

Blue-Cloud 2026 –a Federated Data Discovery and Access Service

Content

The Blue-Cloud 2026 HE project aims at a further evolution of the pilot Blue-Cloud open science infrastructure into a Federated European Ecosystem to deliver FAIR & Open data and analytical services, instrumental for deepening research of oceans, EU seas, coastal & inland waters. It also strives to become a major data and analytical component for the Digital Twins of the Oceans (DTO's) as well as a blue print for a thematic EOSC node.

One of the key services is the Blue-Cloud Data Discovery & Access service (DD&AS), which federates key European data management infrastructures, to facilitate users in finding and retrieving multi-disciplinary datasets from multiple repositories through a common interface. In Europe, there are several research infrastructures and data management services operating in the marine and ocean domains. These cover a multitude of marine research disciplines, and providing access to data sets, directly originating from observations, and to derived data products. A number are ocean observing networks, while others are data aggregation services. Furthermore, there are major EU driven initiatives, such as EMODnet and Copernicus Marine. Together, these infrastructures constitute a diverse world, with different user interfaces. The Blue-Cloud DD&AS has been initiated to overcome this fragmentation and to provide a common interface for users by means of federation.

The pilot Blue-Cloud Data Discovery & Access service (DD&AS) already federates EMODnet Chemistry, Sea-DataNet, EuroArgo-Argo, ICOS-Marine, SOCAT, EcoTaxa, ELIXIR-ENA, and EurOBIS, and provides common discovery and access to more than 10 million marine datasets for physics, chemistry, geology, bathymetry, biology, biodiversity, and genomics. As part of Blue-Cloud 2026 project, it is being expanded by federating more leading European Aquatic Data Infrastructures, such as EMSO, SIOS, EMODnet Physics, and EBI –Mgnify. In addition, upgrading is underway for optimising the FAIRness of the underpinning web services, incorporating semantic brokering, and adding data sub-setting query services.

The common interface includes facilities for discovery in two steps from collection to granular data level, and including mapping and viewing of the locations of data sets. The interface features a shopping mechanism, facilitating users to compose and submit mixed shopping baskets with requests for data sets from multiple BDIs. The DD&AS is fully based and managed using web services and APIs, following protocols such as OGC CSW, OAI-PMH, ERDDAP, Swagger API, and others, as provided and maintained by the BDIs. These are used to deploy machine-to-machine interactions for harvesting metadata, submitting queries, and retrieving resulting metadata, data sets and data products.

Presentation:

During the presentation more details will be given about the federation principles, the semantic brokerage, and the embedding of the DD&AS in the Blue-Cloud e-infrastructure, serving external users as well as users of Blue-Cloud Virtual Labs and EOVS WorkBenches.

Topic

EOSC Developments and Open Science: EOSC

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