



EMODnet

European Marine Observation and Data Network (EMODnet)

EMODnet@EurOCEAN Pre-Event
Connecting people with data



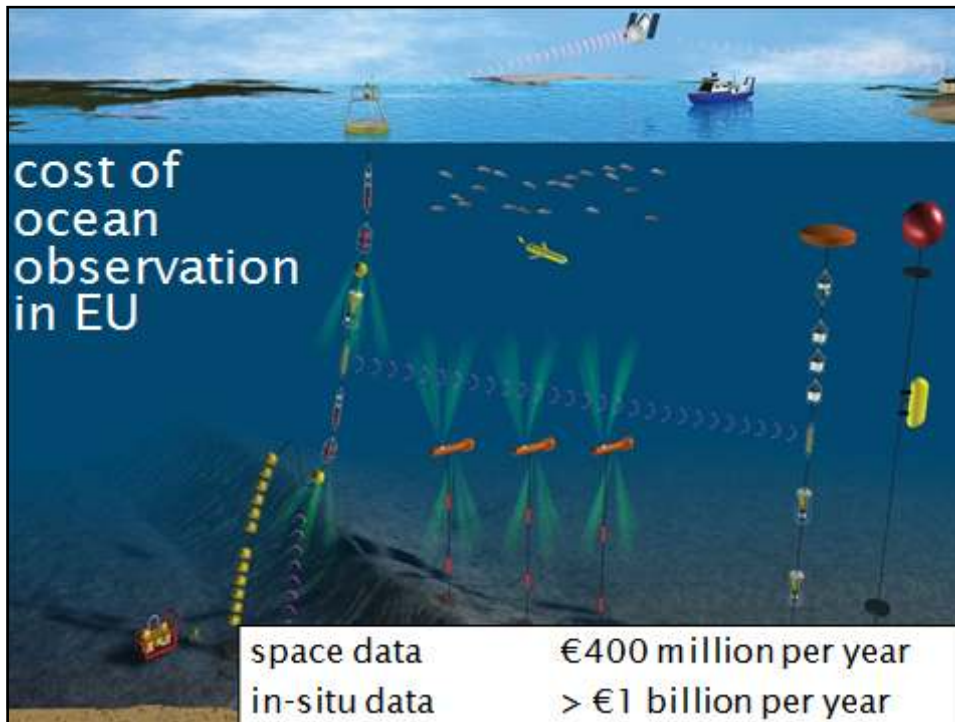
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Outline

- What is EMODnet?
- Why EMODnet?
- Where are we now?
- EMODnet portals
- Common challenges ahead






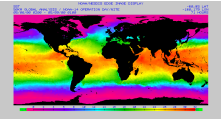


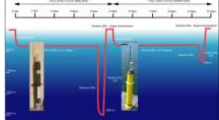
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Maria Damanaki, former Commissioner for Maritime Affairs and Fisheries

(...) 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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Why is it so important?

An effective pan-European marine data infrastructure will

- **Improve offshore operators' efficiency and costs** in gathering and processing marine data for operational and planning purposes → estimated at **1 billion € per year**
- **Stimulate competition and innovation** in established and emerging maritime sectors → est. at **200-300 million € per yr**
- Improve efficiency of **marine planning and legislation** (e.g. environment, fisheries, transport, etc.);
- **Reduce uncertainty** in our knowledge and ability to forecast the behaviour of the sea.



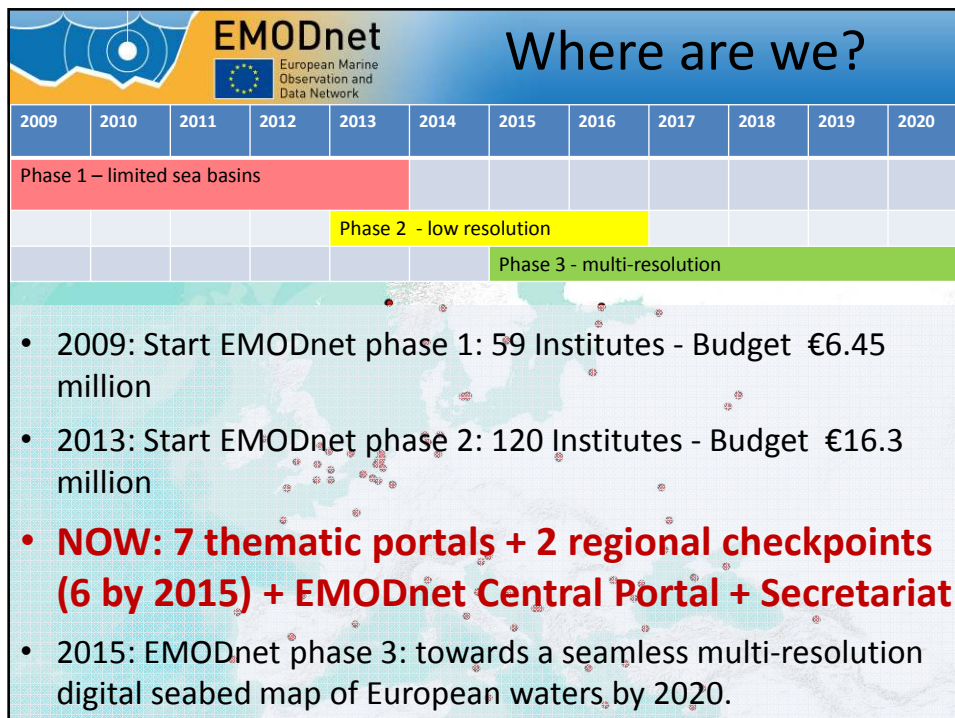
What is EMODnet?

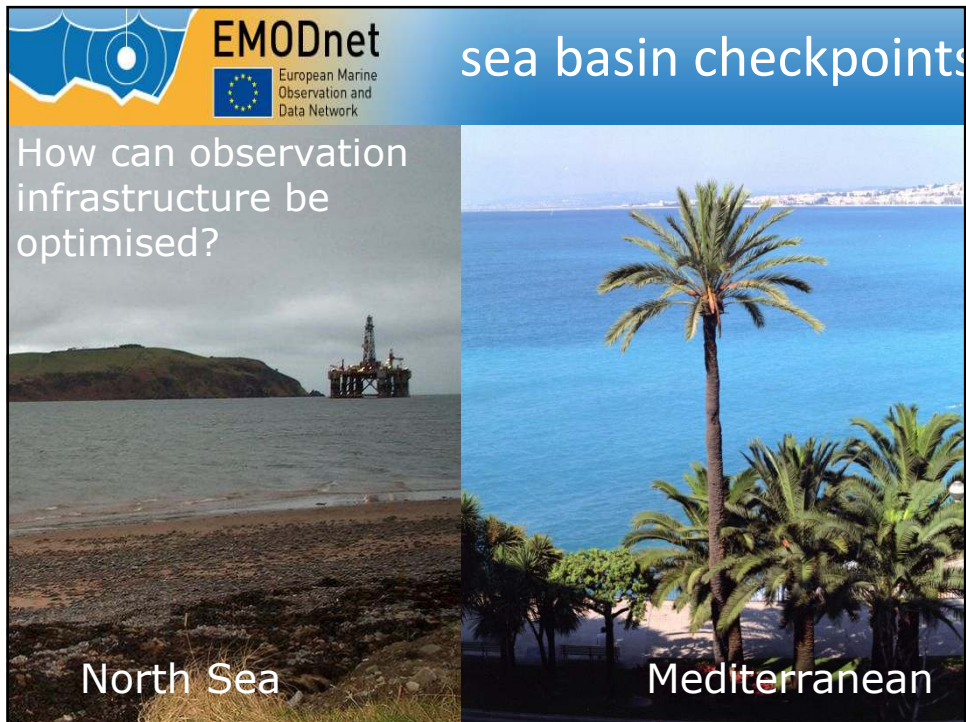
Network of organisations assembling marine data, metadata & data products from diverse sources within Europe in a **uniform** way to

- make marine **data** more (i) easily accessible, (ii) free of restrictions on use and (iii) interoperable
- Develop **data products** of common interest

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 breakdown 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

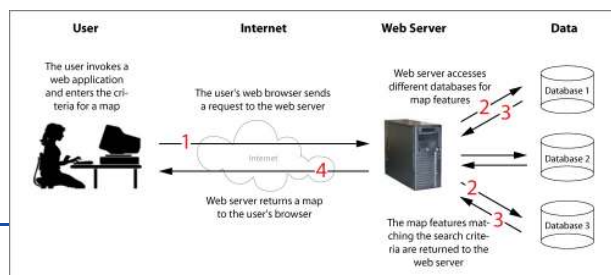




The Central Portal

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



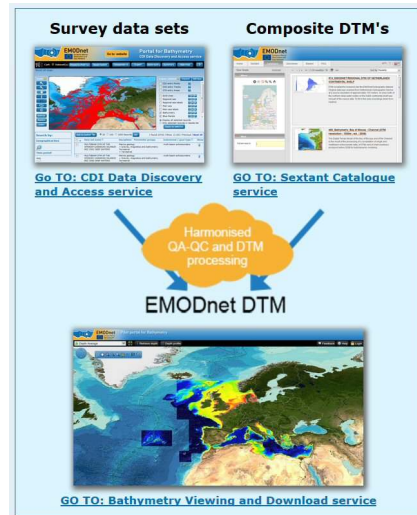


EMODnet Bathymetry

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

EMODnet Bathymetry (2)

- > 10.000 surveys indexed
- DTM for 7 regions at $\frac{1}{4}$ * $\frac{1}{4}$ arc minutes
- Coming:
- More surveys indexed
- DTM for 11 regions at $\frac{1}{8}$ * $\frac{1}{8}$ arc minutes
- Coastal DTMs at multi resolution



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EMODnet Bathymetry (3)

- Harmonised freely downloadable DTM of European seas of medium high resolution $\frac{1}{8}$ * $\frac{1}{8}$ (GEBCO is $\frac{1}{2}$ * $\frac{1}{2}$ arc minutes)
- Direct links between DTM cells and used survey data sets and overview of additional surveys
- Main challenges:
 - further improving survey coverage by extra input from science, authorities and industry
 - further improving quality of DTM
 - maintain cooperation with HOs and IHO

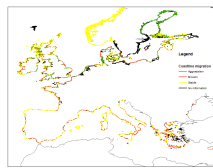
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EMODnet Geology

- Portal will provide 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 (2)

- 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 Seabed habitats

- Generate and make available a broad-scale map of Eunis habitats at $1/8 * 1/8$ NM - along with confidence map - and investigate feasibility of reaching $1/16 * 1/16$
- Provide a unique EU receptacle for:
 - Maps from surveys
 - Modelled distributions of single habitats (e.g. Mediseh, Habmap)
 - Habitat sample data (e.g. Ospar's)
- Where do the data come from?
 - EMODnet, EuroGOOS, MyOcean
 - A number of single organisations (habitat samples)



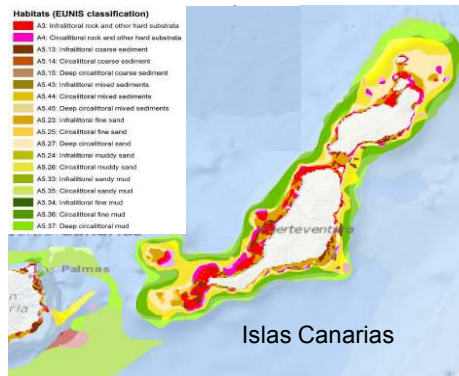
EMODnet Seabed habitats (2)

- What can users expect: what does the portal offer and what not?
 - No biology in map form (only samples)
 - Increased resolution to come (but spatially limited)
 - Detailed habitat maps from survey (but no quantified objective)
- Why would users want to go to your portal?
 - No other mapping portal
- What are the main challenges you are facing/expecting in future
 - Most issues are coastal (e.g. 8 from 11 in Atlantic CP)

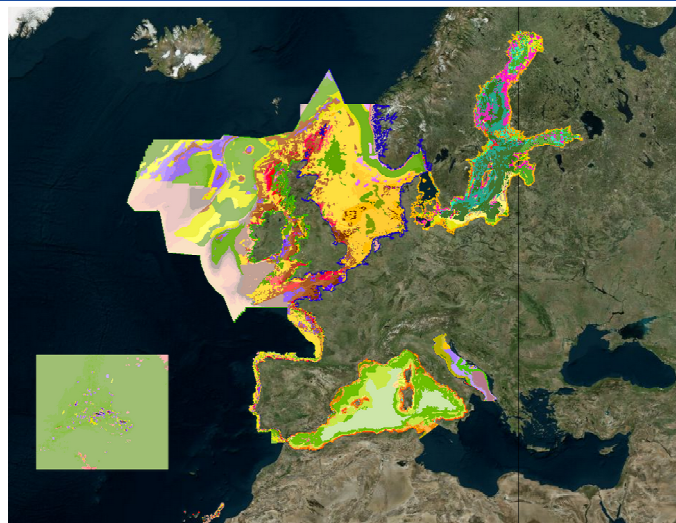


EMODnet Seabed habitats (3)

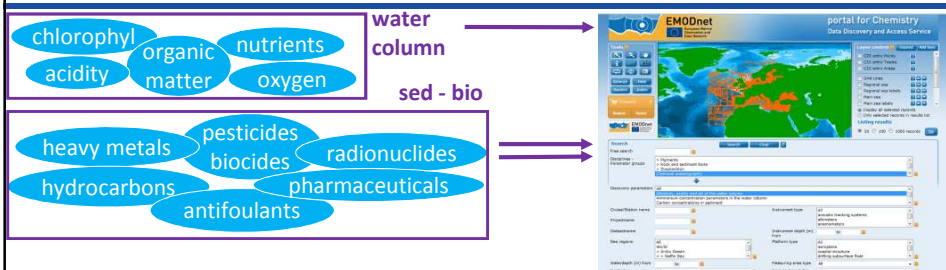
- Foster use at EU and MS levels (MSFD, pressure / impact) and feed into checkpoints
- Assist EEA in improving EUNIS
- Promote a EUSeaMap coastal strand (somewhat equivalent to CLC)



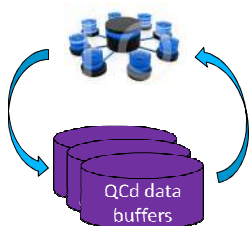
EMODnet Seabed habitats (4)



EMODnet Chemistry (1)



Methodology for Data Assembly

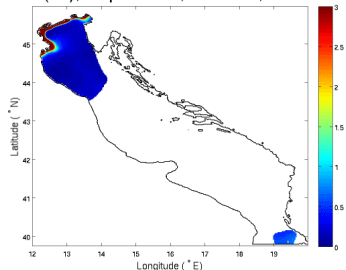


- DIVA (Data-Interpolating Variational Analysis) concentration maps for parameters with homogeneous coverage, measured at basin scale;
- Dynamic plots and coastal visualizations for not homogeneous data (coastal points repeated in time, datasets with fragmented coverage)

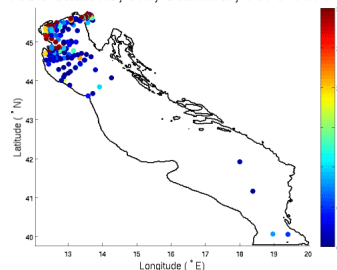


EMODnet Chemistry (2)

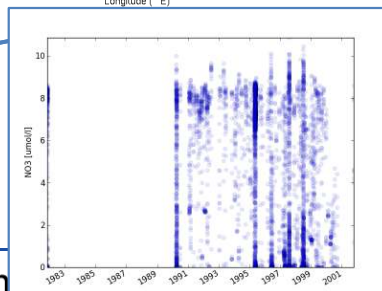
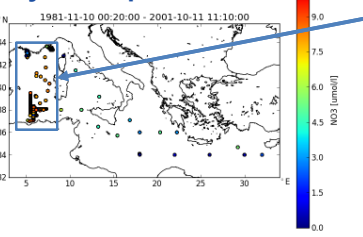
Nitrate (L2), Depth = 0m, Summer, 1970-1979



NO3 stations, 0m, Summer, 1970-1979

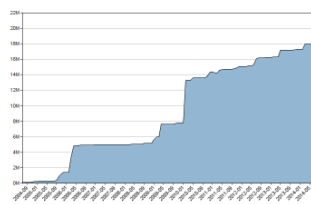


Dynamic plots



EMODnet Biology

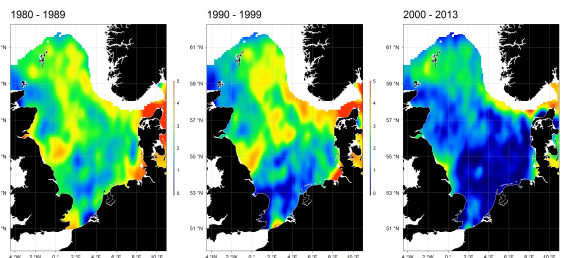
- Data on temporal and spatial distribution of species abundance and biomass from several species groups.
- Main components
 - WoRMS
 - EurOBIS-OBIS



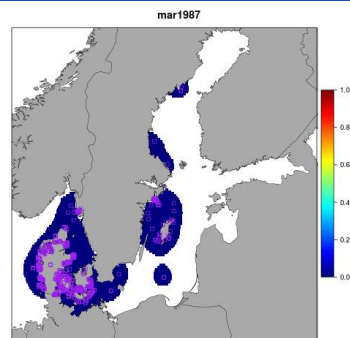
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EMODnet Biology (2)

- Both raw data, and data products - stores taxonomic and functional data
- Include both research oriented and monitoring data – using common standards
- Focus on 'indicator' species



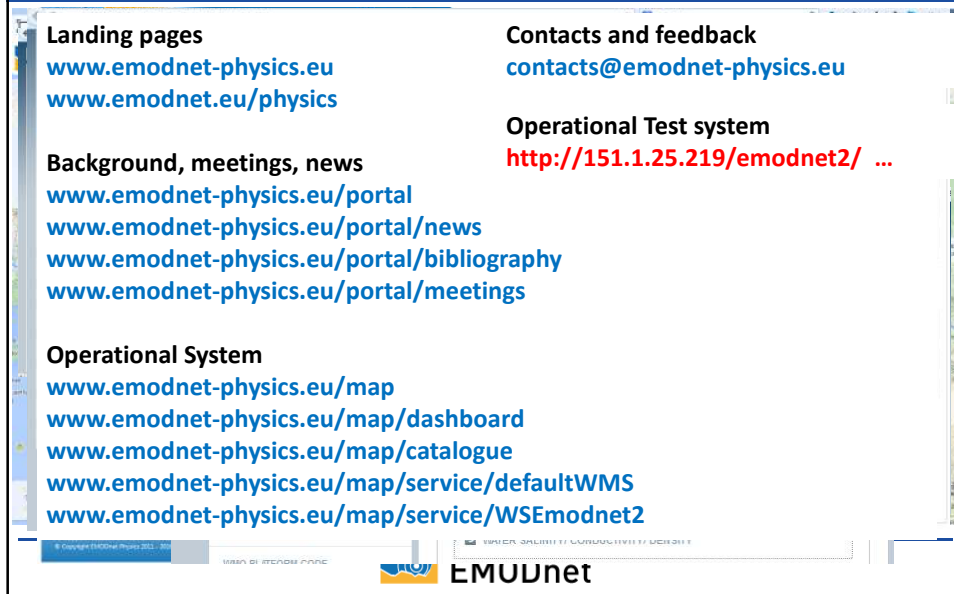
Gridded Cod (*Gadus morhua*) abundance illustrating the dramatic decrease of the cod stock in the North Sea.



Marenzelleria abundance showing multiple invasions in Baltic Sea

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EMODnet Physics (3)



Landing pages
www.emodnet-physics.eu
www.emodnet.eu/physics

Background, meetings, news
www.emodnet-physics.eu/portal
www.emodnet-physics.eu/portal/news
www.emodnet-physics.eu/portal/bibliography
www.emodnet-physics.eu/portal/meetings

Operational System
www.emodnet-physics.eu/map
www.emodnet-physics.eu/map/dashboard
www.emodnet-physics.eu/map/catalogue
www.emodnet-physics.eu/map/service/defaultWMS
www.emodnet-physics.eu/map/service/WSEmodnet2

Contacts and feedback
contacts@emodnet-physics.eu

Operational Test system
[http://151.1.25.219/emodnet2/ ...](http://151.1.25.219/emodnet2/)

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EMODnet Human Activities (1)

- Human activities provides geographic information on a vast array of marine activities carried out at sea (e.g. hydrocarbon extraction, renewable energy, mariculture, shipping, etc.)
- Its data come from a variety of sources at EU and Member State level, depending on the dataset involved. Generally speaking, we tend to privilege public sources (data continuity, no restrictions)

EMODnet (2)

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Common challenges ahead

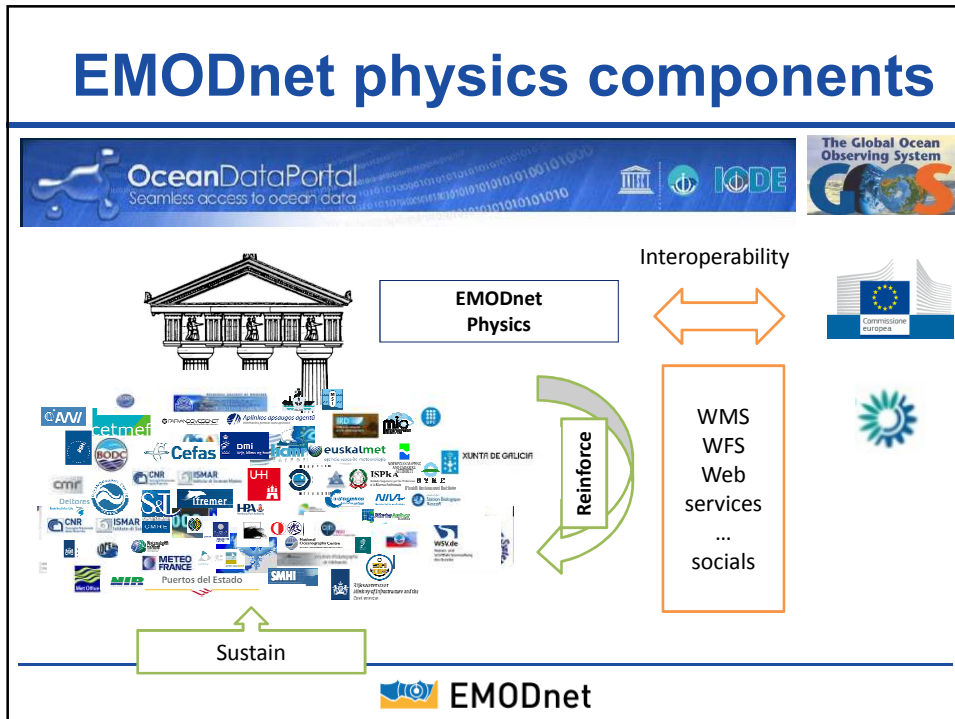
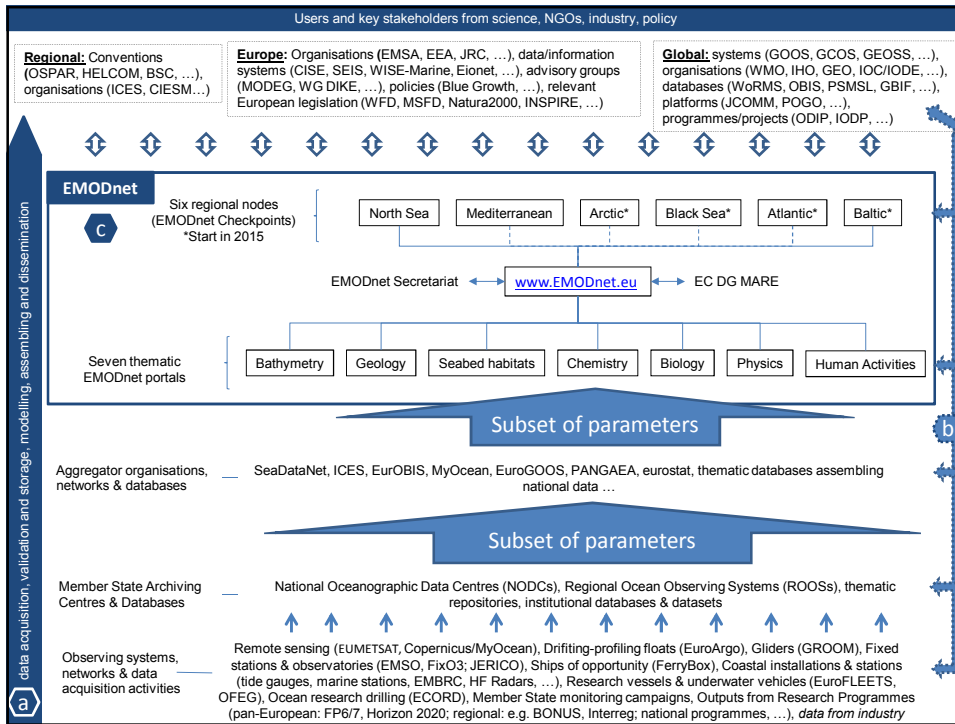
- Single sign-on
- Maintaining realistic stakeholder expectations
- Seek and implement feedback from users
- Interoperability issues
- Assure open supply and access of marine data
- Improve data ingestion from research and industry

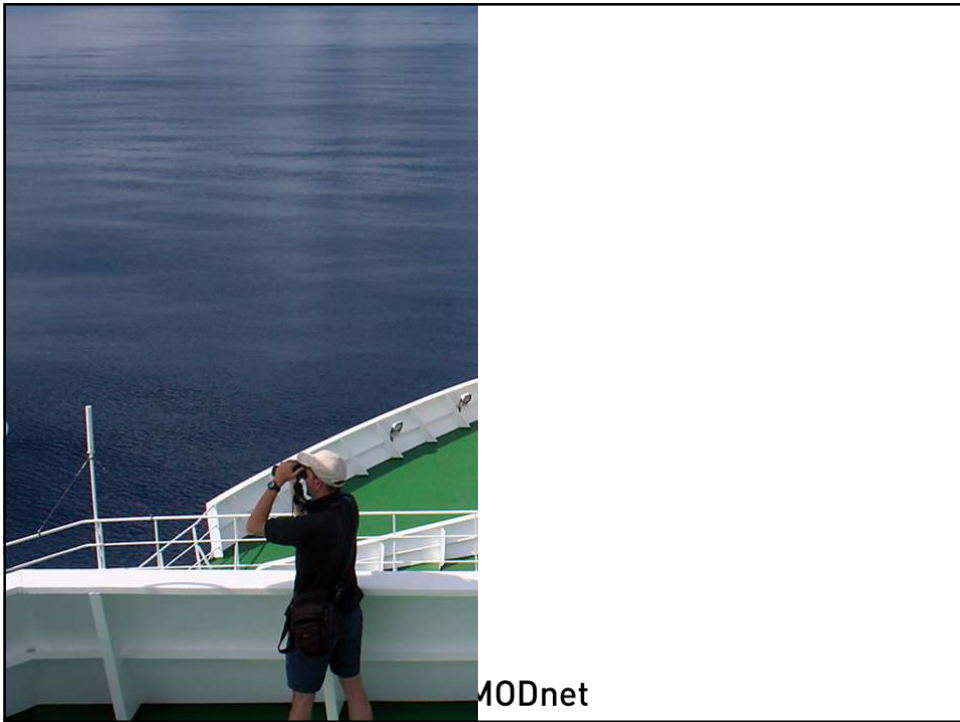
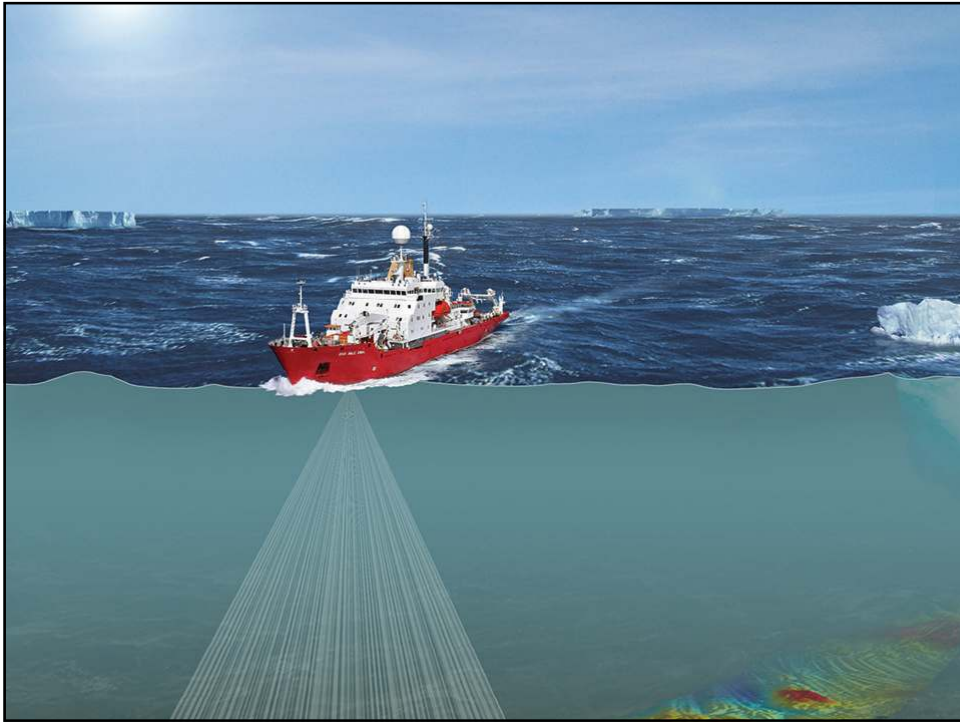
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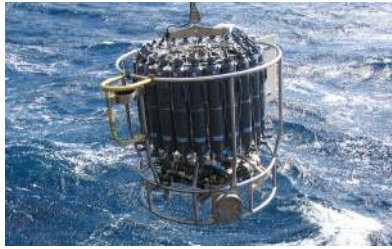


Discussion

- *How to get more data made available through the EMODnet system? How to improve data ingestion notably from research and industry?*
- *How to improve user friendliness by simplifying user access? How to secure a single sign-on procedure?*
- *How to involve stakeholders/users in the development of EMODnet? How to maintain realistic stakeholder expectations?*
- *How to ensure open access without restrictions while accommodating supplier concerns?*
- *How to address interoperability issues and compliancy to required standards to allow meaningful machine to machine communication?*







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