EOSC Future Science Project:
Dashboard for the State of the Environment

Angeliki Adamaki (ICOS)
Raul Bardaji Benach (EMSO)
Tjerk Krijger (MARIS)
ENVRI Cluster

EOSC Symposium – Prague 14-17 November, 2022

The EOSC Future project is co-funded by the European Union Horizon Programme call INFRAEOSC-03-2020, Grant Agreement 101017536

CC BY ND

The Environmental Dashboard in a nutshell

Motivation

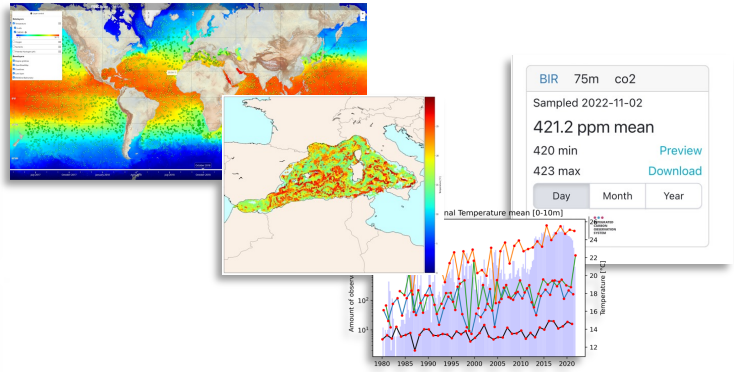
Information on the state of the environment (for public, policy makers)

Switchboard to applications to explore data and models (for scientists)

Understand the impacts of a changing climate on biodiversity, environment and societies

Improved understanding of our universe

Easily understandable environmental indicators



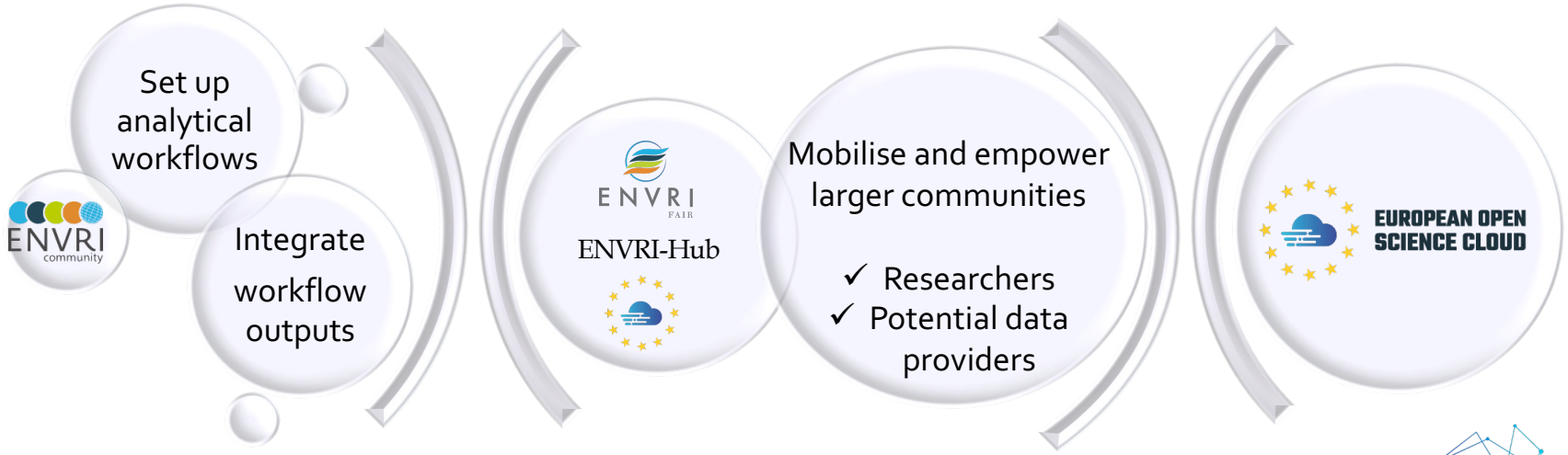
The Environmental Dashboard in a nutshell

General Workflow

Develop and launch a Dashboard of Environmental Indicators

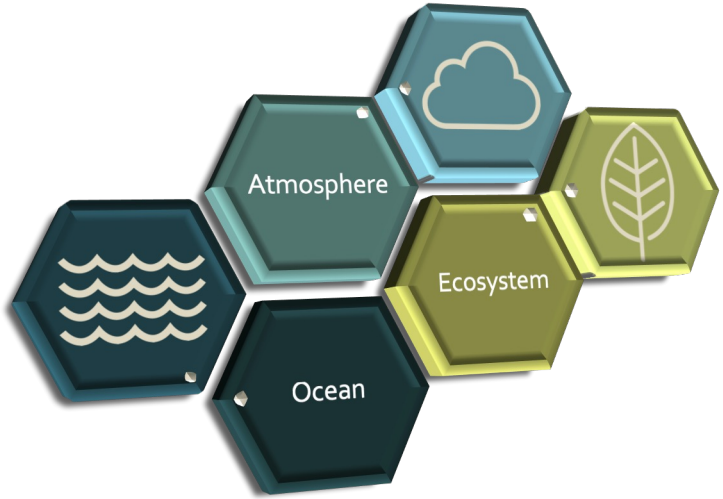
Connect the analytical framework to the EOSC Platform

Demonstrate the benefits and potentials of web-based science



The Environmental Dashboard in a nutshell

Our Partners



SeaDataNet

Euro Argo

emso ERIC

IAGOS
IN-SERVICE AIRCRAFT FOR A GLOBAL OBSERVING SYSTEM

ACTRiS
Exploring the Atmosphere

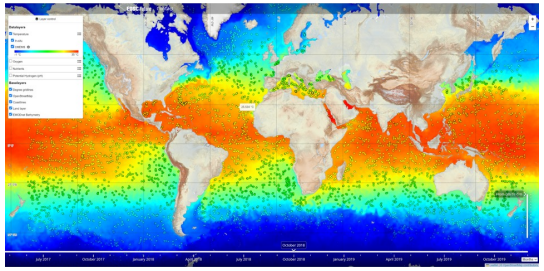
eLTER

LifeWatch ERIC

ICOS
Integrated Carbon Observation System

ENVRI FAIR

Analytical workflow - SeaDataNet



NERC Vocabulary

>2.8M datasets

SeaDataNet CDI Database

SPARQL Queries

Dynamically I-ADOPT

Co-located Display Map Viewer

When TRL7 Onboarded as service to EOSC

Unit conversion

1 Uniform Dataset

Algorithm Jupyter Notebook

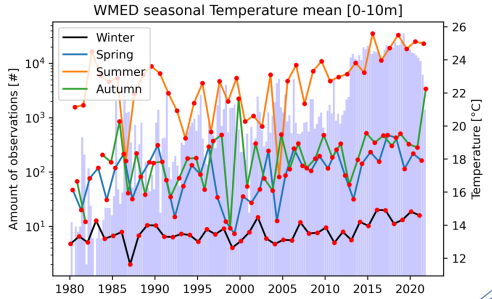
EOSC Cloud Computing

EOV → **Semantic Broker** → **SeaDataNet API**

Essential
Ocean
Variables:
Oxygen
Temperature
pH
.....

DOXMZZXX
DOXYPE01
DOKGWITX
.....

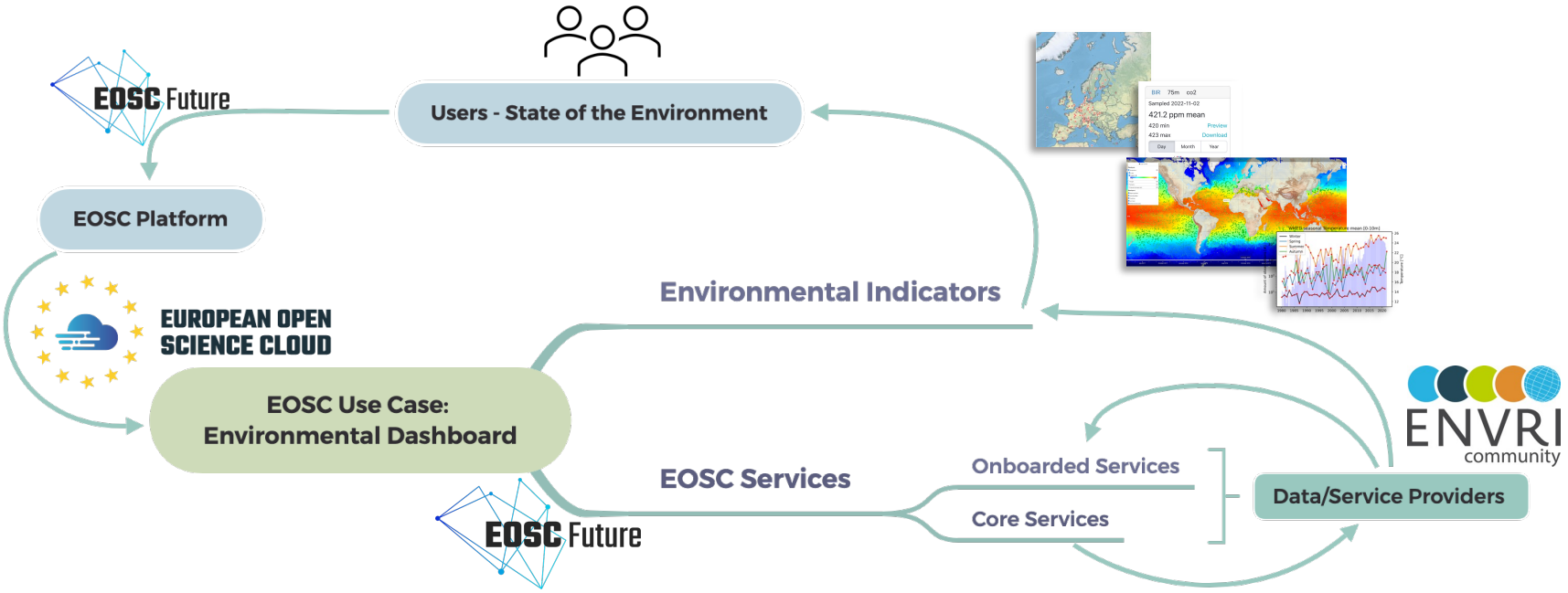
1. Time period
2. Depth range
3. Bounding box
4. Parameter names



There is a similar type of workflow for Euro-Argo established that attributes extra data to the map viewer and ocean indicators.

The Environmental Dashboard

EOSC as enabler



The Environmental Dashboard

Impact

General Public – *Offered a dissemination platform to showcase the usefulness of the scientific observations to Climate Change*

Scientists - *Get access to data and services from ENVRIs*

EOSC platform - *used for integration of data and scientific workflows to support scientific products relevant to societal needs*

Engage scientists *from research and industry, addressing environmental processes – as providers, co-creators, end-users*

Strengthen the links with the ENVRI communities
Increase visibility of elaborated products provided by scientific communities

Results relevant to **the Sustainable Development Goals** of the UN and the **European Green Deal**

EOSC Future
EOSC-Future
Data in action

Dashboard for the
State of the Environment

The Environmental Dashboard

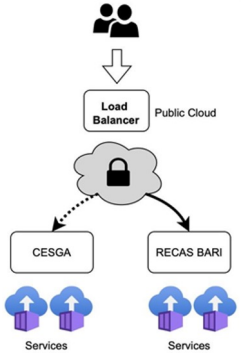
Technical requirements

- Implementation of the Dashboard
  a. Back-end, with a RESTful API -> https://env-dashboard.eoscfuture.eu:4000/docs
  b. Responsive front-end -> available here (https://env-dashboard.eoscfuture.eu)
- Source code on git-based repository -> available here (https://gitlab.emso.eu/eosc-future/)
- Deployment and operations of the IT infrastructure using industry best practices and EOSC services
  a. High-availability (redundancy for failover and business continuity)
  b. Deployment of independent services via containers
  c. EGI Cloud (https://marketplace.eosc-portal.eu/services/egi-cloud-compute)
  d. EGI Check-in (https://marketplace.eosc-portal.eu/services/egi-check-in)

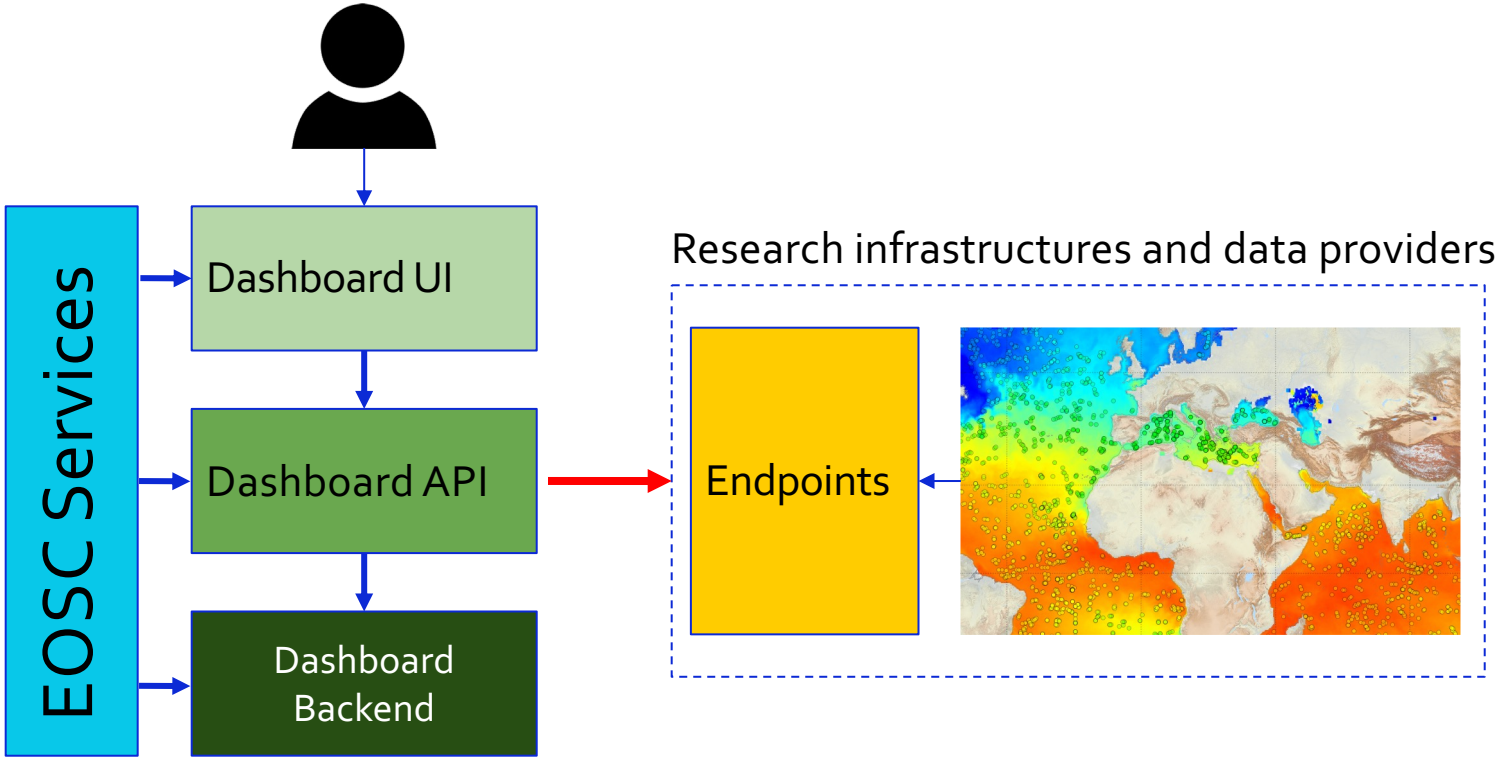
Integration with the EOSC

- ✓ Onboarding to EOSC Marketplace
- ✓ EOSC AAI Federation
- ✓ EGI Cloud Compute
- ✓ Service Monitoring
- ✓ Helpdesk

✓ Achieved
✓ In Progress



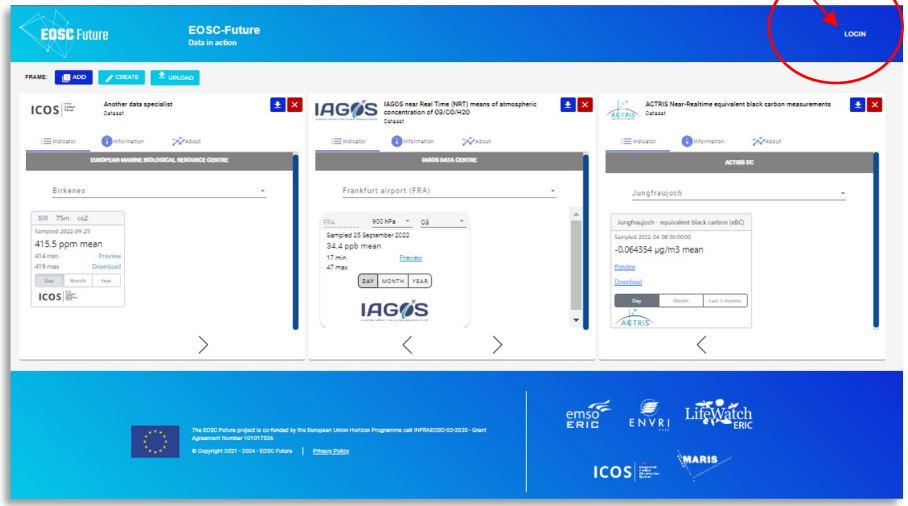
The Environmental Dashboard

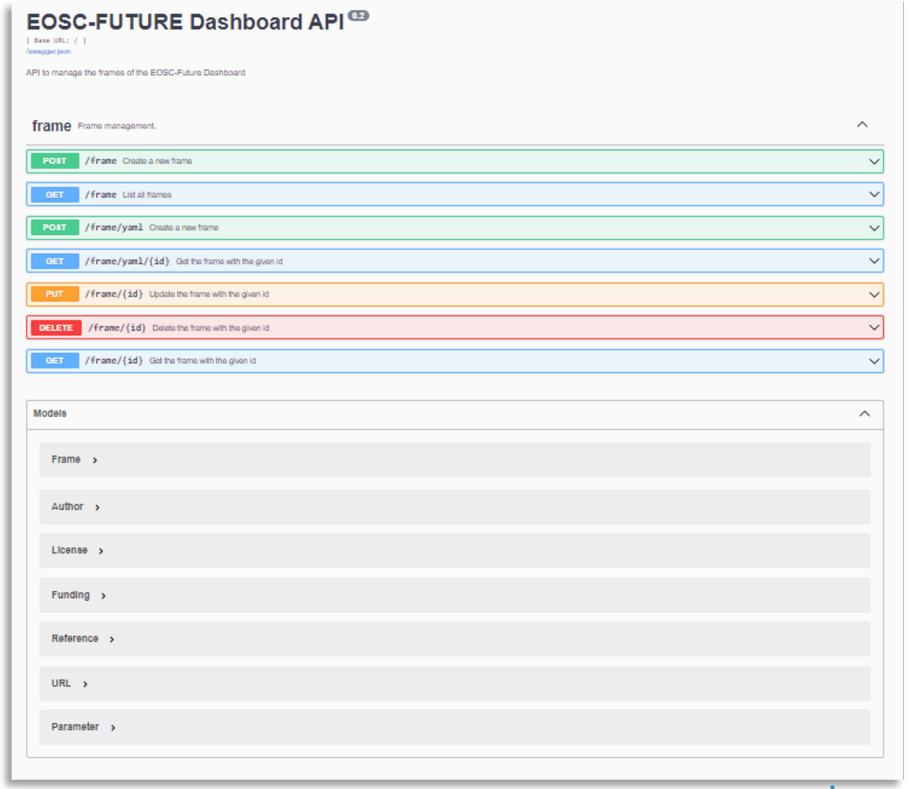


The Environmental Dashboard

Frame management:
Add, Create and Upload (Yaml configuration)

AAI





Demonstration:

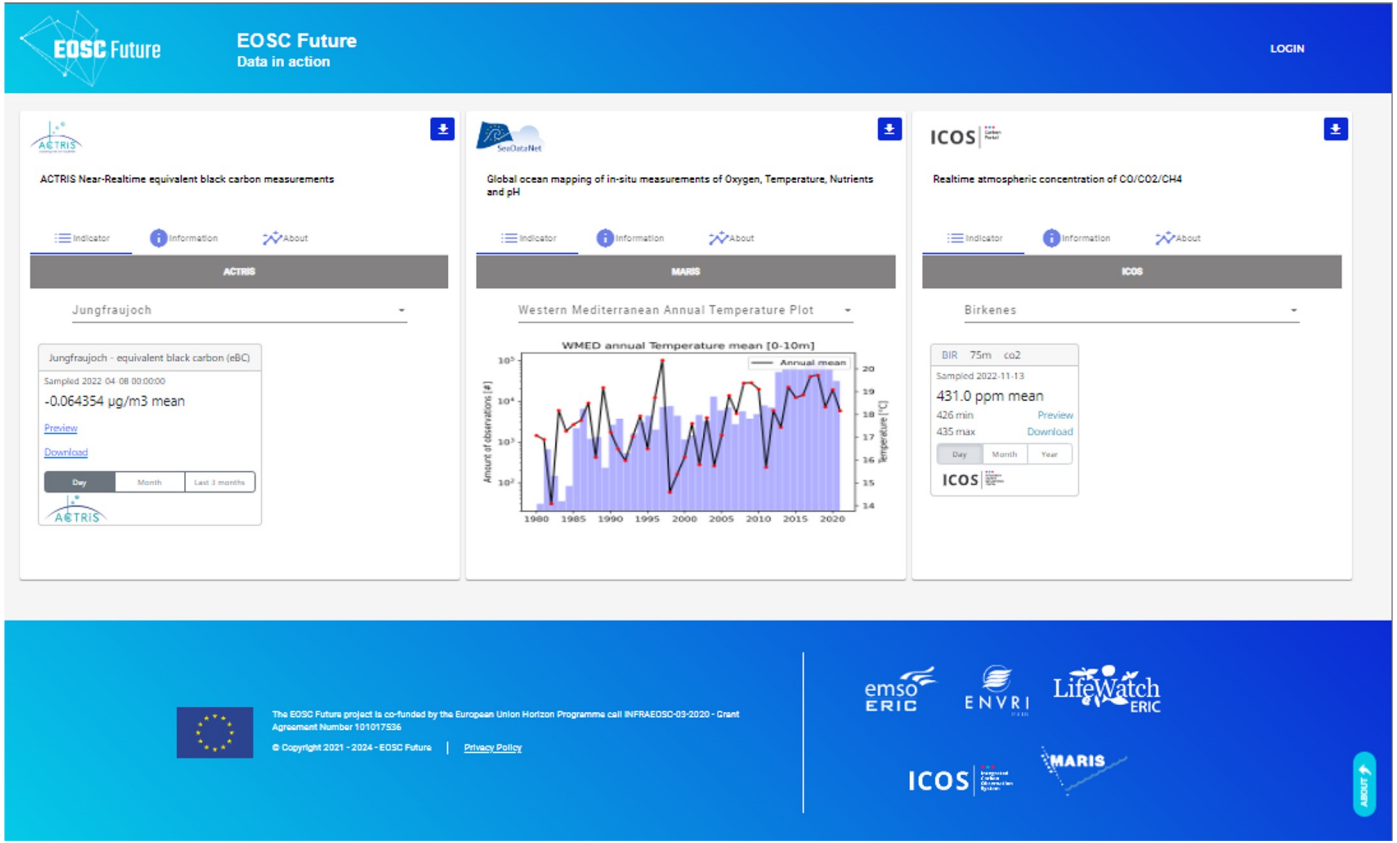
Dashboard for the State of the Environment

EOSC Symposium – Prague 14-17 November, 2022

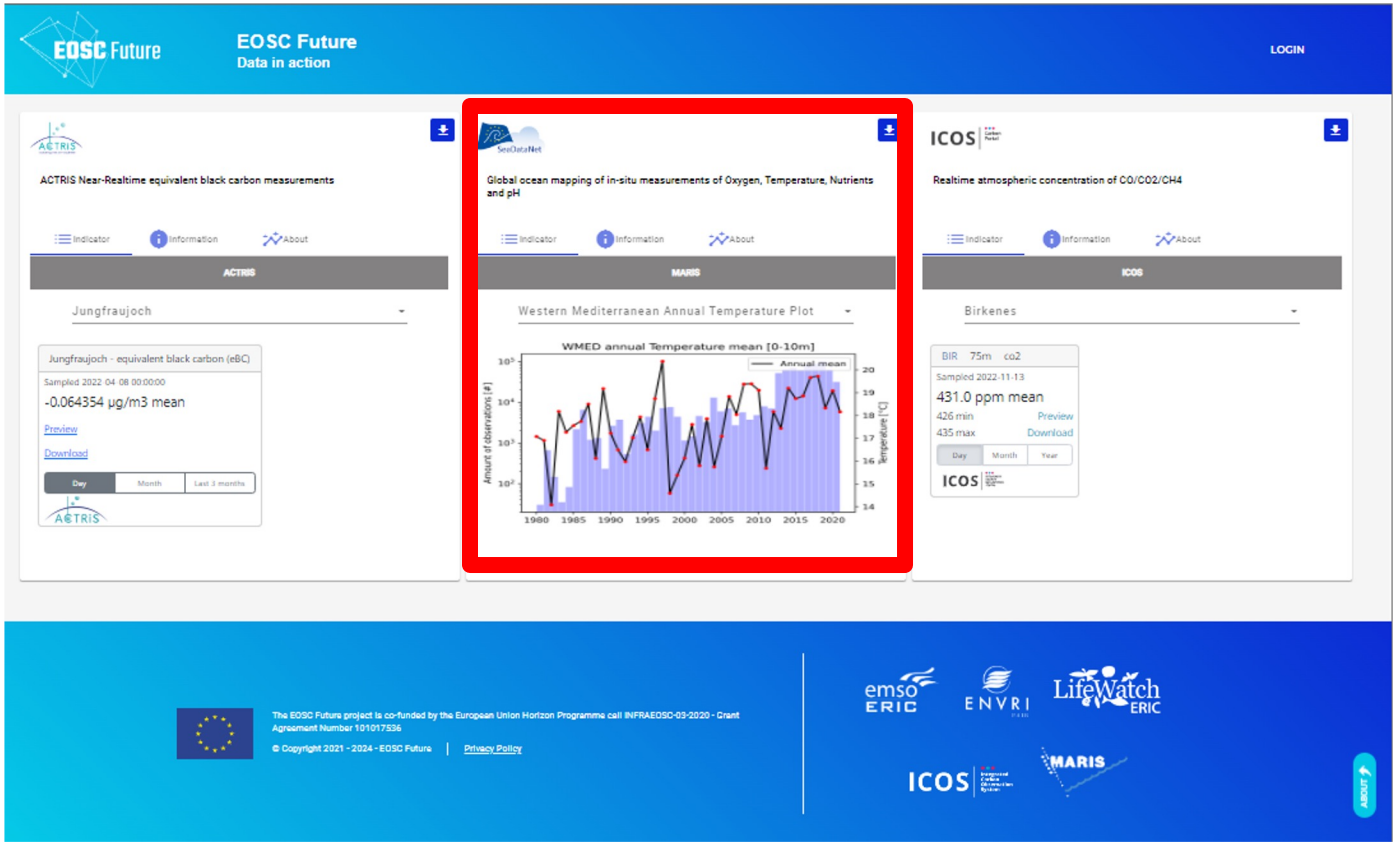
The EOSC Future project is co-funded by the
European Union Horizon Programme call
INFRAEOSC-03-2020, Grant Agreement 101017536

CC BY ND

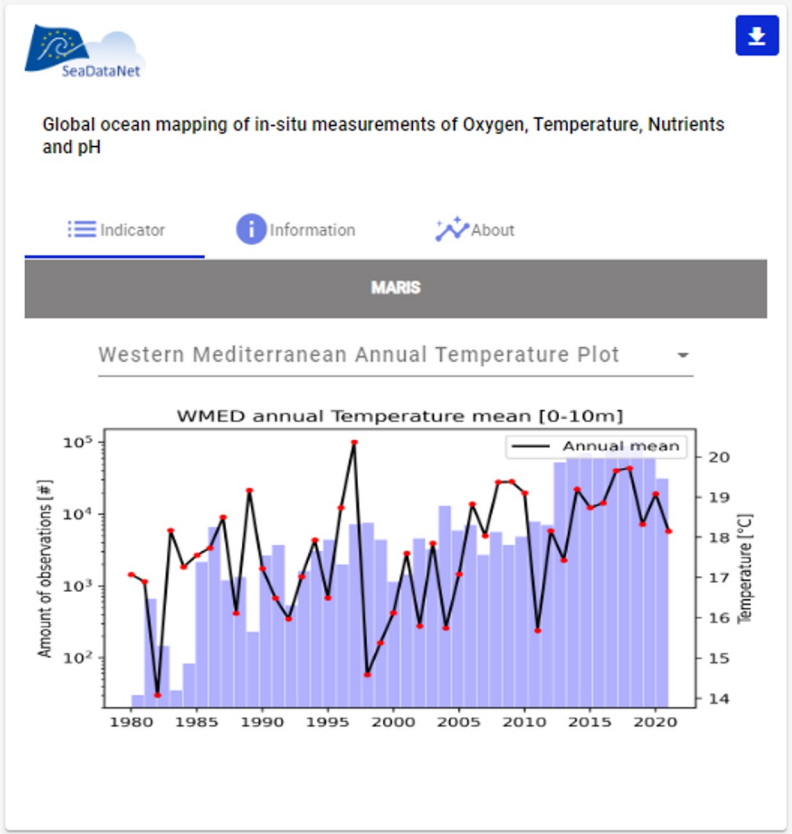
DEMO


EOSC Future
EOSC Future
Data in action
LOGIN
ACTRIS Near-Realtime equivalent black carbon measurements
Indicator
Information
About
ACTRIS
Jungfraujoch
Jungfraujoch - equivalent black carbon (eBC)
Sampled 2022-04-08 00:00:00
-0.064354 µg/m3 mean
Preview
Download
Day
Month
Last 3 months
Global ocean mapping of in-situ measurements of Oxygen, Temperature, Nutrients and pH
Indicator
Information
About
MARIS
Western Mediterranean Annual Temperature Plot
WMED annual Temperature mean [0-10m]
Annual mean
Amount of observations [#]
Temperature [°C]
1980 1985 1990 1995 2000 2005 2010 2015 2020
Realtime atmospheric concentration of CO/CO2/CH4
Indicator
Information
About
ICOS
Birkenes
BIR 75m co2
Sampled 2022-11-13
431.0 ppm mean
426 min
435 max
Preview
Download
Day
Month
Year
ICOS
The EOSC Future project is co-funded by the European Union Horizon Programme call INFRAEOSC-03-2020 - Grant Agreement Number 101017536
© Copyright 2021 - 2024 - EOSC Future
Privacy Policy
emso ERIC
ENVRI
LifeWatch ERIC
ICOS
MARIS
ABOUT

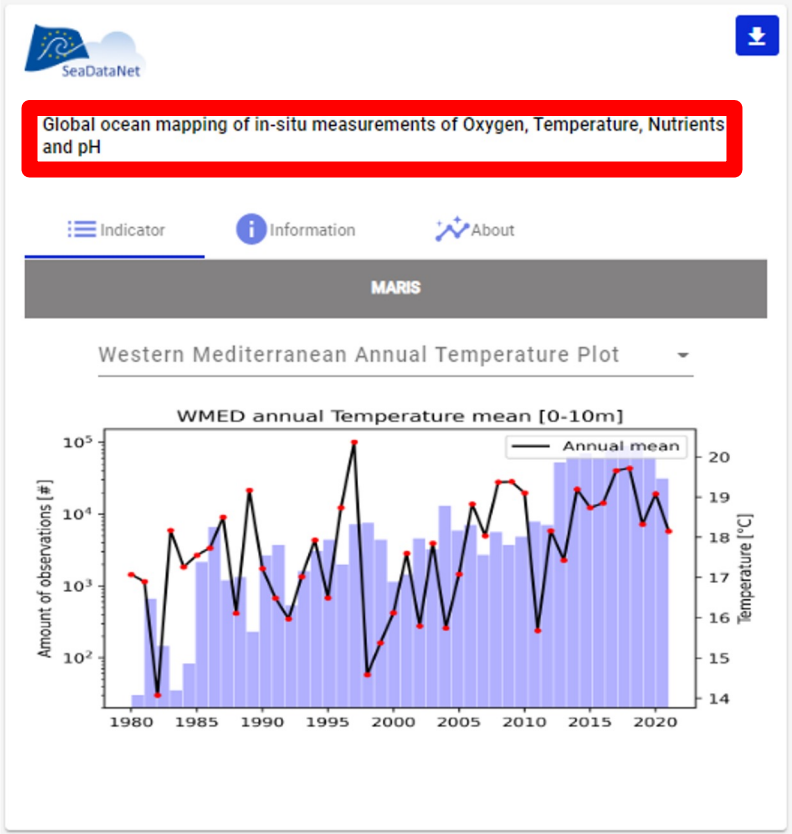
DEMO


EOSC Future
EOSC Future
Data in action
LOGIN
ACTRIS Near-Realtime equivalent black carbon measurements
Indicator
Information
About
ACTRIS
Jungfraujoch
Jungfraujoch - equivalent black carbon (eBC)
Sampled 2022-04-08 00:00:00
-0.064354 µg/m3 mean
Preview
Download
Day
Month
Last 3 months
Global ocean mapping of in-situ measurements of Oxygen, Temperature, Nutrients and pH
Indicator
Information
About
MARIS
Western Mediterranean Annual Temperature Plot
WMED annual Temperature mean [0-10m]
Annual mean
Amount of observations [#]
Temperature [°C]
1980 1985 1990 1995 2000 2005 2010 2015 2020
Realtime atmospheric concentration of CO/CO2/CH4
Indicator
Information
About
ICOS
Birkenes
BIR 75m co2
Sampled 2022-11-13
431.0 ppm mean
426 min
435 max
Preview
Download
Day
Month
Year
ICOS
The EOSC Future project is co-funded by the European Union Horizon Programme call INFRAEOSC-03-2020 - Grant Agreement Number 101017536
© Copyright 2021 - 2024 - EOSC Future
Privacy Policy
emso ERIC
ENVRI
LifeWatch ERIC
ICOS
MARIS
ABOUT

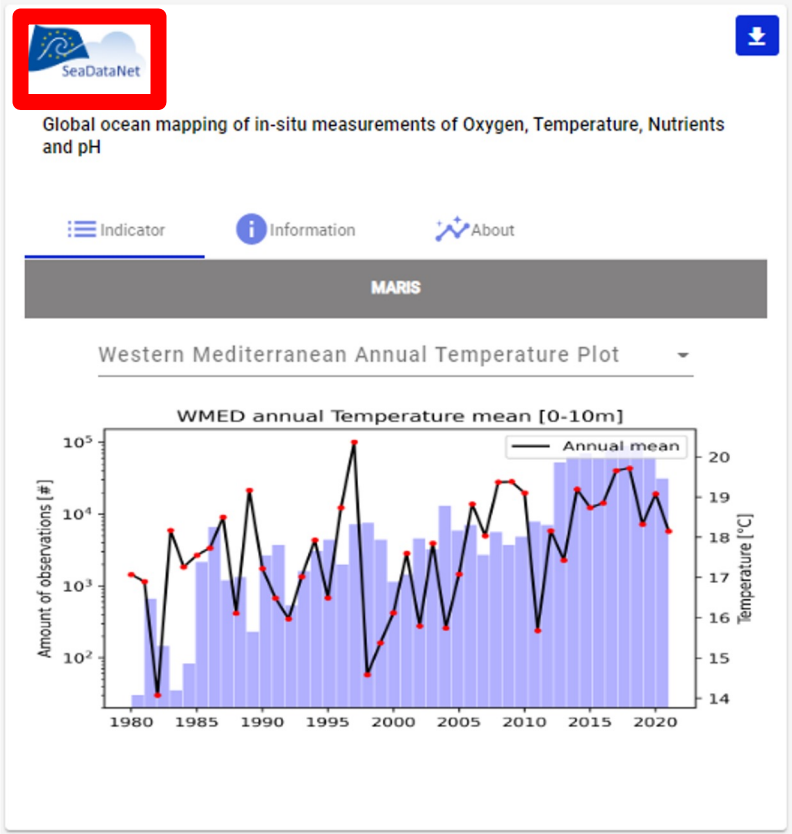
DEMO


SeaDataNet
Global ocean mapping of in-situ measurements of Oxygen, Temperature, Nutrients and pH
Indicator
Information
About
MARIS
Western Mediterranean Annual Temperature Plot
WMED annual Temperature mean [0-10m]
Annual mean
Amount of observations [#]
Temperature [°C]
1980
1985
1990
1995
2000
2005
2010
2015
2020

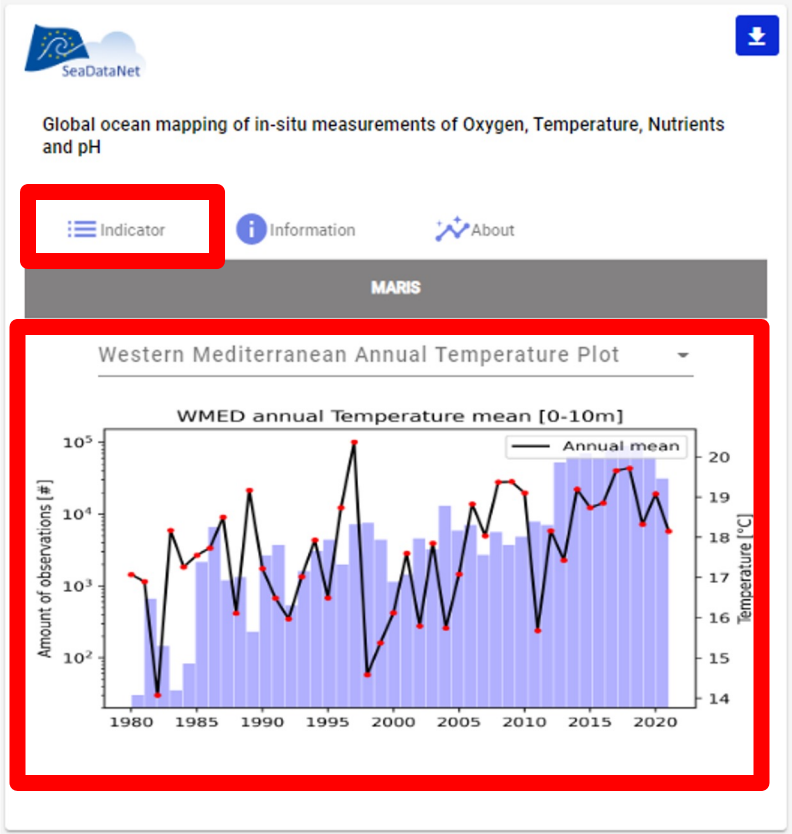
DEMO


SeaDataNet
Global ocean mapping of in-situ measurements of Oxygen, Temperature, Nutrients and pH
Indicator
Information
About
MARIS
Western Mediterranean Annual Temperature Plot
WMED annual Temperature mean [0-10m]
Annual mean
Amount of observations [#]
Temperature [°C]
1980
1985
1990
1995
2000
2005
2010
2015
2020

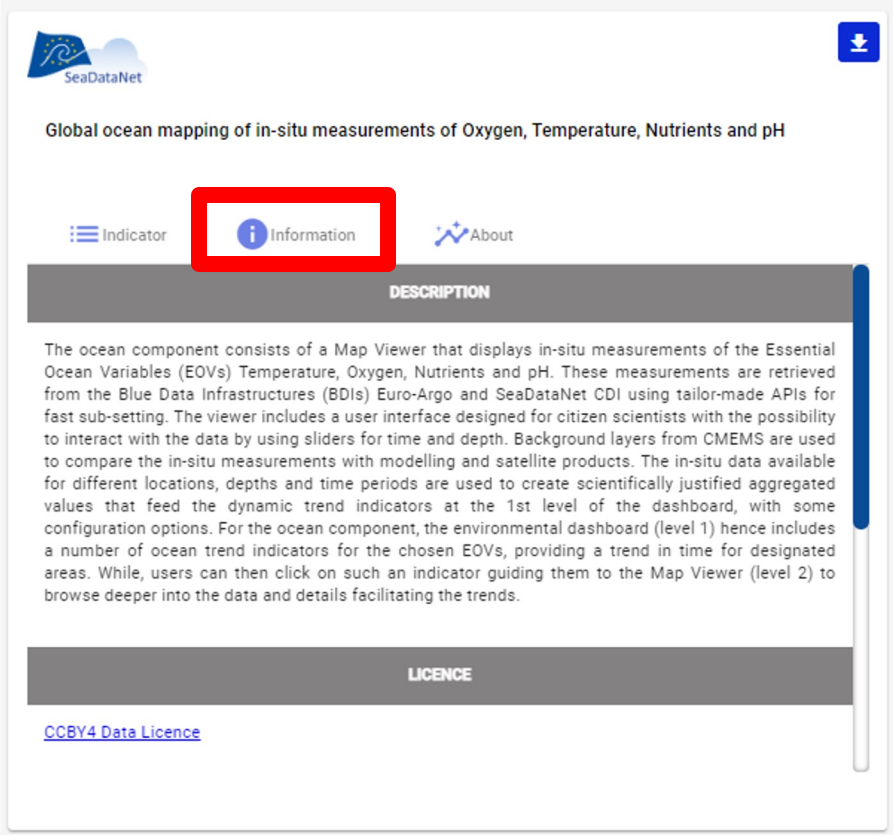
DEMO


SeaDataNet
Global ocean mapping of in-situ measurements of Oxygen, Temperature, Nutrients and pH
Indicator
Information
About
MARIS
Western Mediterranean Annual Temperature Plot
WMED annual Temperature mean [0-10m]
Annual mean
Amount of observations [#]
Temperature [°C]
1980
1985
1990
1995
2000
2005
2010
2015
2020

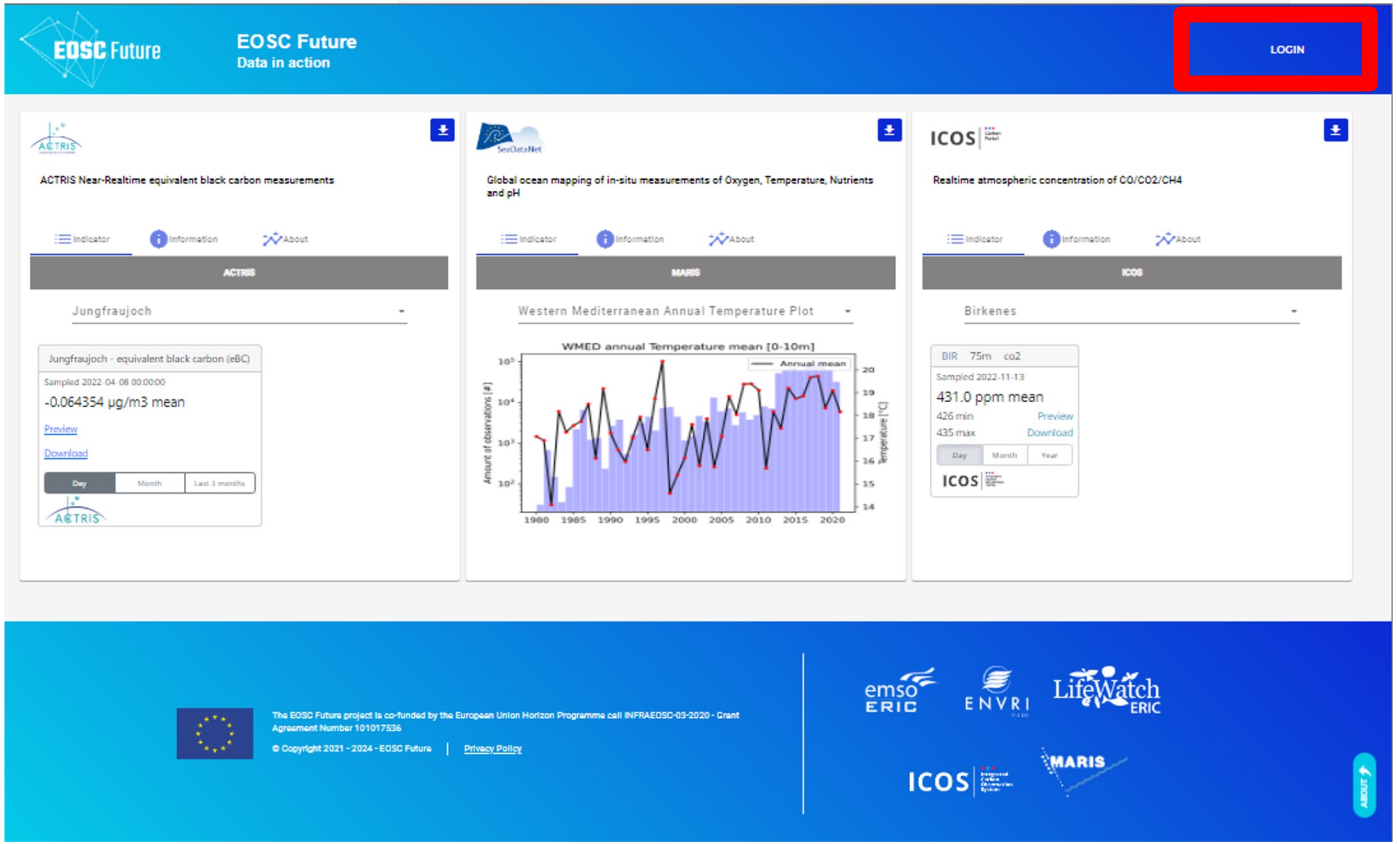
DEMO


SeaDataNet
Global ocean mapping of in-situ measurements of Oxygen, Temperature, Nutrients and pH
Indicator
Information
About
MARIS
Western Mediterranean Annual Temperature Plot
WMED annual Temperature mean [0-10m]
Annual mean
Amount of observations [#]
Temperature [°C]
1980
1985
1990
1995
2000
2005
2010
2015
2020

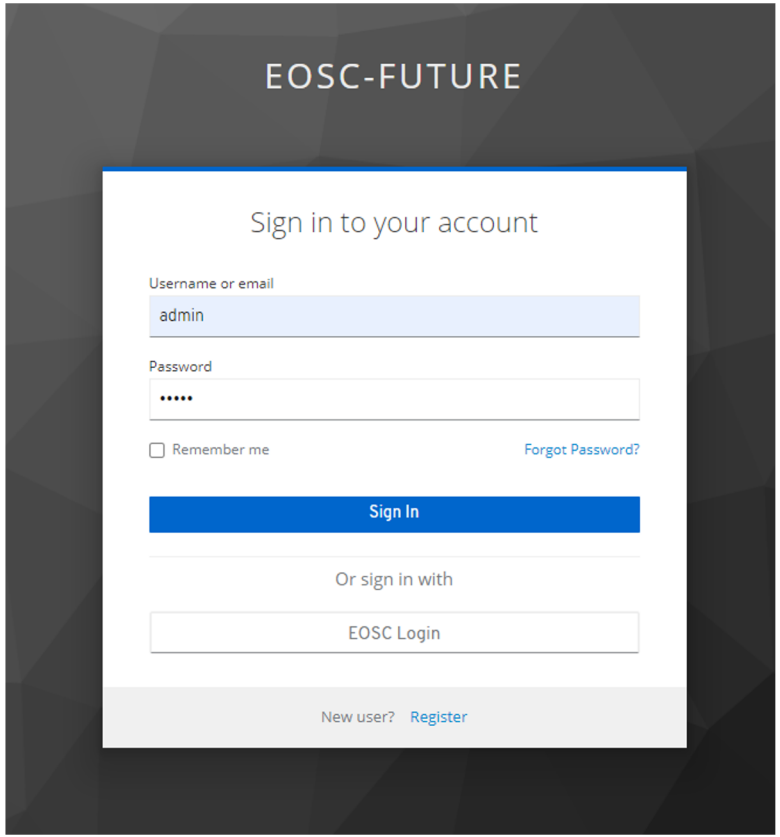
DEMO


SeaDataNet
Global ocean mapping of in-situ measurements of Oxygen, Temperature, Nutrients and pH
Indicator
Information
About
DESCRIPTION
The ocean component consists of a Map Viewer that displays in-situ measurements of the Essential Ocean Variables (EOVs) Temperature, Oxygen, Nutrients and pH. These measurements are retrieved from the Blue Data Infrastructures (BDIs) Euro-Argo and SeaDataNet CDI using tailor-made APIs for fast sub-setting. The viewer includes a user interface designed for citizen scientists with the possibility to interact with the data by using sliders for time and depth. Background layers from CMEMS are used to compare the in-situ measurements with modelling and satellite products. The in-situ data available for different locations, depths and time periods are used to create scientifically justified aggregated values that feed the dynamic trend indicators at the 1st level of the dashboard, with some configuration options. For the ocean component, the environmental dashboard (level 1) hence includes a number of ocean trend indicators for the chosen EOVs, providing a trend in time for designated areas. While, users can then click on such an indicator guiding them to the Map Viewer (level 2) to browse deeper into the data and details facilitating the trends.
LICENCE
CCBY4 Data Licence

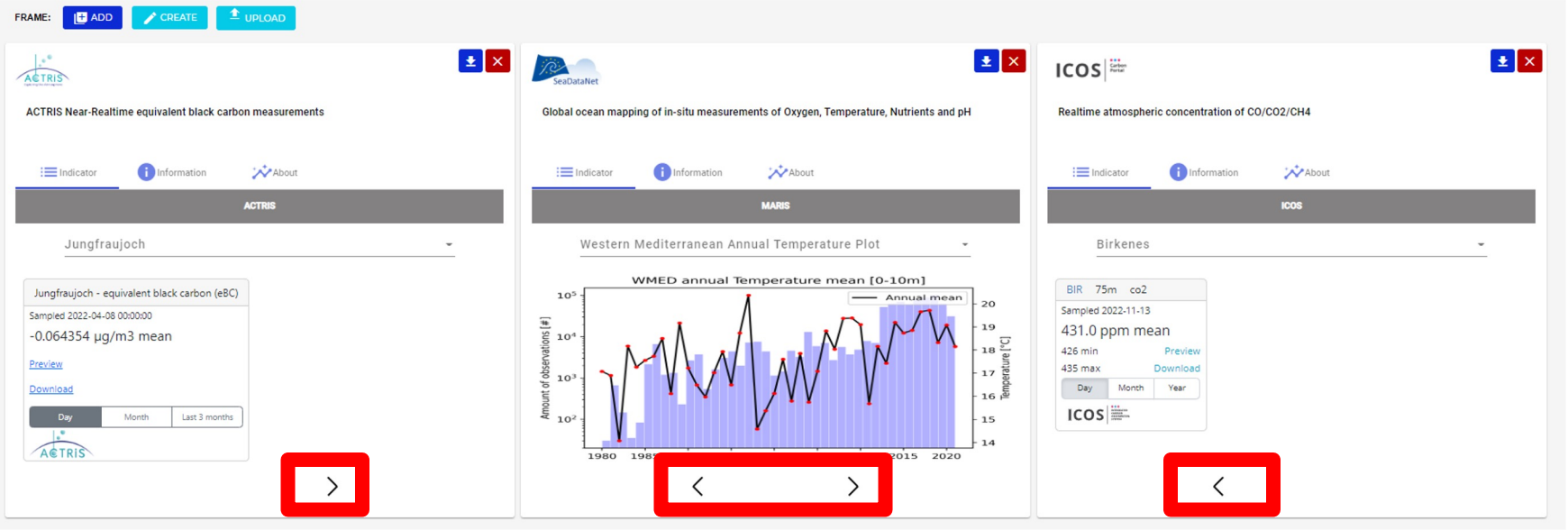
DEMO


EOSC Future
EOSC Future
Data in action
LOGIN
ACTRIS Near-Realtime equivalent black carbon measurements
Indicator
Information
About
ACTRIS
Jungfraujoch
Jungfraujoch - equivalent black carbon (eBC)
Sampled 2022-04-08 00:00:00
-0.064354 µg/m3 mean
Preview
Download
Day
Month
Last 3 months
Global ocean mapping of in-situ measurements of Oxygen, Temperature, Nutrients and pH
MARIS
Western Mediterranean Annual Temperature Plot
WMED annual Temperature mean [0-10m]
Annual mean
Amount of observations [#]
Temperature [°C]
1980 1985 1990 1995 2000 2005 2010 2015 2020
Realtime atmospheric concentration of CO/CO2/CH4
ICOS
Birkenes
BIR 75m co2
Sampled 2022-11-13
431.0 ppm mean
426 min
435 max
Preview
Download
Day
Month
Year
The EOSC Future project is co-funded by the European Union Horizon Programme call INFRAEOSC-03-2020 - Grant Agreement Number 101017536
© Copyright 2021 - 2024 - EOSC Future
Privacy Policy
emso ERIC
ENVRI
LifeWatch ERIC
ICOS
MARIS
ABOUT

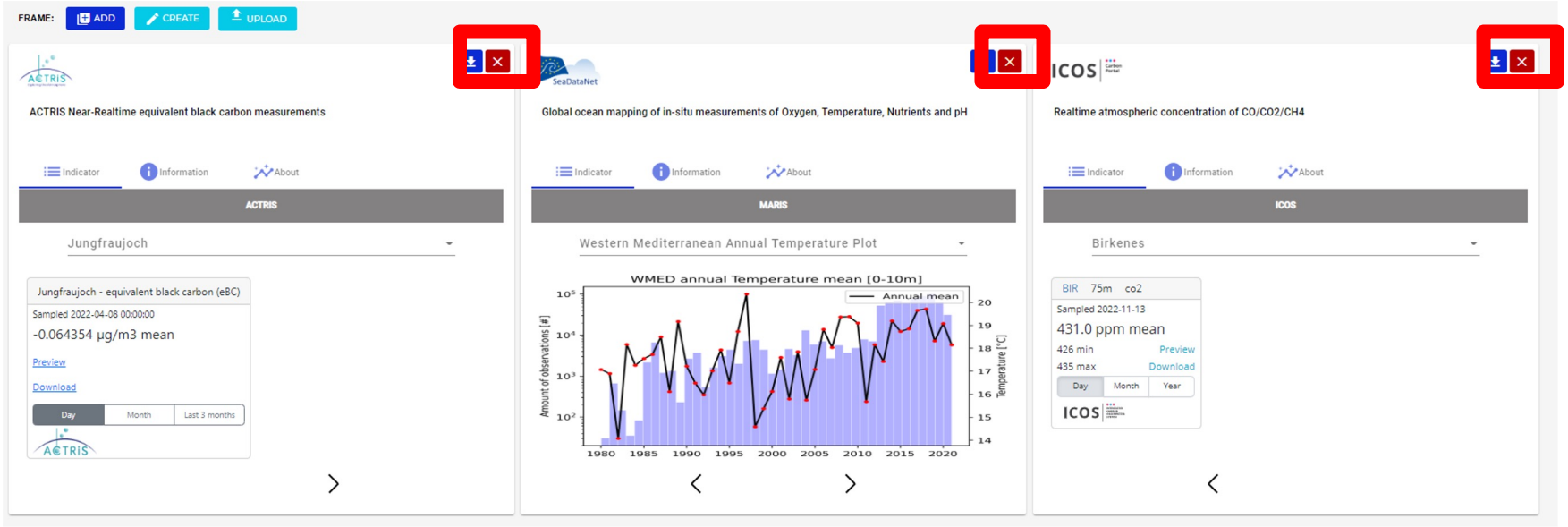
DEMO


EOSC-FUTURE
Sign in to your account
Username or email
admin
Password
Remember me
Forgot Password?
Sign In
Or sign in with
EOSC Login
New user? Register

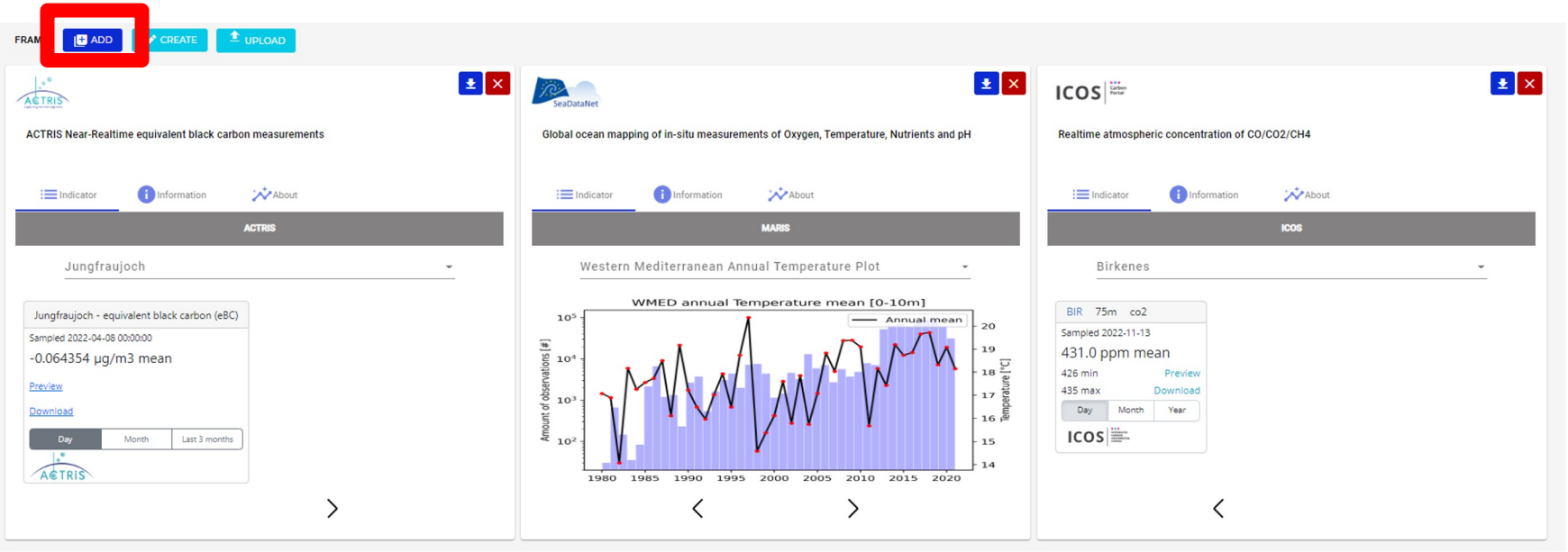
DEMO


FRAME:
ADD
CREATE
UPLOAD
ACTRIS Near-Realtime equivalent black carbon measurements
Indicator
Information
About
ACTRIS
Jungfraujoch
Jungfraujoch - equivalent black carbon (eBC)
Sampled 2022-04-08 00:00:00
-0.064354 µg/m3 mean
Preview
Download
Day
Month
Last 3 months
Global ocean mapping of in-situ measurements of Oxygen, Temperature, Nutrients and pH
MARIS
Western Mediterranean Annual Temperature Plot
WMED annual Temperature mean [0-10m]
Annual mean
Amount of observations [#]
Temperature [°C]
1980
2015
2020
Realtime atmospheric concentration of CO/CO2/CH4
ICOS
Birkenes
BIR 75m co2
Sampled 2022-11-13
431.0 ppm mean
426 min
435 max
Preview
Download
Day
Month
Year

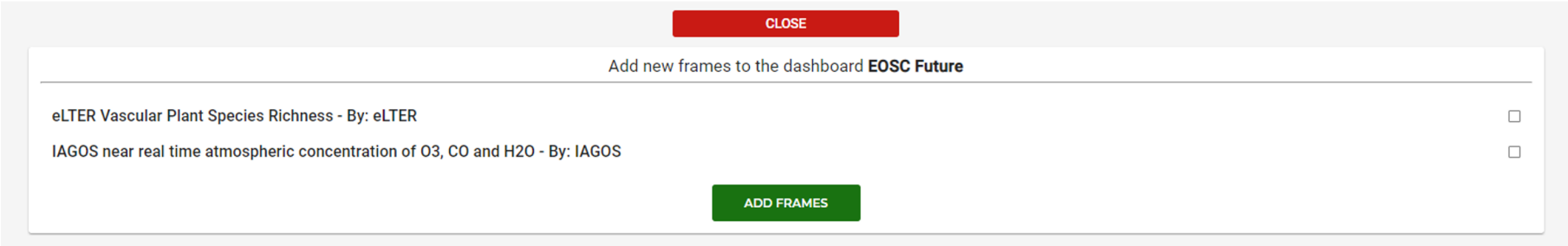
DEMO


FRAME:
ADD
CREATE
UPLOAD
ACTRIS Near-Realtime equivalent black carbon measurements
Indicator
Information
About
ACTRIS
Jungfraujoch
Jungfraujoch - equivalent black carbon (eBC)
Sampled 2022-04-08 00:00:00
-0.064354 µg/m3 mean
Preview
Download
Day
Month
Last 3 months
Global ocean mapping of in-situ measurements of Oxygen, Temperature, Nutrients and pH
MARIS
Western Mediterranean Annual Temperature Plot
WMED annual Temperature mean [0-10m]
Annual mean
Amount of observations [#]
Temperature [°C]
1980 1985 1990 1995 2000 2005 2010 2015 2020
Realtime atmospheric concentration of CO/CO2/CH4
ICOS
Birkenes
BIR 75m co2
Sampled 2022-11-13
431.0 ppm mean
426 min
435 max
Preview
Download
Day
Month
Year

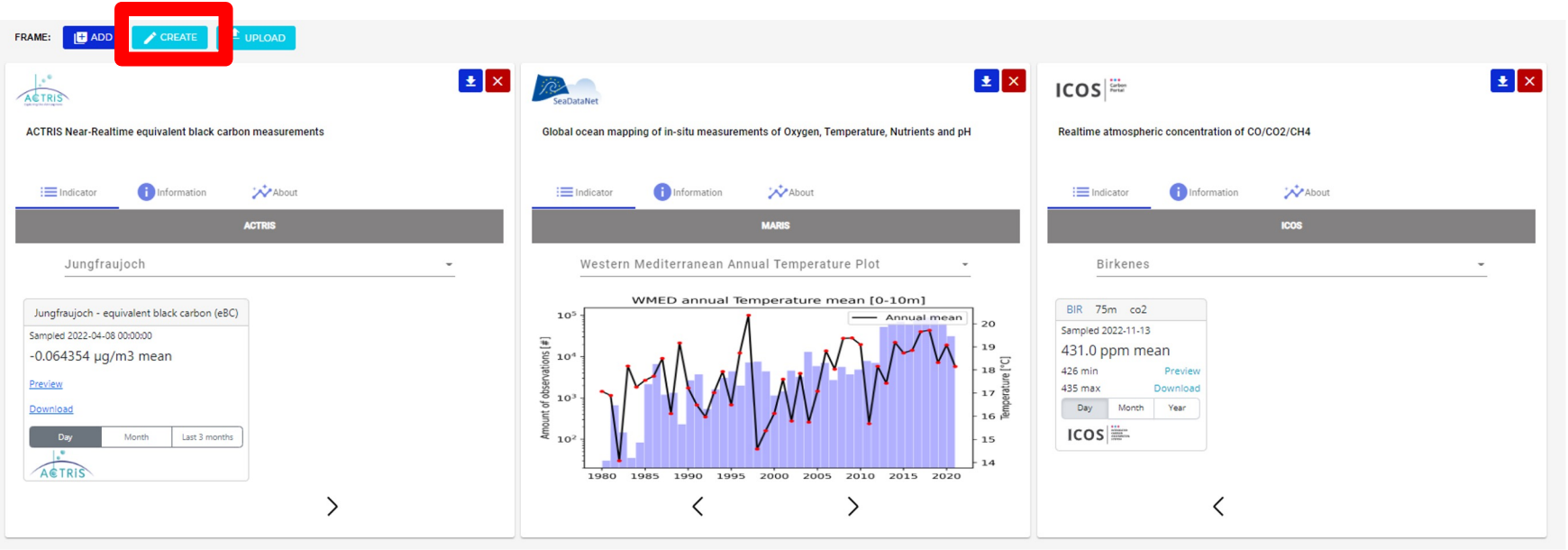
DEMO


FRAM
ADD
CREATE
UPLOAD
ACTRIS Near-Realtime equivalent black carbon measurements
Indicator
Information
About
ACTRIS
Jungfraujoch
Jungfraujoch - equivalent black carbon (eBC)
Sampled 2022-04-08 00:00:00
-0.064354 µg/m3 mean
Preview
Download
Day
Month
Last 3 months
Global ocean mapping of in-situ measurements of Oxygen, Temperature, Nutrients and pH
MARIS
Western Mediterranean Annual Temperature Plot
WMED annual Temperature mean [0-10m]
Annual mean
Amount of observations [#]
Temperature [°C]
1980 1985 1990 1995 2000 2005 2010 2015 2020
Realtime atmospheric concentration of CO/CO2/CH4
ICOS
Birkenes
BIR 75m co2
Sampled 2022-11-13
431.0 ppm mean
426 min
435 max
Preview
Download
Day
Month
Year

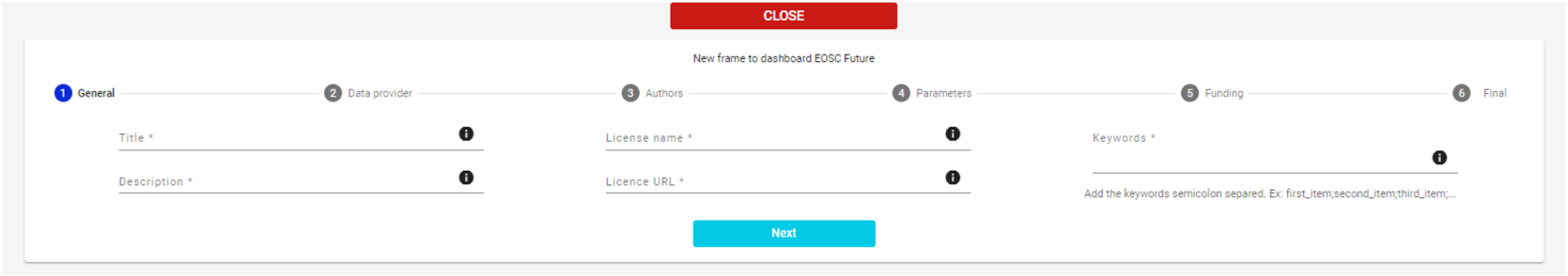
DEMO


CLOSE
Add new frames to the dashboard **EOSC Future**
eLTER Vascular Plant Species Richness - By: eLTER
IAGOS near real time atmospheric concentration of O3, CO and H2O - By: IAGOS
ADD FRAMES

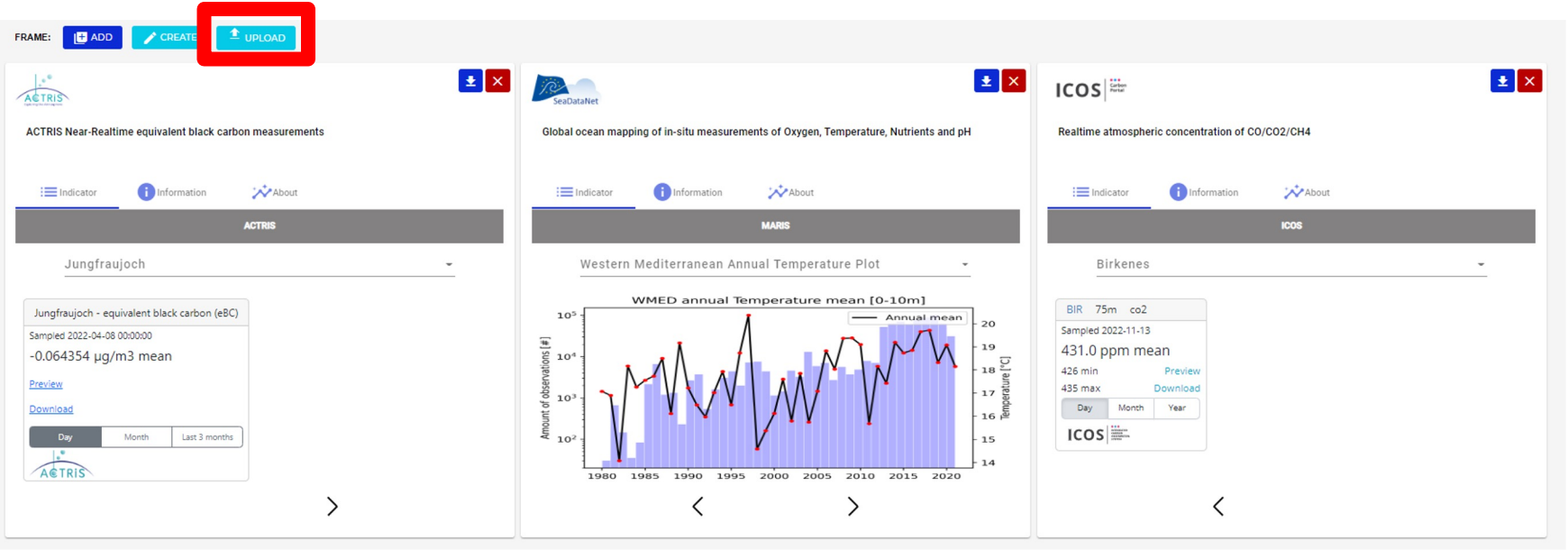
DEMO


FRAME:
ADD
CREATE
UPLOAD
ACTRIS Near-Realtime equivalent black carbon measurements
Indicator
Information
About
ACTRIS
Jungfraujoch
Jungfraujoch - equivalent black carbon (eBC)
Sampled 2022-04-08 00:00:00
-0.064354 µg/m3 mean
Preview
Download
Day
Month
Last 3 months
Global ocean mapping of in-situ measurements of Oxygen, Temperature, Nutrients and pH
MARIS
Western Mediterranean Annual Temperature Plot
WMED annual Temperature mean [0-10m]
Annual mean
Amount of observations [#]
Temperature [°C]
1980
1985
1990
1995
2000
2005
2010
2015
2020
Realtime atmospheric concentration of CO/CO2/CH4
ICOS
Birkenes
BIR 75m co2
Sampled 2022-11-13
431.0 ppm mean
426 min
435 max
Preview
Download
Day
Month
Year

DEMO


CLOSE
New frame to dashboard EOSC Future
1 General
2 Data provider
3 Authors
4 Parameters
5 Funding
6 Final
Title *
Description *
License name *
Licence URL *
Keywords *
Add the keywords semicolon separated. Ex: first_item;second_item;third_item;...
Next

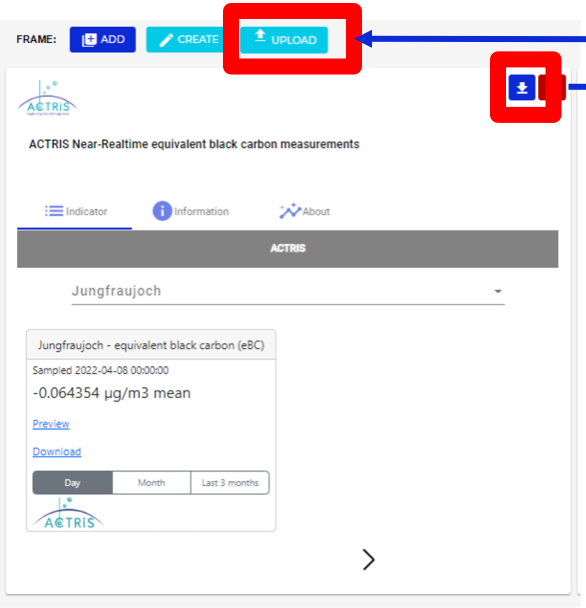
DEMO


FRAME:
ADD
CREATE
UPLOAD
ACTRIS Near-Realtime equivalent black carbon measurements
Indicator
Information
About
ACTRIS
Jungfraujoch
Jungfraujoch - equivalent black carbon (eBC)
Sampled 2022-04-08 00:00:00
-0.064354 µg/m3 mean
Preview
Download
Day
Month
Last 3 months
Global ocean mapping of in-situ measurements of Oxygen, Temperature, Nutrients and pH
MARIS
Western Mediterranean Annual Temperature Plot
WMED annual Temperature mean [0-10m]
Annual mean
Amount of observations [#]
Temperature [°C]
1980
1985
1990
1995
2000
2005
2010
2015
2020
Realtime atmospheric concentration of CO/CO2/CH4
ICOS
Birkenes
BIR 75m co2
Sampled 2022-11-13
431.0 ppm mean
426 min
435 max
Preview
Download
Day
Month
Year

DEMO

2. Upload the new YAML file

1. Download existing YAML file



YAML FILE

```yaml
# Mandatory fields

## A title to describe the frame.
title: Example of frame
## Name of the organization that provides the information of the frame
data_provider_name: Name of the data provider
## Abreviation of the provider name
data_provider_abbreviation: NDP
## Logo of the porvider
data_provider_logo: URL to the logo (in https)
## Web site to redirect when users click on the logo
data_provider_url: URL to the web site
## provide the URL to access an HTML webpage which content is going to be
## displayed
parameters:
  -
    name: Name of the parameter
    value: URL to the webpage or endpoint

# Optional fields
## Researchers, developers and technical staff involved
authors:
  -
    name: Name of the author
    surname: Surname of the author
    email: Email of the author
```

Thank you for your attention!

Visit the **EOSC Environmental Dashboard!**
See the impacts of the changing climate!

An interactive environment that gives
clear and easy access to the ENVRIs.

Climate change is a scientific fact and **science means knowledge, awareness and understanding!**