

## **“Polar Research – Global Implications”**

A multitude of observations confirm that the Polar Regions are the fastest and perhaps most dramatically changing areas of the planet affecting regional environments and peoples, with far-reaching and significant implications for the rest of the globe. Changes in the Polar Regions manifest themselves on the global scale as major contributions to mean sea-level rise; diverse climate impacts, including the albedo-feedback associated with loss of sea ice and snow; and global carbon uptake and release; to name only a few.

Every Grand Challenge for Global Sustainability identified by the ICSU visioning process has a significant polar dimension. Observing and forecasting of this severe environment is a great challenge but essential for understanding global processes and future sustainability. Confining the adverse change and adapting effectively to its impacts requires effective institutional response supported by science-based innovative solutions.

The long and successful history of international collaboration in polar research makes this community uniquely positioned to be a leader in responding to the ICSU Grand Challenges and to achieve results that are beyond reach of any single nation or discipline. The ICSU- and WMO-sponsored International Polar Year 2007-2008 (IPY) is an example of a large-scale international scientific endeavour, in which cooperation was the foundation for obtaining a great range of scientific results of high societal relevance and value.

A meeting of polar scientists, sponsored by the Scientific Committee on Antarctic Research (SCAR), International Arctic Science Committee (IASC) and the International Association of Cryospheric Sciences (IACS) at the University of Siena, Italy, immediately preceding the 30th ICSU General Assembly, endorsed the continuation of relevant polar activities as a contribution towards the ICSU Grand Challenges and as a legacy of the IPY. The meeting identified lessons to be learnt from the IPY that are relevant to the future of polar research, and essential in order to address the ICSU Grand Challenges:

- developing advanced research based interdisciplinary observational networks and sustaining a monitoring system supplemented with records of past changes;
- ensuring data preservation, exchange, availability and effective use of the capabilities of the ICSU System of World Data Centres;
- focusing on an understanding of processes and the ability to better model the polar environment as the basis for predicting future climate;
- facilitating active and equal engagement of indigenous people;
- Actively engaging and supporting the next generation of scientists in a meaningful way;
- Nurturing and strengthening partnerships with main stakeholders;
- creating opportunities for wider scientific community participation; and
- integrating education and outreach to the wider community as a necessary component of all research projects.

The IPY has created a unique international and interdisciplinary snapshot of the Polar Regions. It engaged a wide community in observations and research that are of paramount importance not only for the Polar Regions, but for the whole planet. It is essential to maintain the momentum of polar activities in the post-IPY era by sustaining IPY legacies and transforming new scientific knowledge into a set of effective long-term actions towards global sustainability. The strengthened partnership made of IPY Sponsors, the leading polar organizations affiliated with ICSU, such as SCAR, IASC, and IACS, and the community of early career scientists united by APECS, will concentrate their efforts on continuing to develop community-based, well-planned, coordinated, long-term observations, research, education and services in the Polar Regions to address the ICSU Grand Challenges regionally and make a significant contribution to achieving them on the global scale.