European Marine Observation and Data Network (EMODnet):
EMODnet: A best practice in Findable, Accessible, Interoperable and Reusable (FAIR) marine data sharing for the EU Green Deal and UN Ocean Decade

EMODnet data for Offshore Renewable Energy

21st October 2022

EMODnet Secretariat

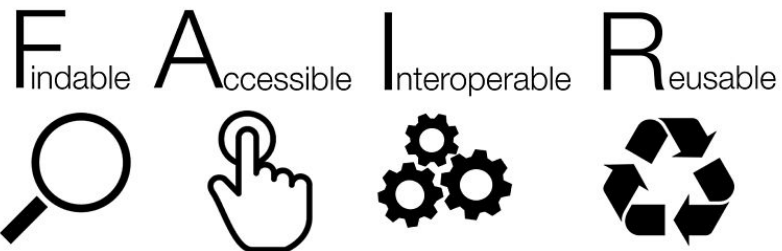Kate Larkin

secretariat@emodnet.eu

Marine data are crucial to achieve the ambitious targets of the EU Green Deal, UN 2030 Agenda

*Sound ocean data is indispensable
if we want to tackle
major global issues
such as climate change, marine litter,
illegal fishing or marine protection.
It is also a bare necessity
if we want to develop the blue economy
and create sustainable
economic growth in the EU.*

Karmenu Vella, *European Commissioner
for Environment, Maritime Affairs and Fisheries*

#EOOSConference18

European Commission

The European Green Deal
#EUGreenDeal

EUROPEAN CLIMATE PACT
#MyWorldOurPlanet
#EUClimatePact

International ocean governance
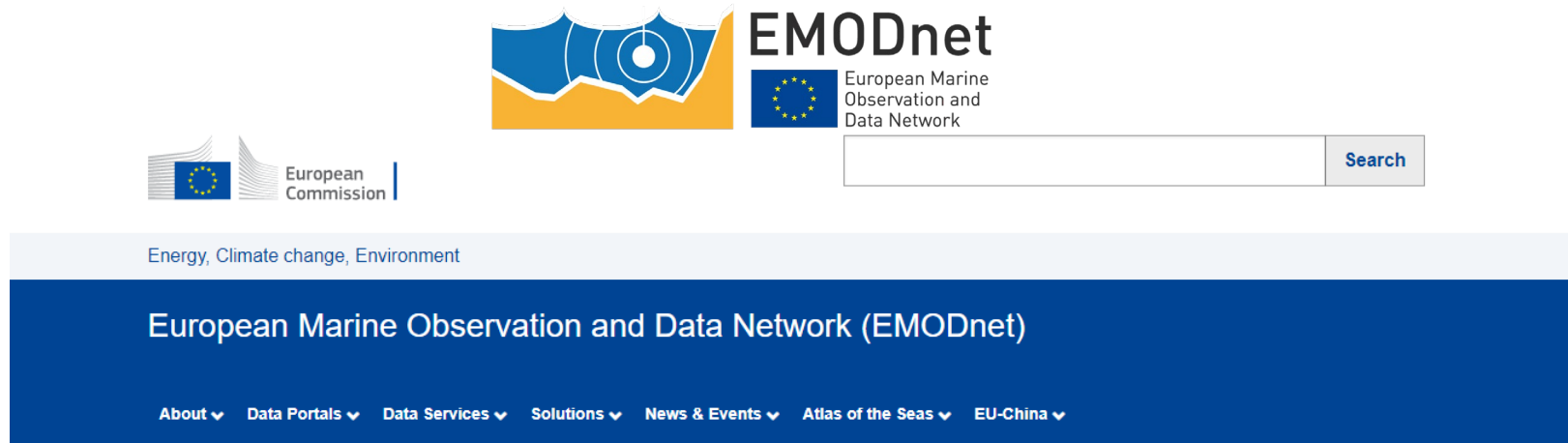
SUSTAINABLE DEVELOPMENT GOALS

UNESCO
United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Findable **A**ccessible **I**nteroperable **R**eusable

EMODnet
European Marine Observation and Data Network
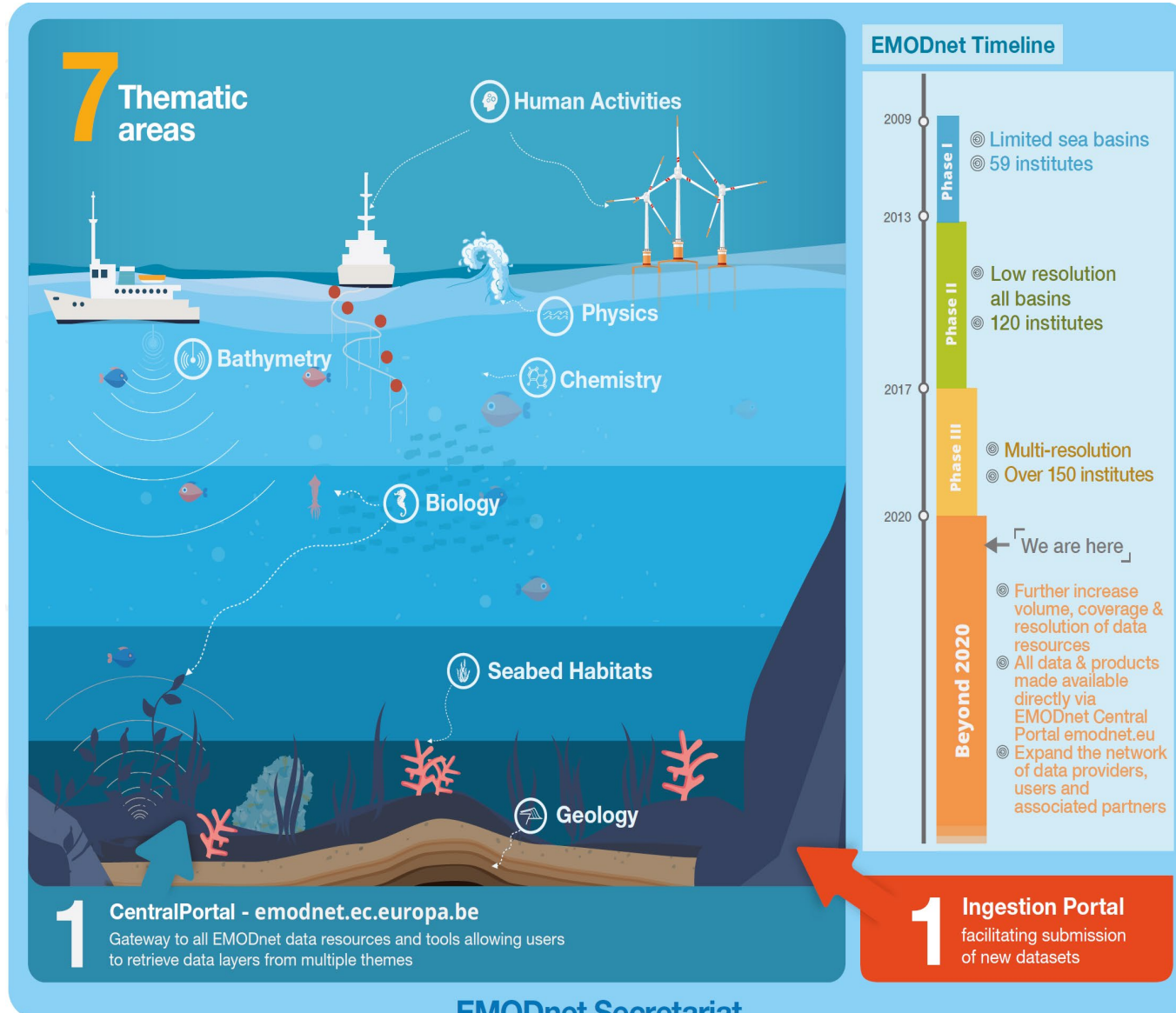
The European Marine Observation and Data Network (EMODnet)

- **A Network of > 120 leading organisations, jointly delivering:**
- **Long-term** *public* **marine data service and marine knowledge initiative** funded by the **European Commission (DG MARE);**
- **European authority and regional best practice in the marine data domain;**
- **Key marine knowledge initiative which together with Copernicus Marine Service provides the back-bone for the European marine data space, a key contributor to the Global Ocean Data Ecosystem and digital commons.**

Ten Years of EMODnet in Ten Minutes - watch the full movie - YouTube

Introduction to the European Marine Observation and Data Network (EMODnet) - Bing video

emodnet.ec.europa.eu

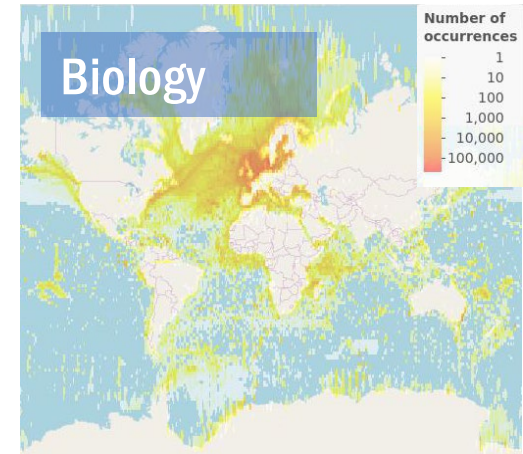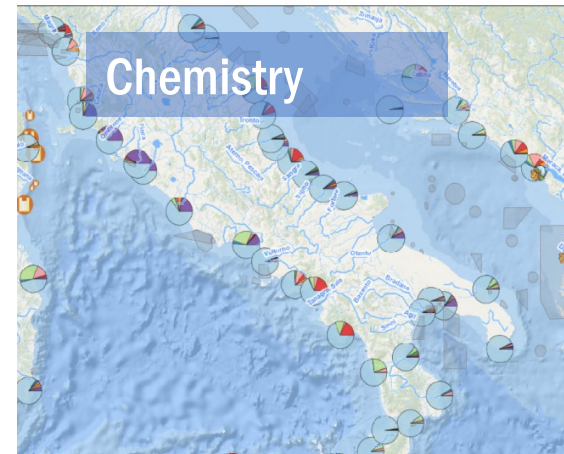# EMODnet: A trusted *in situ EU* marine data service.
Unlocking and democrasting marine data: Open and free (re)use for all

7 Thematic areas

- Human Activities
- Physics
- Bathymetry
- Chemistry
- Biology
- Seabed Habitats
- Geology

EMODnet Timeline

- **Phase I** — 2009
  - Limited sea basins
  - 59 institutes
- **Phase II** — 2013
  - Low resolution all basins
  - 120 institutes
- **Phase III** — 2017
  - Multi-resolution
  - Over 150 institutes
- **Beyond 2020** — 2020 — We are here
  - Further increase volume, coverage & resolution of data resources
  - All data & products made available directly via EMODnet Central Portal emodnet.eu
  - Expand the network of data providers, users and associated partners

1 CentralPortal - emodnet.ec.europa.be
Gateway to all EMODnet data resources and tools allowing users to retrieve data layers from multiple themes

1 Ingestion Portal
facilitating submission of new datasets

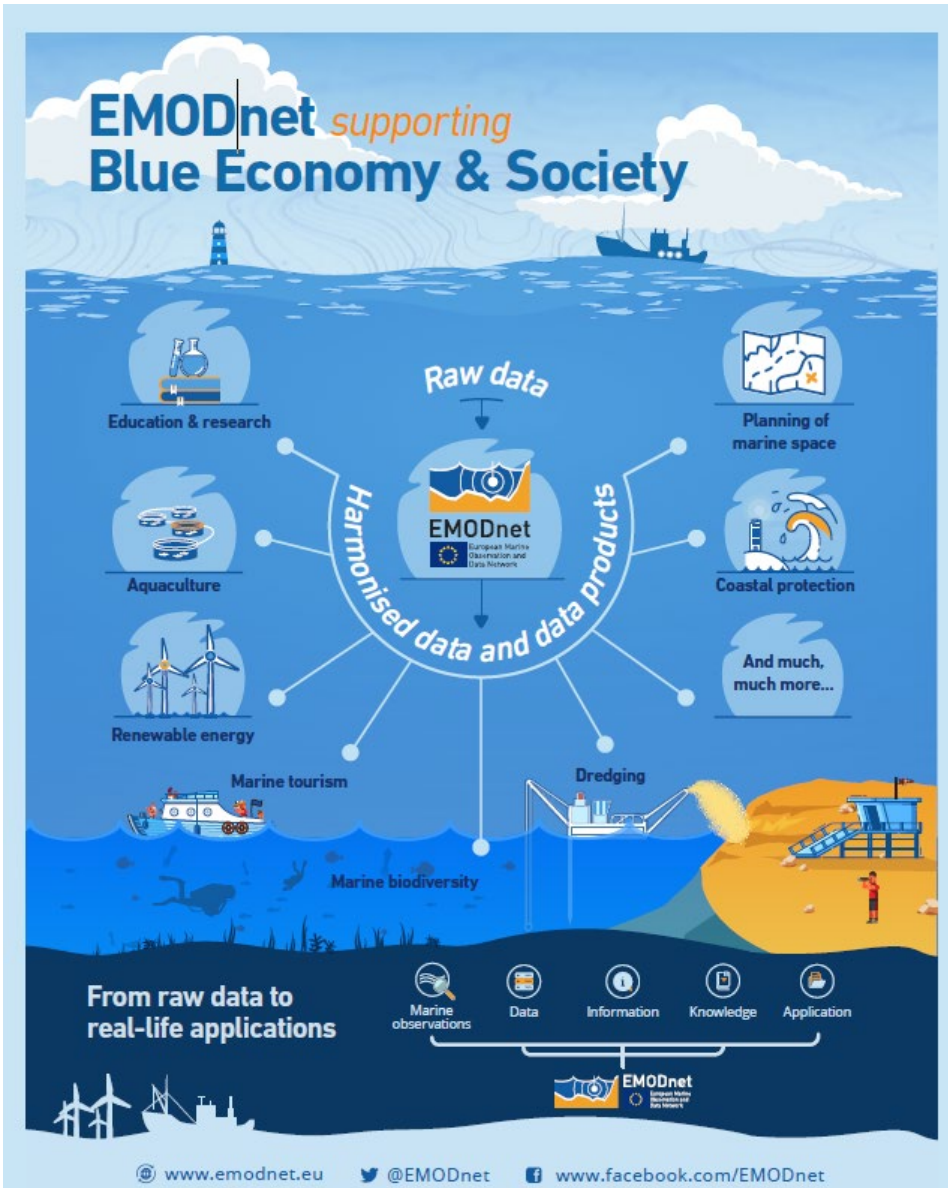**EMODnet Secretariat** European Marine Observation and Data Network

- **7 EMODnet thematic domains** marine environment and human activities (100s of parameters)
- **Datasets**
  - ✓ *from **hundreds of data providers** (academia, private sector, government marine monitoring, citizen science*
  - ✓ ***Standardized, harmonised & integrated***
  - ✓ *from **seafloor to surface***
- **Data products** (e.g. maps, composite maps, predictive capability);
- **European seas and beyond** (global datasets and maps)
- **More than 10 years data service**

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EMODnet European Marine Observation and Data Network

EMODnet: Diverse marine data and data products
Some results of working together: democratsing in situ marine data, for all

Bathymetry

Physics

Chemistry

Biology

Number of occurrences
- 1
- 10
- 100
- 1,000
- 10,000
- 100,000

Geology

Seabed Habitats

Human Activities

EMODnet
European Marine
Observation and
Data Network
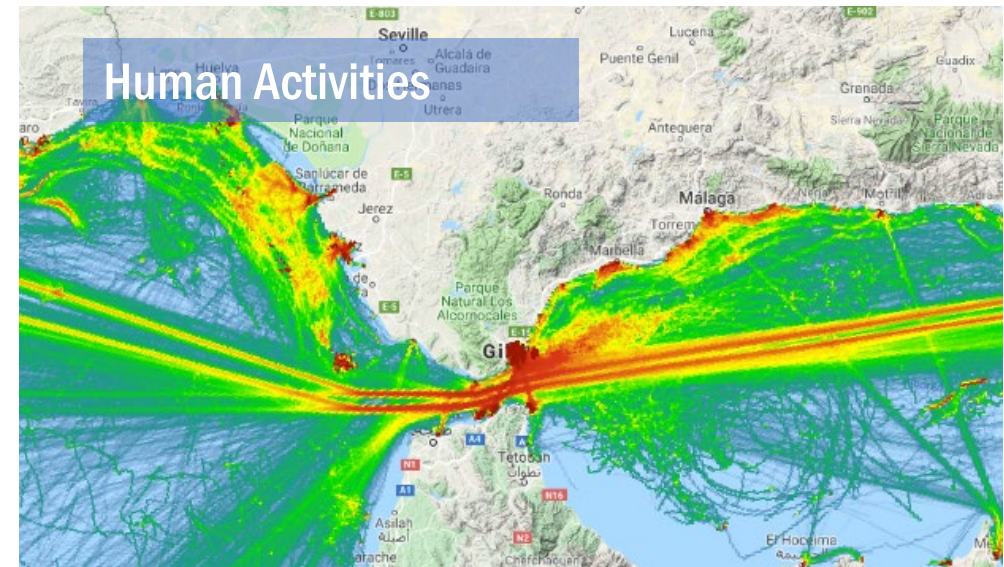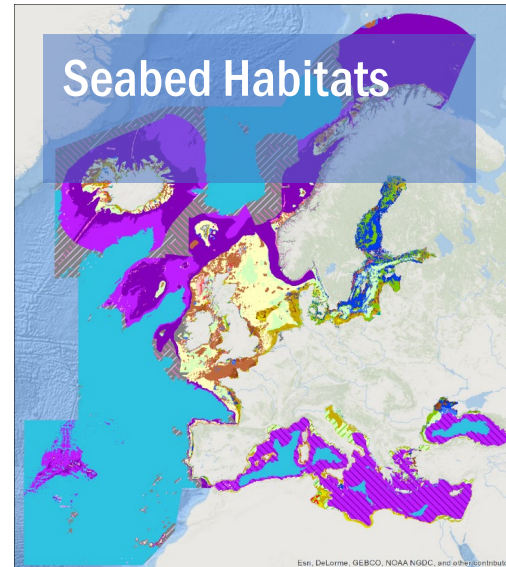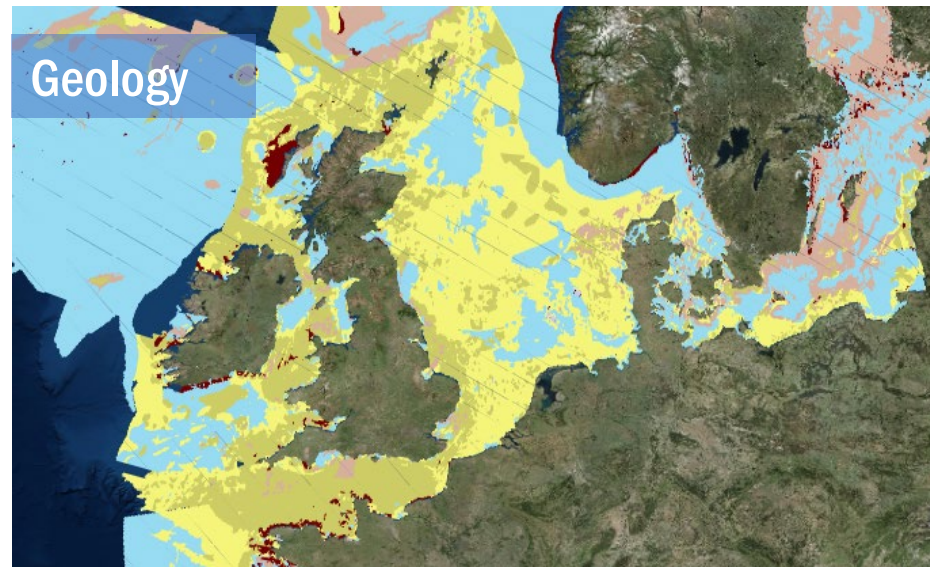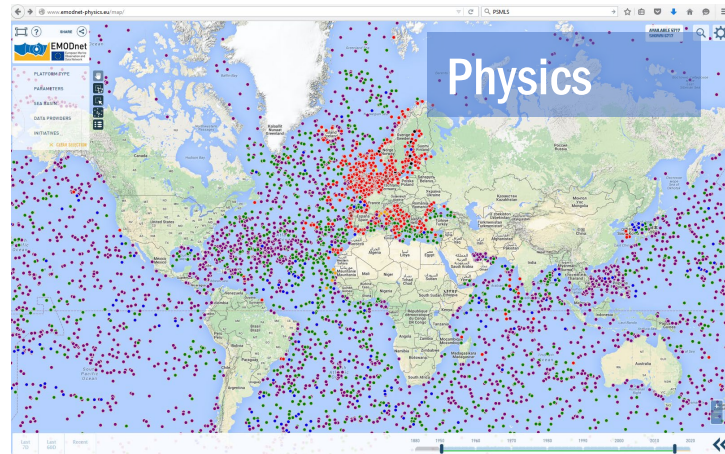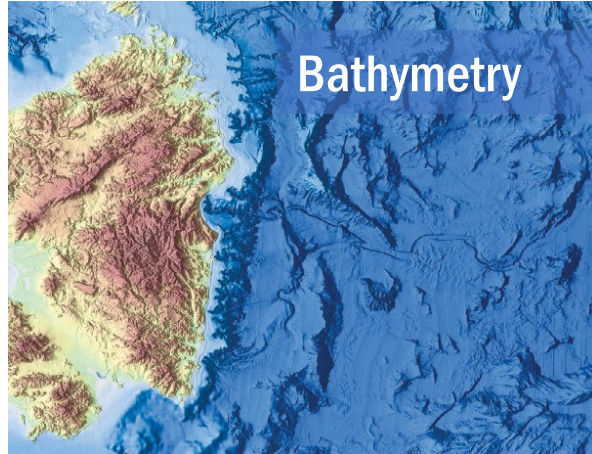
EMODnet: Added value

From raw data to **real-life applications**

Marine Observations · Data · Information · Knowledge · Application

EMODnet
European Marine
Observation and
Data Network
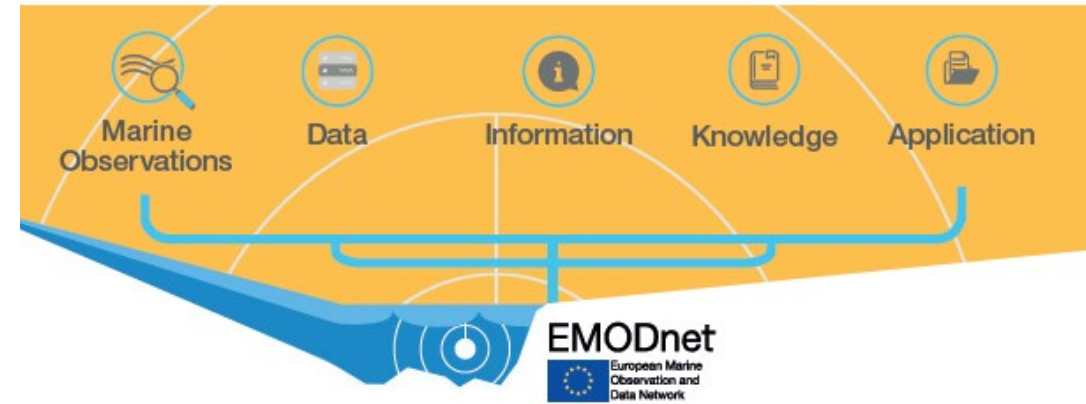
- ❑ Collect data once, use many times.
- ❑ Assemble, standardise, harmonise, quality control, integrate.
- ❑ Visualize and make data come alive.

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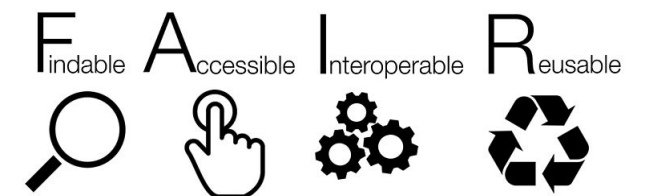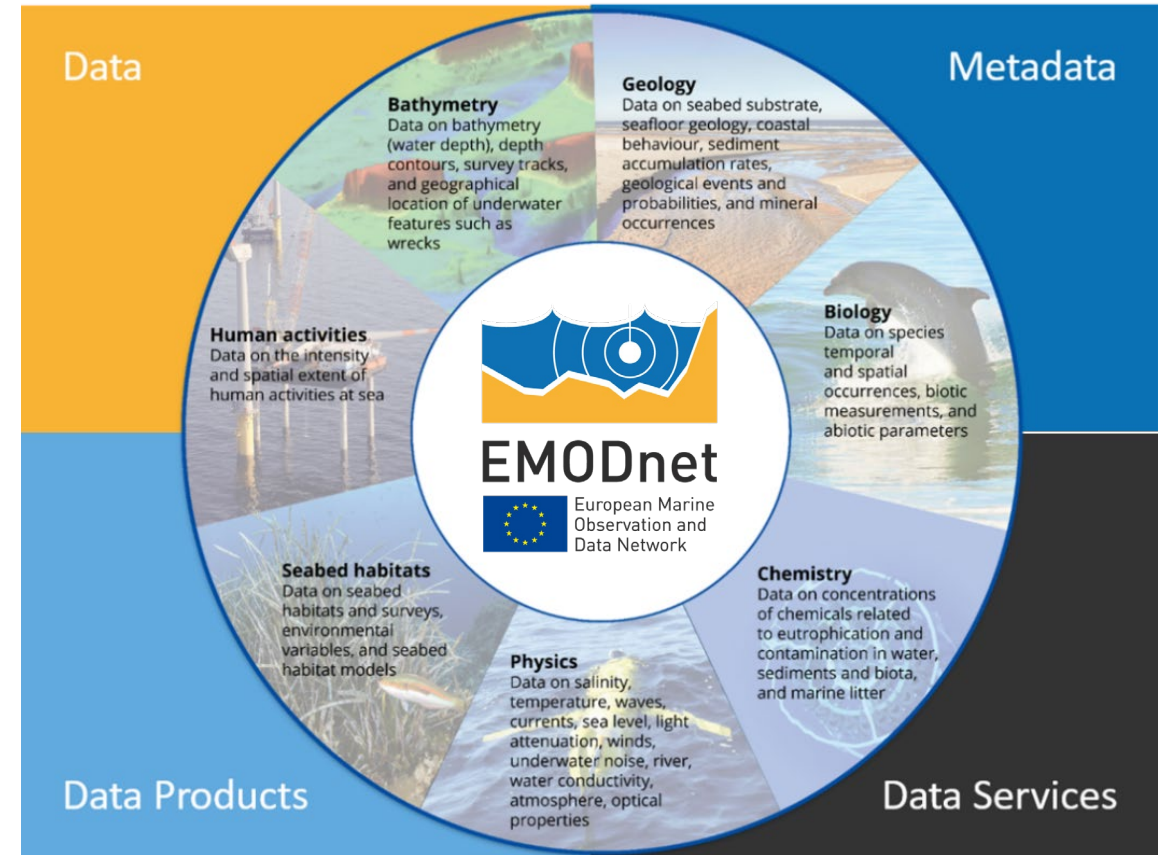- add value and impact to your data;
- stimulate innovation.

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EMODnet: Data services and web services to discover open and free access to data and data products from a trusted source

- INSPIRE (EU) and FAIR (International) data principles

- Aggregated, harmonized multi-parameter data sets

- Searchable metadata (ISO standards)

- Data services (maps, query)

- Integrated data products

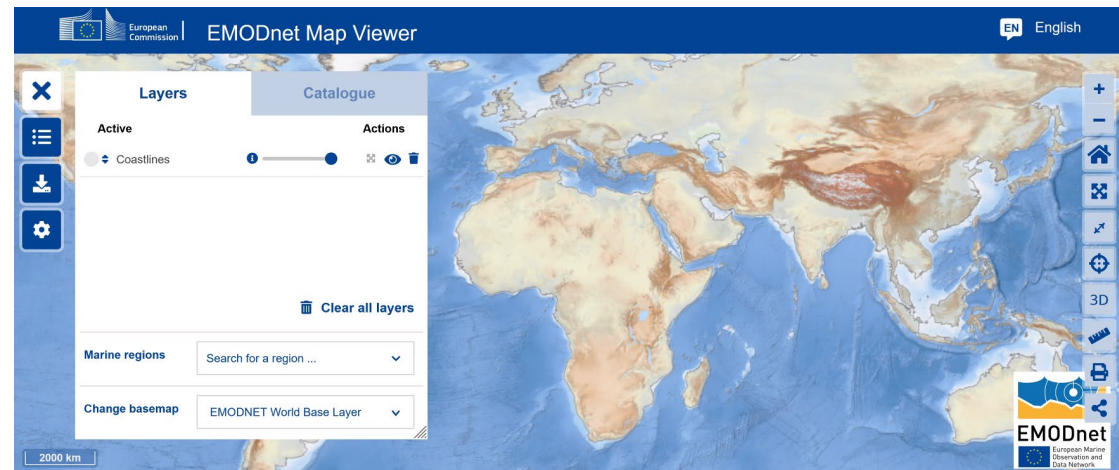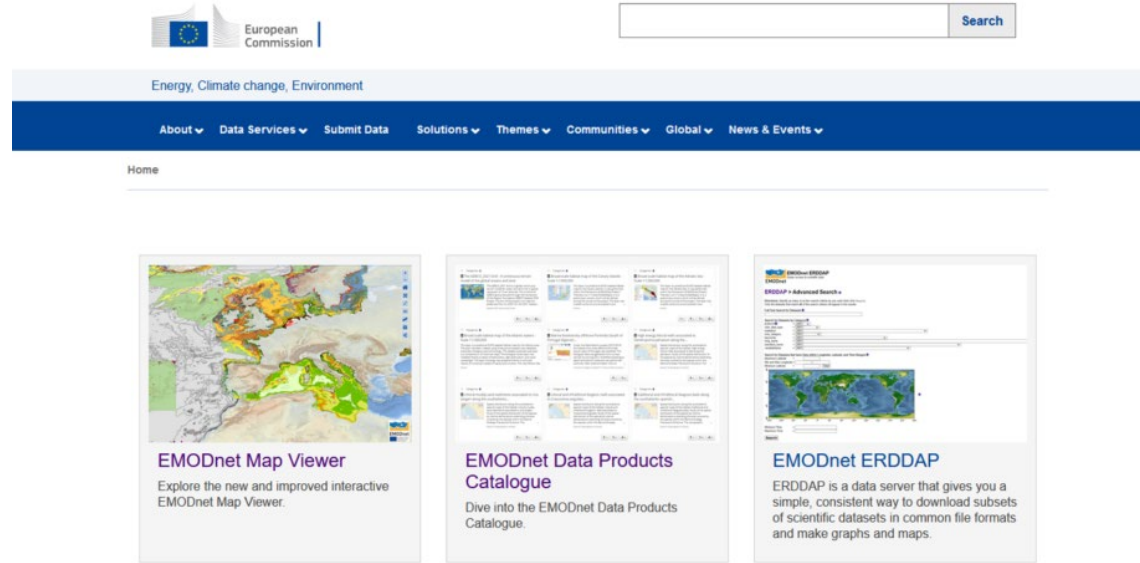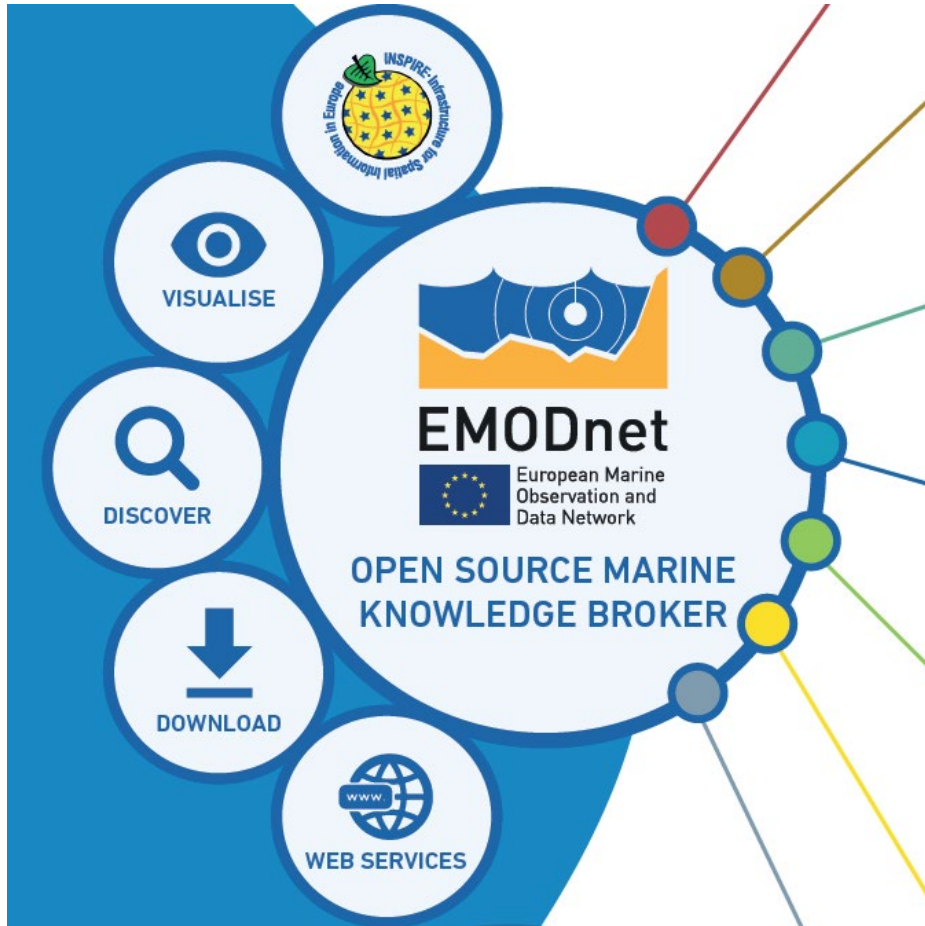- Web services e.g. OGC, machine-machine readability e.g. WMS, WFS, WebS

https://inspire.ec.europa.eu/inspire-directive/2
https://www.go-fair.org/fair-principles/

https://github.com/EMODnet/Web-Service-Documentation

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EMODnet: Continued evolution of EMODnet
To deliver a fit-for-purpose user-driven service

Screenshots from development website, 'soft launch from October 2022'

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EMODnet: Continued evolution of EMODnet
EMODnet as the in situ pillar for the EU Digital Twin of the Ocean

EMODnet and Copernicus Marine Service are mature, operational marine data infrastructures and ocean services underpinning the interoperable EU marine data space needed to deliver the European Digital Twin Ocean and the Digital Ocean Knowledge System.
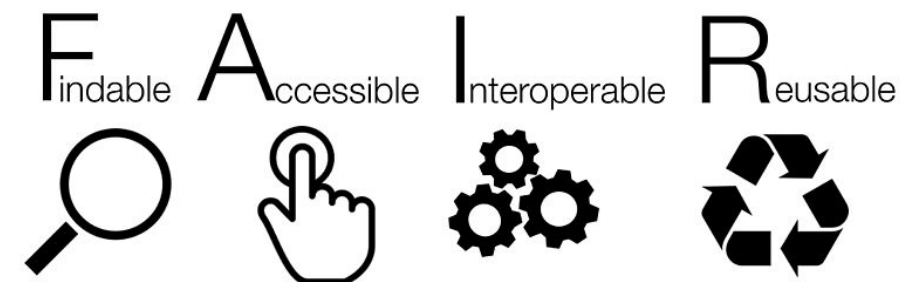

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United Nations Decade of Ocean Science for Sustainable Development

Transformative ocean science solutions for sustainable development, connecting people and our ocean.

- **A clean ocean** where sources of pollution are identified and reduced or removed.
- **A healthy and resilient ocean** where marine ecosystems are understood, protected, restored and managed.
- **A productive ocean** supporting sustainable food supply and a sustainable ocean economy.
- **A predicted ocean** where society understands and can respond to changing ocean conditions.
- **A safe ocean** where life and livelihoods are protected from ocean-related hazards.
- **An accessible ocean** with open and equitable access to data, information and technology and innovation.
- **An inspiring and engaging ocean** where society understands and values the ocean in relation to human wellbeing and sustainable development.

High quality, trusted and FAIR marine data, information and knowledge is cross-cutting, underpinning all of the UN Ocean Decade Objectives, Challenges and Outcomes

Findable Accessible Interoperable Reusable

https://www.oceandecade.org/vision-mission/

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EMODnet
European Marine
Observation and
Data Network

EMODnet: A key contributor to the Ocean Decade

«*EMODnet – a true hallmark in Marine Observations, Data and networking – is hugely important, not only for Europe, but as an example for other regions, and a valuable partner for IOC of UNESCO*». **Vladimir Ryabinin, Executive Secretary of the Intergovernmental Oceanographic Commission (IOC-UNESCO)**

EMODnet has a key role to play – together with other marine knowledge actors across the world - to realise a truly transparent and accessible ocean whereby all nations, stakeholders and citizens have:

○ **simplified access to ocean data, information and knowledge**, through user-driven interfaces and online data discovery and access services based on machine-machine communication;

○ **trust in the provenance of the data** (through standardized, rich metadata) to increase the uptake and use and;

○ **the capacity and knowledge to use marine data services and web-based collaborative spaces/digital ecosystems** where marine data can be utilized for solution-oriented applications and informed decisions.

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UN Ocean Decade:
Data, information and knowledge management

- Enhancement to infrastructure, common approaches to data interoperability, collaboration;
- Towards a "digital ocean ecosystem" of interoperable data sharing and stewardship.

How is data-sharing collaboration being enhanced?

- **UN Ocean Decade Data Coordination Group**: 25 experts, 12 countries spanning public and private;
- **Cross-sector dialogues** e.g., UN Ocean Conference 2022 international side event on Marine Data Interoperability;
- *Upcoming* **Ocean Decade Corporate Data Group** private sector group, coordinated by IOC-UNESCO, to start in early 2023 to assess barriers and solutions to private-public data sharing.

Newly appointed group of global experts will help drive Ocean Decade action on data, information and knowledge management
IOC-UNESCO, 20.12.2021

https://emodnet.ec.europa.eu/en/UN-Ocean-Conference-SideEvent-MarineDataInteroperability

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EMODnet: Strengthening Partnerships for International Interoperability and Impact

- **A key partner for open data, open science, data diplomacy and digital data stewardship** in Europe, and beyond;
- **Interoperable data discovery and access,** in collaboration with other key data services
- **Further diversifying data parameters and sources** (e.g. industry, citizen science)
- **Extending FAIR** to FAIR, CARE and TRUST
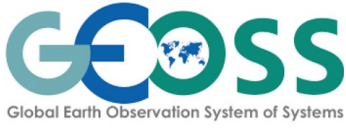
Transparency,
Responsibility,
User focus,
Sustainability and
Technology

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EMODnet: How can you/your organisation share data with EMODnet?
EMODnet Data Ingestion: A free public service, for all

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Your gateway to marine data in Europe