



**CANADIAN OCEAN SCIENCE NEWSLETTER**

**LE BULLETIN CANADIEN DES SCIENCES DE L'OcéAN**

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## OCEAN SCIENCE PROGRAMS

### Trans-Atlantic Science

Submitted by George Rose<sup>1</sup>, Sheena Fennell<sup>2</sup>, Conor Ryan<sup>3</sup>, and Emily Wilson<sup>4</sup>

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The 65.5m multi-purpose research vessel *Celtic Explorer* departed Horgans Quay in Cork, Ireland on the 29<sup>th</sup> of Jan 2011, crossing the North Atlantic and arriving in St. John's, Newfoundland and Labrador, on Feb. 6<sup>th</sup>, returning to Ireland in early March after completing research on the Newfoundland continental shelf. The *Celtic Explorer* is owned by the Irish Marine Institute in Galway, Ireland. The vessel was chartered for this research by the Centre for Fisheries Ecosystems Research at the Marine Institute of Memorial University in St. John's. The *Celtic Explorer* vessel is super-quiet, being compliant with ICES CRR Report 209 for acoustic survey vessels, with a drop keel housing 4 acoustic transducers.

The voyage across the North Atlantic was made to conduct research on the fish stocks and oceanography of the Grand Banks region, a project of the Centre for Fisheries Ecosystems Research. During the crossings, the opportunity existed to simultaneously measure the thermal and salinity structure of the North Atlantic Basin, the acoustic backscatter from the deep ocean, and the occurrence of seabirds and marine mammals. These initial transects were the first of a multi-year and multi-disciplinary ocean research program co-designed by the Irish-Newfoundland team which will see the *Celtic Explorer* make similar crossings and develop a more extensive research program in the springs of 2012 and 2013. The equipment used included XBTs and XCTDs, a Simrad EK60 split-beam echosounder firing 4 transducers (18, 38, 120 and 200 kHz), a towed hydrophone system capable of detecting marine mammal soundings, and binoculars to sight surface going sea-birds and mammals.

## CNC-SCOR

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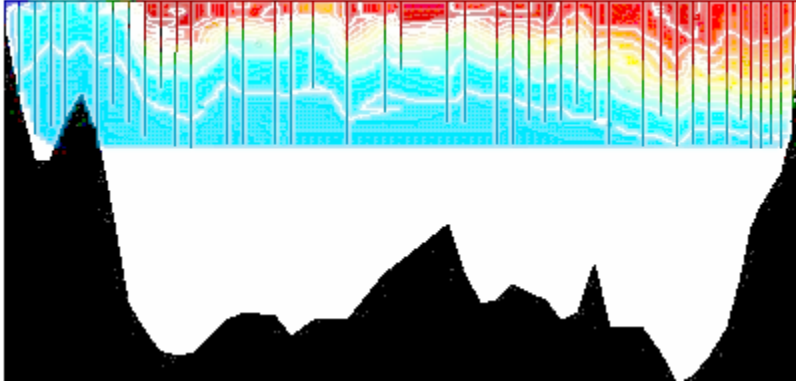
The Canadian National Committee of the Scientific Committee for Oceanic Research (CNC-SCOR) fosters and facilitates international cooperation. It is a non-governmental body that reflects the multi-disciplinary nature of ocean science and marine technology.

Le Comité national canadien du Comité scientifique de la recherche océanographique (SCOR) favorise et facilite la coopération internationale. Il reflète la nature multidisciplinaire de la science océanique et de la technologie marine.



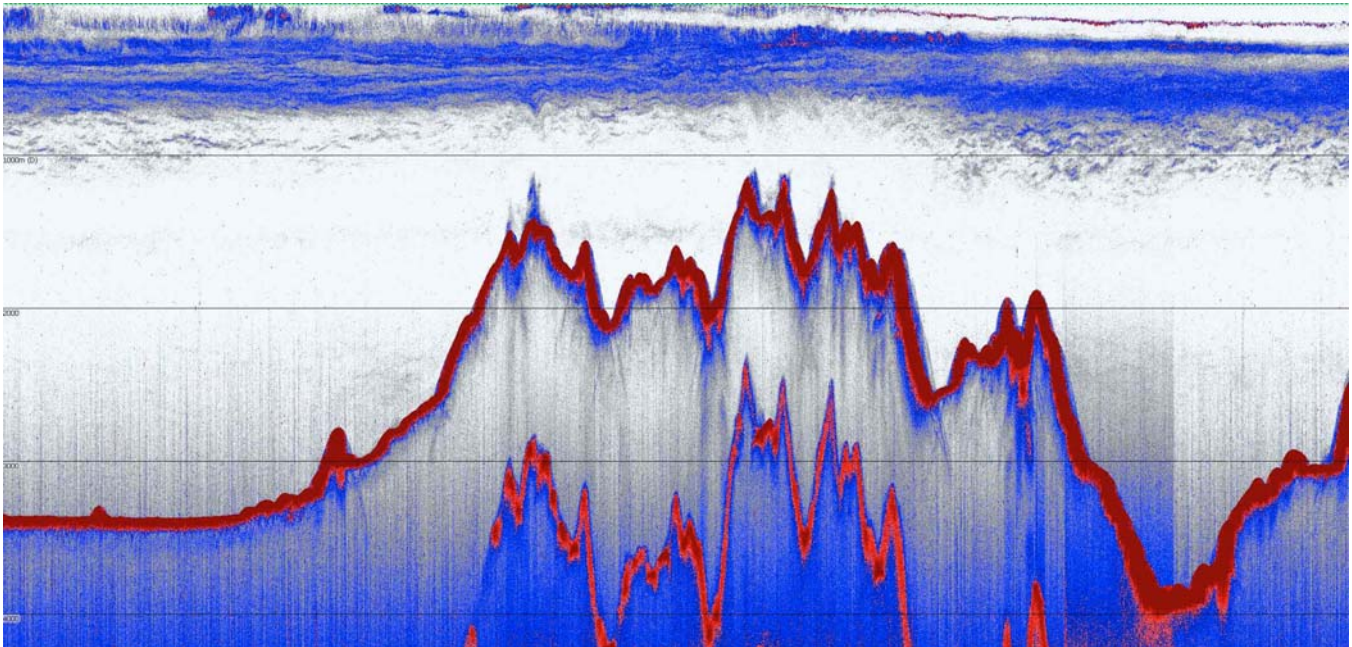
*Fig. 1: Distribution of XBT's and XCTD stations. Green denotes XBT, Pink denotes XCTD and Blue denotes poor quality data*

The initial oceanographic program consisted of XBT or XCTD deployment each 30 nautical miles. They began at the 200 m isobath south west of the Mizen, Ireland and ended on the Grand Banks, with exceptions on the evenings of the 1<sup>st</sup> 2<sup>nd</sup> and 3<sup>rd</sup> of Feb when winds broached 60 knots and seas >12 m, making deployments impossible. All in all, 50 sampling stations were occupied on the East to West transect (Fig. 1). Many detailed thermohaline features were evident, the most striking being the dramatic decrease in surface temperature and salinity east of the Grand Banks at the front between the Labrador Current and North Atlantic Drift. In this region there was a strong halocline between 100-200m with well mixed waters below.



*Fig. 2: Caption: Cross-section of the North Atlantic Basin showing thermal structure on the East to West transect. The front and eddies near the meeting of the North Atlantic Drift (Gulf Stream) and Labrador Current west of the Grand Banks ( 40-45 deg W) is the most striking feature, with other putative eddies forming further East.*

Acoustic data were collected continuously on both crossings, using all 4 frequencies, with daylight seabird and marine mammal observations on both crossings. A towed hydrophone detected marine mammal soundings when conditions permitted (intermittent on the rougher East to West transect, continuously on the West to East transect).



*Fig 3: Echogram (18 kHz) over the mid-Atlantic Ridge, showing the “deep scattering layer”, comprised mainly of Myctophid fishes (lanternfish) and krill (Euphausiids), and nearer surface backscatter. The threshold is set to -80 dB. The frequency dependence of the signal is being investigated.*

These trans-Atlantic crossings provide a unique opportunity to gather climatic, oceanographic and bio-ecological data on the North Atlantic basin. More extensive research is being investigated for the crossings in 2012 and 2013, based on proposed collaborations with the EURO-BASIN project, including the use of a Video Plankton Recorder and sampling of larger pelagic organisms. Data have also been shared with oceanographers in Canada and the USA.

**Acknowledgments:** The vessel and crew experienced tough weather on the crossing and thanks are extended to all involved on the *R.V. Celtic Explorer* for a safe crossing.. Thanks to Aodhan Fitzgerald for all the help on deploying the XCTD's and XBT's and to shore crews on both sides of the Pond. This work was funded by the Department of Fisheries and Aquaculture and the Research Development Corporation of Newfoundland and Labrador.

### **New SCOR Working Group Proposals**

SCOR has put seven proposals for new working groups out for comment ([click](#)):

- Surface waves in ocean and climate system
- “International nutrients scale system” to improve the global comparability of nutrient data
- Marine ecosystem reorganization under climate change
- Sea-surface microlayers
- Quality control procedures for oxygen and other biogeochemical sensors on floats and gliders
- Ecosystem essential ocean variables for measuring change in the biological properties of marine ecosystems
- The reassessment of marine dinotrogen fixation methodology and measurements

One or two of these proposals will likely be funded at SCOR's Annual Meeting in October. The proposals are intended to represent an international consensus of priority for the coordination and work needed to move these topics forward. Comments from any interested scientist are welcomed, with the procedure being outlined at the link above.

## **MEETINGS**

### **The Ocean in a High CO<sub>2</sub> World, Monterey, CA 24-27 Sept. 2012**

The Third International Symposium on the ocean in a high CO<sub>2</sub> world will take place in Monterey, California, sponsored by SCOR, IOC, and IGBP. The symposium will offer the worldwide community of scientists working to understand ocean acidification opportunities to share their research results and develop new research collaborations ([click](#)). Registration is temporarily closed due to the large number of registrants, but a waiting list has been opened.

### **IMBIZO III, Goa, India, 28-31 Jan 2013**

IMBER is holding three interdisciplinary workshops in Goa, India, 28-31 January 2013 ([click](#)). The three concurrent workshops cover the topics:

- Biogeochemistry-ecosystem interactions on changing continental margins;
- The impact of anthropogenic perturbations on open ocean carbon sequestration via the dissolved and particulate phases of the biological carbon pump;
- Understanding and forecasting human-ocean-human interactions, drivers and pressures, with respect to global change.

The deadline for abstract submission is **July 15**. To ensure an environment conducive to interaction and discussion, each workshop will be limited to approximately 40 participants. For a diversity of scientific interests, participants will be selected according to their research interests and the abstracts they submit.

## PERSONNEL

### Paul Myers



The new chair of CNC-SCOR is Paul Myers, an Associate Professor (Professor as of July 1, 2012) in the Department of Earth and Atmospheric at the University of Alberta. Paul is a physical oceanographer who grew up with an interest of the sea from a young age that developed from listening to his grandfather's stories as a deep sea trawler skipper. Many years later and after many years living inland away from the oceans, a developing interest in fluid dynamics and numerical methods gained while obtaining a B. Math degree from the University of Waterloo in 1990 brought Paul back to the oceans. This then led to an M.Sc. from McGill in 1992 and a Ph.D. from the University of Victoria in 1992. After 3 years working in the United Kingdom at the University of Edinburgh as a postdoctoral research fellow, he returned to Canada to take up a faculty position at Memorial University of Newfoundland, before moving to the University of Alberta in 2001 where he has been since. He has been actively involved in both SCOR and CMOS (locally as well as nationally)

over the past decade, being the SCOR Tour Speaker to Eastern Canada in 2011 and the CMOS President in 2007-2008.

Today, Paul's research is a mixture of data analysis as well as numerical modelling. He is interested in the role of freshwater in the North Atlantic, both in terms of observed changes as well as how to properly represent this quantity in numerical models and what those models can tell us of observed variability. Linked to this is a desire for a greater understanding of the links between the Atlantic and the Arctic Oceans, and especially the role that is played by the straits and passageways of the Canadian Arctic Archipelago. He also does some work on the Gulf of Alaska and the North Pacific.

As the new chair of CNC-SCOR, Paul welcomes contact from scientists about concerns in marine sciences and oceanography in Canada that CNC-SCOR might examine and, hopefully, address ([click](#)).

## JOBS & TRAINING

### Professeure ou professeur régulier en biologie marine, UQAR

L'Université du Québec à Rimouski (UQAR) désire engager une professeure ou un professeur régulier en biologie marine ([cliquer](#)). La personne retenue sera associée au Département de biologie, chimie et géographie (DBCG). Elle aura une responsabilité d'enseignement aux trois cycles universitaires, notamment au sein de la

concentration «sciences marines» du baccalauréat en biologie et interagira directement avec le personnel scientifique rattaché au DBCG. Les recherches des professeurs de ce département qui sont associées au domaine des sciences de la mer concernent l'étude et l'aménagement des organismes et écosystèmes marins et côtiers, l'écologie comportementale, l'écologie microbienne, la biologie adaptative et évolutive, la paléontologie et la biologie du développement des poissons, la télédétection et la géochimie. Ces travaux traitent d'aspects tant fondamentaux qu'appliqués. Ces chercheurs sont fortement impliqués dans plusieurs regroupements de recherche tels que le Centre d'études nordiques (CEN), ArcticNet, Québec-Océan, et le Groupe de recherche sur les environnements nordiques (BORÉAS).

Les personnes intéressées sont priées de soumettre leur dossier de candidature incluant un CV, deux lettres de recommandation et un échantillon des publications les plus pertinentes, **avant 17 h le 31 août 2012**.

International oceanographic job opportunities are posted on the CMOS site ([click](#)).

*Looking for work? Try the CMOS site ([click](#))*

## GENERAL

### Managing the Risk of Extreme Events

The Intergovernmental Panel on Climate Change has released a report titled "Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation" ([click](#)). While some extreme weather and climate events lead to disasters, others do not. Policies to avoid, prepare for, respond to and recover from the risks of disaster can reduce the impact of these events and increase the resilience of people exposed to extreme events. At the same time, the IPCC notes severe challenges for adaptation when thresholds or tipping points associated with social and/or natural systems are exceeded.

"The main message from the report is that we know enough to make good decisions about managing the risks of climate-related disasters. Sometimes we take advantage of this knowledge, but many times we do not," said Chris Field, Co-Chair of IPCC's Working Group II, which together with Working Group I produced the report. "The challenge for the future has one dimension focused on improving the knowledge base and one on empowering good decisions, even for those situations where there is lots of uncertainty."

### Progress Towards AR5

The IPCC has opened its expert review period for the first order draft of Working Group II, covering impacts, adaptation and vulnerability. It runs from 11 June to 6 August 2012. Working Group II assesses the scientific, technical, environmental, economic and social aspects of the vulnerability (sensitivity and adaptability) to climate change of, and the negative and positive consequences for, ecological systems, socio-economic sectors and human health, with an emphasis on regional sectoral and cross-sectoral issues.

The review is being coordinated by the Technical Support Unit (TSU). Experts interested in participating in the review can send an email to the TSU coordinator ([click](#)).

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Previous newsletters may be found on the CNC/SCOR web site.  
Les bulletins antérieurs se retrouvent sur le site web du CNC/SCOR.

Newsletter #66 will be distributed on 31 August, 2012. Please send contributions to Bob Wilson, [wilson@telus.net](mailto:wilson@telus.net)  
Bulletin #65 sera distribué le 31 août 2012. Veuillez faire parvenir vos contributions à Bob Wilson, [wilson@telus.net](mailto:wilson@telus.net)

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