The International Polar Year 2007-2008, sponsored by the International Council for Science and the World Meteorological Organization, represents one of the most ambitious coordinated international science programmes ever attempted. It will include research and observations in Arctic and Antarctic regions and explore the strong links these regions have with the rest of the globe. The poles are recognized as sensitive barometers of environmental change. Polar science is crucial to understanding our planet and our impact on it. The poles are also exceptional archives of what Earth was like in the past, and offer a unique vantage point for many terrestrial and cosmic phenomena.

The previous International Polar Years of 1882-3, 1932-3, and 1957-8 (also known as the International Geophysical Year), each produced a step increase in our understanding of the Earth system. This IPY will initiate a new era in polar science with a stronger emphasis on interdisciplinary research including physical, biological and social sciences, indigenous communities, and educators. It is a truly international endeavour with over 60 countries participating in more than 200 projects, over 50 of which focus on education and outreach. These include school activities, media events, exhibitions, books, films, art, and presenting research in real time through blogs, podcasts, and geobrowsers.

IPY Science Summary

IPY will exploit new technological and logistical capabilities and strengthen international coordination in research. Its aims are to attract, engage and develop a new generation of researchers and to raise the awareness, interest and understanding of educators, students, the general public and decision makers worldwide. IPY projects will collect a broad-ranging set of samples, data and information, and share that data and information through new access and information tools. It will engage northern communities as full partners in research, analysis, and assessment.

IPY 2007-2008 aims to leave a legacy of enhanced observational systems, facilities and infrastructure, within the frameworks of existing and new long-term international research programmes. This legacy includes ocean observing systems in the Arctic and Southern Oceans, coordinated acquisition of satellite data produces from cooperating space agencies, and enhanced operational and community monitoring systems for astronomy, sun-earth physics, atmospheric chemistry, meteorology, biodiversity, permafrost, glaciers, and geophysics.

The International Polar Year 2007-2008 will be exciting and historic. It will significantly advance our understanding of polar processes and their global implications, enhance the international collaboration of scientists, and communicate the relevance and urgency of global science issues.
STATUS AND CHANGE AT THE POLES

Polar regions are presently changing faster than any other regions of the Earth, with local and global implications for communities, ecosystems, and economies. This change is particularly evident in widespread shrinking of snow and ice, which has immediate local consequences for terrestrial and marine ecosystems, and permafrost degradation which affects local ecology, hydrology and soil stability as well as potentially releasing large quantities of greenhouse gases into the atmosphere.

FRONTIERS AND VANTAGE POINTS

Polar regions present important scientific challenges and offer unique scientific vantage points. The regions beneath polar ice sheets and below ice-covered oceans, for instance, remain largely unknown. Many polar research questions require broadly interdisciplinary collaborations. Examples include permafrost (geography, hydrology, microbiology, meteorology), polar carbon cycles (oceanography, ecology, chemistry, atmospheric transport), and the changing North (climatology, sociology, resource management, economics, and political science.)

POLES AND THE PLANET

Processes in polar regions have profound influence on the global environment, particularly on weather and climate systems. Examples include the large continental ice sheets which impact global sea level. Warming of polar oceans, coupled with changes in ice-coverage and and river run-off, will alter marine ecosystems with consequences for globally-significant fisheries. Changes in snowfall and shrinkage of glaciers will impact millions of people whose daily use of water depends on snowpack and glacial sources. At the same time, the polar environment is impacted by global processes. Examples include pollutants transported from lower latitudes that cause polar ozone holes and contaminate polar ecosystems.

COMMUNITIES IN THE NORTH

The Arctic is home to more than 4 million people. These polar communities face changes in their natural resource and food systems - changes that are, for the most part, of a rapidity and magnitude beyond recent experience or traditional knowledge. Northern people also face unique health challenges related in part to pollutants transported to polar regions, and accelerating pressures of development and commercialism.

For the full scope of IPY science, visit www.ipy.org