



## As tendências das infraestruturas europeias de dados marinhos

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Carlos Borges, Leonor Veiga e Sara Almeida





SeaDataNet



SeaDataCloud



EMODnet



EMODnet Ingestion



Conclusões

|   |                   |
|---|-------------------|
| + | SeaDataNet        |
| + | SeaDataCloud      |
| + | EMODnet           |
| + | EMODnet Ingestion |
| + | Conclusões        |



É uma infraestrutura pan-Europeia de dados espaciais marinhos

Atualmente tem Centros de Dados de 35 países que fazem fronteira com as zonas marítimas europeias

90s Metadata directories  
MEDAR/MedAtlas

2002-2005 Sea-Search (FP5)

2006-2011 SeaDataNet (FP6)

2011-2015 SeaDataNet II (FP7)

2016-2020 SeaDataCloud (H2020)

SERVICES

# SEARCH DATA

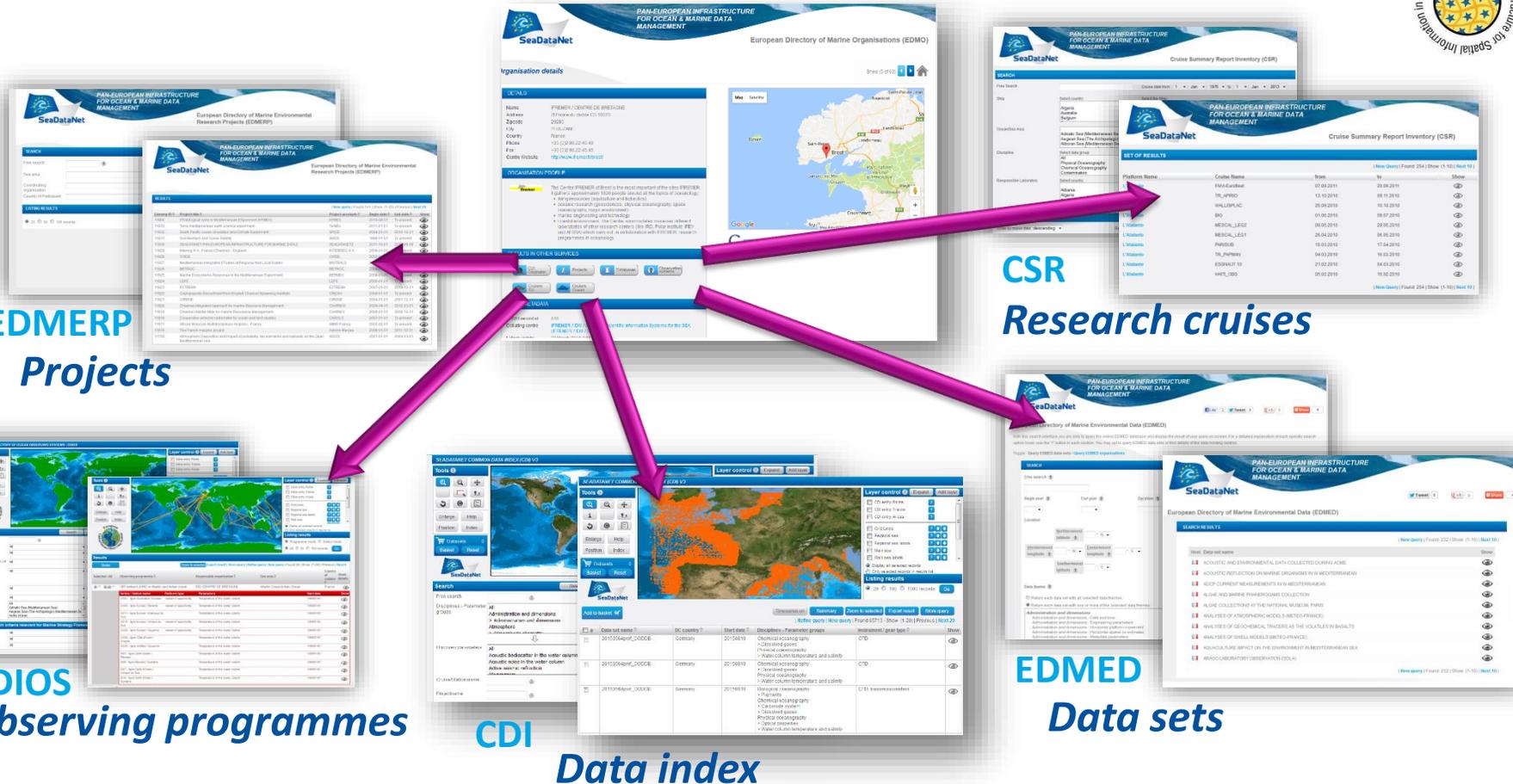
Enter your own criteria to search and download data from SeaDataNet CDI catalogue

|   |  |   |
|---|--|---|
| <br>SEARCH DATA          | <br>BROWSE DATA     | <br>DOWNLOAD SOFTWARE          |
| <br>LOOK-UP VOCABULARIES | <br>ACCESS PRODUCTS | <br>ACCESS METADATA CATALOGUES |

Portal com standards para harmonização dos dados, ferramentas e serviços, dedicados aos utilizadores e centros de dados

[www.seadatanet.org](http://www.seadatanet.org)

## EDMO Organisations



CSR  
Research cruises

EDMED  
Data sets

EDMERP  
Projects

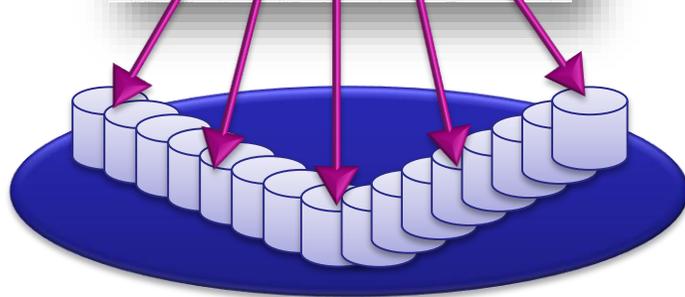
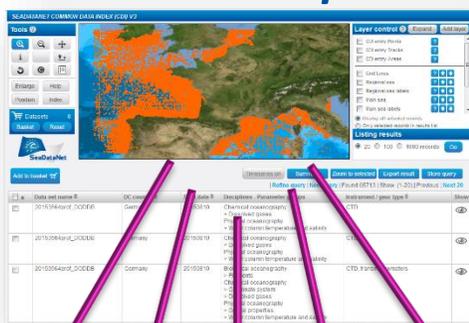
EDIOS  
Observing programmes

CDI  
Data index



Conhecer o mar para que todos o possam usar

## SeaDataNet portal

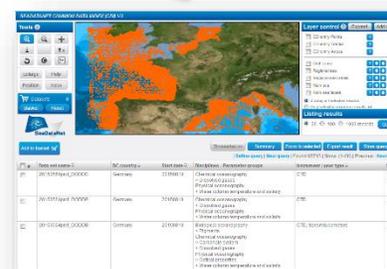


European data sources

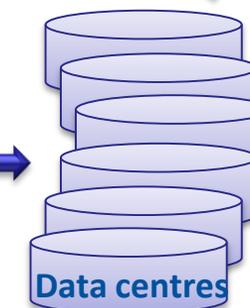
Search  
and  
Shop

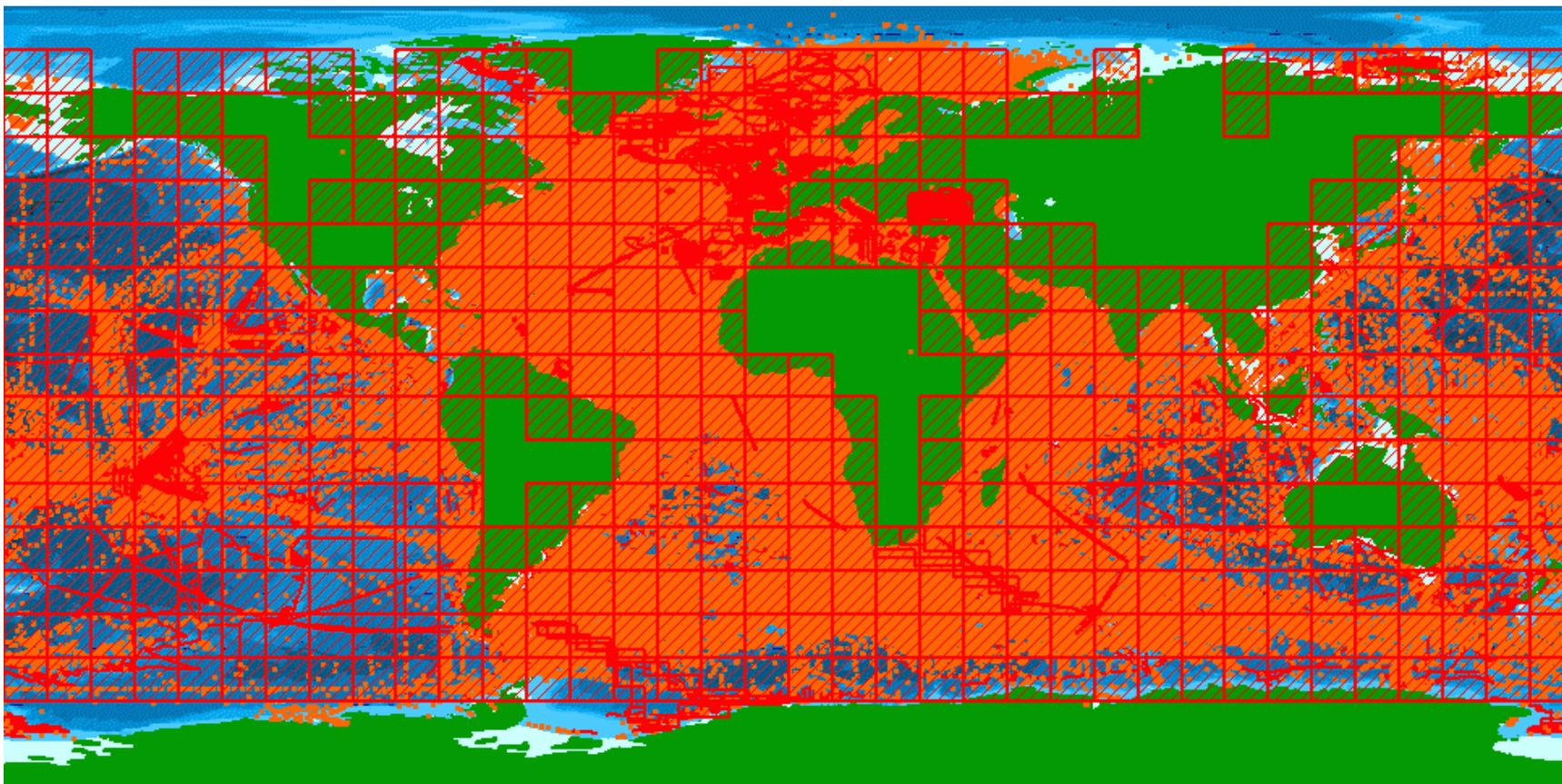


Data  
download



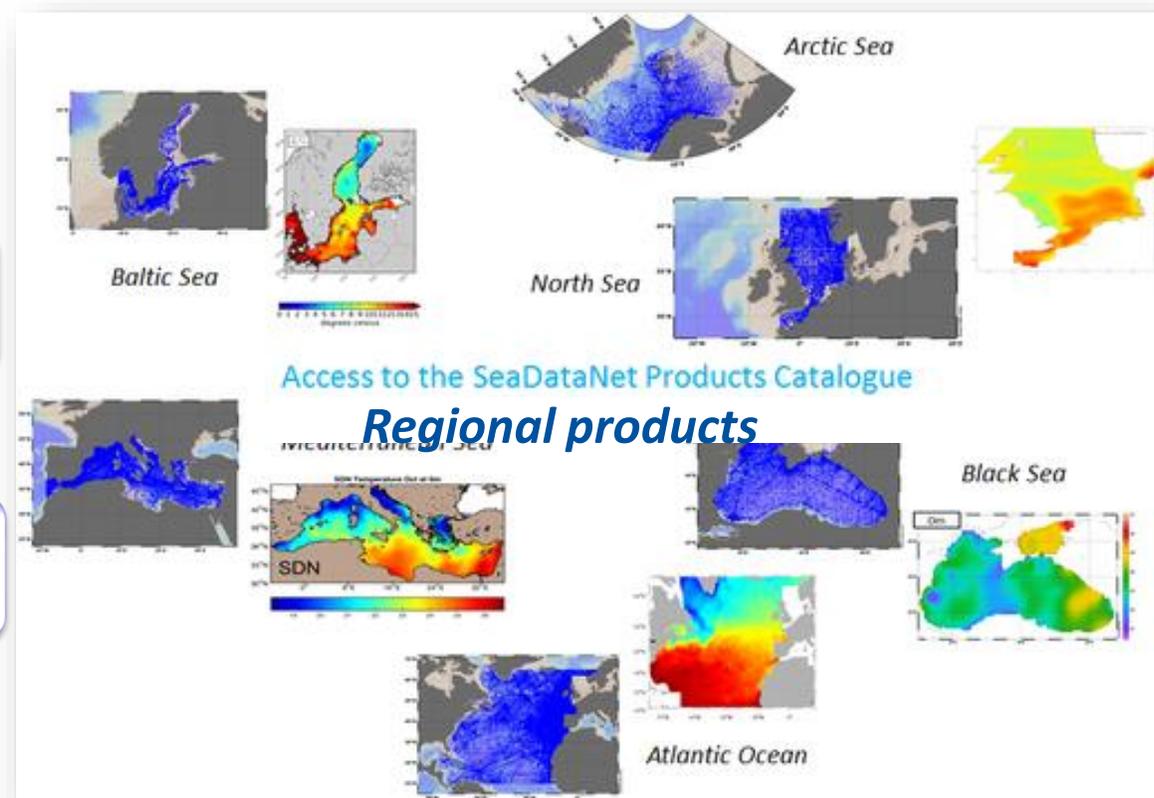
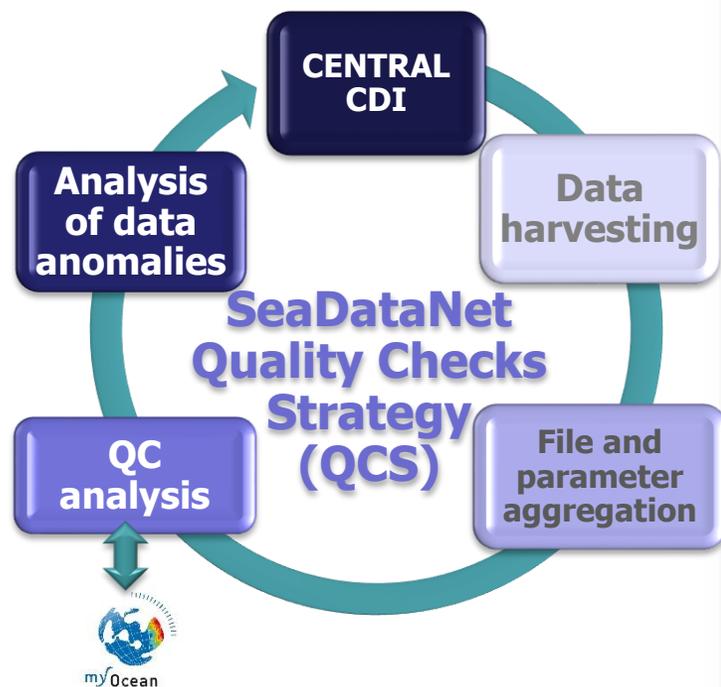
Metadata  
+ transaction data





*1.95 million CDIs de 34 países;*

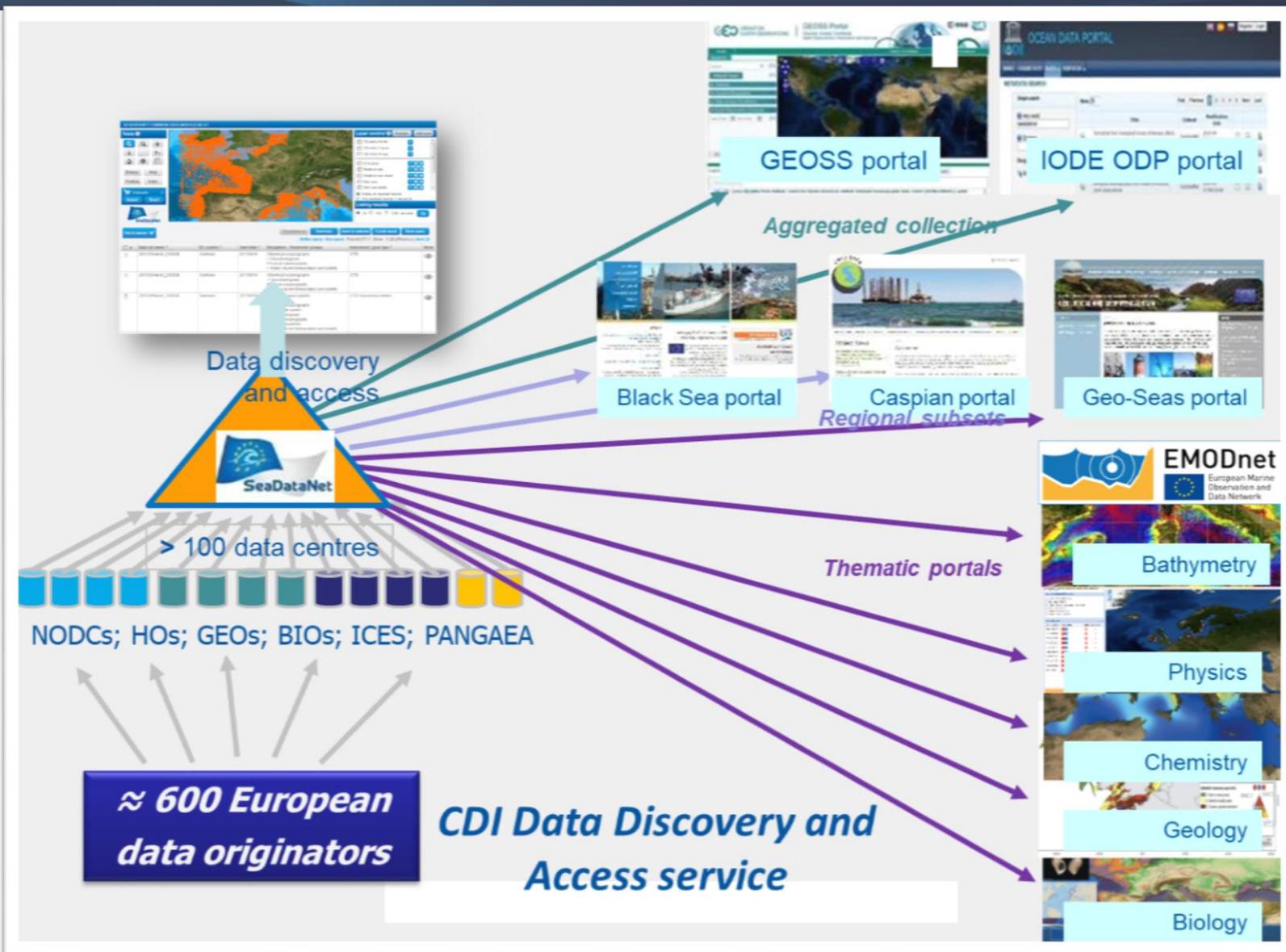
*102 Centros de Dados Temas: Oceanografia Física, química, geologia, geofísica, batimetria e biologia;*



*Aggregated datasets and climatologies*

*Improvement of the data quality*

# Rede de infraestruturas regionais e globais



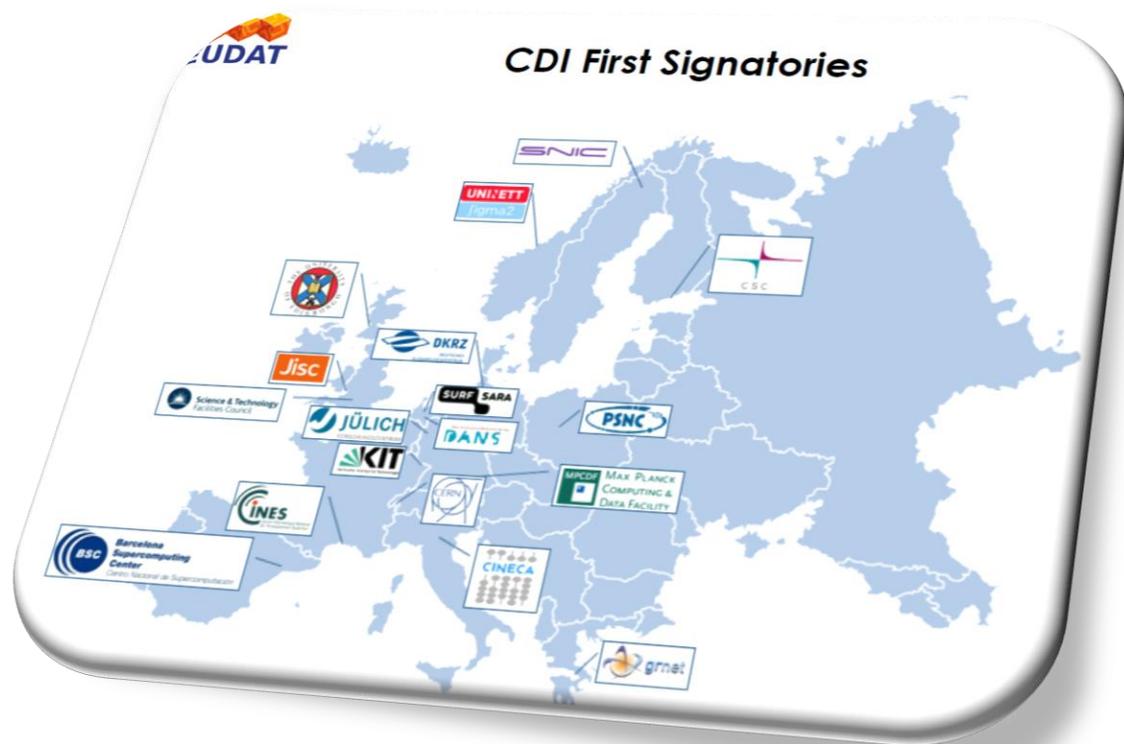
Conhecer o mar para que todos o possam usar

|  |                   |
|--|-------------------|
|   | SeaDataNet        |
|   | SeaDataCloud      |
|   | EMODnet           |
|   | EMODnet Ingestion |
|  | Conclusões        |

Os desenvolvimentos tecnológicos obrigam a uma evolução contínua e ao investimento na atualização das infraestruturas

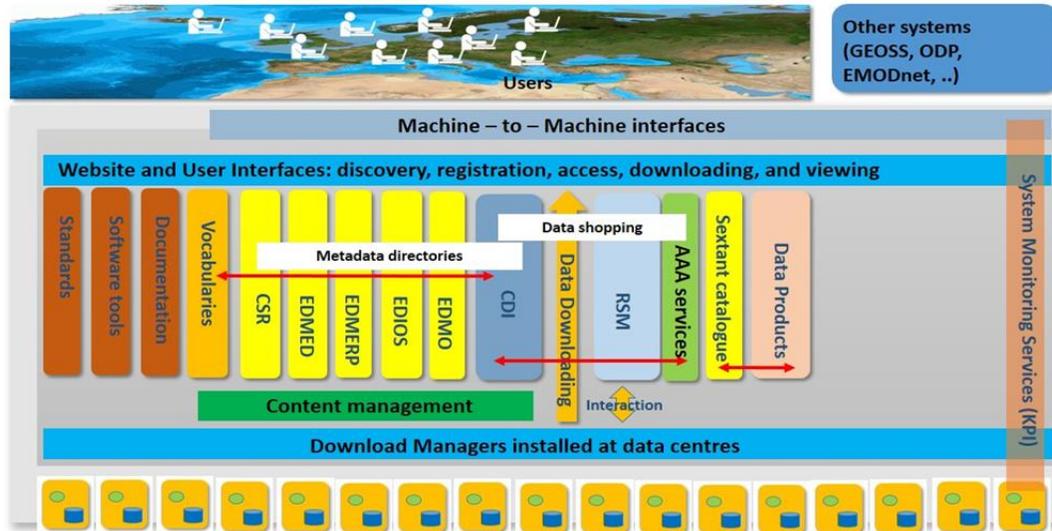
O projeto H2020 **SeaDataCloud** (evolução da **SeaDataNet** e dos standards associados):

- Início em Novembro de 2016 com uma duração de 4 anos;
- Financiamento: 10 M €;
- 61 parceiros de 32 países;
- Coord. Científica: IFREMER (FR), Coord. Técnica: MARIS (NL)

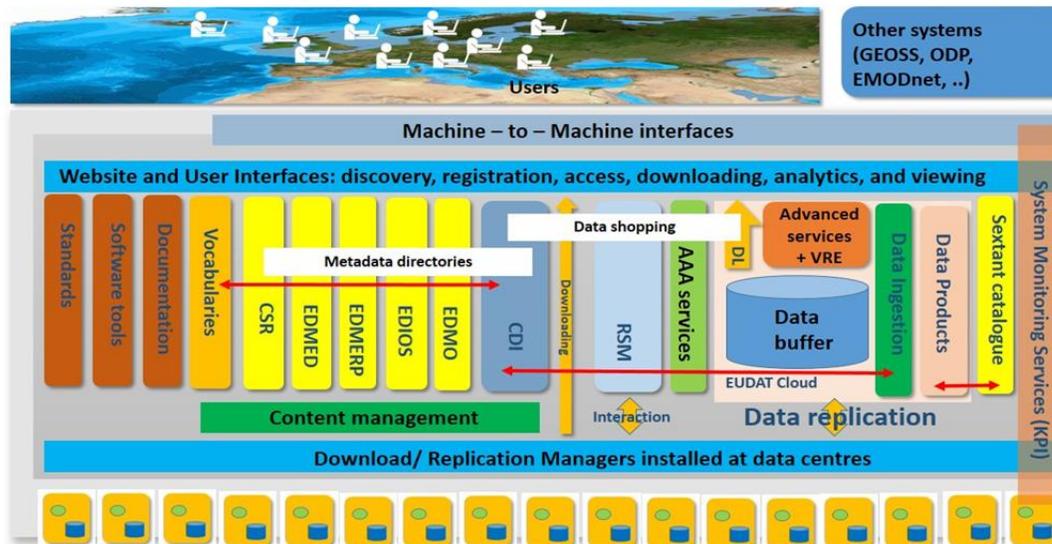


Estabelecimento de protocolos de colaboração e partilha de recursos com a rede EUDAT (Rede europeia de centros de computação de alto desempenho)

**Arquitetura SeaDataNet**



**Arquitetura SeaDataCloud**  
**Atualização dos servidores instalados nos centros de Dados**  
**Serviços analíticos VRE na cloud**



Data collection by in situ sensors and remote sensing

Conhecer o mar para que todos o possam usar



SeaDataNet



SeaDataCloud



EMODnet



EMODnet Ingestion



Conclusões

## 7 Thematic portals

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

## 6 Sea-basin Checkpoints

- ARCTIC
- ATLANTIC
- BALTIC
- BLACK SEA
- MED SEA
- NORTH SEA

Checking the fitness for purpose of marine data in European sea basins

### EMODnet Timeline

- Phase I (2009-2013)**
  - Limited sea basins
  - 59 institutes
  - budget: 6.45 M€
- Phase II (2013-2017)**
  - Low resolution all basins
  - 120 institutes
  - budget: 16.3 M€
- Phase III (2017-2020)**
  - « We are here »
  - Multi-resolution
  - over 150 institutes

## 1 Central Portal ([www.emodnet.eu](http://www.emodnet.eu))

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

### ACCESS THEMATIC PORTALS

#### DATA INGESTION PORTAL

The EMODnet Data Ingestion portal seeks to identify and to reach out to other potential providers in order to make their data sets also part of the total offer. It aims at...

[READ MORE](#)

#### BATHYMETRY

Data on bathymetry, seafloor morphology, sediment, and geological features of European basins, straits, and canals.

[USE CASES](#) [INFO](#) [ACCESS](#)

#### GEOLOGY

Data on seabed substratum, sea floor geology, coastal geomorphology, geological features, and mineral resources.

[USE CASES](#) [INFO](#) [ACCESS](#)

#### SEABED HABITATS

Data on modelled seabed habitats based on seabed substratum, energy, biological zone, and salinity.

[USE CASES](#) [INFO](#) [ACCESS](#)

#### CHEMISTRY

Data on the concentration of nutrients, organic matter, pesticides, heavy metals, radionuclides and pollutants in water, sediment and biota.

[USE CASES](#) [INFO](#) [ACCESS](#)

#### BIOLOGY

Data on temporal and spatial distribution of species abundance and biomass from several taxa.

[USE CASES](#) [INFO](#) [ACCESS](#)

#### PHYSICS

Data on salinity, temperature, waves, currents, and level, light attenuation, and FerryBoxes.

[USE CASES](#) [INFO](#) [ACCESS](#)

#### HUMAN ACTIVITIES

Data on anthropogenic activities and their impact on the marine environment.

[USE CASES](#) [INFO](#) [ACCESS](#)

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Lançamento da  
Nova versão do EAS  
– Junho 2018



[http://ec.europa.eu/maritimeaffairs/atlas/maritime\\_atlas/](http://ec.europa.eu/maritimeaffairs/atlas/maritime_atlas/)



SeaDataNet



SeaDataCloud



EMODnet



EMODnet Ingestion

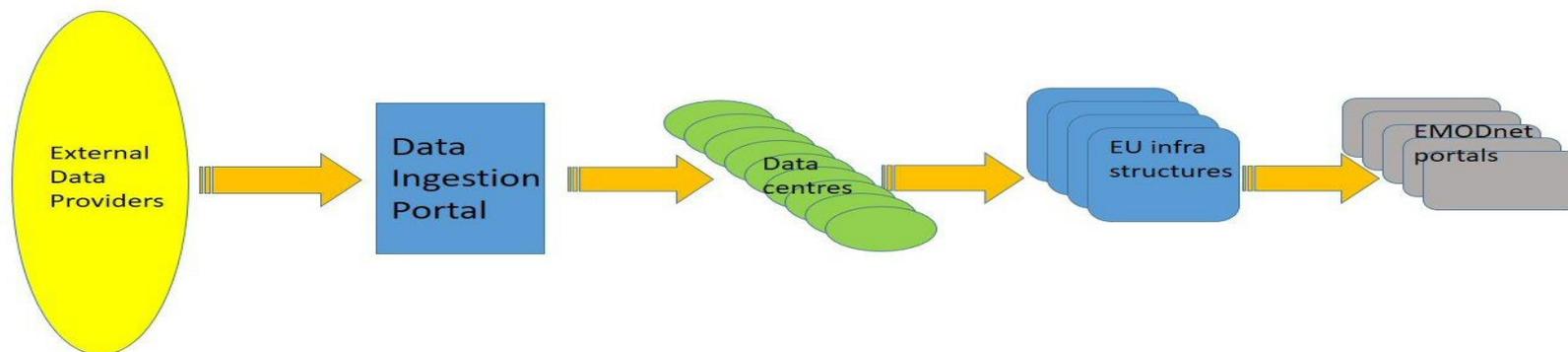


Conclusões



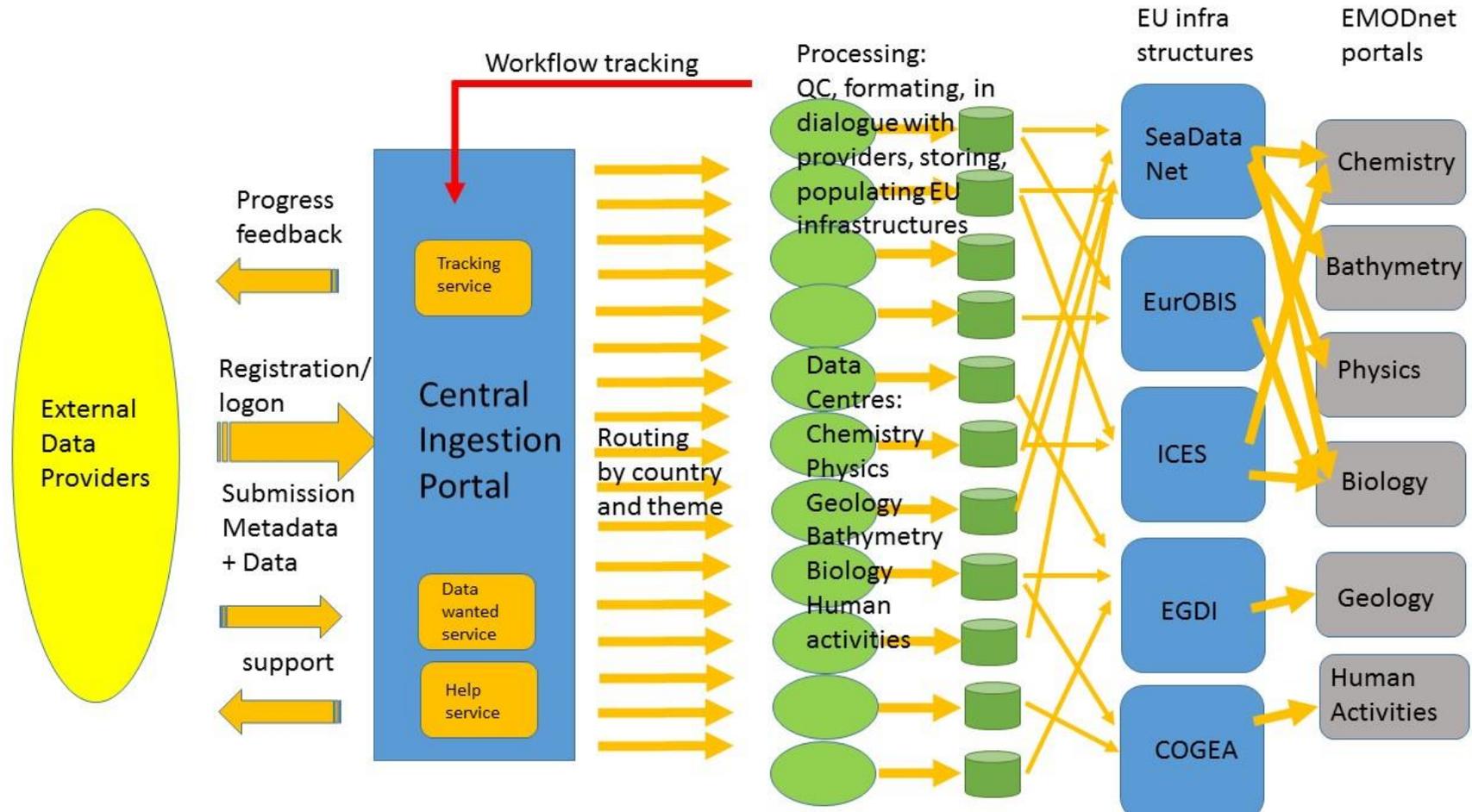
Fluxo de dados dos  
Portal EMODnet  
Ingestion

Projeto: 19 Maio  
2016 – 19 Maio 2019



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# EMODnet Ingestion – Processo





Home

## Welcome to the EMODnet Data Ingestion portal

The European Marine Observation and Data Network (EMODnet) consists of more than 160 organisations that together work on assembling, harmonising and making marine data, products and metadata more available to public and private users. This Data Ingestion portal facilitates additional data managers to ingest their marine datasets for further processing, publishing as open data and contributing to applications for society.

[READ MORE](#)



### Submit your data files

The online Data Submission service facilitates you to submit marine datasets by completing a form and uploading your data as a file package. The service



### Ingest operational data

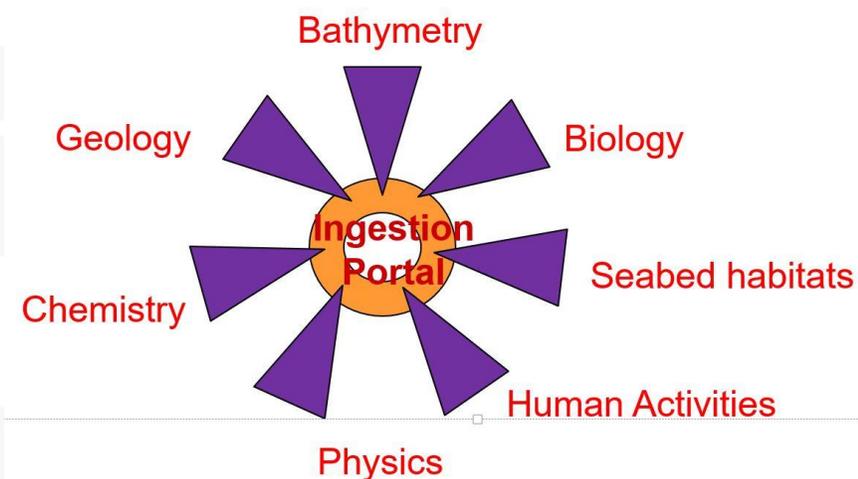
We are also interested in (Near) Real-Time ((N)RT) data streams from fixed and autonomous ocean observing platforms. This section explains how you



### View submissions

View, search and download datasets that have been submitted by data providers using the Data Submission service.

## Lançamento - fevereiro de 2017



Conhecer o mar para que todos o possam usar



EMODnet

## DATA INGESTION PORTAL

Wake up your data - set them free for Blue Society

Data Submission Service

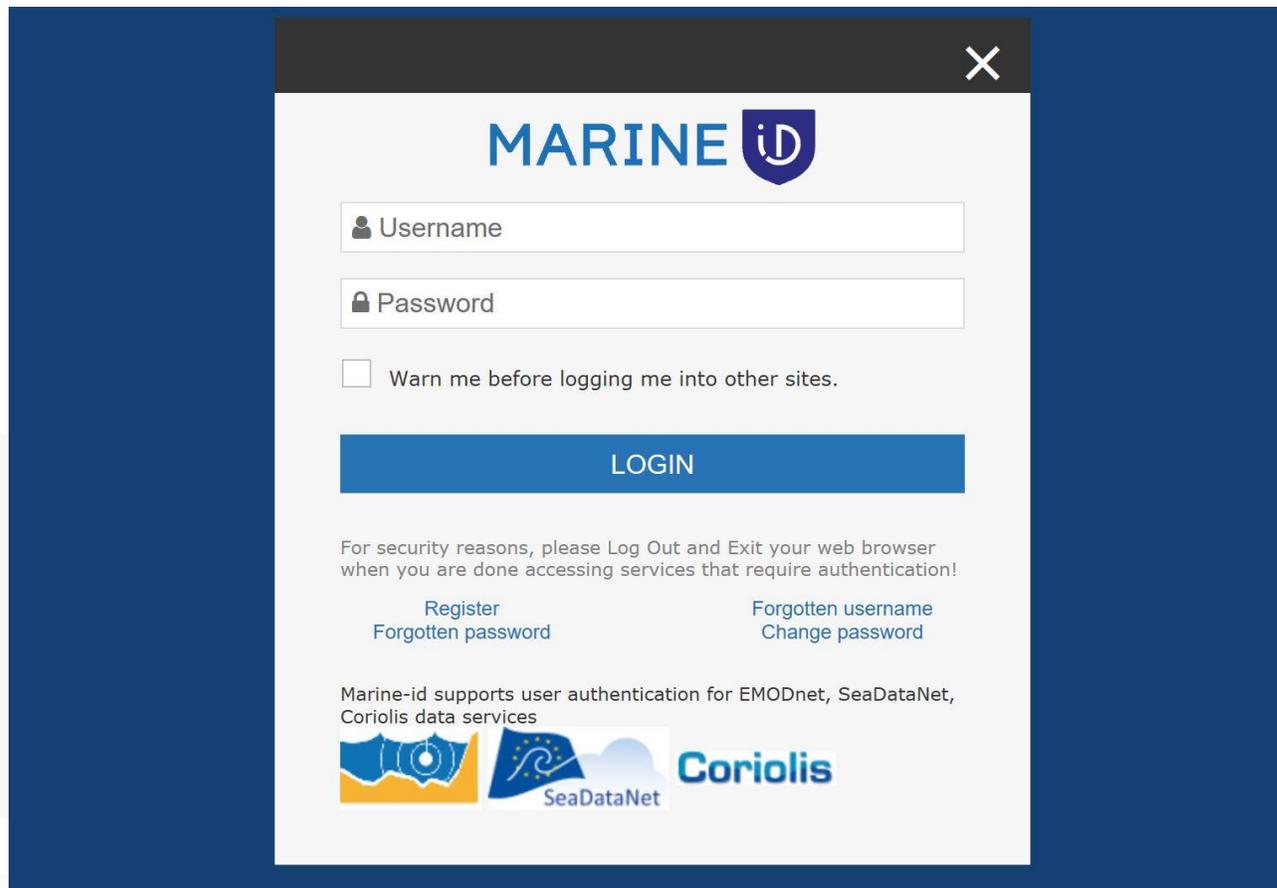
CONTINUE >



Welcome to the Data Submission service of the EMODnet Data Ingestion portal. This service facilitates you to submit marine datasets by completing a form and uploading your data as a package. Press "Continue" to start.

**Conhecer o mar** para que  
todos o possam usar

Os utilizadores registados possuem um Marine-ID que permite a submissão e acesso aos dados



The screenshot shows a login window titled "MARINE ID". It contains the following elements:

- A close button (X) in the top right corner.
- The "MARINE ID" logo.
- A "Username" input field with a user icon.
- A "Password" input field with a lock icon.
- A checkbox labeled "Warn me before logging me into other sites."
- A blue "LOGIN" button.
- A security warning: "For security reasons, please Log Out and Exit your web browser when you are done accessing services that require authentication!"
- Links for "Register" and "Forgotten username / Change password".
- Text: "Marine-id supports user authentication for EMODnet, SeaDataNet, Coriolis data services".
- Logos for EMODnet, SeaDataNet, and Coriolis.



**EMODnet**

## DATA INGESTION PORTAL

Wake up your data - set them free for Blue Society  
Data Submission Service

| [DASHBOARD](#) | WELCOME DICK M.A. SCHAAP | [LOGOUT](#)

### DATA SUBMITTER

- USERS PROFILE
- DATA SUBMISSIONS

### DATA CENTRE

- USERS
- DATA SUBMISSIONS
- KEY INDICATORS
- VOCAB ORPHANS

### MASTER

- USERS
- DATA SUBMISSIONS
- KEY INDICATORS
- VOCAB ORPHANS
- DC CATALOGUE
- DC SPECIALISMS



## DATA INGESTION PORTAL

Wake up your data - set them free for Blue Society

Data Submission Service

[DASHBOARD](#) | [BACK TO LIST](#)

WELCOME DICK M.A. SCHAAP (M) | [LOGOUT](#)



## Dataset Identification

\* = Required

### DATASET GENERAL INFORMATION

Title of dataset \* ⓘ 2011-GEMS, Zone 8 - Bristol Channel Atlantic Array, Metocean assessment

Narrative summary of dataset \* ⓘ GEMS Survey Ltd. (GEMS) was awarded a contract by Channel Energy Limited to undertake metocean data collection in the Bristol Channel as part of the Atlantic Array wind farm development project. The scope of work includes the deployment of two acoustic wave and current (AWAC) units and one Directional Waverider Buoy. Ancillary work includes water and sediment sampling and water profiling. Following non-recovery of AWAC devices, TRIAXYS Directional Wave buoys were utilised for the rest of the survey. This series contains both reports and datasets associated with the Metocean Assessment.

### DATASET FORMATS

Dataset format \* ⓘ Text or Plaintext

## Processo em três fases:

1. Submissão de dados
2. Fase I – Centro de Dados (complete dos metadados)
3. Fase II – Centro de Dados (Harmonização com os standards)

Conhecer o mar para que todos o possam usar



**DATA INGESTION PORTAL**  
*Wake up your data - set them free for Blue Society*

[CONTACT](#)

[ABOUT](#) [DATA SUBMISSION](#) [OPERATIONAL DATA](#) [SUBMISSIONS](#) [GUIDELINES](#) [DATA WANTED](#) [HELP](#) [PROMOTION](#) [CENTRAL PORTAL](#)

[Home](#) / [Submissions](#)

## View submissions

This service allows users to search and download the datasets that have been submitted via the Submission service and that have been reviewed and completed in metadata by assigned data centers. These datasets are published “as-is” and will be further inspected and elaborated, where possible, for uptake in the national and European infrastructures supporting EMODnet.

### Filter Search

Found 78 Show (1 - 20) [◀ Prev](#) [Next ▶](#)

#### Free search

#### Date [yyyymmdd]

#### Geobox

#### Sea areas

#### Results

##### Nutrients in Mediterranean Sea

Period: 2006-06-13 - 2006-07-01

Observation type: Nutrients



##### AMBER

Period: 2009-03-08 - 2009-03-14

Observation type: Isotopes, Nutrients, Other physical oceanographic measurements, Water column temperature and salinity



##### SIGNAL\_CRUISE\_1

Period: 2001-03-08 - 2001-03-12

Observation type: Isotopes, Nutrients, Other physical oceanographic measurements, Water column temperature and salinity



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## Data Wanted service

SUBMIT A REQUEST

DISBAND MY POSTS

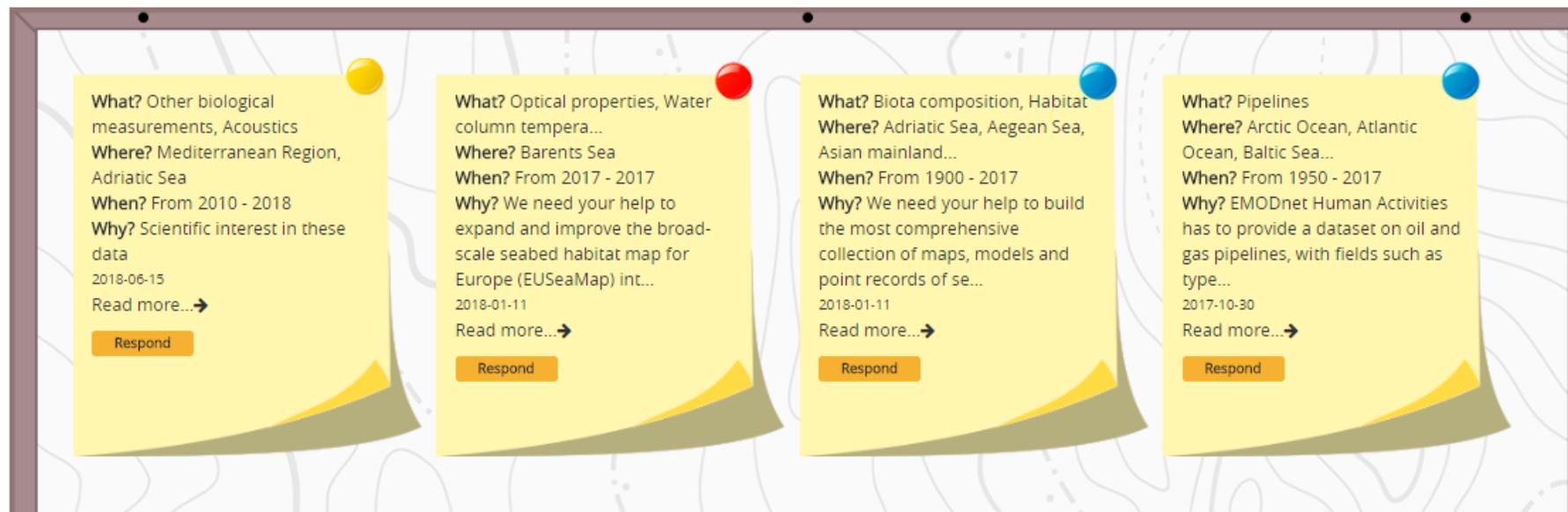
The Data Wanted service facilitates anyone seeking certain types of datasets to specify its needs and to post these.

This might challenge potential owners of matching datasets to come forward and as follow-up to ingest their datasets. Also it gives direction to the operators of the Ingestion portal in their searches for additional datasets as they will try to match the posted data requests

Posting requires registration as [Marine-ID user](#). A registered user can submit multiple posts and, if needed, can disband its posts. All submitted posts are validated before publishing; this might take some time.

Filter  in  **FILTER**

« < 1 > »



The screenshot displays a user interface for the Data Wanted service. It features a filter bar at the top with dropdown menus for 'Observation Type' and 'Sea Region', and a 'FILTER' button. Below the filter bar, there are four data request cards, each represented as a yellow sticky note pinned to a map background. Each card contains the following information:

- What?** Description of the data request.
- Where?** Geographic region or sea area.
- When?** Time period for the data.
- Why?** Reason for the data request.
- Date:** The date the request was posted.
- Read more...→** A link to view the full details of the request.
- Respond** A button to respond to the request.

## 49 Centros de Dados

**EMODnet** DATA INGESTION PORTAL  
*Wake up your data - set them free for Blue Society*  
Data Submission Service

DASHBOARD WELCOME DICK M.A. SCHAAP | LOGOUT

### DC Catalogue

ADD

Show 10 entries

| Organization   | Country                                     | Controls  |
|--|---|-----------|
| <input type="text" value="Search Organization"/>   | <input type="text" value="Search Country"/> |           |
| Hellenic Centre for Marine Research, Hellenic National Oceanographic Data Centre (HCMR/HNODC)  | Greece                                      | EDIT VIEW |
| IFREMER / IDM / SISMER - Scientific Information Systems for the SEA                            | France                                      | EDIT VIEW |
| British Oceanographic Data Centre  | United Kingdom                              | EDIT VIEW |
| British Geological Survey, Edinburgh   | United Kingdom                              | EDIT VIEW |
| Federal Maritime and Hydrographic Agency   | Germany                                     | EDIT VIEW |
| Swedish Meteorological and Hydrological Institute  | Sweden                                      | EDIT VIEW |
| IEO/Spanish Oceanographic Institute  | Spain                                       | EDIT VIEW |
| OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale), Division of Oceanography | Italy                                       | EDIT VIEW |

Home / Operational Data

NAVIGATE

PILLARS UNDER EMODNET PHYSICS

HOW IS THE OPERATIONAL OCEANOGRAPHY DATA EXCHANGE ORGANISED

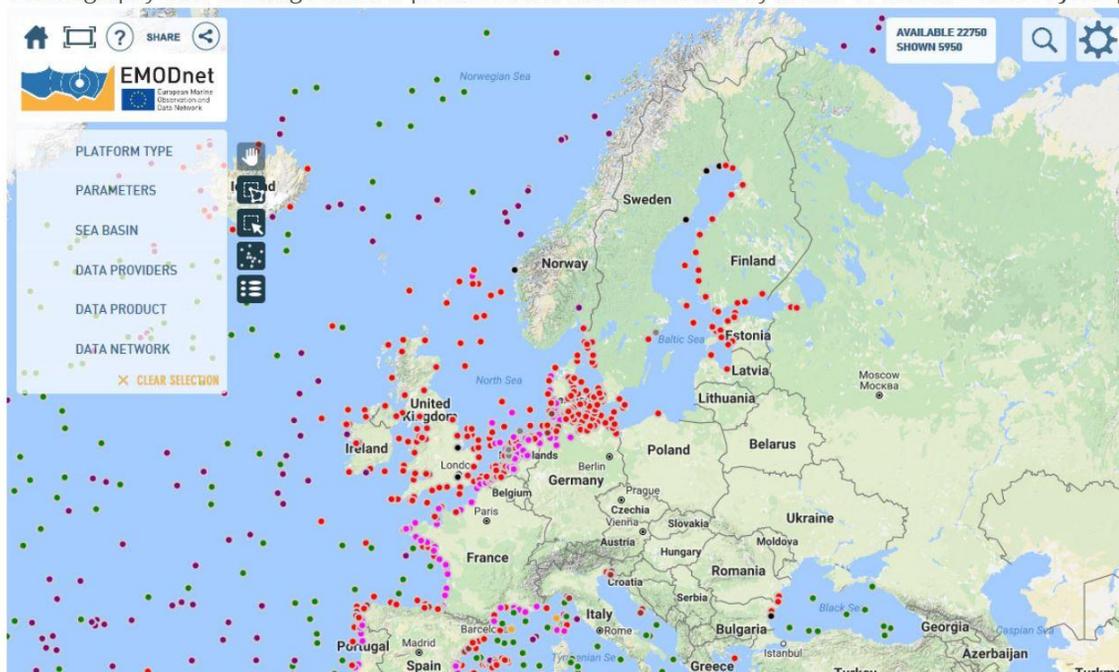
HOW CAN YOU JOIN THE OPERATIONAL OCEANOGRAPHY DATA EXCHANGE



## Join the European operational oceanography exchange

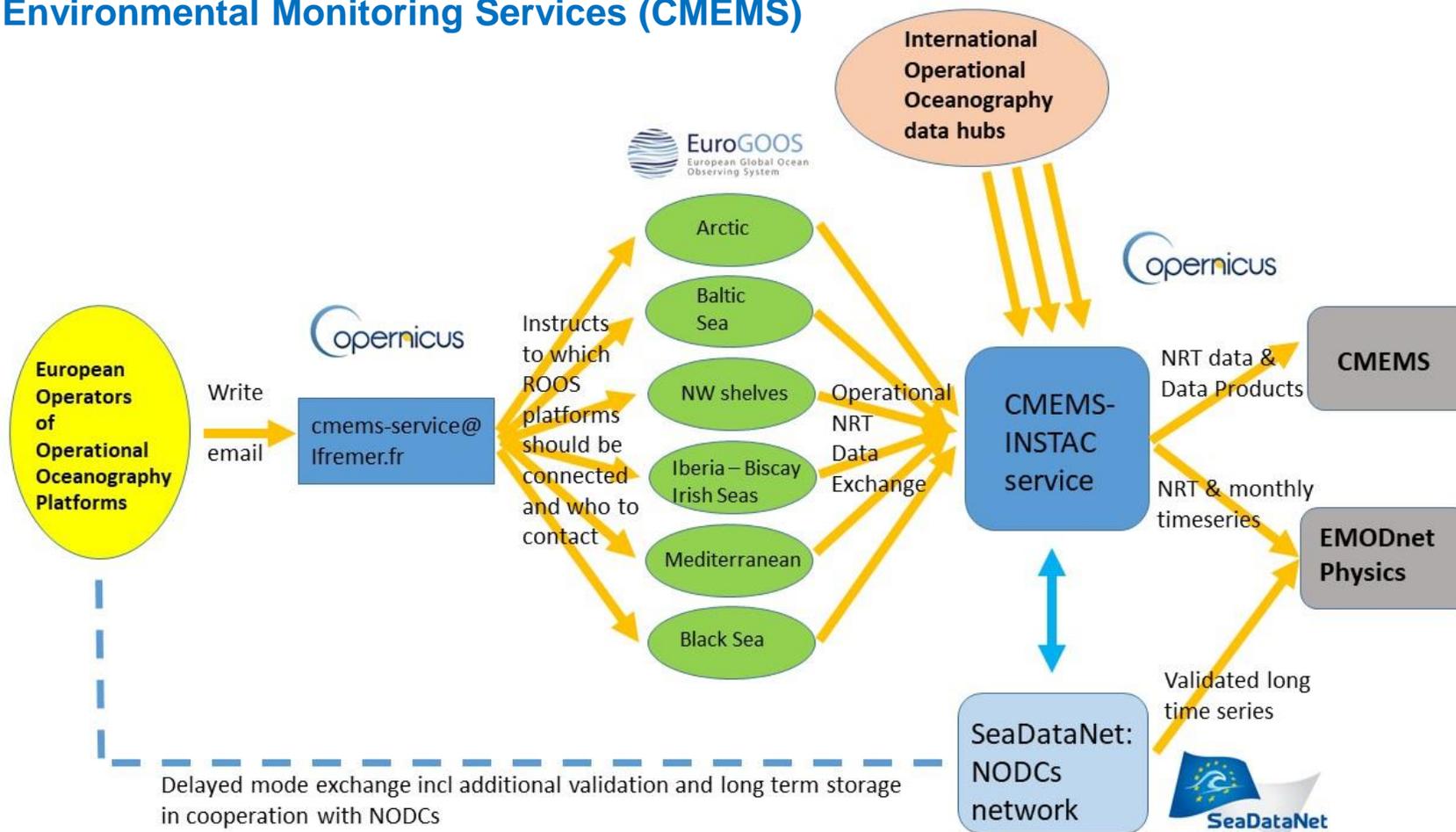
EMODnet Ingestion aims at making marine data part of the European data management infrastructures. This concerns marine data from the European seas and coastal waters from diverse governmental, research and private sources. It concerns data that have been collected by all kinds of surveys, campaigns, and projects.

It also concerns **operational oceanography data** that are collected by fixed and moving platforms such as fixed stations, moorings, buoys, tide gauges, surface drifters, ferryboxes, argo floats, gliders, HF radars and other platforms. These platforms generate Near Real Time (NRT) data streams which should become part of the European operational oceanography data exchange which is promoted and made accessible by means of the **EMODnet Physics portal**.



Conhecer o mar para que todos o possam usar

## Copernicus Marine Environmental Monitoring Services (CMEMS)



- 📍 Marine Profiles of the OGC Sensor Web Enablement Standards (ver: <https://odip.github.io/MarineProfilesForSWE/>)
- 📍 SensorML – Implementação de semântica da informação (online dictionaries URI (Uniforme Ressource Identifier) / ontologies)
- 📍 Cooperação entre os projetos EMODnet Ingestion e EMODnet Physics (RT Data)



SeaDataNet



SeaDataCloud



EMODnet



EMODnet Ingestion



Conclusões

- Os projetos Europeus apresentados apresentam as seguintes tendências:
  - Crescente partilha de dados – marine open data;
  - Estratégias de *Crowd Source* e desenvolvimento de comunidades temáticas;
  - Aproximação dos Standards à INSPIRE;
  - Desenvolvimento de uma crescente interação *machine-to-machine* com a *Semantic Web*;
  - Desenvolvimento de ferramentas na *cloud*;
  - Preocupações com crédito científico da informação – *Digital Object Identifier (DOI)*;

