New IACS Working Group on Dynamic Processes in the Marginal Ice Zone (MIZ)

IACS is pleased to announce a new working group on Dynamic Processes in the Marginal Ice Zone (MIZ). The new working group is the first in the division of Sea Ice, Lake and River Ice. The Marginal Ice Zone (MIZ) serves as a transitional boundary between the open ocean and the dense pack ice. It plays a vital role in modulating atmosphere ocean exchanges and significantly influences the contemporary sea ice covers observed in both the Arctic and Antarctic. Understanding the MIZ is not only of scientific importance but also holds substantial economic interest due to its impact on global climate change and maritime access and transportation.

The objectives focus on: 1) Sea Ice Physical Processes, 2) Wave-Ice Interaction, 3) Atmosphere-Ocean-Ice-Snow Feedbacks, and 4) Biogeochemical Processes.

The deliverables are designed to advance the mathematical and scientific understanding of the MIZ as well as to enhance collaboration and produce other tangible outcomes, such as a common workspace for data and model development. These deliverables will include:

- Establish a Unified Data Set of Waves in Ice Measurements
- MIZ Wave-Ice “Models Collection”
- Establish a Data Set of Bioactivity within the MIZ
- Global Atmosphere-Ocean-Ice-Snow “Models Collection”

Organization and membership:
The working group is organized with three co-chairs, a steering committee and members. Co-chairs: Mike Meylan, University of Newcastle, Australia; Noa Kraitzman, Macquarie University, Australia; Ian Eisenman, Scripps Institution of Oceanography, UC San Diego, USA

A steering committee consisting of co-chairs + additional members is to be determined in consultation with the WG members. Membership is open to anyone willing to contribute to this effort. See full proposal on the IACS homepage for the WG.

Deputy in the Cryosphere, Atmosphere and Climate division
IACS has appointed Ji-Woong Yang as Deputy Head of the Cryosphere, Atmosphere and Climate division.

Ji-Woong is from South Korea and works at the Laboratoire des Sciences du Climat et de l’Environnement in France.
The 8th Snow Science Winter School

The 8th Snow Science Winter School took place in Sodankylä, Finland, at the Finnish Meteorological Institute’s Arctic Space Centre, from 25 February to 2 March. The school brought together eight lecturers and 26 students from thirteen countries to learn both the theoretical and practical sides of snow field measurements. The intensive week was packed with field work, lectures, data analysis, student presentations and some extracurricular activities, like a visit to a reindeer farm. Lectures covered a wide range of subjects from snow physics and modeling to hydrology and remote sensing. Afternoons were dedicated to fieldwork, starting from touching and feeling snow (first time for some of the students!). The highlight of field work was a one-day field experiment designed and conducted by student groups. Since the theme of the school was remote sensing, the students used their field data to run simulations of the microwave response of snowpack and compared that to nearby tower-based observations in their final presentations. The students had an opportunity to use modern snow measurement equipment and to network with other students and senior scientists.

The Snow Science Winter Schools are arranged in collaboration by the Finnish Meteorological Institute (FMI), WSL-SLF (Switzerland) and Météo-France. This year the school was sponsored by EGU, ESA and IACS.

Publication by WMO of Best Practices for the Measurement of Glaciers

As part of the long standing and successful engagement between the International Association of Cryospheric Sciences (IACS) and the Global Cryosphere Watch (GCW) of the World Meteorological Organization (WMO), a new publication is available through the WMO Library, focusing on the Measurement of Glaciers. Currently, the publication is available in four official languages of the United Nations: English, French, Russian, and Arabic, with the versions in Spanish and Chinese being under final review, to be posted on the same site, in the near future. The Measurement of Glaciers is published as Chapter 3 of Volume II Measurement of Cryosphere Variables of publication WMO No-8, Guide to Instruments and Methods of Observations, a flagship publication of WMO since 1950, and updated regularly through the contribution of the international experts.

The glacier chapter describes conventional methods used to measure winter and summer mass balance on glaciers. It outlines methods used in mass-balance calculations, discusses sources of error in measurements and calculations of mass-balance and outlines methods for bias-correction. The 21st century is likely to witness a transformation to automated, real-time glaciological observations, supported by satellite monitoring and modelling, and regular updates of this publication will strongly support future generations of glaciologists and the increased standardization of observations and data.

The manual includes recommendations on the archiving of field data, on the combination of different methods to reduce uncertainties in mass-balance results and on the standardization of results using common protocols. Fostering of information exchange between national and international programs is discussed. The glacier chapter is authored by Thorsteinn Thorsteinsson, Jakob Abermann, Liss M. Andreassen, Charles Fierz and Matthias Huss.

Report by Rodica Nitu, WMO

WMO issues new guidance on cryosphere measurements
APECS Social Event at Arctic Science Summit Week

On the evening of 24 March, APECS held a social event at Arctic Science Summit Week for Early Career Researchers (ECRs) to socialize and expand their networks. The event was organized by the APECS Executive Committee and co-sponsored by IACS. This was a prime opportunity for ECRs to meet like-minded individuals in an informal setting away from the formal workshops and meetings of the conference. The event was held at Summerhall in Edinburgh and around 60 ECRs attended where they enjoyed pizza and drinks whilst sharing experiences about their research and trips to the polar regions. To engage and stimulate the conversation, the ECRs were invited to play ‘Polar Bingo’, where everyone in the room was required to speak to new people to fill in their bingo card.

The Frozen Frontier through the Lens: A Polar Research Exhibition

The Polar Educators International (PEI) and IACS 2024 photo contest was initiated to spotlight captivating photographs captured by researchers, educators, and polar enthusiasts. Of 70 entries from 15 countries in total 20 selected photos were displayed at The Frozen Frontier through the Lens: A Polar Research Exhibition, taking place during Arctic Science Summit Week in Edinburgh, Scotland, 21-29 March 2024. IACS co-sponsored printing of photos for the exhibition. Here we present the three winning photos by O. Nolin, E. Towns and A. Gomes.

Erin Towns
PhD student Renée Clavette cheers in delight when she realizes that her semi-experimental Autonomous Phase-sensitive Radio Echo Sounding (ApRES) deployment setup was indeed, collecting data. She had been worried that it had stopped. Instead, she got a full 6 weeks of data that will allow her to look at how ice properties change over time.

Ana Gomes
A curious polar bear pauses its icy stroll.

Olivier Nolin
In this photo we are observing the permafrost outside of Longyearbyen and discussing how it is changing. We are a group of students from Morocco who come to Svalbard each year to study the effects of climate change in the Arctic.
About IACS

The International Association of Cryospheric Sciences (IACS) is a constituent Association of the International Union of Geodesy and Geophysics (IUGG).

IACS promotes and sponsors workshops, symposia and educational activities.

IACS has targeted working groups, joint commissions and bodies on cryospheric topics.

IACS offers free individual membership:
www.cryosphericsciences.org

The IACS newsletter is issued 2-4 times a year.

IACS Co-sponsored events and activities

The IACS bureau has decided to sponsor the following events based on applications received by the 1 February deadline.

- **International Symposium on Geomatics, Remote Sensing and Climate Change** in the Arctic, Antarctica and High Mountain Asia
- **El Chaltén workshops**
- **International Summer School in Glaciology**

IACS co-sponsors cryosphere-related workshop, educational or other events that further IACS objectives.

Support will be provided for the IACS-IAMAS-IAPSO BACO-25 joint assembly in Busan, Korea. Details will be announced later in 2024.

Weertman medal to Gwenn Flowers

Gwenn Flowers gave her medal lecture at the European Geosciences Union (EGU) General Assembly 2024 in April. Gwenn Flowers was Glacier division head for IACS for the period 2019-2023.

Gwenn Flowers received the 2024 Julia and Johannes Weertman Medal for outstanding research in the field of the theoretical and observational hydrology of glaciers, ice caps and continental ice masses.

Credit: Ted Scambos

Image from 26 February, 2024.

Punchbowl Glacier, located in the northern Larsen B embayment on the Antarctic Peninsula, is undergoing a renewed rapid retreat after decade-old fast ice broke out of the embayment in 2022. The dense mélange has formed as the ice front rapidly calved. Image from 26 February, 2024.

Credit: Ted Scambos

Gwenn Flowers and Carleen Tijm-Reijmer (EGU Cryosphere division president) at the medal lecture, Vienna, 16 April 2024.

Photo: Liss M. Andreassen

Gwenn E. Flowers
Department of Earth Science
Simon Fraser University
Vancouver, BC, Canada

Weertman medal to Gwenn Flowers

Gwenn Flowers gave her medal lecture at the European Geosciences Union (EGU) General Assembly 2024 in April. Gwenn Flowers was Glacier division head for IACS for the period 2019-2023.

Gwenn Flowers received the 2024 Julia and Johannes Weertman Medal for outstanding research in the field of the theoretical and observational hydrology of glaciers, ice caps and continental ice masses.

Credit: Ted Scambos

Image from 26 February, 2024.

Punchbowl Glacier, located in the northern Larsen B embayment on the Antarctic Peninsula, is undergoing a renewed rapid retreat after decade-old fast ice broke out of the embayment in 2022. The dense mélange has formed as the ice front rapidly calved. Image from 26 February, 2024.

Credit: Ted Scambos

Gwenn Flowers and Carleen Tijm-Reijmer (EGU Cryosphere division president) at the medal lecture, Vienna, 16 April 2024.

Photo: Liss M. Andreassen