

Time to Plug Gaps in the Global Glacier Monitoring Network

Call Comes as UNEP and WGMS Release New Facts and Figures Report on Glaciers and Ice Caps

Geneva/Zurich/Nairobi, 1 September 2008 – Monitoring of glaciers and ice caps in Central Asia, the Tropics and in the Polar Regions needs to be urgently stepped up, scientists and the United Nations said today.

There is mounting evidence that climate change is triggering a shrinking and thinning of many glaciers world-wide which may eventually put at risk water supplies for hundreds of millions of people.

But experts are warning that data gaps exist in some vulnerable parts of the globe undermining the ability to provide precise early warning for countries and populations at risk.

Peter Gilruth, Director of the Division of Early Warning and Assessment (DEWA) of the UN Environment Programme (UNEP) and Wilfried Haeberli, Director of the World Glacier Monitoring Service (WGMS) today urged the international community to act.

“Excellent data stretching back through much of the 20th century exist for large parts of the world including Europe and North America. But the same cannot be said for some strategically important regions of the Tropics, Central Asia and the Polar Regions,” they said.

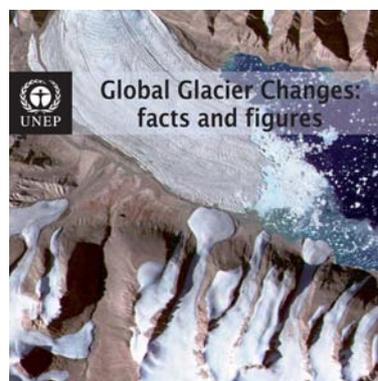
“Given the urgency of climate change and the need for scientifically-based adaptation strategies, it is now essential to re-initiate interrupted long-term series in strategically important regions. It is equally urgent to strengthen the monitoring network in those regions which at the moment have sparse coverage and to include the latest technologies such as high-resolution remote sensing to compliment the traditional field observations,” said Mr Gilruth and Professor Haeberli.

The call was made during the 20th anniversary celebrations of the Intergovernmental Panel on Climate Change (IPCC)—the scientific body established by UNEP and the World Meteorological Organisation to advise governments on global warming.

Here UNEP and the WGMS released the report *Global Glacier Changes: Facts and Figures*. The report presents the latest fluctuations of glaciers and ice caps and underlines the overall trend of glaciers’ retreat.

Indeed the report confirms that the average annual melting rate of glaciers appears to have doubled after the turn of the millennium, with record losses posted in 2006 for a key network of reference sites.

If the trend continues and governments fail to agree on deep and decisive emission reductions at the crucial UN climate convention meeting in Copenhagen in 2009, it is possible that glaciers may completely disappear from many mountain ranges in the 21st century.



Background

Glaciers are recognised as impressive elements of the landscape – however, in particular they are a critical component of the earth's system and the current accelerated melting and retreat of glaciers have severe impacts on the environment and human well-being, including vegetation patterns, economic livelihoods, natural hazards, and the water and energy supply.

By looking at glaciers or what is left of them, future generations will be able to discern clearly which climate scenario is being played out at the present time. The consequences of ice disappearance for landscape characteristics in high mountain areas will be felt at local to regional scales, while the changes in the water cycle will also affect continental-scale water supply and global-scale sea levels.

Glacier monitoring-- The internationally coordinated collection of information about glaciers began in 1894 and the efforts towards the compilation of a world glacier inventory have resulted in unprecedented data sets. For the second half of the 20th century, preliminary estimates of the global distribution of glaciers and ice caps covering some 685 000 km² are available, including detailed information on about 100 000 glaciers, and digital outlines for about 62 000 glaciers.

The database on glacier fluctuations includes 36 240 length change observations from 1803 glaciers as far back as the late 19th century, as well as about 3 400 annual mass balance measurements from 226 glaciers covering the past six decades.

In 2006, a new record annual mass loss was measured on the reference glaciers under long-term observation. The average annual melting rate of mountain glaciers appears to have doubled after the turn of the millennium, in comparison with the already accelerated melting rates observed in the two decades before.

The previous record loss in the year 1998 has already been exceeded three times, i.e., in the years 2003, 2004 and 2006, with the losses in 2004 and 2006 being almost twice as high as the previous 1998 record loss.

Early measurements indicate strong ice losses as early as the 1940s and 1950s, followed by a moderate ice loss between 1966 and 1985, and accelerating ice losses until present.

The global average annual mass loss of more than half a metre during the decade of 1996 to 2005 represents twice the ice loss of the previous decade (1986–95) and over four times the rate of the decade from 1976 to 1985. Prominent periods of regional mass gains are found in the Alps in the late 1970s and early 1980s and in coastal Scandinavia and New Zealand in the 1990s.

Glaciers and climate--The overall shrinking of glaciers and ice caps since their maximum extents during the Little Ice Age is well correlated with the increase in global mean air temperature of about 0.75 °C since the mid 19th century, which is most likely human-induced for the most part, at least since the second half of the 20th century (IPCC 2007). On a scale of decades, glaciers in various regions have shown intermittent re-advances, possibly in response to precipitation changes (IPCC 2007).

Under current *IPCC climate scenarios*, the ongoing trend of worldwide and rapid, if not accelerating, glacier shrinkage on the century time scale is most likely to be of a non-periodic nature, and may lead to the de-glaciation of large parts of many mountain ranges this century.

New efforts needed--The rapid environmental changes highlighted in the new report released today require that the international glacier monitoring efforts make use of the swiftly developing new technologies, such as remote sensing and geo-informatics, and relate them to the more traditional field observations, in order to better face the monitoring challenges of the 21st century.

Notes to Editors

The full report including pictures and other resources can be found at <http://www.grid.unep.org/glaciers>

The publication was prepared in a joint project of the United Nations Environment Programme (UNEP) and the World Glacier Monitoring Service (WGMS). It was reviewed by scientists from around the world with expertise in the research and monitoring of glaciers and ice caps.

World Glacier Monitoring Service (WGMS): <http://www.wgms.ch>

WGMS compiles, analyses, and publishes standardised information on the distribution and ongoing changes in the world's glaciers and ice caps. WGMS works under the auspices of ICSU (FAGS), IUGG (IACS), UNEP, UNESCO, and WMO and maintains a collaborative network of local investigators and national correspondents in all countries involved in glacier monitoring.

The latest WGMS figures can be accessed at: <http://www.wgms.ch/mbb/mbb9/sum06.html> and <http://www.wgms.ch/dataexp.html>

United Nations Environment Programme: <http://www.unep.org> and UNEP/DEWA/GRID-Europe: <http://www.grid.unep.ch/>

GRID-Europe is one of UNEP's major centres for data and information management, with a unique, "value-adding" mandate in the handling of global and regional environmental data, which in turn support the environment assessment and early warning activities of UNEP and its partners.

The potential impacts of climate change on glaciers were outlined in the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (UNEP and the World Meteorological Organisation) published in 2007.

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