CANADIAN OCEAN SCIENCE NEWSLETTER
LE BULLETIN CANADIEN DES SCIENCES DE L'OCÉAN

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Contents

OCEAN SCIENCE PROGRAMS

New Working Groups

Two new Working Groups were approved by the SCOR Executive at this year's executive meeting.

WG 139: Organic Ligands – a Key Control on Trace Metal Biogeochemistry in the Oceans will focus on advancing our understanding of trace metal-binding organic ligands in the oceans by bringing together expertise ranging from aquatic organic geochemistry to trace metal electrochemistry. Over a 4-year period the working group will:

(1) Summarize published results from electrochemical and organic geochemistry techniques to identify future collaborative research directions towards targeting specific approaches to determine the structure and source of metal-binding ligands;
(2) Expand upon the ligand intercalibration programme, initiated by GEOTRACES, to evaluate key analytical issues with currently employed methodologies and determine how best to link ongoing efforts in trace metal and organic geochemistry to assess natural metal-binding ligands;
(3) Identify how to best incorporate published and future data into biogeochemical models;
(4) Employ a suite of proposed workshops and working group meetings as a forum to debate the nature of sampling strategies and experimental approaches to be employed in laboratory and field efforts that are needed to determine the composition and structure of these ligands;
(5) Provide summarized recommendations at the proposed symposium for future research approaches into ligand biogeochemistry, especially with respect to complementing the ongoing decade-long GEOTRACES field efforts (*i.e.,* regional surveys and process studies) and the need for rapid incorporation of this research into biogeochemical models;
(6) Establish a web page for this SCOR working group, to promote a forum for discussion of ideas and results, soliciting input from the trace metal biogeochemistry, aquatic organic geochemistry and modelling communities, and provide a platform to propose special sessions on trace metal-binding ligands at international meetings such as Ocean Sciences, AGU and/or EGU.

WG 139 is chaired by Kristen Buck (Bermuda) and Maeve Lohan (UK). It has no Canadian members.

CNC-SCOR

Members/ Membres

Catherine Johnson (DFO-BIO)
Markus Kienast (Dalhousie)
Rob Macdonald – Chair (DFO-IOS)
Gordon McBean (UWO)
Alfonso Mucci (McGill)
Paul Myers (U Alberta)
Ian Perry (DFO-PBS)
Garry Stern (DFO-FWI)
Bob Wilson – Secretary
Len Zedel (Memorial)

Members Ex-Officio/ Membres d'office

Blair Greenan (IAPSO)
Helen Joseph (DFO-HQ)
Norm McFarlane (CMOS)
Ian Rutherford (CMOS)
Michael Scarratt (GEOTRACES)
Bjorn Sundby (SCOR Past President)

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 Comite 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.

WG 140: Biogeochemical Exchange Processes at the Sea-Ice Interfaces (BEPSII) will bring together sea-ice specialists from multiple disciplines and modellers of sea ice systems at the different scales, in order to:

(1) explore existing knowledge on the role of sea ice in influencing climate---relevant elemental fluxes,
(2) discuss and formulate the relevant biogeochemical processes and indentify gaps in our knowledge,
(3) explore and compile available field data needed for model validation, and
(4) stimulate integrated model development.

Nadja Steiner (EC-CCCMA) is a member of WG140.

Publishing Data

A report is available (click, pdf) from the recent SCOR/IODE/MBLWHOI Library Workshop on Data Publication, convened by SCOR, the International Oceanographic Data and Information Exchange (IODE) and the Marine Biological Laboratory/Woods Hole Oceanographic Institution Library (MBLWHOI Library). The session evaluated progress of two pilot projects and discussed related topics, such as implementation of data repositories in different data centres, cooperation with related national and international efforts, how data publication is handled in other disciplines, interactions with publishers of scientific journals, and the economic implications of data publication. A thrust of this initiative is to provide open access to datasets and link them to papers in the literature.

Planning for a New Polar Decade

The next session of the IOC will consider a resolution to initiate an International Polar Decade, staring in 2015. The invitation to participate comes from the World Meteorological Organization (WMO), which undertook to lead a planning process in May this year. The IOC will decide whether to cooperate with the WMO and other organizations in a multi-agency steering group to prepare a draft planning document, which would be submitted to the International Polar Year Conference in Montreal next April (please see below).

CARBOCHANGE

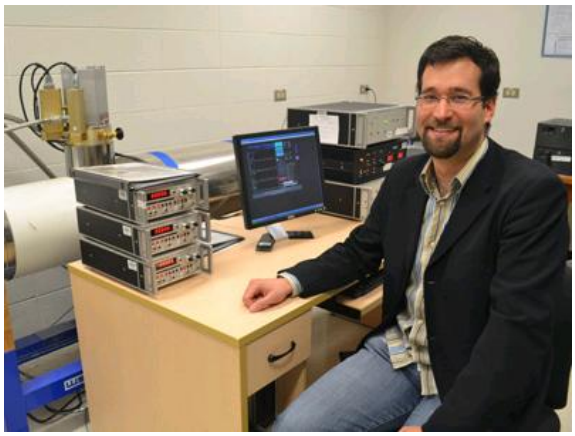
A 4-year project has been endorsed by SOLAS and IMBER, two SCOR-affiliated research programs, to quantify the ocean's role in uptake of human-produced carbon dioxide, to investigate how large this uptake rate has been in the past, how it is changing at present, and how it will evolve in the future. CARBOCHANGE will provide a process-based quantification of net ocean carbon uptake, under changing climate conditions, using past and present ocean carbon cycle changes for a better prediction of future ocean carbon uptake (click).

Over 100 scientists from 28 partner institutions will work on the project. Activities will improve the quantitative understanding of key biogeochemical processes (particle flux, ecosystem community structure, lateral advection) and physical processes (overturning circulation, ice cover, mixing) through a combination of observations and models. Participants will upscale new process understanding to large-scale models of the changing climate and will quantify probabilistic changes to oceanic carbon sources and sinks using coupled models. The key drivers for change will be identified. Observations of the changing ocean carbon sink will be integrated with the newest ocean carbon models, a coupled land-ocean model, an Earth system model of intermediate complexity, and fully fledged Earth system models through a spectrum of data assimilation methods as well as advanced performance assessment tools. The project will deliver the calibrated forecasts of

ocean pH and carbonate saturation needed by the research community on ocean acidification and others. Results of the project will be summarised and forwarded to policy makers working on climate change mitigation through specifically targeted outreach papers. The project leader is Heinz Christoph, at the University of Bergen.

PERSONNEL

Guillaume St-Onge



L'Université du Québec à Rimouski vient d'obtenir une Chaire de recherche du Canada en géologie marine. Son titulaire est le professeur Guillaume St-Onge, de l'UQAR-ISMER.

Les travaux de la Chaire nouvelle porteront sur les fonds marins et leurs sédiments. Les recherches effectuées par M. St-Onge aideront à comprendre les risques naturels, la variabilité naturelle du climat et l'histoire géologique dans le fjord du Saguenay, l'estuaire et le golfe du St-Laurent de même que l'Arctique. Un budget de 500 000 $ sur cinq ans est attribué à l'UQAR-ISMER pour cette chaire.

« Un des objectifs de la chaire est d'identifier, de caractériser, de dater et de déterminer les mécanismes responsables du dépôt des glissements sous-marins afin de connaître la fréquence et la magnitude de ces événements pour des régions particulièrement à risque », explique Guillaume St-Onge. « Des travaux seront aussi menés afin de déterminer comment se sont accumulés les sédiments que l'on retrouve dans l'estuaire et le golfe du St-Laurent et dans l'Arctique. »

Les changements climatiques arctiques seront également étudiés par M. St-Onge et son équipe. « Il y a deux phénomènes qui jouent actuellement, les gaz à effet de serre qui réchauffent la planète et la variabilité naturelle du climat qui varie à toutes sortes d'échelles de temps. On veut comprendre comment varie le climat aux échelles de temps décennal à millénaire. »

MEETINGS

International Polar Year Conference, Montreal, 22-27 April 2012

Early registration has opened for the International Polar Year (IPY) conference to be held next April in Montreal (click). Coming at a pivotal time for the environment of our planet, the IPY 2012 Conference draws international attention to polar regions, global change, and related environmental, social and economic issues. *From Knowledge to Action* will bring together over 2,000 Arctic and Antarctic researchers, policy- and decision-makers, and a broad range of interested parties from academia, industry, non-government, education and circumpolar communities, including indigenous peoples. The conference will contribute to the translation of new scientific findings into an evidence-based agenda for action that will influence global decisions, policies and outcomes over the coming years.

Conférence de l' Année polaire international, Montréal, le 22-27 avril, 2012

L'inscription hâtive est ouvert pour la conférence de l'Année polaire internationale (API) à Montréal, le prochain avril. La conférence de l'API 2012 attire l'attention de la communauté internationale sur les régions polaires, les changements globaux et les enjeux environnementaux, sociaux et économiques qui y sont reliés. De la connaissance à l'action réunira plus de 2 000 spécialistes de l'Arctique et de l'Antarctique, des décideurs et analystes politiques, ainsi qu'un grand nombre d'intervenants du milieu universitaire, de l'industrie, d'organismes non gouvernementaux, du monde de l'éducation, des collectivités arctiques et des peuples des régions circumpolaires. La conférence de l'API 2012 contribuera à véhiculer les nouvelles conclusions scientifiques des études polaires vers des programmes d'action concrets qui influenceront les décisions et les politiques de l'ensemble de la planète au cours des prochaines années.

JOBS & TRAINING

Physical Oceanographer, DFO - BIO

The Ocean Sciences Division of the Bedford Institute of Oceanography, in Dartmouth, N.S. is searching for a full time research scientist in physical oceanography (click). The position covers a broad spectrum of applied and basic, multi-disciplinary oceanographic research from coastal pollution issues, to continental shelf process studies, to long-term climate change. It requires knowledge of physical oceanographic processes and the ability to process, analyze and interpret a wide variety of oceanographic data using statistical, analytical and modelling techniques. Field work from small boats in the coastal zone and from large ocean-going vessels is expected. The position will also involve cross-disciplinary collaborations with marine biologists, marine chemists, sedimentologists and fisheries scientists.

The competition is open to residents of Canada and Canadians residing abroad and may be used to establish eligible candidates for temporary or permanent positions in Dartmouth and St. John's. The application deadline is **January 20, 2012.** For further information, please contact Charles Hannah (click).

Océanographe physicien(ne), MPO – BIO

La Division des sciences océanographiques de la Direction des Sciences est à la recherche d'un

chercheur scientifique ou d'une chercheuse scientifique en océanographie physique (cliquer). Le ou la titulaire devra réaliser des recherches multidisciplinaires appliquées et fondamentales dans un large éventail de domaines liés à l'océanographie (pollution côtière, processus relatifs au plateau continental, changements climatiques à long terme, etc.). Il ou elle devra connaître les processus liés à l'océanographie physique et être apte à traiter, à analyser et à interpréter un large éventail de données océanographiques à l'aide de techniques statistiques, analytiques et de modélisation. Il ou elle sera appelé à faire des travaux sur le terrain à bord de petites embarcations (dans la zone côtière) et de grands navires océaniques. Le ou la titulaire collaborera avec des biologistes de la vie marine, des chimistes marins, des sédimentologues et des scientifiques halieutistes.

Personnes résidant au Canada ainsi que les citoyens canadiens résidant à l'étranger. Un bassin de candidats peut être établi pour doter des postes semblables de durée permanente et/ou temporaire à Dartmouth, (N.-É.) et/ou St. John's,TNL. La date de limite est le **20 janvier 2012.** Pour de plus ample renseignments, veuillez contacter Charles Hannah (click).

Looking for work? Try the CMOS site (click)

GENERAL

2011 CNC-SCOR Speaking Tours

CNC-SCOR selects and sponsors two tour speakers each year, with the Secretariat working to establish the itineraries and help with logistics. The tour speaker going east in 2011 was Paul Myers, University of Alberta, whose topic was *Freshwater Processes and Transport in the Arctic and Sub-Polar North Atlantic.* Dr. Myers visited Ottawa, Rimouski, Quebec, Montreal, St. John's, Halifax and Dartmouth between October 21 and October 28. The speaker going west was Charles Gobeil, INRS Quebec, whose topic was *Biogeochemical Coupling of Elemental Cycles in the Arctic Ocean as Reflected by Sediment Records.* Prof. Gobeil visited Winnipeg, Edmonton, Sidney, Vancouver and Victoria between November 7 and November 15.

2011 US Carbon Cycle Science Plan Released

The first U.S. Carbon Cycle Science Plan was published in 1999 to improve understanding of the global carbon cycle and research coordination. The U.S. Carbon Cycle Interagency Working Group (CCIWG) and the Carbon Cycle Science Steering Group (CCSSG) have recently released an update and revision.

The new science plan (click, pdf) gives funding agencies information about the community-based research priorities for carbon cycle science over the next decade. The Plan emphasizes the long-lived, carbon-based greenhouse gases, carbon dioxide (CO2) and methane (CH4), and the major pools and fluxes of the global carbon cycle. International in scope, its success will depend partly on international cooperation and collaboration.

Six goals have been agreed:

- Provide clear and timely explanation of past and current variations observed in atmospheric CO2 and CH4 and the uncertainties surrounding them.
- Understand and quantify the socioeconomic drivers of carbon emissions, and develop transparent methods to monitor and verify those emissions.
- Determine and evaluate the vulnerability of carbon stocks and flows to future climate change and human activities, emphasizing potential positive feedbacks to sources or sinks that make climate stabilization more critical or more difficult.
- Predict how ecosystems, biodiversity, and natural resources will change under different CO2 and climate change scenarios.
- Determine the likelihood of success and the potential for side effects of carbon management pathways that might be undertaken to achieve a low-carbon future.
- Address decision makers' needs for current and future carbon cycle information and provide data and projections that are relevant, credible, and legitimate for their decisions.

Research over the coming decade will be focused on (1) sustained observations; (2) studies of system dynamics and function across scales; (3) modeling, prediction, and synthesis; and (4) communication and dissemination.

Global Carbon Project Update

The Global Carbon Project has released its update of the carbon budget and trends for 2010 (click). The project reports that the annual growth rate of atmospheric CO_2 was 2.36±0.09 ppm in 2010, one of the largest growth rates in the past decade. The average for the decade 2000-2009 was 1.9±0.1 ppm per year, 1.5±0.1 ppm for the decade 1990-1999, and 1.6±0.1 for the decade 1980-1989. The 2010 increase brought the atmospheric CO_2 concentration to 389.6 ppm, 39% above the concentration at the start of the Industrial Revolution (about 278 ppm in 1750). The present concentration is the highest during at least the last 800,000 years.

The project reports that natural land and ocean CO_2 sinks removed 56% of all CO_2 emitted from human activities in the period 1958-2010, each sink in roughly equal proportion. During this period, the size of the natural sinks has grown almost at the same pace as the growth in emissions, although year-to-year variability is large. There is the possibility, however, that the fraction of all emissions remaining in the atmosphere has a positive trend due to changes in emissions growth rate and decline in the efficiency of natural sinks.

Software Updates Available

Ocean Data View 4.4.2 is a software package for the interactive exploration, analysis and visualization of oceanographic and other geo-referenced profile or sequence data. Version 4.4.2, including many improvements, is now available for download (click) (Windows, Mac OS X, Linux, Solaris-i386).

CO2SYS for MATLAB has been updated to v1.1 **(**click). CO2SYS calculates and returns a detailed state of the carbonate system of oceanographic water samples.

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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 #62 will be distributed on January 27, 2012. Please send contributions to Bob Wilson, wilson@telus.net
Bulletin #62 sera distribué le 27 janvier 2012. Veuillez faire parvenir vos contributions à Bob Wilson, wilson@telus.net

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