

Has the mystery of the Antarctic ice sheet been solved?

February 28 2008

A team of scientists from Cardiff University's School of Earth and Ocean Sciences and Amgueddfa Cymru - National Museum Wales travelled to Africa to find new evidence of climate change which helps explain some of the mystery surrounding the appearance of the Antarctic ice sheet.

Ice sheet formation in the Antarctic is one of the most important climatic shifts in Earth's history. However, previous temperature records show no evidence of the oceans cooling at this time, but instead suggest they actually warmed, presenting a confusing picture of the climate system which has long been a mystery in palaeoclimatology.

Now Dr Carrie Lear, Lecturer in Palaeoceanography, and her team at Cardiff have presented new temperature records using ancient sea floor mud recovered from Tanzania, East Africa. The shell chemistry of pin-head sized animals called foraminifera ("forams") reveal that ocean temperatures did in fact cool by about 2.50C.

Dr Lear said: "Forams are great tools for studying climates of the past, which helps us learn about the uncertainties of our future greenhouse climate. These new records help resolve a long-standing puzzle regarding the extent of ice-sheet growth versus global cooling, and bring climate proxy records into line with climate model simulations.

"We have been able to use the chemistry of the Tanzanian microfossils to construct records of temperature and ice volume over the interval of

the big climate switch. These new records show that the world's oceans did cool during the growth of an ice sheet, and that the volume of ice would have fitted onto Antarctica; so now the computer models of climate and the past climate data match up.”

The team at Cardiff University's School of Earth, Ocean and Planetary Sciences will now look for evidence of the ultimate cause of the global cooling using the forams. They believe the prime suspect is a gradual reduction of CO₂ in the atmosphere, combined with a 'trigger' time when Earth's orbit around the sun made Antarctic summers cold enough for ice to remain frozen all year round.

Source: Cardiff University

Citation: Has the mystery of the Antarctic ice sheet been solved? (2008, February 28) retrieved 6 May 2024 from <https://phys.org/news/2008-02-mystery-antarctic-ice-sheet.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.