

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

**Newsletter Number 55, January 27, 2011
Bulletin numéro 55, le 27 janvier 2011**

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OCEAN SCIENCE PROGRAMS

Proposal Call for New SCOR Working Groups

The SCOR Secretariat is accepting proposals for new working groups from now until **15 April 2011**. Information about proposal content and format and the operation of working groups can be found on SCOR's website ([click](#)). A new proposal can come from any individual or group of individuals but SCOR encourages prior discussion to work out any 'bugs'. Interested parties should contact the Chair of CNC-SCOR ([click](#)) for advice as soon as possible but, in any event, well in advance of the proposal deadline.

SCOR approves new working groups each year at its annual meeting. The number adopted depends both on the results of the proposal review process and the availability of funding. In recent years, one to three new working groups have been approved in any given year. SCOR is an organization that promotes science that comes from the "bottom up" in the ocean science community, and working groups are an important vehicle to bring attention to the important ocean science issues identified by the global community of ocean scientists.

Report: SCOR WG126 — Role of Viruses in Marine Ecosystems

Submitted by Curtis Suttle, University of British Columbia, Vancouver, BC ([click](#))

Viruses are by far the most abundant biological particles in the oceans, making them a massive repository for genetic capabilities and potential. Only in the last two decades has significant attention has been paid to the ecology of viruses in marine systems. The *Scientific Committee for Oceanographic Research* commissioned Working Group 126 to synthesize what we know to date about these important, obligate pathogens, but also to address deficiencies in standards for how viruses are studied.

Researchers from labs around the World attended meetings in Vancouver (Canada), Bergen (Norway) and Newark, Delaware (USA) to bring together their expertise in the study of viruses. Discussions at these meetings addressed many areas including the accuracy of methods for enumerating viruses in seawater, approaches for studying the diversity of viruses (that is, the number of different types of viruses and how many of each type there are), and how to quantify the impact of viruses on marine ecosystems as agents of mortality and nutrient cycling. Moreover, this group fully embraced the rapid advancements in molecular biology and the computational analysis of these data (bioinformatics) and ways to determine the genomic composition of viruses without the need to culture them!

Although WG126 has officially wrapped up, it produced several items of interest to the oceanographic community.

The first is a publication (ISME Journal **2**, 575–578) that discusses how viruses drive marine carbon and nutrient cycles ([click](#)). This paper highlights how viruses transform bacteria and phytoplankton into dissolved and particulate material that fuels further primary and secondary production.

The most significant contribution is the publication of a major reference work "**Manual of Aquatic Viral Ecology**" ([click](#)) edited by SW Wilhelm, MG Weinbauer and CA Suttle. This free-access volume, published by ASLO with the financial support of the Gordon and Betty Moore Foundation through its Marine Microbiology Initiative ([click](#)), brings together state-of-the-art techniques for studying viruses and viral process in aquatic systems. The manual

contains 19 chapters written largely by experts from within WG126, and provides step-by-step instructions, trouble-shooting and tips on procedures ranging from the enumeration and isolation of viruses to those involving the development of molecular biological probes for specific viruses and the use of fluorescent tags to make virus particles that can be visually tracked.

Perhaps the most important outcome of WG126 has been the establishment of camaraderie within the marine virus research community. Student and researcher exchanges have been seeded by the gathering of scientists with common interests, accelerating the rates of discovery and the trajectory of the group into the foreseeable future, as well as a commitment to continue to hold workshops in the future.

Report: SCOR WG130 on Automatic Plankton Visual Identification

WG 130 held its final SCOR-funded meeting last spring in Villefranche-sur-Mer, France. The members reported growth in the use of semi-automatic methods for plankton identification, for example, instruments coupled to automatic image analysis and software for specimen identification. Several studies by WG members explored issues of instrument inter-calibration, the exchange of data among users of different automatic analysis toolsets, and the potential use of non-linear, matched-filters for species identifications in the field. It is anticipated that these will be published in due course. A series of dissemination activities are being held to advertise the outputs of WG 130 to the wider community, including a special session at last summer's ASLO conference, a one-day workshop at the Zooplankton Productivity Symposium (ZPS) meeting in Pucon, Chile in March 2011, and a potential special issue of the *Journal of Plankton Research* on the topic of automatic visual plankton identification. (Contact Mark Benfield; [click](#))

Update: SCOR WG 132 on Land-Based Nutrient Pollution and the Relationship to Coastal HABs

WG 132 held its final meeting in Crete last October. The working group emphasized application of models at multiple scales. First, GlobalNEWS models were used as the basis for estimating nutrient loads and forms. These models have been advanced with inclusion of nutrient loads from aquaculture. Second, coastal typology models were used to estimate nutrient retention and how it impacts nutrient loads and ratios. Third, simulations with the POLCOM-ERSEM Global coastal ocean model were compared to total production and HAB occurrences in several specific oceanic regions, also based on GlobalNEWS data. A special issue of a journal is planned by the working group to highlight the emerging relationships among nutrient loads, phytoplankton production, biomass, and HABs. (Contact Patricia Glibert; [click](#))

Update: SCOR/IAPSO WG 133 on OceanScope

The OceanScope WG met at the International Chamber of Shipping in London last April to discuss and complete white papers on each of its terms of reference. The group will make the papers available for community comment in the near future. (Contact Arnold Furlong; [click](#))

Update: SCOR WG 134 on the Microbial Carbon Pump in the Ocean

This group got off to a fast start after its first meeting by publishing a paper in *Nature Reviews Microbiology* as a foundation for the group's work. A recent *Science News Focus* article (*Science* 328:1476-1477, 2010) features the microbial carbon pump: its origin, rationale, implications, applications, impacts, as well as prospects. The second WG 134 meeting will be held immediately after the ASLO meeting in Puerto Rico on 18-20 Feb. 2011. One focus of the meeting will be to consider experimental designs to test the effects of the microbial carbon pump. (Contact Susan Ziegler; [click](#))

Update: SCOR WG 137 on Patterns of Phytoplankton Dynamics in Coastal Ecosystems

The full name of this WG is Patterns of Phytoplankton Dynamics in Coastal Ecosystems: Comparative Analysis of Time Series Observation. The overall goal of this new WG is comparative analyses of human- and climate-induced changes of estuarine and coastal phytoplankton community structure and function. An initial meeting was held in Hangzhou, China last October, focussing on local and regional data sets and the frameworks for comparing indicators, trends and patterns of environmental change. Approaches were developed for comparing data sets from diverse regions and ecosystems, and work has begun on applying a set of research questions to the systems and areas under consideration. (Contact Hans Paerl; [click](#))

SCOR/POGO International Quiet Ocean Experiment

SCOR and the Partnership for Observation of the Global Oceans received funding from the Alfred P. Sloan Foundation to hold a workshop last October to explore the idea of an International Quiet Ocean Experiment. Participants from the scientific community, industry and several navies discussed the current knowledge of sound in the ocean, including effects on marine organisms, what could be learned if areas of the ocean could be quieted by ceasing some or all human generation of sound for a limited period, and other issues related to comparative studies of sound. They concluded that large-scale international observations and experiments are needed in relation to sound in the ocean. An open science meeting on the topic will be planned for late 2011. (Contact Ed Urban; [click](#))

PERSONNEL

Ken Denman



Ken Denman has taken up the post of Chief Scientist of the VENUS observatory (the Victoria Experimental Network under the Sea; [click](#)). He joined the VENUS team this month to develop the new water column theme in VENUS and to broaden collaborations with other scientists. His research interests address the effects of climate change on marine ecosystems and biogeochemical cycles, in particular: how will marine ecosystems adapt to a future ocean that will be warmer, more stratified, less oxygenated and more acidic? The cabled VENUS network, a part of Ocean Networks Canada ([click](#)), is operated from the University of Victoria.

For the last 10 years Ken worked at the Canadian Centre for Climate Modelling and Analysis, also located at UVic. He worked previously at the Institute of Ocean Sciences in Sidney BC and the Bedford Institute of Oceanography. He was a Coordinating Lead Author in the Second (1996) and Fourth (2007) IPCC assessments of climate change. Ken obtained a PhD in Physics and Oceanography from UBC. (source: UVic)

Curtis Suttle

Professor Curtis A. Suttle (FRSC) received the 2010 A.G. Huntsman award in November as recognition of his contributions to biological oceanography. Dr. Suttle is one of the World's leading marine virologists, and is among a small group of researchers credited with launching the field of marine virology nearly twenty years ago.

These studies demonstrated that viruses are not only the most abundant and genetically diverse biological entities in the World's oceans, but they are major agents of mortality. The results have had a significant impact on our understanding of nutrient and energy flow in the oceans, and have been a catalyst in the re-invigoration of phage biology and environmental virology. His contributions cross over many fields including biological oceanography, environmental microbiology, microbial ecology, virology and phycology.



Dr. Suttle has been Associate Professor (1996 – 2000), Professor (since 2000), and Associate Dean of Science (since 2001) at the University of British Columbia in Vancouver, British Columbia. He received his B.Sc. in zoology in 1978 and his Ph.D. in botany in 1987, both from UBC. His career has taken him to government laboratories and academic institutions in Canada, the United States, and Germany, with a significant amount of time (1988 – 1996) at the

University of Texas at Austin. (*source: A.G. Huntsman Award website*)

MEETINGS

CMOS Congress, June 5-9, Victoria BC

The annual CMOS Congress for 2011 is organised around the theme "Ocean, Atmosphere and the Changing Pacific" ([click](#)). The scientific program includes over 30 sessions covering atmospheric science, oceanography, climate science, cryospheric science, hydrology, biogeoscience and interdisciplinary work.

Abstract submissions are now open ([click](#)), deadline **February 11**. An abstract fee of \$50 will be charged at the time of submission. The deadline for student bursary applications is **February 25**.

Congr s SCMO, le 5-9 juin, Victoria, BC.

Le congr s SCMO 2011 discute la th me : "Oc an, Atmosph re et le Pacifique en Transition" ([cliquer](#)). Cette conf rence donnera l'occasion de diffuser les connaissances et les r sultats scientifiques en plus de 30 s ances sp ciales : l' atmosph re, l' oc anographie, le climat, l'interface atmosph re-oc an-glace, et les tudes interdisciplinaires.

Veillez soumettre vos r sum s  lectroniquement en avant **le 11 f vrier** ([cliquer](#)). Des frais de 50 \$ seront exig s au moment de la soumission. La date limite de demande de bourses d' tudiants est **le 25 f vrier**.

From Knowledge to Action: IPY Conference, April 22-27, 2012, Montreal

A conference in 2012 will be the final event of International Polar Year 2007 - 2008, the largest international program of interdisciplinary polar research ever undertaken. This conference will provide an opportunity to apply and disseminate the knowledge and scientific results from IPY from around the world and focus on next steps. Participants will consider ways to translate those new understandings into policy that will guide activities in and enhance stewardship of the polar regions.

The call for abstracts opens this June and registration in September. You can register to receive future e-mails from the organizers ([click](#)).

De la connaissance à l'action: conférence API, 22-27 avr il 2012, Montréal

La conférence de 2012 sur l'API est le dernier événement de l'Année polaire internationale 2007-2008, le plus grand programme international de recherches polaires interdisciplinaires jamais entrepris. Cette conférence donnera l'occasion d'appliquer et de diffuser les connaissances et les résultats scientifiques de l'API du monde entier et de se pencher sur les prochaines étapes. Les participants concevront des moyens de traduire ces nouvelles connaissances en politiques afin d'orienter les activités à venir et d'améliorer l'intendance des régions polaires.

La demande de communications s'ouvre en juin et le début des inscriptions en septembre. Veuillez remplir le déclaration d'intérêt pour recevoir d'autres annonces ([cliquer](#)).

JOBS & TRAINING

Director, NEPTUNE Canada

Ocean Networks Canada (ONC) has opened an application process for the position of Director, NEPTUNE Canada. Appointment will be for an initial five-year term, renewable subject to funding. This world-leading cabled ocean observatory began operations in 2009, delivering real time data to researchers around the world from the seafloor on the coastal margins of Vancouver Island out to the deep ocean at the Juan de Fuca Ridge. NEPTUNE Canada represents a capital investment of \$130M, with a \$12M annual O&M budget. A dedicated staff of 40 scientists, engineers, data management specialists and administrators maintain the subsea facility and data archive, and design new approaches to ocean data collection, management and distribution in partnership with the large scientific user community.

The Director's duties include:

- responsibility for overall leadership, advocacy and management of the observatory;
- leadership in building the Canadian and international user community;
- promotion of the role of ocean observation in understanding earth systems;
- strategic planning for maintaining excellence;
- future development and funding of the Observatory; and
- support for the vision of ONC in areas of ocean policy, outreach and private sector engagement.

A position description ([click](#)) and contact information can be found on ONC's website ([click](#)). Applications should be completed by **mid-February**.

Research Theme Integrator, NEPTUNE Canada

NEPTUNE Canada is looking for a research scientist in earth sciences with research experience related to dynamic processes of fluid fluxes and gas hydrates in the sea bed. Candidates should also have a strong quantitative background. The position involves working with users, instruments and data ([click](#)). The application deadline is **February 3**.

Project Maury – Training for School Teachers

The American Meteorological Society, CNC-SCOR and CMOS and will co-sponsor one elementary or high school teacher to attend this year's two-week summer workshop in oceanography at the US Naval Academy, in Annapolis MD. The workshop takes place July 11-22 and is aimed at providing pre-university science teachers with oceanographic teaching tools and an expanded network of contacts. Some fieldwork is included. More information, an application form and a report from last year's participant can be found on the CMOS website ([click](#)).

The application deadline is **March 8, 2011**. It's unlikely that many eligible Canadian school teachers read this newsletter, so please pass the information along to any you know would appreciate the opportunity. Further information can be obtained from Sheila Bourque ([click](#)).

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

GENERAL

A User-Friendly Seawater Carbon Calculator for Windows, Mac OS X, and iOS (iPhone)

A user-friendly, stand-alone application for the calculation of seawater carbonate system parameters ([click](#)) has been developed by the U.S. Geological Survey in response to its Ocean Acidification Task. The application, by Mark Hansen and Lisa Robbins, USGS St. Petersburg, FL, Joanie Kleypas, NCAR, Boulder, CO, and Stephan Meylan, Jacobs Technology, St. Petersburg, FL, is intended as a follow-on to CO2SYS, originally developed by Lewis and Wallace (1998; [click](#)) and later modified for Microsoft Excel[®] by Denis Pierrot (Pierrot 2006; [click](#)). Besides eliminating the need for using Microsoft Excel on the host system, CO2calc offers several improvements on CO2SYS described in the first link above.

Atmosphere-Ocean

Having recently acquired considerably more capacity by entering into a partnership agreement with major publisher Taylor & Francis, *Atmosphere-Ocean* ([click](#)) would like to receive more submissions. The content of the journal is generalist but, being Canadian, A-O specially welcomes papers on the Arctic and Northern latitudes. The journal's remit includes biogeochemistry.

Thanks to a new online manuscript submission and review system, processing time can be significantly reduced. Page charges will be waived for Canadian authors publishing in *Atmosphere-Ocean* if they have not previously been the first and corresponding author of another paper in the journal ([click](#)).

All members of CMOS have free access to the electronic version and may purchase a print subscription at a much reduced price. The latest issue, Volume 48-4, available from the CMOS website ([click](#)) or the *Atmosphere-Ocean* link, features an interesting special section on IPY oceanographic research.

Oceans and the Law of the Sea

The UN Division for Ocean Affairs and the Law of the Sea has released a report from the UN Secretary-General on 'Oceans and the Law of the Sea'. It includes sections on: the UN Convention on the Law of the Sea (UNCLOS) and its implementing agreements, marine science and technology, conservation and management of marine living resources, marine biological diversity, protection and preservation of the marine environment and sustainable development, and climate change and oceans ([click](#)).

Ocean Fertilization for Policymakers

A Scientific Summary for Policymakers on Ocean Fertilization, commissioned by the Intergovernmental Oceanographic Commission and prepared with the assistance of the Surface Ocean Lower Atmosphere Study (SOLAS), is now available online ([click](#); pdf) and in print. The 20-page Summary considers the practicalities, opportunities and threats associated with large-scale ocean fertilization.

The document focuses on scientific issues that led the Convention on Biological Diversity (CDB) to recommend a moratorium on fertilization in the open ocean three years ago. A regulatory framework under development by parties to the London Convention and London Protocol would ban commercial ocean fertilization and help regulate scientific experiments. The Summary highlights uncertainties about the effectiveness and side effects of these activities.

New Publications

The European Project on Ocean Acidification (EPOCA) has released an accessible layperson's guide to ocean acidification. Both French and English versions are available ([click](#)).

The GO-SHIP Panel has released a manual of detailed instructions for the high quality collection and analysis techniques of numerous ocean parameters, both physical and biogeochemical ([click](#)). Sixteen chapters covering CTD methods, discrete samples, and underway measurements have been reviewed and revised by more than 50 experts.

The Global Climate Project (GCP) has updated its budget for carbon emissions and sinks through 2009 ([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 #56 will be distributed on March 17, 2011. Please send contributions to Bob Wilson, wilson@telus.net
Bulletin #56 sera distribué le 17 mars 2011. Veuillez faire parvenir vos contributions à Bob Wilson, wilson@telus.net

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