

*IACS promotes the advancement
of cryospheric sciences of
the Earth and solar system*



IACS

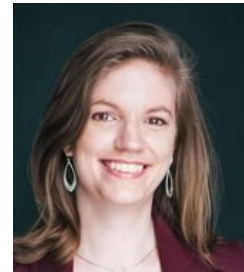
International Association
of Cryospheric Sciences

IACS NEWSLETTER

November 2022

IUGG Early Career Scientist Awardees

IACS congratulates Mohd Farooq Azam, Natalya Gomez, Johan Gaume, and the other recipients of the IUGG Early Career Scientist Awards for 2023. This award honors early career scientists for their outstanding research in Earth and space sciences and for their international research cooperation. Azam, Gomez and Gaume were nominated by IACS. The awardees will be invited to give a talk at the IUGG General Assembly in Berlin July 2023. See the IUGG announcement of the award: [The IUGG Electronic Journal](https://www.iugg2023berlin.org/registration-guidelines/)



Awardees: Mohd Farooq Azam, Natalya Gomez, Johan Gaume.

IUGG General Assembly July 2023 registration

Registration (<https://www.iugg2023berlin.org/registration-guidelines/>) is now open for the IUGG General Assembly in Berlin, with reduced fees for student, OECD low-middle income country and retired participants. All of the IACS symposia and joint symposia will be between 12 and 16 July 2023. The IACS keynote Union Lecture will be given by Ricarda Winkelmann (Potsdam Institute for Climate Impact Research). Registration is open until **14 February 2023**. See also IACS activities at IUGG: <https://cryosphericsscience.org/iugg-berlin-2023/>

IACS symposia (<https://www.iugg2023berlin.org/903-2/>):

- C01 Advances in Modelling Glaciers and Ice Caps – Past Reconstructions, Future Projections, and Process-Based Studies
- C02 Glacier Changes in High Mountain Asia and the Karakoram Anomaly: Latest Insights from Atmosphere & Cryosphere
- C03 Debris Covered Glaciers
- C04 Fast Glacier Flow: Processes, Observations and Modelling of Ice Streams, Tidewater Glaciers and Surging Glaciers
- C05 Tropical Glaciers: Mass Changes, Climate Forcing and Impacts on Indigenous Communities
- C06 New Frontiers in Paleoclimate Reconstructions and Proxy Interpretations from Ice Cores
- C07 Mass Changes of The Cryosphere – The Need for and Lessons Learned from Intercomparison Exercises
- C08 Challenges in Modeling, Monitoring and Predicting Alpine Mass Movements
- C09 Mountain Snow Cover Under Climate Change: From Past to Future
- C10 Satellite-Derived Snow Cover Products and Their Applications in Hydrology
- C11 Light Absorbing Particles on Snow and Ice
- C12 Spotlighting Divergence: Climate Change Refugia Within Snow-Dominated Catchments and Where to Find Them
- C13 Data driven Cryospheric Sciences: Machine Learning, Data Assimilation and Inverse Methods for the Cryosphere
- C14 Cryospheric Processes and Related Socioeconomic Impacts
- C15 Progress in Quantifying Ice-Sheet Surface Mass Balance: Past, Present and Future

Selected joint symposia with other IUGG Associations (<https://www.iugg2023berlin.org/922-2/#IACS>):

- JC01 Remote Sensing of the Cryosphere (IACS, IAHS)
- JC02 Declining Glacier, Snow Cover and Permafrost and Their Impacts on Downstream Hydrology (IACS, IAHS, IAG)
- JC03 Coupling Processes Between the Atmospheric Boundary-Layer and Snow – Ice Surfaces: (IACS, IAHS, IAMAS)
- JC04 Atmospheric Circulations and Surface Mass Balance of Ice Sheets (IACS, IAMAS)
- JC05 Atmosphere-Ocean-Sea Ice Interactions: Physical and Chemical Processes (IACS, IAMAS, IAPSO)
- JC06 Mountain Cryosphere Hazards (IACS, IAVCEI, IASPEI)
- JG01 Interactions of the Solid Earth with Ice Sheets and Sea Level (IAG, IACS, IASPEI)
- JH02 Advances in Snow Hydrology (IAHS, IACS)
- JH03 Snow in the Critical Zone (IAHS, IACS)
- JM03 Polar Regions Instrumentation (IAMAS, IACS, IASPEI)
- JP03 Physical and Biogeochemical Ocean and Ice Processes in the Southern Ocean: (IAPSO, IACS)
- JP04 Ice Sheet-Ocean Interactions: Challenges & Insights from Theory, Observations & Modelling (IAPSO, IACS, IASPEI)
- JP06 Electromagnetic Studies of the Ice and Ocean System (IAPSO, IACS, IAGA)
- JS01 Cryoseismology (IASPEI, IACS, IAG)
- JV01 Volcano-Ice Interactions (IAVCEI, IACS)

IACS annual business meeting

IACS held its annual business meeting on 20 October as two 3 hour sessions to accommodate participation from bureau members in different timezones. All officers and deputies participated in one or both meetings. As has become the norm in years without an IUGG or IACS assembly the business meetings were held virtually. Prior to our meeting we received reports from IACS working groups (WG), standing groups, joint commissions and the Joint Body on the Status of Mountain Snow Cover. These annual report can be found at the IACS homepage under Activities. On their request, we decided to give the WG for debris covered glaciers a 1 year extension to complete their work.

We also discussed plans for several new WGs. We aim to develop these plans into full proposals. A short description of two of the WG topics is given below. **We currently seek co-chairs for both WGs.** If you are interested in joining as co-chair or member, or have other feedback, please use the contact information under each description to express your interest. If you have suggestions for other WGs please contact [IACS](#).

Planned new IACS Working Groups (WG):

WG on Antarctic Marginal Ice Zone Processes

The Division of Sea Ice, Lake and River Ice, is proposing to establish a new WG about Antarctic Marginal Ice Zone (MIZ) processes. By combining interdisciplinary fields of physics and biogeochemistry of sea ice, the aim is to improve our understanding of how different processes are linked to determine Antarctic marginal sea ice-behavior on a hemispheric scale. The WG encompasses the fields of wave-ice interaction, sea-ice formation & melting, floe size distribution, atmosphere-ocean-ice-snow interaction, biogeochemistry, exchange of chemical components, and remote sensing.

Contact: [Takenobu Toyota](#) and [Alex Fraser](#).

WG on Glacier - Ice Sheet Delineation

The ice sheets and all glaciers in their peripheries are typically dealt with separately in assessing and projecting regional-scale mass changes. However, ice masks vary widely between studies, and there is an urgent need for clear separation of ice sheets and glaciers in Antarctica and Greenland to avoid double-counting, or omissions when estimates are combined in global assessments, such as IPCC. This WG aims to bring together the glacier and ice sheet communities to find common ground for defining the exact domains assessed or simulated by the ice sheet and glacier communities (ice sheet & glacier masks).

Contact: [Sophie Nowicki](#) and [Regine Hock](#)

IACS Working Groups address scientific problems of the cryosphere that are timely and well constrained. WGs shall have explicit aims, objectives, milestones and deliverables to be achieved within 4 years. They should be international in composition. <https://cryosphericciences.org/activities/working-groups/>



Antarctic MIZ off East Antarctica, Sept. 2007. Photo: T. Toyota

IACS Early Career Scientist Award 2023 - Call for nominations

The deadline for submitting nominations for the IACS Early Career Scientist (ECS) Prize is **1 February 2023**. This prize is given for a scientific paper focused on a cryospheric topic represented by any of the current IACS divisions or IACS standing groups. The nominee must be an early-career scientist defined as a person who is currently enrolled in a PhD/MSc program or (if no longer a PhD/MSc student) whose highest academic degree (PhD, MSc) was obtained no longer than 2 years before the submission deadline. Guidelines & nomination form: <https://cryosphericciences.org/awards/early-career-prize/>

Sessions at the International Mountain Conference September 2022

The International Mountain Conference (IMC22) was held in Innsbruck in September 2022 and included sessions arranged by GAPHAZ and the Joint Body on the Status of Mountain Snow Cover. Below follow summaries from the sessions.

Glacier and permafrost risks

GAPHAZ promoted a successful session on “Glacier and permafrost risks in a changing climate”, with 13 contributions addressing a variety of hazards, demonstrating the attention to the topic. Glacial lake outburst floods (GLOFs) are a major concern in Asia, while rockfall hazards are a research focus in the European Alps. Hazards related to permafrost, ice aprons, rock glaciers and combined hazards were also addressed. A lively open discussion on the relationship between scientists, local authorities, the media and the public highlighted that: a) research is advancing rapidly, providing new tools and methods for hazard assessment and monitoring; b) authorities are ready to receive the message, and scientists need to make further efforts to make scientific information easily accessible and understandable; c) efforts are needed to move from hazard to risk; d) scientists should engage more to communicate their research outcomes to journalists, media and the general public, also by taking better advantage of social media.

(Report by Marta Chiarle, Michele Koppes, Holger Frey, John J. Clague)

Status of mountain snow cover

The recently established Joint Body on the Status of Mountain Snow Cover (JB-SMSC) proposed a successful session on Changes in Snow Cover in the Mountain Regions of the Earth at IMC 2022. Two additional and closely-related sessions were held in parallel (Monitoring of Heterogeneous Mountain Snow Cover; Snow Cover Changes and Mountain Ecology), which underscores the great interest in mountain snow cover. A total of 12 papers in the JB-SMSC session dealt with the topic of mountain snow cover, and from these presentations it can be concluded that snow is still quite poorly monitored on a global scale and that in many mountain regions there is almost no information on snow. Access to data is also limited in many regions. On the other hand, future scenarios for snow have a high degree of uncertainty, making it difficult to provide robust data for water management. This is particularly true for extreme values, the associated assessment of natural hazards, and future changes at high elevations. Overall, there is a clear motivation for the goals of the Joint Body to improve the understanding of mountain snow cover and to bring together global datasets and communities of practice around mountain snow monitoring and reporting.

(Report by Wolfgang Schöner and Shawn Marshall)

Virtual workshop on ice-ocean interactions October 2022

The Joint Commission on Ice-Ocean Interactions hosted its first virtual workshop from 17-20 October. The theme of the workshop was identifying knowledge gaps in ice-ocean interactions in both Antarctica and Greenland. We had over 280 registered participants from 26 countries across 6 continents. The workshop was split into five sessions: (1) the physics of the ice-ocean boundary, (2) the role of glacial melt in the wider ocean, (3) new and emerging technologies for studying ice-ocean interactions, (4) the impact of ocean-driven melt on glacier and ice sheet mass balance, and (5) community linkages. We had two keynote speakers from each of sessions (1)-(4), and five speakers for the session (5) on community linkages.

The sessions were recorded, and are freely available on the JCIOI website:

<https://www.youtube.com/channel/UC-K08KQA86pNh5oLHNZU0Hw>.

We are planning a white paper to summarise the key findings from the workshop, and look forward to continuing the discussions in our joint symposia session at IUGG Berlin 2023 (*JP04 Ice-Ocean Interactions: Challenges and Insights from Theory, Observations and Modelling*).





The Grand Etr t Glacier, Gran Paradiso Massif, NW Italy. The glacier has been the object of annual mass balance measurements for over 20 years by the Surveillance Service of Gran Paradiso National Park (PNGP). The photo shows the conditions of the lowest ablatometric stake (2800 m a.s.l., N exposure) at the intermediate survey on August 10, 2022, when the glacier had already lost 388 cm of ice since September 17, 2021. On September 16, 2022, at closure of the annual mass balance, another 144 cm of ice had melted, bringing the total annual loss to 532 cm: this is the largest loss in glacier thickness ever measured on this glacier. Photo: Alberto Rossotto, PNP.

Frontiers Journal Research Topic “Debris-Covered Glaciers”

The Frontiers Journal Research Topic “Debris-Covered Glaciers: Formation, Governing Processes, Present Status and Future Directions” is now complete, including an editorial summarizing the main achievements of the 20 papers presented therein (Shukla et al., 2022). This volume is a contribution from the IACS working group on Debris Covered Glaciers. <https://www.frontiersin.org/articles/10.3389/feart.2022.1021292/full>

IACS bureau 2023-2027

IACS is looking for new bureau members to serve for four years from July 2023. The new bureau will be elected at the IUGG General Assembly in Berlin. Nominations of cryospheric scientists for any position within the IACS bureau (except President but including President Elect) are welcome, and self-nominations are allowed.

IACS bureau positions, along with current and past office holders, are listed at <https://cryosphericosciences.org/organization/officers/>. Our bureau has an even gender balance, is highly international and has a mixture of scientists at different career stages. We strive to maintain or improve this diversity. Being on the IACS bureau provides opportunities to help develop and promote the cryospheric sciences at the highest levels, and a chance to network and collaborate with a diverse group of experts from all parts of the globe. An independent nomination panel consisting of Jon Ove Hagen (Chair, Norway), Mary Albert (USA) and Ian Allison (Australia) is established. Nomination packages consisting of a letter expressing interest and a CV should be sent to the Chair of the panel, (j.o.m.hagen@geo.uio.no), no later than **6 January 2023**.

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 on cryospheric topics.
- IACS offers free individual membership: www.cryosphericosciences.org
- The IACS newsletter is issued 2-4 times a year.
- Previous newsletters can be found on: cryosphericosciences.org/newsletter/