North America Regional IODE developments: Canada, México, and The United States

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The Marine Environmental Data Section (MEDS) is Canada’s NODC since 1962.

MEDS is part of the federal government and based in Canada’s national capital. Its role initially consisted in managing centralized databases for common data types collected across Canada, but gradually shifted toward operational oceanography and coordination of data management activities across the country.

The Department of Fisheries and Oceans in Canada mainly consists of 4 research institutes, 2 fisheries centres and 2 biological stations whose activities cover waters in the three oceans surrounding Canada, in addition to internal water bodies. Canada is also home to several marine and oceanographic academic research institutions and consortia: Ocean Networks Canada (Victoria BC), Ocean Frontier Institute (Halifax, NS), Institut des Sciences de la Mer (Rimouski, QC), etc.
MEDS Activities

National

- Argo Canada (end-to-end data management)
- Fisheries and Oceans Gliders
- Tides and Water Levels official archive
- Oceanographic profile centralized archive
- Wave buoy data archive
- Operational oceanography (GTS data transmission / acquisition)

International

GTS Data acquisition / support for:

- Global Temperature Salinity Profile Project
- Copernicus Marine Environment Monitoring Service (in situ TAC)
- NEAR-GOOS
- Global Ocean Surface Underway Data Pilot Project
- Marine Climate Data Service, Drifting buoys
- International Comprehensive Ocean-Atmosphere Data Set (drifting buoys)
Key Transformational Activities 2018-2020

- Modernization of data ingestion processes to
  - Enable management of new data types and formats (including BUFR)
  - Increase the number of access points to MEDS data, including via web services and APIs
  - Improve analytics capacity by using cloud technologies
- Streamlining data exchanges with NOAA (Ocean Carbon Data System, World Ocean Database), the CLIVAR and Carbon Hydrographic Data Office and with IOC (for specific requests such as ocean acidification)
- Participation in the developing “Canadian Integrated Ocean Observing System”, which offers opportunities for better integration with non-governmental members
- Providing data support for the Ocean Tracking Network Associated Data Unit
The Consorcio de Instituciones de Investigación Marina del Golfo de México y del Caribe (CiiMAR) began as a concept in 2011 and today encompass the many, diverse, strategic, and connected universities with the cause of sustainability of the Gulf of Mexico fostering collaboration with academic and research institutions from Mexico and the US. There are now 24 associated Mexican universities and over 100 US institutions.

Common goal – To contribute to the best management practices and sustainable development of the region by providing sound science and knowledge to improve the ecosystem health condition and economic wealth of the Gulf of Mexico.
CREATE A COMMON OCEAN AND COASTAL OBSERVING SYSTEM

- Enhance the integrated ocean and coastal observing system for the Gulf region
- Promote *ad hoc* ocean and coastal observing systems
- Establish a network of existing observing assets
- Define priority research topics and associated observing assets needed
- Stimulate regional cooperation and supply with equipment, technology and training capabilities as appropriate
U.S. and international partnership efforts

- NCEI final repository for Argo/bioargo float data
- NCEI Ocean Carbon Data System (formerly CDIAC-Oceans)
- NCEI data repository Global Temperature and Salinity Profile Programme (GTSPP)
- Marine Biodiversity Observation Network: MBON Pole to Pole
- NCEI data repository NSF Rolling Deck to Repository (R2R) Data Management
- Clivar & Carbon Hydrographic Data Office
- NCEI data repository NOAA Marine and Aviation Fleet data assembly

U.S. Public Access to Research Results (PARR) issued in 2013: Publications and environmental data funded through taxpayer dollars made publicly accessible in a timely fashion.

> 30 PB in 2018
>> 160 PB by 2030
NOAA World Ocean Database (WOD)
Physical, chemical, and biological ocean profile data (1772-2019): 16M profiles

**Challenge:** Optimize and coordinate data flow to increase value-added for the global international community.
"The Decade of Ocean Science will be a unique ten-year, global, large-scale cooperative programme to seek urgently-needed scientific solutions to support effective ocean management, stewardship and sustainable development."

VLADIMIR RYABININ
Executive Secretary, IOC

Critical: unrestricted use of data with minimum delay

Data acquire value-added by informing societal-relevant strategies for sustainable ocean use, blue economy, and emergent environmental challenges.