

Most glaciers will disappear by middle of century and add to rising sea levels, expert warns

- Melt rates for 2007 fall but still third worst on record
- Threat to livelihoods of 2bn dependent on rivers

Juliette Jowitt, environment editor
The Guardian, Monday 19 January 2009

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Most of the planet's glaciers are melting so fast that they will disappear by the middle of the century, a leading expert has warned. Figures from the World Glacier Monitoring Service show that although melt rates for 2007 fell substantially from record levels the previous year, the loss of ice was still the third worst on record.

The total mass left in the glaciers is now thought to be at the lowest level for "thousands of years".

Even under moderate predictions of global warming, the small glaciers, which make up the majority by number, will not recover, said Prof Wilfried Haeberli, the organisation's director.

The warning will raise concern among those who say that glacier melting is one of the greatest threats of [climate change](#) because it raises the risk of sudden avalanches of rocks and soil released from the ice, threatening the livelihoods of more than 2 billion people who depend on melt-water to feed rivers in summer. Glacier melting will also add to rising global sea levels.

"If the climate is not really cooling dramatically, they'll retreat and disintegrate," said Haeberli. "This means many will simply be lost in the next decades - 10, 20, 30, 40 years.

"If you have a realistic, mid-warming scenario, then there's no hope for the small glaciers - in the Pyrenees, in Africa, in the Andes or Rocky mountains. The large glaciers in Alaska and the Himalayas will take longer, but even those very large glaciers will change completely; they will be much, much smaller, and many of them will disintegrate, forming lakes in many cases."

The WGMS, whose backers include UN agencies and scientific bodies, collects annual data for up to 100 glaciers around the world, including 30 "reference" glaciers in nine different mountain ranges on four continents, for which data goes back nearly three decades.

Figures for 2005-06 showed the biggest loss of ice in a single year since those records began, and based on historic reconstructions, it was thought to be the worst year for 5,000 years.

The latest data for 2006-07 shows that 22 of the 27 reference glaciers for which data has been supplied lost mass, as did 55 of a longer list of 74 glaciers. The total losses were half that of the previous year, but still the third largest on record. In Europe it is thought glaciers have lost one quarter of their mass in the last eight years alone, said Haeberli.

Although the mass balance of glaciers would fluctuate with natural changes in temperatures and snowfall, climate scientists believe the sustained losses of recent decades are partly due to man-made global warming, with the 10 hottest years on record coming in the last 11 years.

"The general trend to increased loss rates is continuing," Haeberli said. "The year was a little bit less terrible than [the previous] year ... but still a very heavy loss. It's still two times the average loss rate of the 20th century."

Although the data only covers some of the world's glaciers, its figures are mirrored by reports from experts from around the globe.

Two years ago the UN's Intergovernmental Panel on Climate Change forecast that if current trends continue, 80% of Himalayan glaciers will be gone in 30 years, although more recent estimates have suggested the 2060s or later.

Last year the UN environment programme and the WGMS jointly published data for 1,800 glaciers on all seven continents, which warned losses had been accelerating globally since the mid-1980s, so that the annual average decline for 1996-2005 was double that of the previous decade, and four times that of the decade before. Last week China Dialogue, a London-based organisation dedicated to debate on China's environment issues, launched a campaign to highlight the same trends in melting in the Himalayas and on the Tibetan plateau.

Those glaciers feed all the main river systems in Asia, depended on by the estimated 40% of the world's population that lives in northern India, Bhutan, Nepal, Pakistan, Bangladesh, China, Cambodia, Thailand and Vietnam, said Isabel Hilton, China Dialogue's editor.

"In a region that is already fractured and unstable, the melting of the 'third pole' glaciers is one of the most important challenges facing humanity in the 21st century," she said.

In December the US Geological Survey also warned that sea-level rise could be even worse than feared, as much as 1.5 metres by the end of this century, partly due to increased melting of the volume of water stored in glaciers in Antarctica and Greenland.

Nick Nuttall, a spokesman for UNEP, said the latest findings should encourage more governments to follow moves by some politicians to invest billions of dollars in clean energy and efficiency as a way of curbing greenhouse gases.

He urged world leaders to agree a treaty to cut emissions. Water experts have also called for more investment in better water management.

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