Canadian National Committee for SCOR
Comité national canadien pour SCOR

Scientific Committee on Oceanic Research

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

Newsletter Number 129, March 2023
Bulletin numéro 129, mars 2023

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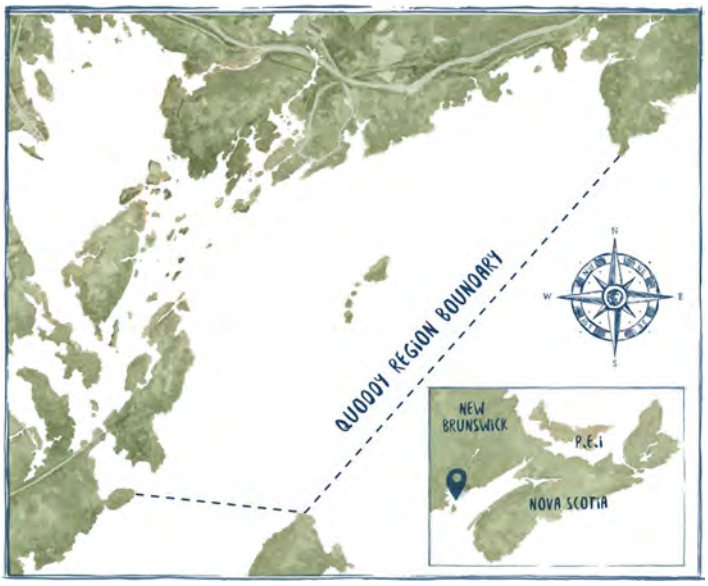
OCEAN SCIENCE NEWS
Dive Deeper

A virtual exhibit exploring the Quoddy region of the Bay of Fundy, presented by the Huntsman Marine Science Centre. Developed with the support of Digital Museums Canada.

The Dive Deeper site covers many interesting science topics in the region.

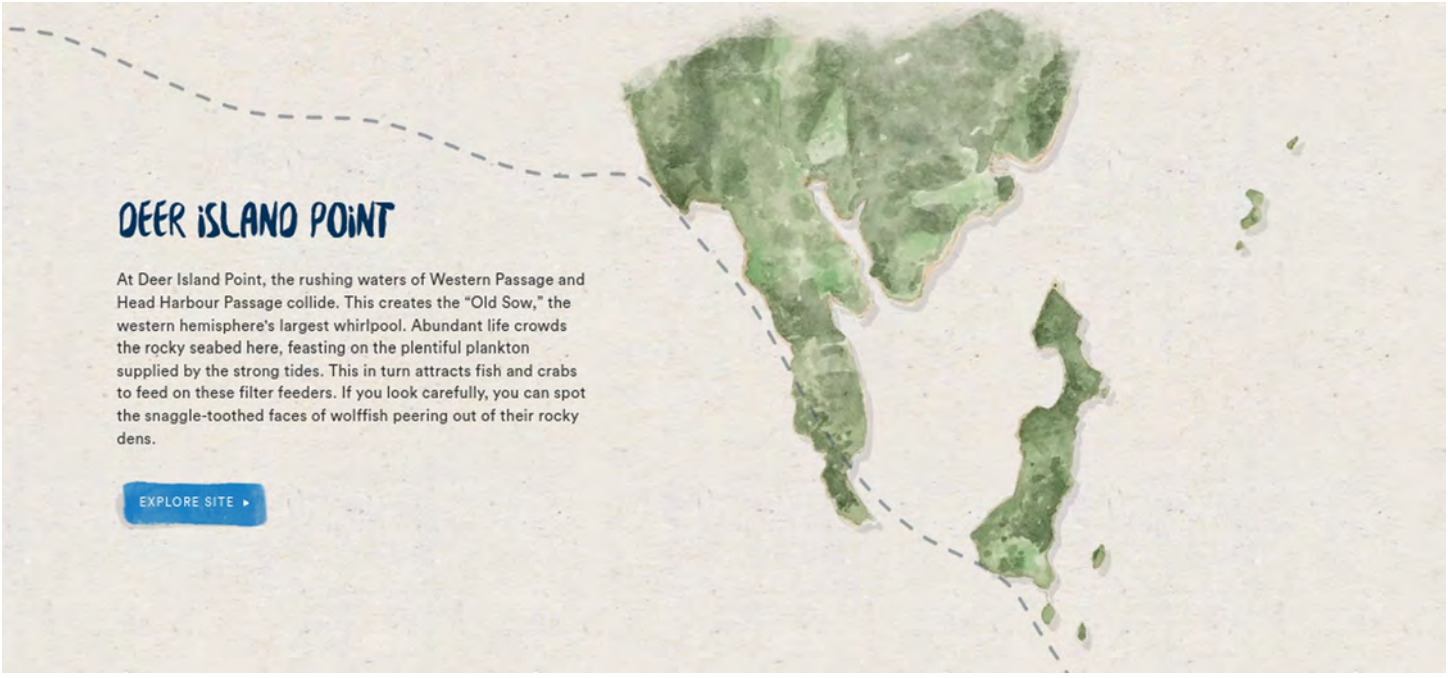
Come and dive into the Quoddy region -

The Quoddy region nestles in the southwest corner of the Bay of Fundy on Canada's east coast. Its diverse habitats range from the sheltered, muddy seabed of Passamaquoddy Bay to the tide-swept passages of the Western Isles. Now, we're bringing the seafloor to your fingertips. Immerse yourself in 360° videos of some amazing locations. Explore above and below the waves using our interactive seabed map. Use the virtual microscopes to see the tiniest of marine life. Find out how marine scientists explore this environment. We invite you to come dive in and experience life below the ocean waves with our group of marine scientists.



The name Passamaquoddy Bay comes from the Peskotomuhkati (Passamaquoddy) Tribe. It means “Bay of the Pollock” and refers to the plentiful fish stocks that drew First Nations people to the region.

Among the many aspects explored are:



And notes on some people you might know who are working in the area.

Link to the Dive Deeper site.

Ice to ocean biogeochemical investigations in the Canadian Arctic Archipelago

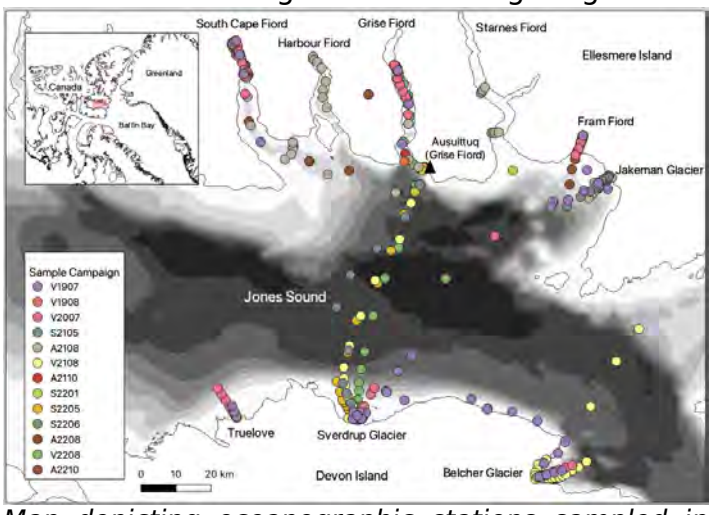
Maya Bhatia *Earth & Atmospheric Sciences, University of Alberta*

As glaciers melt, they contribute large quantities of freshwater, sediments, carbon, and nutrients to adjacent lands and the coastal ocean. Over the past decade, studies around the world point to the potential for melting glaciers to directly affect atmospheric greenhouse gas concentrations, and to indirectly impact biological productivity and carbon storage in high-latitude oceans. These findings have resulted in paradigm shifts within the field of glacier biogeochemistry, demanding collaborative efforts between glaciologists, oceanographers, paleo-scientists, and climate modelers to unravel the true role of glaciers in the global biogeochemical cycles on various timescales (past, present, future). Today, glaciers are melting at unprecedented rates, placing new urgency on understanding their influence on Earth's carbon-climate system. The Canadian Arctic Archipelago (CAA) is one of the fastest warming regions on the plant, where rapidly melting glaciers have cascading effects on the natural and human land- and sea-scape. Yet, compared to other polar regions, the CAA remains markedly unexplored with regards to the role that melting glaciers play in marine ecosystem productivity and carbon cycling, despite being a hotspot for glacial retreat and meltwater runoff to the ocean.

Sampling by the Sverdrup Glacier marginal stream, Devon Island, Nunavut. *Photo Credit: Erin Bertrand*

Servicing a timelapse camera overlooking the terminus of Sverdrup Glacier, Devon Island, Nunavut.
Photo Credit: Erin Bertrand

Working in the Canadian high Arctic is notoriously challenging due to remoteness of the region, limited availability of marine platforms, and costs of field operations. Thus, gaps in our understanding of the impact of melting glaciers on coastal marine ecosystems stem largely from a scarcity of *in situ* observations, especially in coastal and near-shore regions investigating the physical, chemical, and biological marine system. To combat these challenges in the eastern CAA, since 2019, in collaboration with the community of Aujuittuq and colleagues in chemical (*E. Bertrand, Dalhousie*) and physical (*S. Waterman, UBC*) oceanography as well as from glaciology (*D. Burgess, Natural Resources Canada*) we have worked to establish a multi-disciplinary marine program, building a network of collaborators in numerical modelling (*P. Myers,* Alberta), marine trace metals (*R. Bundy, U. Washington*), nitrogen cycling (*C. Buchwald, Dalhousie*), phytoplankton ecology (*H. Alexander, WHOI*). Our recent publications represent the first work in over 50 years in the Canadian Arctic Archipelago exploring the impact of glaciers on marine nutrient pools, in



Map depicting oceanographic stations sampled in Jones Sound from 2019-2022.
Map Credit: Andrew Hamilton

Sampling in Jones Sound, Nunavut. *Photo Credit: David Didier*

Jones Sound, Nunavut. Jones Sound is a region surrounded by glaciers draining ice caps and fields on Devon and Ellesmere Islands and is home to the Inuit hamlet of Aujuittuq (Grise Fiord), the northernmost community in Canada. Knowledge from this community indicates that the termini of local tidewater (marine-terminating) glaciers are particularly rich in wildlife, providing hunting grounds for its citizens. Guided by this knowledge, and in consultation with the community, we conducted an inaugural field season in 2019, finding that coastal marine regions with tidewater glaciers harboured significantly higher summer-time nutrient and trace metal concentrations compared to those regions without glaciers (*Bhatia et al., 2021*). Paired with this broad regional survey, we also completed a focal ice to ocean study at one tidewater glacier. This work is one of the few studies, and the first in the Canadian Arctic, to collect paired samples on the glacier surface, from the meltwater rivers, and in the coastal ocean, offering new perspectives on the capacity of shallow tidewater glaciers, which are common across the CAA, to facilitate nutrient upwelling in the near-shore zone (*Williams et al., 2021*). Forthcoming publications describe marine phytoplankton community dynamics using a novel proteomic method (*Roberts et al., submitted*).

To date, the work described above has resulted in the creation of a valuable timeseries of repeated oceanographic transects in remote, infrequently observed, eastern CAA regions. These observations of *in situ* physical (conductivity, temperature, depth, turbidity) and biological (photosynthetic active radiation, chlorophyll, dissolved oxygen) oceanographic water column measurements, as well as bottle samples for nutrients, nitrate isotopes, trace metals, mercury, carbon, microbial community composition and function span across almost 300 stations. In the future we plan to explore the impact of the sediment and chemical load transported by glacial meltwater rivers to the near-shore coastal zone, and to use this novel timeseries to gain perspective on regional ocean circulation and biogeochemical cycling, remotely sensed primary production estimates, and to explore organic carbon land-to-ocean transfer and cycling. Finally, in the next phase of this program, we plan to extend this marine time-series in the eastern CAA with a new emphasis on community-led collection of novel year-round measurements spanning the sea-ice covered to open-water season. This work will allow our local Inuit partners to expand our observational window beyond the summer, into the rarely sampled fall and winter seasons. Together we aim to build local capacity for environmental and ecological monitoring while simultaneously addressing key scientific knowledge gaps critical for effective management of northern marine conservation areas in a changing climate.

Terry Noah collecting samples during an overwinter sampling campaign in Jones Sound, Nunavut. *Photo Credit: Terry Noah*

References:

- Roberts M, Bhatia MP, Rowland E, White P, Waterman S, Cavaco M, Williams P, Spence J, Tremblay J-E, Montero-Serrano J-C, Bertrand EM. Rubisco in High Arctic tidewater glacier-marine systems: A new window into phytoplankton dynamics. Submitted to *Limnology and Oceanography*, January 2023.
- Williams P, Burgess D, Waterman S, Roberts M, Bertrand E, and Bhatia M. Nutrient and carbon export from a tidewater glacier to the coastal ocean in the Canadian Arctic Archipelago. *Journal of Geophysical Research: Biogeosciences*, 126(9) e2021JG006289 (doi:10.1029/2021JG006289).

- Highlight article with accompanying commentary by Hawkings, J: Trickle and Treat: The critical role of marine-terminating glaciers as ice macronutrient pumps in polar regions, *Journal of Geophysical Research: Biogeosciences*, 2021, 126(10): e2021JG006598.

1. Bhatia M, Waterman S, Burgess D, Williams P, Bundy R, Mellet T, Roberts M, and Bertrand E. Glaciers and nutrients in the Canadian Arctic Archipelago marine system. *Global Biogeochemical Cycles*, 35(8), e2021GB006976 (doi:10.1029/2021GB006976).

Maya Bhatia is the 2022 CNC-SCOR Early Career Ocean Scientist Award winner.
The 2023 winner will be announced at the CMOS Congress in St. John's.

This section of your newsletter provides an opportunity to highlight your research programs to the Ocean Science Community. *Your are invited to send contributions to David Greenberg, davidgreenberg@alumni.uwaterloo.ca*	*Mettez en valeur vos programmes de recherche en publiant un article dans cette première section de votre bulletin.* *Faites parvenir vos contributions à David Greenberg, davidgreenberg@alumni.uwaterloo.ca*

MEETINGS

57th CMOS Congress | 57e congrès de la SCMO

May 28 - June 1, 2023, St. John's, NL **28 mai – 1 juin 2023, Saint-Jean, TN**

The CMOS congress is moving into high gear.
- Early Bird Registration **Deadline** April 14
- Check out the
  - Student / Early Career Professionals Events
  - Integrated and extracurricular events
  - St. John's
  - Registration + Membership is cheaper than just Registration for non-members.

Le congrès CMOS passe à la vitesse supérieure.
- **Date limite** Inscription hâtive le 14 avril
- A noter
  - Événements étudiants / professionnels en début de carrière
  - Événements dans et hors programme
  - Saint-Jean de Terre-Neuve-et-Labrador
  - L'inscription + l'adhésion est moins chère que la simple inscription pour les non membres.

13th International Workshop on Modeling the Ocean 2023

Katholische Akademie Hamburg, June 27-30, 2023

The IWMO was first held in 2009 with the goal that modelers and observationalists interested in ocean processes and coupling with its surrounding can exchange their latest research and wide-ranging ideas in an intellectually rewarding and relaxing environment. The

IWMO focuses on all aspects of ocean and coupled air-wave-sea, ice and current-sediment modeling: processes, analysis and prediction. The earth system is inter-connected on a broad range of temporal and spatial scales, and we welcome coastal, regional and basin-scale studies, as well as interdisciplinary topics. As in the past workshops, we particularly encourage participation from young scientists – graduate students and postdocs – and will again host the Outstanding Young Scientist Awards (OYSA) competition. IWMO participants are welcome to submit a manuscript to a special issue in Ocean Dynamics dedicated to the workshop.

Details

Deadlines:

Abstract Submission: **April 16, 2023**
Early Registration: **May 16, 2023**
Late Registration: **June 2, 2023**

Second International Symposium on Plastics in the Arctic and Sub-Arctic Region

22-23 November 2023, Reykjavik, Iceland

The planned symposium will build on the foundation of science of the first symposium and produce information and advice for decision makers. The symposium aims for exchange of views and updates of knowledge from various sources. The symposium will evaluate the present extent and nature of plastic pollution in the Arctic and Sub-Arctic regions and discuss its impact on ecosystems and communities. The origin of plastic litter, how it is transported to or in the Arctic and Sub-Arctic region and how breakdown processes are affecting the status of pollution will also be addressed.

Finally the symposium will focus on possible mitigation methods and how they can be implemented and provide useful input to the ongoing negotiations on an international agreement on plastic pollution, and to other ongoing relevant international work to support protection of the marine environment.

Details

Deadlines:

Abstract Submission: **May 1 2023**

Early Registration: **Sept 1 2023**

Please send meeting announcements to David Greenberg, davidgreenberg@alumni.uwaterloo.ca	*SVP faites parvenir vos annonces de réunion à David Greenberg, davidgreenberg@alumni.uwaterloo.ca*

POSITIONS AVAILABLE

Postdoc - Sea Ice/Polar Marine Biogeochemistry

Department of Geography, University of Calgary

Dr. Brent Else (University of Calgary, Department of Geography) and Dr. Lisa Miller (Institute of Ocean Sciences, Fisheries and Oceans Canada) are seeking a Postdoctoral Researcher to contribute to the international project: "Climate relevant interactions and feedbacks: the key role of sea ice and snow in the polar and global climate system (CRiceS)". The goal of this project is to improve how biogeochemical models represent the role of polar processes and feedbacks in the global climate system. The Postdoctoral Fellow will work with both observationalists and numerical modellers within the CRiceS project to compile existing observational data implementation in model development. Specific efforts within CRiceS include better understanding of: air-sea exchange in the presence of sea ice; carbon export and deep sequestration; iron and nutrient supplies to sea-ice biota; and seasonality and sources of aerosol precursors; among other topics. The PDF should expect to conduct field studies relevant to the requirements of the modeling efforts. The ideal candidate will be either an observational scientist interested in pathways to mobilize field studies in climate models, or a modeling scientist interested in broadening their perspectives to include observational Polar science.

Details

Application **review starts March 31**, 2023 and will continue until the position is filled.

Hydrodynamic and water quality modelers

William & Mary's Virginia Institute of Marine Science (VIMS)

Multiple positions - post-doc or higher level or staff

In preparation for the new 5-yr IOOS project, the Center for Coastal Resources Management is looking for one extra post-doc/staff. The main goal of this 5-yr project is to (1) work with NOAA CO-OPS and IOOS for a new operational forecasting system SECOFS (Southeast Coastal Operational Forecast System); (2) work with OCS, UCAR on ESMF/NUOPC caps that facilitate Unified Forecasting System (UFS).

They are also looking to fill a vacancy that can be filled at the post-doc or higher level. They are particularly interested in candidates who have experience in earth system modeling.

NOTE that both vacancies refer to the same generic position information. The investigators will join ongoing projects involving the development and application of numeric models to coastal hydrodynamics and water quality processes. Research activities will contribute to development and implementation of the next-generation seamless 'creek-to-ocean' forecasts based on the SCHISM modeling system. Position responsibilities include interacting with graduate students and visiting scientists, working closely with collaborators on ongoing projects, and developing new, independent research consistent with the goals of the coastal systems modeling group. The position will be located within VIMS' Center for Coastal Resources Management in Gloucester Point, VA, but may involve collaboration with investigators at other locations.

Deadline: Applications will be reviewed as received.

In addition to these vacancies, they are also recruiting new students.

Professeure ou professeur en acoustique marine

Institut des sciences de la mer de Rimouski (ISMER)

La personne choisie devra être spécialisée en acoustique marine. Les domaines d'expertise recherchés sont le paysage sonore sous-marin, l'impact du bruit anthropique sur l'environnement marin, la bioacoustique, les mesures des conditions atmosphériques et de surface par le bruit sous-marin ambiant, l'acoustique active, la détection de la structure physique interne de l'océan par tomographie inverse, ou l'acoustique comme un outil d'observation de l'environnement marin. La personne sélectionnée sera encouragée à développer son propre secteur de recherche et sera amenée à collaborer avec les scientifiques de l'ISMER et de l'UQAR. La personne retenue devra être en mesure de participer aux programmes de maîtrise et de doctorat en océanographie par l'encadrement d'étudiantes et d'étudiants aux cycles supérieurs et par l'enseignement de cours à la maîtrise, au doctorat et au diplôme d'études supérieures spécialisées (DESS) en océanographie. La langue de travail est le français.

Université du Québec à Rimouski
Institut des sciences de la mer de Rimouski

Au moment de l'embauche, la personne choisie devra détenir un doctorat dans une discipline pertinente (océanographie, génie, mathématiques ou discipline connexe), au moins une année d'expérience postdoctorale et un solide dossier en recherche.

Plus d'information

Date limite: L'analyse des candidatures débutera le **15 mai 2023** et se poursuivra jusqu'à ce que le poste soit pourvu.

Professeure ou professeur en océanographie biologique avec spécialisation en écologie du plancton

Institut des sciences de la mer de Rimouski (ISMER)

La personne choisie devra être spécialisée en écologie de la boucle microbienne, en écologie du phytoplancton, en écologie du zooplancton, ou en écologie trophique. Les domaines d'expertise recherchés sont la microbiologie, les réseaux trophiques inférieurs, les flux de matière et particules, l'export de carbone, et les changements environnementaux et climatiques. La personne sélectionnée sera encouragée à développer son propre secteur de recherche et sera amenée à collaborer avec les scientifiques de l'ISMER et de l'UQAR. La personne retenue devra être en mesure de participer aux programmes de maîtrise et de doctorat en océanographie par l'encadrement d'étudiantes et d'étudiants aux cycles supérieurs et par l'enseignement de cours à la maîtrise, au doctorat et au Diplôme d'études supérieures spécialisées (DESS) en océanographie. La langue de travail est le français.

Au moment de l'embauche, la personne choisie devra détenir un doctorat dans une discipline pertinente (océanographie, biologie marine, écologie marine, microbiologie ou discipline connexe), au moins une année d'expérience postdoctorale et un solide dossier en recherche.

Plus d'information

Date limite: L'analyse des candidatures débutera le **15 mai 2023** et se poursuivra jusqu'à ce que le poste soit pourvu.

Looking for work? Try the CMOS site (click).	*Vous recherchez un emploi? Visitez le site SCMO (click).*

GENERAL
SCOR International is Celebrating Newsletter #50!

SCOR has arrived to it's 50th Newsletter! The first Newsletter was issued in December 2004 following the XXVIth SCOR General Meeting held at the CNR–Istituto di Scienze Marine (ISMAR) in Venice, Italy, hosted by the Italian SCOR Committee. Since its establishment more than 60 years ago, SCOR has shaped modern oceanography by planning and coordinating several large-scale ocean research projects, establishing more than 160 working groups, and developing capacity in ocean sciences. SCOR has engaged and supported thousands of scientists from all continents, providing a platform of opportunities for ocean scientists across all disciplines. Currently, 33 nations are members of SCOR and have national SCOR committees.

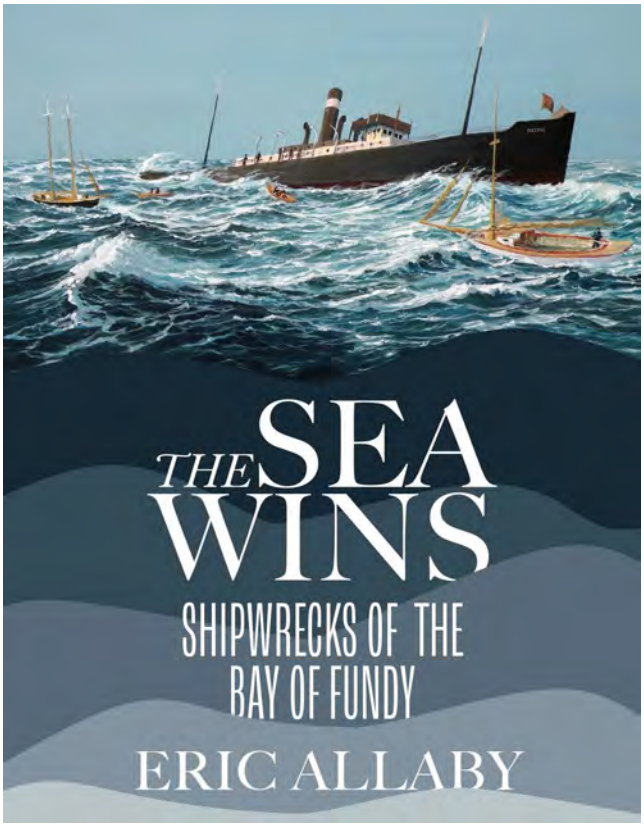
Intertidal rocky shore at Blackmans Bay, Tasmania.
Photo by Patricia Miloslavich

News in the newsletter also includes:
Call for new SCOR Working Groups 2023
The 2023 Call for SCOR Working Groups is open until the 12 May 2023. The selection of the new SCOR working groups will take place at the 2023 SCOR Annual Meeting scheduled to take place in Guayaquil, Ecuador, on 17-19 October 2023. For more information, read the full call.
SCOR Capacity Development activities such as Summer Schools and training, Travel Grants and Visiting Scholars.
And
News from the many projects it has fostered.

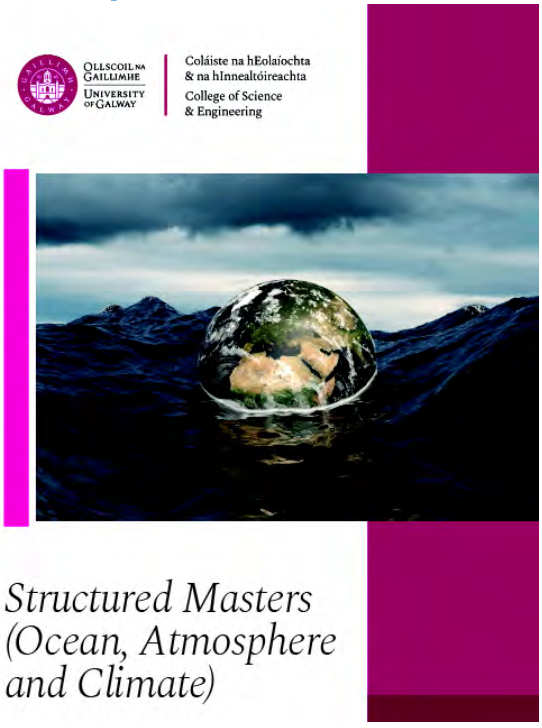
Prof. Vyacheslav Lyubchich, a 2022 SCOR Visiting Scholar from the University of Maryland Center for Environmental Science (UMCES) provided training on popular methods of machine learning for ocean sciences and in the application of those methods to real data to students from the State University of Maringa and the Federal University of Parana, Brazil.

The Sea wins

Book review from CBC



Structured research Master programme on Ocean, Atmosphere and Climate



The newly developed structured research Master programme on Ocean, Atmosphere and Climate (MSC-OAC) will run in its 2nd round from September 2023. The programme bridges the boundaries between ocean and atmosphere and will provide students with a broad understanding of how the coupled system works, affects and is affected by climate and human activities.

The MSc is a collaborative effort between the global and interdisciplinary research project Surface Ocean-Lower Atmosphere Study (SOLAS) and the University of Galway, Ireland. The course combines taught and research elements and is designed for students who want to develop careers in this vibrant, global, and multidisciplinary area. It involves an up to seven-month research placement in a world-leading partner organisation, participation in international workshops or summer schools, and working with renowned scientists in the respective areas. Owing relationships with major stakeholders, these placements offer students an opportunity to develop the necessary skills to continue with a PhD, work in the marine renewable energy sector, marine/atmosphere related industry settings, or nature conservancy.

More information here.

Call for Papers: Time-Series Observations of Ocean Acidification

Frontiers in Marine Science

Issue theme: Time-Series Observations of Ocean Acidification: a Key Tool for Documenting Impacts on a Changing Planet

This Research Topic encompasses all aspects of time-series observations that contribute to the quantification and forecasting of ocean acidification patterns and trends, and their impact on marine organisms, ecosystems, and societies, whether in coastal or open ocean areas. You are invited to submit original research articles, reviews, and methodological/guidelines papers. The topics covered in this Research Topic include but are not limited to:

- Time-series observations related to ocean acidification in coastal areas, marginal seas, and the open ocean;
- Studies that link physical, chemical, and biological observations;
- Modeling and projections of ocean acidification variability and patterns;
- Methodologies, best practices, new products, and recommendations that can help the observational community in advancing ocean acidification research and linking it with other environmental changes.

If you are interested in contributing a paper to this Research Topic, please click here.

Abstract Submission **Deadline 15 April 2023**

Canadian Ocean Science Newsletter
Le Bulletin Canadien des Sciences de l'Océan

Previous newsletters may be found on the CNC-SCOR web site. The CNC-SCOR website is hosted by CMOS.

Newsletter #**130** will be distributed in **May 2023**.

Please send contributions to David Greenberg *davidgreenberg@alumni.uwaterloo.ca*

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Le Bulletin #**130** sera distribué en **mai 2023**.

Veuillez faire parvenir vos contributions à David Greenberg, *davidgreenberg@alumni.uwaterloo.ca*

Abonnement et désabonnement

Si vous souhaitez vous abonner à cette newsletter ou annuler votre inscription, veuillez visiter le site web:

http://www.mailman.srv.ualberta.ca/mailman/listinfo/cnc-scor

CNC-SCOR

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.

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.

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