

The French research vessels management: an opportunity for harmonized data

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The French research vessel fleet has been selected as one of the Very Large Research Infrastructures (TGIR). Until end of 2017, the French research vessels were operated by each owner of the ships (the French research institutes Ifremer, IPEV, IRD and CNRS). Since the 1st January of 2020, 11 research vessels, mobile equipments, 4 underwater vehicles and 1 submarine are effectively gathered within the French Oceanographic Fleet (FOF). The French Ministry of Research has entrusted Ifremer to manage the whole research fleet including open ocean and coastal vessels, station ships, underwater gears and mobile equipment such as seismic acquisition systems and deep sea coring.

The TGIR Fleet is a tool that covers all fields of oceanography (marine geosciences, physical and biological oceanography, bio-geochemistry and chemistry of the oceans, paleoclimatology, etc).

The actors involved in the French research fleet activities are the chief scientists, the persons in charge of the scheduling and processing of the cruises, the ship operator Genavir in charge of achieving the cruises and SISMER which - as the French NODC - is in charge of the final repository of the data and of the data distribution.

The landscape would be incomplete without taking into account the European marine data infrastructure SeaDataNet and the currently attached project SeaDataCloud. SeaDataNet is in charge of managing common vocabularies describing, among others, vessels, geographical locations, parameters and instruments.

Considering the number of stakeholders, the challenge is to ensure the transmission of the information reported by each stakeholder related to each stage in the life of a cruise. But it is also a question of providing the entire scientific community with all the information related to the oceanographic cruises and the data from the Fleet through a single national access portal.

A new global cruise management tool.

Designing a global management tool required, first, bringing together the fleet managers and the SISMER data scientists in order to :

- Define, describe and orchestrate each stage in the life of a cruise.
- Draw up an exhaustive list of all available gear that can be operated on each vessel and map them with standardised vocabulary lists.
- Define the role of each stakeholder in order to enable each of them to act at his or her level.

Under the coordination of DFO, Ifremer/IRSI developed the Campaign Management System (SGC - Système de Gestion des Campagnes) in 2018. The SGC is a workflow, managed by a software, which allows the overall management of an oceanographic cruise from calls for tenders to the cruise valorization. The various stages of the SGC are as follows: scientific campaign application following

calls for tenders, evaluation of campaigns by external experts and national committees, scheduling of selected campaigns, instructions, process and preparation of cruises, production of reports and records at the end of the cruises, and finally valorization of each scientific campaign for its post-evaluation by national committees.

The SGC is based on the common vocabularies defined in SeaDataNet. In particular, it produces the Cruise Summary Reports (CSR), as part of the cruise report, which feed the descriptions of each of the cruises listed in the SISMER database and are then shared at European level.

IBTS 2020 (January, February 2020) is the first cruise that has gone through all the steps of the SGC workflow, from the tender to the cruise report. The valorization will follow soon.

The cruise catalogue: a real hub for the access to all the information related to the fleet.

SISMER has been responsible for a long time for archiving (guarantee of no loss of data) and banking (guarantee of description and access to data that have passed quality control) data acquired on board Ifremer research vessels.

In order to extend its practices to other vessels, Ifremer has focused on installing Ifremer standard acquisition units on each vessel of the fleet (except 2 for geographical reasons) to facilitate the automation of its database indexing procedures. Thanks to an efficient partnership with its ship operator (Genavir), all the data acquired on board each platform are now transmitted to SISMER within 2 months after the end of the cruise.

The data are converted into standard formats and undergo visual and/or automatic quality checks to meet the needs of cataloguing and dissemination. Like the SGC, the conversion and description tools are based on the common SeaDataNet vocabulary repositories.

Today, the SISMER database contains more than 9300 cruises, the oldest of which dates back to 1913. It successfully feeds the new single access portal developed in 2018: the campaign catalogue (<https://campagnes.flotteoceanographique.fr/>). This cataloguing and data access tool is a real hub of access to all information related to the oceanographic cruises since it contains the CSR, the Digital Object Identifier (DOI), the associated publications and reports, and the description of the acquired data, the sampling operations, the dives, the moorings and the videos.

The unification of the French research vessels within the FOF has been an opportunity to unify the management of French oceanographic cruises and their associated data. The use of common vocabulary repositories established at the European level is an essential step to contribute to the application of the FAIR principles -Findability, Accessibility, Interoperability and Reusability- to the French data.

The presentation will describe in details the whole information and data flow system (SGC Système de gestion des campagnes / Cruise Management System) that has been developed to ensure a comprehensive tracking of cruise information and data circulation. It will also describe how it is included in a wider perimeter for sharing data and cruise summary reports (CSR) through a single national access portal.