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POLAR RESEARCH REVEALS NEW EVIDENCE OF GLOBAL ENVIRONMENTAL CHANGE

Geneva, 25 February 2009 (WMO/ICSU) – Multidisciplinary research from the International Polar Year (IPY) 2007-2008 provides new evidence of the widespread effects of global warming in the polar regions. Snow and ice are declining in both polar regions, affecting human livelihoods as well as local plant and animal life in the Arctic, as well as global ocean and atmospheric circulation and sea level. These are but a few findings reported in "State of Polar Research", released today by the World Meteorological Organization (WMO) and the International Council for Science (ICSU). In addition to lending insight into climate change, IPY has aided our understanding of pollutant transport, species' evolution, and storm formation, among many other areas.

The wide-ranging IPY findings result from more than 160 endorsed science projects assembled from researchers in more than 60 countries. Launched in March 2007, the IPY covers a two-year period to March 2009 to allow for observations during the alternate seasons in both polar regions. A joint project of WMO and ICSU, IPY spearheaded efforts to better monitor and understand the Arctic and Antarctic regions, with international funding support of about US$ 1.2 billion over the two-year period.

"The International Polar Year 2007 – 2008 came at a crossroads for the planet's future" said Michel Jarraud, Secretary-General of WMO. "The new evidence resulting from polar research will strengthen the scientific basis on which we build future actions."

Catherine Bréchignac, President of ICSU, adds "the planning for IPY set ambitious goals that have been achieved, and even exceeded, thanks to the tireless efforts, enthusiasm, and imagination of thousands of scientists, working with teachers, artists, and many other collaborators."

IPY has provided a critical boost to polar research during a time in which the global environment is changing faster than ever in human history. It now appears clear that the Greenland and Antarctic ice sheets are losing mass contributing to sea level rise. Warming in the Antarctic is much more widespread than it was thought prior to the IPY, and it now appears that the rate of ice loss from Greenland is increasing.

Researchers also found that in the Arctic, during the summers of 2007 and 2008, the minimum extent of year-round sea ice decreased to its lowest level since satellite records began 30 years ago. IPY expeditions recorded an unprecedented rate of sea-ice drift in the Arctic as well. Due to global warming, the types and extent of vegetation in the Arctic shifted, affecting grazing animals and hunting.

Other evidence for global warming comes from IPY research vessels that have confirmed above-global-average warming in the Southern Ocean. A freshening of the bottom water near Antarctica is consistent with increased ice melt from Antarctica and could affect ocean circulation. Global warming is thus affecting Antarctica in ways not previously identified.

IPY research has also identified large pools of carbon stored as methane in permafrost. Thawing permafrost threatens to destabilize the stored methane -a greenhouse gas- and send it into the atmosphere. Indeed, IPY researchers along the Siberian coast observed substantial emissions of methane from ocean sediments.

In the area of biodiversity, surveys of the Southern Ocean have uncovered a remarkably rich, colourful and complex range of life. Some species appear to be migrating poleward in response to global warming. Other IPY studies reveal interesting evolutionary trends such as many present-day deep-sea octopuses having originated from common ancestor species that still survive in the Southern Ocean.

IPY has also given atmospheric research new insight. Researchers have discovered that North Atlantic storms are major sources of heat and moisture for the polar regions. Understanding these mechanisms will improve forecasts of the path and intensity of storms. Studies of the ozone hole have benefited from IPY research as well, with new connections identified between the ozone concentrations above Antarctica and wind and storm conditions over the Southern Ocean. This information will improve predictions of climate and ozone depletion.

Many Arctic residents, including indigenous communities, participated in IPY's projects. Over 30 of these projects addressed Arctic social and human science issues, including food security, pollution, and other health issues, and will bring new understanding to addressing these pressing challenges. "IPY has been the catalyst for the development and strengthening of community monitoring networks across the North" said David Carlson, Director of the IPY International Programme Office. "These networks stimulate the information flow among communities and back and forth from science to communities."

IPY leaves as its legacy enhanced observational capacity, stronger links across disciplines and communities, and an energized new generation of polar researchers. "The work begun by IPY must continue", said Mr. Jarraud. "Internationally coordinated action related to the polar regions will still be needed in the next decades," he said. Ms Bréchignac concurs: "This IPY has further strengthened the ICSU-WMO relationship on polar research coordination, and we must continue to assist the scientific community in its quest to understand and predict polar change and its global manifestations at this critical time."

The increased threats posed by climate change make polar research a special priority. The "State of Polar Research" document not only describes some of the striking discoveries during IPY, it also recommends priorities for future action to ensure that society is best informed about ongoing polar change and its likely future evolution and global impacts. A major IPY science conference will take place in Oslo in June 2010.

For more information about IPY, including the "State of Polar Research" report: www.ipy.org
For photographs of scientists at work in the Arctic region, on exhibit at the Palais des Nations in Geneva, Switzerland, between 16 February and 23 March 2009, please visit: http://www.wmo.int/artgallery/

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