

The logo for the Integrated Carbon Observation System (ICOS) features the letters 'ICOS' in a large, white, sans-serif font. To the right of the text is a vertical white line, followed by three colored dots (red, blue, red) and the full name of the system in a smaller, white, sans-serif font.

**ICOS**

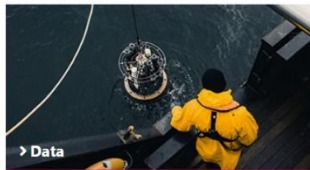
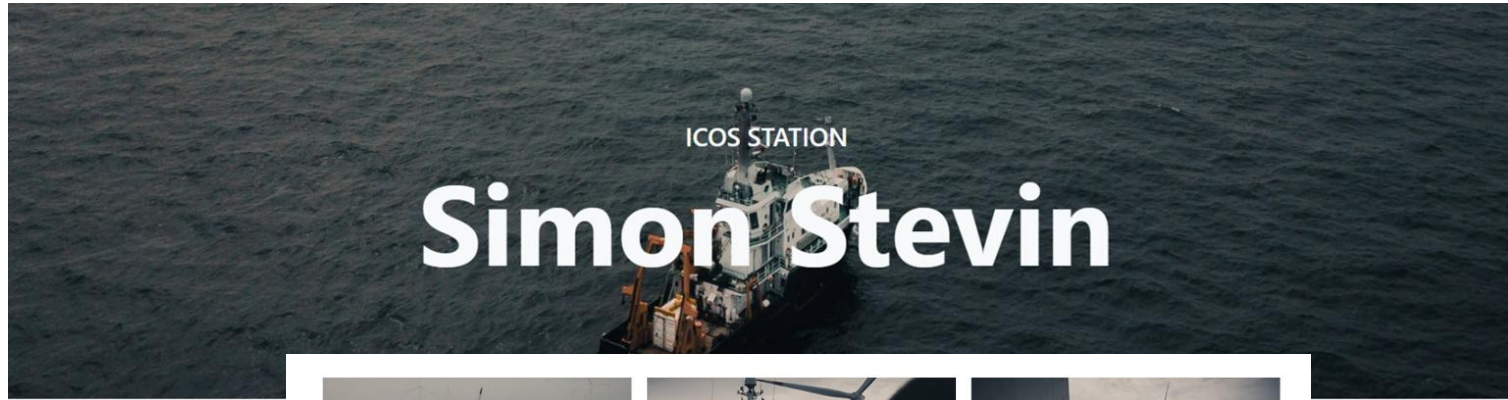
**INTEGRATED  
CARBON  
OBSERVATION  
SYSTEM**

# **IN 24H AROUND THE WORLD**

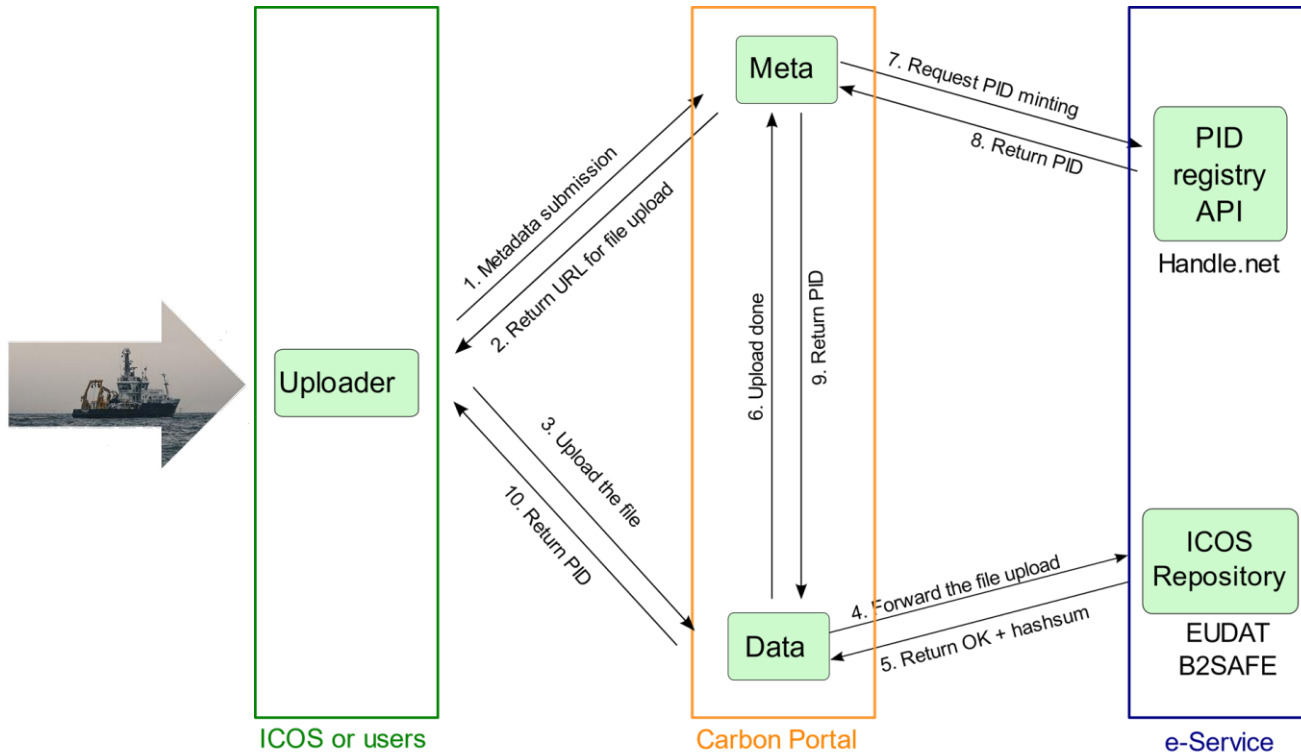
ICOS Carbon Portal @ BlueCloud Federation Workshop

Lisbon, 5.11.2024, Claudio D'Onofrio

# Near Real Time Data in the making



# Data upload process



# RDF Triplestore

ICOS Integrated Carbon Observation System

Log in

ABOUT & CONTACTS OBSERVATIONS DATA & SERVICES SCIENCE & IMPACT RESOURCES NEWS & EVENTS

## Carbon Portal SPARQL Client

Access to SPARQL endpoint

```
1 prefix cpmeta: <http://meta.icos-cp.eu/ontologies/cpmeta/>
2 prefix prov: <http://www.w3.org/ns/prov#>
3 select ?station ?nRows ?fileName ?dobj ?plot where{
4   ?dobj cpmeta:hasSpatialCoverage/cpmeta:asGeoJSON ?geoJson .
5   FILTER(CONTAINS(?geoJson, "Polygon"))
6   ?dobj cpmeta:hasObjectSpec/cpmeta:hasFormat cpmeta:asciiOtcSocatTimeSer .
7   ?dobj cpmeta:hasName ?fileName .
8   ?dobj cpmeta:wasAcquiredBy/prov:wasAssociatedWith/cpmeta:hasName ?station .
9   ?dobj cpmeta:hasNumberOfRows ?nRows
10  BIND(CONCAT("https://data.icos-cp.eu/dygraph-light/?objId=", STRAFTER(str(?
11  dobj), "objects/"), "&x=Longitude&y=Latitude&type=scatter") AS ?plot)
12 }
13 ORDER BY ?station desc(?nRows)
```

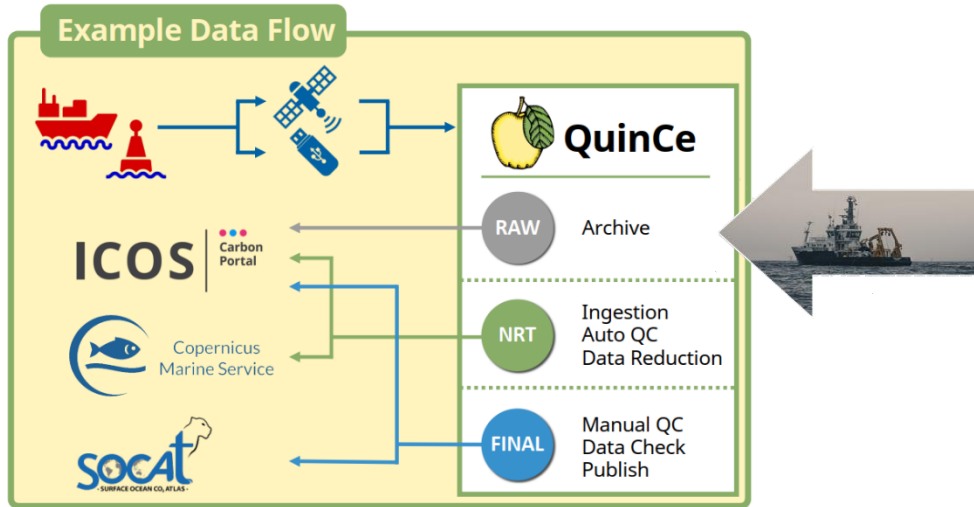
Select predefined request: OTC SOCAT polygon-ap

Return type: JSON **CSV** XML TSV or Turtle



# QuinCe

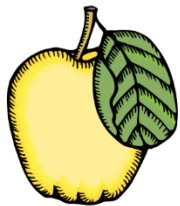
An online tool for data reduction and quality control of surface ocean  $fCO_2$  data



**Steve D. Jones**  
**Jonas F. Henriksen**  
**Maren K. Karlsen**

<https://github.com/quince-science/QuinCe>





# QuinCe

*An online tool for data reduction and quality control of surface ocean  $f\text{CO}_2$  data*

## Features

- Receives data in any text format - no pre-processing required
- Individual sensor calibration adjustments can be applied
- Data reduction is performed automatically, with calibration to gas standards
- Automated QC routines detect common issues (GPS errors, range limits, outlier and spike detection...) and highlight them for further investigation
- Extensive plotting and mapping tools for manual 1st Level QC
- All QC decisions (automatic and manual) are recorded for future traceability
- Automatic submission to data centres (e.g. CMEMS INSTAC), synthesis projects (e.g. SOCAT) & ICOS RI
- Near Real Time processing allows fully automatic data flow from ship to publication within minutes

# Example of NRT data

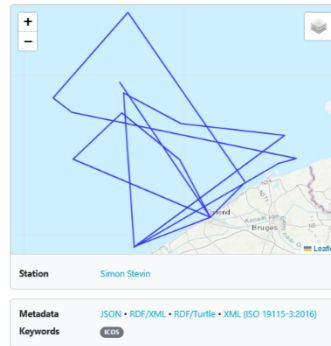
## ICOS OTC SOOP NRT Product, Simon Stevin

2024-09-01–2024-10-30

Add to cart Download

Metadata Preview

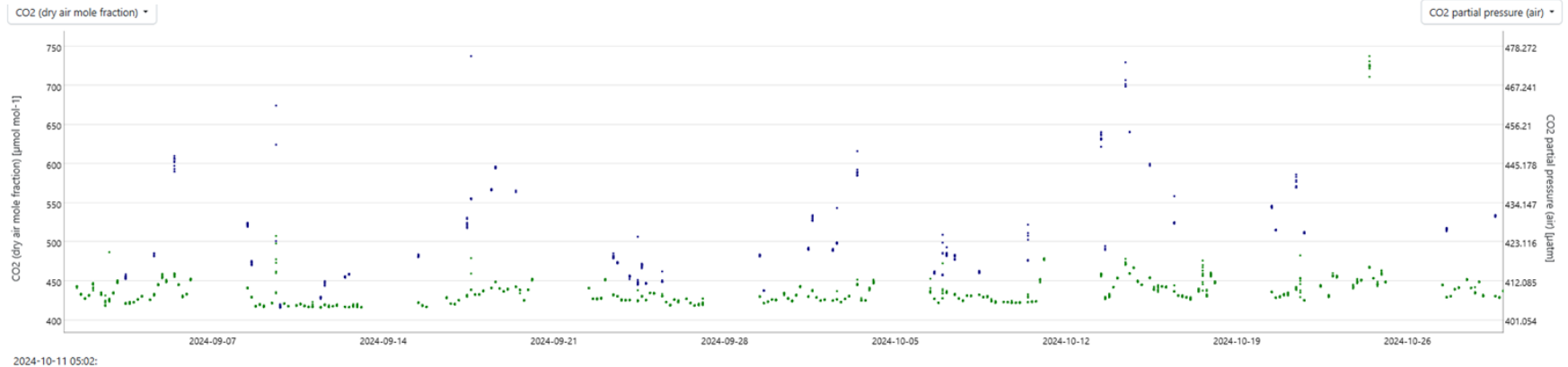
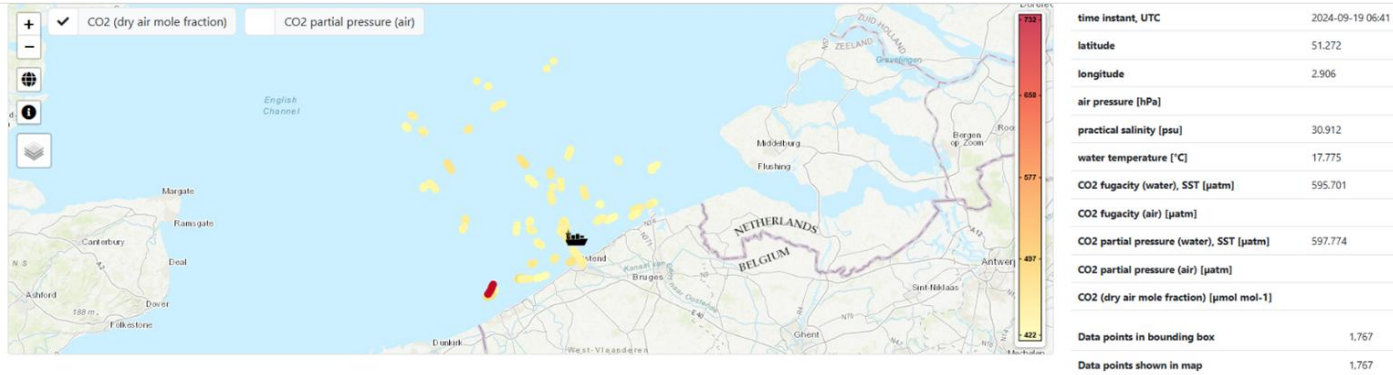
|                                 |   |
|---------------------------------|---|
| <b>PID</b>                      | 11676/gbXwoTUdF0_PWmNduj44ua <a href="#">(link)</a>   |
| <b>Description</b>              | valid for QuinCe versions from 2.0.0  |
| <b>Data affiliation</b>         | ICOS  |
| <b>Citation</b>                 | Gkritzalis, T., Theetaert, H., T'Jampers, M. (2024). ICOS OTC SOOP NRT Product, Simon Stevin, 2024-09-01–2024-10-30, ICOS RI, <a href="https://hdl.handle.net/11676/gbXwoTUdF0_PWmNduj44ua">https://hdl.handle.net/11676/gbXwoTUdF0_PWmNduj44ua</a> |
|                                 | <a href="#">BibTex</a>  |
|                                 | <a href="#">RIS</a>   |
| <b>Previous version</b>         | <a href="#">View previous version</a>   |
| <b>File name</b>                | 1155_NRT_20240901.csv   |
| <b>File size</b>                | 4 MB (4543271 bytes)  |
| <b>Number of data rows</b>      | 21955   |
| <b>Data type</b>                | ICOS OTC SOOP NRT Product   |
| <b>Data level</b>               | 1   |
| <b>Licence</b>                  | ICOS CCBY4 Data Licence   |
| <b>Acquisition</b>              |   |
| <b>Station</b>                  | Simon Stevin  |
| <b>Responsible organization</b> | Vlaams Instituut voor de Zee (Flanders Marine Institute)  |
| <b>Start time (UTC)</b>         | 2024-09-01 19:02:00   |
| <b>Stop time (UTC)</b>          | 2024-10-30 20:10:00   |
| <b>Production</b>               |   |
| <b>File made by</b>             | <a href="#">Ocean Thematic Centre</a>   |
| <b>Production time (UTC)</b>    | 2024-10-31 15:43:00   |
| <b>Comment</b>                  | Data processed using QuinCe v23.1.4   |



- Persistent Identification PID
- Previous & next history PID
- Reference / Citation
- Long term storage
- Data processing production
- Machine Readable meta data
- Download CC BY 4.0

[https://meta.icos-cp.eu/objects/p7VNXsdV4Xu1\\_trn-vkjGBmd](https://meta.icos-cp.eu/objects/p7VNXsdV4Xu1_trn-vkjGBmd)

# Integrated Preview



2024-10-11 05:02:



# Download Stats

ICOS Integrated Carbon Observation System

Log in

ABOUT & CONTACTS OBSERVATIONS DATA & SERVICES SCIENCE & IMPACT RESOURCES NEWS & EVENTS

## ICOS Data Usage Statistics

Downloads Previews Pylib

Data object specification filter

Data types: Data types

Project: Project

Data level: 2 x

Stations: (BE-SOOP-Simon Stevin) Simon Stevin x

Contributors: Contributors

Submitters: Submitters

Download country: Download country

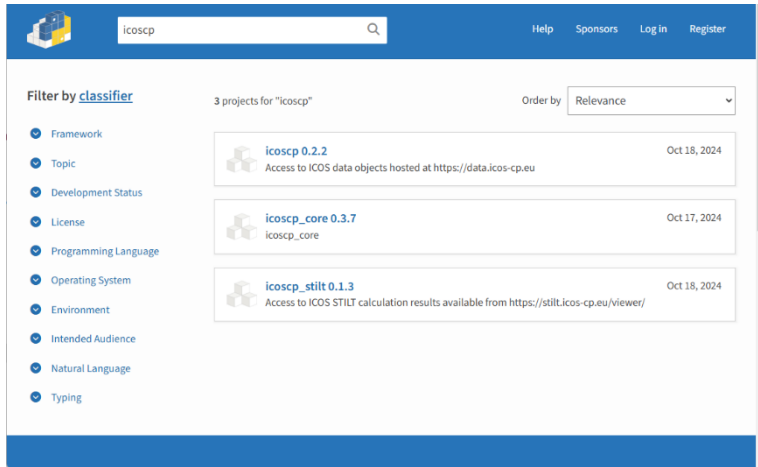
Data origin: Data origin

Download dates: From: dd/mm/yyyy

### Data objects 1 to 100 of 207

| File Name                        | Landing Page                             | Count |
|----------------------------------|--|-------|
| <a href="#">11SS20210104.csv</a> | <a href="#">_3mCT65muBmDXxblJwalmWE_</a> | 40    |
| <a href="#">11SS20210201.csv</a> | <a href="#">DI5TgWRP-07Zz8gkb_Jf4PtF</a> | 40    |
| <a href="#">11SS20210301.csv</a> | <a href="#">Td6bbGUNRCXrms5I5calcCQv</a> | 39    |
| <a href="#">11SS20210401.csv</a> | <a href="#">q7YBycAgcyr4j1b8Rt6wFX22</a> | 37    |
| <a href="#">11SS20210501.csv</a> | <a href="#">T9sg_f3kGm3iIUq3rywwj5ZO</a> | 37    |
| <a href="#">11SS2021023.csv</a>  | <a href="#">GFRnnK2SoESoM9ODJdw8T2Wc</a> | 36    |
| <a href="#">11SS20210701.csv</a> | <a href="#">973escNghR0lGnXtiQd7En4S</a> | 36    |
| <a href="#">11SS20210801.csv</a> | <a href="#">pNLVy57iaVfO65k3HZxulNH3</a> | 35    |
| <a href="#">11SS20210601.csv</a> | <a href="#">MaAUIFdLqLHrUByk3Qot5nBR</a> | 34    |
| <a href="#">11SS20211001.csv</a> | <a href="#">KUy9EcKETHAJR6UODW2F5sk</a>  | 33    |
| <a href="#">11SS20211206.csv</a> | <a href="#">gOLHTrp17rEYGKUP7A7ABSt</a>  | 33    |
| <a href="#">11SS20211101.csv</a> | <a href="#">YXo2mcOd88H4lUeRDj8K11nQ</a> | 33    |

# Python API / Jupyter Notebooks




<https://pypi.org/search/?q=icoscp>  
<https://github.com/ICOS-Carbon-Portal>



<https://exploredata.icos-cp.eu>  
<https://jupyter.icos-cp.eu>

# Discovery & Access Example


**Time-series analysis** GIVE FEEDBACK 

0. Information 1. Search datasets 2. Select datasets 3. Filter data 4. Data analysis

Variables legend:

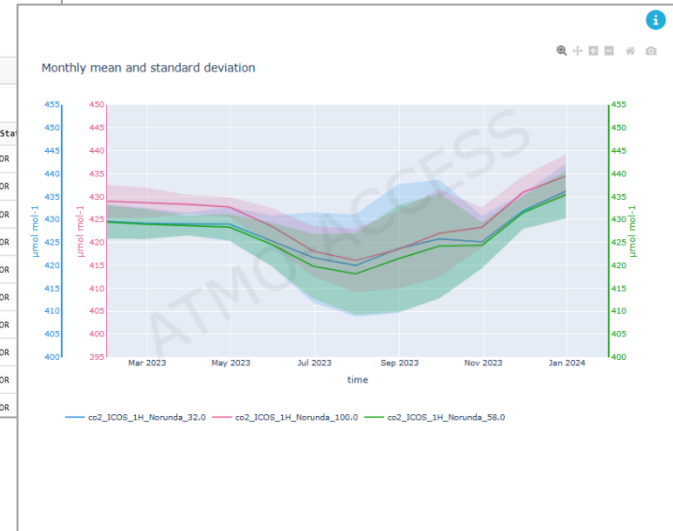
- ACP - Aerosol Chemical Properties
- AP - Pressure (surface)
- APP - Aerosol Physical Properties
- AT - Temperature (near surface)
- CH4 - Methane
- CIP - Cloud Properties
- CO - Carbon Monoxide
- CO2 - Carbon Dioxide
- N2O - Nitrous Oxide
- NO2 - NO2
- O3 - Ozone
- RH - Water Vapour (surface)
- WSD - Surface Wind Speed and direction

**a) Datasets time coverage:** Click on stations to see the datasets in the table on the right



**b) Select your datasets here (up to 10 datasets)**

| Select all / none        |      |  |              |         |     |
|--------------------------|------|--|--------------|---------|-----|
| <input type="checkbox"/> | Plot | Title                                      | Variables    | Station | Sta |
| <input type="checkbox"/> |      | Atmospheric CO2 product, Norunda (32.0 m)  | CO2          | Norunda | NOR |
| <input type="checkbox"/> |      | Atmospheric CO2 product, Norunda (100.0 m) | CO2          | Norunda | NOR |
| <input type="checkbox"/> |      | Atmospheric CO2 product, Norunda (58.0 m)  | CO2          | Norunda | NOR |
| <input type="checkbox"/> |      | Atmospheric CH4 product, Norunda (32.0 m)  | CH4          | Norunda | NOR |
| <input type="checkbox"/> |      | Atmospheric CH4 product, Norunda (58.0 m)  | CH4          | Norunda | NOR |
| <input type="checkbox"/> |      | Atmospheric CH4 product, Norunda (100.0 m) | CH4          | Norunda | NOR |
| <input type="checkbox"/> |      | ICOS ATC CO Release, Norunda (100.0 m)     | CO           | Norunda | NOR |
| <input type="checkbox"/> |      | ICOS ATC CO Release, Norunda (32.0 m)      | CO           | Norunda | NOR |
| <input type="checkbox"/> |      | ICOS ATC CO Release, Norunda (58.0 m)      | CO           | Norunda | NOR |
| <input type="checkbox"/> |      | ICOS ATC Meteo Release, Norunda (1.5 m)    | AP AT RH WSD | Norunda | NOR |



# Discovery & Access Example

**Blue-Cloud**  
Helping researchers discover and access data from the Blue Cloud

**DATA DISCOVERY & ACCESS SERVICE**

WELCOME CLAUDIO D'ONOFRIO | DATASET BASKET 0

**Filter search**

Free search:

Date search:  
From:   
To:

Geographic search:  
North  West  East  South

| Blue Data Infrastructures | Level 2 Search                                | Level 1 Results (66875)                      | Level 1 Total | Last update |
|---------------------------|---|--|---------------|-------------|
| EcoTaxa                   | <input type="button" value="Level 2 Search"/> | <input type="button" value="10 results"/>    | 10            | 2023-05-31  |
| ELIXIR-ENA                | <input type="button" value="Level 2 Search"/> | <input type="button" value="30797 results"/> | 38784         | 2024-10-27  |
| EMODnet Chemistry         | <input type="button" value="Level 2 Search"/> | <input type="button" value="358 results"/>   | 358           | 2024-10-27  |
| EMSO                      | <input type="button" value="Level 2 Search"/> | <input type="button" value="170 results"/>   | 170           | 2024-10-27  |
| EuroArgo - Argo           | <input type="button" value="Level 2 Search"/> | <input type="button" value="19132 results"/> | 19132         | 2024-10-27  |
| EuroBIS - EMODnet Biology | <input type="button" value="Level 2 Search"/> | <input type="button" value="1378 results"/>  | 1378          | 2024-10-27  |
| ICOS Data Portal          | <input type="button" value="Level 2 Search"/> | <input type="button" value="360 results"/>   | 0             | 2024-10-27  |
| SeaDataNet                | <input type="button" value="Level 2 Search"/> | <input type="button" value="980 results"/>   | 980           | 2024-10-27  |
| SeaDataNet-products       | <input type="button" value="Level 2 Search"/> | <input type="button" value="48 results"/>    | 48            | 2024-10-27  |
| SIOS                      | <input type="button" value="Level 2 Search"/> | <input type="button" value="158 results"/>   | 158           | 2024-10-27  |
| SOCAT                     | <input type="button" value="Level 2 Search"/> | <input type="button" value="7484 results"/>  | 7484          | 2024-10-27  |





