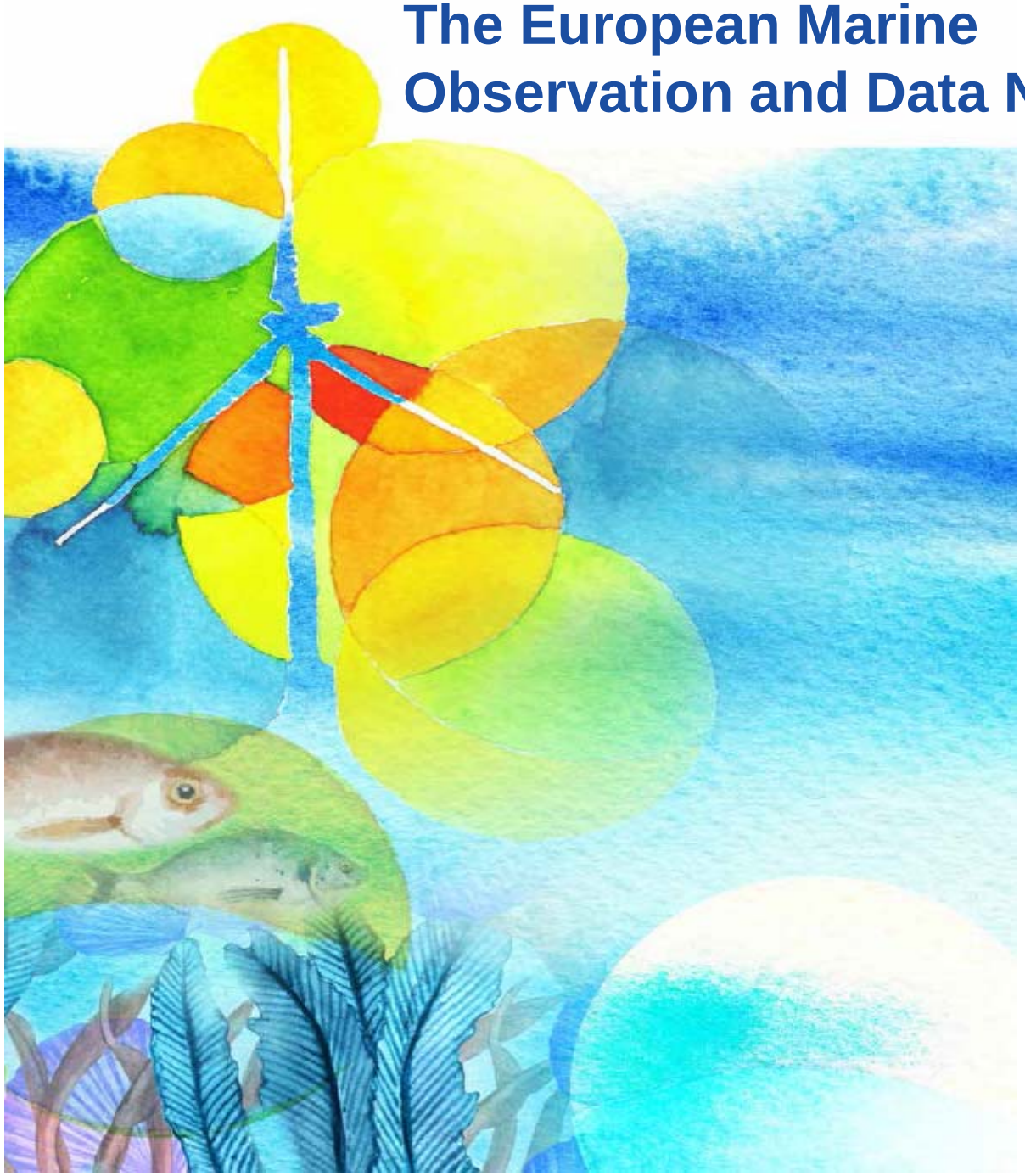
The European Marine Observation and Data Network

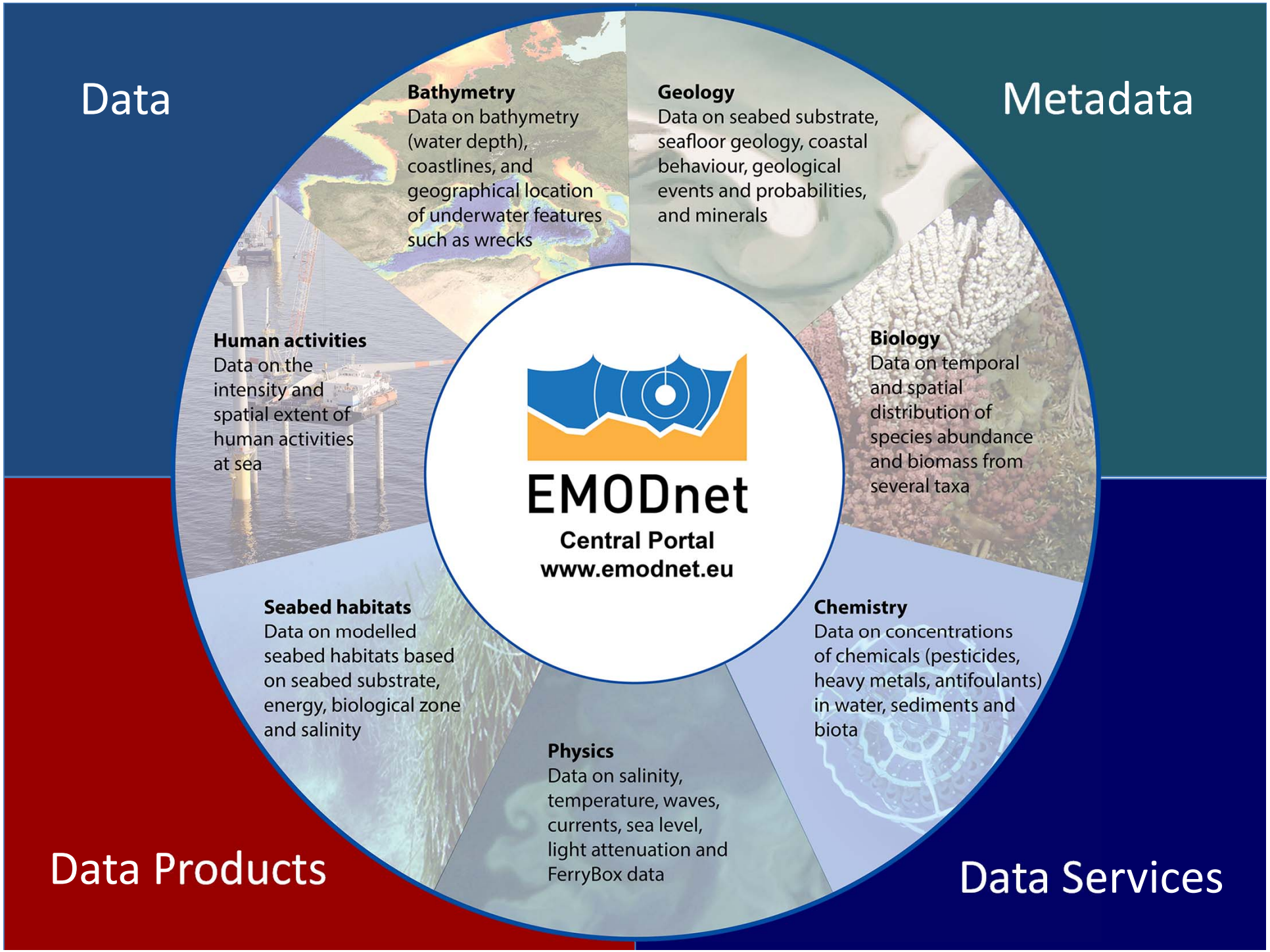


EMODnet

Pilot Blue Cloud Workshop

Tuesday, 28 March 2017 Brussels

Janbart.Calewaert@emodnet.eu


Data
Metadata
Bathymetry
Data on bathymetry (water depth), coastlines, and geographical location of underwater features such as wrecks
Geology
Data on seabed substrate, seafloor geology, coastal behaviour, geological events and probabilities, and minerals
Human activities
Data on the intensity and spatial extent of human activities at sea
Biology
Data on temporal and spatial distribution of species abundance and biomass from several taxa
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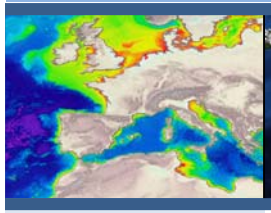
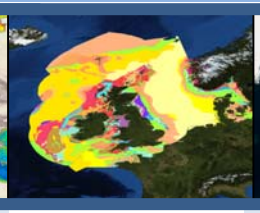
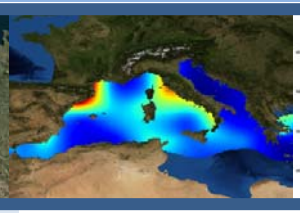
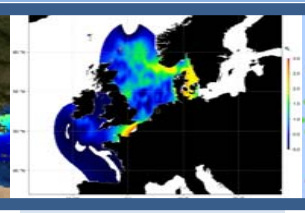
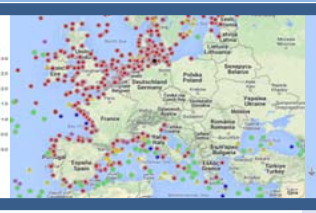
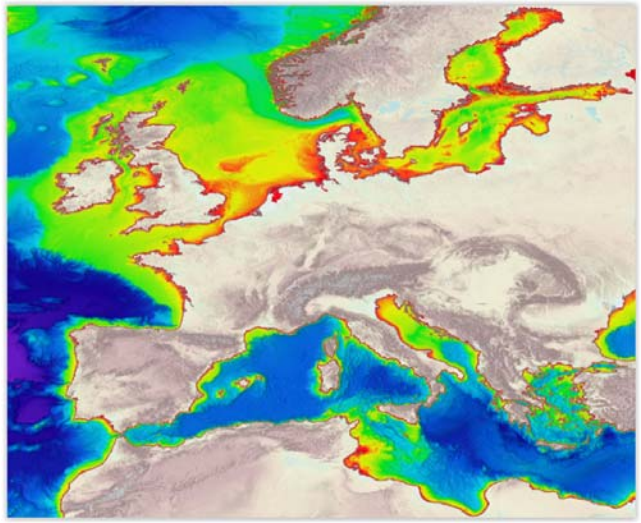
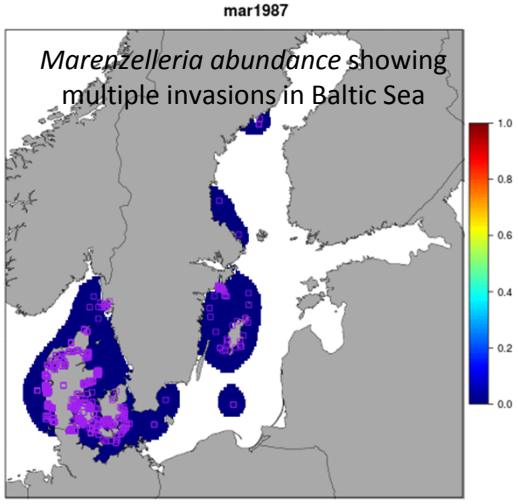
Central Portal
www.emodnet.eu
Seabed habitats
Data on modelled seabed habitats based on seabed substrate, energy, biological zone and salinity
Chemistry
Data on concentrations of chemicals (pesticides, heavy metals, antifoulants) in water, sediments and biota
Physics
Data on salinity, temperature, waves, currents, sea level, light attenuation and FerryBox data
Data Products
Data Services

Thematic data coverage

Bathymetry	Geology	Seabed habitats	Chemistry	Biology	Physics	Human activities
						
Minimum cell water depth Maximum cell water depth Average cell water depth Standard deviation of cell water depth Number of values used for interpolation of cell water depth Horizontal coordinate reference system Depth reference system Lowest Astronomical Tide	Seabed substrate Sediment accumulation rate Sea-floor geology Seabed lithology Stratigraphy Coastline migration Aggregate resources Geological events	Depth Seabed substrate Energy at seabed (waves & current) Salinity Temperature Light at seabed Oxygen at seabed	DDT PCB TBT TPT Oxytetracycline Mercury Cadium Lead Anthracene Fluoroanthene Cs137 Pu239 Nitrogen (Din, TN) Phosphorus (DIP, TP) pH pCO2 alkalinity O2 CO2 Polyethylene Polypropylene Chlorophyll Silicates Organic Matter	Biomass Abundance Gridded Abundance (DIVA) *species groups* phytoplankton zooplankton angiosperms macro-algae invertebrate bottom fauna birds mammals reptiles Fish	Waves Water temperature Water salinity/conductivity/density Currents Light attenuation/ fluorescence Sea level Atmospheric parameters Wind Underwater noise River Ice	Aggregate Extraction Dredging Fisheries Hydrocarbon Extraction Main Ports Mariculture Ocean Energy Facilities Pipelines and Cables Protected Areas Waste Disposal Wind Farms Other Forms of Area Management / Designation



http://www.emodnet-bathymetry.eu



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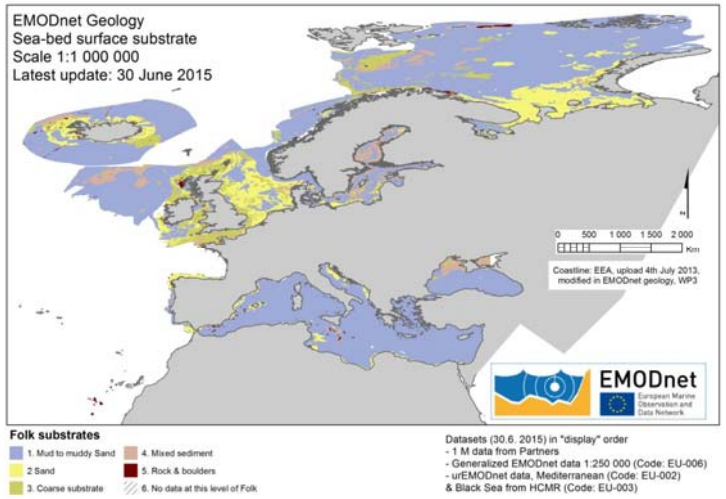
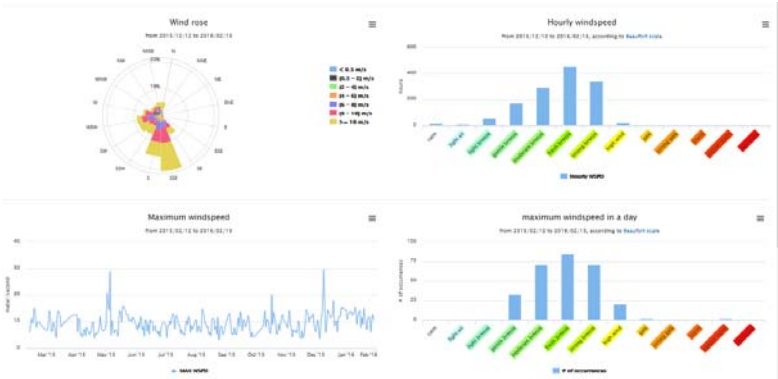
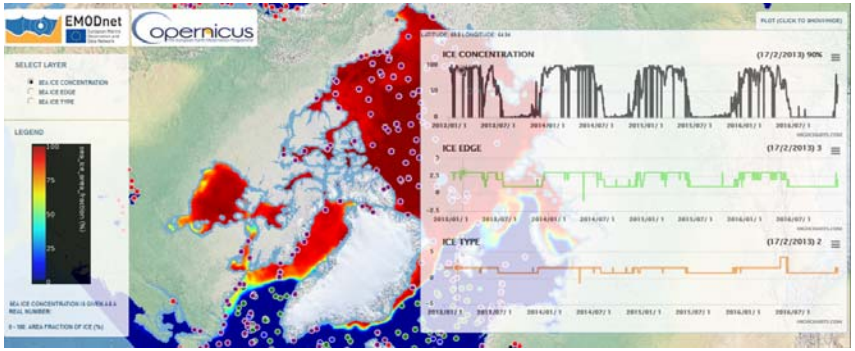


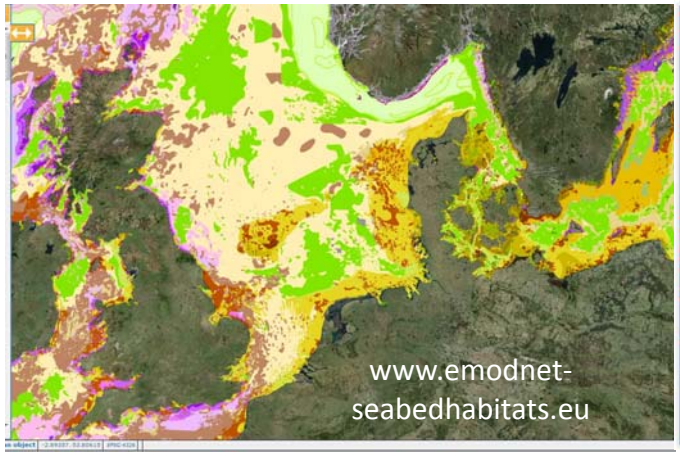
www.emodnet-geology.eu

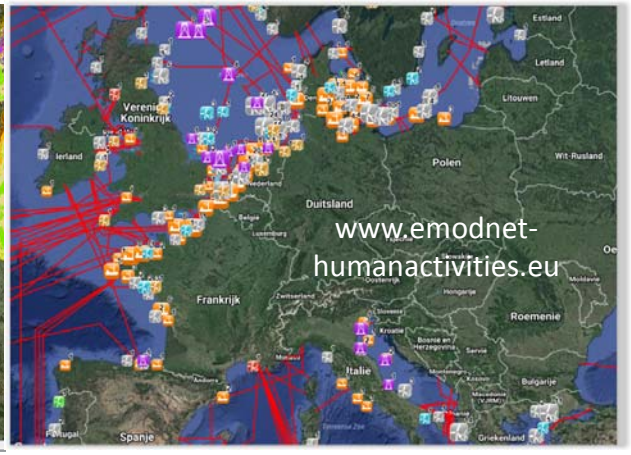


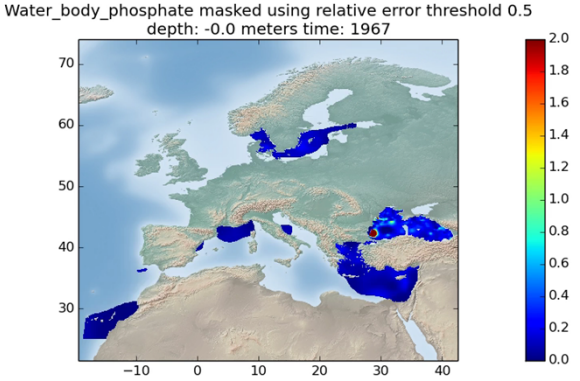


Layers & products

www.emodnet-physics.eu







www.emodnet-chemistry.eu

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How does it work?

users

Are data fit for use?
EMODnet Sea-Basin Checkpoints
As surrogate users

service providers

services to customers

access to data and data products from more than one theme

Central Portal www.EMODnet.eu

EMODnet THEMATIC GROUPS provide access to data and create data products

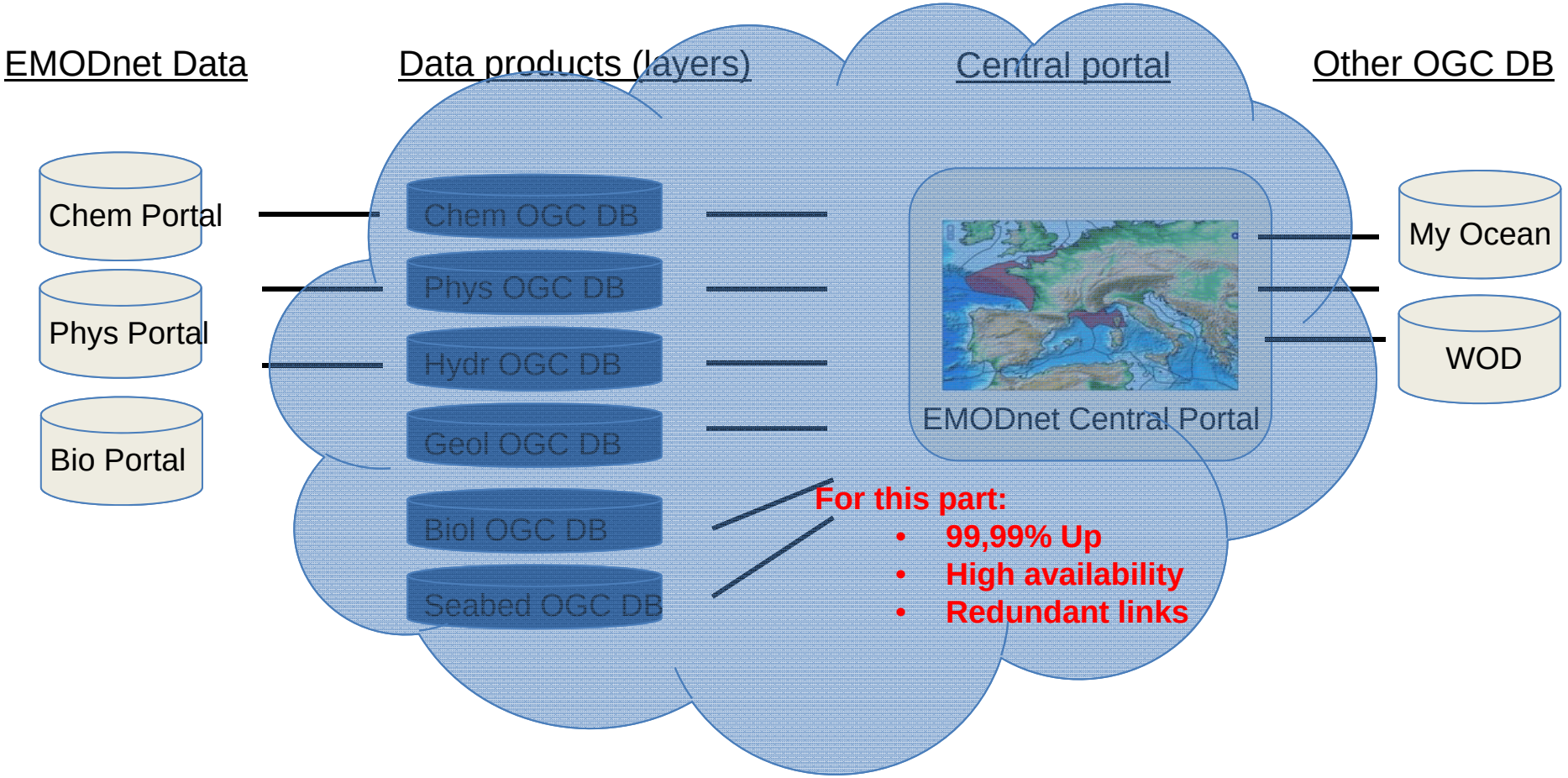
Bathymetry	Chemistry	Habitats	Physics	Geology	Biology	Human activity
HOs, SDC			Euro GOOS, CMEMS, SDC	GSs	OBIS, ICES	RSCs

Data repositories in Member States

www.EMODnet-ingestion.eu

EMODnet Central Portal Services

Towards Cloud Infrastructure



More than just access to data & products

- **Permanent service:** long term EU data initiative supported by DG MARE
- **Widening thematic & geographic coverage**: highly multidisciplinary; pan-European & increasingly global
- **Reduce fragmented** marine data landscape → towards coordinated, interoperable data sharing framework
- **Platform for collaboration**: brings together key European providers, integrators, networks & infrastructures e.g. EuroGOOS ROOSs, CMEMS, SeaDataNet, OBIS, ICES, RSCs, hydrographic offices, geological surveys, …
  - Stimulate adoption of common solutions and standards
  - Facilitate down- and up-stream integration and interoperability (WMS, WFS, Web Service, etc.)
- **Attract more data**, **providers & platforms:** with data Ingestion Project, EMODnet provides facility to help researchers make their data available.
- **Raise visibility** of Europe's wealth of marine observations & data resources
- **Change culture** towards open data sharing practices & increased collaboration
- **Strengthen engagement/involvement of stakeholders and users**

How can EMODnet contribute?

➔ **EMODnet as high level European aggragator of marine data & observations:**

- *serve as thematic data provider/sharing platform for marine & maritime data*
- *contribute data products & services to EOSC users*
- *serve as long term facilitator building bridges between various data management initiatives, systems & projects*
- *Could contribute foundations of BCP together with other long term EU initiatives such as CMEMS*

- EMODnet as reference data platform for making available marine data/obs from H2020/FP projects!

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Thank you!

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)

http://www.emodnet.eu/video

PART II – BLUE CLOUD

1. What are the gaps and obstacles that need to be overcome to realise the Pilot Blue Cloud?

2. What is the most pressing need to realise the Pilot Blue Cloud in the short/midterm? = Priorities and possible actions?

3. As a user of the Pilot Blue Cloud; what would you need it to do?

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Obstacles/barriers/gaps

- Technical challenges
  - Interoperability/standards/single sign-on procedures
  - data services from distributed data systems often down or not stable
- Non-technical challenges
  - Fragmentation from data acquisition to provision
  - Cultural/language
  - Lack of Knowledge of what is being done and has been done across EU research programmes
  - Knowledge of the market for research and data

Views BlueBridge Workshop “Understanding how ecosystems of e-infrastructures canSupport Blue Growth”

1. “Blue Cloud pilot” to rely on three technological layers:
   - *Layer 1: Thematic infrastructures such as Copernicus and EMODnet must be at the foundations of such a pilot, as they will provide the data to fuel the process.*
   - *Layer 2: Horizontal e-infrastructures providing basic services will be the engine to compute and store data.*
   - *Layer 3: Thematic e-infrastructures built on top of the horizontal e-infrastructures, like the one underlying BlueBRIDGE, must be part of such a pilot to provide the users with customized services and user friendly interfaces. These are particularly fundamental in the Blue Growth sector, where scientists, researchers, policy advisors and SMEs need customized services to solve specific problems and do not always have the skills to directly use the horizontal infrastructure services.*
2. Challenges for EOSC too complex for a small group of people → strong need for collaboration.
3. Complementarities of each e-infrastructure need to be identified.

What should it need to do?

- Create environment enabling data intensive research ‘from genes to ecosystems in a changing ocean’ (Euromarine/Tara)’
- Allow users to make full usage of Europe’s wealth of marine observations and data resources
- Train scientists with IT and data handling skills to fully exploit potential of data intensive research, big and linked data.
- Not only provide tools & support to use of data resources but also on how to make data available for re-use → e.g. via EMODnet Data Ingestion
- Help researchers better exploit outputs (results, data, information, tools, etc, …) from other researcher’s projects

Priority needs/actions

- Inventory of existing services for "Blue area" & assess demand & identify what's missing.
- Consider different initiatives working in silos developing services that in some cases overlap.
- Involve users as drivers of the process to inform providers about services they need. (e.g. sea-basin checkpoints best practice)
- Improve interoperability among the different players of the EOSC to make selected services cost effective → can be achieved only if an inclusive governance model is in place e.g. via EOSC pilot.
- Improve ability for researchers to query past and ongoing EU project outputs

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