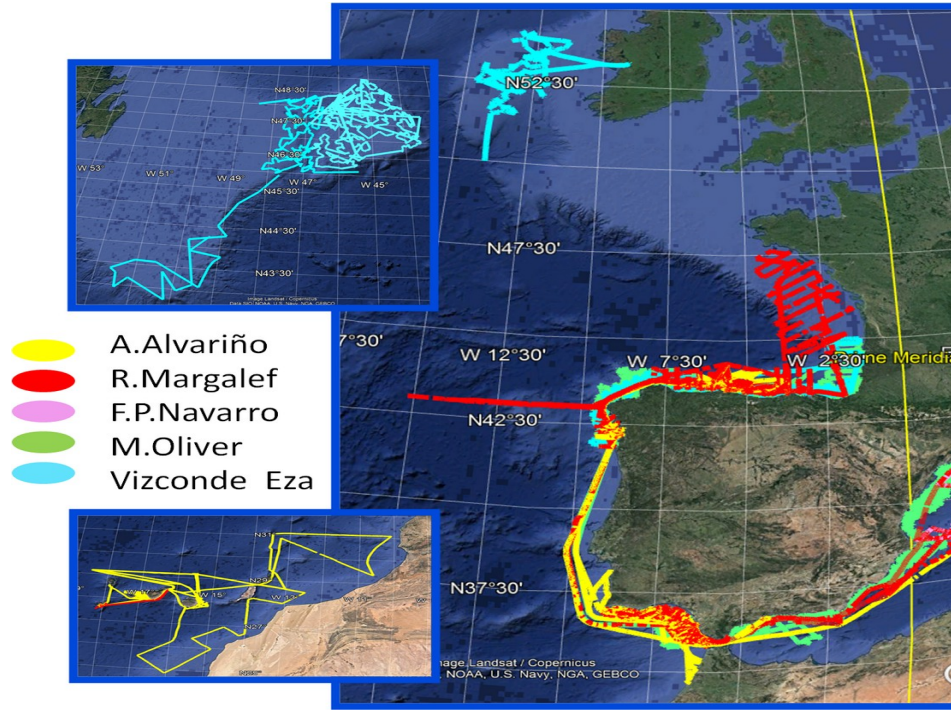
Development of web apps to facilitate QC and dissemination of TSG-BGC data from IEO research vessels



Gonzalo González-Nuevo, Manuel Ruiz Villarreal, Luz García, David Marcote and Elena Tel

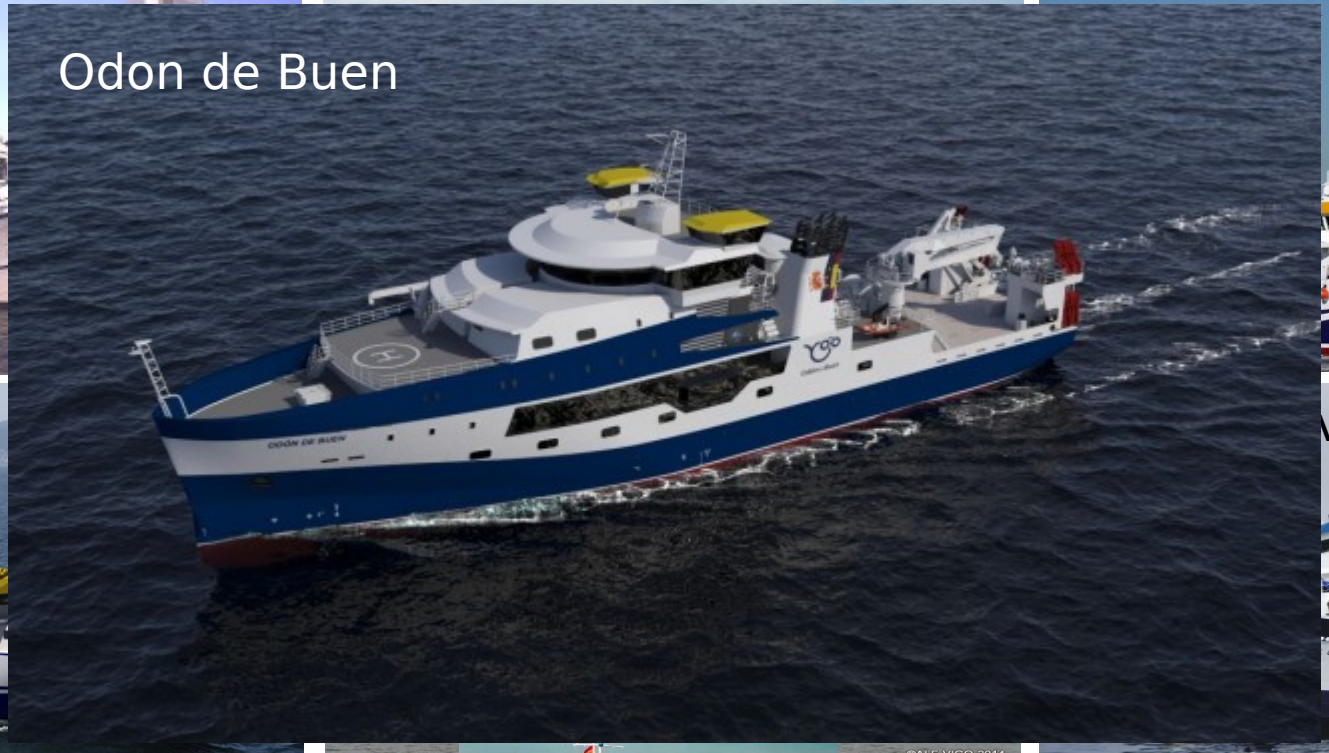
gonzalo.gonzaleznuevo@ieo.csic.es

MyCoast MARRISK Interreg Atlantic Area European Regional Development Fund EUROPEAN UNION PRIMROSE Predicting the Impact of Regional Scale events on the Aquaculture Sector

IEO research vessels fleet

Navaz

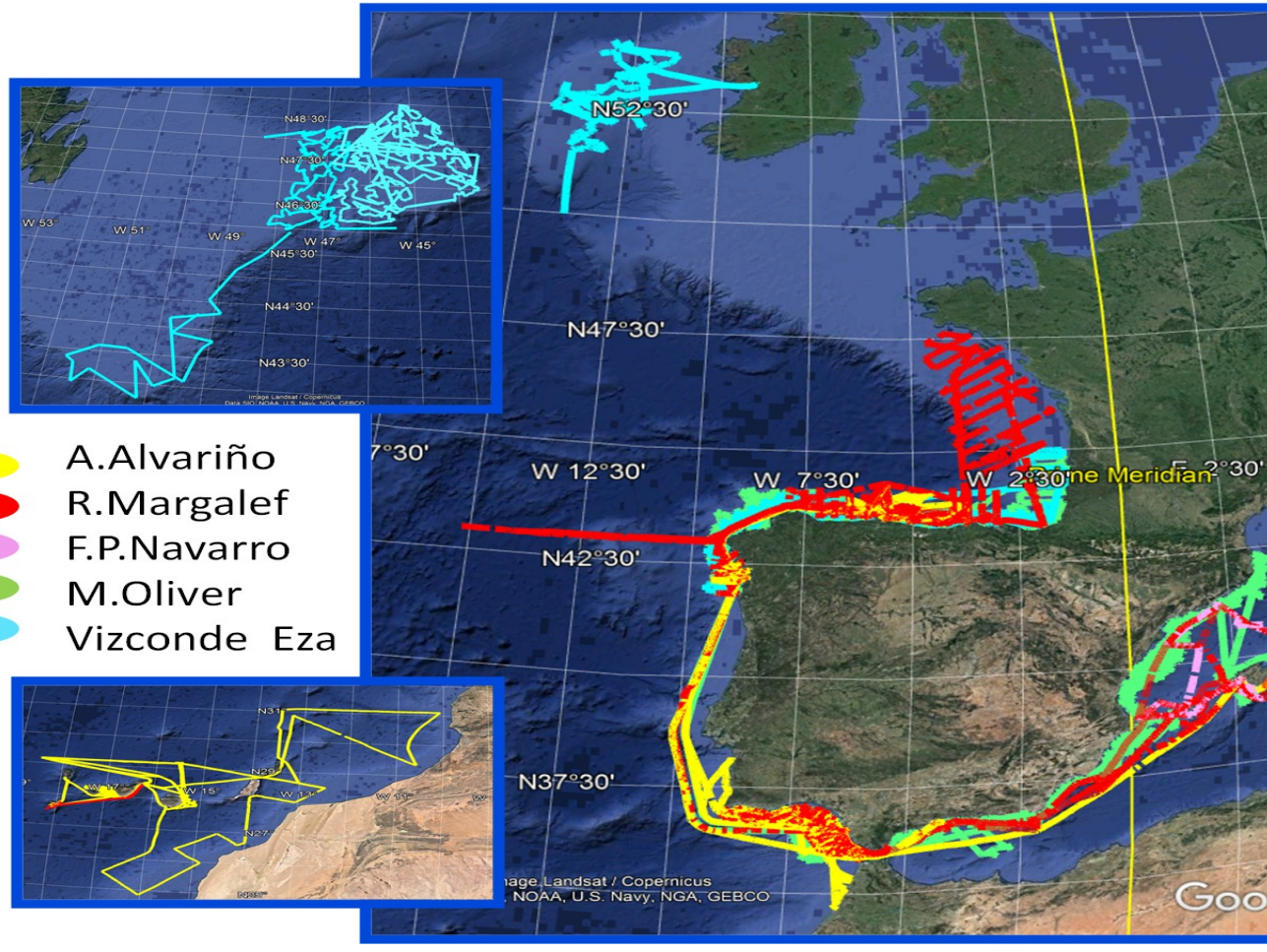
IEO research vessels fleet



Navaz

Cruise activities

- Give response to institutional/research/social demands
- Consolidate oceano-meteorologic observation ship-based network
- Develop of new technologies in the field of oceanography monitoring
- Creation of common data infrastructure platform
- Development of specific final user products



R. V. Lura

- Base port A Coruña
- Length 14 m
- TSG data
  - 2016-present
    - Monthly sections
  - 2019-present
    - Weekly sections

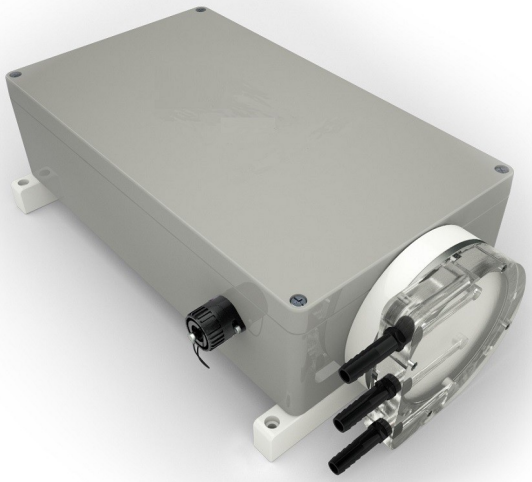
Sensors

SBE 21 Thermosalinograph

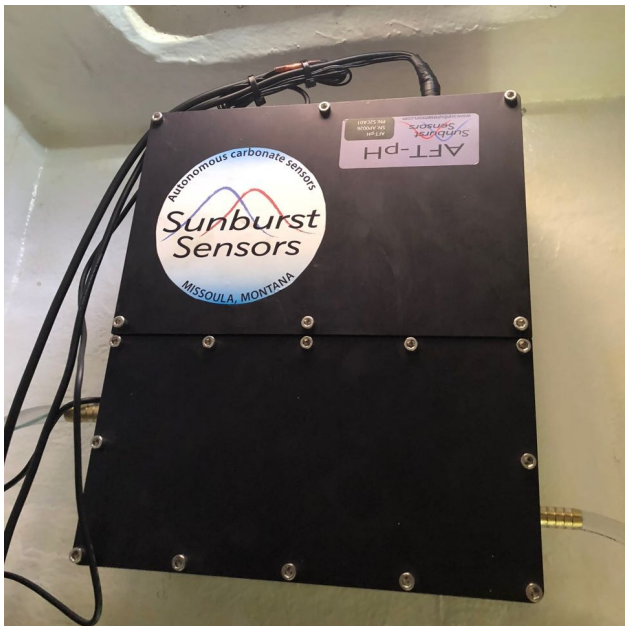
Fluorimeter + CDOM + Turbidimeter + Optode

Sensors under test

CONTROS HydroC® CO2



Sunburst AFT-pH



General Data Flow

Vessels

Data Processing

python™

OGC Data servers

Database

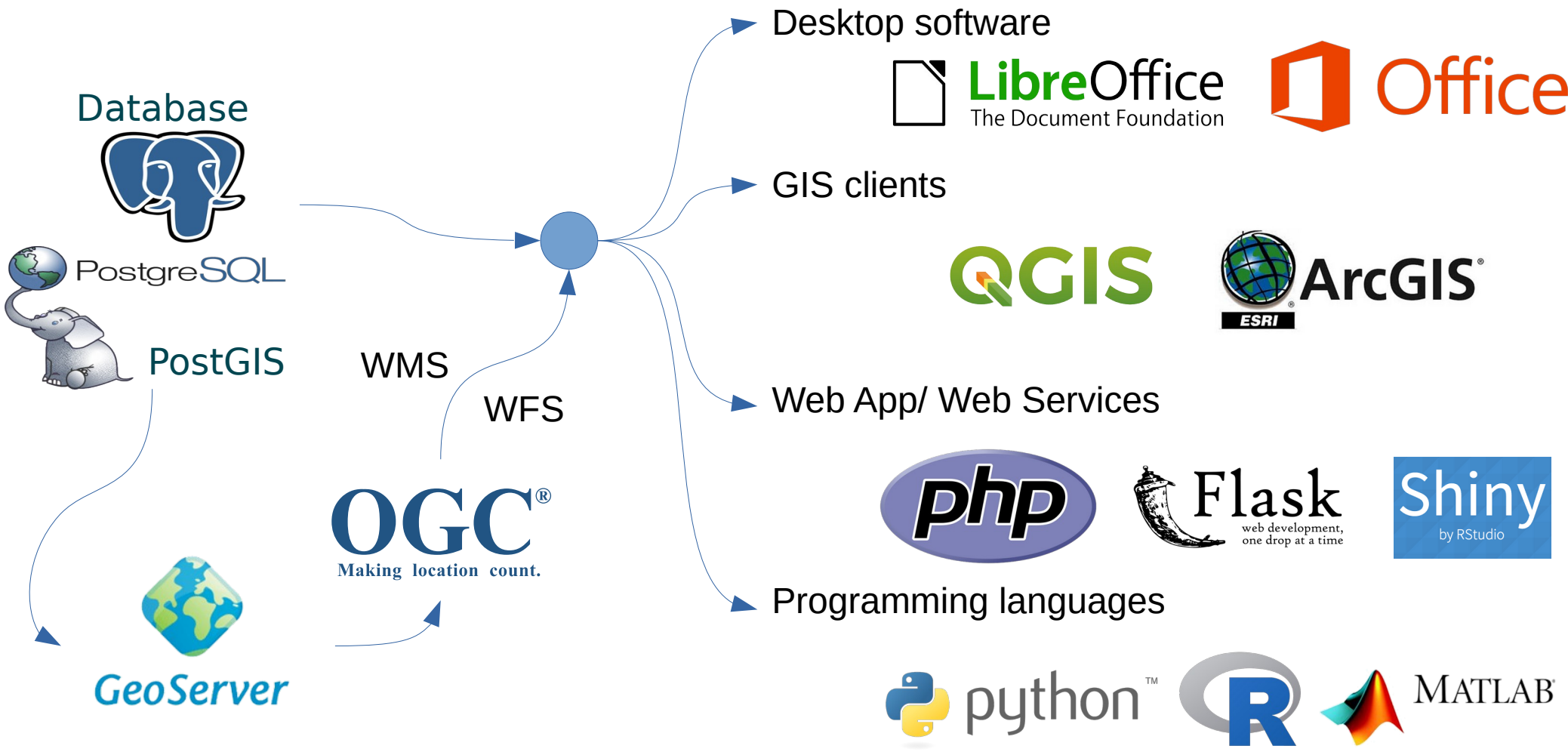
PostgreSQL

PostGIS

GeoServer

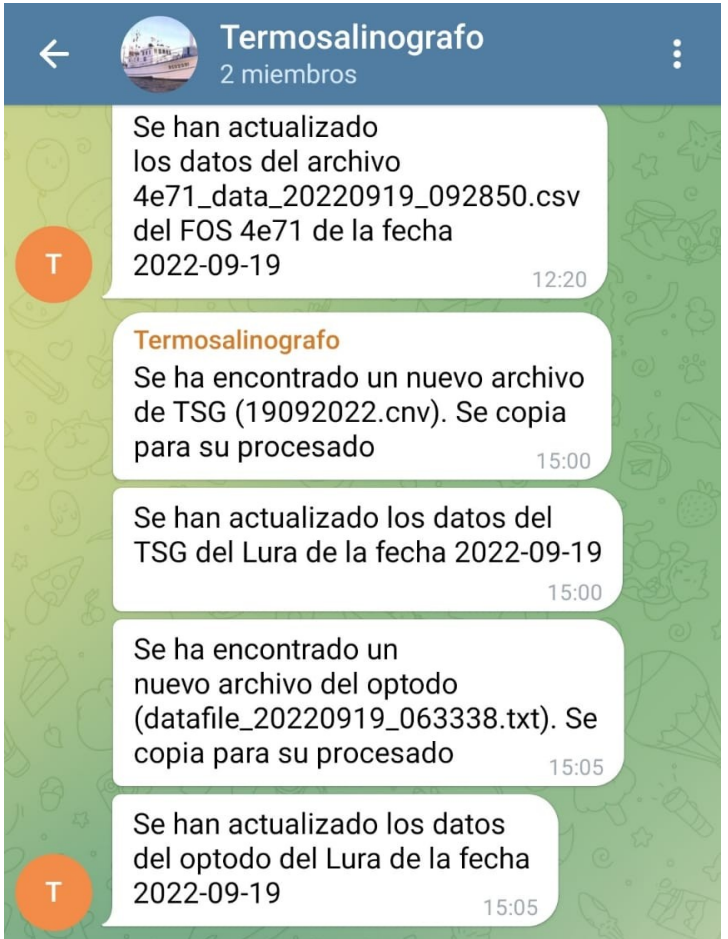
Final Users

Architecture



Telegram Alert System

- Based on telegram bot
- Simple implementation
- Notification of data processing and QC problems
- Keep people involved informed of data updates.



Web-Apps

Client Side

Server Side

Web server

Processing

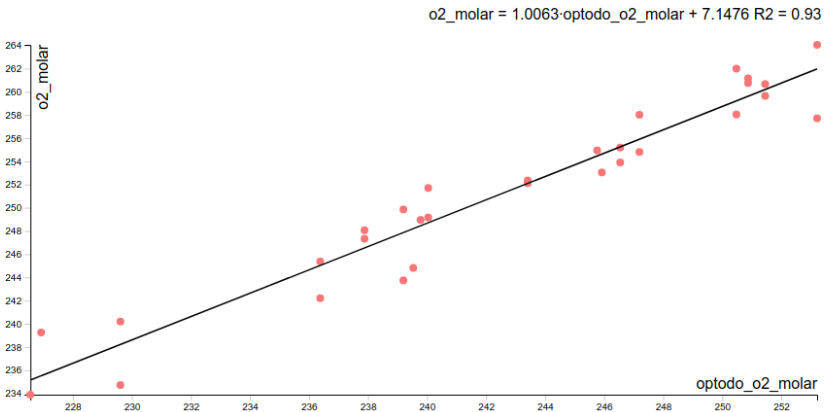
Database

PostgreSQL

PostGIS

Calibration app

- Put together TSG and laboratory data
  - Oxygen
  - CDOM
  - Chlorophyll
- Easily compare and get calibration function
- Flexible, intuitive and user friendly



Rfecha	Longitude	Latitude	Temperature	Salinity	Fluorescence	Cdom	Turbidity	Optodo_tem	Optodo_dphi	Optodo_o
2021-07-15 07:46:00	-8.4425	43.4153	17.5791	34.8252	0.9879	1.1484	69.3014	17.5805	19.4943	221.8359
2021-07-15 07:46:00	-8.4425	43.4153	17.5791	34.8252	0.9879	1.1484	69.3014	17.5805	19.4943	221.8359
2021-07-15 09:11:00	-8.4220	43.3996	17.2623	35.0859	0.8152	1.1548	69.2283	17.2690	19.7455	217.2626
2021-07-15 09:11:00	-8.4220	43.3996	17.2623	35.0859	0.8152	1.1548	69.2283	17.2690	19.7455	217.2626
2021-07-15 09:28:00	-8.4026	43.3932	17.3263	35.2601	0.8412	1.0818	69.2679	17.3158	19.5571	220.9433
2021-07-15 09:28:00	-8.4026	43.3932	17.3263	35.2601	0.8412	1.0818	69.2679	17.3158	19.5571	220.9433
2021-07-15 09:46:00	-8.3783	43.3857	17.7237	35.1620	0.8550	1.1279	69.3293	17.7154	19.3574	224.4325

Días de Muestreo

3 of 3 selected

Zona de muestreo

2 of 2 selected

Variable x

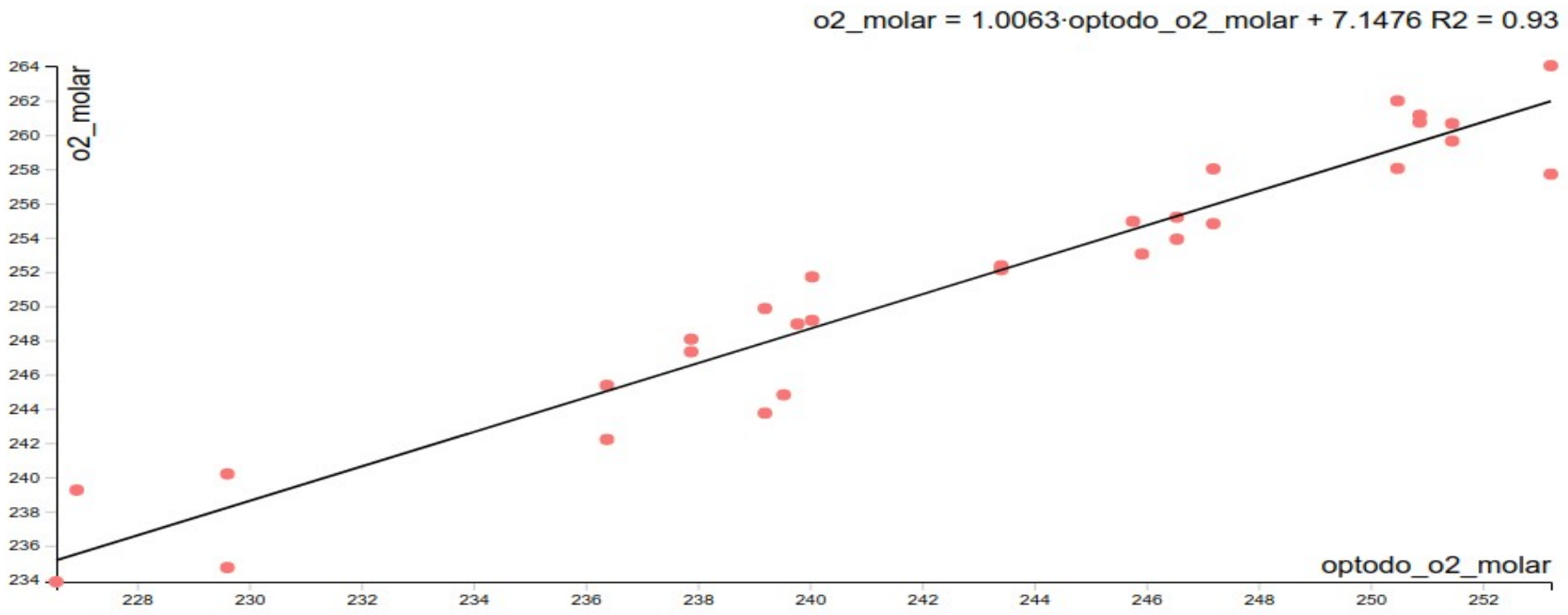
optodo_o2_molar

Variable y

o2_molar

Días de Muestreo | Zona de muestreo | Variable x | Variable y

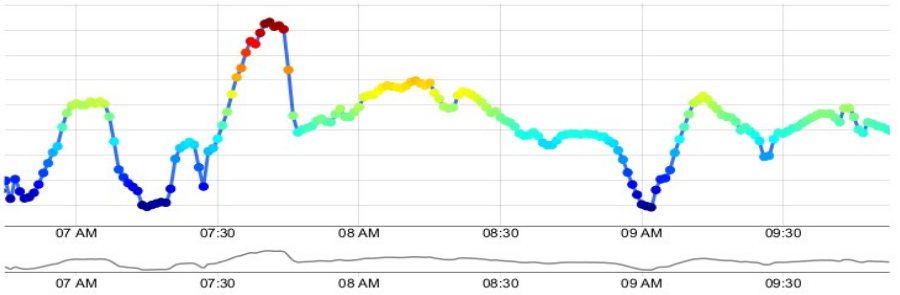
3 of 3 selected | 2 of 2 selected | optodo_o2_molar | o2_molar

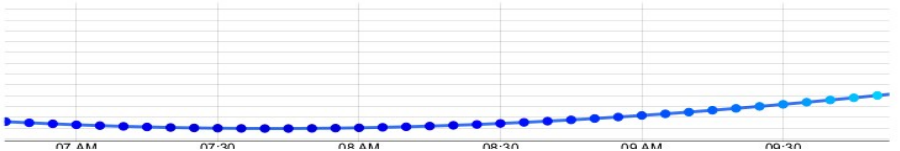


Rfecha	Longitude	Latitude	Temperature	Salinity	Fluorescence	Cdom	Turbidity	Optodo_tem	Optodo_dphi	Optodo_d
2021-07-15 07:46:00	-8.4425	43.4153	17.5791	34.8252	0.9879	1.1484	69.3014	17.5805	19.4943	221.8359
2021-07-15 07:46:00	-8.4425	43.4153	17.5791	34.8252	0.9879	1.1484	69.3014	17.5805	19.4943	221.8359
2021-07-15 09:11:00	-8.4220	43.3996	17.2623	35.0859	0.8152	1.1548	69.2283	17.2690	19.7455	217.2626

TSG data viewer

- Map, time graph and tide.
- Interaction between graphs
- Integration of calibration data

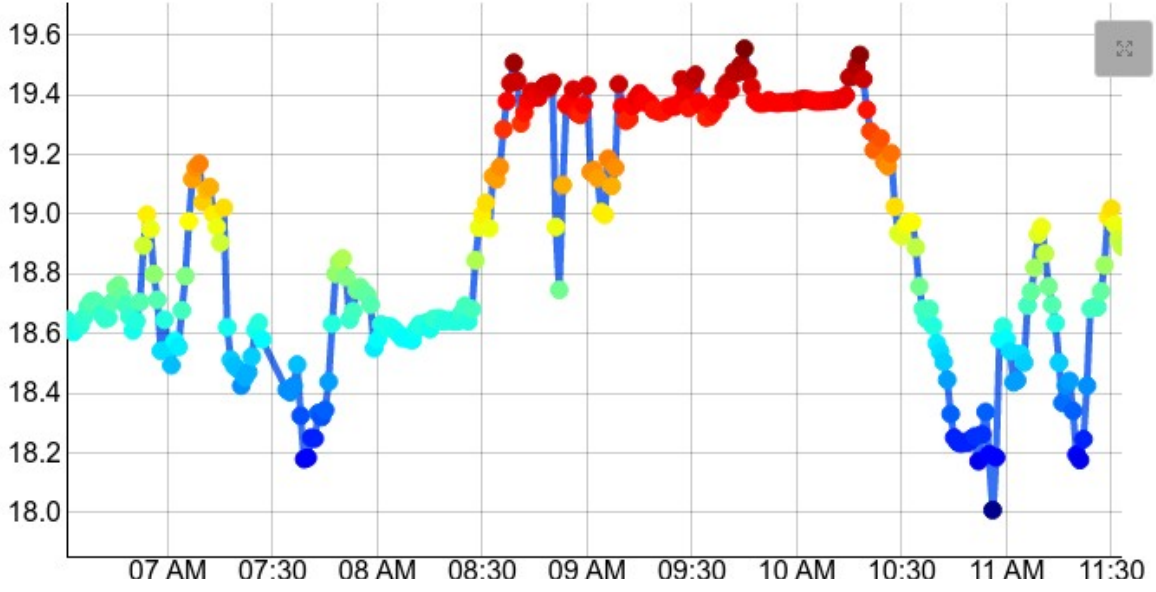


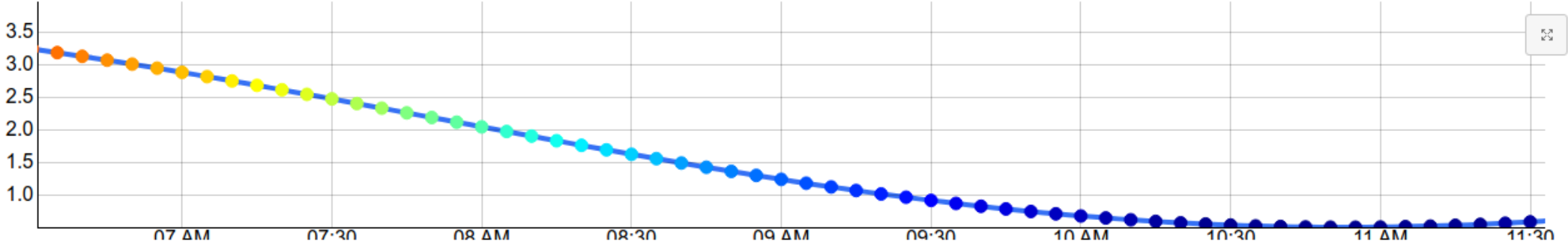


Interreg España - Portugal

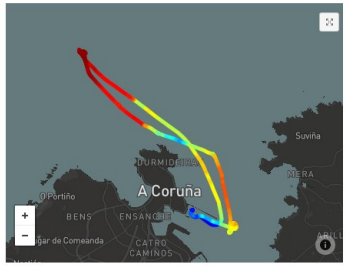
MarRISK www.marnaraia.com

Lura | 2022-09-13 | t090c | Minutos | O2 | AutoZoom

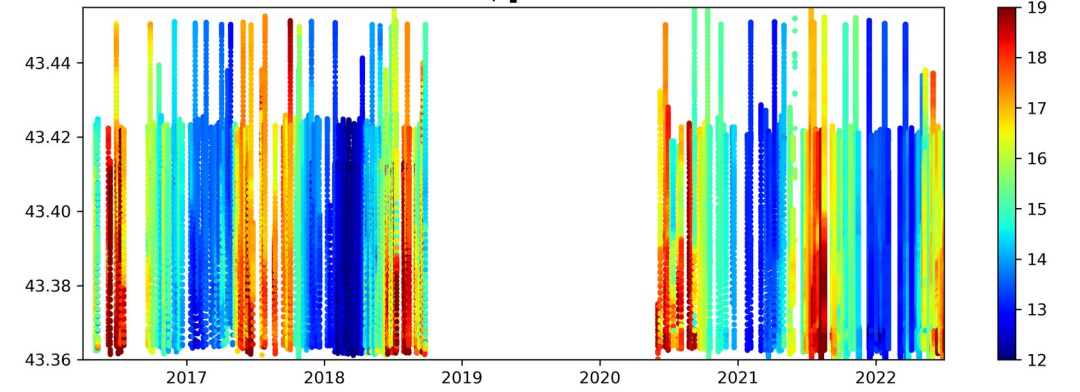




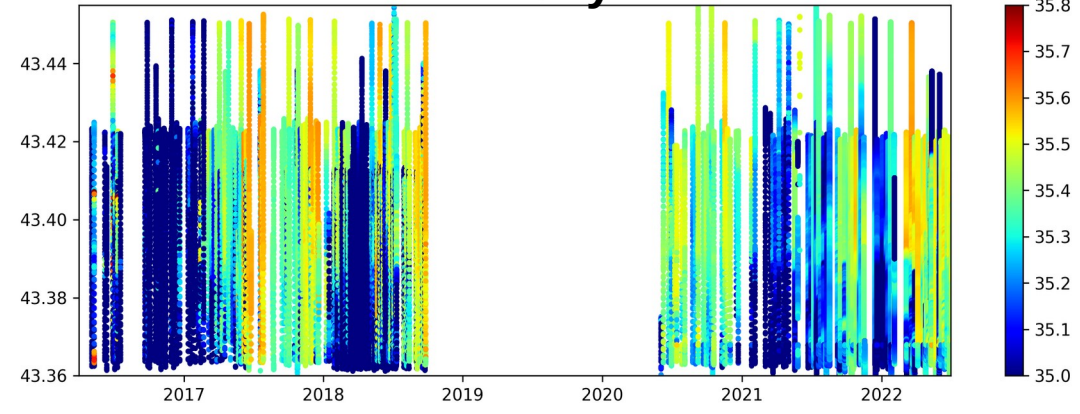
Surface Time Series



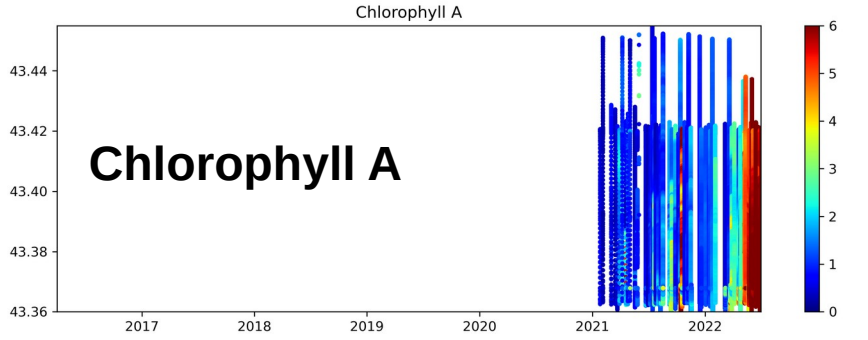
Temperature



Salinity

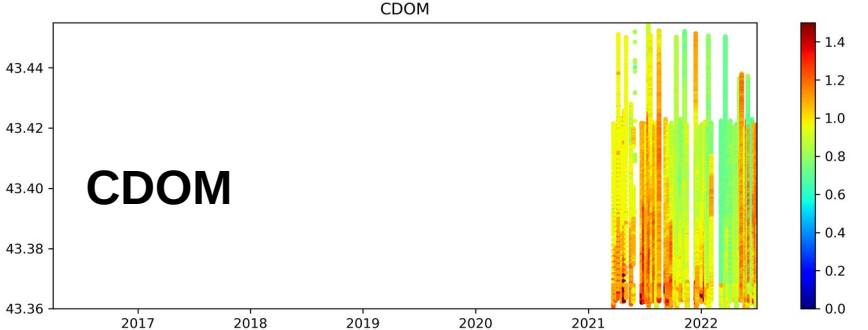


Chlorophyll A



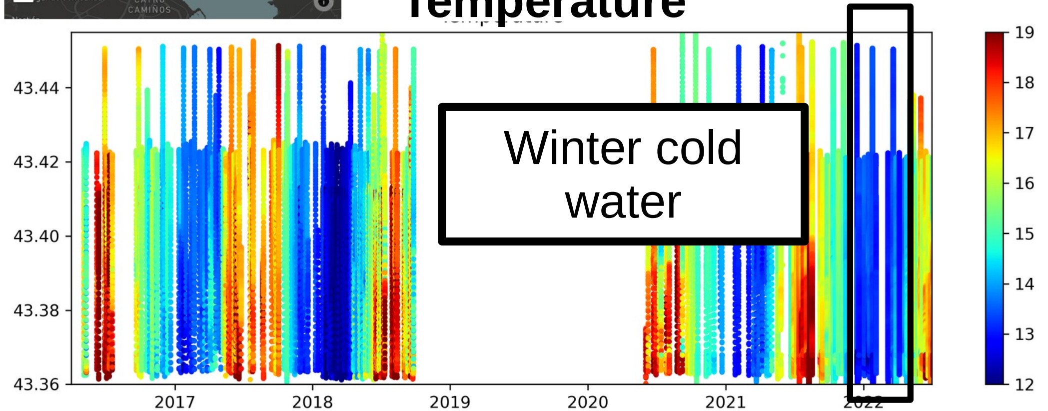
O2

CDOM

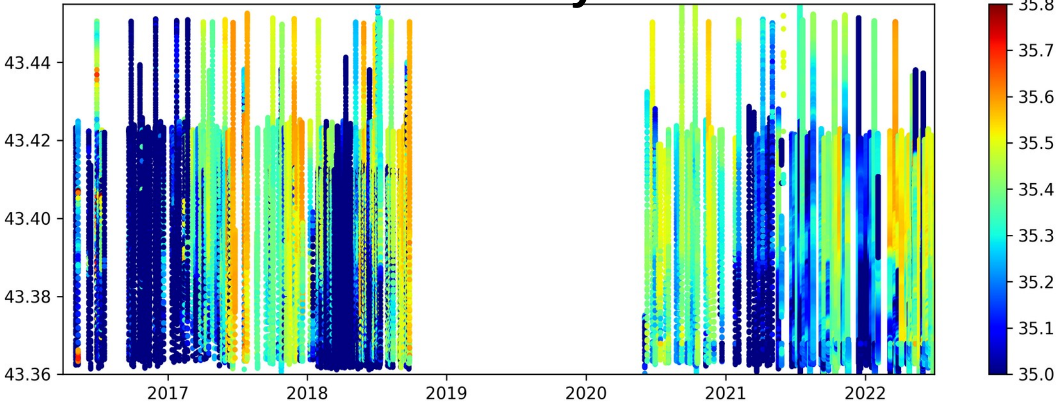


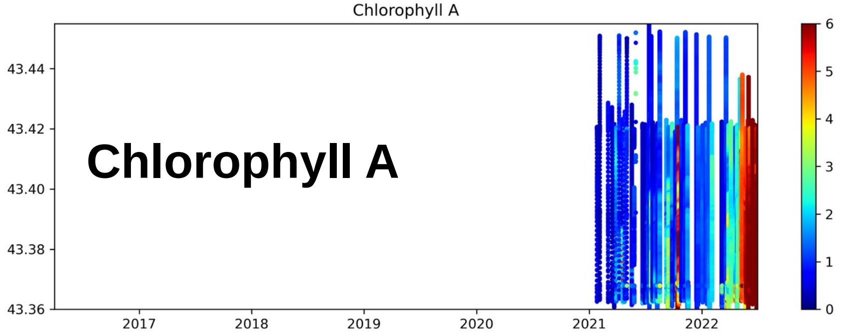
Surface Time Series

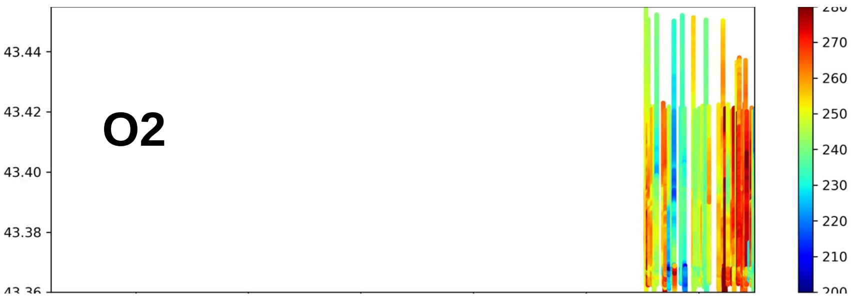
Temperature

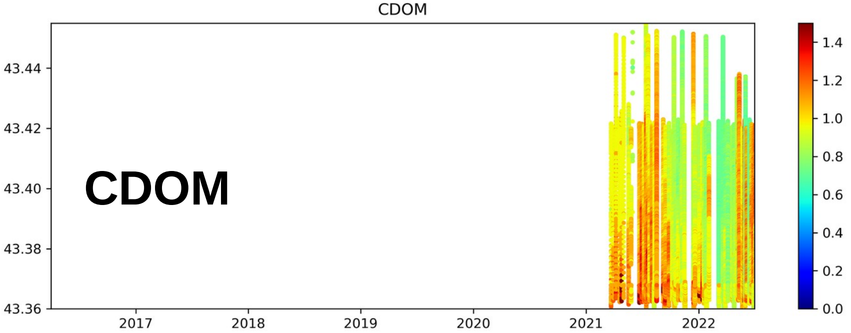


Salinity

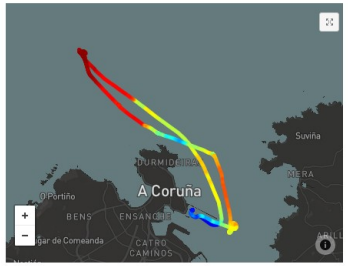


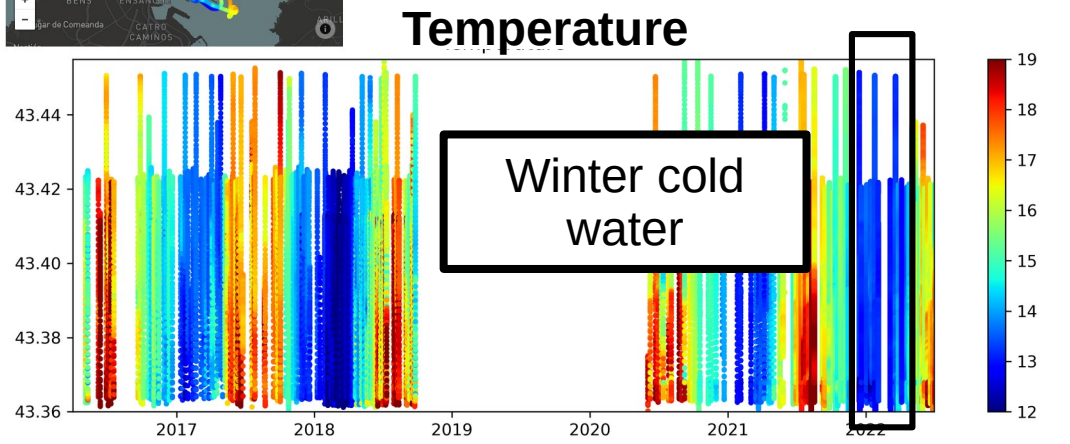


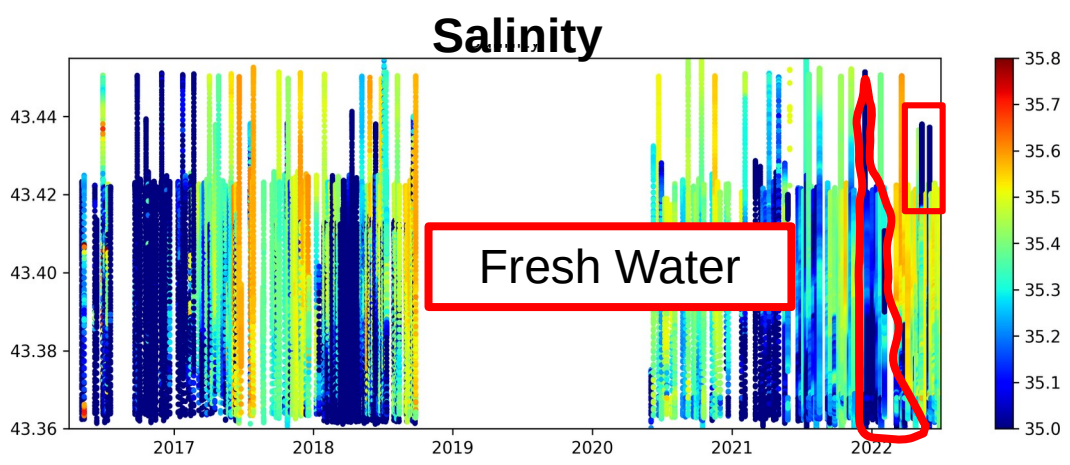


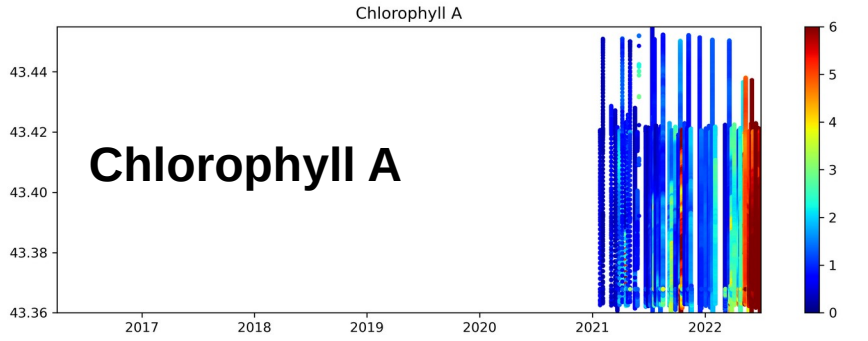


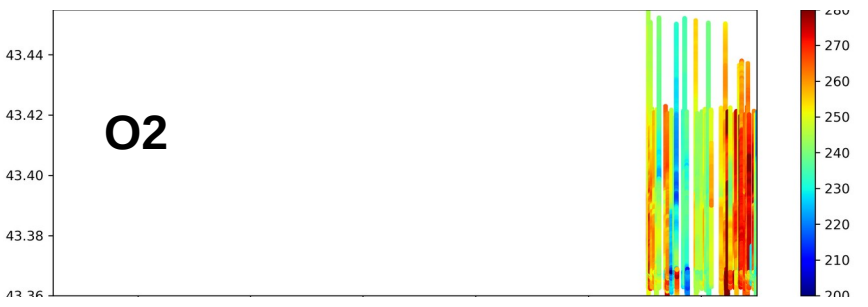
Surface Time Series

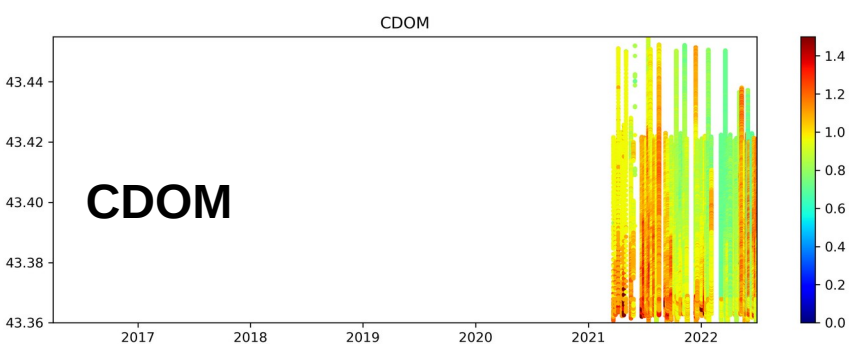




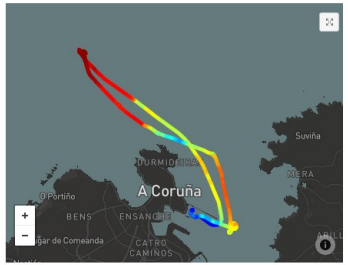


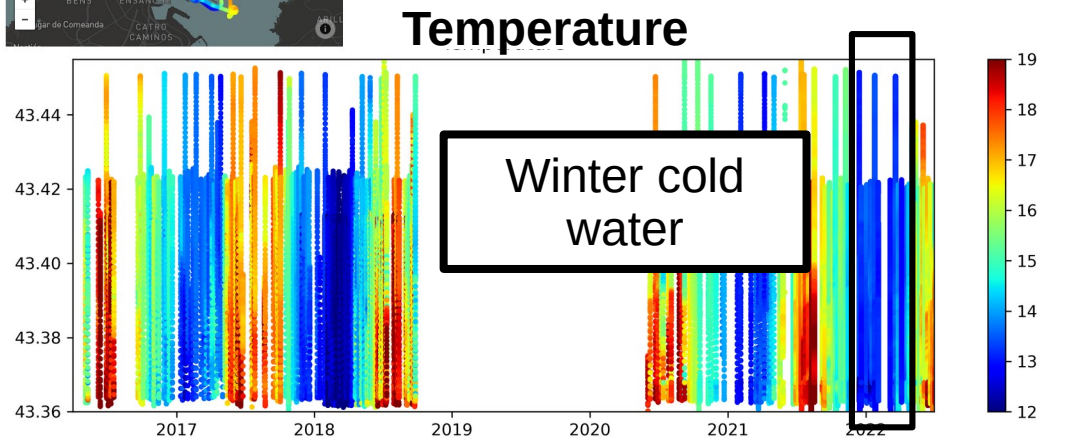


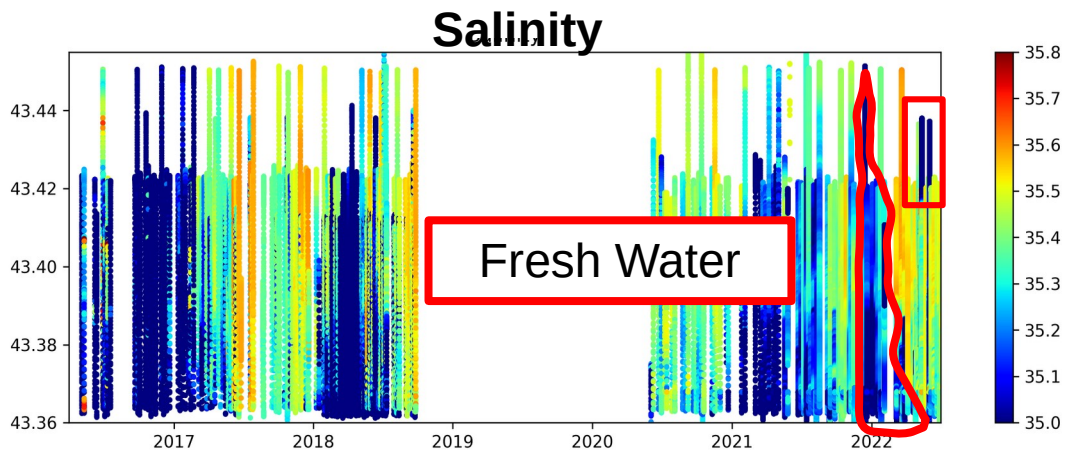


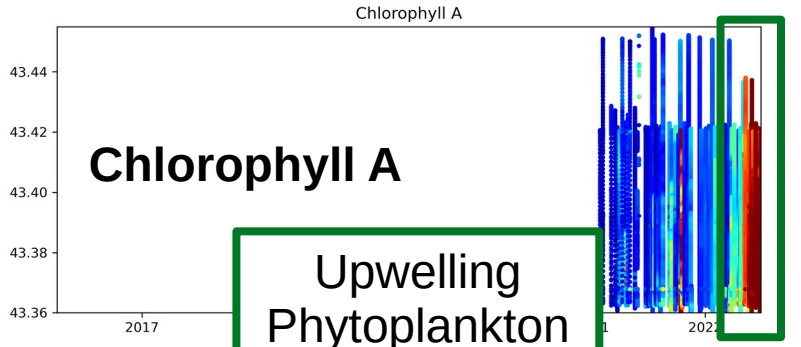


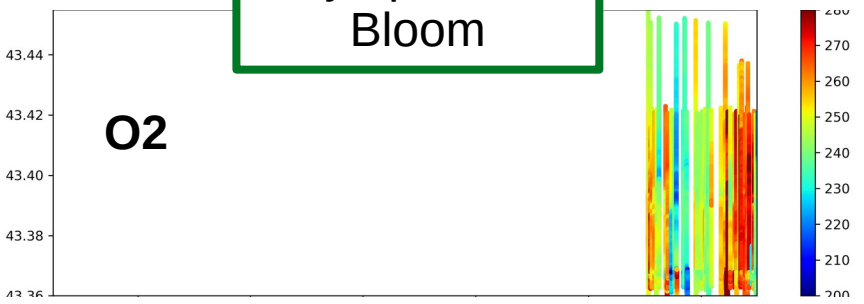
Surface Time Series

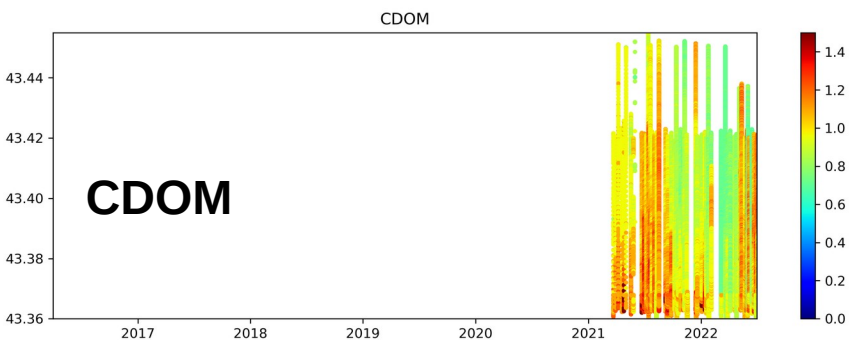






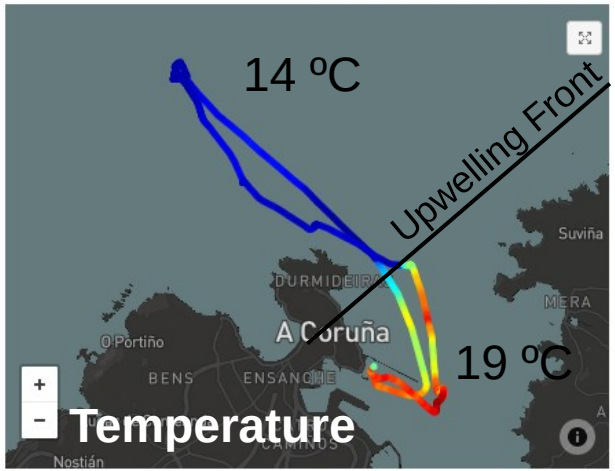


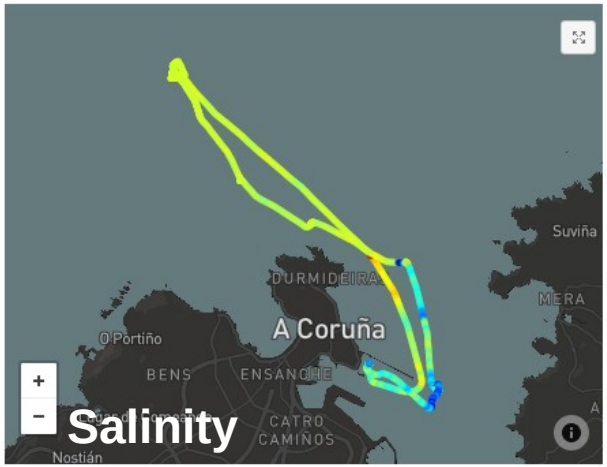


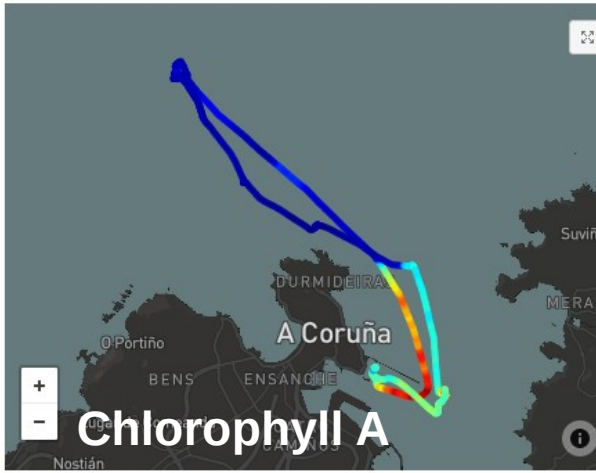


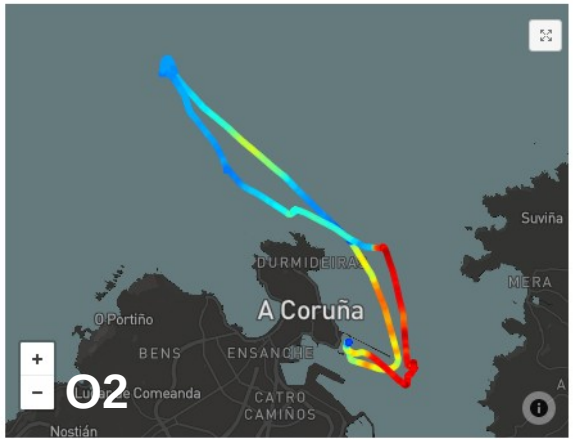
8-8-2022

Short Scale Events









Pending tasks

- Implementation of new sensors.
- Calibration tools transactional mode.
- Implementation of 4G in the R. V. Lura
  - Semiautomatic to Automatic processing.
- Development of a more advanced viewer with more flexible data query requests and new data representation and download possibilities.
- Explore Streamlit, a web app development framework based on python.

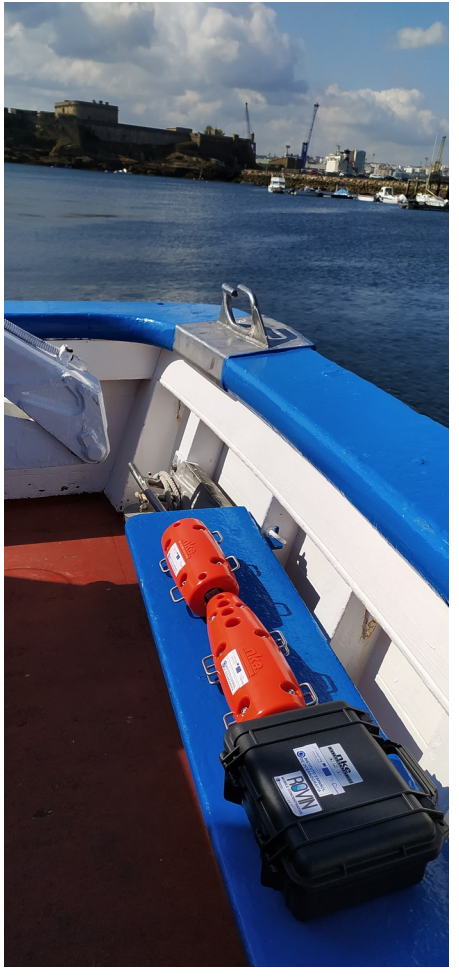
N42.625°
N42.575°
25°
W8.875°
W8.825°
N42.525°
Thank you
for your attention
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2013 DigitalGlobe
Google earth
lat. 42.621656° long. -8.947970° elev. 95 m alt. ojo 5.59 km

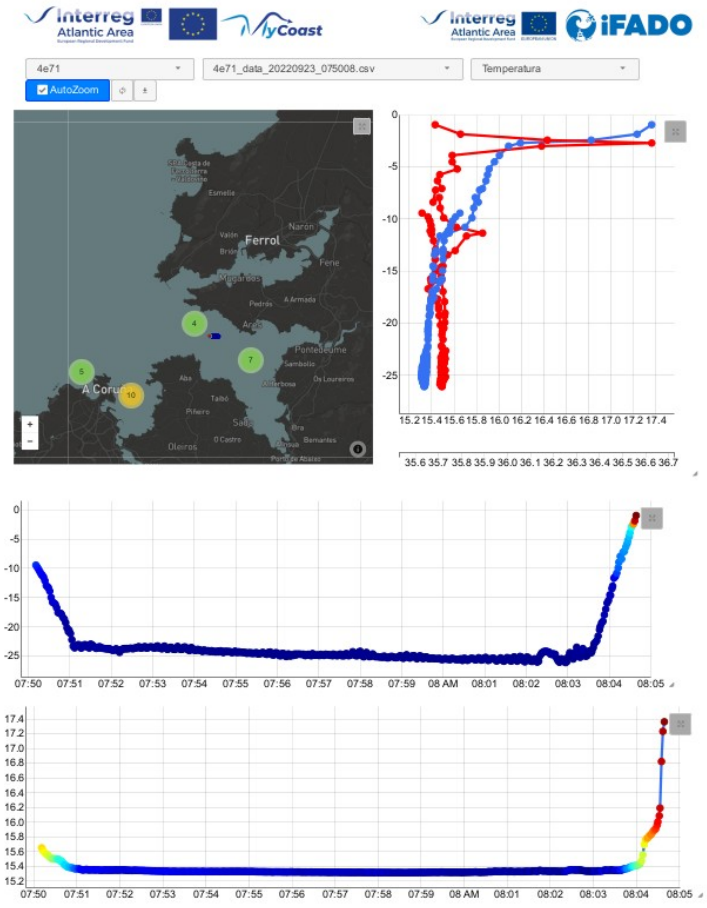
Fisheries Observing System

- NKE CTD fishery nets
- Completely automatic
  - Sampling Operation
  - Data acquisition via IoT platform (Bluecherry)
- Visualization and download via web app.

Fisheries Observing System

- NKE CTD fishery nets
- Completely automatic
  - Sampling Operation
  - Data acquisition via IoT platform (Bluecherry)
- Visualization and download via web app.



Fisheries Observing System

- NKE CTD fishery nets
- Completely automatic
  - Sampling Operation
  - Data acquisition via IoT platform (Bluecherry)
- Visualization and download via web app.