



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

**Newsletter Number 60, 29 October, 2011  
Bulletin numéro 60, le 29 octobre 2011**

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## OCEAN SCIENCE PROGRAMS

### Towards an ecological status report for phytoplankton and microbial plankton in the North Atlantic

*Submitted by William Li, Fisheries and Oceans Canada, Bedford Institute of Oceanography, Dartmouth NS.*

The Working Group on Phytoplankton and Microbial Ecology (WGPME) of the International Council for the Exploration of the Sea (ICES) recently convened a theme session on “Ecological response of phytoplankton and other microbes to global change processes in ocean basins, shelf seas, and coastal zones” at this year’s science conference in Gdańsk, Poland. As a follow up to the ICES status report on climate change in the North Atlantic<sup>1</sup>, WGPME is working towards an ecological status report for phytoplankton and microbial plankton in the North Atlantic.

The cooperative research agenda for WGPME is based on the successful model of WGZE for the ICES zooplankton status report<sup>2</sup>. To date, WGPME has a collection of data from dozens of discrete monitoring stations ([click](#)). Long-term records of sea surface temperature (1900-2010) and ocean colour (1998-2010) at every monitoring site are extracted from the Hadley Centre SST database and the GlobColour chlorophyll databases respectively. Multidecadal records (1958-2009) of diatoms, dinoflagellates and phytoplankton colour index in 40 standard geographic areas of the North Atlantic are contributed from the Continuous Plankton Recorder (CPR) database of the Sir Alister Hardy Foundation for Ocean Science.

Datasets contributed into the cooperative collection are analysed using the Coastal and Oceanic Plankton Ecology, Production, and Observation Database (COPEPOD) Interactive Time-series Explorer (COPEPODITE; [click](#)). All data values in a time series are converted to a dimensionless ratio (anomaly) in order to indicate change over time relative to the long-term average (climatology). This method removes any seasonal signal and the resulting multiyear trend is assessed by linear regression of the annual anomalies. An example of data analysis and visualisation is the time series of diatom abundance recorded in the Bay of Fundy showing a strong increase over two decades (Figure 1). The WGPME ecological status report will assemble information at local and

<sup>1</sup> Reid PC, Valdés L [eds.] 2011. ICES Cooperative Research Report No. 310, 262pp.

<sup>2</sup> O’Brien TD, Wiebe PH, Hay S [eds] 2011 ICES Cooperative Research Report No. 307, 152pp.

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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.

regional scales, but will use this to address issues of climate change and biodiversity resilience, both of which are, by definition, large-scale processes. A preliminary report on progress to date is available for download ([click](#))

## Bay of Fundy

Total Diatoms (cells/liter)

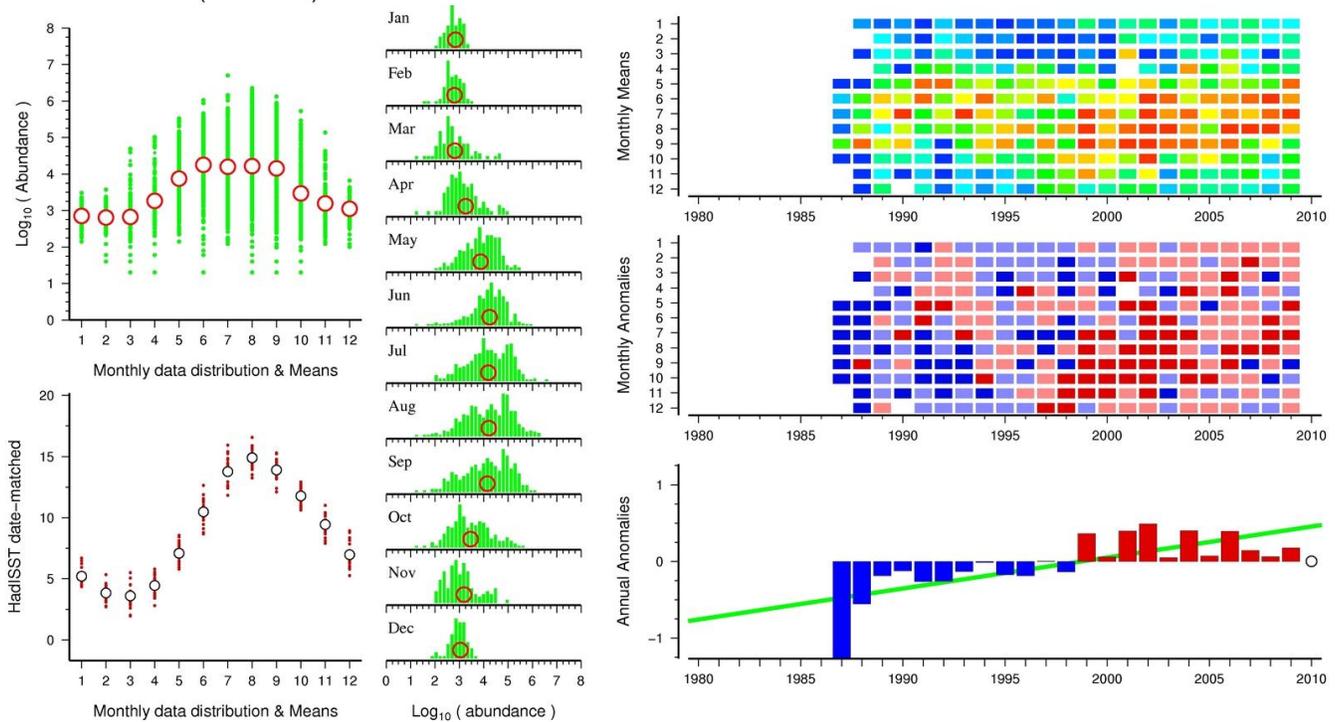


Figure 1. The monthly climatology and multiyear change in diatoms in the Bay of Fundy recorded by Jennifer Martin, DFO Canada.

### Environmental Impacts of Wave and Tidal Energy

ICES has formed a study group on the environmental impacts of wave and tidal energy, chaired by Michael Bell (UK). The group has provided a first report ([click](#)) prioritizing the research gaps relevant to this rapidly developing industry sector and listing the energy developments underway around the world.

## PERSONNEL

### Bob Conover

Dr. Robert J. (Bob) Conover passed away on August 1, 2011 in Cobourg, Ontario. Bob was educated at Oberlin College and Yale University, earning his doctorate from Yale in 1955 in marine biology. His doctoral thesis focused on a planktonic crustacean (copepod) that is essential to the ocean's food web. He continued his

research on copepods at the Woods Hole Oceanographic Institute with the late Gordon Riley. In the fall of 1966 he took a position at the Bedford Institute of Oceanography in Dartmouth, NS., where he and his colleagues furthered our understanding of the feeding physiology of various plankters. He received two citation classics for papers published during this period. In the late 1980s, Bob took his interest in plankton physiology to the Arctic, where he continued to be at the forefront of his field. During his career he worked and co-authored many publications with younger scientists who went on to become leaders in the field. Bob loved travel, took sabbaticals in Scotland and France, and gave scientific papers around the world. He retired from the Bedford Institute in 1994, continuing to publish papers on Arctic biology for many years. In retirement, he pursued his passion for organic gardening and every fall would take his pickup truck and head east for salmon fishing in his beloved Nova Scotia.

### Bill Silvert

Bill Silvert - eminent scientist, teacher, mentor, father, husband, polymath, epistemologist, gastronome, humorist, colleague and friend - died of cancer at his home in Peral, Portugal on June 28th. Bill was born in New York City. He trained as a physicist (Ph.D., Brown University, 1964) and held faculty positions in physics at Case Western Reserve University (Cleveland, Ohio USA), the University of Kansas (Lawrence, Kansas, USA) and Dalhousie University (Halifax, Nova Scotia, Canada).

Physics was not sufficiently complex for Bill; theoretical and applied issues in marine ecology piqued his interest. He joined the Oceanography Department at Dalhousie University in 1975, and then moved to the Bedford Institute of Oceanography in 1978. Bill retired from BIO in 1998 but remained as an Emeritus Research Scientist until 2000. Bill moved to Portugal where he became a Senior Research Fellow at the Departamento de Ambiente Aquático (Department of the Aquatic Environment). Bill was a prolific scientist and published more than 150 primary contributions in marine ecology, oceanography, mariculture, mathematical biology and modeling. Bill is survived by his wife of almost 14 years, Maria Emília de Freitas Mota e Cunha, his daughter Rebecca and son Richard.

### Andrew Weaver



Dr. Andrew J. Weaver, FRSC, will receive the 2011 AG Huntsman Award for Excellence in Marine Science at a ceremony to be held in the Ford Auditorium at the Bedford Institute of Oceanography at 2:00 p.m. on Thursday, November 24, 2011 ([click](#)).

Dr. Weaver is an international leader in ocean and climate modelling and analysis and, in particular, is a foremost expert on the role of the ocean in climate variability and change. Dr. Weaver's research at the University of Victoria involves multiple aspects of ocean, climate, and paleoclimate modeling and analysis. His research group developed an Earth System Climate Model referred to internationally as the University of Victoria climate model.

A novel aspect of Dr. Weaver's approach to research is his ability to transcend traditional disciplinary barriers. A unifying theme in his work is enhancing our scientific understanding of the natural environment. He recently became interested in how climate and abrupt climate change has affected human dispersal over the last 135,000 years, and together with his colleagues he has published a number of manuscripts in this emerging field. Finally, Dr. Weaver is an outstanding spokesperson on issues concerning climate science and he has dedicated enormous energy conveying sound science to the public at large. Dr. Weaver has served on many national and international committees and his scientific contributions have been recognized internationally through his election to learned societies and his winning of prestigious scientific awards as well as the Order of British Columbia.

## MEETINGS

### **3<sup>rd</sup> GEOTRACES Data-Model Synergy Workshop, 14-17 Nov. 2011, Barcelona**

The 3<sup>rd</sup> GEOTRACES Data-Model Synergy Workshop will focus on ocean particles, with emphasis on their role in the biogeochemical cycle of trace elements & isotopes ([click](#)). The exchange with particulate phases is recognized as an important process in the oceanic budget of a large number of substances present in trace amount in seawater, including that of key substances of GEOTRACES. The goal of the workshop is to bring together analysts and modelers in an effort to answer to two specific questions: (1) What measurements of particles should GEOTRACES make? (2) How should models of ocean biogeochemistry represent particles? The last day of the workshop will be used to recommend future studies that would further the understanding of ocean particles, both in the context of GEOTRACES and beyond.

## JOBS & TRAINING

No Canadian jobs were submitted or found this month.

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

## GENERAL

### **Videos on Foraminifera**

SCOR/IGBP WG 138 has placed two videos about the collection and culture of forams on YouTube ([click](#), [click](#)), the first working group to document its progress in this fashion. The videos show how forams are collected and cultured and information about why it is important to study these animals.

### **Another Year of Low Arctic Sea Ice**

The extent of Arctic sea ice at the end of the 2011 melt season was just above the record low of 2007, despite weather conditions less favourable to ice dispersal in 2011 than in 2007 ([click](#)). Average September ice extent was 4.61 million km<sup>2</sup>, 2.43 million km<sup>2</sup> below the 1979-2000 average. Canadian Ice Service composites of minimum ice extent ([click](#)) show that both the northern and southern sea routes through the Northwest Passage were again open to shipping.

## Southern Ocean CO<sub>2</sub> Atlas

The Surface Ocean CO<sub>2</sub> Atlas (SOCAT) was initiated by the IOC-SCOR International Ocean Carbon Coordination Project, SOLAS and IMBER in April 2007 (IOCCP, 2007). The first public release of SOCAT (version 1.5) was on 14 September 2011 and there are plans for regular annual to bi-annual future releases ([click](#)). SOCAT version 1.5 has 6.3 million surface water CO<sub>2</sub> measurements from the global oceans, including the Arctic Ocean and coastal seas, made between 1968 and 2007. The surface water fCO<sub>2</sub> (fugacity of carbon dioxide) data in SOCAT have been put in a uniform format and recalculated using transparent and fully documented methods (Pfeil et al., 2011). In addition, a mean monthly fCO<sub>2</sub> atlas has been constructed from this data set (Sabine et al., 2011). Powerful, interactive viewers of the SOCAT data and data products are available from the link above.

An ambitious time table **for SOCAT version 2** has now been set, with **data submission open until 31 December 2011**, SOCAT quality control by the regional groups from June to September 2012, and a tentative date for public release in late 2012. Interested scientists can submit surface water fCO<sub>2</sub> data before 31 December 2011 via the Carbon Dioxide Information Analysis Center ([click](#)). All coastal and open ocean data not already in SOCAT v1.5 are most welcome.

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### CANADIAN OCEAN SCIENCE NEWSLETTER

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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 #61 will be distributed on December 15, 2011. Please send contributions to Bob Wilson, [wilson@telus.net](mailto:wilson@telus.net)  
Bulletin #61 sera distribué le 15 décembre 2011. Veuillez faire parvenir vos contributions à Bob Wilson, [wilson@telus.net](mailto:wilson@telus.net)

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