

The data life cycle management at SOCIB: responding to science and societal needs

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The SOCIB-ICTS Marine Research Infrastructure approach

The Balearic Islands Coastal Ocean Observing and Forecasting System (SOCIB, <http://www.socib.eu>), is a Marine Research Infrastructure (ICTS) that provides world-class, quality controlled metocean datasets, in both real time and delayed mode. This is achieved from across its multi-platform, observation and forecasting system, covering coastal to open ocean areas. This multi-platform approach is needed to properly capture oceanographic processes, that take place at different spatial and temporal scales, and that characterise both ocean state and ocean variability. The SOCIB observation system provides physical and biogeochemical variables from different platforms such as the coastal research vessel, a high-frequency (HF) radar system, weather stations, tide gauges, moorings, drifting buoys, ARGO profilers, gliders (autonomous underwater vehicles) and sea turtle tracking, providing trajectories given by the animals. The forecasting system uses high-resolution numerical models for hydrodynamics (ROMS) and waves (SAPO).



Figure 1: SOCIB multi-platform observing & forecasting system

The role of the Data Centre

The DC is responsible for the different stages of data management and covers the whole data life cycle, ranging from data acquisition using SOCIB observational platforms, numerical models or information generated by other divisions, to distribution and visualization through the development of specific tools for visualising the data sets, including both dedicated web and mobile applications. The implemented system relies on open source solutions.

In order to cope with a wide range of platforms, automatic management and processing are necessary. Here we present some of the applications developed to perform the oceanographic data management of the different platforms and a specific example developed for gliders.

- Instrumentation: a database that contains the inventory of materials, the activities performed with them and the processing applied on the collected datasets.
- Processing: an application designed to extract metadata of the deployed equipment from Instrumentation and to perform the data ingestion, processing, quality control and standardization.
- Glider toolbox (https://github.com/socib/glider_toolbox): a complete set of MATLAB/Octave scripts that automates glider data processing function, including thermal lag correction, quality control and graphical outputs.

Applications

Based on the available data and using a set of web services, several applications were build:

- SEABOARD (<http://seaboard.socib.es>), a dashboard combining different sources of information in real time for different types of users.
- Smartphone apps to access data, platform trajectories and forecasts in real-time.
- “Medcllic: the Mediterranean in one click” (<http://www.medcllic.es/en/>), a web dedicated to the Mediterranean Sea monitoring, with scientific and an outreach components.

Other applications are currently being developed as an adaptation to different sectors within the new SOCIB Products and Services 2017 strategy (beach lifeguard and Bluefin tuna apps).

Conclusions

SOCIB organizational and conceptual structure as a facility of facilities including the Data Centre and its developed components is a good example of Marine Information System within the framework of new Ocean Observatories and/or Marine Research Infrastructures, a system of systems that through FAIR principles, generates added value to both cover the scientific community demands and respond to the general societal needs.