



IUGG



IACS

International Association
of Cryospheric Sciences

<http://www.cryosphericciences.org>

2017 IACS annual report

This report covers the period from February 2017 to January 2018.

INTRODUCTION

The International Association for Cryospheric Sciences (IACS) is the Association of the International Union of Geodesy and Geophysics (IUGG) that is concerned with snow and ice science and which 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 co-ordination.
- 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.

ADMINISTRATION

A Bureau of 11 elected officers manages the business of IACS. The current IACS Bureau was elected at the IACS Plenary Administrative Meeting during the 26th IUGG General Assembly in Prague. It consists of *Regine Hock* (President), *Charles Fierz* (Immediate Past President), *Andrew Mackintosh* (Secretary General), *Olga Solomina* (Vice President), *Cunde Xiao* (Vice President), *Ian Allison* (Vice President), *Hiroyuki Enomoto* (Head, Sea Ice, Lake and River Ice), *Christine Schott Hvidberg* (Head, Planetary and other ices of the solar system), *Liss Andreassen* (Head, Glaciers and Ice Sheets), *Ethan Greene* (Head, Snow and Avalanches), *Valérie Masson Delmotte* (Head, Cryosphere, Atmosphere and Climate), *Anaïs Orsi* (Deputy Head, Cryosphere, Atmosphere and Climate).

To run the 'daily' business, the IACS Executive Committee (EC) consisting of President, Secretary General and Immediate Past President holds regularly teleconferences, in which all Bureau members are welcome to join.

ACTIVITIES

Transfer of Presidency

On February 22nd 2017, the IACS Presidency was transferred from Charles Fierz to Regine Hock. The IACS bureau and community thank Charles for his many years of outstanding service, which he will continue as Immediate Past President until Montreal. [Regine Hock](#), the new IACS President, is Professor of Geophysics at the University of



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Alaska, Fairbanks. Regine has previously served as a Vice President of the International Glaciological Society, and as Secretary of the [International Commission on Snow and Ice Hydrology](#) (2005-2015), an IAHS commission. She is also the Chief Editor of [Frontiers in Earth Science - Cryospheric Sciences](#).

IACS Individual Membership

In 2017, IACS established free individual membership. We currently have more than 300 members who have signed up despite a limited amount of publicity to date. We hope that offering individual membership will help to create a stronger community around IACS, promoting its activities and its relationship with IUGG and its other seven constituent associations. Specifically, IACS members will receive regular information about IACS activities and opportunities, and will be eligible to engage in IACS activities and bodies. This includes the possibility of receiving IACS sponsorship and financial support for workshops, summer and winter schools, and other IACS-sponsored activities, as well as for the IACS early-career scientist prize (if members qualify). More information about IACS membership can be found [here](#). Everybody is welcome to join, including members of other IUGG associations.

IACS bureau members join Intergovernmental Panel on Climate Change

IACS is playing a leading role in the 5th Assessment Round of the Intergovernmental Panel on Climate Change (IPCC). IACS Division IV head [Valérie Masson Delmotte](#) is co-chair of IPCC Working Group 1. In addition, the following IACS officers and affiliates were selected in 2017 to write the IPCC [Special Report on the Oceans and Cryosphere in a Changing Climate](#).

1. IACS President Regine Hock is Coordinating Lead Author of Chapter 2 'High Mountain Regions'.
2. IACS Secretary General Andrew Mackintosh is Lead Author of Chapter 3 'Polar Regions'.
3. IACS Division III head Hiroyuki Enomoto is Lead Author of Chapter 1 'Framing and Context of the Report'.
4. IACS Vice President Xiao Cunde is Review Editor for Chapter 3 'Polar Regions'.
5. Former IACS President Georg Kaser is Review Editor for Chapter 2 'High Mountain Regions'.
6. IUGG Early Career Scientist awardee Ben Marzeion is lead author in Chapter 4 'Sea level rise and implications for low lying islands, coasts and communities'.
7. IACS MICROSNOW Working Group co-chair Samuel Morin is lead author in Chapter 2 'High Mountain Regions'.

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 Working Groups (WG) of IACS are the [Randolph Glacier Inventory and infrastructure for glacier monitoring](#) working group (2014-2018) and the [Glacier ice thickness estimation](#) working group (2014-2018). Both WGs are very active.

The Randolph group was the first to provide a globally comprehensive glacier inventory; in 2017, it released version 6.0 of its database (<https://doi.org/10.7265/N5-RGI-60>). The inclusion of Randolph Inventory data into the GLIMS (Global Land Ice Measurements from Space) database is now complete, and the working group collaborates closely with the World Glacier Monitoring Service (WGMS; an IACS Service). The IACS Working Group on Glacier ice thickness estimation completed its first experiment and published a scientific paper (*The Cryosphere*, 11, 949-970, 2017). The Working Group collaborated with the World Glacier Monitoring Service to provide more glacier thickness data to the community ([GlaThiDa 2.0](#)). The working group is now continuing experiments, carrying out global modelling and collecting more ice thickness data. More information can be found [here](#).

The current Standing Groups (SG) are the *Joint Commission on Volcano-Ice Interactions* (with the International Association of Volcanology and Chemistry of the Earth's Interior - IAVCEI), *Glacier and Permafrost Hazards in Mountains* ([GAPHAZ](#), a joint SG with the International Permafrost Association IPA), and the *Steering Committee of the Global Terrestrial Network for Glaciers* (GTN-G). The latter was recently strengthened through the addition of Ben Marzeion (University of Bremen) and Stephen Briggs (European Space Agency). GAPHAZ also links IACS to the IUGG Union Commission on GeoRisk (M. Krautblatter is our representative). For a taste of what GAPHAZ does, please see their recent [Nature Geoscience paper](#) about a catastrophic glacier collapse in Tibet.

Meetings and symposia

International Symposium on the Cryosphere in a Changing Climate: Wellington, 2017. IACS held its 2017 scientific assembly from 12th-17th February 2017 in Wellington, New Zealand. A description of this event was provided in our 2016 report

In addition to our scientific assemblies, IACS also supports events that are of interest to the cryospheric community. Our contributions are either to cover part of the travel costs of attendees (early career scientists and scientists from developing countries) or towards IACS awards for scientists in these categories. Recent sponsorships are listed below:

- *International Glacial Seismology Training School*, 11-17 June 2017, Fort Collins, CO, USA. IACS provided support for student participation.
- Past Antarctic Ice Sheet Dynamics (PAIS) [conference](#), September 10th-15th 2017, Trieste, Italy. IACS provided support for student participation.
- IACS provided awards for best presentations at the *International Workshop on Cryospheric Change and Sustainable Development*, 1-2 August 2017, Lanzhou, China. An event report can be found here on [IACS website](#).

IACS early career scientist award

- These prizes will be presented at bi-annual scientific assemblies (IACS, and IUGG General Assemblies). Information about the 2016 awardees can be found [here](#). The next round of awards will be made in time for the 2019 Montreal IUGG General Assembly.

IACS contribution to World Meteorological Organisation 'Global Cryosphere Watch'

IACS is contributing since 2011 to the development of the World Meteorological Organisation (WMO) cross-cutting initiative Global Cryosphere Watch (GCW). IACS was asked to

join following our wish to contribute to WMO activities related to the cryosphere and in particular because of IACS experience in standards and terminology. Immediate Past President Charles Fierz currently represents IACS in various Task Teams and within the GCW Steering Group. After finalising the design of the CryoNet network comprising both research and operational stations and assessing more than 100 applications, work now concentrates on establishing Best Practices, making data exchange possible, and terminology. This is a crucial phase as GCW is due to become operational by 2023. GCW should thus progressively gain more importance within WMO and the goal is to provide the cryospheric community with a possibility to fund long-term monitoring tasks based on this partnership with GCW/WMO. A small step may be seen in IACS and GCW both sponsoring the development of the open source software [niViz](#) to record and visualise snow profiles based on the international IACS/CAAML standard format.

FUTURE ACTIVITIES AND ANNOUNCEMENTS

New Working Groups

IACS is currently seeking new Working Groups. We have currently received two preliminary enquiries; the first is from the *Microsnow Working Group*, who are putting together a new proposal to explore the feasibility of a Community Snow Model that would be as physically based as possible, covering snow from its deposition on the surface down to the transition of firn into ice. The model could then serve as a benchmark for evaluating less complex models. The second enquiry is from a multi-organisational group that proposes to investigate ocean and ice-sheet model ensembles, a highly topical area of research of direct relevance to the Intergovernmental Panel for Climate Change.

IACS sponsorship of forthcoming meetings

- IACS will sponsor a Chilean student to attend the 4th Snow Science Winter School to take place at Col du Lautaret, France, from 11-17 February 2018. IACS Immediate Past President Charles Fierz will act as lecturer. More info is available at the school [website](#).
- IACS will co-sponsor the 2018 International Summer School in Glaciology from 5-15th June, to be organised by the University of Alaska Fairbanks in McCarthy, Alaska. We very much appreciate that IUGG are also providing some financial support for this summer school. The course provides glaciology graduate students with a comprehensive overview of the physics of glaciers and current research frontiers in glaciology. IACS President Regine Hock is the principal organiser of the course. More information is available [here](#).



Transfer of IACS Presidency on February 22nd 2017 from Charles Fierz (right) to Regine Hock (left).



International Glacial Seismology Training School sponsored by IACS. 11-17 June 2017, Fort Collins, USA.