

SCAR/IASC Open Science Conference 2008

Session Chairs

The Conference is entitled “Polar Research – Arctic and Antarctic Perspectives in the International Polar Year” and will be held in St. Petersburg, Russia July 8th – 11th, 2008. The XXX SCAR web site is now open for abstract submission (current deadline January 15, 2008) and registration at <http://www.scar-iasc-ipy2008.org>. Abstract submission guidelines can be found at: <http://www.scar-iasc-ipy2008.org/site.php?go=89&page=982&lang=ENG>

To take advantage of the less expensive early bird registration fee you must register for the Conference by April 1st, 2008. While there are no funds directly available from the Conference organizers for the costs of attending the Conference, various organizations and national programs are offering travel support and you should refer to the Conference web site or your local sponsors for further information

1.0 STATUS AND CHANGE

1.1 Earth Structure and Geodynamics at the Poles

Chairs: G Leitchenkov (RUS) and D Fuetterer (GER)
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Session Description: The hard-to reach Arctic and Antarctic Polar regions of the Earth have been actively studied during past decades by the international geoscience community. Despite a considerable progress achieved in understanding the tectonic evolution of these regions, many of their major crustal features concealed under the thick Ice Sheet in Antarctica and the heavy sea ice in the Arctic Ocean, as well as geodynamic evolution remain actually unknown or controversial. The session is intended to focus on contribution of Arctic and Antarctic earth science research to resolving fundamental geological problems, such as: (1) Lithosphere/crustal structure and major tectonic terrains/provinces of the Polar Regions; (2) Amalgamation of supercontinents in the Precambrian and Early Paleozoic and Gondwana break-up; (3) Antarctic subglacial environments and geology; (4) Paleogeography and geodynamic history of the Arctic region during the Phanerozoic; (5) Polar gateways and long-term climate changes. The presentations are expected to contain new, high-quality research results contributing significantly to the knowledge of the planetary geodynamic system. The latest information obtained within the IPY 2007-2008 Projects is especially welcomed.

For more detail about the Session please contact German Leitchenkov (german_l@mail.ru or german_leitchenkov@hotmail.com) and Dieter Fuetterer (Dieter.Fuetterer@awi.de or dfuetterer@awi-bremerhaven.)

1.2 Polar Ocean Processes – Status and Change

Chairs: H Loeng (NOR) and S Rintoul (AUS)

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In the session on “Polar Ocean Processes – Status and Change” we invite presentations on all aspects of the physics and biogeochemistry of the polar oceans and their role in the earth system. Topics of particular interest include early results from IPY fieldwork and modelling studies; ice – ocean – atmosphere interaction in the polar regions; circulation and major current systems; transports and budgets of mass, heat, freshwater, carbon and other properties; the contribution of the polar oceans to the global overturning circulation; biogeochemical cycles; and advances in polar observing systems.

1.3 Evolving Coastal, Near shore and Shelf Processes in the Polar Regions

Chairs: G Cherkashov (RUS) and H Lantuit(GER/EC)

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The session provides a forum for discussions of recent developments in the study of physical processes along polar coasts, in the nearshore zone and over polar continental shelves. The session encourages submissions integrating several disciplines over the entire coastal tract, from backshore areas to offshore shelf environments. Special attention will be given to material and energy exchanges at the land-ocean interface and on the shelf driven by nearshore and offshore currents, tides, as well as surface and internal waves. Recent reports on the theory, modelling and observations of erosion, sediment transport and coastal morphodynamics are encouraged, as are presentations of inter-disciplinary research linked to biogeochemistry.

1.4 Shrinking Snow and Ice: Rapid Change in the Polar Regions

Chair: V Kotlyakov (RUS) and R Bindshadler (USA)

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Shrinking snow extent and ice mass are among the most visible and compelling signals of climate change. Less ice is expected in a warmer world, but the details of this change must be precisely anticipated if humans are to manage future change most effectively. Records of past, current and forecast changes of snow, sea ice, glaciers and ice sheets all play a role in improving the glaciological community's capability to inform society and decision makers. This session welcomes contributions to this urgent subject that address the above topics.

1.5 Past, Present and Future Polar Climate Change

Chairs: R Gersonde (GER) and K Goto-Azuma (JPN)

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Session description: The understanding and quantification of northern and southern polar processes in driving and amplifying global climate variability as recorded in paleoclimate (ice, ocean, land) archives and observed by multi-decadal monitoring programs is crucial for the generation of realistic climate models and estimates of future sea level. The session should bring together paleo-/climatologists, paleo-/oceanographers, and modellers to present and discuss the current state of knowledge of

- (a) the complex pathway and timing of climate development at orbital, millennial and submillennial to decadal time-scales,
- (b) its internal amplification and propagation mechanisms (ice, ocean, atmosphere) including bi-polar, circum-Arctic, circum-Antarctic and polar-global linkages,
- (c) effects of external forcing (insolation, solar activity),
- (d) related past sea level and biosphere changes,
- (e) simulations of past and future polar climate and sea level development, and to discuss (e) strategies of upcoming research to augment our knowledge in this field, considering relevant projects initiated for IPYO7/08.

For more details about the session please contact Rainer Gersonde (Rainer.Gersonde@awi.de) and Kumiko Azuma (kumiko@pmg.nipr.ac.jp).

1.6 Meteorological Processes in the Polar Regions

Chairs: K Dethloff (GER) and T Yamanouchi (JPN)

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As co-Chairs of the SCAR/IASC 2008 Open Science Conference (OSC) sub-theme Session 1.6 **Meteorological processes in the polar regions** we encourage you to submit an abstract summarizing your work for consideration as an oral or poster presentation.

Session Description: This session invites contributions to the physical and chemical processes of the polar tropo- and stratosphere on the basis of measurements, numerical studies with regional and global weather forecast models and coupled models of the atmosphere-ocean-sea-ice system. Welcome are papers related to the dynamics and predictability of polar weather systems, atmospheric constituents, physical and chemical processes of the atmosphere, cloud dynamical and microphysical processes as well as aerosol interactions, planetary boundary layer physics and surface energy budget as well as other dynamical studies relevant for the International Polar Year.

The session welcomes papers on:

- 1) Observations and improved use of conventional and of new remote sensing data and their interpretation.
- 2) New developments in model dynamics, physical and chemical parameterizations and numerical methods.

- 3) Verification of model components and operational NWP products against theories and observations, regional and global re-analysis.
- 4) Ensemble forecasts and predictability strategies in ensemble construction, model resolution and forecast range related issues, applications to data assimilation.
- 5) Stable boundary layers in high latitudes over sea ice, coastal areas, and the high terrain of Greenland and Antarctica as a major challenge for weather and climate models.
- 6) Role of the surface energy budget in reductions of Arctic sea ice, the interplay of physical and chemical processes, including aerosols, clouds, radiation, and surface processes at high latitudes.

For more detail about the Session please contact Klaus Dethloff (Klaus.Dethloff@awi.de) or Takashi Yamanouchi (yamanou@pmg.nipr.ac.jp)

1.7 Polar Terrestrial and Freshwater Ecosystems: Status and Change

Chairs: T Callaghan (SWE/UK) and D Bergstrom (AUS)

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1.8 Polar Marine Ecosystems: Status and Change

Chair: M Stoddart (AUS), E Murphy (UK) and I Ahn, (KOR)

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This session will bring together cross-disciplinary research on the status and operation of polar marine ecosystems and the consequences of change.

Polar oceans include some of the most rapidly warming regions of the planet. Climate related changes are already having a profound effect on marine ecosystems, components of which are also commercially exploited. Key challenges for the polar science community include predicting i) how these diverse ecosystems will respond to such changes and ii) the impacts of marine ecosystem change on the Earth System. Addressing these challenges in the polar regions has led to the development of a number of international marine programs including Integrating Climate and Ecosystem Dynamics in the Southern Ocean (ICED), the Census of Antarctic Marine Life (CAML) and Arctic Ocean Diversity (ArcOD). These are currently maximising the opportunities presented by the International Polar Year to develop the coordination and integrated circumpolar analyses necessary for answering major scientific questions. This session is designed to examine the diversity of life in polar oceans and the development of integrated analyses of the marine ecosystems. We encourage presentations that examine links between climate and ecosystems, ecosystems and biogeochemical cycles, and ecosystems and fisheries, particularly with regard to the effects of variability and change.

1.9 Status and Change in Cultural Heritage Sites in Polar regions

Chairs: S Barr (NOR)

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1. Cultural heritage sites across the Antarctic and the Arctic have many common concerns and problems. What is the status today, which changes do we see or can expect in the future, and how may we approach the challenges that the changes are bringing/will bring ?
2. The use of multi-disciplinary studies, including applications of science (chemistry, geochemistry, biochemistry, molecular and microbiology), archaeology, conservation, and history in the understanding of the condition of sites and specifically their deterioration as an important instrument in the development of appropriate management and conservation plans.

1.10 Status and Change in the Polar Regions – General Session

Chair: D Carlson (IPY PO/UK) and H Shin

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This general session is intended to allow people to submit abstracts that they feel do not fit into the designated Sessions concerning status and change in the polar regions, allowing for the Conference to be inclusive and “Open”.

2.0 POLAR/GLOBAL LINKAGES

2.1 Coupled Cryosphere/Ocean/Atmosphere Systems

Chair: D Bromwich (USA) and T Motoi (JPN)

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As co-Chairs of Session 2.1 ‘Coupled Cryosphere/Ocean/Atmosphere Systems’, within the IPY theme ‘POLAR/GLOBAL LINKAGES’, we encourage you to submit an abstract summarizing your work for consideration as an oral or poster presentation.

Session Description: The climates, and thus the cryosphere, of the Arctic and Antarctic are governed by the large scale modes of atmospheric variability such as the Northern and Southern Annular Modes (NAM/SAM), and the El Niño-Southern Oscillation that is manifested in high latitudes by the Pacific-North American and Pacific-South American (PNA/PSA) patterns. The impacts of the Pacific Decadal Oscillation and the Atlantic Multidecadal Oscillation will also be explored. The session will be concerned how these patterns are changing and affecting high latitude climate and cryosphere, how the different modes interact and the mechanisms by which this occurs, the roles of high latitude versus tropical forcing, the roles of the ocean and sea-ice cover in initiating and/or amplifying change, stratospheric versus tropospheric causes of variability and change, and the issue of natural versus anthropogenic forcing. Mass balance of the Greenland and Antarctic ice sheets and their contribution to global sea level in response to climate change

will be explored. Contributions are solicited from all approaches that bear on these topics, such as observational analyses from field data, remote sensing, reanalyses or ice-core records; theoretical studies; and all types of numerical modeling.

For more details about the Session please contact David Bromwich (bromwich.1@osu.edu) or T. Motoi (tmotoi@mri-jma.go.jp)

2.2 Polar/Global Biological Connections

Chairs: R Drent and H Moreano (ECU)

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Although the geography of both Polar Regions is different, the Arctic being an ocean closed by continents connected through narrow passages to the Atlantic and Pacific oceans, while the Antarctic is a continent surrounding by the southern ocean that acts as a natural barrier but distributes water into the major ocean basins. Nonetheless, both regions are examples of extreme environments where marine biodiversity behaves accordingly to extreme weather conditions, sea ice formation, energy sources, shore processes among other factors.

The session on Polar Biological Connections intends to address the issue of Arctic and Antarctic life with a wide variety of themes from authors that are involved in one way or other in the following projects: Census of Marine Life (CoML), Natural Geography in Near Shore Areas (NaGISA), Census of Antarctic Marine Life (CAML) and Chemosynthetic Ecosystems (CheSS).

2.3 The Sun's Interactions with the Earth's Atmosphere and Electromagnetic Environment

Chairs: K. Kauristie (FIN) and A Kadokura (JPN)

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Near-Earth space (geospace) is an integral part of the Earth system which provides the material link between the Sun and Earth primarily through the polar regions. Understanding of the complex geospace environment has matured to the level of being able to describe many of its component parts and a major goal is now to seek a unified framework that can specify its global state. Methods for predicting this state have continuously increasing social value as in extreme conditions geospace variations pose a potential hazard to space-based and ground-based technology. The volume of experimental data in on-line archives has been increasing significantly during recent years. Several countries have made substantial investments for sophisticated instrument networks to cover the both polar areas and to arrange ambitious measurement campaigns. Besides ground-based data several recently launched satellite missions, like Envisat, Cluster, THEMIS, and STEREO provide interesting data for evaluating and testing theoretical work. Our session welcomes presentations demonstrating the usage of these assets especially when addressing linkages between different scale sizes in geospace

phenomena, geospace-atmosphere coupling processes and interhemispheric relationships.

2.4 Human Linkages: The History of Non-indigenous Peoples in Polar Regions - Impacts and Interactions

Chair: D Avango (SWE) and M Bravo (UK)

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The circumpolar north has become increasingly important as a supply area of fossil energy, partly a result of rising world market prices for crude oil, partly because of the possibilities for extraction and transport in the high north that global warming might offer. In the wake of this development, attempts have been made by states to establish exclusive rights to natural resources in the Arctic.

We are calling for papers that will contribute to our understanding of the regimes of resource exploitation in the Polar Regions. The session will in particular aim to explore the tension between the notion of freedom of access to the resources of the polar areas, and the networks of private capital, states, and international political and legal regimes that control and sustain this notion of freedom. This development calls for research efforts on how the actors and networks of industry, science and politics have dealt with resources and territorial rights in the polar areas, in the present and the past.

2.5 Polar/Global Linkages: General Session

Chair: C Summerhayes (SCAR/UK) and V Rachold (IASC/SWE)

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This general session is intended to allow people to submit abstracts addressing the links and interactions between polar regions and the rest of the globe that they feel do not fit into the designated Sessions allowing for the Conference to be inclusive and "Open".

3.0 A SENSE OF DISCOVERY

3.1 Deep Sub-ice Water, Hydrological Systems and Ice sheet Interactions

Chairs: I Alekhina (RUS) and M Kennicutt (US)

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As co-Chairs of this session, we encourage you to submit an abstract summarizing your work for consideration as an oral or poster presentation.

Session Description: The importance and role of deep sub-ice water, hydrological systems and ice sheet interactions are now recognized as central

to many processes that have shaped the Antarctic continent and its ice sheets today and in the past. Subglacial environments include a range of features that differ in geologic setting, age, evolutionary history, limnological conditions, and size. These environments are “natural” earth-bound macrocosms that in some instances trace their origins to a time before the continent became encased in ice. Subglacial environments are isolated from the weather, the seasons, and celestially controlled climatic changes that establish fundamental constraints on the structure and functioning of most other earth-bound environments. In contrast to other habitats, processes in subglacial environments are mediated by the flow of the overlying ice, a glaciological boundary condition, and the flux of heat and possibly fluids from the underlying basin, a tectonic control. Recent findings suggest that a third control is subglacial hydrology, which establishes water residence time and enables the delivery of water, materials, and heat to and through subglacial systems. Water ponded in lakes or spread-out beneath the ice efficiently lubricates motion of the ice but moves little sediment; water in concentrated streams moves more sediment but localizes lubrication. The spectrum of sub-ice environments provides an unparalleled opportunity to explore one of earth’s last frontiers and decipher fundamental earth and life processes. The exploration and study of deep sub-ice water, hydrological systems and ice sheet interactions will advance our understanding of how life, climate, and planetary history have combined to produce the subglacial environments as we know it today.

For more detail about the Session please contact Irina Alekhina (alekhina@omrb.pnpi.spb.ru) or Chuck Kennicutt (m-kennicutt@tamu.edu)

3.2 Frontiers in Polar Biology

Chairs: A Huiskes (NETH), D Gilichinsky (RUS), and S Kang (KOR)

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In the biogeography, biodiversity, and ecophysiology of polar organisms substantive progress has been made over the last few years. Species boundaries were better defined or even redefined. The application of improved techniques (including genetic techniques) allowed a more accurate assessment of biodiversity. Studies on the ecophysiology and behavior of species, allowed a more accurate insight in the response to changing environmental factors. The redefinition of the limits of polar organisms will be the theme of this session.

3.3 Polar Microbes, Genetics, and Molecular Biology

Chairs: T Naganuma (JPN), J Baeseman (USA/EC), and S Lee (KOR)

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Once thought barren of life, polar regions are now known as quite dynamic ecosystems teeming with life, much of it microbial in nature. Our understanding of this living polar world has increased dramatically in recent years due to advances in microbial ecology and molecular techniques. We are beginning to understand the genetic features and evolutionary relationships that help sustain this extreme life through the use of modern molecular tools. Information on the origin and history of life on Earth are currently sought through paleontological studies on relics of biogenic material preserved through geologic time. Survival mechanisms of the organisms exposed to sub-zero conditions or freeze-thaw cycles contribute to our understanding of the resilience of life and contribute to the biotechnology field. This session pulls together studies from various polar environments focusing on microbial diversity, evolution, biogeography (and phylogeography), organismal and molecular responses to environmental changes, biotechnological applications, genomics, metagenomics and proteomics.

For further information, please contact:

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Takeshi Naganuma: takn@hiroshima-u.ac.jp

SangHoon Lee: shlee@kopri.re.kr

3.4 Technological Advances and Polar Exploration

Chair: J Thiede (GER), Y Naito (JPN), and M Park (KOR)

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The polar regions comprise some of the most extreme environments of Planet Earth, both on land and in the seas. They comprise poorly known deep-sea regions both in the South as well as in the North, unknown parts of ocean basins under extensive ice shelves and vast regions of continental crust which have never been sampled because they are buried under thick ice sheets. Technologies, permanently manned as well as robotic monitoring stations, vehicles, airplanes and ships which function safely under the extreme polar conditions have been developed over the past 50 years (since IGY) and are operated today providing personal and environmental safety. Needs for further developments exist in ocean exploration because ships are needed which can operate during the unfavourable seasons of the in the permanently sea ice covered polar ocean basins, dependable unmanned underwater vehicles are being prepared to explore seas and seafloors under an ice cover. New technologies are needed for "sterile" drilling into the subglacial lakes to sample their waters and sediments; mobile robots with sophisticated sensors and small enough to be launched through drill holes in the ice should be developed for a regional exploration of the subglacial lakes and the structures of the lake floors . The interface between the ice sheets and continental crust below has to be penetrated to obtain geological samples requiring new coring technologies. New satellites such as CRYOSAT will carry sensors which will for the first time allow to monitor ice and snow covers in the polar regions of both hemispheres. Scientists and engineers working on new research

technologies for the polar areas are invited to present their plans at the SCAR/IASC Open Science Conference.

3.5 Polar Weather and Climate Forecasting

Chair: M Beland (CAN) and T Yamanouchi (JPN)

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3.6 Frontiers in Polar Scientific Drilling

Chair: K Moran (US) and J Lopez (SPA)

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3.7 A Sense of Discovery – General Session

Chair: C Tweedie (USA/EC) and H Motoyama (JPN)

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This general session is intended to allow people to submit abstracts that they feel do not fit into the designated Sessions of the section ‘A Sense of Discovery’, allowing for the Conference to be inclusive and “Open”.

4.0 THE POLES AS AVANTAGE POINT FOR OBSERVATIONS

4.1 Polar Observing Systems

Chairs: B Goodison (CAN) and K Alverson (GOOS/FRA)

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The need for well-coordinated and sustained Polar Observing Systems that meet scientific and societal needs has been identified in numerous reports and forums. Particularly, the International Polar Year 2007-2008 aims to leave a legacy of observing sites, facilities and systems to support ongoing polar research and monitoring as the basis for observing and forecasting change. There is a strong consensus that the ability to observe and quantify change in the polar regions will serve as a harbinger for monitoring global changes. The high-intensity observing period of the IPY years will provide detailed observations that can, through the integration of observations and advanced numerical models, guide the design of cost-effective, sustainable observing systems for the future.

This session will focus on our polar observing systems - atmosphere, hydrosphere, cryosphere, biosphere, geosphere - marine and terrestrial, using conventional and new technologies from in-situ and remote sensing systems. The session invites presentations on the enhanced systems and networks and the resulting products and information for modelling and process studies, including:

- co-ordinated polar ocean and ice observing; atmospheric observatories and networks supporting polar observing;

- cryospheric observing, such as snow, glaciers, permafrost and geophysical and geodetic observations of ice sheets and sub-ice properties and processes;
- biodiversity monitoring;
- monitoring of contaminants in polar regions and their transport;
- community networks and traditional knowledge information contributing to the status of polar regions and their change;
- new or upgraded space observing systems looking outward through the dry polar atmospheres; and,
- coordinated efforts to provide essential satellite observational products.

The development of environmental products and information from in-situ and satellite data, including their evaluation, validation and use to determine status of the polar regions and their change, are encouraged. Presentations on integrated environmental observing and monitoring, and efforts to develop sustained observing systems in the long term are especially welcome. Coordination, collaboration and communication among the observing activities of government agencies, research communities and local residents/communities will contribute to the development of a robust, lasting and coordinated observing system.

For more detail about the Session please contact Barry Goodison (barrygo@rogers.com; barry.goodison@ec.gc.ca) or Keith Alverson (k.alverson@unesco.org).

4.2 Astronomy and Astrophysics

Chairs: M Candidi (ITA) and J Storey (AUS)

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In preparation of the International Year of Astronomy, declared for 2009 by the United Nations, this session on Antarctic Astronomy is aimed at highlighting the potential of Antarctica as a superior site for observations. The high Antarctic plateau offers conditions that allow unique observations with unprecedented sky quality, and create opportunities for exciting new discoveries. Additionally, the clear ice and the use of circumpolar balloon platforms allow for observations of the universe that are not otherwise possible. Abstracts are invited on the scientific results of on-going research, the assessment of site quality for present and future installations, plans for future observatories, and which underline the contributions that Antarctica can make to astronomical and astrophysical research in general.

4.3 New Ways of Looking at the Polar World

Chair: T Mohr (GER), M Drinkwater, and S Marensii (ARG)

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This session encourages presentations that investigate new remote sensing techniques or methods for analysing or synthesising Earth Observation data from the polar regions.

New approaches for analysing existing datasets, or for combinations of existing data are encouraged, as are presentations on new instruments, and planned or potential future geophysical data products. Scientific results employing airborne- and satellite-borne data, together with their combination with in-situ data for high-latitude atmosphere, ocean, ice, or terrestrial applications are welcomed.

4.4 Earth's Magnetic Field: A View from the Poles

Chair: A. Meloni (ITA) and S Pilipenko (RUS)

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This sub session will be the forum of scientific views, ideas, observations and results about the Earth's magnetic field from the vantage point of polar observations, both Arctic and Antarctic. This is intended for magnetic phenomena generated externally to the Earth, as well as for magnetic phenomena generated in the Earth's interior. All scientific papers that would increase our knowledge on the Earth's magnetic field that are focused on the polar perspective, or that show the importance of the polar perspective, can be presented and scientists working in this area are encouraged to show their results in this session.

4.5 Accessing and Preserving Data as an IPY Legacy

Chair: T de Bruin (NETH) and M Parsons (USA)

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This session is a joint endeavor of the IPY Data Policy and Management Subcommittee and the IPY Data and Information Service (DIS). The IPYDIS is a loose international federation of data repositories, observatories, networks, and data management experts. We solicit contributions from all involved in the data collection and management for the International Polar Year, with a focus on: (i) data acquisition, cataloging, and sharing; (ii) interdisciplinary data discovery; (iii) distributed data access and integration in a global IPY data infrastructure; and (iii) examples of interdisciplinary data applications.

4.6 The Poles as a Vantage Point for Observations

Chairs: E Sarukhanian (WMO/SWZ) and K Jezek (USA)

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This general session is intended to allow people to submit abstracts that they feel do not fit into the designated Sessions of the section 'The Poles as a

Vantage Point for Observations', allowing for the Conference to be inclusive and “Open”.

5.0 PEOPLE AND RESOURCES AT THE POLES

5.1 People and Change

Chair: E Andreeva (RUS)

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Human society faces great challenge: despite very conservative mode of thinking it still find ways to sustainable development. Simultaneously it tries to understand how to enhance adaptive possibilities to those changes in natural processes that impact social systems so sound during last decades. Arctic, as a most dynamic system, under impact of global warming is getting more and more vulnerable, unstable. It causes many changes in human activity, in possibilities of people to continue their traditional style of life. And processes of transformation concern not only local arctic population – indigenous peoples but also big social groups of new-comers that arrived to the northern and arctic regions to explore and exploit non-renewal resources. Sustainable development ideas are very steadily but still getting to work including the industrial companies that have to revise their main strategy of getting profit as not acceptable today. Corporate social responsibility became an important part of current policy in interaction with local communities, with regional and municipal structures. But most of changes are definitely happening with indigenous peoples. They passed through different experiences of national policy in regions, some of them had to change their places of living, they have to come to new kinds of food and it impacts on their health and behavior. The increasing consumption of energy resources in all over the world forces industry to go further to arctic areas and arctic shelf. It will bring so strong changes in patterns of land use in arctic areas, disturbance and maybe disappearance of some ecosystems and biological resources that today is not enough investigated and assessed. What are the main driving forces of social changes in the arctic and what are the reserves of resilience and adaptation? What institutional response should be on these changes, in what spheres arctic countries should work together to mitigate the negative consequences of such changes? It's very important to understand what kind of transformation of social life is towards sustainability and what is against. How federal government or other powerful structures may regulate these processes or changes and transformation of arctic society should be self-managed in such complex region as Arctic is?

For more details about the Session please, contact Elena Andreeva (vniisi@isa.ru) or Chuck Kennicutt (m-kennicutt@tamu.edu)

5.2 Harvesting and Exploitation of Polar Biological Resources

Chair: S Mathiesen (NOR) and M Fukuchi (JPN)

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5.3 Conservation, Tourism, and Visitor Management

Chairs: G Reck (ECU) and DH Walton

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Several thousand scientists and logisticians visit and live in Antarctic stations every year and more than 40000 travel to the area in summer as tourists. Even more visitors travel to the Arctic. Impacts on wildlife and environments are a growing concern to the scientific and conservation community. With low terrestrial biodiversity and very limited areas of snow free land in Antarctica frequent visits may carry elevated risks of introductions of alien species and diseases. Recovery rates from human impacts on the local environment may be extremely low and species which are already under pressure from stressors in the open water have unknown levels of resistance and resilience to further impacts from land based activities. Climate change is almost certainly adding another order of magnitude of risks. Specially Protected Areas or National Parks may be effective ways of protecting particularly important areas or wildlife colonies, but additional controls are essential for subantarctic islands and sensitive Arctic areas. Whereas site guidelines on Antarctic visitor sites are certainly helping to reduce impacts of nature tourism on many of the Antarctic and subantarctic visitor sites, and may have contributed to habituation of some species to visitors, this may not apply to all, and does not take into account new forms of adventure tourism. Also, based on recent experience, it is clear that major risks do not only arise from activities on land as such, but also from supporting marine transport and logistics. Whilst Antarctica does not have native human populations, in the Arctic community-based tourism activities are and will continue to be an important aspect of sustainable tourism operations. During this session we hope to get, amongst other things, initial reports on current initiatives within IPY, progress with management and conservation activities in both polar regions and in the Southern Ocean (including specially protected areas on land and in the sea), control and monitoring of aliens and further information about pathways for introductions, evaluation of the effectiveness of visitor site guidelines, monitoring of impacts of different tourism-related activities on and offshore, and opportunities for strengthening knowledge-based decision taking and management among national authorities and Antarctic Treaty members.

As co-Chairs of this session, we encourage you to submit an abstract summarizing your work for consideration as an oral or poster presentation. For more details about the Session please contact: David Walton (dwhw@bas.ac.uk) and Günter Reck (gunter.reck@gmail.com).

5.4 The Role of Indigenous Knowledge in Modern Polar Science

Chairs: V Gofman (USA) and S Gearheard (CAN?)

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Session Description: Arctic Indigenous Peoples have inhabited the North for millennia. They have sophisticated knowledge systems about the world around them that support their culture, worldview, and the many intricate

skills they need to thrive in the Arctic. Their deep understanding of and intimate relationship with the natural and physical environment present unique vantage points for a holistic understanding of the Arctic. In the last two decades, scientists have begun to recognize this knowledge. Scientists are applying observations by indigenous individuals and groups in their research and many indigenous communities and scientists are collaborating on specific research projects.

Bringing together indigenous and scientific knowledge is not always easy. Basic research challenges include, but are not limited to, **questions of definition of indigenous knowledge, how to segregate indigenous environmental knowledge**, often referred to as TEK (traditional ecological knowledge), and how **to apply statistical analysis and other reporting methods** that would provide **means for comparison and integration with other scientific data**

The depth of indigenous knowledge provides fertile ground for multidisciplinary collaboration. For example the 2007-2008 International Polar Year, the first IPY to bring arctic social science and humanities into its scope, inspired several projects promising to enhance our knowledge of different ways of knowing the Arctic and the possible ways of linking the results.

Abstracts summarizing work, both applied and theoretical research, related to the topics mentioned above are invited for consideration for oral and/or poster presentation.

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5.5 Arctic and Antarctic Archeology

Chair: L.Hacquebord (NETH) and M Murray (CAN)
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Session Description: In recent years archaeological research has moved toward more integrated and interdisciplinary approaches to understanding coupled human/environment interactions in Polar and adjacent subpolar regions. However despite common methodological, logistical and analytical problems until very recently collaboration among researchers in these regions has been limited to project specific interactions. In this session we solicit papers and posters that transcend the typical geographic and or culture-history specific frameworks which have characterized the archaeology of these regions in the past. We seek papers that offer new and innovative approaches for furthering polar archaeological research in areas of method, theory and analyses. Case study examples are welcome as are data oriented papers, and especially those that consider issues of data comparison on regional and circumpolar scales.

This session is sponsored in part by the Polar Archaeology Network (PAN). For more information on PAN and on becoming a member please contact Maribeth S. Murray (ffmsm@uaf.edu) or Hans Peter Blankholm (hansbp@sv.uit.no)

5.6 Polar Bridges: Social Scientists and Natural Scientists Working Together

Chairs: G Hovelsrud (NOR) and I Gan (AUS)
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The IPY 2007-2008 is fundamentally interdisciplinary and new insights will be gained through the collaboration between different scientific disciplines. The need for such collaboration is imperative for understanding the processes of social and ecological / environmental change taking place in the polar regions. In this session we focus on how to bridge the gap between social and natural sciences in an effort to gain a deeper understanding of how environmental and societal processes are linked. Papers discussing 1) concrete examples of how social and natural scientists are working together to understand such linkages, and 2) how to analyse coupled social-ecological systems will be preferred.

5.7 Polar History and Institutionalization of Polar Research: The International Polar Years

Chairs: C Luedecke (GER)
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As Chair of session 5.7 'Polar History and Institutionalization of Polar Research: The International Polar Years', within the IPY theme 5 'PEOPLE AND RESOURCES AT THE POLES,' I encourage you to submit an abstract summarizing your work for consideration as an oral or poster presentation.

Session Description: Polar research has a long tradition starting in the 16th century in the Arctic with the search for a Northwest and Northeast Passage. It turned to Antarctica in the 18th century in connection with the search for the postulated Terra Australis Incognita. Driving forces behind exploration in High Latitudes both North and South were a mixture of economic interests, whaling, individual and national pride of being first regarding new geographical discoveries, various scientific investigations, politics and pure adventure. At the institutional level organizations like the precursor of the World Meteorological Organization and the International Geographical Congress were the first bodies to support a temporal international experiment in the Arctic during the first International Polar Year (1882-1883). Focal points early on were ground-based meteorological and magnetic observations, as well as investigation of the unknown Antarctic continent (1901-1904) respectively. The Belgian attempt, subsequently, to set up an international polar organization in the first decade of the 20th century failed due to a combination of two factors: first of all polar research was not yet institutionalized on a national basis; secondly, the outbreak of World War I

eroded scientific internationalism. The International Society for the Exploration of the Arctic Regions by Means of Aircraft (Aeroarctic, 1924-1937) can be regarded as first international polar organization consisting of national committees and a scientific board with various sub-committees within. Among other aspects the need for comprehensive weather information relating to conditions in the upper air for future air travel triggered the 2nd International Polar Year (1932-1933), which also focussed on the Arctic. World War II interrupted polar research of single countries with the exception of the United States - it organized High Jump, the biggest expedition ever undertaken. Finally, the desire to investigate the High Atmosphere led to the exploration of Antarctica with a network of stations around the continent as already recommended at the turn of the century. The organization of the International Geophysical Year (1957-1958) together with the earlier political negotiations between Argentina, Great Britain and Chile led to the Antarctic Treaty and the foundation of SCAR. Within the historical framework outlined above the main focus of the session will be the scientific, cultural and political background of polar research and the transfer of knowledge and experiences from the Arctic to the Antarctic since the 19th century.

For more detail about the Session please contact Cornelia Lüdecke (C.Luedecke@lrz.uni-muenchen.de)

5.8 People and Resources at the Poles– General Session

Chair: M Borbor-Cordova (ECU/EC)

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The connection between Polar Regions and human societies around the world is increasingly part of our mainstream culture. Scientists, educators and communicators have provided a plethora of polar research information for a broad audience. We are more aware of how the accelerated melting of glaciers in Greenland and the Antarctic Peninsula will result in rising sea levels that will eventually impact the billions of people who live near coastlines, and that Polar Regions have profound significance for the Earth's climate, environments, ecosystems and human society. However, what is behind the science-making what are the thoughts and experiences of the scientists working and people living at the poles? In celebration of the International Polar Year, this session will present an up-close and particular look at the people living in and scientists working and/or visiting extreme polar environments. It will describe the resources and worldwide collaborative efforts towards the development of international agreements, scientific research networks, management partnerships, business projects, media inventiveness, and other initiatives, which are leading to a better understanding of the Arctic and Antarctic systems. There is special interest to explore the ways that technological resources have changed how science has been conducted and further opportunities in the polar research. It also presents education and outreach tools used to raise public awareness of the climate change, human dimensions, and environmental management in the Polar Regions and the new generation of researchers who are preparing for the future. Finally, this is a great opportunity to share science and human-interest stories, to disseminate new ways of expressions, archival imagery,

original writings, and personal records reflecting the aspirations, motivations and experiences that continue to shape Arctic and Antarctic exploration from the 16th century to our days.

Session Description:

This general session is intended to allow people to submit abstracts that they feel do not fit into the designated Sessions of the section 'People and Resources at the Poles', allowing for the Conference to be inclusive and "Open". We encourage you to submit an abstract summarizing your work for consideration as an oral or poster presentation. For more detail about the Session, please contact Mercy Borbor-Cordova (mcordova@ucar.edu).