

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

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Research Scientist in Polar Physical Oceanography

The Institute of Ocean Sciences , Fisheries and Oceans Canada, Sidney, B.C,

The Ocean Sciences Division seeks a Research Scientist in polar physical oceanography. 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 and fisheries scientists. Application open to all but preference will be given to Canadian citizens. A pool of qualified candidates may be established and may be used to staff similar term and/or permanent positions across Canada.

Duration: full time staff position

Salary: SE-RES 1 or 5 level (\$46K-\$115K)

Details and Online application: www.jobs.gc.ca (reference # DFO08J-006661-000564) Closing Date: December 22, 2008

Questions: Mr. Robin Brown – email: Robin.Brown@dfo-mpo.gc.ca; Tel : 1-250-363-6378

Other : Only online applications will be accepted.

Faculty Position in Data Assimilation

The Department of Atmospheric and Oceanic Sciences at McGill University is seeking outstanding applicants for a tenure-track Assistant Professor position in the area of Data Assimilation. This opening is to enhance our strength in mesoscale modeling and remote sensing. The successful applicant will be expected to develop an active research program, supervise graduate students, and teach a variety of undergraduate and graduate courses. Preference will be given to candidates whose area of expertise is the application of data assimilation to mesoscale numerical weather prediction, particularly in improving the forecast of high impact weather and precipitation. A Ph. D. in atmospheric or oceanic sciences or a closely-related field is required. Position details may be found at: <http://www.mcgill.ca/meteo/positions/>

SCOR working group 128 on Natural and Human-Induced Hypoxia and Consequences for Coastal Areas

Report by Denis Gilbert, Denis.Gilbert@dfo-mpo.gc.ca

The SCOR working group on coastal hypoxia (low oxygen), co-chaired by Drs Jing Zhang (China) and Denis Gilbert (Canada), was created in September 2005. The list of members and the terms of reference of the working group can be found at http://www.scor-int.org/Working_Groups/wg128.htm. Its main goal is to synthesize the state of the science of coastal hypoxia, with emphasis on the causes and on the biogeochemical and ecological impacts of hypoxia. Its first meeting was held in April 2006 in Vienna, Austria, and led to the refinement of the working group's terms of reference and a preliminary list of synthesis papers. The second meeting was held in September 2007 in Shanghai, China, and allowed to discuss the paper outlines in more detail, identify overlaps between papers and pinpoint some remaining gaps. The proposed final list of papers and their lead authors are given below. Partial financial

support from SCOR will allow us to publish these synthesis papers in 2009 in [Biogeosciences](#), an interactive open access journal of the European Geosciences Union.

1. Historical record of hypoxia from sediment proxies (Andy Gooday, United Kingdom)
2. Effects of hypoxia on nekton and plankton (Werner Ekau, Germany)
3. Benthic biological response to coastal hypoxia : comparison of natural versus human-induced hypoxia (Lisa Levin, USA)
4. Shelf hypoxia driven by open ocean boundary climate variability (Pedro Monteiro, South Africa)
5. Pelagic microbial communities and biogeochemical cycling (Osvaldo Ulloa, Chile)
6. Hypoxia effects on the benthic-pelagic coupling (Jack Middelburg, Netherlands)
7. Global oxygen trends in the coastal ocean (Denis Gilbert, Canada)
8. Dynamics and distribution of natural and human-induced coastal hypoxia (Nancy Rabalais, USA)
9. Modeling of hypoxia/anoxia (Angelica Peña, Canada)
10. Hypoxia/anoxia as a source of N₂O and CH₄ greenhouse gases (Wajih Naqvi, India)
11. Recovery following remediation efforts (Mike Kemp, USA)
12. Overall summary (Jing Zhang, China)

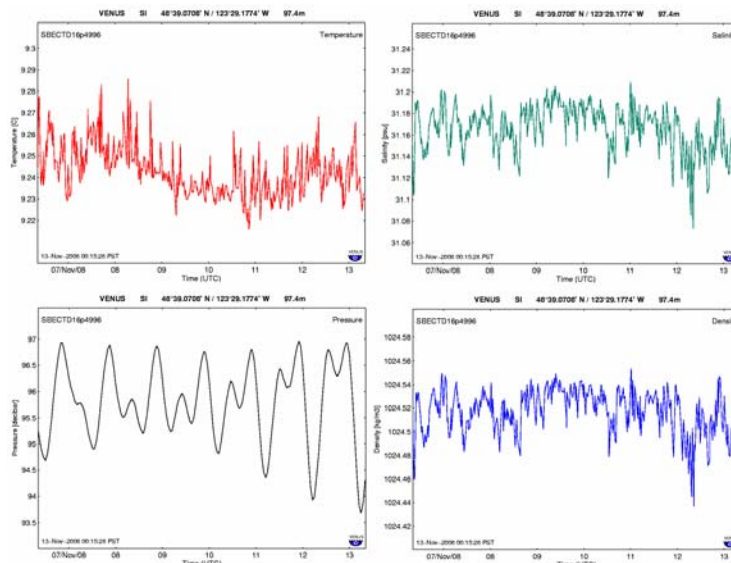
VENUS: Approaching Threes Years of Cabled Ocean Observatory Science

Contributed by Richard Dewey, Associate Director, Research (rdewey@uvic.ca)

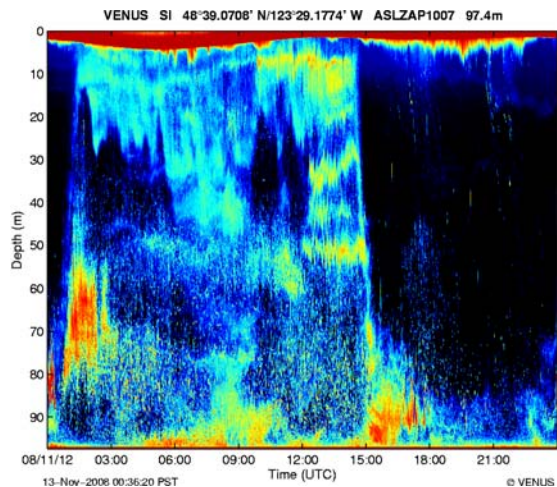


The Victoria Experimental Network Under the Sea (VENUS <http://www.venus.uvic.ca/>) is nearing three years of cabled observatory ocean operations serving science. The first array of the VENUS system was deployed in Saanich Inlet on Vancouver Island in February 2006, and consists of a 4 km telecom cable running from the Institute of Ocean Sciences out into Pat Bay where a Node and instruments sit near the 100m isobath (http://venus.uvic.ca/locations/saanich_inlet.php). The second and larger array is a 40km cable in the Strait of Georgia, with two Nodes plus instruments at 300m and 170m (<http://venus.uvic.ca/locations/sog.php>), and a 6 km extension cable running up to the mouth of the Fraser River where there is a Delta Dynamic Laboratory. In conjunction with NEPTUNE Canada (<http://www.neptunecanada.ca/>), we have built a data delivery and storage system at the University of Victoria.

The cabled observatory provides researchers, managers, and the public with unprecedented access to instruments located in a variety of dynamic environments. Significant power (kilowatts) and bandwidth (GB fibre optic) allow for user interaction, intervention, and control of complex instrument systems, and continuous data reception and logging. Secure shore stations provide the power and communications to the subsea Nodes and instrument platforms (<http://venus.uvic.ca/facility/mainpage.php>)



and buffer the data before sending them on to the Data Management and Archive System (DMAS) at the University of Victoria. Saanich Inlet is a protected fjord supporting a vibrant and complex biological and geochemical ecosystem. The central Strait of Georgia is a more dynamic environment, with strong tides, estuarine circulation, and sediment transport pathways associated with the Fraser River. Active research includes benthic ecology, microbial dynamics, fish/plankton interactions, boundary layer dynamics, deep water renewal dynamics, sediment transport and stability, forensic and food fall studies, and marine mammal communications.



From the VENUS web page (<http://www.venus.uvic.ca/>) one can access live data feeds (http://www.venus.uvic.ca/lda_popup.php), plots of various time series for the last 24 hours, week, month or year (http://venus.uvic.ca/data/data_plots.php), and search and request data and products from the growing data archive (<http://dmas.uvic.ca/Search>). Information about the observatory, active research programs, and how you can participate is also available. All data collected on the observatory are free to

download. Deployed instruments include CTDs with Oxygen at each Node, inverted echosounders (Zooplankton Acoustic profilers, or ZAPs) for monitoring the diel migrations and fish densities, transmissometers to monitor turbidity, ADCPs and current meters to measure water velocity, broadband hydrophones to monitor ambient sound and marine mammal vocalizations, and a pan & tilt digital stills camera for benthic ecosystem studies. Proposals currently submitted would substantially expand seafloor and water column capabilities.

In February 2009 we will celebrate three years of operations. The VENUS team at the University of Victoria services the instruments and arrays twice each year (September and February). Contact us (venus@uvic.ca) to receive our quarterly newsletter and find out how you can participate on the world's most advanced coastal ocean cabled observatory. VENUS operations are funded by CFI, NSERC, users, and donors.

VENUS is a Project of Ocean Networks Canada (<http://www.oceannetworks.ca/>) at the University of Victoria.

Sargassum Patch Detected with MERIS in the Northern Atlantic Ocean

Martin L. Taillefer (DFO) TailleferM@DFO-MPO.GC.CA, Guy Aube (CSA) and Jim Gower (DFO)

With over \$20 billion in annual economic activity, Canada's oceans and their resources are significant contributors to the overall Canadian economy. Developing the full potential of Canadian fisheries as an economic driver for our coastal and rural communities is among Government of Canada's priorities.

Through the Canadian Space Agency (CSA) Government Related Initiatives Program (GRIP), the Department of Fisheries and Oceans (DFO) is developing new tools and methodologies based on Earth observation (EO) data to better understand ocean ecosystems, climate changes and renew the economic viability of our fisheries. Much of the Medium Resolution Imaging

Spectrometer (MERIS) analysis and validation efforts for the Full Resolution mode in Canada has been spearheaded by Dr. Jim Gower from DFO's Institute of Ocean Science, in Sidney British Columbia.

This image (below) was acquired by the MERIS instrument on September 4 2008, working in Full Resolution mode to provide a spatial resolution of 300 meters. It highlights the patch of Sargassum detected with MERIS on the North Atlantic Ocean (35°45'N and 66°21'W). Sargassum is floating marine vegetation that absorbs carbon dioxide (CO₂) – the most important greenhouse gas that contributes to global warming – through photosynthesis and converts it into organic carbon. This process is known as primary productivity. The patch is near 45 km across.

The primary mission of MERIS is the measurement of sea colour in the oceans and in coastal areas. But MERIS imagery can also be applied to a wide range of applications: ocean productivity, water quality, chlorophyll mapping, phytoplankton monitoring, harmful algal blooms detection, suspended sedimentation, etc. The ability to monitor Sargassum allows DFO researchers and the Government of Canada to better understand the primary productivity of the ocean, predict climate changes and develop the full potential of Canadian fisheries. To better understand primary productivity, it is necessary to monitor the amount of chlorophyll in marine vegetation. The MERIS instrument is able to detect chlorophyll, the green photosynthetic compound in plants that captures energy from sunlight necessary for photosynthesis.

This sargassum patch discovery is the results of the DFO EO team and CSA GRIP program team joint efforts.

The CSA GRIP program focuses on developing Canadian government use of space-based land, ocean, and atmospheric observation systems and services. It supports the development and demonstration of new applications that increase the benefits and effectiveness of Government of Canada services for Canadians through use of EO information sources and raises awareness within the Government of the uses and benefits of Canadian supported EO missions.

ABOUT MERIS

Canada is a cooperating member of European Space Agency (ESA) and contributed to the development of ENVISAT. In response to an expression of interest articulated by Canadian Government users, such as DFO, the CSA has invested in the upgrade of the Canadian ground infrastructure at the Canada Centre for Remote Sensing (CCRS) for the reception and processing of ENVISAT MERIS Full Resolution. As a result, MERIS Full Resolution data acquired over North America are now available on Internet for the Canadian Government users. This initiative, established in collaboration with the European Space Agency and the support of the CCRS, will provide access to all recent MERIS Full Resolution (FR) Level 1 products (MER_FRS_1P) and Level 2 products (MER_FRS_2P) covering North America (visibility mask of the Gatineau and Prince Albert stations). Canada is a cooperating member of ESA and contributed to the development of ENVISAT.

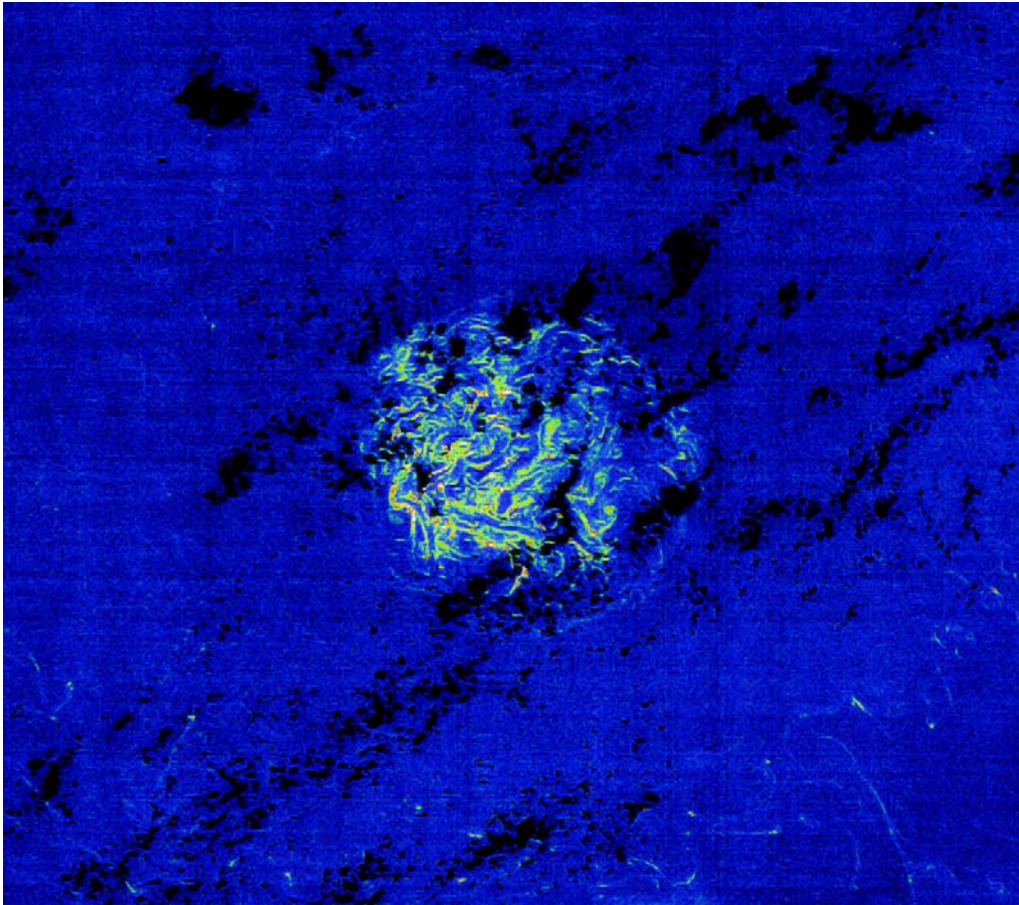


Image credit: DFO, 2008



Image credit: ESA, 2008



Image credit: Wikipedia, 2008

Warren Wooster

Warren Wooster passed away on October 29, 2008. Some details of his many accomplishments may be found at:

http://www.ioc-unesco.org/index.php?option=com_content&task=view&id=87&Itemid=76

Kim-Tai Tee

Kim-Tai Tee, research scientist at BIO's Ocean Circulation Division/Section from 1975 to 1997, passed away peacefully on Saturday November 29, 2008, in Abbey J. Lane Memorial Building, QEII, Halifax, at the age of 62. Kim Tai was born in Malaysia. In 1969 he moved to Halifax. In 1975 he received a Ph.D. degree in physical oceanography and joined the Bedford Institute of Oceanography.

Kim-Tai began his graduate career at Dalhousie in low temperature solid state physics but, after completing his M. Sc., switched to physical oceanography. He completed his Ph. D. in less than 4 years, unravelling the tidal residual circulation in the Bay of Fundy. The physics of tidally-induced flows became the dominant recurring theme of his science career. Kim Tai was recognized as one of the world authorities on that topic. At Dalhousie, he played intercollegiate badminton, finishing second in the Maritimes university tournament. He was stronger in badminton than in hockey, though he enjoyed the Oceanography weekly fun game.

Kim-Tai's early work at BIO focused on the dynamics and circulation of the Labrador Sea; he used the Princeton model developed by Kirk Bryan, the state-of-the-art at the time. He was the first Canadian oceanographer to study the open ocean with a realistic 3-dimensional ocean circulation model. However, the demand for computing power for his model was huge which BIO could not meet. As a result, he turned his attention back to coastal problems.

His regional modelling focus expanded from the Bay of Fundy to the entire Gulf of Maine region, with particular emphasis on Georges Bank and the shallow, well-mixed waters off southwest Nova Scotia, and to the St. Lawrence Estuary. A series of papers on tidally induced residual currents and upwelling in these regions were published which had a major impact on shelf modelling. He also extended his disciplinary focus to include the modelling of sediment transport processes in the upper Bay of Fundy, a problem of distinct interest to this day. In recognition of his insightful and innovative work in shelf modelling, a ubiquitous feature of coastal circulation was named the "Tee Current" after Kim Tai.

Kim Tai is survived by his wife, Jenru, and his sons, James and Frank. The funeral service was held on Thursday, December 4, 2008 at the Atlantic Funeral Home in Halifax.

Charles Tang, Brian Petrie, Peter Smith, Charlie Quon

The Third Argo Science Workshop: The Future of Argo, 25, 26 and 27 March 2009, Hangzhou, China

Call for Papers and Registration

Submitted by Howard Freeland, Howard.Freeland@dfo-mpo.gc.ca

Hosted by the Second Institute of Oceanography, SOA and the State Key Laboratory of Satellite Ocean Environment Dynamics. Talks and posters are invited on any topic based on substantial use of Argo data. The purpose of the workshop is to assess the scientific and wider utility of Argo and to consider the future evolution of the Argo program. The deadline for abstract submissions is 19 December 2008, the deadline for registration is 23 January 2009. For further

information visit the workshop web site: www.argo.ucsd.edu/ASW3.html Sponsored by the Argo Steering Team and PICES, the N. Pacific Marine Science Organization.

Call for Papers, 43rd Annual Canadian Meteorological and Oceanographic Society Congress

The Canadian Meteorological and Oceanographic Society (CMOS) Congress 2009 will be held in Halifax, Nova Scotia, Canada at the World Trade and Convention Centre from May 31 to June 4, 2009. The Congress theme is "Sea and Sky Come to Life".

The Congress will feature:

- Plenary presentations by leading researchers.
- Science sessions that highlight top Canadian and international research contributions to climate, meteorology, oceanography, and hydrology, as well as the policy implications of research in these fields.
- An evening lecture of general-interest, open to the public, on the theme of hurricanes.
- A banquet, a hosted lunch, awards of CMOS prizes, and the CMOS Annual General Meeting.

Please submit abstracts electronically to the link found on the Congress website (<http://www.cmos.ca/Congress2009>) after January 7, 2009 and before the deadline of February 15, 2009. You will be asked to submit your abstract to one of several planned sessions that are listed on the website and to specify your preference for either an oral or a poster presentation. An abstract fee of \$50 will be charged at the time of submission. Your abstract will be evaluated by the Congress's Science Program Committee and you will be notified by the end of March 2009 if your presentation has been accepted for oral or poster presentation.

Student CMOS members are welcomed and encouraged to apply for a Student Travel Bursary when submitting an abstract. If you are an exhibitor, an educator, a member of the media, or anyone else with an interest in the meeting, please visit the Congress website (<http://www.cmos.ca/Congress2009>) and contact the Chair of the Local Arrangements Committee for further information.

Appel à la soumission des résumés, 43^e Congrès annuel de la Société canadienne de météorologie et d'océanographie

Le congrès 2009 de la Société de météorologie et d'océanographie (SCMO) aura lieu du 31 mai au 4 juin 2009 à Halifax en Nouvelle-Écosse, Canada, au World Trade and Convention Centre. Le thème du congrès est " Mer et ciel s'animent ".

Le congrès inclura:

- Des présentations plénières par des scientifiques à la pointe de la recherche.
- Des sessions scientifiques accentuant les contributions ultimes de la recherche canadienne et internationale dans les domaines du climat, de la météorologie, de l'océanographie et de l'hydrologie, ainsi que les implications politiques de la recherche avancée dans ces domaines.

- Une présentation d'intérêt général dans la soirée, ouvert au public, sur le thème des ouragans.
- Un banquet, un petit déjeuner accueilli, remise des récompenses SCMO, et réunion générale annuelle de la SCMO.

Veillez soumettre vos résumés électroniquement en utilisant le lien sur le site du congrès (<http://www.cmos.ca/Congress2009>) entre le 7 janvier et le 15 février 2009. Vous devrez soumettre votre résumé sous une des nombreuses sessions affichées sur le site et spécifier votre préférence quant à une présentation orale ou une présentation affichée. Un frais de \$50 sera chargé au moment de la soumission. Votre soumission sera évaluée par le comité du programme scientifique du congrès qui vous avisera avant la fin du mois de mars 2009 de la décision de présenter votre contribution oralement ou avec une affiche.

Les membres étudiants de la SCMO sont les bienvenus et sont encouragés à appliquer pour une bourse étudiante d'aide au voyage lors de leur soumission. Si vous êtes un exposant, un éducateur, un membre des médias, ou quelqu'un avec un intérêt pour le congrès, veuillez visiter le site Web du congrès (<http://www.cmos.ca/Congress2009>) ou contactez-nous ou le président du Comité des arrangements locaux pour obtenir plus d'information.

GLOBEC international 3rd and final Open Science Meeting

GLOBEC international will be holding its 3rd and final Open Science Meeting in Victoria, Canada, June 2009. This conference will culminate the integration and synthesis activities of the international GLOBEC programme, ten years after its launch as an IGBP-SCOR-IOC activity. The 3rd OSM is entitled “Marine ecosystems: from function to prediction” to focus the meeting on the overall objective of GLOBEC of “providing a new mechanistic understanding of the functioning of the marine ecosystem, in order to develop predictive capabilities and propose a framework for the management of marine ecosystems in the era of global change”.

Abstract submission has now been extended to 31 January 2009 and a reduced early registration fee is available until 30 March. Participation is limited and it may be necessary to close registration once our maximum numbers have been reached. Limited financial support is available for scientists from developing countries and for early career scientists worldwide, the deadline for financial support is 15 January 2009. Please see the GLOBEC website for further details, <http://www.globec.org/>

The programme of the meeting has been designed with the dual purpose of celebrating the programme's achievements at global, regional and national level, while providing a unique forum for scientists to shape the new decade of international collaboration in our area of science.

Confirmed invited speakers include:

- Roger Harris/ Liz Gross: A history of GLOBEC
- Eileen Hofmann: Physical/Biological coupling in marine ecosystems
- Coleen Moloney: Food web processes in marine ecosystems
- Yasuhiro Yamanaka: Forecasting and predicting marine ecosystem responses to climate change
- Ian Perry: The human dimensions of global environmental change
- John Steele: Beyond GLOBEC: Challenges and opportunities
- Ken Denman: An outsider's view of GLOBEC

On days 1 and 2 of the meeting we will host twelve one or two day workshops:

- Modelling ecosystems and ocean processes: the GLOBEC perspective of the past, present and future (Chairs: Curchitser, Gallego, Kishi, Di Lorenzo)
- Comparisons of processes and climate impacts in sub-Arctic and Antarctic marine ecosystems: observations and modelling approaches (Hofmann, Hunt, Megrey, Saitoh, Shin)
- Biogeochemistry of the oceans in a changing climate (Chairs unconfirmed)
- Plankton phenology and life history in a changing climate: observations and modelling (Ji, Mackas, Edwards)
- Continuous Plankton Record surveys of the global ocean (Batten, Burkill)
- Climate impact on ecosystem dynamics of marginal seas (Sakurai, Möllman)
- Worldwide large-scale fluctuations of sardine and anchovy (Alheit, Lluch-Cota, Van der Lingen)
- Cod and Climate Change: the past, the present and future challenges (Fiksen, Runge, Köster)
- GLOBEC into the future: embracing complexity, adaptation and plasticity of response (St.John, Fulton, Hannah)
- Krill biology and ecology in the world's oceans (Atkinson, Gomez-Gutierrez, Meyer, Peterson)
- Marine resources management and ecosystem forecast in the high seas (Chairs unconfirmed)
- Socio-economic dynamics and ecosystems, governance implications (Miller, Charles)

For further details of the programme, workshops, registration and abstract submission please see the GLOBEC website: <http://www.globec.org>

Recent Addition to the Canadian Oceanographic Historical Photos Archive

Contribution by Howard Freeland, Howard.Freeland@dfo-mpo.gc.ca

There was an important oceanographic event in Canada earlier this year, July 2008. DFO/IOS hosted scientists from around the world at a Festschrift in celebration of the 65th birthday of Chris Garrett. The following is a group picture taken at the event, along with identification keys. This contribution, along with other archived photos, may be found on the CNC/SCOR web site at: <http://www.cmos.ca/Oceanphotos/photoindex.html>

Original Photo



see

identifications in enlargements below

Enlargement - Left



Third row (l to r) (six people, staggered): Jonathan Nash, Josef Cherniawsky, Jody Klymak, Johannes Gemmrich, Mike Gregg, John Loder.

Middle row (ten people): Bruce Sutherland, Shaun Johnston, Rolf Lueck, Mary-Louise Timmermans, Brian Arbic, Amit Tandon, Richard Dewey, Eric Kunze, Parker MacCready, Dan Wright.

Front row (seven people): Elina Tragou, Matthew Alford, Jen MacKinnon, Ryu Inoue, Burkard Baschek, Myriam Bormans, Chris Garrett.

Enlargement - Right



Third and fourth rows (1 to r) (seven people): Parker MacCready, Peter Rhines, Rosalie Rutka, Mike Foreman, Barry Ruddick, David Farmer, Raf Ferrari.

Middle row (seven people): Dan Wright, Rob Pinkel, Tom Sanford, Ann Gargett, Denis Gilbert, Keith Thompson, Howard Freeland.

Front row (nine people): Chris Garrett, Trevor McDougall, Germaine Gatién, Jerome Smith, Hide Yamazaki, Carl Wunsch, Walter Munk, Kate Stansfield, Ming Li.

The Year of the Ocean in 1998 and an Approaching Anniversary for the IOC

Report by Geoff Holland (Former Chairman, IOC of UNESCO), anneandgeoff@telus.net

Ten years ago the United Nations declared 1998 as “The Year of the Ocean”, a celebration that was led by the Intergovernmental Oceanographic Commission (IOC) of UNESCO and was supported by a national Canadian program based in the Department of Fisheries and Oceans. Notable occurrences throughout the world included the Ocean Expo in Lisbon, the formation and report of the Independent World Commission on the Ocean, commemorative postage stamp issues in over one hundred countries, the publication of a coffee table book and the Ocean Charter.

The Ocean Charter was of particular interest to Canada. The Charter was a non-legal document, adopted by the Member States of the IOC, and sent out to governments around the world to be signed as an affirmation of the need to sustain the ocean and its resources. It was signed at a senior political level by eighty or more countries. Canada sponsored the Charter which, in Canada, was signed by the Prime Minister, Jean Chretien. It was subsequently taken to, and adopted by, the Francophonie countries in their Conference in New York. A less formal Charter, called “My Ocean Charter” was open for public signature and received many millions of signatures around the world.

In 2010, it will be the fiftieth anniversary of the formation of the IOC and plans are getting underway to celebrate that event.

Changes to the CMOS journal Atmosphere-Ocean

At the May 25, 2008 meeting of the committee in Kelowna, a few modifications to the Atmosphere-Ocean (A-O) publication policy were proposed. These modifications, formally approved the following day at the CMOS annual general meeting and now implemented, are summarized below.

- Three years after their publication, A-O articles will become “open access”, available for free on the internet.
- Accepted papers will be made available online in PDF format as soon as technical editing to the journal’s style is completed. These “in press” papers will thus appear online a few weeks in advance of the final publication.
- Oceanic biogeochemistry has become a new area of research covered by A-O. Dr Katja Fennel (Dalhousie University) was added to the list of A-O associate editors to reflect this change.

Before proceeding any further on the matter of open access for A-O, the CMOS publication committee recommended that users be consulted about the approach. The committee would very much like to receive your comments on the question. Please take about two minutes to reply to our questionnaire at : <http://www.cmos.ca/Ao/OpenAccessSurvey.pdf>

Thank you in advance for your collaboration. We look forward to receiving your paper submissions to our journal.

Co-editors:

Andrew Bush (Atmosphere; andrew.bush@ualberta.ca)

Denis Gilbert (Ocean; denis.gilbert@dfo-mpo.gc.ca)

WCRP News

WCRP's news on climate research is now available in e-zine N°12 at: http://wcrp.wmo.int/documents/Ezine12_Dec08.pdf. Science Highlights include:

- WCRP 2007-2008 Accomplishment Report now available;
- CLIVAR endorses Southwest Pacific Ocean Circulation-Climate Experiment (SPICE);
- 7th International Polar Day: Above the Poles.
- ICSU launch of new Research Initiatives, namely the Integrated Research on Disaster Risk (IRDR) and Ecosystem Change and Human Well-being research programmes.

To subscribe/unsubscribe, please send an email to wcrp@wmo.int. Contributions to e-zine N° 13 to be published in March 2009 should also be addressed to wcrp@wmo.int by 15 February 2009.

International SCOR Newsletter No. 12

The 12th newsletter (December 2008) of international SCOR is published at <http://www.scor-int.org/Publications.htm> near the bottom of the page. Amongst other things it contains information on the SCOR 50th Anniversary Symposium, the SCOR XXIXth General Meeting, three new SCOR working groups (OceanScope, Hydrothermal Energy Transfer and its Impact on the Ocean Carbon Cycle, and The Microbial Carbon Pump in the Ocean), the SCOR Committee on Capacity Building, the Ocean Mixing Group Affiliated to SCOR, Outreach from SCOR Activities, Large-Scale Ocean Research Projects (GEOHAB, GEOTRACES, GLOBEC, IMBER and SOLAS), SCOR Panel on New Technologies for Observing Marine Life, Second Symposium on The Ocean in a High-CO₂, the SCOR/IODE Workshop on Data Publication, and various publications and SCOR annual meetings.

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

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

Newsletter #41 will be distributed on January 30, 2009. Please send contributions to dick.stoddart@sympatico.ca
Bulletin #41 sera distribué le 30 janvier 2009. Veuillez faire parvenir vos contributions à dick.stoddart@sympatico.ca

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