IGU COLD REGIONS ENVIRONMENTS COMMISSION ACTIVITIES: RUSSIA COOPERATION

During the International Geographical Congress in Glasgow in August 2004, the International Geographical Union (IGU) renewed its focus on periglacial topics while encouraging geographers to increasingly recognize the importance of human factors and human perceptions in cold regions by approving the new Commission on Cold Region Environments (CRE). This was initiated by Prof. Dr. Jef Vandenberghe (VU University of Amsterdam), who already led the former commission activities on periglacial topics. The first Chair Person was Martin Gude, of Jena University. At this time, a formal Agreement of Cooperation was signed by the presidents of IGU and IPA (International Permafrost Association) committing the two organisations to the establishment of the new CRE commission in order to extend their joint activities and related cooperation.

The CRE commission has a broad scope related to polar and high mountain environments. These sensitive cold-climate regions face increased impacts and responses to environmental stresses, the consequences and sources of which are not purely physical, but also have important social elements. As the recent International Polar Year 2012 Conference in Montreal, Canada, has made very clear, the role of humans in changing the cold regions is increasingly evident.

Hence, the issues of the environments of cold regions and their future require the incorporation of social, economic and environmental aspects. The Commission themes stress the need for interdisciplinary efforts to synthesize an integrated understanding of cold region geo-ecosystems, including land use and climate change issues, based on current scientific assessments. A second focus is on the improved integration of process and geo-archive information in arctic and alpine environments as well as in past periglacial environments. Within this geographical-oriented commission, an integration of many aspects of the physical environment with the social and economic realms, such as sustainable development, is emphasized.

The steering committee formed in 2004 was multinational: M. Gude (Germany), N. Doubleday (Canada), O. Humlum (Norway), C. Jonasson (Sweden), N. Matsuoka (Japan), J. Murton (U.K.), F.E. Nelson (U.S.A.), D. Trombotto (Argentina), J. Vandenberghe (Netherlands), X. Yang (China), T. Vlasova (Russia). Dr. Tatiana Vlasova from Institute of Geography, Russian Academy of Sciences was recommended to be the CRE Commission steering committee member by vice-president of IGU Nikita Glazovskiy, and was elected by all steering committee members due to her expertise in research of complex Arctic socio-ecological systems under impacts of humans and climate changes.

The CRE commission represents scientific interests geographically oriented to polar and high mountain regions; and with membership open to nations with scientific interests in cold regions. One of the founding principles was also to form a multi-disciplinary coalition of scientists uniting experts from different branches of natural and social sciences and sharing diverse geographical expertise, both in terms of regions, and also a range of substantive and methodological concentrations.

We recognize clearly that the complexities of understanding the changes and challenges of adaptation in cold regions are significant, due to the need not only for multi-disciplinary collaboration, but due to growing requirements for interdisciplinary and trans-disciplinary understanding.

Prior to the International Polar Year (IPY), CRE commission activities concentrated on preparation to IPY by organizing and co-sponsoring topical workshops and conference sessions, as well as contributing geographical expertise to organizations dealing with cold region issues. One of the most important starting point for the eventual participation of the CRE commission in IPY and beyond was the *Second International Conference on Arctic Research Planning (ICARP II), November 10–12 2005, Copenhagen, Denmark*. The goal of ICARP was to prepare Arctic research plans to guide international cooperation over the next 10–15 years.

The ICARP Themes were 1. Sustainable development and Arctic economies • 2. Indigenous peoples and change in the Arctic • 3. Arctic coastal processes • 4. Deep central basin of the Arctic Ocean • 5. Arctic Ocean margins and gateways • 6. Arctic shelf seas • 7. Terrestrial cryospheric and hydrologic systems • 8. Terrestrial biosphere and biodiversity • 9. Modelling and predicting Arctic climate and ecosystems • 10. Resilience, vulnerability and rapid change • 11. Science in the public interest. Many steering committee members of the CRE commission attended the conference. An abstract has been submitted by the CRE commission with reference to the themes 1, 7 and 10. The presentation was by poster and was entitled: The International Geographical Union (IGU) commission on "Cold Region Environments" within the context of changing land use impacts in arctic areas.

Following an initial call launched by the IPY Joint Committee, the CRE commission submitted an Expression of Intent (EoI) with the title "LUPOG – Land Use Impact in Polar and Sub-Polar Geosystems". Main concept and objectives of LUPOG were to maintain sustainable land use in polar and sub-polar regions, through understanding, observing, controlling and modelling of geosystem reactions. The rational for LUPOG was that the cold region environments underwent significant changes in recent decades – a trend expected to continue and even accelerate in the near future. This is due to changing global climates, but it is also caused by direct human impact on a regional and local basis, in particular in terms of increased pressure on nature and its resources. In many regions, both in polar areas and in high mountains, land use at many sites is already intensive and probably will even get more intensive in the future, due to many factors, such as:

- infrastructure, construction and transportation costs are decreasing, while technical facilities and society needs are increasing;
- living standards are improving;
- political pressure for resource exploration, mining and transportation is growing;
- tourist activities are increasing.

Any of these land use activities may effect significant changes in the natural geosystems, especially in hydrology, permafrost, snow cover, soils, geomorphology, and regional and local climate (e.g. water contamination, permafrost degradation). On the other hand, in many regions the land use is accompanied by hazards for humans and their constructions, especially due to the sensitive landscape character in these cold environments. These aspects of land use – among others – are investigated and discussed from a geographical perspective within the IGU CRE commission, with the principal aim of providing information for a sustainable land use in these regions.

For achieving sustainability, social assessment of land use impacts and human-nature systems' vulnerability is very important. It is needed for the elaboration of adequate strategies (co-management, for example) and plans for sustainable development, especially at the local level. In the process of planning for sustainable development from local to national and circumpolar levels, traditional knowledge, observations and perceptions of the Cold Region residents should be balanced with the interpretations of scientists and decision-makers. Professional knowledge and experience gained through the exchange of better practices will serve in the elaboration of sustainable development strategies for the Cold Region as a whole, taking into account geographical peculiarities of localities. The scientific knowledge of achieving sustainability will be shared by local residents through the education and training, preparation of the manual and outreach materials, and joint research activities.

This concept of the IPY LUPOG proposal, was submitted to the IPY Office in 2005–6 and was accepted and then incorporated into other global projects, thus dividing the commission members among a number of highly successful international IPY projects (e.g. CALM, PPS-Arctic, CiCAT).

One of the key concerns for LUPOG was the integration of our understanding of the physical and human environments within the cold regions and the development of an interface for forging effective science to policy linkages with respect to changing environments, the mitigation of impacts and the potential for fostering adaptation.

At ICARP the IPY plans of CRE Commission were discussed with the IASC Taiga-Tundra Interface (TTI) group steering board members. TTI which was initiated by Prof.Terry Callaghan during a Treeline Workshop in Abisko, Sweden, in April 2000. TTI group assumes that the position and dynamics of the arctic-boreal boundary are major determinants for land-atmosphere interactions at the circumpolar scale and for ecological and socioeconomic conditions at the local to regional scale.

This zone, the 'tundra-taiga ecotone' varies dramatically in width (up to hundreds of kilometres) throughout the circum-arctic North and has thus a recognized exceptional importance, in terms of global vegetation, climate, biodiversity and human settlement. Further, the particular vulnerability of the zone to changes in climate and land use is recognized, along with concern for subsequent alterations and shifts of its position with consequences for the entire arctic region and the global climate through feedback mechanisms. Despite this recognition, comprehensive and large scale multidisciplinary scientific focus incorporating cause, effect, and importance of its past and present transformation to the biota and human societies, has been lacking.

During the ICARP, the TTI group organized the joint meeting with which CRE commission members which initiated the basic principle of cooperation within the IPY, putting the multi-national initiatives of the USA–Canada–Russia–United Kingdom and Norway in studying taiga-tundra zone processes at the circumpolar scale within the IPY PPS Arctic cluster (Present day processes, Past changes, and Spatiotemporal variability of biotic, abiotic and socio-environmental conditions and resource components along and across the Arctic delimitation zone).

Socially-oriented objectives of the LUPOG were well incorporated with the future PPS Arctic cluster on the basis of

the Integrated Arctic Socially-oriented Observation System (IASOS) which has been endorsed as a separate project in the National Russian Programme of the International Polar Year (IPY) and supported by the Presidium Russian Academy of Sciences Programme N16 Institute of Geography, Russian Academy of Sciences (Vlasova T.K., et al., 2008) and the Canadian project under the PPS Arctic Canada Programme "Photos and Plants Through Time" (N. Doubleday, et al.,) and "Food Access" (S. Donaldson et al.,). The socially-oriented dimension of the PPS Arctic project has been implemented in the Russian as well as Canadian North.

In Russia the main focus was directed to the development of the methodology, tools and methods of the long-term socially-oriented observations of quality of life conditions and human capital development integrating community-based observations with multidisciplinary scientific knowledge. The aims of Socially-oriented observations and monitoring is to monitor and control changes on the way to better (or worse) quality of life and sustainability, increase knowledge of trends in socio-economic, political and living conditions of northern residents under the impacts of happening changes in climate, biodiversity, character of human impacts, globalization, socio-economic and political changes and human responses. For this purpose socially-oriented key indicators (key variables) should be identified in order to monitor and control changes on the way to better (or worse) quality of life and sustainability. Two types of indicators should be used in there combination: based on statistics and based on perceptions of local people. Common backgrounds for socially-oriented observations methods are mainly based on community engagement tools and instruments. Among these methods we practice such tools as:

Permanent long-term semi – structured interviewing along with gathering narratives and stories;

Express short-term semi-structured interviewing during field trips and students summer schools;

These two types of semi-structured interviewing were based on preliminary developed questionnaire. This questionnaire was discussed with and approved by our PPS Arctic Canadian and Norwegian colleges and publishes in PPS Arctic Manual (PPS Arctic Manual; Vlassova, Doubleday, Hofgaard 2008). In parallel during International Polar Year, members of the International Polar Year 'PPS Arctic – Impacts of a Changing Treeline' social team conducted a host of studies throughout the circumpolar region under the leadership of CRE Chair Person Prof. Nancy Doubleday.

IPY – CRE Commission collaboration in 2007 also included joint field reconnaissance in Nunavut by T. Vlasova and N. Doubleday to form a common baseline for interpretation of social, cultural and ecological understanding of change in cold regions. This shared baseline and also the recognition of important variations were key to relating work from many disciplines, across the circumpolar region, from northern Scandinavia to Russia to North America, and also to the integration of physical science with social and cultural dimensions.

Some results of carried out socially-oriented and community based observations were discussed during the CRE commission and IPY PPS arctic meetings and were published in different journals and books but a lot should be yet done in evaluation and the dissemination of the results and further development of methodology and tools

in different socio-economic, cultural and ecological conditions. In Russian language our first collaborative results were also published in Environmental Planning and Management journal[1].

Many geographers interested in the cold regions and their future joined us during CRE session at IGC 2012 in Cologne in August. This session was very productive and successful.

OUR PLANS FOR FUTURE COLLABORATIONS

The changes currently observed and experienced in the Cold Region Environments, particularly as a result of International Polar Year research, provided a unique focus, both for a proposed CRE Commission Meetings, and for a CRE-sponsored session within the Kyoto Regional Conference, which will be held in August 4-9, 2013. The main theme of the conference is "Traditional Wisdom and Modern Knowledge for the Earth's Future."

Our commission steering committee membership has been fully committed to International Polar Year research in all cases, beginning in 2004. Now that the active field component has been succeeded by the reporting and data archiving activities of IPY, the commission as a whole is preparing to move into a diversification and growth mode, in terms of membership, and in terms of inclusion of new and emerging geographic fields of inquiry. A second priority is the strengthening of the Commission by expansion, both of the number of countries represented in the commission, but also by increasing its working groups, particularly in areas of emerging importance such as tourism. A third priority is providing greater support to IGU in its international work concerning cold regions and a changing world. In addition, the commission must also work to adapt and diversify, in keeping with the theme of the IPY 2012 Conference "From Knowledge to Action", and also in the spirit of the "Future Earth" initiative, both at, and after, Rio+20.

As mentioned above, bilateral cooperation and collaboration with national geographical societies is one important key to the future of IGU CRE. We are looking forward to strengthen the cooperation with the Russian Geographical Society and its regional organizations, especially those located in remote territories of the North and the Arctic. We propose that the 3rd "Arctic: Territory of Dialogue" Forum taking place in Salekhard this year will be a good starting point for this cooperation.

Tatiana K. Vlasova
Nancy C. Doubleday

[1] T.K. Vlasova, N.C. Doubleday, A. Hofgaard (2009) "Building a Network of the Socially Oriented Monitoring: Project 'PPS Arctic'" (IPY # 151). In: Environmental Planning and Management ISSN 1991-9344 (Ed. V.M. Kotlyakov) No.3-4 (8-9) 2008. P. 49-58. (In Russian with abstract and Note from V.M. Kotlyakov in English). An abstract of this paper is also published on the web site of the Journal http://eco-plan.ru. in September 2009.

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ISSN 2071-9388

SOCIALLY SCIENTIFIC MAGAZINE "GEOGRAPHY, ENVIRONMENT, SUSTAINABILITY"

No. 03(v. 05) 2012

FOUNDERS OF THE MAGAZINE: Faculty of Geography, M.V. Lomonosov Moscow State University and Institute of Geography of the Russian Academy of Sciences

The magazine is published with financial support of the Russian Geographical Society.

The magazine is registered in Federal service on supervision of observance of the legislation in sphere of mass communications and protection of a cultural heritage. The certificate of registration: ПИ МФС77-29285, 2007, August 30.

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Phone 7-495-9167574
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Sent into print 05.09.2012
Order N gi312

Format 32 × 46 cm/2
55 p. sh.
Digital print
Circulation 500 ex.