Global Cryosphere Watch to support needs for weather, climate and water information and services

Geneva, 20 January 2010 (WMO) - The international community is working within the World Meteorological Organization (WMO) towards the establishment of a Global Cryosphere Watch (GCW) to serve societal needs for weather, climate and water and related environmental information and services. At its next quadrennial session in 2011, the World Meteorological Congress – WMO's supreme governing body – is to consider ways and means of developing and implementing a GCW.

The proposal to create a GCW was initiated by Canada as a legacy of the International Polar Year (IPY) 2007-2008 and welcomed by the quadrennial World Meteorological Congress in 2007. The aim is to respond to the need for a sustained, robust end-to-end cryosphere observing and monitoring system, not only for polar regions, but also globally. The IPY was an internationally coordinated multidisciplinary scientific undertaking co-sponsored by the WMO and the International Council for Science (ICSU).

GCW should enhance the capability of the research community and operational services to predict the future state of the cryosphere and provide quality assured global and regional products on the state of cryosphere. It will facilitate assessments of the cryosphere and its components on regional to global scale to support climate change science, decision making and formulation of environmental policy. This capability will be instrumental in generating the scientific knowledge which is used, for example, by the UNEP/WMO Intergovernmental Panel on Climate Change (IPCC) for assessing the observed changes of elements of the cryosphere, globally and regionally, and discussing their potential impacts on societies and countries.

Background

The cryosphere collectively describes elements of the Earth System containing water in its frozen state and includes solid precipitation, snow cover, sea ice, lake and river ice, glaciers, ice caps, ice sheets, permafrost, and seasonally frozen ground. The presence of frozen water in the atmosphere, on land, and on the ocean surface affects energy, moisture, gas and particle fluxes; clouds; precipitation; hydrological conditions; and, atmospheric and oceanic circulation. Elements of the cryosphere also contain important records of past climate, providing benchmarks for interpreting modern climate change.

The cryosphere exists on all latitudes of the Earth and occurs in approximately one hundred countries of the world. While the cryosphere is an integrative element within the climate system and provides one of the most useful indicators of climate change, it is arguably the most under-sampled domain in the climate system.

The contribution of the cryosphere to sea-level rise in a changing climate is a critical issue for society. The cryosphere, being frozen water, is an intrinsic part of the global water cycle, for example, impacting water, weather, energy and agriculture. Accurate determination of precipitation, including the solid component, is essential to understanding the global water cycle. Snow- and glacier-melt are critical sources of water for agricultural, domestic and industrial water supply and hydropower production, and directly contribute to flood and drought hazard

conditions. Lake-, river- and sea-ice directly affect high latitude transportation and ecosystems, including regional and global transportation routes, regional economic development, and the well-being of northern peoples. Other short and long term hazards directly related to the cryosphere include avalanches, glacier lake outburst floods, subsidence due to thawing permafrost, snowstorms, blizzards, icing, coastal erosion, and of course sea-level rise.

The World Meteorological Congress, at its next session in 2011 (16 May-1June), will consider a scoping document on the development and the implementation of a GCW based on widespread consultation with National Meteorological and Hydrological Services and other partners.