

World 'warmest for 12,000 years'

BBC News, Tuesday, 26 September 2006

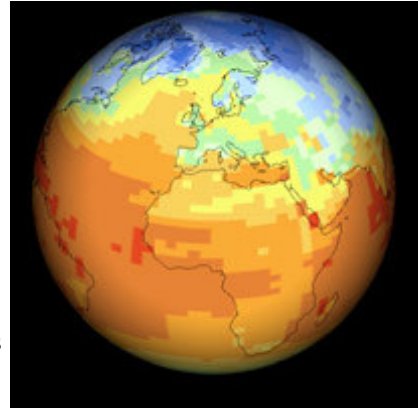
The world is the warmest it has been in the last 12,000 years as a result of rapid warming over the past 30 years, a study has suggested.

Nasa climatologists said the Earth had warmed by about 0.2C (0.4F) in each of the last three decades.

Pollution from human activity was pushing the world towards dangerous levels of climate change, they warned.

As a result, plant and animal species were struggling to migrate fast enough to cooler regions, they said.

"The evidence implies that we are getting close to dangerous levels of human-made pollution," warned James Hansen, head of Nasa's Goddard Institute for Space Studies, New York.



Earth has warmed by 0.6C (1F) over the past 30 years, research shows

Ice melt

The study by researchers from Nasa, Columbia University and the University of California at Santa Barbara (UCSB), showed that warming was greatest at high latitudes of the Northern Hemisphere, and was more pronounced over land than the oceans.

The reason behind the rise in temperatures in this region was a result of a loss in snow and ice cover, the researchers said.

As the Earth warmed, melting snow and ice exposed dark land surfaces which absorbed more energy from the Sun, resulting in more warming - a process known as "positive feedback". Warming was less over the ocean than over the land because of the great heat capacity of the deep-mixing ocean, which causes warming to occur more slowly there.

Simon Tett, a scientist at the UK's Hadley Centre for Climate Prediction and Research, said the findings supported Dr Hansen's earlier predictions, which had been criticised in some quarters. "The results of this study show that James Hansen's predictions of the late '80s are consistent with what has happened," Dr Tett said.

"Modelling has moved on since then, but the idea that early predictions were done to cause panic and were wrong has been proved to be not the case."

Ocean data

The study also showed that the recent warming had brought temperatures within about 1C (2F) of the estimated maximum of the past one million years.

The Nasa researchers, alongside a team from UCSB, made the comparison by looking at past tropical ocean surface temperatures.

They did this through measurements of magnesium content in the shells of microscopic sea surface animals found in ocean sediment.

This study showed that the Western Equatorial region of the Pacific Ocean and the Indian Ocean was as warm, if not warmer, since the end of the last major ice age, approximately 12,000 years ago. The researchers said this findings was important because these ocean areas were indicative of global temperature shifts.

Keith Briffa, from the University of East Anglia's Climatic Research Unit, said the tropical ocean regions were among the more reliable areas from which to infer large-scale temperature changes. "If you were looking for somewhere that was indicative of global average temperatures then you would go for the tropical oceans because modern studies based on instrumental records show that these are places that seem to represent relatively accurately global temperature variations over the last century."

But Professor Briffa said using data such as magnesium content in shells, otherwise known as "proxy data", over long periods raised a number of potential problems.

"The assumptions that we base our interpretations on are more likely to hold up when applied to data since the last ice age, or the last few millennia. The further back you go though, the more likely it is that the story is more complicated and the uncertainties in our interpretations of proxy data are likely to be much greater," Professor Briffa added.

"One of the big problems we have is that when you are looking at hundreds of thousands of years or longer timescales, we have no direct data to calibrate the proxy records rigorously."

Extinction fears

The team warned that the rate animal and plant migration was not keeping pace with recent temperature rises.

"That means that further global warming of 1C defines a critical level," Dr Hansen said. "If warming is kept to less than that, effects of global warming may be relatively manageable. But if [it] reaches two or three degrees, we will likely see changes that make Earth a different planet to the one we know," he added.

"If we do not slow down the rate of global warming, many species are likely to become extinct. In effect, we are pushing them off the planet."