

## Who Will Climate Change Hurt First?

Climate change will impact many facets of life including ecosystem health, human health and the economy. The United Nations Framework Convention on Climate Change (UNFCCC) has recognized that the greatest impact of climate change will be on those with the least capacity to deal with the changes, including poor and indigenous peoples.

The denizens of the Arctic (Inuit peoples, the animals, fish, plants, in short all manner of life) act as the canary in the coal mine for the rest of the planet. It is here that we see some of the first, most obvious damage caused by climate change. It is here that we should listen to the lessons that are being taught.

*"My God, my God, why have you forsaken me? Why are you so far from helping me, from the words of my groaning? O my God, I cry by day, but you do not answer; and by night but find no rest." Psalm 22: 1-2*

### A Few of Those Already Affected.....

#### Ice Cap Melt



"The earth is the LORD's and all that is in it, the world, and those who live in it; for he has founded it on the seas, and established it on the rivers." Psalm 24:1-2

**Polar bears** - Polar bears do the bulk of their hunting in the winter and spring, living off built up fat during the summer months until the late-November freeze up. Polar bears can swim long distances, but they need ice on which to rest and from which to hunt. With summer coming much sooner (10 to 14 days on average)\* and lasting longer because of global warming, bears are starving. With less

ice every year we now have evidence of polar bears drowning. This picture of a skinny male polar bear was taken along the Beaufort Sea coastline of Alaska in September of 2007.

"Our generation has the ability to write a death sentence for the polar bear, or to take action to assure that the species survives," says Deborah Williams in an article in the Anchorage daily news. ([http://www.adn.com/news/alaska/wildlife/bears/polar\\_bears/story/9286663p-9200531c.html](http://www.adn.com/news/alaska/wildlife/bears/polar_bears/story/9286663p-9200531c.html))

\*This year (2007) was much worse. The bears were forced off the ice and into their summer fast almost four weeks earlier than normal.

For more information go to <http://abcnews.go.com/Video/playerIndex?id=2648927> or [http://video.on.nytimes.com/index.jsp?fr\\_story=aa9ac8c8b71dbc3e2c455b7e6d51020c29c0cd8e&rf=fr\\_std](http://video.on.nytimes.com/index.jsp?fr_story=aa9ac8c8b71dbc3e2c455b7e6d51020c29c0cd8e&rf=fr_std)

## Permafrost Melt & Ice Melt



**Shishmaref\*** is beset by a trifecta of climate change woes: permafrost melt, ice melt, and erosion by rising seas. The ice that once protected the barrier island on which Shishmaref sits is largely gone, and the seas are eroding the soil beneath the permafrost at a rate of 10 or more feet per year depending on storm damage. The people of Shishmaref are some of the first that must relocate their entire village because of climate change. But, they are not only losing their home, their way of life is in danger as well. Their senior citizens are having difficulty dealing with warm temperatures; the stories their elders teach about ice and hunting and fishing no longer apply; new words are being added to their language (they had neither word nor need of one for sunburn until now); their whole culture is built on ice, and the ice is leaving.

*\* Editor's note: While investigating Shishmaref for these web pages I was intrigued to learn that these people are my **Lutheran brothers and sisters**. There is only one church located in Shishmaref, Shishmaref Lutheran Church (ELCA).*

The Shishmaref story - [http://news.sky.com/skynews/video/videoplayer/0,,31200-alaska\\_p19677,00.html](http://news.sky.com/skynews/video/videoplayer/0,,31200-alaska_p19677,00.html)

Meet the people of Shishmaref - <http://shishmarefrelocation.com/index.html>



## Glacier Melt and Glacial Lake Outburst Flooding –



*"A new command I give you: Love one another. As I have loved you, so you must love one another."*  
Jn. 13:34



In 1986, at the roof of the world in Nepal, a hanging glacier lost its hold and crashed into a glacial lake at Nare Glacier causing a tidal wave that broke through the moraine. It sent 8 million tons of water crashing down the mountain in a 5-story high wall that took out a hydroelectric plant, bridges, trees and much else in its path. Fortunately, only 5 people lost their lives. Imja Tso (shown at left), the glacial lake below Island Peak, lies in the same basin as the area hit by the 1986 outburst flood. It currently contains 5 times as much water as the Nare Glacier lake and is growing at a rate of 5% per year. It is listed by the UN as one of 20 such lakes that hold the greatest danger of draining catastrophically. If it does so it will drain in as little as half a day. The people seen in the above photos live in its path.

## What We in Gulf Coast Can Expect

Visit [http://www.bestsyndication.com/Articles/2006/Nicole-WILSON/WhatsNew/03/032306-global\\_warming\\_raise\\_sea\\_level\\_20\\_feet.htm](http://www.bestsyndication.com/Articles/2006/Nicole-WILSON/WhatsNew/03/032306-global_warming_raise_sea_level_20_feet.htm) for more information.



## Predicted Impacts of Climate Change on Growth and Development<sup>1</sup>

| Temp rise (°C) | Water  | Food   | Health   | Land   | Environment  | Abrupt and Large-Scale Impacts   |
|----------------|--|--|--|--|--|--|
| 1°C            | Small glaciers in the Andes disappear completely, threatening water supplies for 50 million people   | Modest increases in cereal yields in temperate regions   | At least 300,000 people each year die from climate-related diseases (predominantly diarrhoea, malaria, and malnutrition)<br>Reduction in winter mortality in higher latitudes (Northern Europe, USA) | Permafrost thawing damages buildings and roads in parts of Canada and Russia   | At least 10% of land species facing extinction (according to one estimate)<br>80% bleaching of coral reefs, including Great Barrier Reef   | Atlantic Thermohaline Circulation starts to weaken   |
| 2°C            | Potentially 20 - 30% decrease in water availability in some vulnerable regions, e.g. Southern Africa and Mediterranean   | Sharp declines in crop yield in tropical regions (5 - 10% in Africa)   | 40 – 60 million more people exposed to malaria in Africa   | Up to 10 million more people affected by coastal flooding each year  | 15 – 40% of species facing extinction (according to one estimate)<br>High risk of extinction of Arctic species, including polar bear and caribou   | Potential for Greenland ice sheet to begin melting irreversibly, accelerating sea level rise and committing world to an eventual 7 m sea level rise  |
| 3°C            | In Southern Europe, serious droughts occur once every 10 years<br>1 - 4 billion more people suffer water shortages, while 1 – 5 billion gain water, which may increase flood risk  | 150 - 550 additional millions at risk of hunger (if carbon fertilisation weak)<br>Agricultural yields in higher latitudes likely to peak | 1 – 3 million more people die from malnutrition (if carbon fertilisation weak)   | 1 – 170 million more people affected by coastal flooding each year   | 20 – 50% of species facing extinction (according to one estimate), including 25 – 60% mammals, 30 – 40% birds and 15 – 70% butterflies in South Africa<br>Onset of Amazon forest collapse (some models only) | Rising risk of abrupt changes to atmospheric circulations, e.g. the monsoon<br>Rising risk of collapse of West Antarctic Ice Sheet<br>Rising risk of collapse of Atlantic Thermohaline Circulation |
| 4°C            | Potentially 30 - 50% decrease in water availability in Southern Africa and Mediterranean   | Agricultural yields decline by 15 – 35% in Africa, and entire regions out of production (e.g. parts of Australia)                        | Up to 80 million more people exposed to malaria in Africa  | 7 – 300 million more people affected by coastal flooding each year   | Loss of around half Arctic tundra<br>Around half of all the world's nature reserves cannot fulfill objectives  |  |
| 5°C            | Possible disappearance of large glaciers in Himalayas, affecting one-quarter of China's population and hundreds of millions in India   | Continued increase in ocean acidity seriously disrupting marine ecosystems and possibly fish stocks                                      |  | Sea level rise threatens small islands, low-lying coastal areas (Florida) and major world cities such as New York, London, and Tokyo |  |  |
| More than 5°C  | The latest science suggests that the Earth's average temperature will rise by even more than 5 or 6°C if emissions continue to grow and positive feedbacks amplify the warming effect of greenhouse gases (e.g. release of carbon dioxide from soils or methane from permafrost). This level of global temperature rise would be equivalent to the amount of warming that occurred between the last age and today – and is likely to lead to major disruption and large-scale movement of population. Such "socially contingent" effects could be catastrophic, but are currently very hard to capture with current models as temperatures would be so far outside human experience. |  |  |  |  |  |

<sup>1</sup> Stern Review: The Economics of Climate Change. Part II, pg 56