

New findings on why Antarctic ice sheets melt

January 17 2011

Research from Victoria University has revealed new findings on why Antarctic ice sheets have melted in the past, as well as how future melting may affect sea levels.

Victoria researcher Dr. Andrew Mackintosh is the lead author of the research published today in the prestigious journal *Nature Geoscience*. Victoria researchers Dr. Nick Golledge and Dr. Dan Zwartz also contributed.

"Our research looked at how ice sheets behave, in particular the East [Antarctic ice sheet](#). The retreat of this ice sheet at the end of the last [glacial period](#) has previously been attributed to both sea level rise and ocean warming," says Dr. Mackintosh.

"We found that although the initial stage of retreat may have been forced by [sea level](#) rise, the majority of the ice loss resulted from ocean warming. Increasing ocean warmth seems to be the main driver of ice sheet retreat.

"This means that we should be particularly concerned about the present-day warming of the oceans around the Antarctic periphery. Our findings suggest that a substantial contribution from melting ice sheets to global [sea level rise](#) in the near future is very likely.

"As a caveat though, we also show that the response of an ice sheet margin can vary significantly between locations, depending on the

geometry of the land beneath the ice. This makes it challenging to predict the actual response of the ice sheet without detailed computer modelling."

Dr. Mackintosh says that researchers study past records of ice sheet behavior to help understand current change.

"It's very difficult to tell what might happen with modern observations such as satellite imagery because they cover a very short period of time, so we look at past information, asking questions such as 'What caused the retreat of ice sheets thousands of years ago?'.

In particular, we use computer models, which are tested against geological data, to help answer these questions."

Dr. Mackintosh leads a glacier modelling group in the Antarctic Research Center at Victoria University and he says that this paper represents the most significant publication of the group to date.

More information: Paper online: [www.nature.com/ngeo/journal/va ...
nt/abs/ngeo1061.html](http://www.nature.com/ngeo/journal/va.../nt/abs/ngeo1061.html)

Provided by Victoria University

Citation: New findings on why Antarctic ice sheets melt (2011, January 17) retrieved 20 March 2024 from <https://phys.org/news/2011-01-antarctic-ice-sheets.html>

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