



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

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OCEAN SCIENCE PROGRAMS

Arrival of the Fukushima radioactivity plume in North American continental waters

Following the release into the western North Pacific Ocean of radioactive ^{134}Cs and ^{137}Cs from the damaged Fukushima nuclear power plant, DFO established a monitoring program to track the movement of radioactivity across the Pacific. Some results are presented in an article by John N. Smith, Robin M. Brown, William J. Williams, Marie Robert, Richard Nelson, and S. Bradley Moran published in the Proceedings of the National Academy of Sciences (PNAS) in December 2014 and highlighted in the latest CMOS Bulletin: *CMOS Bulletin SCMO, April 2015, Vol.43, No.2, pages 51-57*.

Below is the article abstract:

The large discharge of radioactivity into the northwest Pacific Ocean from the 2011 Fukushima Dai-ichi nuclear reactor accident has generated considerable concern about the spread of this material across the ocean to North America. We report here the first systematic study to our knowledge of the transport of the Fukushima marine radioactivity signal to the eastern North Pacific. Time series measurements of ^{134}Cs and ^{137}Cs in seawater revealed the initial arrival of the Fukushima signal by ocean current transport at a location 1,500 km west of British Columbia, Canada, in June 2012, about 1.3 year after the accident. By June 2013, the Fukushima signal had spread onto the Canadian continental shelf, and by February 2014, it had increased to a value of 2 Bq/m³ throughout the upper 150 m of the water column, resulting in an overall doubling of the fallout background from atmospheric nuclear weapons tests. Ocean circulation model estimates that are in reasonable agreement with our measured values indicate that future total levels of ^{137}Cs (Fukushima-derived plus fallout ^{137}Cs) off the North American coast will likely attain maximum values in the 3–5 Bq/m³ range by 2015–2016 before declining to levels closer to the fallout background of about 1 Bq/m³ by 2021. The increase in ^{137}Cs levels in the eastern North Pacific from Fukushima inputs will probably return eastern North Pacific concentrations to the fallout levels that prevailed during the 1980s but does not represent a threat to human health or the environment.

You can download the complete article [here \(pdf file\)](#).

CNC-SCOR

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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.

News from SCOR Working Groups

SCOR WG 139 on Organic Ligands – A Key Control on Trace Metal Biogeochemistry in the Ocean held its final meeting and final workshop ([click here](#)) in Šibenik, Croatia on 7-11 April. In addition to the special issue of Marine Chemistry just published, the group is considering publication of another special issue.

SCOR WG 140 on Biogeochemical Exchange Processes at the Sea-Ice Interfaces (BEPSII) produced a major review article in the new journal *Elementa: Science of the Anthropocene*. The article is entitled “Methods for biogeochemical studies of sea ice: The state of the art, caveats, and recommendations” and was led by Lisa Miller (Canada). The article can be accessed [here \(click\)](#). This is the first article in an *Elementa* Special Feature being produced by WG 140.

SCOR WG 145 on Chemical Speciation Modelling in Seawater to Meet 21st Century Needs (MARCHEMSPEC) held its first meeting in Šibenik, Croatia, on 12-13 April. A major focus of the meeting was the preparation of a prioritized list of the chemical components (major and minor seawater ions, and trace elements) to be modelled; the relevant temperatures, salinities and pressures; and planning the review of the availability of thermodynamic data. The meeting also discussed activities to be carried out over the next 12 months. These activities include preparation of an article describing the list, giving the practical justifications for the different items, and its publication in the chemical and geochemical literature; compilation of external contacts for consultation; plans for securing additional funding; and a review of the user interfaces in selected speciation modelling packages. In addition, a Working Group Web site will be established. The results of these activities will be reviewed at the second meeting of the Working Group, which will be held in conjunction with Ocean Sciences 2016 in New Orleans.

SCOR WG 146 on Radioactivity in the Ocean, 5 decades later (RiO5) will hold its first meeting in Woods Hole, Massachusetts, USA on 15-17 July. The group has established a Web site ([click here](#)). The meeting will discuss existing and developing radionuclide databases and will explore available data to develop global distribution maps of radioactivity in the ocean. Outlines will be developed for synthetic papers to present the current state of the global ocean for natural and artificial radionuclides, based on data from the databases identified. Spatial distributions and evolution as well as a global overview of potential risk will be the focus of the artificial radionuclide datasets, while objectives for naturally occurring radionuclides include their relevance to applications and newly available tools. The meeting will discuss challenges and frontiers in marine radiochemistry and radioecology. Participants will also discuss plans to increase the content of the group’s Web site and how to build and disseminate educational materials for the public and students. Finally, planning will be initiated for an international symposium on marine radioactivity.

SCOR WG 147: Towards Comparability of Global Oceanic Nutrient Data (COMPONUT) held its first meeting on 14-15 April in Vienna, Austria, in conjunction with the General Assembly of the European Geosciences Union. The meeting discussed the use of reference materials and certified reference materials, and the current status of nutrient measurements in seawater.

PERSONEL

New PICES Executive Secretary: Mr. Robin Brown

From the CMOS Bulletin SCMO, April 2015, Vol.43, No.2, pages 79-80

After almost 30 years in Department of Fisheries and Oceans (DFO) and more than 15 years as the Division Manager of the Ocean Sciences Division of DFO at the Institute of Ocean Sciences, Robin Brown has left DFO to take up the position of Executive Secretary of PICES, the North Pacific Marine Science Organization (<http://www.pices.int>), effective February 23, 2015.

We wish Robin all the success in his new role as Executive Secretary of PICES. We are certain that Robin will bring to PICES the same leadership, dedication, and sense of humour as he has done with DFO during his distinguished career. Robin replaces Dr. Alex Bychkov who has served PICES as its Executive Secretary since 1999 and has overseen the maturation of PICES as an organization. Members of CMOS and of the Ocean Science community would like to express their appreciation to Alex for his invaluable contribution to PICES and, through this organization, to the wider ocean science community.



Mr. Robin Brown

About PICES

The North Pacific Marine Science Organization (PICES), an intergovernmental scientific organization, was established in 1992 to promote and coordinate marine research in the northern North Pacific and adjacent seas. Its present members are Canada, Japan, People's Republic of China, Republic of Korea, the Russian Federation, and the United States of America. The purposes of the Organization are as follows:

- Promote and coordinate marine research in the northern North Pacific and adjacent seas especially northward of 30 degrees North.
- Advance scientific knowledge about the ocean environment, global weather and climate change, living resources and their ecosystems, and the impacts of human activities.
- Promote the collection and rapid exchange of scientific information on these issues.

About Robin Brown

Robin Brown was born in Vancouver, British Columbia, and grew up on the water. During his early years, he and his family spent weekends and vacations traveling up and down the inner coastal waters of the BC coast. In his high school and university years, he became deeply involved in sailboat racing in all kinds of craft from high performance dinghies to offshore racing yachts, culminating in an appointment to the National Sailing Team.

Robin attended the University of British Columbia, graduating with a degree in marine biology. In his final year, he was hired by Prof. Tim Parsons as a Research Assistant to assist in operations at the Controlled Ecosystem Pollution Experiment (CEPEX), a large plankton mesocosm facility on the site of the Institute of Ocean Sciences (IOS) in Sidney, BC. This was his first exposure to international science, as the facility hosted investigators from Canada, USA, Japan, Germany, and the United Kingdom.

At the conclusion of the CEPEX project, Robin went to work for a local oceanographic consulting company, carrying out projects in optical remote sensing, physical oceanography and chemical oceanography in diverse Canadian locations, including Newfoundland and the Canadian Arctic. In 1985, he was hired by Dr. Ken Denman into the Department of Fisheries and Oceans at IOS as a Multidisciplinary Oceanographer. In 1992 he transitioned to the position of Oceanographic Data Manager. In this position, he undertook his first PICES appointment as the first Chairman of the Technical Committee on Data Exchange (TCODE) and has attended every PICES Annual meeting since 1995.

Since 1999, Robin has been Manager of the Ocean Sciences Division of DFO at IOS, responsible for a research group of up to 70 physical, chemical, and biological oceanographers conducting research in the North Pacific and the Arctic. In this period, he also served on a number of PICES expert groups and committees, including TCODE, Science Board, FUTURE Advisory Panel on Status, Outlooks, Forecasts and Engagement, the Finance and Administration Committee, and the Governing Council.

In 2012, he was appointed as co-chair of a Canadian Federal-Provincial interagency working group to assess potential impacts of debris resulting from the 2011 Tohoku earthquake and tsunami. In 2013, he was appointed as the lead Canadian Commissioner to the North Pacific Anadromous Fish Commission.

Robin and his wife, Leslie (also a biological oceanographer and a graduate student of Prof. Tim Parsons), live a short distance from the PICES Secretariat at IOS. This allows him to commute by bicycle year-round, which is normal in southern coastal BC, but rare in the rest of Canada. Robin and Leslie are “empty-nesters” with three adult children living in Victoria, Calgary, and Kalamazoo, Michigan (USA).

Retirement of William K.W. Li from the Department of Fisheries and Oceans

Submitted by Erica Head, Bedford Institute of Oceanography

Dr. Bill Li retired on March 30, 2015 after 35 years as a Research Scientist with the Department of Fisheries and Oceans (DFO) at the Bedford Institute of Oceanography (BIO). The list of his career achievements is long, but those who have worked with him have also learned to value his personal qualities: his breadth of knowledge, his integrity, his attention to detail and his willingness to take on, or assist others with, any of the tasks that come with working for a government department.

Bill's field of expertise is in Microbial and Phytoplankton Ecology and before joining DFO he developed his ideas and skills with the help of some well-known Canadian and US marine scientists: Tim Parsons was his undergraduate Thesis supervisor at the University of British Columbia, Bob Fournier was his PhD supervisor at Dalhousie University, and Ian Morris and Joel Goldman were his Post-graduate supervisors at the Bigelow Laboratory for Ocean Sciences and the Woods Hole Oceanographic Institution.



Early in his career at DFO in 1985 Bill was the recipient of a Certificate of Honourable Mention in Ecology and Environmental Science (Royal Society of Arts, London) and in 1986, of an APICS-Fraser Gold Medal for Outstanding Research (Atlantic Provinces Council on the Sciences). More recently, in 2012 he was a member of two research teams that received BIO Crystal Awards, and in 2014 he was given the prestigious John Martin Award¹. The latter is awarded by ASLO (the Association for the Sciences of Limnology and Oceanography) for a paper in aquatic sciences that is judged to have had a high impact on subsequent research in the field. The paper for which he received the award was published early during Bill's career in 1983 and since then has received more than 400 citations².

In his award-winning paper Bill demonstrated that very tiny organisms, picoplankton of less than 1 micrometer in diameter, could contribute up to 80% of the photosynthetic carbon fixation in tropical ocean waters. During the following years, assisted by the acquisition of a then state-of-the-art flow

¹ See the CMOS Bulletin SCMO, Vol.42, No.3, pages 83-86

² Li, WKW, D.V. Subba Rao, W.G. Harrison, J.C. Smith, J.J. Cullen, B. Irwin and T. Platt, 1983. Autotrophic picoplankton in the tropical ocean. *Science*, 219:292-295.

cytometer, Bill showed that photosynthetic picoplankton were not restricted to tropical regions, but could be found at higher latitudes. In fact, he has recently demonstrated that some of these small phytoplankton forms can be found as far north as the Arctic Ocean³.

The flow cytometer is an instrument that counts and characterises small particles as they pass through a laser beam in a fluid stream absorbing, scattering and re-emitting light. The acquisition of his first flow cytometer, and more modern incarnations since, and of water samples from around the world, led Bill into the field of macroecology. Bill has been one of the pioneers in marine macroecology, which is the study of ecological communities with a focus on patterns and processes.

Over the course of his career Bill has authored or co-authored more than 100 articles that have appeared in peer-reviewed scientific journals, twelve of which have received more than 100 citations. His contributions to other written publications (*e.g.* DFO reports, reviews and research documents, ICES⁴ reports *etc.*) are numerous, as are his evaluations and commentaries on the published work of others, through his membership of the F1000 Ecology Faculty. As well as his written output, Bill has also served on the Editorial Boards, or as an Editor, for several well-respected scientific journals. He has also been the Canadian delegate on international working groups for a series of topics (*e.g.* United Nations Environment Program (Convention on Biological Diversity, Northwest Atlantic Ecologically or Biologically Significant Areas), “Arctic Five” Scientific Meeting on Arctic Fish Stocks, ICES (Phytoplankton and Microbial Ecology), Census of Marine Life (Gulf of Maine Microbial Communities)), has organised or co-organised international scientific conferences and has had numerous invitations to speak at conferences and other venues.

Between 2010 and 2014 Bill served as the Section Head for the Marine Ecosystems Section, within the Ocean and Ecosystem Sciences Division (OESD) at the Bedford Institute of Oceanography. Bill applied himself to the task with his usual efficiency and the personal qualities which he brought to the position made him a valuable member of the management team. His contributions to strategic planning and advice were highly valued by the OESD Management Committee during a period of significant change within DFO. In his science management role, Bill effectively mastered Stephen Covey’s Habits 4-6 (principles of interdependence)⁵, which are particularly important in a government science work environment where effective teamwork is paramount.

Bill will be missed by his colleagues but not completely, since he has joined the ranks of the “Emeritus scientists” and will be at BIO for years to come, if not as early in the morning, or as late in the afternoon as before. The expectation is that now Bill has laid down the burdens of DFO administration duties and bureaucracy, his scientific productivity will only increase.

³ Li WKW, Carmack EC, McLaughlin FA, Nelson RJ, Williams WJ, 2013. Space-for-time substitution in predicting the state of picoplankton and nanoplankton in a changing Arctic Ocean. *Journal of Geophysical Research – Oceans*, 118: 5750-5759.

⁴ ICES – International Council for the Exploration of the Sea

⁵ Covey, S.R., 1989. *The 7 Habits of Highly Effective People*. New York, New York. Free Press.

Gesche Winkler est la nouvelle Présidente de Québec-Océan

Québec-Océan est un regroupement de scientifiques et de leurs partenaires oeuvrant en recherche océanographique. Plus de 200 membres issus de 6 universités québécoises, de plusieurs ministères et d'organismes non-gouvernementaux collaborent pour développer l'océanographie, incluant la formation des étudiants et le transfert des connaissances.

Le 3 mars 2015, le Conseil d'Administration de Québec-Océan a élu Gesche Winkler comme nouvelle Présidente du regroupement stratégique. Gesche Winkler est Professeur- Chercheur en écologie du zooplancton à l'UQAR-ISMER. Elle succède à Michel Gosselin qui siégeait à titre de Président depuis 2006. Monsieur Gosselin a grandement contribué à l'avancement du regroupement et l'a fièrement représenté sur les scènes nationales et internationales.



Gesche Winkler is the new President of Québec-Océan

Québec-Océan is a group of scientists and their partners involved in oceanographic research. More than 200 members from 6 Quebec universities, several ministries and non-governmental organisations collaborate to develop oceanography, including student training and knowledge transfer.

On March 3rd 2015, the Board of directors of Québec-Océan elected Gesche Winkler as new President of the strategic cluster. Gesche Winkler is a Professor-Researcher in zooplankton ecology at UQAR-ISMER. She succeeds Michel Gosselin who had been President since 2006. Mr. Gosselin has contributed greatly to the progress of Québec-Océan and proudly represented it nationally and internationally.

MEETINGS

CMOS Congress 2015 / Congrès 2015 de la SCMO

The 49th CMOS Congress will be held in beautiful Whistler, British Columbia, from May 31 to June 4, 2015. This congress will be held jointly with the 13th American Meteorological Society (AMS) Conference on Polar Meteorology and Oceanography. The theme of this joint conference is "*Tropics to Poles Advancing Science in High Latitudes*". Visit the [congress website](#) for more information.

Note that the Plenary Speakers [biographies](#) and [abstracts](#) are now available.

Le 49^e congrès de la SCMO se tiendra du 31 mai au 4 juin 2015 dans la magnifique ville de Whistler, Colombie Britannique. Ce congrès se tiendra en même temps que la 13^e conférence de l'AMS sur la météorologie polaire et l'océanographie. Le thème de cette conférence conjointe est "*Des Tropiques aux Pôles: Avancement de la science des hautes latitudes*". Consultez le [site web du congrès](#) pour plus d'information.

Notez que les [biographies](#) et les [résumés](#) des conférenciers plénières sont maintenant disponible.

CNC-SCOR Annual Meeting, 31 May, Whistler, BC

CNC-SCOR will hold its annual business meeting on the first day of the 49th CMOS Congress. The Committee will meet Sunday 31st May at 10:00 in the Wedgemount room of the Whistler Conference Centre.

IMBIZO open science meeting, 26-30 October 2015, Trieste, Italy

The Integrated Marine Biogeochemistry and Ecosystem Research (IMBER) project will be convening its fourth IMBIZO open science meeting on 26-30 October 2015 in Trieste, Italy. The theme of this IMBIZO is “Marine and human systems: Addressing multiple scales and multiple stressors”. Click [here](#) for more information.

Because the number of IMBIZO IV attendees is limited, you need to submit an abstract to be considered as a participant in one of the workshops. Please click [here to submit an abstract](#) for the workshop of your choice **before 30 May 2015**.

SOLAS Open Science Conference, 7-11 September , Kiel, Germany

The **Surface Ocean – Lower Atmosphere Study (SOLAS)** will be holding its 2015 Open Science Conference in Kiel, Germany on 7-11 September. Click [here](#) for details.



CANADIAN JOBS and TRAINING

Titulaire de chaire de recherche du Canada en océanographie biologique

L'Institut des sciences de la mer de Rimouski (ISMER) est à la recherche d'un chercheur de haut niveau pour occuper une chaire de recherche du Canada niveau 2 en océanographie biologique.

[Cliquer ici](#) pour plus de détails.

Canada Research Chair in Biological Oceanography

The Institut des sciences de la mer de Rimouski (ISMER) is seeking an exceptional emerging researcher to obtain a Canada Research Chair (Tier 2) in biological oceanography.

[Click here](#) for more details.

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

Vous recherchez un emploi? Visitez le site SCMO ([click](#))

GENERAL

NSERC Awards for Science Promotion / Prix du CRSNG pour la promotion des sciences

The NSERC Awards for Science Promotion honour individuals and groups who make an outstanding contribution to the promotion of science in Canada through activities encouraging popular interest in science or developing science abilities. Two recipients (one individual and one group) may be selected for the awards each year. The individual recipient will receive an award of \$10,000. The winning group will be awarded \$25,000 to further science promotion activities.

The nomination deadline is 1 September 2015. For more information please [click here](#).

Les Prix du CRSNG pour la promotion des sciences rendent hommage aux particuliers et aux groupes qui apportent une contribution exceptionnelle à la promotion des sciences au Canada par l'entremise d'activités visant à encourager la population à s'intéresser aux sciences ou à acquérir des aptitudes en sciences. Deux lauréats (un particulier et un groupe) peuvent être sélectionnés chaque année pour recevoir un prix. Le lauréat individuel reçoit 10 000 \$. Le groupe lauréat reçoit quant à lui 25 000 \$ pour appuyer des activités de promotion des sciences.

La date limite de présentation des candidatures est le 1er septembre 2015. Visiter le site web ([cliquer ici](#)) pour plus d'information.

Report on REIMEP-22 inter-laboratory comparison now available

The report on the Regular European Interlaboratory Measurement Evaluation Programme (REIMEP-22) on U Age Dating - Determination of the production date of a uranium certified test sample is now available online as a pdf file at the following link: ec.europa.eu/jrc/en/interlaboratory-comparison/reimep-22

This inter-laboratory comparison (ILC) involves the measurements and report of the isotope amount ratios of $n(^{230}\text{Th})/n(^{234}\text{U})$ in 20 mg U sample or of the isotope activity ratio $n(^{230}\text{Th})/n(^{234}\text{U})$ in 50 mg uranium sample, in order to determine the production date of the uranium certified test sample.

Workshop on Seafloor Ecosystem Functions and their Role in Global Process

SCOR is sponsoring a workshop on "Seafloor Ecosystem Functions and their Role in Global Processes", to be held 16-18 September 2015 in Naples, Italy. Paul Snelgrove of Memorial University of Newfoundland (Canada) will convene the meeting for SCOR. Processes that occur at, immediately above, and just below the seafloor play an important role in global biogeochemical cycles, from coastal areas to the deep ocean. The workshop will assemble 12 participants with different perspectives, to generate an exciting, productive, and inclusive conversation to advance this topic. The goal of the workshop will be to produce an article for a peer-reviewed journal that could form the basis for a broader discussion by interested scientists. The group will provide advice to SCOR on future research needs on benthic ecosystems and processes in the global ocean.

The workshop aims to consider, synthesize, and define critical challenges and needs related not only to fundamental biogeochemical and biophysical science but also in relation to more focused issues of marine ecosystem services and pathways to sustainability of marine ecosystems.

World Oceans Day / Journée mondiale des océans

World Oceans Day, held every June 8th, is the UN-recognized day of ocean celebration and action. People all over our blue planet organize celebrations – which can be a huge event in your community, a special announcement, or anything in between – to support action to protect the ocean. This year, the theme is *Healthy oceans, healthy planet*, and we're making a special effort to stop plastic pollution. Ideas for activities and relevant articles are available on the [World Oceans Day](#) web site.



La journée mondiale des océans, qui a lieu chaque année le 8 Juin, est la journée reconnue par l'ONU pour la célébration de l'océan et pour la prise d'actions. Les gens de partout sur notre planète bleue organisent des fêtes - qui peuvent être un grand événement dans votre communauté, une annonce spéciale, ou quelque chose entre - pour soutenir l'action pour protéger l'océan. Cette année, le thème est *la santé des océans, santé de la planète*, et nous faisons un effort particulier pour arrêter la pollution plastique. Le [site web](#) offre des exemples d'activités de même que plusieurs articles d'intérêt.

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

Previous newsletters may be found on the CNC/SCOR web site.

Newsletter #83 will be distributed in July 2015.
Please send contributions to Michel Mitchell,
michel.mitchell@dfo-mpo.gc.ca

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Les bulletins antérieurs se retrouvent sur le site web du CNC/SCOR.

Le Bulletin #83 sera distribué en juillet 2015.
Veuillez faire parvenir vos contributions à Michel Mitchell,
michel.mitchell@dfo-mpo.gc.ca

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