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Cover picture: The glaciers and ice core drilling expedition in Naimona'nyi, southwestern Tibetan Plateau. Photography by Lide Tian, ITP-CAS, Beijing, China.

From the Editor

Dear IGS member

The festive season is fast approaching and it is time to get this *ICE* issue out. Once again open access and its potential impact on the operation of the Society is the main topic of this editorial.

The IGS Council discussed the implementation and likely effects of open access on the running of the Society at its meeting held in Beijing in July.

In the past, institutional and library subscriptions to the *Journal and Annals of Glaciology* have subsidized the various activities of the IGS (e.g. to provide scholarships, travel grants, student exchanges and grants for students to attend symposia and workshops). This is a common business model of the various independent learned societies in the UK and so ours is not the only organization that has to deal with these issues.

The Society has three main operations: the membership, the publication of the *Journal*, *Annals* and *ICE*, and the IGS symposia. With the anticipated changes resulting from going open access, we will have to ensure that each of these activities is self-sustaining. Page charges will have to cover the cost of publication, registration fees will have to cover the cost of attending a symposium and membership fees will have to cover the cost of supporting our members and the distribution of our publications to them.

If we look at these things individually I will try and share with you the thoughts of the IGS Council and the steps that have been taken so far.

Publication. We are now being more assertive with authors of *Journal* and *Annals* papers in our efforts to recover full page charges. Those of you submitting papers will have noticed that you are now required to tick a box saying you are aware of the page charges and realize these have to be paid.

In the past, participation in an IGS symposia has entitled a participant submitting a paper to a thematic *Annals* issue with a similar theme to the symposium s/he is attending to four page-charge-free pages in that issue. However, starting with the thematic issue on 'Sea Ice in a Changing Environment' (paper deadline 20 December 2013), all authors will now be required to pay full page charges. At present, the Society is charged a processing fee of US$30 for each submission to our online submission system. Another thing the IGS Council is considering is passing some or all of this cost on to submitting authors (regardless of whether the paper in question is accepted or not).

Having laid out this 'tougher' policy on page charges, Council has however reaffirmed its commitment to continue to provide waivers and discounts in cases of financial hardship.

As there is no page-charge income for the IGS newsletter, Council has decided to stop printing *ICE* and only publish it online, starting with *ICE* 164. The next issue of *ICE* (163) will be the last to be mass-printed on paper. However, we will continue to print a few copies of ICE to send to some of our esteemed members who do not have access to the Internet.

Symposia. As I have already mentioned, we will no longer grant participants four page-charge-free pages. In addition, participants in the respective symposium will no longer receive a hard copy of the *Annals* in question, although they will have full access to it online. Of course, members will be able to purchase the issue at a 'members rate'. Unfortunately, this does not mean that the registration fee will reduce; in fact the fees may have to increase (although we are attempting to get some commercial sponsors and grants to help keep the price down). IGS symposia are very elaborate and generous events and delegates get a lot for their money, with icebreakers, banquets, mid-week excursions, refreshments during breaks all week, sometimes lunch and additional events such as BBQs all included (all good value, particularly when one considers that at some big conferences one does not even get a free cup of coffee!). With the help of the local organizers, the Society will continue to solicit grants that will enable us to support students and young scientists wanting to attend. For our next two symposia it is clear that we have some funding to do just that. IGS symposia will continue to be an enjoyable and useful experience and a great place to meet your peers, strengthen existing collaborations and forge new ones.

Membership. Although production of *Journal of Glaciology* papers (i.e. copy-editing, style-setting, typesetting, proof-checking, etc.) is shared by all, it does not seem fair that the limited society membership fees should go towards subsidizing printing and shipping, particularly since more and more members are opting for 'online-only' membership. Increasingly, we are moving towards a system in which those of us who wish to receive a hard copy of the *Journal* bear the cost of printing and shipping. Council have decided not to make this transition in one fell swoop but to spread it over 3 years. This means that we will have to increase the 'combined' membership fees considerably in stages over the next 3 years. However, the 'online-only' membership will remain unchanged next year, for the third year in a row.

We have now set the online membership page up in such a way that you no longer have to log in separately to access recent papers on Ingenta. In order to have full access to all IGS publications (irrespective of where they are hosted), it should now be sufficient just to log in as a member on our website.

At the time of writing, members have started renewing their membership. I would like to ask all members who are opting for the 'combined' membership (i.e. those of you wanting to continue to receive hard copies of the *Journal*) to renew promptly. The first issue of 2014, issue 219, will be finished very early in the new year. And it is most economical if we can ship all hard copies out at the time of publication. It is very expensive to send copies out individually.

So far almost 350 members have renewed. The total tally for 2013 was 930 members, 20 down from last year. I trust that we will reach the 1000 mark in 2014.

Magnús Már Magnússon
Secretary General

The Russian contribution to snow science

Perhaps the most exhaustive list of Russian (Soviet) achievements in cryospheric research published in English contains almost no purely snow-related publications (Kotlyakov, 1997). However, this does not mean that snow research was not a focus of Russian scientists. Russian-language reviews exist (e.g. Sokratov and Troshkina, 2009, although this does not focus solely on Russian developments) and show that, in Russia, snow cover was always considered one of the most important components of the environment. The often specific nature of the approach taken was mainly due to the large scale of the country and the variety of environmental conditions found within it. This often makes the ideas involved and the results obtained rather difficult for the international scientific community to interpret.

Modern Russian cryospheric literature originates from the early works of M.V. Lomonosov. His seminal works (Shiltsev, 2012) include ideas on latitudinal and altitudinal climatic belting in interaction between the 'winter's cold' and the 'summer's heat'. He defined the 'freeze layer' in the atmosphere and mentioned a number of thermophysical phenomena related to ice and snow. However, the beginning of snow research in Russia is usually linked with the name of A.I. Voeikov (1842–1916). Voeikov (Hooson, 1968) considered climatology and meteorology to be among the main fields of his scientific interests. Because of the climatic conditions of the Russian Empire, snow cover was an inevitable part of practically any scientific research in the field. The stated aim of snow cover studies was expressed by Voeikov in terms of the effect of snow cover on soil conditions, with reference to German studies of the influence of snow cover on crops (Wollny, 1877). Particular interest was expressed in the converse effect of snow cover on climate and on weather. This took the form of a book published by the Imperial Academy of Sciences (Voeikov, 1889).

Probably more important was Voeikov's active participation in the establishment of a

Fig. 1. Photograph: 'Snowflakes; micro-photographic images from nature: A. Sigson: Rybinsk'. End of the 19th century. 61.2 × 90.7 cm. Courtesy of Rybinsk State Historical, Architectural and Art Museum, Russia.

network of extensive snow cover investigations at meteorological stations around the Russian Empire. The daily snow depth was measured at a rapidly increasing number of stations: from 35 in 1888/89 to 130 in 1891/92 (Voeikov, 1892). Simultaneously, several hundreds of stations reported the decadal quantity of days with snow cover, dates of appearance and disappearance of snow cover, frequency and repeatability of blizzards in each Russian province (Berg, 1893). The data were published annually by the Academy of Science and the Geographical Society and are still available.

In addition to such extensive campaigns, more specific research was taking place. A.A. Sigson's extensive series of micro-photographs of natural snowflakes (more than 200 over more than 30 years from 1872; Fig. 1) presents different forms of snowflake and resulted in his conclusion that the form of falling snowflakes is dependent on air temperature. These snowflake photographs were widely used by the scientific community (e.g. Lyuboslavskii, 1900; Weinberg, 1936) and were highly regarded internationally (Abbe, 1900). The advanced photographic technique resulted in the award of several prizes at exhibitions, including a gold medal at the Exposition Universelle of 1900 in Paris.

Meteorological observations made at the Chief Physical Observatory of the Imperial Academy of Sciences, led by Swiss (and de facto Russian) meteorologist and physicist H. von Wild, included measurement of soil temperature and seasonal soil freezing. The results for the period 1872–89 were interpreted as showing a warming effect of snow (and grass) on soil temperatures down to 3.2 m depth and the effect of snow cover on the speed of warming and cooling during the annual temperature variation in soil (Glasek, 1892).

Dissatisfied with the persistently low values for snow density published up to that time, Abels (1892) studied the dynamics of intraseasonal snow cover density in relation to temperature and wind velocity, expressing the thermal conductivity of snow as a function of snow density (Abels, 1893). Significant data were collected and analysed on the evaporation of snow cover (Muller, 1892), leading to recognition of the spatial and temporal variability of the process. The results of the examinations of the spatial–temporal variability in snow cover depth and duration in dependence on 'local conditions' became part of the chapter on snow and snow cover in one of the most

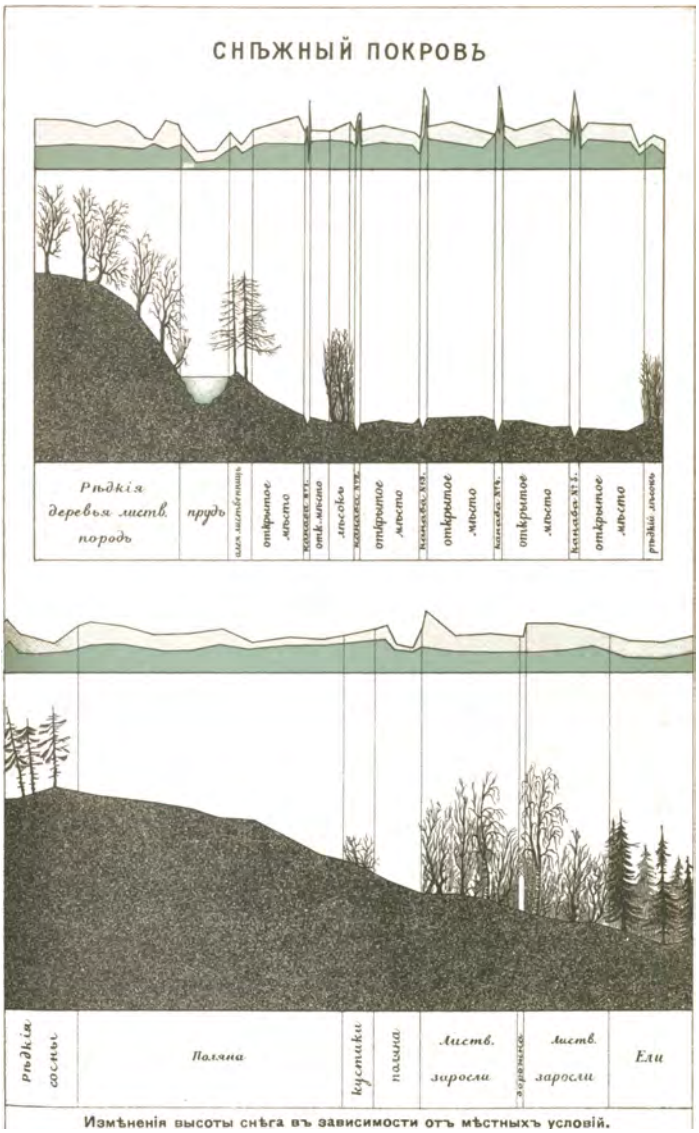

Fig. 2. Variability in snow cover depth dependending on local conditions (Lyuboslavskii, 1900).

respected Russian-language encyclopedias, in 86 volumes (Lyuboslavskii, 1900; Fig. 2).

Existence of such a background allowed further development of snow research and links with practical applications. Thus, the importance of snow cover depth and its thermophysical properties were recognized in permafrost studies related to industry and agriculture in developing permafrost regions, where water scarcity was a major problem (Sumgin, 1927).

Snow avalanche investigations in Russia/USSR, which first received attention as road construction developed in the Caucasus (second half of the 19th century), became an important part of the massive new mining developments in the Khibiny Mountains in the 1930s (Ancey and others, 2005). At that time snow research was focused on experimental studies of the mechanical properties of snow (Saatchyan, 1936; Goff and Otten, 1938) and understanding the complexity and importance of variability in the structural properties of the snow cover (Molochnikov, 1938; Shepelevskii, 1938). In addition to the Russian background, the establishment of the avalanche service in the Khibiny Mountains was also inspired by international studies. In particular, A.E. Fersman (Glasby, 2008) travelled to Switzerland in June 1936, hosted there by P. Niggli and accompanied by 'energetic young professor' H. Bader to the regions of St Gotthard, Davos and Arlberg. Fersman brought back to Kirovsk a collection scientific publications on snow and snow avalanches and the strategic organization of snow and avalanche research in Davos (Rzhevskiy, 1989).

The development of glaciology as a scientific field in Russia, based on the ideas of M.V. Lomonosov and A.I. Voeikov, introduced the so-called 'chionosphere' – the belt around the Earth where snow can accumulate, leading to the formation of glaciers (Kalesnik, 1939). Evidently, the basis for this was progress in understanding the mass and energy balance of natural snow cover. This idea, that snow cover is later transformed into glaciers, views glaciers not just as the product of climate but as a driving force for local and global climate change – expressed by E.S. Gernet in his book, published in Japan (Gernet, 1981; Chizhov, 1969).

Inspired by the fundamental work *Historia naturalna lodu* [*The natural history of ice*] by the Polish researcher A.B. Dobrowolski (Machowski, 1998; Barry and others, 2011), B.P. Weinberg published a collective monograph on ice in which the work of A.B. Dobrowolski was combined with what were then the latest international developments in snow research (Weinberg & Gorlenko, 1940).

The number of publications discussing the results of snow research was gradually increasing. A number of reviews of the existing knowledge appeared (Rikhter, 1945, 1948). On the one hand, snow research addressed numerous practical applications with snow cover considered as a natural resource (Rikhter, 1955), such as estimations of the peculiarities of snow-melt (Kuz'min, 1961), the properties of snow (snow structure) as it affected wildlife and animal husbandry (Formozov, 1991), regulation of the thermo-insulation properties of snow cover for agricultural purposes (Shulgin, 1986), the effects of snowstorms and the measures required to mitigate them (Dyunin, 1963) and the dependence of snow avalanche regimes on geographical conditions (Troshkina, 1992; Tushinskii, 1949). As in 19th century studies, presentation of the results often took the form of maps showing the spatial variability of one snow-related phenomenon or another across the USSR, based on classification systems specifically developed for them. Some of these coincide with similar constructions based on more recent foreign data (Sturm and others, 1995). Russian snow cover investigations were also gaining wider geographical and climatic coverage (i.e. Kotlyakov, 1961, 1968).

Of course, on the other hand, more detailed research on the process of snow recrystallization (Kuz'min, 1957; Shumskii, 1955; Tushinskii and others, 1953), the thermo-physical properties of snow cover (Pavlov, 1979), and the mechanical properties of snow and ice (Voitkovskii, 1960, 1977) was successfully advancing, often concurrently combining empirical results from regions with very different environmental conditions.

The peak of native Russian analysis and presentation of spatially distributed snow and glacier data is represented by the *Atlas of snow and ice resources of the world* (Kotlyakov and others, 1997). The geographical distribution of spatially varying snow quantities and their influence on snow cover constitutes a substantial part of this publication. Until completion of the long-anticipated digitization of the data underlying the Atlas (Fig. 3), the maps themselves are mainly useful as illustrative material. However, the methods used to analyse data in order to draw up the maps, which are described in detail, can be considered as a validated approach for the modern world of numerical simulations and remote sensing.

At the present time, Russian snow science is becoming incorporated within joint international efforts to develop new methods for snow investigations and in worldwide data collection campaigns. Some of the international summaries on the results of snow research have been translated into Russian (e.g. Fierz and others, 2009; Grey & Male, 1981; Kingery, 1963; Maeno, 1981). Foreign lan-

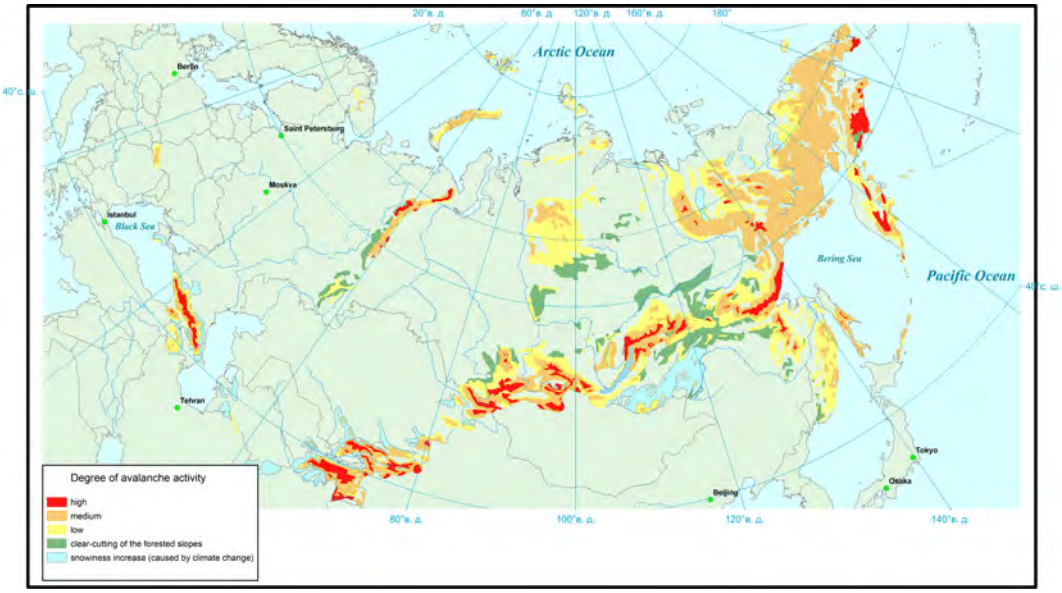

Fig. 3. An image from the digitized 'Degree of avalanche activity' map. With permission from Kotlyakov, 1997: 35A.

guages are not a problem for the majority of currently active Russian snow researchers. With a few exceptions (Kolomyts, 2012; Sokratov and Kazakov, 2012), modern Russian snow investigations are mainly proceeding in line with international colleagues and thus have to be based on the internationally accepted scientific background. However, the knowledge comprising 'Russian snow science' should also be taken into account when analysing new information. The differences in approach and in understanding of processes related to highly variable natural conditions and the differing requirements of society over time should provide a useful base for joint developments rather than a purely historic backdrop to the internationally supported investigations presently ongoing in the field of snow science.

Sergey Sokratov

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International Glaciological Society

JOURNAL OF GLACIOLOGY

Papers accepted for publication between 1 July and 30 September 2013. The papers are listed in alphabetical order by first author. Some of these papers have already been published.

Smriti Basnett, Anil V. Kulkarni, Tobias Bolch
The influence of debris cover and glacial lakes on the recession of glaciers in Sikkim Himalaya, India

Emilie Beaudon, John C. Moore, Tõnu Martma, Veijo A. Pohjola, Roderik S.W. van de Wal, Jack Kohler, Elisabeth Isaksson
Lomonosovfonna and Holtedahlfonna ice cores reveal east–west disparities of the Spitsbergen environnment since AD 1700

S.P. Carter, H.A. Fricker, M.R. Siegfried
Evidence of rapid subglacial water piracy under Whillans Ice Stream, West Antarctica

C.C. Clason, P.J. Applegate, P. Holmlund
Modelling Late Weichselian evolution of the Eurasian ice sheets forced by surface meltwater-enhanced basal sliding

The IceCube Collaboration
South Pole glacial climate reconstruction from multi-borehole laser particulate stratigraphy

Charlotte Delcourt, Brice van Liefferinge, Matt Nolan, Frank Pattyn
The climate memory of an Arctic polythermal glacier

Johannes Freitag, Sepp Kipfstuhl, Thomas Laepple, Frank Wilhelms
Impurity-controlled densification: a new model for stratified polar firn

K. Jezek, X. Wu, J. Paden, C. Leuschen
Radar mapping of Isunguata Sermia glacier, Greenland

David H. Jones, G. Hilmar Gudmundsson
Aircraft-Deployable Ice Observation System (ADIOS) for instrumenting inaccessible glaciers

Chang-Qing Ke, Cheng Kou, Ralf Ludwig, Xiang Qin
Glacier velocity measurements in the eastern Yigong Zangbo Basin, Tibet, China

Amber A. Leeson, Andrew Shepherd, Aud V. Sundal, A. Malin Johansson, Nicholas Selmes, Kate Briggs, Anna E. Hogg, Xavier Fettweis
A comparison of supraglacial lake observations derived from MODIS imagery at the western margin of the Greenland ice sheet

Matti Leppäranta, Onni Järvinen, Elisa Lindgren
Mass and heat balance of snowpatches in Basen nunatak, Dronning Maud Land, Antarctica, in summer

S.R.M. Ligtenberg, J.T.M. Lenaerts, M.R van den Broeke, T.A. Scambos
On the formation of blue ice on Byrd Glacier, Antarctica

M. Morlighem, E. Rignot, J. Mouginot, X. Wu, H. Seroussi, E. Larour, J. Paden
High-resolution bed topography mapping of Russell Glacier, Greenland, inferred from Operation IceBridge data

Martin Mössner, Gerhard Innerhofer, Kurt Schindelwig, Peter Kaps, Herwig Schretter, Werner Nachbauer
Measurement of mechanical properties of snow for simulation of skiing

T.D. Reid, B.W. Brock
Assessing ice cliff backwasting and its contribution to total ablation of the debris-covered Miage Glacier

H. Seroussi, M. Morlighem, E. Rignot, A. Khazendar, E. Larour, J. Mouginot
Dependence of century-scale projections of the Greenland Ice Sheet on its thermal regime

Leo Sold, Matthias Huss, Martin Hoelzle, Hubert Andereggen, Philip C. Joerg, Michael Zemp
Methodological approaches to infer end-of-winter snow distribution on alpine glaciers

Stephanie Weidemann, Tobias Sauter, Lars Schneider, Christoph Schneider
Impact of two conceptual precipitation down-scaling schemes on mass-balance modeling of Gran Campo Nevado ice cap, Patagonia

ANNALS OF GLACIOLOGY 55(66)

The following papers have been selected for publication in Annals of Glaciology *55(66) (thematic issue on Changes in glaciers and ice sheets: observations, modelling and environmental interactions), edited by Douglas R. MacAyeal and Weili Wang*

Mohd Farooq Azam, Patrick Wagnon, Christian Vincent, Alagappan Ramanathan, Anurag Linda, Virendra Bahadur Singh
Reconstruction of the annual mass balance of Chhota Shigri glacier, Western Himalaya, India, since 1969

Alison F. Banwell, Martamaria Cabellero, Neil S. Arnold, Neil F. Glasser, L. Mac Cathles, Douglas R. MacAyeal
Superglacial lakes on the Larsen B ice shelf, Antarctica, and at Paakitsoq, West Greenland: a comparative study

Prashant Baral, Rijan B. Kayastha, Walter W. Immerzeel, Niraj S. Pradhananga, Bikas C. Bhattarai, Sonika Shahi, Stephan Galos, Claudia Springer, Sharad P. Joshi, Pradeep K. Mool
Preliminary results of mass-balance observations of Yala Glacier and analysis of temperature and precipitation gradients in Langtang Valley, Nepal

Christoph Haemmig,, Matthias Huss, Hansrudolf Keusen, Josef Hess, Urs Wegmüller, Zhigang Ao, Wubuli Kulubayi
Hazard assessment of glacial lake outburst floods from Kyagar glacier, Karakoram mountains, China

Nie Zhenyu, Pan Renyi, Li Chuanchuan, Zhang Mei, Liu Gengnian
Analysis of the glacial geomorphological characteristics of the last glacial in the Tianger area, Tien Shan, and their paleoclimate implications

Shin Sugiyama, Daiki Sakakibara, Satoshi Matsuno, Satoru Yamaguchi, Sumito Matoba, Teruo Aoko
Initial field observations on Qaanaaq ice cap, northwestern Greenland

Chunxia Zhou, Yu Zhou, Fanghui Deng, Songtao Ai, Zemin Wang, Dongchen E
Seasonal and interannual ice velocity changes of Polar Record Glacier, East Antarctica

More papers for *Annals* 55(66) will be published in the next issue

Romance of the Three Poles

A report on the IGS conference on 'Changes in Glaciers and Ice Sheets'

Beijing, China, 28 July–2 August 2013

It is a general truism of this world that anything long divided will surely unite, and anything long united will surely divide
Luo Guanzhong, 14th Century, author of *Romance of the Three Kingdoms*

Although having been separated for eons, when the two continents were brought together, a great crisis of unification ensued. What had long been the low dwelling of shellfish, and of birds darting across the breaking wavelets on beaches, heaved upward. It rose ever higher to become a plateau that insulted the sense of balance of Mother Earth. So high was this plateau that snow began to fall regularly for the first time on the planet since the days of coal swamps and Pangea. On high, in the chamber of snows, the spirit of Mother Earth began to respond, slowly pulling from the gases rarefied above the plateau the carbonic acid needed to wear away the stone and to restore the home of gentle waters, shellfish and darting birds with long legs and beaks. The lowering of this plateau would also take eons, and its final level is as yet unknown.

As the acid worked, the ocean bottom covered itself with another kind of limy snow, and the slow response of the dwelling of plants and animals was to get colder. Eventually, another crisis of unification came, and this was the beginning of the two distant houses of ice and snow, each in their separate corners of the Earth below the pinpoint axis around which the stars circle. Snows built up on the two geographic poles at the bequest of the pole of elevation that sat on the high plateau where India and Asia were unified in one form.

Today, another crisis looms. Another form of nature has come to live on the earth that temporarily reverses the slow pull of gases from the atmosphere needed to deposit lime in the ocean. The unification of the three poles, embodied by their care and nurturing for ice and snow, is challenged by a warming trend that threatens to send each on a separate, divided path. For the North Pole, the threat is to lose the gentle blossoms of white snow on sea ice in the warm summer. For the South Pole, the threat is to break ice shelves and unleash torrents of ice into the ocean. And for the Pole of Altitude the threat is to water resources, permafrost stability and the way of life of people whose civilizations were born in the gentle floodwaters of melting glaciers from the high chamber of snow and ice.

And so, to address this threat, and to consider the state, whether divided or unified, of the three poles of importance in Earth's environment, the Symposium on 'Changes in Glaciers and Ice Sheets: observations, modelling and environmental interactions' was held in Beijing, China, from 28 July to 2 August 2013. Co-sponsored by the Institute of Tibetan Plateau Research, the Chinese Academy of Sciences, the Cold and Arid Regions Environment and Engineering Research Institute, and the National Natural Science Foundation of China, the meeting focused on a variety of themes and topics that sought to define, explain and project changing ice and snow conditions on the planet. Of particular note in the vision that organized the meeting was the recognition that the Earth's 'Third Pole' (the pole of land elevation)

The delegates posed for a group photo in front of the venue, the Institute of Tibetan Plateau Research.

An attentive audience.

has become a region of interest for glaciologists because of the widespread influence this area has on the water resources of Asia.

A total of 158 delegates from 22 countries converged on a warm and humid Beijing in late July to attend the symposium. A great many of these came to Beijing several days early to attend the International Workshop on Ice in Motion held at the Beijing Normal University (25–27 July). This productive workshop allowed some of the early arrivers to additionally participate in a workshop-sponsored excursion to visit the Great Wall of China and some of the other visitor attractions in the vicinity of Beijing. The symposium itself was held in the Institute of Tibetan Plateau Research's seminar room at a location on the northern outskirts of Beijing near the Olympic Village and near many other divisions of the Chinese Academy of Sciences. Each day, delegates were shuttled from the comfortable Beijing Conference Center Hotel to the venue site in a very efficient manner. Having the comforts and reasonable price of the large hotel, coupled with the close contact between the venue and the ITPCAS's other facilities, allowed the delegates to get a good sense of how much interesting and important work is being undertaken to better understand climate change and other issues of the Tibetan Plateau.

The symposium began with a full schedule of oral presentations on Monday 29 July, led off by the presentation 'Travelling the last mile – communicating cryospheric knowledge' by Bob Bindschadler and featuring a special presentation on 'Climate change: the physical science basis – progress of WG1 of the AR5 of IPCC' presented by renowned glaciologist and WG1 co-chairman Qin Dahe. Invited presentations on other days included 'Variable glacier mass changes in High Mountain Asia 1975–2010' by Tobias Bolch, 'Glacier variations in response to recent climate changes in the Tibetan Plateau and surrounding region' by Yao Tandong and 'The firn layer over the ice sheets of Antarctica and Greenland' by

Co-chief editors of *Annals of Glaciology* 55(66), Douglas MacAyeal and Weili Wang, stand outside a beautiful Buddhist temple on the way back from visiting the Great Wall of China with the pre-symposium excursion.

Co-Chair of the Local Organizing Committee and Co-chair of the IPCC Working Group 1 (Physical Basis) Professor Qin Dahe takes the stage to give an invited talk after lunch on Monday, the first day of the symposium.

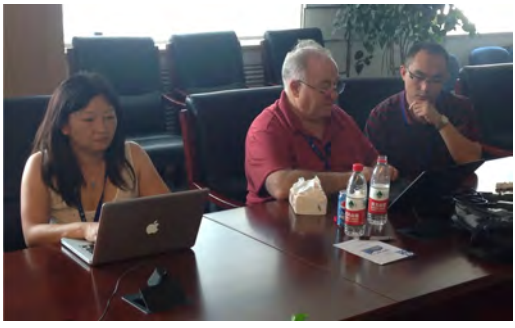
The symposium was very well attended. Here, Bob Bindschadler is giving his invited talk.

Ted Scambos explaining some interesting science to Xiao Cunde, Wen Jiahong, Peter Kuipers-Munneke and Li Ronxin.

Bob Bindschadler and Lonnie Thompson deep in discussion.

IGS symposia are the ideal place to strengthen existing collaborations and forge new ones. And it helps if you can recharge your computer at the same time. Qiao Gang and Marco Scaioni sharing some results.

Senior researchers played an important role in the symposium and here we have Wang NingLian explaining how glacier melt helps to make 'corridors' through the deserts of central Asia through which caravans used to pass from oasis to oasis (the water outcropping from the ground in these oases being glacial meltwater).



IGS Chief Editor Jo Jacka working with a Chinese scientist, Shi Guitao from Shanghai, on the latter's paper, which has been submitted to the *Journal of Glaciology*. On Jo's other side, freelance science writer Jane Qiu is working on her next report.

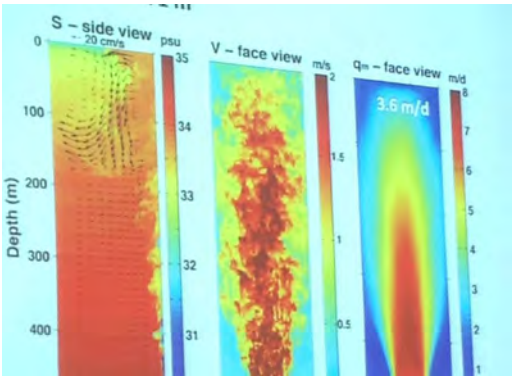
Peter Kuipers Munneke. The symposium featured a public presentation of note, given by esteemed glaciologist, ice-core climatologist and Seligman Crystal laureate Lonnie Thompson, entitled: 'Large-scale teleconnections as recorded in climate records of low- to mid-latitude mountain glaciers'.

The two poster sessions were equally lively and featured impressive work by the many delegates whose valuable work could simply not be accommodated in the limited time available for oral presentations. Most importantly, the poster hall allowed the presentation of new, cutting-edge research that was still responsive to the cross-fertilization of ideas so effectively exchanged at poster events sponsored by the IGS.

On Wednesday of the symposium week, the Annual General Meeting of the IGS (see separate report in this issue) was convened. During the President's report, IGS member (and chair of

The IGS Chief Editor celebrated his birthday on the Friday before the symposium when we were invited to join the delegates from a satellite meeting being held at the Beijing Normal University.

Seligman Crystal recipient Lonnie Thompson, another invited speaker, talked about his globetrotting with an ice-coring drill and the climate change indicators he and his team have discovered.



Xu Yun presented an extremely detailed numerical simulation (using the MIT ocean GCM) of a meltwater-driven circulation along the front of a vertical ice cliff (with Store Glacier's parameters). Fascinating detail.

the Publications Committee) Christina Hulbe and co-chair of the symposium's Scientific Steering Committee Weili Wang took to the stage to help the President present one of the IGS's most prestigious awards offered in recognition of a lifetime of contribution to the science of glaciology: lifetime Honorary Membership to Professor Yang Zhenniang of China. The citation commemorating Professor Yang's lifetime Honorary Membership also appears in this issue of *ICE*.

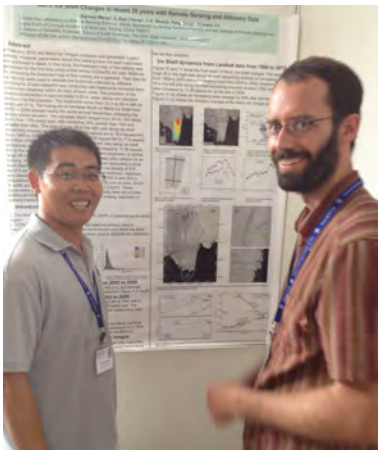
The symposium was not without a great deal of fun and cultural exchange. A source of particular enjoyment was the fact that both the icebreaker and the symposium banquet were held at a fancy restaurant in the middle of Beijing's Olympic Village, renowned for hosting the 2008 Olympic Games with flair and beauty. For those delegates who were visiting China for the first time, it was particularly interesting to see the 'bird's nest' stadium and other Olympic Games venues on the way to and from the symposium's social events. To fail to mention the exquisite Chinese cuisine served at the various events and at the 'everyday' lunches and breakfasts would leave out one of the most memorable aspects of the symposium. Even the most uncoordinated Western hands were familiar with chopsticks by the end of the week!

Speaking of chopsticks, most of the free evenings during the week-long symposium witnessed delegates heading to interesting and delightful restaurants, both near the Olympic Village and near the centre of Beijing. Among the most highly recommended dinner establishments were those that featured bona fide, authentic, world-class Peking duck. (We learned that the old-fashioned mispronunciation of 'Beijing' using the south-mandarin accented 'Peking' is OK when it comes to references to this delectable dish.) The most famous restaurant chain in China, Quanjude, of which there are eight branches in Beijing, was the favorite place for Peking duck. According to former Chinese Premier Zhou Enlai, who used to

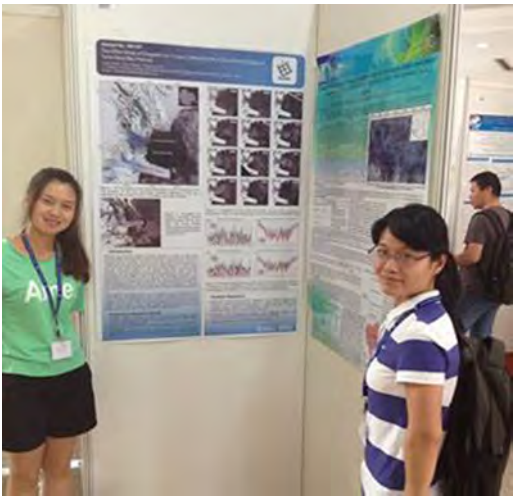
Doug MacAyeal, Paul Winberry and Audrey Huerta sharing a joke and a drink.

As usual there were several delightful presentations from young scientists. Here Shi Liquiong answers questions from the audience after her talk on thermal diffusivity of thermokarst lake ice on the Tibetan plateau.

Robert Bindschadler, a former president of the IGS and Xiao Cunde, an IGS Council member share a toast.



During the poster session, Wang Xianwei and Andy Bliss discuss Xianwei's research on the Mertz Ice Tongue.



Zhao Chen (left) and Guo Zhongming display their posters on the effect of Drygalski ice tongue calving events and the influence of black carbon and snow grain size on snow/ice albedo respectively.

host state dinners in this restaurant, *quan* means 'perfection', *ju* means 'gathering without departing', and *de* means 'supreme virtue'; together the words mean 'perfection, union and benevolence'. The wall of the branch nearest the symposium venue featured photographs of the President of the People's Republic of China, Hu Jintao, entertaining the Olympic officials to dinner in the same room where lucky delegates were having their first taste of delicious Peking duck.

The mid-week excursion offered two choices. One group visited the Great Wall of China on a day that allowed excellent, picturesque views of

One of the mid-week excursions was to the Forbidden City.

The IGS Accounts and Membership Manager, Louise Buckingham, poses in the gardens of the Forbidden City.

The other mid-week excursion was to the Great Wall. The day before the symposium started some of the delegates visited the wall and experienced very misty and wet conditions. Luckily, by the time Wednesday and the mid-week excursion came around, the weather had greatly improved.

During the mid-week excursion, Stavroula and Olivia jacka took the opportunity to dress up in the fashion of the Chinese Emperor's court.

the ancient structure. (The group that went on the Saturday prior to the start of the symposium saw the wall up close, stone by stone, but the iconic view of the wall crossing from mountain top to mountain top was not visible on that day.) The other group went to the Forbidden City. In both cases, delegates regarded the experience as providing the 'quintessential' touristic experience of China that everyone enjoys most.

The meeting closed on Friday 2 August, but not without first thanking the many people who made the symposium a huge success. Paramount in the success of the meeting was the foresight and patient preparation over the many years leading up to the event of Yao Tandong, Qin Dahe, Weili Wang and many of the other Chinese members of the IGS who were interested in seeing this meeting come together. Execution of the meeting, running of the various many details, fixing problems, filling vacancies, picking up lost delegates, storing and shuttling baggage, organizing accommodation and banquet menus all fell on the shoulders of the hard working Wu Guangjian, who was helped by a cadre of local organizing helpers to ensure that each and every delegate had an easy time attending the symposium. The IGS extended its appreciation to Guangjian and his team, and to Yao Tandong, Qin Dahe and Weili Wang, by

The IGS Banquet is always a festive occasion. Here delegates share a glass of mao-tai. Ganbei!

Wu Guangjian and Weili Wang bore the brunt of the organization of the meeting. As a token of the Society's gratitude they were each presented with an example of the new IGS field knife.

The Local Organizing Committee presented some of its foreign guests with outstanding examples of Chinese blades, much to the delight of the IGS President and Secretary General, both keen blade enthusiasts. Here Yao Tandong brandishes a cleaver made by a 300-year-old manufacturer, supplier to the Chinese Emperors in bygone days.

giving them each one of the new IGS field knives, which will be helpful in their future activities as glaciologists. Several of these knives were presented at the symposium banquet on Thursday evening along with a host of IGS commemorative 'snowflake' dishes to all the helpers who made the symposium technically flawless and comfortable for the delegates.

The Local Organizing Committee also had a few surprises up their sleeve: In appreciation of

This fine group of colleagues made it all happen behind the scenes. Whenever you needed a helping hand they were there. As a small token of the Society's gratitude they were eachpresented with an IGS dish.

the international organizing efforts conducted by the IGS Secretary General and for the week's provision of 'pomp and circumstance' by the IGS President, Yao Tandong and his helpers presented extraordinary pieces of Chinese everyday culture to them as a way of reinforcing the pleasant memories of the symposium we would retain for years to come. A high-quality Chinese chef's knife and a pair of silk cutting shears (capable of cutting the finest silk cloth without damage) were presented to the Secretary General and President (being amateur blacksmith blade-makers, both expressed extreme delight in receiving such fine examples of Chinese craftsmanship). As a further show of hospitality, a chef's knife and silk-cutting shears were given to a number of other esteemed delegates as a way to saying thank you to the entire body of delegates. Of particular note was the presentation of these very Chinese cultural souvenirs to Professor Lonnie Thompson, who has had such a strong collaborative presence in the conduct of science on the high-altitude plateaus of China. After these official thanks and the presentation of official gifts, a series of less formal 'thank-yous' were exchanged via the traditional process of 'individual toasts'. This wonderful Chinese custom involves drinking the spirit called *mao tai* in small toasting glasses, with the two participants shouting '*Ganbei*!' (Empty cup!) at the end of each toast.

As the meeting concluded, it was universally noted that the week had been wonderful for both science and culture, and that that another meeting of the IGS in China should not be delayed for long.

Doug MacAyeal

Treasures of Tibet

Post-symposium tour, August 2013

Despite the clarity and illuminating qualities of the IGS Symposium talks, the same could not be said for the Beijing skies. And so it was a particular pleasure for the fourteen members of the post-symposium tour group to emerge from the airport at Lhasa and look up to radiant sunshine, a few thin wispy clouds and brilliant blue sky. We were greeted also by our smiling Tibetan guide, Tse-dron, and coach driver, Tube-ten, who hung traditional khatak around our necks. These white scarves symbolize purity, compassion and the open heart of the giver. And so began what was to be a magical week, full of history, tradition, belief and mysticism (not to mention semi-permanent headaches, brought on by the altitude).

IGS Secretary General Magnús Magnússon and President Doug MacAyeal prepare themselves for the walk to the top of Lhasa's cardinal landmark, the Potala. Dating back to 1645, the Potala was the home and seat of government for successive Dalai Lamas from the 5th to the current 14th Dalai Lama until he was exiled in 1959. Today it is largely a museum for tourists like ourselves but is still a major spiritual centre for the many thousands of Tibetan locals and pilgrims who visit the site annually, with its statues, temples, shrines and historical artefacts.

Locals and pilgrims walking around the Barkhor, central Lhasa, a collection of narrow streets lined with shops (selling everything from reconditioned mopeds to jewellery) surrounding a square and the most revered religious structure in Tibet, the Jokhang.

Regine Hock, Bob Bindschadler and Magnús Magnússon in the extensive gardens of the Norbulingkha, the summer palace of the Dalai Lamas, in the west part of Lhasa. Founded by the 7th Dalai Lama in 1755, the palace and gardens were subsequently extended by successive Dalai Lamas. The current Dalai Lama made his escape from here disguised as a soldier in 1959.

Inside the Jokhang, a complex of temples and shrines and the beating spiritual heart of Lhasa. With many of the buildings dating from the 14th century and the oldest carvings dating back to the 6th, time seems to have stood still in this corner of the world.

Doug MacAyeal and Rachel Carr discuss whether the style of teaching and learning they have just witnessed at Sera Monastery, with much shouting, laughing and handclapping, might be introduced at subsequent IGS symposia.

Monks debating and testing their knowledge of the scriptures at Sera Monastery, near Lhasa. This once huge monastery housed around 5000 monks but now has closer to 500.

Ian Willis (still wearing his khatak), Alison Banwell, Hilmar Gudmundsson and Rachel Carr climb a small hill festooned in prayer flags overlooking Nam-tso Lake, which at 4370 m is the highest saltwater lake in the world. The Nyenchen Tangilia range in the background, with peaks over 7000 m, was crossed by Heinrich Harrer and Peter Aufschnaiter in their adventurous journey to Lhasa documented in their book *Seven Years in Tibet*.

In addition to temples, monasteries and sacred lakes, we visited the Tibetan Plateau Research Institute buildings and facilities at both Lhasa, where we were shown around by Wu Guangjian, and Lake Nam-tso. Here, Kang Shicheng welcomes us to the Nam-tso Research Station. Opened in 2005, its research projects include meteorological and hydrological measurement, atmospheric boundary layer observation, studies of modern lake processes and environmental change, and monitoring of glacier, snow, permafrost, vegetation and soils (Photo credit: Andrew Bliss).

A nomad tent in front of Kharola Glacier. At 5560m, this was close to the highest point we reached during the week. Comparing notes on our altitude sickness symptoms featured heavily on this day!

Following a historic trade route between India and Tibet, we travelled to Tibet's second largest city of Shigatse, about 250km south west of Lhasa. On the way we stopped at Pelkor Chöde Monastery complex. It was founded in 1418 and in its heyday brought together three different orders of Tibetan Buddhism, the Gelugpa, Sakyapa and Büton. The complex contains the monumental 35m high Kumbum, a unique chörten filled with many small temples containing elaborate statues and paintings.

At Shigatse, we visited the Tashihunpo Monastery, one of the few in Tibet that survived the Cultural Revolution of the 1960s and 70s. It was founded in 1447 by Gendun Drup, who was retroactively named the First Dalai Lama. The site flourished in the 17th century when the 5th Dalai Lama declared his teacher, the then abbot of Tashihunpo, as the 4th Panchen ('Great Scholar') Lama. This associated the monastery with the lineage of Panchen Lamas to the present day. The three biggest temples contain the tombs of the 4th, the 5th to the 9th, and the 10th Panchen Lama respectively.

Team Tibet, L–R: Magnús Magnússon, Bob Bindschadler, Andrew Macintosh, Hilmar Gudmundsson, Ian Willis, Elizabeth Bindschadler, Doug MacAyeal, Tse-dron (guide), Linda Sparks, Andrew Bliss, Tubeten (driver), Marcus Engelhardt, Alison Banwell, Regine Hock, Rachel Carr, Oxana Savoskul.

We feel privileged to have witnessed a part, albeit a small part, of Tibet and its people. We come away with a feeling of hope; hope that the old Tibetan ways of life that we saw are able to survive, and preferably flourish, despite the drive of development that permeates the region. In the Preface to the Tibet *Lonely Planet* book, the Dalai Lama quotes a Tibetan saying: 'The more you travel, the more you see and hear.' He encourages people to visit Tibet, hoping their presence will instil a sense of reassurance in the Tibetan people, while also exercising a restraining influence on the government authorities. We too hope that our visit did just that.

བཀྲ་ཤིས་བདེ་ལེགས་ Tashi Delek

Ian Willis

The IGS T-shirt was very popular in Tibet...

... and (when he left it unattended) so was the Secretary General's hat!

Trip to Sichuan

My name is Olivia Jacka and I am 13 years old. As I am learning Mandarin Chinese at school, my grandparents, Jo and Stavroula Jacka, took me to China for sightseeing (and the IGS symposium). After staying in Shanghai for a week and Beijing for another, we left for the post-symposium tour. We headed first for Jiuzhaigou, in Sichuan Province. Jiuzhaigou is located in the mountains and the weather is often bad for flying. When the plane landed it skidded around on the runway because of strong winds – scary! Then we had a bus ride to the hotel where we stayed for two nights. That night we ate traditional local food at the hotel. The next day we visited Jiuzhaigou National Park all day. We saw the beautiful blue, green and turquoise-coloured lakes (the local people call these '*haizi*'). Joanne Zwally, Yia Yia ('Grandma' in Greek) and I dressed up in traditional Tibetan costume to have photos taken with the amazing scenery. It was a very hot and sunny day so it was lucky Yia Yia and I had our umbrellas that we bought in Shanghai. When we got back, Yia Yia, Joanne and Jay Zwally had a massage in a little shop. Then we had very good Tibetan food at a tiny restaurant. Weili Wang was very helpful translating for us. From the restaurant we went to a dynamic performance of Tibetan music.

Jay and Joanne Zwally at Jiuzhaigou National Park

The next day, we left at 8:00 am to catch a minibus to Huanglong National Park, a World Heritage site. To get there, we had to cross a mountain that was 4000 m above sea level. To avoid getting altitude sickness we took some foul Tibetan herbal medicine, which seemed to do very little despite the hefty price we paid for it. We looked at the brightly coloured pools and waterfalls. On the way from there to the airport, I was lucky to see my first glacier – the Xuebaoding Glacier. The sun was reflecting off it, and it was very beautiful. The tour guide had no idea about the glacier, and it has taken Grandpa and me some effort to identify it using Google! When we got to the airport, we found that our flight was delayed because of unsafe weather conditions.

Dressing up again, this time in Tibetan costume at Jiuzhaigou National Park.

Chinese opera.

Me in the rain at the oldest large scale irrigations scheme in the world, Sichuan Province.

Though 90% of planes flying through Jiuzhaigou airport are delayed, we were taken to a hotel which was very unprepared despite the number of times it must be used by Air China. Finally, after an 11 hour wait, we boarded a plane to Chengdu and arrived there at 3 am. Because of our late arrival, we spent the next day resting. That evening we went to a very good performance of traditional and modern Chinese arts. It included a costume- and mask-changing act, Chinese opera, shadow puppets and traditional musical instruments.

We were in for a busy day the next day. First we went to my favourite part of the whole tour – the Chengdu Panda Base. Chengdu Panda Base is a very important place for Panda research and breeding. More than 30% of the world's Giant pandas in captivity live here. We saw at least 20 Giant Pandas and six Red Pandas. My favourites were the one-and-a-half-year-old babies who are very playful and love climbing trees. For 2000 Yuan I could have held a baby Panda, but I decided I could spend my money on other things, i.e. in the souvenir shop. After lunch we visited the oldest large-scale irrigation project in the world. The gardens were very beautiful; but it was raining very hard so my umbrella came in handy again. This was the last day of the tour, and after a few more days staying with Wei Li Wang's family, we boarded a plane for Melbourne. Going to China was so much fun. I learned lots of new things, met interesting people and went to fascinating places. But now it's time to stop writing because today is AFL (Australian Football League) Grand Final day and I am going to watch the match on TV with Grandpa and, in the Australian tradition, eat meat pies and lamingtons (Grandpa can have my beer).

Olivia Jacka

Annual General Meeting 2013

Wednesday 31 July
Institute of Tibetan Plateau Research, Beijing, China

The President, Douglas R. MacAyeal, was in the Chair.

78 persons from 21 countries attended, of whom 37 were members.

1. The previous AGM's minutes
The Minutes of the last Annual General Meeting, published in *ICE* 2012, No 19, p. 23–27, were approved on a motion by R. Bindschadler, seconded by F. Navarro and signed by the President.

2. The President's report
The President gave the following report for 2012–2013:

Dear Fellow Members
It is my pleasure to report to you on the status of the International Glaciological Society during its 77th year as the world's premier non-profit learned society dedicated to the science of ice and all its relatives.

I will start this report by highlighting the Society's activities conducted over the past year, since I last reported to you in Fairbanks, USA, in June 2012.

- The IGS held two international symposia in 2012 (Lahti, Finland and Fairbanks, USA) and is in the process of holding its first of two international symposia in 2013 (Beijing, China, and Lawrence, USA, in September). In 2014, the IGS plans to hold three international symposia: in Hobart, Australia, in March, Chamonix, France, in May and Edmonton, Canada, in August. In 2015, we are planning to be in this region of the world again with a symposium to be held in Kathmandu, Nepal.
- The IGS has co-sponsored a large number of workshops and local branch meetings, including regular annual meetings of the British Branch, the Nordic Branch, the Northwest Glaciology Meeting, the Midwest Glaciology Meeting, the Snow and Ice Research Group of New Zealand, and diverse workshops on ice-mass evaluation (such as ISMASS-2012 held in Portland, USA), geophysics, subglacial hydrology, ice drilling technology, and snow physics and chemistry.
- The IGS has financially co-sponsored a summer school (Alaska, USA, in 2012 and in previous years) and continues to interact with peer learned societies, such as AGU, EGU, DACA and IACS in ways that are productive to both, including assistance in publication (e.g. the Davos Atmosphere and Cryosphere Assembly, DACA-13; the joint International Association of Cryospheric Sciences and the International Association of Meteorology and Atmospheric Sciences IACS/IAMAS Conference on Air and Ice Interaction processes).
- In 2012, the second of two most respected peer publishers of glaciological and cryospheric scholarly journals, the AGU (the other being EGU's Copernicus Group), gave up its in-house publishing operation by turning over its flagship journals to a commercial publisher. This means that the IGS is the only remaining non-profit publisher of glaciological literature of high stature. As measures of the IGS's performance as a publisher of glaciological literature, I cite the following information:
  - In 2012, the IGS published six issues of the Journal of Glaciology, comprising 1252 pages and breaking the previous year's record for the all-time largest annual volume of the Journal.
  - So far in 2013, we are on track to publish an equally large volume, with over 100 papers submitted (as of early July) (a total of 184 papers were submitted in all of 2012 and 198 in 2011, having broken the paper submission record 6 years in a row).
  - In 2013, Volume 54 of the Annals of Glaciology will consist of five issues. Issue 62, parts 1 and 2, is a thematic issue on 'Seasonal Snow and Ice'. Issue 63, parts 1 and 2, is a thematic issue on 'Glaciers and Ice Sheets in a Warming Climate'. Issue 64 is a thematic issue on 'The Geophysics of the Cryosphere'.
  - Both IGS publications possess impact factors, 2.870 for the *Journal* and 1.870 for the *Annals*.
  - The IGS runs an effective publication website featuring benefits for authors and editors (the online submission system operating under EJPress software) and for readers (all papers are put on line under full open

access for a period of time immediately following their production).

  - The IGS website has a full online publication of all past IGS publications dating back to 1947. This archive is available to IGS members.

  - The IGS continues to produce ICE three times per year, a news periodical that features reports from correspondents around the world and other items of interest.

- The membership of the IGS continues to rise. In 2012, we had 958 members. So far this year, 2013 has 880 members. The Secretary General and I would like to see this number increase while we are here in Beijing. Among the benefits of being a member of the IGS is complete online access to all published papers, the receipt of a handsome, award-winning paper journal (if so desired), access to ICE, and discounted registration fees at IGS symposia. IGS symposia are unique in that they are relatively small and permit an intimate, interactive experience among the participants. Delegates develop a close connection to their peers, and there is no need to set up appointments in advance, as is the case for the many large meetings at AGU and EGU. In addition, participants at IGS symposia get refreshments throughout the week, and sometimes lunch is included as well. There is always an elaborate banquet included, as is a mid-week excursion to some interesting local attractions. Quite often there are other social events organized throughout the week. All of this is included in the registration fee. So IGS symposia give delegates excellent value for money. An intangible benefit to being a member, but one that is highly visible within the glaciological community, is that our members support charitable donations to authors lacking support for page charges and to early-career scientists through reduced dues, registration fees and occasional summer schools. Among the most important intangible benefits of being an IGS member is that you support the oldest learned society in cryospheric science.

- Among the most important functions of the IGS is to provide the framework allowing recognition of scientists of great distinction, either through scholarly research, through service, or through other means. The IGS awards the Seligman Crystal, so named after one of the founders of the Society, Gerald Seligman. The crystal is considered to be the highest honour in glaciology. In 2012, the IGS awarded two Seligman Crystals, one to Dr Almut Iken (presented to her in Fairbanks) and one to Professor David Sugden (presented to him in Aberdeen). The IGS also has the Richardson Medal, so named to honour its first Secretary General, Mrs Hilda Richardson. Last year, the Richardson Medal was awarded to the esteemed glaciologist Stan Paterson for his contribution to the glaciological literature in the form of the classic textbook that can be found on the shelf of most glaciologists, *The Physics of Glaciers*. This year, an additional Seligman Crystal has been awarded to Professor Paul Duval. The presentation ceremony will be held in May, 2014, so that it can be held at the IGS symposium in Chamonix, France, the country where Professor Duval lives and works.

- The IGS also recognizes exceptional contributions to glaciology through the award of honorary membership of the Society. It is my honour to announce that this recognition has been recently awarded to Professor Yang Zhenniang. As a founding member of the Lanzhou Institute, Professor Yang played an important role in shaping glacier research in China. A pioneer in cold region hydrology, she published three books and 70 papers over her nearly 40-year career. Writing in 2003, the late IGS Honorary Member Shi Yafeng cited Professor Yang's dedication to research, innovative spirit and ability to overcome any challenge that stood in her way. Professor Yang's scholarly excellence and devoted service to her community deserve recognition by the international scientific community. Because her mountain hydrology research in the Tien Shan and Qilian Shan was pioneering and of fundamental importance, and because her life's work should be held up as an example for future generations, the IGS awards lifetime Honorary Membership to Yang Zhenniang.

- A final highlight in the past year of IGS activity is the report by the Treasurer, indicating that the fiscal year 2012 is the first time in many years that the IGS's financial situation has shown a real positive balance. Over the last few years, the IGS Treasurer, the IGS Secretary General and lately the IGS Accounts Manager have worked towards reorganizing the IGS accounting procedures so as to make the accounts more transparent and to better reflect the actual status of the Society's finances. Income and expenditures are now related to the actual financial year in which they occur, and we are effectively ensuring that all financial transactions are completed in a timely fashion. The reversal of a deficit spending trend that had been worrisome over the past years is largely due to the unabated attention of the IGS Secretary General and his efficient, dedi-

cated staff to running our small learned society as efficiently as possible and with unswerving respect for the value of the contributions given by authors through their page charges, members through their dues and institutions through their subscriptions.

Having given you the highlights of the past year for the IGS, I now turn to one more topic to be covered in my report: the situation with regard to Open Access (OA) publishing.

Over the past year, the Secretary General, Council and Publications Committee of the IGS have engaged in a series of discussions about the long-range plans of the IGS in the area of Open Access publishing. These discussions are inspired by the general view within our community that OA publishing is the way of the future, and some model of OA publishing (beyond the current OA practices and institutional archiving policies of the IGS) is desirable for the IGS.

This discussion is also inspired by a new regulation that affects scientific publication in the United Kingdom. In the UK, any publications reporting the results of research supported by public funds must be published in one of two OA models, termed 'gold' and 'green'. In OA gold, a published paper is available online from the moment it is produced in perpetuity, and the copyright of the paper is held in what is known as the 'Creative Commons – copyright only dedication'. In OA green, a published paper is placed under a subscription pay wall by the publishing journal; however, the institution or author may place an online copy of the paper on an institutional archive that is publicly accessible after 1 year.

The distinction between whether a paper is published OA gold or OA green depends on whether a publication fee is paid by the authors or authors' institution to support OA gold. If no fee is paid, the paper is published as OA green (implying that subscription fees will support the cost of producing the publication, and relying on less formal institutional archiving as the eventual avenue for public OA after an embargo period).

This regulation took effect in the UK last April. Similar regulations are under consideration in the USA and in the EU; however, it is unclear whether they will be enacted and how they will differ in detail from that in the UK.

The Council of the IGS met in Vienna in early April to hold a significant discussion of what to do about the new UK regulation, as well as to deliberate on what the long-term plan should be for OA publishing in the IGS. Here I summarize the outcomes of the Vienna Council meeting:

- The Council's view is that it is desirable for the IGS to move to OA publishing in some yet-to-be-defined form in the medium- to long-term future.
- Over the coming year, the IGS needs to define the position within OA publishing that it eventually wants to achieve. Once this is done, it must then map out the pathway toward achieving this position. And finally, over the short term, the IGS needs to implement policies and procedures that adapt to the various regulations enacted in the UK and elsewhere.
- The Council has identified two immediate (1–5-year time scale) challenges that the IGS must face in order to keep its publishing practices up to date.
    1. To financially support current publishing, the IGS depends on three sources of income: page charges, institutional subscriptions and membership dues. The Council's view is that two of these sources will be diminished or eliminated, either precipitously or over a period of transition, if and when IGS publications transition to an OA form.
    2. The publishers that produce the most readily appreciated successful examples of OA publishing (e.g. peer journals: The Cryosphere and The Cryosphere Discussions, and others: Public Library of Science One) owe a great deal of their success to the fact that they were created and built from the ground up within the last decade. The IGS has been publishing since the late 1940s, and hence is optimized for a different form of publishing that first must be abandoned or dismantled in the process of moving to OA. The difference between building an OA journal from scratch and renovating a long-standing publishing operation to transition to OA is akin to the difference between building a house on a clean vacant lot and renovating an old mansion which must first be largely demolished. To move from a subscription/membership/page-charge-based publishing operation that is focused on bound paper volumes on the shelves to a high-tech/high-service-oriented web-based publishing operation that is paid for only by page charges is a formidable challenge that the established learned societies such as the IGS must contend with.
- Right now, there is no concrete plan for the IGS to change its publishing policy and practices; however, items under consideration include the following:

– Transition to a 'premium page charge' for OA gold (to immediately allow UK authors to comply with regulations).
– Eliminate the practice of producing printed (paper) copies of the Journal and Annals (this eliminates only printing and mailing costs, which, while significant, are not the main cost of producing published papers). An alternative that may be more attractive to more traditional IGS members is to make the online version of IGS publications the default, but have a small print run that members could pay a premium to receive.
– Cutting corners on quality control, for example reference checking and copy editing. (I'll remark that this step, while recognized as being possible, is not preferred by the Council.)
– Assessing page charges at the point of submission rather than the point of publication, and featuring a 'discussion'-style venue for papers that fail to be accepted.
– Simplifying production steps, for example, by featuring more author-prepared typesetting steps.
– Eliminating inefficiencies in post-production costs associated with proof corrections not submitted in a timely manner.

I conclude by reiterating that the Council, the Publication Committee, the Secretary General and the officers of the IGS are very much attentive to the issues arising over OA publication. The current strategy of the IGS is to continue to wait for further developments in the UK, USA and EU over the early part of 2014 before initiating permanent changes to the current policies and practices.

At this point I would like to invite Christina Hulbe and Weili Wang to join me on the stage. Christina will deliver the citation for Professor Yang Zhenniang and Dr Ren Jiawen has agreed to accept the reward on behalf of Professor Yang as she is out of the country.

Christina Hulbe:
It is my great honour to take part in recognizing Professor Yang Zhenniang for her lifetime of achievement in glacier and cold regions hydrological research. A student in land hydrology, Professor Yang began her professional studies in that field but soon moved to join the Lanzhou Institute when it was founded. In a career spanning 40 years, Professor Yang climbed mountains, built research stations, wrote papers and books, and when times called for it, minded children at the Lanzhou Institute farm. Her study of glacier-fed streams in the Tien Shan and Qilian Shan was as ground-breaking as it was physically demanding. Her 1991 book, *Glacier water resources in China*, was the first comprehensive study of its kind and set the standard for future work.

Professor Yang was among the founders of the Chinese glaciological research program and it seems safe to say that every glaciologist working in China today has a connection to her, through her research and her support of the scientific community. Her dedication to field studies in the Qilian Shan – right up until the year of her retirement – provided important training for a younger generation of scientists. She also served her community as a People's Representative in provincial government.

It is a loss to our discipline that the history of achievement in Chinese glaciology is not more widely known around the world. I hope that as we move forward in a 21st century marked by more open access to information and collaborative opportunities, that at least some of what we share is better understanding and wider recognition of our past, and of the important scholarly achievements upon which all of our work today rests.

I would now like to close my report and ask the Secretary General and the Membership and Accounts Manager, Louise Buckingham, to assist me in answering your questions.

Respectfully submitted
Douglas R. MacAyeal, President

The Secretary General invited members to discuss the President's report.

Stefan Vogel proposed and Philippe Huybrechts seconded, that the President's report be accepted. This was carried unanimously.

3. The Treasurer's report
The IGS Treasurer, Dr I.C. Willis, presented the following report with the audited Financial Statements for the year ended 31 December 2012.

Dear fellow members, ladies and gentlemen

As our turnover in 2012 was greater than £500k, it was compulsory for our accountants to undertake a full Audit this year rather than the less intensive Independent Examiner's Report of the previous two years.

The Society's finances are best summarized by considering the changes from 1 January 2012 to 31 December 2012, as shown on page 10 of the accounts. In the table, the Restricted Fund is money earmarked specifically for costs associated with the Seligman Crystal and the Richardson Medal. The Unrestricted Funds is everything else.

Restricted Funds: decreased by £1362 from £8362 to £7000 as a result of the manufacture and purchase of two Seligman Crystals. Two crystals were awarded in 2012.

Unrestricted Funds: increased by £29 454 from £354 609 to £384 063 showing that the income to IGS largely from membership, sales of the *Journal* and *Annals*, page charges and symposia attendance exceeded expenditure associated with *Journal* and *Annals* printing, publication and associated office support, and office support for activities related to running symposia.

Total: The Society had net resources accrued before revaluation of £26 707 resulting in the positive movement in the Society's funds of £28 092 in 2012, compared to the slight loss of £19 199 in 2011, the bigger loss of £70 573 in 2010, an even bigger loss of £122 499 in 2009 a smaller loss of £4837 in 2008, and a net profit of £11 327 in 2007.

Thus, although it has taken us 5 years, we have thankfully turned the finances around from loss to profit. **This is an important achievement**. Of course, since 2007 we still have a cumulative deficit of £177 689 and I'd argue that we should try to reduce that over the next few years by continuing to turn in a modest profit each year. Our total funds at the end of the year were £391 063 and yet our average annual expenditure for the last three years has been £538 464. Thus, if our income stream were suddenly shut off completely (unlikely I know), we'd only have enough reserves to keep us going until 22 September!

In more detail, income is itemized in notes 2–6, and expenditure is listed in notes 3 and 7–11 on pages 15–18. The accounts are presented under the headings 'Journal, ICE & Books', 'Annals' and 'Meetings/Symposia' to reflect the three main activities of the Society.

Income:

Note 2. Voluntary income was £737 in 2012 compared to £1522 in 2011 (and £6308 in 2010). This reflects fewer Royalties associated with declining sales of individual articles through Ingenta and licensing fees (for copying individual articles) collected by the Publishers Licensing Society Ltd (PLS).

Note 3. Trading activities associated with the sale of IGS merchandise turned in a small loss of £365 in 2012 compared to a small profit of £33 in 2011 and a larger profit of £915 in 2010. This largely reflects the cost of manufacturing the IGS fleeces this year combined with fewer sales this year compared with previous.

Note 4. IGS reserves were transferred into medium term investment accounts in July 2011 (£200 000 into a 2-year account and £100 000 into a 1-year account) and income from this was £9832 in 2012, higher than in recent previous years. It is still a long way off the £29 986 in 2008 when bank interest rates were much higher. These higher interest accounts elapsed earlier in 2013 and we have renewed them at an interest rate similar to what we had before. Again considerably below the interest rate we had prior to 2008.

Note 5. Income from membership subscriptions and sales of the *Journal*, *ICE* and books to libraries and individuals is up by £16 361 from £260 300 in 2011 to £276 661 in 2012. Similarly, income from meetings and symposia is up by £215 492 from £50 031 in 2011 to £265 523 in 2012. This reflects the fact that one symposium was held in 2011 but three, including the large SCAR meeting, took place in 2012. Conversely, income from sales of *Annals* was down by £60 564 from £139 918 in 2011 to £79 354 in 2012.

Membership subscriptions (see page 11) were up by £5643 from £56 723 in 2011 to £62 366 in 2012. This continues the trend from last year. Membership numbers have continued to go up (150 new members in 2012 cf. 2011) and payments have increasingly been received before the new subscription year or early in the year as a result of renewal notices being sent out in an efficient and timely manner.

Note 6. Journal sales to libraries and other organizations were up by £9393 from £88 714 (2011) to £98 107 (2012), a rise of 10.6%. In 2011/12, the annual subscription rose by 2.5% (£324 to £332). Together, this shows that the number of libraries subscribing to the *Journal* rose between 2011 and 2012, which is good news and reverses the trend of a steady fall in library subscriptions since 2009.

Journal page charge income declined very slightly by £1242 from £113 977 to £112 735 (despite a few more pages being published in 2012 (1252) than in 2011 (1184). This reverses the steadily rising contribution from this source since 2007. It increased by £14 553 (2010/11), by £10 984 (2009/10), by £11 697 (2008/09) and by £21 695 (2007/08). Page charges to authors remained the same from 2008 to 2012 and so the rising contribution up to 2011 shows that progressively more authors were able to honour page charges up to 2011. The slight reversal in this trend in 2012 reflects the fact that we are reaching a maximum in the page charge income that we can receive from authors as virtually all authors now, quite rightly, honour page charges. The difference of £1242 between 2011 and 2012 is insignificant.

Total income from *Annals* is down by £60 564 from £139 918 in 2011 to £79 354 in 2012. (NB. This does not include income for the *Annals* from delegates at conferences, who essentially receive their copy 'free', i.e. this is accounted for under the income to meetings/symposia heading.) The reduction in *Annals* income largely reflects the fact that four *Annals* were sold in 2011 and three in 2012, giving a greater income from libraries and institutions, combined with the fact that all four 2011 volumes had associated page charge income but only two of the three 2012 volumes had page charge income. The page charge income for the *Annals* volume on the theme of the Russia Symposium was partially met by a contribution of £22 894 from the organizers of the symposium, which was held in 2011 and which appeared on last year's accounts.

Expenditure:

Note 8. The direct costs associated with editing, printing, publishing and distributing the *Journal* and *Annals* and material for meetings/symposia decreased by £6533 from £135 497 to £128 964. This compares to an increase of £5086 (2010/11), an increase of £8676 (2009/10) and an increase of £16 568 (2008/09). Printing costs increased largely due to increased colour printing (the decline in printing of fewer *Annals* pages was more than offset by an increase in printing of Journal pages). Proof reading and editing costs rose very slightly (by £738) as did editorial fees and expenses (£1668). Fees associated with online submission declined by £1682 although this is largely artificial, with 2011 appearing high since invoicing for 2011 occurred in early 2011 and invoicing for 2012 occurred in late 2011. Wages and salaries associated with these activities decreased by £4411. This is shared across all three activities (*Journal, Annals,* Meetings/ Symposia) despite the Society producing more *Journal* pages and organizing more Symposia. This is a good sign and suggests greater efficiency by IGS office staff.

Note 9. The Society gave grants totalling £4105 to support the glaciology summer school held in Alaska and the ISMASS workshop in Portland, Oregon.

Note 10. The support costs associated with *Journal*, *Annals* and Meetings/Symposia activity have increased substantially by £135 577 from £292 521 to £428 098. This is largely made up of the extra costs associated with running three symposia rather than one (an increase of £155 107), which is partly offset by savings elsewhere. Encouragingly, many items are less costly this year than last year, including telephone and postage, computing and office equipment. It is also encouraging to see a continued reduction under the Wages and salaries, National Insurance and Pension costs due to continued streamlining of work practices in the IGS office. It is also good to see a reduced expenditure compared to last year (£6575) against Travel and Subsistence costs (largely the costs of our Secretary General representing the Society at Meetings (not symposia, which are accounted for elsewhere)). This reverses steady year on year increases in this item over the last four years.

The provision of doubtful debts is now a trivial amount (£361) compared to the situation several years ago. As note 18 on page 22 shows, net debtors at the end of the year amounted to £24 795 in 2012. This compares to £110 481 in 2008! There are now essentially no long-term debtors.

The much higher bank changes in 2012 compared with 2011 (a rise of £6846) is largely associated with the increased costs of credit card transactions. These were relatively high in 2012 associated mostly with the SCAR meeting.

Note 10. Governance costs associated with running the Society as a Charity decreased by £6350 in 2012 compared to 2011. As mentioned in last year's report, costs were unusually high in 2011 due to professional advice and staff time taken up with the VAT payment backlog. Governance costs are now comparable with what they were in 2010. The first item in this Note is greater than last year due to the extra time spent by our Accountants on producing a full audit rather than the less rigorous independent examination.

Summary

The Society's finances are in much better shape than they have been for some years. We ran a small surplus in 2012 (~7% of funds) and so we have achieved the major goal we set ourselves this time last year. This small surplus compares to a small deficit in 2011 (~5% of funds), a bigger deficit in 2010 (~18% of funds) a much bigger deficit in 2009 (~27% of funds), a small deficit in 2008 (<1% of funds), a small surplus in 2007 (~2% of total funds) and a bigger surplus in 2006 (~5.5% of total funds). Thus, the net result over the past 7 years is that we have been accumulating a deficit, although hopefully the small surplus in 2012 is the start of a trend that may help reduce that cumulative deficit over the next few years. The Society is now setting a budget on all key items of income and expenditure and is more closely monitoring each item on a weekly to monthly basis. This seems to have gone some way towards helping us achieve our small surplus. On the income side, it is excellent that the Society increased its paying membership compared to the previous year and it is hoped that more people will be encouraged to join in the future, especially younger members and members from emerging industrialized nations, e.g. China and India.

It is also good news that the Society increased its library subscriptions to the *Journal*. Again, it is hoped that this can be maintained. The Society should continue to invest some of its assets in high interest medium term (1-2 years) bank accounts.

On the expenditure side, the Society's expenses have stabilized and been brought under control in recent years. It is encouraging that big items of expenditure – computing, editing, wages – are now rising by modest amounts or even falling slightly.

The biggest challenge to the Society will be to remain competitive in the face of changes in the publishing sector, in particular the rise of open access publishing. I think that to authors, our page charge policy still represents very good 'value for money' compared with many of the alternatives. We should continue to make sure that this remains the case and that this fact is advertised to prospective authors. So far, I sense that many authors across all aspects of glaciology continue to want to publish their findings in the *Journal* or *Annals* but we should remain ever wary of our competitors. Similarly, I think that IGS symposia and other sponsored meetings continue to represent important venues for scientists to present their work and to meet and discuss their findings and ideas with others. They provide a very different experience from that provided by, for example, AGU and EGU. This fact needs to be continuously advertised, and interest in and attendance at our symposia/meetings needs to be closely monitored.

Ian C. Willis, Treasurer
8 July 2013

The SG invited members to discuss the Treasurer's report.

T.H. Jacka proposed, and R. Bindschadler seconded, that the Treasurer's report be accepted. This was carried unanimously.

4. Election of auditors for 2012 accounts
On a motion from the Secretary General, F. Navarro proposed, and C. Hulbe seconded, that Messrs Peters Elworthy & Moore of Cambridge be elected 'Independent Inspectors or Auditors', whichever is appropriate for the 2012 accounts. This was carried unanimously.

5. Elections to Council
After circulation to members of the Society of the Council's suggested list of nominees for 2013–16, no further nominations were received, and the following members were therefore elected unanimously.

Elective Members:	Ludwig Braun
	William Colgan
	Petra Heil
	Yulia Zaika

These appointments were unanimously approved by the AGM.

The President thanked the outgoing Council members and welcomed the newly elected members.

The President recognized the attendance of past president Robert Bindschadler.

6. Other business
The President, Secretary General, Treasurer and Membership and Accounts Manager then responded to a period of open questions and discussion covering a variety of topics. Topics discussed included: the IGS's deliberations over the Open Access 'movement' that is gaining momentum in the scientific publication community, how the IGS's journals might resemble or differ from journals published by peer institutions (e.g. *The Cryosphere*) both now and in the future, the question of how authors from developing countries and authors facing financial hardship might interpret the IGS policy on mandatory page charges, how a move to Open Access publishing would impact the overall budget of the IGS, the IGS review process and its merits and drawbacks relative to other styles of review, such as the two-stage review process run by peer journal *The Cryosphere*, and the question of continuing to publish paper copies of the *Journal* and *Annals*. The President concluded the discussion by indicating that these topics were very much under the consideration of the IGS Council, and that it was his job to make sure that topics raised in discussion at the AGM were taken to the Council for more detailed deliberation.

The AGM was adjourned on a motion from R. Hock seconded by P. Kuipers Munneke at 12:43

British Branch Meeting 2013

Loughborough University, 3–5 September 2013

Glaciologists and scientists of related subjects travelled to the old stomping grounds of Robin Hood (Earl of Huntington) for the 2013 meeting of the British Branch hosted by Loughborough University. The meeting began with a Polar Science Film Festival, organized by Eleanor Darlington, a Loughborough graduate student in glaciology, on Tuesday evening, 3 September. The film festival began with a reception designed to introduce teaching materials (puzzles and 3-D scale models of ice sheets, polar clothing, etc.) available for early-childhood education curricula through the EducaPoles project of the International Polar Foundation. The main screening featured four short films introduced by their creators. The four films were: *Life in the Field* introduced by Alex Ingle, *Ice, Ash, Mud* introduced by Peter Abbott, *Lake Ellsworth* introduced by Martin Seigert, and excerpts from the television series *Frozen Planet* introduced by Mark Brandon. After the film screening, a question and answer session with the four film makers/presenters followed where the public was particularly interested in knowing more about how the polar regions figure into the problems posed by global climate change.

The meeting got under way midmorning on 4 September with statement of welcome by the meeting's organizer, Richard Hodgkins of the Loughborough University Department of Geography. Six oral sessions and one poster session were held over the next two days. The session topics covered a full spectrum of topics being researched actively by the UK glaciological/geomorphological community, including: glacier variability, ice-sheet and ice-stream flow, oceanic forcing, glacial geomorphology and geology, atmospheric impacts on outlet glaciers and ice shelves, and finally biogeochemical forcing of the ocean by delivery of glaciogenic iron sediments. Of particular importance, was the fact that eight oral presentations of a total of 27 were given by postgraduate presenters (graduate students). The remainder of talks and posters were primarily given by early-career scientists who were just beyond the receipt of their PhD. Among the very valued 'old timers' presenting in the programme and, more importantly, lending their expertise to the younger scientists through their sage questions and comments, were Chris Stokes, Richard Hindmarsh, Edward King, Hilmar Gudmundsson, Peter Nienow, John Woodward, Doug MacAyeal and Magnús Magnússon. To make good use of the 'old timers' and 'mid-career' scientists present at the meeting, the UKPN presented a mentor panel entitled 'To the viva and beyond', with panel members Nick Rutter, Simon Carr, Laura Edwards, Anne Le Brocq and John Woodward, chaired by Tom Matthews. This event was followed by a wine reception at the Department of Geography, academic home of the local organizing committee.

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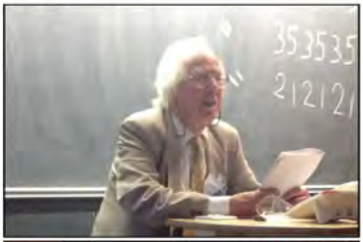

The
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British Branch
International Glaciological Society

Annual Dinner, 4th September 2013

Starters

Spiced Sweet Potato & Coriander Soup, coconut cream,
fennel seed & coriander bread

Galantine of Chicken Apricot & Dates, Moroccan-style apple chutney,
baby gem lettuce

Tempura of Black Tiger Prawn, Orange Teriyaki sauce, cucumber salad

Mains

Medallions of Beef with Wild Mushrooms,
Madeira & Crème Fraiche sauce, braised leeks, fondant potato

Baked Sea Bass with Oregano, lemon & black olive mash

Homemade Pappadelle pasta, sweet leeks & Mascarpone

Desserts

Hot Pear & Apple Oat Crumble, Crème Anglaise, cinnamon ice cream

Italian Tiramisu, Coffee biscuits, Tia Maria cream

Triple Chocolate Cheese Cake, Almond brittle,
Belgian dark chocolate sauce

The menu for the 2013 Annual Dinner.

A strong component of this, as with previous, British Branch meetings was the delightful evening of social engagement associated with the Annual Dinner. This year's event was held at Radmoor Center next to the campus, and featured the services of student chefs, sommeliers and waiters who were part of the Loughborough College of Further Education. As meeting delegates took their places, the elegant table setting was amplified by the appearance of the evening's tablet de menu. The front face of the four-page menu featured a reproduction of the front cover of Vol. 3, No. 14 of the *Journal of Glaciology*, published in 1953. The second page of the menu displayed a reproduction of the inside cover of this issue, conspicuously showing the name of John W. Glen, who, with that particular issue, first joined the editorial board of the *Journal of Glaciology*. Paired with the display of select images from Vol. 3, No. 14, on the back page of the menu, was a display of the list of current editors of the current issue of the *Journal of Glaciology*, which also displays the name of John W. Glen. Thus, subtly through the hints present on the dinner menu, it became apparent to those present at the dinner that John Glen has served as an editor with the *Journal of Glaciology* (including years as a Chief Editor) for 60 years. The enthusiasm of the dinner guests attending the Annual Dinner was spurred even higher when, during the interlude between the main course and dessert, the President of the IGS presented the Richardson Medal to John Glen, who received it with delight. A citation accompanying this award to John Glen, which also mentions John's long involvement in the activities of the British Branch, is presented elsewhere in this issue of *ICE*.

As toasts were presented during the Annual Dinner, several revellers took time from their merriment during an entertaining speech by Robert Bingham to express the wish that more senior academic advisors would accompany their students and postdoctoral scholars to the British Branch meetings in the future. Even if the academic advisors do not present papers (and perhaps it is even better if they don't), their presence in the audience giving sage advice and criticism would be greatly valuable and encouraged. As has become customary, the best student presentations were recognized with the award of the John Glen prizes, to Harold Lovell (Queen Mary University of London) for the best poster and to David Ashmore (University of Aberdeen) for the best talk.

The British Branch held its Annual General Meeting on the second and final day of the meeting, and adjourned late in the afternoon with the understanding that the Branch would meet again in 2014 in the city of Bristol.

Richard Hodgkins

News

Richardson Medal for John W. Glen

John Glen's contribution to the field of Glaciology, and to the International Glaciological Society has been outstanding, has earned international recognition, and has continued over a period of about 65 years. John has served either as the *Journal of Glaciology* Chief Editor or as a member of the Editorial Board for a period, this year, of 60 years.

Glen's pioneering work in the field of ice physics is well known. He was the first in modern glaciology to carry out laboratory ice deformation experiments, resulting in several published papers, which established the power law form of the flow relation for ice. These papers, particularly Glen (1955) have possibly been cited more than any other paper in the glaciological literature, and Glen's flow law is perhaps the best known and most fundamental law in our collective repertoire. Within the ice physics community, Glen's relations for secondary flow rates for isotropic ice have been and continue to this day to be used as the standards against which further studies of the flow of natural ice masses have been compared.

As an ice physicist, John has been involved with the organization of several symposia on this topic. In particular he was instrumental in establishing (in 1962) and, over a period of 40 years, leading the series of symposia on 'The Physics and Chemistry of Ice'. The 11th in that series of meetings specially honoured John for his long-term contribution.

John's contribution to the IGS, and in particular to the *Journal of Glaciology*, has been and continues to be extraordinary. When John received his PhD from Clare College, Cambridge, in 1953, he joined what was then known as the 'advisory board' of the *Journal of Glaciology*, which at the time was only about 6 years old, having been founded by Gerald Seligman and others of the original incarnation of the IGS. John continued to build his involvement in the *Journal* over all the years between 1953 and now, and was most notably the Managing (or Chief) Editor of the *Journal* from 1961–84. Since 1984, John has remained a valuable and active Scientific Editor of the *Journal of Glaciology*, as is reflected by his name on the masthead of the current issue. In Glen (2010), John, who is a modest man, wrote …

'A lot of the work was of course done by correspondence and I was in almost daily contact with Gerald while an issue was being prepared.

By 1955 the difference between the work I was doing and that being done by other members of the Advisory Board was recognized by my being listed as Assistant Editor, and in 1959 Ray Adie was added to the Advisory Committee, joining me as an Assistant Editor a year later. In 1961 Gerald Seligman, John Glen, Ray Adie and Doris Johnson are listed as "Editors" and the old "Editorial Advisory Board" was dropped.'

Remarkably, to this day, John continues as a member of the Editorial Board. He has, since departing as Chief Editor, continued to look after the reviewing and editing of his full share of papers, and has remained a valuable resource to each of the Chief Editors who has served since his time in the position.

John Glen is a very highly recognized scientist, having been awarded the Seligman Crystal in 1972. And he is among the few honorary members of the IGS. There is not a student of glaciology who is not familiar with the universally recognized foundation of our science that goes by the name of 'Glen's law'. While these scientific achievements are extraordinary, they are not the reason behind this award. It is in recognition of the Society's respect for John Glen, the accomplished physicist and glaciologist, and focuses on the man

as a powerful facilitator of progress through his service to the community.

It is John Glen's contribution to the service of others, to the service of the science and to the service of the IGS that unarguably matches, if not surpasses, his excellence as the accomplished scientist who created the foundations of our field.

A concrete result of John's continuous effort in the service of others as an editor, is the fact that the *Journal* is now the longest-lived and most effective repository of glaciological knowledge in the world. Perhaps equally attributable to the stature and prestige of the *Journal* that John Glen worked so hard to establish is that the glaciological community has grown in size, grown in effectiveness, and has lived up to expectations by assuming an ever more important role in informing humankind about the strengths and vulnerabilities of the natural world.

Of his service as an editor, it is said: 'It is perhaps not only those closely associated with him … who appreciate and value his freely given advice; he is encouraging and constructively critical to the young glaciologist attempting to publish his first paper, but at the same time, he is doubly critical of the established glaciologist who submits for publication a paper which is imprecise and in which he does not argue his case rigorously' (from ICE). The sentiments expressed in this quotation were repeated in various correspondence received regarding the nomination for this award: '[John has been] inspirational across the spectrum of glaciological endeavours, whatever the seniority of the practitioners'.

But John is much more than an editor of great distinction and accomplishment. He is also an engaging teacher, both professionally and informally as an accessible, engaging man of intelligence and humour. Possibly among the most significant and easily visible contributions to the glaciological community in recent time is John's long-standing participation in the meetings of the British Branch of the IGS, where he has been an interested audience member for oral and poster presentations alike. John's service to the British Branch has been informally recognized by the fact that his name is given to the award for the most clear and effective oral and poster presentations made by students.

And so, in recognition of 60 years of service as an Editor of the *Journal of Glaciology*, of continuous participation in meetings of the IGS and especially of the British Branch Meetings, and of a lifetime of personal engagement with the people who conduct glaciological research, so as to improve both the quality of their science and the effectiveness of their communication, and for his contribution to other related forums, e.g. the organization of symposia on 'The Physics and Chemistry of Ice' and 'European Science Editing', the Society awards the Richardson Medal to John W. Glen.

The Awards Committee of the International Glaciological Society

The presentation ceremony

Appropriately, John Glen received the medal at the 2013 IGS British Branch meeting in Loughborough as John was instrumental in founding the British Branch back in 1974 and 2013 marks the 60th anniversary of his original appointment to the Advisory Committee of the *Journal of Glaciology*. The presentation was introduced by the IGS President, Douglas R. MacAyeal, in the following fashion:

There is no more powerful form of energy in the universe of science as is manifest through selfless service to the community of people who make science their work. This evening the International Glaciological Society has occasion to recognize the performance of such service by awarding the Richardson Medal to John W. Glen, one of the Society's most esteemed and loyal members. John Glen is a very highly recognized scientist, having been awarded the Seligman Crystal in 1972 and being among the few honorary members of the IGS. While these scientific achievements are extraordinary, they are not of our immediate interest. It is John Glen's contribution to the service of others, to the service of the science and to the service of the IGS that are equally extraordinary. A measure of John's service is the fact that this year, 2013, marks the 60th anniversary of John's continuous service on the editorial board of the *Journal of Glaciology*. A concrete result of John's continuous effort in making the *Journal* the longest and most effective repository of glaciological knowledge and scientific progress is the fact that the glaciological community has grown in size, grown in effectiveness, and has

lived up to expectations by assuming an ever more important role in informing humankind about the strengths and vulnerabilities of the natural world.

Of his service as an editor, it is said: 'It is perhaps not only those closely associated with him … who appreciate and value his freely given advice; he is encouraging and constructively critical to the young glaciologist attempting to publish his first paper, but at the same time, he is doubly critical of the established glaciologist who submits for publication a paper which is imprecise and in which he does not argue his case rigorously.' (From *ICE*)

But John is much more than an Editor of great distinction and accomplishment. He is also an engaging teacher, both professionally and informally, as an accessible, engaging man of intelligence and humour. Possibly among the most significant and easily seen contributions as a teacher is John's long-standing participation in the meetings of the British Branch of the IGS, where he has contributed his advice on student presentations, and has given his name to the award for the most clear and effective oral and poster presentations.

So, in recognition of long service as an Editor, and of continuous presence as a teacher and careful listener/viewer at the British Branch Meetings, the IGS awards the Richardson Medal to John W. Glen.

Dr Glen responded with the following remarks:

Thank you so much. I feel I must seem like someone from a different era when you describe it like that, and in fact I think things were very different when I started.

My research supervisor was Egon Orowan and he had a very different attitude to publishing from how things are today. When he had finished some research and considered publishing, he wrote it up and then put it in a drawer and left it for a year. At the end of the year he took it out and if, as was usually the case, he thought it could be bettered he bettered it and put it back in the drawer. If when he took it out he felt it was really all right, then he sent it to an obscure journal, which is why two of his most important papers appear in the *Journal of the West of Scotland Iron and Steel Institute* and the *Bulletin of the Rheologists Club*. Then if he later rather regretted it, he could say

The President presents the Richardsonn Medal to John Glen, while a young glaciologist looks on.

I only put it in an obscure journal, while if anyone else independently published a similar paper he could quote his earlier publication and order them to refer to it! Would he get funded today? I don't think so and anyway as I say I come from a time when things were done differently and of course the moral of his story was don't publish unless you're sure that what you are saying is really good or it may come back to haunt you. And there are people today for whom that might be a good message to take.

I appreciate that that's not how we do things now and I certainly try to do what I do with continuing to help in editing the *Journal* to get papers published as quickly as possible. For a number of years I have kept a record of how long it's taken papers to get published and I'm very pleased to say that under the present regime this is much shorter than it was a decade or two ago and I'm sure you will appreciate that. But anyway, I've said enough, and I will simply close by thanking the Society again for the honour it has done to me in presenting me with the Richardson Medal.

New Honorary Member – Professor Yang Zhenniang

Professor Yang Zhenniang has been awarded an honorary membership of the IGS for her lifetime of achievement in glacier and cold-regions hydrological research.

A student in land hydrology, Professor Yang began her professional studies in that field but soon moved to join the Lanzhou Institute when it was founded. In a career spanning 40 years, Professor Yang climbed mountains, built research stations, wrote papers and books, and, when times called for it, minded children at the Lanzhou Institute farm. Her study of glacier-fed streams in the Tien Shan and Qilian Shan was as ground-breaking as it was physically demanding. Her 1991 book *Glacier Water Resources in China* was the first comprehensive study of its kind and set the standard for future work.

Professor Yang was among the founders of the Chinese glaciological research programme and it seems safe to say that every glaciologist working in China today has a connection to her, through her research and her support of the scientific community. Her dedication to field studies in the Qilian Shan – right up until the year of her retirement – provided important training for a younger generation of scientists. She also served her community as a People's Representative in provincial government.

A detailed account of Professor Yang's contribution to glaciology was published in the 200th issue of the *Journal of Glaciology*.

Hulbe CL, Wang W, Ommanney CSL (2010) Women in glaciology, a historical perspective. *J. Glaciol.*, **56**(200), 944–964

Staff changes

Christine Butler retired from her post as Production Manager at the IGS in June after 10 years of dedicated service, and has spent much of the time since then travelling the world, including visits to Ecuador, the Galapagos, Finland, the USA and Iceland. We wish her well and happy travelling.

In September we were very pleased to be joined in the in-house Production department by Rachel Brown (right). Rachel has copy edited for the *Journal* and *Annals of Glaciology* for several years and so knows the IGS publications well. She studied biology at the University of Bath and has worked in the editorial departments of Elsevier, Hobsons and the Society for Reproduction and Fertility and, more recently, as a freelance editor.

Craig Baxter

Obituary: Sigfús Johnsen, 1940–2013

A star in Danish/Icelandic and international ice core research has been extinguished

With the passing of Professor Dr Sigfús Jóhann Johnsen on 4 June 2013, Danish and international ice-core research lost a key figure. Since the mid-1970s, Sigfús was responsible for a number of inventions in ice-core drilling technology, ice-core measurements and ice-flow models leading to a unique sequence of successes for the Danish Ice and Climate Research Group.

Sigfús was born on 27 April 1940 on the island of Ögur in Ísafjarðardjúp in northwest Iceland and grew up in the village of Ísafjördur. After high school in Akureyri, he began to study physics at the University of Copenhagen. In 1964 he was hired by Professor Willi Dansgaard to build radioactive decay counters, but work on reconstruction of past climate through measurements of stable isotopes in ice soon became a main activity, with Dansgaard in 1967 beginning a collaboration with Professor Chester Langway on the analysis of the Camp Century ice core. The results were published in *Science* in 1969 and created so much attention that the paper is considered the birth of ice-core-based climate research.

Like so many of his fellow countrymen, Sigfús had a large number of skills, and in him they were combined with a strong intellect which gave him the ability to analyse even difficult problems and to solve them with an extraordinary intuition. An example of this can be seen in an article in *Science*, where the problem of assigning an age to ice at a given depth was solved by using a new, simple and intuitive physical-age model. This model has since become internationally known as the Dansgaard–Johnsen model. Among the latest of Sigfús's discoveries was the use of stable-isotope diffusion to reconstruct past temperatures.

In the 1970s, Sigfús collaborated with engineer Niels Gundestrup and engineering assistant Steffen Bo Hansen on the development of a Danish ice-core drill. The drill, named 'ISTUK', penetrated the 2037 m thick Greenland ice sheet in 1981 at Dye-3. The drill design was full of new concepts and ideas. In 1989 the ice-core research group in Copenhagen assumed responsibility for a European ice core drilling in Central Greenland. Sigfús was in charge of the drilling and, in 1992, bedrock was reached at 3027 m, which at that time was a world record. To Sigfús, an ice-coring operation was a scientific experiment, and an ice-core drill a scientific instrument that needed constant adjustment and improvement. Sigfús participated in the drilling

of kilometre after kilometre of ice cores in both Greenland and Antarctica. A great many scientists of various nationalities have learned the art of deep ice coring from Sigfús and have applied that knowledge worldwide. Sigfús was an ever-present 'drill-master' and scientific expert throughout the Greenland ice-core projects at Dye-3 (GISP), GRIP, NorthGRIP and most recently NEEM in 2010, where bedrock was reached at 2538 m depth. NEEM was to be Sigfús´s last drilling expedition. Worldwide, eleven ice cores longer than 2 km have been drilled and Danish drills or knowhow have been involved in the drilling of seven of them.

Sigfús also built a unique automatic system for the analysis of stable isotopes in collaboration with Niels Gundestrup. This system gave the group in Copenhagen an international lead in the determination of stable oxygen isotope ratios.

Sigfús and family moved back to Iceland in 1980, and he became professor at Háskóli slands in Reykjavík, where he built a stable isotope laboratory. In 1988 he returned to Copenhagen, where he resumed his work in the ice-core research group. He maintained the connection with Reykjavík, however, and the two laboratories have been collaborating ever since.

Even among peers, Sigfús was a unique scientist as he was able to keep an open mind and maintain creativity throughout his career. He was convinced that there was more to life and existence than science could provide answers for. Spirituality and science are rare companions; but for Sigfús there was no contradiction between the two, and maybe it was in this mental state that Sigfús found his creativity and intuition.

Sigfús established a vast international network of colleagues who all benefited from his insight and inspirational thinking. Many a young scientist has enjoyed Sigfús´s warm and kind personality and his enthusiasm for ice and climate. Lifelong friendships were tied by Sigfús´s kindness, patience and great love for human company. Throughout his life, Sigfús had a close and strong marriage with Pálína Kristinsdóttir (Palla), who was at his side not only at home but also several times in the field.

In addition to various international acknowledgements for his pioneering work on the design and development of deep-ice-core drills, Sigfús is also renowned for his interpretations of various scientific data on the physics of glaciers and the development of global climate change during the last 150 000 years. He authored in excess of 200 scientific papers, including 35 that were published in *Nature* and *Science*. He is among the elite group of scientists defined as 'highly cited researchers'.

Sigfús was awarded the Seligman Crystal by the International Glaciological Society in 1997 for his outstanding contribution to glaciology. Queen Margrete of Denmark appointed him a Knight of the Order of the Dannebrog for his contribution to science. Sigfús was also the recipient of the Hans Oeschger Medal of the European Geophysical Society. In 2010 he was awarded an Honorary Doctoral Degree from the Department of Earth Sciences at the University of Iceland and was made an Honorary Member of the Icelandic Glaciological Society.

He is survived by his wife, Pálína Kristinsdóttir, his three children Kristín Johnsen, Jóhann Johnsen and Valgerður Guðrún Johnsen, children-in-law and 11 grandchildren.

Dorthe Dahl-Jensen PhD, Professor and Centre Leader
On behalf of the Centre for Ice and Climate, Niels Bohr Institute, University of Copenhagen

INTERNATIONAL GLACIOLOGICAL SOCIETY

International Symposium on

Glaciology in high-mountain Asia

Kathmandu, Nepal 2–6 March 2015

Co-sponsored by:
ICIMOD
Himalayan Cryosphere, Climate and Disaster Research Center
(HiCCDRC), Kathmandu University
Tribhuvan University

FIRST CIRCULAR
October 2013
http://www.igsoc.org/symposia/2015/kathmandu

The International Glaciological Society (IGS) will hold an International Symposium on 'Glaciology in high-mountain Asia' in 2015 in Kathmandu, Nepal, from 2–6 March 2015.

THEME

The high mountains of Asia are estimated to contain the third greatest concentration of glacier ice on the planet, and are the headwaters of rivers which support agriculture and livelihoods of over one billion people. Changes in snow, ice, and permafrost due to climatic changes will impact water resources, ecosystems, hydroelectric power generation, and natural hazard risks. To understand these impacts, this symposium will provide a forum to discuss advances in measurements, modeling, and interpretation of glaciological and cryospheric changes in high-mountain Asia.

As the field of glaciology intersects with both atmospheric and hydrologic sciences, the symposium will also focus on linkages between atmospheric processes and glacier change and the downstream impacts of glacier and climatic changes in the region. The meeting seeks to bring together scientists from the region and around the world and provide an overview of the state of science with respect to the glaciers and snowpacks of the Himalayan, Hindu-Kush, Karakoram, and Tibetan Plateau regions.

TOPICS

Symposium topics include the following, and will be focused on studies in high-mountain Asia:

1. Past, present, and future glacier change (reconstructions, observations, projections)
2. Observations and models of glacier dynamics (glacier response times, and thickness and volume of ice)
3. Glacier and snow melt processes (debris cover, supraglacial lakes, black carbon, etc.)
4. Hydrology of glacierized catchments (observations, modeling, projections)
5. High-altitude meteorology, climate downscaling, and climatic change (ice core records, etc.)
6. Glacier hazards (GLOFs, avalanches, mass movements)
7. Permafrost
8. Cryospheric change impacts (water resources, ecosystems)

Potential participants are encouraged to contact the Scientific and Editorial Steering Committee if they feel additional topics would be appropriate.

PROGRAMME
The symposium will consist of a mixture of oral and poster sessions, with free time planned to allow participants to exchange scientific information in an informal setting. Additional activities are to be determined, but should include an icebreaker and a symposium banquet. (Reasonable half-day options include visit to historical city of Bhaktapur; hiking at Nagarjung; visits to Swoyambu (Monkey Temple) and/or Boudhnath).

ABSTRACT AND PAPER PUBLICATION
Participants wishing to present a paper at the symposium are required to submit an abstract. The Council of the International Glaciological Society will publish a related thematic issue of the *Annals of Glaciology*. Participants and non-participants alike are encouraged to submit manuscripts for this volume.

SYMPOSIUM ORGANIZATION
Magnús Már Magnússon (International Glaciological Society)

SCIENCE STEERING AND EDITORIAL COMMITTEE
Graham Cogley (Chief Editor), Surendra Adikhari, Etienne Berthier, Bodo Bookhagen, Tobias Bolch, D.P. Dhobal, Koji Fujita, Walter Immerzeel, Shichang Kang, Jeffrey Kargel, Francesca Pellicciotti, Joseph Shea, Patrick Wagnon.

LOCAL ORGANIZING COMMITTEE
Joseph Shea (Chair); Dorothea Stumm; Patrick Wagnon; Pradeep Mool; Rijan Kayastha; Arun Shrestha, Prerna Thapa, Amy Sellmyer.

VENUE
To be determined.

POST-SYMPOSIUM EXCURSION
To be determined.

FURTHER INFORMATION
If you wish to attend the symposium please register your interest online at http://www.igsoc.org/symposia/2015/kathmandu/.

The Second Circular will give further information about accommodation, the general scientific programme, additional activities, preparation of abstracts and final papers. Members of the International Glaciological Society will automatically receive one, as will all those who have pre-registered. Information will also be updated on the IGS conference website, http://www.igsoc.org/symposia/2015/kathmandu/. A local website will open in a few weeks.

IGS merchandise

The holiday season is approaching so why not purchase an item of IGS merchandise for the Glaciologist in your life! Choose from our range below.

The Official International Glaciological Society Tie

£18.00 plus postage and packing

The International Glaciological Society T-shirt

Available in two colours and six adult sizes (S–3XL) and kids' sizes.

£15.00 (kids' size £10.00) plus postage and packing

The International Glaciological Society Beanie Hat

£15.00 plus postage and packing

The International Glaciological Society Knife

£66.00 plus postage and packing

The International Glaciological Society Fleece Jacket

Available in sizes from XS to 3XL

£27.00 plus postage and packing

Please e-mail your order to sales@igsoc.org

Forthcoming events

International Summer School in Glaciology

organized by the University of Alaska, Fairbanks (UAF)

McCarthy, Alaska, 6–16 August 2014

Overview

The third UAF International Summer School in Glaciology, co-sponsored by IGS, will be organized by the University of Alaska, Fairbanks (UAF) from 6 to 16 August 2014. The school will provide a comprehensive overview of the physics of glaciers and current research frontiers in glaciology with focus on quantitative glaciology, modelling and remote sensing. The course will be open to 27 graduate students from around the world targeting primarily early stage PhD students who perform glacier related research. It will be taught by faculty of UAF's glaciology group and several invited guest lecturers from outside Alaska.

Course content

Key topics to be covered include remote sensing in glaciology; glacier mass balance and meteorology; response of glaciers to climate change; glacier dynamics and hydrology, surging and tidewater glaciers, ice streams; ice-ocean interactions; and ice-sheet modelling. The course will consist of lectures, exercises, computer projects and field excursions.

Course location

The course will be held in McCarthy, a small village in south central Alaska in immediate vicinity to 5000 km^2 glaciers originating in the Wrangell Mountains (up to 5000 m a.s.l.). Transport by van from and to Fairbanks will be offered.

Excursion to Kennicott glacier.

Costs

Students will be expected to cover their travel to and from Fairbanks but student assistance may be available. In addition students need to pay a course fee of approx. US $200 which includes accommodation and full board in McCarthy, transport from Fairbanks to and from McCarthy and course material.

Course sponsors

* National Science Foundation (NSF)
* *GlacioEx*, an exchange program between Norway and North America
* Geophysical Institute (GI), University of Alaska, Fairbanks (UAF)
* International Glaciological Society (IGS)

Applications

Applications must be sent to Regine Hock (regine@gi.alaska.edu) by 15 February 2014. For more details see http://glaciers.gi.alaska.edu/courses/summerschool2012.

Photos by Regine Hock

Lectures are held in Edward LaChapelle's former home in McCarthy.

Glaciological diary

** IGS sponsored * IGS co-sponsored

2013

4–5 September 2013
****International Glaciology Society British Branch Meeting 2012**
Loughborough, UK
Contact: Richard Hodgkins [r.hodgkins@lboro.ac.uk]

8–12 September 2013
5th Polar and Alpine Microbiology Conference
Big Sky, Montana, USA
Website: http://polaralpinemicrobiology2013.montana.edu/

9–13 September 2013
****International Symposium on Radioglaciology: advances in radio frequency, microwave and digital technologies**
Lawrence, Kansas, USA
Contact: Secretary General, International Glaciological Society
Website: http://www.igsoc.org:8000/symposia/2013/kansas/

9–13 September 2013
***7th International Workshop on Ice Drilling Technology**
University of Wisconsin, Madison, WI, USA
Website: http://icedrill.org/7th-international-workshop-on-ice-drilling-technology/

10–21 September 2013
The annual Karthaus course on Ice Sheets and Glaciers in the Climate System
Karthaus (northern Italy)

16–18 September 2013
Mountainhazards 2013: Natural hazards, climate change and water in mountain areas
Bishkek, Kyrgyzstan
Website: http://www.mountainhazards2013.com/

17 September 2013
UK Polar Network Workshop in Software and Polar Science
Cambridge, UK
Website: http://polarnetwork.org/events-and-workshops/2013-software-and-polar-research-workshop/

18–20 September 2013
Third UK Arctic Science Conference
Scott Polar Research Institute, Cambridge, UK
Website: http://www.arctic.ac.uk/research/uk-arctic-science-conference-2013/snowphysics.fegi.ru/en/main.html

23–24 September 2013
Transantarctic Mountains Science Meeting
Minneapolis, Minnesota, USA
Website: http://tamcamp.org/

23–28 September 2013
****International Symposium: Physics, chemistry and mechanics of snow**
Yuzhno-Sakhalinsk, Russia
Website: http://snowphysics.fegi.ru/en/main.html

29 September–2 October 2013
West Antarctic Ice Sheet (WAIS) Workshop
Sterling, Virginia, USA
Contact: waisworkshop@nsidc.org

29 September–3 October 2013
Earth Cryology: XXI century
Pushchino, Russia
Website: http://cryosol.ru/index/earth_cryology2013/0-45

3–4 October 2013
Elmer/Ice course for beginners
LGGE, Grenoble, France
Contact: Olivier Gagliardini [olivier.gagliardini@ujf-grenoble.fr]
Website: http://www.issw2013.com/

7–11 October 2013
ISSW International Snow Science Workshop 2013
Grenoble and Chamonix Mont-Blanc, France
Website: http://www.issw2013.com/

12–19 October 2013
DISCCRS VIII Interdisciplinary Climate Change Research Symposium
Colorado Springs, Colorado, USA
Website: http://disccrs.org/

18–19 October 2013
North West Glaciologists meeting
Vancouver, BC, Canada

27-30 October 2013
Geological Society of America
Denver, Colorado, USA
Session T30: Past records and future challenges of glacier and ice sheet response to climate change: honouring and building on the legacy of Mark Meier
Contact: Scott Lundstrom [sclundst@usgs.gov]

Website: http://community.geosociety.org/2013AnnualMeeting/Sessions

31 October–2 November 2013
****International Glaciological Society Nordic Branch Meeting 2013**
Lammi, Finland
Contact: Onni Järvinen [onni.jarvinen@helsinki.fi]
Website: http://www.physics.helsinki.fi/conf/IGSNB2013/IGSNB2013.html

7–8 November 2013
Antarctic Geologic Drilling Workshop
Houston, Texas, USA
Contact: Julia Wellner [jwellner@uh.edu]
Website: http://eas.uh.edu/agdw/

9–13 December 2013
AGU Fall Meeting
San Francisco, California, USA
Website: http://fallmeeting.agu.org/2013/

2014

3–5 February 2014
IASC Workshop on the Dynamics and Mass budget of Arctic Glaciers
Ottawa, Canada
Contact: Carleen Tihm-Reijmer [c.h.tijm-reijmer@uu.nl]
Website: http://www.iasc.info/nag/

11–13 February 2014
4th DUE Permafrost User Workshop
Frascati, Italy
Website: http://www.climate-cryosphere.org/meetings/due-permafrost-2014

27–28 February 2014
18th Alpine Glaciology Meeting (AGM)
Innsbruck, Austria
Contact: Irmgard Juen [irmgard.juen@uibk.ac.at.]
Website: http://imgi.uibk.ac.at/iceclim/agm2014

9–14 March 2014
Intercomparison of Snow Grain Size Measurements Workshop
Davos, Switzerland
Contact: Martin Schneebeli [schneebeli@slf.ch]
Website:
http://%20http//www.wsl.ch/dienstleistungen/veranstaltungen/veranstaltungskalender/Snow_Grain/index_EN

10–14 March 2014
****International Symposium on Sea Ice**
Hobart, Australia
Contact: Secretary General, International Glaciological Society
Website:
http://www.igsoc.org/symposia/2014/hobart/

17–20 March 2014
13th International Conference on the Physics and Chemistry of Ice (PCI-2014)
Hanover, New Hampshire, USA
Website:
http://engineering.dartmouth.edu/pci-2014

2–3 April 2014
Workshop: Liquid Water in Snow – measurement techniques and modeling approaches
Davos, Switzerland
Contact Christoph Mitterer [mitterer@slf.ch]

8–12 April 2014
Association of American Geographers Annual Meeting
Tampa, Florida, USA
Cryosphere Sessions:
Advances in Cryosphere Research
High Latitude Environments in a Changing Climate
Ice and Snow
Contact Vena Chu [venachu@ucla.edu]

2–6 June 2014
XIX Geological Congress of Argentina
Cordoba, Argentina
Special Session on Cryosphere Science.
Conveners: Dario Trombotto[dtrombot@mendoza-conicet.gob.ar], Lucas Ruiz [lruiz@mendoza-conicet.gob.ar]
Second Circular:
http://www.congresogeologico.org.ar//assets/pdf/XIX_CGA_2da_Circular.pdf

3–5 June 2014
71st Eastern Snow Conference
Boone, North Carolina, USA
Website:http://www.easternsnow.org/annual_meeting.html

26–30 May 2014
****International Symposium on Observations, Modelling and Prediction of the Cryospheric Contribution to Sea Level Change**
Chamonix, France
Contact: Secretary General, International Glaciological Society
Website:
http://www.igsoc.org/symposia/2014/chamonix/

18–21 June 2014
EUCOP4: 4th European Conference on Permafrost
Évora, Portugal
Website: http://www.eucop4.org/

22–25 June 2014
28th International Forum for Research into Ice Shelf Processes (FRISP)
Schloss Wahn, Cologne, Germany
Contact Adrian Jenkins[ajen@bas.ac.uk]

4–5 August 2014
Intercomparison of Snow Grain Size Measurements Workshop (follow-up to March Workshop in Davos)
Reading, UK
Contact:
Martin Schneebeli [schneebeli@slf.ch]

6–8 August 2014
Workshop on Microstructure in Snow Microwave Radiative Transfer (MICROSNOW workshop)
Reading, UK
Contact:
Melody Sandells [m.j.sandells@reading.ac.uk]

11–15 August 2014
22nd IAHR International Symposium on Ice
Singapore
Website: http://www.iahr-ice2014.org/

17–22 August 2014
International Workshop on Ice Caves (IWIC)
Idaho Falls, Idaho, USA
Website: http://www.iwic-vi.org/

17–22 August 2014
****International Symposium on the Changing Arctic Cryosphere**
Edmonton, Alberta, Canada
Contact: Secretary General, International Glaciological Society
Website:
http://www.igsoc.org/symposia/2014/alberta/

22 August–3 September 2014
XXXIII SCAR Biennial Meetings and Open Science Conference
Auckland, New Zealand
Contact: Katrina Hall [gateway-antarctica@canterbury.ac.nz]
Website: http://www.scar2014.com/

2015

****International Symposium on Himalayan glaciology**
Kathmandu, Nepal
Contact: Secretary General, International Glaciological Society

June 2015
****International Symposium on the Hydrology of Glaciers and Ice Sheets**
Iceland
Contact: Secretary General, International Glaciological Society

August 2015
****International Symposium on Contemporary Ice-Sheet Dynamics: ocean interaction, meltwater and non-linear effects**
Cambridge, UK
Contact: Secretary General, International Glaciological Society

2016

20–24 June 2016
Eleventh International Conference on Permafrost (ICOP 2016)
Potsdam, Germany
Website: http://icop2016.org/

August/September 2016
****International Symposium on Polar Sea Ice, Polar Climate and Polar Change**
Boulder, Colorado, USA
Contact: Secretary General, International Glaciological Society

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International Glaciological Society

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1982 M. de Quervain	1997 S.J. Johnsen	
1983 W.O. Field	1998 C. Lorius	
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1985 M.F. Meier	2000 S.C. Colbeck	
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ICE

Editor: M.M. Magnússon (Secretary General)

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