



IACS

International Association
of Cryospheric Sciences

<http://www.cryosphericciences.org>

2019 IACS annual report

INTRODUCTION

The International Association for Cryospheric Sciences (IACS) is the Association of the International Union of Geodesy and Geophysics (IUGG) concerned with snow and ice science and provides expert advice on cryospheric issues to governmental and non-governmental organisations. The objectives of IACS are to:

- promote studies of cryospheric subsystems of the Earth and solar system;
- encourage research in the above subjects by members of the cryospheric community, national and international institutions and programmes, and individual countries through collaboration and international coordination;
- provide an opportunity on an international basis for discussion and publication of the results of the above research;
- promote education and public awareness on the cryosphere, and facilitate the standardisation of measurement or collection of data on cryospheric systems and of the analysis, archiving and publication of such data;
- promote and support diversity, inclusion and equality within the field of cryospheric science, including but not limited to career stage, gender, racial and ethnic identities, and geographic origin.

ADMINISTRATION

A Bureau of 12 elected officers manages the business of IACS. The current IACS Bureau was elected at the IACS Plenary Administrative Meeting during the 27th IUGG General Assembly in Montreal. It consists of *Regine Hock* (President), *Liss Andreassen* (President Elect), *Richard Essery* (Secretary General), *Minghu Ding* (Vice President), *Stanislav Kutuzov* (Vice President), *Andrew Mackintosh* (Vice President), *Takenobu Toyota* (Head, Sea ice, lake and river ice), *Christine Schøtt Hvidberg* (Head, Planetary and other ices of the solar system), *Gwenn Flowers* (Head, Glaciers), *Sophie Nowicki* (Head, Ice sheets), *Charles Fierz* (Head, Snow and avalanches) and *Anaïs Orsi* (Head, Cryosphere, atmosphere and climate). The former division Glaciers and Ice Sheets was split into two separate divisions following an update of the IACS Statutes.

To run the day to day business of IACS, an Executive Committee (EC) consisting of the President, Secretary General and President Elect holds regular teleconferences, in which all Bureau members are welcome to join.

ACTIVITIES

27th IUGG General Assembly, Montreal

IACS organized 15 sessions and 15 joint symposia with other Associations at the IUGG General Assembly in Montreal. Waleed Abdalati gave the IACS union lecture and Marie Dumont gave the IACS early-career award lecture; both were well attended. The three active Working Groups of IACS (Glacier ice thickness estimation, Debris covered glaciers, and the Randolph Glacier Inventory) and the Global Terrestrial Network for Glaciers (GTN-G) steering group held meetings. National delegates elected a new bureau at the IACS open plenary administrative meeting.

IACS Bureau Meeting

The outgoing and incoming IACS Bureaus met over two days during the Montreal IUGG General Assembly. The meeting was attended in person by nine Bureau members, with another member attending by video link. We intend to expand the use of videoconferencing for business meetings to better accommodate busy work schedules and home responsibilities, and to minimise greenhouse gas impacts associated with air travel.

IACS Statutes and By-Laws

Substantially revised IACS Statutes and By-Laws were approved by the IUGG Council in September 2019. The revisions were necessary to account for the individual membership category introduced in 2017, electronic voting and the establishment of a new 'Ice sheets' division. The revised Statutes also emphasize commitments to promoting and supporting diversity within cryospheric science and within IACS.

IACS homepage (<https://cryosphericssciences.org/>)

An entirely revamped and modernized IACS was launched in February 2019 and is being continuously updated. The page is now hosted at the World Glacier Monitoring Service in Zurich and is also linked to twitter account @iacscryo (<https://twitter.com/iacscryo>).

IACS Working and Standing Groups

IACS facilitates the transfer of research methods and explores new avenues in cryospheric science through Standing Groups and Working Groups devoted to a theme or subject and composed of experts in the particular field of study. The currently active IACS Working Groups are:

- Randolph Glacier Inventory and its role in future glacier monitoring and GLIMS (2020-2023). RGI has become a pillar of glaciological research at global and regional scales, for estimates of recent and future glacier changes, glacier mass balance, and glacier contribution to sea-level rise.
- Regional Assessments of Glacier Mass Change (2019-2023). This new working group brings together the research community that is assessing regional glacier mass changes from various observation technologies to come up with a new consensus estimate of global glacier mass changes and related uncertainties.
- Debris Covered Glaciers (2018-2022) aims to advance our ability to map debris thickness, to identify the level of model complexity required to estimate sub-debris melt, and to coordinate knowledge exchange.

The IACS/IPA Standing Group on Glacier and Permafrost Hazards in High Mountains (GAPHAZ) aims to:

- improve international scientific communication on glacier and permafrost hazards;
- compile knowledge related to glacier and permafrost hazards in high mountains;
- work towards greater transfer of information and improved communication between the scientific and governmental communities;
- signpost sources of advice to international and national agencies, responsible authorities and private companies;
- act as a focal point for information for international media during relevant crises.

IACS and IAVCEI have agreed to wind up the Joint Commission on Volcano-Ice Interactions after a period of inactivity and are now exploring new areas for collaboration. Plans are underway to establish joint commissions with IAPSO on ice-ocean interactions and with IAG on cryospheric deformation.

IACS is part of the Global Terrestrial Network for Glaciers (GTN-G) Steering Committee. GTN-G is a framework for internationally coordinated monitoring of glaciers jointly run by the US National Snow and Ice Data Center, the Global Land Ice Measurements from Space initiative, and the World Glacier Monitoring Service.

IPCC Special Report on the Ocean and Cryosphere in a Changing Climate

IACS bureau members played key roles in the IPCC SROCCC, with Regine Hock as a Coordinating Lead Author and Andrew Mackintosh and Stanislav Kutuzov as Lead Authors. Several other past IACS bureau members and IACS award winners also served as lead authors or review editors, including Hiroyuki Enomoto, Xiao Cunde, Georg Kaser and Ben Marzeion. Valerie Masson Delmotte is serving as IPCC Working Group 1 co-chair.

IACS awards

The IACS Early Career Scientist Awards for 2019 went to Dr Doug Brinkerhoff (University of Montana, USA) and Dr Denis Felikson (NASA Goddard Space Center, USA).

An award in memory of Graham Cogley was established in 2019 with generous support from the Cogley family. The award recognizes Graham's substantial and outstanding contributions to glaciology, in particular to studies of glacier mass balance, his sustained service to scientific organizations and the broader glaciological community, and his collegiality, kindness and extraordinary work ethic. Graham also chaired several IACS working groups. The award will be given annually to recognize excellence in cryospheric research by Early-Career Scientists, with recipients selected by IACS and the International Glaciological Society in alternating years. The inaugural Graham Cogley Awards were presented at the IUGG General Assembly in July 2019 to Caroline Aubry-Wake (University of Saskatchewan, Canada) and Eric Keenan (University of Boulder, USA).

Co-sponsored events and activities

IACS supports events that are of interest to the cryospheric community. Our contributions typically cover part of the travel costs for early career scientists and scientists from developing countries attending cryosphere related events, or IACS awards for scientists in these categories. Sponsorships in 2019 included:

- WMO High Mountain Summit, Geneva, Switzerland 29-31 October
- Workshop on computational methods for snow and avalanche release mechanics, Aussois, France, 30 September - 1 October
- Glacial Isostatic Adjustment Training School, Gävle, Sweden, 26-30 August
- Cryo Connect database development and website integration

Three IACS newsletters were published in 2019. The newsletters are typically four pages long and feature IACS activities: <https://cryosphericsscience.org/newsletter/>

FUTURE ACTIVITIES AND ANNOUNCEMENTS

To facilitate the review of requests for support, IACS has introduced three deadlines per year on 1 February, 1 June and 1 October. Funding requests must be submitted for a deadline at least two months prior to the event that is to be supported (for example, the funding request for an event in July must be received by 1 February). Proposers will be informed of decisions approximately two weeks after the deadline.

Events already selected for sponsorship in 2020 include:

- International Summer School in Glaciology, McCarthy, Alaska, 6-16 June
- 6th Snow Science Winter School, Col du Lautaret, France, 16-22 February
- 7th International Conference on Mars Polar Science and Exploration, Ushuaia, Argentina, 13-17 January

IACS has started planning its next assembly (18-23 July 2021 in Busan, Republic of Korea) in conjunction with IAMAS and IAPSO.



The newly-elected IACS Bureau for 2019-2023.

Back row, l-r: Minghu Ding, Andrew Mackintosh, Anaïs Orsi, Takenobu Toyota.

Front row, l-r: Charles Fierz, Christine Schøtt Hvidberg, Regine Hock, Gwenn Flowers (on screen), Liss Andreassen, Richard Essery.

Not present: Stanislav Kutuzov, Sophie Nowicki