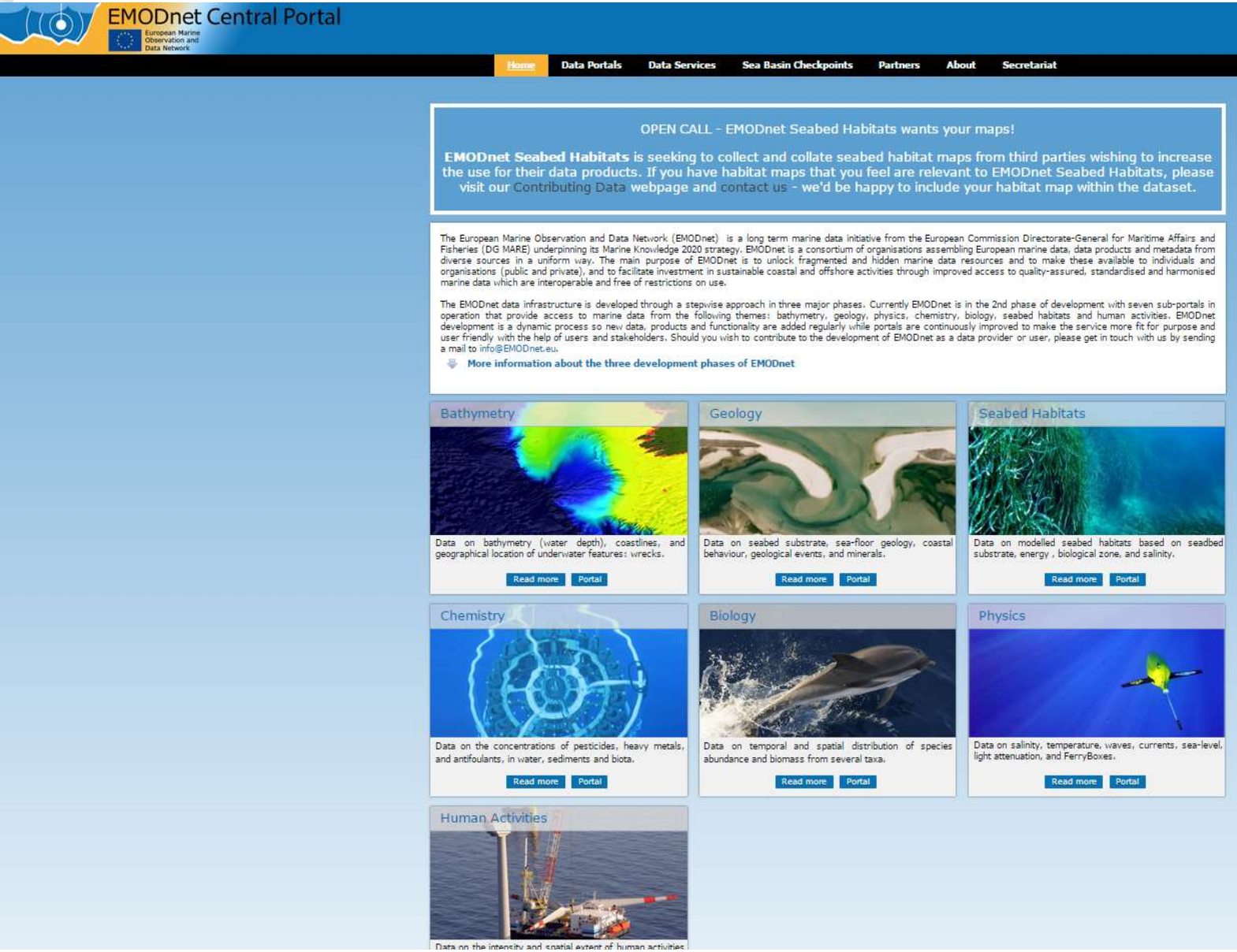
https://www.youtube.com/watch?v=7taT9croynk&feature=youtu.be

Introduction to EMODnet and EuroGOOS

Patrick Gorringe
EuroGOOS AISBL
patrick.gorringe@eurogoos.eu

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



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

EMODnet
European Marine Observation and Data Network
myOcean
SeaDataNet
BOOS
describes the actual, anticipates the future, and classifies the state of the Baltic Sea
Arctic ROOS
NOOS
IBIROOS
mongoos

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”

EMODnet
European Marine Observation and Data Network

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

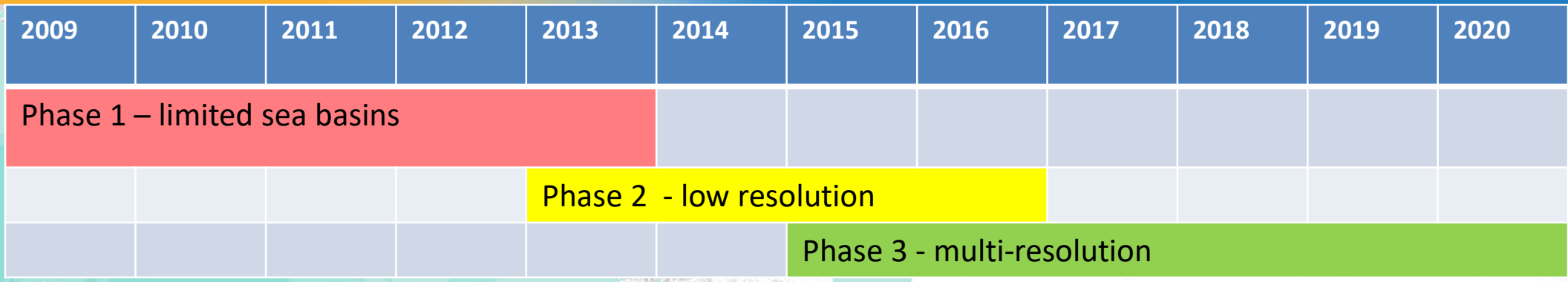
Core principles for development

- **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**

EMODnet
European Marine Observation and Data Network

Where are we?



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

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

- Bathymetry
- Geology
- Physics
- Chemistry
- Biology
- Physical habitats

- Bathymetry
- Geology
- Physics
- Chemistry
- Biology
- Physical habitats
- Human activity

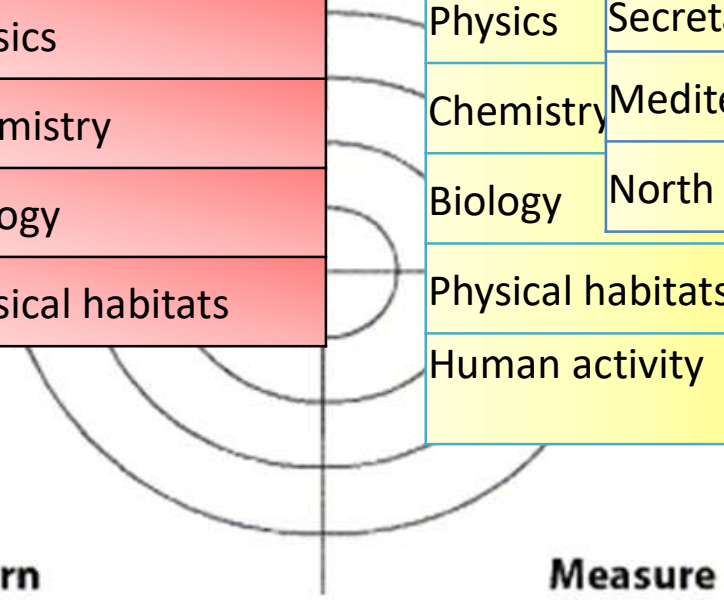
- Secretariat – Central portal
- Mediteranean check point
- North Sea Check point

s users to assess

product by

- Artic check point
- Atlantic check point
- Baltic Check point
- Black Sea Check point

- Euro ARGO
- Multi Source Data



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

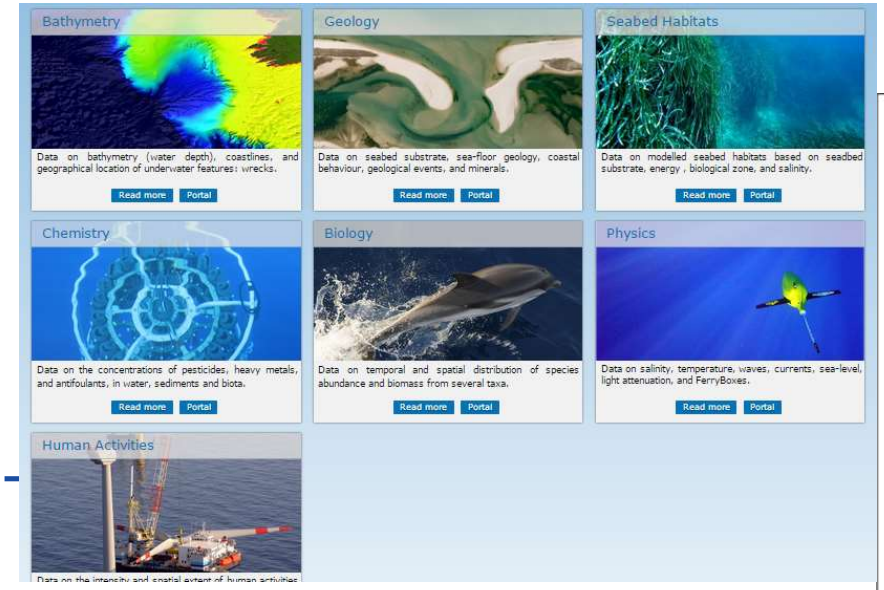
Overarching goal to develop a more efficient, effective, fit for purpose EMODnet which is better known and more widely used

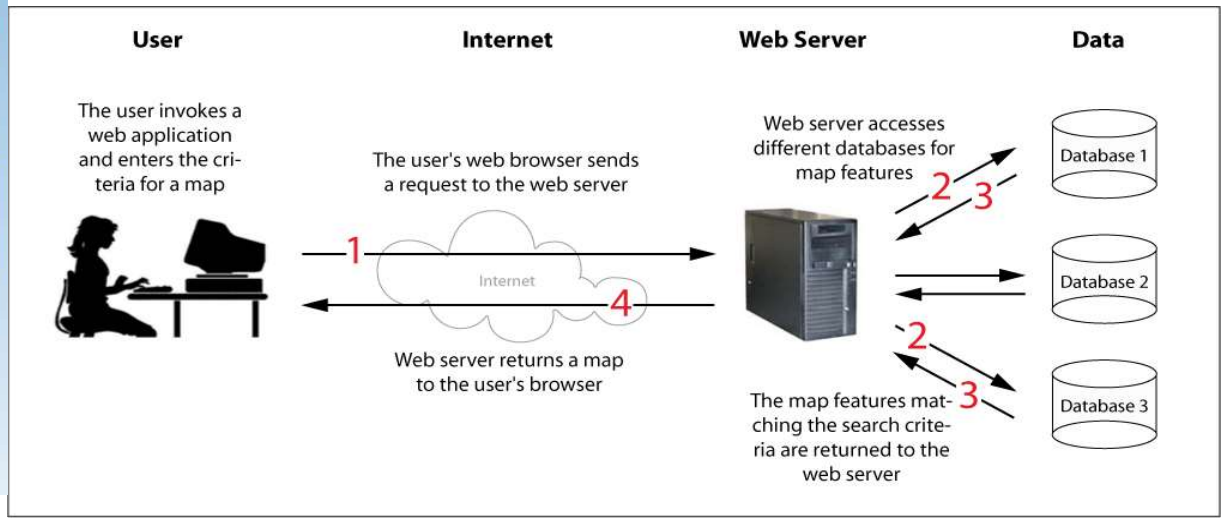
1. Coordination & internal communication
   - Steering Committee / internal updates / guide entry portal / support MODEG
2. Monitoring
   - Test functionality / implement progress indicators / collect user-feedback / progress reports / report lessons learned / guide portals to improve them
3. Dissemination and Outreach
   - Prepare/give on-line demonstrations / videos / brochure/ posters etc.

The Central Portal

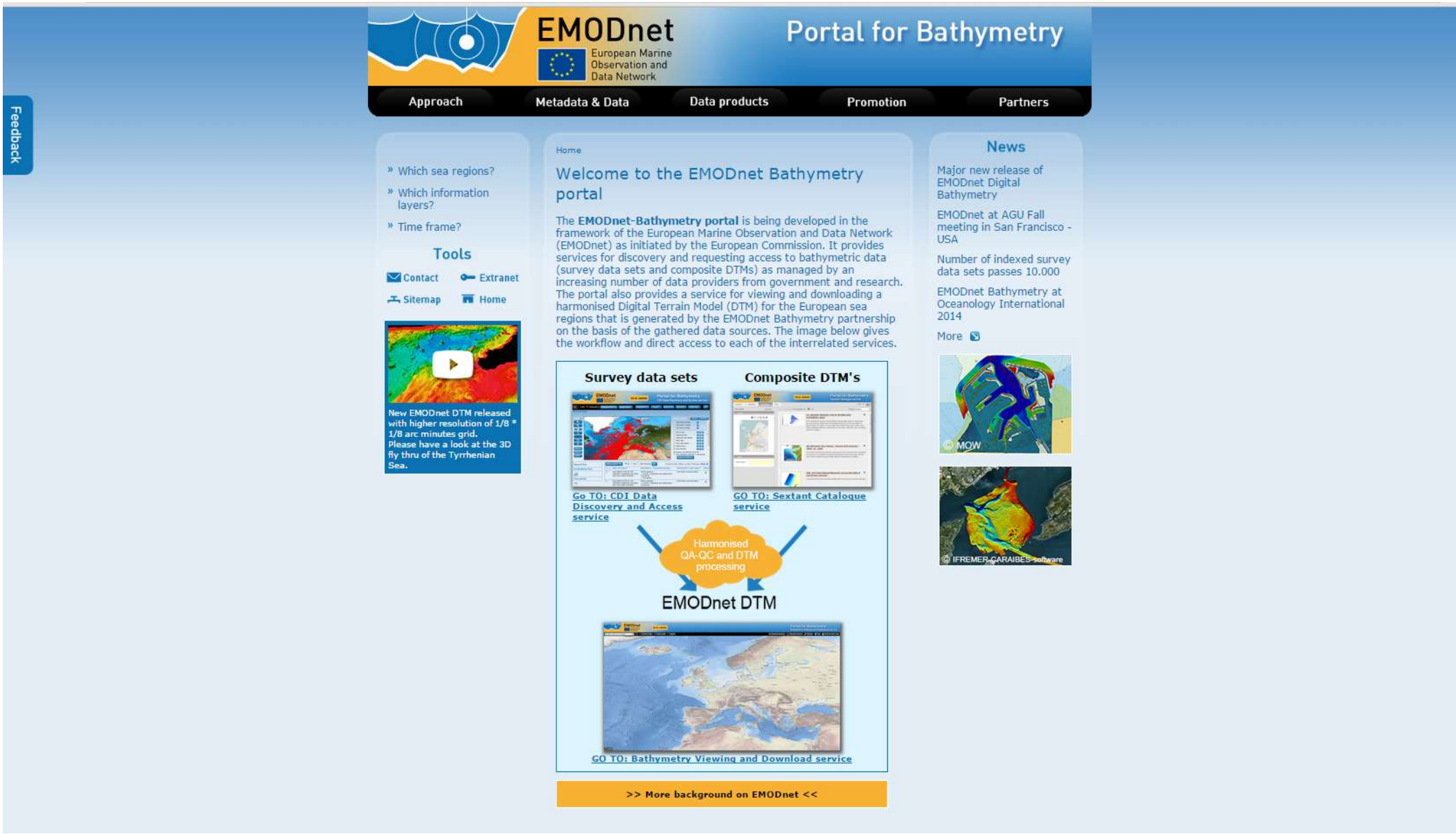
www.emodnet.eu

- 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

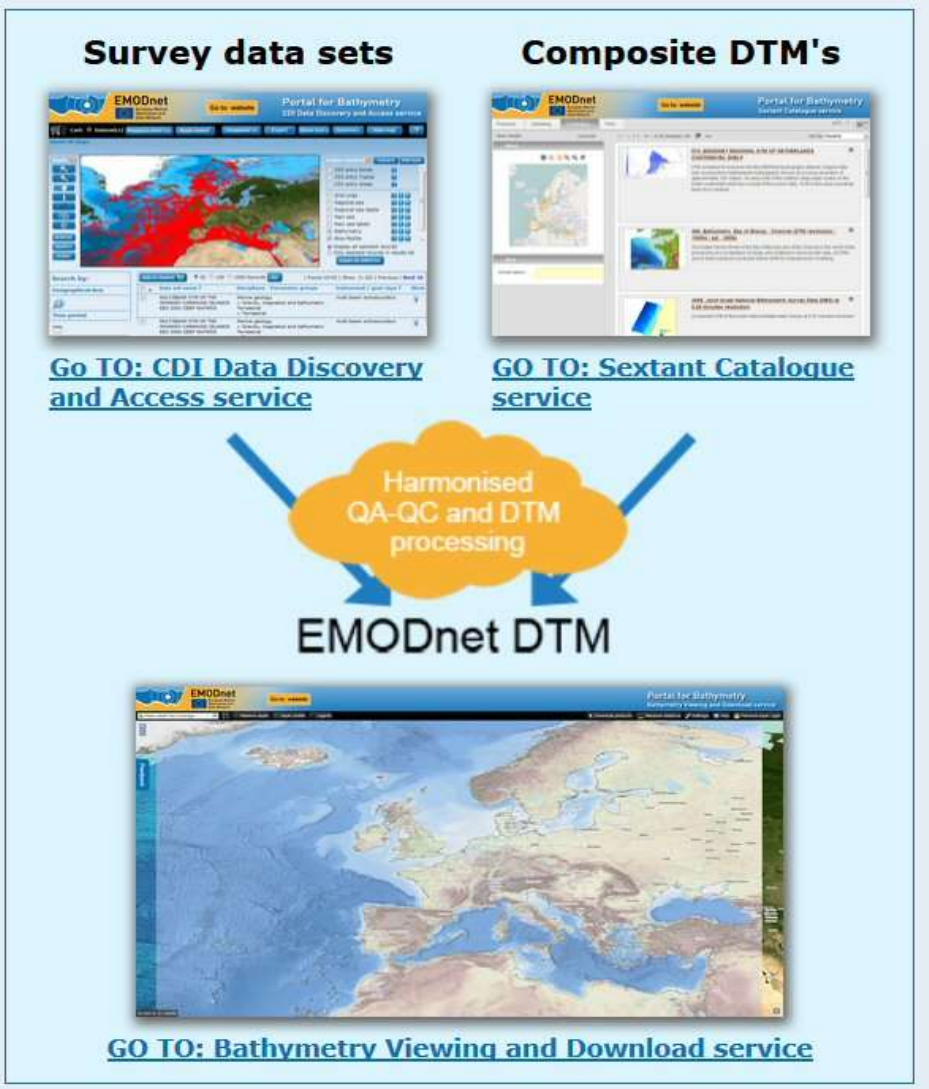


1. EMODnet Bathymetry (1)

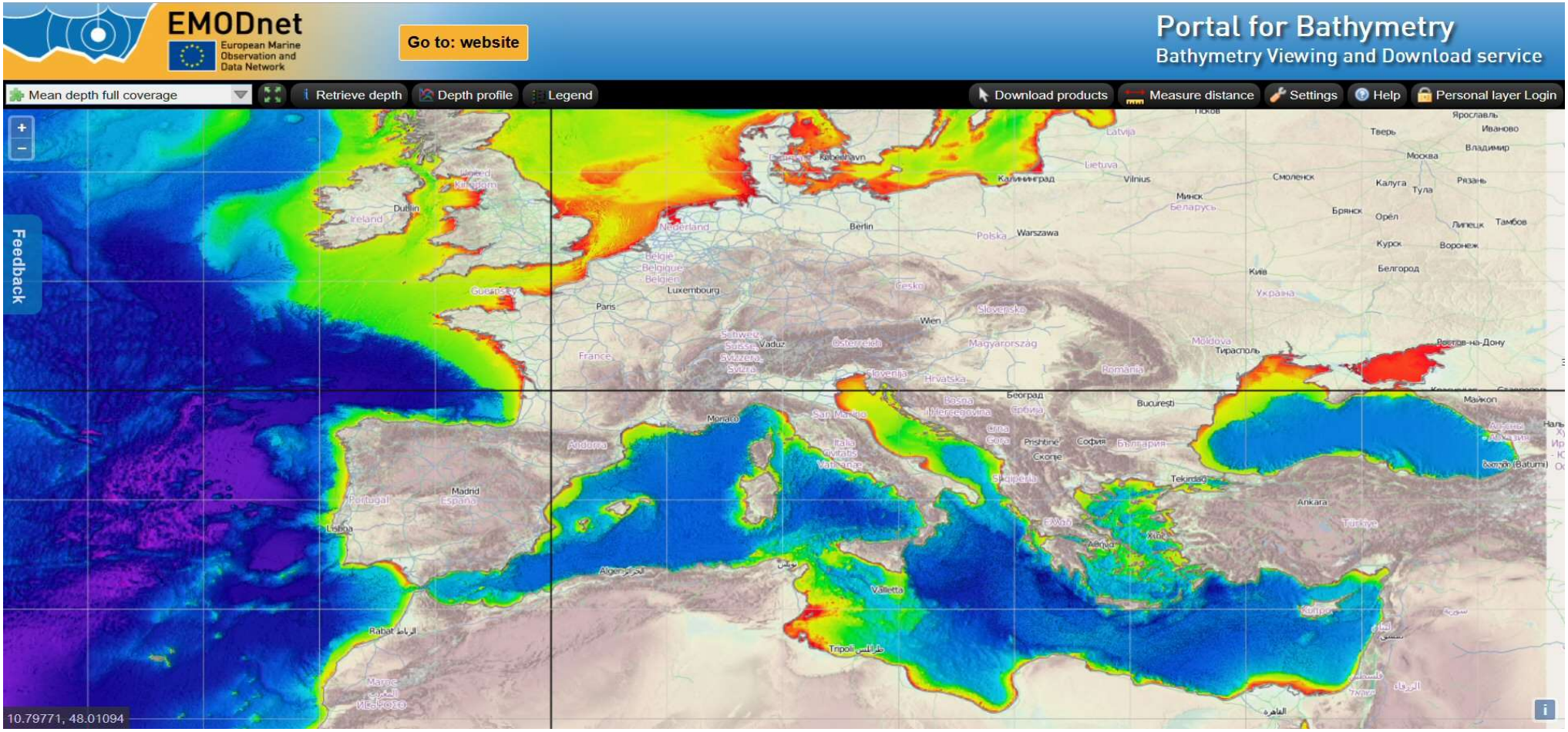
- Providing overview and access to bathymetric survey data
- Generating and providing free access to a harmonised medium resolution Digital Terrain Model (DTM) for all European seas
- Data (single beam, multibeam, plummets, LIDAR, ..) comes from national hydrographic services, marine research institutes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

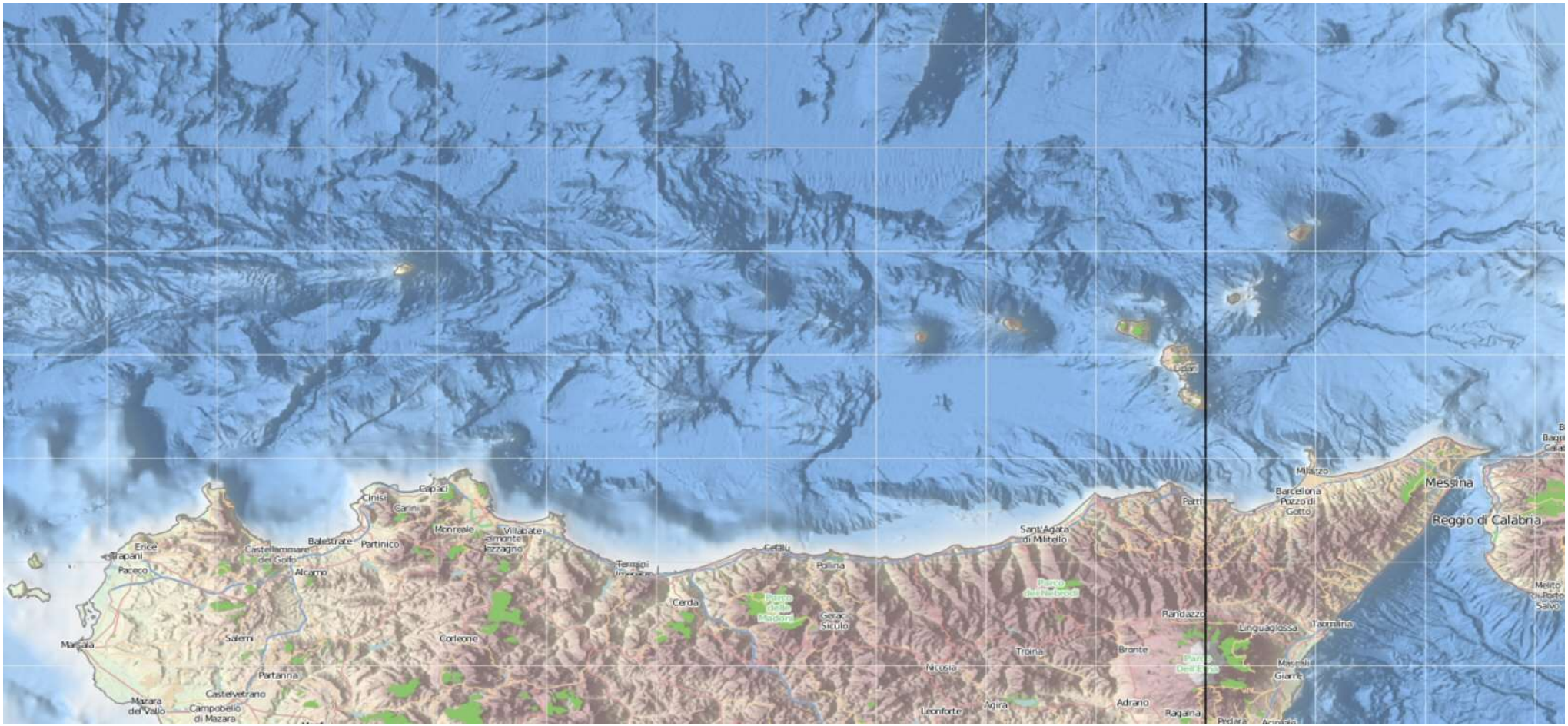


EMODnet Bathymetry (3)



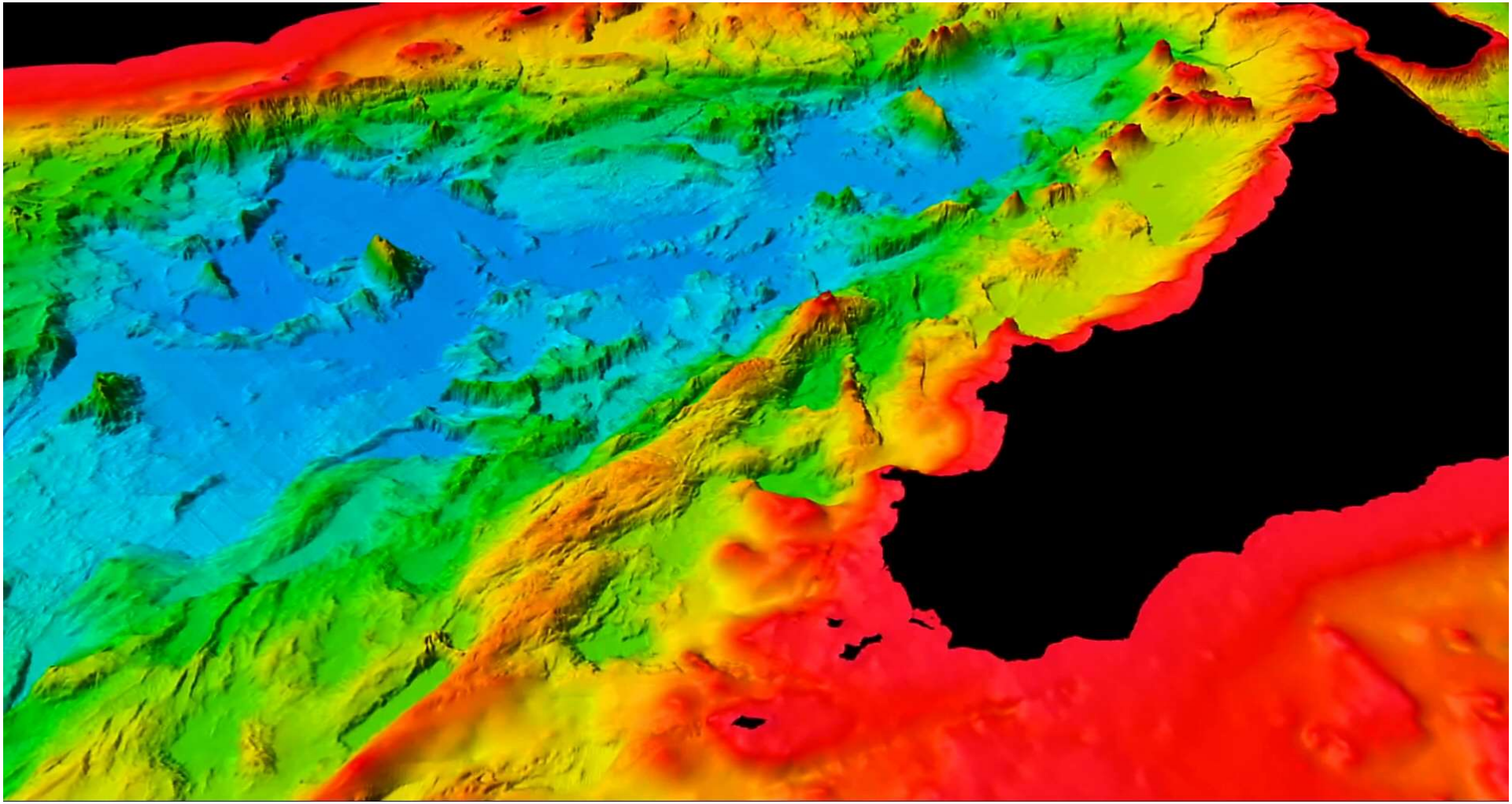
EMODnet DTM in rainbow colour

EMODnet Bathymetry (4)



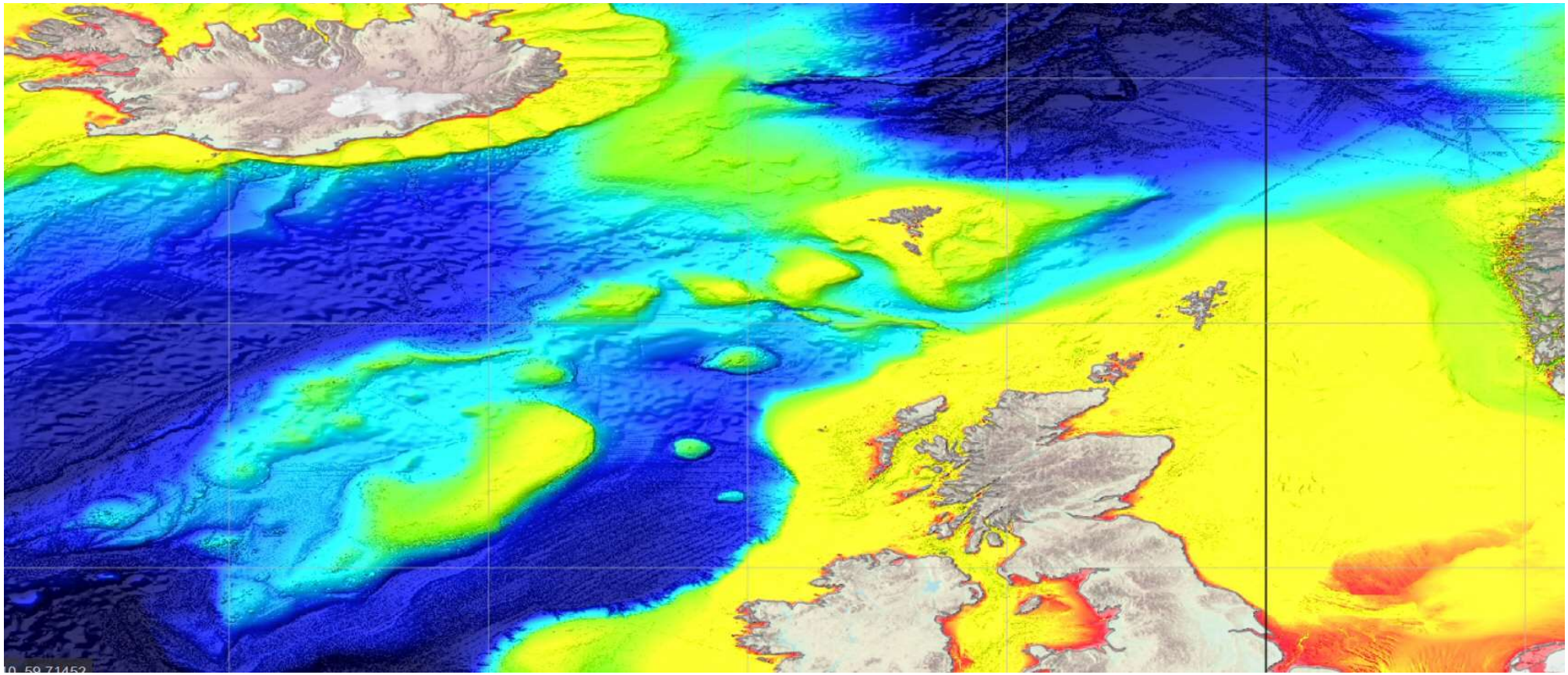
EMODnet DTM detail near Sicily in atlas colour

EMODnet Bathymetry (5)



3D visualization

EMODnet Bathymetry (6)



www.emodnet-bathymetry.eu

2. EMODnet Geology (1)

EMODnet
European Marine Observation and Data Network

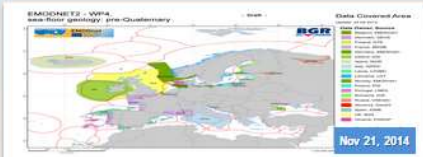
LOGIN Guest

Geology

HOME | CATALOG | MAP | PORTALS | LINKS | CONTACT US | HELP | ABOUT | English

Online data | Data for download | No direct download | show advanced options

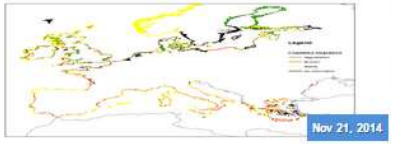
EMODnet-Geology



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 IG-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

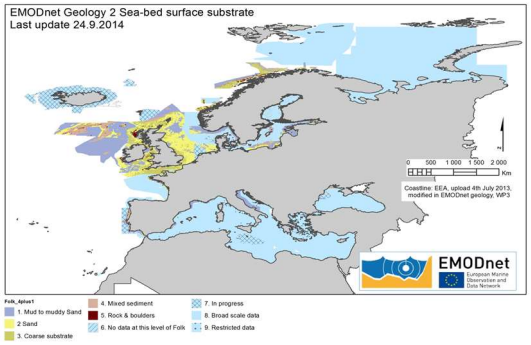
continental margin | debris flow | fjord | geologic events | geologic hazards | geoscientificInformation | infoMapAccessService | marine geology | mudflow | ocean | off-shore landslides | sea | shelf | slide | submarine slide

LATEST

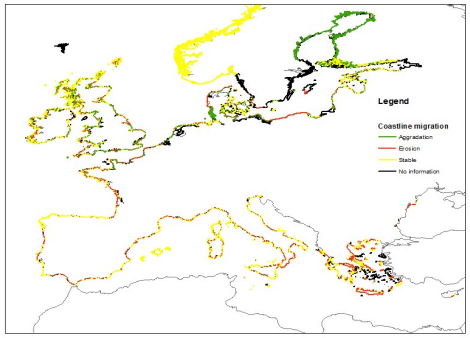
BGR Emodnet Stratigraphy | NGU EMODNET Submarine | Aggregate Resources | NGU EMODNET Submarine | NGU EMODNET Submarine

EMODnet Geology (2)

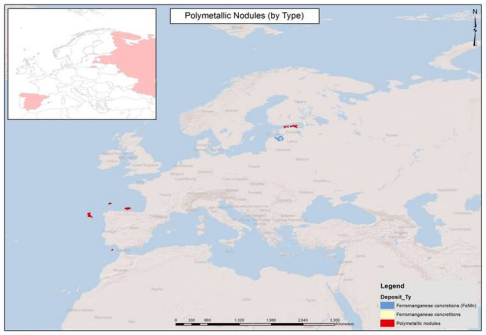
- Portal provides access to information primarily held by national geological surveys:
  - harmonised **sea-bed substrate** and bedrock geology at 1:250,000 scale where available;
  - Information on **coastal behaviour** (migration; erosion; accretion);
  - Locations of earthquake activity, volcanoes,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



Seabed substrate



Coastal behaviour

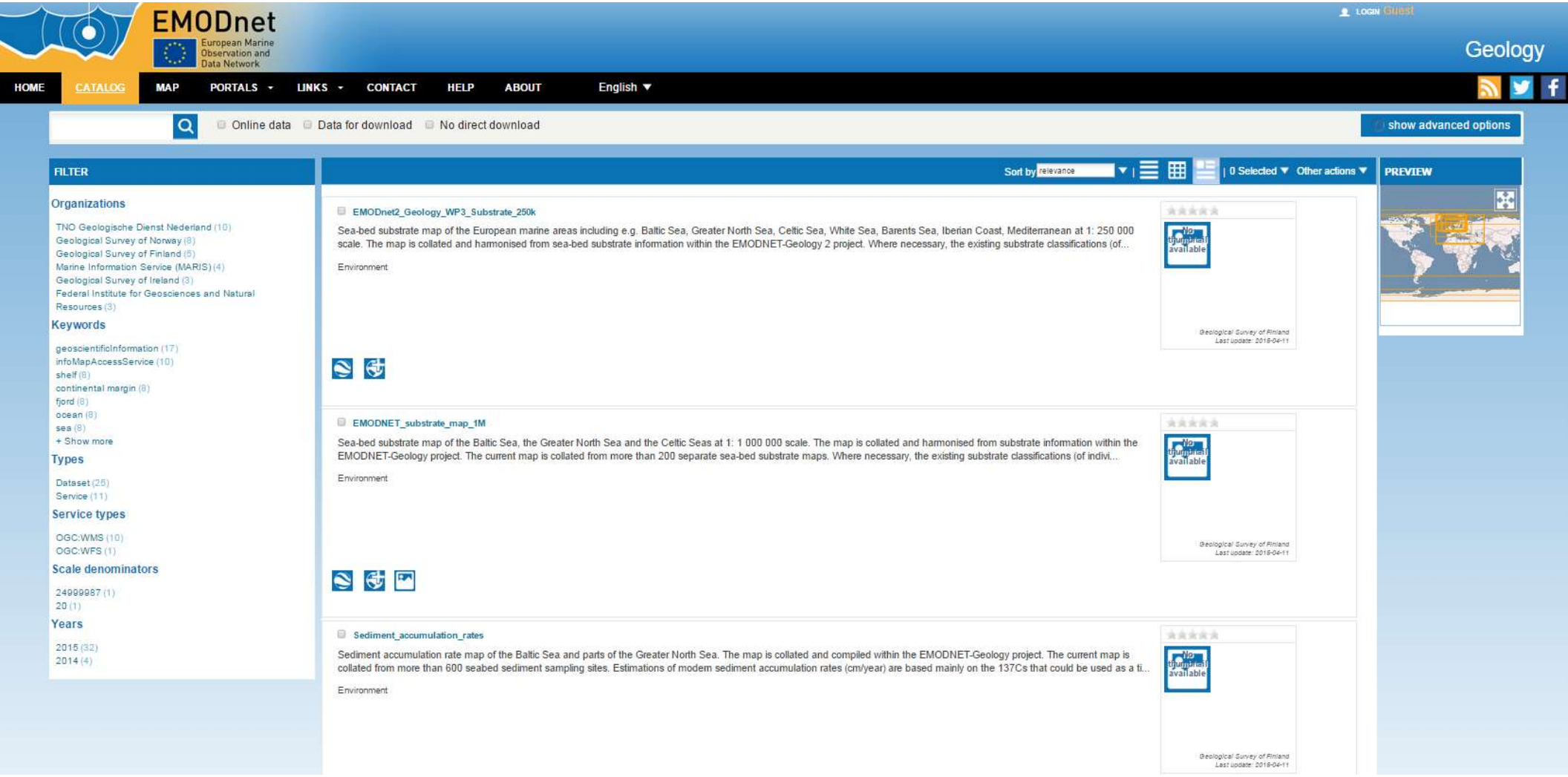


Minerals

EMODnet Geology (3)

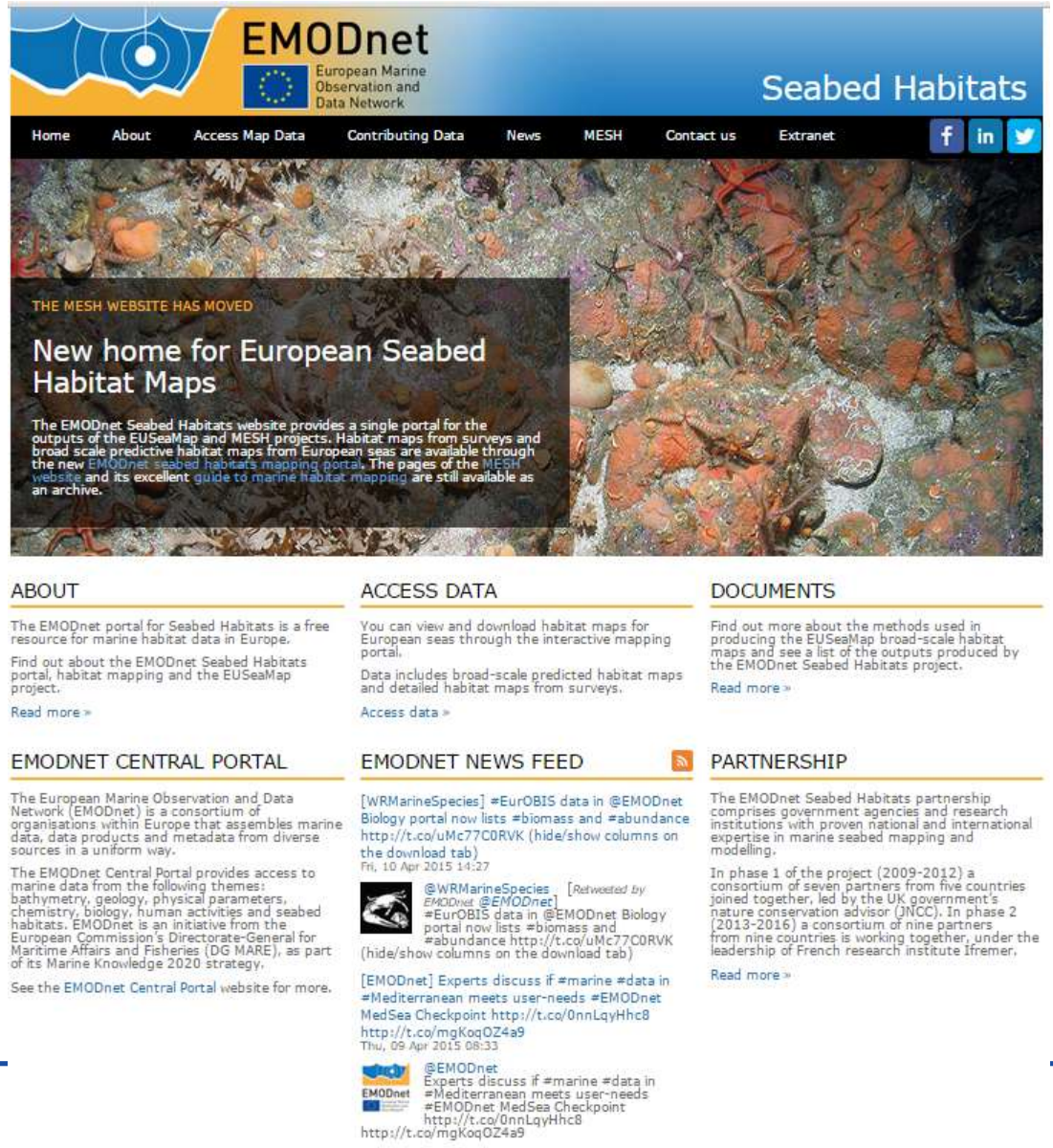
- Advantages
  - Central access to **geological information from 30 countries**;
  - Building on **open-source platform** providing access to national geological survey information and to **provide best available data and access to national data catalogues.**
- Challenges
  - Accessing third party data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

EMODnet Geology (4)



www.emodnet-geology.eu

3. EMODnet Seabed habitats (1)

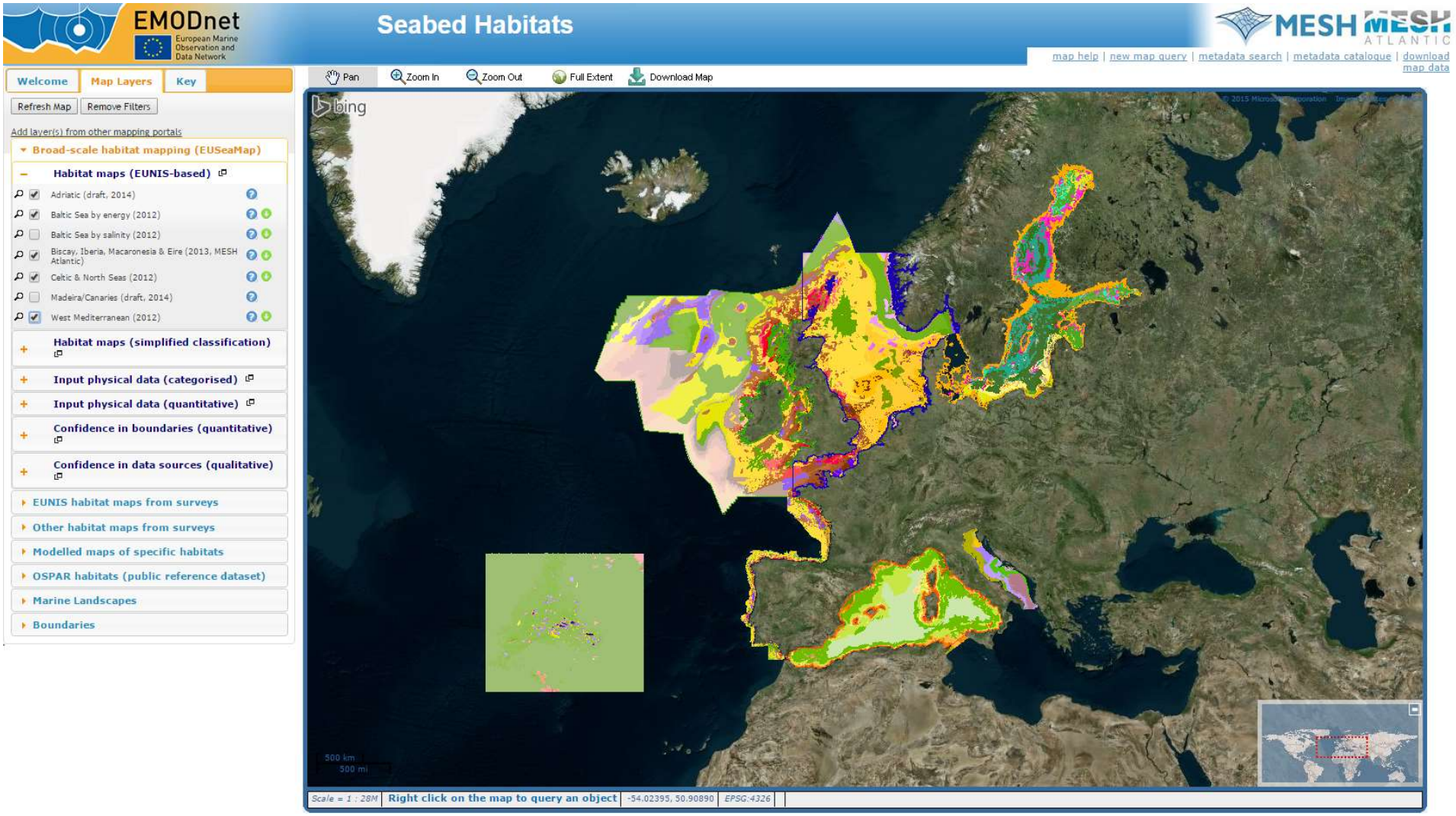


3. EMODnet Seabed habitats (2)

- Building on the highly successful INTERREG IIIB-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
European Marine Observation and Data Network
Portal for Chemistry

Home | Data Access | Data Products | Partners | Acknowledgment

>>Portal Services Map>>

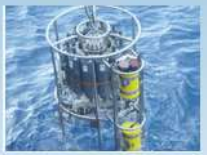
OVERVIEW
PRIVATE AREAS
REPORTS TO EU
MEETINGS
DOCUMENTS

>>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.

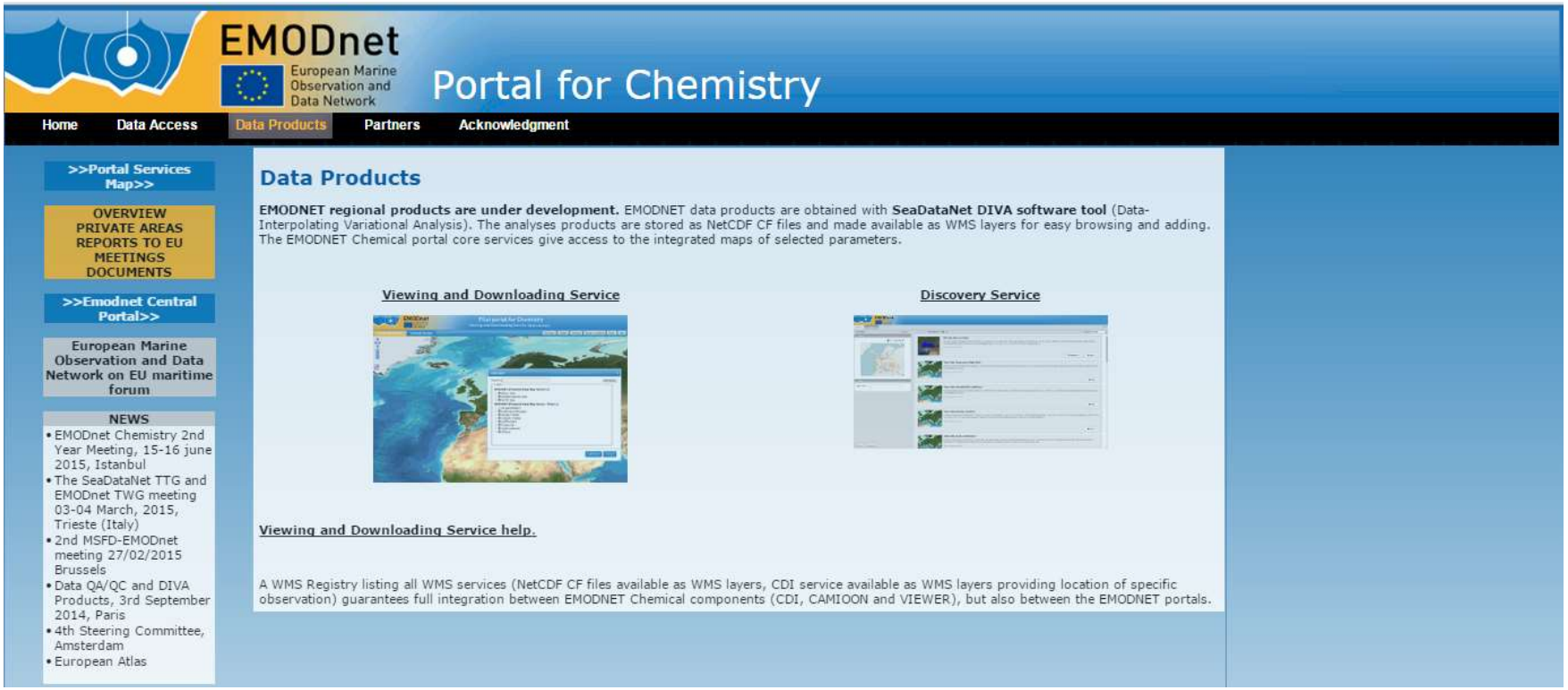
1-50	51-250	251-1000	1001-2500
2501-5000	5001-10000	10001-25000	>25000

Sea regions

Group of Variables	Greater North Sea - Celtic Sea - Norwegian Sea	Baltic Sea 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.



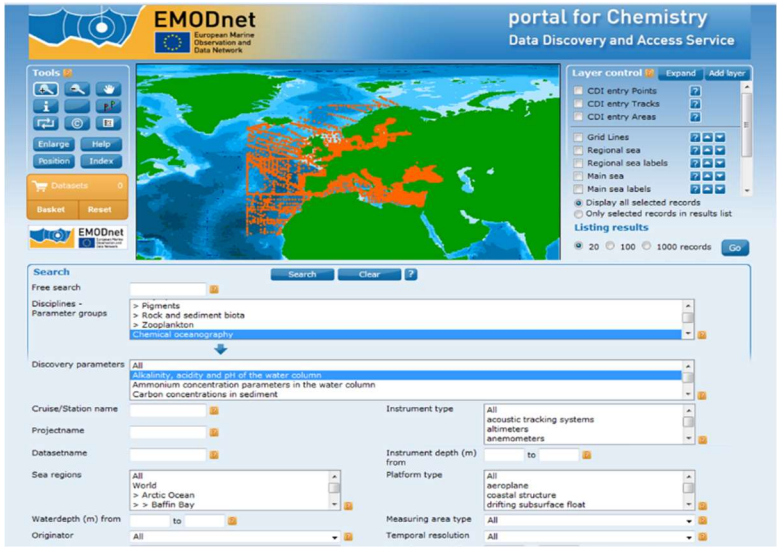
4. EMODnet Chemistry (1)

chlorophyll
organic matter
nutrients
acidity
oxygen

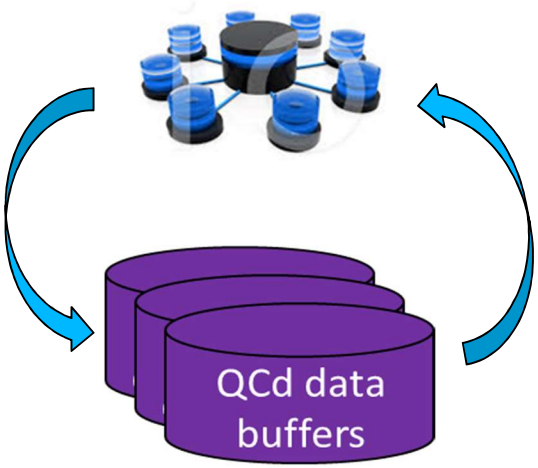
water column

heavy metals
pesticides
biocides
radionuclides
hydrocarbons
pharmaceuticals
antifoulants

sed - bio



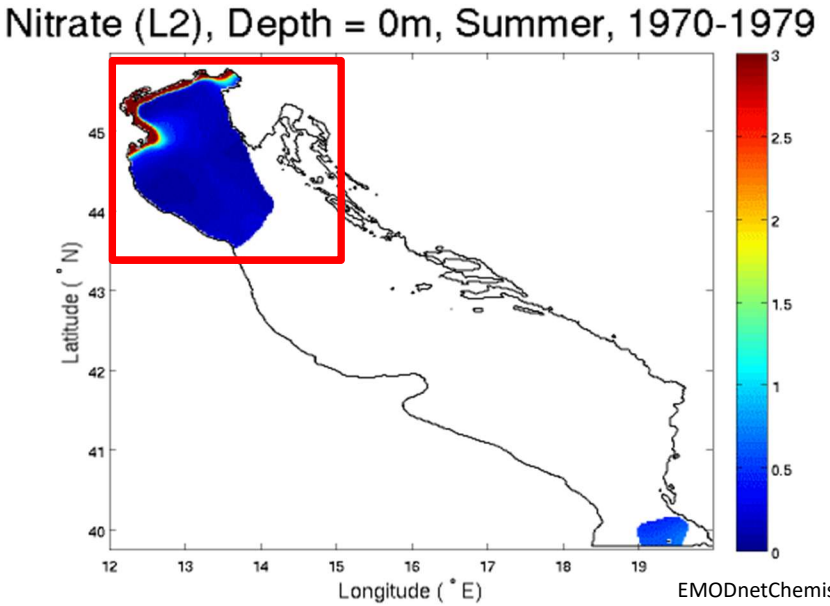
Methodology for Data Assembly

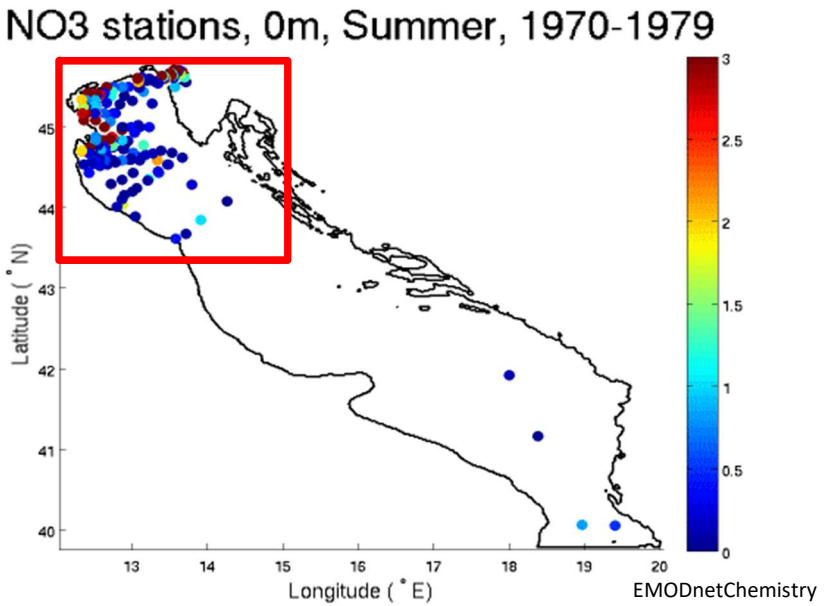


- **DIVA (Data-Interpolating Variational Analysis) concentration maps** for parameters **with homogeneous coverage**, measured at **basin scale**;

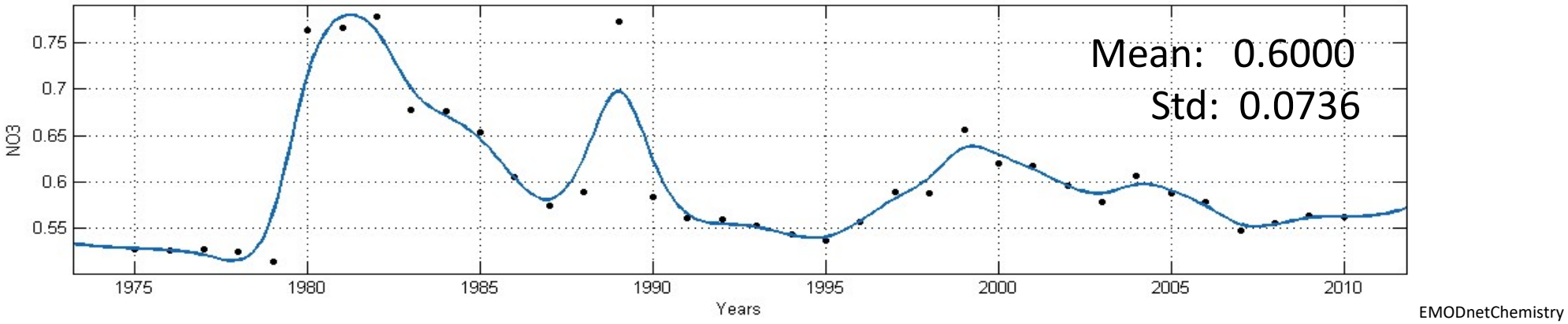
-Dynamic **plots** and coastal visualizations for not homogeneous data (**coastal points** repeated in time, datasets with **fragmented coverage**)

4. EMODnet Chemistry (2)



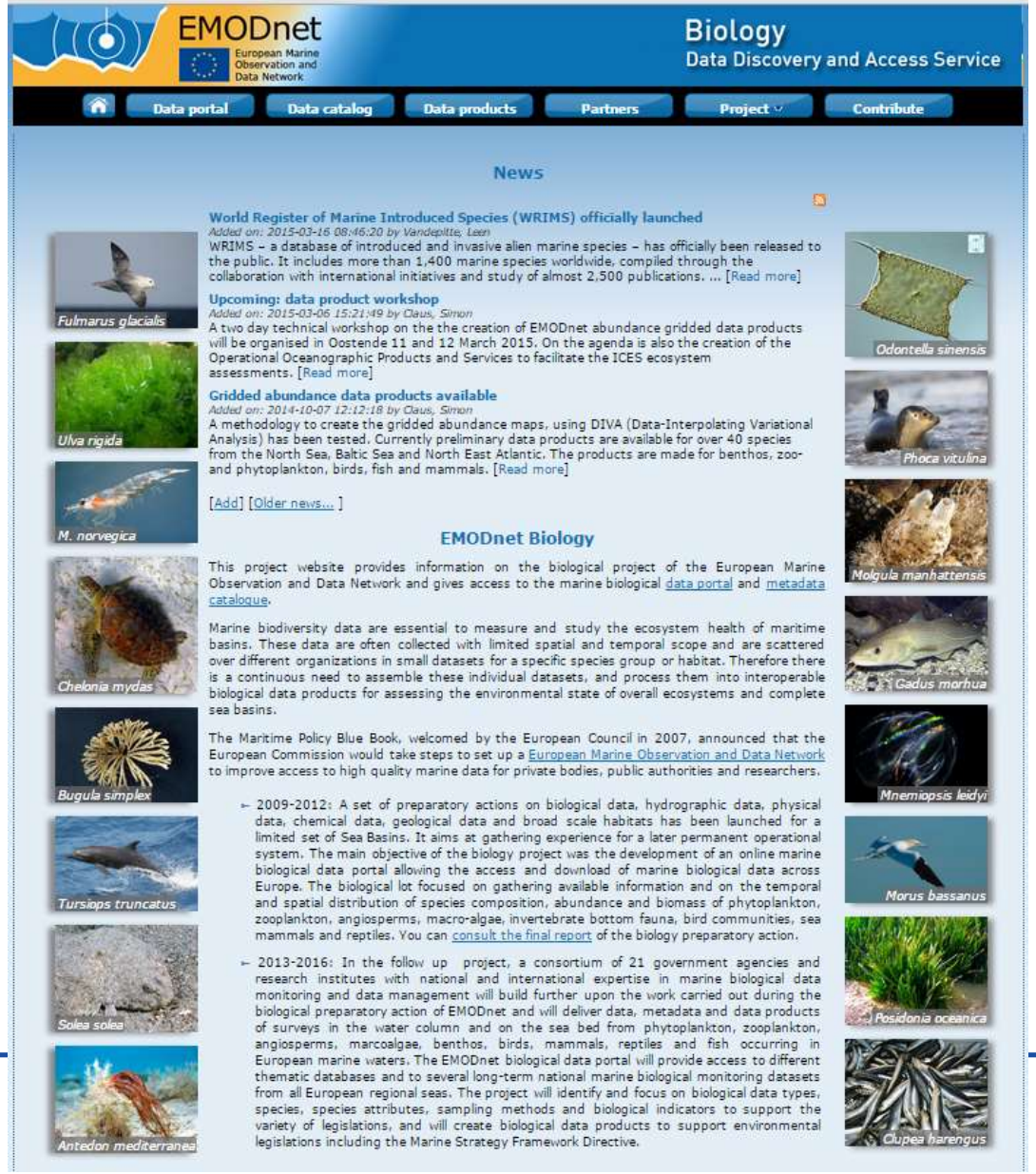


Horizontal distribution maps, produced with **10-year moving window**



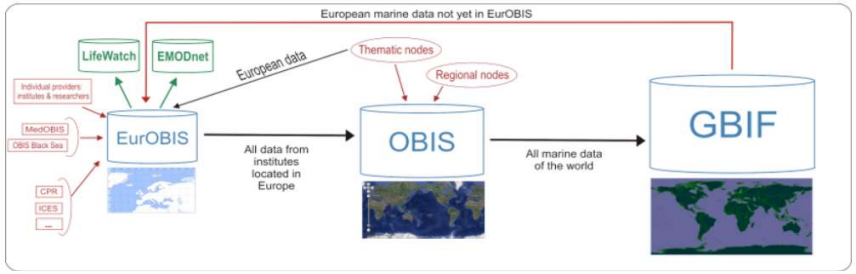
Mean summer NO3 at first 10 m, over the area N43.5-46, E12-15

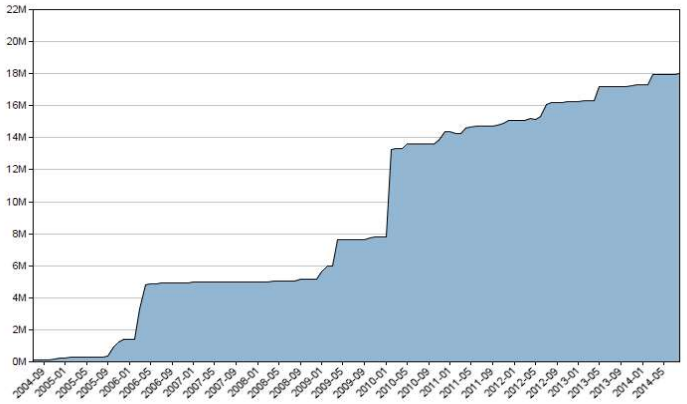
5. EMODnet Biology (1)



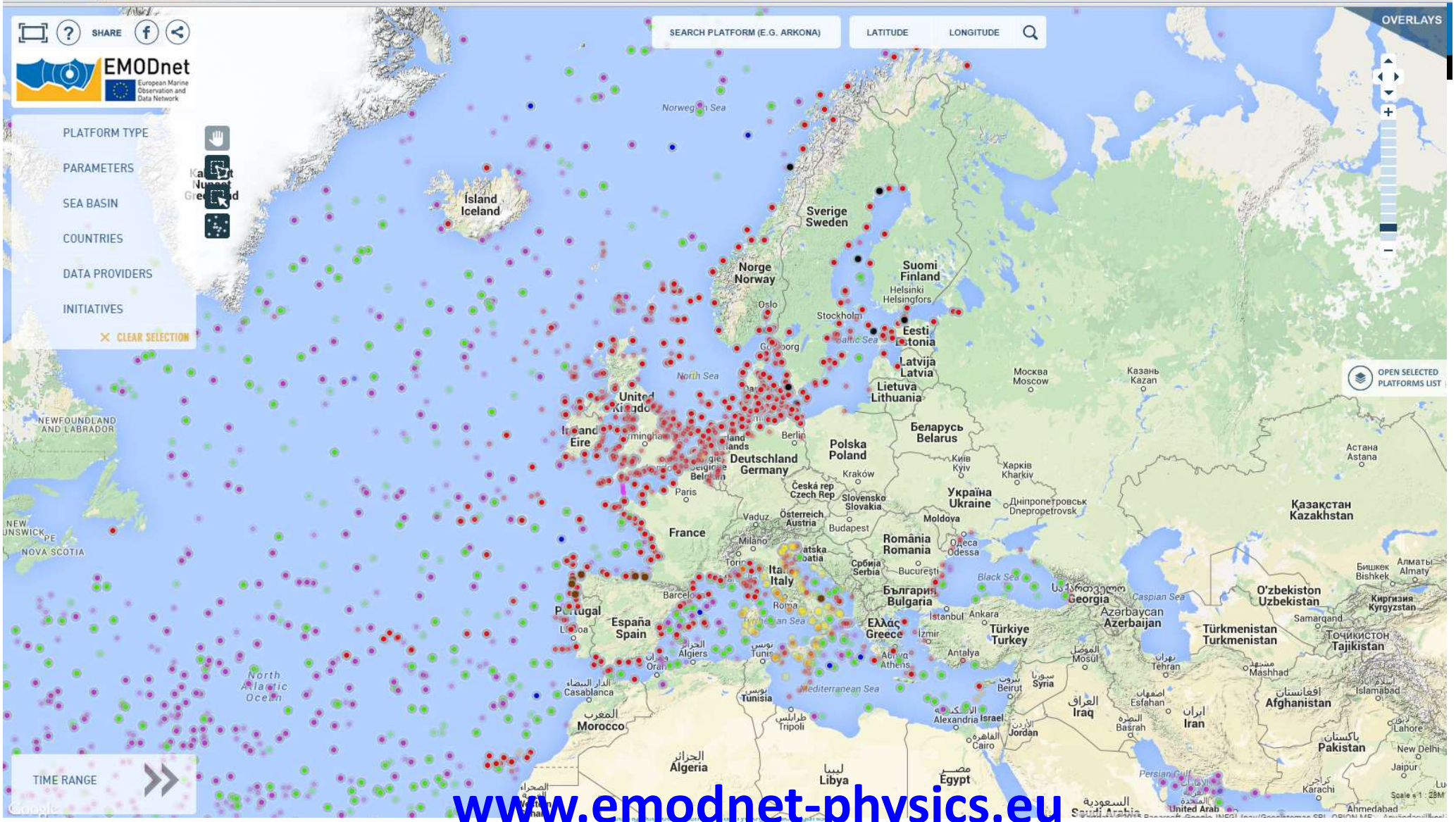
5. EMODnet Biology (2)

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





6. EMODnet Physics (1)



www.emodnet-physics.eu

7. EMODnet Human Activities (1)

EMODnet Central Portal

European Marine Observation and Data Network

Home | Data Portals | Data Services | Sea Basin Checkpoints | Partners | About | Secretariat

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

COGEA

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

7. EMODnet Human Activities (2)

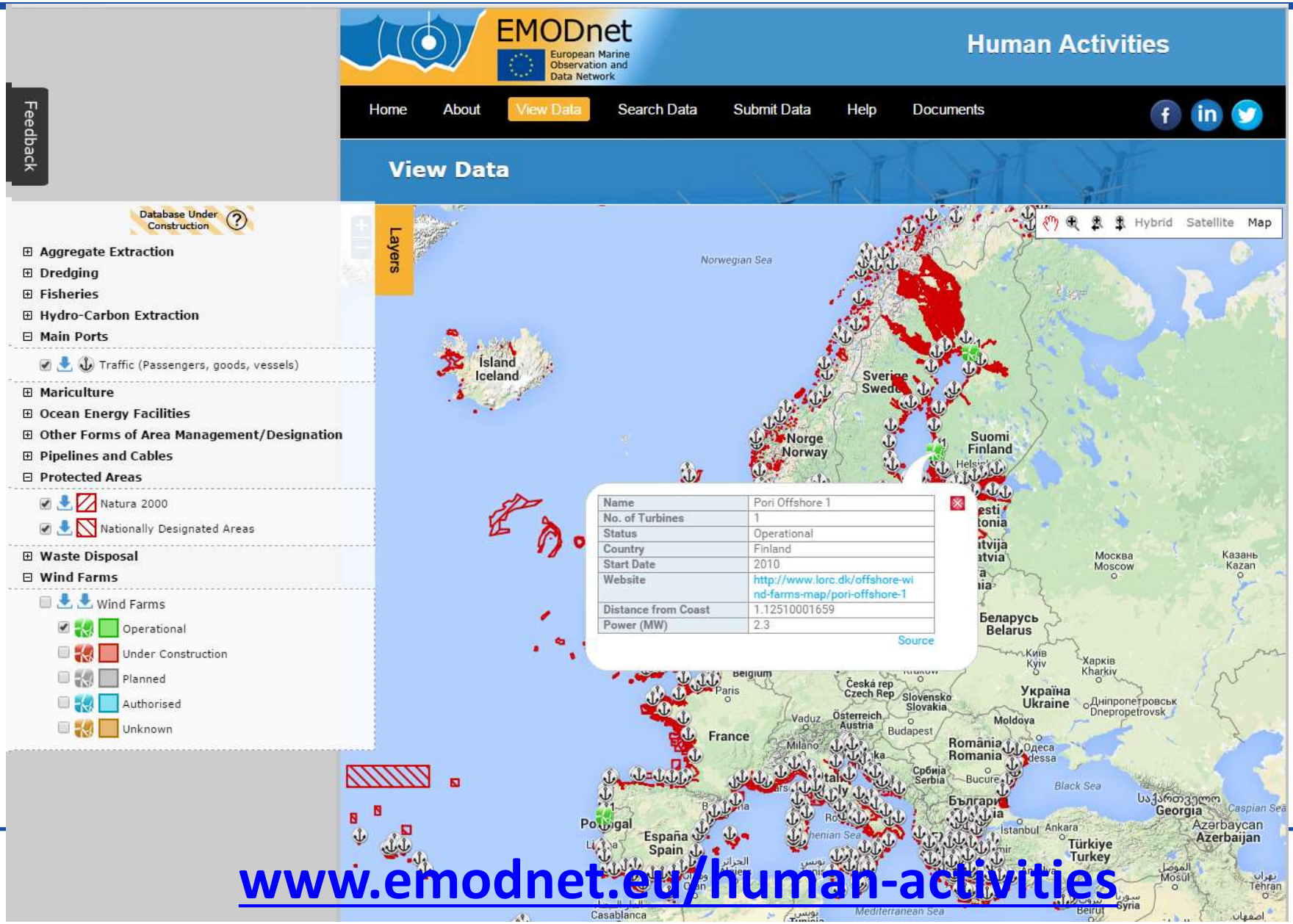
- Human Activities is a relatively **new Lot**
- Its main objective is to provide information on the geographical position, spatial extent, and attributes of a wide array of **marine activities** (e.g. hydrocarbon extraction, renewable energy, mariculture, shipping, etc.)
- Particular attention is given 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;

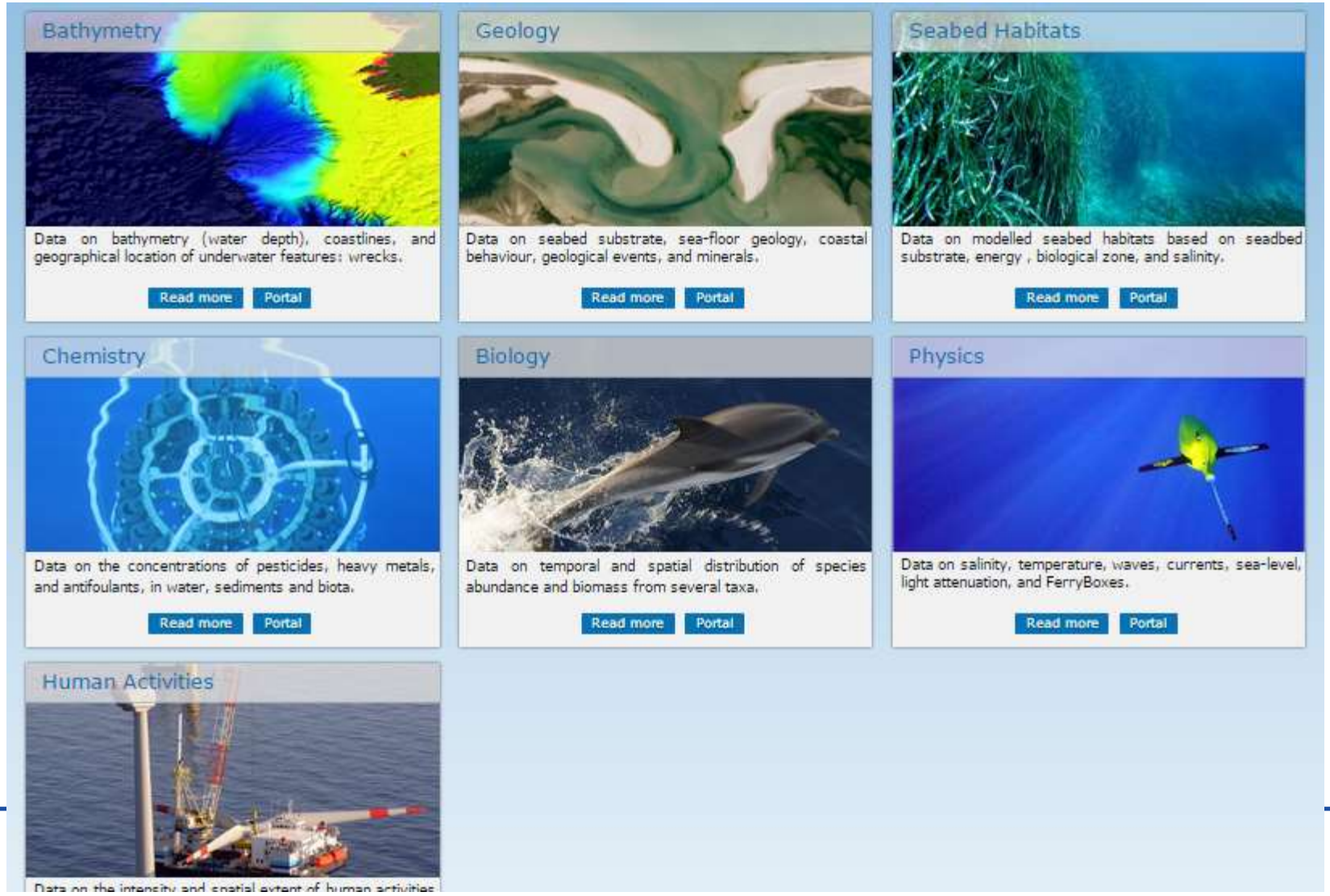
EMODnet Human Activities (4)



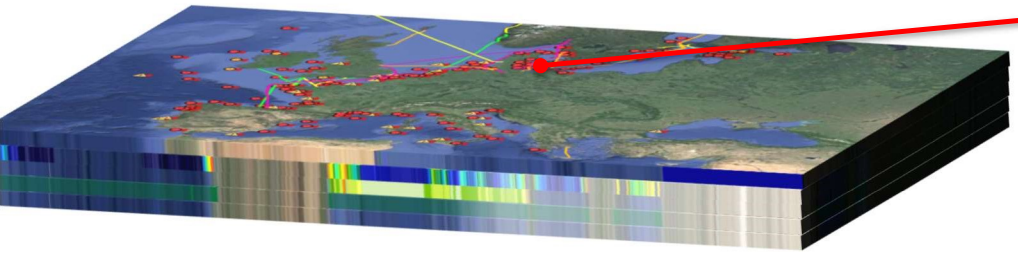
www.emodnet.eu/human-activities

The Central Portal

www.emodnet.eu



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

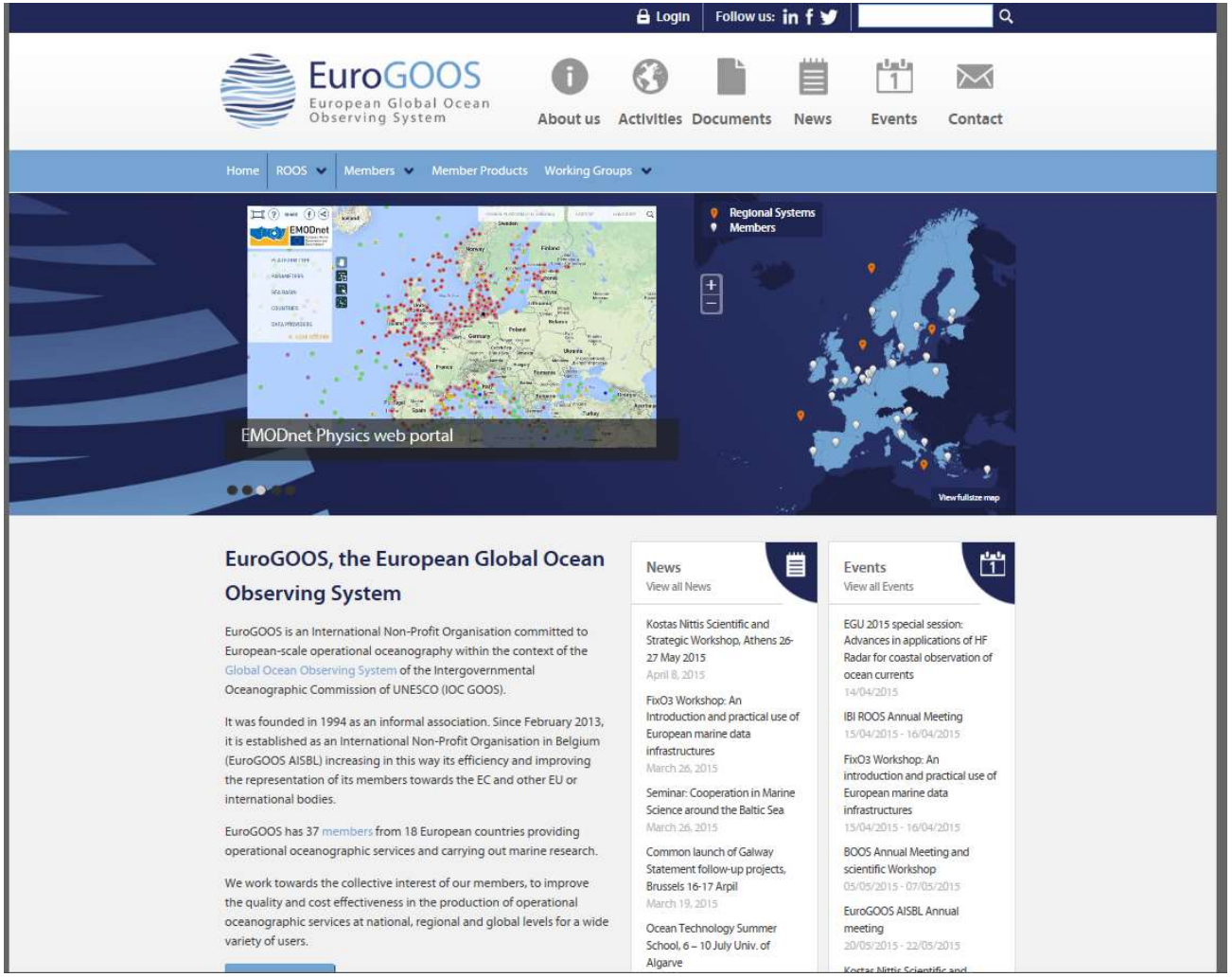
-

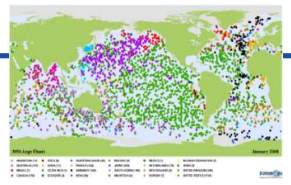
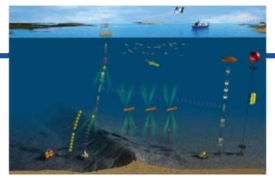
Preparatory Actions for
European Marine Observation and Data Network MARE
2010/02 - Physical Parameters [SI2.579120]
-
Knowledge base for growth and innovation in ocean economy: assembly and dissemination of marine data for seabed mapping
MARE/2012/10 - Lot 6 Physics [SI2.656795]

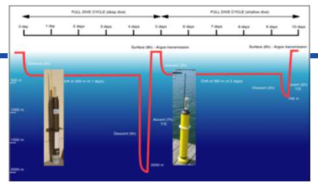
A Novellino **G Manzella** D Schaap S Pouliquen L Rickards P Gorringe

EuroGOOS
European Global Ocean Observing System

www.eurogoos.eu



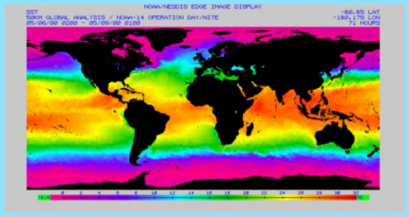





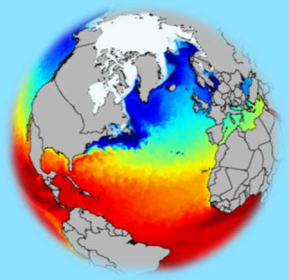
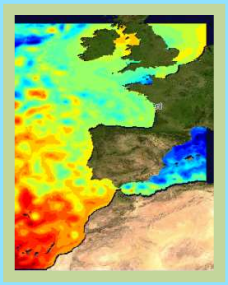
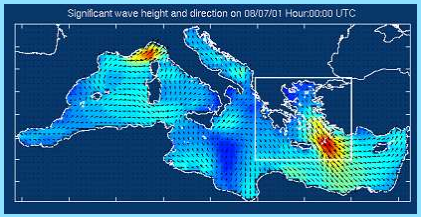
EuroGOOS
European Global Ocean Observing System

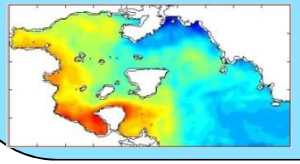
Operation Oceanography

Observations



Processing & Modeling

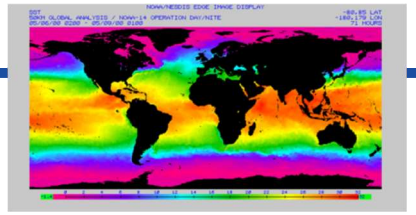


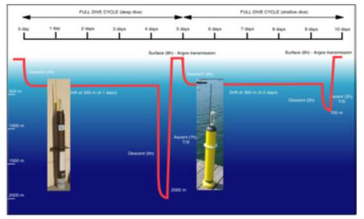
Services

End Users

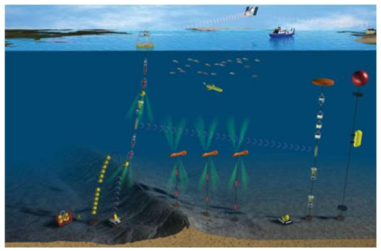
EuroGOOS
European Global Ocean Observing System

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

EuroGOOS
European Global Ocean Observing System

Operation Oceanography

Operational Oceanography is not a new invention

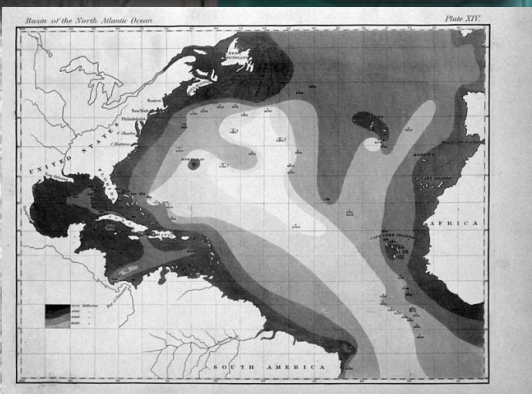
An international conference established the basic principles of operational meteorology and oceanography:

- 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

EuroGOOS
European Global Ocean Observing System

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…..

EuroGOOS
European Global Ocean Observing System

User needs

- Global scale applications requiring a 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

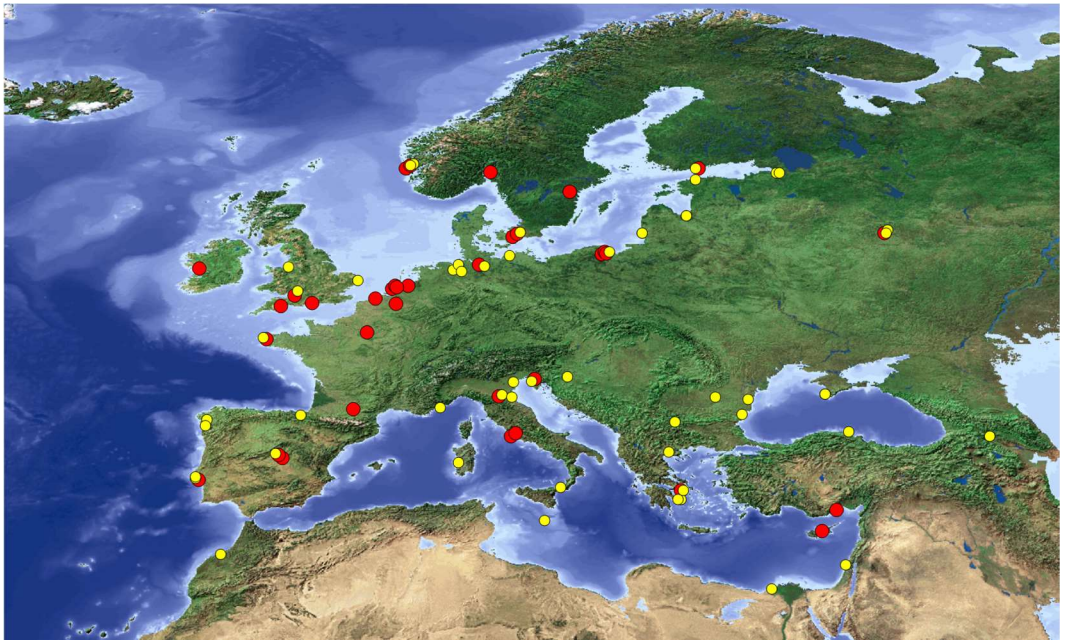
Data are available

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
European Global Ocean Observing System

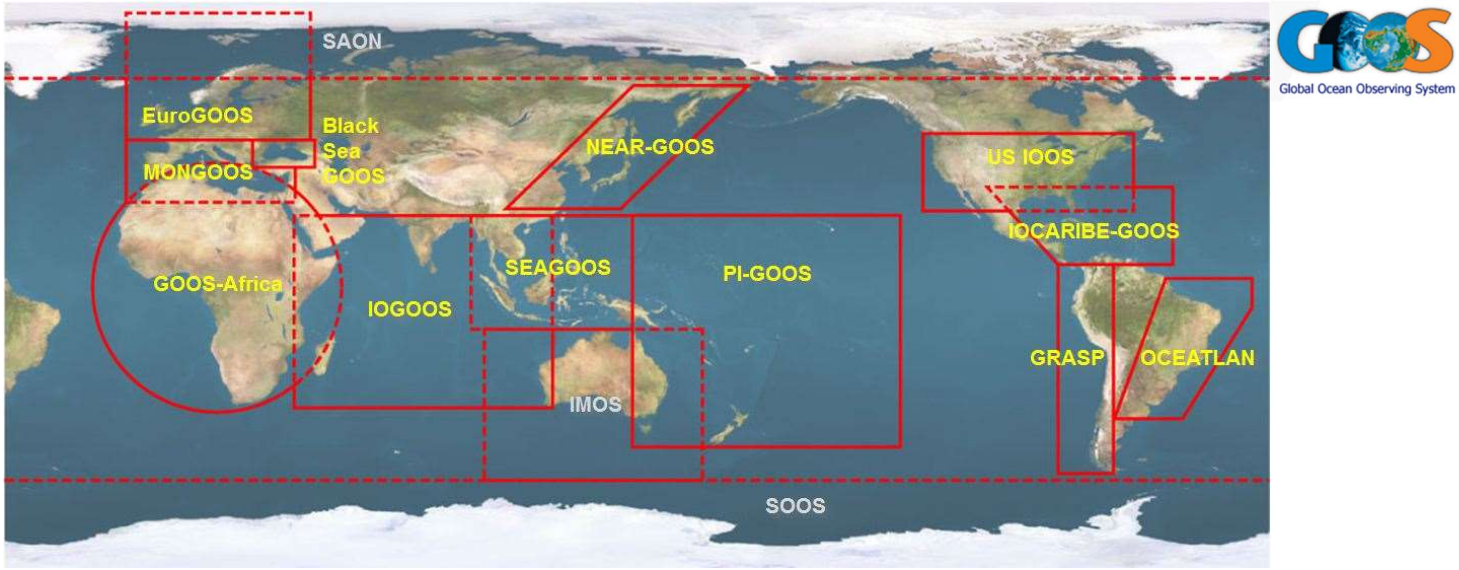
EuroGOOS AISBL is an International Non Profit Association of 37 national agencies, institutes and research organisations in Europe promoting and implementing Operational Oceanography. Founded in 1994, EuroGOOS operates in the framework of the Global Ocean Observing System (GOOS) of UNESCO/IOC



EuroGOOS
European Global Ocean Observing System

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.

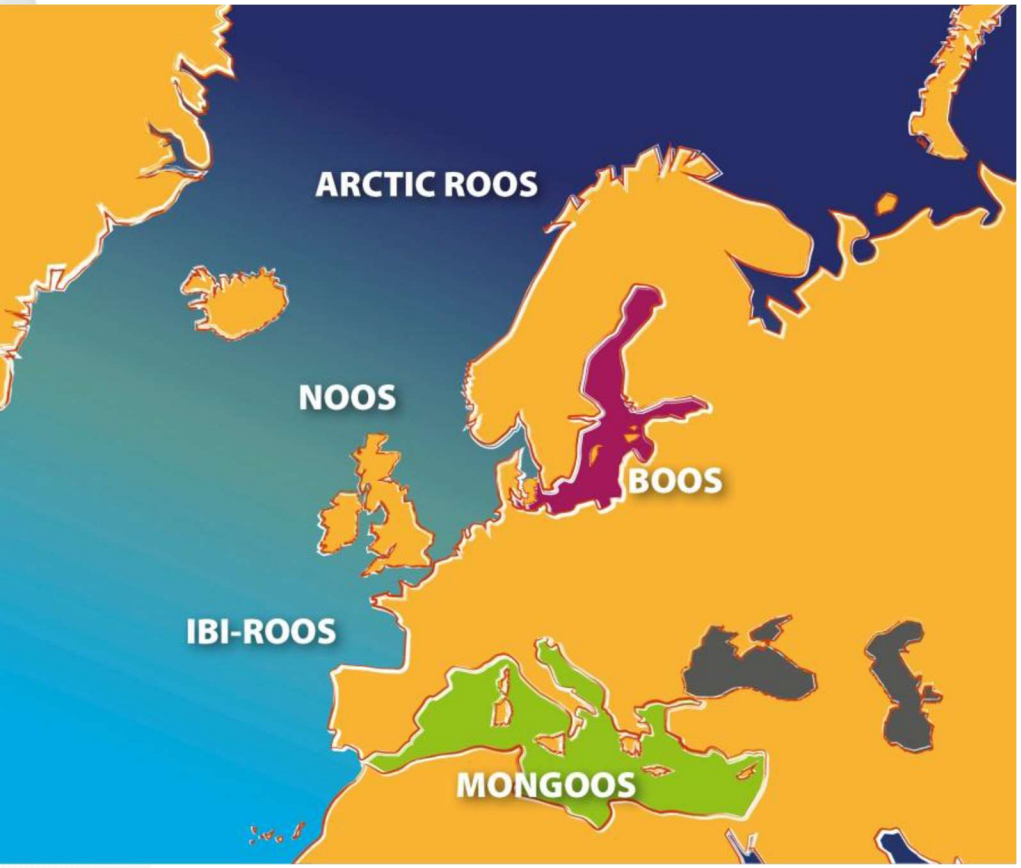


GOOS is a platform for:

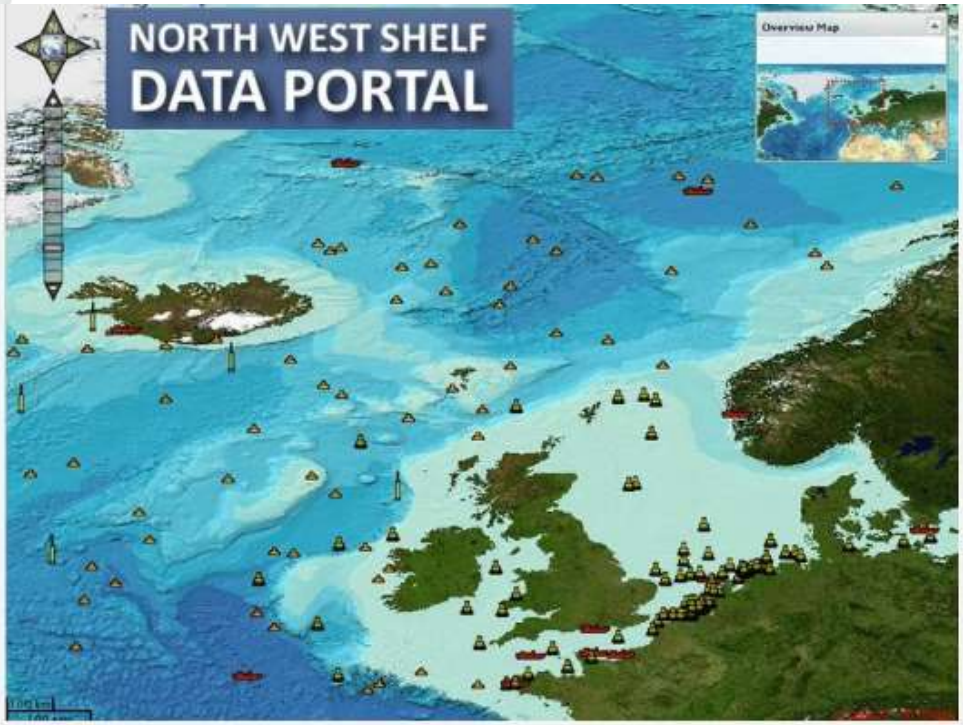
- International cooperation for sustained observations of the oceans
- Generation of oceanographic products and services
- Interaction between research, operational, and user communities

EuroGOOS
European Global Ocean Observing System

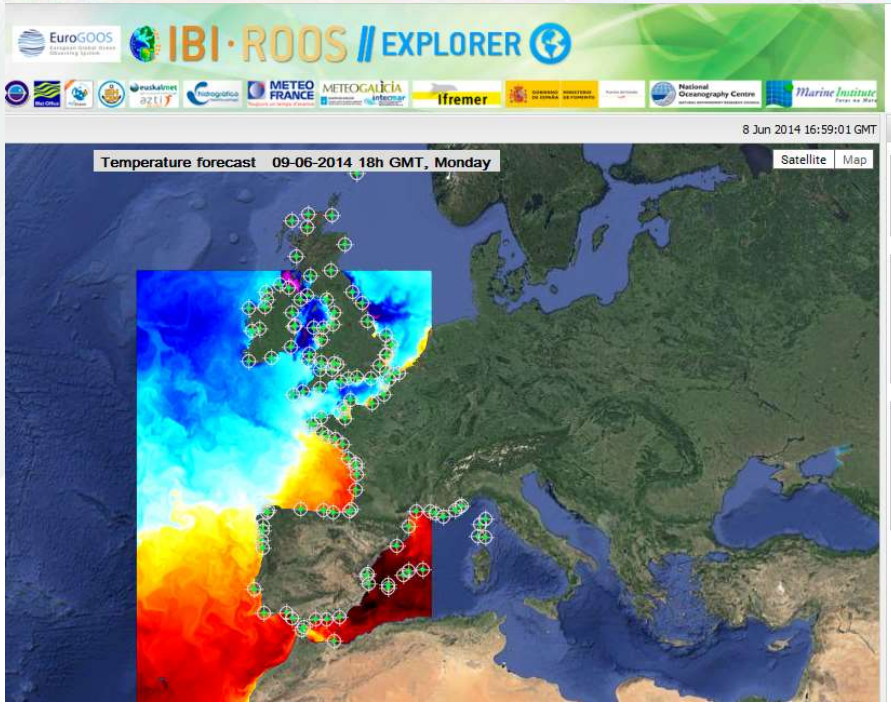
EuroGOOS and data

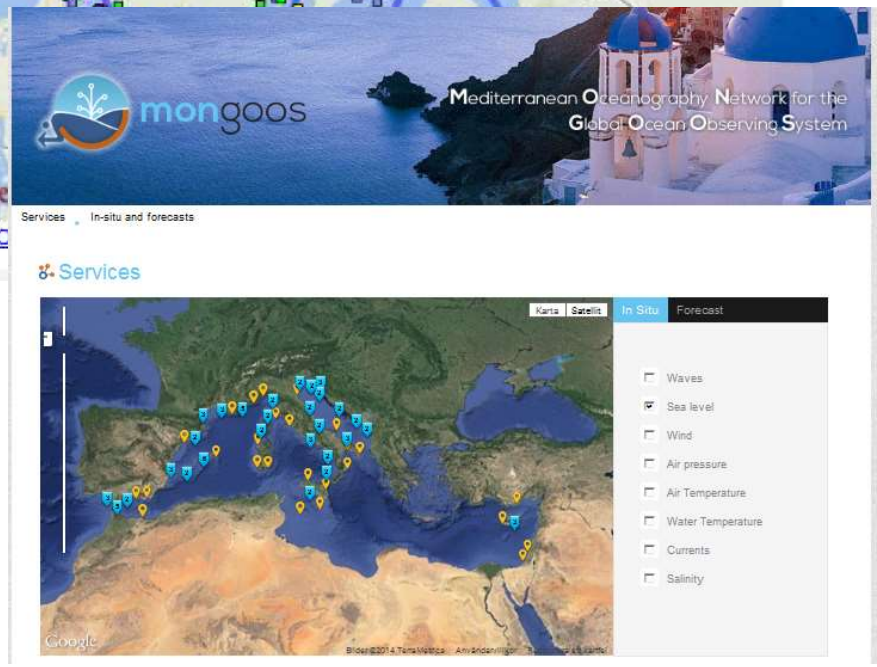


- The **ROOSs - Regional Operational Oceanographic Systems** are the operational arm(s) of EuroGOOS
- About 60 additional partners in ROOSs
- The ROOSs cooperation focus on improved national and regional services and products
- ROOSs **coordinate the observations** and the **data transfer** for internal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

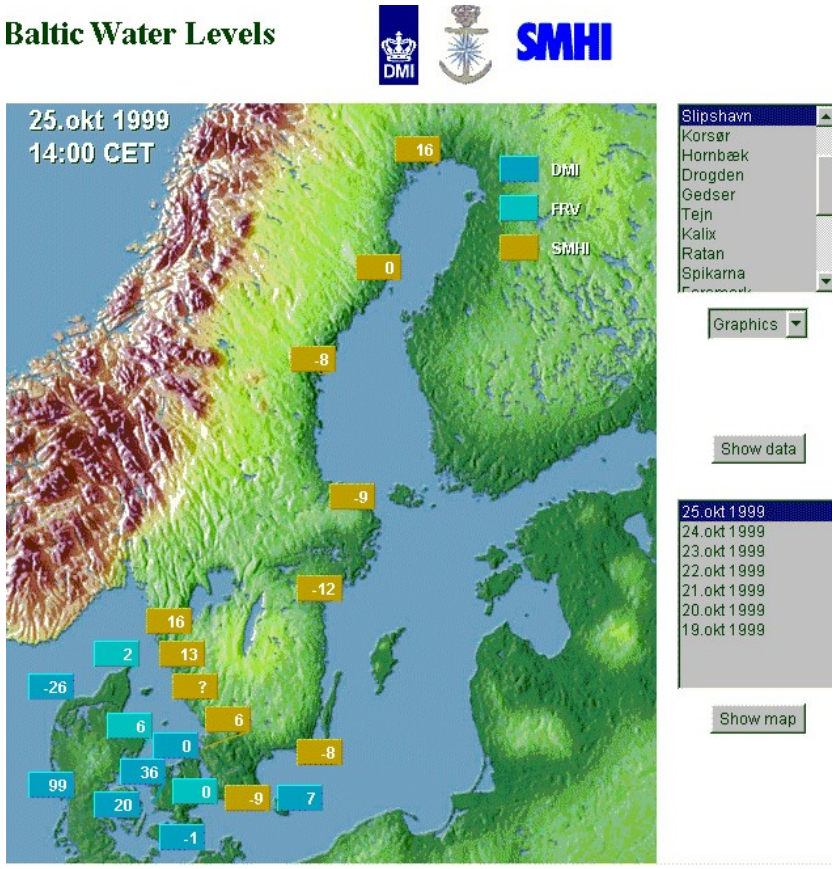

NORTH WEST SHELF
DATA PORTAL
Overview Map

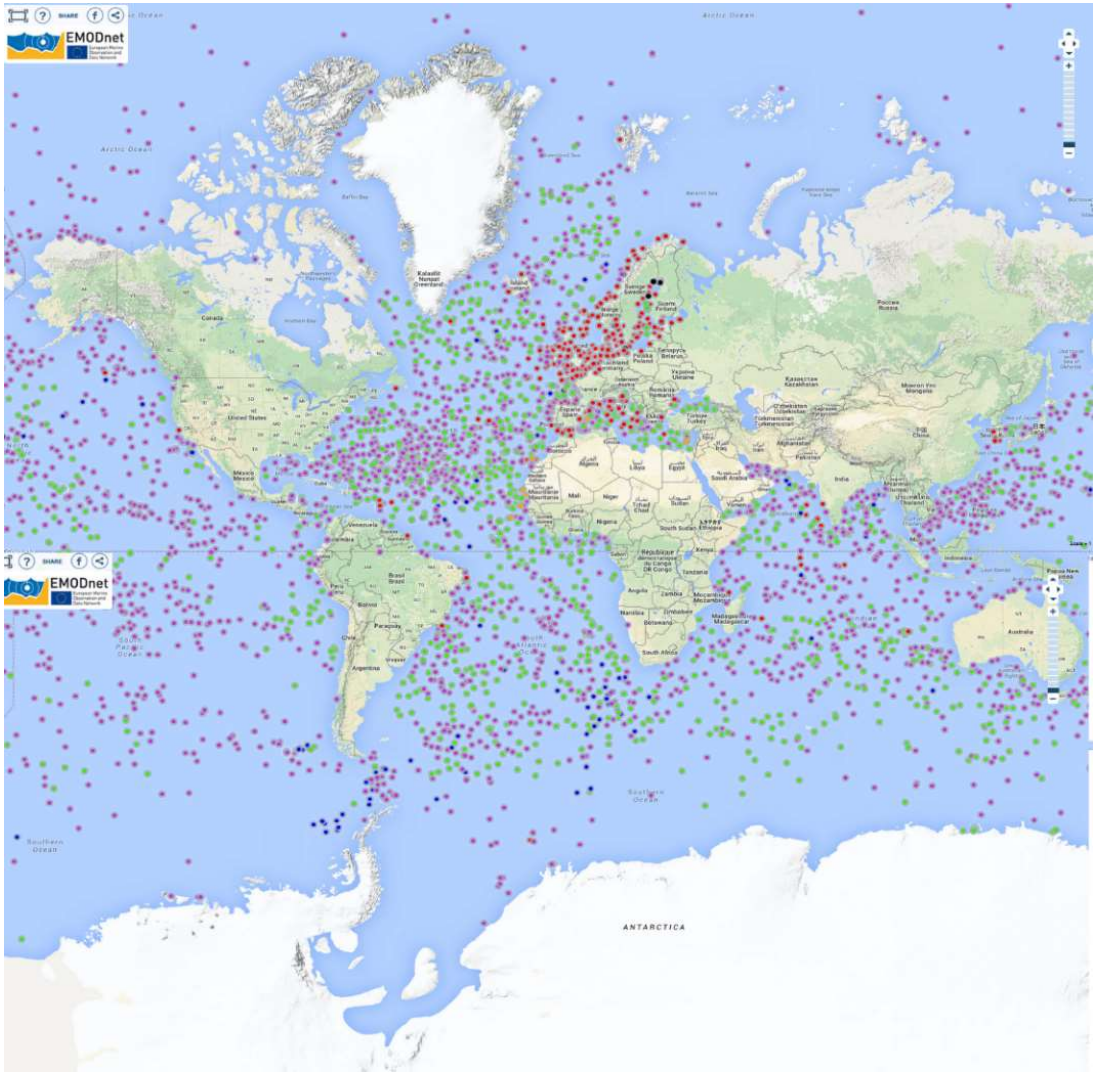
BOOS OCEANOGRAPHIC STATIONS
Map
Sat
Ter
Sweden
Norway
Finland
Oslo
Stockholm
Turku
Helsinki
Saint Petersburg
Tallinn
Estonia


EuroGOOS
IBI·ROOS // EXPLORER
METEO FRANCE
METEOGALICIA
Ifremer
Marine Institute
8 Jun 2014 16:59:01 GMT
Temperature forecast 09-06-2014 18h GMT, Monday
Satellite
Map
Forecast Data
Wave Atlantic
Current
Sea temperature
Salinity
Real-Time Data
Wave
Wind
Sea level
Current
Sea temperature
Salinity
Air temperature
Air pressure
Historical Data
Wave
Wind
Sea level
Current
Sea temperature
Salinity
Air temperature
Air pressure
Powered by Puertos del Estado
through MyOcean2 and EMODnet
EMODnet
myOcean


mongoos
Mediterranean Oceanography Network for the
Global Ocean Observing System
Services
In-situ and forecasts
Services
Karta
Satellit
In Situ
Forecast
Waves
Sea level
Wind
Air pressure
Air Temperature
Water Temperature
Currents
Salinity
Google

EuroGOOS and data - development

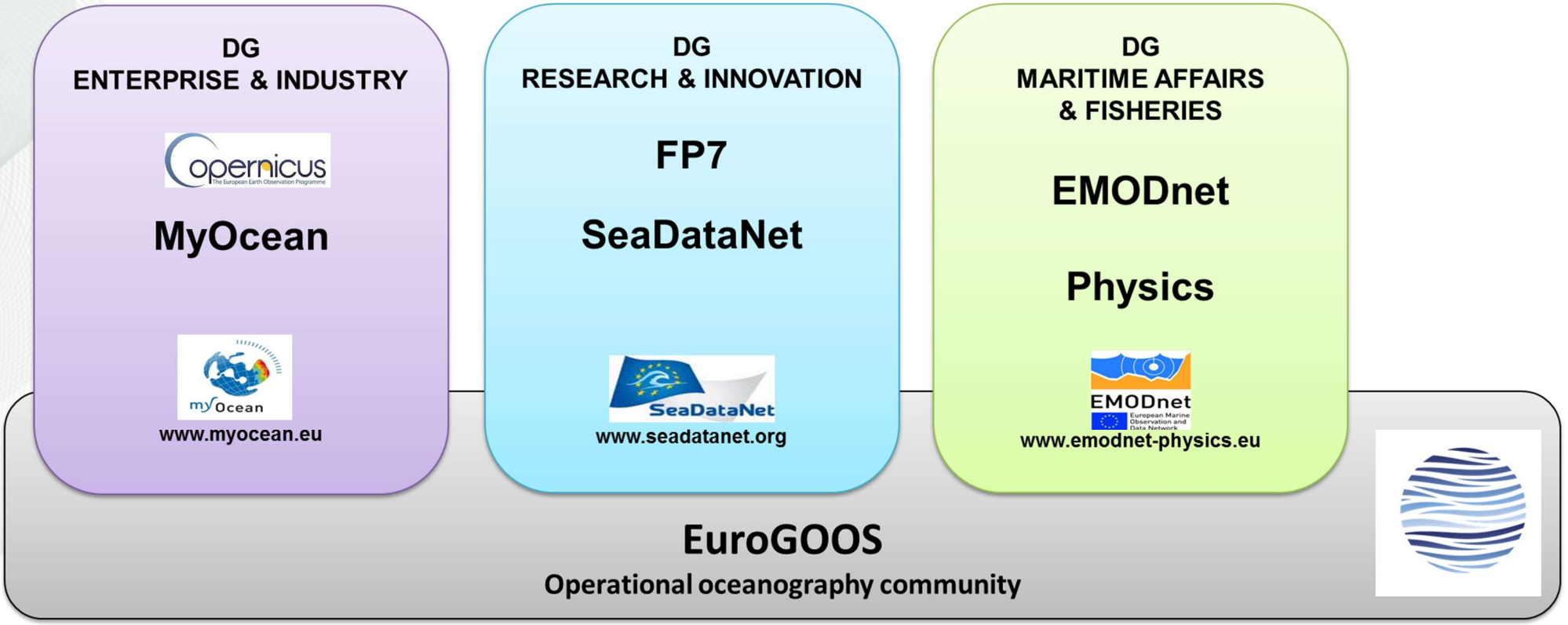




EuroGOOS
European Global Ocean Observing System

EuroGOOS and data

Three initiatives for marine information



EuroGOOS has the cross cutting role in these initiatives

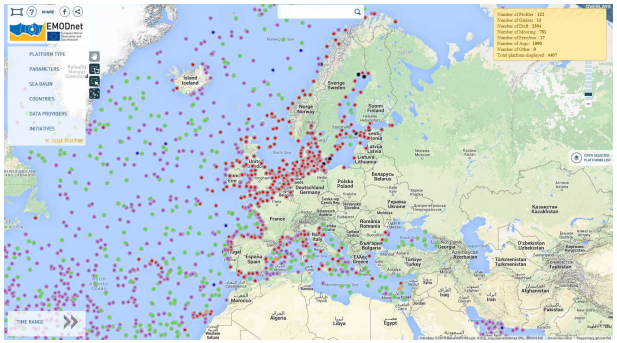
EuroGOOS and data

End Users

Network of NODC

SeaDataNet

Data Discovery, archiving, standards, services,…..

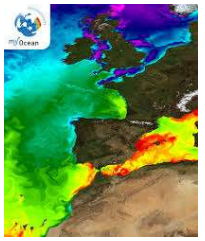


EMODnet European Marine Observation and Data Network

Data discovery, view, download, new platforms (type + number), interoperability layers

In SITU TAC

myOcean

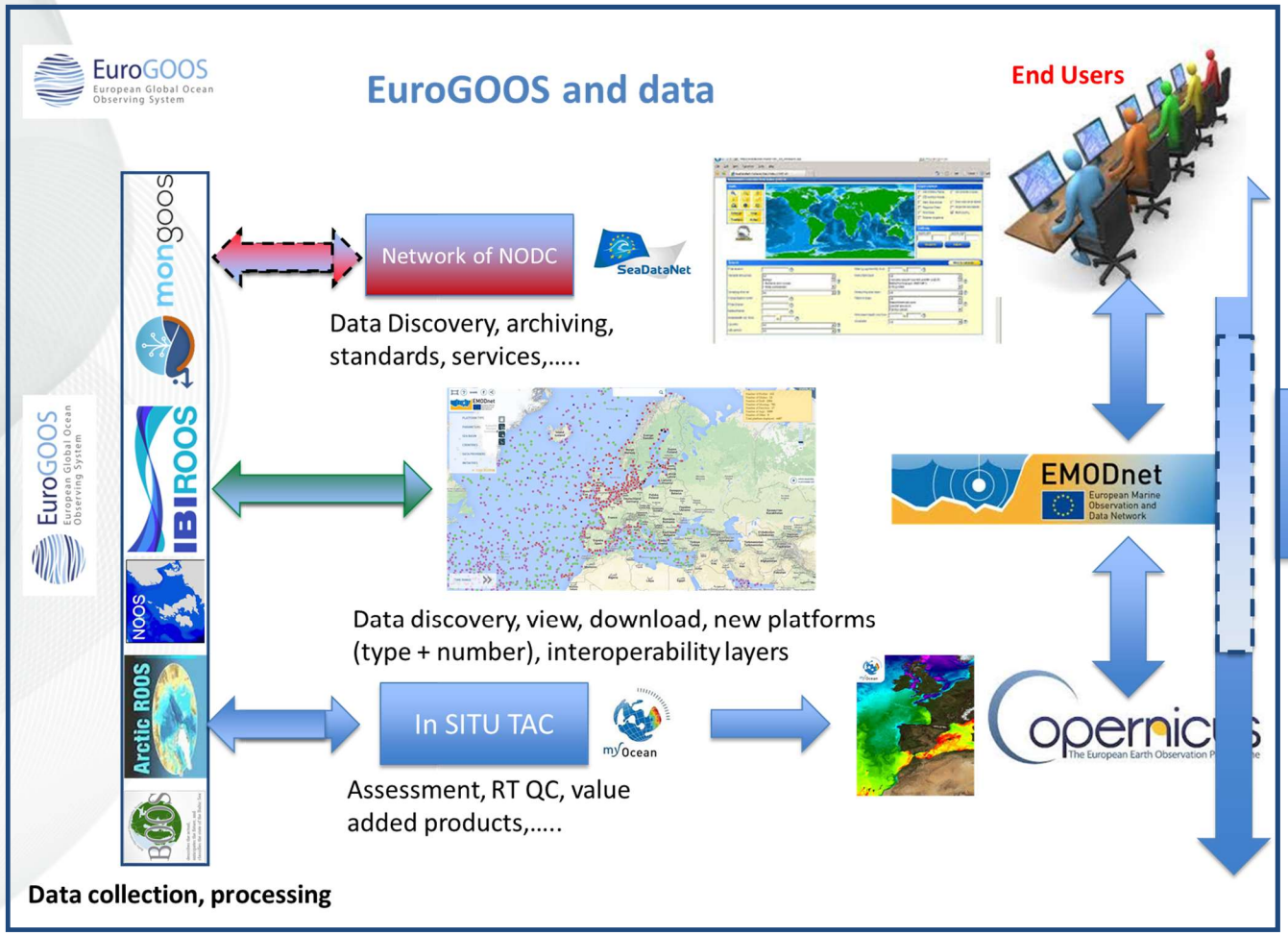


Copernicus The European Earth Observation Programme

Assessment, RT QC, products,…..

Data collection, processing

EuroGOOS and data



World Meteorological Organization
Weather · Climate · Water

GEO GROUP ON EARTH OBSERVATIONS

The Global Ocean Observing System
GOOS

European Environment Agency

EMSA

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

EMODnet Physics objectives:

- *Provide a **single point of access** to marine near real time and achieved data on **physical conditions** as monitored by:*
  - Fixed Stations[1], Ferrybox[1], Argo[2], Gliders[2], HF Radars[2]

Parameters:

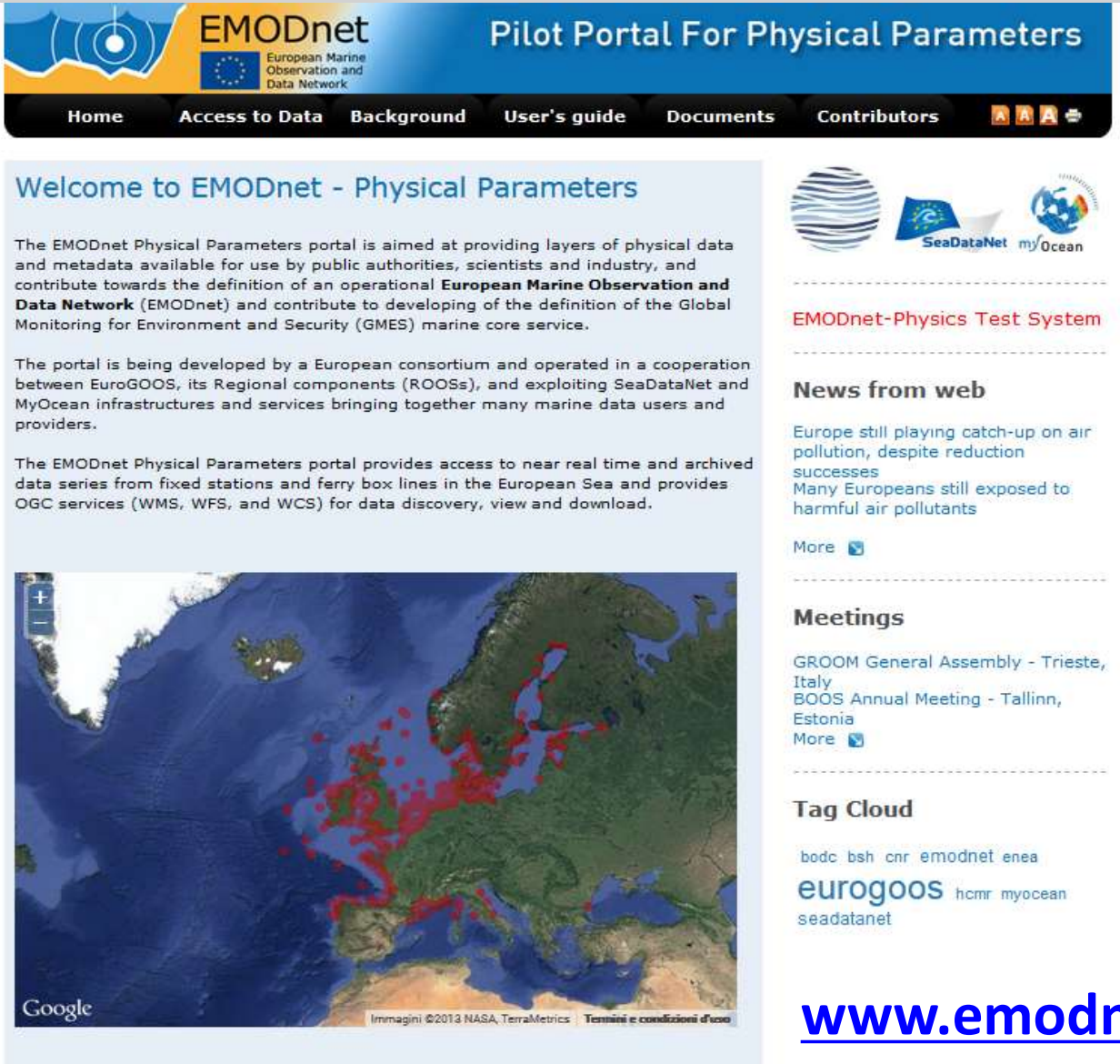
- Sea Temperature[1], Sea Level[1], Sea Salinity[1], Winds[1], Waves[1], Sea Currents[1], Light Attenuation[1], Ice Coverage[2], Sea Level trends[2]

- *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)*

EMODnet
European Marine Observation and Data Network

[1]*MARE/2010/06 (2011-2013)*
[2]*MARE/2012/10 Lot 6 (2013 – 2016)*

EMODnet Physics



INSPIRE Services

DISCOVER

VIEW

DOWNLOAD

WMS/WFS

Data Policy

Open & Free

www.emodnet-physics.eu

EMODnet
European Marine Observation and Data Network

EMODnet Physics

Exisiting

OceanDataPortal
Seamless access to ocean data
IODE

myOcean
SeaDataNet

BOOS
Arctic ROOS
NOOS
IBIROOS
mongoos

Sustain

EMODnet Physics

Reinforce

Interoperability & Visibility

The Global Ocean Observing System
GOOS

Commissione europea

WMS
WFS
Web services
…
socials

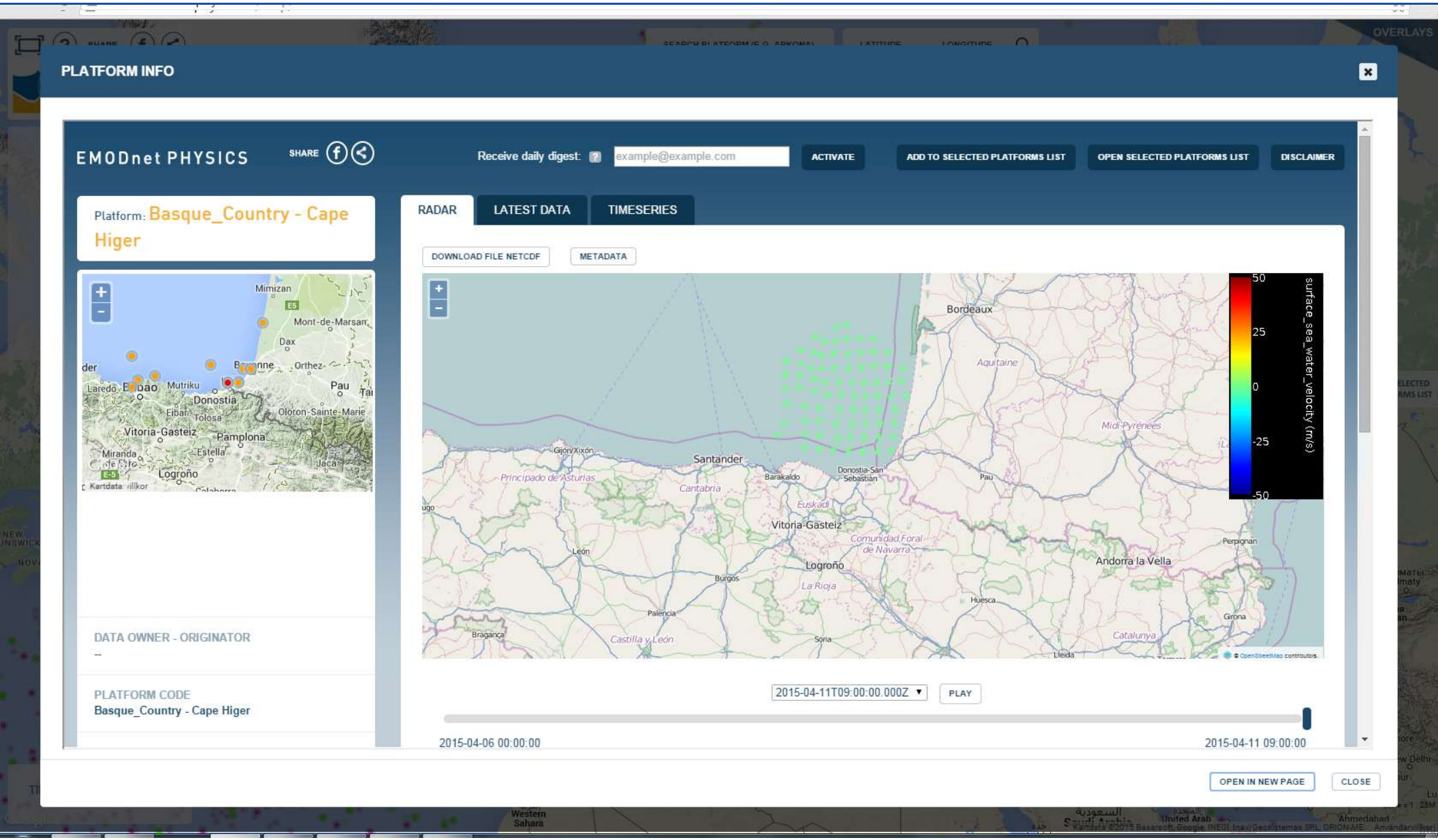
European Environment Agency

EuroGOOS
European Global Ocean Observing System

EMODnet
European Marine Observation and Data Network

contacts@emodnet-physics.eu

EuroGOOS
European Global Ocean Observing System



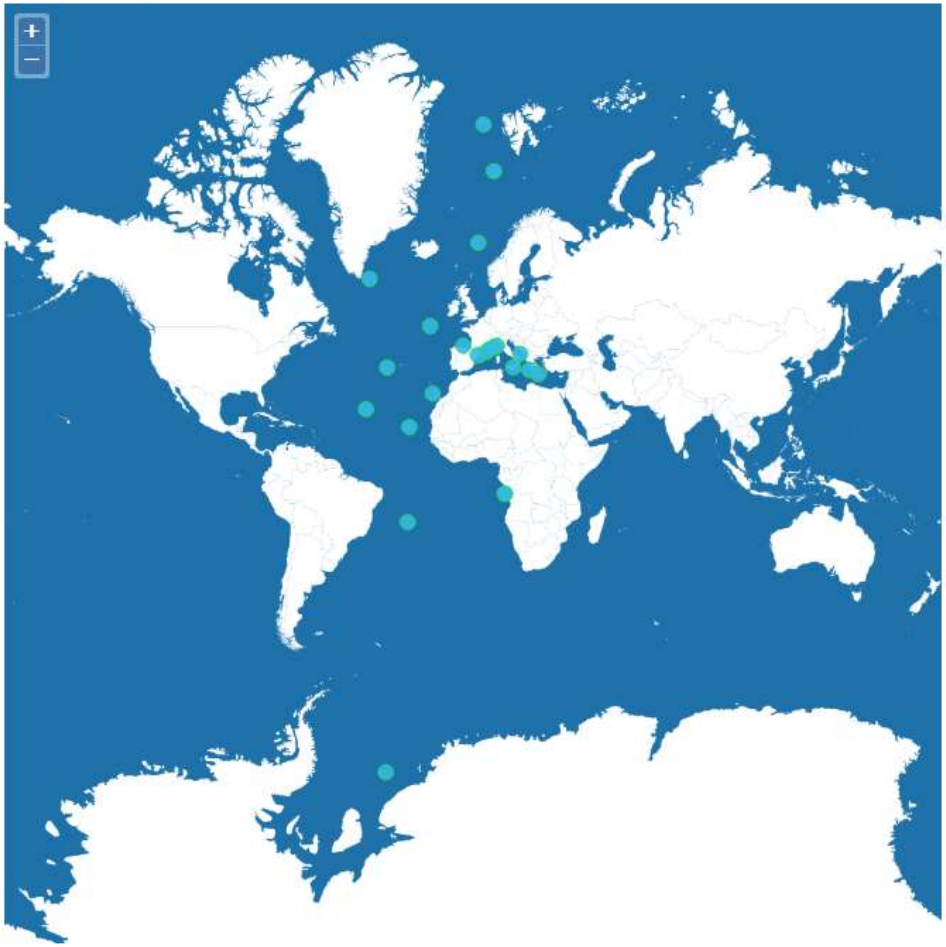
Login Register

FixO3 FIXED-POINT OPEN OCEAN OBSERVATORIES

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

- Observatories
- Parameters
- Standards & Services Registry
- Metadata Catalogue
- Service Activities
- Training Opportunities
- Work Packages
- Deliverables

Observatories

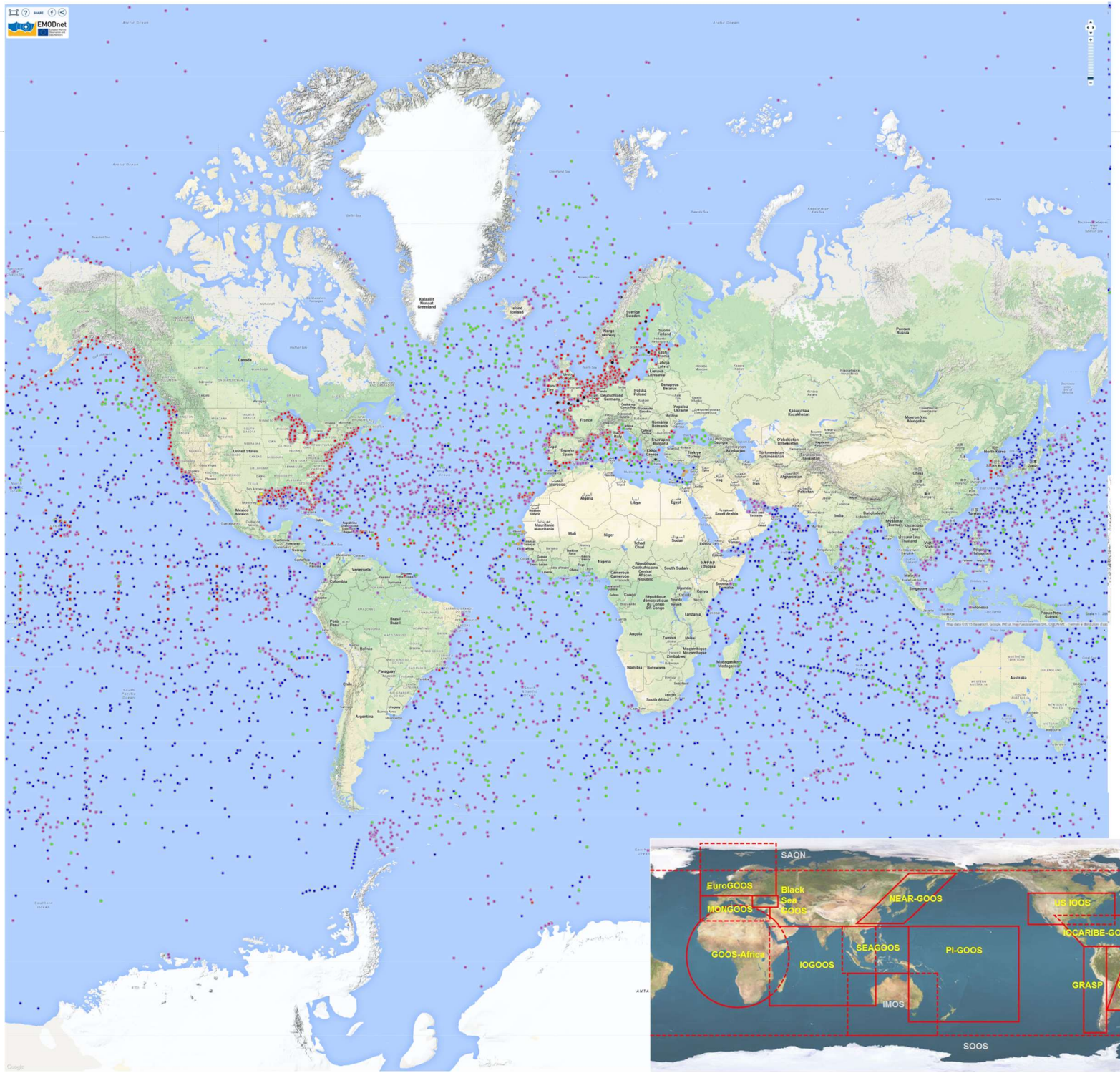


EMODnet Physics

EMODnet Physics approach

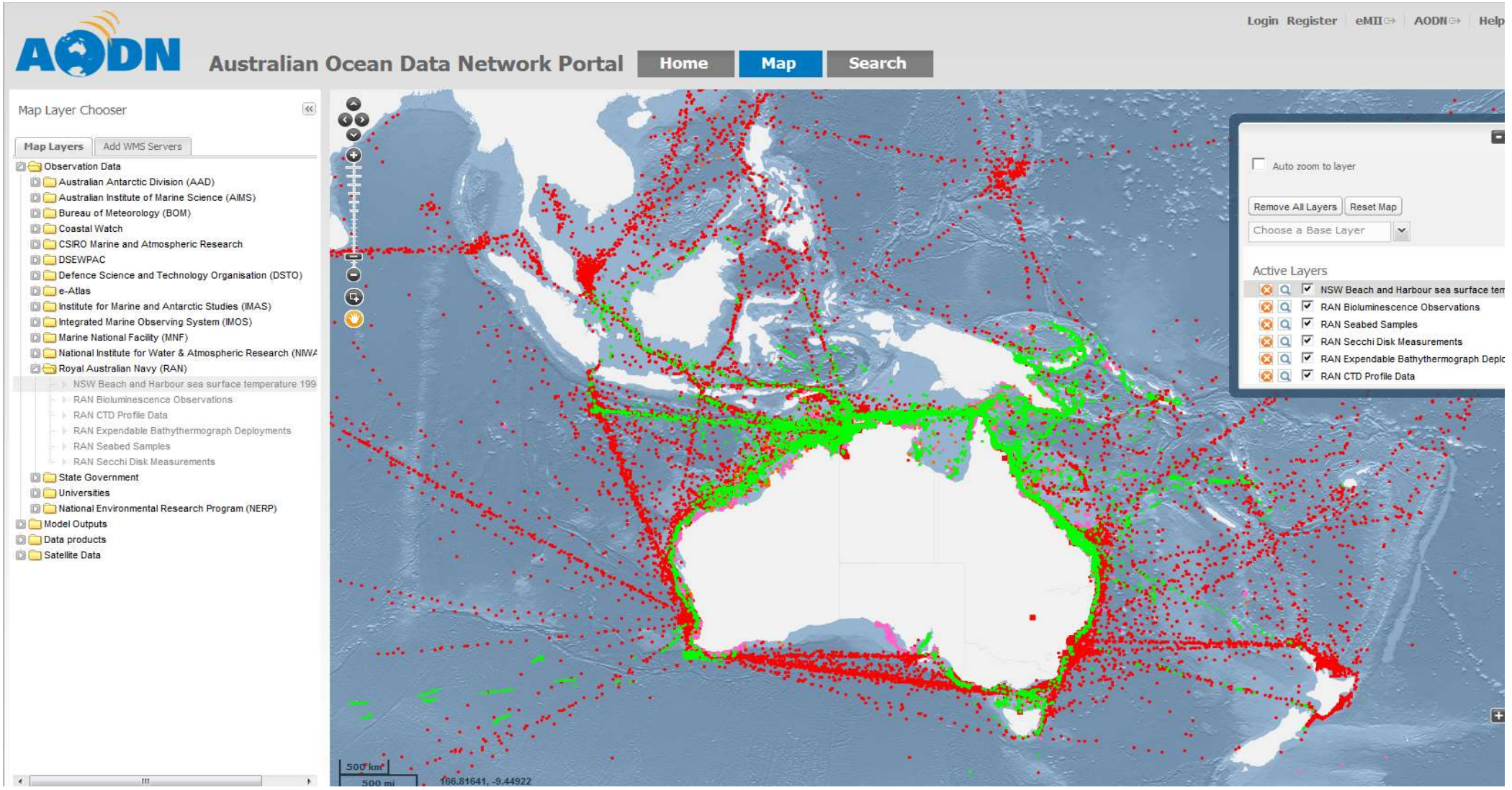
- Build on existing infrastructures and avoid duplication of efforts
- Improve back office infrastructure for the benefit of the ROOSs and contributing institutes
- Give visibility and awareness to everyone
- Crate added value interoperability layers on top of the existing infrastructure
- Reach new 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

EMODnet
European Marine Observation and Data Network



Global Ocean Observing System

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



National Oceanic and Atmospheric Administration's

National Data Buoy Center

Center of Excellence in Marine Technology

weather.gov

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Station ID Search Go
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
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Met/Ocean
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

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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.

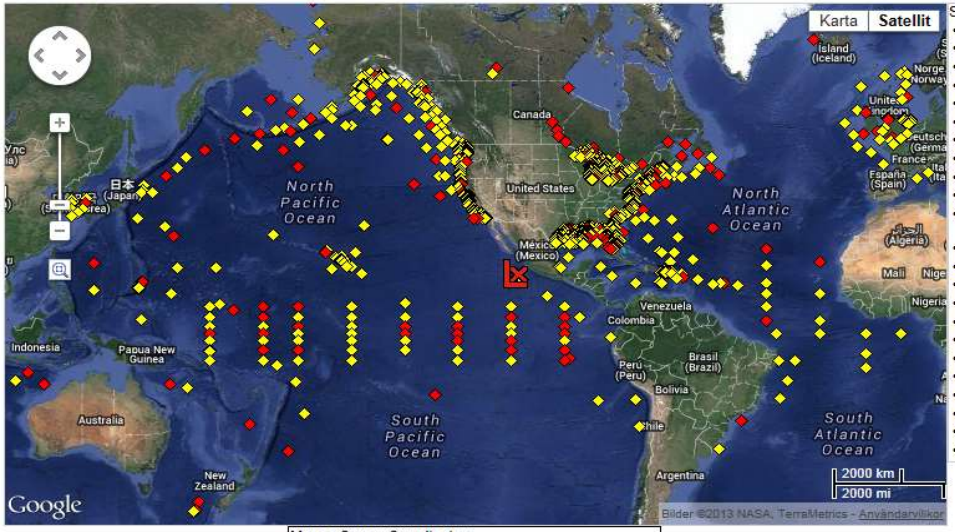
BuoyCAMs: See recent photos from NDBC weather buoy 44013 near Boston, DART station 46410 in the Gulf of Alaska, 46029 near the Oregon/Washington coastline and the following TAO stations: 2N 155W, 5N 155W

Check out Gliderpalooza data.

Recent Data | Historical Data | Show Labels

Program Filter:	Owner Filter:
NDBC Meteorological/Ocean	NDBC
International Partners	Alaska Ocean Observing System
IOOS Partners	Amerada 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 zoom 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

Mouse Cursor Coordinates:

1193 stations deployed
899 have reported in the past 8 hours

- Stations with recent data
- Stations with historical data only
- Stations with no data in last 8 hours (24 hours for tsunami stations)
- Tsunami station in event mode (within previous 24 hours)
- Hurricane
- Tropical Storm
- Tropical Depression, Post-Tropical Cyclone or Remnant

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.

U.S. Dept. of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Data Buoy Center
Bldg. 3205
Stennis Space Center, MS 39529
Contact Us

Page last modified: September 19, 2013

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www.ndbc.noaa.gov/

GLOSS

www.gloss-sealevel.org/data

The Global Sea Level Observing System

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Data

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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.

(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

EMODnet
European Marine Observation and Data Network

www.emodnet.eu

EuroGOOS
European Global Ocean Observing System

www.eurogoos.eu

patrick.gorringe@eurogoos.eu

FixO3
FIXED-POINT OPEN OCEAN OBSERVATORIES

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?

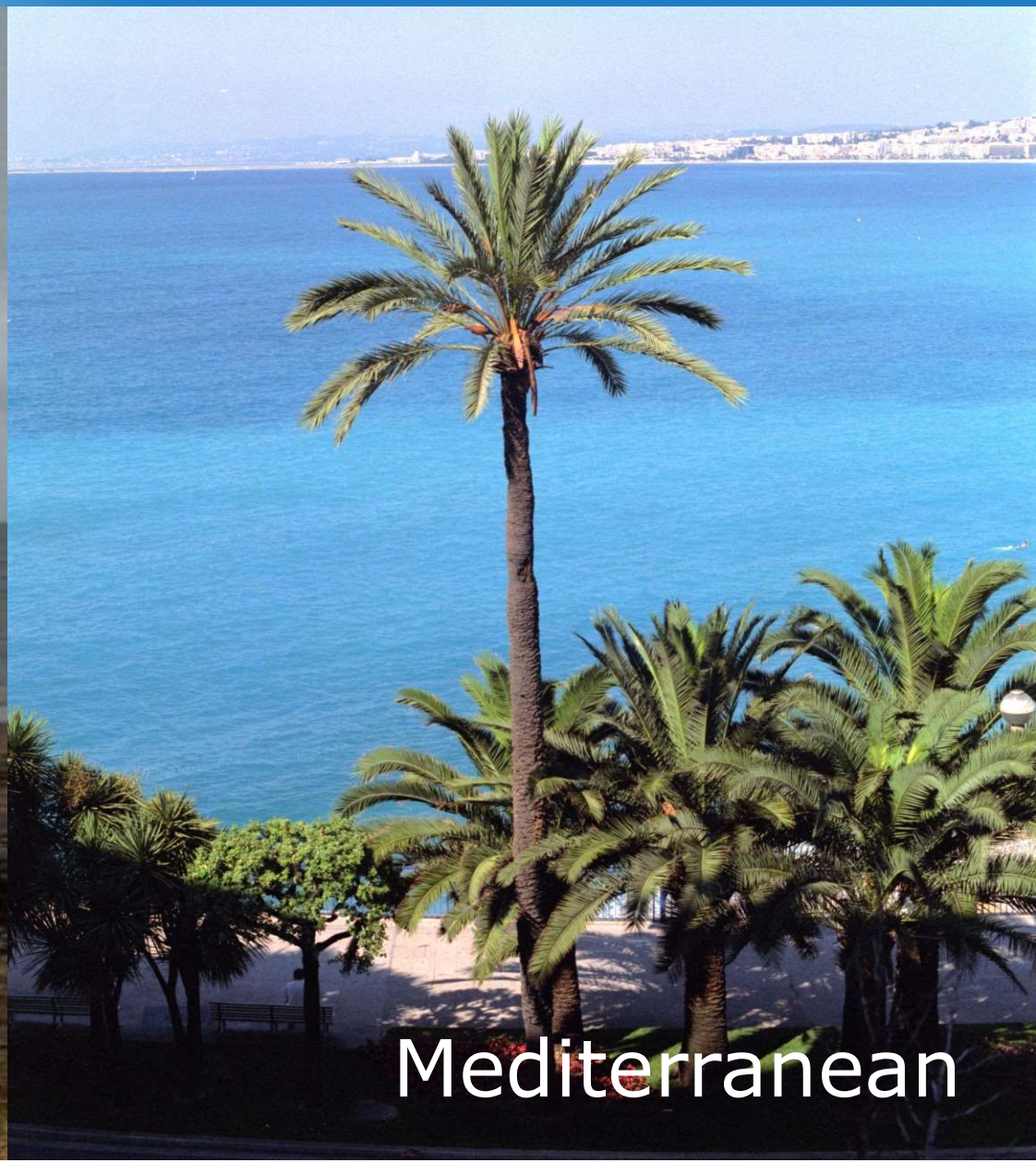
Take into account:

- 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?

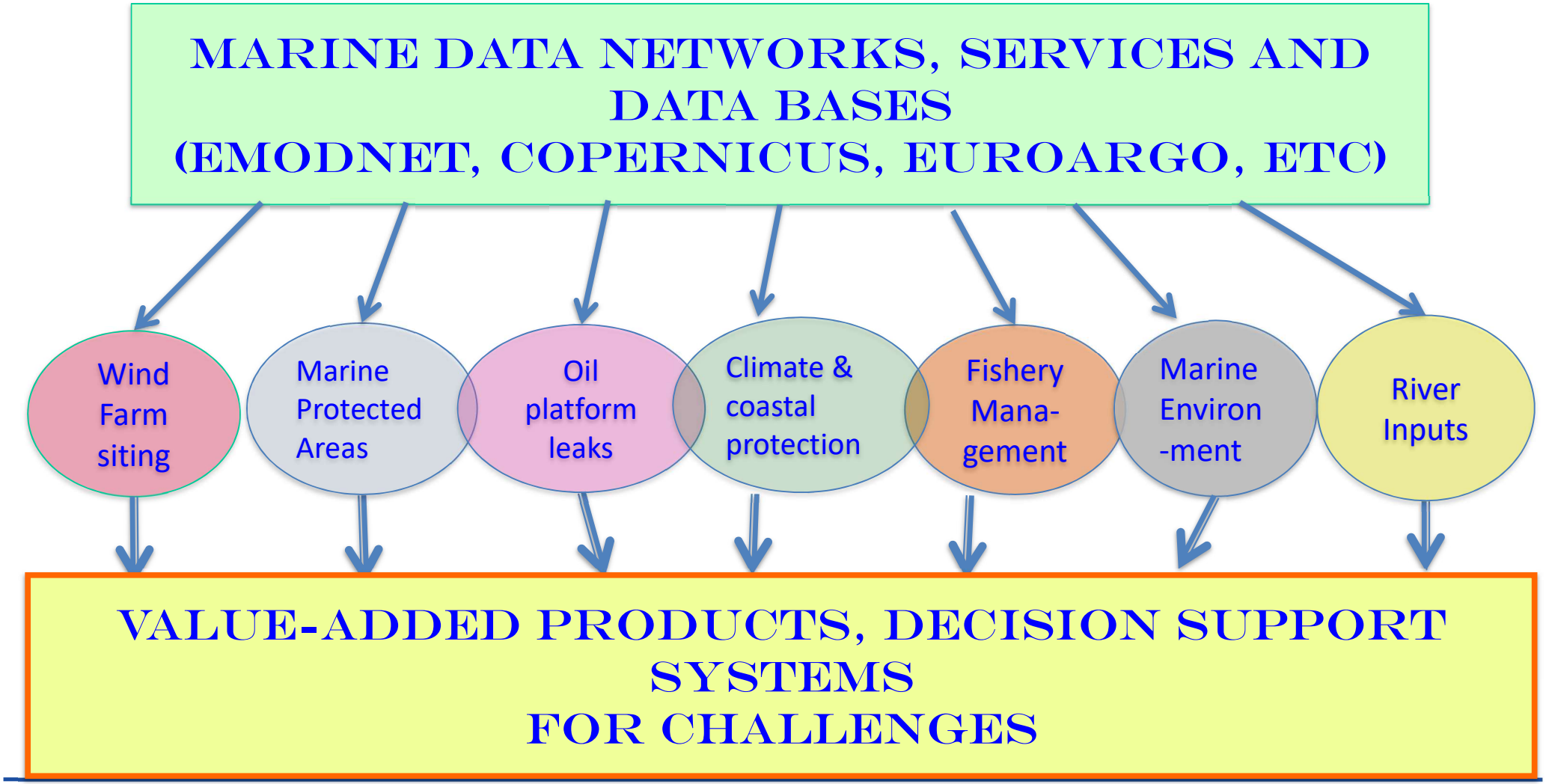
EMODnet

European Marine Observation and Data Network

sea basin checkpoints



EMODnet Check Points



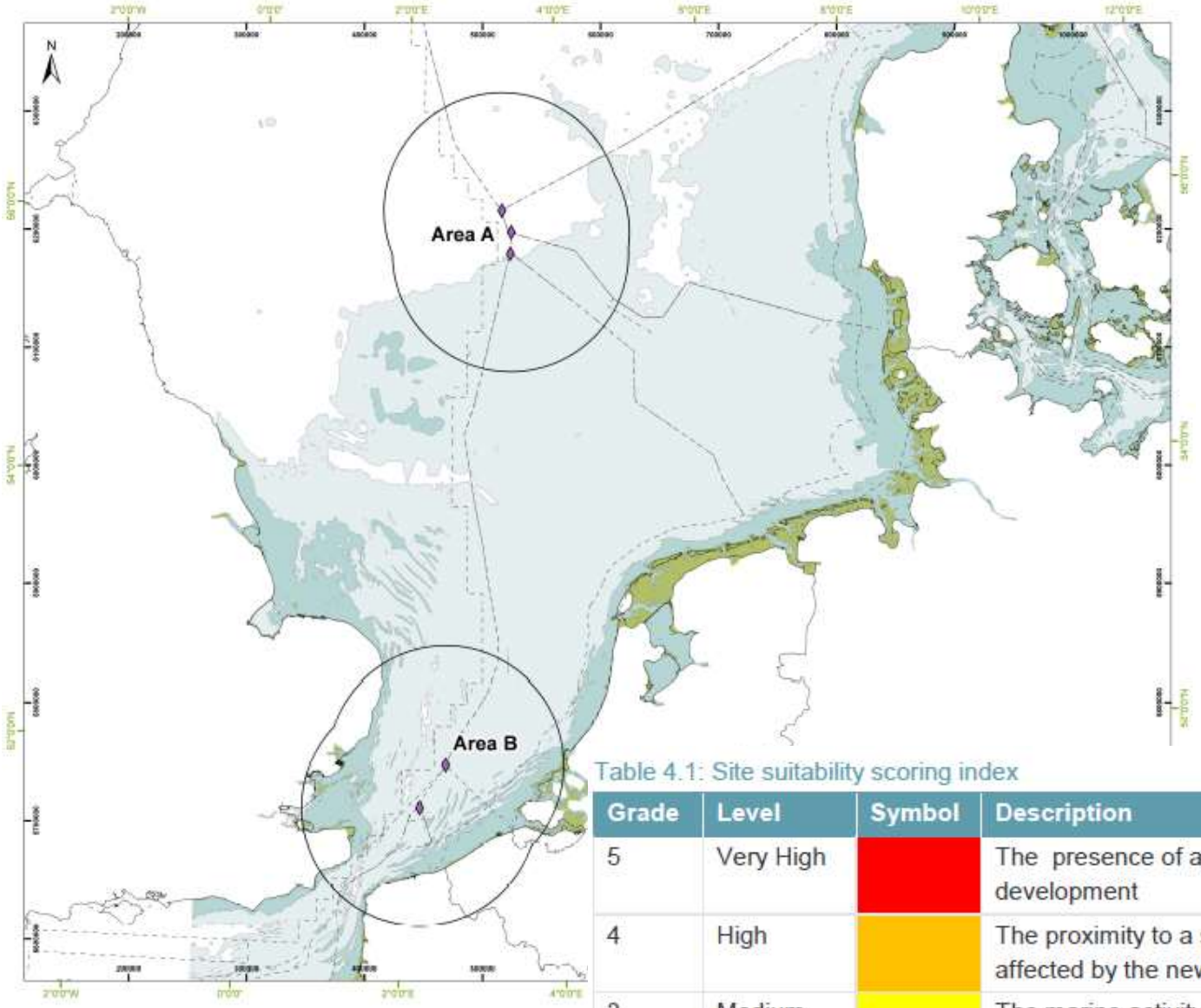


Table 4.1: Site suitability scoring index

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

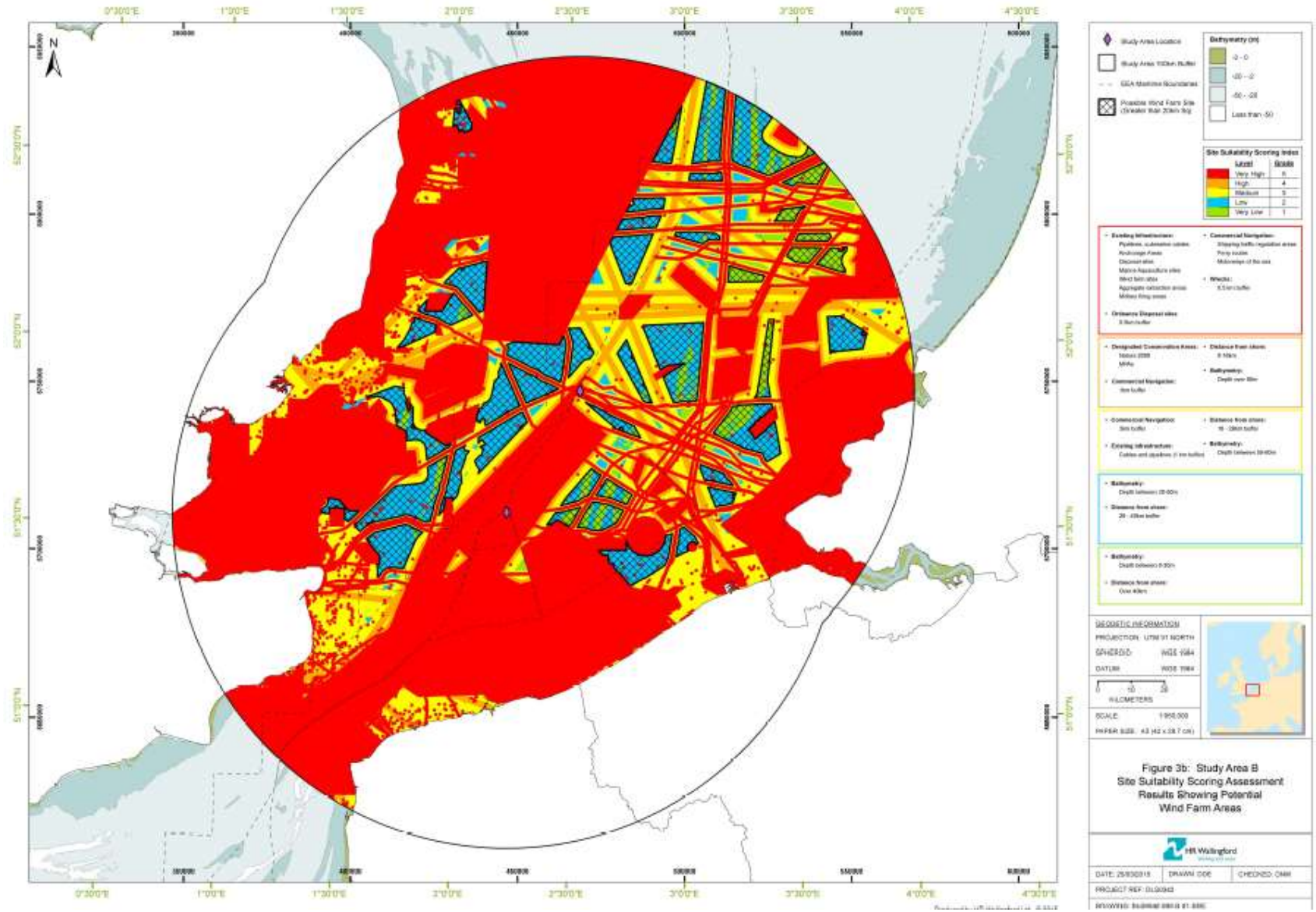
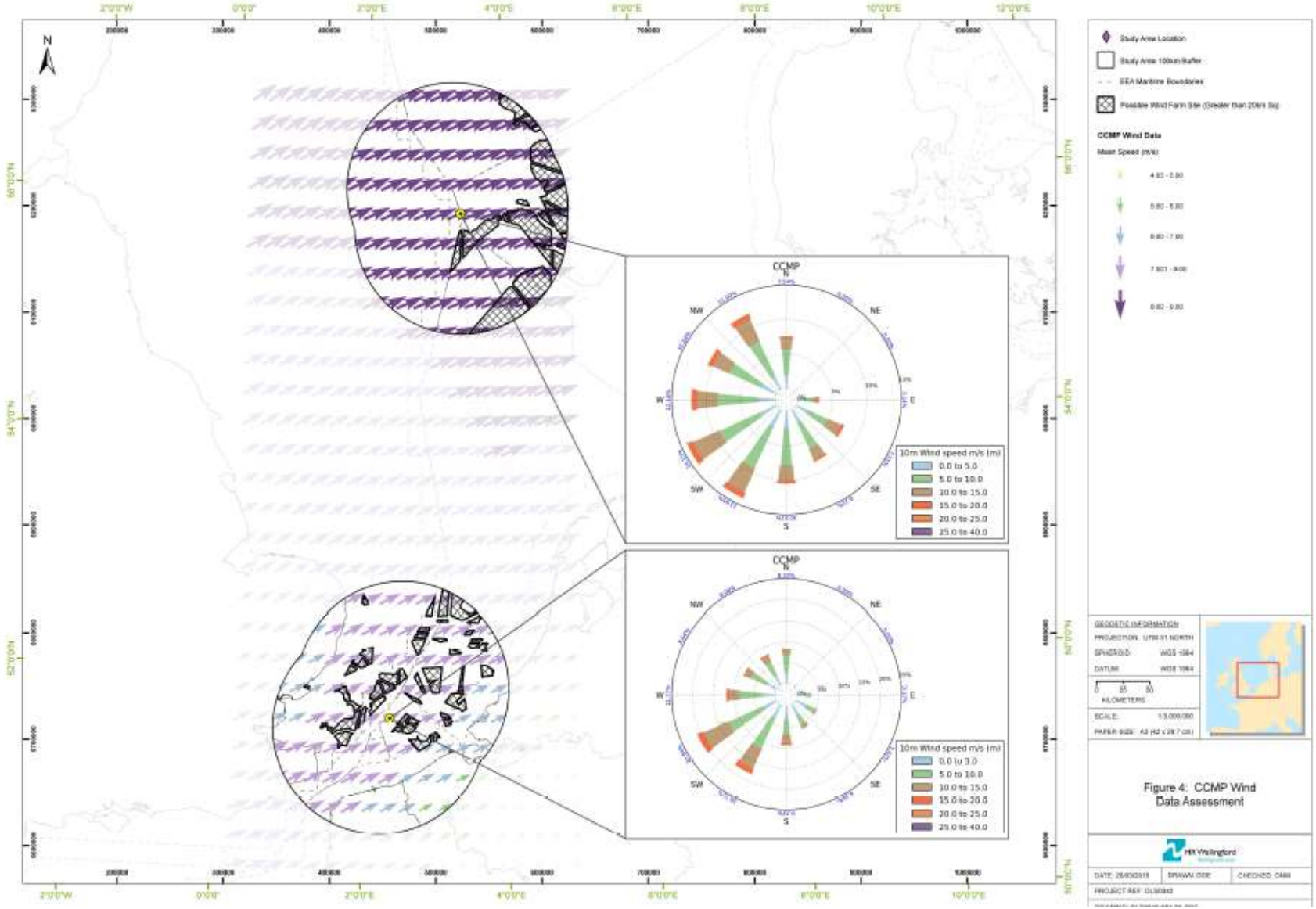


Figure 3b: Study Area B
Site Suitability Scoring Assessment
Results Showing Potential
Wind Farm Areas

HR Wallingford

DATE: 25/03/2015	DRAWN: DDE	CHECKED: DMH

PROJECT REF: DJ0943


Study Area Location
Study Area 100km Buffer
EEA Maritime Boundaries
Possible Wind Farm Site (Greater than 20km Sq)
CCMP Wind Data
Mean Speed (m/s)
4.83 - 5.00
5.00 - 6.00
6.00 - 7.00
7.001 - 8.00
8.00 - 9.00
CCMP
10m Wind speed m/s (m)
0.0 to 5.0
5.0 to 10.0
10.0 to 15.0
15.0 to 20.0
20.0 to 25.0
25.0 to 40.0
CCMP
10m Wind speed m/s (m)
0.0 to 5.0
5.0 to 10.0
10.0 to 15.0
15.0 to 20.0
20.0 to 25.0
25.0 to 40.0
GEODETIC INFORMATION
PROJECTION: UTM 31 NORTH
SPHEROID: WGS 1984
DATUM: WGS 1984
KILOMETERS
SCALE: 1:3,000,000
PAPER SIZE: A3 (42 x 29.7 cm)
Figure 4: CCMP Wind Data Assessment
HR Wallingford
DATE: 28/03/2013
DRAWN: DEE
CHECKED: CMW
PROJECT REF: EL30362

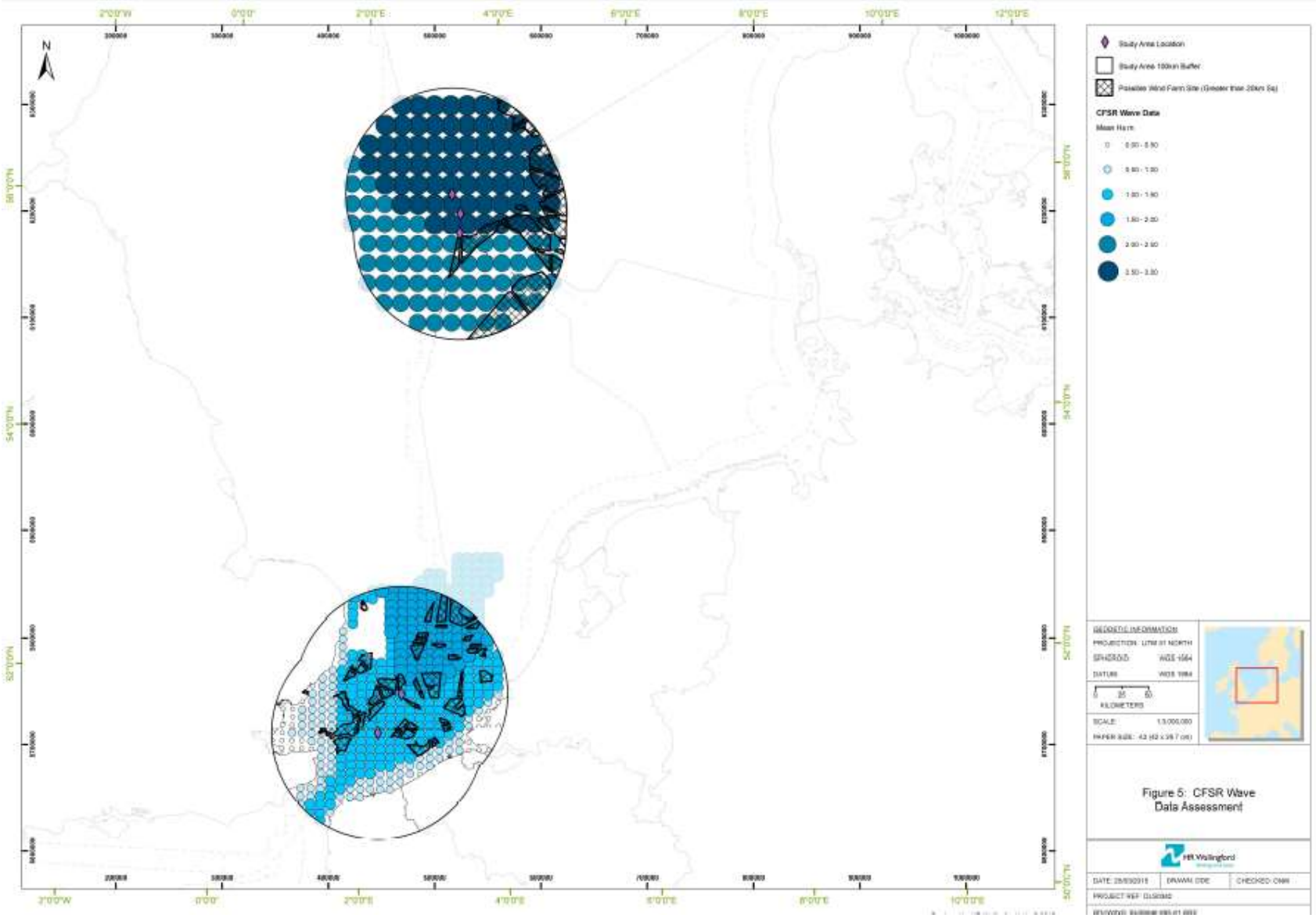


Figure 5: CFSR Wave Data Assessment

Figure 6: Assessment Of Protected Areas And Fishing Data

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)