ATLANTIC STAKEHOLDER PLATFORM CONFERENCE

REGISTER NOW

1st & 2nd December, 2022

Cadiz, Spain

ATLANTIC STRATEGY
Support Team for the Atlantic Action Plan

European Commission

Blue-Cloud

Piloting innovative services for Marine Research & the Blue Economy

Blue-Cloud: Your Open Science Platform for Collaborative Marine Research

Contribution to the Workshop “Connecting Atlantic policy efforts through co-implementation”

9th Atlantic Stakeholder Platform Conference

1st December 2022

Sara Pittonet Gaiarin, Trust-IT & Blue-Cloud Coordinator

Blue-Cloud has received funding from the European Union's Horizon Programme call BG-07-2019-2020, topic: [A] 2019 - Blue Cloud services, grant Agreement number 862409.

Blue-Cloud develops a European federation of marine and ocean water data management infrastructures and services with increased FAIR, advanced analytical capabilities and high quality data provision, interacting with EOSC developments, in support of the EU Green Deal, UN SDG, EU Destination Earth, and the EU Mission Starfish on healthy oceans, seas, coastal and inland waters.

Funding: H2020: The 'Future of Seas and Oceans Flagship Initiative'
(BG-07-2019-2020) topic: [A] 2019 - Blue Cloud services
October 2019- September 2022
20 partners + 13 Blue federated Infrastructures

Blue-Cloud key products and services

- **Blue-Cloud Data Discovery & Access service**, federating key European data management infrastructures, to facilitate users in finding and retrieving multi-disciplinary datasets from multiple repositories
- **Blue-Cloud Virtual Research Environment infrastructure** to provide a range of services and to facilitate orchestration of computing and analytical services for constructing, hosting and operating Virtual Labs for specific applications

- **Blue-Cloud Virtual Labs**, configured with specific analytical workflows to serve five **Demonstrators,** developed to showcase the potential of the European Open Science Cloud, which can be adopted and adapted to support other thematic communities.

https://blue-cloud.d4science.org/

EUROPEAN OPEN SCIENCE CLOUD

Zoo & Phytoplankton EOV products

Plankton Genomics

Fish a matter of scales

Marine Environmental Indicators

Aquaculture Monitor

EurOBIS | EcoTaxa | ENA European Nucleotide Archive | | WEKEO | ICOS | Copernicus Marine Service | Climate Change Service | FAO | RAM | SFP | Copernicus | | EMODnet Bathymetry | EMODnet Biology | EMODnet Chemistry | SeaDataNet

- A zooplankton and phytoplankton abundances
- B high resolution precision microscopy gene images
- C genomics data
- D high resolution precision microscopy gene images
- E environmental climatologies
- F inorganic carbon data
- G chlorophyll a concentration
- H satellite-derived reflectance's
- I temperature, salinity , currents, density, sea level anomaly
- J wind
- K fisheries data
- L aquaculture farm information
- M fisheries data
- N fisheries data
- O radar and optical images
- P temperature and salinity
- Q bathymetry
- R biodiversity data
- S zooplankton and phytoplankton abundances
- T environmental data
- U salinity and temperature

Zoo- and Phytoplankton EOV products

A G H I P S U

Plankton Genomics

B C D E R T

Marine Environmental Indicators

F I J

Fish, a matter of scales

K M N Q

Aquaculture Monitor

L O Q

What can Blue-Cloud contribute to the marine value chain? Some examples

From the Fishnet to the Internet

The "**Fish, A Matter of Scales**" demonstrator[24] has evolved innovative ways of delivering knowledge on **fisheries** to improve their **management** and **monitor trends** in **fisheries indicators**. Its **Global Tuna Fisheries Atlas VLab** provides an overview of FAO statistics, further allowing their visualisation in combination with other maps of environmental data, feeding from Copernicus Marine satellite data products and from EMODnet. It offers global thematic maps showing the **Earth's fisheries**, their **production** and **trade**, as well as **fish distribution maps** and **ecological zones**. Added maps, measurements and accurate analytical techniques allow users to place and analyse fisheries in a wider environmental context, potentially informing and supporting decision making across different **EU policies** -including the **Common Fisheries Policy**, the **EU "Farm-To-Fork" Strategy** and the **EU Biodiversity Strategy**- as well as at a regional level, further enabling **capacity building** to monitor progress towards the **UN SDGs**, more specifically **SDG 2** (Zero Hunger), **SDG 13** (Climate Action) and **SDG 14** (Life Under Water).

Using Artificial Intelligence to Classify Coastal Areas and Monitor Aquaculture

Blue-Cloud's "**Aquaculture**" demonstrator[25] has evolved a series of **algorithms** and a repeatable **data workflow** that enables the use of satellite images to support the **detection** and **tracking** of **aquaculture cages**, anytime, anywhere. This can evolve into a service that would enable the production of national aquaculture sector overviews, allowing countries to make use of OGC-compliant data services to monitor its aquaculture sector, built on interoperable services where teams can compute and publish reproducible experiments. This demonstrator provides a powerful example of how Artificial Intelligence could be harnessed to enhance monitoring capabilities and analytical services across different domains, in support of policy objectives.

Modelling & assessing the socioeconomic impact of MSP on coastal communities

In the last years, different initiatives have developed models to quantify the socio-economic effects of MSP on coastal communities[27]. Evolving and fine-tuning these models could further contribute to using existing data on human activities in coastal areas and at sea to develop different use scenarios of available marine space, providing policy makers with tools to test different planning options in real time. Besides gaining insight into uses that contribute higher social and economic value with a lower environmental footprint, collaborating in an EU platform would allow them to factor in how neighbouring countries are planning their Ocean space, enabling for example cost-efficient, collaborative investment decisions (e.g., on deployment of shared Ocean energy grid infrastructures).

Ref. Atlantic Action Plan 2.0:
Pillar IV: Health Ocean and Resilient Coasts

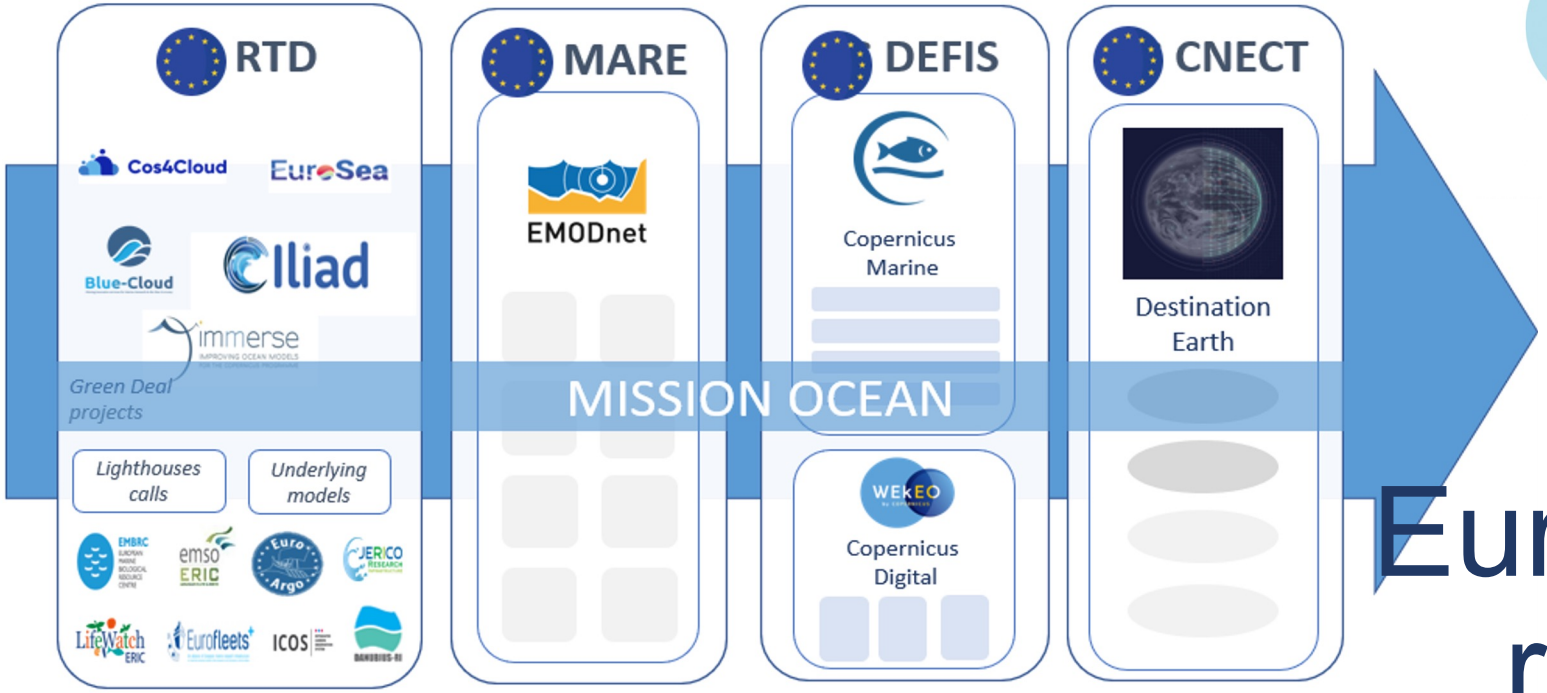
Source: Blue-Cloud Strategic Roadmap to 2030

Blue-Cloud Hackathon pilots

Ref. Atlantic Action Plan 2.0:
Pillar IV: Health Ocean and Resilient Coasts

Blue-Cloud contribution to the Digital Twin of the Oceans

Accessing Ocean Data & New Sensors



An inclusive community of European experts, ready to commit

Image courtesy of Mercator Ocean International

Blue-Cloud

Blue-Cloud Mission 2030

"Accelerating marine and freshwater data interoperability, modelling and Big Data analytics through Artificial Intelligence, Machine Learning and cloud-based Open Science to catalyse innovation in support of the EU Green Deal & UN Agenda 2030".

Source: Blue-Cloud Strategic Roadmap to 2030

Blue-Cloud 2026

MISSION: To develop further the European federation of marine and inland water data management infrastructures & high quality services

A1. DD&AS

A FAIR compliant Data Discovery & Access Services > access to 10+ million open data sets & products by 13 major BDIs

A2. VRE

An Open Science Virtual Research Environment (VRE) federating multiple e-infrastructures > supporting Analytical Big Data Workbenches & VLabs

A3. EOVs

3 EOV Workbenches for highly qualified data collections

3.000 DATA ANALYTICS SESSIONS PER MONTH - 5,000 HTC DATA ANALYTICS JOBS PER MONTH

A4. VLABs - FIVE DOMAIN-BASED VIRTUAL LABS

Coastal Ocean observations along Europe

Coastal currents from observations

Carbon-Plankton Dynamics

Marine Environmental Indicators

Global Fisheries Atlas

A7. COMMUNITY

- **All EU countries** engaged
- **3k+** engaged Blue- Cloud community users
- **5k+** followers across all the platforms
- **10+** External Stakeholders

OUTREACH

- **1** Blue-Cloud Hackathon
- **1** Blue-Cloud TV
- **18** Newsletter issues
- **11** Webinars on Blue-Cloud VRE, DDAS & EOV Workbenches
- **3** Blue-Cloud Annual Impact Events
- **3** Ocean Literacy Webinars
- Videos & Interviews

A6. TRAINING ACADEMY & CATALOGUE

- **3** Online training course on Best Practices for FAIR data principles
- **3** Info session & course on the EOV Workbenches
- **2** online webinars dedicated to the BlueCloud VRE
- **2** dedicated to the DDAS and the innovations introduced
- A series of training sessions on how to use the VLabs

POLICY

- Scientific papers & articles
- Restoring healthy oceans, seas, coastal & inland waters in Europe
- Strategic Roadmap 2030 A5. ROADMAP
- Cross-domain expansion factsheets
- Sustainability Business model

DTO Task Force

2022
Unlocking
Open Science
in support of the
EU Green Deal
Blue-Cloud
8 Dec 2022
Brussels, Belgium
SAVE THE DATE
FINAL CONFERENCE

Thank You!

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