



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

Previous newsletters may be found on the CNC/SCOR web site.  
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Newsletter #3 will be distributed on October 14, 2003. Please send contributions to [dick.stoddart@sympatico.ca](mailto:dick.stoddart@sympatico.ca)  
Bulletin #3 sera distribué le 14 octobre 2003. Veuillez faire parvenir vos contributions à [dick.stoddart@sympatico.ca](mailto:dick.stoddart@sympatico.ca)

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**Position Available in Physical Oceanography**

A 2-year post-doctoral position is available at Acadia University working primarily with Dr. Richard Karsten, but also with Howard Freeland at the Institute of Ocean Sciences, Sidney, B.C. The successful candidate will work with Karsten and Freeland on a project funded by the Canadian Foundation for Climate and Atmospheric Science (CFCAS) to use data from the Argo array to explore mechanisms governing the formation of Antarctic Intermediate Water. The data already exist. We are looking for a recent graduate, or someone expecting to complete their PhD very soon who might take up an appointment before the end of calendar 2003. The optimal candidate will have experience with data analysis in physical oceanography. The position will be based at Acadia University in Wolfville, NS. We recognize the need for a PDF to interact with scientists at larger institutions, we are willing to discuss options for achieving that. Please send a c.v., statement of research interests and the names of three potential referees to: Dr. Richard Karsten, Department of Mathematics and Statistics, Acadia University, Wolfville, NS, Canada, B4P 2R6, Email: [richard.karsten@acadiu.ca](mailto:richard.karsten@acadiu.ca)

**SCOR / IOC - Quantitative Indicators for Fisheries Management**

International Symposium, Paris, France, 31 March - 4 April, 2004

Prepared by: Kees Zwanenburg, [ZwanenburgK@mar.dfo-mpo.gc.ca](mailto:ZwanenburgK@mar.dfo-mpo.gc.ca), Marine Fish Division and Centre for Marine Biodiversity, Bedford Institute of Oceanography

Over the past 5-10 years there has been growing international interest in adopting an ecosystem based approach to fisheries management. This is in explicit recognition of the fact that fisheries are deeply imbedded within ecosystems. It had become apparent that ecosystems are the level of biophysical organization to be considered in fisheries management. The effects of fishing on marine ecosystems (including targeted or direct effects as well as non-target and indirect effects) have been widely recognized, as has the need to move toward an ecosystem approach to fisheries (EAF). The specifics of such an approach has most recently been outlined by the Food and Agriculture Organization of the United Nations (FAO 2003). Such an evolution is being sought by society for all exploited natural resources. Fisheries are no exception. To meet this new challenge, we need a strategy that will elaborate operational frameworks. This in turn will require the development of quantitative indicators at the ecosystem level, and the definition of innovative reference points to provide bridges between scientific results, society's needs, and an effective EAF. The SCOR/IOC Symposium is planned to support scientific aspects of using indicators for an EAF, and aims to review existing indicators as well as develop new indicators reflecting the exploitation and state of marine ecosystems. The Symposium is also aimed at evaluating the utility of indicators relative to specific objectives. A session on the Symposium's last day will be devoted to summarizing the major themes and conclusions of the Symposium.

**Reference**

FAO, 2003. Fisheries Management: 2. The ecosystem approach to fisheries. FAO Technical Guidelines for Responsible Fisheries No. 4. Supplement 2. Rome 2003. 112 pages.

### **ArcticNet**

The Networks of Centres of Excellence (NCEs) program has just announced the establishment of the ArcticNet Network, funded at \$25.7 million over the next 5 years. ArcticNet will entrain some 93 researchers, from 27 universities, 2 industries, and 24 government departments and public sector supporters. ArcticNet researchers will collaborate with the best research teams in the USA, Japan, Denmark, Sweden, Norway, Poland, the United Kingdom, Spain and Belgium. Over the next four years and beyond, ArcticNet will conduct Integrated Regional Impact Studies (IRIS) in the coastal marine Canadian High Arctic (Theme 1); the terrestrial ecosystems in the Eastern Arctic (Theme 2); and Hudson Bay (Theme 3). Each of these IRIS will contribute the knowledge needed to formulate policies and adaptation strategies for the Canadian coastal Arctic (Theme 4), that address the following concerns of Northerners: the rate of change of the Arctic environment; the reduction of human vulnerability to hazardous events; the adaptation of the public health system to change; the protection of key animal species; the maritime transport in an ice-free Canadian Arctic; and the economic impacts of environmental change in the Arctic. The ultimate goal of ArcticNet is to rebuild Canada's scientific presence in the Arctic and include Northerners and their traditional ecological knowledge. ArcticNet will bring together researchers from NSERC, CIHR, and SSHRC. Additional details on ArcticNet may be obtained from the NCE web site, [www.nce.gc.ca](http://www.nce.gc.ca), or from the ArcticNet Scientific Director, Dr. Louis Fortier, at [louis.fortier@bio.ulaval.ca](mailto:louis.fortier@bio.ulaval.ca).

### **Argo News**

Argo is a global array of free-drifting profiling floats that will measure the temperature and salinity of the upper 2000 m of the ocean. Howard Freeland ([FreelandHj@pac.dfo-mpo.gc.ca](mailto:FreelandHj@pac.dfo-mpo.gc.ca)) has started a small web site dedicated to showing mapped conditions in the Gulf of Alaska, including monthly circulation maps. That collection can be seen at: [http://www.pac.dfo-mpo.gc.ca/sci/osap/projects/argo/Gak\\_e.htm](http://www.pac.dfo-mpo.gc.ca/sci/osap/projects/argo/Gak_e.htm). The first Argo International Newsletter is available at: [http://www.argo.ucsd.edu/Argo\\_Newsletter\\_1.pdf](http://www.argo.ucsd.edu/Argo_Newsletter_1.pdf). The first Argo Science Workshop is planned for November 12-14 in Tokyo, Japan. The poster advertising the workshop can be downloaded from: [http://www.pac.dfo-mpo.gc.ca/sci/osap/projects/argo/Argo\\_poster.pdf](http://www.pac.dfo-mpo.gc.ca/sci/osap/projects/argo/Argo_poster.pdf).

### **The Coastal Habitat of Unique Glass Sponges**

Frank Whitney, DFO ([WhitneyF@pac.dfo-mpo.gc.ca](mailto:WhitneyF@pac.dfo-mpo.gc.ca)) and Kim Conway, NRCan ([kconway@nrcan.gc.ca](mailto:kconway@nrcan.gc.ca))

A group of sponges called hexactinellids have the skeletal strength to build reefs. They obtain this strength from silicon based spicules which can comprise over half of their total body mass. The only locations where reef building sponges have been found in the present ocean is on the coast of British Columbia, in areas of low sediment deposition but high nutrient supply. In the geologic past, such reefs covered thousands of kilometers of shallow ocean and now form major strata in European mountains.

Our recent work has helped define the oceanic habitat of reef building sponges. They thrive in shelf canyons where tidal currents reach  $35 \text{ cm s}^{-1}$ , enough to eliminate sediment accumulation on a glacially scoured substrate. Canyons permit nutrient rich, oceanic waters to flow onto the shelf. Apparently, siliceous sponges do not form spicules unless the dissolved silicate concentration in seawater is high. We believe that a concentration  $> 30 \text{ uM}$  silicate may be a lower threshold for siliceous sponge growth, based worldwide distributions of hexactinellid sponges. In BC waters, silicate concentrations at the depth of sponge colonies (165 to 240 m) range between  $40 \text{ uM}$  in winter and  $80 \text{ uM}$  in summer during coastal upwelling.

Sponges are efficient particle scavengers. Over their 9000 yr history on the BC coast, they have built mounds comprised of mineral particles from coastal erosion, sponge skeletons, and biogenic materials that rise up to 21 m above the sea floor. Our measurements show that suspended particle density in seawater is distinctly lower in the vicinity of the sponge reefs compared with adjacent waters. Collections of settling particles near reefs shows that they are rich in organic material. By trapping such particles, sponges enrich their environment with substances needed for their growth.

To summarize our findings, it appears that sponge reef colonies require a biologically productive environment where currents are adequate to supply nutrition and decrease sedimentation, and where inputs of terrigenous materials (river silts, coastal erosion) are low. Siliceous sponges are fragile, slow growing organisms that are extremely vulnerable to human activities. Extensive damage to reefs has been done by bottom trawlers, and sponges likely could not survive increases in sediment fluxes arising from dredging or drilling in their vicinity.

### **Review of physical oceanography research in Canada, 1999 and 2003**

Michael Stacey (Royal Military College, [stacey-m@rmc.ca](mailto:stacey-m@rmc.ca)) and Bill Crawford (Institute of Ocean Sciences, [CrawfordB@pac.dfo-mpo.gc.ca](mailto:CrawfordB@pac.dfo-mpo.gc.ca)) have completed a review of physical oceanography research in Canada between 1999 and 2003, for the International Union of Geodesy and Geophysics (IUGG). This report was presented at the 2003 IUGG Meeting in Sapporo, Japan, in July 2003, and is available on the Internet at <http://www.cgu-ugc.ca/cnc-iugg/IAPSO03.htm>

### **SHOWEX 1999: Call for Papers, JPO**

Fred Dobson, [ASEAS@hfx.eastlink.ca](mailto:ASEAS@hfx.eastlink.ca)

In May of this year a Call for Papers was made for a Special Issue of the Journal of Physical Oceanography (JPO) on SHOWEX (Shoaling Wave EXperiment) 1999. This follows an earlier call by the Journal of Atmospheric and Oceanic Technology, which resulted in a SHOWEX Special Issue of that journal, now in the final review stages. By July, 13 papers had been promised, with a submission deadline of 1 October, 2003 for publication in late 2004. This article describes the experiment.

The idea arose from an ONR "Departmental Research Initiative", announced in mid-1995, to improve our basic understanding of wind wave development in shoaling waters. Funding proposals ensued, and in early 1996 a RSMAS group led by Hans Graber, Mark Donelan

(<http://anole.rsmas.miami.edu/people/mdonelan.html>) and Will Drennan (<http://anole.rsmas.miami.edu/people/wdrennan.html>) (the latter two formerly of CCIW) and including a sub-proposal by Fred Dobson and Bob Anderson of DFO/BIO, were funded. The BIO sub-proposal included the chartering and equipping of CCGS "F. G. Creed", a SWATH (Short Waterline Area, Twin Hull) vessel, to serve as a mobile stable platform for directional measurements of waves and near-surface wind and air pressure (RSMAS), micrometeorological measurements from a bow mast (RSMAS, BIO) and wave measurements with a marine radar (BIO, for J. Buckley of RMC Kingston). Also a CHS multi-beam mapping sonar system (SimRad E-1000) was used to make a detailed survey of the sea bottom near the center of the buoy array.

The experiment was set in the shoal areas off the U. S. Army Corps of Engineers Field Research Facility (FRF) at Duck, N. C., near Cape Hatteras. The measuring period was September-December 1999. An array of data buoys was deployed to measure directional wave spectra, near surface meteorology, water and bottom turbulence, and the air-sea fluxes of heat and momentum. More detailed coverage of the area was provided by the SWATH vessel and four research aircraft. The near-shore area was also covered by an HF radar system.

The papers will be based on collaborative efforts, coordinated and reviewed in a series of four data workshops held over the past three years. A new level of understanding of the wave development process in shallow water will emerge. The intent is that the knowledge gained will be absorbed into a new, more accurate range of wave prediction models. For a list of the papers proposed so far for the JPO Special Edition, contact Mark Donelan [mdonelan@rsmas.miami.edu](mailto:mdonelan@rsmas.miami.edu). For more information on SHOWEX see the websites of the individual participant groups, e.g. [www.noaa.inel.gov/projects/showex/](http://www.noaa.inel.gov/projects/showex/), [www.shef.ac.uk/~sceos/environmental/showdex.html](http://www.shef.ac.uk/~sceos/environmental/showdex.html), <http://box.mmm.ucar.edu/community/showex.html>, <http://cdip.ucsd.edu/models/wave.model.shtml>, etc.

### **[Geoff Holland, Ocean Ambassador Activities](#)**

Geoff Holland ([hollandg@saltspring.com](mailto:hollandg@saltspring.com)), one of the two ocean ambassadors to the Minister of Fisheries and Oceans, has been invited to give the Intergovernmental Oceanographic Commission paper at a special international conference, "An Historical Perspective of Operational Marine Meteorology and Oceanography", in Brussels, Belgium, 17 –18 November, 2003. The Conference marks the 150<sup>th</sup> anniversary of a landmark maritime conference, also held in Brussels, convened by Lt. Matthew Fontaine Maury (US Navy) for the purpose of "establishing a uniform system of meteorological observations at sea, and of concurring in a general plan of observation on the winds and currents of the ocean". The first historical conference led more or less directly to the first International Meteorological Congress in Vienna in 1973 and to the establishment of the International Meteorological Organization, now the World Meteorological Organization. The event is being organized in association with CLIMAR-II and will include displays of both historical and state-of-the-art equipment and some scope for contributed posters, although the presentations are primarily invited papers. Details of the Conference are available on at [http://www.cdc.noaa.gov/coads/climar2/climar2\\_cele.html](http://www.cdc.noaa.gov/coads/climar2/climar2_cele.html)

Also on the subject of anniversaries, the Bedford Institute of Oceanography, is very aware of the importance of history and that a fiftieth anniversary, although several years away, will create an interest in its establishment and early years. Two important figures in the creation of the Institute, Dr. W.M. Cameron and the first Director of BIO, Dr. W.N. English are both still active and living on the West Coast. They have both agreed to be interviewed by Geoff and to record their own perspectives on the birth of the Institute and the related ocean science policies, personalities and politics of the early sixties.

### **International Association for the Physical Sciences of the Oceans (IAPSO)**

Lawrence Mysak ([mysak@zephyr.meteo.mcgill.ca](mailto:mysak@zephyr.meteo.mcgill.ca)) was elected a Vice -President of IAPSO <http://www.iugg.org/iapso/> at the Sapporo IUGG assembly, for the period 2003-07. Between IUGG meetings, IAPSO holds separate meetings, the last one being a joint IAPSO-IABO meeting in Mar del Plata, Argentina, Oct. 2001. The next IAPSO meeting will be held jointly with IAG (International Association for Geodesy) in Cairns, Australia, in 2005. Finally, in 2007 IUGG will meet in Perugia, Italy where IAPSO will organize a number of symposia.

### **Canadian CLIVAR Research Network**

Jacques Derome, [jacques.derome@mcgill.ca](mailto:jacques.derome@mcgill.ca)  
Canadian CLIVAR Network PI

The Canadian CLIVAR Research Network held the 18th Stanstead Seminar, June 16-20 at Bishop's University, Quebec, on the theme: Climate Variability and Predictability from Seasons to Decades. Each morning started with a one-hour presentation by invited speakers (C. Deser, J. Hurrell, T. Jung, A. Miller and T. Stockdale), followed by contributed presentations. The scientific program, Power Point files for most of the presentations and other information on the Seminar can be found at: <http://www.clivar.ca/stanstead>

Extended abstracts of the presentations are being collected and will be published shortly. Anyone interested in obtaining a copy should contact Ms. Lisa LeBlanc, Canadian CLIVAR Network Manager at [lisa.leblanc@mcgill.ca](mailto:lisa.leblanc@mcgill.ca). Additional information on the Canadian CLIVAR Network can be found at: <http://www.clivar.ca/network>

### **Oceanographic data exchange: new IOC policy**

The Intergovernmental Oceanographic Commission (IOC), at its 22<sup>nd</sup> Assembly, approved a data policy framework for the international exchange of oceanographic data and its associated metadata. The timely, free and unrestricted exchange of oceanographic data is essential for the global community to be able to manage our environment and resources, and support safe navigation.

The framework for the new IOC policy encompasses a number of initiatives, including (i) access to all data, associated metadata and products generated under the auspices of IOC programmes, (ii) encouragement of access to relevant data and associated metadata from non-IOC programmes that are essential for application to the preservation of life, beneficial public use and protection of the ocean environment, the forecasting of weather, the operational forecasting of



the marine environment, the monitoring and modelling of climate and sustainable development in the marine environment, and (iii) encouragement of the provision and access to oceanographic data and associated metadata for non-commercial use by the research and education communities, provided that any products or results of such use shall be published in the open literature without delay or restriction.

The Policy acknowledges the right of Member States and data originators to determine the terms of such exchange, in a manner consistent with international conventions. Member States will use data centres linked to IOC's National Oceanographic Data Centre and World Data Centre network as long-term repositories for oceanographic data and associated metadata. Member States shall enhance the capacity in developing countries to obtain and manage oceanographic data and information and assist them to benefit fully from the exchange of oceanographic data, associated metadata and products. The Department of Fisheries and Oceans (DFO) already has in place a very similar data policy. For additional details on both the existing DFO policy and the new IOC policy contact Savi Narayanan [narayanans@dfo-mpo.gc.ca](mailto:narayanans@dfo-mpo.gc.ca).

### **2004 Ocean Sciences Meeting**

The 12th Ocean Sciences Meeting will be held for the first time in Portland, Oregon, 26-30 January 2004, and CMOS is one of the co-sponsors. Bill Crawford (IOS/DFO), [crawfordb@pac.dfo-mpo.gc.ca](mailto:crawfordb@pac.dfo-mpo.gc.ca) is the CMOS representative on the program committee. Join your colleagues by submitting your abstract and participating in this exciting event. Conference Website: <http://www.agu.org/meetings/os04/>

#### **Important Dates:**

October 9, 2003      Deadline for abstract submissions by postal or express mail.  
October 16, 2003     Deadline for electronic online abstract submissions.  
December 29, 2003    Deadline for pre-registration and housing.

### **Eastern Pacific Ocean Conference (EPOC)**

The 51st Annual Eastern Pacific Ocean Conference (EPOC 2004) will be held at Dunsmuir Lodge, Sidney, British Columbia, in September 2004. EPOC provides an opportunity for scientists to meet and present their original research findings on the Eastern Pacific Ocean to a community of 40 to 75 scientists. This will be only the second time EPOC has met outside the USA. Watch for more information on conference themes later this year. Local Host: Bill Crawford, IOS/DFO, [crawfordb@pac.dfo-mpo.gc.ca](mailto:crawfordb@pac.dfo-mpo.gc.ca)

### **Third IGBP Congress, Banff, Alberta**

Ken Denman, [Ken.Denman@ec.gc.ca](mailto:Ken.Denman@ec.gc.ca), Canadian Centre for Climate Modelling and Analysis, University of Victoria & Institute of Ocean Sciences

The Third International Geosphere-Biosphere Programme (IGBP) Congress 'Connectivities in the Earth System' was held at the Banff Centre, 19-24 June 2003. The Scientific Steering Committees of IGBP projects met the first and last days, and in between were various plenary talks and half to full day workshops. I attended as a member of the SOLAS (Surface Ocean

Lower Atmosphere Study) SSC. SCOR is a cosponsor of the ocean-related projects: SOLAS, GLOBEC (Global Ecosystem Dynamics) and the new OCEANS project (after this meeting to be called IMBER - Integrated Marine Biogeochemistry and Ecosystem Research).

In 2003, the IGBP reorganized its projects into land, atmosphere and ocean themes, and interfacial boundary themes, plus crosscutting activities such as GAIM (Global Analysis Integration and Modelling). There is now a tendency for IGBP scientific planning to be more 'top down' than in the past, with strong emphasis on cross-cutting projects and bringing in the human dimension. This programmatic direction was reflected in several of the plenary talks, which to my mind had an evangelical flavour: 'The ocean as part of the Earth System', 'The atmosphere in the Earth System: research in the "Anthropocene" ', and 'The land in the Earth System'. Most of the other plenary talks were high quality, interesting and provocative. For me the best paper was 'Long time perspectives on the Earth System: valuable lessons from natural experiments in climate change', given by Thomas Stocker of the University of Bern, who worked with Lawrence Mysak and Dan Wright at McGill about 15 years ago.

The working group discussions were of mixed quality. I was fascinated by the discussion in 'Natural and human-induced iron/N addition to the ocean' chaired by Hein de Baar of the Netherlands. It is comforting to realize that even the iron specialists find the biochemistry of iron in the ocean both puzzling and complex. Other working groups that I attended were 'Top-to-bottom food web studies, from viruses and phytoplankton to fish', 'Introducing the dynamic biosphere into Earth System models' which unfortunately dealt only with the terrestrial biosphere, and 'Marine implementation issues: SOLAS/IMBER'. The last working group was one of several: apparently the GLOBEC/IMBER meeting was much more lively because the IGBP Scientific Committee has decided that IMBER will be THE ocean project, with GLOBEC being merged into it. This issue is one that has ramifications for SCOR, as a co-sponsor of both projects.

The deliberate emphasis on connectivities and including the human dimension in IGBP projects made me wonder if science is going to take a back seat, but occasionally we were assured that IGBP would not forget about 'scientific excellence'. From my point of view, the bigger issue for IGBP and SCOR is one of capacity building and inclusion of scientists from developing countries. In western society, we have been conditioned to our research receiving critical review both in the proposal stage and the publication stage, and so we have become in many ways a scientific elite. It follows, according to our narrow logic, that in these large international projects, we will conduct scientific research of the highest quality and share the results to the benefit of developing countries. But at this meeting enough people from developing countries spoke out to make it clear that they want to participate in the science as partners, not just be given the results. I do not have any answers, but I feel this issue is one that should receive considerable attention by SCOR.

I do not want to leave the impression that I did not find the meeting worthwhile. I enjoyed the venue, and I was privileged to meet and talk with many new and old colleagues. One evening, I was having a beer with two others when Paul Crutzen, Nobel Laureate for explaining the processes causing the ozone hole, joined us for a beer. That was a singular experience in my life.



(Powerpoint presentations from the plenary talks, and working group reports are available from the IGBP website (<http://www.igbp.kva.se>) at <http://www.igbp.kva.se/congress/>

### **Paul LeBlond Letter on Interaction between CNC/SCOR and CMOS**

Paul LeBlond, CMOS Fellow; Galiano Island; [leblond@gulfislands.com](mailto:leblond@gulfislands.com)

A Canadian Ocean Sciences e-mail newsletter. Great idea! What surprised me was to find it under the banner of SCOR, which immediately triggered my CMOS loyalty reflex. Why isn't CMOS doing this and will CMOS' prestige and authority as a voice for Canadian oceanographers be thereby diminished by this sharing of the limelight? What is CNC-SCOR's agenda in broadening its interests beyond its primary purpose of "furthering international scientific activities in all branches of oceanic research"?

I was quickly re-assured that the initiative had the full support of CMOS - while CNC-SCOR is jointly funded by DFO and NRC, its members are mostly (perhaps all) members of CMOS; the CNC-SCOR website [www.cncscor.ca](http://www.cncscor.ca) is hosted under the CMOS site; and the CNC-SCOR annual report appears within the pages of the Annual CMOS Review (pp.30 ff). "Practically a CMOS committee" in the words of CNC-SCOR's secretary.

That notwithstanding, it might be advisable to clarify for the readers- some of whom may be less than appreciative of the value of institutional name-recognition - that CMOS indeed supports this initiative, although it is not one of the publications under its editorial control. I trust the editor and the CMOS executive can come to some simple solution that addresses this issue.

### **Subscriptions to Canadian Ocean Science Newsletter**

There are presently **345** subscribers to the electronic Canadian Ocean Science Newsletter. The breakdown is: **114** from universities (Acadia, Alberta, Concordia, Dalhousie, INRS, Laval, McGill, Memorial, Ottawa, Queen's, RMC, Royal Roads, Sherbrooke, Toronto, UBC, UNB, UQAC, UQAM, UQAR, Victoria, Western, Windsor, York), **190** from federal government agencies (DFO, EC, NRC, NRCan, NSERC) and **41** from others (private sector, retirees, other countries, specialized agencies).

### **Ocean Science Theses**

The Canadian National Committee (CNC) for SCOR is undertaking an initiative to gather and publish the titles of completed Masters and PhD theses in oceanographic sciences. Compilations from the University of Victoria, University of British Columbia, University of Alberta, Québec-Océan, and Dalhousie University have already been posted on the CNC/SCOR web site at [www.cncscor.ca](http://www.cncscor.ca). Additional summaries from other universities are welcome and should be sent to [dick.stoddart@sympatico.ca](mailto:dick.stoddart@sympatico.ca).

### **Students Circumnavigation of the Pacific Ocean**

A lucky group of about forty high school students left Victoria Harbour, B.C., on August 20 on the sailing vessel Concordia. This three-masted, 54 meter, vessel was embarking on a 20,000

nautical mile circumnavigation of the Pacific Ocean. She will visit three continents and make 22 ports of call during the voyage, before returning to Victoria on June 24, 2004. The students will follow a full school curriculum in addition to being exposed to a huge variety of environmental and cultural experiences. Geoff Holland ([hollandg@saltspring.com](mailto:hollandg@saltspring.com)), one of the Ocean Ambassadors of DFO and Jim Boutilier of Victoria University, were invited to address the students and their families and friends at a reception on board, just prior to departure. There was a mixture of excitement and apprehension, with questions about forecasting storms, pirates in the South China Seas and life in the South Pacific islands. More can be found at the website [www.classafloat.com](http://www.classafloat.com)

### **Canadian Foundation for Climate and Atmospheric Sciences (CFCAS)**

The latest round of grants by the Canadian Foundation for Climate and Atmospheric Sciences was announced on July 1, 2003. Details of the 22 new grants, totaling \$7 million, to researchers in climate and ocean sciences may be found at <http://www.cfcas.org/round4fundedde.htm>. This brings the total CFCAS investment in research over the last three years to over \$44 million. Details on previous grants may be found at [http://www.cfcas.org/funded\\_projects\\_e.html](http://www.cfcas.org/funded_projects_e.html).

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