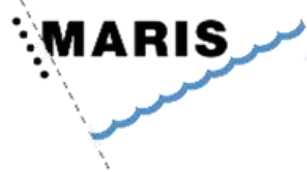


27-29 May 2024 



imdis

International conference on Marine Data and Information Systems





IMDIS 2024, 27-29 May, Bergen

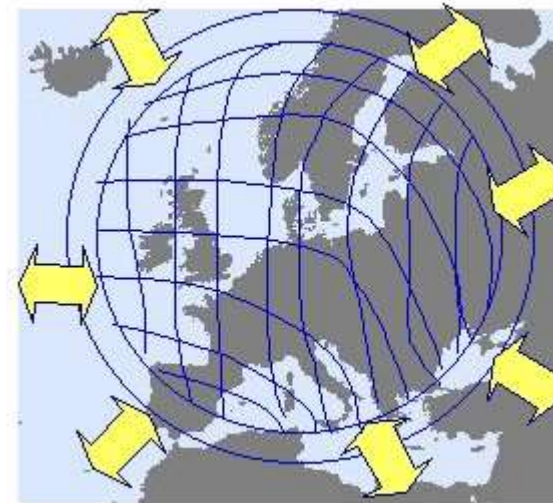


SeaDataNet – Pan-European infrastructure
for marine and ocean data management
– an update

Michèle Fichaut, Alessandra Giorgetti, Athanasia Iona,
Hong Minh Le, Steven Piel, Dick Schaap, Serge Scory
Peter Thijsse, Lesley Rickards, Marine Vernet



Medar/MedAtlas
90's



EuroNODIM (FP3)
1998-2001



Sea-Search (FP5)
2002-2005



SeaDataNet (FP6)
2006-2011



SeaDataNet 2 (FP7)
2011-2015



SeaDataCloud (H2020)
2016-2020

Set of common **standards** for the marine domain, adapting ISO and OGC standards and achieving INSPIRE compliance



Adoption of **ISO 19115 – 19139 standard** for describing **metadata** on data, data sets, research cruises, monitoring networks, and research projects



Open Geospatial Consortium

Controlled vocabularies for the marine domain (> 97 500 terms in 123 lists), with international governance and web services, SPARQL Endpoints

Standard data exchange formats: ODV ASCII and NetCDF (CF) fully supported by controlled vocabularies



Maintenance and dissemination of **standard QA-QC procedures**, together with IOC/IODE and ICES



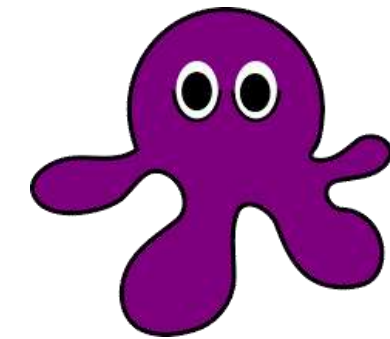
Tool for **converting** any ASCII data set to SDN ODV + netCDF formats

NEMO



Tool for **format checking**, convert between SDN formats and handle multi-files

OCTOPUS



Tool for generating XML entries for SDN catalogues (generation of ISO-19115/19139 metadata files)

MIKADO



Tools for **transfer entries** from data centres to **central CDI catalogue** and **central data cloud**

CDI Import
Manager

RM



Vocabulary and Directories web services for marking up data and metadata

**CSR, EDMO, CDI,
EDIOS, EDMERP,
EDMED**





Linked, interoperable metadata catalogues

Figures as of 11/04/2024

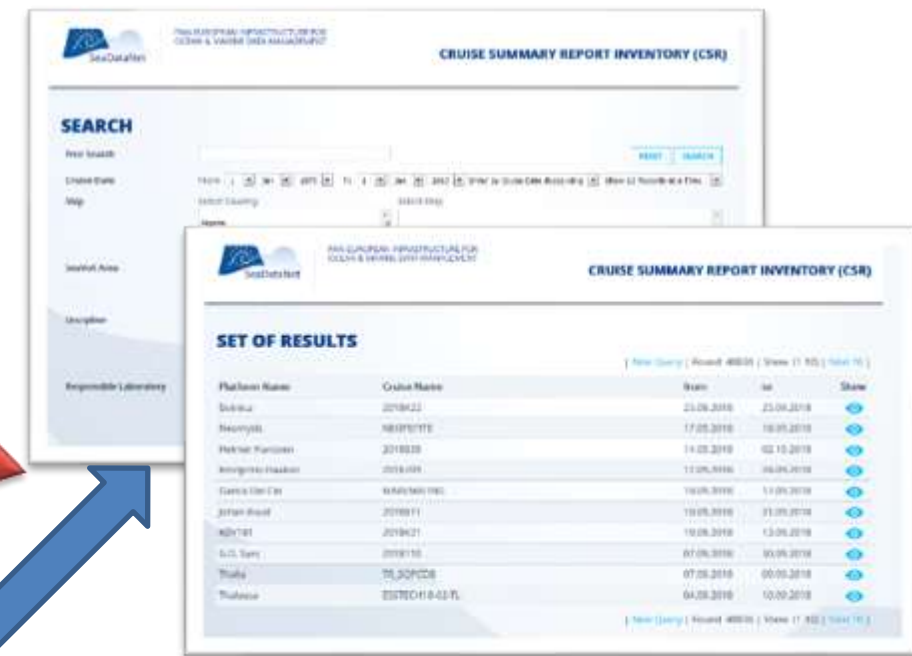
**EDMERP
Projects
(3 501)**



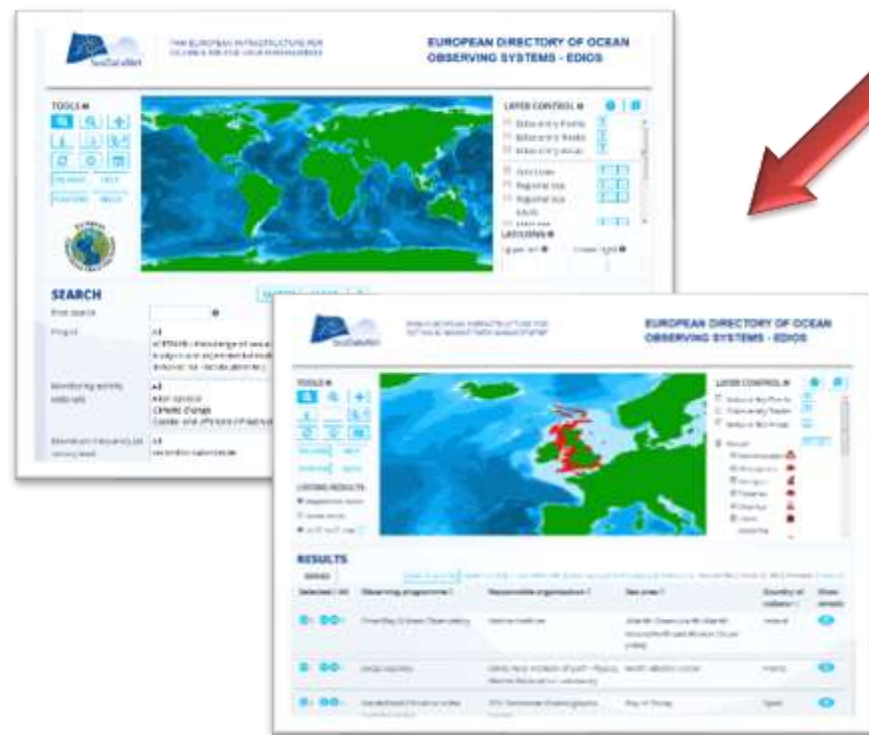
EDMO Organisations (4 936)



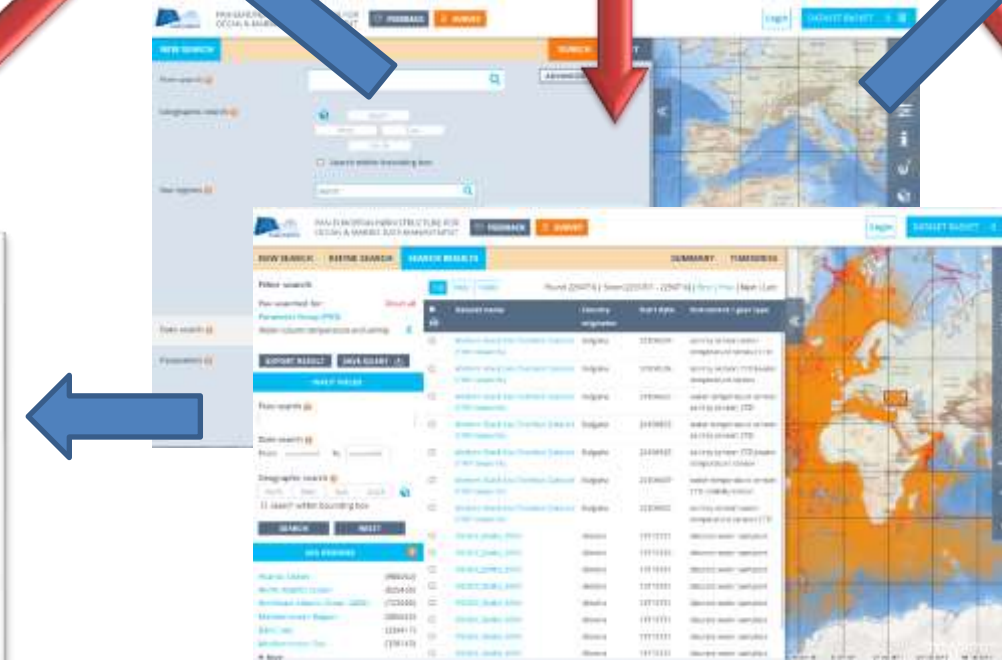
**CSR
Research
Cruises
(68 188)**



**EDIOS
Observing
Programmes
(373)**



CDI Data index (2 952 602)



**EDMED
Data sets
(4 350)**



The overarching European Marine Observation and Data Network (**EMODnet**) was **initiated in 2008** by EU DG MARE



SeaDataNet qualified as a **leading infrastructure for the EMODnet data management** component and is driving several thematic groups and portals from the start

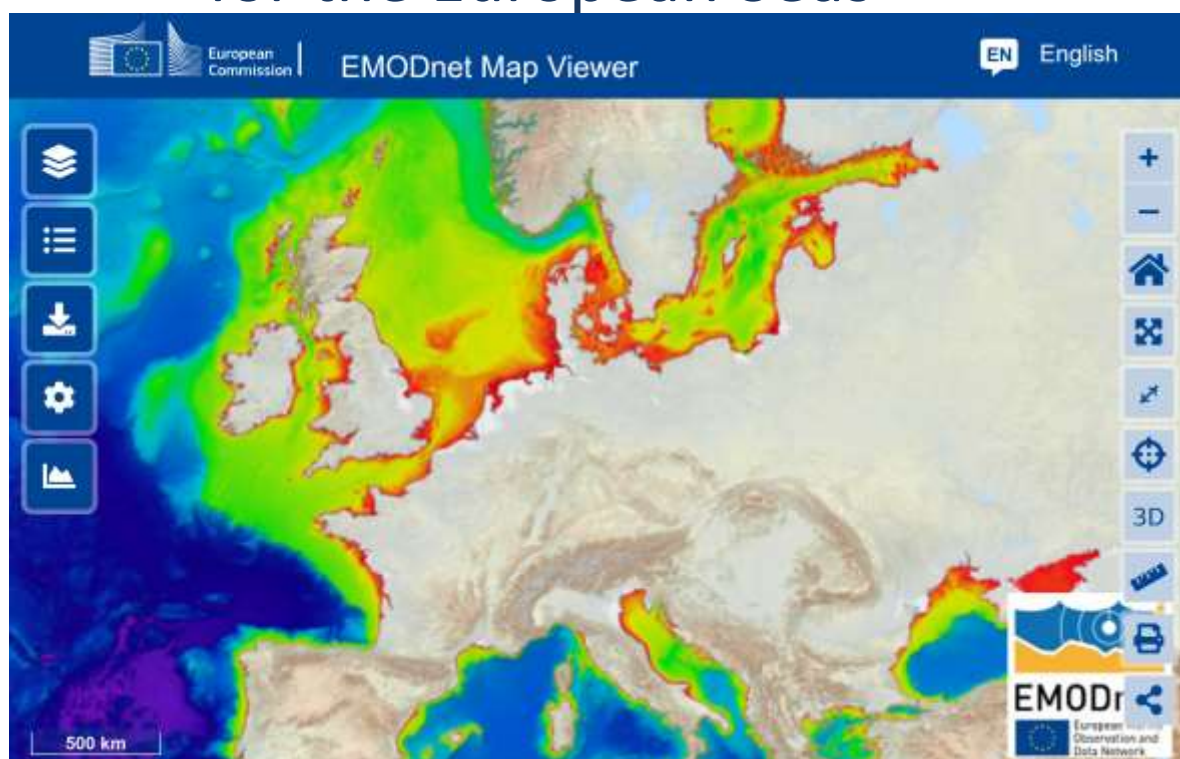
This synergy has resulted in many more data centres adopting **SeaDataNet standards** and connecting to the CDI Data Discovery and Access service, while it gave a flying start to EMODnet

EMODnet has a focus on European data products and services in support of Blue Economy, Blue environment and Marine Knowledge 2020 agendas

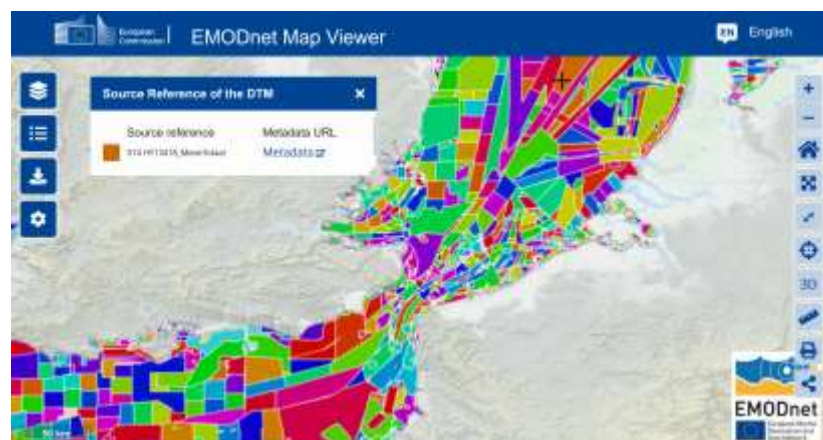
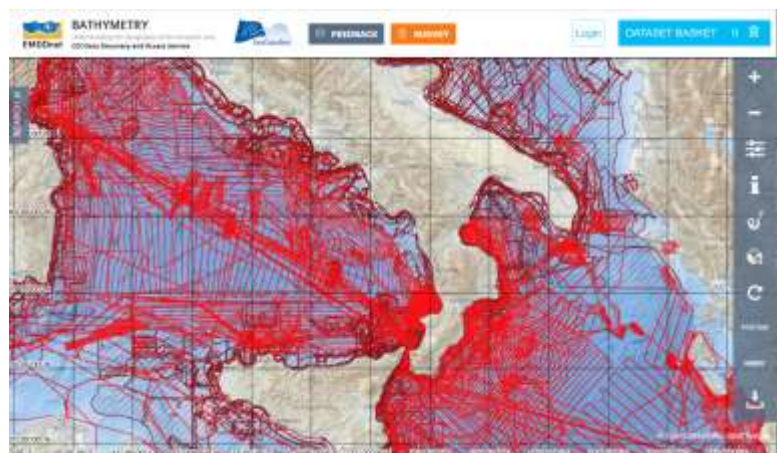
The data sets as gathered, harmonized and delivered by SeaDataNet provide **essential input for generating and regularly updating EMODnet data products**

EMODnet Bathymetry

Generates and publishes the best Digital Terrain Model for the European Seas

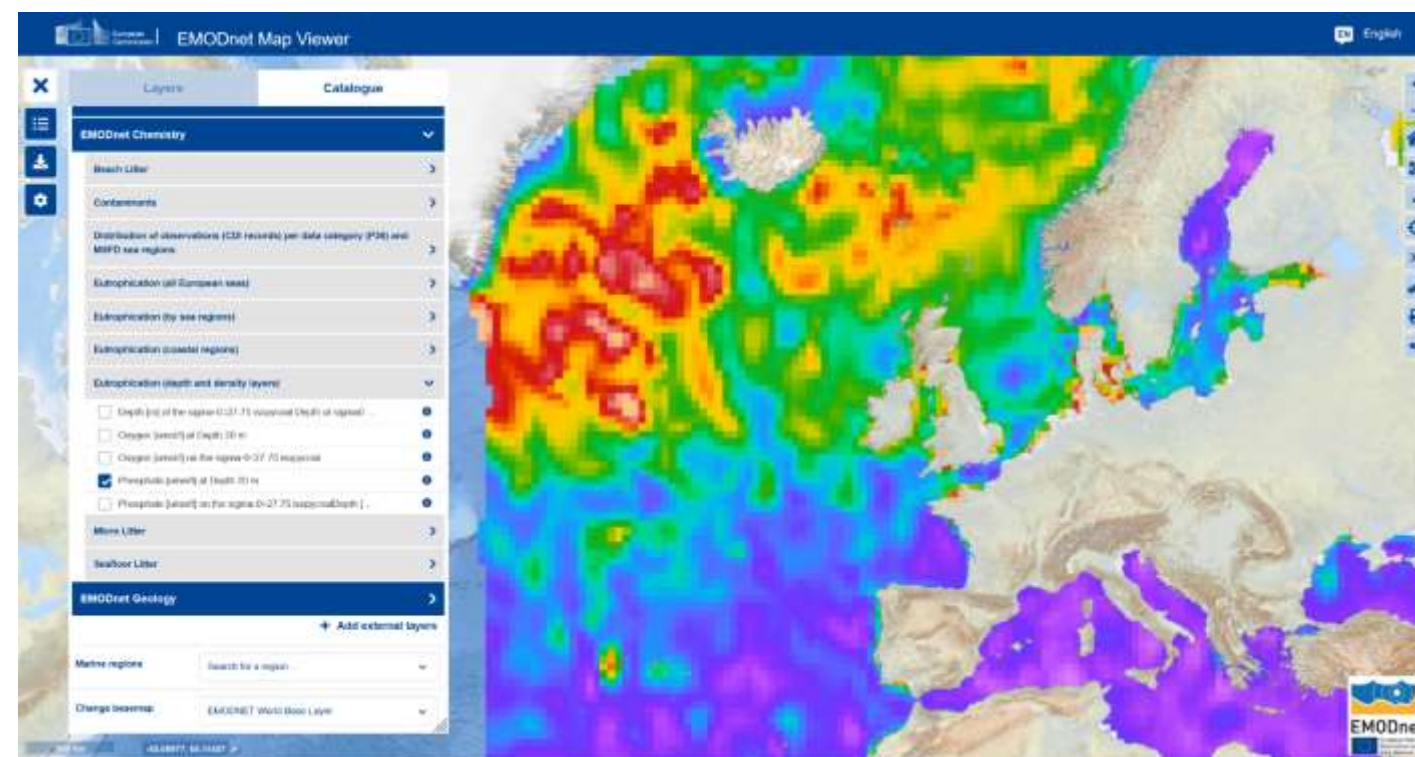


Based upon >40.000 Survey data sets as managed in the SeaDataNet CDI Data Discovery & Access Service



EMODnet Chemistry

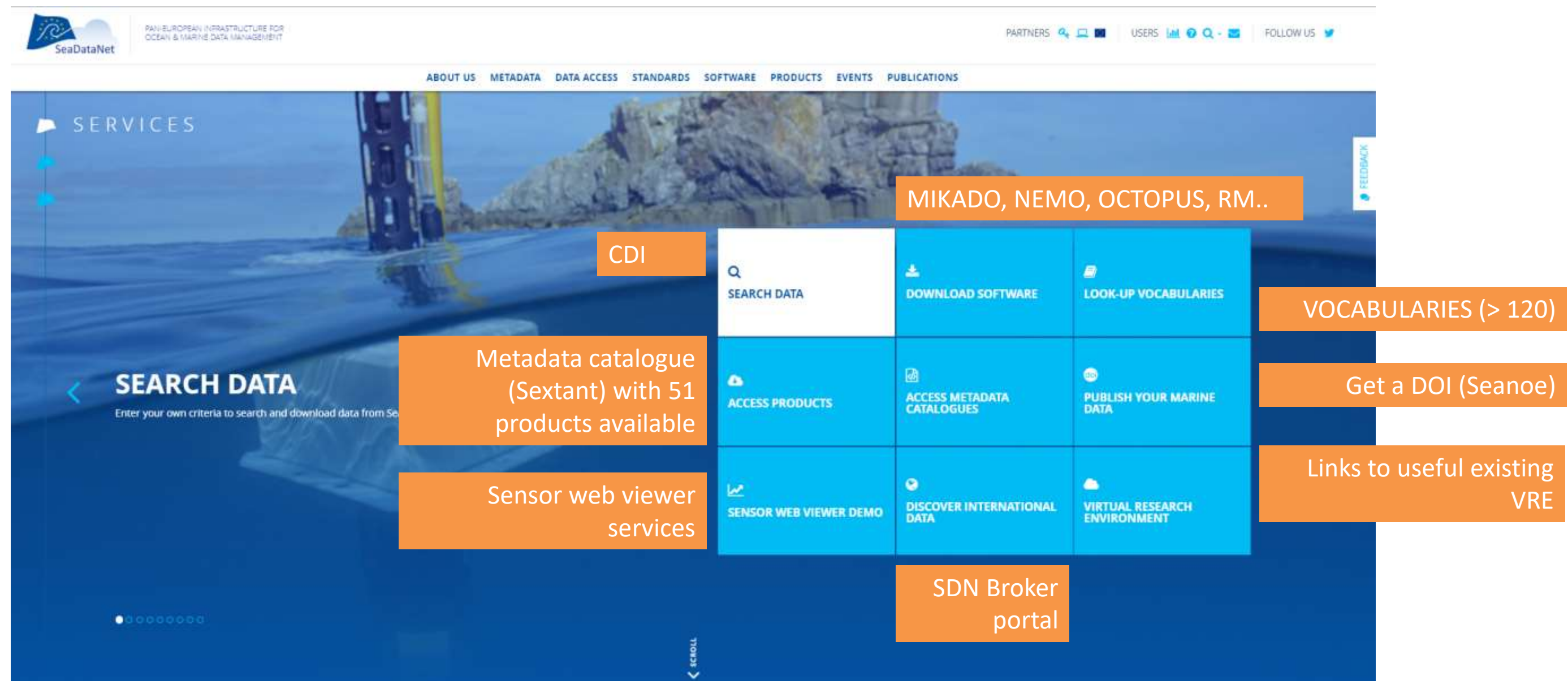
Generates and publishes high quality aggregated data collections and maps of eutrophication, contaminants, and marine litter for the European Seas



Based upon >1.2 million chemistry data sets as managed in the SeaDataNet CDI Data Discovery & Access Service

Giving access to:

- Standards, tools both for data centres and other users
- Data and metadata
- Products



The screenshot shows the SeaDataNet portal homepage. At the top, there is a navigation menu with links for ABOUT US, METADATA, DATA ACCESS, STANDARDS, SOFTWARE, PRODUCTS, EVENTS, and PUBLICATIONS. The main content area features a grid of service tiles. Callouts in orange boxes highlight specific services and features:

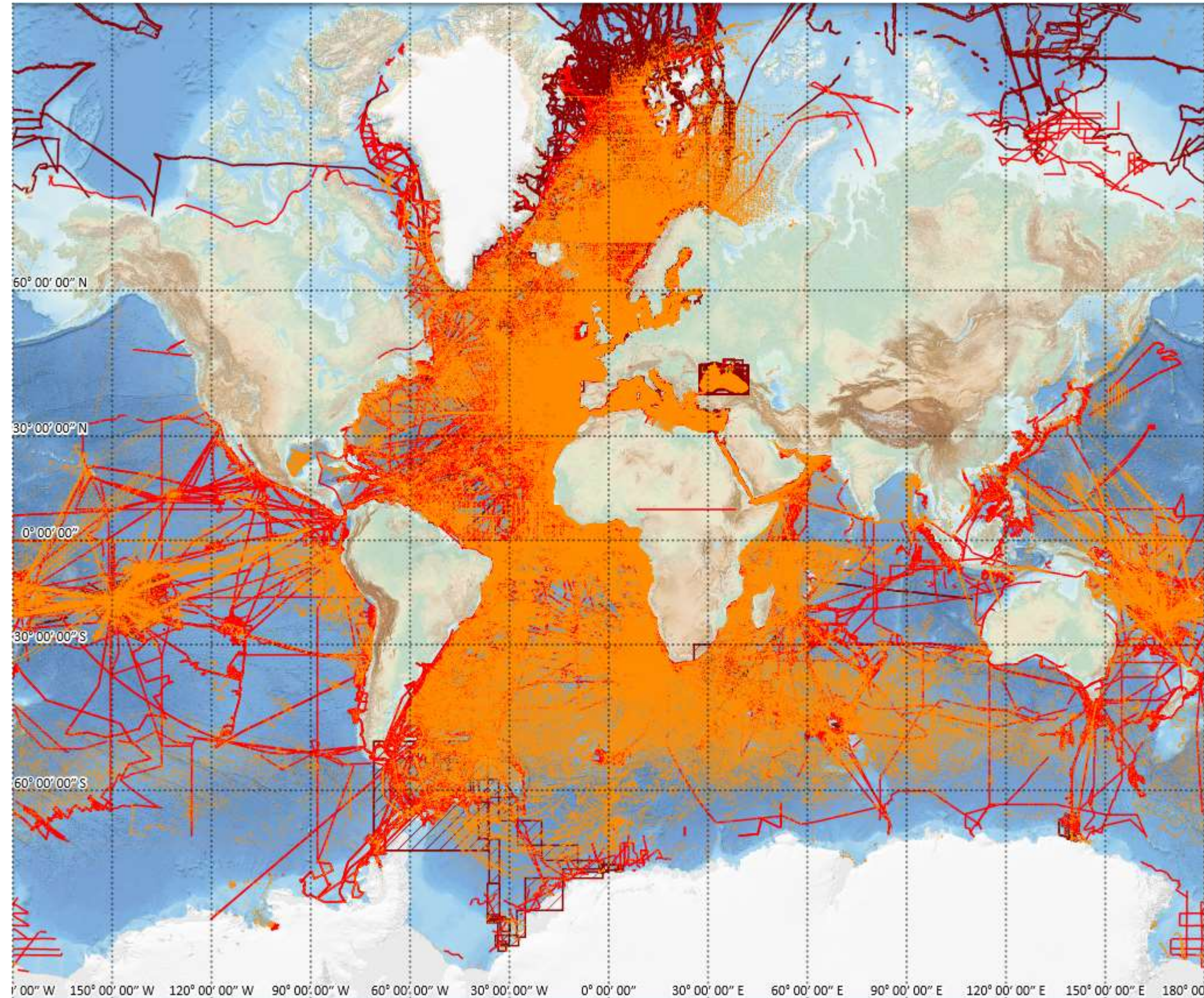
- CDI** (Common Data Interface)
- MIKADO, NEMO, OCTOPUS, RM..** (Data products)
- SEARCH DATA** (Main search function)
- DOWNLOAD SOFTWARE** (Software tools)
- LOOK-UP VOCABULARIES** (Vocabularies > 120)
- ACCESS PRODUCTS** (Product access)
- ACCESS METADATA CATALOGUES** (Metadata catalogue (Sextant) with 51 products available)
- PUBLISH YOUR MARINE DATA** (Get a DOI (Seano))
- SENSOR WEB VIEWER DEMO** (Sensor web viewer services)
- DISCOVER INTERNATIONAL DATA** (Links to useful existing VRE)
- VIRTUAL RESEARCH ENVIRONMENT** (Links to useful existing VRE)
- SDN Broker portal** (SDN Broker portal)

April 2024

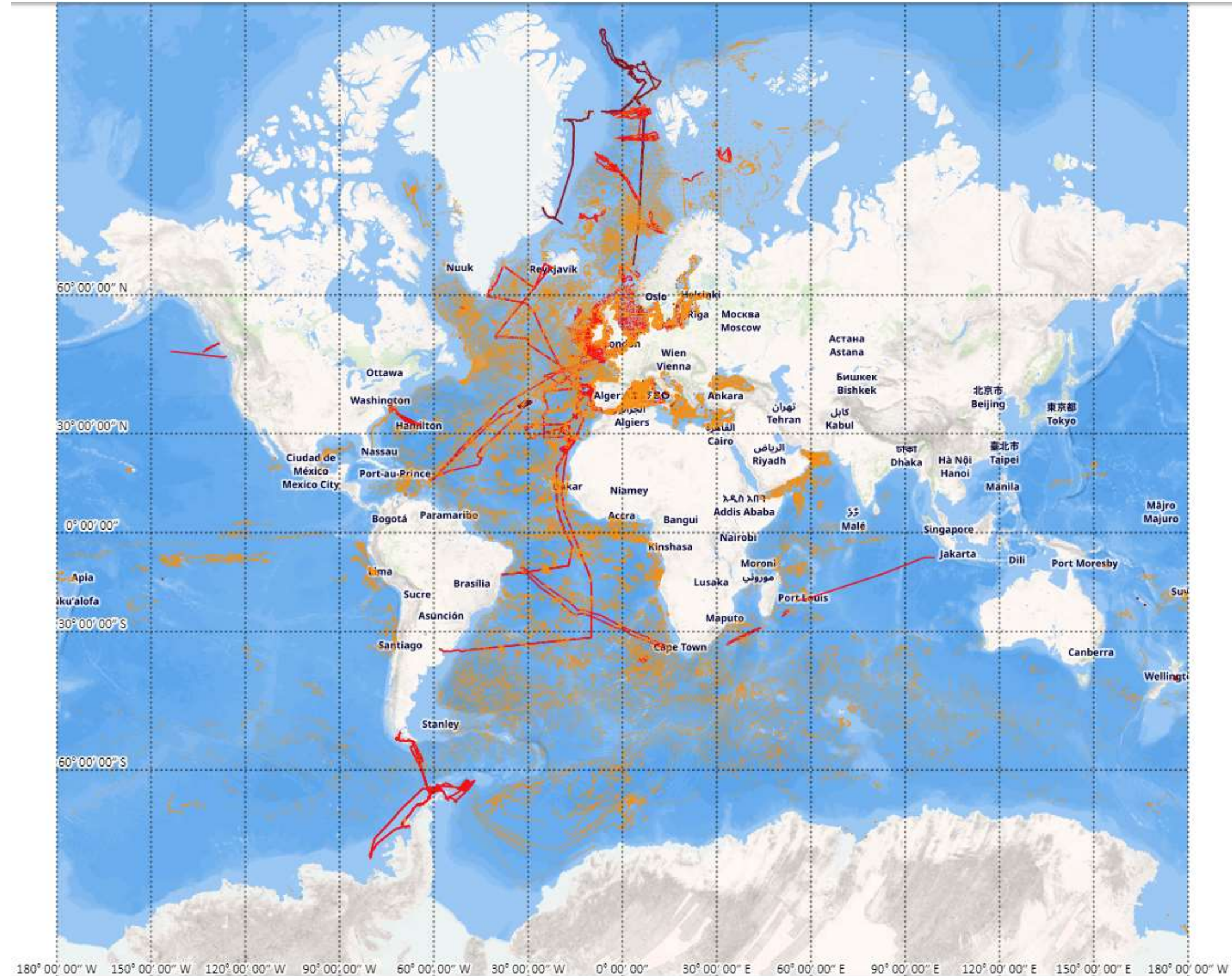
More than **2.9 million CDI** entries for physics, chemistry, biology, geology, bathymetry and geophysics

From **117 data centres**

Located around the European seas, and **970 data originators**

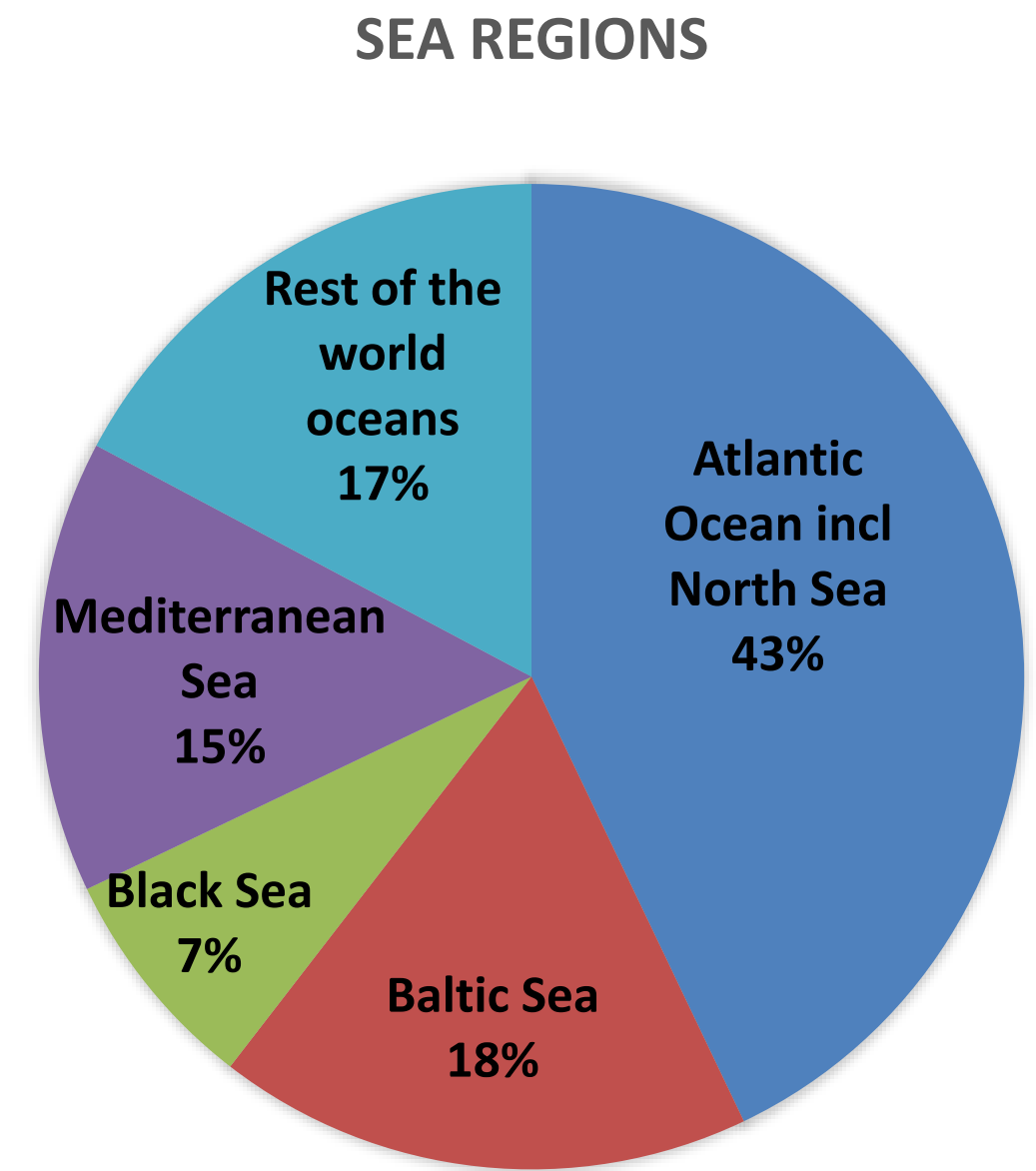
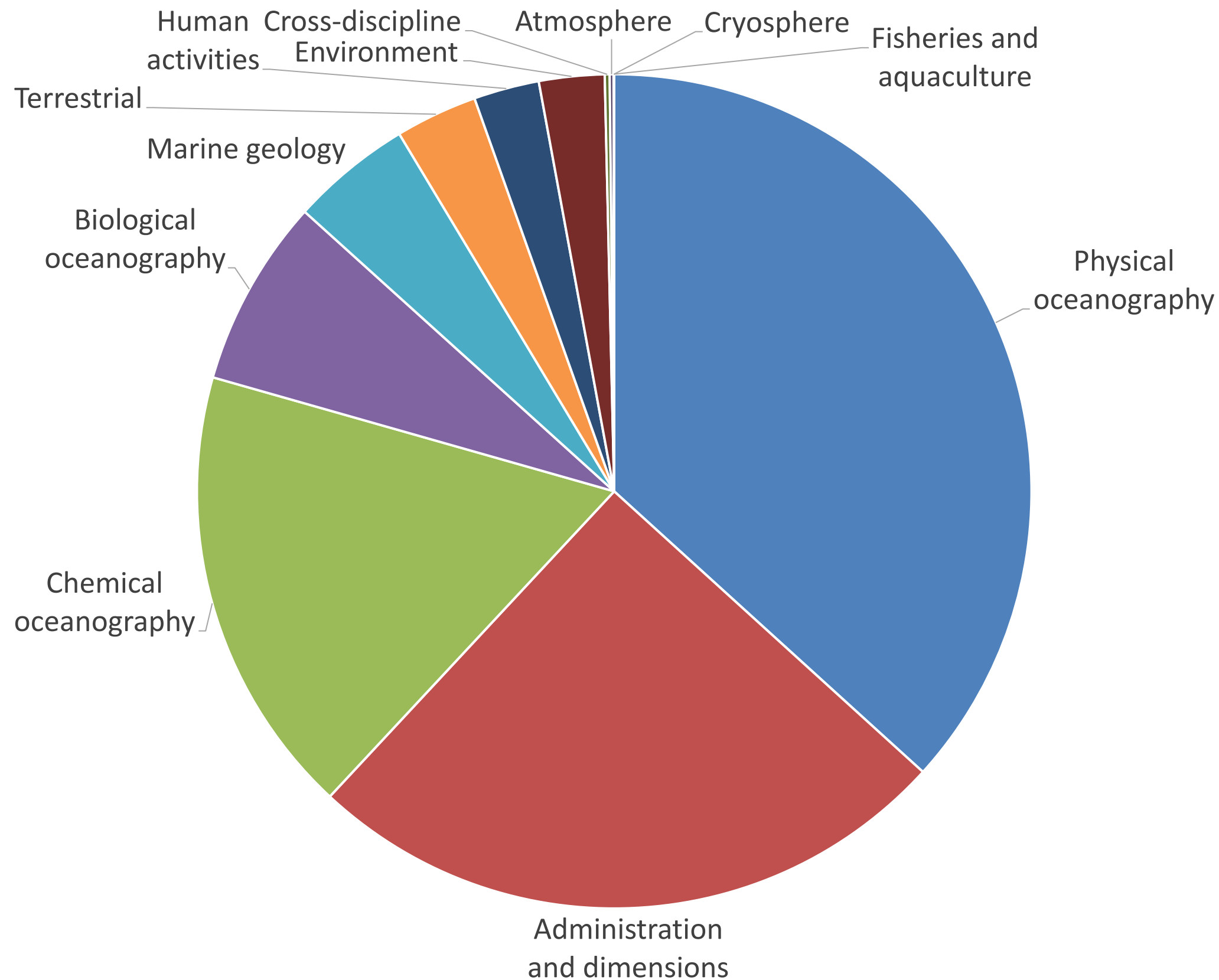


From January 1, 2022 to today
134 427 CDI



Distribution of CDI data collection by disciplines (P08) and sea regions

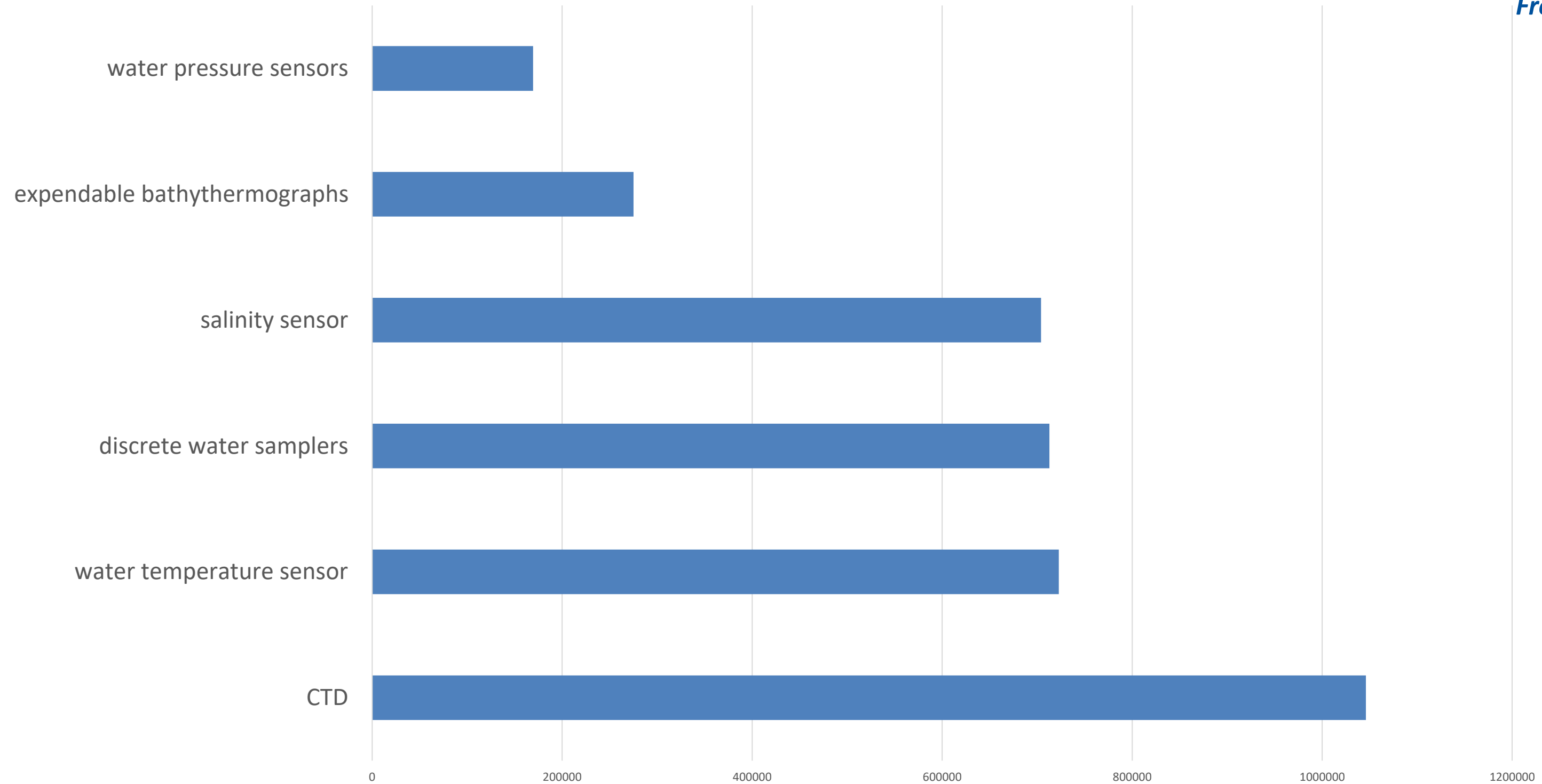
Figures as of 16/04/2024
From cdi.seadatanet.org





Distribution of whole CDI by main instrument types

*Figures as of 16/04/2024
From cdi.seadatanet.org*



SeaDataNet provides several software tools for preparing metadata and data in SeaDataNet standard formats. These tools are regularly maintained, following feedback from data providers, projects, and developments for new data types

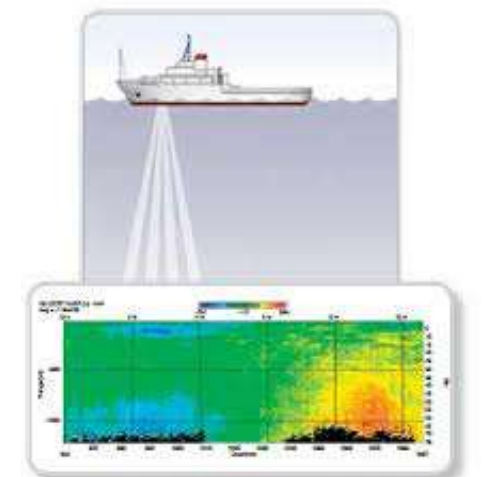
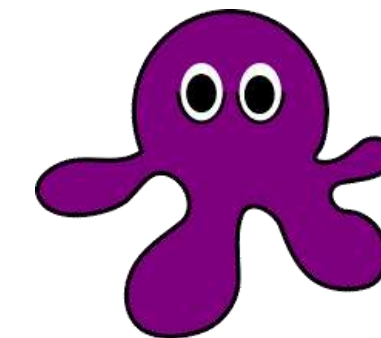
NEMO

Version 2 published in april 2023 with new functions and tools to ease the use



OCTOPUS

Version 1.10 published in mid-May 2024 which now supports
Shipboard ADCP data files from Cascade software (and the near future CODAS format)



MIKADO

Version 3.8.2 published in May 2023 which now supports
Automatic CDI from Nemo 2.0 export



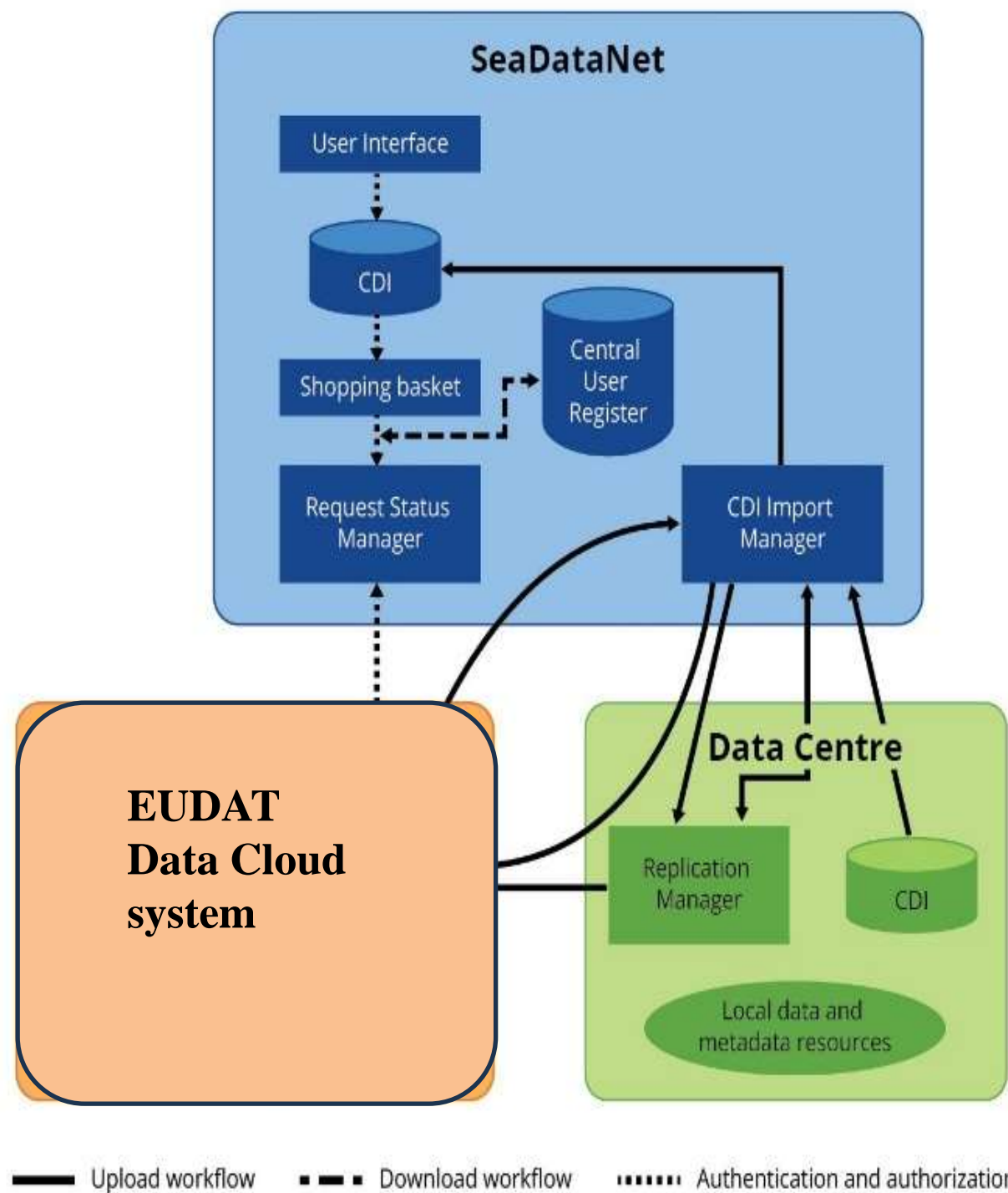
SeaDataNet is regularly adopting new technologies and responding to new challenges. Developments are undertaken as part of EU RTD projects in which SeaDataNet participates as EU Research Infrastructure for marine and ocean data management.

These developments are aimed at improving and optimising the **FAIRness of SeaDataNet metadata, data and services.**

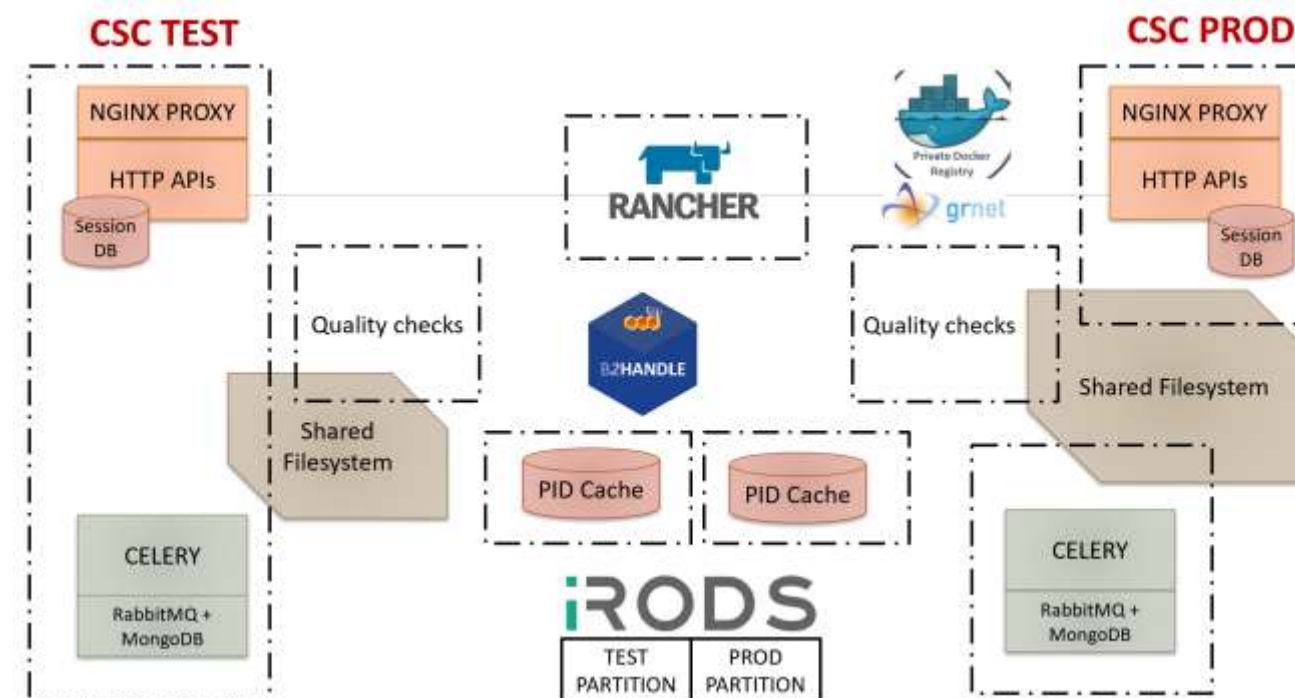
Several projects are within the framework of the **European Open Science Cloud (EOSC)** and also in support of the **Digital Twins of the Oceans (DTO)** and **Mission Ocean** developments



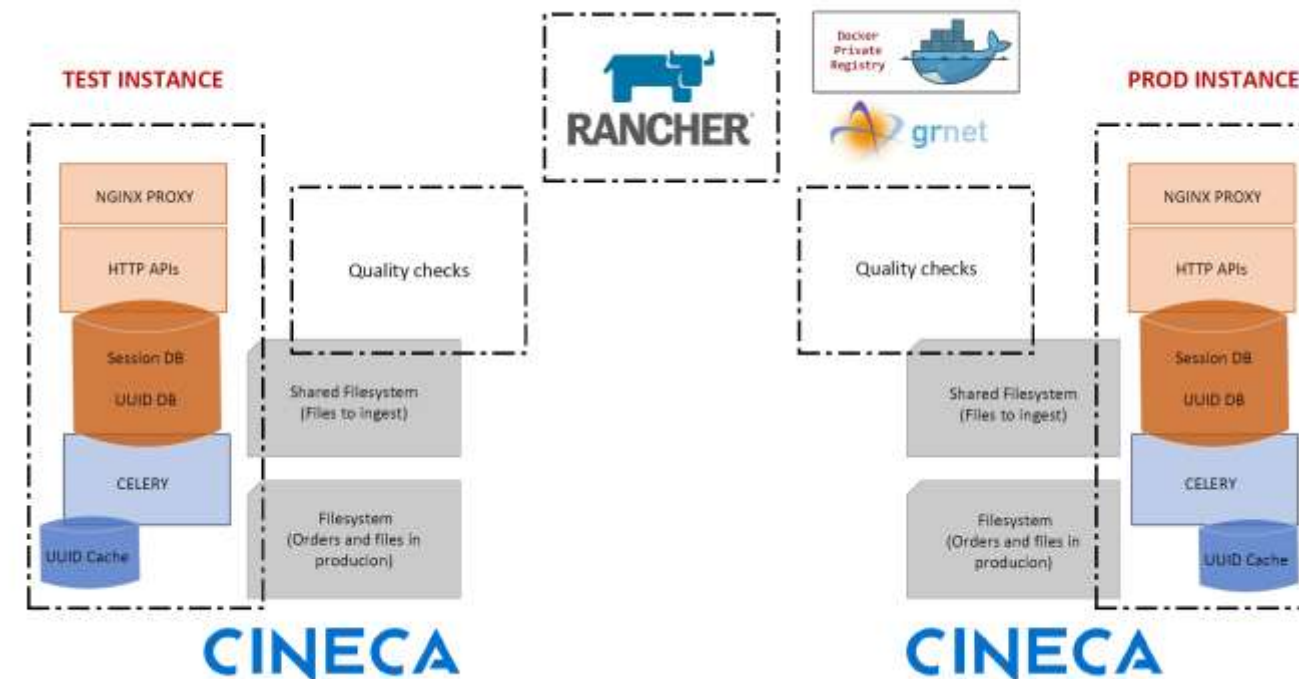
SeaDataNet CDI Data Discovery & Access Infrastructure – Architecture has been upgraded



Nov 2019



Dec 2023





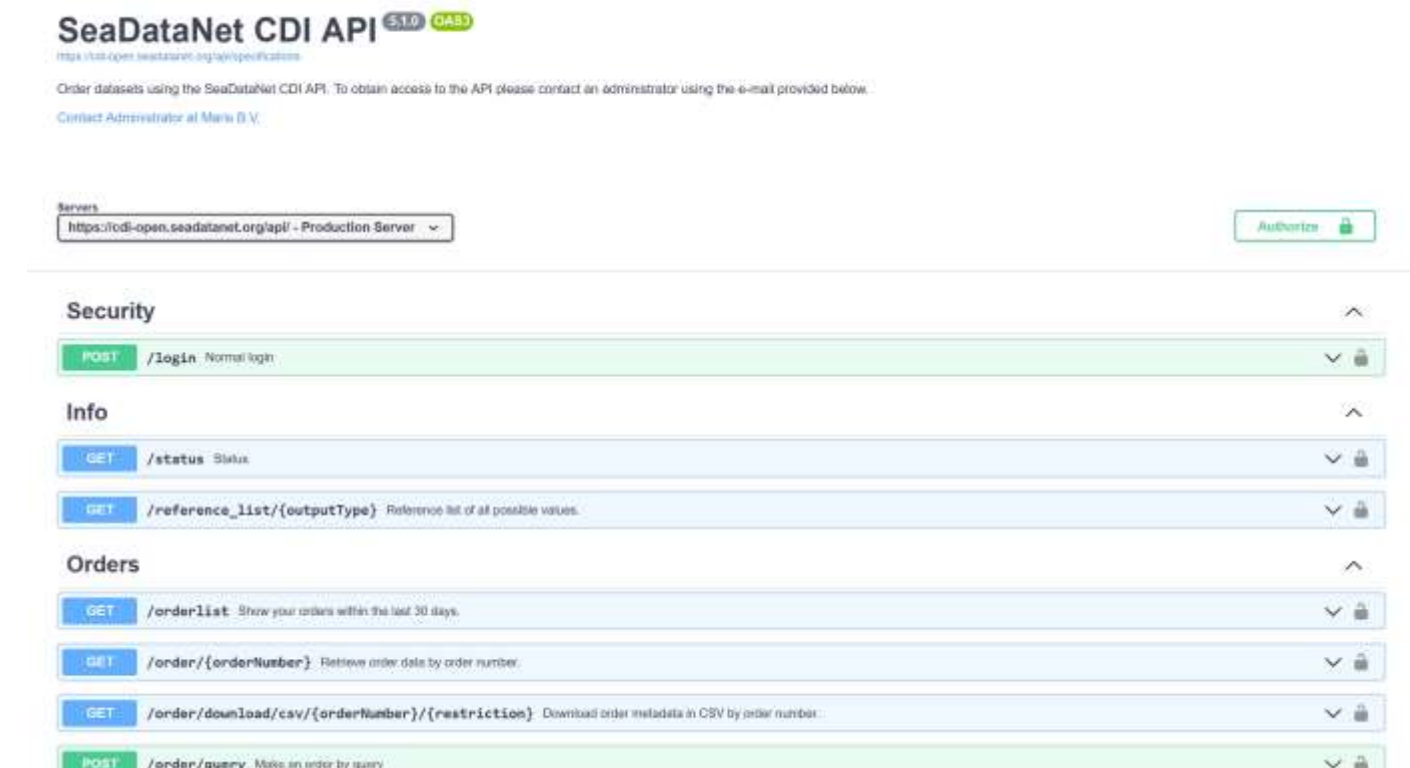
Technical innovations

As part of the SeaDataCloud project, already Web Services, OGC WMS & WFS, and SPARQL endpoints were established for machine-to-machine interactions with the SeaDataNet services:

- EDMO - Organisations
- EDMERP – Research Projects
- EDMED – Data sets (collections)
- CDI – Data (granular)
- Vocabularies – many controlled lists

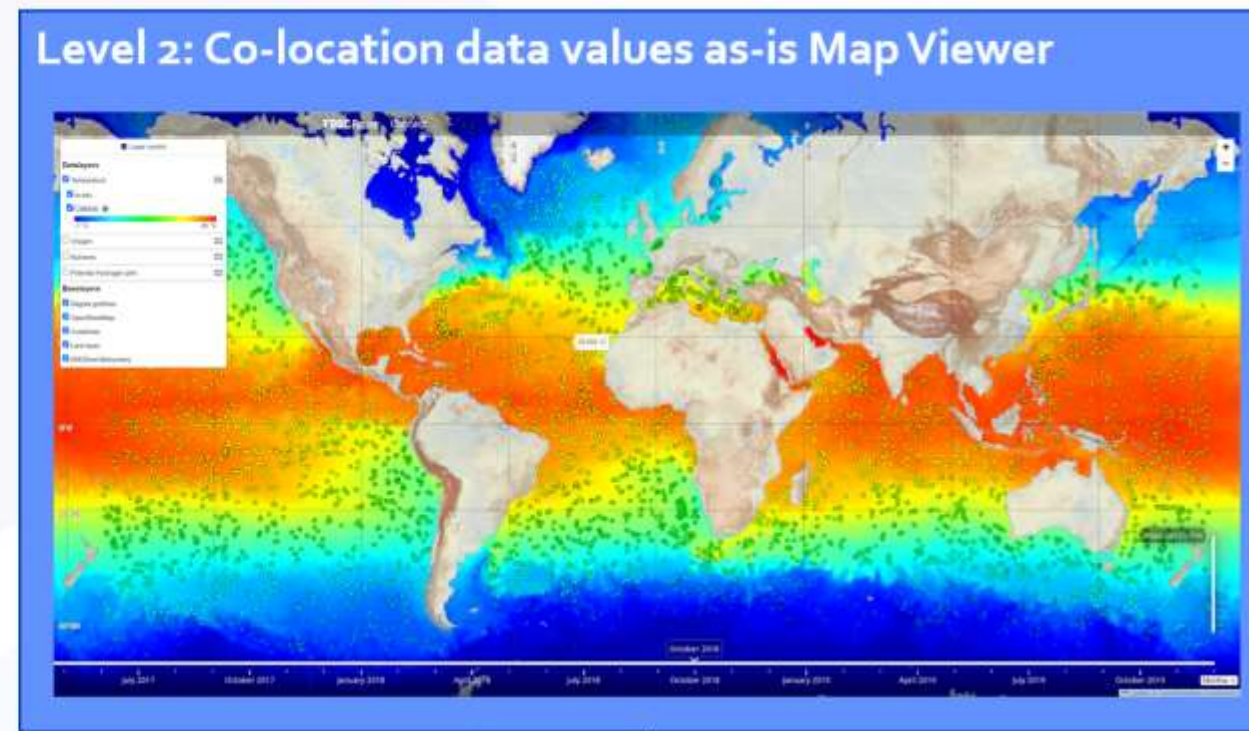
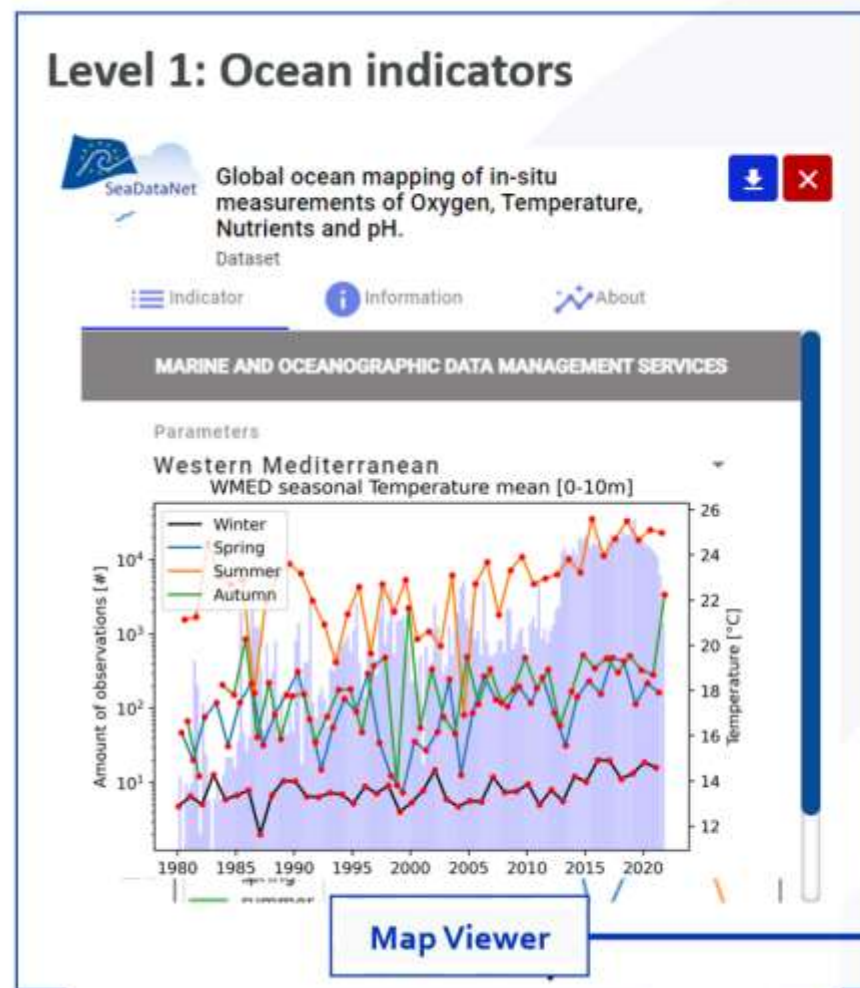


As part of ENVRI-FAIR the FAIRness of the CDI service has been assessed and optimised. Moreover, a Swagger API has been added for SeaDataNet CDI open data.



In ENVRI-Hub-NEXT further improvements will be analysed and developed

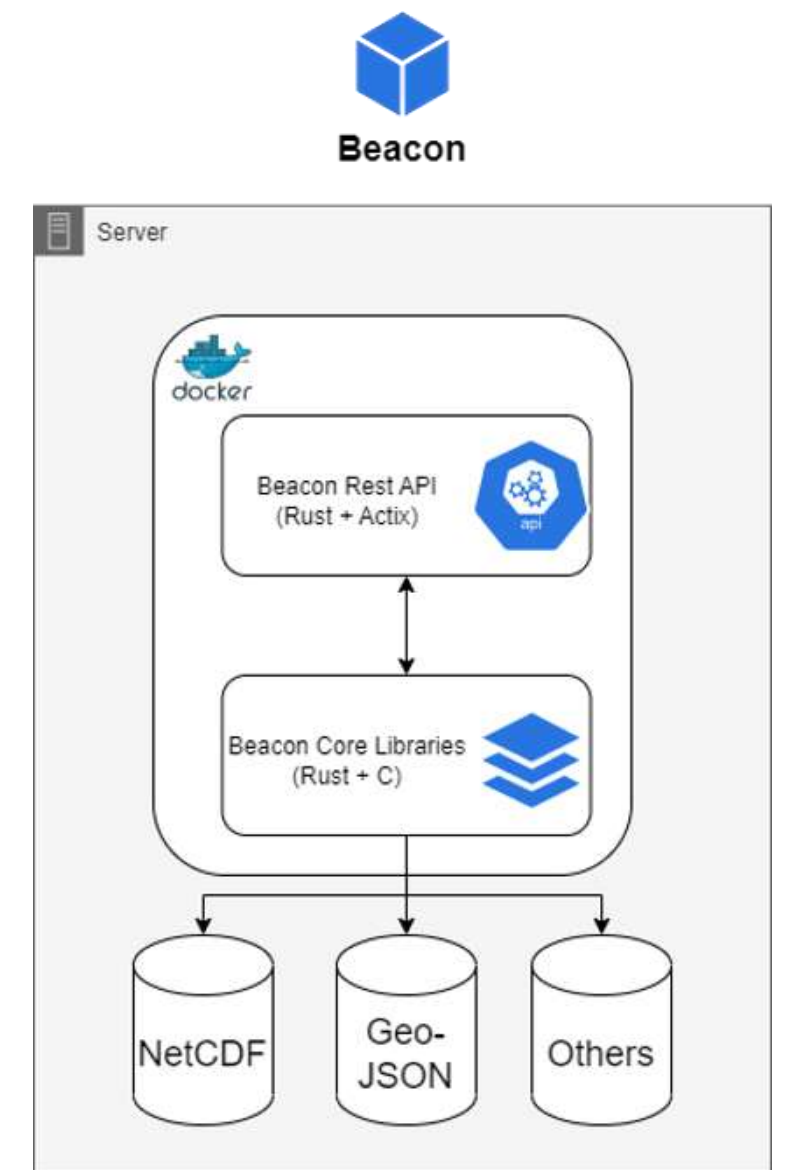
As part of the EOSC-FUTURE project an Ocean Indicators dashboard and viewer has been developed, which gives instantaneous access to data values from Euro-Argo and SeaDataNet, co-located with Copernicus Marine Data data products. This is made possible thanks to a new Data Lake and Subsetting Engine development: **Beacon**



Sliding by depth, time period, parameters, and geo location

<https://eosc-future.maris.nl/>

Further Beacon developments are underway in Blue-Cloud 2026 and FAIR-EASE, including subsetting direct access to the SeaDataNet open data cloud



<https://beacon.maris.nl/>

- SeaDataNet develops and maintains standards and services for marine data management which are widely adopted, and which have a major impact on the functioning of the marine data landscape in Europe and beyond
- SeaDataNet has a large network of more than 100 data centres which have direct contacts with nearly a thousand in-situ data collectors, providing them services for validation, long term stewardship, and wider dissemination of data sets
- SeaDataNet data are essential input for many derived products, for instance for several European data products as generated and published by EMODnet and CMEMS
- SeaDataNet has a legal entity, the SeaDataNet AISBL, which gives a strong foundation for its mission and sustainability
- SeaDataNet is a major building block in the European marine data management landscape, supporting EMODnet, CMEMS, EOSC, and DTO
- SeaDataNet continues to innovate its standards and services to stay state-of-the-art for tomorrow's needs. This is done by participating in many EU funded projects.



We wish you
a very fruitful IMDIS 2024 conference
and a pleasant stay in Bergen 🇳🇴

27-29 May 2024 



imdis

International conference on Marine Data and Information Systems

