



IUGG



IACS

International Association
of Cryospheric Sciences

<http://www.cryosphericciences.org>

2016 IACS annual report

This report covers the period from January 2016 to February 2017.

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 *Charles Fierz* (IACS President until February 2017, Immediate Past President thereafter), *Regine Hock* (President Elect until February 2017, President thereafter), *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). Note that in October 2015, Valérie Masson Delmotte was elected as co-chair of Working Group 1 of the Intergovernmental Panel on Climate Change (IPCC), and thus Anaïs Orsi was appointed to deputise on her behalf. Anaïs as a relatively early career researcher (PhD in 2013) also brings fresh experience to our bureau.

To run the 'daily' business, the IACS Executive Committee (EC) consisting of President, Secretary General and Immediate Past President or President Elect holds regularly teleconferences, in which all Bureau members are welcome to join. IACS also held its 2016 Bureau meeting by teleconference. Two-hours sessions were organised on three consecutive days in June 2016. Teleconferencing required more preparation for all participants but the discussions were productive and conclusive.

ACTIVITIES

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* (2014 – 2018), *Glacier ice thickness estimation* (2014-2018), and *MicroSnow* (2012-2016). All three of these working groups are very active.

The MicroSnow Working Group started 2012 and will close in 2017. This active group held workshops in 2013, 2014, and 2015, culminating in the [Intercomparison of Snow Grain Size Measurement Workshop](#) held in March 2014 in Davos, Switzerland. The final outcome of this Working Group will be a special issue of the journal *The Cryosphere* with the title 'Inter-comparison of methods to characterise snow microstructure'.

Both the [Randolph Glacier Inventory and infrastructure for glacier monitoring](#) and the [Glacier thickness estimation](#) working groups were very active since they started to operate. The Randolph group was the first to provide a globally comprehensive glacier inventory; it is now preparing the release of version 6.0 of their database. The inclusion of Randolph Inventory data into the GLIMS (Global Land Ice Measurements from Space) database is now completed, and the working group collaborates closely with the World Glacier Monitoring Service (WGMS; an IACS Service). The Glacier Thickness Working Group and the World Glacier Monitoring Service collaborate to provide glacier thickness data to the community. The IACS Working Group on Glacier Thickness Estimation completed its first experiment and a paper was submitted to *The Cryosphere*. The working group is now preparing for its second phase. 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 Union Commission on GeoRisk (M. Krautblatter is our representative).

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. This meeting brought together three of the leading international associations focusing on the cryosphere; the International Association of Cryospheric Sciences (IACS), the International Glaciological Society (IGS) and the World Climate Research Programme Climate and Cryosphere Project (WCRP CliC). This conference was held at Victoria University of Wellington, Andrew Mackintosh's home institution. Andrew chaired the Local Organising Committee while Ian Allison chaired the Scientific Steering Committee. Around 250 delegates from more than 25 countries attended this conference. IACS provided travel grants to allow more than 15 early career scientists and scientists from developing countries to attend this meeting. Chris Rizos, IUGG Bureau Member, welcomed participants on behalf of IUGG President Michael Sideris. Attendees included senior and chief editors of the journals *Nature* and *Nature Climate Change* respectively. About 30 delegates also attended the pre- and post-conference field trips to Tongariro and Aoraki/Mt Cook National Parks. All indicators suggest that this conference was a major success. Further information about the conference is still available on the conference [website](#).

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:

- IACS co-sponsored the second *Snow Science Winter School*, 14-20 February 2016, Preda-Davos, Switzerland. The feed-back from the 26 participants from 11 countries was enthusiastic and they provided a special feed-back to IACS and other sponsors. The event also benefited from an IUGG grant.
- IACS co-sponsored a *Training Course on Mass Balance Measurements and Analysis 2016* organised by WGMS 10-16 July in La Paz, Bolivia.

IACS early career scientist award

- In 2016 IACS offered its second *IACS Early Career Scientist Prize* for the best paper published within the field of the Cryosphere in the last 24 months. In 2016 the Committee awarded two prizes jointly to Rachel Tilling (University College London) and Thorben Dunse (University of Oslo). The IACS Bureau decided to award two prizes bi-annually from now onwards. These prizes will be presented at bi-annual scientific assemblies (IACS, and IUGG General Assemblies). More information about the 2016 awardees can be found [here](#).

FUTURE ACTIVITIES AND ANNOUNCEMENTS

Transfer of Presidency

On February 22nd, 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. [Regine Hock](#), the new IACS President, is Professor of Geophysics at the University of 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](#). Regine's background is in glacier modelling, and projecting the contribution of glacier melt to sea level rise. We look forward to the continuing success of IACS under Regine's presidency.

IACS Individual Membership

IACS has just established free individual membership, and we will be promoting this very shortly. We already have about 50 members who have signed up despite a very 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 schools, and other IACS-sponsored activities, and 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.

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

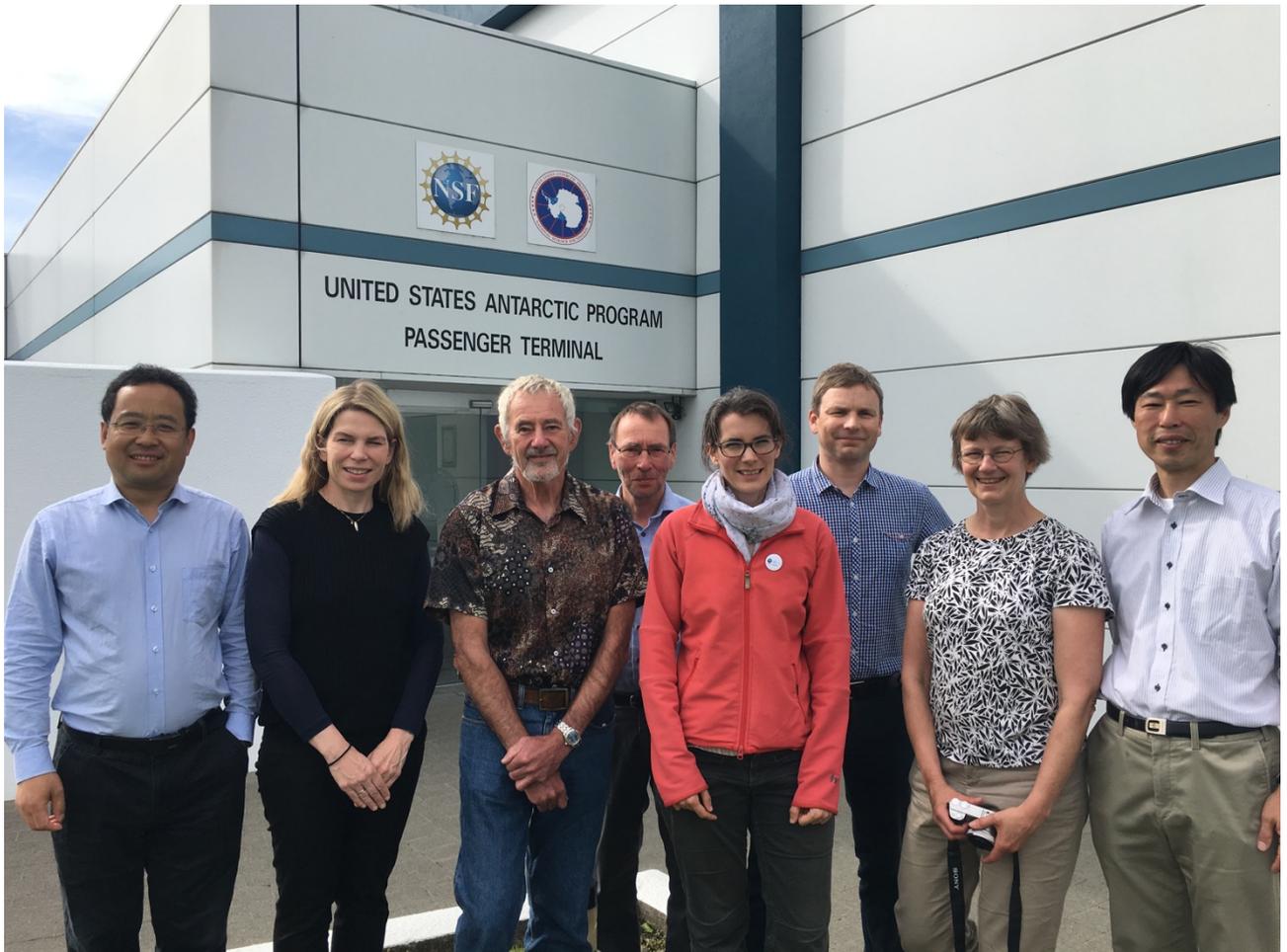
IACS will co-sponsor the 2017 *Glacial Seismology Training School* between 11-17 June 2017, in Fort Collins, Colorado, USA. The program will include lectures and practical exercises aimed at current and emergent seismological study of glaciers. Students will have the opportunity to spend one-on-one time with leading researchers in the emerging glaciological seismology community. More information is available [here](#).



Delegates enjoying dinner on the Mid-Conference Field Trip to the Wairapa. International Symposium on the Cryosphere in a Changing Climate, Wellington 2017.



Delegates strolling across farmland to investigate the historically active Waiarapa Fault. International Symposium on the Cryosphere in a Changing Climate Mid-Conference Field Trip, Wellington 2017.



2017 IACS Bureau Meeting meeting in Christchurch, New Zealand. From left to right Xiao Cunde, Liss Andreassen, Ian Allison, Charles Fierz, Anaïs Orsi, Andrew Mackintosh, Regine Hock, Hiroyuki Enomoto



Three IACS Presidents enjoying the scenery at Mueller Glacier lake and Mt Sefton (3151 m) in Aoraki/Mt Cook National Park, New Zealand on the Wellington 2017 Post-Conference Field Trip. From left to right: President Regine Hock (2017-2021), Immediate Past President Charles Fierz (2013-2017) and current Vice President Ian Allison (President from 2009-2013).