



International Permafrost Field Courses in Siberia: the Synthesis of Research and Education

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During summers of 2007 and 2008 a series of International University Courses on Permafrost (IUCP) were conducted in West Siberia, Russia. Courses were organized as part of the International Permafrost Association (IPA) International Polar Year activities. The North of West Siberia region was selected to represent diverse permafrost, climatic and landscape conditions. The courses were jointly organized by the Moscow State University (MSU) and the Tumen' Oil and Gas University (TOGU) with the help from German and U.S. institutions. The program attracted undergraduate and graduate students with diverse interests and backgrounds from Germany, Russia and the U.S. and involved instructors specializing in different aspects of permafrost research.

Courses were designed to address three major topics of permafrost-related research: a) permafrost environments characteristic of the discontinuous and continuous zones; b) field instrumentation and techniques; c) permafrost engineering and problems of development in permafrost regions.

Methodologically, courses consisted of systematic permafrost investigations at long-term monitoring sites and survey-type expeditions. Systematic, process-based investigations were conducted at a network of sites which constitute the TEPO established by TOGU in collaboration with the gas company NadymGasProm. The observation complex includes an array of 30-m deep boreholes equipped with automatic data collection systems and representing characteristic permafrost landscapes of West Siberia. Boreholes are complemented by sites for snow cover, vegetation, soil, ground ice, and geomorphologic investigations. As part of student research activities, four new Circumpolar Active Layer Monitoring (CALM) sites were established in proximity to boreholes for monitoring spatial distribution and long-term dynamic of the active layer. New sites represent diverse landscapes characteristic of the West Siberian previously underrepresented in the CALM network.

Specific emphasis was made on the study of permafrost soils. Throughout the course students were exposed to a wide range of field techniques, including surveying, coring, geothermal monitoring, thaw-depth measurements, landscape characterization, geomorphologic investigations, soil description and classification according to International, Russian, German, and U.S. classification schemes, and hydrologic and botanical field investigations. Significant portion of the course curriculum was devoted to problems of industrial development in permafrost regions. Pipelines, material sites, operating gas wells, processing plants, pump stations, and permafrost engineering testing facilities associated with three major gas fields (Yamburg, Yubileinoe, and Zapolyarno) were visited as part of the field excursions. Several meetings with Russian gas industry executives and workers were arranged to openly discuss economic and political issues associated with GasProm activities in West Siberia.

The field work was complemented by daily lectures prepared by instructors and students, covering a wide range of topics. Students also participated in active permafrost research through daily data collection and analysis activities. Analysis of the diverse data sets obtained during the course was conducted at Moscow State University, presented in a series of detailed reports.

The data collected by students were contributed to the international IPY permafrost monitoring programmes. Several students have presented results of their research at the Ninth International Conference on Permafrost and other national and international scientific meetings. This presentation describes research and educational activities of the IUCP, provides results of student research, and outlines the plan for the future.

