Data Management and applications at SOCIB

David March, *IMEDEA (CSIC-UIB)*, david@imedea.uib-csic.es, *(Spain)*
Sebastian Lora, SOCIB, slora@socib.es
Joan Pau Beltrán, SOCIB, jbeltran@socib.es
Kristian Sebastian, SOCIB, ksebastian@socib.es
Sonia Gómara, SOCIB, sgomara@socib.es
Joaquín Tintoré, SOCIB and IMEDEA (CSIC-UIB), jtintore@socib.es

SOCIB Description

SOCIB, the Balearic Islands Coastal Ocean Observing and Forecasting System (http://www.socib.es), is a Marine Research Infrastructure, a multiplatform distributed and integrated system, a facility of facilities that extends from the nearshore to the open sea and provides free, open and quality control data. SOCIB is a facility o facilities and has three major infrastructure components: (1) a distributed multiplatform observing system, (2) a numerical forecasting system, and (3) a data management and visualization system. We present the principles, major components and actions implemented in the 2010-2013 period by SOCIB Data Centre, also providing some examples of on-going developments.

Data Centre Facility Goals

The Data Centre is the core of SOCIB. The general goal of SOCIB Data Centre is to provide users with a system to locate and download the data of interest (near real-time and delayed mode) and to visualize and manage the information. Following SOCIB principles, data need to be (1) discoverable and accessible, (2) freely available, and (3) interoperable and standardized. In consequence, SOCIB Data Centre Facility is developing and implementing a general data management system to guarantee international standards, quality assurance and interoperability. The combination of different sources and types of information requires appropriate methods to ingest, catalogue, display, and distribute this information. The data managed by SOCIB mostly come from its own observation platforms, numerical models or information generated from the activities in the SIAS Division. The Data Centre also performs the management of data coming from external data providers through various collaborations.

Data Centre Facility Components

SOCIB Data Centre is responsible for directing the different stages of data management, ranging from data acquisition to its distribution and visualization through web applications. The system implemented relies on open source solutions, following other architectures adopted within the context of marine spatial data infrastructures. In other words, the core Data Centre system main components are:

- An instrumentation application developed at SOCIB to manage all platforms centralized in a database through a web interface.
- A processing application developed at SOCIB to deal with all collected platform data performing data calibration, derivation, quality control and standardization.
- A THREDDS catalogue implemented at SOCIB to archive data and distribute them through services such as OPeNDAP, OGC services, HTTP and ncISO.
- A layer of RESTful web services developed at SOCIB to ease the development of both internal and external applications, such as web or mobile applications.
- A set of tools for data visualization and real time monitoring developed at SOCIB

The general structure and some of the components are illustrated in Figure 1 and some specific examples of visualization developments are illustrated in Figure 2.

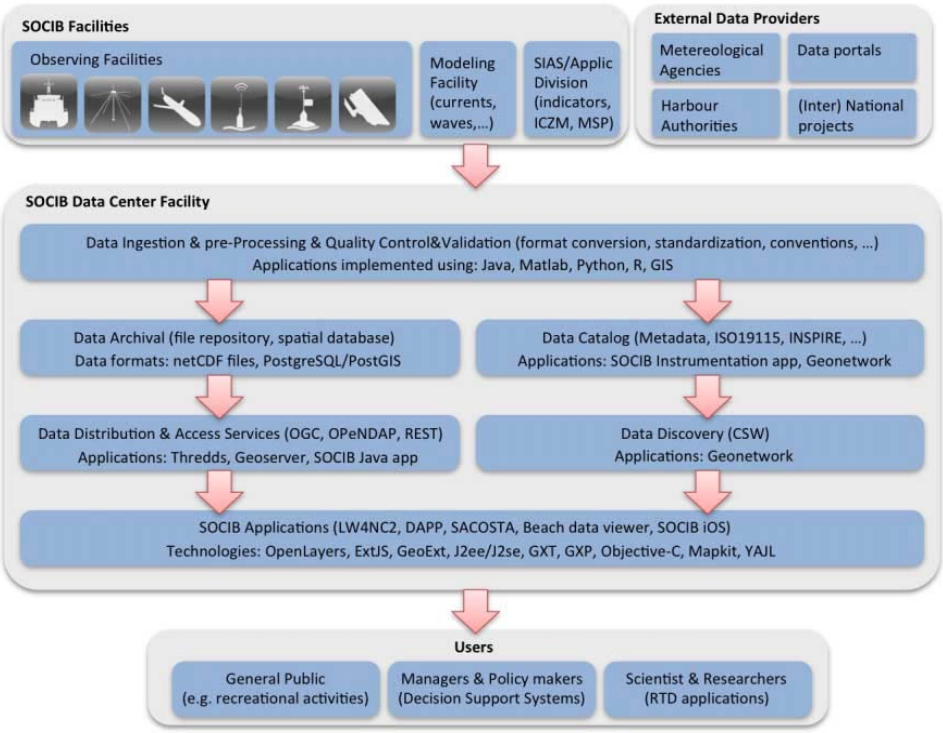

Figure 1 : Data Centre Conceptual Structure and SOCIB developed applications

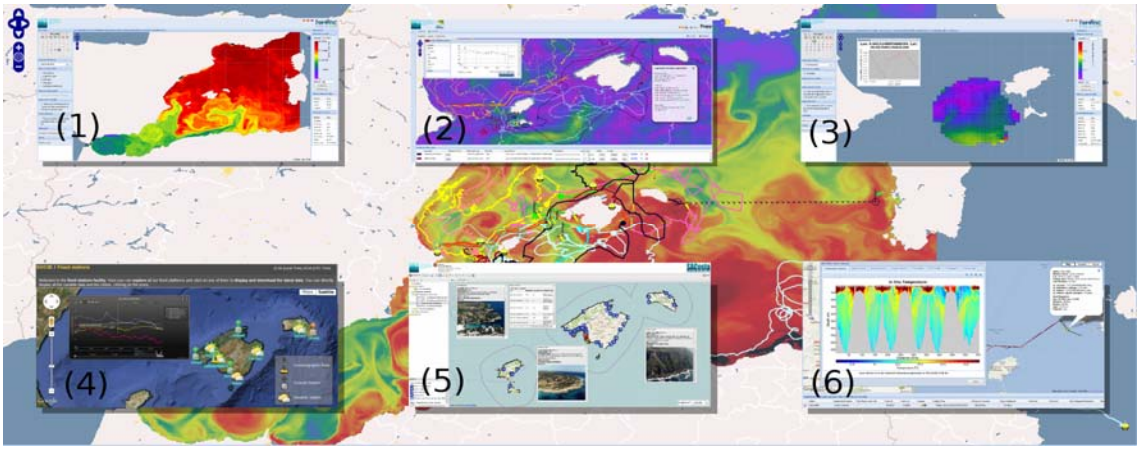

Figure 2: Data and applications developed at SOCIB: (1) web-based map viewer for numerical models output; (2) web application for mobile platforms (e.g.,gliders, Argo profilers, drifters, etc.); (3) HF radar output; (4) fixed stations web section; (5) web-based map viewer for cartographic data, ESI, etc.; (6) glider real-time monitoring tool.

Conclusions

The organizational and conceptual structure of SOCIB's Data Centre and the components developed provide an example of marine information systems within the framework of new ocean observatories and/or marine research infrastructures. The main principles of standardization, interoperability and open access are in line with the INSPIRE Directive and other important European initiatives such as Emodnet or Copernicus, which are also the information pillar of the Integrated Maritime Policy and the Marine Strategy Framework Directive.