

Ancient DNA reveals Greenland's warm past

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by Ryan Smith

Edmonton - A team of international researchers has collected the oldest samples of DNA ever recovered and used them to show Greenland was much warmer during the last Ice Age than previously believed.

The ancient DNA was discovered at the bottom of a two-kilometer-thick ice sheet and comes from the trees, plants and insects of a boreal forest estimated to be between 450,000 and 800,000 years old. Previously, the youngest evidence of a boreal forest in Greenland was from 2.4 million years ago.

The results findings appear today in the journal *Science*.

"These findings allow us to make a more accurate environmental reconstruction of the time period from which these samples were taken, and what we've learned is that this part of the world was significantly warmer than most people thought," said Martin Sharp, a University of Alberta glaciologist and co-author of the paper.

Eske Willerslev, a biologist at the University of Copenhagen in Denmark, led the project. Sharp and PhD student Joel Barker contributed to the research by providing DNA samples from the ice of much younger glaciers (3,000 years old) on Ellesmere Island in the Canadian Arctic. This DNA served as a control sample for the international researchers who worked to estimate the age of the Greenland DNA samples.

The Greenland DNA suggests temperatures in the southern Greenland boreal forests 450,000 to 900,000 years ago ranged between 10 C in summer and -17 C in winter, much warmer than current temperatures. Also, the reduced glacier cover in that region means the global ocean was probably between one and two metres higher during that time than it is today.

Sharp, who has supported the idea that current global warming is the result of human activity, believes the new research offers evidence that climate warming on the current scale is possible through natural conditions.

However, he cautions that this research does not prove that ongoing global warming is not human induced.

"It could mean that our current warming is the result of both natural processes and human influences, and we may be heading for even bigger temperature increases than we previously thought," Sharp said.



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