



Report on Activities During 2012

Purpose:

The purpose of SCOR is to further international scientific activity in all branches of oceanic research. The Scientific Committee on Oceanic Research (SCOR) is a non-governmental organization, created in 1957 by the International Council of Science (ICSU). SCOR promotes international cooperation in planning and conducting interdisciplinary oceanographic research programs and solving methodological and conceptual problems that hinder research. SCOR promotes scientific excellence and integrity and has direct access to the international ocean science community. The primary purpose of CNC-SCOR is to provide communication between the Canadian Ocean Science community and the international activities that come under SCOR's umbrella. Under the auspices of CMOS, CNC-SCOR brings together the Canadian Ocean Science community across disciplinary boundaries and the boundaries of universities, government and private sector organizations.

CNC-SCOR Highlights for 2012

CNC-SCOR's Annual Meeting was held 28 May, 2012 in conjunction with the 46th Annual CMOS Congress, in Montreal. CNC-SCOR also hosted the 2012 Annual Meeting of SCOR-International in the Halifax/Dartmouth area, from 20 to 24 October, the first time SCOR had met in Canada since 1994. Over 40 senior marine scientists from around the world assembled to conduct the Committee's annual business and discuss funding priorities. CNC-SCOR was represented by the Chair, Dr. Paul Myers, and Prof Bjorn Sundby. The provided a networking opportunity for oceans companies to meet high profile ocean scientists from other countries. The international delegates took a day to listen to presentations at a Fisheries and Oceans Canada climate change workshop, associated with celebrations of the 50th anniversary of the Bedford Institute of Oceanography. A dinner for the international delegates was held at the Halifax Maritime Museum, receiving very positive comments from the delegates.

DFO did not renew its contribution agreement to CNC-SCOR for the year 2012/13. The resulting budget deficit of approximately \$18,700 for CNC-SCOR's year 2012 was a significant drain on the Committee's financial reserves. Negotiations for a renewed contribution in 2013 are underway.

Small international Working Groups (WGs) are the core of SCOR's activities. These WGs -- not more than 10 members -- are established in response to proposals submitted to SCOR by the international ocean

science community. In general, they are established to address well-defined topics of emerging importance that would benefit from coordinated international attention. WGs are expected to provide a final report, organize a workshop or symposium, or otherwise make significant contributions to advancing the topic at hand within a 3 - 4 year period. Canadian participation on SCOR Working Groups has declined. Currently, six senior Canadian scientists serve on four of the nine active WGs.

CNC-SCOR reviewed the proposals for seven new international working groups, providing detailed written comments and a prioritized list to SCOR's Executive Director. These proposals, none of which originated in Canada, were discussed in detail during the year and at the Annual Meeting of SCOR in Halifax/Dartmouth. The International Committee approved two new initiatives: WG 141 on sea-surface microlayers; and WG 142 on quality control procedures for oxygen and other biogeochemical sensors on floats and gliders. The proposals for both groups were also the highest priorities for CNC-SCOR.

As the Argo program seeks to expand its capabilities, quality control procedures for oxygen and other biogeochemical sensors on floats are an important constraint. Canada has been a leader in adopting and promoting Argo and refining its technology. Katja Fennel (Dalhousie) and Denis Gilbert (DFO) are members of the new WG 142.

CNC-SCOR published seven electronic issues of the Canadian Ocean Science Newsletter during 2012. The subscriber database is dynamic and is continually reviewed to eliminate non-functioning addresses. The subscriber base has been declining slowly over the last three years, from approximately 445 in May, 2009 to about 415 in December, 2012. In addition to articles on ocean science and updates in ocean science programs, the newsletter reports milestones in the careers of Canadian ocean scientists and includes job postings and training opportunities for graduate students, young scientists and teachers. The newsletter provides periodic status reports on the work of SCOR's international Working Groups, written, where possible, by the Canadian representatives.

CNC-SCOR sponsored one NSERC Scholarship Supplement for Ocean Sciences in 2012, in the amount of \$5,000, which was presented at the CMOS Awards banquet in June, 2012 to Cara Manning, a Canadian Ph.D. student at the Woods Hole Oceanographic Institute. Her research focuses on the use of at-sea mass spectrometers to obtain continuous measurements of biological production and air-sea gas exchange. She plans to build a mass spectrometer to measure the noble gases Ne, Ar, Kr, and Xe in surface waters. Measurements of several noble gases can be used to develop a parameterization of air-sea gas exchange, capitalizing on the unique physiochemical properties of each gas. The new instrumentation will be tested during seasonal ice melt in Canada's Arctic and the Bras d'Or Lake in Nova Scotia. Ali Mashayek, the 2011 NSERC Scholarship Supplement winner, was ineligible for the usual second-year renewal for technical reasons.

CNC-SCOR annually supports a national lecture tour to foster cross-Canada communication in ocean science. Two prominent Canadian scientists are selected to travel and speak in oceanographic centres on the opposite side of the country. These tours promote ocean science, support student education through the talks at universities, and help the speakers build professional networks. In 2012, the

speakers were Eddy Carmack, DFO-IOS (centres from Ottawa east) and Ken Frank, DFO-BIO (centres from Winnipeg west). Dr. Carmack visited Ottawa, Montreal, Quebec, St. John's, Dartmouth and Halifax, speaking on *Three Oceans Around Canada: Roles of the Interconnected Arctic and Subarctic Oceans in Global Change*. Dr. Frank gave his talk *Dynamics of Exploited Marine Ecosystems* at centres in Winnipeg, Edmonton, Vancouver, Victoria and Nanaimo. Both tours were conducted in the week of November 19, 2012. The CMOS-sponsored tour speaker for 2013 was Dr. Denis Gilbert from DFO, who spoke on *Oceans and Climate Change*.

For a third year, CNC-SCOR provided financial support to a school teacher to participate in Project Maury, which involves training at the US Naval Academy in Annapolis, Maryland. Project Maury promotes understanding of the physical foundations of oceanography through a dedicated training course directed at school teachers. In 2012, CNC-SCOR and CMOS jointly sponsored Thea Black, from the École Puntledge Elementary, in New Brunswick. The workshop included a wide range of oceanographic topics and activities on-site (classroom and lab) and off-site, including a field trip on a research vessel. Changes were made to the way this opportunity was advertised to teachers for the 2013 year to more broadly promote it to potential participants.

CNC-SCOR's ongoing capacity-building work was highlighted in the February, 2012 newsletter of SCOR-International.

The annual update was made to the list of masters' theses and doctoral dissertations completed in ocean science at Canadian universities, and a ten-year summary was compiled. The list can be found on CNC-SCOR's web pages. Data were assembled from departmental website listings, library catalogue searches and the Thesis Canada portal. There are still a few gaps, e.g., no list for Trent University, which awards graduate degrees in environmental science to ocean science students. Nevertheless, the record for 2011 is likely to capture most graduate ocean science degrees awarded by Canadian universities. In that year, Canadian universities awarded at least 40 Master's degrees and 19 Ph.D.'s in SCOR's area. The list was accessed by the Council of Canadian Academies as part of their work on Canadian Ocean Science activities.

SCOR-International partners with other organizations to sponsor several large scale international science programs. Of these, Canadian scientists serve on the committees for GEOHAB, IMBER, GEOTRACES, SOLAS, and IMAGES. CNC-SCOR provides another way for these programs to communicate updates to the Canadian community in the Newsletter. GEOHAB held an open science meeting at UVic in 2012, providing opportunities for Canadian scientists in this field. A \$4.8 million, 5-year grant was awarded through NSERC's Climate Change and Atmospheric Research (CCAR) program to a research network led by Roger François, at UBC, to participate in a multi-national GEOTRACES effort in the Arctic Ocean. The Canadian Arctic GEOTRACES Program will provide fundamental new information on the distribution of trace elements that can regulate biological and geochemical cycles in seawater. CCAR also awarded a 5-year, \$5 million grant to the Ventilation, Interactions and Transports Across the Labrador Sea (VITALS) program, a multi-investigator initiative led by CNC-SCOR Chair Dr. Paul Myers. The VITALS network will

answer fundamental questions about how the deep ocean exchanges carbon dioxide, oxygen, and heat with the atmosphere through the Labrador Sea.

Two Committee members helped Dalhousie University review the terms of reference for a graduate scholarship in ocean science, awarded to a deserving candidate from a developing country. The terms of reference for the Professor F Ronald Hayes International Scholarship require a periodic review by two independent members of CNC-SCOR.

Three Committee members participated in an initiative of the Council of Canadian Academies to identify research directions for Canadian ocean science.

CNC-SCOR maintains an internally circulated file showing actions agreed to and milestones reached for each year. A mid-term meeting was held by conference call on 29 November 2012 to discuss progress and take decisions on outstanding items.

Other CNC-SCOR activities included: working with sister organizations in Canada and abroad on ocean research initiatives; and maintaining its web site (<http://cmos.ca/scor/scorindexe.html>). CNC-SCOR's pages on the CMOS website are maintained by the CMOS_webmaster, Bob Jones. Among the various pages are background information on CNC-SCOR, a membership list, information about and links to ocean science activities, and historical photos of Canadian oceanographers and vessels. All material stored on the site is searchable, and past copies of the newsletter can be retrieved.

CNC-SCOR Members Active in 2012

Rob Macdonald (Chair through May, 2012), DFO/IOS

Bjorn Sundby, ISMER, Université du Québec à Rimouski

Paul Myers, U Alberta (Chair from June, 2012)

Alfonso Mucci, McGill

Len Zedel, Memorial

Paul Snelgrove, Memorial (from June)

Martin Taillefer (Maritime Way Consulting) from June

Céline Guégen (Trent) from July

Catherine Johnson, DFO/BIO (until October)

Markus Kienast, Dalhousie

Ian Perry, DFO/PBS

Bob Wilson (Secretary), retired

Helen Joseph, (ex-officio), DFO HQ

Bill Crawford (ex-officio until June), IAPSO

Blair Greenan (ex-officio from June), IAPSO

Dave Fissell (ex-officio until June), CMOS

Norm McFarlane (ex-officio from June), CMOS

Michael Scarratt (ex-officio, from June), SOLAS

Ian Rutherford (ex-officio), CMOS Executive Director