

EMSO SERVICES CURRENT AND POTENTIAL CAPABILITIES

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RESEARCH INFRASTRUCTURES

Services as part of the mission

An organization that enables the research community to use specific facilities, resources and services in order to accelerate scientific achievements and promote sustainable research.

EMSO SERVICES

Description in a document



EMSO ERIC SERVICES

As of November 2024

Observing the Ocean to Save the Earth

EMSO ERIC

European Multidisciplinary Seafloor and water-column Observatory
European Research Infrastructure Consortium

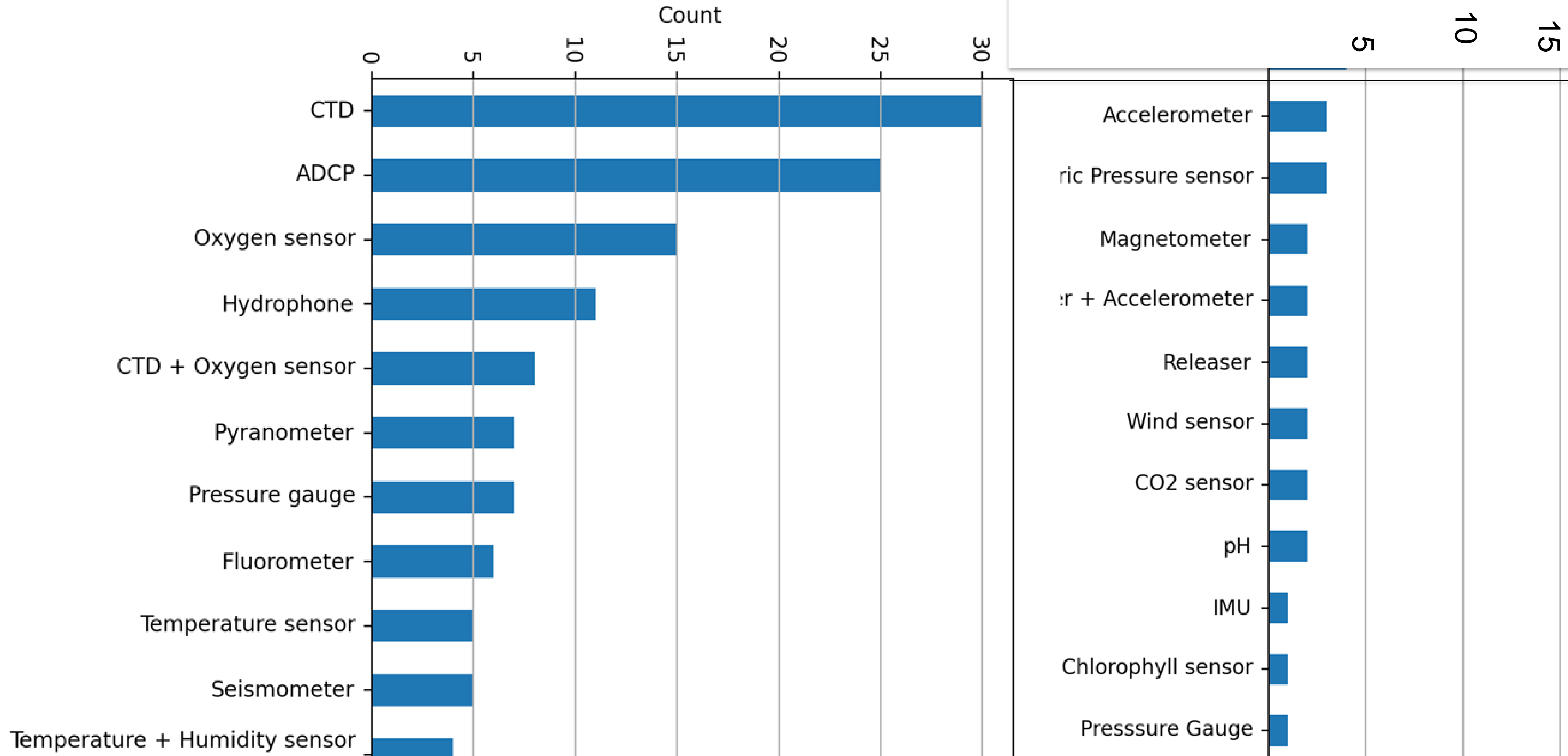


OBSERVATIONS IN NUMBERS...

1. About 130 in situ marine observation variables
2. 19 deep sea sites,
 - 5 in the Nordic Seas, 3 in the South Adriatic-eastern Ionian
 - 4 in the Ligurian,
 - 4 in the Ionian basin,
 - 1 in the Black Sea, 2 in the north-east Atlantic.

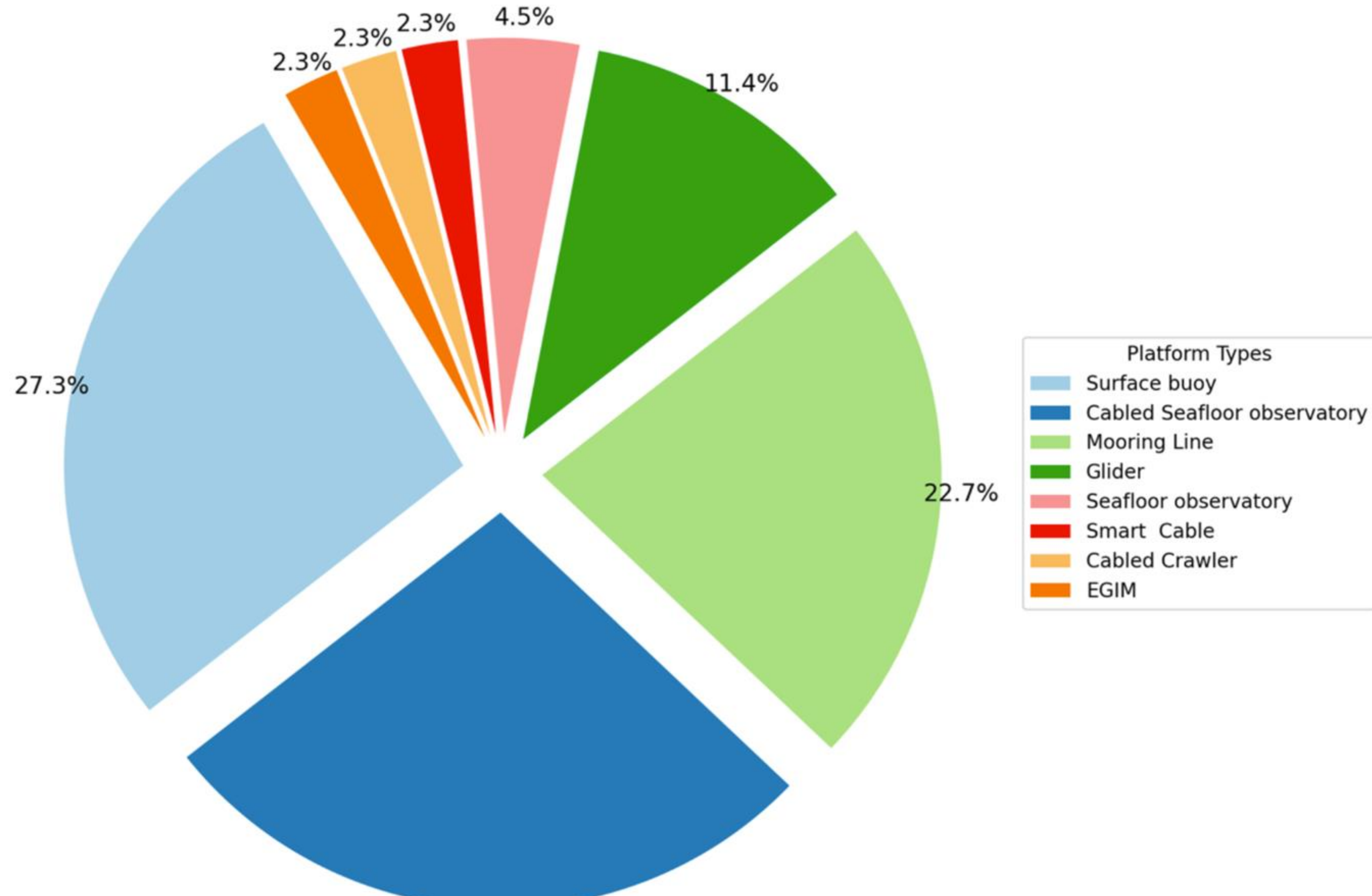


SENSORS AND EQUIPMENT



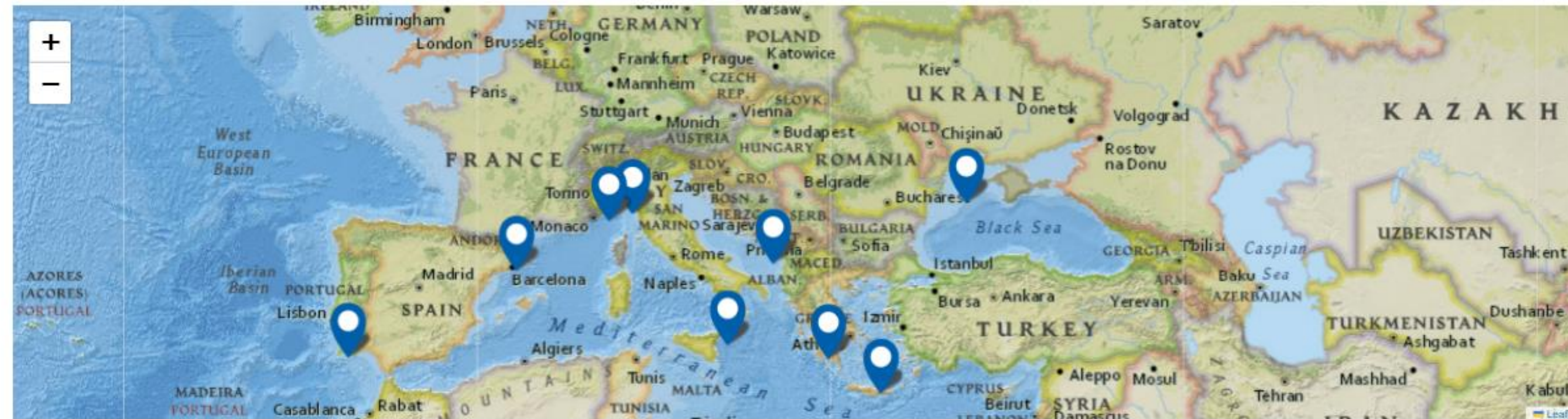
PLATFORMS ...

Distribution of Platform Types



DATA SERVICES

Data Access



- Black Sea
- Cretan Sea
- EMSO Azores
- EMSO Canarias
- Hellenic Arc
- Iberian Margin
- Ligurian Sea**
- Nordic Seas
- OBSEA
- Smartbay
- South Adriatic Sea
- Western Ionian Sea
- Western Mediterranean Sea

Ligurian Sea

General Information	Sites
Ligurian Sea description	ALBATROSS-MII (seafloor): Data Information
Data sources	ALBATROSS-MII (mooring): Data Information
EMSO France	DYFAMED: Data Information
	EMSO NICE: Data Information



DATA SERVICES

Data Access Service (Data Portal)

Work in progress...easy accessible Data Portal

- Data analysis tools
- QC

Challenges:

- acoustic data
- images

DATA SERVICES

Data Tools

Data tools



ERDDAP

Download subsets of gridded and tabular scientific data in standard formats



Plots

Plotting of ERDDAP harmonized data



GitHub

EMSO ERIC repository management system



MOODA

Python package to open, harmonize and analyze marine observatory datasets

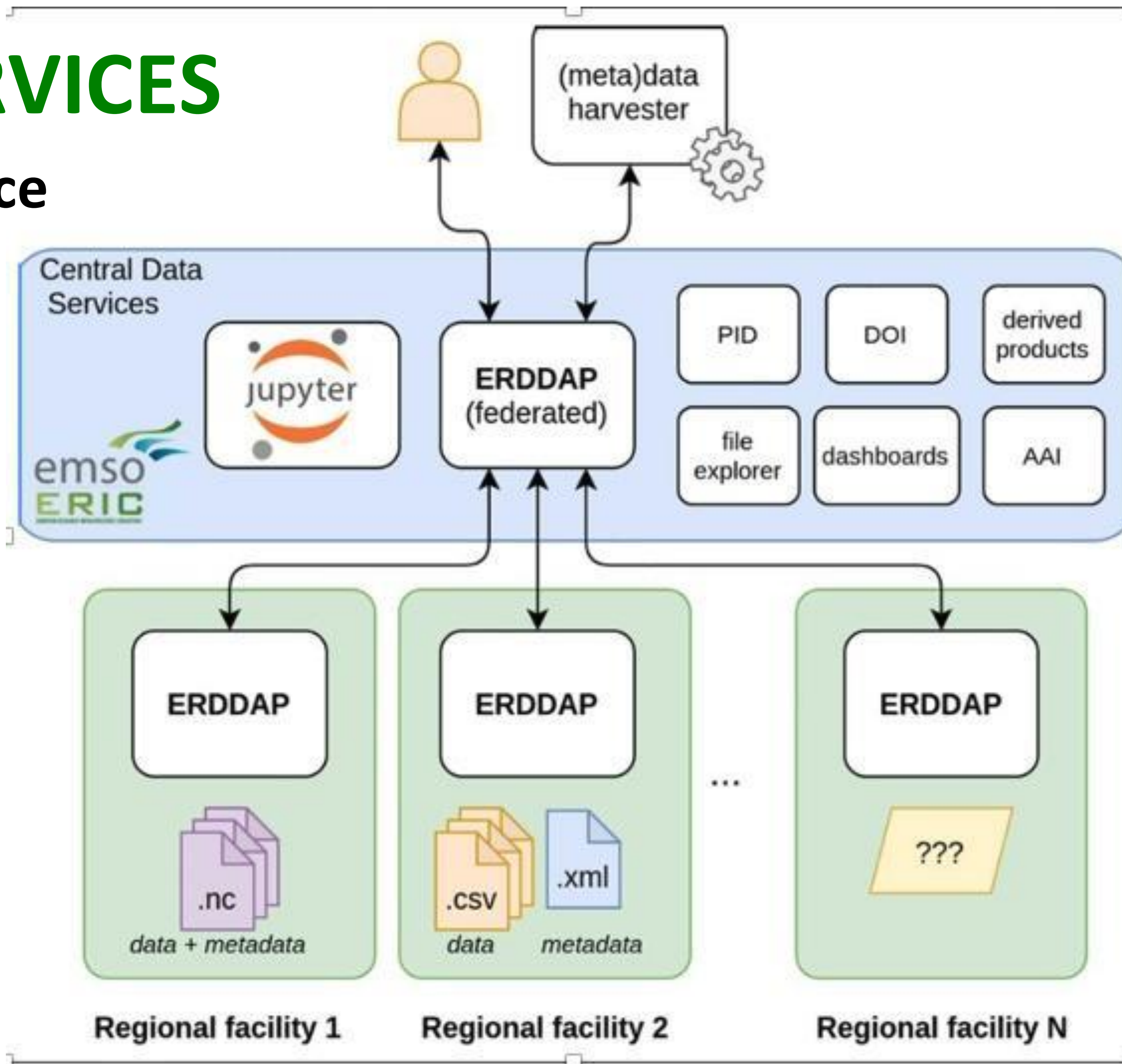


Plots

Plotting functionalities temporarily unavailable.

DATA SERVICES

ERDDAP Service



DATA SERVICES

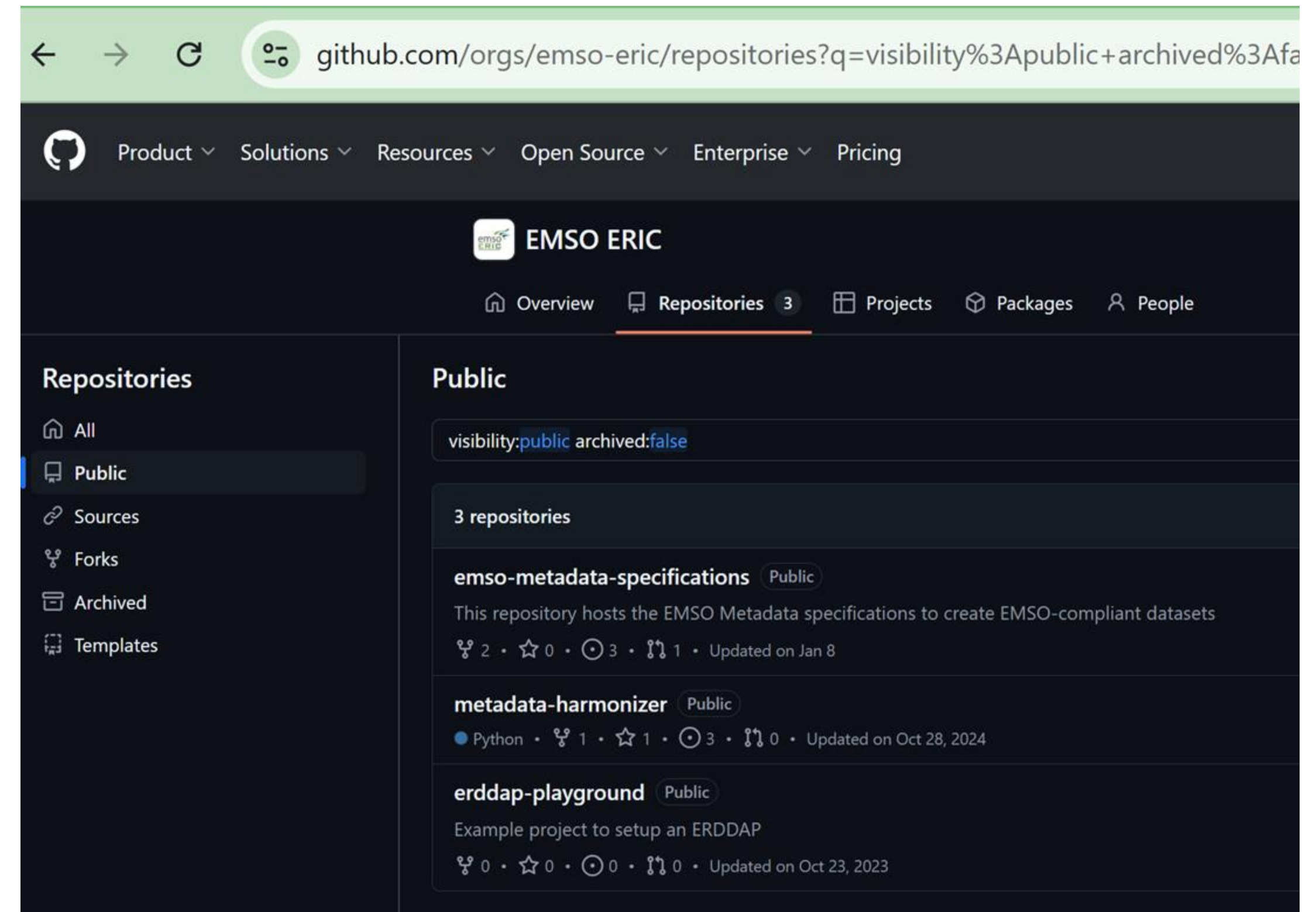
ERDDAP Service

- The federated ERDDAP infrastructure provides access to all data through a single-entry point and tools for data analysis and visualisation.
- Flexible data download options supporting multiple formats, including CSV, NetCDF, and JSON.
- EMSO data are shared with the EMODnet platform through ERDDAP, ensuring broader accessibility and integration.

DATA SERVICES

Github

- **EMSO Metadata Specifications document:** harmonizes policies across facilities, building on frameworks like OceanSITES and SeaDataNet.
- **Metadata Report tool:** evaluates dataset alignment with EMSO Metadata Specifications, provides a harmonization score and improvement tips.
- **Dataset Generator:** This tool allows users to produce new datasets aligned with the EMSO's specifications



DATA SERVICES

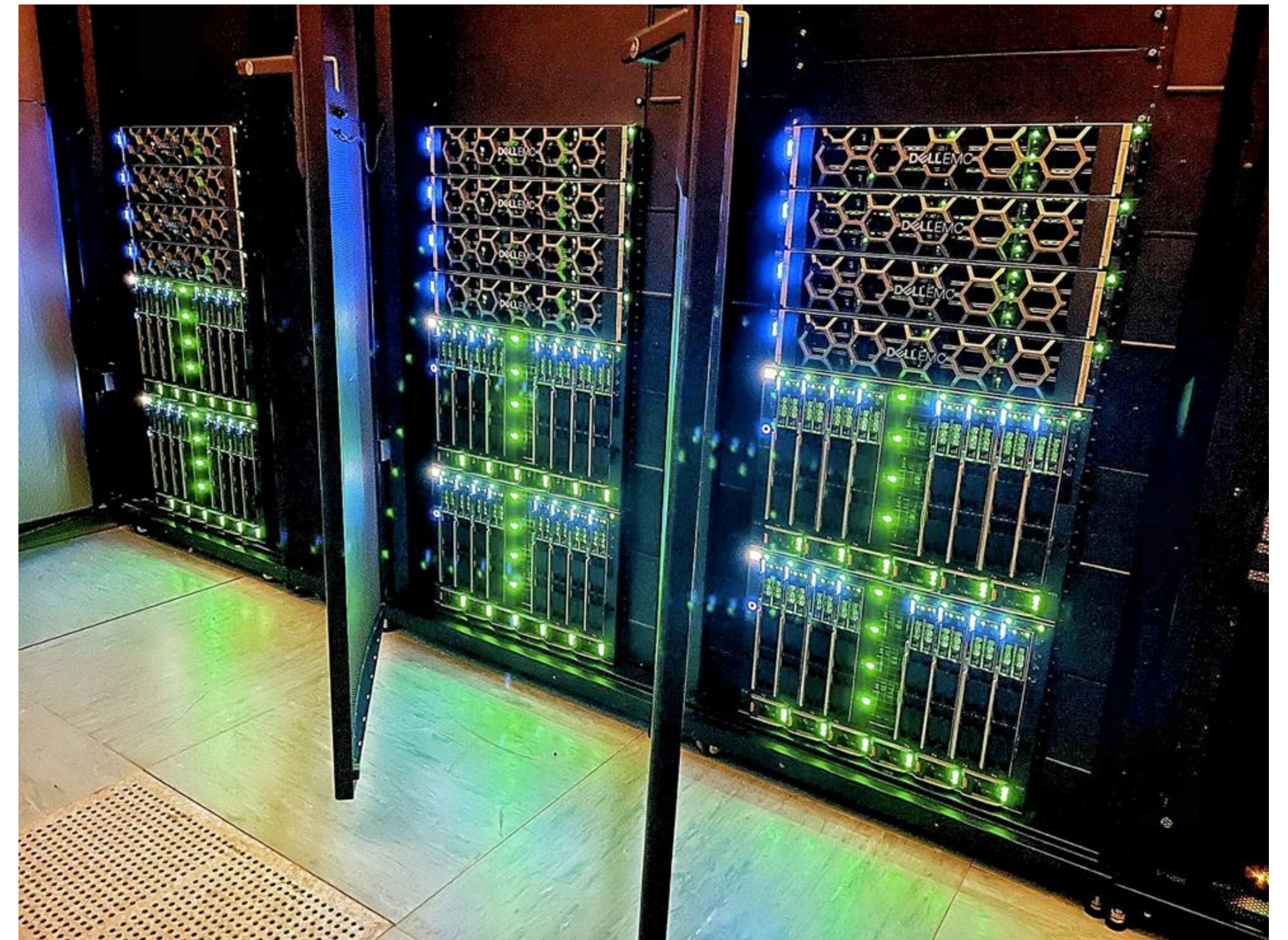
Virtual Data Center (NEREIDE, coming soon as INGV in-kind resource)

Enhanced Data Services:

- Provision resources to process, store, and analyze large datasets.
- Support for developing advanced simulation models and visualization tools (e.g. digital twins, AR, XR, VR models).

Collaboration Platforms:

- Tools to foster interdisciplinary collaborations within the EMSO and broader scientific community.
- Integration with initiatives like Blue-Cloud and the Digital Twin of the Ocean.



DATA SERVICES

Virtual Data Center (NEREIDE, coming soon as INGV in-kind resource)

Training and Development:

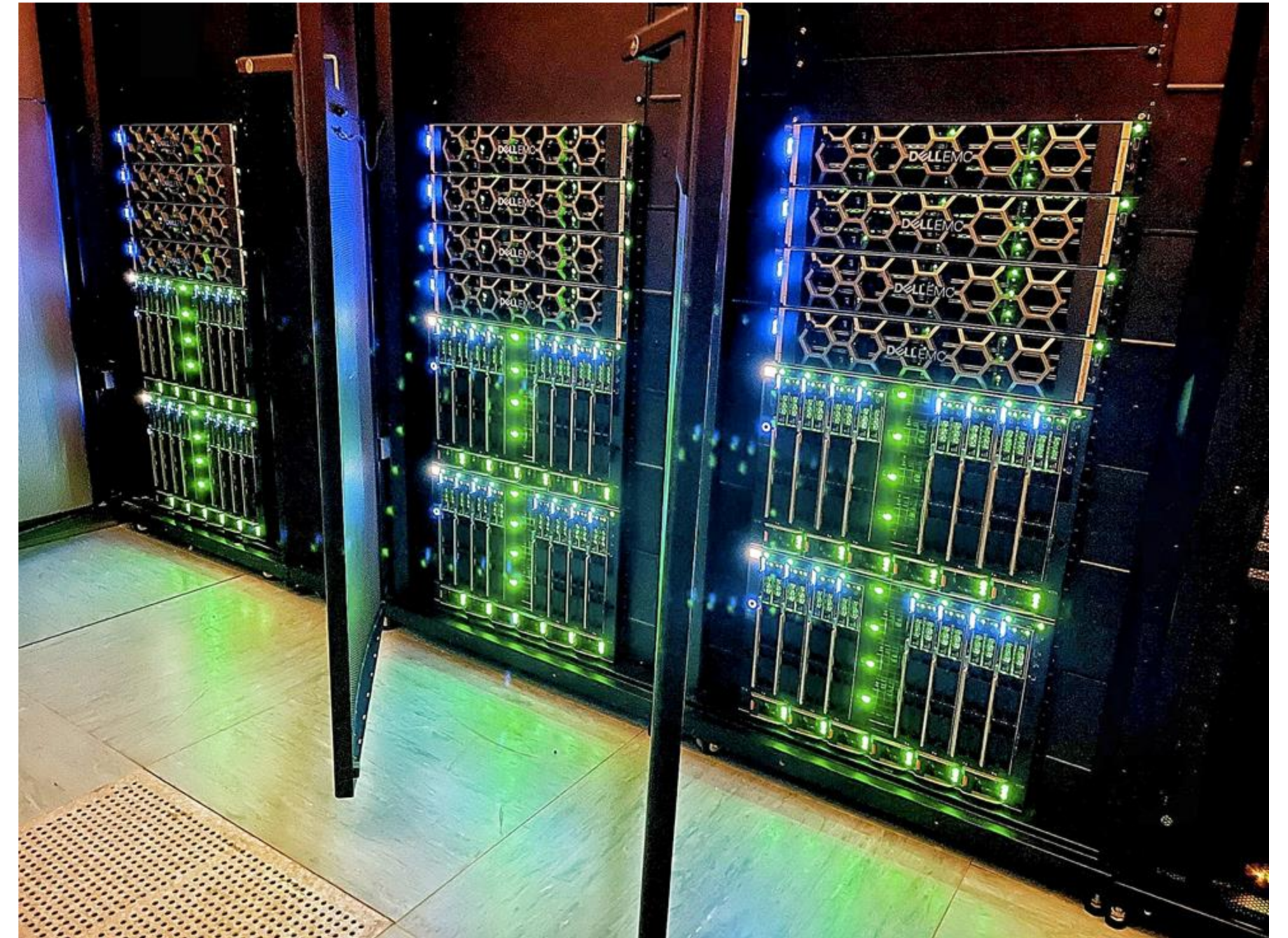
- Resources for skill development, including datasets and computational infrastructure for training.

Advanced Computational Support:

- Resources for intensive data processing and analysis, supporting FAIR data principles.

Integration with Global Systems:

- A backend for Blue-Cloud Virtual Labs and support for the DTO through data and computational power.



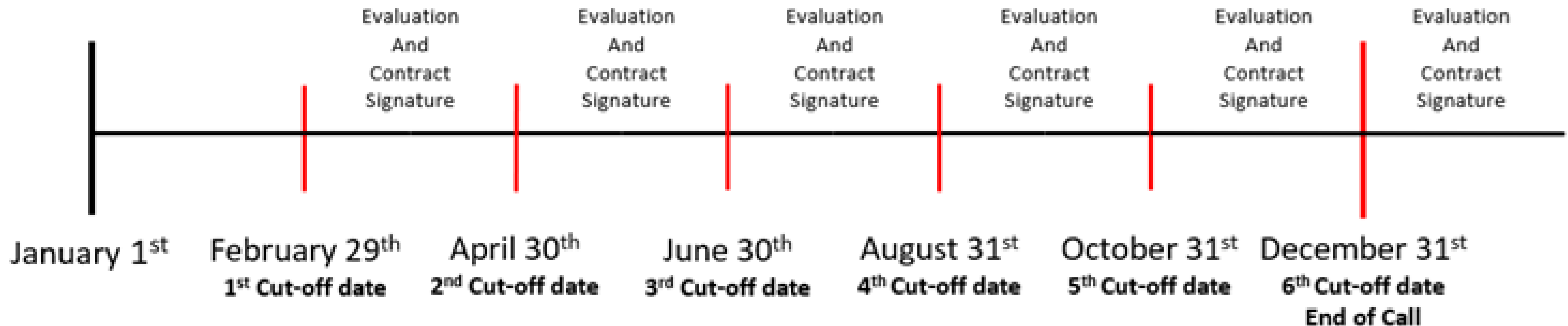
PHYSICAL ACCESS

Key features

- Access to multiple facilities under the same project.
- High-quality, instrumented platforms for open-ocean activities.
- Training and co-development opportunities with experienced engineers and scientists.
- Tailored data collection services.
- Funding available to facilitate user access.
- Continuous availability with cut-offs for proposals evaluation every 2 months.

PHYSICAL ACCESS

There are six cut-off dates in which proposals received before their deadlines will be evaluated and, if positive, given green light for execution on the programmed dates.

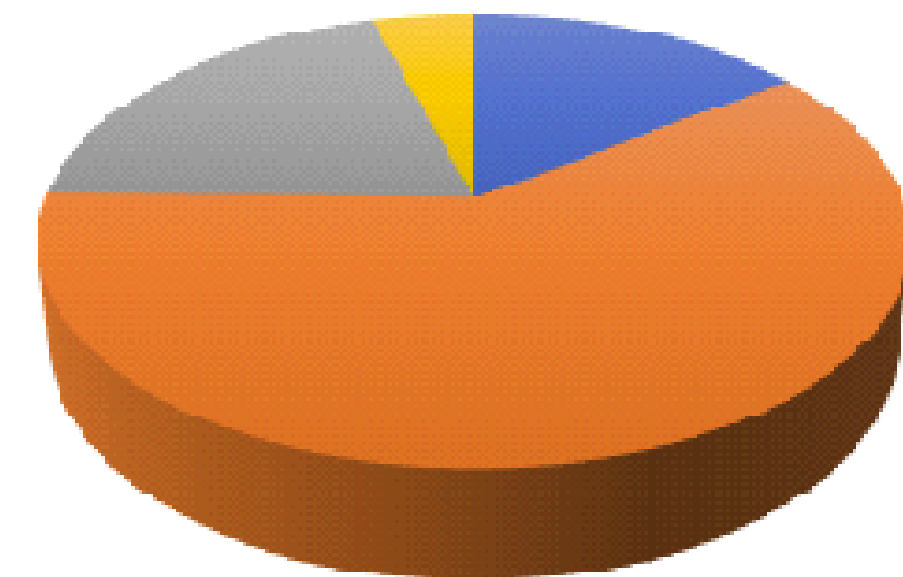


More details about the Physical Access Application procedure are available on <https://emso.eu/physical-access/>

PHYSICAL ACCESS

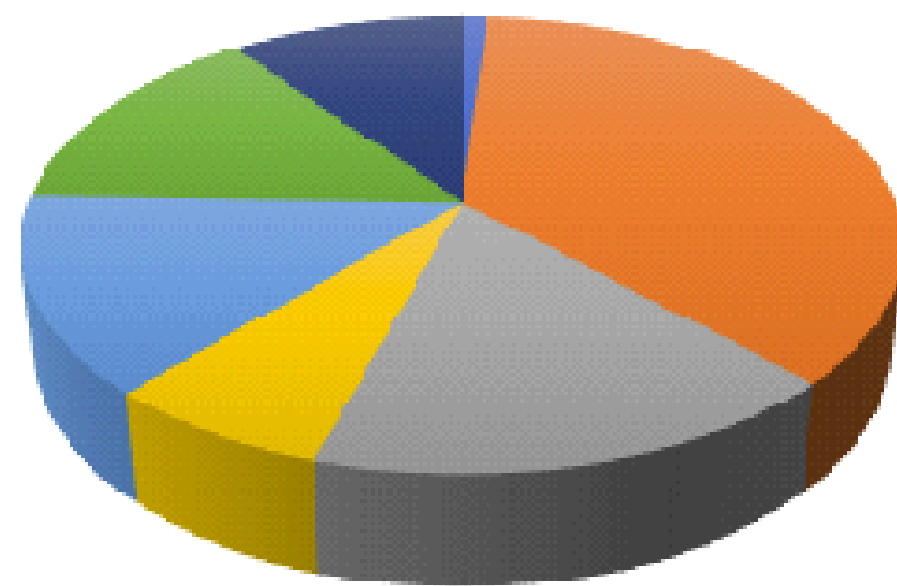
10 projects have been funded since the program was launched in April 2022

Type of Users - Access Units Requested (1312 in total)



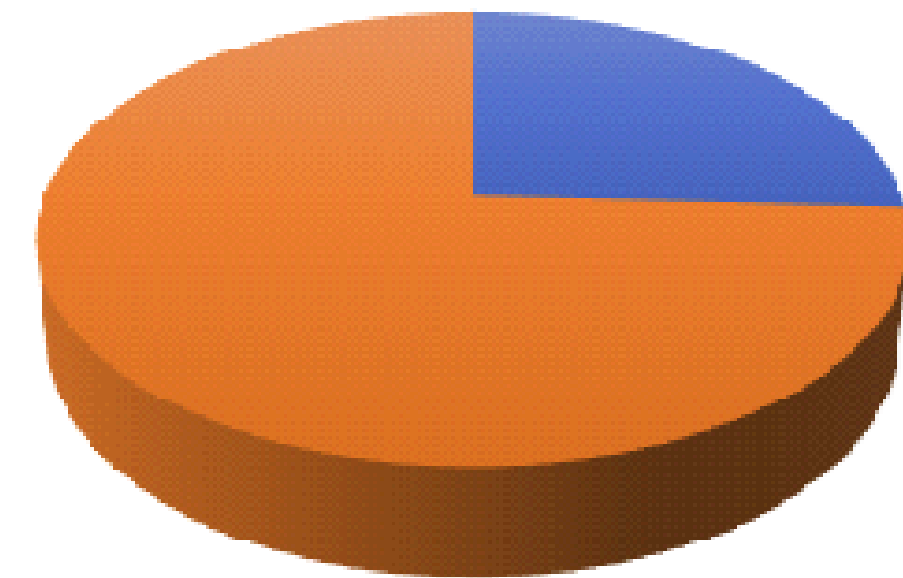
University Research Centre SME Large Industry

Users by Country - Access Units Requested (1312 in total)



Germany UK Sweden Ireland Czechia Spain France

Type of Site - Access Units Requested (1312 in total)



Test Site Observatory Site

CAPACITY BUILDING AND TRAINING

EMSO Academy

- Summers schools (coming soon)
- Training courses at the EMSO Time series conferences <https://tsc2021.emso.eu/>
- Internships
- Mobility of personnel

Tutorials:

- **API** - A guide on programmatic access to EMSO ERIC's (meta)data via their Application Programming Interface (API).
- **Videos** - Visual demonstrations covering various data tools and access methods.

PUBLIC ENGAGEMENT AND OUTREACH SERVICE

EMSO leverages several channels, from **website to social media platforms, Zenodo and Newsletter** to share updates, research highlights, and multimedia content with a wider audience.

Through participation in the **main events in marine domain and booth organization**, EMSO aims also to increase public awareness of ocean science and inspire future generations of scientists by developing **promotional material and organizing interactive sessions**.



HINTS FOR QUESTIONS AND DISCUSSION

To EMSO users:

- What is your experience with the EMSO services?
- Which services do you expect that EMSO provides?
- Which service would you be able to co-develop with EMSO research Organisations'/Regional Facilities' staff ?

Thank you for your attention.



Observing the ocean to save the earth