

PARTNER PERSPECTIVE

Canada and the Ocean Frontier



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change on one hand, and changing economic and societal use of the marine environment on the other. Economic development is extending and intensifying along coastlines and into deep water globally, facilitated by technology that makes vast regions of the unexplored, uncharacterized ocean accessible. With global population increasing towards 11 billion by 2100, it's hardly surprising that attention is focussed increasingly on the 70% of our planet's surface that is ocean. Canada, with the world's longest coastline bordering on three, very different oceans, holds a major stake in this final frontier.

The acceleration of societal and environmental change along the ocean frontier is remarkable. Associated with this, the magnitude and complexity of ocean-related risks are increasing, as evidenced by events such as Deepwater Horizon, Fukushima, and Hurricane Sandy. These events show that it is not sufficient to base policy and planning on risks of the past. Economic opportunity and protection of life, property and eco-

systems will depend on improved understanding and observation of the ocean and, in particular, on improved predictive capability as a basis for planning and response. Yet a case can be made that our global rush to the frontier is outpacing our ability to characterize and understand it. Realistically, given the connectedness and vastness of the ocean and the global nature of change, the situation can only be improved through international cooperation in research and development.

An important step in this direction took place in May 2013, in Ireland, where Canada, the US and the EU signed the *Galway Statement on Atlantic Ocean Cooperation*. This recognised "the importance of the Atlantic Ocean to our citizens, prosperity, human health and well-being, adaptation to climate and other environmental change, and security." A new tripartite Research Alliance was established to "increase knowledge of the Atlantic Ocean and its dynamic systems." Amongst several key areas, the Alliance calls for a "North Atlan-

tic multi-platform ocean observing and forecasting system driven by science and societal needs." Coordination of the Alliance is in the hands of US-EU and Canada-EU Working Groups. Within Canada, a Marine Working Group, under the leadership of Fisheries and Oceans Canada, is developing an overall Canadian response to this initiative.

The EU rapidly implemented several calls for proposals under the *Blue Growth* component of the Horizon 2020 research programme to support Galway Alliance initiatives. This included a call for research towards "deployment of an Integrated Atlantic Ocean Observing System (IAOOS) building on existing capacities on both sides of the Atlantic." Funding for the 1st round of Galway-related programmes was approximately EUR 30 million.

The Alliance and the Horizon 2020 calls are both an opportunity and a challenge to Canada. On one hand, the research can benefit Canada, given our shared interest with the EU and the US in the

Atlantic and Arctic Oceans. On the other hand, without active participation of Canadian researchers, there is no guarantee that Canadian priorities and needs will be addressed. Further, a significant amount of research under Horizon 2020 will be conducted by SMEs as the programme aims to create economic opportunity for European nations and businesses. The research is relevant to the needs and capacity of Canada's strong ocean industries, including the energy, fishing, and technology sectors. However, without a linked Canadian effort, how Canadian companies can participate in European-led research programs is at best unclear.

The Marine Environmental Observation Prediction and Response (MEOPAR) Network of Centres of Excellence is working closely with the Canadian Marine Working Group to develop a strategy to incorporate Canadian interests, needs and capacities into an Integrated Atlantic Ocean Observing System. Implementation will require a new, multisectoral

approach to planning and support of ocean observation along Canada's Atlantic coast: from northern Baffin Bay to the Gulf of Maine in the South. This region covers a number of areas of major economic, ecological and scientific significance. This approach could serve as an integrative model to manage Canada's three oceans, building on government, academic and private sector efforts in other regions, including activities of other ocean science networks. MEOPAR proposes to work cooperatively towards establishing: the new regional approach, a technology roadmap to guide choice and development of required technologies, and establishment of a number of sentinel areas along Canada's Atlantic coast where the interests and information needs of industry and scientific research, including the international research community, coincide and can be aggregated. These sentinel areas can become the observation posts required to observe, understand, protect and guide our activities along the ocean frontier.

"Our future depends on an informed relationship with the ocean."

The ocean has always presented humankind with economic opportunity coupled to risk and, as a consequence, has played host to a long history of accidents and disasters. Yet the human relationship with the ocean is changing rapidly, impacted by a confluence of environmental