

MEETINGS

The First Training Workshop on Permafrost Research Methods

IMPETUS 2007: OSL-APECS-PYRN Training Workshop; St. Petersburg, Russia, 29 November to 2 December 2007

PAGE 97

Fifty young researchers from 14 countries met in St. Petersburg, Russia, to learn about the latest methods used in permafrost research and engineering and to discuss future plans to address climate change issues in permafrost areas. This workshop was an official International Polar Year (IPY) event organized jointly by the Otto Schmidt Laboratory for Polar and Marine Sciences (OSL) in St. Petersburg, the Permafrost Young Researchers Network (PYRN), and the Association of Polar Early Career Scientists (APECS).

The workshop provided insights into the latest techniques and methods used in permafrost research in fields as diverse as permafrost modeling, investigations of mountain ice segregation, bubbling from thermokarst lakes, and submarine permafrost detection. It brought together experts to provide young investigators with a multidisciplinary and cross-border perspective on permafrost research, a much needed

approach in a discipline marked by strong research history yet strongly entangled within national borders. Presentations and speaker biographies are now available on the conference Web site (<http://pyrn.ways.org/activities/pyrn-meetings/2007-saint-petersburg>).

The workshop triggered discussions and exchanges of ideas fostering capacity building for the future of permafrost research. The involvement of young scientists ensures a long-term perspective on scientific projects, which is important because changes in the state of the permafrost often occur over long timescales. It is crucial that young researchers be able to participate in wider international workshops and science planning activities of this nature to gain experience that can be used to carry the responsibility of assessing the impacts of warming permafrost until the next International Polar Year (2032). We now expect the participants to contribute to the follow-up activities to this workshop and to relate their

experiences within the PYRN and APECS communities.

The success of this workshop highlights the need for a "sense of belonging" among scientists beyond the traditional nationally and disciplinarily established borders. The new generation of permafrost researchers is a vital part of the global research effort, and workshops such as this one provide the platform for them to move beyond traditional borders, exchange information, and contribute to the early elaboration of relevant scientific questions. The success of the workshop is a testament to the success of the Permafrost Young Researchers Network, an organization launched 2 years ago and now rich with 480 members, and which used this workshop to promote and put a start to its scientific activities (more information is available at <http://www.pyrn.org>).

The workshop was supported financially by the German Federal Ministry of Education and Research, the Leibniz Institute for Marine Science (IFM-GEOMAR), the International Arctic Research Center (Fairbanks), the International Permafrost Association, the Climate and Cryosphere Project (CliC), the Arctic and Antarctic Research Institute (AARI), St. Petersburg, and the Alfred Wegener Institute for Polar and Marine Research (AWI).

—H. LANTUIT, Alfred Wegener Institute for Polar and Marine Research (AWI), Potsdam, Germany; E-mail: hugues.lantuit@awi.de; H. KASSESS, M. JOHANSSON, L. TIMOKHOV, T. HALTIGIN, J. BAESSEMAN, and K. VOLKMAN-LARK, Leibniz Institute of Marine Sciences at University of Kiel (IFM-GEOMAR), Kiel, Germany

Global Change and the High-Latitude Environment

High Latitude Terrestrial and Freshwater Ecosystems: Interactions and Response to Environmental Change; Abisko, Sweden, 11–14 September 2007

PAGE 97

Terrestrial and aquatic scientists took part in a workshop in Sweden to discuss cross-system linkages that strongly influence the structure and function of terrestrial and aquatic ecosystems, which effects may be altered by future environmental change. Sixty-five researchers, mainly from northern Europe and North America, attended the meeting.

Through a series of presentations and discussions several clear themes emerged. For example, workshop participants discussed how high-latitude freshwater ecosystems are strongly influenced by nutrient and material inputs from the surrounding terrestrial environment. In particular, the magnitude and quality of carbon, nitrogen, and phosphorus exported from terrestrial ecosystems are recognized as major drivers of the productivity and biological structure of aquatic ecosystems.

Meeting participants also recognized that temporal variations to high-latitude

freshwater ecosystems are important because the timing and magnitude of terrestrial losses may have important implications for the response in aquatic ecosystems. For example, lateral losses of terrestrial organic carbon and subsequent mineralization and atmospheric efflux in aquatic systems can be important components of landscape greenhouse gas balances. Mineralization of terrestrial organic carbon in aquatic systems is thus a feedback on the net ecosystem exchange of carbon in the terrestrial system, and aquatic systems become integrated with terrestrial carbon cycling by serving as mineralization sites for terrigenous organic carbon, causing net emissions to the atmosphere of greenhouse gases from the freshwater surfaces.

There was a consensus from the meeting that in order to understand the impact of environmental change on northern ecosystems, there is an urgent need to integrate research on terrestrial and aquatic ecosys-

tems. High-latitude ecosystems are sensitive to environmental change, especially climate change. The various links between terrestrial and aquatic systems respond differently to environmental changes, and for many processes the rate of change may be as important as the magnitude of change. Feedbacks and interactions may result in further magnification of differences.

It is, however, largely unknown to what extent change may lead to decoupling of ecosystem processes and shifts to alternative states, and at what temporal or spatial scales such responses operate. The workshop highlighted that climate-driven responses affecting terrestrial-aquatic linkages may not necessarily be the same in northern Europe and North America, and emphasized a need for cross-continental collaboration and discussions to enable a more general understanding of ecosystem responses to future change. A major challenge will be to find resources enabling cross-system research that integrates disciplines such as ecology, biogeochemistry, and hydrology.

Attendees stressed that future endeavors should focus on multidisciplinary research that will help answer questions about how terrestrial processes governing production, processing, and transfer of material will