



EMODnet

 European Marine
Observation and
Data Network

European Marine Observation and Data Network – advancing marine knowledge to support EU policies and innovation

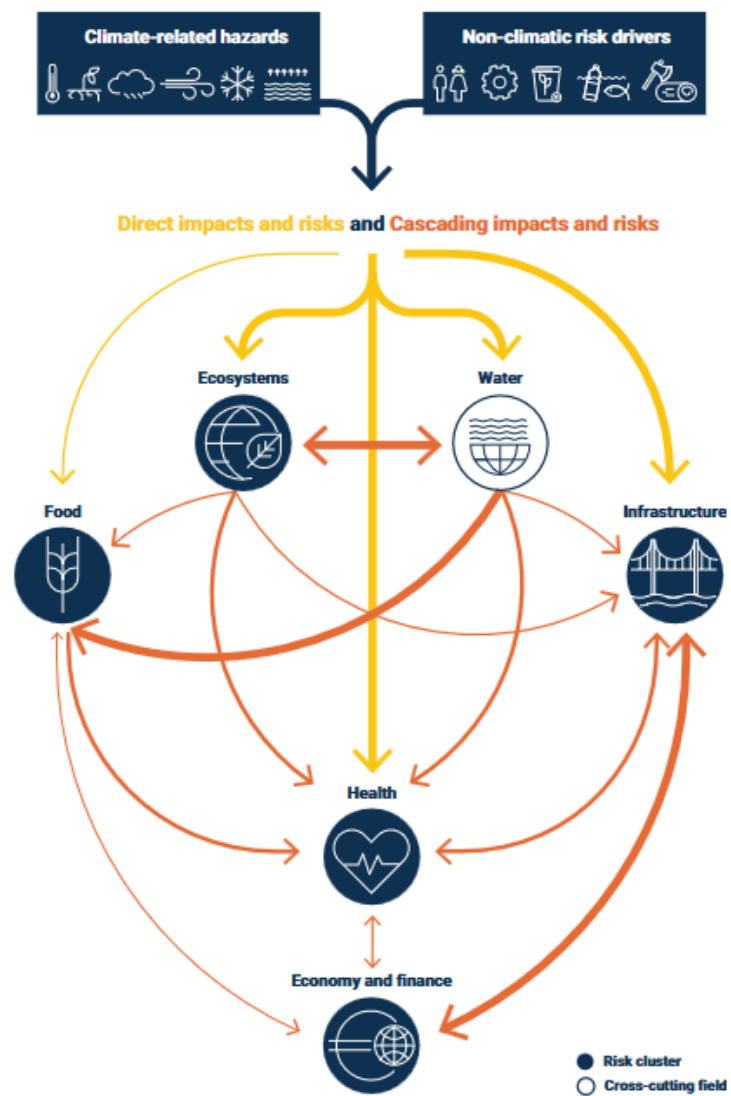
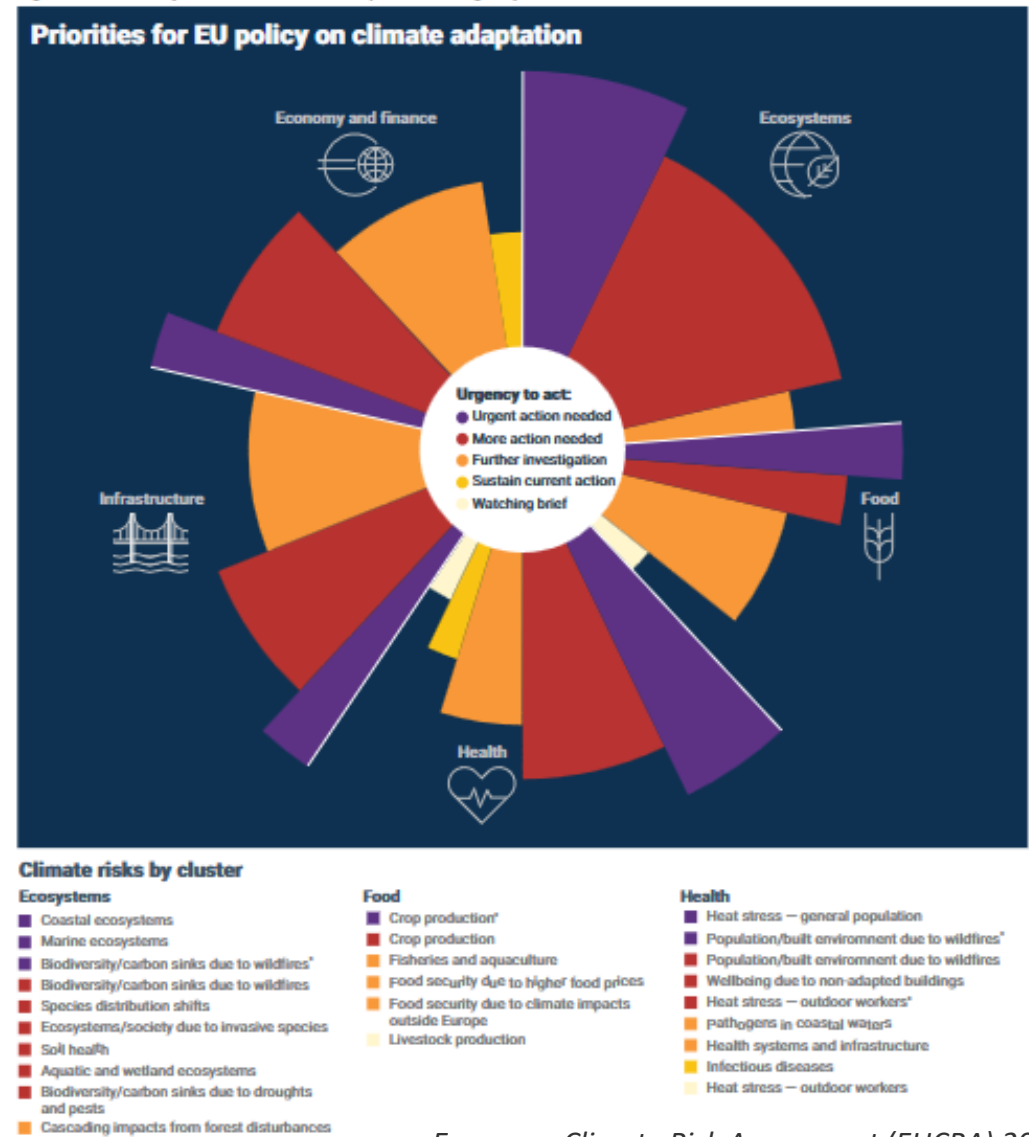
Dr Kate Larkin
Head, EMODnet Secretariat

20 March 2025, EU Open Data Days 2025



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.

What is the role of the Ocean in EU policy? e.g., climate adaptation



Coastal and marine ecosystems require urgent action (EUCRA, 2025) and **marine knowledge is crucial** to understand the **direct and cascading impacts and risks** to weather and climate, food security, infrastructure, health and economy and finance

European Climate Risk Assessment (EUCRA) 2024 report: <https://www.eea.europa.eu/en/analysis/publications/european-climate-risk-assessment>

How is marine knowledge already supporting EU policy, the Blue Economy, Research and Innovation and society at large?



European Commission

EN

EU Science Hub

Home > JRC news and updates > Marine litter on the EU coastline down by almost one-third

NEWS ANNOUNCEMENT | 4 February 2025 | Joint Research Centre | 2 min read

Marine litter on the EU coastline down by almost one-third

But more needs to be done, as it is still above the agreed threshold value.



WORLD BANK BLOGS

HOME ALL BLOGS TOPICS CONTACT

Published on Eurasian Perspectives

Addressing Pollution in the Black Sea

PAOLA AGOSTINI EOLINA PETROVA MILOVA & SAMEER AKBAR | JUNE 04, 2023

This page in: English



Green sea weed on the rocks c

euro news.

Latest Europe World EU Policy Business Travel Next Culture Green Health

> Green > Series > Ocean



European Commission

EN

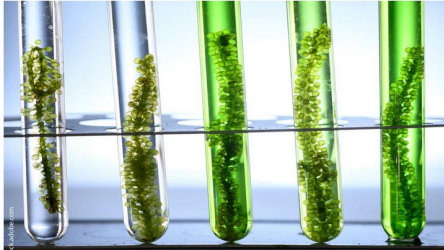
Food, Farming, Fisheries

Oceans and fisheries

Home > News > EU Blue Economy report 2024: innovation and sustainability drive growth

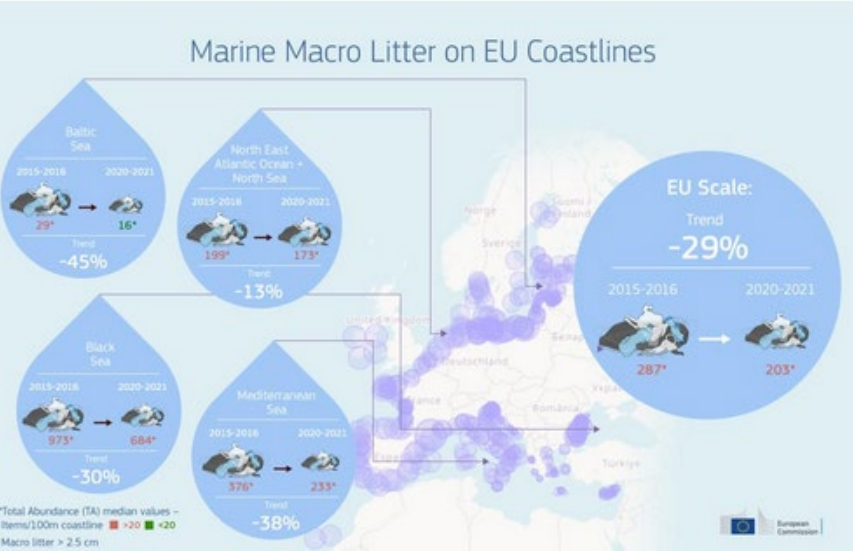
NEWS ANNOUNCEMENT | 30 May 2024 | Directorate-General for Maritime Affairs and Fisheries | 3 min read

EU Blue Economy report 2024: innovation and sustainability drive growth



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Invasive species: Are they really threatening the Mediterranean Sea and local fisheries?



euronews. green

INVASIVE SPECIES EXPLAINED

Copyright

PROMOTED CONTENT

Energy, Environment & Transport

North Sea countries aim for 300 GW of offshore wind energy by 2050

Nine European countries signed the Ostend Declaration on Monday (24 April), aiming to jointly produce at least 120 gigawatts of offshore wind energy by 2030 and at least 300 gigawatts by 2050 in the North Sea.



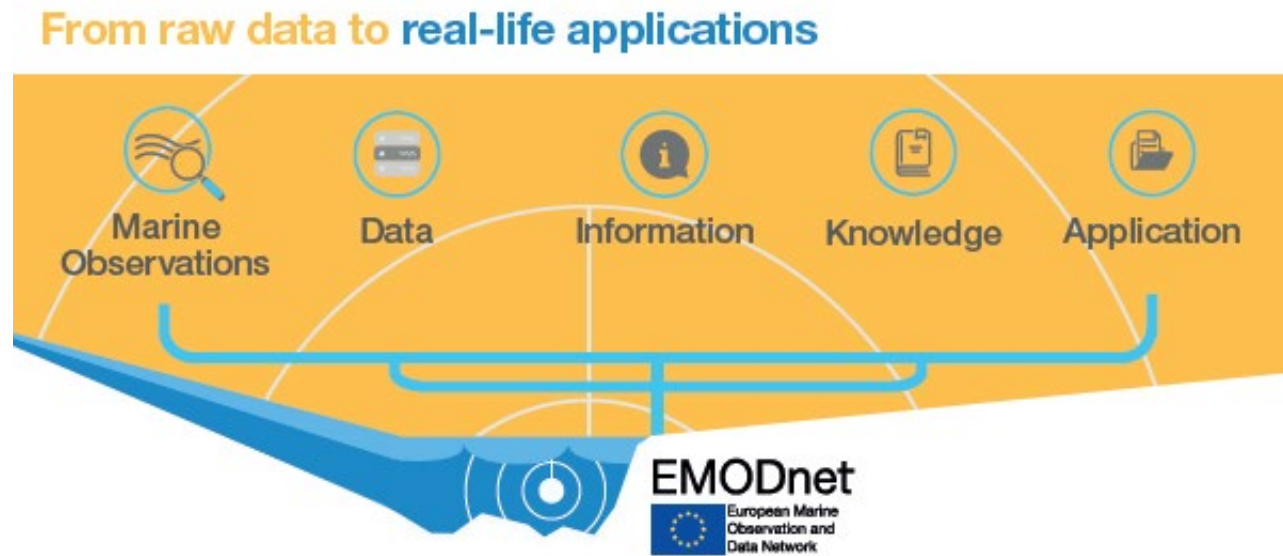
Ocean observations: The foundation of marine knowledge



***In Situ* ocean observations**
(collected in/around water)
are collected by thousands
of independent efforts, for
different reasons.

The **shear diversity** of *in situ* ocean observations
presents a challenge for
marine knowledge
provision.

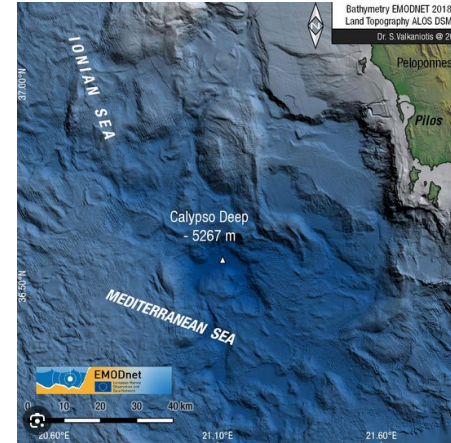
EMODnet provides a key solution: transforming *in situ* ocean observations (primary data) into useful marine knowledge, across European regional seas and beyond



- EMODnet is the **European *in situ* marine data service** of the European Commission EC DG MARE;
- EMODnet is a **unique EU asset for marine knowledge**, offering Open and FAIR data and data products for the marine environment and human activities at sea, as a public service for all.

Why does EMODnet focus on *in situ* data? Multi-disciplinary marine knowledge at local, National, regional, European and global scales

- *In situ* data are essential to provide more **localised spatial and temporal resolution and depth profiles**, including data beyond the reach of satellites e.g., Calypso Deep (5,200 m off Pylos, Greece, Ionian Sea);
- *In situ* data are crucial to **validate satellite-derived data** and as input to computer models;
- Data-driven scenarios: The **reliability of computer simulations and scenarios e.g., of climate change, is critically dependent on the reliability of the data used to calibrate it.** This requires high-volumes of standardised open data from trusted sources!



Arctic Checkpoint



Atlantic Checkpoint



Baltic Sea Checkpoint



Black Sea Checkpoint



MedSea Checkpoint



North Sea Checkpoint



One central map viewer

to visualise all EMODnet data

1 OCEAN 1 EMODnet

One single portal

One central metadata catalogue

to enhance data search and discovery

120
partners

+100
use cases

Discover, visualise and
download marine data and products
across 7 thematics and hundreds of parameters



BATHYMETRY



HUMAN ACTIVITIES



PHYSICS



GEOLOGY



SEABED HABITATS



CHEMISTRY



BIOLOGY



EMODNET.EC.EUROPA.EU

YOUR GATEWAY TO *IN SITU* MARINE DATA IN EUROPE AND BEYOND

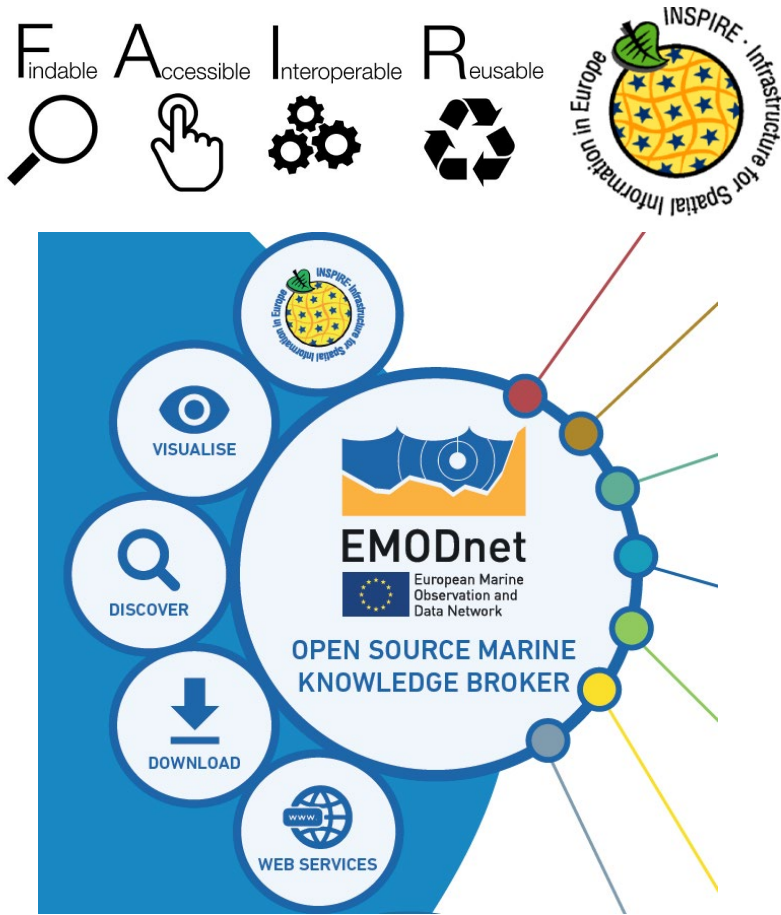


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EMODnet
European Marine
Observation and
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EMODnet: A success story in Open Data for the marine domain



- EMODnet is an early adopter and implementor of the **European INSPIRE Directive** and embodies the **Findable, Accessible, Interoperable and Reusable (FAIR)** data principles;
- EMODnet applies **European data standards (e.g., INSPIRE)** and **international metadata standards (e.g., ISO)** and is underpinned by a **single metadata catalogue (GeoNetwork)**;
- EMODnet's data collections are as open as possible (as closed as necessary) and **EU-funded data products are fully open access** (Creative Commons CC BY 4.0);
- EMODnet's web services follow **Open Geospatial Consortium (OGC) standards** WMS, WFS, WebS and OpenDAP, with machine-to-machine readability and Application Programming Interfaces (APIs)



emodnet.ec.europa.eu



EMODnet: Driven by a unique network of more than 120 partner organisations and *in situ* marine data experts across EU Member States and beyond

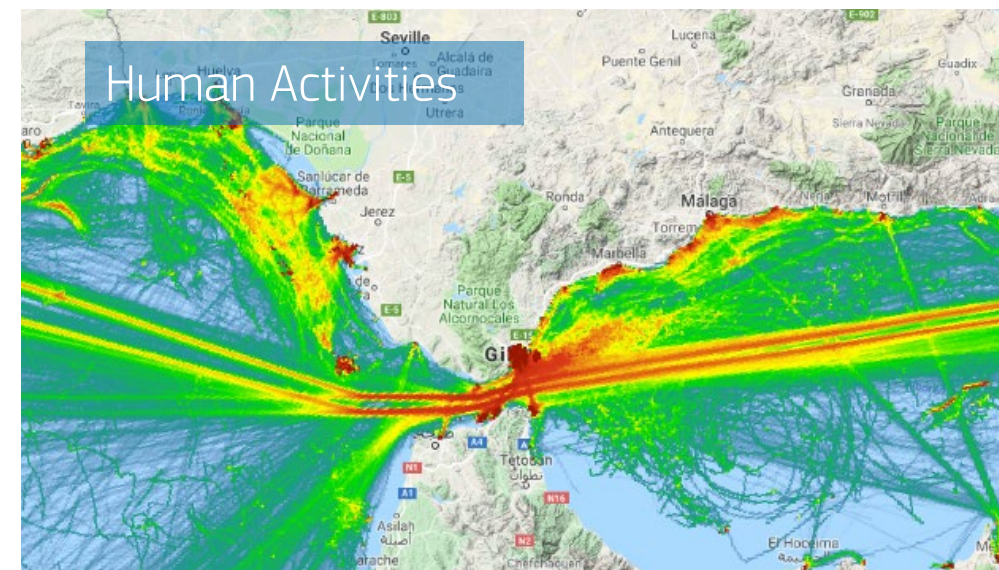
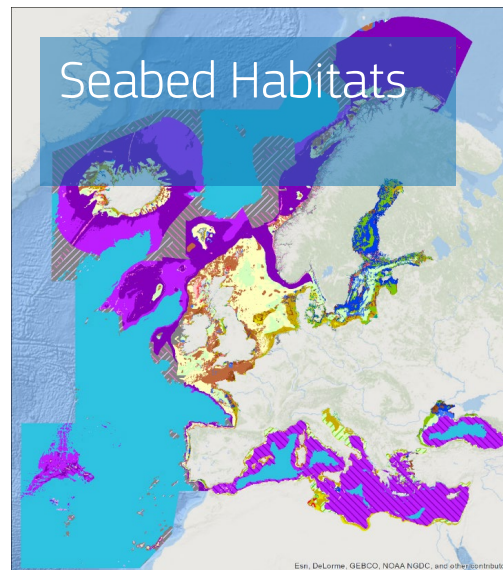
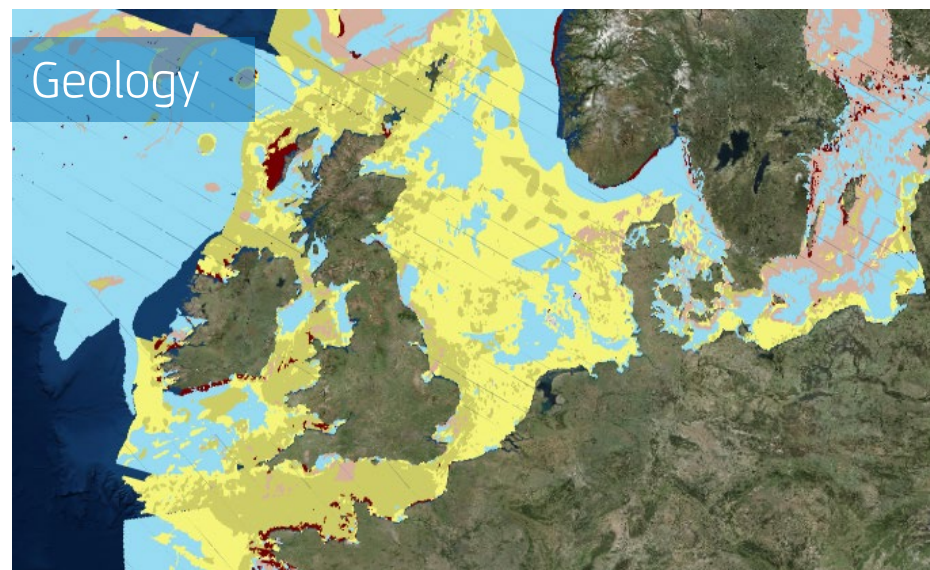
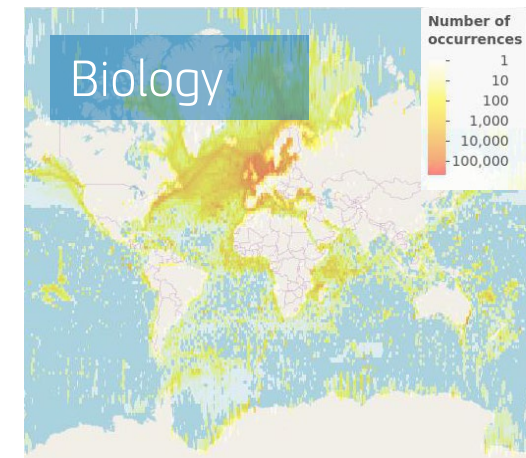
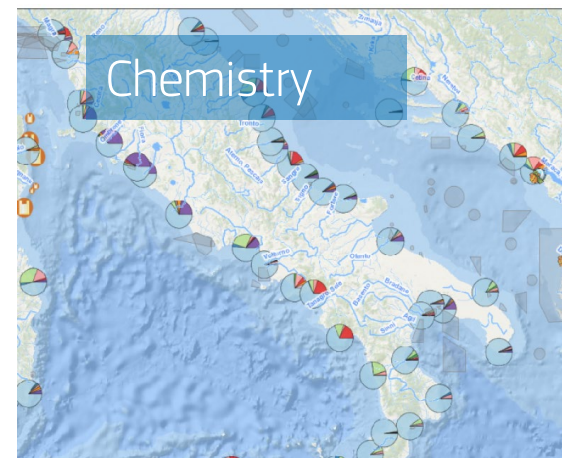
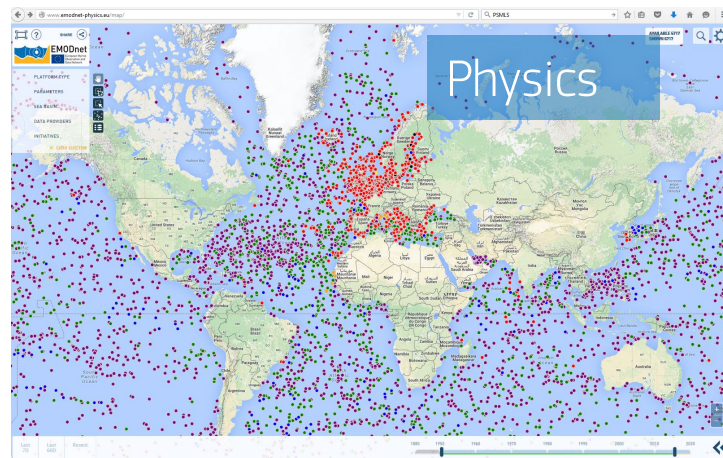
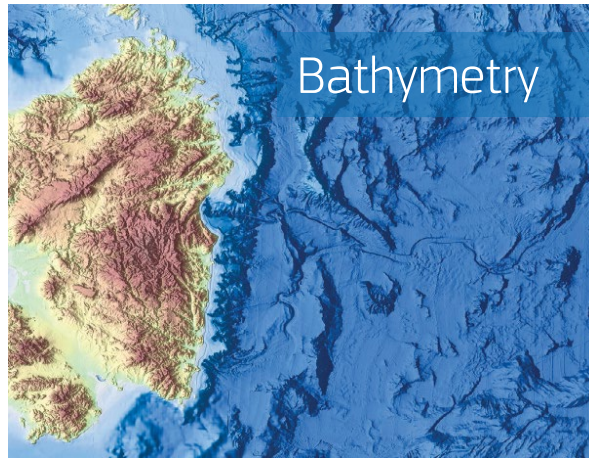


Figure 1. © EMODnet Secretariat TWG meeting group photo October 2024



EMODnet partners and stakeholders at the EMODnet Open Conference 2023, 29-30 November 2023. Image copyright: Serena Vittorini, official event photographer

EMODnet: The power of Open Data and expertise, democratising marine knowledge

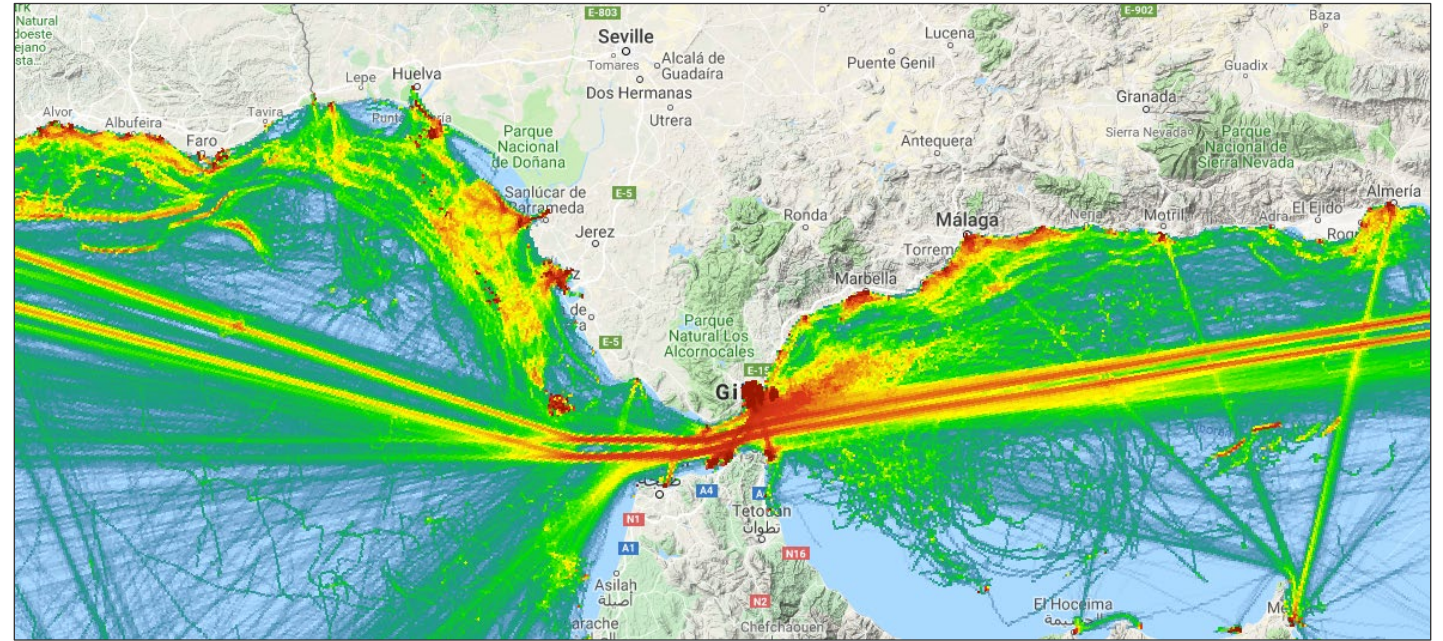


EMODnet: The power of Open Data and expertise, democratising marine knowledge

Collect data once, use many times

The benefits of Open and FAIR data:

- reduce uncertainty
- increase productivity and cost-effectiveness;
- add value and impact to your data;
- stimulate innovation.



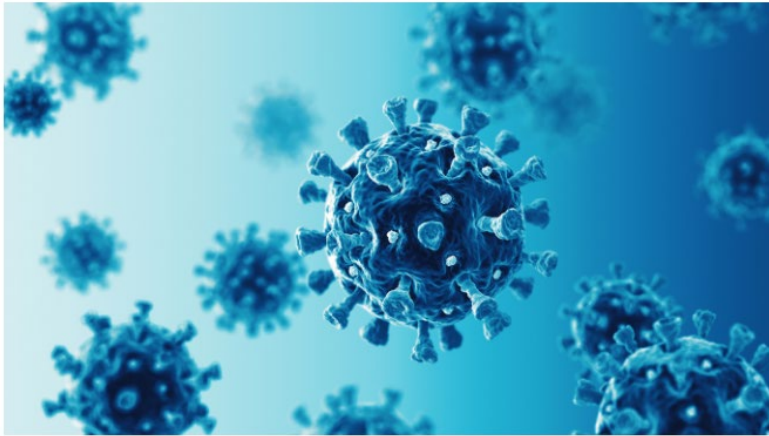
Vessel Density by EMODnet Human Activities, on the EMODnet Map Viewer. The map is a grid with 1 square kilometre cells, each with a colour gradient for vessel density.

EMODnet: The power of Open Data and expertise, democratising marine knowledge

Assessing trends in the Blue Economy: EMODnet's Vessel Density composite data product, used to assess the impact of COVID-19 on the Blue Economy

EMODnet Human Activities » News » Estimating the impact of COVID-19 on fishing

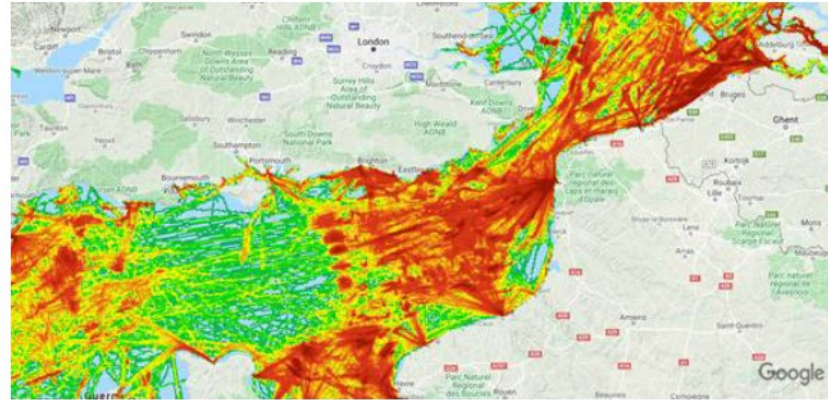
Estimating the impact of COVID-19 on fishing



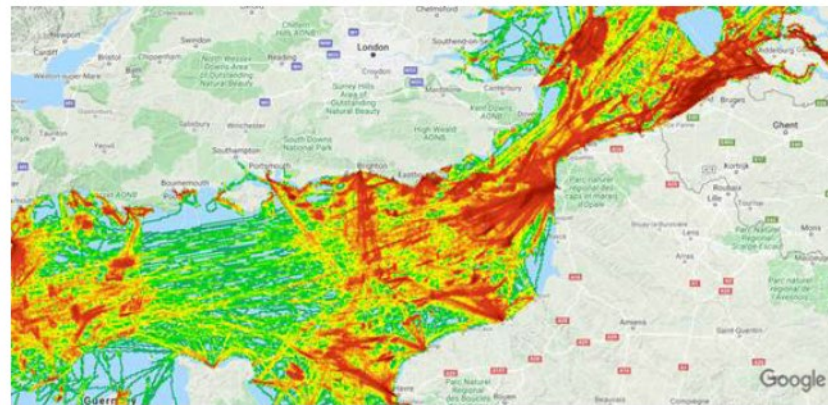
“...on average fishing vessel density reduced by 18% compared to the same period in 2019 in EU sea basins.”

Information from EMODnet Human Activities and the European Market Observatory for Fisheries and Aquaculture Products (EUMOFA)

April 2019



April 2020



EMODnet Vessel density composite maps
The English Channel / La Manche / Het Kanaal

EMODnet for Policy: Maritime Spatial Planning (MSP)

A focal point for EU Open Data for MSP: EMODnet works directly with EU Member States to make national MSPs accessible as FAIR geospatial layers, promoting cross-border MSP and advising the Technical Expert Group on MSP Data



Maritime Spatial Planning Data Framework (MSPdF)

How to structure input data for MSP process, monitoring & evaluation



Abramic, A., Norton, D., Sarretta, A., Menegon, S., Katsika, M., Gekas, V., Rybka, K., Fernández-Palacios, Y.
Produced by Technical Expert Group (TEG) on Data for MSP.

European Commission | EMODnet Map Viewer

EN English

Layers | **Catalogue**

Main Ports >

Maritime Spatial Planning v

- ☒ MSP Spatial Plan Area
- ☒ MSP Zoning Areas
- ☒ MSP Zoning Lines
- ☐ MSP Zoning Locations

Military Areas >

+ Add external layers

Marine regions Search for a region ...

Change basemap EMODNET World Base Layer

500 km -43.92010, 65.69055

MSP Spatial Plan Area

The dataset on Maritime Spatial Planning (MSP) in the EU was created in 2021 by CETMAR for the European Marine Observation and Data Network (EMODnet). It is the result of the aggregation and harmonization of datasets provided by several sources. It is released as soon as a new plan is adopted or updated by an EU member state and it is available for viewing and download on EMODnet web portal (Human Activities, <https://emodnet.ec.europa.eu/en/human-activities>). The dataset contains polygons, points and lines representing Maritime Spatial Planning (MSP) in the following countries: Belgium, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Netherlands, Poland, Spain and Sweden. The MSP dataset is made up of 3 types of spatial features: MSP Spatial Plan, MSP Zoning Element and MSP Supplementary

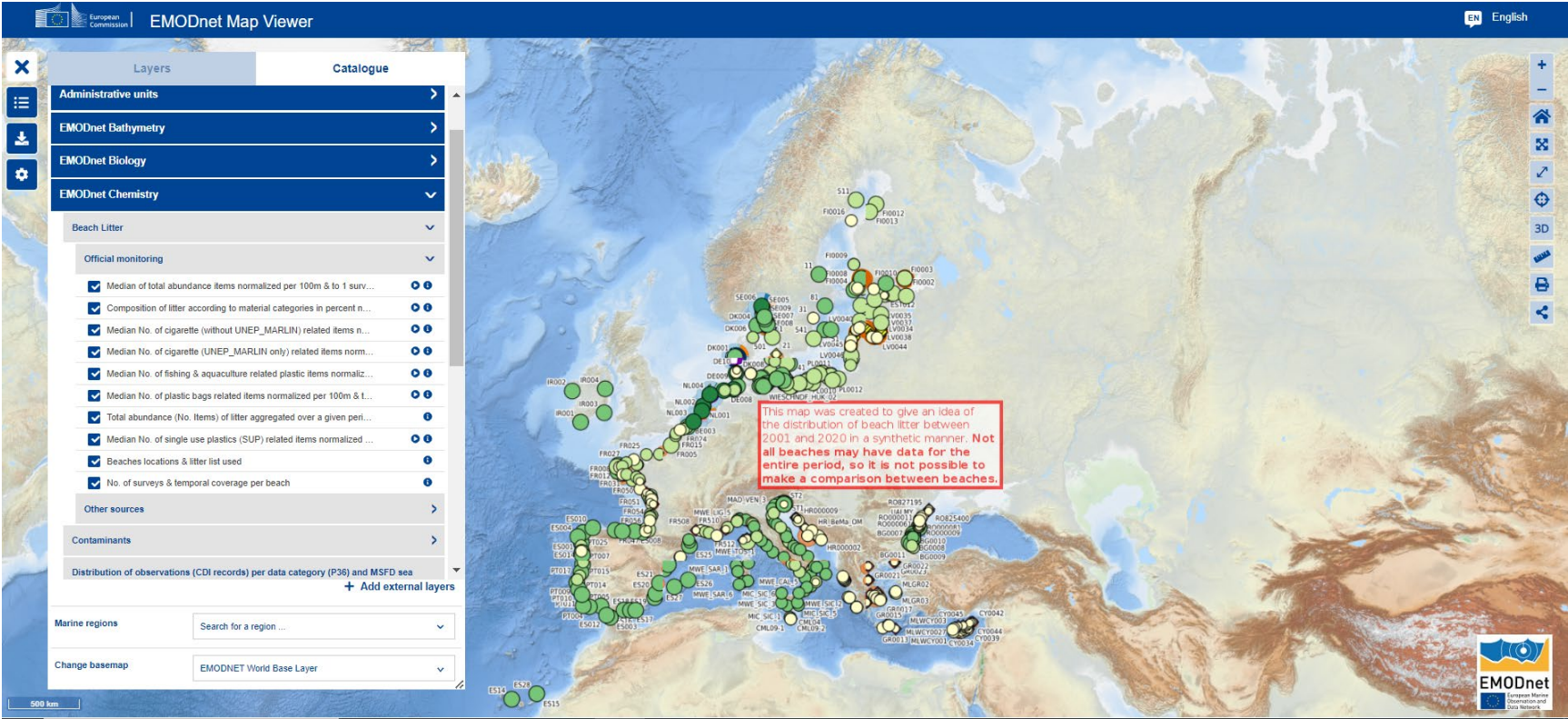
Metadata Download

EMODnet
European Marine Observation and Data Network

EU Member State Maritime Spatial Plans on EMODnet Map Viewer, noting not all EU Member States are currently available as the Member State must first provide EMODnet with metadata to enable EMODnet to produce geospatial layers

EMODnet for Policy: EU Marine Litter database

Supporting policy implementation of the EU Marine Strategy Framework Directive, Descriptor 10



EMODnet’s aggregated, harmonized and FAIR marine litter data and marine knowledge supports evidence-based policy-making

EMODnet EU Marine Litter database on EMODnet Map Viewer: A product co-designed with European Commission, the Joint Research Centre, Regional Sea Conventions and EU Member States

EMODnet for Policy: EU Marine Litter database

Supporting policy implementation of the EU Marine Strategy Framework Directive, Descriptor 10



EMODnet's aggregated, harmonized and FAIR marine litter data and marine knowledge supports evidence-based policy-making and drives positive change!

Marine macro litter EU report 2024, source: https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/marine-litter-eu-coastline-down-almost-one-third-2025-02-04_en



emodnet.ec.europa.eu



EMODnet for Policy: Supporting National, regional, European and International Policy and Ocean Governance



EMODnet's Chemistry data (nutrients and chlorophyll) were used in the **UNEP MAP 2017 Quality Status Report** and European MSFD on Good Environmental Status (GES) in the Mediterranean Sea (among others)

EMODnet Biology's direct contribution to EurOBIS and international OBIS brings millions of marine biodiversity data to global users, used for international marine assessments e.g. UN World Ocean Assessment.

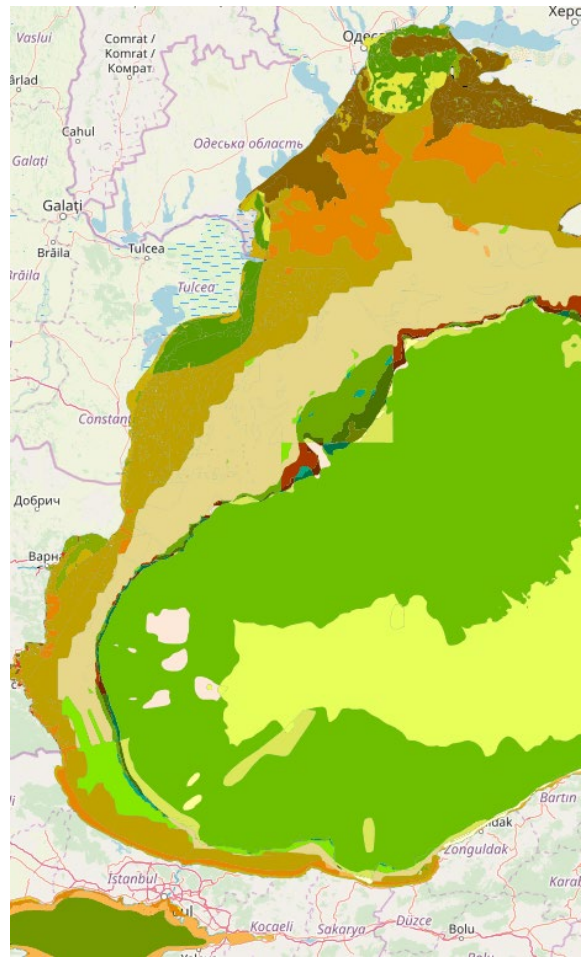


EMODnet's services are routinely used as a trusted source of marine knowledge to support **existing European Integrated Maritime Policy** implementation.

And EMODnet stands ready to serve the marine knowledge needs of **emerging policy** e.g., Nature Restoration Law, Marine Biodiversity Beyond National Jurisdiction (BBNJ).....

EMODnet: The power of Open Data for integrated marine knowledge

EUSeamap broadscale seabed habitat map using interoperable, cross-thematic data

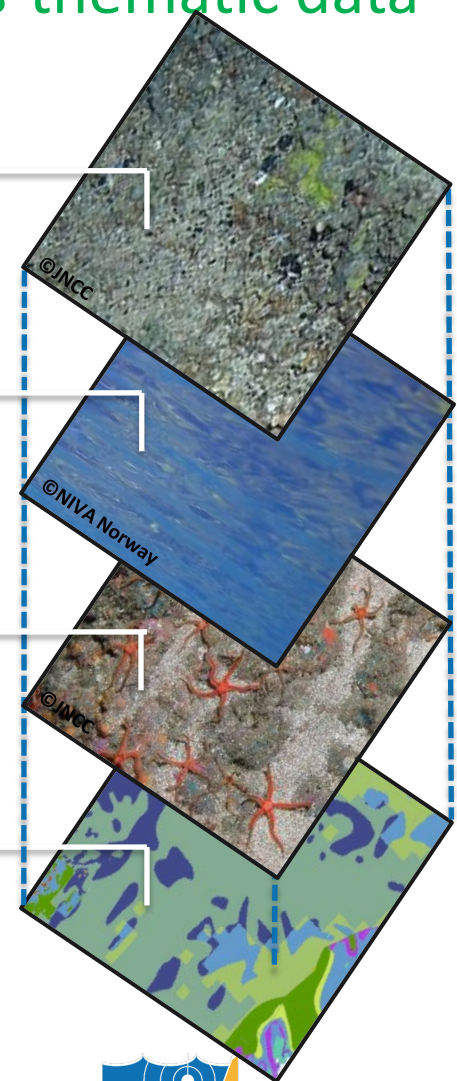


 Substrate
E.g. Sand, Mud, Rock

 Hydrodynamic Energy
Wave and currents climate at the seabed

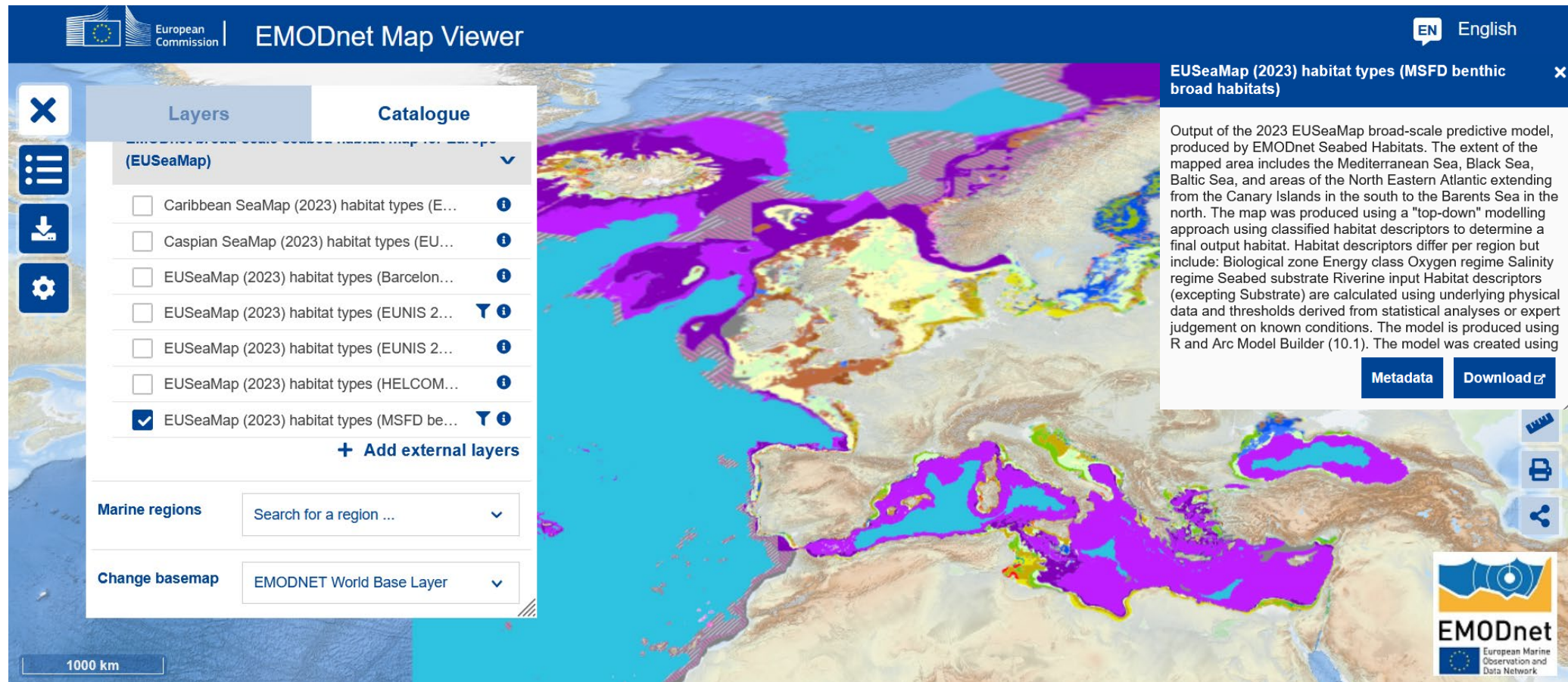
  Biological Zone
Infralittoral, circalittoral etc

 Predictive habitat maps
EUNIS A3.1: Atlantic and Mediterranean High Energy Infralittoral Rock



EMODnet: The power of Open Data for integrated marine knowledge

EUSeamap broadscale seabed habitat map using interoperable, cross-thematic data



EUSeamap on EMODnet Map Viewer, version EUSeamap (2023) habitat types (MSFD benthic broad habitat types (also available in other habitat types e.g., EUNIS, HELCOM) and for the Caspian Sea and the Caribbean Sea

EMODnet: Digital Terrain Model seafloor map

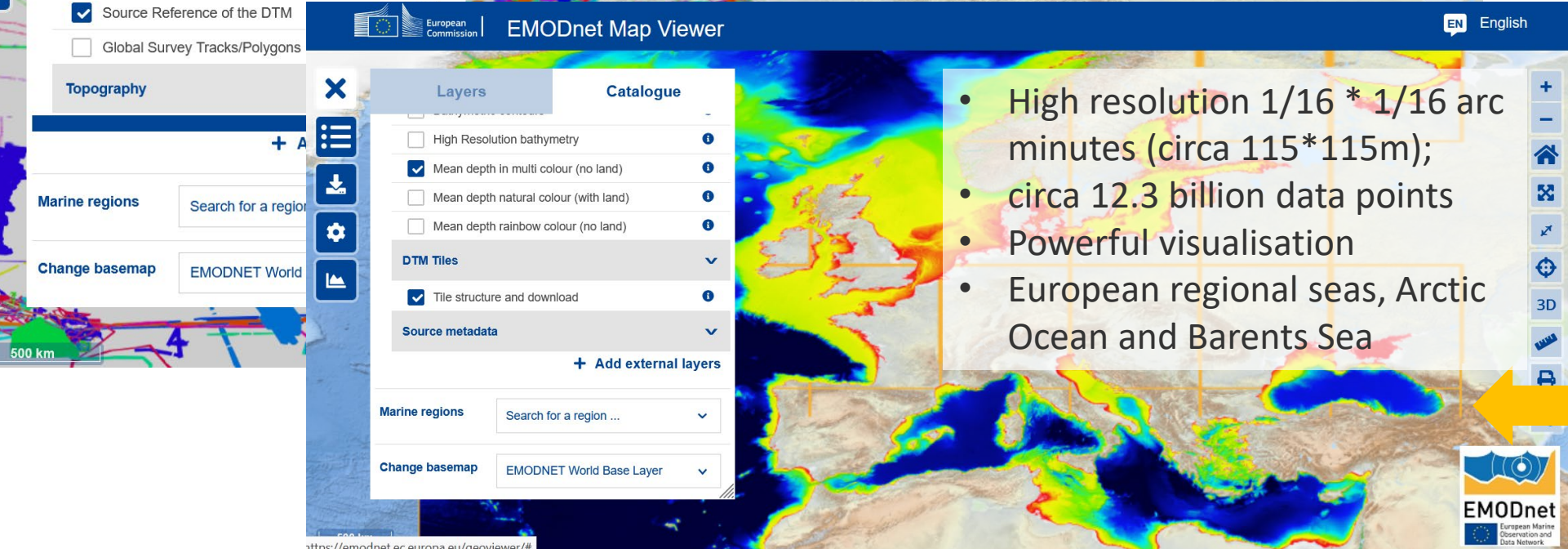
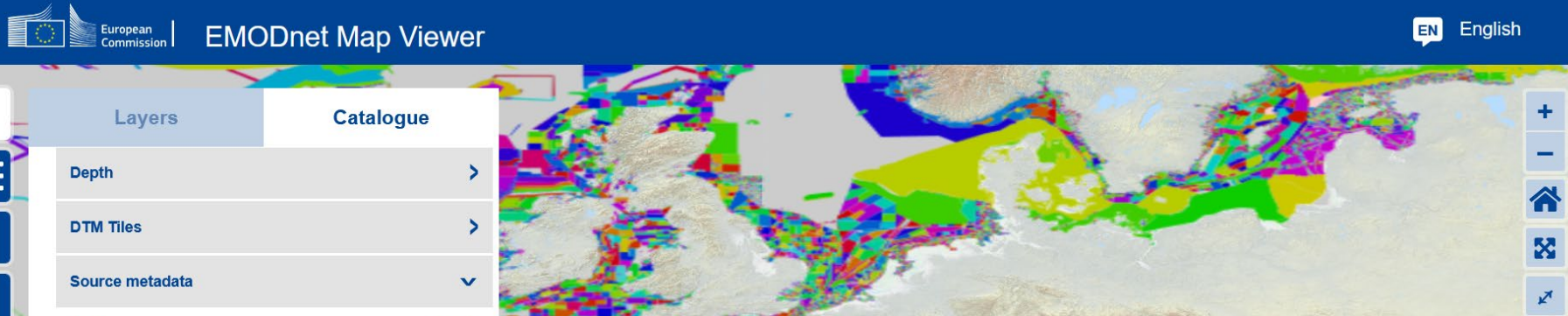
Transforming *in situ* Bathymetry surveys into open data, at European scale



Soundings data (*in situ* surveys) collected by EU member states, the private sector (and others)



Processed by EMODnet into the **EMODnet Digital Terrain Model** of the European seabed. Contributor to global Seabed 2030 initiative.



EMODnet for the Blue Economy

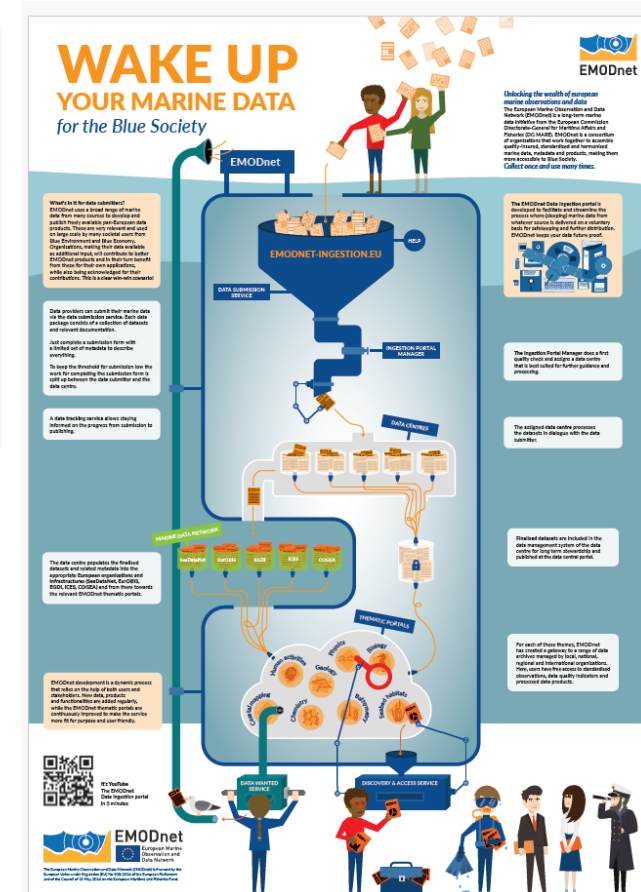
A go-to service for the private sector for activities at sea, and for data sharing



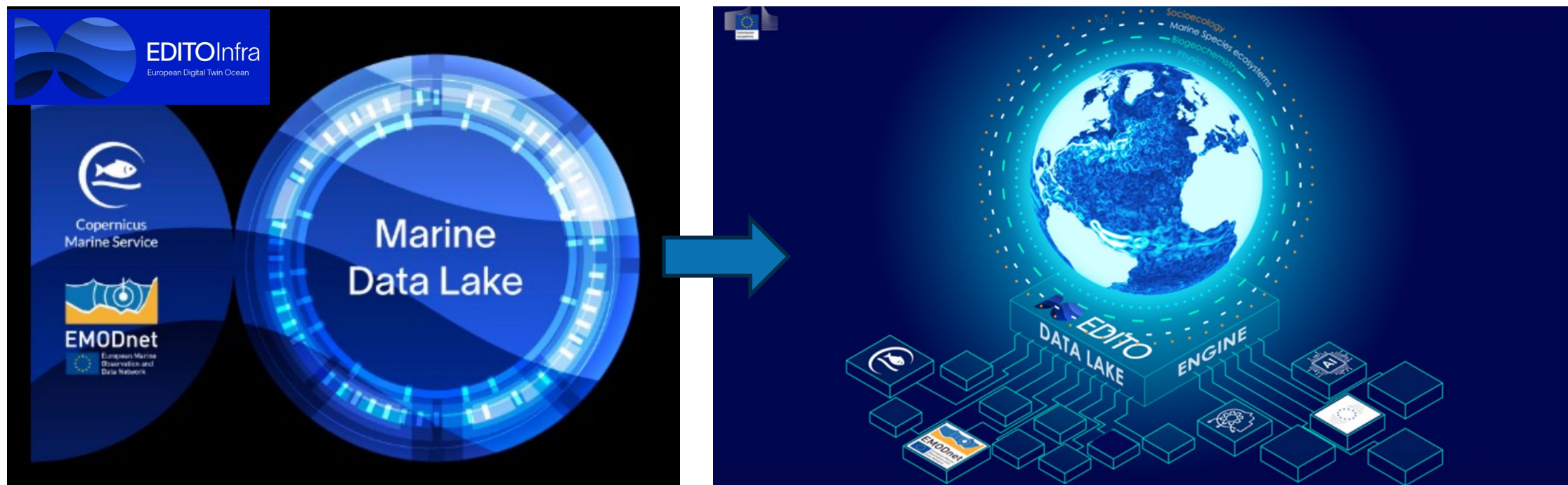
«We realise the importance of EMODnet data and data products e.g. Bathymetry, Physics in reducing uncertainty and improving offshore energy operators costs in mico-siting of cables».

Van Oord: EMODnet Associated Partner,
Member of UN Ocean Decade cooperate data sharing group

- EMODnet's marine knowledge offer **reduces costs and uncertainty**
- EMODnet **promotes private and public data sharing**
- EMODnet **Data Ingestion** supports stakeholders to ingest their data, e.g., Private sector, European projects, Citizen Science
- EMODnet provides **free and public guidance** (documentation) and training (webinars, events) on Open and FAIR data & metadata



EMODnet: The *in situ* data component of the European Digital Twin Ocean



EMODnet in partnership with **Copernicus Marine Service** for the **EU DTO**
3 core marine knowledge assets for the marine component of EU open data, on the cloud



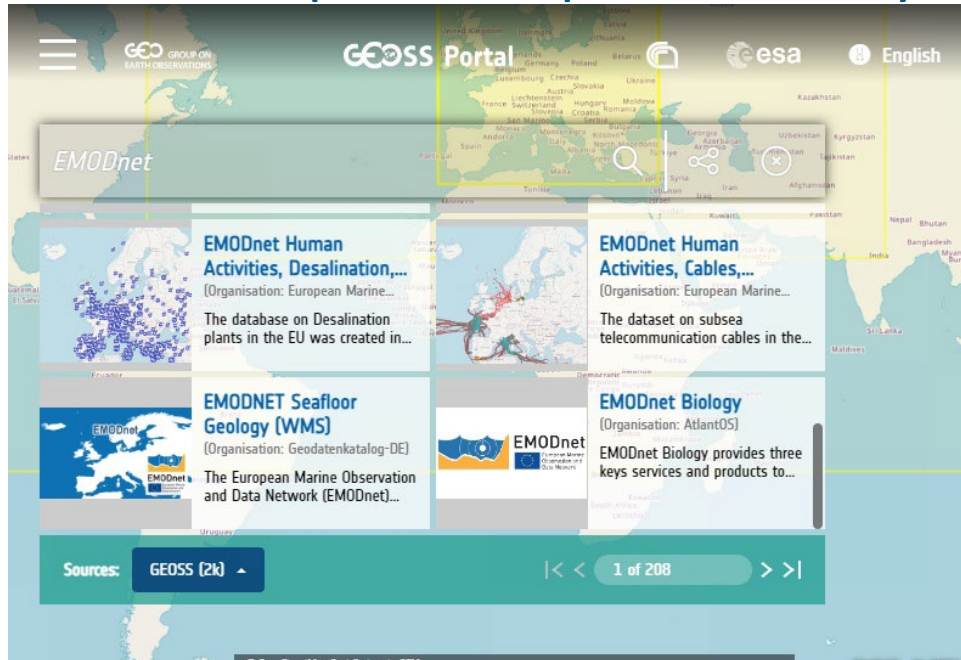
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EMODnet: A European marine data best practice with global reach, and a recognised contributor to the Global Ocean Data Ecosystem

GEOSS Portal

International portal, implemented by ESA



Ocean Data and Information System (ODIS)

Implemented by IODE of IOC/UNESCO

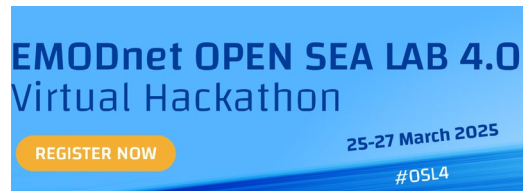


EMODnet is an active contributor to the UN Decade of Ocean Science for Sustainable Development, the UN 2030 agenda, and other global policy frameworks.

EMODnet in a ~~nut~~-seashell

- **Your partner for Open Data in the marine domain...***in situ* ocean data, data products and services for European seas and beyond, at your fingertips!
- EMODnet is a **core EU marine knowledge asset** for the EU Green Deal, the European Digital Twin Ocean (EU DTO), the Mission: Restore our Ocean and Waters and the European Oceans Pact;
- **EMODnet today makes a difference** to EU Policy, the Blue Economy, Research and Innovation etc, with **>120,000 annual visitors** and **hundreds of use cases**;
- EMODnet is a **recognised European (regional) best practice in Open Data for the marine domain** and **key contributor to the global ocean data ecosystem**.

Join **EMODnet's Open Sea Lab 4.0 Hackathon** and **test EMODnet's data on EU DTO!**



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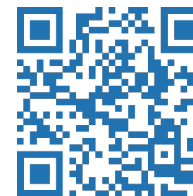




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the latest news

