EMODnet 20th Steering Committee
Welcome and Opening remarks

Open Session

29-30 April 2024

The European Marine Observation and Data Network (EMODnet) is financed by the European Union under Regulation (EU) 2021/1139 of the European Parliament and of the Council of 7 July 2021 establishing the European Maritime, Fisheries and Aquaculture Fund.

Practical arrangements and housekeeping rules

- Online

- Sessions:
  - 09:00-13:00 CEST EMODnet Open* Session

    *Open for members of the Technical Working Group, EC Marine Knowledge Expert Group (MKEG) and other invited stakeholders
  - 09:00-13:00 CEST EMODnet Closed Session**

    **SC only

- Housekeeping rules
  - Please update your name in the Zoom meeting setting
  - Keep your micorphone muted when you are not speaking
  - Use the ‘raise hand’ tool if you would like to speak
  - Keep to the time allotted for your presentations
  - We request that particpants do not use ‘AI note taking’ tools

Meeting agenda

Monday 29 April 2024, 09h00-13h00 CEST Open Session

- 09:00-09:15 **Welcome and Opening remarks** (Chair, EMODnet Secretariat and DG MARE) – 15'
- 09:15-09:35 **Updates on the EMODnet Portal** (EMODnet Secretariat, VLIZ) – 20’
- 09:35-10:50 **Updates from the EMODnet Thematics & Data Ingestion** (EMODnet Coordinators) – 75’
- 10:50-11:00 **COFFEE BREAK** – 10'
- 11:00-11:10 **EMODnet and European Ocean Observing** (DG MARE, EMODnet Secretariat, ALL) – 10’
- 11:10-11:55 **EMODnet for EU Policy** (Chaired by EC DG MARE, ALL) – 45’
- 11:55-12:25 **EMODnet Partnerships: Overview of EU and Global** (EMODnet Secretariat, ALL) – 30’
- 12:25-12:35 **EMODnet OSL 4.0 and events overview** (EMODnet Secretariat, ALL) **–** 10’
- 12:35-12:45 **EMODnet Future Look** (Call to Action 2023; Vision 2035) (EMODnet Secretariat, ALL) – 10’
- 12:45-13:00 **Closing of day 1, Open Session** (DG MARE, EMODnet Secretariat) – 10’

Welcome and Opening remarks

Chair, EMODnet Secretariat and DG MARE

EMODnet Portal Updates:

Map Viewer update & Move to Drupal 10 & ECAS

EMODnet CP Technical team: Secretariat and VLIZ

20th EMODnet Steering Committee meeting
29-30 April 2024

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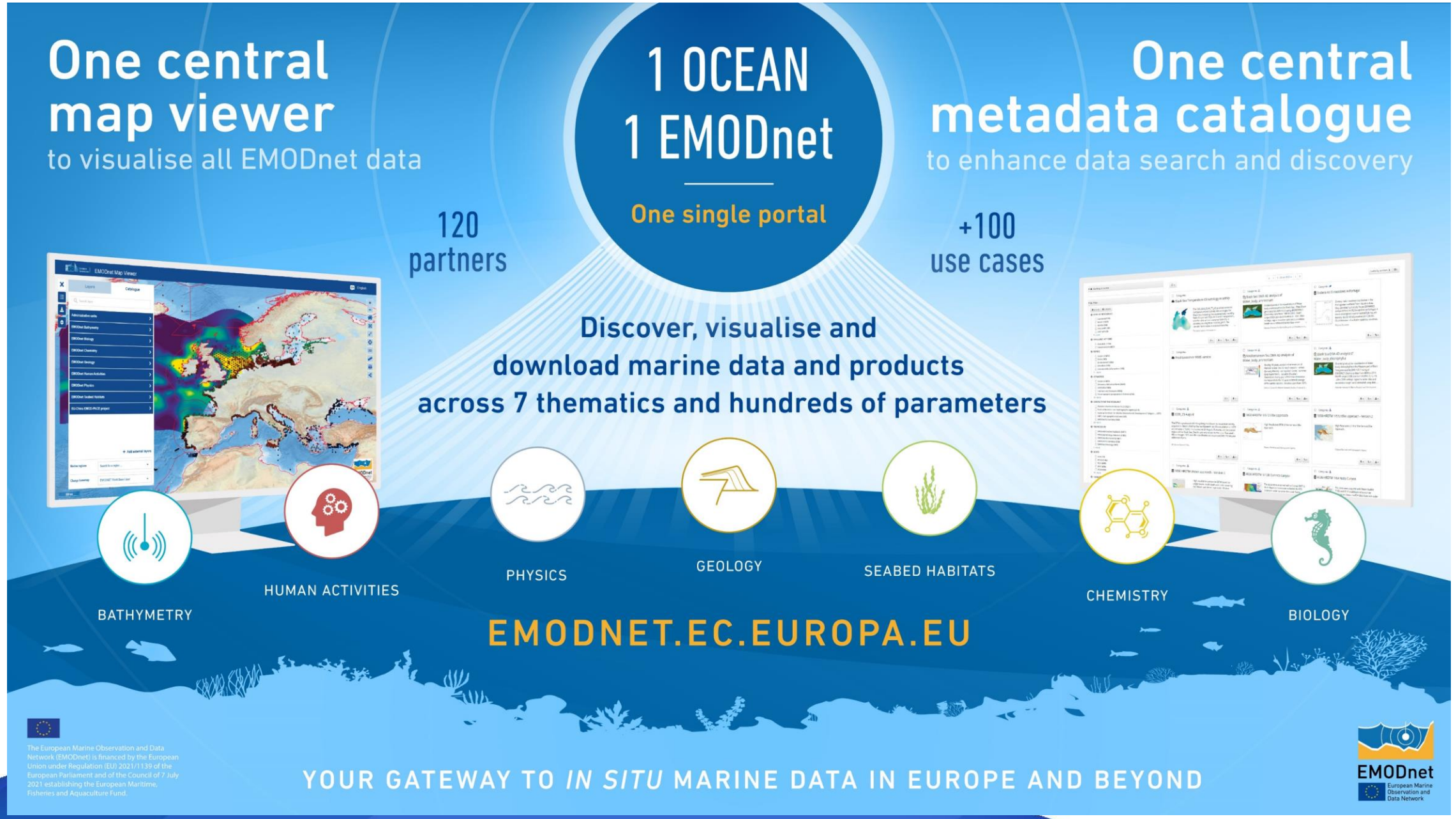
EMODnet Portal: A unified service



Map viewer update

Conor Delaney (EMODnet Technical Coordinator)
Joana Beja/Bart Vanhoorne (VLIZ)

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Updates from EMODnet Portal

MapViewer releases

- Since the start of the centralisation there has been 10 releases of the MapViewer the most recent v3.2.8:

- MapViewer v3.2.8 (20th November 2023)
- MapViewer v3.2.7 (9th October 2023)
- MapViewer v3.2.6 (20th July 2023)
- MapViewer v3.2.5 (18th April 2023)
- MapViewer v3.2.4 (20th January 2023)
- MapViewer v3.2.3 (17th November 2022)
- MapViewer v3.2 (August 8, 2022)
- MapViewer v3.0.0 (March 4, 2022)
- MapViewer 2.0.0 (February 15, 2021)
- MapViewer 1.0.0 (December 10, 2021)

Updates from EMODnet Portal

MapViewer v3.2.8 (23rd November 2023)

1. **shapezip / shape-zip format in WFS download**: Both formats are accepted in the wfs_output parameter. If this parameter is empty, all the accepted formats are loaded except "SHAPEZIP“

2. **Included Europa Analytics tracking script in the MapViewer release**.

3. **TIME Parameter in Filtering:** In the advanced filters, it is possible to configure the time parameter according to the **"timeMethod"** parameter in the config file. There are two possible values:
   - "standard" (default if not specified) : The value is applied to the TIME parameter.
   - "days_ago": we calculate the time interval according to the value

4. **Physics Filtering**: In case of an advanced filter based on API,the complete query is read from the value parameter returned by the API.

Updates from EMODnet Portal

MapViewer v3.2.8 (23rd November 2023)

5. **Advanced Filtering (for viewParams Filtering)**: In case of a viewparam filter in the advanced filter widget, they are applied with the "where" format

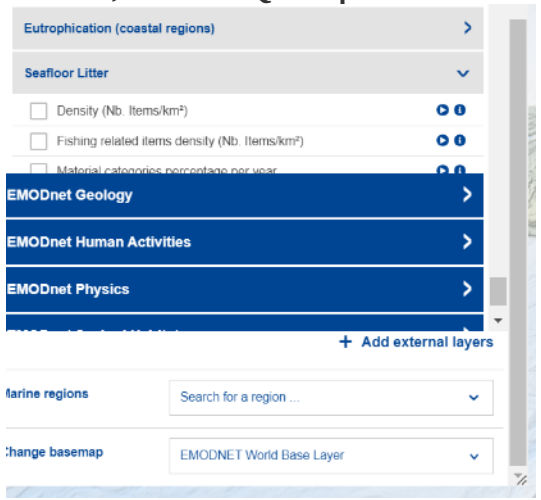
6. **WFS Download Functionality**: The "where" format is also applied to the WFS requests in case of viewparams filters (advanced filters).

7. **Download functionality with animated layers**: include time values for WFS downloads in the case of the animated layers.

Remaining features to be released

Bilbomatica + CP_Team Tasks

- **Inclusion of CQL Filter**: Layer animation already possible with ViewParams and GetParams filters, the CQL option is pending implementation

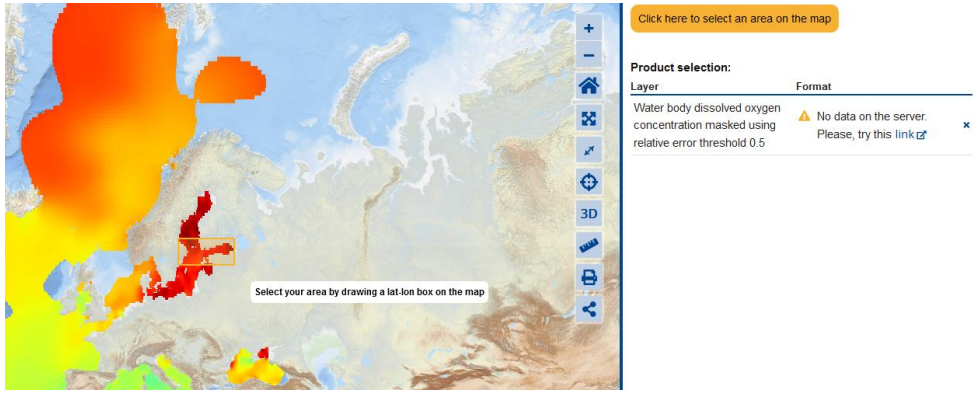


- **Catalogue Window Cut-off** (CP-30), EM-841 Layout bug to be fixed.-> Chemistry

- **Physics Animation Server Overload** (PHY-8): -- (EM-902)**.** Number of calls from MapViewer to be tuned.

- **Download Issues for Out-of-Bounds Areas** (CHEM-5):

In the case the user selects an area without data, the layer returns the error displayed in the viewer **.** (EM-902)



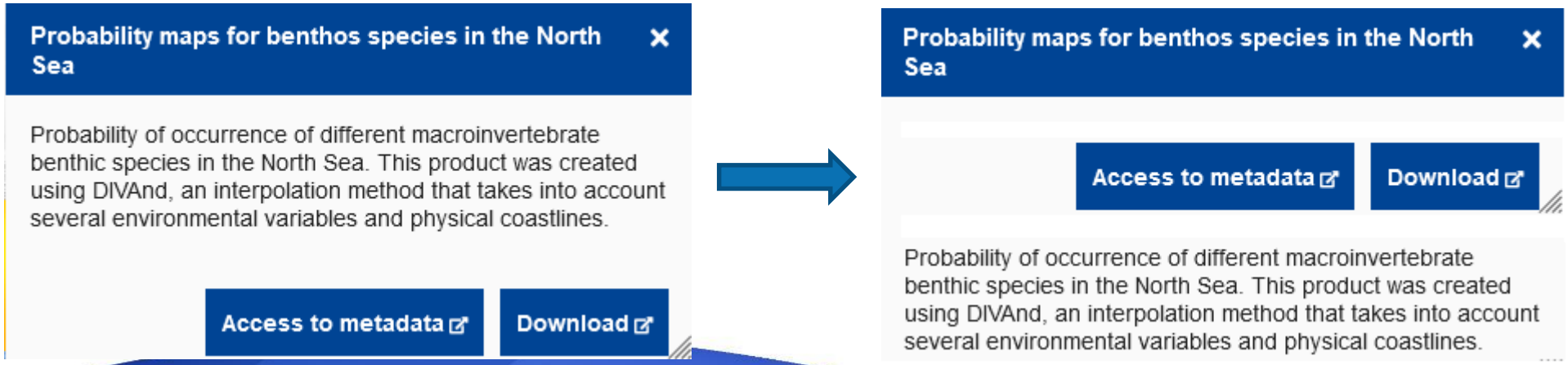
Remaining features to be released

Bilbomatica + CP_Team Tasks

- **Antarctic Projection Addition**: (EM_900) : for next release

- **Layer Identification via Metadata UUID** (EM-657): Analyse the implication of this change in the viewer and determine if it is feasible.

- **Improving Metadata and Download Accessibility** (EM-623): Move buttons to the top of info forms and modify tests.



Managed Releases

Bilbomatica Tasks

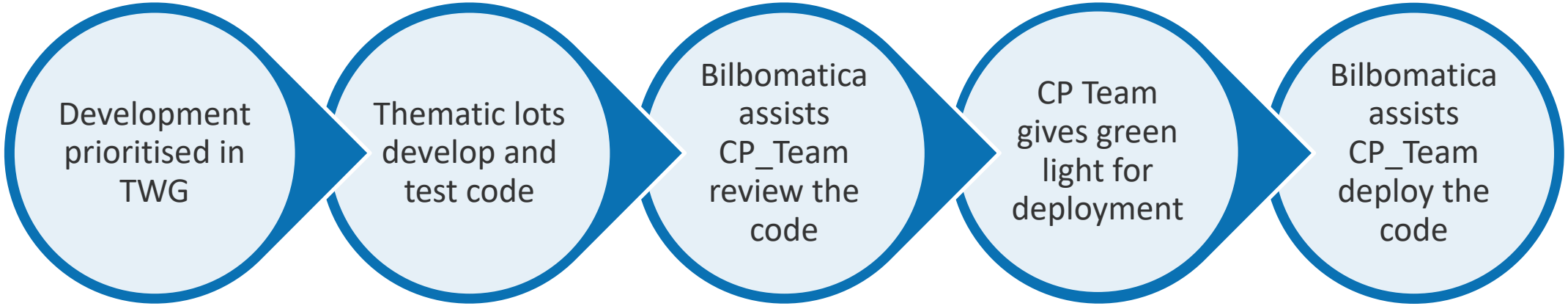
In 2024 we have 2 fully managed releases of MapView to implement outstanding feature requests, following feedback from the TWG

- **MapViewer v3.2.9** (Spring 2024): Improvements included in previous slides
- **MapViewer v3.3.0** (late Summer/Autumn 2024). Features requests and updates. Any development bugs found in these releases will be the responsibility of Bilbomatica to fix, this is the same situation as exists at the moment.

Move to community development of Open Source MapViewer

Bilbomatica Tasks

- Move the MapViewer code into a GitHub (or similar) development space.
- Ensure the documentation for the code is complete



Move to community development of Open Source MapViewer

Community Tasks

- This will be regulated by the CP Team and the TWG.
- The responsibility for testing and debugging the code of new features will be the responsibility of the developers of the new features. You will have to write unit tests for the newly developed feature(s
- The deployments for bug fixes will happen at a frequency agreed between Bilbomatica and the CP team
- New deployments of the Map Viewer to accommodate newly developed features will occur, if needed, before the each TWG (every 6 months)

Move to Drupal 10 & ECAS

Progress update

Bart Vanhoorne, VLIZ, EMODnet CP Team

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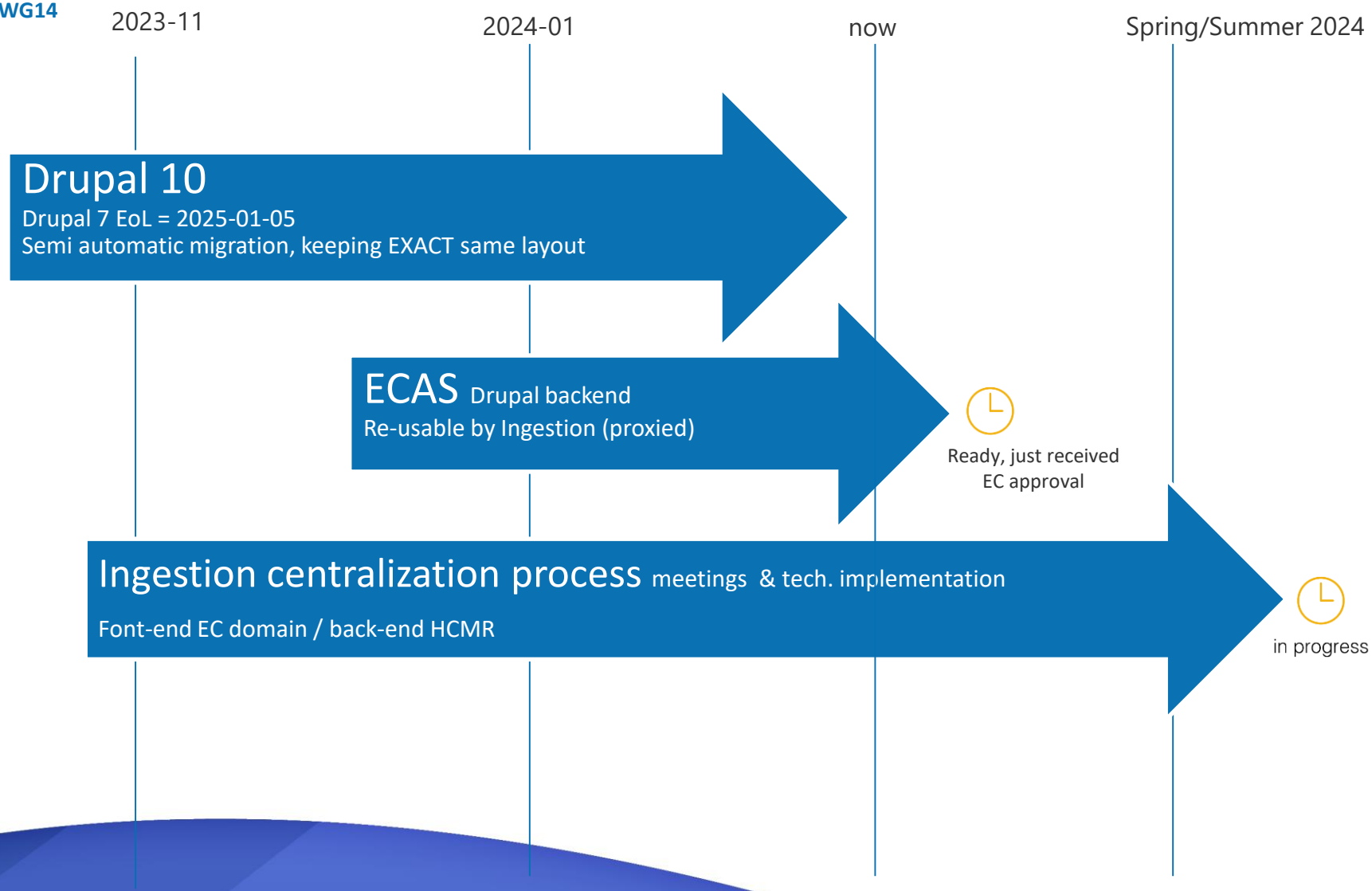
Drupal 10 & ECAS integration

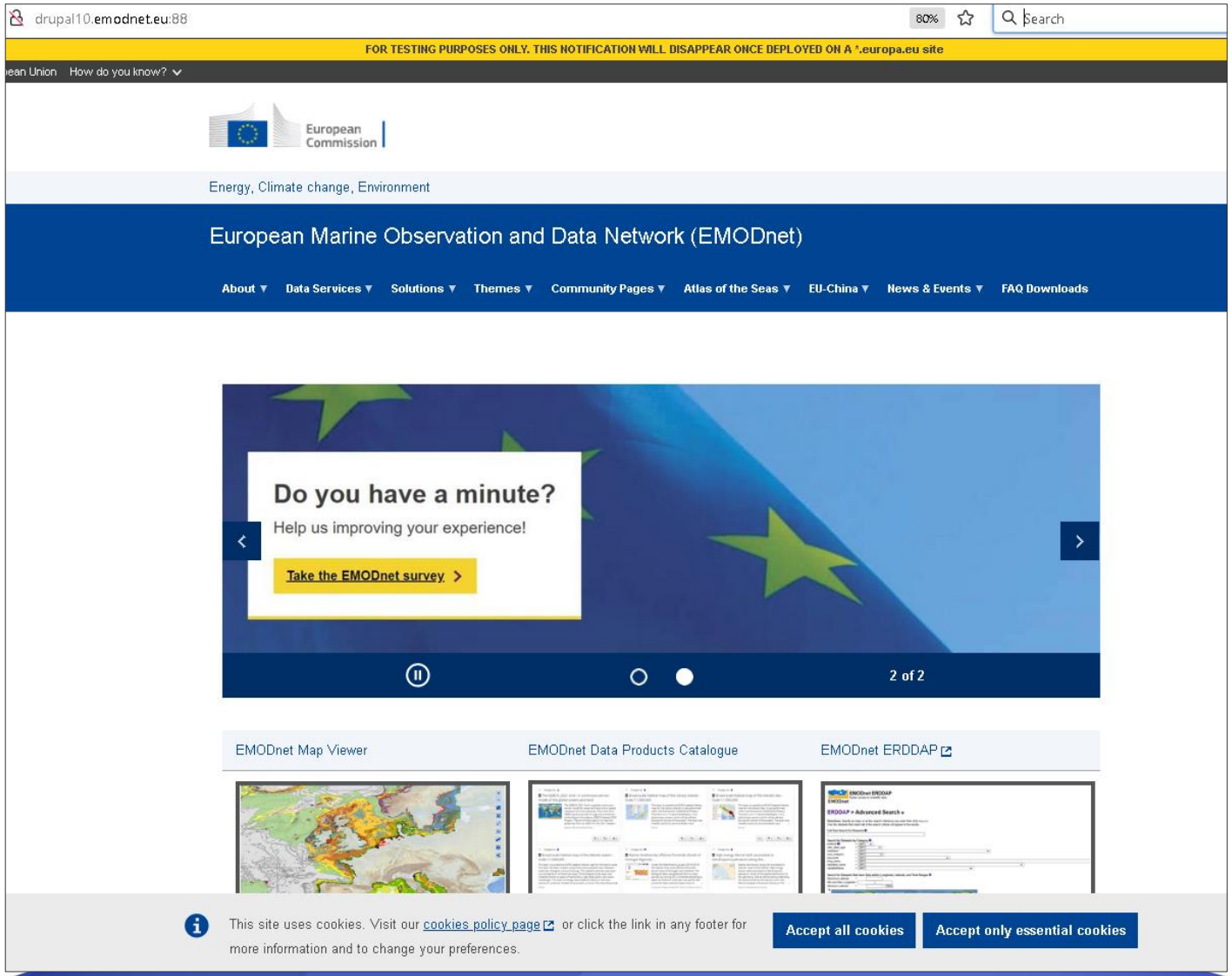
Updated timeline

Timings remain the same as in TWG14



Drupal 10

Preview



Some features

- Latest Drupal CMS
- Stand alone (not multi-site)
- Use of OpenEurope oe_theme
- Exact same layout
- Fully responsive
- All content migrated. Todos:
  - Review by CP team
  - Small layout fixes
- Backend login via ECAS
  - Awaiting approval EC
  - Initial editing by CP team
  - Later: by lots via moderation
- App ”integrations”
  - Metadata catalogue (GeoNetwork)
  - Ingestion forms (template ready)
- DEV environment accesible for collaboration

Updates from EMODnet 7 Thematics & Data Ingestion

EMODnet Coordinators

Bathymetry

Current offer, updates and forward look EMODnet Bathymetry

Dick Schaap, MARIS
Thierry Schmitt, Shom

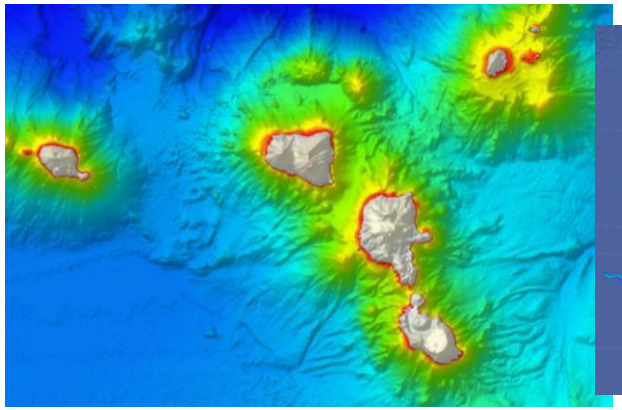
20th EMODnet Steering Committee meeting
29-30 April 2024

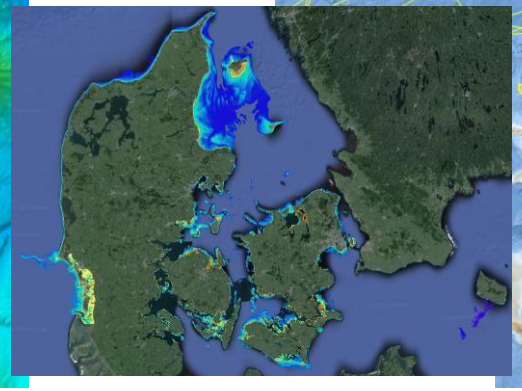
EMODnet bathymetry current offer

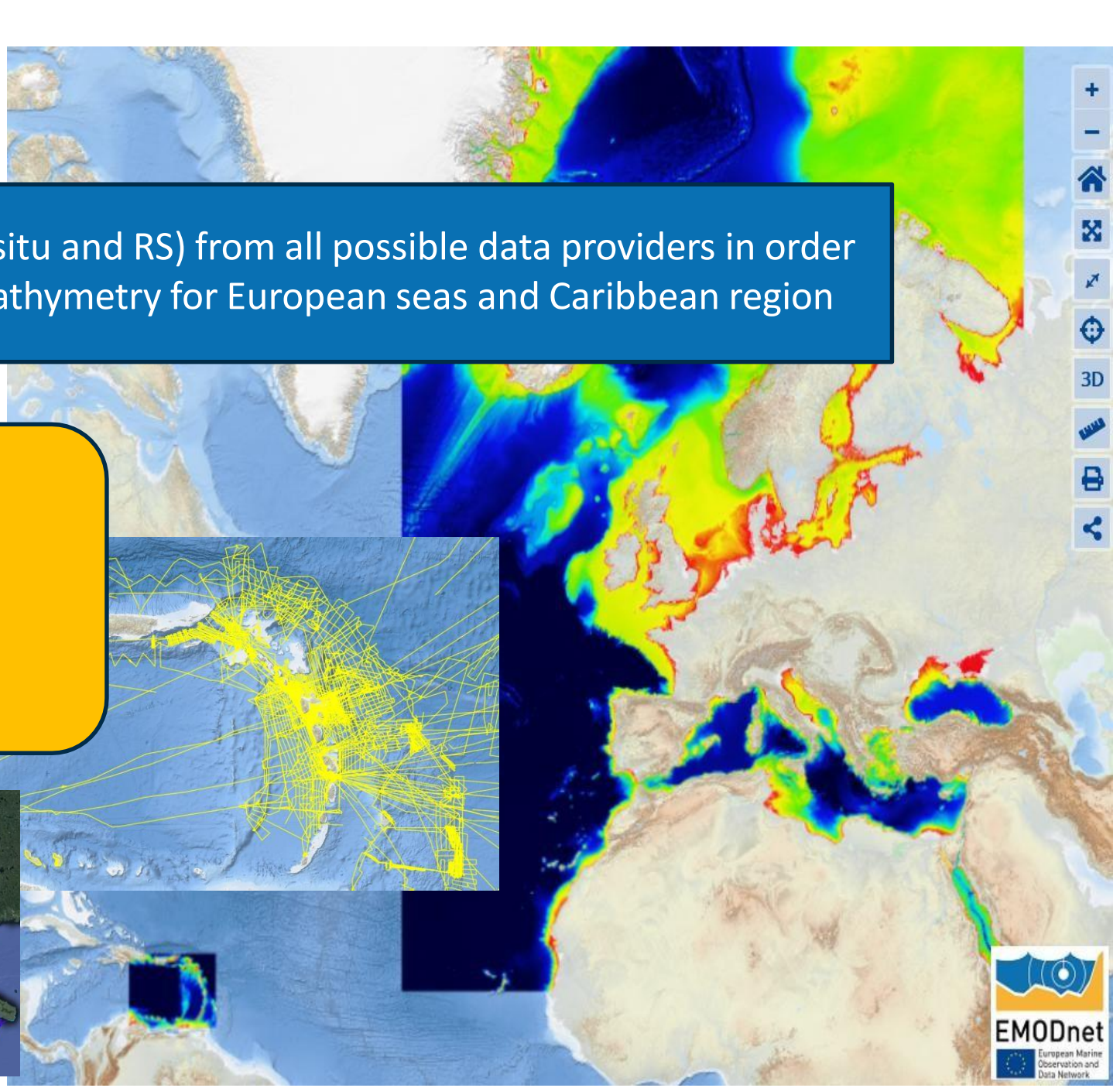
Overview of products and services

To bring together bathymetry data sets (in-situ and RS) from all possible data providers in order to generate and publish the best Digital Bathymetry for European seas and Caribbean region

- DTMs for European seas and Caribbean region
- Collection of HR-DTMs
- Catalogues for survey data and Composite DTMs
- World Base Layer (WMTS)
- SD global coastlines at LAT, MSL, and MHW
- Inventory of national coastlines and baselines







EMODnet Bathymetry current offer

Data/Data Products for EU Policy

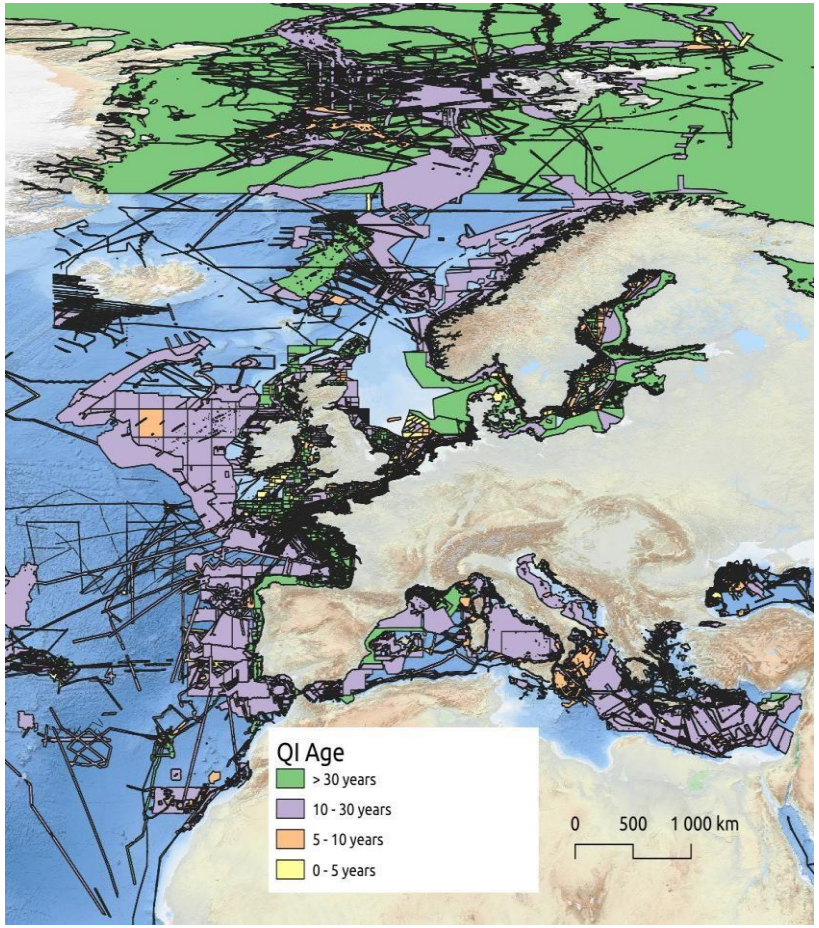
EMODnet Bathymetry products and services are supportive of several EU directives and initiatives, such as:

- **Marine Spatial planning**
- **Coastal Zone Mapping**
- **Marine Strategy Framework Directive**
- **Water Framework Directive**
- **Habitats Directive**
- **Marine Renewable Energy strategy**
- **Biodiversity strategy**
- **Zero pollution strategy**
- **Blue Economy**
- **Green Deal**
- **United Nations Decade of the Oceans initiative and the Sustainable Development Goals (SDG).**

However, bathymetry is not yet recognised internationally (GOOS) as an Essential Ocean Variable (EOV). Efforts should be undertaken to change this.

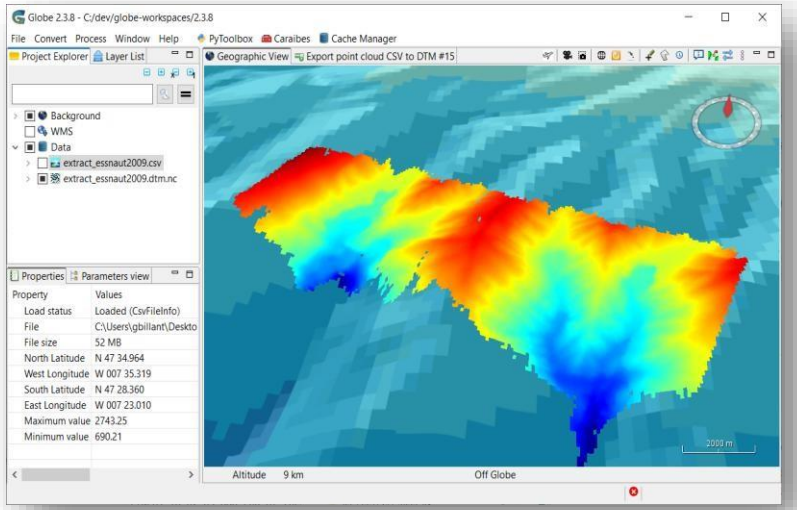
EMODnet Bathymetry Updates and Future look

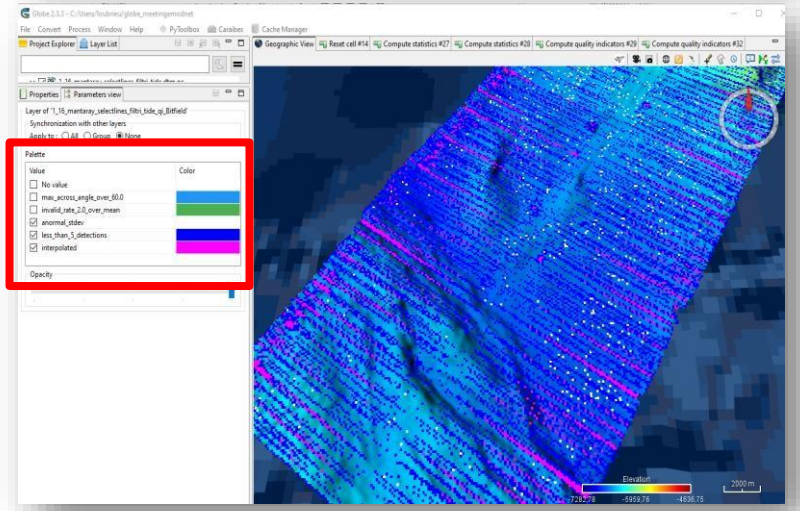
- New products releases planned for end of 2024
- Close cooperation with SeaBed 2030 and GEBCO, also as part of Ocean Decade activities
- <u>Future:</u>
  - Updating the EMODnet Bathymetry World Base Layer (current version is from 2020 based on EMODnet DTM 2018 and GEBCO 2019)
  - Deep Sea areas remain sparsely covered, therefore the 'hunt' for unlocking even more existing data from government, research and industry sectors needs to be intensified. Industry can offer data in open waters such as 'transits'.
  - Seeking alternative methods such as collaboration with the geophysical community to extrapolate bathymetry from the gravity field and with the geological community analysing backscatter



EMODnet Bathymetry Updates and Future look

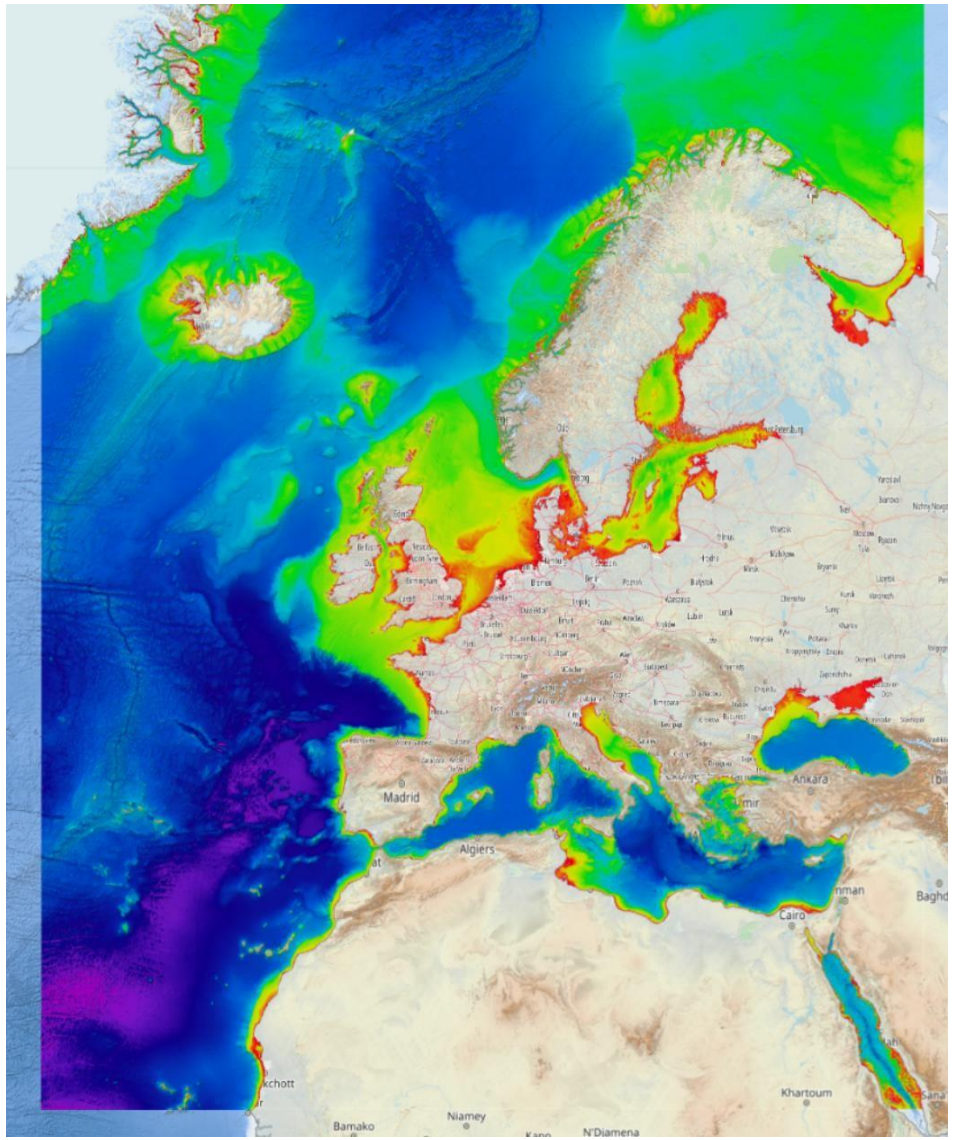
- **Future**:
  - Closer cooperation of CMEMS and EMODnet Bathymetry on systematic Satellite Derived Bathymetry production efforts in the coastal areas and possibly time dynamic bathymetry
  - Use the centralisation for designing possible mixed thematic products
  - Further innovations of working methods:
    - Collaborative Virtual Environment (cloud based) for optimising Regional DTMs
    - AI for improved local interpolations
    - AI for super-resolution of satellite images
    - AI for refining coastal transitions
    - Improved 3D visualisations





Use Case

EMODnet DTM for European seas, our no 1 use case



- Available at MSL and LAT
- 4th Release: end December 2022
- Based on 21.790 survey data sets, composite DTM data sets and coastal Satellite Derived Bathymetry (SDB) datasets from 64 data providers from 28 countries
- Resolution grid of 1/16 * 1/16 arc minutes (circa 115 * 115 meters)
- Use of GEBCO 2022 and IBCAO V4 for covering areas without available data
- Available in ESRI ASCII, XYZ, EMODnet CSV, NetCDF (CF), GeoTiff and SD in download tiles
- OGC WMS, WMTS, WFS and WCS services
- **https://doi.org/10.12770/ff3aff8a-cff1-44a3-a2c8-1910bf109f85**

- **45.000 DTM tiles downloads in 2023 (10 Tb)**
- **27 Million WMS requests in 2023**
- **Hundreds of references in Google Scholar**

EMODnet

European Marine Observation and Data Network

Stay up-to-date with the latest news

The European Marine Observation and Data Network (EMODnet) is financed by the European Union under Regulation (EU) 2021/1139 of the European Parliament and of the Council of 7 July 2021 establishing the European Maritime, Fisheries and Aquaculture Fund.

Biology

EMODnet Biology

20th Steering Committee meeting

Joana Beja, VLIZ/EMODnet Biology

29-30 April 2024 / Online

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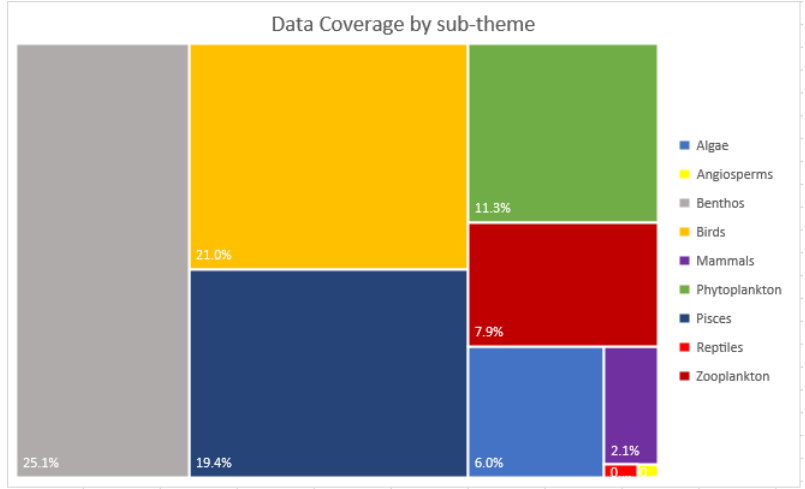
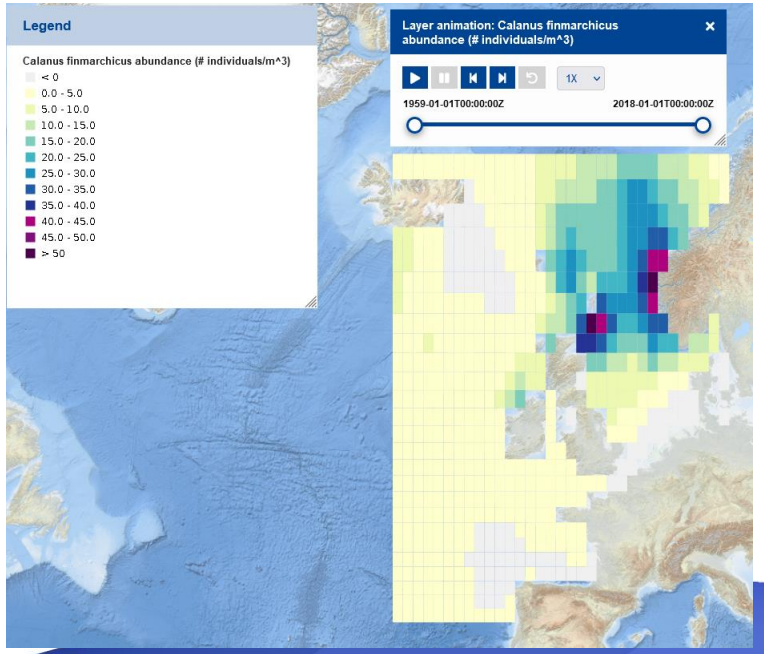
EMODnet Biology current offer

Overview of services

Data

- 1325 datasets published
- 40.8M occurrence records
- 96.2M measurements and facts associated with biological records
- Sub-themes: Angiosperms, (macro)Algae, Benthos, Birds, Fish, Mammals Phytoplankton, Reptiles, Zooplankton





Data Products

- 38 products
- 11 products in map Viewer (19 layers)
- 2 external products in map Viewer
- Species distribution maps (probability abundance, presence/absence, temporal changes, modelled habitat suitability, alpha diversity)

EMODnet Biology current offer

Data/Data Products for EU Policy

- Not easy to know which outputs (data/products) were used by RSC or for EU policy

- Results from our recent survey
  - 1 organisation declared they had used our data for their work
  - 3 organisations declared they had submitted data to EMODnet Biology (they are part of the consortium)
  - 3 organisations declared they had used data products (R Packages, distribution maps)

- Not easy to obtain information to publish use cases that demonstrate the use of our outputs in EU policy/RSC

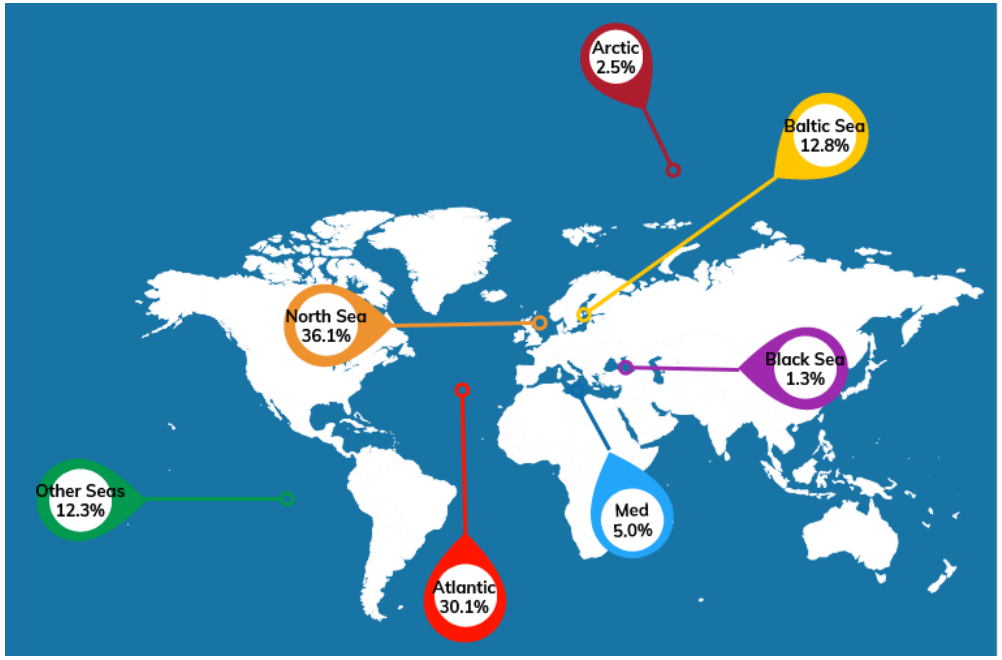
- Published 4 leaflets with information costumised to each RSC
  - https://emodnet.ec.europa.eu/en/biology#Communication

EMODnet Biology Future look

Service evolution

Workplan 2023-05-10 to 2025-05-09

- Data infrastructure developments
- Data Publication
- Data Product creation/Publication
- Increase communication and collaboration with RSC and other stakeholders
- D4.2.4 Report on progress for the publication of fisheries survey data due 2024-05-09



Key gaps

- Data collected under Directive framework (MSFD, Birds and Habitats)
- Arctic Ocean, Black Sea, Mediterranean Sea
- Angiosperms, Mammals, Reptiles
- Expertise in birds/mammal migration patterns

Engagement, Partnerships and Use Cases

- Ongoing discussions with JRC regarding biodiversity monitoring efforts and data availability via EMODnet Biology
- Last Use case: "Facts and figures on the importance of UNESCO World Heritage Marine Sites for marine biodiversity"
- IFREMER re-joined consortium as data provider
- Collaboration with EMODnet Seabed Habitats for product creation: benthic species lists for each individual habitat polygon as well as summaries of species for different habitat types
- Ongoing discussions for future collaboration with EMODnet Geology for joint product creation

Events attended

Since last SC meeting

November	December	January	February	March	April
. EuropaBON Webinar: Stakeholder consultation (online) . EuropaBON workshop (online) . EMODnet Jamboree and Open Conference (Brussels, Belgium)	. EMODnet Steering Committee meeting (Brussels, Belgium) . MSFD Expert Network on Marine Biodiversity meeting (Incidental Bycatch Threshold Values) (online)	. EMODnet future evolution and governance (Online)	. EMODnet webinar for EU Mission: restore our Ocean and Waters and Horizon Europe (online) . Meeting with Eurostat (online)	. VLIZ Marine Science Day (Oostende, Belgium) . EMODnet TWG meeting (online) . Iliad Webinar: Digital Twins of the Ocean and Biodiversity (online) . NECCTON workshop on standardization of biodiversity products	. EMODnet Biology annual meeting (Constanta, Romania) . EMODnet Biology workshop for the RSC (hybrid) . EMODnet Vision 2035 Drafting Group (Online)

Questions for further discussion

- Data policy statement for EMODnet data/data products should be easily available in the CP

- Clarification needed on the inclusion of EMODnet Biology products/data in the data lake and catalogue
  - Concerns about provenance degradation
  - Will we have access to usage metrics for our resources in the data lake/catalogue?
  - Data product reformatting done without output confirmation by consortium partners. Are the products altered in any way (e.g. do values change)?

- EU funded projects outputs submitted to EMODnet
  - Expectation management. What constitutes submission of data/products to EMODnet?
    - Is a metadata record in the EMODnet catalogue sufficient?
    - Do the data/products need to be available in the map Viewer/webservices?
  - The work/support required to publish data/products is not negligible
  - This task was not envisaged in our workplan-> no resource (human/financial) available
  - EMODnet Ingestion webinar is a first step, but insufficient as it (naturally) does not provide detail specific for each lot
    - EMODnet Biology has a workshop planned for the EU projects and might adjust this to include a data training aspect
    - Collaboration with Seabed Habitats when it comes to data submission from these projects
  - What support does DG MARE and CINEA have in place for the thematic lots?

EMODnet

European Marine Observation and Data Network

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Chemistry

Key updates and forward look

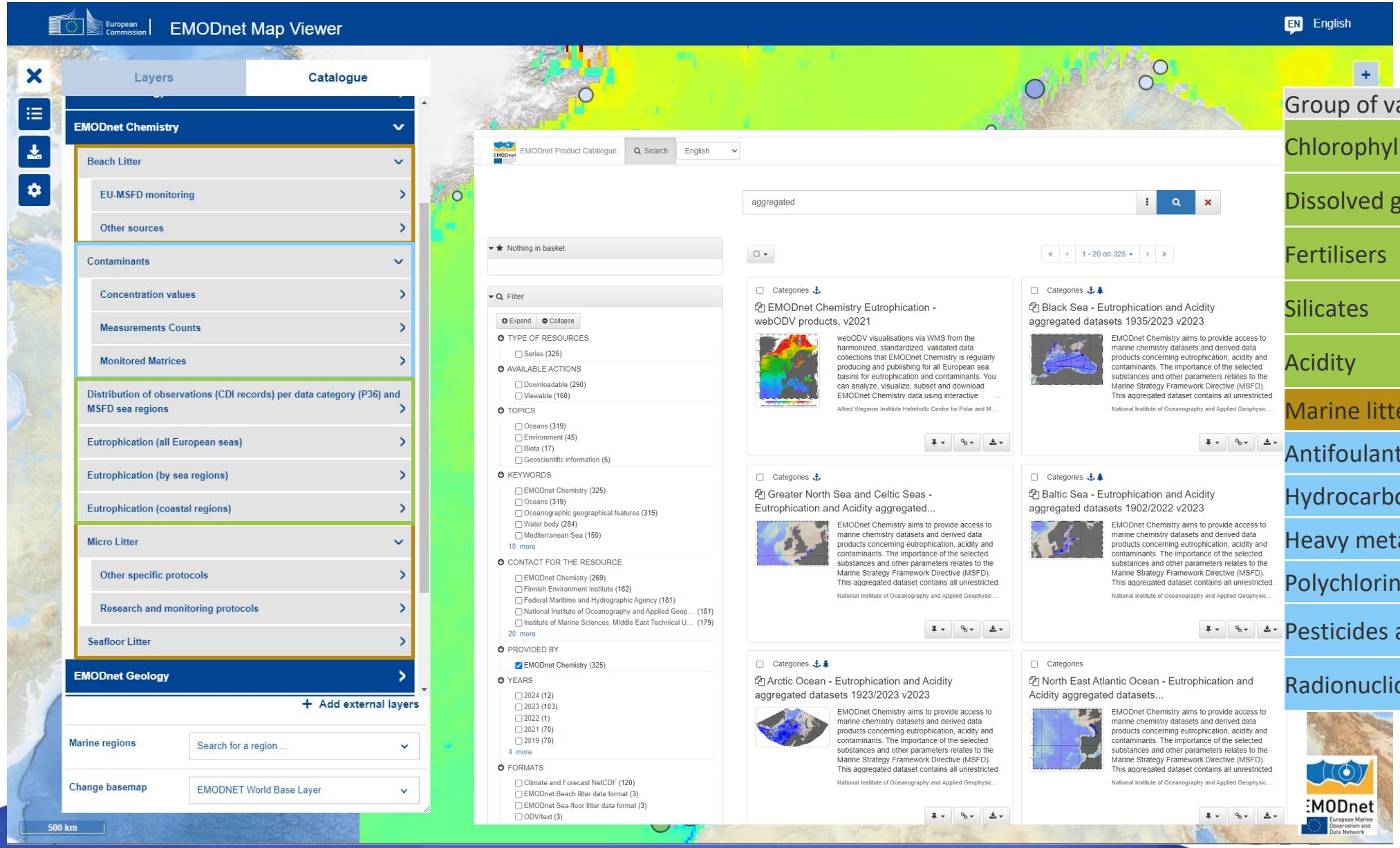
EMODnet Chemistry

Alessandra Giorgetti, OGS

20th EMODnet Steering Committee meeting
29-30 April 2024

EMODnet Chemistry current offer

Overview of Data/Data products



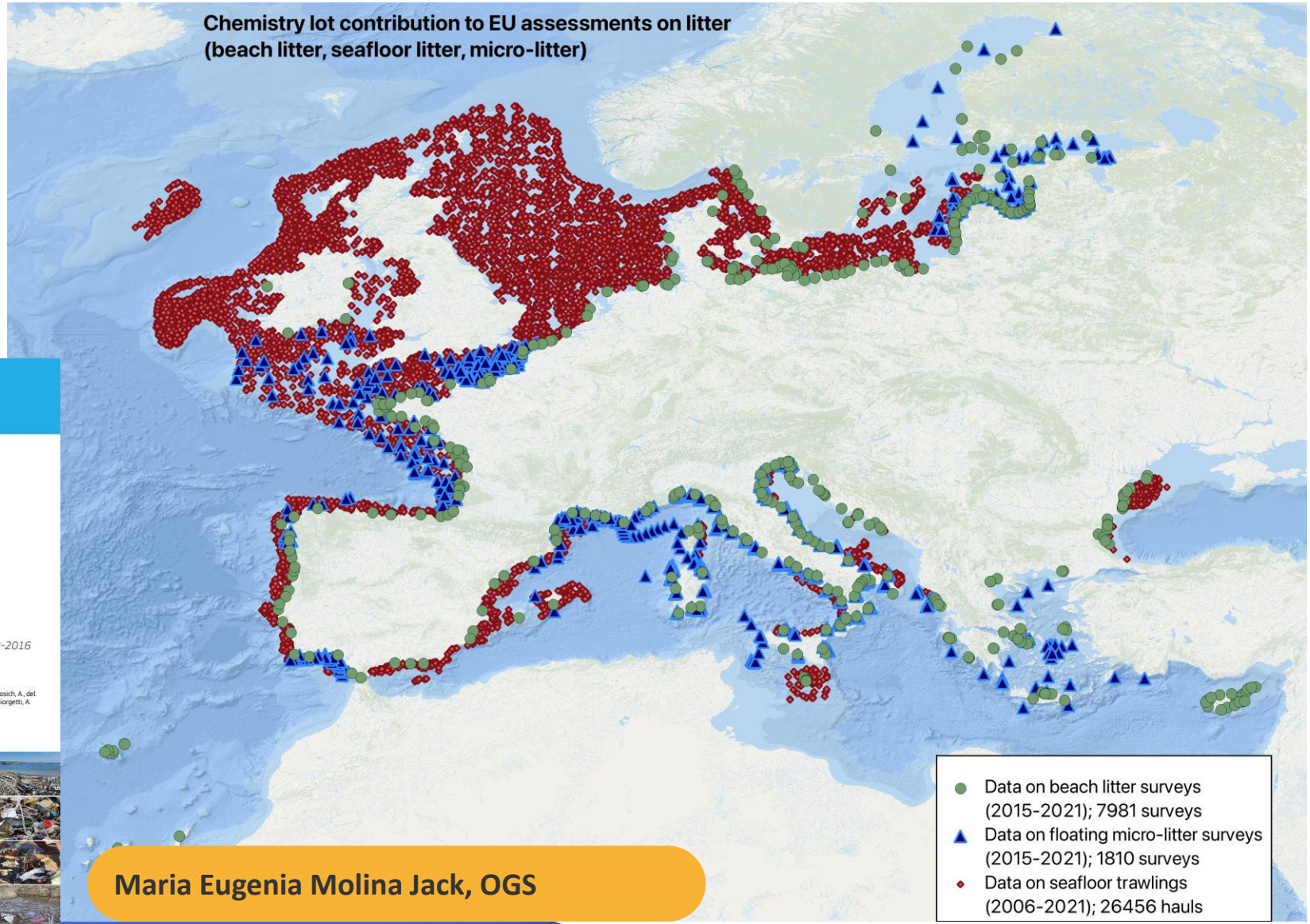
- **Total: 580 products**

Group of variables	Nb. products
Chlorophyll	86
Dissolved gases	96
Fertilisers	145
Silicates	90
Acidity	37
Marine litter	80
Antifoulants	39
Hydrocarbons	65
Heavy metals	55
Polychlorinated biphenyls	28
Pesticides and biocides	47
Radionuclides	22

EMODnet Chemistry current offer

Data/Data products for EU Policy

- EMODnet acts as the **Data Portal** for data collection and management under the MSFD
- Beach litter 2012-2016 data **used** for EU Baselines and Threshold values



Maria Eugenia Molina Jack, OGS

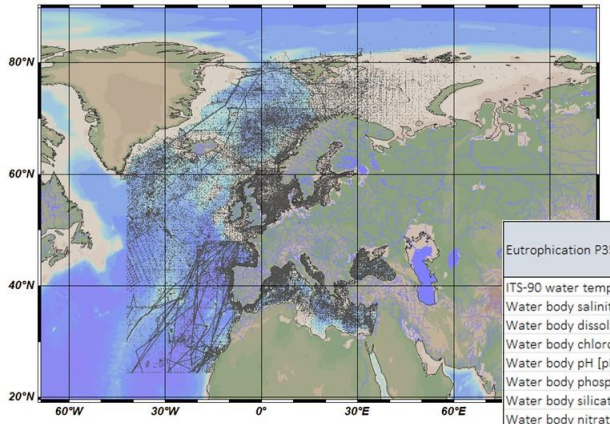
EMODnet Chemistry current offer

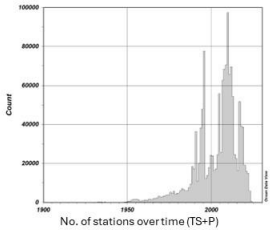
Data/Data products for EU Policy

- For the next MSFD reporting on D5 (Eutrophication), D8 (Contaminants) and D9 (Contaminants in seafood), the latest aggregated, standardised, and validated data collections on eutrophication and chemical pollution were made available to the JRC for the first time.

- EMODnet chemistry data contributed to **EEA** indicators

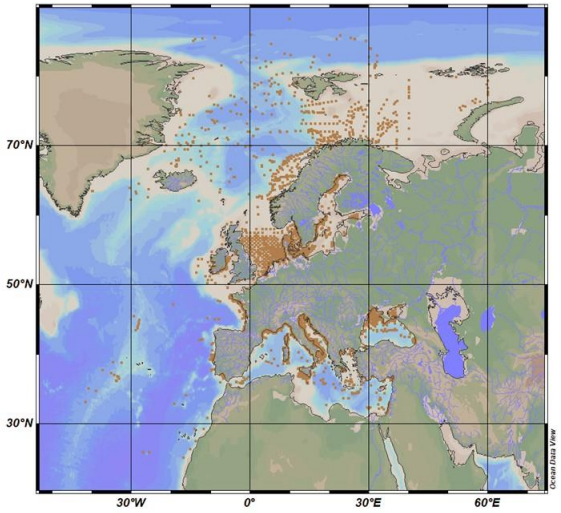
Eutrophication : Profiles + Timeseries — No. of stations 1374080; Temporal coverage 1902–2023

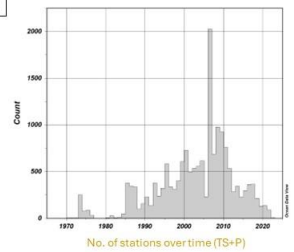




Eutrophication P35 (examples)	Data count QFs1+2+6+Q (all sea basins TS+P, all QFs for time and QFs 0-1-2 for depth)
ITS-90 water temperature [degrees C]	45816968
Water body salinity [per mille]	44579666
Water body dissolved oxygen concentration [umol/l]	35770318
Water body chlorophyll-a [mg/m^3]	17080591
Water body pH [pH units]	2445922
Water body phosphate [umol/l]	2305596
Water body silicate [umol/l]	1796217
Water body nitrate [umol/l]	1440786
Water body nitrite [umol/l]	1282351
Water body ammonium [umol/l]	1009124

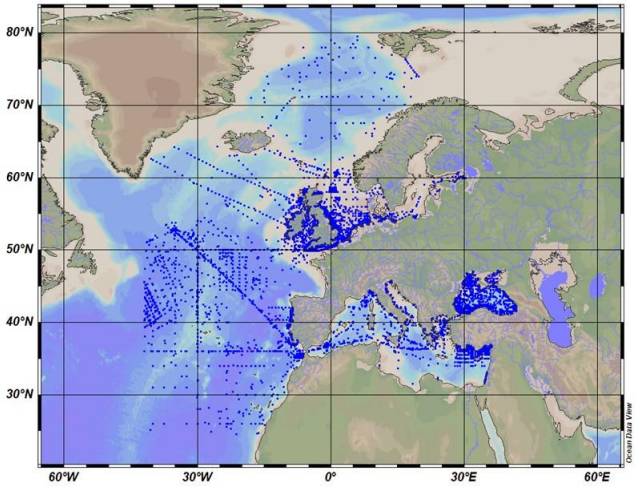
Contaminants in sediment : Profile + Timeseries — No. of stations 16929; Temporal coverage 1966–2022

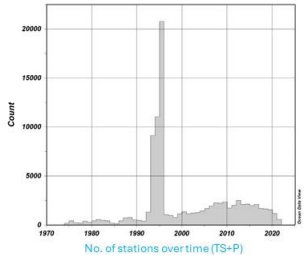




Contaminants in sediment P36	Data count QFs1+2+6+Q (all sea basins TS+P)
Metals and metalloids	202578
Hydrocarbons	168005
Polychlorinated biphenyls	43914
Pesticides and biocides	24660
NULL	18875
Radionuclides	8415
Organic matter	5740
Antifoulants	5643
Pharmaceuticals	114
Total	477944

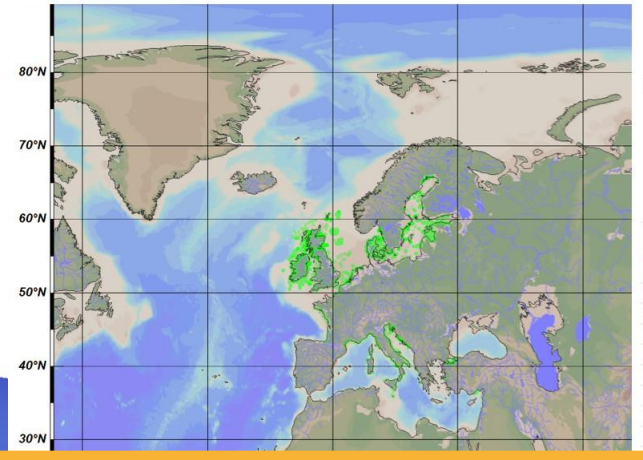
Contaminants in seawater : Profiles + Timeseries — No. of stations 91571; Temporal coverage 1970–2021

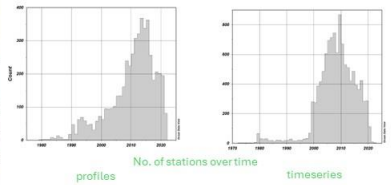




Contaminants in seawater P36	Data count QFs1+2+6+Q (all sea basins TS+P)
Metals and metalloids	154809
Hydrocarbons	117745
Pesticides and biocides	103597
NULL	34692
Organic matter	27008
Polychlorinated biphenyls	10183
Antifoulants	5896
Radionuclides	3876
Pharmaceuticals	860
Total	458666

Contaminants in biota : Profiles + Timeseries — No. of stations 16437; Temporal coverage 1972–2022





Contaminants in biota P36	Data count QFs1+2+6+Q (all sea basins TS+P)
Metals and metalloids	231322
Polychlorinated biphenyls	185577
Pesticides and biocides	98919
Hydrocarbons	93511
NULL	65424
Antifoulants	4467
Radionuclides	292
Pharmaceuticals	10
Total	679522

Megan Anne French, OGS

EMODnet Chemistry Future look

Service evolution

- **Key areas of service evolution in the current workplan:**
  - Improve data access via ERDDAP service for the aggregated collections
  - **Eutrophication**: expanding data collection covering all Member States monitoring data
    strengthen connection with Ocean Acidification networks (as e.g. GLODAP, SOCAT)
  - **Contaminants**: improve collection of analytical methods in addition to the actual instruments
  - **Marine litter**: expand to the seafloor litter from images & keep alignment with MSFD monitoring guidelines

- **Key gaps highlighted by the thematic** :
- Connection with UNEP/MAP and INFO/RAC
- Endorsement of EMODnet as a data portal for the MSFD by the Member States (as for marine litter)

Engagement, Partnerships and Use Cases

Update on recent use cases in development

Eutrophication

Projected climate oligotrophication of the Adriatic marine ecosystems by using EMODnet Chemistry climatologies

Scientific paper: https://doi.org/10.3389/fclim.2024.1338374

Status (as of 10/04/24): Published on EMODnet CP

Eutrophication

A simple dashboard for visualising seasonal and annual trends in oxygen and nitrate concentrations using EMODnet Chemistry data from the SeaDatanet CDI DB.

More info: https://eosc-future.maris.nl/documentation

Status (as of 10/04/24): In final revision by Tjerk Krijger from MARIS

Eutrophication and contaminants

EMODnet Chemistry harmonised and validated data collections for the EU Marine Strategy Framework Directive

Status (as of 10/04/24): Under evaluation by the EC JRC

Marine litter

Development of an Indicator-based tool for identification of potential problem areas for ML in EU seas thanks to the EMODnet Chemistry DBs.

Scientific paper: https://doi.org/10.1016/j.scitotenv.2023.167096

Status (as of 10/04/24): Under evaluation by the Secretariat

Chiara Altobelli, OGS

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Geology

EMODnet Geology
Steering Committee

Henry Vallius and Anu Kaskela, GTK, Finland

20th EMODnet Steering Committee meeting
April 2024, Online

EMODnet Geology current offer

Overview of services

- **Seabed Substrates:** Seabed substrate (multiscale), Sedimentation rates, Seabed erosion index
- **Sea-floor Geology**: Pre-Quaternary geology (incl. lithology and stratigraphy), Quaternary geology and geomorphology
- **Coastal Behavior**: Satellite and Field data based Coastal behavior, Coastal types
- **Geological Events and Probabilities:** earthquakes, submarine landslides, volcanoes, and Quaternary tectonics, landslide susceptibility,…
- **Marine minerals:** aggregates, critical minerals, hydrocarbons
- **Submerged landscapes:** palaeocoastlines, Submerged landscapes, Thickness of Post-LGM Deposit
- **Entity indexes:** borehole and grab samples, Seismic and multibeam survey data

EMODnet Geology current offer

Data/Data Products for EU Policy

EMODnet Geology data products have been/can be used for e.g., Maritime Spatial Planning Directive, Marine Strategy Framework Directive, Habitats Directive, Biodiversity Strategy, Blue economy, Green Deal, Blue Growth and European Critical Raw Materials Act

Green deal - EMODnet Geology data services used by the Offshore Renewable Energy sector (Use case Feb 2023)

- **Energinet,** an independent public enterprise owned by the Danish Ministry of Climate, Energy and Utilities. It builds, owns, and operates offshore electricity utility cables and gas pipelines and develops offshore wind farms and energy islands
- preliminary studies of the seabed prior to the development of new offshore windfarms and energy islands in the Danish waters. Several seabed investigations have been carried out to establish preliminary models of the subsurface in the selected areas prior to the possible establishment of offshore wind farms. The results are used for the tendering process where developers can bid on an informed basis.
- EMODnet Geology data products: the Seabed Substrate map has been used to avoid unsuitable areas; the Index Map to get an overview on available geological knowledge
- Energinet also uses map services and data from other EMODnet Lots such as EMODnet Bathymetry, EMODnet Human Activities, and EMODnet Seabed Habitats

EMODnet Geology, Future look (Renewal period 2023 – 2025)

Service evolution, key areas of service evolution in your current workplan

- Continue updating and improving available data products. Dynamic process.
- **Geological data specification and sourcing.** The main focus is to enable data access from **the Caribbean Sea**.
- **Seabed substrate.** Further development of **the seabed erosion data product**.
- **Sea-floor geology.** Optimise **the vocabularies** and **harmonisation** process. Transfer them to **a machine-readable (SKOS) format** and examine suitable repositories to publish the vocabularies openly.
- **Coastal behaviour.** Visualise **the uncertainty of satellite-based coastline migration** in a confidence map. Extend the coastal type map with **a coastal-ribbon map**.
- **Geological events and probabilities. Working groups on selected sea areas** and a map of areas subject to **geohazards** (test)
- **Minerals. Align the strategic minerals, critical minerals/non-critical minerals classifications** with current EU guidelines (European CRM Act).
- **Submerged landscapes.** Case study areas for **paleogeographic reconstruction work**.
- **Data management, web portal and services. Geotechnical data**.

EMODnet Geology Future look (Renewal period 2023 – 2025)

Service evolution

- **Key areas of service evolution in our current workplan:**
  - **Develop Sub-areas: Caribbean area, Caspian area**
  - **Working groups: Continue data gathering, and initiate harmonization for selected sea areas, where applicable, e.g. Geomorphologic Features, Geology**
  - **Data products: Geotechnical data, Seabed erosion, Coastal Ribbon**
  - **Parameter/Data product: Uncertainty**
  - **Investigate and define applications: Machine readability**

EMODnet Geology Future look

Service evolution

- **<u>Key gaps that remain in your thematic that need to be filled in future work</u>/via further partnerships with other data producers/other marine data services?**
  - Take into account **the geographical or specific characteristics of the sea regions** regarding nomenclature and interpretation approaches, e.g., Deep Ocean vs. Shallow sea or the Arctic Ocean areas
  - Develop data products **consider**ing **different end users**, needs and purposes:
    - **Collaboration with other EMODnet Lots** in including additional information and finding the common datasets or approaches, e.g. chemical, physical, geotechnical, sediment dynamics / bedform migration, geodiversity, carbon storage potential, habitat-restoration
    - Information serving **industry**, e.g. green energy/offshore wind parks
    - Improve data continuity and visualisation of **the coastal ribbon**, area where the land meets the sea
    - **Continuous data layers (**rasters), modelling, AI, Machine readability
  - **A catalogue of signatures** – what geological features really look like in the field
- Continue with even **wider geographical scope**. Potential areas: South America, Africa.
  - Layer successions: **xyz models/ 2.5 D**
  - Parameters/products: Seafloor integrity, Sediment budgets, Water column and seabed subsurface data on gas/groundwater seeps etc

Engagement, Partnerships and Use Cases

Collaboration with Geological Service for Europe (GSEU)

Several EMODnet Geology partners are participating in HORIZON 2.5 - Climate, Energy and Mobility project Geological Service for Europe (GSEU), which enables synergy and direct feedback. For example:

- From the GSEU side, EMODnet Geology attributes are being queried and translated into applied attributes needed to build a geo-assessment matrix for determining seabed suitability to construction of offshore windfarms.
- The intended end product will be contributed to the EMODnet Central Portal as an applied data product.
- A Baltic Sea Windfarm Workshop, which fed directly into one of the activities within GSEU, was organised in February at Århus, Denmark. The workshop was attended by geological surveys of Finland, Sweden, Poland, Denmark, Lithuania, Germany and UK, which are also partners of EMODnet Geology. Data and knowledge sharing were among the main topics discussed serving also EMODnet Geology.

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Bathymetry

EMODnet Human Activities

Alessandro Pititto, Cogea Bip-Group

20th EMODnet Steering Committee meeting
29-30 April 2024

EMODnet Human Activities current offer

Overview of services

- ***EMODnet Human Activities currently offers data on 19 themes, each of them with one or more data sets/products***

Aggregate extraction	Main ports
Algae production	Maritime Spatial Planning
Aquaculture	Military Areas
Cables	Oil & Gas
Cultural Heritage	Other Forms of Area Management
Desalination	Pipelines
Dredging	Route Density
Energy	Vessel Density
Environment	Waste Disposal
Fisheries	

EMODnet Human Activities current offer

Data/Data Products for EU Policy

- *EMODnet Human Activities mostly contributes to EU policy by making available maritime spatial plans, harmonized according to a bespoke data model created in the framework of the Technical Expert Group on MSP Data.*
- *It also contributes to some descriptors of the MSFD process, though to a lesser extent compared with other EMODnet thematic groups*

EMODnet Future look

Service evolution

- Despite having started later than the other EMODnet thematic groups, Human Activities quickly caught up. However, there remain some notable data gaps, for which no solution seems feasible in the short term. These are:
  - Pipelines
  - Cables
  - Aquaculture

- Coverage is patchy, meaning that some MSs/sea basins are well covered, whereas little data is available for others

- Hydrographical institutes often have this data, but they can’t always share it freely for a number of reasons.

- The fishery-related data portfolio could be expanded. A dialogue is ongoing with DG MARE to understand how feasible it would be to make available additional data sets.

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Bathymetry

EMODnet Physics

updates

Antonio Novellino, ETT

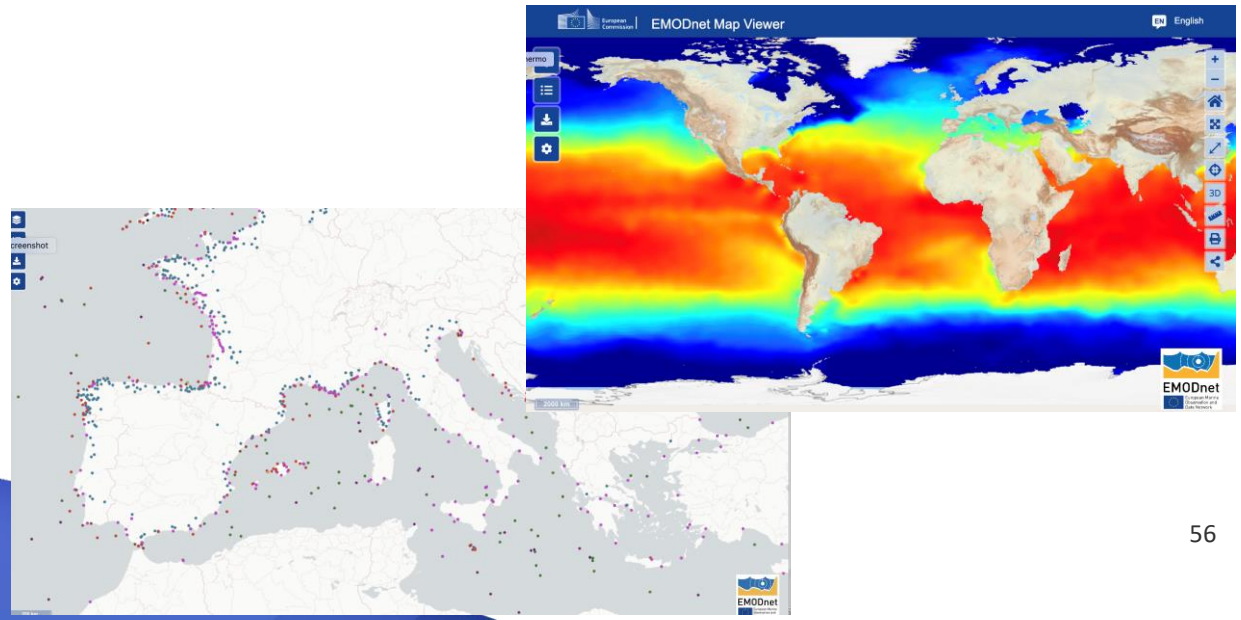
20th EMODnet Steering Committee meeting
29-30 April 2024

EMODnet Physics current offer

Overview of services

- **parameters:**
  - Temperature,
  - Salinity,
  - Sea Level,
  - Currents,
  - Waves and Winds,
  - Optical properties of the water,
  - Under water noise,
  - River runoff,
  - Meteorological data at sea level
- **in situ** data, data collections and products
  - CP Geoviewer, ERDDAP, GeoServer, GeoNetwork
- **near real time and delayed** mode data on ocean physics
- builds on **marine data infrastructures and programs**
- **continuous data flow**
  - 2300 Mooring, 950 Rivers, 700 Gliders/AUVs missions, …
  - 330 Vessels data, 25900 drifting buoys, 14900 ARGO, …
- **global coverage** (whenever possible)
- **common standards** and tools (support to community)

Parameter	Stations	Products
Water Temperature	5856141	4
Water Salinity and conductivity	5820447	5
Currents	4494	
Optical Properties (turbidity, light att., …)	19539	3
Sea Level	7114	4
Meteorological	14684	
Waves (height, direction, …)	3544	
Winds (strength, direction)	3215	
River outflow	1787	1
Under water noise	5	2



EMODnet Physics current offer

Data/Data Products for EU Policy

- **Support to open data, open science, standards**
- **MSP:** land-sea interaction (river outflow, waves, currents, sea level)
- **MSFD**: D7 (Hydrographical conditions = physical parameters of seawater: temperature, salinity, depth, currents, waves, and turbidity) , D11 (Energy including underwater noise) + complementary data for D1 (biodiversity), D5 (Euthorphication)

Monitoring Parameters of the MSFD Annex III (adopted from Craglia et al., 2010a) and their relevant MSFD indicators of the COM DEC 2010/477/EU.

N	Parameter	MSFD indicator
43	Currents	1.6.3, 7.2.2
46	Ice cover	1.6.3
52	Salinity	1.6.3
60	Temperature	1.6.3
61	Turbidity	1.6.3, 5.2.2
62	Underwater noise	11.1.1, 11.2.1
63	Upwelling	1.6.3
64	Wave exposure	1.6.3

Zampoukas N et al, 2012 - Monitoring methods, their applicability in off-shore areas and their capability to collect data relevant for MSFD indicators

Device	MSFD Indicator
Moorings and Buoy	1.6.3, 5.1.1, 5.1.2, 5.2.1, 5.2.2, 5.2.3, 5.2.4, 5.3.2, 8.1.1, 8.2.2, 9.1.1, 9.1.2, 11.1.1, 11.2.1
Ships of opportunity	5.1.1, 5.1.2, 5.2.1, 5.2.2, 5.2.3, 5.2.4, 7.1.1, 8.1.1, 8.2.2, 9.1.1, 9.1.2
AUVs and Gliders	1.1.1, 1.1.2, 1.1.3, 1.2.1, 1.3.1, 1.4.1, 1.4.2, 1.5.1, 1.5.2, 1.6.2, 1.6.3, 1.7.1, 2.2.1, 2.2.2, 4.3.1, 5.1.1, 5.1.2, 5.2.1, 5.2.2, 5.2.4, 5.3.2, 7.1.1, 7.2.1, 7.2.2, 8.1.1, 8.2.1, 8.2.2, 11.1.1, 11.2.1

EMODnet Physics Future look

Service evolution

Add a layer for each theme to discover the in situ data collections

- test under the CP staging enviroment
  - Wave, Wind
- ready to go under test/staging
  - Sea Level (5min, 60min), Temperature, Salinity
- working on
  - Currents, Optical properties of the water, Meteo, snow-cameras

Add in situ products

- PSMSL (RLR) trends
- Platform-networks products
  - Ships, Gliders, HFR, …

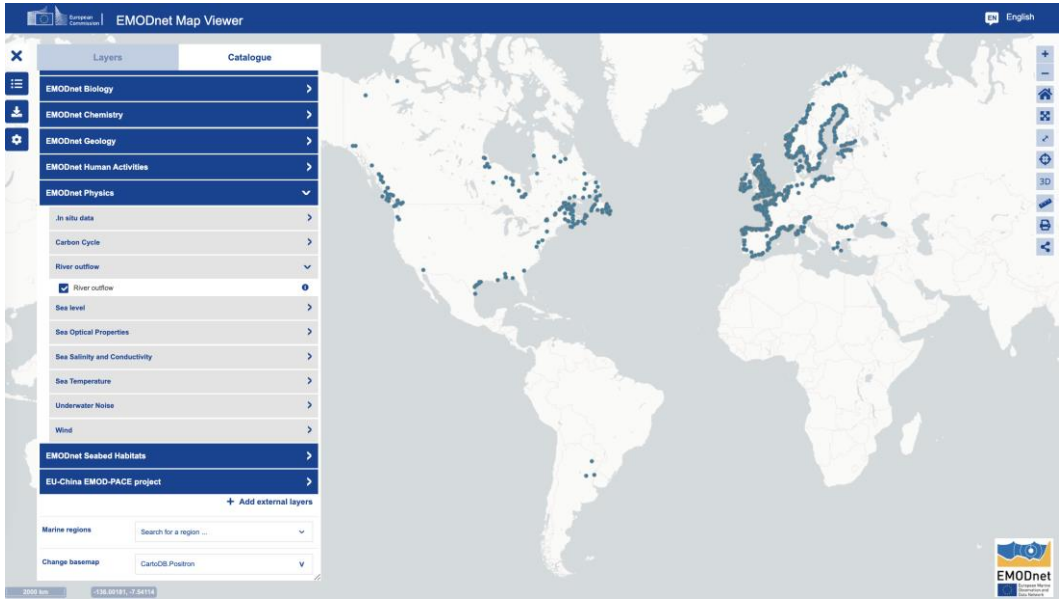
Remove/update obsolete products

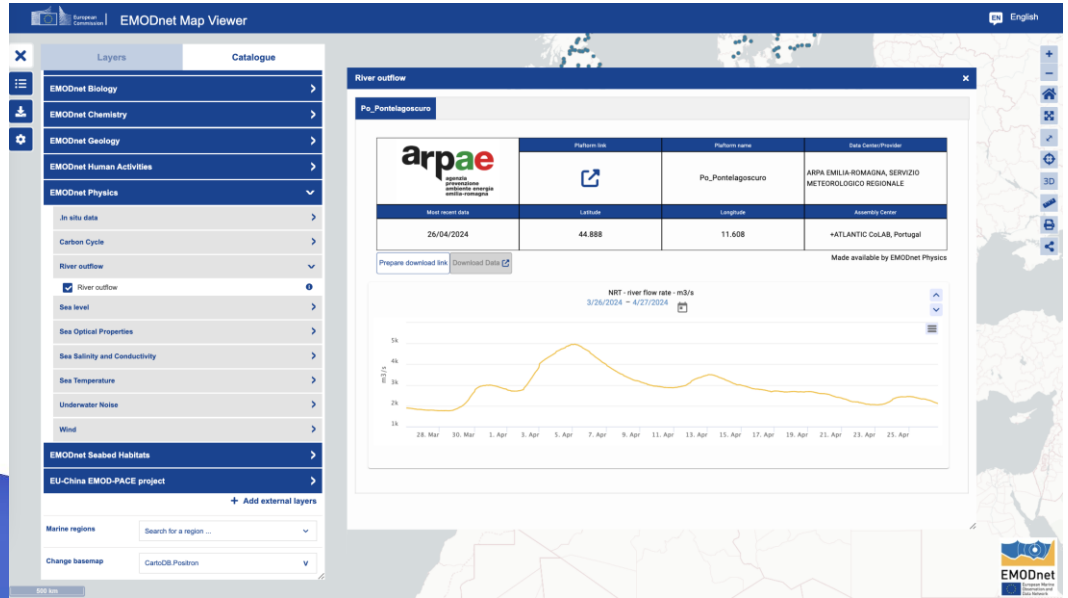
- Temperature and Salinity anomalies

Review/improve layers filters

- projects, providers, …

Improve UX in situ platform page





EMODnet Physics Future look

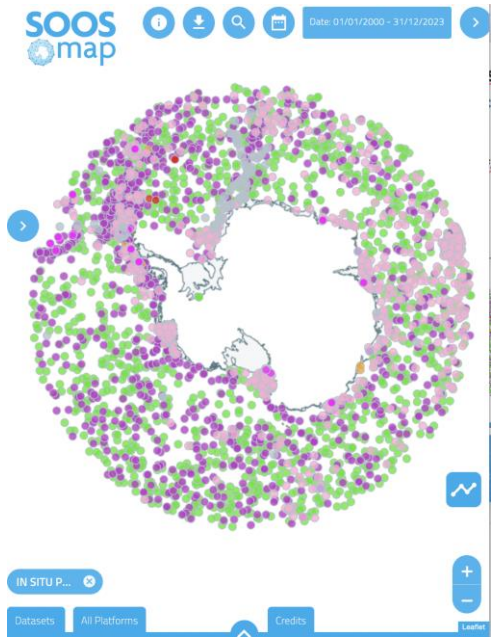
Service evolution: content, services, partnerships

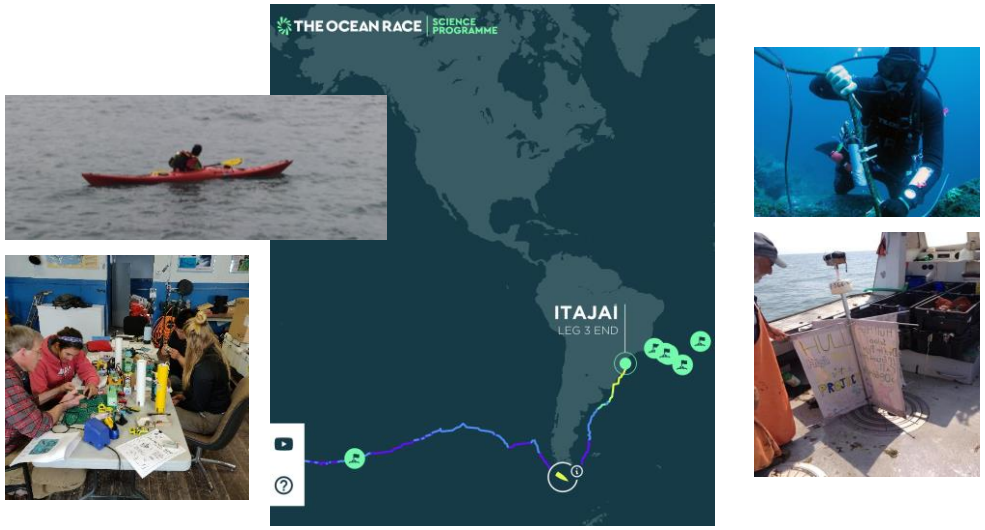
new parameters/networks:

- Sea-Air fluxes
- Sea-Land interface
- Ocean sounds
- Citizen Science initiatives

In partnership with

- Copernicus Marine Service INS TAC
- OceanOPS
- EuroGOOS
- Southern Ocean Observing System
- Deep Ocean Observing System
- WMO Hydrological Observing System
- GOOS OGC capacity development
- Horizon Europe Prjs
- …

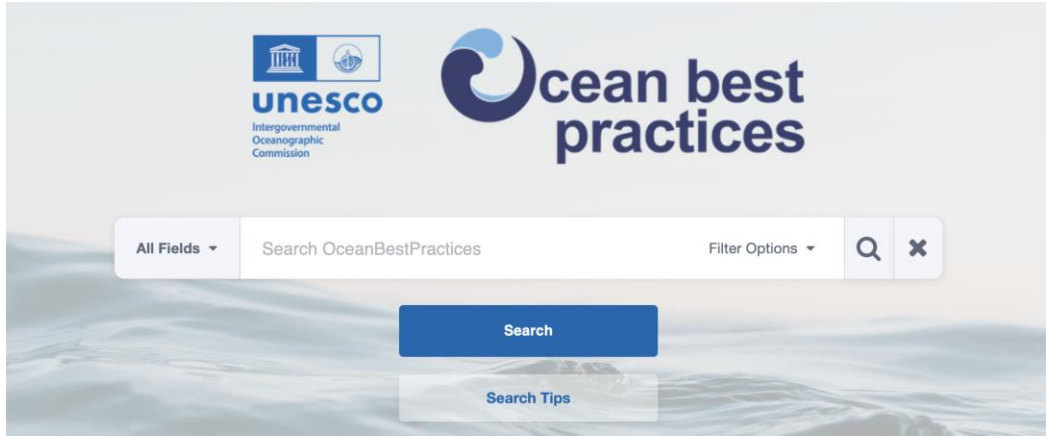


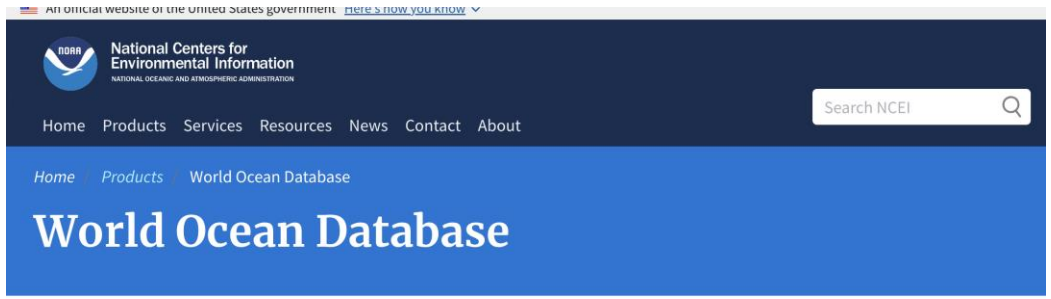


ARGO profiles

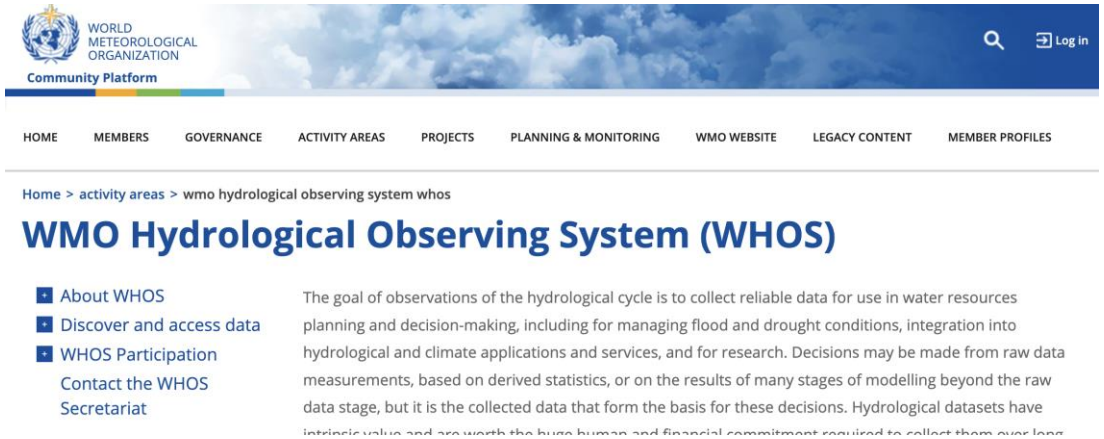
vessels using Moana probe system

Engagement, Partnerships and Use Cases





The World Ocean Database (WOD) is world's largest collection of uniformly formatted, quality controlled, publicly available ocean profile data. It is a powerful tool for oceanographic, climatic, and environmental research, and the end result of more than 20 years of coordinated efforts to incorporate data from institutions, agencies, individual researchers, and data recovery initiatives into a single database. WOD data spans from Captain Cook's 1772 voyage to the contemporary Argo period, making it a valuable resource for long term and historical ocean climate analysis. Original versions of the 20,000+ datasets in the WOD are available through the NCEI archives.



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Seabed Habitats

EMODnet Seabed Habitats

Thematic Update

Ville Karvinen, Syke

20th EMODnet Steering Committee meeting
29–30 April 2024

EMODnet Seabed Habitats current offer

Overview of services

- EUSeaMap – broadscale seabed habitat map & environmental variables that influence habitat type
- Habitat maps / habitat point data / habitat models
- Composite products
  - Essential Ocean Variables (EOV): Live hard coral / Seagrass / Macroalgal canopy / Mangrove cover
  - Coastal wetlands
  - Essential Fish Habitats (EFH)
  - Vulnerable Marine Ecosystems (VME)
  - Biogenic substrate

Data type	**Number of layers**
EUSeaMap	132
Environmental variables that influence habitat type	60
Individual habitat maps from survey	1152
Point data	3
Modelled maps	104
Composite product	76
EFH map	23
EFH model	27
Total	**1577**

EMODnet Seabed Habitats current offer

Data/Data Products for EU Policy

Existing

- MSFD reporting
  - EUSeaMap - Benthic Broad Habitat Types

Potential

- Restoration Law (or whatever will come out of the process)
  - EUSeaMap / EOVs / other habitat mapping products defining the EUNIS level 3/4/5 habitats

EMODnet Seabed Habitats Future look

Service evolution (Phase V / 2023–2025)

- Updates to all existing products & new ones

- Integration and expansion of data sources
  - Identifying new areas and data providers
  - Working toward full integration of habitat observation data with species data

- Enhancing user experience & maximizing utility of data
  - Development of tools, sharing them & ideas across themes

- Enhancing collaboration and focusing on user needs
  - Identifying potential new meaningful (possibly cross-thematic) products aligned with policy delivery
  - RSCs collaboration
  - Research projects

Engagement, Partnerships and Use Cases

- Ongoing MSFD reporting (2024)
- Scientific articles (8), Scientific reports (1), Technical reports (2), Conference proceedings (2), Posters (1)
- Collaboration with projects (Horizon Europe: OBAMA-NEXT & MARCO-BOLO)
- RSCs – HELCOM Habitat Mapping Products Workshop (05/2024)
- TG Seabed & ICES WG for Marine Habitat Mapping

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Data Ingestion

Updates, Current offer and Future Outlook

EMODnet Ingestion

Dick Schaap, MARIS
Sissy Iona, HCMR

20th EMODnet Steering Committee meeting
29-30 April 2024

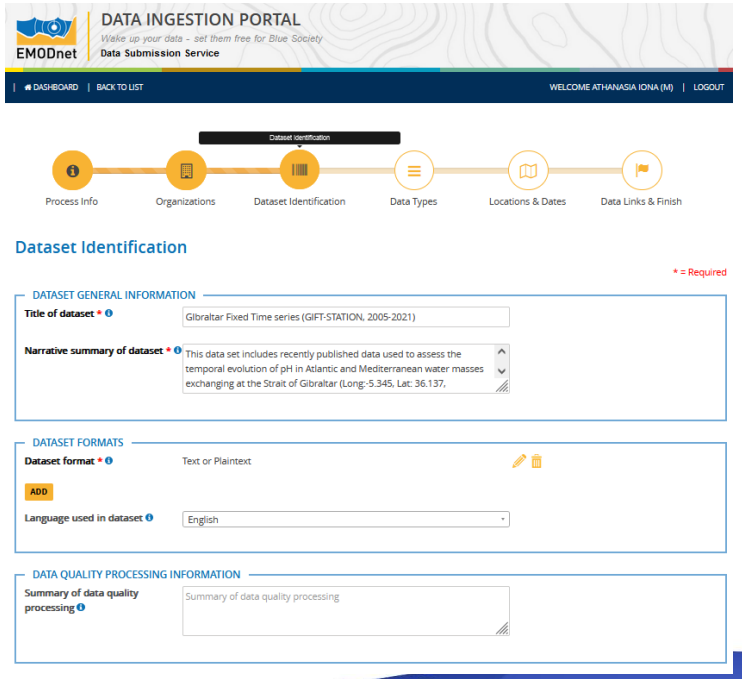
The European Marine Observation and Data Network (EMODnet) is financed by the European Union under Regulation (EU) 2021/1139 of the European Parliament and of the Council of 7 July 2021 establishing the European Maritime, Fisheries and Aquaculture Fund.

EMODnet Data Ingestion current offer

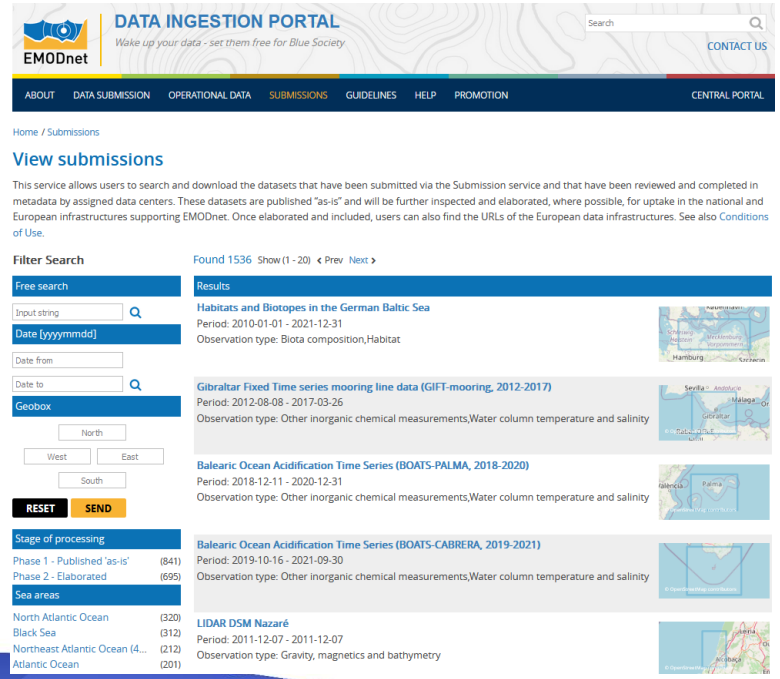
Overview of services

To **identify**, **encourage** and **support data holders** (from public and private sectors) to **share their data** with EMODnet by teaming up with EU data management infrastructures, that feed EMODnet thematics

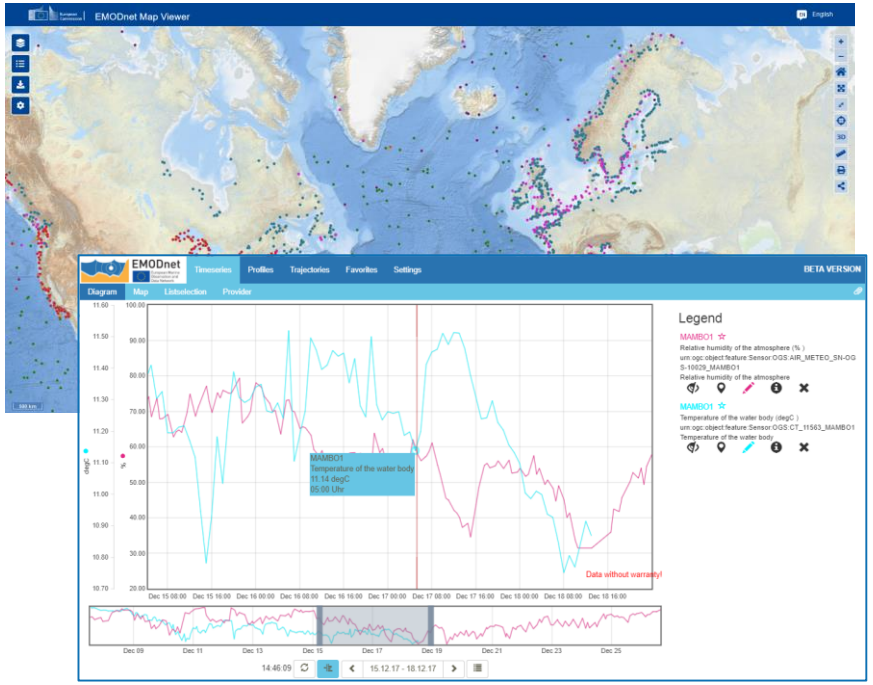
Submission service



Viewing service



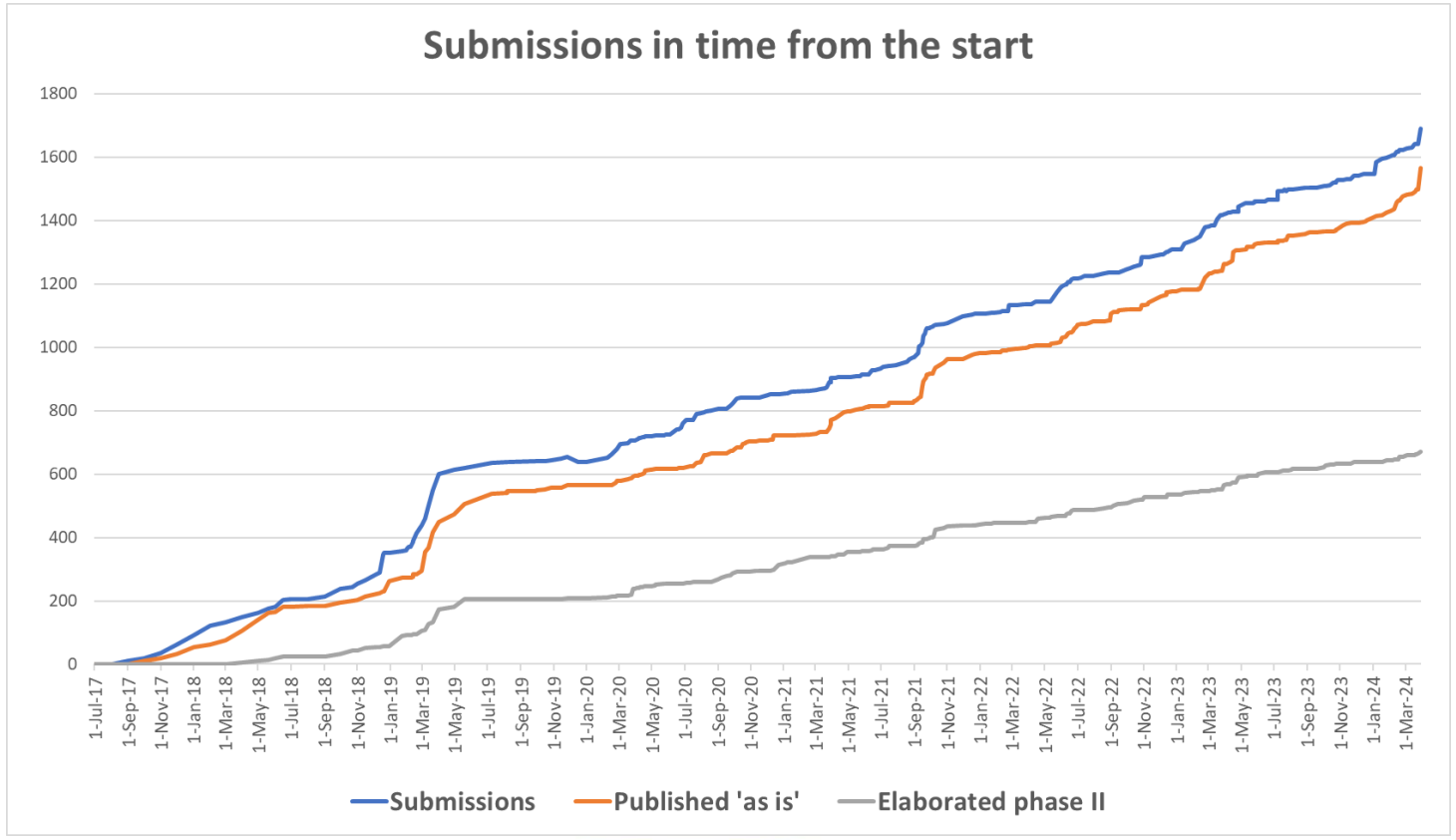
Real-Time viewer service

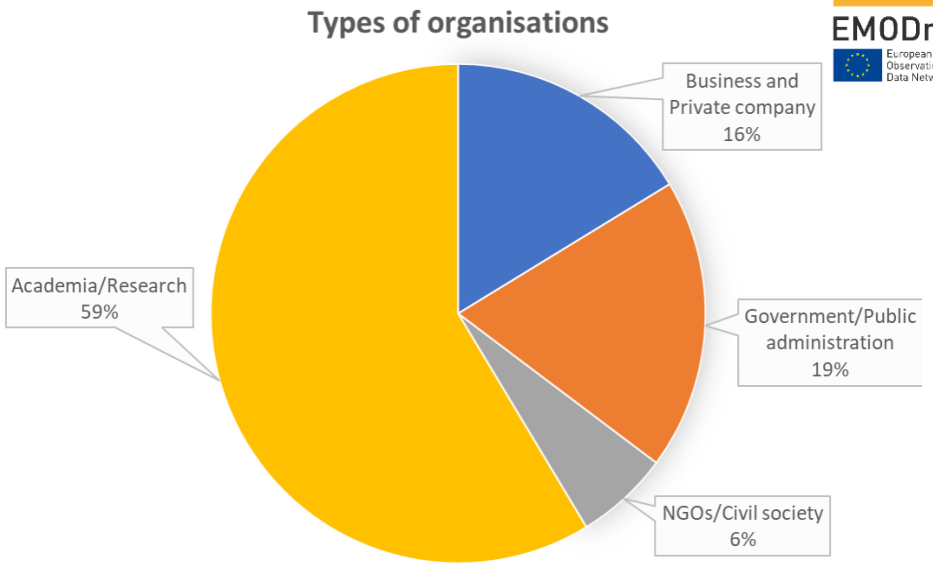


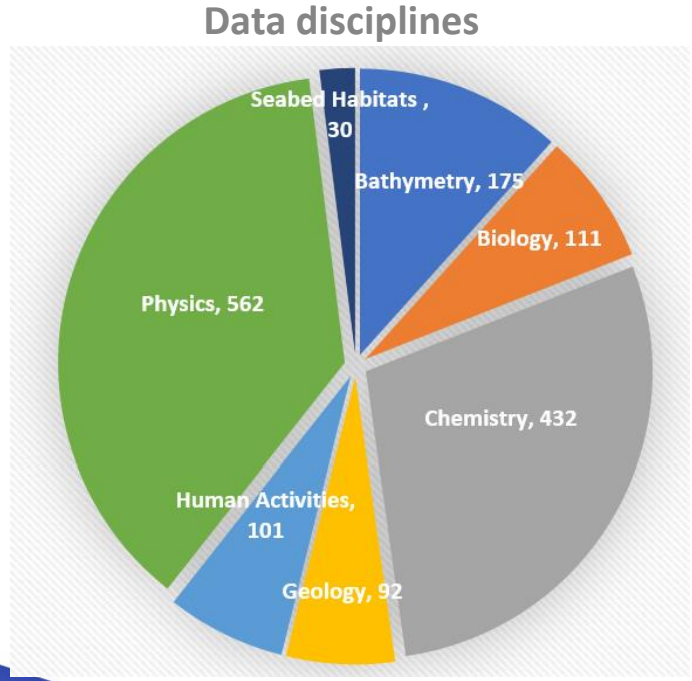
Soon fully integrated into Central Portal

EMODnet Data Ingestion current offer

Ingested data, types, stakeholder sectors







EMODnet Data Ingestion current offer

Data/Data Products for EU Policy

- EMODnet Human Activities has promoted EMODnet Ingestion as the preferred data submission service for Member States' Marine Spatial Planning (MSP) data. The EU MSP (Marine Spatial Planning) committee adopted this approach.

- In a comparable way, EMODnet Chemistry has successfully promoted such an approach for Marine Litter (ML) reporting by Member States, supported by EU JRC and TG ML, and today Ingestion is used as a structured instrument for Member States for MSFD ML data reporting.

- Jointly with EMODnet Secretariat, Ingestion is working towards setting up similar arrangements with Citizen Science groups and initiatives about the exchange of marine litter data, which will then be processed and elaborated by EMODnet Chemistry for inclusion and publishing as EMODnet data products.

EMODnet Data Ingestion Future look

Service evolution

- Current contract just ended (phase 3: March 2022 – March 2024 => extension to March 2026)
- Current (phase 3) workplan:
  - maintenance, smooth operation of portal and its services, M2M exchanges with other data infrastructures (in delayed and NRT mode)
  - Migration to Central Portal
    - Test release on 30th April 2024 including
      - Front-end developed from scratch to be run on EU Central Portal
      - API developed to be run along with backend operations on Ingestion cloud infrastructure
    - Production Release Summer 2024, including ECAS migration

- Plans of next phase with most impact to the project into the future:
  - **Expanding scope to supporting EU RTD projects, that are collecting new data as follow-up to Workshop of 28th February 2024:**
    - guidance note gives information about standards and pathways to follow
    - **support will be offered to EU RTD projects** for reviewing their Data Management Plans (DMP), including exploring effective ways and cooperation for deploying their DMPs. In principle, EU RTD projects are and continue to be responsible themselves for their DMP performance. Also, to succeed they are required to adopt common standards as used for EMODnet pathways.
    - use will be made of the full Ingestion network of data centres, and taking into account priorities of EU

EMODnet Data Ingestion Future look

Service evolution

- Plans of next phase with most impact to the project into the future:
  - **Following up activities of the Workshop of 28th February 2024 for improving the understanding of data management in offshore licensing procedures** (offshore renewable energy and offshore aquaculture) of various countries:
    - deepening the dialogue with identified stakeholders in selected countries and for selected use cases by means of interviews and webinars to provide stakeholders with guidance and background information for possibly harmonizing data management procedures.
    - developing a roadmap, which will serve as a tool, offering guidance and practical examples to stakeholders seeking to implement harmonized data management practices effectively.

- Additional plans (up to 2025 and beyond) to be taken into account to the EMD Vision 2035:
  - **Integrate EMODnet Ingestion more in the data exchange processes for implementing EU policies (as done now for ML data for MSFD)**
  - **Expand the role of EMODnet Ingestion as an expert in technologies for connecting data streams** (as done so far for delayed mode exchanges with SeaNoe and the TCE-MDE repositories, and connections with NRT monitoring stations)
  - Note: Scaling up the activities of EMODnet Ingestion will require a scaling up of the funding basis

Engagement, Partnerships and Use Cases

Continuous growth

Key Partnerships:

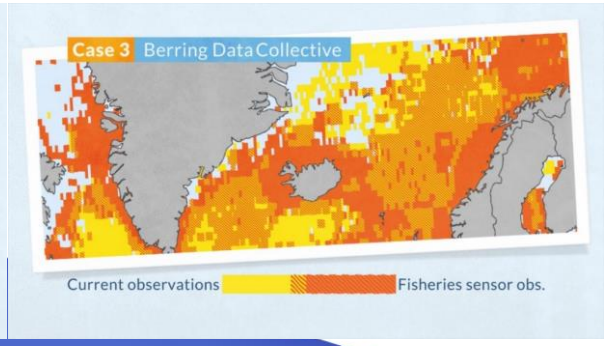
- Cooperation with Operational Oceanography (CMEMS INSTAC, EuroGOOS) for making operational data available in EMODnet Map Viewing service (in synergy with EMODnet Physics and SeaDataNet)

Key Engagements for Data Sharing:

- Automatic exchange with **SeaDataNet/SeaNOE data citing service** for marine data from scientific cruises
- Automatic exchange with **The Crown Estate Marine Data Exchange (TCE-MDE)** for marine industry data

Several successful use cases:

- **Marine Scotland Science data**: provision of numerous eutrophication, contaminants data
- **Spirulina farms from JRC**: in synergy with EMODnet Human Activities
- **Berring Data Collective**: Data from sensors in fishing nets, in synergy with EMODnet Physics
- **Monitoring data from windfarms** in the Dutch North Sea sector



EMODnet

European Marine Observation and Data Network

emodnet.ec.europa.eu

Stay up-to-date with the latest news

The European Marine Observation and Data Network (EMODnet) is financed by the European Union under Regulation (EU) 2021/1139 of the European Parliament and of the Council of 7 July 2021 establishing the European Maritime, Fisheries and Aquaculture Fund.

COFFEE BREAK

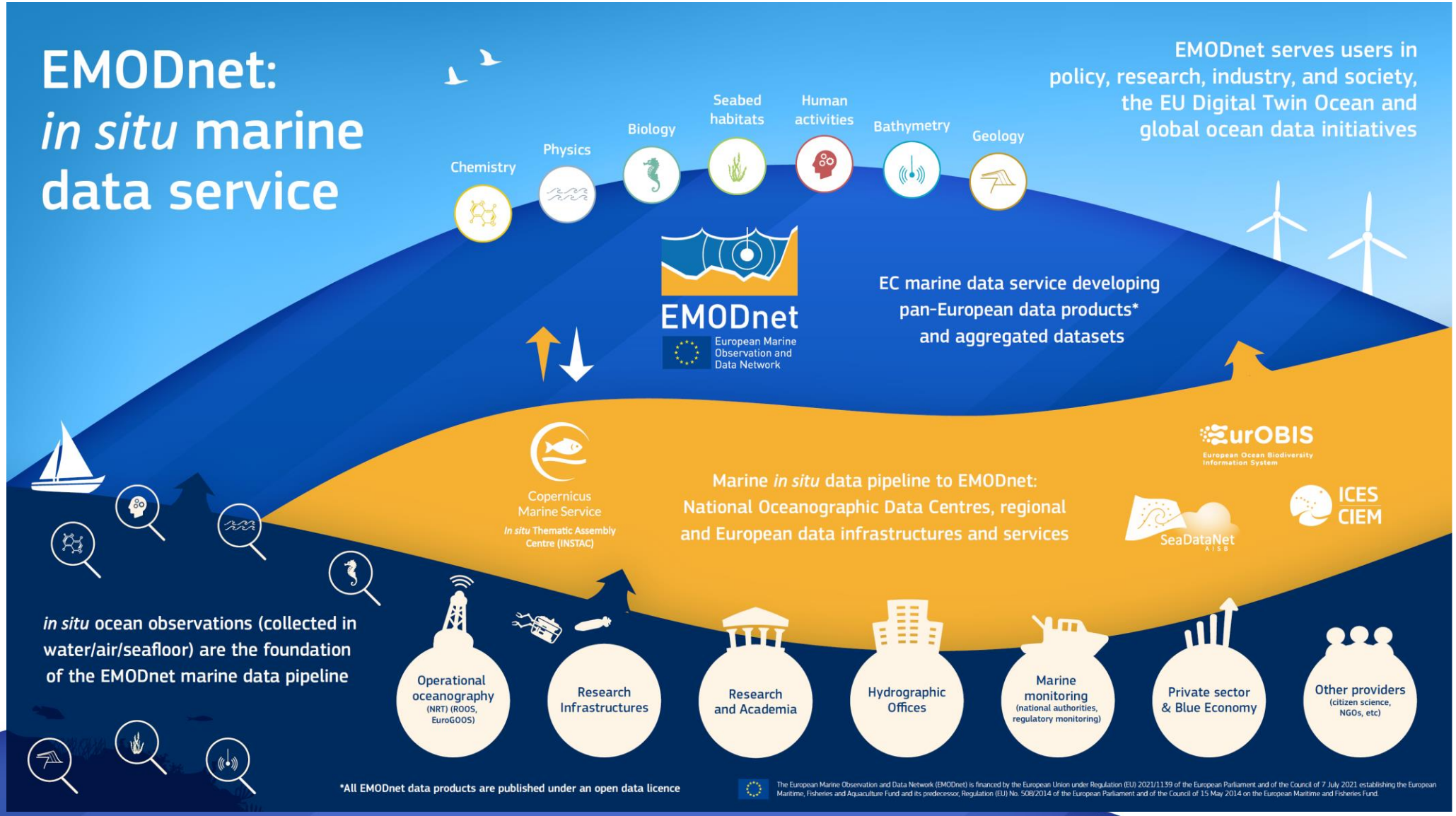
10 mins

EMODnet and European Ocean Observing

DG MARE, EMODnet Secretariat, ALL

EMODnet and European Ocean Observing

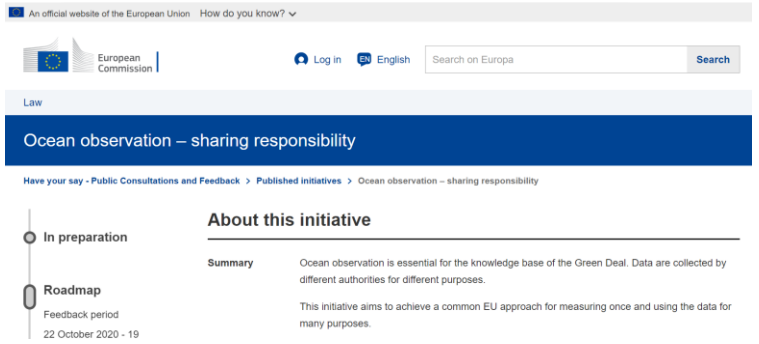
The European *in situ* (survey/field) Ocean Observation and Marine Monitoring Community are key actors in data provision to EMODnet. And very diverse!



EMODnet and European Ocean Observing

EMODnet supports the EC Ocean Observation Initiative

1. **EMODnet as a regional (EU) asset and best practice** in aggregating, standardising and integrating ocean observation data from diverse sources;
2. **Organising community events on the Ocean Observation and Marine Knowledge value chain** e.g., EMODnet Open Conference 2021, 2023, European Maritime Day (2024 workshop with European Blue Economy Observatory and EEA); Attending Ocean Observation community events e.g., OI 2024;
3. **Targeted assessments (TA) and desk studies** a) the **coordination of ocean observation and marine data pipeline** from National – Regional – European. In 2024, the EMODnet Secretariat will lead a TA be on the Regional perspective, including consultation with Regional Sea Conventions to assess current levels of coodination in joint monitoring and marine data pipelines, with a focus on monitoring data for EU Directives e.g., MSFD; b) **EMODnet Sea-Basin Checkpoints**: In 2024, the EMODnet Secretariat will lead a desk study assessing the data adequacy of the current EMODnet offer according to user-driven requirements;
4. **Active contribution to the European Ocean Observing System (EOOS) community framework** (as Steering Group member, member of Operations Committee, in collaboration with EuroGOOS, EMB, Copernicus Marine Service, JPI Oceans, RIs, etc.



EOOS European Ocean Observing System

EMODnet and European Ocean Observing

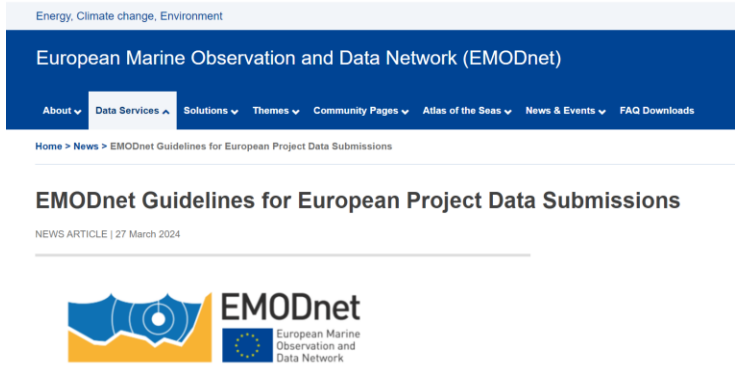
EMODnet actively seeks to optimize data pipelines and promote data sharing and ingestion from diverse *in situ* sources and expanding the diversity of parameters, for EMODnet and the European DTO

EU Project data: New EMODnet guidelines for Horizon Europe and Mission Ocean projects' data submission and ingestion to EMODnet (February 2024, output of webinar for EU HE and MO projects produced by EMODnet Data Ingestion, in collaboration with the Secretariat and EMODnet Coordinators);

Private sector data sharing: Associated Partners, wider industry stakeholders e.g., at EMODnet for Business events and presentations at industry-led conferences;

Citizen Science data ingestion: Active work with citizen science projects and networks, also with low-cost sensor technology.

Marine monitoring data for EU Policy: Assessing the current data pipelines of legislative monitoring, and identifying where EMODnet could strengthen its offer of such data, to further support EU Policy and wider user needs



EMODnet Guidelines for European Project Data Submissions | European Marine Observation and Data Network (EMODnet) (europa.eu)

EMODnet for EU Policy

Chaired by Rémy Dénos, EC DG MARE

EMODnet Partnerships: Overview of EU

EMODnet Secretariat, ALL

EMODnet EU Partnerships

EMODnet: Key contribution to EDITO for the European Digital Twin Ocean

EMODnet EU Partnerships

DOF 2024

EMODnet EU Partnerships

EMODnet - Copernicus Marine Service

European *In Situ* Marine Data Service Landscape

Marine knowledge underpins scientific research, EU environmental policy implementation, Blue economy operations, ocean management and conservation, and more. The foundation of marine knowledge is high-quality ocean observations, with observations falling into two distinct categories, those taken by **satellites (remote sensing)**[1] and those sampled through ***in situ***[2] technology (direct measurements in the environment).

***In situ* measurements are not only key but mandatory to sustain state-of-the-art and fit for purpose ocean monitoring systems and a comprehensive knowledge base on the marine environment**. Many marine environmental parameters can only be taken by *in situ* technology. Thus, *in situ* ocean observations are essential to monitor the ocean interior at depth, to calibrate and validate satellite observations, and to provide information and knowledge for diverse users, spanning from research, to policy, to the blue economy, to society. *In situ* observing systems require human work and expertise, firstly to undertake high-quality sampling, and secondly for the quality control, processing and curation of the data post-collection, before it can be transformed into valuable information for enhancing marine knowledge.

The EU is strongly committed to the development of a coordinated system of global *in situ* ocean observations and has mature capabilities surrounding *in situ* ocean observations and marine monitoring. The **pan-European** requirement for **integrated and interoperable marine data, information, and knowledge** has given rise to **two cornerstone data services** of the European Commission (EC), serving as the backbone of marine knowledge: **EMODnet and the Copernicus Marine Service**.

The European Marine Observation and Data Network (EMODnet) is an EC operational marine data service, and a key marine knowledge initiative of EC DG MARE, with a core mandate for *in situ* marine data services, delivered at a multi-disciplinary pan-European scale. It provides Findable, Accessible, Reusable and Interoperable (FAIR) marine data and data products across seven broad marine environmental and human activities disciplines: physics, chemistry, biology, geology, bathymetry, seabed habitats, and human activities at sea. EMODnet is implemented by a network of more than 120 organisations and hundreds of experts in *in situ* marine data who work together to create pan-European data layers with metadata, aggregated from more than 600 marine data providers, infrastructures and services, to produce standardised, harmonized, and validated data and data products, according to international standards and made openly and freely available.

The Copernicus Marine Service, led by EC DG DEFIS and implemented by Mercator Ocean International, provides the European Union with a world-leading capacity for monitoring the ocean worldwide, through satellites, targeted *in situ observations*, and numerical models. *In situ* observations, which play a key role in constraining global and regional ocean analysis and forecasting systems, are collected, quality-controlled and delivered by a dedicated service-unit called the Copernicus Marine *In Situ* Thematic Assembly Centre (*In Situ* TAC). The *In Situ* TAC is based on a distributed model of production, and developed in coherence with other components of the pan European data management landscape. Today more than 350 data-providers are contributing to a targeted core set of parameters (temperature, salinity, currents, sea level, waves, chlorophyll-a, oxygen, nutrients, and carbon) delivered in near-real time and in delayed mode, and directly useable for initialization, forcing, assimilation and validation of ocean numerical models.

Following a **high-level agreement between DG DEFIS and DG MARE** and the signature of Memorandum of Understanding (MoU) in 2016, **the two services have ensured a complementarity of their offers that are developed and evolve in close interaction and synergies**. The Copernicus Marine Service and EMODnet have jointly set up a Marine *In Situ* Coordination Inter-service Working Group in 2021 bringing in experts from EMODnet, Copernicus Marine Service and the EuroGOOS operational oceanography networks. The aim of the group is to further optimise data flows, coordination, and synergies of *in situ* marine data required by both services.

The **main area of collaboration for *in situ* data provision are the operational oceanographic platforms (e.g., from the Global Ocean Observing System (GOOS) and EuroGOOS) and research infrastructures**. EMODnet works with Copernicus Marine Service to publish such operational oceanographic data and to integrate these data into EMODnet's wider portfolio of *in situ* marine data that are derived from diverse sources including: research-driven time-series of data (e.g., from research cruises/campaigns), the private sector, civil society (e.g., non-governmental organisations and citizen science), and increasingly data collected by public authorities (e.g., for regulatory monitoring).

Several **interfaces have been set up to take advantage of synergies and to optimize and improve the two services**. Illustrating this point, a subset of EMODnet Physics - a core set of highly qualified parameters - is provided by the Copernicus Marine *In Situ* Thematic Assembly Centre. This remains a specific component of EMODnet Physics, with EMODnet coordinating other *in situ* physical marine, coastal and land-sea interface data (e.g., on rivers, wind, underwater noise and other parameters). On the other side, some EMODnet thematics provide *in situ* data to the Copernicus Marine Service, e.g., EMODnet Chemistry provides *in situ* biogeochemical data required for the validation of Copernicus Marine biogeochemical models. And in turn, some EMODnet thematics utilise Copernicus Marine Service outputs to further constrain and reduce uncertainty in EMODnet integrated data products e.g., the EMODnet Seabed Habitats EUSeaMap.

Over the coming years, **the Copernicus Marine Service and EMODnet will continue their collaboration** to optimize data flows required by both services. They **are also working together to provide the backbone data infrastructure and the core data streams into a common data lake underpinning the European Digital Twin Ocean (DTO).**

The two services (EMODnet and Copernicus Marine *In Situ* TAC) are data aggregator services. They depend on upstream global, pan European and coastal *in situ* observing networks (GOOS, EuroGOOS, European Marine Research Infrastructures), amongst others, and associated data assembly and processing infrastructures (National Oceanographic Data Centres, SeaDataNet). **These upstream observation infrastructures need to be consolidated and sustained at the European level as part of the EOOS (European Ocean Observing System) initiative**[3].

[1] Satellites offer a global view of the surface of the ocean for a number of key parameters, which are essential for providing global coverage in near real-time, including for ocean forecasting and prediction.

[2] *In situ* ocean observations are collected by sensors and samplers placed in seawater, on/in the seafloor, the coastal zone and surrounding air.

[3] See EuroSea Final Conference Declaration; EurOCEAN 2023 Vigo Declaration; EOOS 2023-2027 Strategy; EMODnet Call to Action 2023

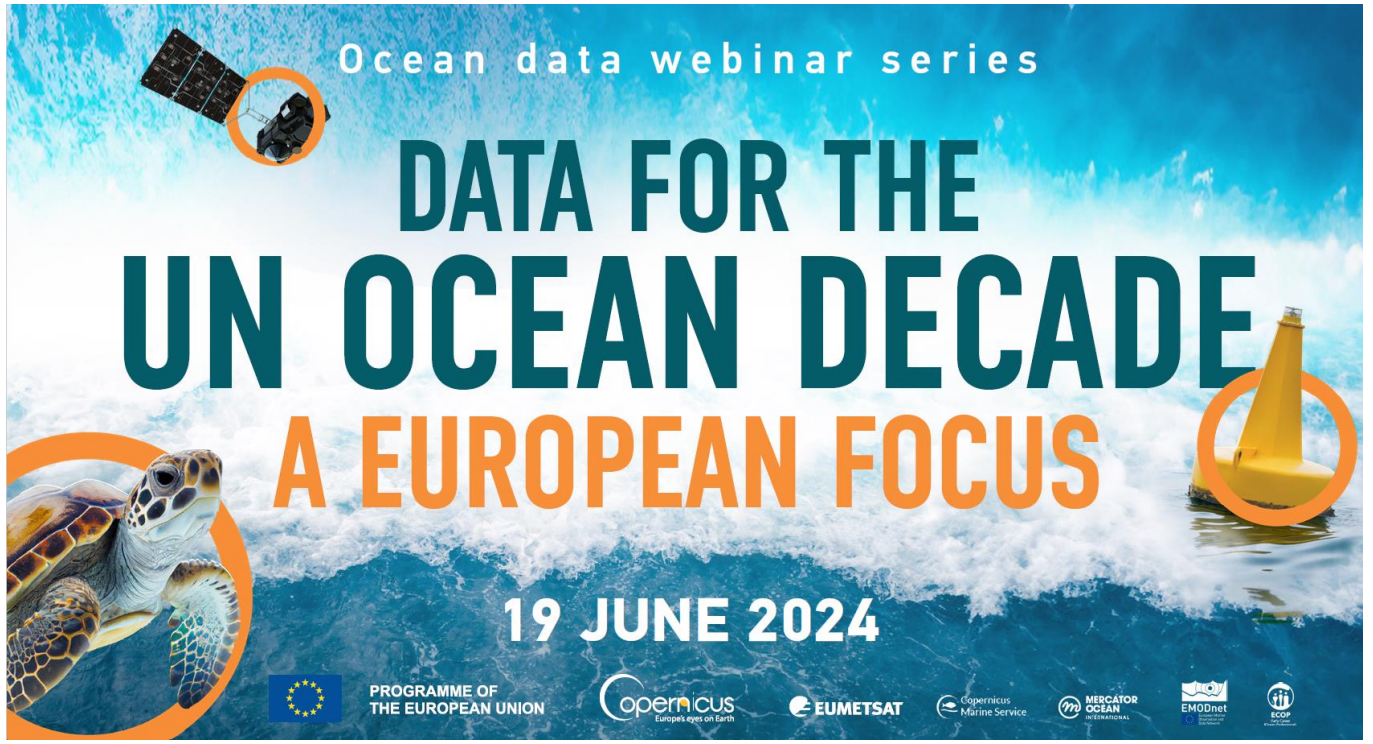
Joint Communication on EU marine data service in situ data offer and landscape (November 2023)

https://emodnet.ec.europa.eu/en/partnership/copernicus-marine-service

https://emodnet.ec.europa.eu/en/emodnet-and-copernicus-marine-service-release-joint-communication-european-situ-marine-data-service

EMODnet EU Partnerships

EMODnet, Copernicus Marine Service and EUMETSAT



Joint EU marine data services webinar, 19 June 2024:

- This event is in place of a side event at the UN Ocean Decade Conference 2024;
- The Webinar brings together EMODnet, EUMETSAT and Copernicus Marine Service to present these European marine data services and how they are individually and collectively contributing to global ocean data initiatives and the UN Ocean Decade;
- Registration will open in May 2024.

EMODnet EU Partnerships

JPI Knowledge Hub: Sea Level Rise

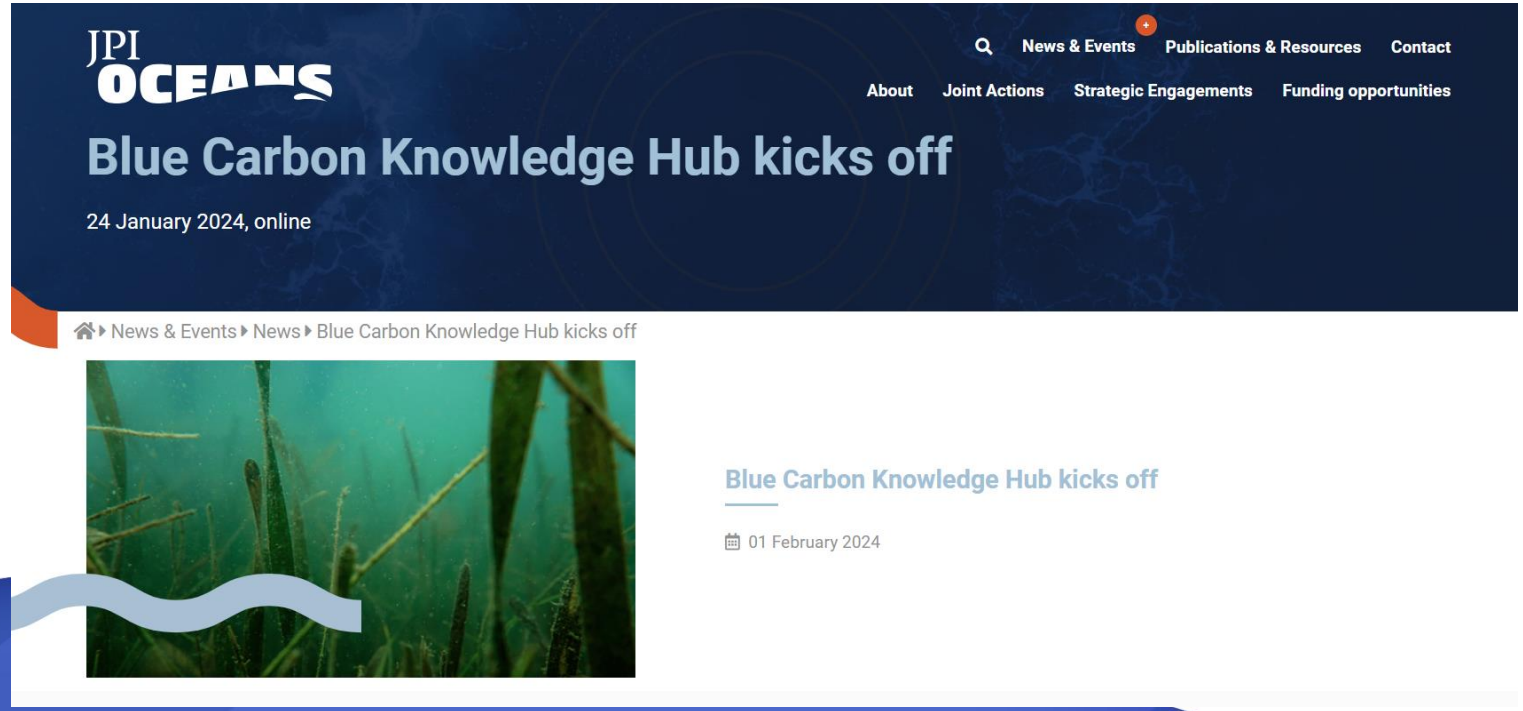
- Joint initiative between **JPI Climate** and **JPI Oceans** facilitating the interaction between research and policy on sea level rise;
- **EMODnet Contributions:** thematic experts e.g., Physics and Secretariat inputs to the first European assessment on sea level rise on relevant EMODnet data/data products, review of existing data services and platforms for sea level rise in Europe; Secretariat is handling editor for Chapter 5: Governance;
- **First Assessment report promoted at UN Ocean Decade Conference**. Launch to come in summer 2024, then plan regular periodic assessments.

Knowledge Hub on Sea Level Rise kicks off publication process of First Assessment Report

EMODnet EU Partnerships

JPI Knowledge Hub: Blue Carbon

- The **new (2024) Knowledge Hub Blue Carbon** aims to develop a network to facilitate the synthesis, exchange, and integration of knowledge on Blue Carbon ecosystems across Europe;
- The EMODnet Secretariat is facilitating **EMODnet input to KH Blue Carbon via EMODnet thematics Seabed Habitats and Chemistry;**
- **3 WGs are being set up on State-of-the-art; Policy Roadmap; Open Access Platform (OAP): EMODnet identified as a key existing data service**
- EMODnet expert input to **WG OAP kick-off meeting on 2 May 2024** (EMODnet Seabed Habitats, Secretariat confirmed)



EMODnet EU Partnerships

EMODnet Seabed Habitats input to EMB Future Science Brief: Habitat Mapping

- European Marine Board Future Science Brief No. 11 on ‘Marine Habitat Mapping’ written by the EMB Working Group on Marine Habitat Mapping;
- EMODnet Seabed Habiats provided experts to this EMB WG;
- EMODnet Secretariat were invited to review the document
- Very good visibility of EMODnet and EUSeaMap as state-of-the-art in pan-European Seabed Habitat Mapping
- Launch of Future Science Brief on 17th June 2024

EMODnet Partnerships: Overview of Global

EMODnet Secretariat, ALL

EMODnet Global Partnerships

EMODnet for the UN Ocean Decade

- **EMODnet is a UN Ocean Decade Implementing Partner (DIP)** since March 2023;
- EMODnet is active in European DIP meetings, and in dialogues with global ocean data ecosystem actors;
- EMODnet has a **dedicated WG: EMODnet for the Ocean Decade Coordination and Implementation Group** (**E4OD CIG):** Mapping exercise on EMODnet partners activities in UN Decade actions and programs still going on;
- **EMODnet is harvested by Ocean Data Information System (ODIS) of IOC-UNESCO and GEOSS** (since Autumn 2023)
- EMODnet has been designated as **primary attachment action to the Decade Coordination Office for Ocean Data Sharing** - it will be supporting the efforts of the Decade Coordination Office for Ocean Data Sharing towards addressing Decade Challenge 8, i.e. Creating a Digital Representation of the Ocean;
- EMODnet Secretariat presented at the **DCO-ODS & IODE joint webinar** (31 January 2024) : highlighted EMODnet as an important regional node contributing to ocean data sharing and interoperability to the global ocean data ecosystem (ODIS and OIH) and its contribution, together with Copernicus Marine Service, to the establishment of the public infrastructure for EU DTO;

- **Regional partnerships worldwide:**
  - Article on the EMOD-PACE collaboration at the EU policy journal #Friends of Europe – Published March 2024;
  - Tele-meeting with IMOS / AODN (Australia), EMODnet and with Copernicus Marine Service;
  - Open to dialogues with other regional data services and key actors, to achieve global ocean data interoperability.

EMODnet Global Partnerships

EMODnet for the UN Ocean Decade

EMODnet at the UN Ocean Decade Conference 2024

- Presence and visibility at the Ocean Prediction DCC booth;
- EMODnet Poster at the DIP poster session;
- EMODnet for the UN OD Decade video (LinkedIn/social media);
- Presence in several satellite events and sessions: e.g., Early Career Ocean Professionals for ECOPS, Challenge 8 digital representation of the Ocean; CoastPredict, Ocean Observing and low-cost technologies etc

EMODnet OSL 4.0 and events overview

EMODnet Secretariat, ALL

EMODnet OSL 4.0 Hackathon: *Save-the-date*

- **EMODnet Open Sea Lab 4.0 (OSL 4.0) is the fourth edition of the flagship EMODnet hackathon series;**
- **OSL 4.0 will take place 12-15 November 2024 as a virtual hackathon**
- **Main scope and aim:** EMODnet's key role in providing diverse FAIR *in situ* marine data to the European Digital Twin Ocean (DTO); Aim is to test the EMODnet offer on the EDITO Platform, develop new applications using EMODnet data (also in combination with other open source data e.g., Copernicus Marine Service)
- **EMODnet – led event**, with Challenge criteria to include use of EMODnet data in all applications;
- **Target audience:** Marine professionals for testing the EMODnet data in the EDITO platform. Public promotion plus targeted promotion to marine data services and initiatives (EU, Regional, National and other regions worldwide, EU projects, marine data professionals);
- **EMODnet Coordinators, Partners, Technical Working Group are invited as coaches and mentors** (also wider experts tbc)

NB: External communication will only start after DOF2024!

NBB: EMODnet is contributing expertise to OceanHack4EU (Copernicus Marine Hackathon 3-7 June 2024)

EMODnet at external events

Upcoming events

May 2024:
- Geospatial World Forum (industry-led)
- MSFD WG DIKE / TG Data
- IMDIS 2024
- Digital skills summit
- EMD 2024

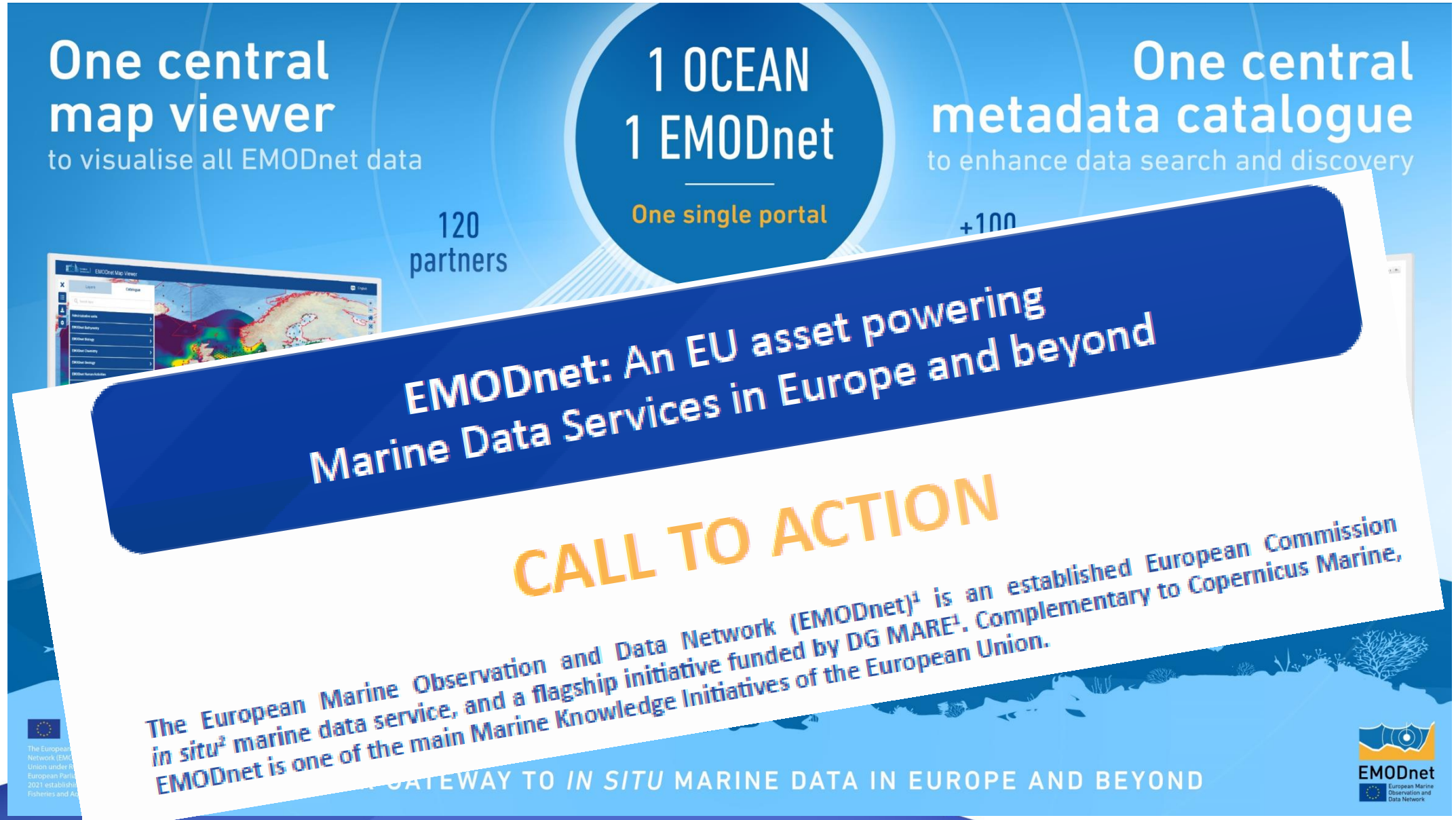
June 2024:
- Copernicus Marine Service GA 2024; OceanHack4EU Copernicus Hackathon
- Ecopath 40 years Conference
- DOF 2024

September 2024:
- ICES 2024
- Other

EMODnet Future Look

EMODnet Secretariat, ALL

EMODnet: Unified Service and Community Call to Action 2023



EMODnet Future Look

EMODnet Vision 2035 In a Nutshell

- **Time-line:** To develop in calendar year 2024
- **Vision time-frame**: 10 years, to 2035
- **EMODnet Vision 2035 Drafting Group** composed of representatives from all EMODnet components (7 thematics, data ingestion, Central Portal, Secretariat, Associated Partners, Sea-basin Checkpoint Coordinators, wider stakeholders (SeaDataNet, EuroGOOS, EuroGeoSurveys, ICES, IODE, UN OD Data Coordination Office): VDG coordinates the Vision 2035 document, taking into account feedback from stakeholder consultation;
- **First EMODnet VDG meeting took place in April 2024, further meetings in June and September 2024 (tbc)**;
- **EC DG MARE are observers to the VDG and all EC and EU agencies are welcome to provide input**;
- **Public consultation (EU Survey) in summer 2024**. Open to all. Feedback will be considered by the VDG;
- **Vision 2035 content and format:** Visual document with roadmap, **focusing on the EMODnet service evolution**. The Vision 2035 is NOT about governance or funding of EMODnet (separate partner discussions ongoing). The Vision 2035 will present a new EMODnet Vision to 2035, an EMODnet mission statement and value proposition, key pillars and components of EMODnet and their evolution, building upon the 2008 EMODnet Vision, EMODnet Call to Action 2023, Recommendations from the EMODnet Open Conference and Jamborees and additional stakeholder consultation;

Closing day 1

DG MARE, EMODnet Secretariat

EMODnet

European Marine Observation and Data Network

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Stay up-to-date with the latest news

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