



International Association of Cryospheric Sciences

News from IACS (Issue 3, October 2012)

Welcome to the third International Association of Cryospheric Sciences (IACS) newsletter, the second published in 2012. In this issue, my first as Secretary General (SG), I highlight the projects and scientific meetings that IACS has recently supported, as well as our next Bureau meeting to be held in Sanya, China in early November 2012. I also highlight two recent awards given to distinguished cryospheric scientists including our own IACS President, Ian Allison. Several IACS members contributed to this newsletter, and it is a pleasure to work with an active and committed Bureau.

IUGG support for scientific meetings

The program of International Union of Geodesy and Geophysics (IUGG) support for scientific meetings (e.g. workshops, advanced schools, symposia) is one of the most important means by which the Union and its Associations pursue a goal of promoting geophysics and geodesy through international collaboration. The number of co-sponsored meetings ranges from 10 to 15 across all associations (up to US\$3,000 each). Examples of activities that have previously been supported are provided below (World Glacier Monitoring Workshop at Tarfala, and University of Fairbanks summer school in Glaciology at McCarthy, Alaska). Note that the deadline for submitting a request for IUGG support (to IACS Secretary General) is rapidly approaching (15th October). More information about these grants is provided at <http://www.iugg.org/meetings/guidelines.php>.

World Glacier Monitoring Service mass balance workshop, Tarfala, Sweden

From July 9–11 2012, the World Glacier Monitoring Service (WGMS) organized in collaboration with Stockholm University a workshop on measurement and uncertainty assessment of glacier mass balance. The workshop was sponsored in part by an IUGG small grant awarded on behalf of IACS. The meeting was held at the Stockholm University, Tarfala Research Station, in northern Sweden, and brought together 17 representatives of the leading research groups currently working on these issues. The major aims of the workshop were to discuss methods and to identify and quantify related uncertainties of mass balance measurements from the ground, air and space, as well as to provide best practices for the homogenisation, validation and re-calibration of (long-term) observational series (re-analysis of glaciological and geodetic mass balance series). Cecilie Rolstad-Denby, who attended as an IACS representative in her role as the chair of the GTN-G advisory board noted:

'I have just attended the mass balance uncertainty assessment workshop at Tarfala, Sweden, partly sponsored by IACS. The workshop participants were a mix of PhD students and senior scientists, with experience from both geodetic measurements and glaciological field measurements. We had an open discussion, and intend to publish a paper in 'The Cryosphere'.

This type of meeting provides a very different arena than large conferences. It is easy to have an open dialog on research topics, and dialogues between students and more senior staff. It is a good way to promote cryospheric research, and I think IACS should actively promote and support these kinds of initiatives. I was also very impressed by the work conducted on Tarfala research station. They have had so many international and Nordic students through their courses and field training during

many years, and inspire and train young talents, which is what we need to keep our research field going. It probably has much the same function as the Karthaus summer school, which is also an excellent place to build a network for young students. I think IACS should try to become more visible in these areas.' (Note from SG – see article about McCarthy summer school directly below.)

University of Fairbanks glaciology summer school, McCarthy, Alaska

A training workshop in glaciology was held in McCarthy, south central Alaska, from 10 – 20 June 2012. The summer school was sponsored (in part) by a small grant from the International Union of Geology and Geophysics (IUGG) awarded on behalf of IACS. This is the second year in which IUGG funds have been provided to support an important glaciology event for young scientists, and is a good example of what is possible with this source of funding. The following text was provided by Professor Regine Hock as part of her report to IUGG following this workshop:

'The workshop aimed to equip early stage PhD students with tools to address the expanding challenges in quantifying and modeling rapid changes in glaciers and ice sheets occurring in response to a warming climate. A goal of workshop was also to offer a valuable platform for international networking.

27 graduate students representing 26 universities from 11 countries spent 10 days in the small village of McCarthy, situated in the heart of the Wrangell mountains and adjacent to a number of easily accessible glaciers. Students came from a wide range of educational backgrounds such as geography, geology, mathematics, physics and engineering. Many of the students are enrolled at universities where glaciology courses are not offered at all. Hence the workshop provided an opportunity for these students to obtain a holistic education in a wide range of glaciological topics that reaches beyond the scope of their graduate thesis work. The workshop provided a comprehensive overview of the physics of glaciers and current research frontiers in glaciology. Topics included glacier mass balance, meteorology, hydrology, glacier dynamics, ice-ocean interactions, glacier geology, geophysical methods, inverse modeling, and remote sensing of glaciers and ice sheets. A focus was on modeling and quantitative glaciology.

The workshop's format followed the one of a similar event in 2010 (also partially sponsored by IUGG). It includes morning presentations followed by computational exercises in the afternoon. In addition, each student worked on a glaciology computer project as a member of a small team guided by an instructor, and presented their results in a 'mini' student conference at the end of the course. At an early stage of the course students presented their own research in poster session. A one-day excursion to the Kennicott glacier and a short excursion to the proglacial field of the glacier provided hands-on experience of a glacial environment, and gave students an opportunity to learn techniques of field data collection. A number of evening activities rounded off the program, including public lectures at the Kennicott National Historic Landmark by two of the external instructors, that were attended by >100 locals and tourists. Course material is currently posted at (<http://glaciers.gi.alaska.edu/courses/summerschool2012>). Hence, the material will reach an audience beyond the participants of the summer school.

A major characteristic of the workshop was that almost all instructors stayed for the entire period, offering plenty of opportunity for interaction with the students during and outside of the formal instruction period. In addition to six faculty members from the University of Alaska, four invited lecturers participated. Students became acquainted with a number of established scientists in different fields in glaciology. Hence, the course offered a valuable platform for international networking between students and instructors and among the students themselves, thereby fostering future collaborations. This was generally perceived as a major asset of the workshop. The workshop location con-

tributed to the networking through the very special atmosphere at McCarthy. Students camped close to the village, while meals were provided by the Wrangell Mountains Center, the location at which all course activities were conducted.

Most participants also participated in the symposium of the International Glaciological Society on “Glaciers and ice sheets in a warming climate) held in Fairbanks, Alaska, following immediately the McCarthy course. The timing of both events was deliberately chosen to facilitate course participants to attend both events. Overall, the course received highly positive evaluations. Participants left with a firmer background in glaciology and a great network of contacts.’

Ice-volcano interaction conference in Anchorage, Alaska

IACS co-sponsored the ‘Third International Conference on Volcano-Ice Interactions on Earth and Other Planets’, held at the U.S. Geological Survey office in Anchorage, Alaska between June 18th and 22nd, 2012. The purpose of the conference was to bring together scientists with a common interest in volcano-ice interactions and to highlight recent studies and eruptions at snow- and ice-clad volcanoes. IACS was pleased to sponsor two students (Lidmila Kuksina from Kamchatka, Russia and Matteo Roverato from Mexico), who would otherwise have not been able to attend. Andrés Rivera, IACS Vice President, notes:

‘Nearly 50 scientists mainly coming from the USA, South America and Europe attended the meeting. Recent findings, new technologies and ongoing projects were discussed, in Alaska, Iceland and the Andes, as well as other regions. A visit to the Alaska Volcano Observatory (AVO) allowed the attendees to see the operations and technologies employed in the continuous monitoring of Alaska’s hazardous volcanoes. The three-day workshop closed with a roundtable discussion, devoted to identifying future research directions and collaborations. The workshop was followed by a two-day field trip to the Wrangell volcanic field and the Cook Inlet volcanoes.’

Workshop of the Ice-Sheet Mass Balance and Sea Level project (ISMASS) Scientific Committee on Antarctic Research (SCAR) meeting in Portland, USA

Ian Allison, the IACS president attended the Workshop of the Ice-Sheet Mass Balance and Sea Level project (ISMASS; 14 July), which was co-sponsored by IACS. ISMASS, an Expert Group of the SCAR Physical Sciences SSG, was originally established in 1993, with a focus on determining the best techniques and required measurements for estimating the status of the Antarctic Ice Sheet. Ian Allison reports:

‘It is now clear, from several independent satellite techniques that both the Antarctic and Greenland ice sheets have lost mass and contributed to sea level rise over the last 20 years. A number of papers presented at the Workshop highlighted these changes. The focus of ISMASS has thus shifted to improving prognostic ice sheet models (including processes and boundary conditions), and the project is now co-hosted by the International Arctic Science Committee (IASC) to include Greenland. The Workshop concluded that the ISMASS project should continue, but with new Terms of Reference (ToR) and a new Steering Committee. The workshop also determined that ISMASS should have stronger links with the community studying the present and future contribution to sea level change from glaciers outside the ice sheets, although the ISMASS activities should not directly include glacier work. IACS undertook to provide this connection through its links with the glacier community, and its lead role in the Steering Group of the Global Terrestrial Network for Glaciers (GTN-G).’

Award of SCAR Medal for International Scientific Coordination to IACS President Ian Allison

I am delighted to report that IACS president, Dr Ian Allison was awarded the SCAR International Coordination Medal at the recent SCAR meeting in Portland, USA. Ian’s significant international

achievements bring distinction and esteem to the IACS office. On behalf of the Bureau, I heartily congratulate Ian. The following citation is from the SCAR website (more information, including Ian's response, is available at <http://www.scar.org/awards/>):

'Dr. Ian Allison has investigated the Antarctic cryosphere for more than 40 years and participated in or led 25 research expeditions to the Antarctic. The focus of his research centres on understanding the role of Antarctica in the global climate system, and its response to climate change. His research interests cover a broad field, including sea ice; ice shelf ocean interaction; the mass budget of the Antarctic ice sheet; and Antarctic surface weather and climate. He has published more than 100 peer-reviewed papers on this research. Ian has been an active member of the SCAR community, for example serving as previous co-chair of the Antarctic Sea Ice Processes and Climate (ASPeCt) group and as a member of the Group of Specialists on Antarctica and Global Change. He is also the current chair of the Martha T Muse Selection Committee. Ian has played a lead role for 30 years in international collaboration in climate science through bodies such as SCAR, the World Climate Research Programme, the International Union of Geodesy and Geophysics, and most notably as co-Chair of the ICSU/WMO Joint Committee for the International Polar Year 2007-2008. The award of the 2012 SCAR Medal for International Coordination is well-deserved recognition of Dr. Allison's distinguished career of service and leadership in Antarctic science.'

Seligman Crystal awarded to Professor David E Sugden

IACS would like to acknowledge the tremendous scientific contribution made by David Sugden, the 2012 winner of the Seligman Crystal, the highest in glaciology bestowed by the International Glaciological Society. David has made many important discoveries in glaciology. I was one ~40 of David's former doctoral students, and have listed some of my favourite papers written by David below: An explanation of the landscapes of glacial erosion in terms of the basal thermal regime of former ice sheets (Sugden 1978, *Journal of Glaciology* 20, 367-391), understanding how debris is entrained under ice sheets (Sugden et al. *Nature* 328, 238 – 241, 1987), and discovery of what is apparently the oldest known glacier ice on Earth (> 8 Ma), vivid evidence of Antarctic climatic stability for millions of years and an intriguing analogue for Mars (Sugden et al. *Nature* 376 (6539), 1995).

Meeting of Global Terrestrial Network for Glaciers (GTN-G) Executive Board

GTN-G is the framework for the internationally coordinated monitoring of glaciers and ice caps in support of the United Nations Framework Convention on Climate Change (UNFCCC). The network, authorised under the Global Climate/Terrestrial Observing System (GCOS, GTOS), is jointly run by the World Glacier Monitoring Service (WGMS), the U.S. National Snow and Ice Data Center (NSIDC), and the Global Land Ice Measurements from Space initiative (GLIMS). To formalise the IACS link to GTN-G the Steering Group as a whole has been made a Standing Group (ongoing tenure) of IACS.

The GTN-G executive board met on 24th of April during the 2012 EGU meeting in Vienna. The meeting consisted of Cecilie Rolstad-Denby (IACS, Chair of the Advisory Board), Michael Zemp (WGMS, chair of the Executive Board Meeting in Vienna) - Martin Hoelzle (WGMS), Frank Paul (WGMS, GLIMS), Tobias Bolch (GLIMS), Bruce Raup (GLIMS/NSIDC) and Richard Armstrong (NSIDC). In this meeting, Cecilie Rolstad-Denby took over from Julian Dowdeswell as the Chair of the GTN-G advisory board. Cecilie has provided a short summary of recent GTN-G activities below:

'GTN-G ran sessions at AGU 2011 and EGU 2012, and both sessions were well attended. Similar sessions are planned for 2012 and 2013. A new version of the World Glacier Inventory is now online and has been announced on Cryolist. Digital Object Identifiers (DOI) will be introduced in order to improve the version control for the operational databases within GTN-G. A meta-data browser is made for the GTN-G website, and further improvements will be made. The Randolph data set is now available at

the GLIMS web pages. Activities and cooperation between GLIMS, NSIDC, and WGMS were discussed, and in particular the need for funding of staff at NSIDC for the inclusion of the new glacier outlines of the Randolph data set into the GLIMS database. The new high-quality outlines from the Randolph index dataset need to be attributed and time-stamped based on information from the original sources, and finally integrated into the operational GLIMS dataset. An evaluation of GTN-G services offered by WGMS, NSIDC, and GLIMS will be conducted by the Advisory Board and external experts, and a final evaluation report will be made in 2014.'

Forthcoming IACS Bureau meeting to be held in Sanya, China.

The next IACS Bureau meeting will be held in Sanya, China from the 13th to the 14th of November, immediately following the International Conference on Cryosphere: Changes, Impacts and Adaptation' (<http://icc.skllcs.ac.cn/dct/page/65540>). Part of the first day will be devoted to discussions with and reporting from IACS partners. The remaining time will be devoted to IACS internal affairs and is reserved for the Bureau.

If there is anything you would like to bring to the attention of IACS Bureau, for example a request to establish a new IACS working group, or any other suggestions or comment, then please make sure to send to Andrew.Mackintosh@vuw.ac.nz well in advance of the meeting (latest by 1st November, 2012).

Finally, we note that this year is the 90th anniversary of the establishment of five of our sister IUGG Associations during the first IUGG General Assembly, May 1922 in Rome, Italy. IACS congratulates the International Association of Geomagnetism and Aeronomy (IAGA), the International Association of Hydrologic Sciences (IAHS), the International Association of Meteorology and Atmospheric Sciences (IAMAS), the International Association for the Physical Sciences of the Oceans (IAPSO), and the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI) and wishes them ongoing success with their scientific endeavours. In particular, IACS wishes IAHS a very pleasant birthday symposium in Delft, the Netherlands, at the end of this month, acknowledging herewith gratefully IAHS for having hosted IACS' predecessor the International Commission of Snow and Ice (ICSI) for 78 years from 1927 to 2005.

Andrew Mackintosh, Secretary General IACS, with contributions from the IACS Bureau (Ian Allison, Charles Fierz, Cecilie Rolstad-Denby, Andrés Rivera), and Regine Hock.

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