



SeaDataCloud

Introduction to SeaDataNet infrastructure

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Oceans and seas are important



Climate, Energy, Food, Tourism, Shipping, Health,



Marine data relevant for many uses:

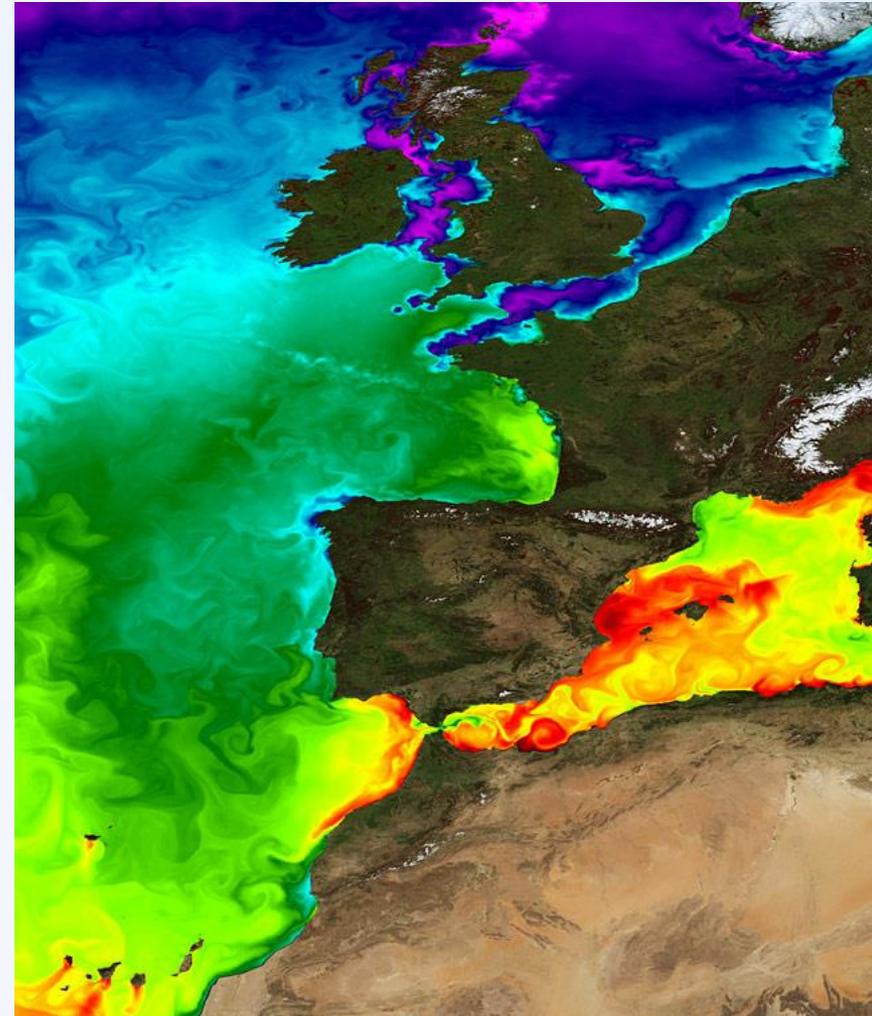
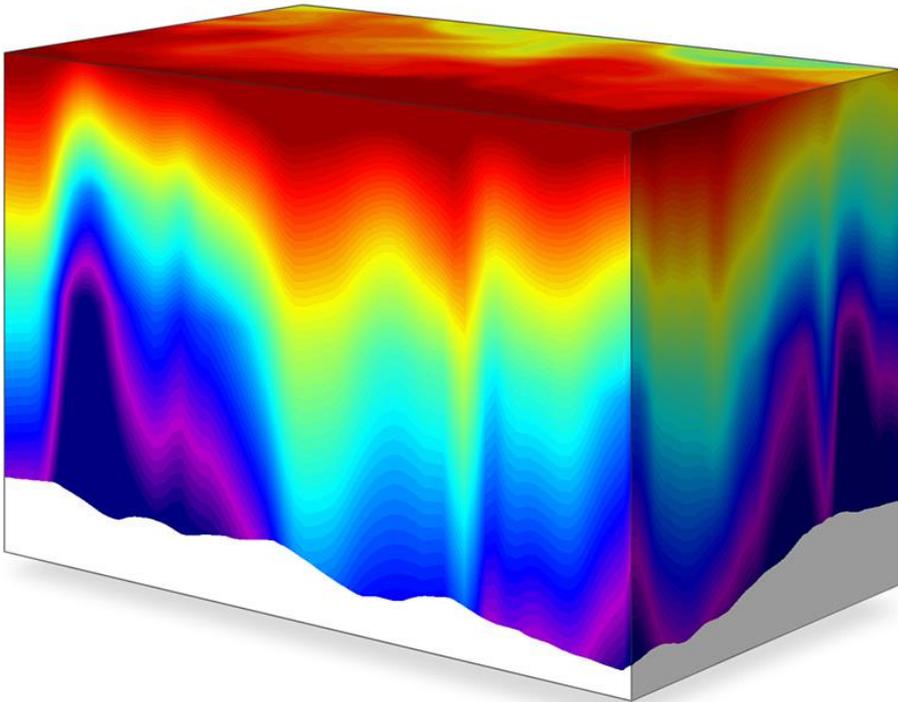
- Scientific Research to gain knowledge and insight
- Monitoring and assessment (water quality, climate status, stock assessment)
- Coastal Zone Management
- Modelling (including hindcast, now-cast, forecast)
- Dimensioning and supporting operations and activities at sea (shipping, offshore industry, dredging industry, ..)
- Implementation and execution of marine conventions for protection of the seas
- Implementation of international Directives, such as in Europe directives for water (WFD), marine strategy (MSFD), coastal zone management



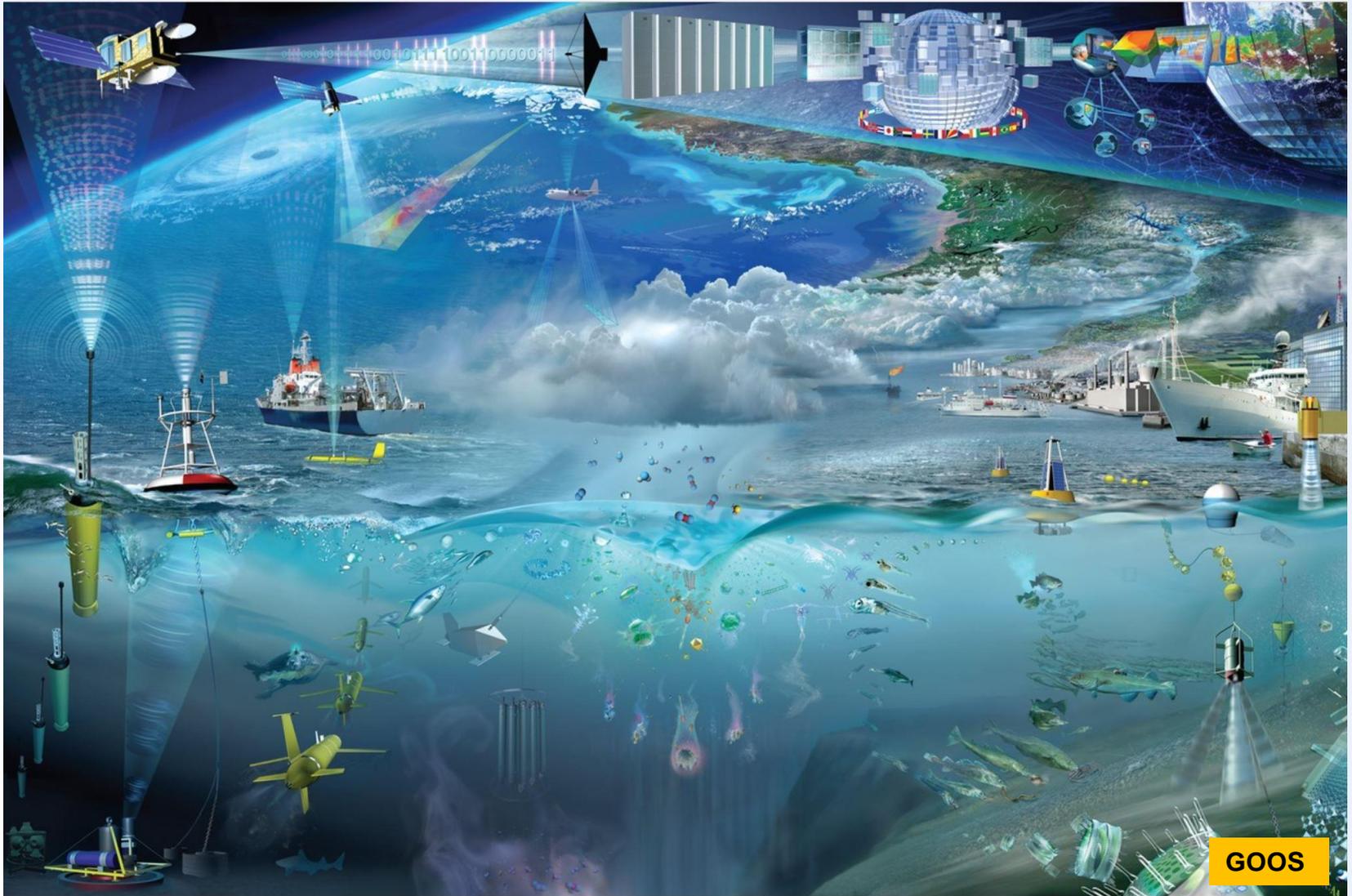
Users originate from government, science sector, and industry, nationally and internationally

Input for models: analyses and forecasts :

- Operational oceanography
- Physical and meteorological modelling
- Ecosystem modelling

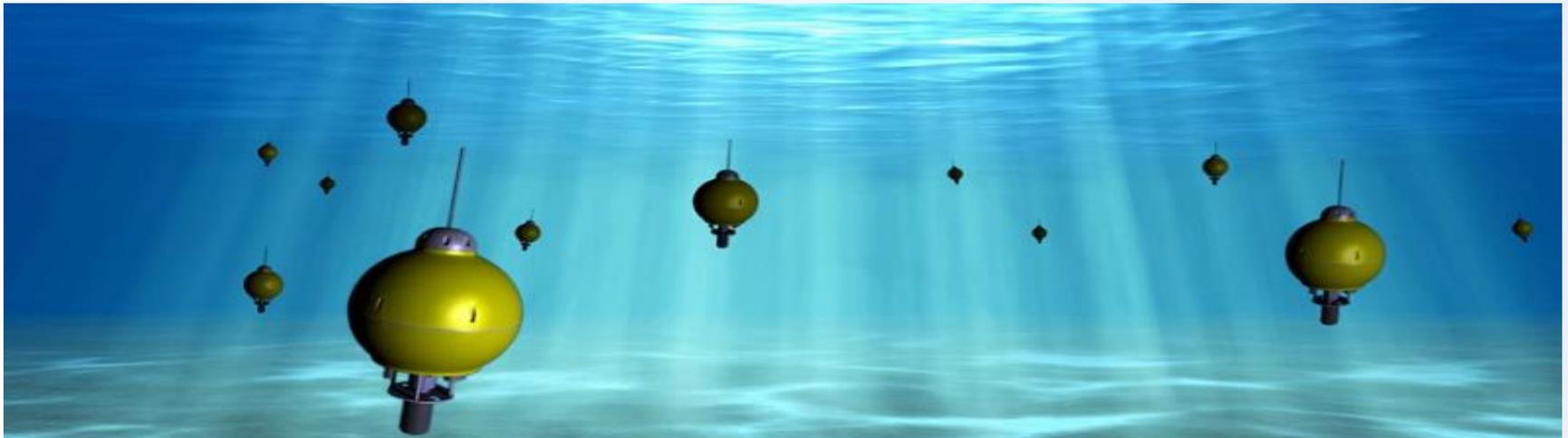


Acquisition of ocean and marine data



Economy of data acquisition

- Data are collected by governments, research institutes, and private industry (in Europe already more than 1.000 organisations)
- Data for physics, geophysics, meteorology, chemistry, biology, geology, bathymetry
- Acquisition of oceanographic and marine data is expensive; annual costs in Europe estimated at **1.4 Billion Euro** (1.0 = in-situ; 0.4 = satellites)



Professional data management is required with agreements on standardisation, quality control protocols, long term archiving, catalogues, and access

What is SeaDataNet?



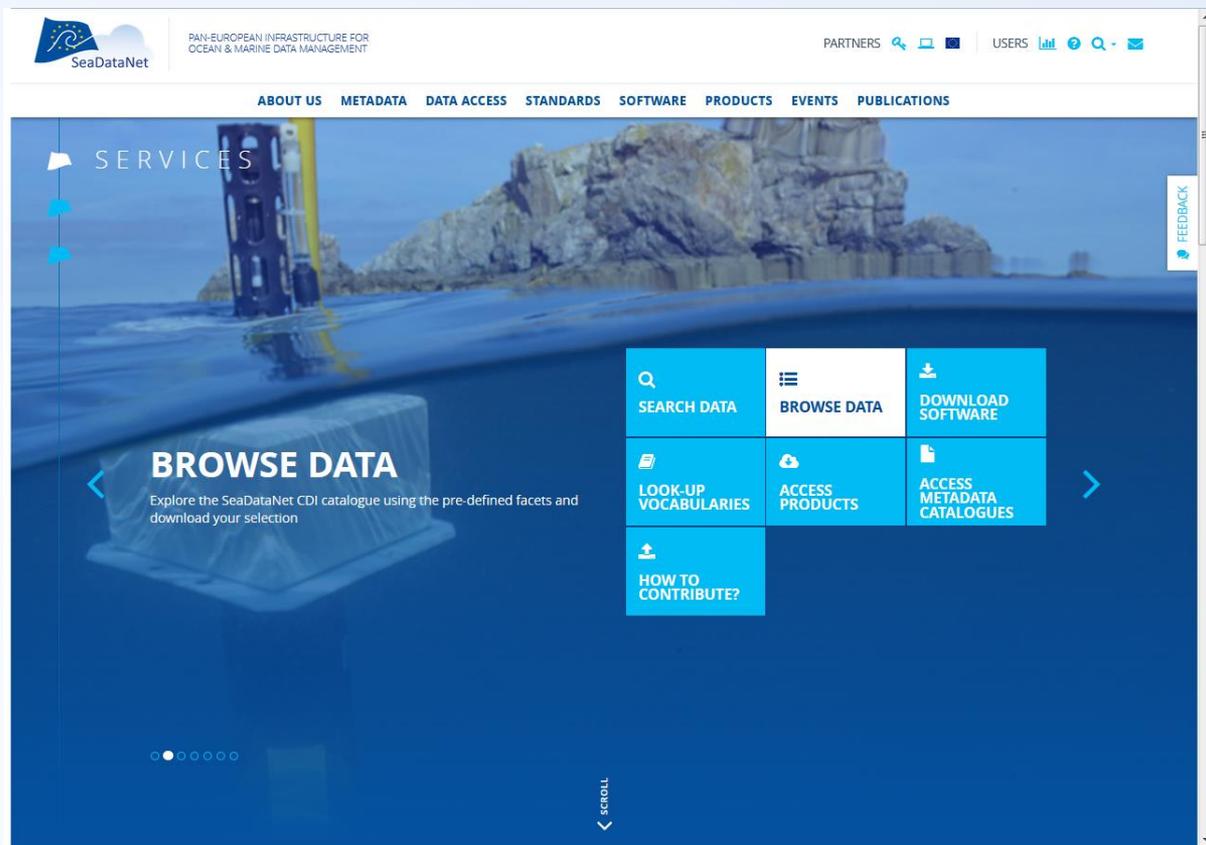
A pan-European infrastructure set up and operated for managing marine and ocean data in cooperation with the NODCs and data focal points of 34 countries bordering the European seas

90s	Metadata directories Medar/MedAtlas
2002-2005	Sea-Search (FP5)
2006-2011	SeaDataNet (FP6)
2011-2015	SeaDataNet II (FP7)
2016-2020	SeaDataCloud (H2020)

SeaDataNet portal

Giving access to

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



<http://www.seadatanet.org>

SeaDataNet standards

- 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 sets, research cruises, monitoring networks, and research projects => marine metadata profiles, schemas, schematron rules
 - **Controlled vocabularies** for the marine domain (>65,000 terms in 82 lists), with international governance and web services
 - **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

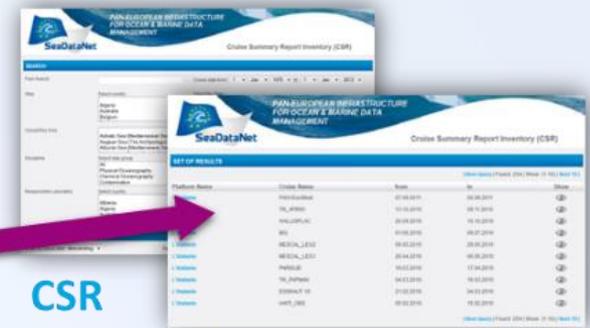


SeaDataNet services and tools

- **Set of tools** to be used each data centre and freely available from the SeaDataNet portal: metadata editor, data conversion software, data analysis software (ODV), data interpolation software (DIVA)
- **Capacity building** by training workshops for uptake of standards and tools by the data centres in order to achieve standardisation
- **Pan-European services** for harmonised discovery, access, visualisation of data and data products
- **Common SeaDataNet Data Policy** and License



Centralised metadata directories



EDMERP
Projects

CSR
Research cruises

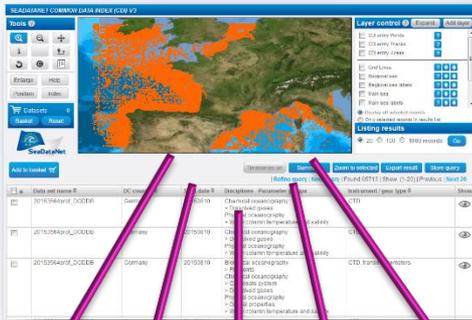
EDIOS
Observing programmes

CDI Data index

EDMED
Data sets

CDI Data Discovery and Access service

SeaDataNet portal

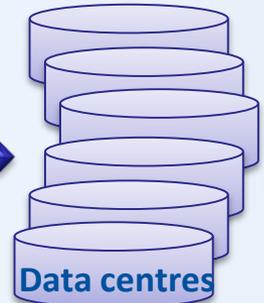


Search
and
Shop



Data
Load

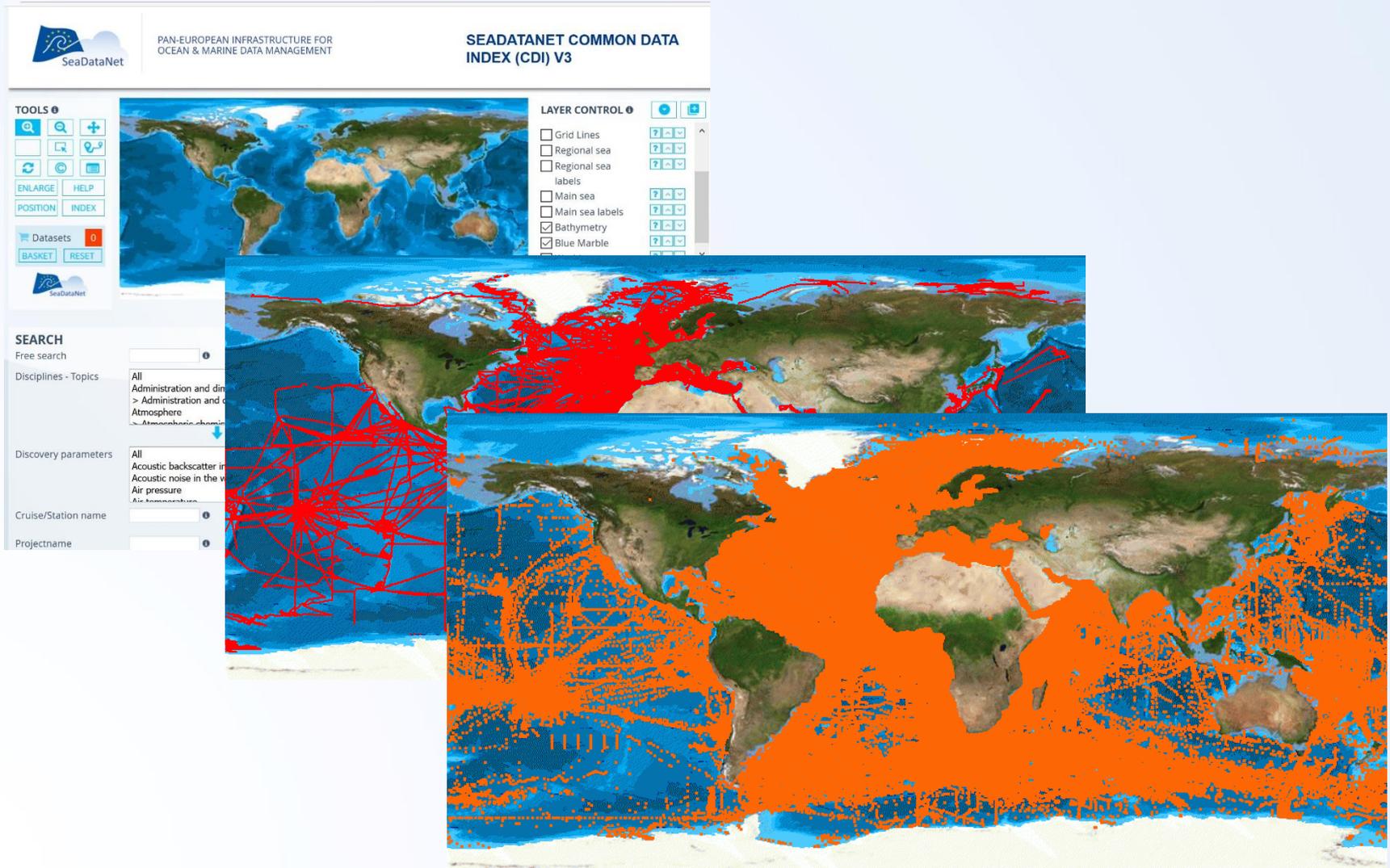
Already 110 data centres connected and more underway



Metadata

+ transaction data

European data sources
data centres ← ≈ 650 originators



The screenshot displays the SEADATANET COMMON DATA INDEX (CDI) V3 web interface. At the top left is the SeaDataNet logo, and the main header reads "PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT" and "SEADATANET COMMON DATA INDEX (CDI) V3".

The interface includes a "TOOLS" panel on the left with search, zoom, and navigation icons, and a "LAYER CONTROL" panel on the right with checkboxes for "Grid Lines", "Regional sea", "Main sea", "Main sea labels", "Bathymetry", and "Blue Marble".

The "SEARCH" section on the left contains a "Free search" input field, a "Disciplines - Topics" dropdown menu (currently showing "Atmospheric observations"), and "Discovery parameters" (currently showing "Acoustic backscatter in..."). Below these are input fields for "Cruise/Station name" and "Projectname".

The main map area shows a global map with three distinct data layers overlaid: a network of red lines representing cruise tracks, a dense field of orange dots representing data points, and a blue grid representing bathymetry. The map is presented in a 3D perspective view.

Data Products and viewers

Home > Products

DATA PRODUCTS

DESCRIPTIONS & DOCUMENTATION

SeaDataNet provides aggregated datasets (ODV collections of all SeaDataNet measurements of temperature and salinity by sea basins) and climatologies (regional gridded field products based on the aggregated datasets) for all the European sea basins.

Search ...

CATALOG MY DOWNLOADS

Results 1 to 17 on 17 : 20 by page - Sort by: Popularity -

- North Atlantic Ocean - Temperature and salinity observation coll...
- Mediterranean Sea - Temperature and Salinity Climatology V1.1

Map view with orange bounding boxes over the Mediterranean and Black Sea regions. Reset filters button.

SeaDataNet Temperature and Salinity historical data collection, including quality flags after quality control with ODV. For access please register at <http://www.marine-geo.org>

Source: Seadatanet

Black Sea - Temperature and salinity observation collection V2

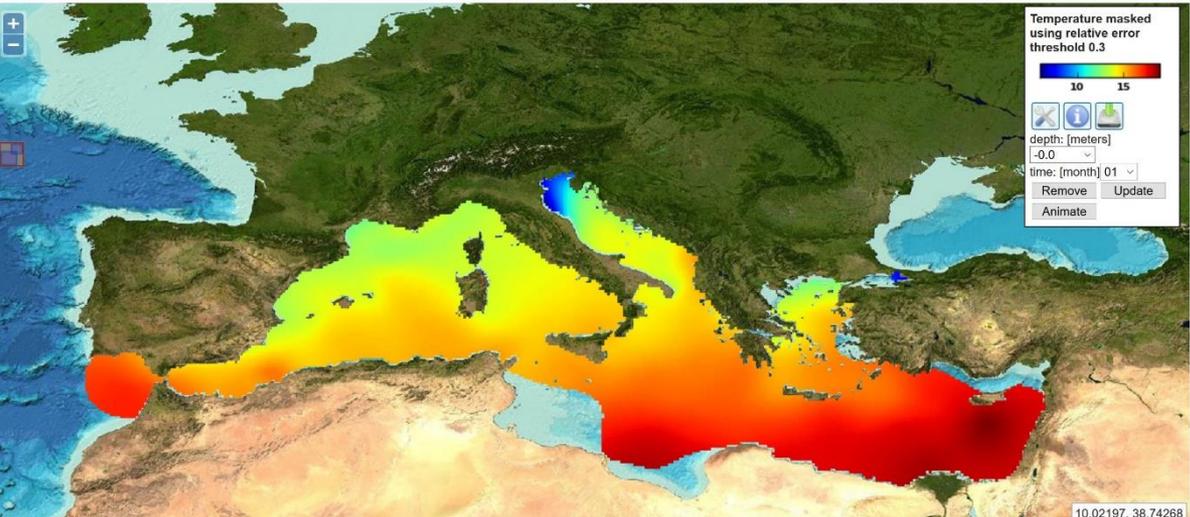
The Black Sea historical dataset includes all access temperature and salinity in situ data from the Black Sea and Sea of Marmara for the period 1868-2014. The data were retrieved from the Black Sea Data Collection Project (BSDCP) archive.

Source: Seadatanet

SeaDataNet products
Viewing and Downloading service

Horizontal Section Vertical Section

Select data products Report a problem About Help



Temperature masked using relative error threshold 0.3

10 15

depth: [meters] [-0.0]

time: [month] 01

Remove Update Animate

10.02197, 38.74268



SeaDataNet cooperation

- **Copernicus Marine Environmental Monitoring Services (CMEMS):** providing long-term archives and standards
- **Marine Strategy Framework Directive (MSFD):** providing infrastructure, standards and data collections for several indicators
- **Large ocean monitoring systems (EuroGOOS, AtlantOS, Euro-ARGO, JERICO-Next, ..):** providing standards and validation + long-term archiving services
- **Ocean Data Interoperability Platform (ODIP):** exploring and demonstrating common standards and interoperability with leading data management infrastructures in USA and Australia
- **GEOSS - EuroGEOSS:** Maintaining the GEOSS portal with SeaDataNet in-situ data collections from large community of European data holders (> 100 data centres; >600 data originators)
- **European Open Science Cloud (EOSC):** shaping the pilot Blue Cloud
- **European Marine Observation and Data Network (EMODNet)** driven by Marine Knowledge 2020 and Blue Growth

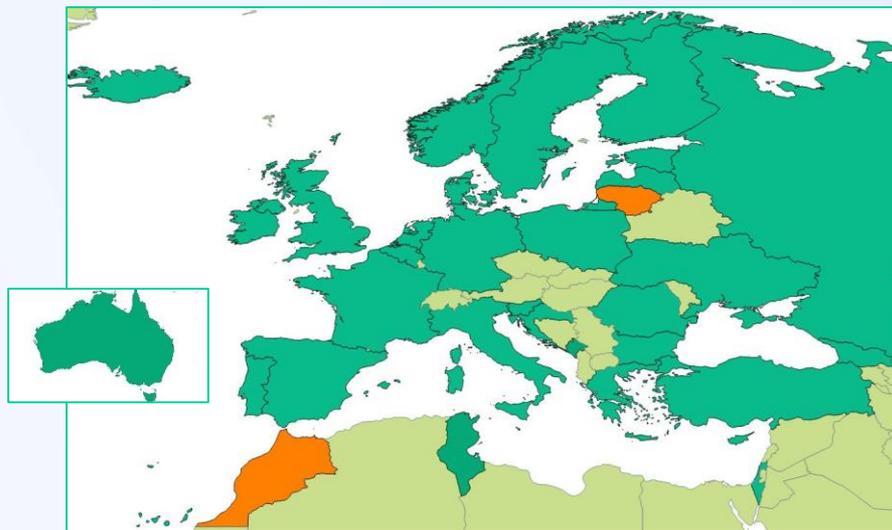
SeaDataCloud a new opportunity

Standards and information technology are always evolving, and the SeaDataNet infrastructure must stay up-to-date to maintain and further expand its services to its leads customers and major stakeholders



SeaDataCloud - Key numbers

- 4 year duration, started 1st November, 2016
- 10 M euros
- 56 partners
- 5 subcontractors
- 32 countries
- 1110.5 man/months

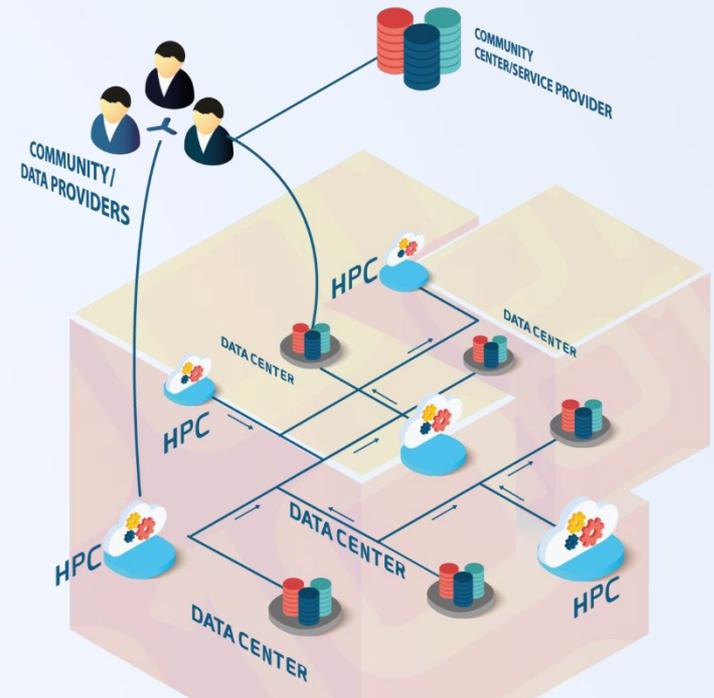
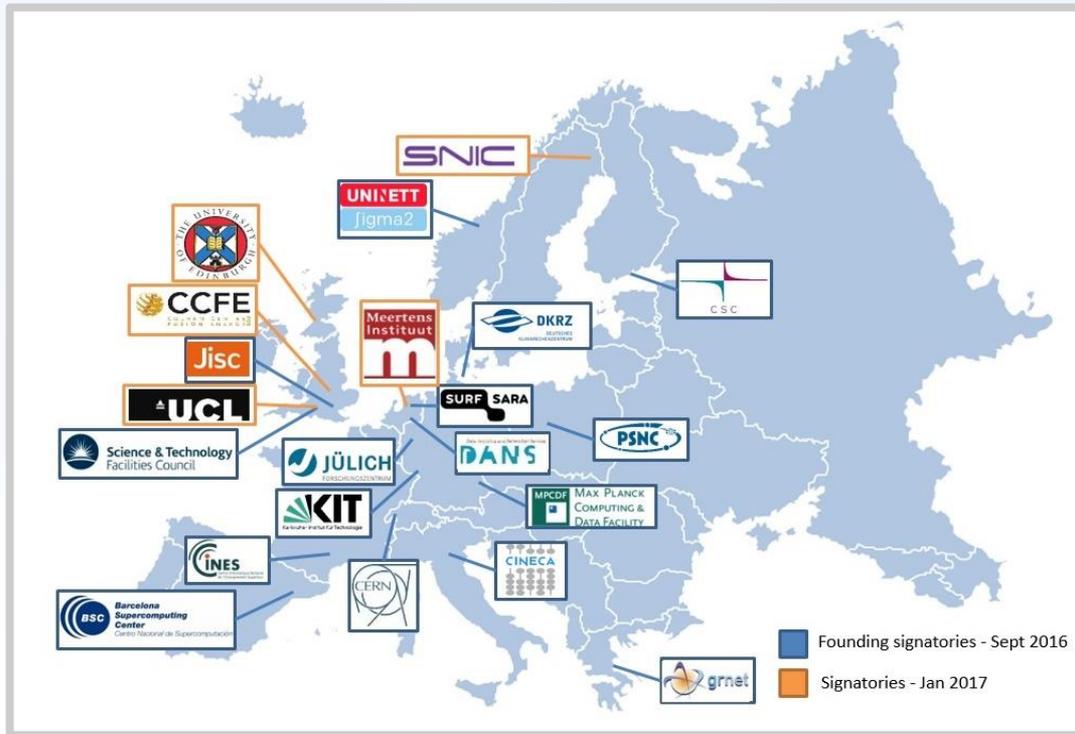




What is it About?

- SDC is about **updating and further developing standards**
- SDC is about improving and innovating services & products
- SDC is about adopting and elaborating new technologies
- SDC is about giving more attention to users and putting the user experience in a central position
- Moreover, it is about implementing a strategic and operational cooperation between the SeaDataNet consortium of marine and ocean data centres and the EUDAT consortium of e-infrastructure service providers

Cooperation with EUDAT



5 EUDAT members are partners of SeaDataCloud :
 CINECA, CSC, DKRZ, GRNET and STFC

Architecture upgrading

Present SeaDataNet architecture

Planned upgraded architecture with data replication, advanced services and VRE in the cloud

