THE DEATH OF ICE GIANTS

As part of its international Choose Positive Energy tour, Greenpeace has taken its flagship, Rainbow Warrior, to Svalbard in the Arctic Circle to document how climate change is affecting glaciers. Glacier scientist and IPCC contributor, Professor Jon Ove Hagen, from the University of Oslo, joined the expedition.

The results were sadly as predicted. Glaciers in this spectacular Arctic region are showing an overall retreat due to higher temperatures. This fits the pattern of mountain glaciers around the world. It is disturbing news. In the International Year of the Mountain, evidence shows that glaciers are on the wane and we risk losing them altogether if we don't massively reduce greenhouse emissions.

Glaciers are one of the myriad of physical systems and ecosystems under threat from climate change. Over the past 60 to 100 years, glaciers worldwide have been retreating as global average temperatures increase. Scientific studies predict continued glacial retreat and even disappearance if global average temperatures continue to climb.

United Nations scientists put the blame on human activity for this temperature increase. Our addiction to fossil fuels releases millions of tonnes of greenhouse gases into the atmosphere, and this is what is causing temperatures to rise.

Svalbard glaciers are just one example. Svalbard's name means "the land with the cold coasts" and about two thirds of the landmass is covered in glaciers. It is a sad irony that temperature increases mean that the glaciers of "the land with cold coasts" are retreating.

Records from Svalbard show warming from early last century (about 1910) and field measurements of ice caps since 1950 show glaciers have thinned and retreated. It's not surprising when Svalbard ice cores give evidence that 1900s were by far the warmest century during the past 800 years. Scientists have documented the retreat and loss of ice mass of almost all low-lying glaciers in western Spitzbergen – the main island of Svalbard. Norwegian and international research has demonstrated that many of these glaciers are retreating, most likely as a result of human-induced climate changes.

The glaciers in the Kongsfjorden area, where Greenpeace undertook documentation during this voyage, began an almost continuous retreat around 1900. Blomstrandbreen (LINK TO PHOTOS*) has retreated around 2 kilometres in the last 80 years. Since 1960, the average retreat of the glaciers' front has been about 35 metres per year, and even higher in the last decade.

The glaciel complex Kongsbreen consists of three parts of "Kronebreen" (north, mid and south) plus Conwaybreen in the north and Kongsvegen in the south.

Kongsbreen has showed significant retreat over the last 50-80 years as response to climate change, with up to 150 metres a year average the last 20 years on the southern part, called Kongsvegen. This glacier part covers 110 sq km.

On every inhabited continent, glaciers are showing the damage from a hotter climate. Greenpeace's documentation project is designed to let people see the changes that have

happened over time around the world, which clearly shows that climate change is real and happening, and that nature responds to it.

In the USA, Grinnell Glacier, in Montana's Glacier National Park is less than half the size it was in 1850, when Grinnell covered 2.33 square kilometres. By 1993 it was only 1.11 square kilometres. From 1850 to 1920, Grinnell lost an average of 6m a year. Between 1920 and 1946, the average retreat increased to 15 metres a year, and it had lost 51% of its 1850 area. Between 1946 and 1979, the retreat slowed to four metres per year, but the glacier reduced in area another 41% from the 1946 total. Its volume has decreased at even faster rates over the same time.

Africa's Orubare Glacier on Uganda's Mount Rwenzori is disappearing and breaking apart into smaller glacial pieces. In 1987's "Glaciers of Africa", the scientific judgement stated, "There has been substantial and virtually continuous wastage of the glacier ice for more than 100 years". As scientists revisit the surveys and maps produced by their earlier counterparts, they find that the glaciers are breaking into smaller patches with less total area. For instance, our 1906 photograph shows one large glacier on Mount Rwenzori. A compilation drawn up in 1984 indicates four smaller glaciers on that face.

The Franz Josef glacier in New Zealand is called Ka Roimato in Maori meaning "Frozen Tears" after a legend of doomed lovers Hinehukatere and Tawe. This is a very dynamic glacier and since 1860, when scientific observations began, it has retreated 1500 metres. However, within that span it has advanced four or five times. The most recent advance, a very strong thrust lasting from 1983 to 1999, has now been reversed and a retreating phase has once again taken hold.

In Europe the famous glaciers of the Alps are also faring just as badly. The impressive Pasterze Glacier lies in the Hohe Tauern mountain range of the Alps, along the northeastern slope of Austria's tallest mountain, Grossglockner, and flows into the Moell River. The 9 kilometre-long Pasterze is currently losing 5 metres in height and 20 metres in length every year.

In Peru the Qori Kalis glacier is disappearing at an accelerating rate: between 1998 and 2001 it retreated an average of 155 metres per year--three times faster than average annual retreat from 1995 to1998 but an alarming 32 times faster than the average annual retreat from 1963 to 1978.

More than 2 billion people depend on the steady glacier-fed flow of the rivers fed from the Himalaya mountains. "Glaciers in the Himalayas are receding faster than in any other part of the world," according to Syed Iqbal Hasnain from the International Commission for Snow and Ice (ICSI) and the School of Environmental Studies of India's Jawaharlal Nehru University in New Delhi . "If the present rate continues, the likelihood of them disappearing by the year 2035 is very high." The Imja Glacier on the southern slope of Island Peak, Imja Tse, in the Himalayan Khumbu Range of Eastern Nepal, just southeast of Mount Everest, is one example. It is currently retreating at the rate of nearly 10 metres per year.

Greenpeace's glacier website and journey to Svalbard has been timed for the lead up to the Johannesburg Earth Summit later this month. Greenpeace has gone to the ends of the earth – literally - to remind governments at the Earth Summit of what is at stake if they don't act now to protect the environment. Climate change is hurting the whole world, not just the Arctic, and energy is a crucial development issue. They must get it right now.

Greenpeace is campaigning for governments to make a commitment at the Johannesburg Earth Summit to provide clean and affordable renewable energy to the two billion people around the world who currently live without electricity and is demanding governments ensure that 10% of all electricity supply by 2010 is provided from green, renewable sources.

The Svalbard expedition is part of Greenpeace's Choose Positive Energy tour campaigning against nuclear and fossil fuel energy on the northern leg of the Choose Positive Energy Tour. The Greenpeace ship, the Arctic Sunrise is presently on the southern leg of the Choose Positive Energy tour, campaigning in the South China Sea against coal fired power stations and in support of clean renewable energy such as wind, solar and modern biomass.

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