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Blue-Cloud2026

Blue-Cloud 2026 harnesses Europe's aquatic expertise to create the marine science extension to the European Open Science Cloud.

The project expands services, integrates tools, and bolsters data access over 42 months, supporting the EU Blue Economy and environmental aims, in line with the EU Green Deal and UN Goals.

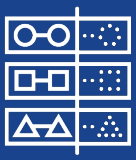
Scan the QR Code
to visit our website

blue-cloud.org

Core services

Data Discovery & Access Service (DD&AS)

An easy and FAIR service for discovering and retrieving multi-disciplinary data sets and data products managed and provided by leading Blue Data Infrastructures.
The federation facilitates sharing of datasets as input for analytical and visualisation services and applications, that are hosted and further developed in the Blue-Cloud Virtual Research Environment.



Virtual Research Environment (VRE)

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. Multi-disciplinary datasets retrieved from the Blue-Cloud DD&AS can be exploited in the VRE. All methods and services in the Catalogue are exchanged with the EOSC Portal Catalogue & Marketplace.

Essential Ocean Variables Workbenches

A number of data-intensive Workbenches for selected Essential Ocean Variables (EOVs) are being developed and tested in Blue-Cloud 2026. Ocean and data scientists will implement efficient workflows that allow them to harmonise, validate and qualify large and various in situ data sources, exploiting the blue analytical services available in the Blue-Cloud Virtual Research Environment.

Physics: temperature & salinity

This Workbench will implement a cloud-based workflow to generate harmonised, validated and customisable EOV 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. The optimised workflow will allow users and big data infrastructures to rapidly/systematically derive and upgrade integrated data collections and generate different datasets as e.g. gridded climatologies.

Eutrophication: chlorophyll, nutrients, oxygen

This Workbench will define and implement an efficient production workflow to merge, aggregate and harmonise multi-source datasets managed by Copernicus Marine Service, EMODnet Chemistry and the World Ocean Database, together with key EU RIs and build highly qualified EOV datasets for eutrophication variables: chlorophyll, nutrients, oxygen. Tested for the North East Atlantic, the aim is to further extend it to the global ocean during the last year of the project.

Ecosystem-level EOVs

This Workbench will improve the availability, quality and interoperability of large collections of plankton observations based on traditional counts, quantitative imaging and genomic methods available from the EMODnet/EurOBIS and ELIXIR data infrastructures. It will develop a generic modelling workflow to generate high-quality interpolated maps of the global distribution of these plankton entities. It will generate ecosystem-level EOVs following clear QA/QC steps and according to best practices in habitat modelling.

Thematic Virtual Labs

Carbon-Plankton Dynamics

This model will use carbon units to study nutrient availability, productivity, organic matter, and interactions in marine regions beyond MIRAMARE.

Global Fisheries Atlas

Expanding operational fisheries VLabs in Blue-Cloud, enabling global access to fisheries data. Experience enhanced knowledge management and spatial data interoperability for impactful research and insights.

Coastal currents from observations

Improve integration and accuracy of ocean surface current data with Blue-Cloud 2026. Generate integrated maps using HF radar, drifter, and satellite altimetry data.

Integration of coastal ocean observations along Europe

Integrate diverse ocean data for enhanced knowledge base. Blue-Cloud 2026 combines JERICO-RI data, advanced visualisations, and expanded functionalities for valuable coastal insights.

Plankton Genomics

Enabling scientific exploration of plankton, including its distributions, dynamics and fine-grained diversity to molecular resolution, through genomics analysis.

Thematic Virtual Labs

Marine Environmental Indicators

This VLab enables monitoring, assessment, and decision-making for marine areas. Exploit diverse data sources in a unique analysis service for online computation of indicators.

Aquaculture Monitor

Delivering a tool to produce national aquaculture sector overviews for monitoring aquaculture in marine cages and in coastal areas.

Fish, a matter of scales

Improving data management and analytic capabilities for fisheries by expanding the Virtual Lab for the Fisheries Atlas and the Global Record of Stocks and Fisheries.

Zoo and Phytoplankton EOV products

Processing several data resources available under different European marine networks to produce unique zoo and phytoplankton EOV products.

Become familiar with Blue-Cloud 2026 Virtual Labs

Blue-Cloud as a research founding pillar of the Digital Twin of the Ocean

Digital Twins of the Ocean (DTO) will improve ocean knowledge and support science decisions based on the next generation of digital ocean models and marine information systems. Europe is building its own DTO with European data sets, which will be fed into the global Digital Twins of the Ocean (DITTO) initiative.
Blue-Cloud provides data services and analytical virtual labs that are essential for European and global twins for marine environments. Within the European Digital TwinOcean, the Blue-Cloud digital ecosystem could be considered as a research component, offering e-infrastructure services (computing, storage, analytics, Single sign-on (SSO), Authentication and Authorization Infrastructure (AAI) and generic services, orchestrated with a large variety of data resources), a federated data service (10M+ datasets and products from leading European marine data management infrastructures), and research intensive virtual labs, embedded in a powerful VRE, federating multiple e-infrastructures.

Learn more about how Blue-Cloud is contributing to the DTO

The marine Open Science platform in Europe

Innovative data products for a multidisciplinary marine open science

A technical federation of marine data, computing resources and analytical services, to increase Europe's knowledge of ocean and marine systems and respond to societal challenges. Blue-Cloud is bringing an unprecedented amount of multidisciplinary data repositories, analytical tools, and computing facilities to the European Open Science community European researchers can retrieve data from marine infrastructures, including SeaDataNet, EMODnet, Copernicus, Ecotaxa and more, benefit from data harmonization, qualification and validation pipelines, and use them in the VRE, accessible via the EOSC federated login, where Blue-Cloud analytical services and interdisciplinary Virtual Labs are available.
A win-win open science extension to the European Open Science framework (EOSC) which will serve the needs of European blue economy, marine environment and knowledge agendas.

Learn more about how Blue-Cloud is contributing to the EOSC

Blue-Cloud Training Academy

Unlock the potential of Open Science and FAIR data principles for marine research

Blue-Cloud Training Academy

Comprehensive lessons and materials that guide you in utilising Blue-Cloud services for Open Science in marine research. The Academy also hosts dedicated courses to foster the uptake of Open Science practices and explore the challenges and solutions in applying the FAIR foundational components, standard and practices towards data interoperability to achieve FAIRification in the marine data community.

Discover how to harness the power of our platform and embrace Open Science practices in the ocean science domain. Join us on this educational journey - check the Academy and sign up for the upcoming training opportunity

In partnership with

GOOS

IODE International Oceanographic Data and Information Exchange

EuroGOOS European Global Ocean Observing System

unesco Intergovernmental Oceanographic Commission

IEEE

OTG@ OceanTeacher Global Academy

Ocean best practices

Blue-Cloud Second Federation and Digital Twins of the Ocean Interoperability Joint Workshops

Services and solutions for thematic and local digital twins of the ocean

When?

16 June 2025
10:00–18:00 CET

Where?

Brest (France)
at **OCEANS 2025 Conference and Exposition**

To achieve the ambitious goals of the European Green Deal and Mission Restore Our Ocean and Waters by 2030, new capabilities and innovative technologies like Digital Twins of the Ocean should be promoted and widely adopted, whether at local and national levels, to solve specific challenges, or at a European and international level.

By creating virtual, data-rich representations of marine ecosystems, digital twins of the ocean can support decision-making processes that are vital for achieving the European Green Deal's goals of sustainable resource use, biodiversity preservation, and climate resilience - and also include the additional use of socio-economic and socio-ecological data and models. This innovative technology also aligns seamlessly with the Mission Restore our Ocean and Waters by enabling precise tracking and mitigation of ecological pressures on marine habitats.

The workshop will include **both one demonstration oriented solution track and one technical services track and joint sessions for both tracks**.

Introducing a federated and interoperability focused approach, where research infrastructures and technological providers make their services available to the community via agreed data management principles (GEO, FAIR, CARE, TRUST) and Open Science technology, can add that extra contribution to the sharing of knowledge, ultimately stimulating uptake of services and the development of new tools and products. The services can include one or more steps of a digital twin pipeline from observations and sensors, to data management through data spaces and data lakes including support for semantic interoperability, data discovery and access, to digital twin engine and processing services with orchestration of workflows and support for virtual research and analysis environments with AI/ Machine learning and predictions/what-if analysis to visualisation and interaction.

Register to join us!

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Blue-Cloud 2026 Consortium

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seascape BELGIUM
AWI Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung
National Oceanography Centre British Oceanographic Data Centre
cmcc
COMMpla Communication Platforms and Online Solutions
EGI
EMBL-EBI
EMBRC European Marine Biological Resource Centre
emso ERIC
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