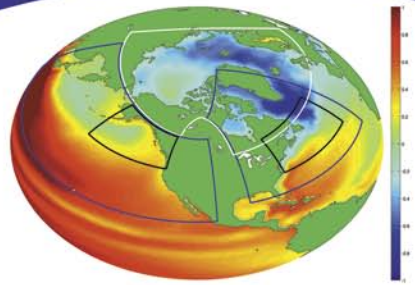
Making Ocean Forecasts More Available

The primary goal of the Centre for Ocean Model Development and Application (*COMDA*) is to increase the availability of information and forecasts for ocean currents, temperature, salinity, sea level, and other variables. COMDA has a network of operational oceanography systems throughout Canada. These systems will provide useful information for marine applications such as:

- ship routing
- search and rescue
- oil spill response
- habitat assessment
- ecosystem management

COMDA co-ordinates Fisheries and Oceans Canada (*DFO*) ocean modeling activities with other government agencies and departments, Canadian universities and industry. COMDA also collaborates with Environment Canada to produce a combined atmosphere-ice-ocean prediction system to provide improved and extended weather forecasts. Compared to the atmosphere, the ocean is more difficult to observe, and therefore, not as well understood; COMDA complements existing ocean observation programs by interpreting data to provide a more complete understanding and snapshot of the physical ocean environment. An important function of COMDA is to provide near-real-time ocean information for today, tomorrow, and the near future to end users such as the Canadian Coast Guard (*CCG*), the Department of National Defence and the Canadian public.



Model regions of various COMDA ocean forecasting systems in Canada

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Fisheries and Oceans Canada

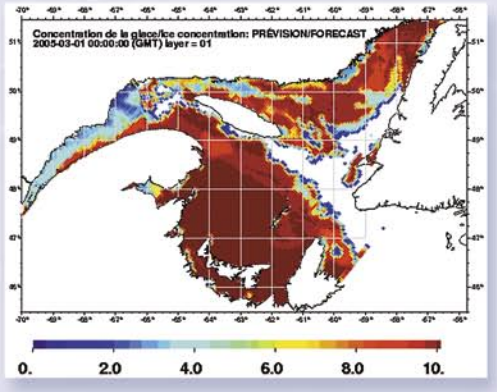
Centre for Ocean Model Development and Application (COMDA)

A Virtual Centre of Expertise

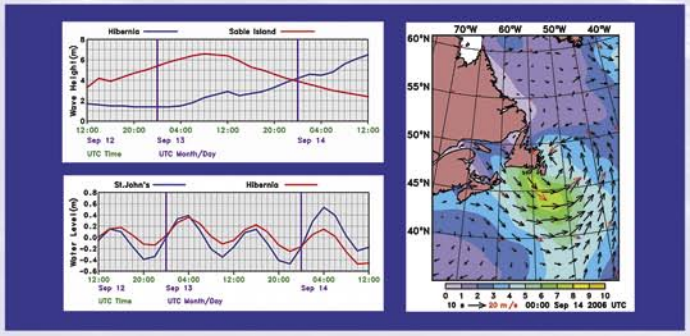
Canada

COMDA Scientists Develop Ocean and Ice Forecast Tools

During winter, the presence of ice in the Gulf of St. Lawrence impedes maritime transportation. The Institut Maurice Lamontagne (*IML*), a DFO laboratory in Mont-Joli, Quebec, estimates time-of-arrival and safe winter routes for ships. Their initial ice distribution estimates are obtained from Canadian Space Agency satellite images. Ocean models for the Canadian Atlantic coast, developed at IML and DFO's Bedford Institute of Oceanography, are also used by Environment Canada for sea ice forecasting. Please visit ***www.osl.gc.ca***



COMDA scientists enhance models to improve the availability of ocean current and surface temperature information to users such as the CCG. The CCG must accurately estimate the at-sea location of drifting liferaft and other search targets. Improved ocean models will include wave information to provide the best available estimate of surface currents allowing the CCG to more effectively search for survivors. The same models also produce wave height and water level predictions for specific near-and offshore sites.

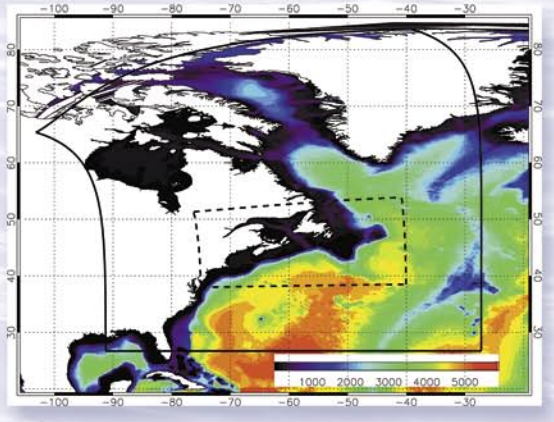


Clockwise from right: Wave Height & Direction; sea height changes in St. John's and at Hibernia; changes in wave height.

Canada-Newfoundland Operational Ocean Forecasting System

The Canada-Newfoundland Operational Ocean Forecasting System (*C-NOOFS*) is a COMDA pilot project which will develop a regional ocean forecasting system for the northwest Atlantic, with special emphasis on eastern Canadian waters.

C-NOOFS uses data-gathering techniques like equipping diving animals, such as seals, with sensors to measure ocean salinity and temperature. The information collected by the seals is combined with satellite-based ocean data and incorporated into models to provide the best available ocean analysis. This work is being done in collaboration with the French ocean forecasting service (*MERCATOR*), the European ocean forecasting consortium (*MERSEA*), Environment Canada, and Canadian universities.



C-NOOFS Model Forecast Domain

COMDA Contributions to Search and Rescue

One of the developments of C-NOOFS is a scientific version of the Coast Guard's Canadian Search and Rescue Planning Program (*CANSARP*) software, which uses the latest wind and ocean current forecast to estimate target location. This will allow COMDA to demonstrate and validate the use of new ocean information prior to application in CANSARP.

Understanding Ecosystems

In addition to search and rescue applications, COMDA ocean modelling is used to improve the understanding of ecosystems. For example, a model developed at DFO's Gulf fisheries centre in Moncton, New Brunswick, is providing annual predictions of the ideal habitat for snow crab in the southern Gulf of St. Lawrence.