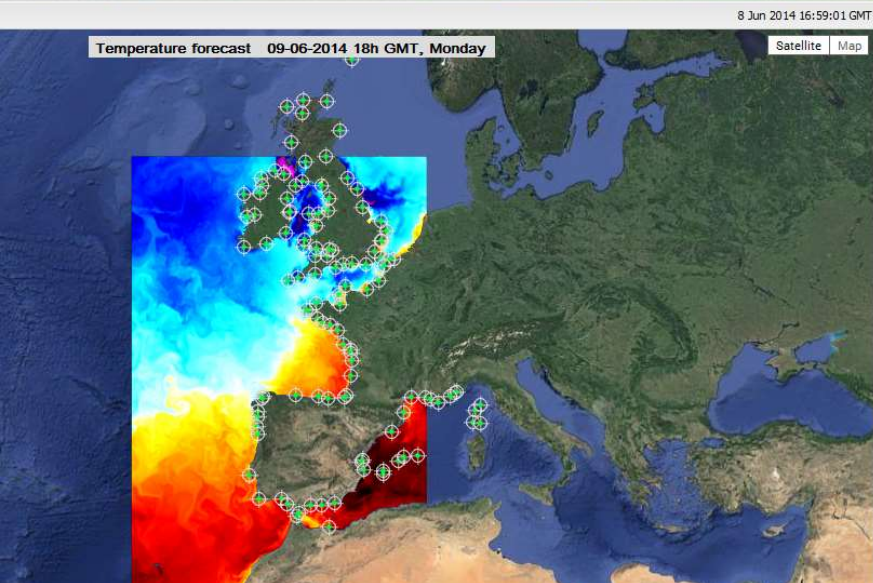
EuroGOOS and data



- The **ROOSs - Regional Operational Oceanographic Systems** are the operational arm(s) of EuroGOOS
- About 60 additional partners in ROOSs
- The ROOSs cooperation focus on improved national and regional services and products
- ROOSs **coordinate the observations** and the **data transfer** for internal use and to other users
- **Regional data portals** in every ROOS simplifying the data transfer and enable interoperability



BOOS OCEANOGRAPHIC STATIONS



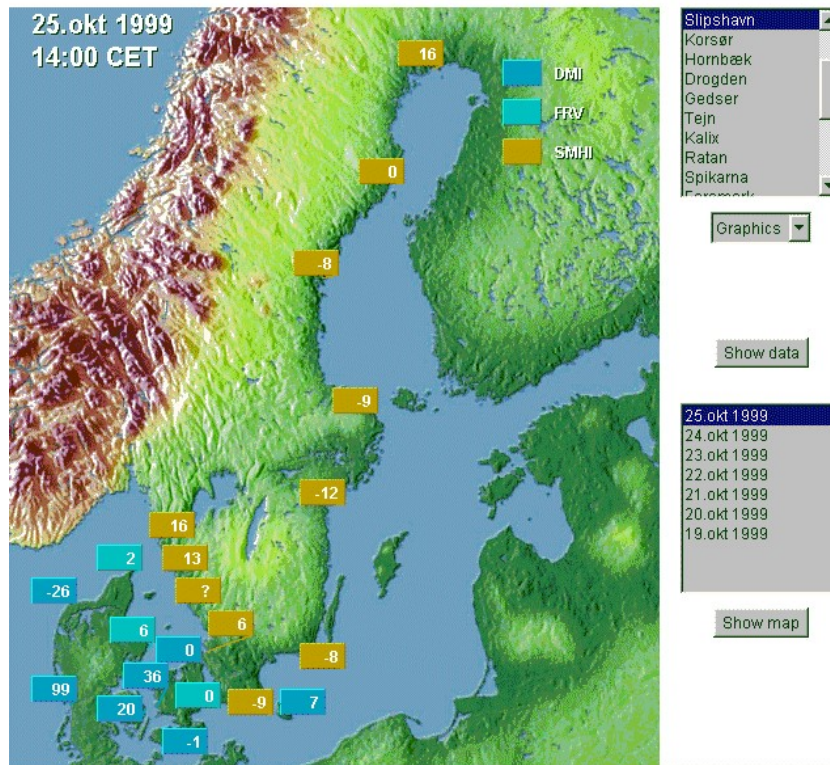
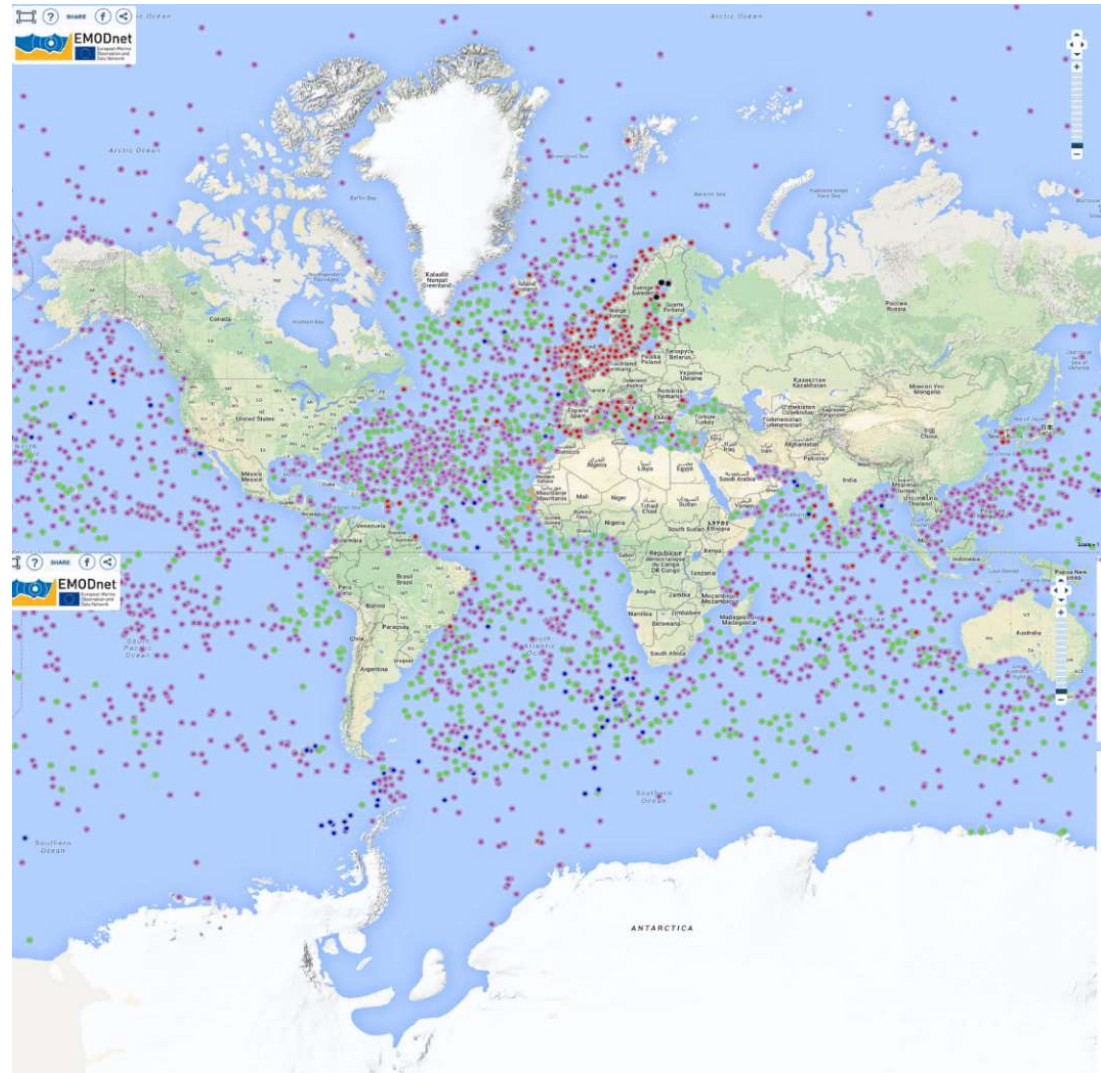
Services In-situ and forecasts

Services



EuroGOOS and data - development

Baltic Water Levels



Three initiatives for marine information

**DG
ENTERPRISE & INDUSTRY**



MyOcean



www.myocean.eu

**DG
RESEARCH & INNOVATION**

FP7

SeaDataNet



www.seadatanet.org

**DG
MARITIME AFFAIRS
& FISHERIES**

EMODnet

Physics



www.emodnet-physics.eu

EuroGOOS

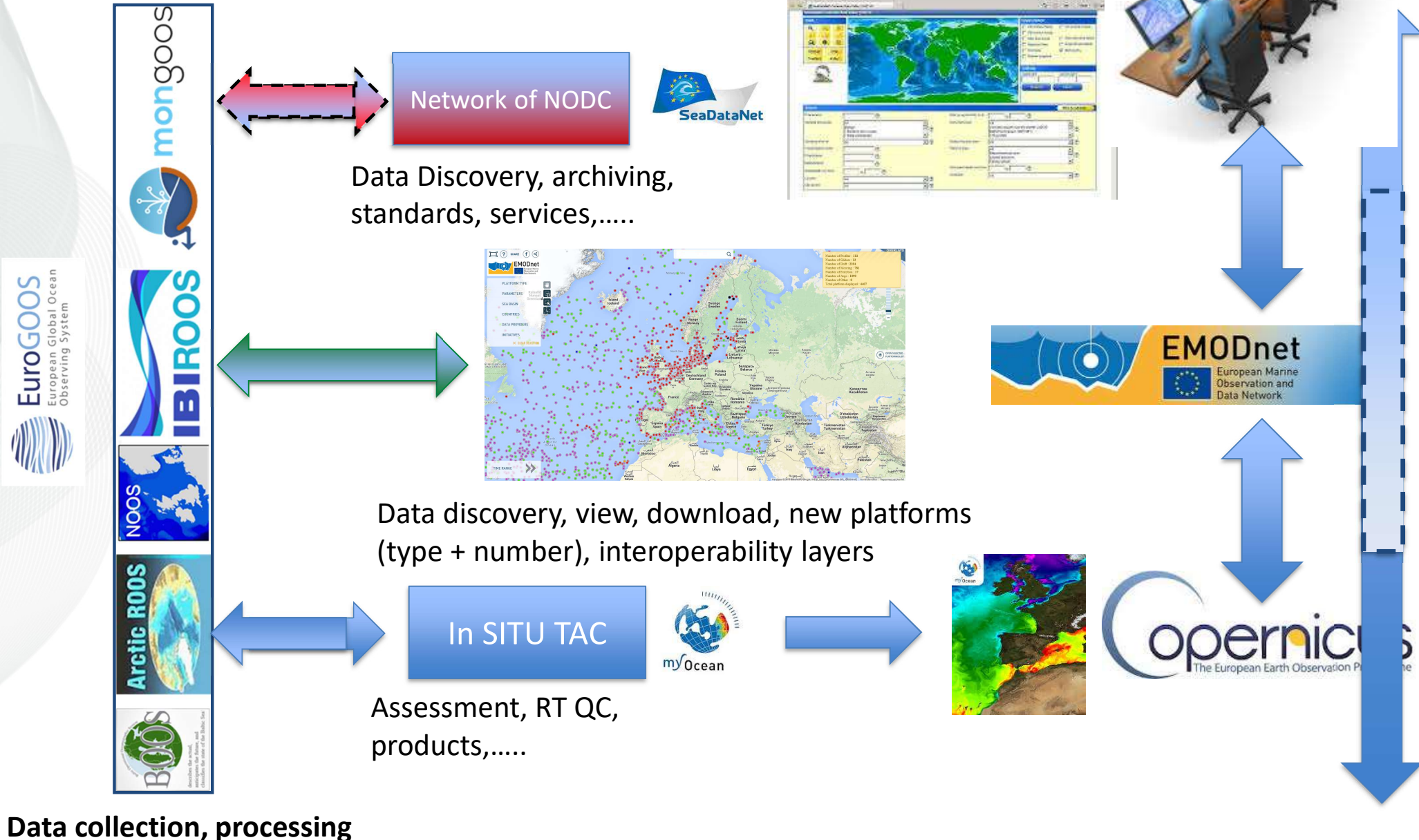
Operational oceanography community



EuroGOOS has the cross cutting role in these initiatives

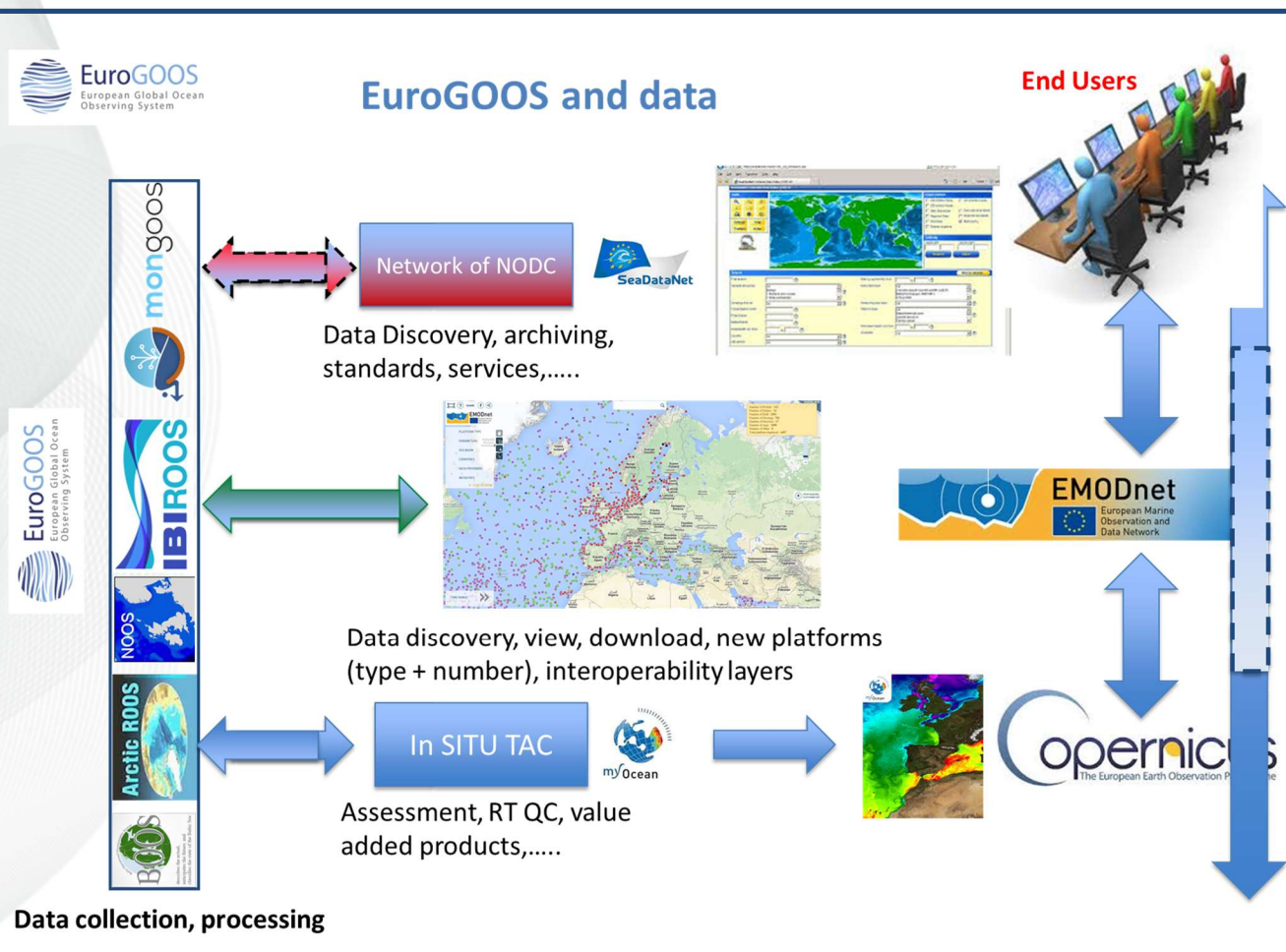
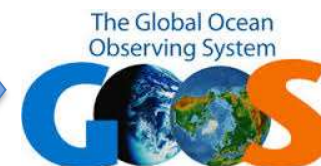
EuroGOOS and data

End Users



Data collection, processing

EuroGOOS and data





**Preparatory Actions for
European Marine Observation and Data Network MARE
2010/02 - Physical Parameters [SI2.579120]**

-

**Knowledge base for growth and innovation in ocean economy:
assembly and dissemination of marine data for seabed mapping
MARE/2012/10 - Lot 6 Physics [SI2.656795]**



A Novellino

G Manzella

D Schaap

S Pouliquen

L Rickards

P Gorringe

EMODnet Physics objectives:

— Provide a **single point of access** to marine near real time and achieved data on **physical conditions** as monitored by:

- Fixed Stations¹, Ferrybox¹, Argo², Gliders², HF Radars²

Parameters:

- Sea Temperature¹, Sea Level¹, Sea Salinity¹, Winds¹, Waves¹, Sea Currents¹, Light Attenuation¹, Ice Coverage², Sea Level trends²

- Build up on **existing infrastructures** by adding value – not complexity
- **Ensure data access to any user**
- Facilitate **integration** and **interoperability** with further systems
(INSPIRE compliant, WMS, WFS, etc.)
- Bring together the main European Marine Observation and Data Communities
(EuroGOOS ROOSs, MyOcean, SeaDataNet, etc)
- **Attract new data and new data providers**
- **Attract new users and stakeholders**
- **Full engagement of the EuroGOOS ROOSs***
(50% of the budget to empower ROOSs data interoperability infrastructure)

¹MARE/2010/06 (2011-2013)

²MARE/2012/10 Lot 6 (2013 – 2016)

EMODnet Physics



Welcome to EMODnet - Physical Parameters

The EMODnet Physical Parameters portal is aimed at providing layers of physical data and metadata available for use by public authorities, scientists and industry, and contribute towards the definition of an operational **European Marine Observation and Data Network** (EMODnet) and contribute to developing of the definition of the Global Monitoring for Environment and Security (GMES) marine core service.

The portal is being developed by a European consortium and operated in a cooperation between EuroGOOS, its Regional components (ROOSs), and exploiting SeaDataNet and MyOcean infrastructures and services bringing together many marine data users and providers.

The EMODnet Physical Parameters portal provides access to near real time and archived data series from fixed stations and ferry box lines in the European Sea and provides OGC services (WMS, WFS, and WCS) for data discovery, view and download.



EMODnet-Physics Test System

News from web

Europe still playing catch-up on air pollution, despite reduction successes
Many Europeans still exposed to harmful air pollutants

More

Meetings

GROOM General Assembly - Trieste, Italy
BOOS Annual Meeting - Tallinn, Estonia
More

Tag Cloud

bodc bsh cnr emodnet enea
eurogoos hcmr myocean
seadatanet

INSPIRE Services

DISCOVER

VIEW

DOWNLOAD

WMS/WFS

Data Policy

Open & Free

www.emodnet-physics.eu



EMODnet Physics

Existing



EMODnet
Physics

Interoperability &
Visibility



Reinforce

WMS
WFS
Web services
...
socials



Sustain



contacts@emodnet-physics.eu

PLATFORM INFO

EMODnet PHYSICS

SHARE  

Receive daily digest: 

[ACTIVATE](#)

[ADD TO SELECTED PLATFORMS LIST](#)

[OPEN SELECTED PLATFORMS LIST](#)

[DISCLAIMER](#)

Platform: **Basque_Country - Cape Higer**



DATA OWNER - ORIGINATOR

PLATFORM CODE

Basque_Country - Cape Higer

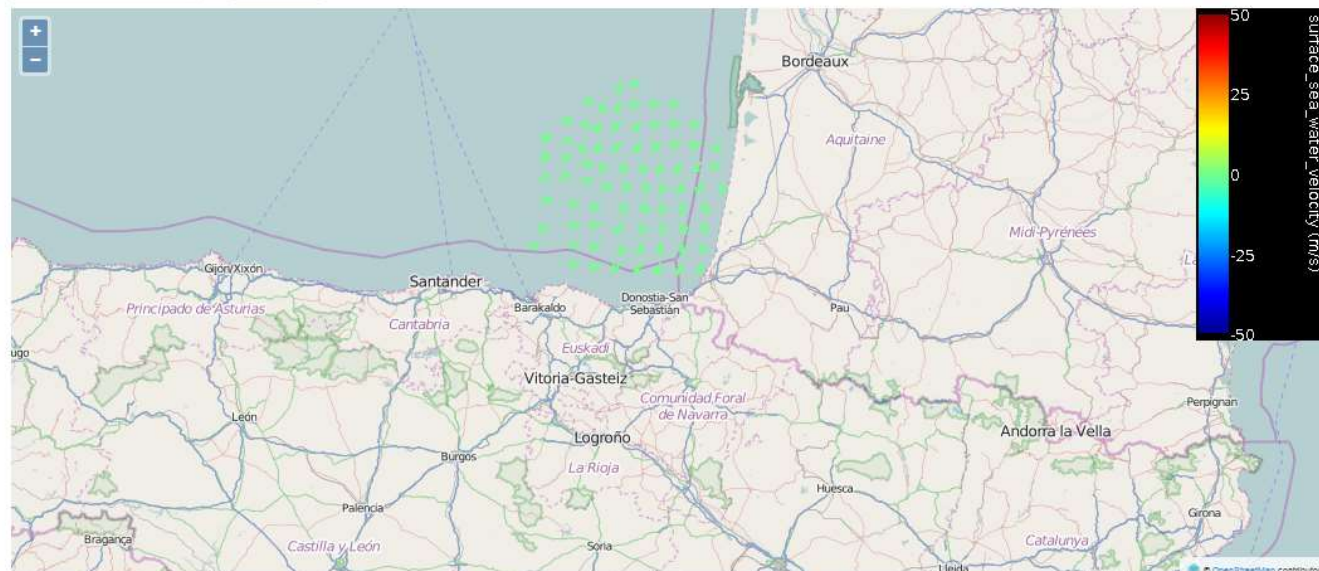
RADAR

LATEST DATA

TIMESERIES

[DOWNLOAD FILE NETCDF](#)

[METADATA](#)



2015-04-11T09:00:00.000Z

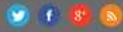
[PLAY](#)

2015-04-06 00:00:00

2015-04-11 09:00:00

[OPEN IN NEW PAGE](#)

[CLOSE](#)

[Login](#)[Register](#)

FixO3 is a Seventh Framework Programme
(FP7 project). Copyright 2014.

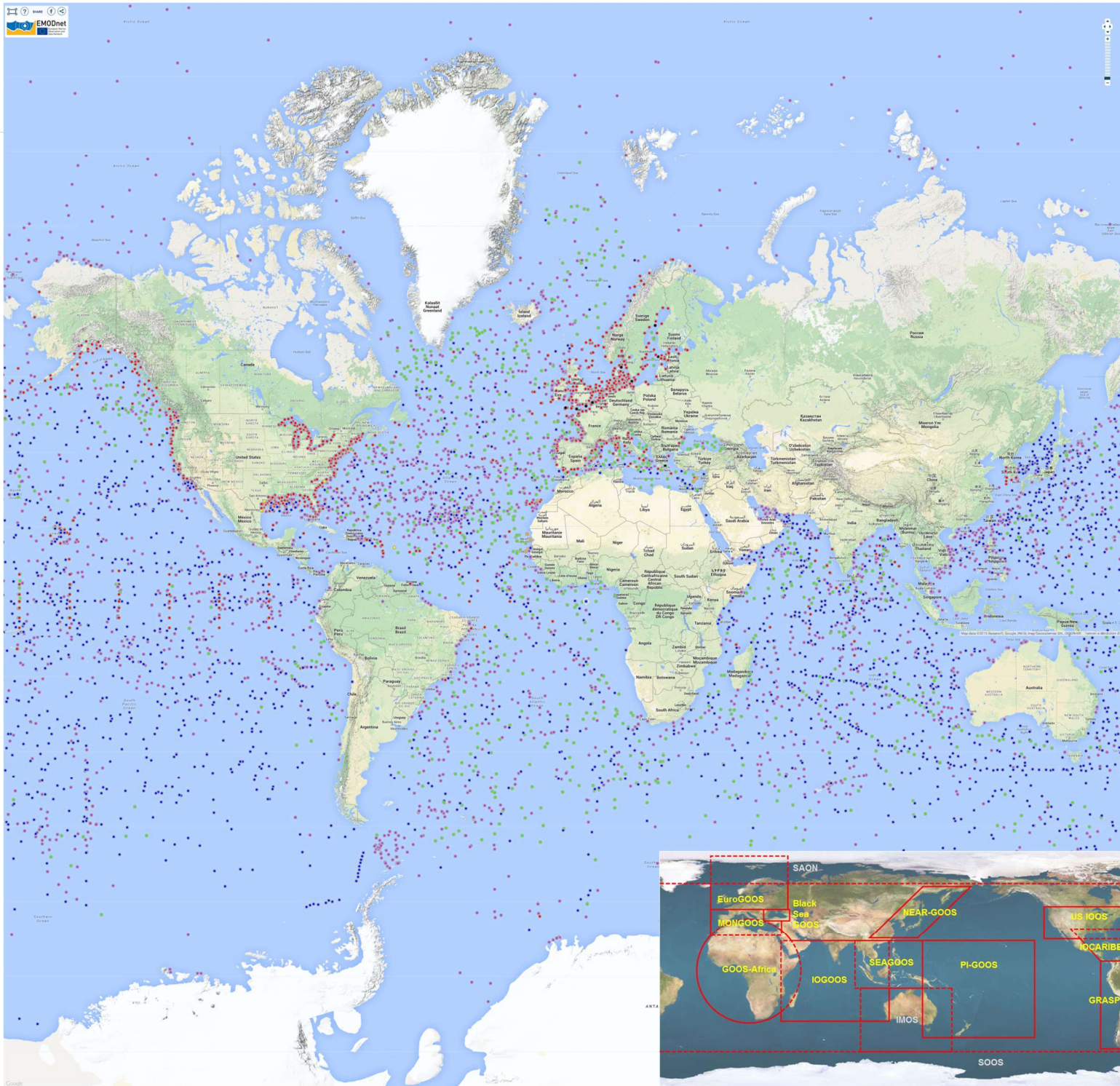
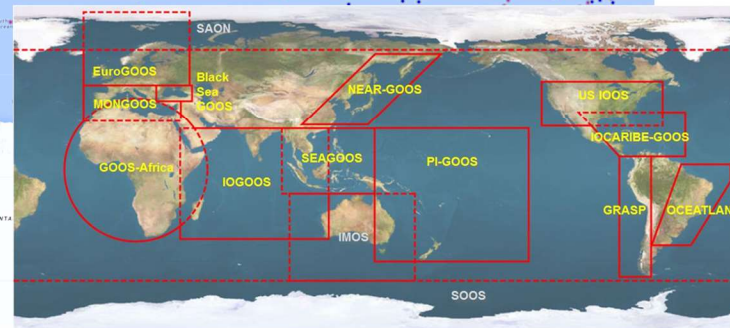
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Services
Registry](#)[Metadata
Catalogue](#)[Service
Activities](#)[+ Training
Opportunities](#)[+ Work Packages](#)[+ Deliverables](#)

Observatories

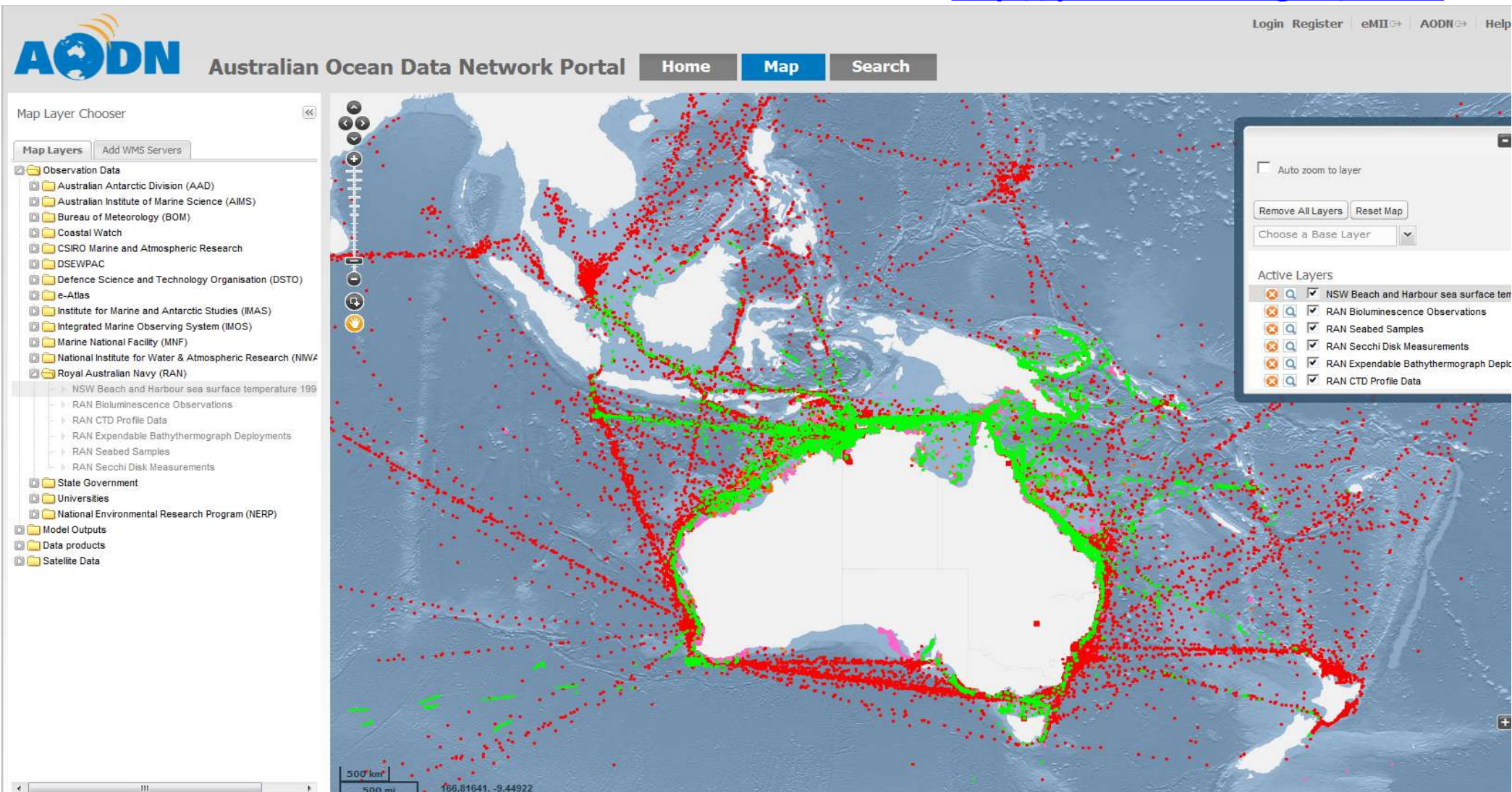


EMODnet Physics approach

- Build on existing infrastructures and avoid duplication of efforts
- Improve back office infrastructure for the benefit of the ROOSs and contributing institutes
- Give visibility and awareness to everyone
- Create added value interoperability layers on top of the existing infrastructure
- Reach new stakeholders and users
- Increase the amount of available data from additional platforms and platforms types (gliders, HF radars,....)
- Give feedback and support to contributing institutes
- Contribute to a stronger community on local, regional, European and global scales



<http://portal.aodn.org.au/aodn/>



- Station ID Search
- Station List
- Observations
- Mobile Access
- Obs via Google Maps
- Classic Maps
- Recent
- Historical
- DART®
- Oil & Gas ADCP
- Obs Search
- Ship Obs Report
- Gliders
- APEX
- TAO
- DODS
- HF Radar
- OSMC
- Dial-A-Buoy
- RSS Feeds
- Obs Web Widget
- Email Access

- Station Status
- NDBC Maintenance
- NDBC Platforms
- Partner Platforms

- Program Info
- Find us on Facebook
- NDBC on Facebook
- About NDBC
- MetOcean
- Moored Buoy
- C-MAN
- TAO
- DART®
- VOS
- CSP
- IOOS® Program
- IOOS® DAC

- Publications
- NDBC DQC Handbook
- Hurricane Data Plots
- Mariners Weather
- Log
- Observing
- Handbook No. 1

- Science Education
- NDBC Director
- FAQ
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- Contact Us
- Visitor Information
- Links



Storm Special! View the latest observations near [East Pacific TROPICAL DEPRESSION EIGHTEEN-E as of ADVISORY NUMBER 5 @ 200 AM PDT SAT NOV 02 2013.](#)

BuoyCAMs: See recent photos from NDBC weather buoy [44013](#) near Boston, DART station [46410](#) in the Gulf of Alaska, [46029](#) near the Oregon/Washington coastline and the following TAO stations: [2N 155W](#), [5N 155W](#)

Check out [Gliderpalooza data](#).

☒ Recent Data
☐ Historical Data
☐ Show Labels

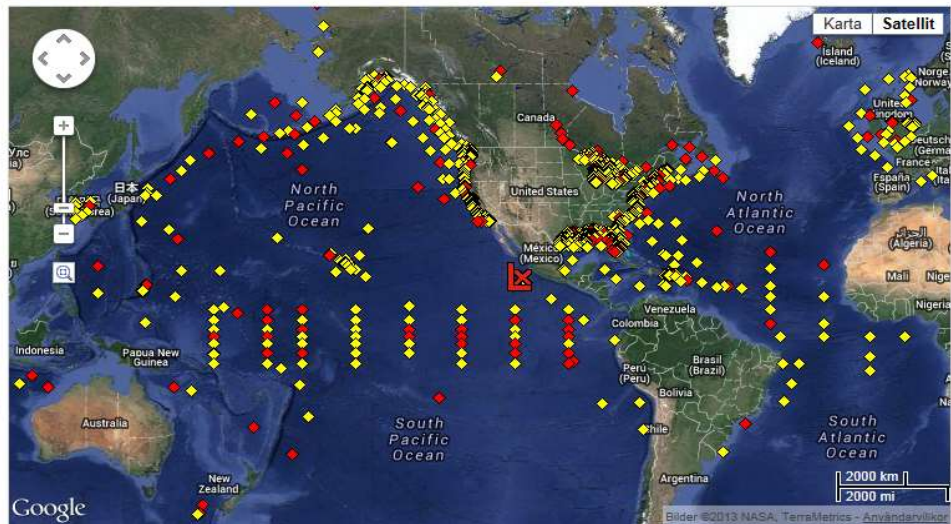
Program Filter:
☐ NDBC Meteorological/Ocean
☐ International Partners
☐ IOOS Partners

Owner Filter:
☐ NDBC
☐ Alaska Ocean Observing System
☐ Amerasia Hess

To save the current map view, [right click on this link](#) and select either "Add to Favorites" or "Bookmark this link".

To view observations, left-click a marker on the map.

To zoom the map, use the zoom slider on the map, or hold down the **Shift** key while dragging a box; or click the magnifying glass below the zoom slider to turn drag mode on and off.



Select a region:

- [Atlantic \(Tropical\)](#)
- [Atlantic \(West\)](#)
- [Australia](#)
- [Bay of Bengal](#)
- [Caribbean Sea](#)
- [Central America](#)
- [Chile](#)
- [Europe](#)
- [Gulf of Alaska](#)
- [Gulf of Mexico \(West\)](#)
- [Gulf of Mexico \(East\)/Florida](#)
- [Nova Scotia](#)
- [Pacific \(North\)](#)
- [Pacific \(West\)](#)
- [USA-Alaska](#)
- [USA-Hawaii](#)
- [USA-Great Lakes \(East\)](#)
- [USA-Lake Superior](#)
- [USA-Northeast](#)
- [USA-Northwest](#)
- [USA-Southeast](#)
- [USA-Southwest](#)
- [World](#)

1193 stations deployed
899 have reported in the past 8 hours

Disclaimer

[Get Observations by Program as KML](#)

[Get Observations by Owner as KML](#)

[How do I use KML?](#)

Note: The tropical storm cone of uncertainty contains the probable path of the storm center but does not show the size of the storm. Hazardous conditions can occur outside the cone. Tropical cyclone positions, forecast tracks, watches and warnings are provided by the [National Hurricane Center](#).

www.ndbc.noaa.gov/

GLOSS

www.gloss-sealevel.org/data



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The Global Sea Level Observing System



Data

GLOSS Sea Level Data

Data from GLOSS stations contribute to many sea level data centres and programmes. An [overview](#) of the various programmes is available.

Gilla 7 Tweet 1 +1 0 Share 2

(1) Obtain [Mean Sea Level \(MSL\)](#) data from the PSMSL

GLOSS was originally proposed in order to improve the quantity and quality of Mean Sea Level data supplied to the Permanent Service for Mean Sea Level ([PSMSL](#)), and GLOSS continues to perform that function. Time series plots of GLOSS station data obtained from the PSMSL RLR database are also available.

(2) Obtain high frequency [delayed-mode](#) data from the GLOSS Station Handbook

The supply of MSL data to the PSMSL is not now the ONLY requirement of a country participating in GLOSS. The Implementation Plan 1997 specifies requirements for the free exchange of the original (typically hourly) sea level data in delayed-mode to an International Sea Level Centre. To check the availability of original delayed-mode sea level data from GLOSS sites, see the information for each site contained within the [GLOSS Station Handbook](#).

(3) Obtain high frequency [fast-mode](#) data from UHSLC (or via [THREDDS](#) server)

For FAST sea level data from GLOSS sites (i.e. data availability within a week or so), see the contents of the GLOSS Fast Data Center at the [University of Hawai'i Sea Level Center](#).

(4) Obtain high frequency [real time/near real time](#) data from the sea level station monitoring facility

For real time/near real time sea level data from GLOSS sites (data available within minutes, to several hours), see the [sea level station monitoring facility](#).

(5) Africa and Western Indian Ocean [sea level data](#)

For high frequency delayed-mode data from ODINAFRICA and Western Indian Ocean tide gauges.

(6) Sea Level Data Archaeology

[Details of projects](#) aimed at the data rescue of sea level information available so far only in paper form (charts, paper tape etc.) and its conversion into computer-accessible form.

Direct data access web service to the IOC sea level system hosted at VLIZ



www.emodnet.eu



www.eurogoos.eu

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Marine Data Workshop
15-16 April 2015, Atlantic Hotel, Bremen, Germany

Challenge:

If we plan to set up a wind farm in the Southern North Sea – What data do we need to consider to answer the challenge?

Take into account:

- Mapping of current sea-use, for instance avoid siting a wind farm in an area of seabed already in use through existing infrastructure, human activity etc.
- Mapping of environmental parameters
- Other factors?





EMODnet

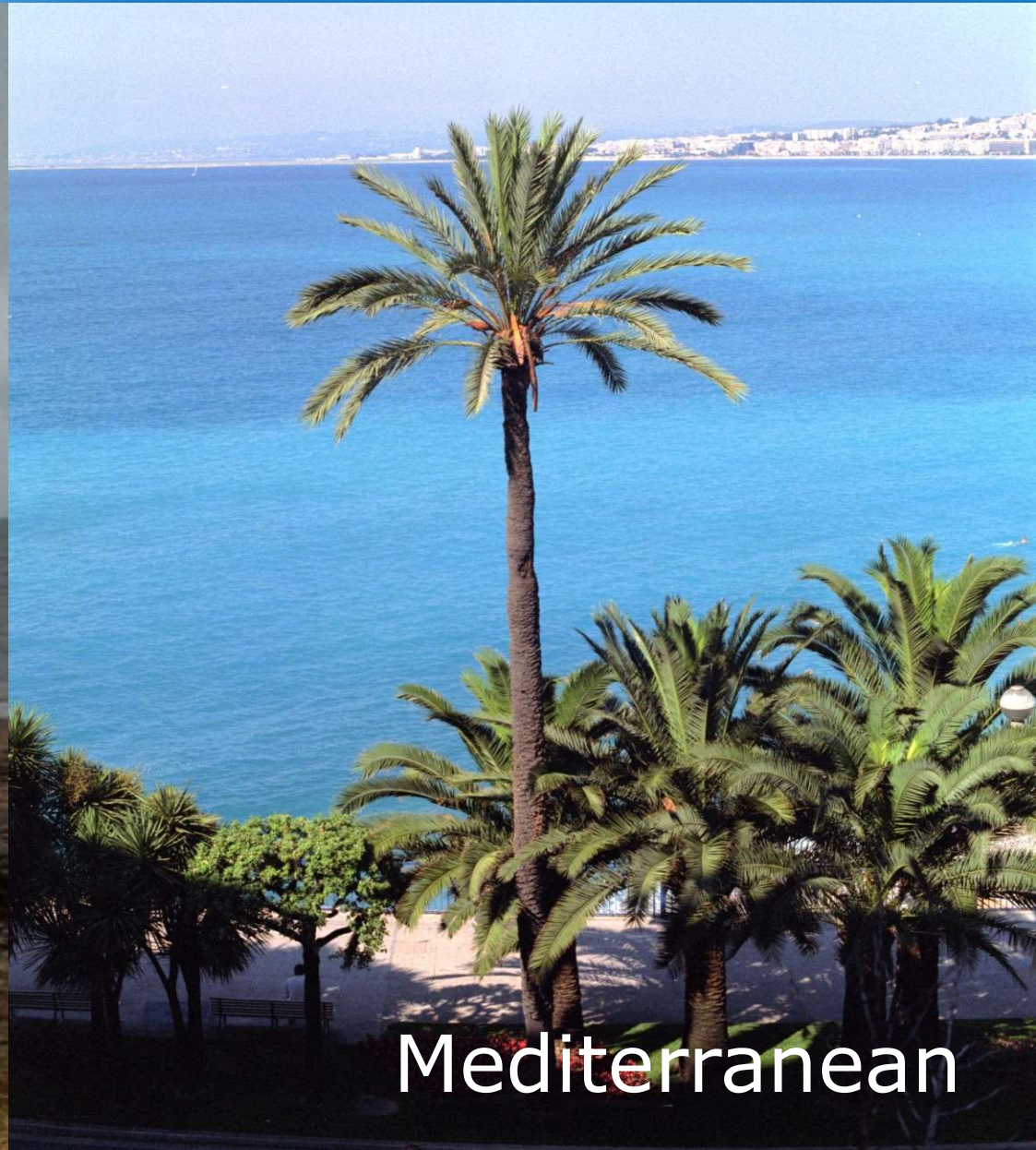


European Marine
Observation and
Data Network

sea basin checkpoints



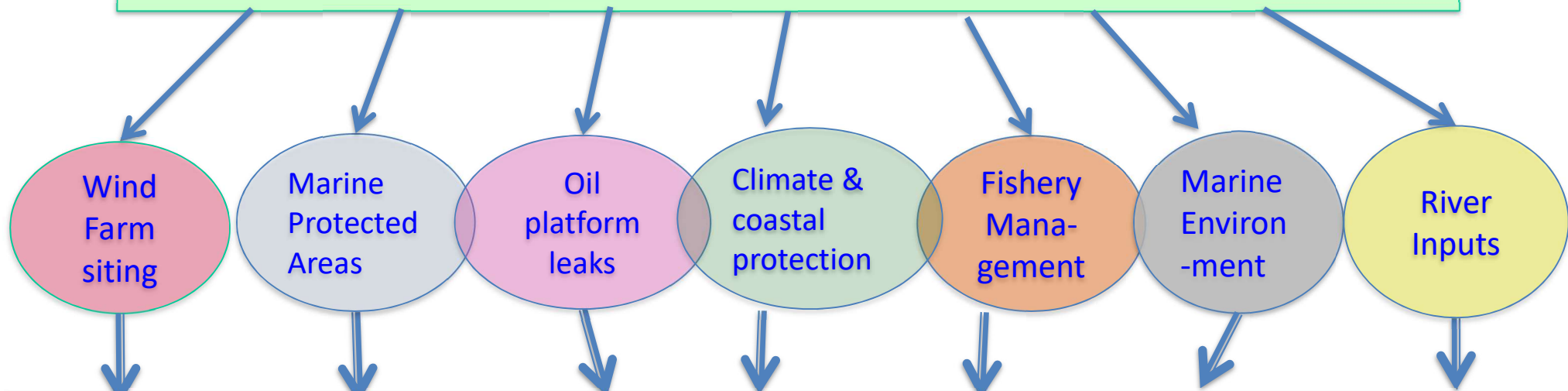
North Sea



Mediterranean

EMODnet Check Points

**MARINE DATA NETWORKS, SERVICES AND
DATA BASES
(EMODNET, COPENICUS, EUROARGO, ETC)**



**VALUE-ADDED PRODUCTS, DECISION SUPPORT
SYSTEMS
FOR CHALLENGES**

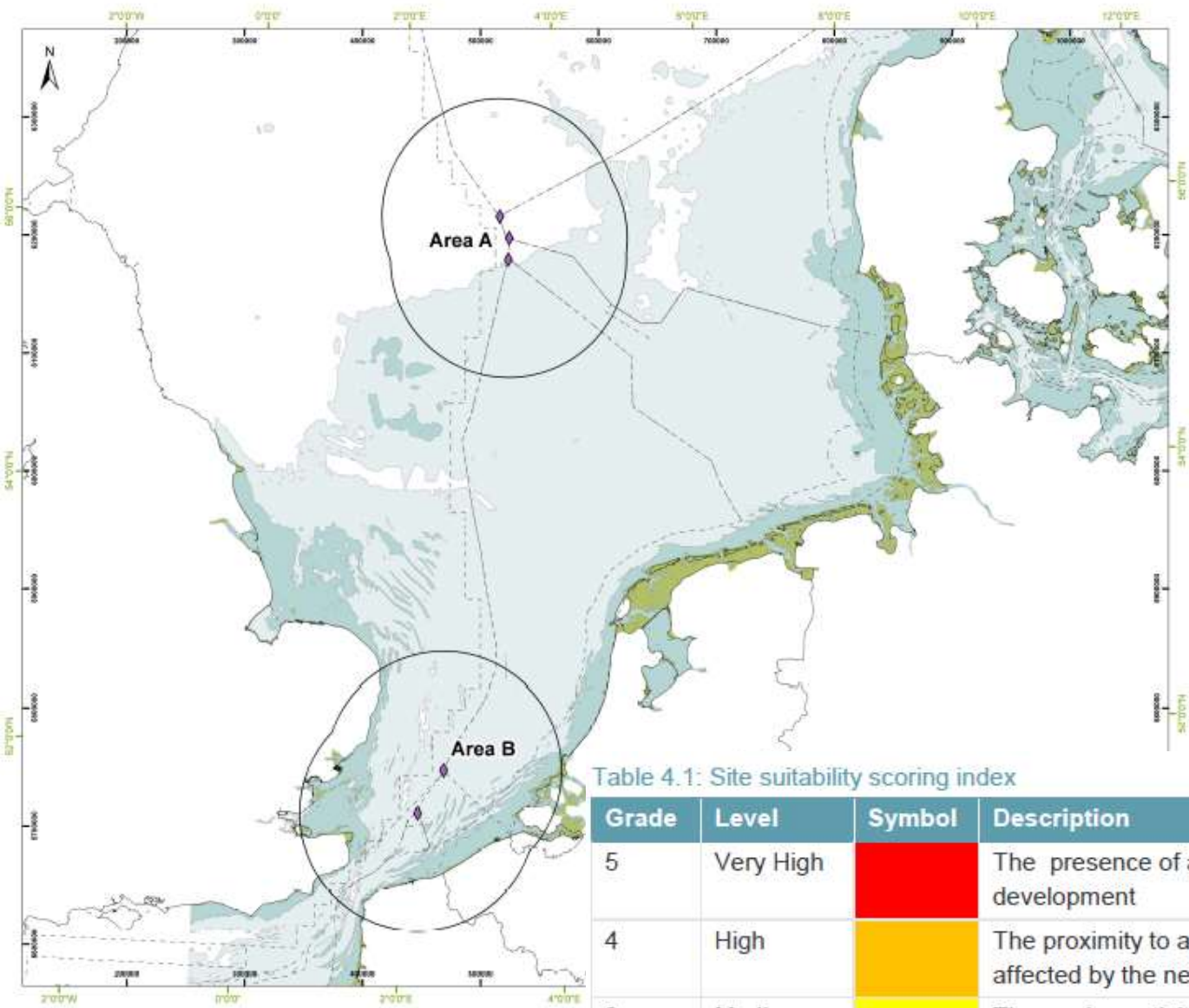
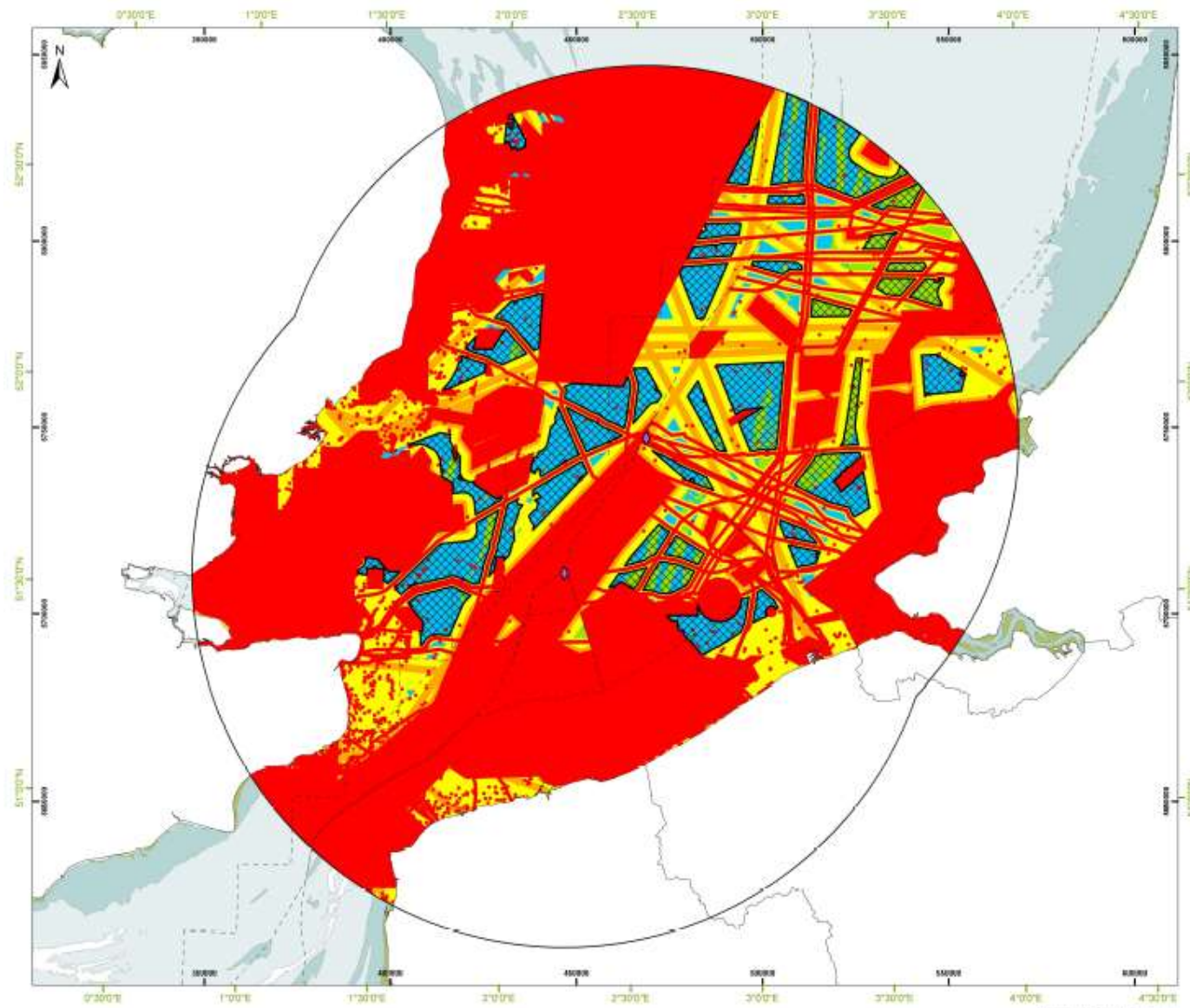


Table 4.1: Site suitability scoring index

Grade	Level	Symbol	Description
5	Very High		The presence of a variable makes the area unsuitable for wind farm development
4	High		The proximity to a suitability receptor or marine activity is adversely affected by the new wind farm or may put the wind farm at risk
3	Medium		The marine activity or sensitive receptor may be adversely affected by the installation and presence of a wind farm although the site may be suitable for development
2	Low		The site is suitable for development and there are only minor adverse impacts anticipated on the sensitive receptor or marine activity
1	Very Low		The site is suitable for development and there are no adverse impacts anticipated on the sensitive receptor or marine activity



Study Area Location

Study Area 10km Buffer

GSA Maritime Boundaries

Possible Wind Farm Site (Greater than 20km Sp)

Bathymetry (m)

0 - 0

00 - 0

00 - 00

Less than -50

Site Suitability Scoring Index

Index	Score
Very High	5
High	4
Medium	3
Low	2
Very Low	1

Excluded Information:

- Problems, submersible cables
- Archaeological sites
- Disposal sites
- Marine Appraisal sites
- Wind farm sites
- Appropriate collection areas
- Marine ship areas

Commercial Navigation:

- Shipping traffic regulation areas
- Porty routes
- Minimum of the sea
- WPC: 0.5km buffer

Distance Exposed sites:

- 0.5km buffer

Designated Conservation Areas:

- Nature 2000
- MHA

Commercial Navigation:

- 0.5km buffer

Distance from shore:

- 0 - 100m
- 10 - 1000m

Distance from shore:

- 0 - 100m
- 10 - 1000m

Distance from shore:

- 0 - 100m
- 10 - 1000m

Geometric Information

PROJECTION: UTM 31 NORTH

SPHEROID: WGS 1984

DATUM: WGS 1984

SCALE: 1:100,000

PAPER SIZE: A3 (42 x 59.7 cm)

Figure 3b: Study Area B

Site Suitability Scoring Assessment

Results Showing Potential

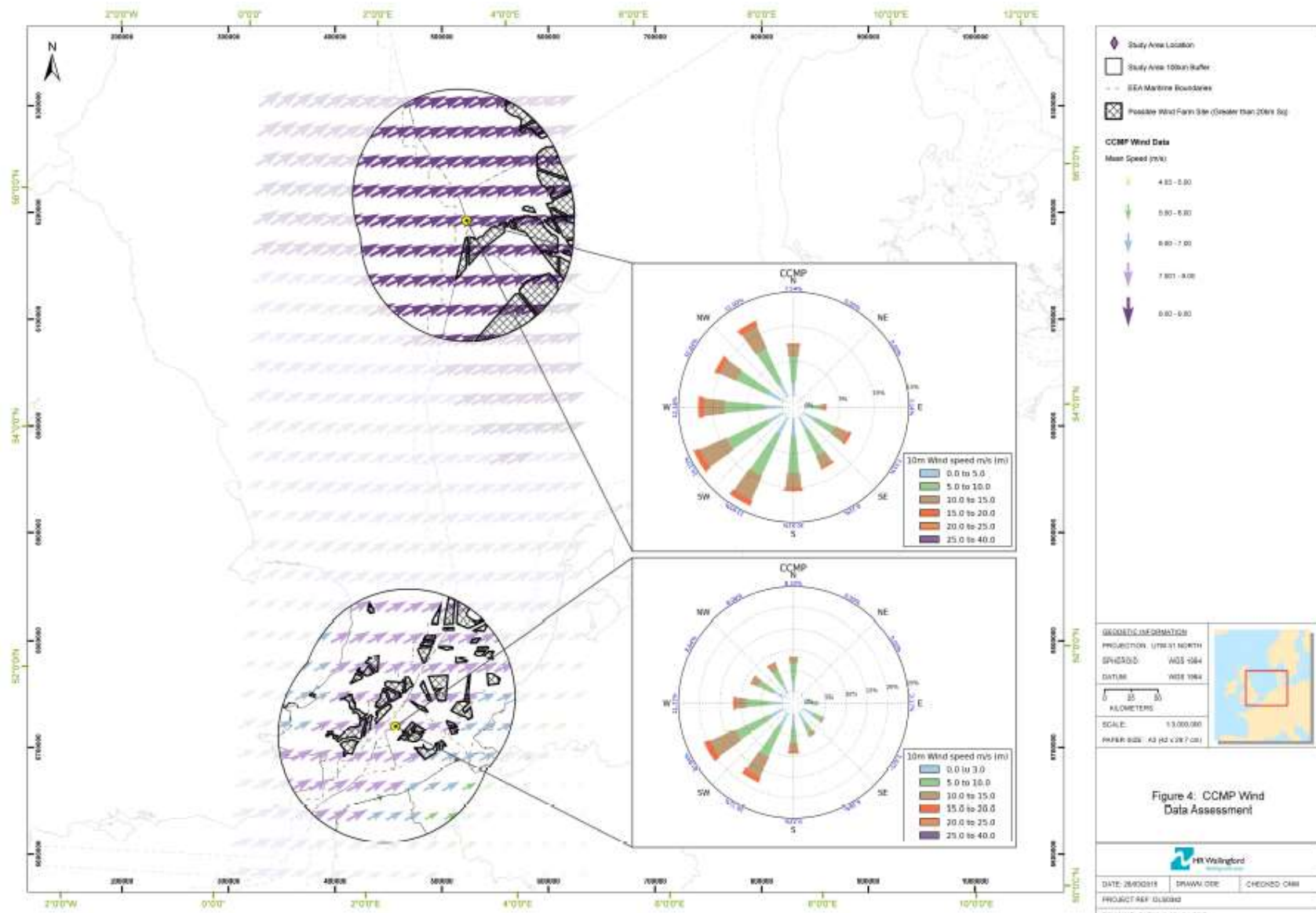
Wind Farm Areas

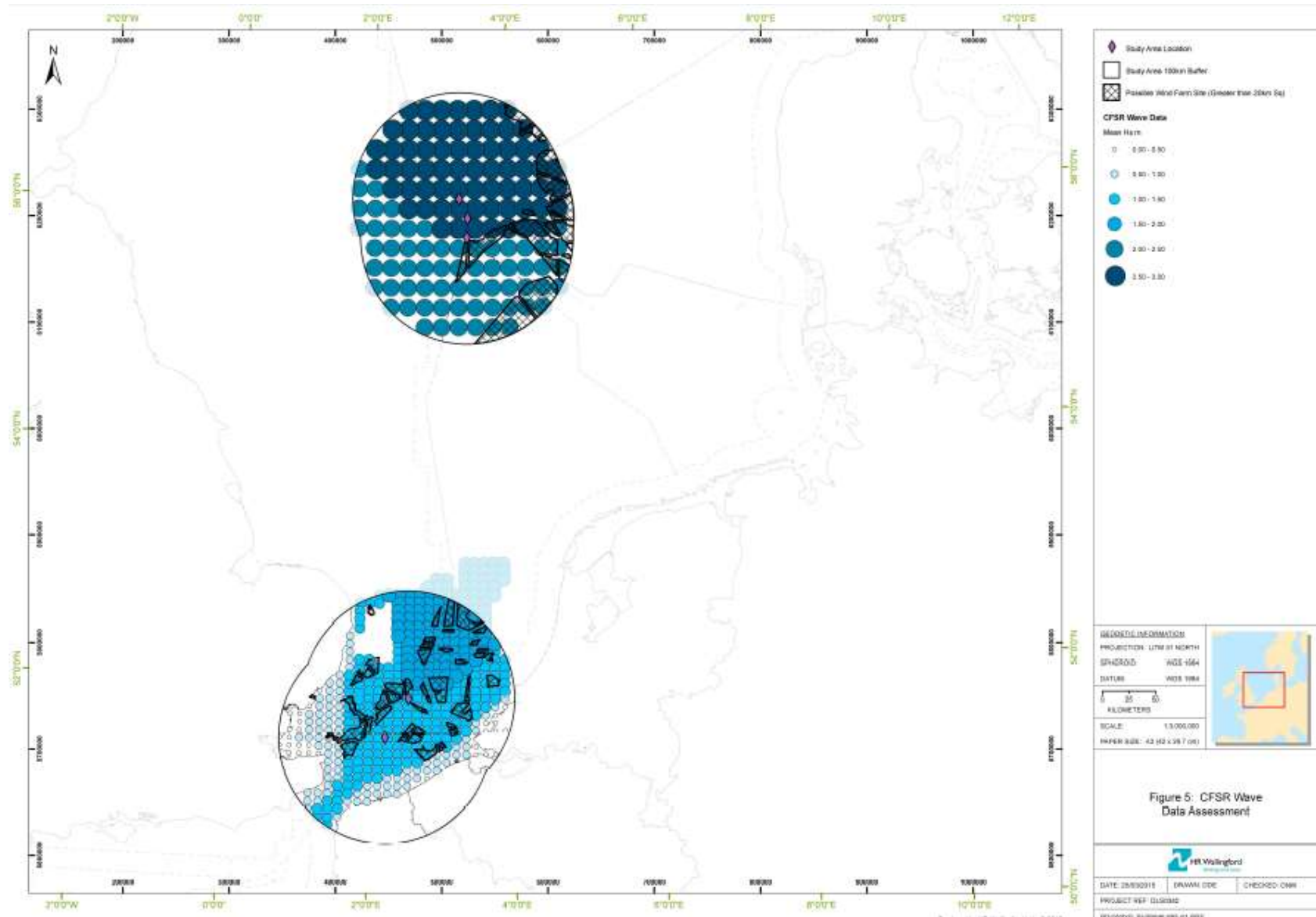
HR Wallingford

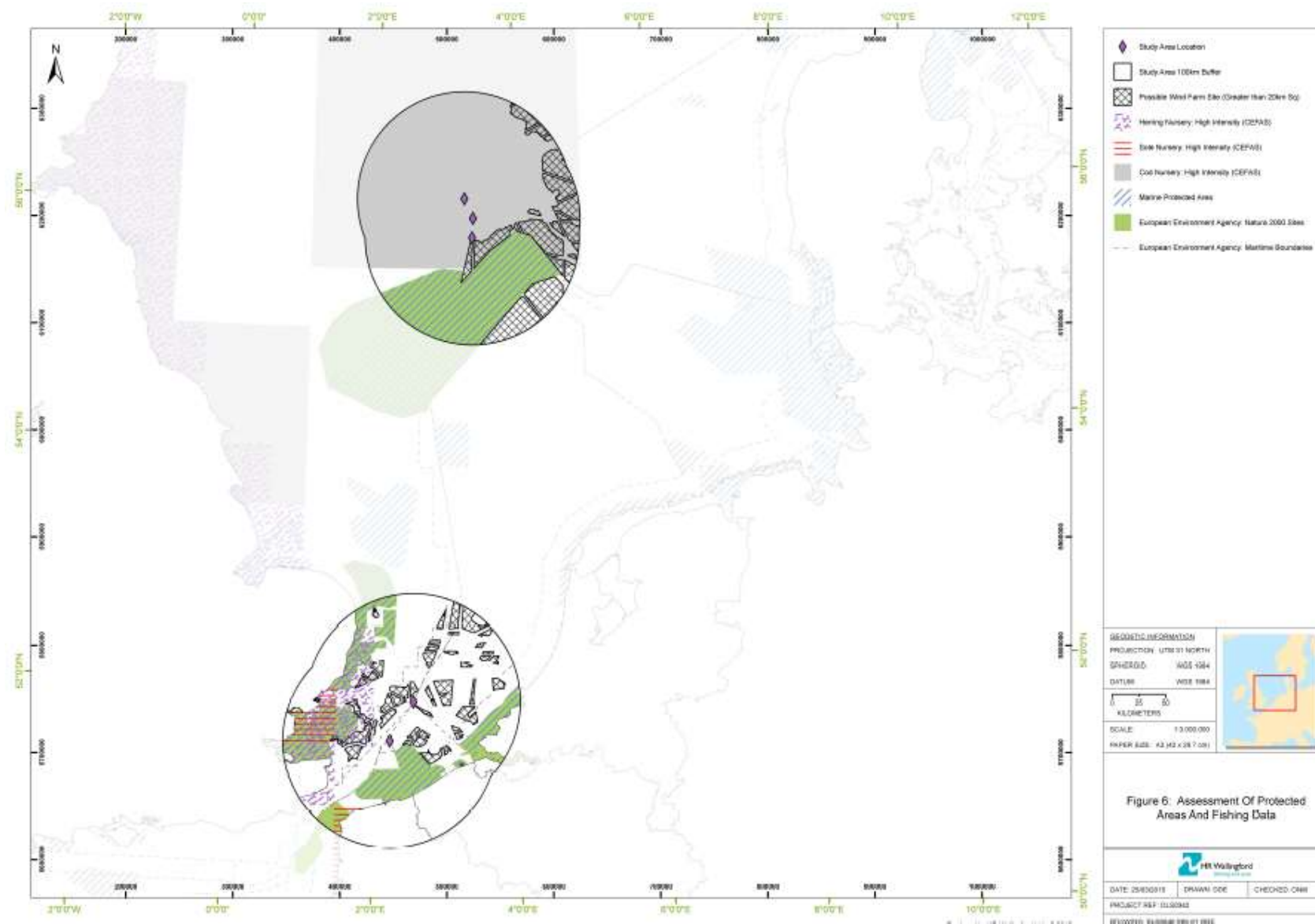
DATE: 25/03/15 DRAWN: CDE CHECKED: DMH

PROJECT REF: 000942

REVISED: 000000 0000 01 000







North Sea wind farm challenge

Data sources

(1) Mapping of current sea-use:

To avoid siting a wind farm in an area of seabed already in use the following datasets were mapped and defined:

- Existing sea-use:
 - Administrative/legislative boundaries
 - Cables and pipelines
 - Other wind farms and renewable energy devices
 - Oil and gas installations
 - Marine aggregate dredging grounds
 - Offshore disposal sites
 - Military training and disposal grounds
- Seabed obstructions e.g. ship wrecks
- Shipping lanes
- Environmental sensitivities
 - Marine protected areas



North Sea wind farm challenge

Data sources

(2) Mapping of Environmental Parameters:

- Bathymetry
- Seafloor geology
- Distance from grid/supply chain
- Wind strength
 - Maxima, Averages, Gusting, Long-term data, Direction
- Tidal data
- Wave data
- Topography

Also:

- Environmental sensitivities:
 - Bird migration routes
- Commercial fishing grounds
- Distance from shore (visibility)

