



INTERNATIONAL GLACIOLOGICAL SOCIETY

International Symposium on
Sea Ice at the Interface



Winnipeg, Manitoba, Canada
18–23 August 2019

Co-sponsored by:
 University of Manitoba

FIRST CIRCULAR
April 2018
<http://www.igsoc.org/symposia/2019/winnipeg>

The International Glaciological Society (IGS) will hold the next **International Symposium on Sea Ice** in Winnipeg, Manitoba, Canada, 18–23 August 2019. Registration will begin on 9 April 2019.

THEME

Sea Ice at the Interface. Sea ice plays a critically important yet highly dynamic role in global climate, polar marine ecosystems, globalization and indigenous cultures. Ongoing dramatic changes to the sea-icescape and freshwater–marine coupling, particularly involving ice sheets, glaciers, ice shelves, sea-ice loss and continental runoff, have major implications for climate within and beyond the polar regions, environmental and ecological integrity, and regional and global socioeconomic development. This symposium presents a timely opportunity to show recent advances in our knowledge and technological capabilities in sea-ice related research. In addition, the symposium will encourage holistic discussions amongst scientists, stakeholders and policy makers regarding the most recent changes, long-term trends and variability in the sea-ice environment in both hemispheres, and how best to engage and communicate with the general public.

SUGGESTED TOPICS

We seek papers and presentations on any timely topics related to the sea-ice environment. Key focus areas include (but are not limited to):

1. **Role of sea ice in the regional and global climate:** Large-scale change and variability in sea ice and climate, including: regional to hemispheric response, teleconnections, attribution of change (including large-scale atmospheric and oceanic circulation changes and feedback mechanisms), shape and structure of the polar vortex and extreme events.
2. **Paleoclimate studies:** Sea-ice historical records and observations; reconstructions from ice-core records, deep-sea sediments, various tracers and proxies; reconstructions from archaeological studies and local and traditional knowledge.
3. **Remote sensing and autonomous observations of sea ice and its various interfaces:** Advances in instrumentation and observation methods, including: non-destructive observations, autonomous observatories (including autonomous underwater and aerial platforms), new remote sensing modelling and retrieval techniques, new remote sensing systems.
4. **Coupling sea-ice modelling with observations:** Sea-ice and coupled model verification, advances in numerical parameterizations, current gaps, translating observations into models, CMIP5 and CMIP6 ensemble synthesis. The modelling is not limited to GCM/ESM, but also includes regional and process models.
5. **Sea-ice forecasting on daily to seasonal to decadal time-scales:** Statistical and modelling approaches; best practices to evaluate forecasts; new data products to improve sea-ice forecasting.
6. **Sea ice and snow thermodynamic processes, microstructure and optics:** New observations of sea-ice growth and decay processes and of the characteristics of the sea-ice matrix, including the contribution of snow to sea-ice formation and decay (e.g. snow-ice, superimposed ice and melt-pond formation), micro-physical properties and sea-ice optical properties.

7. **Sea-ice dynamic process and forcing mechanisms:** Ice kinematics, dynamics and mechanics, linkage to floe-size distribution, ice concentration, type and age, and dynamical effects on the sea-ice matrix; forcing of ice motion by both the ocean and atmosphere.
8. **The ocean–sea-ice–atmosphere interface:** Exchange of climatically relevant gases, boundary-layer processes, waves, tides, drag coefficients, synoptic scale forcing.
9. **The changing marginal ice zone:** Processes at the outer sea-ice–ocean boundary, numerical and experimental advances in wave–ice interaction, wave attenuation and floe-size modification.
10. **Glacier–sea-ice coupling:** Coupled land–ice/sea–ice processes including polynyas, basal melt and refreeze, water-mass modification, freshwater balance, oceanic heat content and ice melange linkage to ice-shelf stability; climate coupling of the marine and land-ice environments.
11. **Freshwater-marine coupling in polar regions:** Role of increasing freshwater delivery to polar marine systems including: continental runoff, hydroelectric regulation, increasing precipitation, increasing melt and timing of melt relative to associated marine processes
12. **Biogeochemical processes of sea ice at various interfaces:** Sea-ice brine and bubble composition and dynamics; fluxes and cycling of gases, nutrients and trace elements; sea-ice biogeochemical modelling.
13. **Contaminants in sea-ice environments:** Source, fate, effects and mitigation of contaminants (including mercury, POPs and oil-related contaminants) in sea-ice environments and implications for the ecosystems and food safety.
14. **Sea-ice ecosystems:** Observations, models and process studies examining sea ice as a habitat over the full range of trophic levels; effects of change and variability on ecosystem function, structure and coupled relationships; diversity and function revealed by genomic approaches.
15. **Detection and monitoring of marine ice hazards:** Icebergs, shipping, oil spills in ice-covered waters.
16. **Inuit and indigenous sea-ice knowledge and use:** Inuit and indigenous knowledge of sea ice and associated processes; indigenous travel over sea ice; community-based monitoring programs; integration of various knowledge-based systems.
17. **Opportunities, adaptation, and mitigation:** Marine shipping and resource development in the polar oceans; geopolitics; adaptation and mitigation; information systems, safety, security and preparedness.

We will also accept proposals for sessions that are not listed above prior to the call for abstracts. Contact: Feiyue.Wang@umanitoba.ca

PROGRAM

The symposium will include oral and poster sessions, and will provide a friendly and intellectually stimulating environment to facilitate face-to-face interactions and networking. Additional activities will include an opening reception, a banquet dinner and a mid-symposium afternoon excursion.

For the adventurous, a post-symposium 4-day excursion to Churchill, Manitoba, will be available for a maximum of 20–30 people, on a first-come basis (cost to be determined). Located on the shore of the sub-Arctic Hudson Bay, Churchill is a world-class tourist destination for viewing polar bears, beluga whales and the aurora borealis. This trip will include a visit to the town of Churchill, the new Churchill Marine Observatory research facility, the Churchill Northern Studies Centre, and a beluga tour at the mouth of the Churchill River. Learn more about this destination: <http://www.everythingchurchill.com>.

ABSTRACT AND PAPER PUBLICATION

Participants who wish to present a paper (oral or poster) at the Symposium will be required to submit an abstract. The Council of the International Glaciological Society will publish a thematic issue of the *Annals of Glaciology* on topics consistent with the Symposium themes. Participants are encouraged to submit manuscripts for this *Annals* volume. A call for abstracts will be issued in the Second Circular.

SIDE MEETINGS

The Local Organizing Committee welcomes requests from groups and organizations for meeting spaces to host side meetings prior to or after the symposium. Send all requests to Lucette.Barber@umanitoba.ca

VENUE

We look forward to welcoming the international glaciology and sea-ice communities to Winnipeg, Manitoba. The University of Manitoba and the Province have a long history in Arctic, sea ice and Indigenous studies and activities. The meeting will take place in the historic Fort Garry Hotel in the heart of downtown Winnipeg, adjacent to the Winnipeg Forks and Exchange District. This venue is ideally situated within walking distance of the Canadian Human Rights Museum, the VIA Rail train station and numerous eating venues, markets and shops. <https://www.fortgarryhotel.com/winnipeg-conference-centre/meeting-spaces>
<https://www.exchangedistrict.org>

SYMPOSIUM ORGANIZATION

Magnús Már Magnússon (International Glaciological Society).

SCIENCE ADVISORY COMMITTEE

David Barber (Chair), Kenneth Lee, Rob Massom, Ann Lennert, Marcel Babin, Robie Macdonald, Jorgen Berge, Marcel Nicolaus, Alice Bradley, Søren Rysgaard, Luke Copland, Randy Scharien, Dorthe Dahl-Jensen, Gunner Spreen, Jody Deming, Julianne Stroeve, Brent Else, Rocky Taylor, Torsten Geldsetzer, Letizia Tedesco, Sebastian Gerland, Martin Vancoppenolle, Mats Granskog, Feiyue Wang, Lawrence Hislop, Muyin Wang, Alexander Komarov, Zhouqing Xie

SCIENCE STEERING COMMITTEE

Feiyue Wang (Chair), John Iacozza, Petra Heil, Dustin Isleifson, David Barber, Christine Michel, Tonya Burgers, CJ Mundy, Odile Crabeck, Kathleen Munson, Jens Ehn, Tim Papakyriakou, Ryan Galley, Gary Stern, Nicolas-Xavier Geilfus, John Yackel

LOCAL ORGANIZING COMMITTEE

Lucette Barber (Chair), Jennifer Hollar, Debbie Armstrong, Lauren Candlish, John Iacozza, Aggie Roberecki, Linda Chow, Heather Stark, Laura Dalman, Denise Whynot