

## Conference Abstract

# The developing Canadian Integrated Ocean Observing System (CIOOS)

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## Abstract

Canada's ocean science community which includes the federal government, academia, small businesses, not-for-profit organizations, and other research partners, collect and synthesize physical, chemical and biological ocean observations. This information is used for discovery research purposes, to model ocean changes and provide environmental assessment advice, support resource management decision-making, and establish baseline data for long-term monitoring.

Canada's ocean community collects large amounts of data but, aside from building comprehensive ocean observatories (Fisheries and Oceans Canada (DFO) et al. 2010), there is no easy mechanism to integrate data from various sources to allow the exploration of interrelationships among variables, and no coordination and collaboration mechanism for the ocean community as a whole to generate an efficient system (Ocean Science and Technology Partnership (OSTP) and for Fisheries and Oceans Canada (DFO) 2011). Consequently, we observe fragmented and isolated data – which may never be used outside of a specific project because it is not discoverable by other potential end users. Canada's ocean science community (Wallace et al. 2014), led and supported by Fisheries and Oceans Canada (DFO), is advancing the development of a Canadian Integrated Ocean Observation System (CIOOS) that brings together and leverages existing Canadian and international ocean observation data into a federated data system which will generate value for users. This integrated ocean observing system (Wilson et al. 2016) will improve coordination and collaboration among diverse data producers, improve access to

information for decision making, and enable discovery and access to data to support a wide variety of applied and theoretical research efforts to better understand, monitor, and manage activities in Canada's oceans.

Conceptual discussions on CIOOS have taken place with Environment and Climate Change Canada, Natural Resources Canada, the Department of National Defence, DFO, and the academic and NGO sector. Work is underway on four closely-linked projects to move CIOOS from the concept stage to the design stage, covering key areas required to develop a robust and integrated observing system:

1. Governance;
2. Data and observations;
3. Cyber Infrastructure; and,
4. Visualization tools.

The project teams are evaluating the current ocean observing landscape in Canada (what exists, who has it, and what state is it in), the standards followed, and the gaps, limits or barriers to setting up an integrated ocean observing system. From this they will develop a list of recommendations to support the implementation of CIOOS, which will include which standards to use, the resources required (FTE, capital investment, capabilities), and the best practices to follow.

## Keywords

data management, data handling, data interoperability, metadata, data discovery, biological monitoring, species occurrence, environmental data, ecosystem data, telemetry data, data standardization, oceanographic data, integrated oceanographic data system, ocean observations

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Lenore Bajona on behalf CIOOS Task Team and associated project team participants

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