

Climate change impacts on glaciers around the world

Mount Kilimanjaro – one example

The ice cap of Mount Kilimanjaro is disappearing rapidly due to melting snow and ice and is expected to disappear entirely within ten to 20 years. In February 2001 American geologist, professor Lonnie Thompson of Ohio State University's Byrd Polar Research Center, made public his findings based on more than 20 years research.

Thompson found that since 1912, when for the first time 12 square kilometres of snow, ice and glaciers were mapped out on the slopes of Mount Kilimanjaro, more than 80 per cent of the ice caps' volume has disappeared. Research shows that since 1989, 33 per cent of the ice mass has vanished. According to recent estimates the remaining ice cap of approximately 2 square kilometres will have melted in 10-20 years. A unique and vital African panorama will have disappeared forever.

Mount Kilimanjaro is located practically on the equator in Tanzania. With an altitude of 5,895 meters, it is the highest mountain in Africa. "Kilima" is Swahili for "mountain" and "Njaro" means "shining", a name that reflects the characteristic white ice cap that, when illuminated by the sun, is visible from great distances and neighboring countries like Kenya. Within some 20 years, Kilimanjaro's name is likely to be a reminder of the shining snowcap it once wore, rather than a description of the mountain itself.

Unfortunately Kilimanjaro's fate is not unique. Globally, the effects of climate change are being felt in a variety of ways and scientists predict more regular, and more intense impacts. Climate change presents a threat to most natural systems. Those natural systems threatened include glaciers, coral reefs, mangroves, arctic ecosystems, alpine ecosystems, prairie wetlands, native grasslands, and biodiversity "hotspots". Climate change will increase existing risks of species extinction and biodiversity loss in ecosystems at every latitude and in each region. This is not only impacting nature – it has devastating implications for human lives as well.

What causes climate change

Climate change is directly linked to our fossil energy consumption. Global warming of the earth is the result of increasing greenhouse gas emissions. The principal cause is carbon dioxide (CO₂), which is released when fossil fuels such as coal, oil and gas are burned.

In 2001 a revised report was issued by the Intergovernmental Panel on Climate Change (IPCC), a body under the United Nations made up of more than 2500 scientists from around the globe. The IPCC found new and stronger evidence that most of the observed warming of the past 50 years is attributable to human activities, and that about three quarters of the

anthropogenic (human created) emissions of CO₂ during the past 20 years are due to fossil fuel burning.

The IPCC also reported that the average global temperature was projected to rise to between 1.4 and 5.8 degrees Celsius in the next 100 years. This is a large increase on the projections in their previous report, made in 1995, which estimated the increase in temperature to be between 1 and 3.5 degrees. A 2-degree increase would produce substantial damage to or loss of many natural ecosystems, lead to a spread of diseases such as malaria and cause substantial damage to agriculture in developing countries.

Glacial impacts globally

Throughout the entire world glaciers are disappearing through global warming, not only in the tropics but also in parts of the world with a milder climate. Below follow some examples of recent research and predictions.

Mount Kenya:

The Lewis glacier, the largest of Mount Kenya has shrunk 40% since 1963.

Himalayas:

Ice drillings in the 2km wide Dasuopu glacier near Xixabangma-peak in Tibet show that the last ten years of the 20th century have been the warmest of the past ten thousand years. Despite a severe winter, the Dokriani Barnak glacier in India shrank 20 meters in 1998, and the Gangorti Glacier retreated some 30 meters. Scientists predict that at this pace all glaciers in the central and east Himalayas will have disappeared by 2035.

Andes (Peru):

The Quelccaya ice cap with a diameter of 154 meters has shrunk 20% since 1963.

Spanish Pyrenees

Half of the glaciers that existed in 1980 have disappeared.

Austrian Alps

A mummy from the Stone Age (Otzi) could be found after a glacier melted in the Oetztal Alps. This attests to the fact that glacier ice is disappearing more rapidly now than in the past 5,000 years.

Alaska (Unites States)

The Bering glacier is 5,170 square kilometers. It is the largest glacier in North America and is 800 meters thick in some places. In the last century, the estuary of this glacier has become 130 square kilometers smaller. Arial photos show that the Bering glacier has become 130 meters thinner in the last 50 years.

For further information see also:

www.geo.unizh.ch/wgms: summary of the status of world glaciers

www.earthobservatory.nasa.gov: NASA-images from glaciers

www.climatehotmap.org: effects of climate change

www.greenpeace.org IPCC report