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

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IEO research vessels fleet

Lura
Margalef
Alvariño
Navarro
Vizconde de Eza (SGP)
Oliver (SGP)
Navaz
IEO research vessels fleet

Odon de Buen

Navaz

Alvariño

Lura

IEO research vessels fleet
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
Architecture

Database
- PostgreSQL
- PostGIS

GIS clients
- QGIS
- ArcGIS

Web App/Web Services
- OGC
- GeoServer

Desktop software
- LibreOffice
- Microsoft Office

Programming languages
- PHP
- Flask
- Shiny
- Python
- R
- MATLAB
Telegram Alert System

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

– Put together TSG and laboratory data
  • Oxygen
  • CDOM
  • Chlorophyll
– Easily compare and get calibration function
– Flexible, intuitive and user friendly
<table>
<thead>
<tr>
<th>Días de Muestreo</th>
<th>Zona de muestreo</th>
<th>Variable x</th>
<th>Variable y</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 of 3 selected</td>
<td>2 of 2 selected</td>
<td>optodo_o2_molar</td>
<td>o2_molar</td>
</tr>
</tbody>
</table>
Días de Muestreo | Zona de muestreo | Variable x | Variable y
--- | --- | --- | ---
3 of 3 selected | 2 of 2 selected | optodo_o2_molar | o2_molar

\[ o2\_molar = 1.0063 \cdot \text{optodo\_o2\_molar} + 7.1476 \quad R^2 = 0.93 \]
TSG data viewer

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

Temperature

Salinity

Chlorophyll A

O2

CDOM
Surface Time Series

Temperature

Winter cold water

Salinity

Chlorophyll A

O2

CDOM
Surface Time Series

Temperature

Salinity

Chlorophyll A

O2

CDOM

Winter cold water

Fresh Water
Surface Time Series

Temperature

Salinity

Chlorophyll A

O2

CDOM

Winter cold water

Fresh Water

Upwelling Phytoplankton Bloom
8-8-2022

Short Scale Events

Temperature

Salinity

Chlorophyll A

CDOM

O2
Pending tasks

– 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.
Thank you for your attention
Fisheries Observing System

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