

InfoNorth

Social Impact Assessment along Russia's Northern Sea Route: Petroleum Transport and the Arctic Operational Platform (ARCOP)

by Nina A. Meschtyb, Bruce C. Forbes and Paula Kankaanpää

INTRODUCTION

THE OIL AND GAS RESOURCES of Russia's Arctic regions comprise the world's largest energy reserve outside the OPEC countries. The Arctic Operational Platform (ARCOP, 2003–05) is a research and development project supported by the European Union's "Competitive and Sustainable Growth" programme. The ARCOP project has 21 participating organizations, from five EU member states (Finland, Germany, the Netherlands, Great Britain, and Italy) and from Norway and Russia. The ARCOP workshops have served as an industrial, scientific, and political forum throughout the project. Participants in the workshops discuss issues such as an integrated marine transport system, the economics of transport, the supporting infrastructure with regard to ice information, the legal status of the Northern Sea Route (NSR) in relation to petroleum transportation and shipping transport services, environmental impacts, and oil spill countermeasures. The social impact assessment (SIA) component of the workshops has focused on issues of environment and technology in relation to human populations along the Northern Sea Route. Its main task, implemented by the Arctic Centre, University of Lapland, has been to carry out overview studies to assess the potential socio-cultural impacts of shipping along the NSR on indigenous peoples and small Arctic communities, with the purpose of highlighting the needs and priorities to be considered from a local perspective.

METHODS AND STUDY SITES OF THE SIA SURVEY

The ARCOP project actively discussed scenarios for marine oil transportation from Varandey terminal (68°49' N; 57°59' E) in the Nenets Autonomous Okrug ('district'—hereafter NAO) to Rotterdam in the Netherlands. Thus the main fieldwork for the social impact assessment survey was done in the NAO and took place during June–September 2003 and July 2004. In addition, we made two short trips in March 2004 and March 2005 for consultation with local stakeholders. The fieldwork was carried out in the

following locales: (i) the town of Naryan-Mar, the administrative centre of the district; (ii) Iskatelei, the second largest settlement in the NAO; (iii) the village of Krasnoe, home base for the reindeer herders of the Varandey tundra; (iv) camps of nomadic reindeer herders on the Varandey tundra; (v) the villages of Indiga and Viucheskoe, both near Cape Svyatoi Nos, site of the future terminal proposed by the NAO administration; (vi) the village of Oma and the Kanin tundra, in order to execute a comparative study in places with no current industrial activity; and (vii) the Yuzno-Shapkino oil field, an example of existing extensive and intensive exploitation of natural resources with the support and control of the European Bank.

The survey was carried out using methods of interviewing, participant observation, and comparison and analysis of the combined data. The main data were derived from interviews with local administration officials, representatives of the oil companies, associations of indigenous peoples, and residents of the district; questionnaires; official statistical data; mass media data; federal and regional legislation from archived sources; and relevant literature.

It was essential, while interpreting the assessment findings, to recognize that different segments of society have widely variable experiences simultaneously in relation to regional development, so their perspectives on the events at hand range widely. The different modes of contemporary life of people settled in 'hub' towns vs. those in isolated villages vs. unsettled (nomadic) populations mean that many people have unequal opportunities, if any, to express their point of view in official fora. The collected data showed that the proposed oil marine transportation and loading terminal may bring varying benefits to almost all parties involved; it was our duty, however, to identify the groups of society most vulnerable to adverse impacts, those whose concerns might get lost in calculating the aggregate benefits. During fieldwork we used multiple approaches: analytical, consultative, and participatory. These approaches allowed us to provide a conceptual framework, together with rigorous, measurable data on those aspects of the analysis that can be quantified; to record detailed input from those affected by the proposal (documenting their experiences, values, needs, and



Current routes for oil transportation in northern Russia.

priorities); and to involve the affected communities in setting the boundaries of enquiry, defining impact measures and indicators, and identifying appropriate responses to anticipated effects.

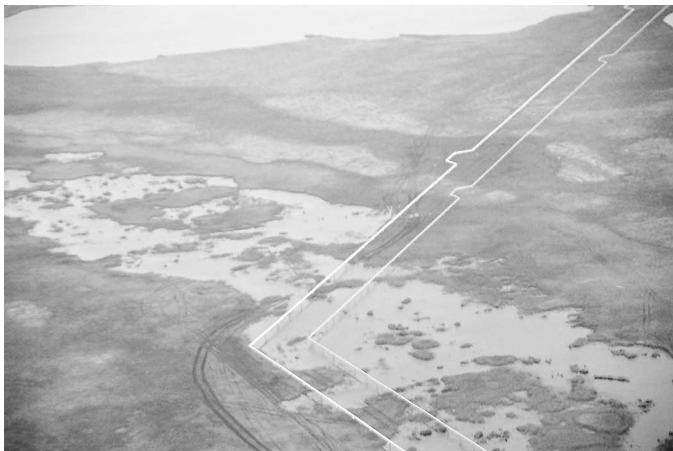
The social impact assessment survey followed the approach elaborated by the ARCOP project, which treated marine transportation of oil not only in terms of icebreakers and ship navigation, but rather as an integrated transportation system of which the interrelations of various individual elements are analyzed.

ANALYSIS OF POTENTIAL INTERACTIONS BETWEEN PLANNED INFRASTRUCTURE AND THE LOCAL COMMUNITIES

The dynamic growth of oil and gas production in the northwestern part of Russia has spurred several transportation projects. At present, there are two possibilities for oil transportation in the Nenets Autonomous Okrug. The first moves oil toward the south via an overland pipeline stretching from Kharyaga to the Komi Autonomous Republic. The second is a marine route to the north via the

Varandey terminal, which is the only sea outlet for crude oil in the NAO. Negotiations for an alternative marine transport route through the proposed Indiga terminal, on Cape Svyatoi Nos in the vicinity of Indiga village, have been taking place in the NAO for several years. These talks, which have progressed and regressed with changes in internal and external policy and in the regional and national situation in general, are now underway again (Vasilevetskiy, 2002).

The Varandey terminal, in operation since 2000, is an integral component of the transportation-technological system for transporting crude oil from the entire Timano-Pechora region. Its capacity is now being expanded. One peculiarity of the Varandey terminal is that it already has a long history (Golovnev, 2000) but is simultaneously in a phase of further planning, construction, and operation. An analysis of the previous and present stages of construction and operation of this terminal provides experts and the public with an opportunity to monitor multiple changes, including implementation by the respective companies of their obligations toward ecological safety and local peoples. The Varandey terminal consists of a coastal oil repository, a service centre building, an underwater



Pipelines cross the tundra in the Varandey coastal area. Photo by Nina Meschtyb, August 2004.

pipeline, and a sea berth. Besides the terminal, the system includes pipelines from the oil deposits to the coastal repository, tankers, icebreakers, and a crude oil reloading base in Kola Bay, from which the crude oil is shipped to Rotterdam (Netherlands). It is planned to keep the Varandey terminal operating for 25 years.

FINDINGS OF THE SOCIAL IMPACT ASSESSMENT SURVEY

Both oil extraction and transportation are important for the future development of the Nenets Autonomous Okrug (Chimbulatov and Firsov, 1997). At present, the revenue from the oil extraction industry makes up the overwhelming majority of NAO revenue. At the same time, the oil industry is a relatively new branch of the economy in a region where reindeer herding, fishing, hunting, gathering, and municipal services still have considerable significance for the economy and culture of the local population. Reindeer herding, for example, is significant not only in terms of employment and food consumption for the rural Nenets and Komi populations, but also for the cultural identity of the indigenous peoples. It is the basis for their traditional ecological knowledge, the core of their beliefs and cultural values. As the primary source for bartering goods and services and constructing relationships among members of the local community, reindeer herding has vital significance for identity cohesion at both family and community levels (Golovnev and Osherenko, 1999; Yuzakov and Mukhachev, 2000). Fishing is no less important and provides a substantial primary or secondary means of survival for many rural inhabitants. In the NAO, some families and villages live mostly on fish, while others are more dependent on reindeer herding and hunting. What is important is the existence of a barter system, which allows local people to use renewable resources in a manner that is both complex and, historically at least, sustainable (Khomich, 1966).



Oil tower in the vicinity of a reindeer herding camp on the Varandey tundra. Photo by Nina Meschtyb, August 2004.

Further development of the oil industry and marine transport will bring changes to the life of local and indigenous people. The balance between its positive and negative impacts will depend on a number of new factors. Significant among these are the ecological safety of oil loading and transportation; the environmental and social policies of the companies involved in the marine oil-transport system; and the attitude and policies of the regional administration.

The field data demonstrate that urban inhabitants expect more positive impact from the oil industry development and oil transportation. The rural population, especially the Nenets, is much more concerned about the future of the natural environment, which may be altered not only by tanker transportation, but also by the coastal facilities, which could affect both water and land resources.

The basic impact caused by vessels navigating the marine environment is most likely the spoiling and disruption of marine flora, organisms, and fish resulting from casual oil spills. Vessels, therefore, might significantly affect private fishing and the local fishing industry (Patin, 1999). To be able to determine future impacts, local inhabitants should be provided with more detailed information about the potential changes in general sea biota, in particular fish diversity and the size of the fish populations, and about what may occur as a result of crude oil transportation.

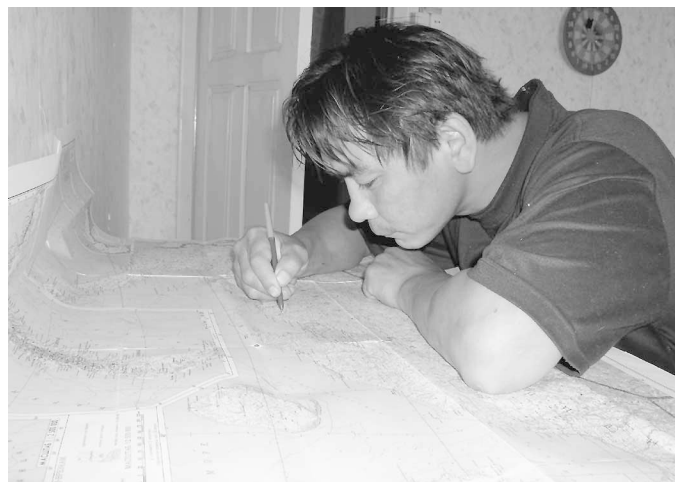
The most perceptible impacts from marine oil transportation are those that Nenets people associate with industrial activity in the coastal area. The area of the coastal terminal is of central interest to many different land users. The largest parcel of the land needed to enlarge the existing terminal and its immediate facilities (88.4 hectares) belongs to the reindeer herding farm "Erv" on the condition of "general tenancy," which essentially means free rental from the state for an unlimited time (Ministerstvo Prirodnikh Resursov, 2003). The project planners are required to take this fact into account. Regional law recognizes this land as "territories of traditional land use" and gives priority to traditional forms of land management in



Petr Khabarov, director of the reindeer herding enterprise "Erv." Photo by Nina Meschtyb.

this territory. This means that all industrial operations should be carried out with the consent of communities of indigenous peoples of the North or their representatives. In the full SIA report (available on the ARCOP website: www.arcop.fi), we provide examples of past and current industrial activities connected with marine transportation of oil in the coastal area. These examples indicate that the withdrawal and biophysical disturbance of the coastal lands could trigger a chain of direct or indirect negative consequences for the families of indigenous peoples.

An important finding of the SIA study was that conflicts between land users can usually be traced to a developer's avoidance of early consultation with the primary land tenants. One example comes from 2002, when the pipeline connecting the Varandey terminal with oil pumping stations and oil deposits terminated access for several families of herders to 20 000 hectares of valuable pasture. Nenets people consider the coastal pastures highly valuable for the reindeer especially during late summer, when animals need to accumulate weight for the coming winter. By the agreement, the oil company took possession of land for pipelines and other facilities. The land that became inaccessible for reindeer was not officially allotted to the company, nor did the company give herders financial compensation for the loss of its use. The company also failed to build gateways for reindeer passage of appropriate size and in the proper places. In response, reindeer herders delayed signing permission for additional lands for further construction and, in turn, the oil company simply appropriated the land and began construction without official permission. These actions entailed a number of further consequences, such as loss of taxes for the regional budget and reduced responsibility of the company for the condition of unofficially allotted land. The conflict between sides could easily ratchet up even further, but then everybody would lose. Yasavey, the Association of the Nenets People, became a mediator between the different parties and initiated a working group to discuss this situation.



Alexandr Viucheisky marks the important campsites in the vicinity of the Varandey terminal. Photo by Nina Meschtyb.

The sharp conflict between Erv, the reindeer farm, and Varandeyneftegaz, the company that in 2001–02 was the most active at the Varandey terminal, became a catalyst for active public discussion in the Nenets Autonomous Okrug. It attracted the attention of other reindeer herding enterprises, oil companies, and public representatives to the issues of indigenous rights and the future development of the oil industry in the area. Since 2001, the Round Table has become an annual forum for this topic. In 2003, Yasavey prepared some amendments that dealt with social assessment for the regional law entitled "About reindeer herding," amendments which the Assembly of Deputies of the Nenets Autonomous District then accepted. Article 17, Item 4 of this law guarantees the right of persons engaged in reindeer herding and their authorized representatives to initiate and perform ecological and ethnologic examination of activities that could infringe on the interests of reindeer herding. Unfortunately, sufficient financing for independent assessment is lacking, so the local stakeholders have not yet been able to accomplish this task. In the NAO, interested parties, both intensive and extensive land users, have come to understand the necessity to seek a balance of their interests, but they are impeded and limited by the lack of information about essential needs and about each other's prospective plans. The SIA helps to raise awareness of project planners, governments, and the international community about the values of the local communities, and it provides feedback between the parties involved.

There is no doubt that development of the oil extraction industry and expansion of sea transport operations can bring benefits as well as disadvantages to the local population. In the Nenets Autonomous Okrug, the main positive impacts are connected with rapidly increasing revenues for the local budget. Other positive changes are also welcomed by the inhabitants of the NAO, but additional measures and social programmes are required to optimize the benefits from the oil transportation (Vanclay, 2003). NAO administration experts envision job opportunities

created by transport and general infrastructure development that will improve the social well-being of local people (ARCOP, 2004). The advantage of the ARCOP project is that all issues have been openly discussed with representatives of the local authorities. In the discussion at Workshop No. 4 (Technology and Environment), we emphasized the importance, when forecasting benefits, of having confidence that the interests of minority groups potentially influenced by negative impacts were being thoroughly considered. The opportunity for employment is an urgent item for the locals, but instead of hiring local people, companies in the NAO generally invite seasonal workers from other regions of Russia, and even from other countries, who have expertise specific to the oil and construction industries. This happens because locals, especially from rural areas, do not have the required skills. To promote the real job opportunities, specially oriented vocational training courses are essential. Transportation connections to isolated settlements are also vitally important in the NAO, but currently the intensification of transportation is mostly connected with construction work at the terminal and doesn't support the needs of the scattered rural inhabitants.

The Arctic Centre SIA report also presents examples of the positive impacts of the oil industry activities in the NAO, with discussion about possibilities to further increase the benefits to all interested parties. Specific attention was paid to the different expectations of urban and rural populations, oil workers, and reindeer herders. For the latter, benefits seem possible, but uncertain and unlikely: in the herders' experience, social and environmental degradation associated with the petroleum industry is the norm. The head of the reindeer-herding brigade from Varandey tundra shared his thoughts:

We should think about our heritage and be concerned about the future, which we don't know yet. We have experienced how political and economic changes are reflected on our life. OK. I can earn money today, buy something, and let my land be destroyed, but what if the internal and external policy of Russia were to be changed tomorrow when the oil price falls? What if all oil workers abandon the oil-site without restoration? We Nenets will remain here anyway but will face our degraded environment. My son and his descendants wouldn't [be able to] feed themselves from nature anymore, nor would they have anything in the outside world. We have to have this in mind. (N. Meschtyb, field notes, August 2004)

One of the most important tasks of the social impact assessment has been to highlight the mitigation measures that should be thoroughly studied in order to minimize any future harm and maximize benefits from planned and ongoing activities. The list of possible mitigation measures that the local inhabitants and reindeer herders discuss is long and quite detailed. Local stakeholders suggest that the measures should not be only for the short term; rather,



Reindeer herder from "Erv" wearing the traditional Nenets belt for men. Photo by Nina Meschtyb.

they should promote long-term effects. The main principles for all measures are these: 1) direct consultation with communities that begins early and is continuous during all stages of planning and industrial activity; 2) strict adherence to the existing environmental laws and regulations; and 3) fulfilment by the companies of their legal obligations toward local communities.

FUTURE PERSPECTIVES

In practice, industrial projects themselves could be affected by the changes in economics and politics at both local and global scales, which may lead to consequences that could hardly be foreseen in detail during a single phase of a given social assessment. A specific SIA should be prepared for each project, with possibilities for further monitoring of the different stages of the project. It is no less important to pay attention to and investigate different vectors of the steadily changing Arctic, which include not only industrial development, but also other aspects of global change. Multidisciplinary analysis could improve our understanding of past consequences and help to predict future impacts. The work started within the ARCOP project will be continuing via the ENSINOR project funded by the Finnish Academy for the period January 2004–December 2007 and coordinated by the Arctic Centre, University of Lapland (Tirronen, 2004). The main goal of ENSINOR is the co-production of scientific and local knowledge about overall changes in the social-ecological systems of oil- and gas-bearing areas during the past 30+ years. We hope to demonstrate a broader and more inclusive research protocol that can be used for future assessments of the overall impact of petroleum exploration and extraction in the Arctic.

CONCLUSIONS

International initiatives can make a positive contribution to the overall effect of industrial development in the Russian Arctic by facilitating more direct discussions with industry representatives and local populations on the requirements for ecological and social safety. The Arctic Operational Platform therefore represents an important mediation task in bringing together the international community of scientists, politicians, and industrial experts in a forum where the values and needs of different stakeholders can be recognized and considered as critical components of the Northern Dimension policy of the European Union. The issues focused on in this article represent an attempt to generate common understanding and empowerment of local communities through increased knowledge and open discussion of their own needs and attitudes. This, in turn, serves to promote greater public accountability among decision makers.

ACKNOWLEDGEMENTS

We wish to acknowledge the members of Yasavey (the association of the indigenous peoples of the Nenets Autonomous Okrug) for their overwhelming support, which has been crucial for successful fieldwork. We were especially pleased to have discussions with Vlad Peskov, the association president, and Alexandr Belugin, its vice-president. We are grateful to the members of the reindeer herding enterprise "Erv" for sharing their time and opinions. Special thanks to the director, Petr Khabarov, who not only provided information but helped with practical matters. We are enormously grateful to Elena Toropova in the village of Indiga and to Alexandr Viucheisky in Krasnoe and Varandey tundra for their great work and interviewing. We would like to express our thanks to Dr. Tuula Tuisku, University of Oulu, and Professor Monica Tennberg, Arctic Centre, University of Lapland, for their valuable advice and criticism.

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- Nina A. Meschtyb is a researcher with the Institute of Ethnology and Anthropology, Russian Academy of Science, Moscow, Russia. Bruce C. Forbes is a professor and researcher with the Arctic Centre, University of Lapland in Rovaniemi, Finland. Paula Kankaanpää is a professor and director of the Arctic Centre, University of Lapland.*

NORTHERN NEWS

Inuvialuit Settlement Region Database Now Available

There is a pressing need for information about north-west Canada's Inuvialuit Settlement Region (ISR). As regulatory work begins on the Mackenzie Gas Project, all levels of government, Inuvialuit organizations, and the private sector must plan for increased development and improved physical and social infrastructure in a region where traditional harvesting must be protected and where the impact of climate warming is expected to be the greatest in Canada.

The Inuvialuit Settlement Region Database, which describes more than 8400 publications and research projects about the ISR, will help to meet this need. The database was created by the Joint Secretariat Inuvialuit Renewable Resource Committees and AINA's Arctic Science and Technology Information System (ASTIS) and is funded by Shell Canada. It is available at www.aina.ucalgary.ca/isr.

The Inuvialuit Settlement Region Database covers all subjects and includes the land and marine portions of the ISR. Publications of all types, especially grey literature, are included. The database's coverage of research projects is based on information from the five territorial and federal agencies that license research in the ISR.

Coverage of publications about the ISR in the Inuvialuit Settlement Region Database is not yet comprehensive. We welcome suggestions about publications that should be added and other improvements that could be made to the database and the website.

Permafrost Glossary Now Available Online

This spring the *Multi-Language Glossary of Permafrost and Related Ground-Ice Terms* became available online. Compiled and edited by AINA Research Associate Robert O. van Everdingen, the full glossary with illustrations and multi-language terms was published in print form in 1998. The English version of the 1998 glossary without illustrations was published on the Circumpolar Active-Layer Permafrost System (CAPS) CD-ROMs, but through the efforts of Dr. van Everdingen, the full, illustrated, multi-language version of the glossary is available at <http://nsidc.org/fgdc/glossary>. The glossary includes terms in Chinese, English, French, German, Icelandic, Italian, Norwegian, Polish, Romanian, Russian, Spanish, and Swedish.

AINA NEWS

2005 Scholarship Winners

Shawn Morrison, a doctoral candidate in the Department of Biological Sciences, University of Alberta, is the 2005 winner of the Jennifer Robinson Scholarship. Shawn's

doctoral research focuses on the foraging ecology and population dynamics of collared pikas (*Ochotona collaris*) in an alpine valley near Kluane Lake in the southwestern Yukon.

Another doctoral student in Biological Sciences at the University of Alberta, Jane Kirk, is the winner of the 2005 Lorraine Allison Scholarship. For her doctoral research, Jane is studying the cycling of mercury in the Arctic environment, particularly the role of open-water areas such as polynyas in the concentration and movement of mercury in the Arctic biosphere.

Grant-in-Aid Program Recipients for 2005

Twenty-one applications for the Grant-in-Aid Awards were submitted this year and sufficient funds were available to fund eight. The committee congratulates the following recipients of this year's competition for awards. Kyle Elliot, University of Manitoba, is studying the foraging behaviour of thick-billed murres in northern Hudson Bay; Alexia Kelley, University of Virginia, is conducting research on buried seeds and succession in Arctic frost-boil ecosystems along a high-latitude temperature gradient; Trevor Lants, University of British Columbia, is investigating climate change, disturbance, and tall shrub dynamics in the Mackenzie Delta; Amber Lincoln, Oxford University, is revisiting a historic collection to look at the shifting meaning of objects across British museums and Inupiaq communities; Shelley Marshall, Simon Fraser University, is investigating the behavioural effects of bear viewing on the time budget of grizzly bears along the Fishing Branch River, Yukon Territory; David Miller, University of Alaska Fairbanks, is developing a simple method for monitoring seasonal patterns of growth in Alaskan eelgrass; Jennifer Turner, McGill University, is researching the adaptive strategies for Inuvialuit communities that are coping with climate change in the Canadian Arctic; and Don Youngblut, Carleton University, is looking at a multi-proxy approach to study paleo-environmental variability and ecosystem response in southwest Yukon.

This concludes the program's 11th year, and we look forward to continuing this very rewarding function of the AINA. All funds awarded over these years represent annual contributions from the membership. All contributions are distributed directly to recipients; none are used for administrative purposes. The Grant-in-Aid committee members—Stephen Braund, Erich Follmann, Peter Johnson, and Matthew Sturm—all volunteer their time to participate in this valuable program.

Proposals for 2006 are due on 1 February. Please refer to the AINA website for information on applications, or contact Dr. Erich H. Follmann, Institute of Arctic Biology, P.O. Box 757000, University of Alaska Fairbanks, Fairbanks, Alaska 99775-7000, U.S.A. Phone: (907) 474-7338; Fax: (907) 474-6967; e-mail: ffehf@uaf.edu.

CONFERENCES

56th AAAS Arctic Science Conference
Session Theme: Consequences of Arctic and Sub-Arctic Environmental Variation: Is the North that Different?
27–29 September 2005, Kodiak, Alaska
Contact: Dr. Scott Smiley
 Phone: (907) 486-1500
 E-mail: Smiley@sfos.uaf.edu

8th World Wilderness Congress
Wilderness, Wildlands, and People – A Partnership for the Planet
30 September–6 October 2005, Anchorage, Alaska
Contact: Janet Sproull, Aldo Leopold Wilderness Research Institute, PO Box 8089, Missoula, Montana 59807, USA
 Phone: (406) 542-4190
 Fax: (406) 542-4196
 E-mail: jspruall@fs.fed.us
 Website: www.leopold.wilderness.net

Traditional Ecological Knowledge: Applying Principles of Sustainability to Inhabited Wilderness Resource Management
8th World Wilderness Congress
3–5 October 2005, Anchorage, Alaska
Contact: Davin Holen, Alaska Department of Fish and Game
 E-mail: davin_holen@fishgame.state.ak.us
 Website: www.8wwc.org/program/gen_program.htm

Human Dimensions of the Arctic System (HARC) Sponsored Session
6th Open Meeting of the Human Dimensions of Global Environmental Change
9–13 October 2005, University of Bonn, Bonn, Germany
Contact: Maribeth Murray
 E-mail: ffmsm@uaf.edu

2nd International Alfred Wegener Symposium
30 October–2 November 2005, Bremerhaven, Germany
 Website: www.alfred-wegener-symposium.de

International Glaciological Society Nordic Branch Meeting
3–5 November 2005, Copenhagen, Denmark
Contact: Andreas Ahlstrom
 For further information, please go to:
 E-mail: aa@oersted.dtu.dk
 Website: server.oersted.dtu.dk/igsnb

The 13th Annual Arctic Conference
4–5 November 2005, Davis, California
Contact: Christyann Darwent: cmdarwent@ucdavis.edu
 Laura Smith: llqsmith@ucdavis.edu

12th Canadian Coastal Conference, Canadian Coastal Science and Engineering Association (CCSEA)
6–9 November 2005, Dartmouth, Nova Scotia
 Website: www.ccc2005-cc12005.ca/welcome_e.html

Arctic Sea Ice Thickness: Past and Present
8–9 November 2005, Copenhagen, Denmark
Contact: Olivia Low
 E-mail: o.low@damtp.cam.ac.uk

38th Annual Chacmool Archaeological Conferences: Tools of the Trade: Methods, Techniques and Innovative Approaches in Archaeology
10–13 November 2005, Calgary, Alberta
 E-mail: Chacmool@ucalgary.ca
 Website: www.arky.ucalgary.ca/arky1/Chacmool2005/index.htm

2nd International Conference on Arctic Research Planning (ICARP II)
10–13 November 2005, Copenhagen, Denmark
 Website: www.icarp.dk

Antarctic Sea Ice in IPY
4 December 2005, Dunedin, New Zealand
Contact: Steve Ackley
 E-mail: sackley@pol.net

International Glaciological Society Symposium on Sea Ice
5–9 December 2005, Dunedin, New Zealand
 Website: www.physics.otago.ac.nz/research/ice/igs/

International Conference on Alpine and Polar Microbiology
27–30 March 2006, Innsbruck, Austria
 Website: www.alpine-polar-microbiology2006.at

International Symposium on Earth and Planetary Ice-Volcano Interactions
International Glaciological Society
19–23 June 2006, Reykjavik, Iceland
 Website: http://www.igsoc.org/

Asian Conference on Permafrost
7–9 August 2006, Lanzhou, China
10–16 August 2006, Field Excursion along the Qinghai-Tibet Railway
Contact: Jerry Brown
 E-mail: jerrybrown@igc.org
 Website: www.casnw.net/permafrost/index.html

Cryospheric Indicators of Global Climate Change
International Glaciological Society
21–25 August 2006, Cambridge, England
 Website: www.igsoc.org/symposia/2006/cambridge/

The View from Here: Cultural History and Ecology of the North Atlantic Region
September 2006, Université Laval, Québec City, Canada
Contact:
 Allison Bain: Allison.Bain@hst.ulaval.ca
 Jim Woollett:
 James.Woollett@hst.ulaval.ca