

# IACS Annual Report 2010

This report covers the period from January 2010 to February 2011.

## Introduction

The International Association for Cryospheric Sciences is the Association (IACS) 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 solar systems,
- 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

The business of IACS is managed by a Bureau of elected officers. The Bureau consists of President (Ian Allison - Australia), immediate Past-President (Georg Kaser -Austria), Secretary General (Manfred Lange - Cyprus) three Vice-Presidents (Kumiko Goto-Azuma – Japan; Gino Casassa – Chile; Peter Jansson – Sweden) and the heads of five disciplinary Divisions (Glaciers and Ice Sheets, Julian Dowdeswell – UK; Snow and Avalanches, Charles Fierz – Switzerland; Marine and Freshwater Ice, Claude Duguay – Canada; Planetary and Other Ices of the Solar System, Ralf Greve – Japan; and Cryosphere, Atmosphere and Climate, Valérie Masson-Delmotte – France). Most routine business of the Association is conducted by email, although during the last 12 months a sub-set of the Bureau met at the Department of Physical Geography and Quaternary Geology, Stockholm University, Sweden on 22-23 November 2010. The main purpose of this meeting was to prepare information on issues related to the funding and profile of the Association that were then decided on at a formal Bureau meeting held by tele-conference on 21 December 2010.

The current four-year term of most Bureau members finishes in July 2011, and a “nominating panel” of members independent of the Bureau (Jon-Ove Hagen – Norway; Konrad Steffen – USA; Qin Dahe – China) was established in June 2010 to identify suitable candidates for election to the Bureau. The nominating panel’s role is to ensure that candidates for the IACS Bureau provide a good coverage of world regions and cryospheric disciplines.

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 Glacier Mass Balance Terminology and Methods and the WG on Glacier and Permafrost Hazards in Mountains (GAPHAZ, a joint WG with the International Permafrost Association). 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) and a newly formed Standing Group (December 2010) that is the Steering Committee of the Global Terrestrial Network for Glaciers (see below).

## Activities

Working Groups of IACS completed two significant reference publications during the year. *The International Classification for Seasonal Snow on the Ground*, edited by Charles Fierz and members of a now disbanded WG, was published as Technical Documents in Hydrology 83 (IACS Contribution No. 1) by the International

Hydrological Programme of UNESCO. The *Glossary of Glacier and Mass Balance Terms*, edited by Graham Cogley and members of the WG on Glacier Mass Balance Terminology and Methods, was completed and will also be published by IHP/UNESCO as IACS Contribution No. 2.

The role of IACS in providing scientific advice and oversight to the World Glacier Monitoring Service (WGMS) has been further formalised. The WGMS, based in Zurich, collects and publishes standardized information about ongoing glacier changes under the auspices of IACS, the Federation of Astronomical and Geophysical Data Analysis Services (FAGS/ICSU), UNEP, UNESCO and WMO. The Global Terrestrial Network – Glaciers (GTN-G), a component of the Terrestrial Observation Panel for Climate of GCOS/GTOS, links WGMS with other bodies involved with observations of glacier systems and their fluctuations: the US National Snow and Ice Data Center (NSIDC) in Boulder, and the Global Land Ice Measurements from Space (GLIMS) initiative. A GTN-G Steering Group has been recently formed and established as a Standing Group of IACS, with the IACS Division Head for Glaciers and Ice Sheets as the chair of its Advisory Board. The WGMS has succeeded in securing long-term funding from the Swiss government, and the IACS Past-President served as a member of the selection committee for a new director of WGMS.

During 2010 IACS cosponsored, with funding support from IUGG Small Grants, meetings on *Southern Hemisphere Cryospheric Change*, in Valdivia, Chile and on *Cryospheric Change and its Influences in Regional Sustainable Development* in Lijiang, China and an international summer school/workshop in glaciology at the Wrangell Mountain Center, McCarthy, Alaska. IACS officers also played lead roles in the organization of the *International Polar Year Conference* in Oslo, and are strongly involved in the IPCC Fifth Assessment Report. All officers, and particularly the Secretary-General and President, have been involved in planning scientific sessions for the IUGG General Assembly in Melbourne in June/July 2011.

The historical records of the International Commission on Snow and Ice have been catalogued and will be transferred to NSIDC, Boulder for permanent archiving. A new process has been established to formalize requests for financial support from IACS for conferences and other activities.

### **Planned Future Activities**

A new WG on *Flow law for polycrystalline ice* has been approved and will be established in 2011. An improved constitutive relationship for ice is particularly important in developing better models of the response of ice sheet systems to anthropogenic climate change. New WGs on *Quantitative Snow Stratigraphy* and on *Polar Surface Features* are also under consideration. The GAPHAZ WG is to be reconstituted as a Standing Group which will provide liaison to the IUGG Commission on Geophysical Risk and Sustainability (GeoRisk).

IACS, with its partners the Scientific Committee on Antarctic Research and the International Arctic Science Committee, is planning a two day symposium prior to the ICSU General Assembly in Rome in September 2011. This will address all aspects of polar science, with a focus on the functioning of the Earth System in the Arctic and Antarctic, the major drivers of pervasive change and the as yet unaddressed research issues in these regions. These global issues will be considered in the polar regions within the context of the ICSU Grand Challenges and as a legacy of the International Polar Year 2007-2008.

Planning has also commenced for a Joint IAMAS/IACS Assembly in Davos, Switzerland in 2013 (DACA-13, the Davos Atmosphere and Cryosphere Assembly 2013). The theme of the conference will be *Ice and Air: Process Interactions*. A Swiss National Organizing Committee has been established and a logo and web-site are in preparation and should be ready for release at IUGG 2011 in Melbourne.