

Blue-Cloud: Exploring and demonstrating the potential of Open Science for ocean sustainability



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Acquisition of marine and ocean data

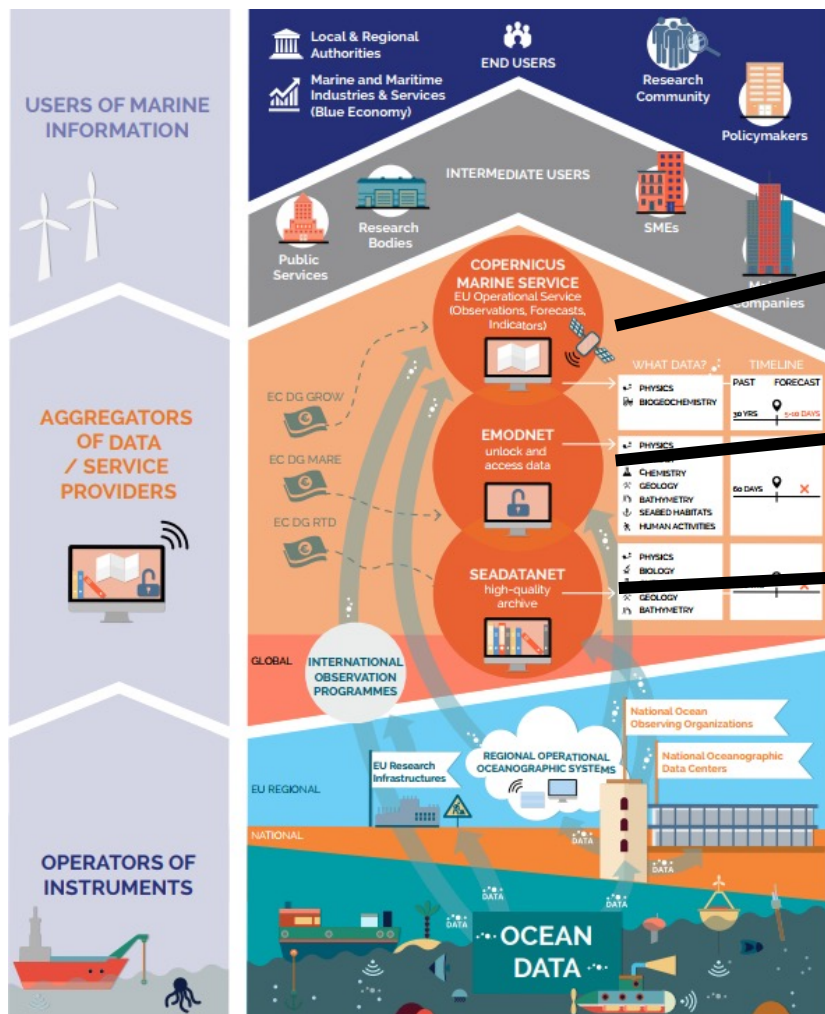


- Scientific Research to gain knowledge and insight
- Modelling (including hindcast, nowcast, forecast)
- Economic activities: shipping, offshore industry, dredging industry, fisheries, tourism, engineering ..
- Environmental Management: monitoring and assessment (water quality, climate status, stock assessment)
- Marine Conventions and Directives, in Europe: Water Framework Directive (WFD), Marine Strategy (MSFD), Marine Spatial Planning (MSP), Coastal Zone Management
- EU Strategies, such as Green Deal, Blue Environment, Blue Economy

In Europe we spent circa 1.4 Billion Euro a year in marine data acquisition



European landscape marine data management



Data aggregators and providers of data products and services



EU H2020 Blue-Cloud project

Marine thematic contribution to European Open
Science Cloud (EOSC)

October 2019 – March 2023; 20 partners

Blue-Cloud Mission

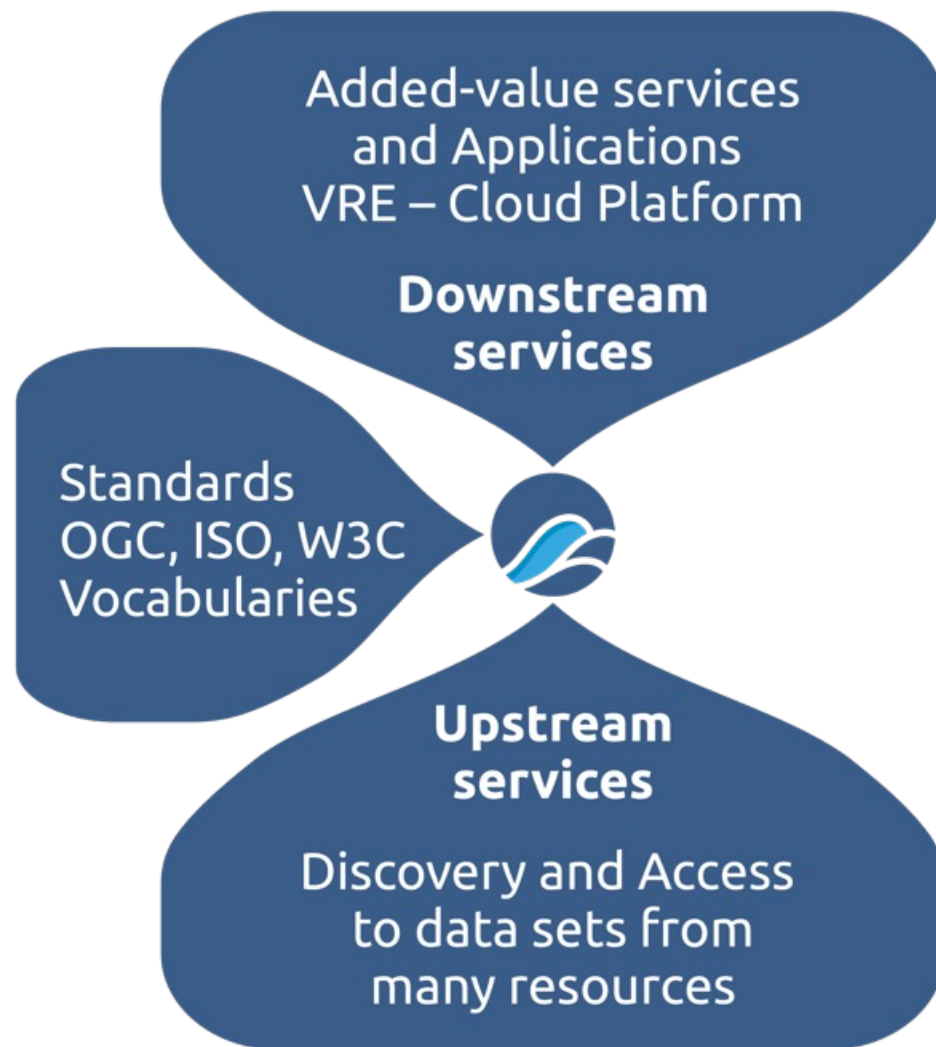
“to promote the sharing of *data, processes and research findings* in the marine domain by delivering a collaborative web-based environment that enables *Open Science*;

underpinned by simplified access to an unprecedented wealth of marine data resources and interoperable added-value services and products”



Blue-Cloud overarching concept

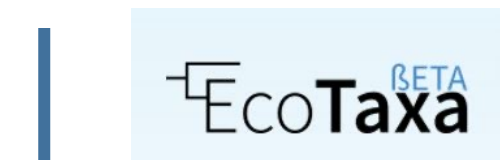
- Developing and deploying Virtual Research Environment (VRE) with an array of services for configuring and running Virtual Labs for specific analytical workflows, use cases, and demonstrators
- Applying common standards and interoperability solutions for providing harmonized metadata and data
- Developing and deploying harmonized discovery and access to established European marine data management and processing infrastructures





Blue-Cloud

Blue-Cloud federation of major infrastructures



Blue Data infrastructures

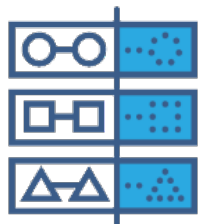
E-infrastructures



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



Fish a matter of scales



Aquaculture Monitor



Zoo & Phytoplankton EOY products



Plankton Genomics



Marine Environmental Indicators

- **Blue-Cloud Virtual Labs**, configured with specific analytical workflows to serve as **Demonstrators**, which can be adopted and adapted for other inputs and analyses

Blue Cloud Discovery and Access service

Built and operated by MARIS, CNR-IIA, and CINECA (EUDAT)





Blue Cloud Discovery and Access service



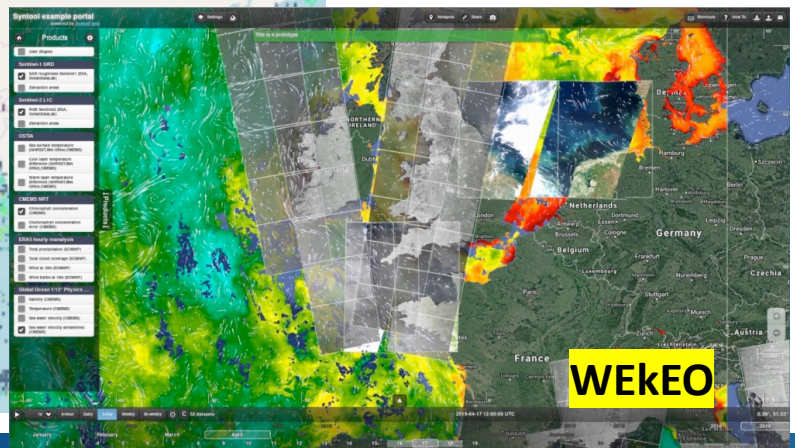
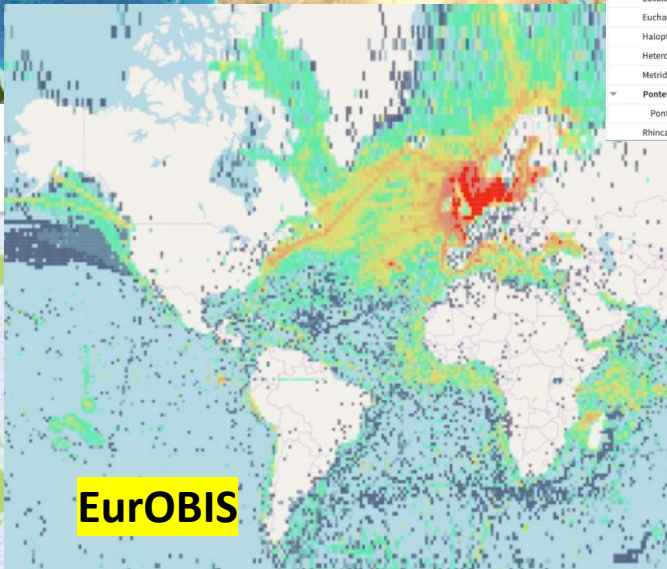
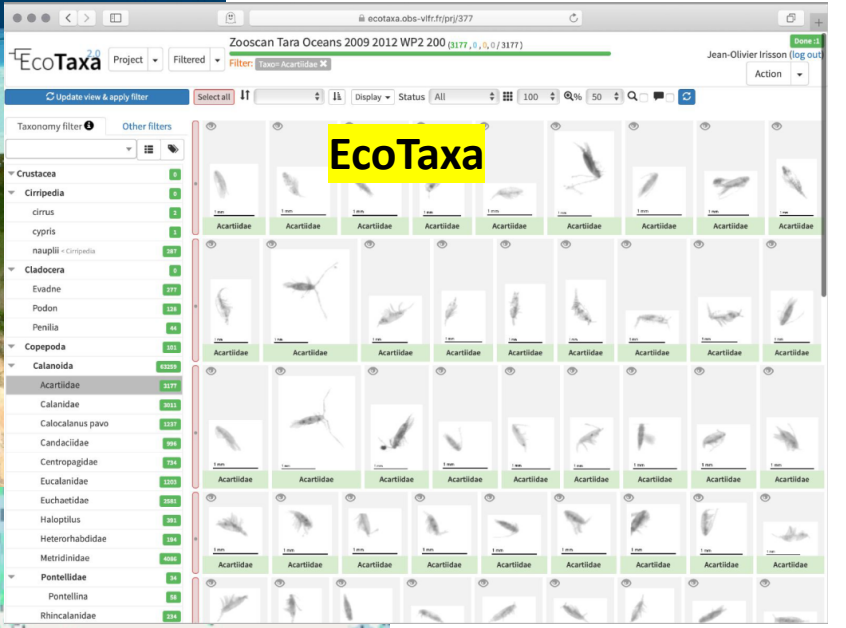
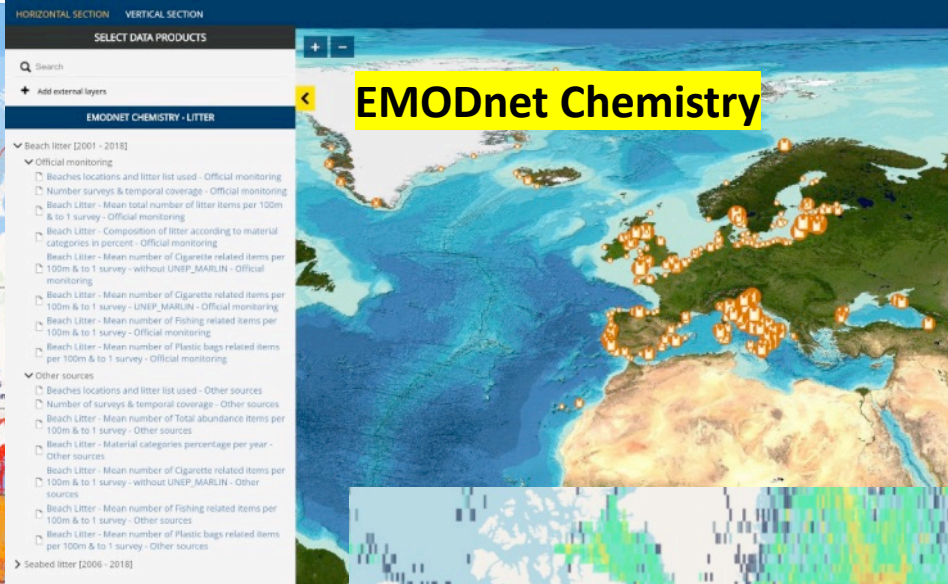
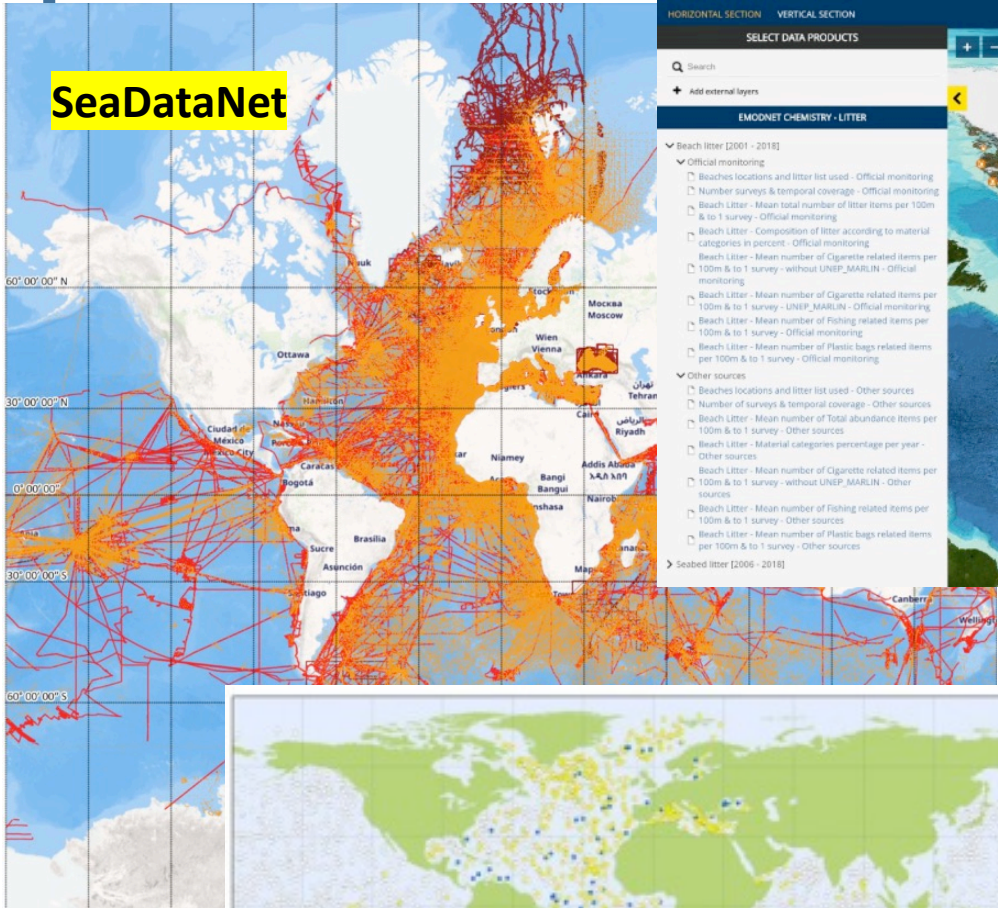
- **Facilitates users:**

- Federated search for discovering interesting data sets (currently more than 10 million) in a common way
- Federated retrieval of identified data sets using a shopping basket mechanism
- Download of data sets or push to Blue-Cloud VRE

- **Facilitates managers of Blue Data Infrastructures:**

- Wider outreach to potential users
 - Stay informed about data requests and users for their repository
 - Periodic reporting of downloads from their repository
- Built and operated by MARIS, CNR-IIA, and CINECA (EUDAT)

Illustrations of data coverage





Approach

- **Federated discovery and retrieval** of data sets and data products from the Blue Data Infrastructures
- **Concept of two-step search approach:**
 - First step: identifying interesting data collections and products with few criteria
 - Second step: drilling down with more criteria to select specific data at granule level, where possible, otherwise at collection/products level
- Metadata and Data Brokerage services interacting **Machine-to-Machine** with web services and APIs as provided and operated by the Blue Data Infrastructures

Filter search

Free search

Date search

From

To

Geographic search

North





West

East

South

SEARCH

RESET

Blue Data infrastructures	Level 2 Search	Level 1 Results (25848)	Level 1 Total	Last update
 EcoTaxa	Level 2 Search	10	10	2022-06-19
 ELIXIR-ENA	Level 2 Search	32	32	2022-06-19
 EMODnet Chemistry	Level 2 Search	210	210	2022-06-19
 EuroArgo - Argo	Level 2 Search	16998	16998	2022-05-01
 EurOBIS - EMODnet Biology	Level 2 Search	1024	1024	2022-06-19
 ICOS data portal	Level 2 Search	195	195	2022-05-08
 SeaDataNet	Level 2 Search	859	859	2022-05-29
 SeaDataNet-products	Level 2 Search	49	49	2022-06-19
 Socat	Level 2 Search	6471	6471	2022-05-29

<https://data.blue-cloud.org>

Filter search

You searched for: Reset all


EuroArgo - Argo 

Free search

Date search
From









To

Geographic search

SEARCH

RESET

 Back to search Results found: 16998   (1 - 100)  100  500  1000  VIEW MAP 

ID	Title	Start date	End date	Level2
 78501	6461 - 5905972 - Argo UW-SOCCOM	20180830	20190928	
 78843	APEX Profiling Float - 4901132 - Argo Canada	20090715	20140109	
 78347	0587 - 1902334 - Argo JAMSTEC	20191225	20220423	
 78625	SOLO Profiling Float - 4900333 - Argo SIO	20030331	20060628	
 78728	SOLO Profiling Float SBE - 1901435 - Argo SIO	20100117	20160426	
 79669	APEX Profiling Float SBE 5389 - 2901303 - Argo INDIA	20110212	20200425	
 78812	NAVIS-A-SBE - 2902536 - Argo JAMSTEC	20150601	20200914	
 78723	APEX Profiling Float IR_SBE_5374 - 5903740 - Argo UW	20120305	20171125	
 78889	PROVOR Profiling Float - 6901881 - Argo GREECE	20131101	20140901	
 79762	SOLO Profiling Float SBE - 5903757 - Argo SIO	20110821	20160320	
 78817	APEX Profiling Float - 3900500 - Argo UW	20051217	20200603	

<https://data.blue-cloud.org>

Filter search

You searched for: **EuroArgo - Argo** Reset all

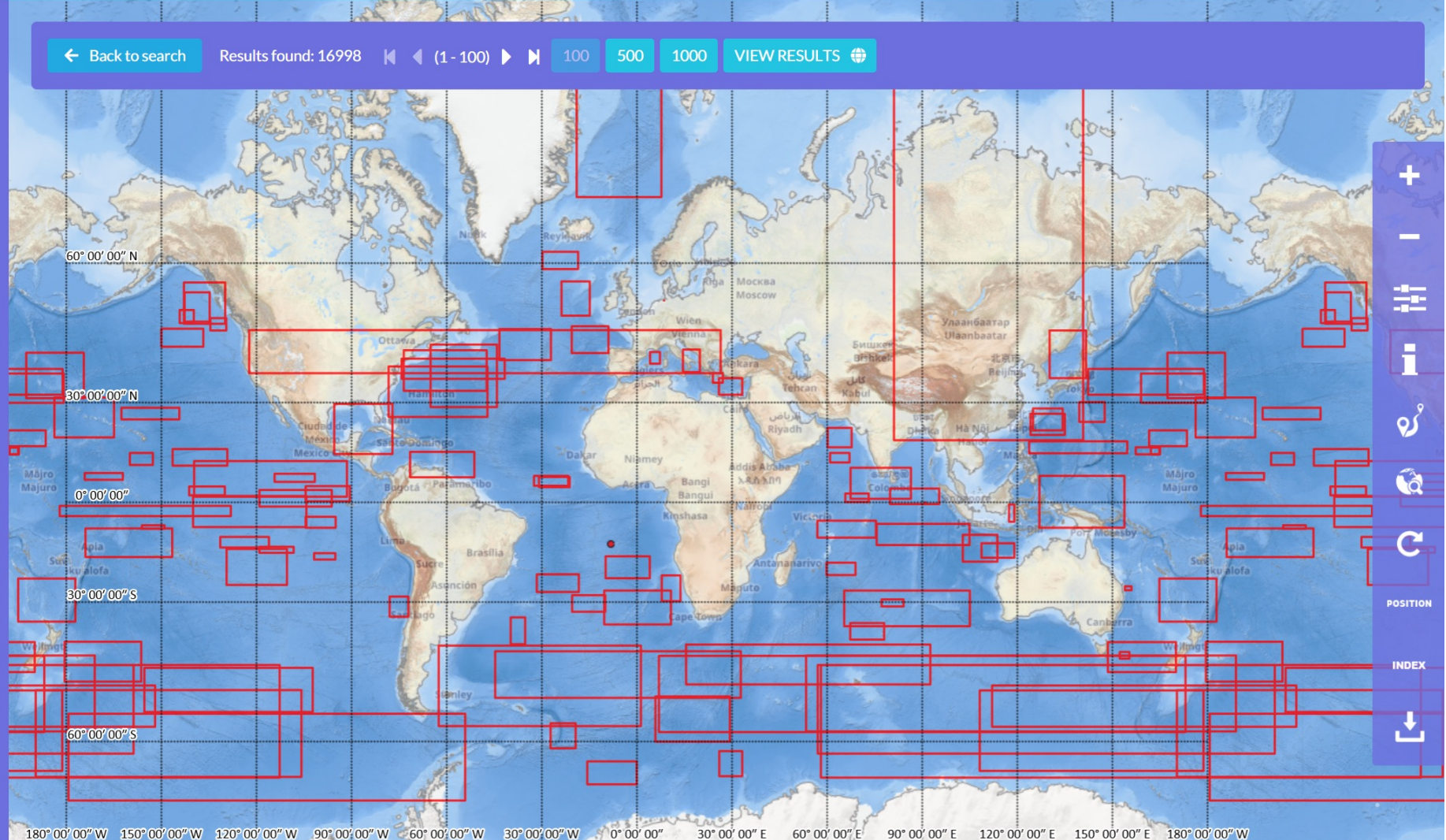
Free search

Date search
From

To

Geographic search

← Back to search Results found: 16998 (1 - 100) 100 500 1000 VIEW RESULTS



<https://data.blue-cloud.org>



Filter search

You searched for: **7900212** Reset all

Free search

Date search
From

To

Geographic search

Variables

SUBSURFACE PRESSURE 296
 SUBSURFACE SALINITY 296
 SUBSURFACE TEMPERATURE 296

Results found: 296 in 0.07 Seconds ◀ (1 - 100) ▶

<input type="checkbox"/>	Platform	Platform Code	Transmission System	Cycle	Cycle Start Date
<input type="checkbox"/>	SOLO2IR_SBE_	7900212	IRIDIUM	255	2021-08-13T07:27:14.000Z
<input type="checkbox"/>	SOLO2IR_SBE_	7900212	IRIDIUM	194	2020-05-04T02:05:25.000Z
<input type="checkbox"/>	SOLO2IR_SBE_	7900212	IRIDIUM	133	2018-09-20T00:49:50.000Z
<input type="checkbox"/>	SOLO2IR_SBE_	7900212	IRIDIUM	135	2018-10-10T02:49:11.000Z
<input type="checkbox"/>	SOLO2IR_SBE_	7900212	IRIDIUM	241	2021-04-24T12:26:02.000Z
<input type="checkbox"/>	SOLO2IR_SBE_	7900212	IRIDIUM	119	2018-05-02T12:38:06.000Z
<input type="checkbox"/>	SOLO2IR_SBE_	7900212	IRIDIUM	93	2017-08-14T14:20:14.000Z
<input type="checkbox"/>	SOLO2IR_SBE_	7900212	IRIDIUM	33	2015-12-22T18:00:27.000Z
<input type="checkbox"/>	SOLO2IR_SBE_	7900212	IRIDIUM	289	2022-04-24T07:07:58.000Z
<input type="checkbox"/>	SOLO2IR_SBE_	7900212	IRIDIUM	229	2021-01-23T05:32:11.000Z
<input type="checkbox"/>	SOLO2IR_SBE_	7900212	IRIDIUM	211	2020-09-12T15:23:41.000Z
<input type="checkbox"/>	SOLO2IR_SBE_	7900212	IRIDIUM	73	2017-01-26T12:34:37.000Z

<https://data.blue-cloud.org>



Filter search

You searched for: **7900212** Reset all

Free search

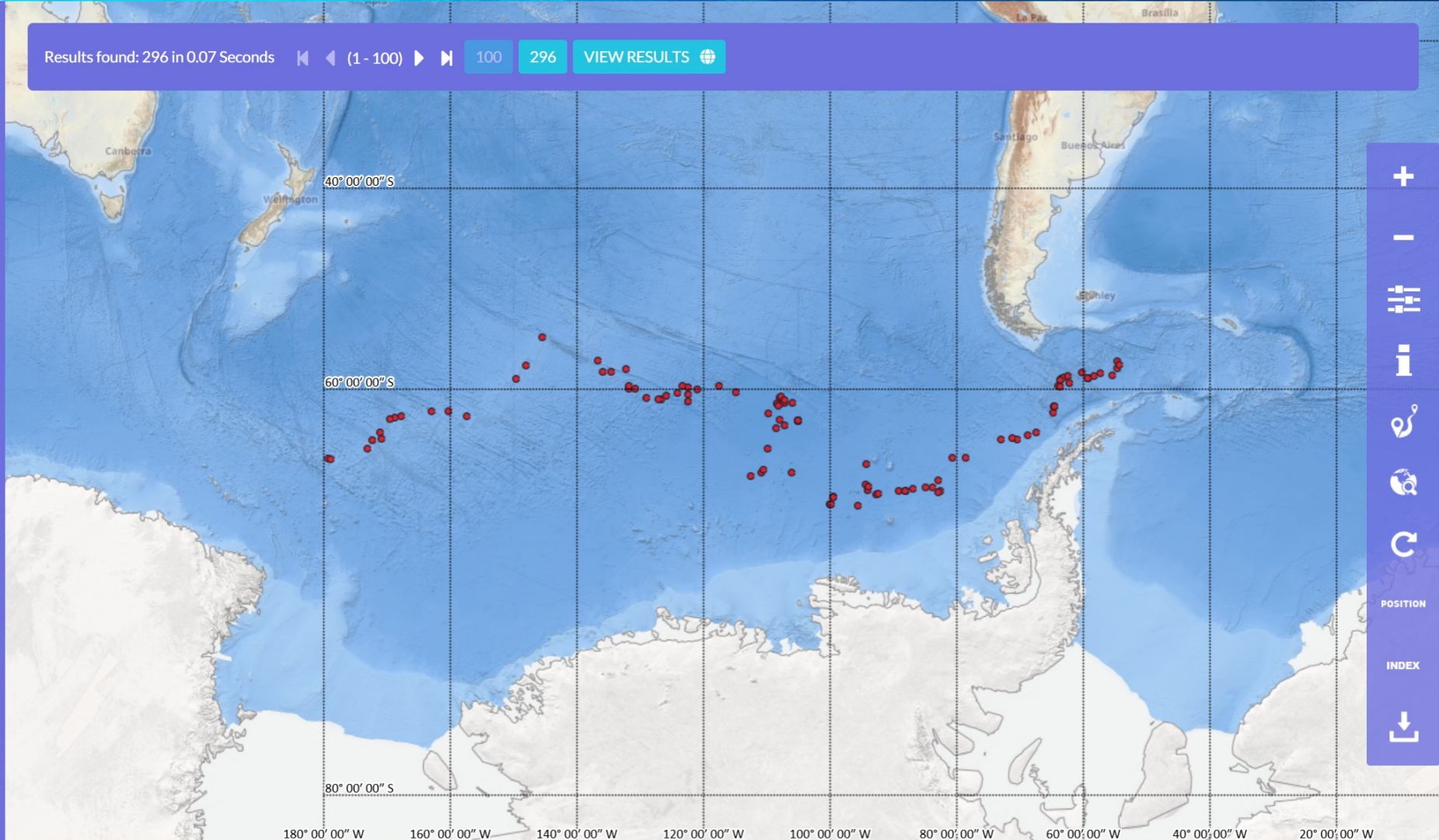
Date search
From
To

Geographic search

Variables

SUBSURFACE PRESSURE	296
SUBSURFACE SALINITY	296
SUBSURFACE TEMPERATURE	296

Results found: 296 in 0.07 Seconds ◀ (1 - 100) ▶



<https://data.blue-cloud.org>



Level 2 Interfacing - Protocols

SeaDataNet	Dedicated API
SeaDataNet Products	OGC CSW service
EMODnet Chemistry	OGC CSW service
EuroArgo - Argo	Dedicated API
EurOBIS – EMODnet Biology	DCAT service
Ecotaxa	Dedicated API
ELIXIR - ENA	Dedicated API
ICOS Marine	SPARQL service
SOCAT	ERDDAP service

Virtual Research Environment (VRE)

Built and operated by CNR-ISTI (D4SCIENCE)





Blue-Cloud VRE



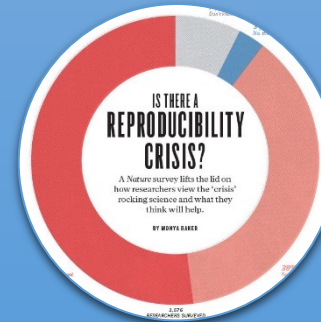
Collaboration



Sharing



Reuse



Reproducibility





Blue-Cloud VRE

System of System

Blue-Cloud VRE is built with dedicated services leveraging on existing e-infrastructures and marine infrastructures, EOSC resources and services

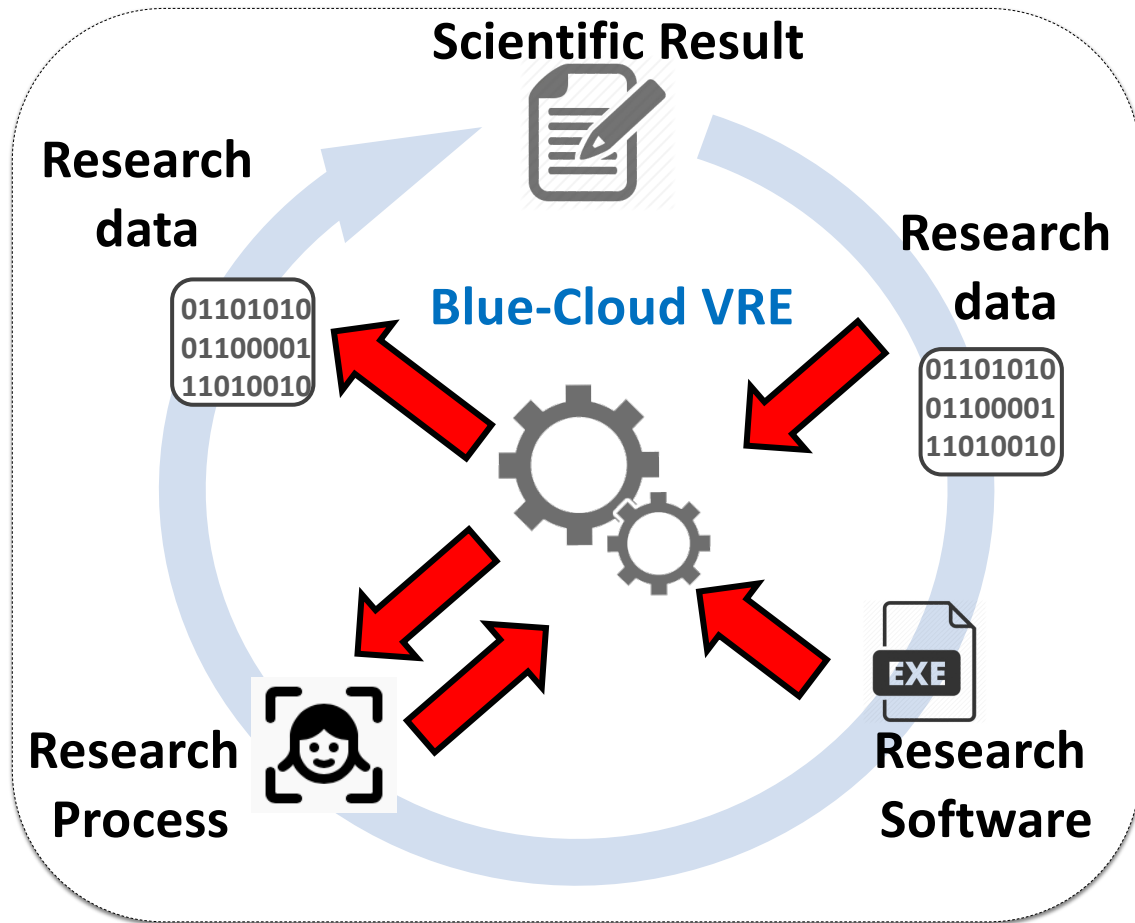
Extensible

Blue-Cloud VRE can integrate services and resources resulting from existing marine initiatives

Open

Blue-Cloud VRE promotes open science and practices

A SoS to support and promote Open Science



Enable

- Repeat, Reproduce, Reuse, Evaluate
- Active collaboration
- Effective sharing
- Provenance and attribution

Adopt

- As-a-service approach
- Standards
- Economy-of-scale to reduce operational costs



Blue-Cloud

VRE at-a-glance

Blue-Cloud | G

Blue-Cloud, a thematic EOSC cloud understand and manage the ocean through a set of five compelling pi demonstrators.

Sign In Register

Terms of Use Cookies Policy Privacy Policy Blue-Cloud Project Website

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

Blue-Cloud Gateway

Admin Go to 8 Massimiliano Assante

Piloting Innovative Services for Marine Research and the Blue Economy

Statistics

ACTIVITY GOT SPACE USED
 2 18 7 107.56%

PROFILE STRENGTH
85%

Data Discovery and Access service

Facilitates discovery and retrieval of data sets and data products for external users in stand-alone mode. The Blue-Cloud data sets are managed in blue data infrastructures that are connected to the Blue Cloud service to serve federated discovery and access.

Visit the service

Synergies with related Projects

JERICO CORE VLab

The JERICO CORE Virtual Lab is a pilot supporting the collaboration between Blue-Cloud VRE and the JERICO Coastal Oceans Resource Environment (JERICO CORE). The VLab offers to any JERICO user a working environment for JERICO CORE tools and data to further their research and application needs. (Access is restricted to project users only).

Enter the VLab

JOINAS VLab

The JOINAS Virtual Lab is for supporting the Joint Framework for Ocean Noise in the Atlantic Seas Initiative. (Access is restricted to project users only).

Enter the VLab

News feed

Show sorted by: newest Post

Federico Drago
September 28, 10:24 AM · Blue-CloudProject

Dear all,
If you wish to learn more about the Wildlife Tracker for Oceans, developed by one of the winning teams at the hackathon, feel free to register for the upcoming webinar on 18 October: <https://blue-cloud.org/events/webinar-wildlife-tracker-oceans-marine-launa-habitat-phytoplankton>

Webinar - Wildlife Tracker for Oceans: real-time assessment for marine fauna habitat with Phytoplankton hotspots - blue-cloud.org

<https://blue-cloud.org/events/webinar-wildlife-tracker-oceans-marine-f...>

The "Wildlife Tracker for Oceans" is a geo-framework dedicated to the real-time assessment of Marine Protected Areas - MPAs. The software is able to retrieve live feeds from Satellite Constellations like Argos for animal tracking and Copernicus f...

Reply - Like 1

Patricia Cabrera
September 20, 2:15 PM · PlanktonGenomics

Hi all, Alexandre Schickele cc: Jean-Oliver IRISSON
I have looked at the maps created in Notebook 2 "Spatial relative abundance of target cluster X" and they fit well for the soon-to-be-release EMODNet Map viewer-Biology theme as a data product. But for this, I would need the output as a raster file (or even better as a NetCDF). If you are interested let me know!

Reply - Like 2 1

Alexandre Schickele Hi Patricia,
It sounds interesting, indeed. Technically speaking, for a user-defined metabolic pathway or selection of enzymes, the notebook already constructs the corresponding maps as a raster format (.gri and .gri file). The final version of the notebook will be published soon in the catalogue.

However, I would like to highlight several points:
 - the maps are relative data, therefore, displaying one map at the time has no biological meaning. We would need to publish all maps relative to a metabolic pathway at the time.
 - we only did the analysis for C4-photosynthesis in picocaryotes
 - we are working on a scientific publication using these maps, thus we need to b...

See More
September 22, 4:57 PM

Patricia Cabrera Hi Alexandre, it all sounds good. These outputs are very valuable for EMODnet Biology and technically it is feasible. For us, it takes some time to format the raster file into the NetCDF to be able to visualize it in the Map viewer. So ideally, once you find out that there are no conflicts with the journal and maps are ready, it...

See More
September 28, 11:49 AM

Write a comment, use @ to mention someone

Blue-Cloud Project

To support the Blue-Cloud project activities and discussions. It is equipped with the following facilities: Workspace: for sharing files ...
Read More >

Blue-Cloud Lab

Where scientists can contribute, find, try, and use Blue-Cloud methods as integrated in the infrastructure by scientists across multiple disciplines.
Read More >

Alien/Invasive Species

This VLab hosts examples of suitable habitat maps produced for today and 2050 in new areas for more than 11,000 species and provides models and workflows to combine environmental data with ...
Read More >

Demonstrators

Zoo-Phytoplankton EOVI (Dem. 1)

The Zoo-Phytoplankton EOVI VLab is the implementation of the Blue-Cloud Zoo-Phytoplankton EOVI products demonstrator. It provides its users with access to blue multidisciplinary data for expli ...
Read More >

Plankton Genomics (Dem. 2)

The demonstrator 'Plankton Genomics' is led by the European Bioinformatics Institute (EMBL-EBI), in collaboration with the Flanders Marine Institute (VLIZ) and the Faculty of Sciences at So ...
Read More >

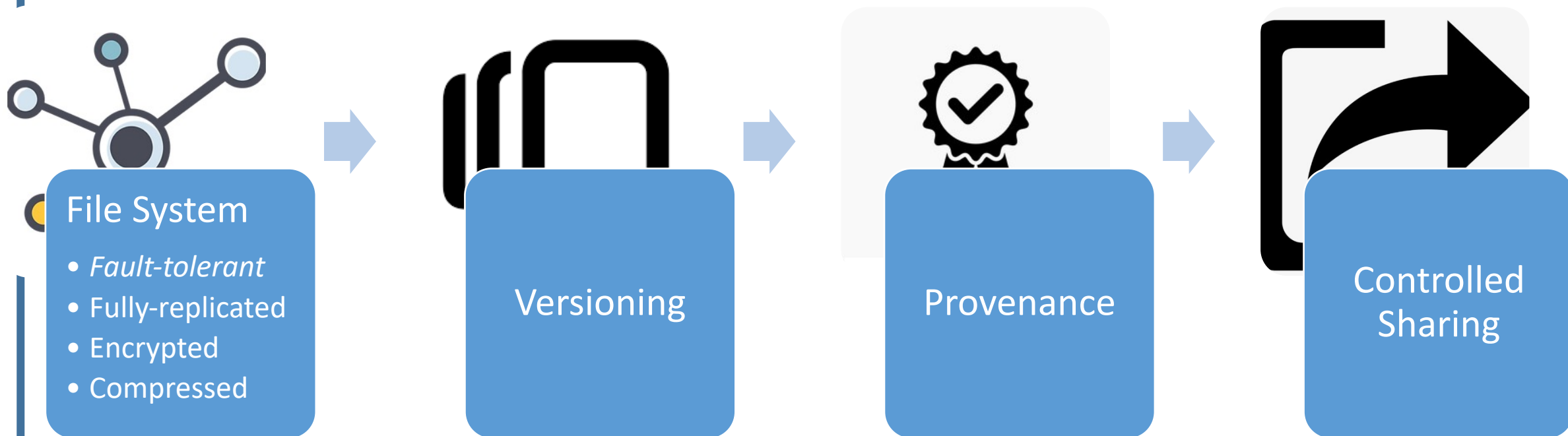
Marine Env. Indicators (Dem. 3)

The Marine Environmental Indicators VLab implements the



One place for store, share, and preserve datasets

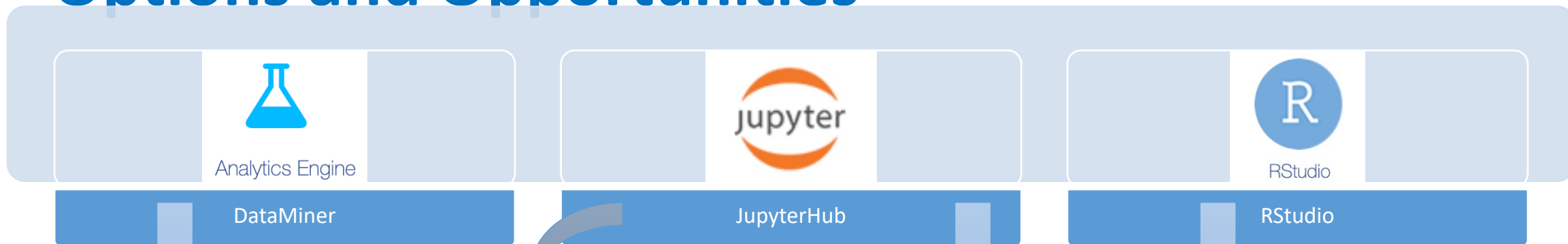
- Common **workspace** and **dataspace** to easily exploit technologies and services not designed to work together



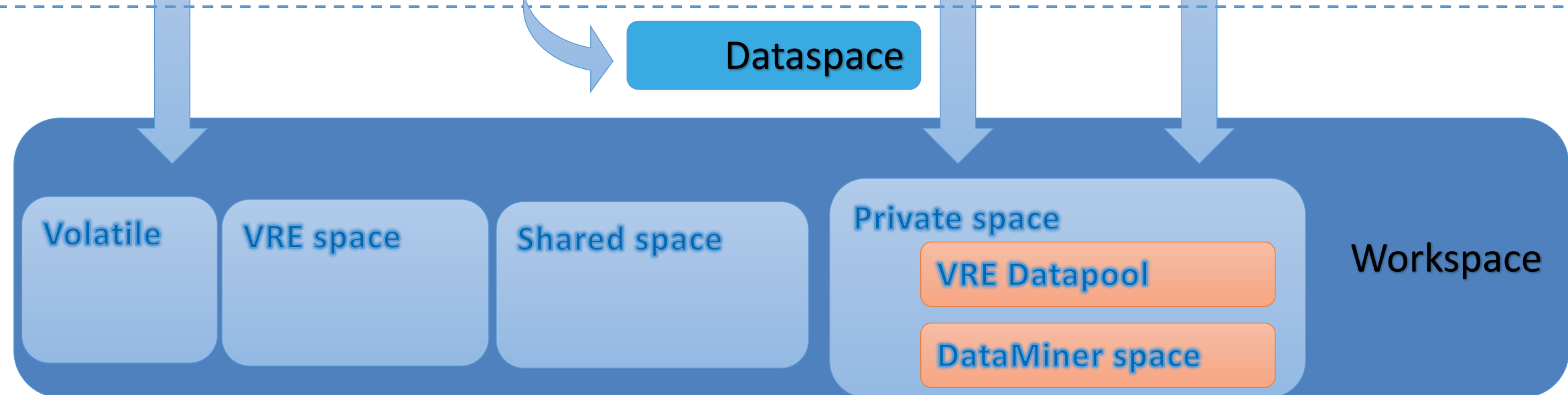


Data Analytics Options and Opportunities

Computing Layer







Storage Layer






One place for execute analysis and processes

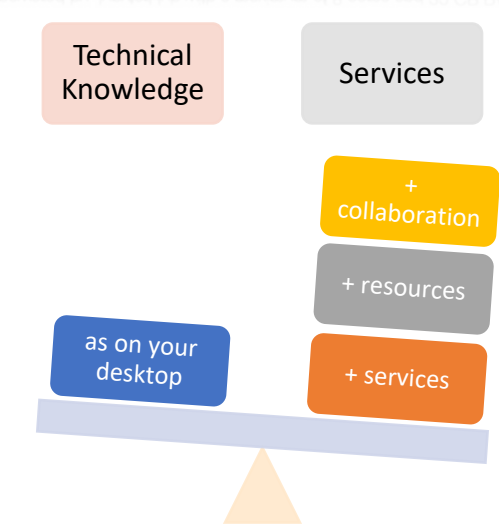
- interactive notebooks via JupyterHub and community-specific applications delivered as a Docker container extend the Analytics framework

 <p>JupyterHub</p> <p>JupyterHub enables the exploitation of computational environments and resources without burdening users with installation and maintenance tasks. This JupyterHub environment is (i) preconfigured with libraries and packages to ease the execution of common data analytics tasks, and (ii) provides access to the Workspace enabling sharing of resources with other members much easier.</p>	 <p>RStudio</p> <p>RStudio provides an integrated development environment for R. It includes a console and a syntax-highlighting editor and it enables code execution. Tools for plotting are also included. This RStudio environment is (i) preconfigured with libraries and packages to ease the execution of common data analytics tasks, and (ii) provides seamless access to the Workspace enabling sharing of resources with other members much easier.</p>
 <p>Analytics Engine</p> <p>Analytics Engine (DataMiner) permits the execution of an array of analytics methods by transparently relying on distributed computing infrastructure. Executions can run either on multi-core machines or on different computational platforms, such as D4Science and other different private and commercial Cloud providers. New software can be integrated by using the dedicated Software Importer (SAI).</p>	 <p>Catalogue</p> <p>Catalogue contains a list of dataset and products produced by the Blue-Cloud Virtual Laboratories and the methods used to generate such products. All the Catalogue items are accompanied with rich descriptions capturing general attributes, e.g. title and creator(s); accessibility properties; technical properties, e.g. size and format; legal and ethical attributes, e.g. whether containing personal data; intellectual properties, e.g. licences.</p>

Development and integration environment for R, Python, and other supported software languages



- it is powered by a cluster of DataMiner servers, each with 16 cores and 32 GB RAM.
- It is powered by a cluster of RStudio servers, each with 16 cores and 32 GB RAM.
- It is powered by JupyterHub with a maximum of 8 cores and 32 GB RAM per notebook. Jupyter





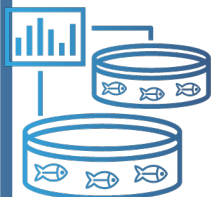
5 Virtual Labs at the VRE



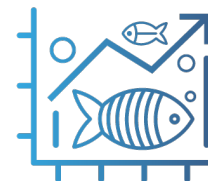
Marine Environmental Indicators



Zoo & Phytoplankton EOVS products



Aquaculture Monitor



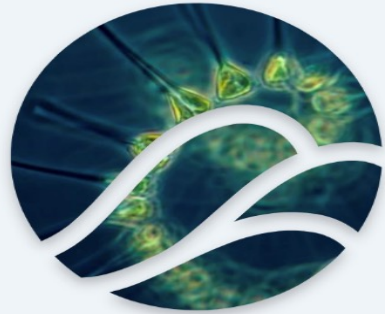
Fish a matter of scales



Plankton Genomics



Vlabs for different domains



Biodiversity

Zoo and Phytoplankton EO
V products



Genomics

Plankton Genomics



Environment

Marine Environmental
Indicators



Fisheries

Global Record of Stocks and
Fisheries



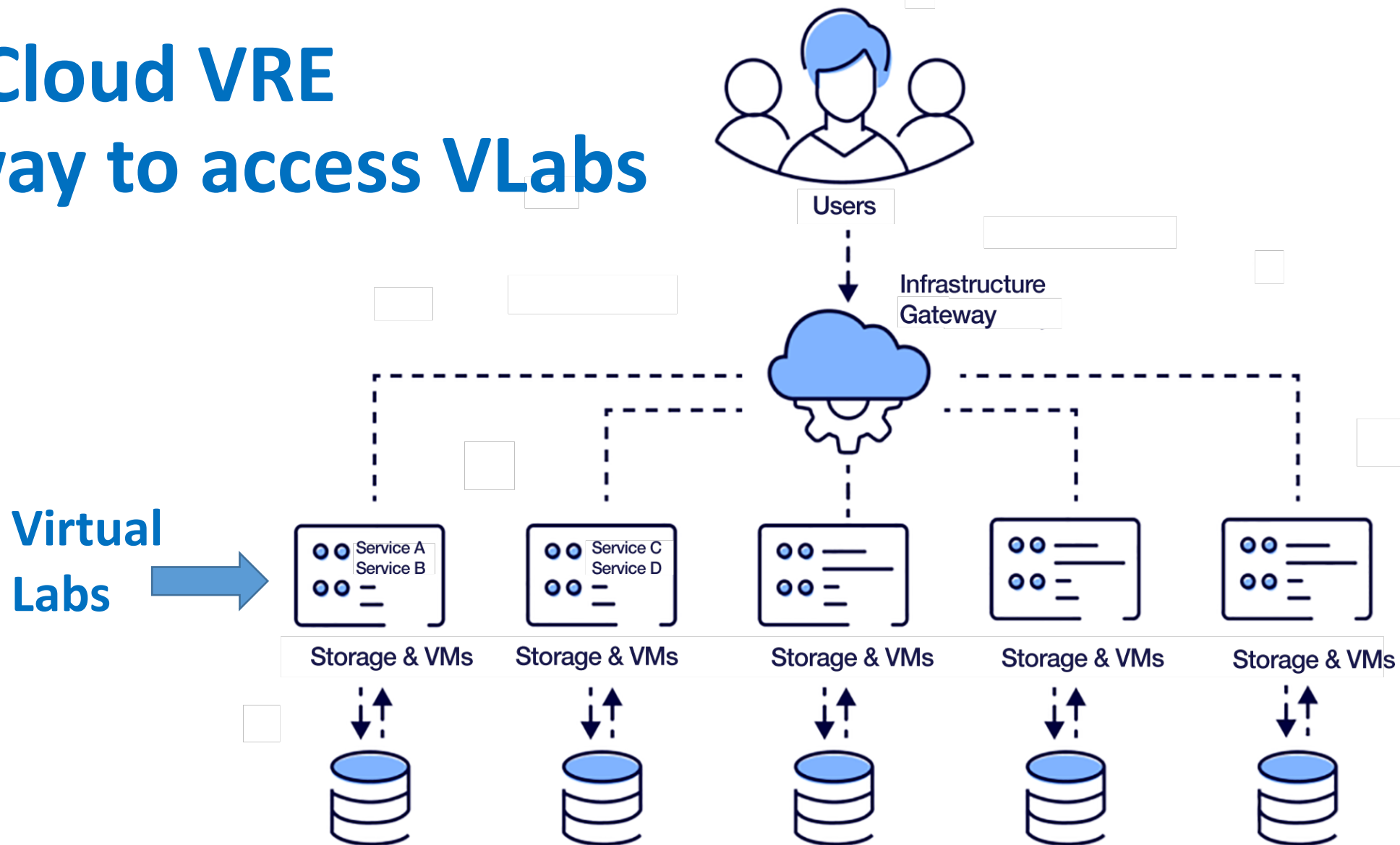
Aquaculture

Aquaculture Monitor



Blue-Cloud

Blue-Cloud VRE gateway to access VLabs





VLabs at-a-glance

AquacultureAtlasGeneration Administration Aquaculture Atlas Production System Members Analytics Catalogue Viewer

Use cases

- Greece
- Malta
- South_sulawesi
 - Coastal Ponds / Rice Paddy by Sentinel-1/2 (2014-2017)
 - Coastal Ponds by Landsat 5 (1994-1997)
- SAR

PlanktonGenomics Administration Result Overview JupyterHub RStudio Analytics Engine Catalogue Members

File Edit View Run Kernel Tabs Settings Help

readme_Notebook1.2.ipynb Python 3

Demonstrator 2 - Notebook 1.2. - Creating protein functional clusters for Notebook 2

Pavia Debeljak, Eric Pelletier & Lucie Bittner

Corresponding author/maintainer: pavia.debeljak@mnhn.fr

Introduction

Recent metagenomic studies have revealed that marine plankton is far more diverse than previously thought (Carradec et al. 2018, Duarte et al. 2020), with hundreds of thousands of genetically distinct taxa and more than 150 million genes documented, however more than half of the planktonic 'omic' sequences have still unknown taxonomy and/or function, especially in terms of sequences with eukaryotic origin. These unprecedented amounts of data on planktonic communities call for the need of innovative data-driven methodologies to quantify and observe their biogeographic importance.

Notebook 1.2. allows for the creation of protein functional clusters from Fasta files derived from Metagenomic or Metatranscriptomic sequencing. These

FisheriesAtlas Administration Members Analytics GeoNetwork Catalogue GeoServer Thredds NetCDF server Catalogue Viewer

About Find Access

Legend

- FISHES ATLAS MAPS
- BASE OVERLAYS
- Exclusive Economic Zones

Blue-Cloud Lab Administration Analytics JupyterHub Catalogue Software Importer Analytics Engine JupyterHub GeoNetwork Catalogue MEI Generator Members

Development and integration environment for R, Python, and other supported software languages

- It is powered by a cluster of Docker servers, each with 16 cores and 32 GB RAM.
- It is powered by JupyterLab with a maximum of 10 cores and 32 GB RAM on request. JupyterLab is powered by Docker with the support of CDK.

All the environments are not for large-scale processing. They are conceived to support the inspection, testing, and validation of your script in the Docker-based distributed computing facility. For large-scale processing, please request the creation of a dedicated Virtual Lab.

JupyterHub enables the visualization of computational environments and resources without burdening users with installation and maintenance tasks.

RStudio provides an integrated development environment for R. It includes a console and a syntax-highlighting editor and enables code execution. Tools for plotting are also included.

The RStudio environment is pre-configured with libraries and packages to ease the execution of common data analysis tasks, and it provides seamless access to the Workspace enabling sharing of resources with other members of the team.

Analytics Engine (Dask) permits the execution of an array of analytic methods by transparently using on distributed computing infrastructures. Functions can run either on multi-core machines or on different computational platforms, such as Dask-CUDA and other different open and commercial Cloud providers.

New software can be integrated by using the dedicated Software Importer (SI).

The Catalogue contains a list of dataset and products produced by the Blue-Cloud Virtual Laboratories and the methods used to generate such products. All the Catalogue items are accompanied with rich, descriptive, including general attributes, e.g. title and creation; accessibility properties, technical properties, e.g. title and format; legal and ethical attributes, e.g. whether containing personal data, intellectual properties, e.g. licenses.

Welcome to Blue-Cloud one-stop-shop, where scientists can contribute, find, try, and use Blue-Cloud methods as integrated into the infrastructure by scientists across multiple disciplines. Using the Web interface you can benefit from all our data sharing services, search methods on high performance backends and discover scientific workflows alongside their results.

Blue-Cloud Lab

Blue-Cloud Lab one-stop-shop, where scientists can contribute, find, try, and use Blue-Cloud methods as integrated into the infrastructure by scientists across multiple disciplines. Using the Web interface you can benefit from all our data sharing services, search methods on high performance backends and discover scientific workflows alongside their results.

ESA CCI Ocean Colour Product

Data products generated by the Ocean Colour component of the Euro Agency Climate Change Initiative project. These files are monthly composites of MERIS, MODIS Aqua, SeaWiFS LAC & GAC, VIIRS, OLCI and SeaWiFS were band-shifted and bias-corrected to MERIS bands in temporally and spatially varying scheme based on the overlap years of was band-shifted and bias-corrected in a second stage against the MERIS already been corrected to MERIS levels, for the overlap period 2012-2013 third stage OLCI was bias corrected against already corrected MODIS 2016-07-01 to 2019-06-30, VIIRS, MODIS, SeaWiFS and MERIS Rs were combination of NASA's I2gen (for basic sensor geometry corrections), Polymer v4.12 (for atmospheric correction). OLCI Rs were sourced at geometrically corrected) and processed with polymer. The Rs were binned to 4km level-3 grid, and later to 4km geographic projection, by Brockmann SNAP. Derived products were generally computed with the standard SeaDAS QAA IOPs were derived using the standard SeaDAS algorithm.

Marine Environmental Indicators Home Administration Software Importer Analytics Engine JupyterHub GeoNetwork Catalogue MEI Generator Members

Generate new data My data Account: Leonardo Candela

Data source: MEDSEA REANALYSIS PHYS

Type: monthly mean timeseries

Environmental field: temperature

Start time: 01/1987

End time: 12/1987

Area:

Lat:	34	42
Lon:	-4.99	1

Depth [m]:

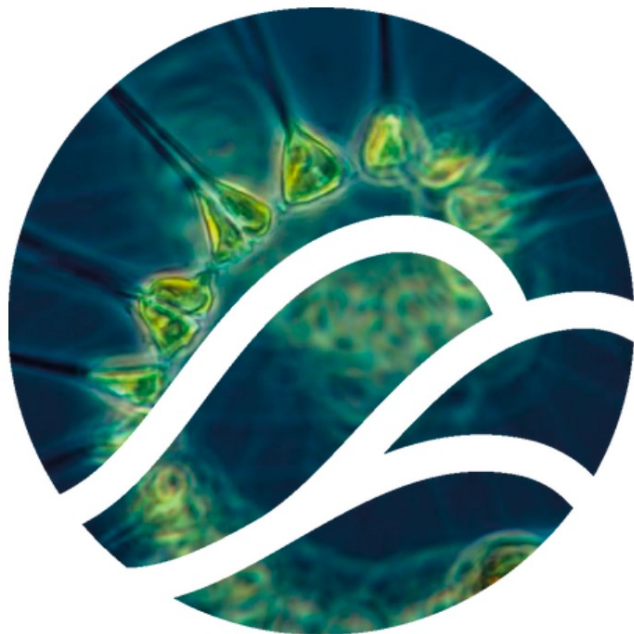
From:	0.5
To:	3000

Execute process

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



Blue-Cloud



Zoo- and Phytoplankton Essential Ocean Variable products



Partners:



Data sources through Blue-Cloud:

EurOBIS, EMODnet Biology, LifeWatch, GEBCO, SeaDataNet, World Ocean Atlas, NOAA, Copernicus Marine Service, Argo GDAC, GlobColour

Main target users:

Plankton researchers, ocean modellers, data product developers and Blue Data infrastructures, for their data products catalogues and as use cases.

Services introduction:

The Vlab offers three independent services that consist of the combination of different data types (biological, physical and environmental data) to then apply models that generate an output. These are offered in a working space where data and scripts are accessible and reusable.

UN SDGs addressed



SERVICES

Zooplankton Essential Ocean Variable

Zooplankton EOv generates zooplankton gridded maps of six zooplankton species in the North East Atlantic. The workflow uses the DIVAnd software tool (Data Interpolating Variational Analysis in n dimensions) that allows to interpolate sparse in situ measurements onto a regular

Phytoplankton Essential Ocean Variable

Phytoplankton EOv generates global open ocean 3D gridded products of (1) chlorophyll a concentration (Chl_a), which is a proxy of the total phytoplankton biomass, and (2) Phytoplankton Functional Types (PFT), as a proxy for phytoplankton diversity, based on temperature and salinity in situ data.

Modelling phyto & zooplankton interactions

Modelling phyto and zooplankton interactions enables users to calculate the relative contribution that limits the growth of phytoplankton by the drivers: nutrients, phosphates, silicates, light and zooplankton grazing.

Milazzo 2022



Successor project: Blue-Cloud 2026



Blue-Cloud 2026

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

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 EOVS 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 & EOVS 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 EOVS 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

Thank you

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