



International Association of Cryospheric Sciences (IACS)

www.cryosphericosciences.org

ABSTRACT

The International Association of 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. In 2013, the major activity of IACS was the organisation of the Davos Atmosphere and Cryosphere Assembly 2013, the joint IAMAS/IACS Scientific Assembly “DACA-13” (www.daca-13.org). This took place in Davos, Switzerland, from 8-12 July 2013. The theme of the conference was *Air, Ice and Process Interactions*. The conference attracted more than 950 attendees from 52 countries. Together, IACS and IAMAS supported many young scientists from developing countries to attend this conference. In addition to DACA-13, IACS was involved in supporting four further cryospheric events in 2013, in Grenoble (France), Ilulissat (Greenland), Zermatt (Switzerland), and Yuzhno-Sakhalinsk (Russia). These included inter-association activities (with IAG), an IACS Working Group meeting, a glaciology summer school run by the World Glacier Monitoring Service (WGMS, an IACS service), and an international symposium on snow science. IACS Standing Groups continue to make good progress in maintaining and progressing some of the most important glacier monitoring work on Earth (via the Global Terrestrial Network of Glaciers, GTN-G steering committee), and at disciplinary boundaries within the Glacier and Permafrost Hazards in Mountains (GAPHAZ) Standing Group (joint with the International Permafrost Association) and the IAVCEI/IACS Joint commission on Volcano-Ice Interactions. Looking forward, we have promised support to six cryospheric conferences/workshops associated with IACS in 2014, and have begun planning for the IUGG General Assembly to be held in Prague in 2015.

INTRODUCTION

The International Association of 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. IACS held its most recent bureau meeting 13-15 July 2013 in Davos, Switzerland. In attendance were Charles Fierz (President-Elect), Olga Solomina (Vice President), Cunde Xiao (Vice President), Cecilie Rolstad Denby (Head, Glaciers and Ice Sheets), Hiroyuki Enomoto (Head, Marine and Freshwater ice), Valérie Masson-Delmotte (Head, Cryosphere, Atmosphere, and Climate), and Ralf Greve (Head, Planetary and other Ices of the Solar System). Ian Allison (President), and Ethan Greene (Head, Snow and Avalanches) joined part-time via Skype, and remaining bureau members provided input in advance of our meeting. On behalf of the President, Vice-President Olga Solomina handed the presidency over to Charles Fierz at the end of this Bureau Meeting. The input of Ian Allison as Immediate Past President will nevertheless be most valuable and appreciated over the next two years.

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 WG on “Flow law for polycrystalline ice” (2010-2014) and the WG “From quantitative stratigraphy to microstructure-based modelling of snow” (2012–2016).

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), the SG on 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). This SG also oversees the operation of the World Glacier Monitoring Service (WGMS), a service of IACS (see below).

ACTIVITIES

DACA-13, a major IUGG event

The Davos Atmosphere and Cryosphere Assembly 2013, the joint IAMAS/IACS Assembly “DACA-13” (www.daca-13.org) took place in Davos, Switzerland 8-12 July 2013. The theme of the conference was *Air, Ice and Process Interactions*. More than 950 attendees from 52 countries on five continents participated in 21 self-contained joint atmosphere-cryosphere symposia/sessions. In addition, four world-leading experts Thomas Stocker (University of Bern), Valérie Masson-Delmotte (LSCE Paris), Ronald B. Smith (Yale), and Georg Kaser (University of Innsbruck) delivered well-attended keynote presentations. Posters were on display during the whole event and six “poster distinctions” were presented to early career scientists at the end of DACA-13. A full report is available in the 2013 September issue of the IUGG e-Journal (www.iugg.org/publications/ejournals).



Organizers of the Davos Atmosphere and Cryosphere Assembly 2013 “Air, Ice & Process Interactions, an IUGG (IAMAS & IACS) Event” (photo: D. Wasser).

Sponsorship of meetings and symposia during 2013

- The IACS WG From quantitative stratigraphy to microstructure-based modelling of snow organized “The Snow Grain Size Workshop - Measurements and Applications” in Grenoble, France, 2-5 April 2013 <http://snowgrain2013.sciencesconf.org/>. Co-sponsored by IACS, this event attracted more than 50 snow scientists to discuss issues around the meaning of “grain size” in snow science. For more detailed info on this and other activities of the WG, please visit www.cryosphericsscience.org/wg_quantStratMicroMod.html.
- IACS co-sponsored the IAG/IACS symposium on “Reconciling observations and models of elastic and viscoelastic deformation due to ice mass change” that took place in Ilulissat, Greenland, 30 May-2 June 2013 (www.dtu.dk/subsites/iag.aspx).
- IACS co-sponsored the summer school on “Mass Balance Measurements and Analysis”, run by WGMS in Zermatt, Switzerland, 2-7 September 2013 (www.wgms.ch/mb_summerschool.html). The course was restricted to about a dozen participants from the Andes and Asia who are involved with ongoing mass balance programs in their region. The participants were trained in both field and office work by an international team of experts in glacier monitoring and capacity building. On behalf of Cecilie Rolstad-Denby, the chair of the GTN-G steering committee, Charles Fierz delivered a short introduction to IACS and IUGG at the beginning of the event.
- Finally, IACS co-sponsored the international symposium on “Physics, chemistry and mechanics of snow”, in Yuzhno-Sakhalinsk, Russia, 23-28 September 2013 (snowphysics.fegi.ru/en/main.html). 138 scientists and experts from eight countries attended the conference. Two keynotes “Global Problems of Snow Science” (Dr. A. Sato) and “Dielectric properties of snow” (Professor N. Maeno), 34 oral presentations, and 24 posters formed the scientific program. On behalf of IACS, Dr Sergey Sokratov awarded two prizes for the best presentations by the young researchers H. Matsushita (Civil Engineering Research Institute for Cold Region, Sapporo, Japan) and D.A. Bobrova (Laboratory of avalanche and debris-flow processes research of Sakhalin Department of Far East Geological Institute FEB RAS, Yuzhno-Sakhalinsk, Russia).



Group photograph from “The Snow Grain Size Workshop - Measurements and Applications” held in Grenoble, France, 2-5 April 2013. This was the inaugural meeting of the IACS Working Group “From quantitative stratigraphy to microstructure-based modelling of snow” (photo: D. Lecorps).

The IACS Standing Group ‘Global Terrestrial Network for Glaciers’ (GTN-G)

The Global Terrestrial Network for Glaciers (GTN-G), created in 1998, is jointly run by three operational glacier monitoring bodies: the World Glacier Monitoring Service (WGMS), the US National Snow and Ice Data Center (NSIDC), and the Global Land Ice Measurements from Space (GLIMS) initiative. To formalize the link with IACS, the GTN-G Steering Group has been made a Standing Group of IACS (www.cryosphericsscience.org/standingGroups.html). The advisory board consists of representatives from data user and producer communities, as well as from international organizations, while officers of WGMS, NSIDC, and GLIMS form the executive board. The latter met twice in 2013, first on 11 April during the 2013 EGU General Assembly in Vienna, second on 11 July during DACA-13 in Davos, Switzerland. A major challenge remains the strongly limited capacities currently available at NSIDC for the maintenance and update of glacier datasets, such as the World

Glacier Inventory, the GLIMS database, and the Glacier Photograph Collection. As a result, important projects such as the finalization of the new version of the GTN-G meta-data browser or the attribution and integration of additional glacier outlines from the Randolph Glacier Inventory dataset into the GLIMS database are pending.

The IACS Standing Group ‘Glacier and Permafrost Hazards in Mountains’ (GAPHAZ)

By the end of 2012, all officer positions of this group were successfully filled, achieving a reasonable balance in terms of geographic representation, thematic competencies, and representation of IACS- and IPA- affiliated individuals. Both Associations confirmed the nominated officers in 2013. The group is active in convening sessions at major conferences and is considering organizing a workshop on “on glacier and permafrost hazards” in 2014. Furthermore, during EGU 2013, GAPHAZ officers and members of the Advisory Committee met, in order to define activities in the near future.

The ‘IAVCEI/IACS Joint commission on Volcano-Ice Interactions’ (CVII)

CVII is particularly active in organizing sessions at major and relevant conferences. The website gives more info on all activities of the joint commission http://volcanoes.dickinson.edu/iavcei_iacs_viic/.

IACS representation at international scientific meetings during 2013

Head of the IACS Division “Glaciers and Ice Sheets”, Cecilie Rolstad Denby, attended both GTN-G Executive Board Meetings (see above). Head of Division “Marine and Freshwater Ice” Hiroyuki Enomoto represented IACS at the Arctic Science Summit Week in Kraków, Poland, 13-19 April 2013. There the Memorandum of Understanding with the International Arctic Science Committee (IASC) and the Scientific Committee on Antarctic Research (SCAR) was renewed for a further 5 years. Ian Allison, IACS President, provided representation for ICSU within a steering group of scientists from organisations with polar interests who are undertaking initial concept planning for a possible new long-term polar science initiative. In January 2013, President Charles Fierz joined in an Executive Committee meeting of the Association of Polar Early Career Scientists in Tromsø, Norway, and attended both the first CryoNet team meeting and the first Global Cryosphere Watch Steering Group meeting in Reykjavik, Iceland; GCW is a WMO initiative which IACS has agreed to participate in.

FUTURE ACTIVITIES

IACS will co-sponsor the following scientific meetings in 2014

- Intercomparison of Snow Grain Size Measurements Workshop, 9-14 March 2014 in Davos, Switzerland, and a follow-up workshop 4-5 August 2014 in Reading, UK (http://www.wsl.ch/dienstleistungen/veranstaltungen/veranstaltungskalender/Snow_Grain/index_EN). Both events run in the framework of the IACS WG “From quantitative stratigraphy to microstructure-based modelling of snow”.
- International Symposium on Sea Ice in a Changing Environment, Hobart, Tasmania, Australia, 10-14 March 2014 (seaice.acecrc.org.au/igs2014/).
- 44th Annual International Arctic Workshop, 15-16 March 2014, Boulder, Colorado, USA <http://instaar.colorado.edu/aw/about/index.html>.
- Model-data workshop for the Late Pleistocene evolution of the Greenland and Antarctic ice sheets, 22-24 May 2014, Grenoble, France (<http://www.physics.mun.ca/MOCA/IceSheetModelandData2014.html>).
- International Workshop on Calving, 1-2 June 2014, Grenoble, France (<http://www-igge.obs.ujf-grenoble.fr/calving2014/theme.html>).
- Third International Summer School in Glaciology, organized by the University of Alaska and to be held in McCarthy, Alaska, USA, 6-16 August 2014.

Submitted by
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