



EMODnet

The European Marine Observation and Data Network

Data Workshop
February 18, 2016
Hamburg, Germany
Janbart.Calewaert@emodnet.eu



 **EMODnet**

Outline

- I. European context and policy framework
- II. The European Marine Observation & Data Network
- III. Key challenges
- IV. What next?

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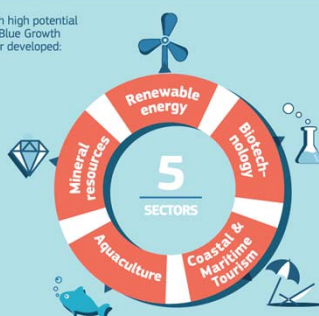
I . European context and policy framework



BLUE GROWTH

71% of the Earth surface is WATER

European Commission | Directorate-General for Maritime Affairs and Fisheries

Why?	Focus Area
<p>Blue Growth is the European Commission's initiative to further harness the potential of Europe's oceans, seas and coasts for:</p> <ul style="list-style-type: none">Jobs (represented by a purple submarine icon)Value (represented by a yellow submarine icon)Sustainability (represented by a green submarine icon) 	<p>Five sectors with high potential for sustainable Blue Growth are to be further developed:</p>  <ul style="list-style-type: none">Renewable energyBiotech-nologyCoastal & Maritime TourismAquacultureMineral resources

Spatial planning, maritime security & **Marine Knowledge**



There is only one Earth, with only one history, and we get only one chance to record it. Ideas not followed through can be taken up again later. A record not made is gone for good. *Editorial - Nature 450, 761 (6 December 2007)*




Maria Damanaki, former Commissioner for Maritime Affairs and Fisheries



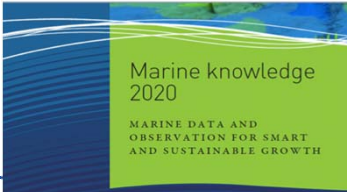
(...) the data collected through observations can only generate knowledge and innovation if Europe's engineers and scientists are able to find, access, assemble and apply them efficiently and rapidly. At present this is often not the case.



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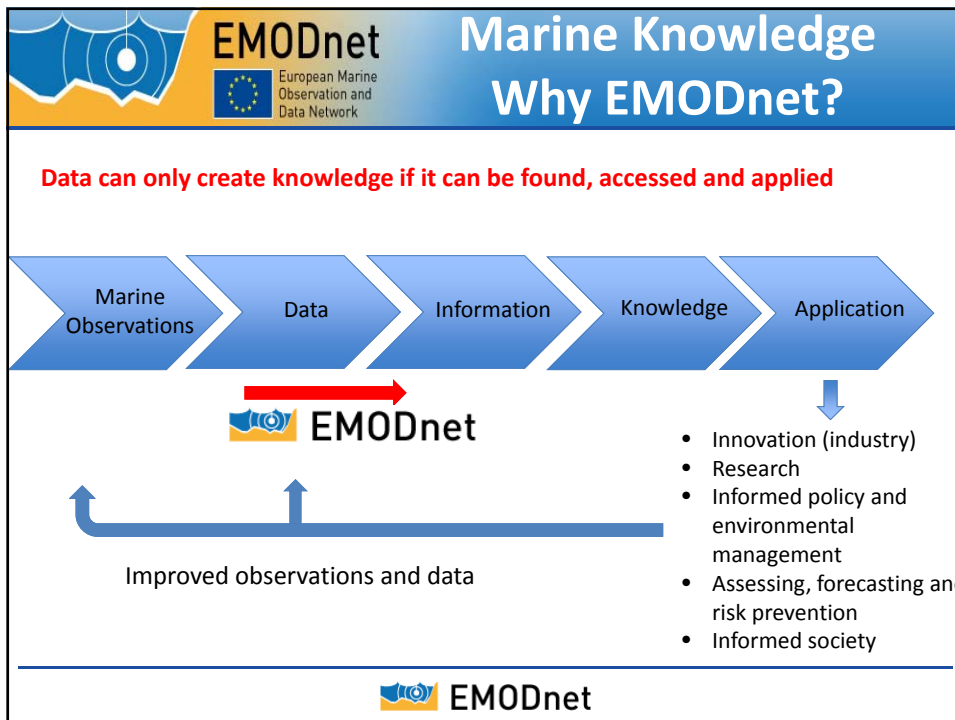
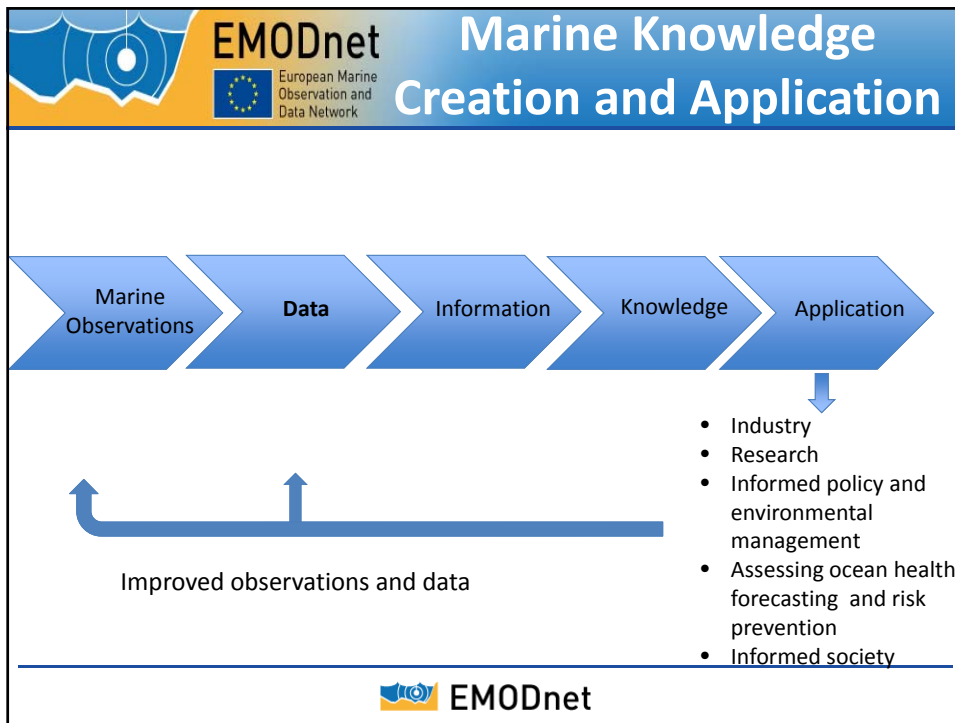
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Marine Knowledge

- ‘The creation of marine knowledge begins with observation of the sea and oceans’
- ‘**Data from these observations are assembled then analysed to create information and knowledge**’
- ‘Knowledge can be applied to deliver smart sustainable growth, to assess the health of the marine ecosystem or to protect coastal communities’



 **EMODnet**  **adopted 8 September 2010**





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A new vision

- Change the present fragmented EU repositories of marine data with an interoperable sharing framework
- Move to a new paradigm where data are collected once and used for many purposes
- Optimize observation networks by showing how monitoring meets the needs of public and private users (CHECKPOINT)



Marine knowledge 2020
MARINE DATA AND OBSERVATION FOR SMART AND SUSTAINABLE GROWTH
adopted 8 September 2010





Vision Target for 2020

- **Seamless multi-resolution digital seabed map of European waters by 2020**
 - Highest resolution possible in areas that have been surveyed;
 - Topography, geology, habitats and ecosystems;
- **Accompanied by timely information on**
 - Physical, chemical and biological state of the overlying water column
 - Oceanographic forecasts;
- **Easily accessible, interoperable and free of restrictions on use;**

Karmenu Vella, current Commissioner for Environment, Maritime Affairs and Fisheries

“The EU and its MS together are spending about 2 billion € per year on marine and maritime research. We are putting in place mechanisms for scientists to cooperate better and share more information. We are also giving better access to maritime information for free to researchers.”

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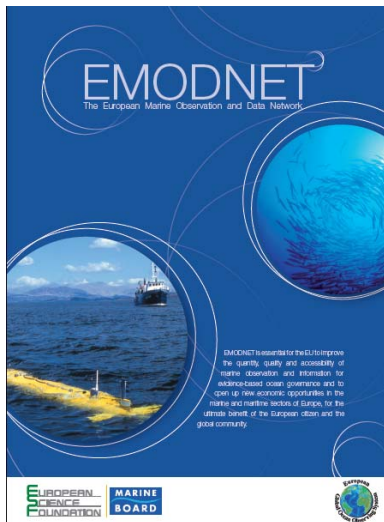
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Open Conference

To reach the balance that must be achieved between growth in the blue economy and the protection and preservation of our marine resources, we are even more heavily reliant on access to accurate and adequate data than ever before.

 **EMODnet**

Science community (2008)



EuroGOOS and
European Marine Board

“A vision for an end-to-end, integrated, inter-operable and user-oriented network of European marine observation and data systems ”

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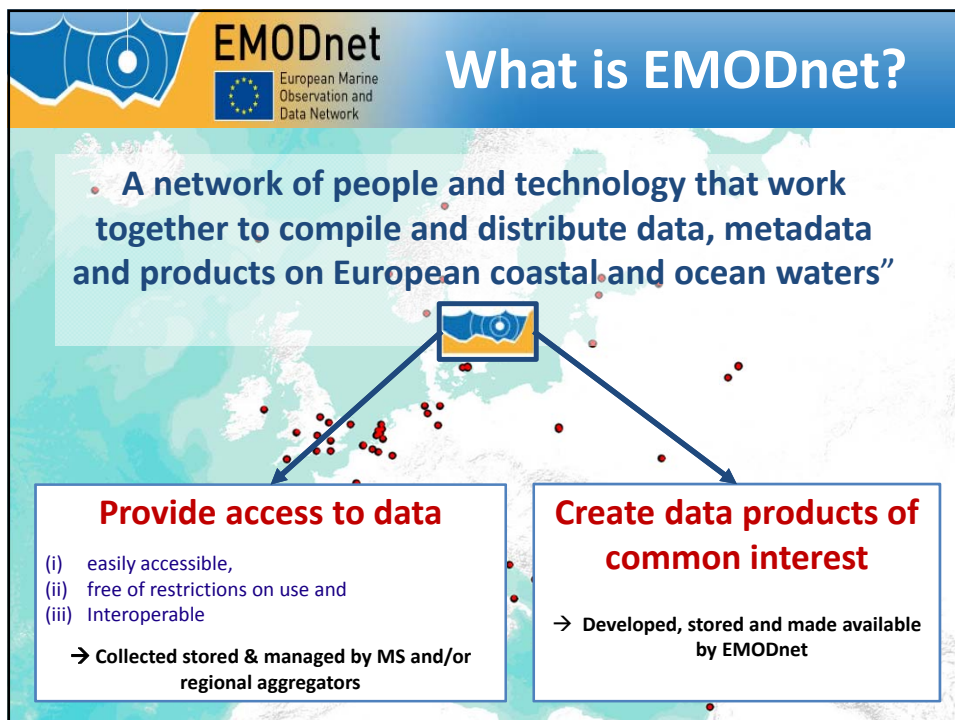
Science community (2014)

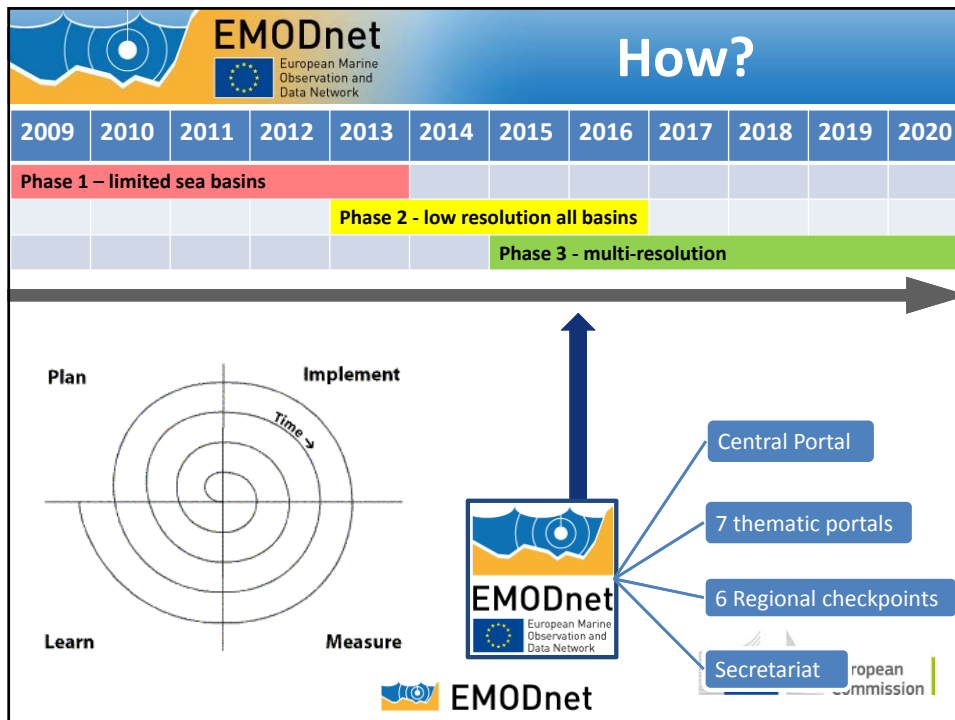
EuroOCEAN2014 Rome Declaration calls for:

- ***A fully operational EMODnet, ensuring collected data are well managed and freely available, to support science, industry and policy, aligned with further development of the European Ocean Observing System (EOOS), integrated at the global level (including GOOS, GEO, Copernicus).***



II . The European Marine Observation and Data Network





How? Core principles for development

- **Collect data once; use many times** -> reduce costs.
- Sustainable funding at a European level to **maximise benefit from the efforts of individual Member States**
- **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 break down barriers
- **Put the user first** when developing priorities and taking decisions
- Develop data standards **across disciplines as well as within them**
- Process and validate data at different scales: regional, basin and pan-European
- Provide statements on data ownership, accuracy and precision




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Data Network

Who is it for?

Targeted at professionals, well-informed experts, policy advisors from 4 main communities:

- 1. Public sector organisations and authorities**
- 2. Civil society**
- 3. SME's and large companies from private sector**
- 4. Research Community**










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Why is this important?



Benefits for data users

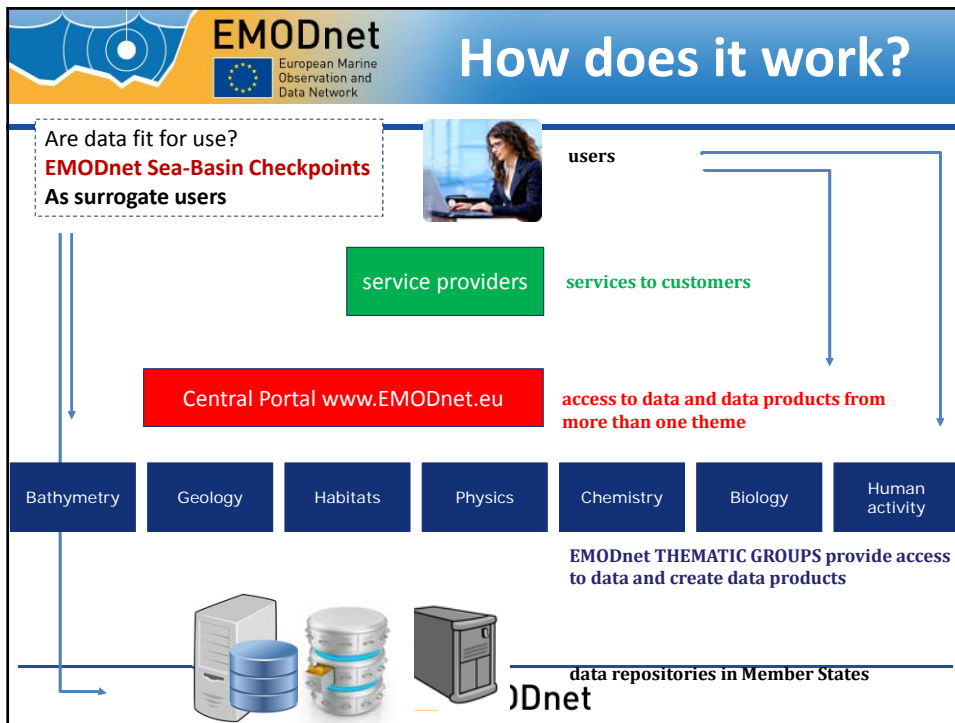
- Reduced costs for offshore activities
 - no need to repeat measurement that made by others
 - costs less to assemble data from different sources
- Stimulation of innovation and competition
- Reduced uncertainty in knowledge
- Better policies & management

Benefits for data providers

- Increase number/kinds of users - help justify investments
- Contribute to data products - increase visibility
- Make better use of own data via access to others' data
- May help data providers comply with their obligations



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Seven thematic portals

<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>Human Activities</p> <p>Data on the intensity and spatial extent of human activities at sea.</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 concentration of nutrients, organic matter, pesticides, heavy metals, radionuclides and antifoulants in water, sediment 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>	

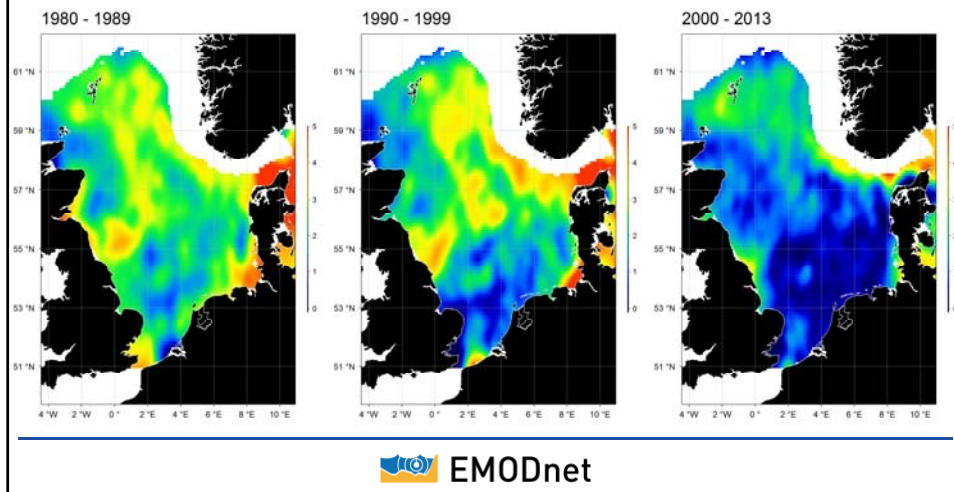
EMODnet thematic portals

- www.emodnet-bathymetry.eu
- www.emodnet-geology.eu
- www.emodnet-seabedhabitats.eu
- www.emodnet-chemistry.eu
- www.emodnet-biology.eu
- www.emodnet-physics.eu
- www.emodnet-humanactivities.eu

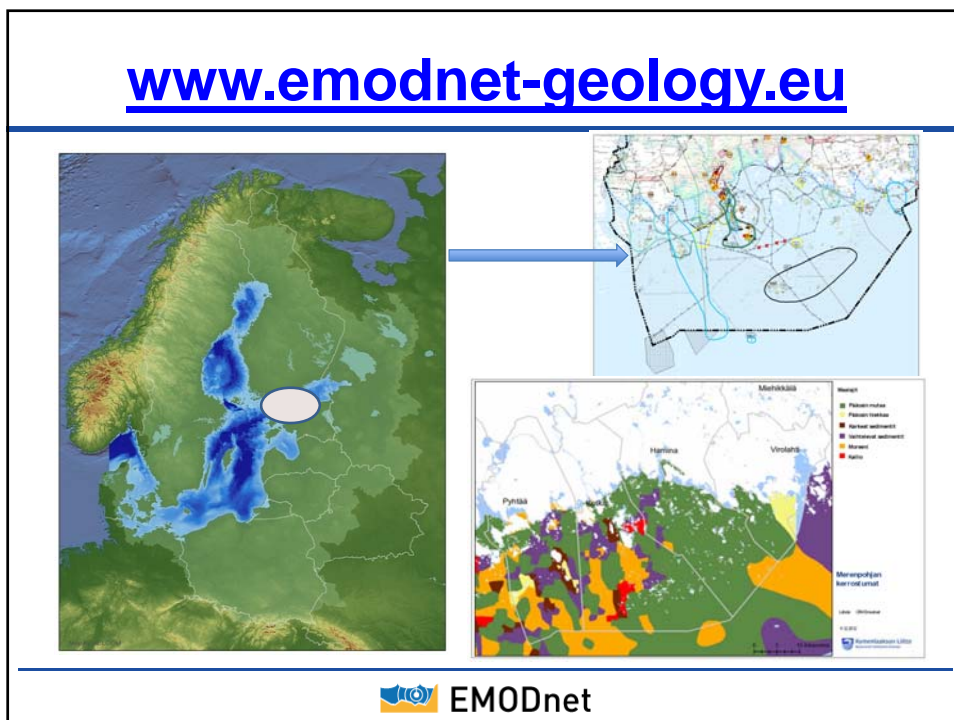
EMODnet

www.emodnet-biology.eu

Gadus morhua North Sea (Cod distribution)



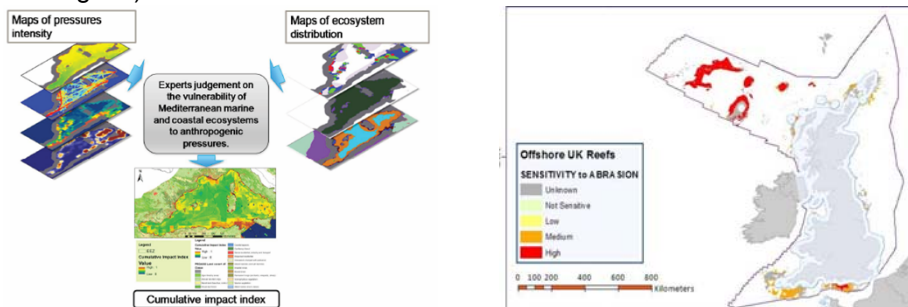
www.emodnet-geology.eu



www.emodnet-seabedhabitats.eu

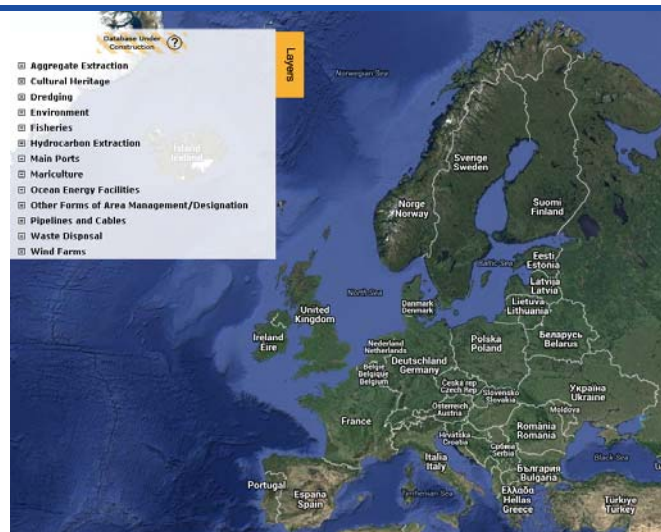
Enables a good many uses

- Joint land use - seabed habitats map for cumulative impact index (FP7 Pegaso)
- Sensitivity maps for assessing Seabed Integrity

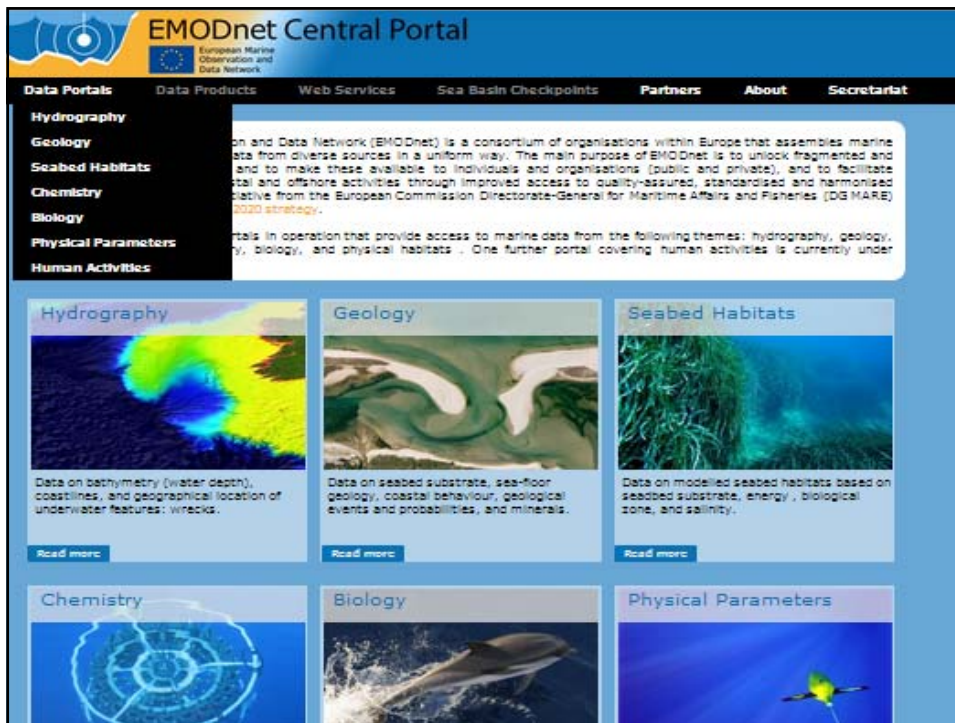


 EMODnet

www.emodnet-humanactivities.eu



 EMODnet



EMODnet

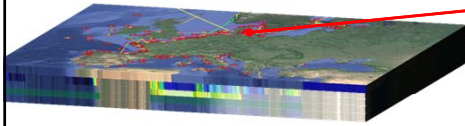
European Marine Observation and Data Network

Central Portal

www.emodnet.eu

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

Ability to overlay different data sets



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


Physical Parameters (temperature, salinity)

Bathymetry

Seabed Substrate


Marine Region (ICES, Protected Area)

Species Abundance



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Sea basin Checkpoints



1. Arctic
2. Atlantic
3. Baltic
4. Black Sea
5. Mediterranean
6. North Sea

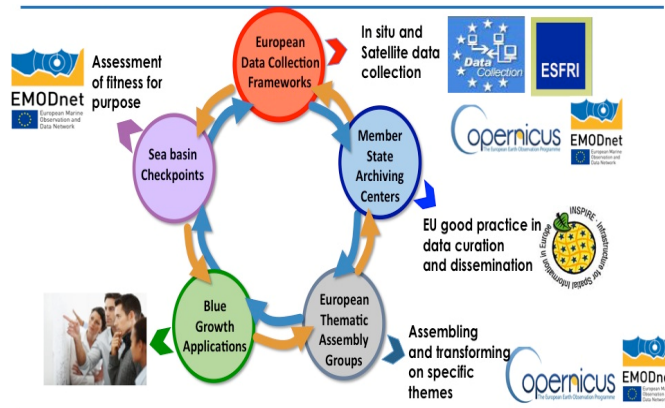
} 2015

} 2013

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Sea Basin Checkpoints

Assessing observations capacity and data adequacy for users at the regional sea-basin level



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Challenge targeted products from Med and North Seas

Windfarm siting	Determine the suitability of wind farm development in the Northwestern Mediterranean Sea
Marine Protected Areas	Analyze the existing Mediterranean network of marine protected areas (national and international sites)
Oil Platform leak	Issue a Bulletin within 24 hours to determine the fate and transport of oil from a platform leakage
Climate and coastal protection	Document in several ways sea level changes, water column annual mean temperature changes and sediment mass changes.
Fishery management	Collect mass and number of fish landings, discards and bycatch (of fish, mammals, reptiles and seabirds) by species and year
Marine Environment	Seasonal averages and changes of eutrophication in the basin for the past ten years
River Inputs	Time series of all river water discharges, sediment loading, total nitrogen and phosphates loads, eels abundance

+ Alien species, fishing impacts, bathymetry (new checkpoints)

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III. Key Challenges



Strengths	Weaknesses
<ol style="list-style-type: none"> 1. Pan-European scope- bringing data together from all coastal states of the EU thus enabling for the first time EU scale maps and data sets and long time series data 2. EMODnet promotes and develops common standards 3. EMODnet enables data to be collected once and used many times 	<ol style="list-style-type: none"> 1. Some providers maintain data restrictions for various reasons (safety, publishing, commercial etc.) which conflicts with the principle of open and easy access 2. Interoperability issues. Very broad coverage with different themes based on different practices and systems sometimes difficult to harmonise. 3. Data for some uses must have high levels of QC/QA and this control may not have been applied to some data e.g. scientific data
Opportunities	Threats
<ol style="list-style-type: none"> 1. EMODnet is becoming the central focal point for marine data in Europe 2. Data quality is improving e.g. with higher resolution, better coverage, improved QC and long-term data sets are being built 3. A user community is being established with feedback loops that are improving usability of data 4. New links are being planned to involve industry and scientific organisations in a more comprehensive way 	<ol style="list-style-type: none"> 1. EMODnet funding to date, and planned to 2020, represents a huge investment that needs to be continued beyond 2020 to realise maximum benefit 2. Expectations from the user community are high but the project is still in development. EMODnet requires the support and patience of users

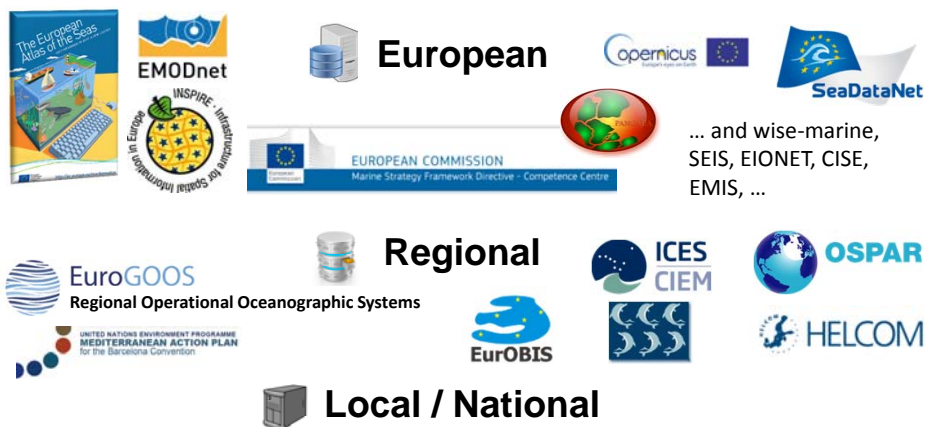


What can we do?

- Embedding EMODnet in a complex landscape
- Coordination, harmonisation & communication
- Ensuring sustained buy in from data providers
 - Promote data sharing + address restrictions & frictions
 - Bring in new data sources via new tools and models
- Making sure EMODnet is used = key to securing long term survival
- And many more: single sign on, interoperability, openness ...



Marine Data & Information Systems



National Oceanographic data centres (NODCs), databases at specialised/competent organisations involved in marine observations/monitoring, universities/research, *industry*



Coordination, Coherence & Communication

Secretariat hosted by the Flemish Government at InnovOcean

Administered by Seascope Consultants UK

- Jan-Bart Calewaert (overall coordination) - BE
- Belén Martín-Miguez & Oonagh McMeel (Project Officers) - BE
- Vikki Gunn (communication support) - UK
- Phil Weaver (Chair of SC) – UK




- Organise EMODnet **Steering Committee**
- Support the **Marine Observation and Data Expert Group**
- **Improve visibility** & disseminate EMODnet results
- Collect feedback from EMODnet users
- Test functionality of Portals and monitor overall progress



Bringing people and ideas together





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Open Conference

Feedback

- **EMODnet has made huge progress**
- **Comprehensive coverage**
- **Central portal** – single access point
- **Strong linkages in the landscape (Copernicus, MSFD actors, INSPIRE)**

Challenges

- **Data gaps** – what exists / what is missing?
- **Data providers** – encourage and acknowledge
- **Users** – EMODnet visibility, user-driven, user oriented
- **Data processing and management** – improved harmonisation
- **Industry involvement** – as providers and users of data
- **Open data** – how to promote data sharing? Find solutions to restrictions




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Data Restrictions (1)

Reasons for not sharing

- data generators may be hesitant to share data to
 - avoid users making “wrong” conclusions based on their data;
 - to maintain the integrity of their data and **avoid circulation of duplicates**;
- there may be issue over **personal data** (e.g. in context of fisheries: records of vessel location could be used together/aligned with records of catches to provide personal information on who was fishing where and when);
- data generators may want to be the only one providing the data, and sometimes benefiting from that.



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Data Restrictions (2)

Reasons for not sharing (continued)

- Industry / SMEs (and researchers) may **lack the human resources/capacity** to carry out data management.
- Environmental monitoring bodies (Members States) may **not want other people to have an opinion** on their data.
- Sometimes data is **commercially valuable**, so the data centre could exploit the data (e.g. for generating products) instead of providing free for users to exploit.
- Researchers may need **time to publish** their data
- Sometimes there are specific data policies in place e.g. on observations in territorial waters.

Data Restrictions (3)

Possible solutions?

- **Moratoria** – automatically free after certain time
- Increase visibility of data providers - **acknowledgement**
- Provide **services for data access and data management** for free in return for data (e.g. Argo H2020 ?)
- Leverage **data against funding**: basically if data from a project is not made available then no future funding.
- Sustained funding to ensure sense of security and promote self-confidence for data providers.

Data Restrictions (4)

Data use and traceability:

- **Open data does NOT mean anonymous usage.** Identification of users and tracking download transactions helps to motivate funding organisations.
- **Enable promotion of data contributions** e.g. DOIs on data sets to measure contribution of data to science and knowledge.
- Standardise data citation by publishers e.g. feedback statistics (spatineo.com, soundcloud.com)
- Provide tools & promote a collaborative environment (e.g. Ifremer sensor nanny)
- Providers don't want many copies of their data 'out there' – **unique platform identifiers** – proper identity.
- Cloud paradigm – **'free services against information'**



What's Next?



What next?

- **more data delivery through machine-to machine connections**
- **better access to fisheries data**
 - proposal for revised Data Collection Framework in preparation
- **better stewardship of data at end of projects**
 - research, impact assessment for offshore facilities etc
 - data ingestion tender under evaluation
- **more structured input from users**
 - user group to be set up
- **coordination with regional sea conventions**



Phase III (2016-2020)?

Towards fully operational EMODnet by 2020

- **Calls for tenders thematic portals – soon!**
 - 2x2 year cycles
 - Architecture remains
 - Parameters and coverage further expanded
- **Data ingestion facility – soon!**
- **Development of new data services via central portal**
- **Selected efforts to fill major gaps of data collection at pan-European level**




Thanks to the partners



Thanks to the partners



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Thank you!



<http://www.emodnet.eu/video>

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**Additional information about the
thematic data portals**

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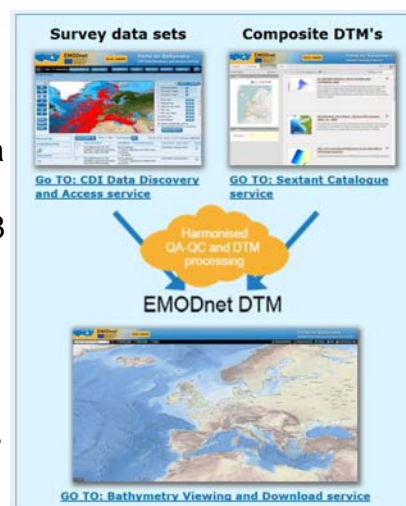
1. EMODnet Bathymetry

- Overview and access to bathymetric survey data
- Free access to a medium resolution Digital Terrain Model (DTM) for all European seas
- Data (single beam, multibeam, plummets, LIDAR, ..) from national hydrographic services, marine research institutes and industry
- SeaDataNet Discovery and Access service for survey data sets
- Bathymetry Viewer and Download service



1. EMODnet Bathymetry

- > 13.800 surveys indexed
- DTM for all European seas at $1/8 \times 1/8$ arc minutes (~230 m)
- DTM uses > 7.000 survey data sets and composite DTMs from 31 data providers from 18 countries and GEBCO_2015
- DTM contains 1.092.115.678 data points (28.799 rows x 37.922 columns)
- 3 high resolution coastal areas
- Latest release: 8 Sept 2015



1. EMODnet Bathymetry

- DTM freely downloadable in 16 tiles in range of formats
- Direct links between DTM cells and used data sets
- Various functions for DTM browsing, retrieving information and WMS services
- full European DEM coverage on both land and water
- Free 3D-viewer



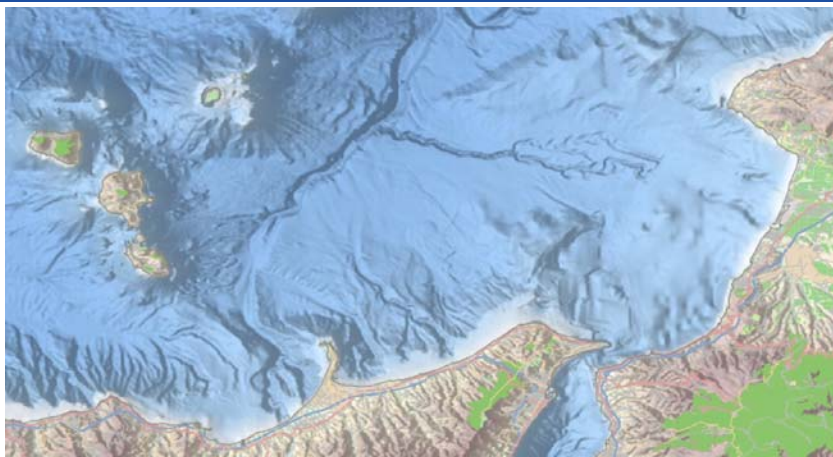
Source reference layer



Retrieving metadata of a survey



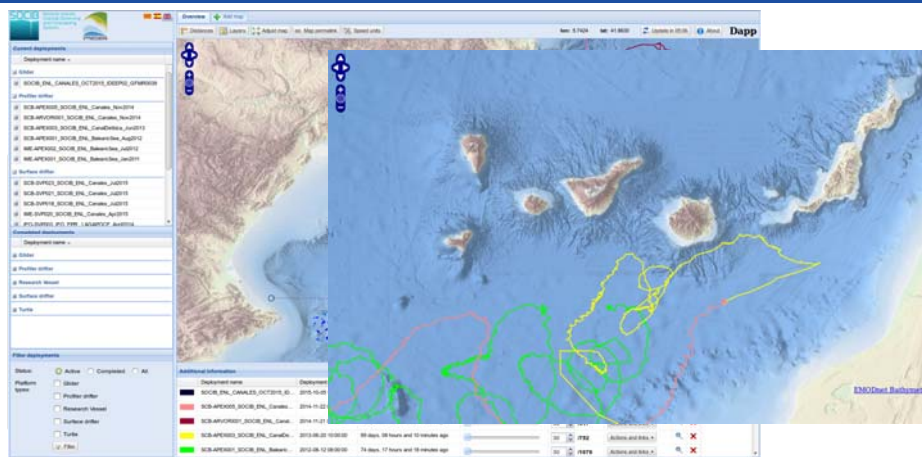
1. EMODnet Bathymetry



Comparison between globally leading digital product - GEBCO – General Bathymetric Chart of the Oceans (IHO – IOC) and EMODnet Bathymetry DTM – example in Tyrrhenian Sea near Sicily – Italy and South Italy – resolution EMODnet is 16 times higher



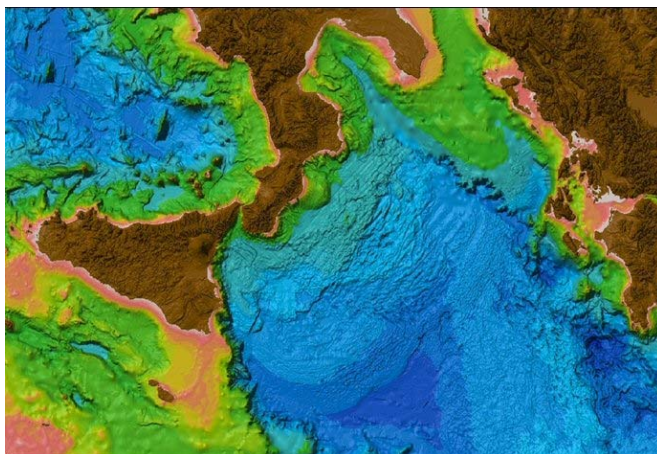
1. EMODnet Bathymetry



Example of usage: SOCIB (Balears – Spain) use WMS as baselayer for display where marine observation instruments are deployed



1. EMODnet Bathymetry



Cooperation and synergy with GEBCO: EMODnet uses GEBCO to cover gaps. **GEBCO uses EMODnet to improve its DTM**

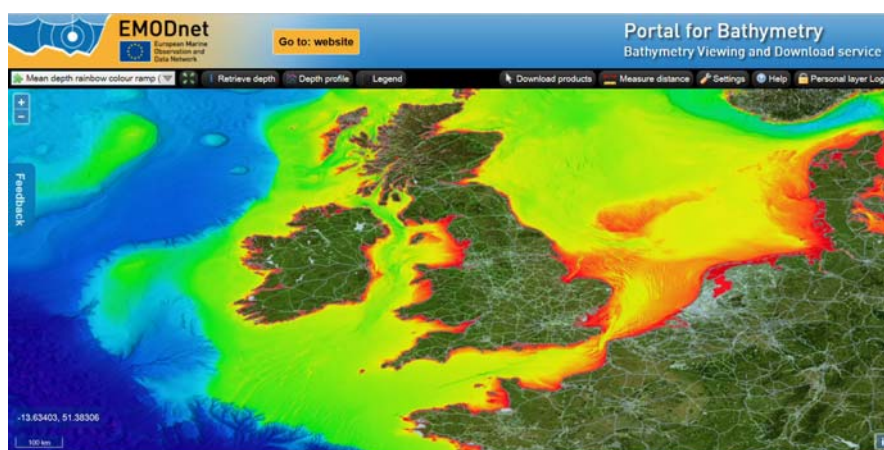


1. EMODnet Bathymetry

- Challenges now and near future:
 - increasing survey coverage with extra input from science, authorities and industry
 - improving quality of DTM
 - expanding partnership and increasing resolution
 - going to the ‘cloud’ because of ‘big data’



1. EMODnet Bathymetry



<http://www.emodnet-bathymetry.eu>



2. EMODnet Geology

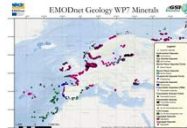
- Portal provides access to information primarily held by national geological surveys of 30 European countries:
 - harmonised **sea-bed substrate** and bedrock geology at 1:250,000 scale where available; 1:1 million scale in other areas
 - Information on **coastal behaviour** (migration; erosion; accretion; resilience/vulnerability);
 - 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

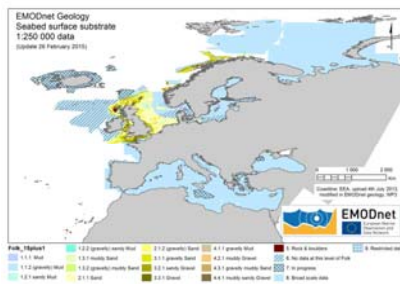


Minerals

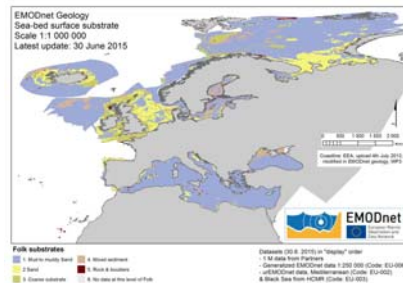


2. EMODnet Geology

Constructing geological maps at various scales



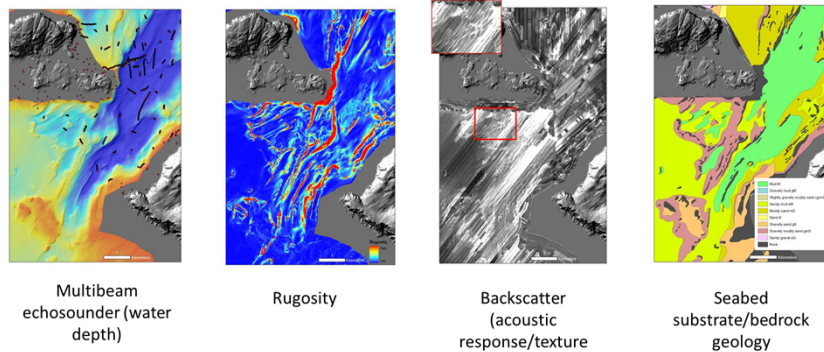
Detailed where possible (1:250,000)



Broadscale in other areas (1:1 million)



2. EMODnet Geology

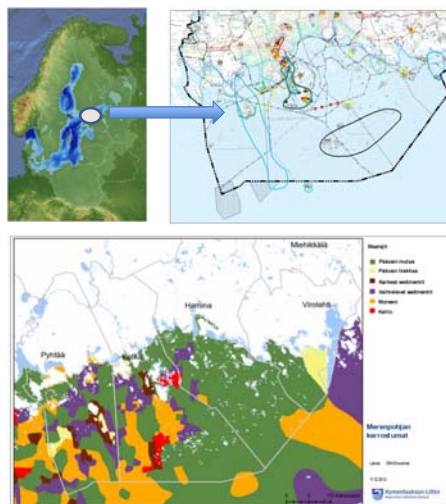


Bathymetry → Geology → Seabed habitats



2. EMODnet Geology

- Gulf of Finland Regional Plan for Trade and the Sea Area
- **EMODnet-Geology** seabed substrate data provided to planners.
- Marine geologists (and biologists) interacted with planners to evaluate what is available for marine spatial planning.
- Information can be understood by decision-makers



2. EMODnet Geology

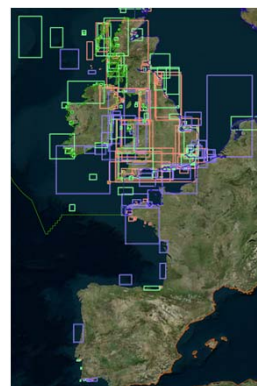
- Advantages
 - Central access to **geological information from 30 countries**;
 - Building on **open-source platform** providing access to national geological survey information and to provide best available data and access to national data catalogues.
- Challenges
 - Accessing third party data held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



3. EMODnet Seabed Habitats

Provides you with:

- Access to habitat maps and habitat samples from surveys expressed in EUNIS (the EU nature information system)
- Access to a pan-European broad-scale EUNIS habitat map – EUSeaMap
- Access to map confidence
- Viewing and download services



3. EMODnet Seabed Habitats

EUSeaMap Requires

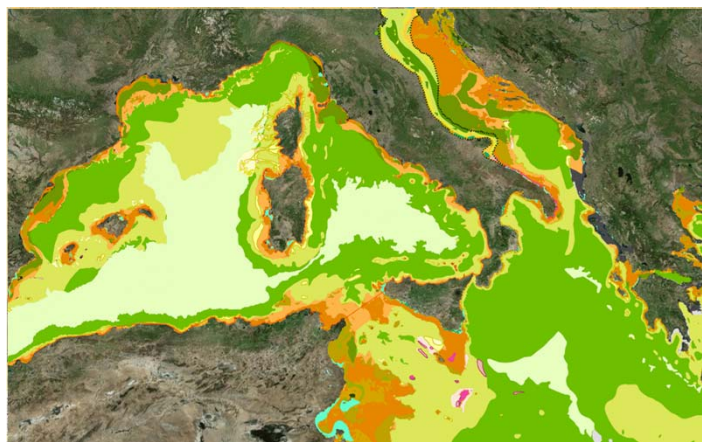
Input data from:

- EMODnet Geology (from WP3: Substrate)
- EMODnet Bathymetry
- Light energy at seabed (from Meris satellite imagery)
- Currents and wave climatologies from models (MyOcean etc.)
- Temperature, salinity, O₂ from various sources
- Habitat samples data from various sources



3. EMODnet Seabed Habitats

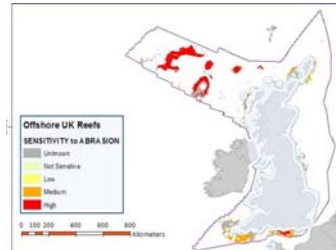
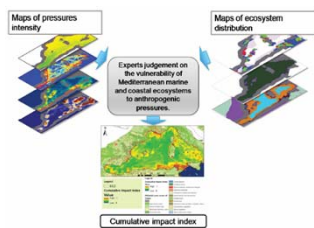
Fills a big knowledge gap



3. EMODnet Seabed Habitats

Enables a good many uses

- 1725 products downloads last year, 11% by commercial users
- Joint land use - seabed habitats map for cumulative impact index (FP7 Pegaso)
- Sensitivity maps for assessing Seabed Integrity



- Marine Directive predominant habitats mapping



3. EMODnet Seabed Habitats

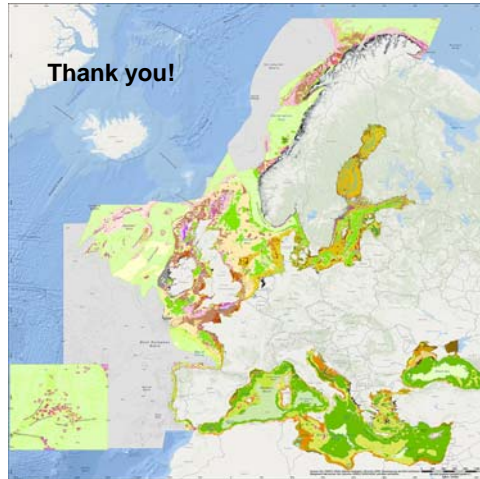
Recommends

Take-home messages

- EUNIS for all! The classification needs to be comprehensive for all basins
- Need for more biological data – A benthos survey?
- Need for higher resolution oceanographic data
- More harmonised confidence assessments
- Improving the map: trade-off between resolution and coverage
- For those possessing habitat maps, please let us have them!



3. EMODnet Seabed Habitats

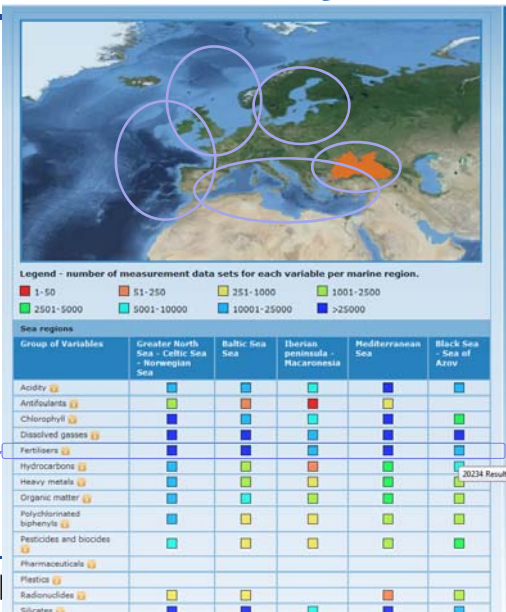


<http://www.emodnet-seabedhabitats.eu>

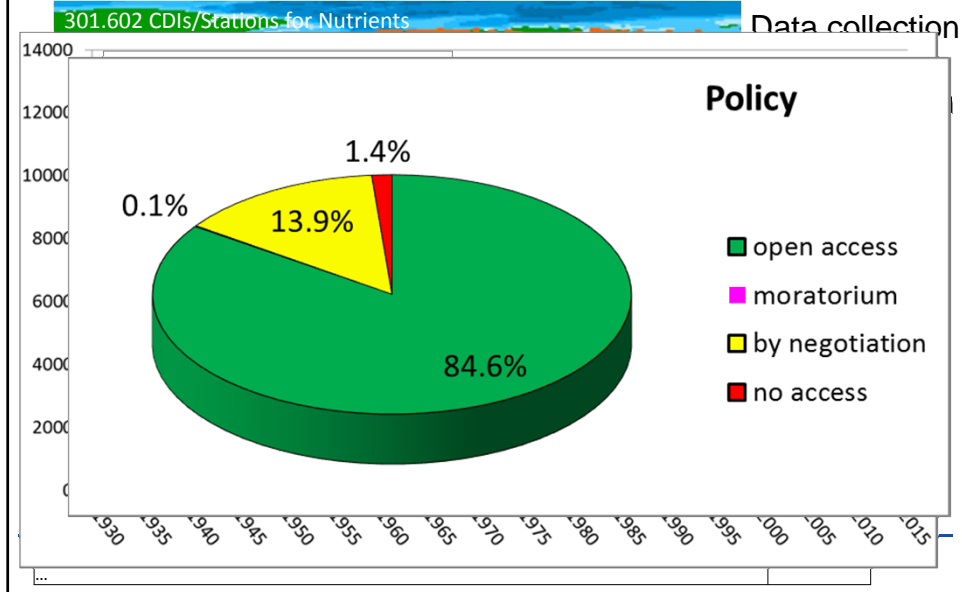


4. EMODnet Chemistry

Involves **46 institutes**
 Covers all European waters
 Aims to **collect, standardize, check the quality** of data
 developing **new services** to share and visualize information and products
 Data harvesting and **products generation** are organized at **Regional level**
 Single **Data Discovery and Access** interface for all the sources

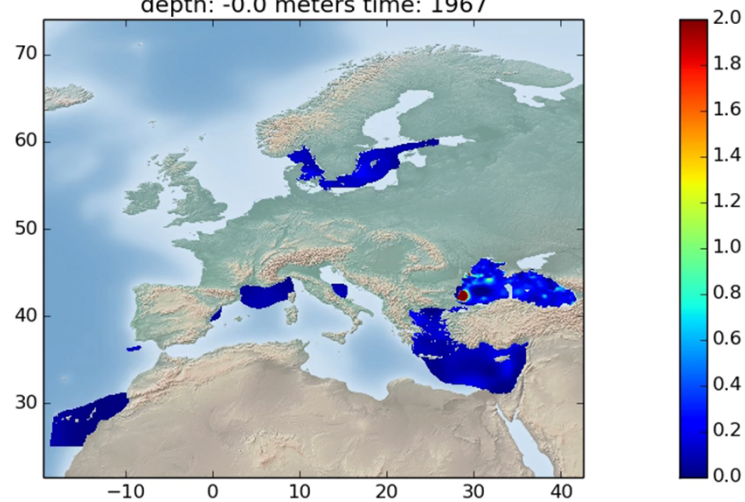


4. EMODnet Chemistry



4. EMODnet Chemistry

Water_body_phosphate masked using relative error threshold 0.5
depth: -0.0 meters time: 1967



4. EMODnet Chemistry

BEFORE

Phosphate [$\mu\text{mol/l}$]

Phosphate [$\mu\text{g/l}$]

PO4

PHOW [$\mu\text{mol/l}$]

PHOS

PHOS [$\mu\text{g/l}$]

AFTER

Phosphate [$\mu\text{mol/l}$]

body

phosphate

$\mu\text{mol/l}$

Standardisation
Interoperability



EMODnet

4. EMODnet Chemistry

Main target is to fit for purpose of the Marine Strategy Framework Directive by

- Having regular and open **dialogue** with MSFD groups, EEA, DG ENV and Regional Sea Conventions to discuss their **requirements** and our **options**
- **Optimisation** EMODnet Chemistry services and products for specific indicators
- **Formalisation** of cooperation

Example: we are preparing an MoU with the Commission on the Protection of the Black Sea Against Pollution (Bucarest Convention)



EMODnet

4. EMODnet Chemistry

Challenges now and near future:

- **Expand** data coverage and data centres connections (**research and monitoring**)
- **Optimise** the validation loop (dynamic harvesting, QA/QC) **in time** and types of parameters
- **Optimise** product generation
- Compute **additional indicators** (ratios, transparency,...)
- **Increase** performance of services
- **Integrate** EMODnet Chemistry in MSFD implementation



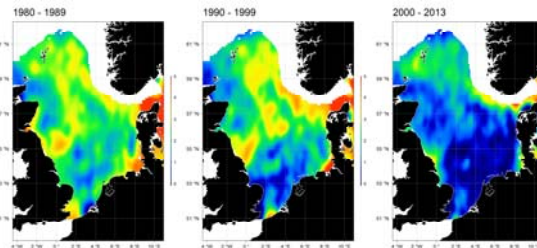
5. EMODnet Biology

- Access to data on temporal and spatial distribution of marine species and species traits from several species groups from European seas.
- Trophic groups: phyto & zooplankton, algae, seagrasses, benthos, fish, reptiles, birds, mammals,
- Main components
 - WoRMS
 - EurOBIS-OBIS

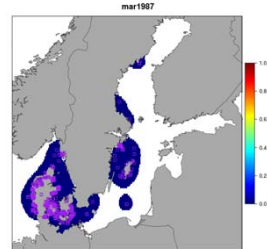


5. EMODnet Biology

- Both raw data, and data products - stores taxonomic and functional data
- Spatial modelling, indicating the trend in abundances of selected species
- Focus on 'indicator' species



Gridded Cod (*Gadus morhua*) abundance illustrating the dramatic decrease of the cod stock in the North Sea.

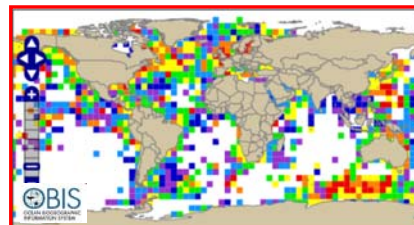
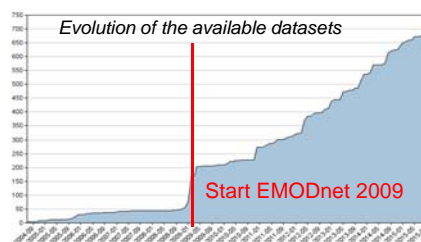


Marenzelleria abundance showing multiple invasions in Baltic Sea

5. EMODnet Biology

We now have a mature European marine biodiversity data network

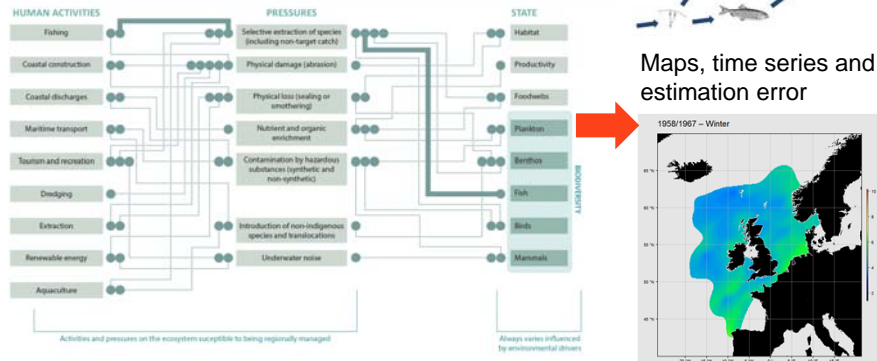
- Connecting 159 institutes from all European countries
- Making available 673 data collections (research oriented and monitoring data) making Europe main contributor to global OBIS IOC/IODE - UNESCO



5. EMODnet Biology

- Contributing to ICES' Ecosystem Overview process

Ecosystem Overview for management of ICES ecoregion



 EMODnet

5. EMODnet Biology

- Key Challenges:
 - Open access policy
- Remaining issues :
 - Data availability & gaps
 - Create fit for purpose data products through real dialogue with stakeholders (e.a. MSFD)
- Recommendations for future development
 - Data products: from species to community characteristics
 - Including new biological observations, new datatypes from novel biodiversity sensors (e.a. near real time sensors: bio-optical sensors, GPS and acoustic tags...)

 EMODnet

6. EMODnet Physics

Provides a single point of free and open access to discover access and download marine real-time and archived data on physical parameters of European Seas as monitored by fixed platforms, ferry boxes, ARGOs, gliders, HF radar, ...

Operational System

www.emodnet-physics.eu/map
www.emodnet-physics.eu/map/dashboard
www.emodnet-physics.eu/map/service/GeoServerDefaultWMS
www.emodnet-physics.eu/map/service/GeoServerDefaultWFS
www.emodnet-physics.eu/map/service/WSEmodnet2
thredds.emodnet-physics.eu:8080/thredds/catalog.html



6. EMODnet Physics

Results:

- **One point of access**
- **Strong cooperation with Copernicus, SeaDataNet and EuroGOOS**
- **New and more contributors**
- **More visibility to data providers**
- **New and more data and users**
- **More harmonization, standardization**
- **Cross-fertilization**
- **Up to date interoperability services**

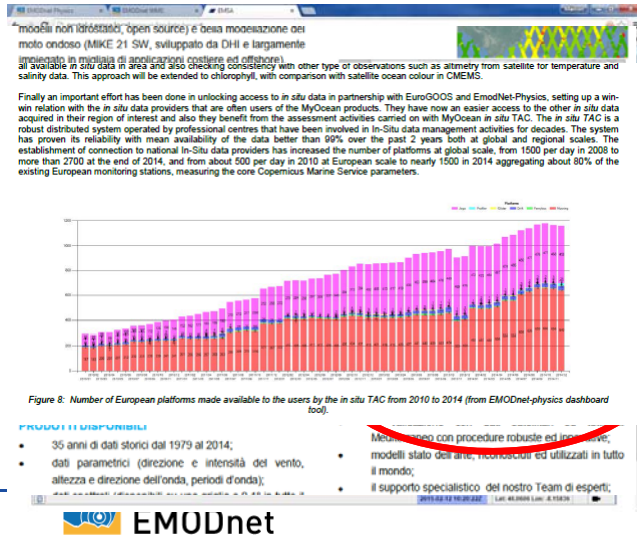
12/10/2015	platforms	Latest 60 days
drifting bouys (DB)	2654	1446
Ferrybox + Icebreaker (FB)	22	11
gliders (GL)	17	4
fixed bouys or mooring time series (MO)	912+704	692
profiling floats vertical profiles (PF)	194	170
Argo Floats (AR)	1102	724
HF Radar (HF)	11	11
TOTAL	6717	3059

parameter group/ # time series	Water Temp	Waves and Winds	Sea Level	Water Salinity, Conductivity, Density	Currents	Light Attenuation	Atmospheric	Others
latest 60days	2460	262	428	932	64	19	1082	1129
total	3830	336	549	1240	86	28	1686	1648
validated historical	440	171	397	132	365	35	39	210



6. EMODnet Physics

examples of how the data of the portal was used



6. EMODnet Physics

• key challenges and remaining issues to be resolved

- Keep engaging data originators
- Improving the accessing, discovering, plotting and downloading features of the portal
- connecting more historical validated data
- further products (e.g. annual/periodic average) accessible via both the portal and interoperability services (e.g. explore/exploit more THREDDS)
- ice data and sea level trends on the portal
- Working on Single Sign On/Open-ID in collaboration with Mercator – IFREMER and SeaDataNet network

6. EMODnet Physics

- **recommendations for future development of the thematic portal in the next phase**
 - new providers and new/more data (e.g. underwater noise, ship opportunity, mammals...)
 - a continuous data flow from Near Real Time to validation
 - improving interoperability layers (e.g. extend THREDDS and OGC catalogues) and services (dashboard, tracking and reporting tools)
 - wider audience (e.g. new data plots, single parameters download ...)
 - more basic products (e.g. annual seasonal averages...)
 - ready to ingest and store data from past projects, organizations outside main networks
 - Real Time data and big data visualization
 - easier direct interaction between providers and users



7. EMODnet Human Activities

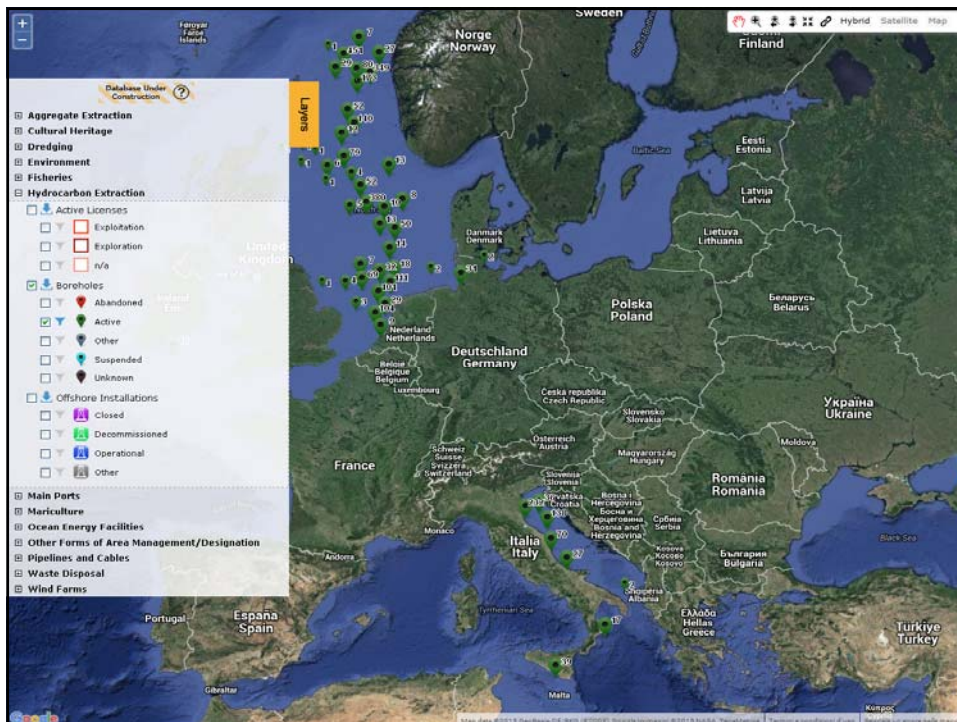
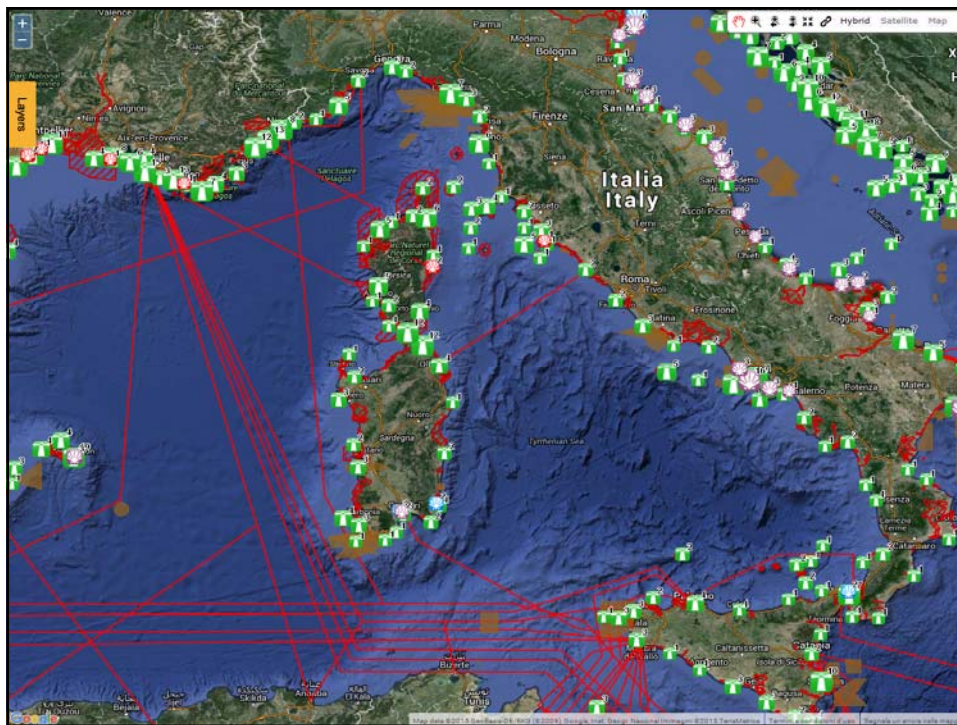
Born in late 2013, Human Activities is the **'youngest member of the EMODnet family'**

It aims to become the **main entry point** for spatial data on **marine and maritime activities** in the EU

We don't collect new data!

We **collate** existing information, **harmonise** it and make it available under **interoperable formats**





7. EMODnet Human Activities



Robert



7. EMODnet Human Activities

Key challenges

- Lots of people advocate data sharing, not that many actually share it
- Harmonising data from different sources is a time consuming activity
- Poor coverage of some countries / data themes

Recommendations for the next phase

- Improve current coverage
- Oceans have no boundaries: extend data collection to non-EU neighbouring countries
- Include Maritime Spatial Plans
- Liaise with INSPIRE

