Frozen Ground

THE NEWS BULLETIN OF THE
INTERNATIONAL PERMAFROST ASSOCIATION
WWW.PERMAFROST.ORG

Word from the president

The International Permafrost Association, founded in 1983, celebrates its 30th birthday

2013 was a year of solid progress for the IPA. The number of Action Groups grew, the Global Terrestrial Network on Permafrost (GTN-P) started to implement its newly approved action plan, the IPA achieved a comfortable financial reserve, members of the Permafrost Young Researchers Network (PYRN) were involved in many new activities, and media and policy-maker interest in permafrost research continued unabated. Although it was an "off" year in the two-year cycle of International and Regional Conferences on Permafrost, numerous meetings took place, including sessions at the annual EGU and AGU conferences which have become regular venues for permafrost researchers to share their findings.

Action Groups

The IPA Executive Committee continues to move forward to implement the organizational changes approved by Council between 2010 and 2012. One of the most important was to alter the IPA's operations budget by reducing the cost of printing and distributing Frozen Ground, and developing a revenue stream from the International and Regional permafrost conferences. This change has permitted the direct funding of Action Groups, formed to undertake short-term projects with well-defined goals. One of the first of these to be proposed, entitled Permafrost extension during the Last Glacial Maximum in the northern hemisphere, led by Jef Vandenberghe, concluded its work in 2013. Its operations exemplified the ideal characteristics of an Action Group: it had a well-defined objective and product (a map of the Last Permafrost Maximum), the IPA funding was used to bring together a group of international participants, and the results will be published (in a special issue of Boreas). Several other Action Groups are currently active (for details see http://ipa.arcticportal.org/activities/action-groups.html) and the IPA Executive Committee looks forward to promoting international permafrost research by funding more in the future. If you have an idea that meets the IPA criteria, please submit it at the next call for proposals.

GTN-P moves forward

The approval of GTN-P's Strategy and Implementation Plan at the end of 2012 allowed the next important steps to be taken in 2013: the naming of national correspondents and their first meeting in Geneva in May 2013 (see p. 4). The data products that will be produced by GTN-P – mean annual ground temperatures and active layer depths - are critical for modellers and for synthesis reports by the IPCC and other organizations. The long-term goal is to develop the GTN-P to the same level as GTN-G, which has a stable funding base. The GTN-P meeting set the stage for a fully developed organizational structure with the national correspondents taking responsibility for encouraging their colleagues to submit data. The essential development of a new data-base and the data management process is being greatly assisted by funding and man-power from the EU PAGE-21 project.

IPA at 30

The IPA was founded at the Fourth International Conference on Permafrost (ICOP) held in Fairbanks in 1983 and so

(continued from page 1)

reached the age of 30 in 2013. This edition of Frozen Ground includes an article (pp. 2-3) by Hugh French, former IPA President, who describes the circumstances that led to the founding of the IPA and why the governance of the organization used, and still uses, council membership by countries.

The three decades of the IPA's existence have seen major changes in the field. Using the search term "permafrost", the Web of Science gives a total of 14 published items and fewer than 100 citations relating to permafrost for 1983. This is certainly less than the true value as Web of Science does not show citations for many books, and most papers in the proceedings volume of the 1983 Fairbanks ICOP are not included. Thirty years later, however, the same search term with the same shortcomings, gave more than 550 publications and well over 14000 citations for 2013. This means we should all be reading nearly two papers every day just to stay current! This increase in publications clearly underlines the growing importance of our field.

International Cooperation

The 2013 IPA report in Permafrost and Periglacial Processes, written by Vice-President Hanne Christiansen, describes the degree of international cooperation in permafrost research that has continued post-IPY. The raison d'être of the IPA is to help foster these international efforts to understand the distribution and evolution of all aspects of permafrost in the Arctic, Antarctic and at high elevation in lower latitudes. The large international and interdisciplinary projects that have been funded in the past two years demonstrate the recognition of the importance of permafrost, but also the need to involve experts from many fields to answer some of the most important questions. The IPA's goal is to be a "big tent", attracting to its conferences and action groups, not only those who study permafrost science and engineering per se, but also researchers who examine the impacts of permafrost on ecology, hydrology, carbon emissions, and all other cognate disciplines. The numerous links that the IPA has as an organization affiliated with IUGS, and with its partners such as CLiC, IASC, SCAR and the IAG, help ensure that this role will be fulfilled.

Change of Executive Director

In May, Executive Director Dr. Inga May left her position following a period when she worked part-time, and there was a hiatus until Ms. Karina Schollaen took over the position at the end of the year.

The IPA is fortunate that the Alfred Wegener Institute (AWI) in Potsdam agreed to continue to fund the Executive Director position and the Secretariat through to November 2016. This was due to the lobbying efforts of Professor Hans-Wolfgang Hubberten, former IPA president, and the receptive ear of Dr. Karin Lochte, Director of AWI. The IPA is very grateful for this support.

The absence of an Executive Director for half a year showed how challenging it is to run the organization at the level of activity that IPA members want and our partners expect, without a paid professional in place. The Executive Committee has been reflecting on what would be needed if the organization were not able to obtain external support to fund the position at some point in the future. As mentioned above, the IPA's finances are in an excellent state provided that this support is available, but a budget deficit would rapidly develop in its absence. This issue will be discussed at the next Council meeting in 2014.

I thank all the members of the Executive Committee (Hanne Christiansen, Hugues Lantuit, Vlad Romanovsky, Lothar Schrott, Dmitry Sergeev, and Ma Wei) and the two Executive Directors, for their help and support throughout the year.

The next IPA regional conference will be EUCOP 4, in Évora (Portugal) in June 2014. I look forward to seeing you there.

Antoni Lewkowicz
IPA President

IPA 30th Anniversary

by Hugh M. French (Past IPA President, 1998-2003)

The 30-year anniversary of the International Permafrost Association (1983-2013): how it all began

The International Permafrost Association (IPA) was founded in July 1983 by Canada, the United States of America (USA), the Union of Soviet Socialist Republics (USSR) and the Peoples Republic of China (PRC). Typically, most international scientific organizations are formed by groups of like-minded individuals who agree to join together to promote their common interest. However, membership on the IPA Council was through National Adhering Bodies, not individuals. In 1983, this requirement was essential if the constitution were to be accepted by both the USSR and the PRC.

Acceptance of this political structure in 1983 was highly significant. In the three decades prior, the 'Cold War' had increased the strategic importance of the high northern latitudes and the necessity to understand the realities of permafrost terrain. The USA and the USSR viewed each other with suspicion. It was also clear that permafrost and geocryological studies in North America were neither as advanced nor as well organized as those in the USSR. The study of geocryology in China was in its infancy. Inevitably, international collaboration on permafrost issues was limited.

The first step towards change was a conference, funded jointly by the US National Academy of Sciences (NAS) and the National Research Council of Canada (NRCC), between Soviet and North American permafrost scientists. This took place in 1963 in Purdue, USA. It was followed in 1964-1966 by formal exchange visits between Canada and the USSR; two Canadian permafrost scientists, Roger J.E. Brown and G. H. (Hank) Johnston, both members of the Division of Building Research (DBR), NRCC, travelled in Siberia and two leading Soviet permafrost scientists, P. I. Melnikov and N. A. Grave, both members of the Permafrost Institute, USSR Academy of Sciences, visited Canada. Subsequently, a second permafrost conference was hosted in

(continued from page 2)

1973 in Yakutsk, Siberia by the Siberian Division of the Permafrost Institute.

It was logical that Canada would take the lead in hosting a third permafrost conference. This took place in 1978 under the auspices of the NRCC and organized by Roger Brown. For the first time, a few Chinese scientists attended because, the previous year, Roger Brown had led a Canadian permafrost delegation to China. The conference ended with discussion centered upon a mechanism that would facilitate the holding of future conferences at regular intervals. Upon reflection, I believe the role played by Roger Brown was critical to the formation of the IPA; he was able to persuade the leaders of the permafrost delegations from the USA, USSR and PRC that Canada was best placed to move this initiative forward. At the same time, the USA extended an offer to hold the next conference in Alaska in 1983.

In Canada in the early 1970s, permafrost research was largely coordinated through the DBR and its advisory body called the Associate Committee on Geotechnical Research (ACGR). The latter functioned through a number of sub-committees that consisted of 8-10 non-NRCC government scientists, academics and geotechnical consultants. One such committee, the Permafrost sub-committee, was chaired by Professor W. O. Kupsch. Roger Brown acted as the NRCC secretary and an American, O. J. Ferrians, Jr., was the USA representative. As a university professor interested in permafrost terrain and arctic regions, I had been appointed to this sub-committee in 1976.

At the first meeting of the sub-committee following the Edmonton conference, Roger Brown led a discussion on the advisability of forming an international permafrost association. Later that year I was appointed Chairman of the sub-committee and the following year Roger Brown and I attended the first organizational meetings for the 1983 conference in San Francisco. Tragically, Roger Brown was suffering from cancer and was becoming weak. By 1980 he had died. This was a great loss to the Canadian and international permafrost communities.

Through default, and with the full support of his colleagues at BDR and members of the Permafrost sub-committee, I assumed the tasks initiated by Roger Brown and now promoted by the new sub-committee secretary, G. H. (Hank) Johnston. The result was that the NRCC Bureau of International Relations established a task force in 1981 to draft a set of organizational rules. This was headed by Lorne Gold, Head of the DBR. The other members were E. F. Roots, Science Advisor, Environment Canada, J. G. Fyles, Head of the Division of Terrain Sciences, Geological Survey of Canada, and me, Chairman of the ACGR Permafrost sub-committee.

The development of an internationally-acceptable constitution in a geopolitical context was tedious, sensitive and complex work. Guidance and advice was provided by representatives of the Bureau of International Relations, NRCC. Subsequently, at the international conference in Alaska in 1983, I convened a special meeting of the leaders of the official delegations from the USA (Professor Péwé), USSR (Academician Melnikov) and PRC (Professor Shi Yafeng). I presented and explained the draft constitution, Professor Péwé graciously nominated Academician Melnikov to be President for the first 5-year term and the Bureau of International Relations, NRCC, agreed to provide financial support for an IPA Secretariat for the first 10 years conditional upon Professor J. R. Mackay (Canada) accepting that responsibility.
The rest is history.....

Announcement of the formation of the IPA at the closing session of the Fourth International Conference on Permafrost, July 22, 1983.
From left to right: Dr Kaare Flaate, Norway; Mr Li Yusheng, China; Dr Jay Barton, President, University of Alaska; Dr A. Lincoln Washburn, University of Washington; interpreter; Academician P. I. Melnikov, U.S.S.R; Professor Troy L. Péwé, U.S.A.; Mr Bill Sheffield, Governor of Alaska; Professor Shi Yafeng, China; Professor Hugh M. French, Canada; Dr. Jerry Brown, U.S.A.

EUCOP4

by Gonçalo Vieira

The 4th European Conference on Permafrost

The 4th European Conference on Permafrost (http://www.eucop4.org) will take place in Évora (Portugal) from 18 to 21 June 2014, jointly organized by the universities of Évora and Lisbon. EUCOP4 has currently about 370 participants from 24 countries, presenting a total of 419 communications in oral and poster formats in 22 thematic sessions. Every day there will be a Plenary Key Note Lecture, 5 parallel oral sessions and one poster session. EUCOP4 will also frame important events such as the IPA Council, the Permafrost Young Researchers Workshop, an ICARP III Townhall Meeting and the Wiley-Blackwell Permafrost and Periglacial Processes Public Lecture. EUCOP4 also counts with a pre-conference field trip to the serra da Estrela and a post-conference field trip to the High Atlas in Morocco. The Local Organizing Committee is honoured for the large participation at the conference and for the high profile of the contributions and warmly welcomes the Global permafrost science community to southern Portugal.

ICOP 50th Anniversary

by Jerry Brown (Past IPA President, 2003-2008)

50th Anniversary of the First International Conference on Permafrost

A one-day permafrost workshop was held on November 15, 2013 at Purdue University to celebrate the 50th Anniversary of the First International Conference on Permafrost (ICOP) that took place at Purdue the week of November 11-15, 1963. The anniversary program included a number of speakers representing topics that were discussed at the 1963 Conference and other engineering, climate-related and geotechnical subjects, and a banquet. The program and presentations can be found on the U.S. Permafrost Association web (http://www.uspermafrost.org/). The event also was a tribute to recently deceased C.W. (Bill) Lovell, a former Purdue faculty member and former chair of the IPA Advisory Committee. Visiting participants and invited speakers included (see photograph from left to right): Fritz Nelson, Ed Clarke, Ed Yarmak, Jess Walker* Tom, Krzewinsjki, Mary Ellen Lovell, Eric Muller, Dick Cameron, Ken Hinkel, Jerry Brown. A recently published Guest Editorial by Brown in Permafrost and Periglacial Processes (no. 4, 2013) summaries the contents of the proceedings of the past ten conferences which contain over 2000 peer-reviewed papers (all ten proceedings available on the USPA web).

Visiting participants and invited speakers included (from left to right): Fritz Nelson, Ed Clarke, Ed Yarmak, Jess Walker, Tom, Krzewinsjki, Mary Ellen Lovell, Eric Muller, Dick Cameron*, Ken Hinkel, Jerry Brown* (not in the photo Toni Lewkowicz, * indicates attended the 1963 conference).*

ICOP logos

1963 1973 1978 1983 1988

1993 1998 2003 2008 2012

GTN-P

by Vladimir E. Romanovsky

Global Terrestrial Network on Permafrost (GTN-P) Progress Report 2012-2014

In accordance with the recommendations of the GTN-P meeting held in October 2011 in Potsdam, Germany, the Executive Committee (EC) of the GTN-P was finalized and formally established during the X International Conference on Permafrost in June, 2012. The EC included five members from four countries (two from Europe and three from North America). Later, one more member from Switzerland was added to the Committee. The members of the EC are J. Noetzeli (Switzerland), V. Romanovsky (USA), P. Schoeneich (France), S. Smith (Canada), D. Streletsky (USA), and G. Vieira (Portugal). Vladimir Romanovsky was appointed as the EC Chair.

During the rest of 2012, GTN-P EC was working on finalizing the GTN-P Strategy and Implementation Plan (SIP) and by the end of 2012 a final version was produced. After review by several representatives from the permafrost community, the final corrected version was published by the University of Alaska Press. The electronic copy was distributed among the permafrost community.

The next step in development of GTN-P indicated in the SIP was the establishment of the Network of the National GTN-P Correspondents (NC). The GTN-P EC approached all representatives of the IPA Adhering Bodies with a request to nominate the National Correspondents to the GTN-P. This network was established in the Spring 2013 in preparation for the First National Correspondents Workshop on GTN-P Implementation and Data Policy, which was planned and executed by the GTN-P EC with a very strong support from IPA, GCOS and GCW. Twenty two countries nominated 32 National Correspondents (several countries nominated more than one NC). An Advisory Board was also established. Five members of the board

(continued from page 4)

are J. Brown (USA), H. Christiansen (Norway), B. Goodison (Canada), W. Haeberli (Switzerland), and H. Lantuit (Germany).

The first meeting of the National Correspondents of GTN-P was held in Geneva in the beginning of May 2013 at the WMO Headquarters. Out of 25 countries formally included in the GTN-P, 18 countries sent their National Correspondents to this meeting. The meeting was directly sponsored by ONR Global, GCOS, GCW, IASC, IPA, and CAREERI and gathered 50 participants total. The Strategy and Implementation Plan of GTN-P developed by the GTN-P Executive and Advisory Committees was discussed and adapted for implementation.

Very important activities during the last two years were directed towards the establishment of the GTN-P Data Management System (DMS) and the DMS online interface. A two-hour Hands-On Training Seminar was conducted during the Geneva meeting to introduce to the NCs the usage of the GTN-P database for up- and downloading data. Data publishing issues have been explained to demonstrate how scientific and individual ownership of the data is ensured. The official inauguration of the GTN-P DMS is planned by the Arctic Portal in summer 2014.

New Thematic Network on Permafrost (TNP)

by Hanne H. Christiansen

International Permafrost Bachelor Summer Field School in Svalbard 2014 & 2015

The IPA Standing Committee on Education and Outreach has taken the initiative to develop a Thematic Network on Permafrost (TNP) within the University of the Arctic. This network was formally approved in June 2013 by the University of the Arctic, and immediately started its activities, very enthusiastically directed by Prof. Kenji Yoshikawa, University of Alaska Fairbanks, USA, who is also the leader of the Standing Committee on Education and Outreach.

The primary goal of this TNP is to establish, sustain and strengthen a network of university institutions that give permafrost research based education primarily between University of the Arctic (UArctic) members, and with some non UArctic partners. This network promotes research, education collaboration and joint projects in the area of permafrost, its impact on environment and adaptation to climate change. The main form of cooperation is joint natural research including indigenous people inhabiting the permafrost areas in education projects. Summer schools are to be held and there are ambitions to develop a joint Master/Ph.D programme. Likewise knowledge sharing is aimed at addressing, in a multidisciplinary way, the contemporary issues in the field of cryosphere including human, social and cultural connections focusing on permafrost in the Northern regions.

Thanks to Norwegian UArctic funding it has become possible for TNP partners to run an International Bachelor Permafrost Summer Field School course in 2014 and 2015 at the University Centre in Svalbard 19 June to 11 July 2014. We welcome senior bachelor students, who are interested in obtaining an overall interdisciplinary knowledge about permafrost. The course will offer insights into several scientific permafrost topics such as permafrost history and global distribution, how climate and other factors control permafrost temperatures, methods of permafrost observations including drilling, coring and instrumentation, permafrost databases and their use in permafrost analyses, how permafrost affect local community infrastructure and cultural life, interaction between carbon and water in permafrost landscapes and how sensitive permafrost landforms are towards climate change. There is no tuition fee for this course, and there will be a possibility for non-European students to apply for a travel stipend to attend the course. The course will be taught by partners of the Thematic Network on Permafrost. Kenji Yoshikawa, University of Alaska Fairbanks, USA & Hanne H. Christiansen, the University Centre in Svalbard, UNIS, Norway are the coordinators and main teaching responsibles for the course. Additionally Mikhail Prisyazhniy, North-Eastern Federal University, Yakutsk, Russia; Atsuko Sugimoto, Hokkaido University, Sapporo, Japan; Ole Humlum, The University of Oslo and UNIS, Norway; Arne Instanes, The University Centre in Svalbard, UNIS, Norway; Guido Grosse and Paul Overduin, The Alfred Wegener Institute for Polar and Marine Science, Germany and Samuel Faucherre, Center for Permafrost, University of Copenhagen, Denmark will give lectures during the course.

ICARP III

by Hugues Lantuit

The future of permafrost research

Over the past ten years, several assessments and reports have described the state of knowledge on permafrost and/or on policy implications at the global scale. These reports include:

- IPCC 5th Assessment report
- UNEP Policy Implications of Warming Permafrost
- AMAP-IASC-CliC Snow Water Ice and Permafrost in the Arctic
- SCAR Horizon Scanning (in progress)
- EEA - Impacts of climate change on snow, ice, and permafrost in Europe: Observed trends, future projections, and socioeconomic relevance
- WCRP Cryosphere in a Changing Climate (in progress)

At present, however, no consensus document exists at the international level to identify forward-looking priorities in permafrost research, although the IPA Executive Committee highlighted the need for such a document during the 24th IPA Council session in June 2012. The IPA and the Climate and Cryosphere project (CliC) decided to seize the opportunity offered by the International Arctic Science Committee (IASC) to engage in the International Conference on Arctic Research Planning process (ICARPIII) to frame a consultative process that will result in the formulation of such priorities. In agreement with its partner organizations, the IPA and CliC decided to expand the scope of the effort, provisionally entitled “Permafrost Research Priorities: A Roadmap for the Future” to Antarctic and mountain permafrost.

The process will span much of 2014, with consultative meetings at conferences with strong permafrost presence, including a townhall meeting at the EUCOP4. The product stemming from the effort will consist of a high level, but short publication listing and putting into context research priorities. The document will become the benchmark against which permafrost research should be gauged starting in 2015.

Standing Committee on Outreach and Education

by Kenji Yoshikawa

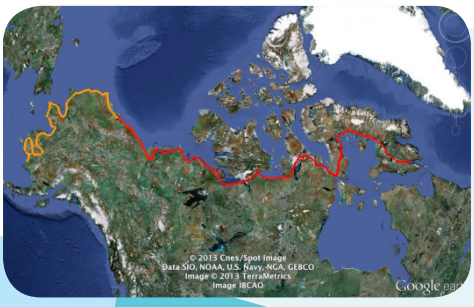
Community based permafrost/active layer monitoring program from Alaska to Canadian Arctic (along the Northwest Passage)

Over the past ten years, we have established permafrost monitoring boreholes and frost tubes in communities in the USA, Canada, Russia, Mongolia, China, Greenland, Norway and Japan. In spite of a well-developed Canadian education system, we had not visited most of the communities scattered across Nunavut and the Northwest Territories, largely because of high transportation costs and logistical challenges. Under the auspices of the IPA’s Standing Committee on Education and Outreach and in cooperation with the University of the Arctic, we decided to establish monitoring stations in many of the remaining northern communities in North America.

The logistical plan was for Ulli Neumann (UNIS) and Kenji Yoshikawa (UAF) to use two snowmobiles (Skidoo Tundra four-stroke machines) with three sledges to visit village after village along a 6000 km west to east transect. This challenging task was planned in close cooperation with Canadian Arctic permafrost programs such as ADAPT, with the Geological Survey of Canada, and international programs such as GRENE-TEA.

One goal of this project is to allow students from remote areas to learn more about permafrost. During the year, the students under the guidance of the teacher of geography, physics or biology, measure the depth of soil freezing in the frost tube in their schoolyard. Their participation in the project also expands their horizons, exposing them to the scientific research community within the IPA, and forming a new scientific worldview.

We used using a simple rotation drill with percussion for the ice-rich sediments from Kaktovik (Alaska) to Paulatuk (NWT). After the Kugluktok, the geology slightly changed to the Canadian Shield and we used rotation



together with jackhammer. In cooperation with Thematic Network on Permafrost (University of Arctic program), we gave lectures to member institutions of the University of the Arctic.

We greatly appreciate the technical information and logistical support received from Nunavut Technical Collage, Nunavut Research Center, Aurora Research Institute, Dr. Sarah Laxton (Yukon Geological Survey), Drs. Chris Burn, Daniel Fortier, and Warwick Vincent (ADAPT), Sharon Smith (GSC), Atsuko Sugimoto, Mamoru Ishikawa, Masao Uchida (GREN-TEA). Without this support, we could not have successfully completed this transect by snowmobile.

Partnerships

IPA signed a new MoU with IAG

At the 8th International Conference on Geomorphology of the International Association of Geomorphologists in Paris 2013, the IPA signs a Memorandum of Understanding (MoU) with the International Association of Geomorphologists (IAG).

Joint activities between IPA and IAG foster international exchange in both fields of research and promote international opportunities of the members of both organizations. To that effect the organizations will promote the following activities: exchange of information on key programs and initiatives; an expansion of membership of both organizations through possible joint programs; an exchange of information and possible joint activities concerning educational opportunities, student programs, and professional services; and an exchange of information and possible co-organization of scientific conferences and workshops.This agreement will be reviewed every four years.

Short communication on network related activities

by C Schädel, EAG Schuur, AD McGuire, JG Canadell, JW Harden, P Kuhry, V Romanovsky, MR Turetsky

Research Coordination Network on the Vulnerability of Permafrost Carbon

Approximately 1700 Pg of soil carbon (C) are stored in soils of the northern circumpolar permafrost zone, more than twice as much carbon as currently contained in the atmosphere. Permafrost thaw, and C released via the microbial decomposition of previously frozen soil organic matter (SOM), is considered one of the most likely positive feedbacks from terrestrial ecosystems to the atmosphere in a warmer world. Yet, the rate and form of permafrost C release is highly uncertain but crucial for predicting the strength and timing of this carbon cycle feedback during this century and beyond. The Vulnerability of Permafrost Research Coordination Network is a National Science Foundation funded synthesis project whose objectives are to link biological C cycle research with well-developed networks in the physical sciences focused on the thermal state of permafrost. The network includes more than 200 scientists from 88 research institutions located in 17 countries. It is structured into five working groups that focus on improving our understanding of 1) the size of permafrost C pools, 2) the decomposability of thawed permafrost SOM, 3) the fate of permafrost C from thermokarst and thermal erosion, 4) anaerobic and aerobic processes affecting C mineralization, and 5) the capability to upscale and model the fate of permafrost C to develop more reliable projections of the role of permafrost C dynamics in the climate system. The working groups produce new knowledge by synthesizing existing data that can be assimilated by biospheric and climate models and that will contribute to future global environmental assessments, including the Intergovernmental Panel on Climate Change (IPCC). We have organized a series of meetings and workshops (co-sponsored by Climate and Cryosphere, International Arctic Science Committee, U.S. Geological Survey and Department of Energy) to bring together leading network participants spanning various stages of career levels. Those meetings are used to design and present progress of individual synthesis products, link findings of products from individual working groups into cross-group synthesis activities, and to discuss missing gaps and future opportunities.

Group photo at the fifth network workshop on Captiva Island, Florida (May 2013, credit C. Schädel)

Network related activities have produced some high visibility products that were helpful for communicating findings about the vulnerability of permafrost C to climate change. A quantitative expert assessment of vulnerability of permafrost C to climate change that started at the first workshop in June 2011 was summarized in a Nature comment article (Schuur, Abbott & Network 2011) and the complete peer-reviewed analysis of the results was published in Climatic Change in 2013 (Schuur et al. 2013). Highlights of individual working group synthesis activities include 1) the updated and reformatted Northern Circumpolar Soil Carbon Database with spatially distributed datasets of soil coverage and soil C storage in the northern permafrost regions (Hugelius et al. 2013); 2) estimates of deep permafrost carbon pools of the Yedoma region in Siberia and Alaska (Strauss et al. 2013); 3) thawing trajectories and depth distribution of permafrost C under current and future climates (Harden et al. 2012); 4) environmental and physical controls on northern terrestrial methane emissions across permafrost zones (Olefeldt et al. 2013),and 5) a circumpolar assessment of permafrost C quality and its vulnerability over time using long-term incubation data (Schädel et al. 2014). Additionally, a special issue at Environmental Research Letters was dedicated to the 'Focus on Changing Permafrost in a Warming World: Observation and Implication' which was edited by network members and includes more than 20 publications. The network also collaborates with the International Soil Carbon Network on establishing a database for Alaska to improve permafrost profiles which is still open to new contributions (http://www.fluxdata.org/nscn/SitePages/ISCN.aspx). Additionally, the network is engaged in various outreach activities such as organizing oral and poster sessions at Annual Meetings of the American Geophysical Union and at General Assemblies of the European Geosciences Union and has been part of the United Nations Environmental Program report on 'Policy Implications of Warming Permafrost'. The network has a website (http://www.biology.ufl.edu/permafrostcarbon/) that serves as a portal for research coordination, media outreach, and education on permafrost C.

Permafrost in the courts

by Lukas Arenson, Pablo Wainstein and Matthias Jakob

Legal challenges relating to glacial and periglacial environments in the Chilean and Argentinean Andes

Argentina introduced a new glacier and permafrost law in 2010 (Act Law 26.639) intended to protect water resources, natural habitats and general scenery in the Andes. From a scientific point of view, this law is phrased in a way that prohibits any activities

(continued from page 7)

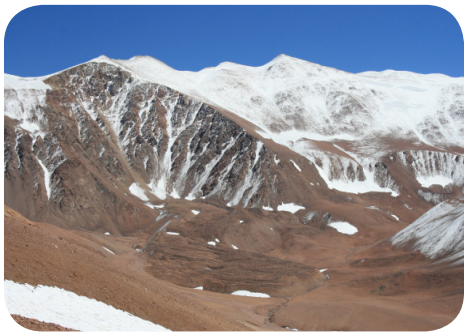
that may have a potential impact within glacial and periglacial environments, with the exception of minor research activities. The primary objective of the law is the preservation of water resources. However, several studies have shown that permitted water use by mines far exceeds the possible reduction of water volumes by simply mining in the periglacial or glacial environments, barring glacial removal.

Moreover, the periglacial environment is defined in the law as synonymous with permafrost extent. Delimiting the periglacial environment is a challenging task even using conventional scientific definitions, but the precise delineation of permafrost within a highly heterogeneous, mountainous environment is effectively impossible.

In Chile, government guidelines and regulations are mainly focused on the protection of glaciers as water resources. However, under current Chilean regulations a glacier is defined as "every perennial ice mass, formed by snow accumulation, independently from its shape, size and dynamics". According to the Chilean authorities this also includes rock glaciers, which should not be considered as glaciers, but as periglacial landforms which differ fundamentally from glaciers in terms of morphology, dynamics and hydrological significance.

These recent legal approaches cause significant uncertainty within the industry, because the evaluation is turning away from current environmental impact assessments, during which the significance of an impact caused by a project is fully evaluated. Both the Argentine and Chilean regulations have caused significant confusion for mining firms and regulatory bodies, and have created tensions between the individual provinces/regions and the federal governments. Furthermore the new regulations challenge mine or power developers when preparing their impact assessments for inexperienced regulators tasked to enforce the guidelines and NGOs. In Argentina, in particular, the government has not yet prepared a document describing the implementation of the new national glacier law which is leaving developers and provincial regulators with considerable uncertainty. This has created a decidedly difficult environment for mining firms to operate in Argentina.

Legal challenges are currently proceeding in Chile and Argentina in which mining firms are accused of violating glacier laws and guidelines under their current environmental permits. The outcome of these trials are highly anticipated as those decisions may be precedent-setting and thus have profound implications in terms of future mining developments in the high-elevation permafrost areas of these countries.



Rock Glacier in the Argentine Cordillera (L. Arenson, 2014)

PYRN Report

by Alexandre Nieuwendam and Michael Fritz, on behalf of the PYRN Executive Committee

PYRN Activities 2013

The Permafrost Young Researchers Network (PYRN) is an international organization that fosters collaboration amongst its members and seeks to recruit, retain, and promote future generations of permafrost researchers. PYRN began as an IPY initiative in close collaboration with APECS and with its overarching organization, the International Permafrost Association (IPA). PYRN seeks to increase global awareness, understanding, and action in relation to permafrost in a changing climate. Our main goal is to provide a common forum to communicate and exchange ideas related to permafrost science and engineering. This includes coordinating activities such as workshops, meetings, and awards to encourage PYRN members to share knowledge and expertise on permafrost-related topics. PYRN leadership consists of an Executive Committee (led by a President; currently Alexandre Nieuwendam) and a Council. One member from the Executive Committee jointly serves on the APECS Open Council.

Many attractive events for early career permafrost researchers took place in the past months and several future activities cast their shadows for 2014.

The IV Iberian conference of the International Permafrost Association

The IV Iberian conference of the International Permafrost Association took place from 25 to 27 of June 2013 in Vall de Núria (Catalonia) in the Pyrenees and was organized by the University of Barcelona. During the conference around 30 oral presentations and 15 posters were presented related to permafrost topics on polar and mountain environments as well as planetary. PYRN organized the awards for best oral and best poster presentations. For the best oral presentation the winner was Lourenço Bandeira from the Institute for Technical Studies from the Lisbon (Portugal) who presented the communication entitled "Ultra-high resolution image acquisition with an Unmanned Aerial Vehicle for detailed mapping in Barton Peninsula (King George Island, Antarctica)".

The best poster presentation was given by Manuel Gómez Lende from the University

PYRN Executive Committee: From left to right (Back): Altug Ekici, Natalia Belova, Alexandre Nieuwendam, Julie Lepage, Andrea Schneider, Sonia Tomaskovicova, Anne Morgenstern. (Front) Marc Oliva, Yingzhao Ma, Michael Fritz, Ben Abbott, Denis Frolov (not on the picture).

(continued from page 8)

of Valladolid (Spain) with the presentation on "Los ortotermogramas en los estudios de hielo de cuevas heladas. El caso de la cueva helada de Peña Castil (Picos de Europa)". The last day was mostly dedicated to a great field trip in the Pyrenees, and in the end of the day, Alexandre Nieuwendam held a presentation about PYRN and the plans for the ongoing organization of two workshops during EGU and EUCOP in 2014. Miguel Angel de Pablo from the University of Alcalá was appointed the new PYRN National Representative for Spain.

Earth Cryology: XXI century

About 150 participants from all over the world came to Puschino at the end of September 2013 to take part in the International Conference "Earth Cryology: XXI century". A full-sized natural carcass of a Late Pleistocene mammoth called "Vasya" friendly provided by theatre-museum "Ice Age" greeted guests of the Institute of Physico-chemical and Biological Problems in Soil Science RAS. Four days of scientific reports, equipment presentations, hot discussions and round tables made up the week. More than 25 young scientists took part in a PYRN meeting at the local pub where they could discuss scientific and career issues in an informal atmosphere. After the conference participants visited the country-house estate of Leo Tolstoi in Yasnaya Polyana.

Third forum for young permafrost scientists, June/July 2013, Yakutsk, Russia

The third forum for young permafrost scientists was hosted by the Melnikov Permafrost Institute (Yakutsk, Russia). The forum celebrated the 140th birthday of M.I. Sumgin, the founder of geocryology, and the 150th birthday of V.A. Obruchev, the first director of the Permafrost Institute in Moscow. The Forum for Young Permafrost Scientists included the Geocryological Conference held from 24–27 June 2013 and the Geocryological Field Workshop from 29 June to 13 July 2013. In total, 76 participants took part in the conference presenting 35 oral presentations and 5 posters. The main topic of the field workshop was "Geocryological research of mountain fields, Southern Verkhoyansk Mountains". 34 participants joined the field workshop. During the workshop, lectures and field excursions were conducted by senior scientists from the Melnikov Permafrost Institute and Institute of Earth cryosphere in Tyumen.

PYRN-DACH Meeting, October 2013, Salzburg, Austria

Within the framework of the annual German branch of the IPA (AK Permafrost) in Salzburg, 24-26 October 2013, the fourth PYRN-Germany meeting took place on October 25. Twenty-two young researchers from Germany, Austria and Switzerland were present and discussed the possibilities of closer cooperation of young permafrost researchers across the German-speaking realm. Under the leadership of Michael Fritz, Jens Strauss, and Ingo Hartmeyer, it was decided that PYRN-Germany should be re-named PYRN-DACH (Deutschland, Austria, Confoederatio Helvetica). With this decision, members sought to achieve greater international recognition and young-researcher-group identity across national boundaries. In addition, Ingo Hartmeyer (Austria), Cecile Pellet (Switzerland), and Jens Strauss (Germany) were chosen as national contact persons and coordinators. Boris Radosavljevic will represent the PYRN-DACH members on the PYRN council.

Outlook PYRN Activities 2014

The PYRN ExCom is starting to work on updating the PYRN Bibliographical Database. Agnès Rivière from the PYRN Council has volunteered to update the PYRN Bip. We encourage all PYRN members to help on this task by sending to Agnès (agnes.riviere1@gmail.com) references of permafrost related theses, reports and papers!

Permafrost Young Researchers Workshop at EUCOP4

The next major joint activity of APECS and PYRN will be a "Permafrost Young Researchers Workshop" that will be hosted together with the young researcher representatives of the two projects PAGE21 (Changing Permafrost in the Arctic and its Global Effects in the 21st Century) and ADAPT (Arctic Development and Adaptation to Permafrost in Transition) in the context of the Fourth European Conference on Permafrost (EUCOP4) in June 2014 in Portugal (http://www.eucop4.org/permafrost-young-researchers-workshop.html). The workshop on June 18 aims at building interdisciplinary knowledge on how the Arctic and Antarctic permafrost regions play a key role in the Earth System and to give each participant a more overarching view on the regions beyond disciplinary research questions. To achieve this, the participants will share knowledge with each other in thematic break-out sessions and elaborate the future avenues of permafrost research together, with mentors playing a key role in permafrost research either in large-scale international projects or science policy. With a central focus on future priorities in permafrost research from a young scientist perspective, this workshop is an official event within the ICARPIII process which is led by IASC. The 90 participants have been already selected through a peer-reviewed application process and will profit from travel grants provided by CliC, IASC and the Bolin Centre for Climate Research.

For more information on PYRN visit us at http://pyrn.arcticportal.org/en/.

New Action Groups

by Karina Schollaen

The IPA funds 3 new international Action Groups with up to 2500 Euros per year for 2 years

Recently sponsored Action Groups:
Since spring 2014

- Permafrost and Culture (PaC): Integrating environmental, geo-, and social sciences to assess; Contact: Mathias Ulrich - mathias.ulrich@uni-leipzig.de, and Otto Habeck - Otto.habeck@uni-hamburg.de
- Permafrost Research Priorities: A Roadmap for the Future; Contact: Hugues Lantuit - hugues.lantuit@awi.de
- Last Permafrost Maximum and Minimum (LPMM) in Eurasia; Contact: Huijun Jin - hjjin@lzb.ac.cn

NEXT DEADLINE for Action Groups: 15th of October 2014

Permafrost Young Researchers Workshop 2014

UPCOMING EVENTS

2014

EUCOP4
June 18-21, 2014
Évora, Portugal

22nd IAHR International Symposium on Ice
August 11-15, 2014
Singapore

XXXIII SCAR Biennal Meetings and Open Science Conference
Aug 23 - Sept 03, 2014
Auckland, New Zealand

Arctic Change 2014
December 08-12, 2014
Ottawa, Canada

2015

Arctic Science Summit Week 2015
April 23-30, 2015
Toyama, Japan

26th IUGG General Assembly 2015
June 22-July 2, 2015
Prague, Czech Republic

12th International Symposium on Antarctic Earth Sciences
July 13-17, 2015
Goa, India

2016

ICOP 2016
June 20-24, 2016
Potsdam, Germany

INTERNATIONAL PERMAFROST ASSOCIATION

The mission of the International Permafrost Association is to promote research in permafrost and permafrost-related fields within the global scientific and engineering communities, to support the activities of researchers in these disciplines, and to disseminate findings concerning permafrost to the decision-makers, the general public and educators.

Officers

President
Professor Antoni G. Lewkowicz
Department of Geography
University of Ottawa
Canada

Vice-President
Professor Hanne H. Christiansen
The University Centre in Svalbard UNIS
Norway

Professor Vladimir E. Romanovsky
Geophysical Institute
University of Alaska Fairbanks
USA

Members
Professor Hugues Lantuit
Alfred Wegener Institute
Helmholtz Centre for Polar and Marine Research
Germany

Professor Lothar Schrott
Department of Geography
University of Bonn
Germany

Dr. Dmitry Sergeev
Sergeev Institute of Environmental Geoscience RAS
Moscow State University
Russia

Professor Ma Wei
CAREERI
Chinese Academy of Sciences
China

Secretariat

Executive Director
Karina Schollaen
Alfred Wegener Institute
Helmholtz Centre for Polar and Marine Research
Germany

Council Members

Argentina
Dario Trombotto
Austria
Andreas Pirklbauer
Canada
Sharon Smith
China
Huijun Jin
Denmark
Thomas Ingeman-Nielsen
Finland
Miska Luoto
France
François Costard
Germany
Michael Krautblatter
Iceland
Halldor Johannsson
Italy
Adriano Ribolini
Japan
Mamoru Ishikawa
Kyrgyzstan
Ryskul Usubaliev
Mongolia
Yamkhin Jambaljav
The Netherlands
Ko van Huissteden
New Zealand
Ed Butler
Norway
Gisle Håland, Ole Humlum
Poland
Rajmund Przybylak
Portugal
Gonçalo Teles Vieira
Romania
Petru Urdea
Russia
Anna Kurchatova
South Korea
Yoo Kyung Lee
Spain
Enrique Serrano
Sweden
Jonas Åkerman
Switzerland
Reynald Delaloye
United Kingdom
Julian Murton
United States of America
Thomas Krzewinski
Frederick Nelson

Address:

International Permafrost Association
c/o Karina Schollaen
Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research
Telegrafenberg A43
14473 Potsdam
Germany

Web:

contact@ipa-permafrost.org
www.permafrost.org
www.facebook.com/ipapermafrost
https://twitter.com/ipapermafrost

ISSN 1021-8610

Past Presidents:

Dr. Hans-Wolfgang Hubberten (2008-2012)
Dr. Jerry Brown (2003-2008)
Professor Hugh M. French (1998-2003)
Academician Cheng Guodong (1993-1998)
Professor Troy L. Péwé (1988-1993)
Academician P. I. Melnikov (1983-1988)