

## A federated European FAIR and Open Research Ecosystem for oceans, seas, coastal and inland waters

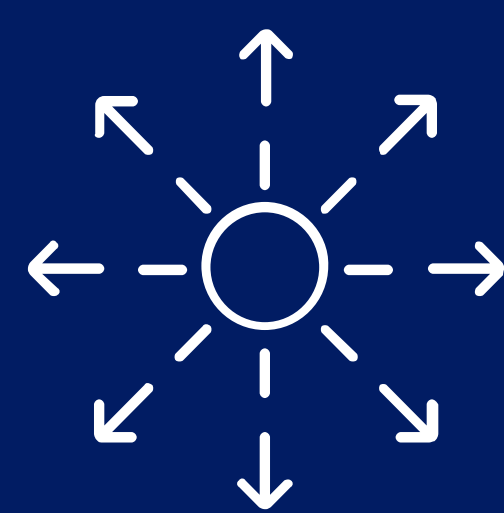


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### Core services: Virtual Research environment

An Open Science platform for collaborative marine research, using a wide variety of datasets and analytical tools, complemented by generic services such as sub-setting, pre-processing, harmonising, publishing and visualisation. The VRE hosts different Virtual Labs and is going to include thematic Workbenches, which users can access with existing credentials in EOSC, the European Open Science Cloud. The Blue-Cloud Marine Node implements several core capabilities, as defined by the EOSC Federation Handbook, to ensure effective operation and service deliver such as the Catalogue, AAI, the Gateway and more.



### Generic services

- Workspace
- RStudio
- JupyterHub
- Galaxy
- CCP services



### Data management facilities

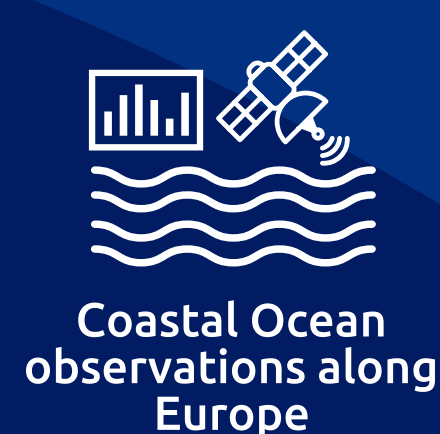
- NoSQL Database
- Relational Database
- DD&AS
- Beacon



### Marine Thematic Services

Virtual Labs offer data products and analytical tools within the Virtual Research Environment (VRE). These V Labs serve as real-life demonstrators for web-based open science and are available for testing by research communities within the EOSC federation. The V Labs offer applications for data processing, publishing data results, and managing computation routines.

#### Vlabs



Coastal Ocean observations along Europe

This VLab enables access, integration and use of observations from European coastal ocean areas. By combining JERICO-RI and complementary data with advanced processing, analytical tools and interactive visualisations, it offers deeper insight into key coastal processes.



Coastal currents from observations

This VLab generates integrated ocean surface current maps from HF radar, drifters and altimetry data using the DIVAnd method. It merges these datasets with constraints such as coastline presence, horizontal divergence and momentum balance between acceleration, Coriolis force and surface pressure gradient.



Carbon-Plankton Dynamics

This VLab analyses the relative contribution of drivers in phytoplankton dynamics in the Belgian North Sea and northern Adriatic Sea. Using an NPZD model based on plankton, nutrient and carbon data, it explores spatio-temporal variations and assesses whether these systems act as a carbon sink or source.



Marine Environmental Indicators

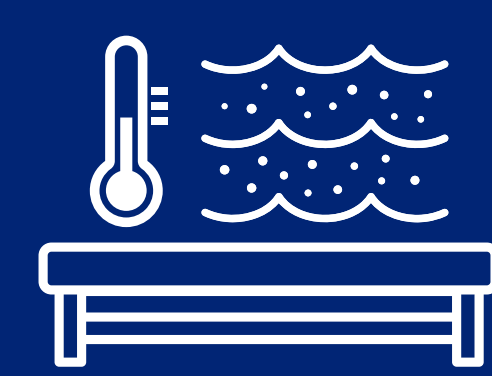
The Marine Environmental Indicators (MEI) VLab enables users to monitor and assess the environmental status of marine areas to support ocean management decisions. It performs online spatio-temporal analysis of selected environmental variables using implemented algorithms.



Global Fisheries Atlas

The "Global Fisheries Atlas" VLab aims to provide a comprehensive view of global fisheries to support informed decision-making and resource management. Its two main pillars are the Fisheries Atlas and the Global Record of Stocks and Fisheries.

#### Workbenches



Physics: temperature & salinity

This Workbench will implement a cloud-based workflow to generate harmonised, validated and customisable EOVS data collections for temperature and salinity, integrating datasets released from different EU and non-EU data infrastructures for the test region of the Mediterranean Sea.



Eutrophication: chlorophyll, nutrients, oxygen

This Workbench will define and implement an efficient production workflow to merge multi-source datasets managed by Copernicus Marine Service, EMODnet Chemistry and the World Ocean Database, together with key EU RIs and build highly qualified EOVS datasets for eutrophication variables: chlorophyll, nutrients, oxygen.



Ecosystem-level EOVS

The Ecosystem Workbench aims to improve the availability, quality, and interoperability of large collections of plankton observations and extrapolated biogeographies. This habitat modeling workflow will generate high-quality interpolated maps of these plankton entities, at the global scale and produce ecosystem-level EOVS.