



Cambridge Society for the Application of Research

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Ocean forcing of ice sheet change in West Antarctica

Dr Adrian Jenkins
British Antarctic Survey, Natural Environment Research Council,
Cambridge

7.30 p.m., **MONDAY 7TH** February, 2011
THE MØLLER CENTRE, Storey's Way, Cambridge

Please note that the **FIRST THREE** CSAR lectures of Lent Term will take place in the **MØLLER CENTRE**. This is at the **far end** of **Churchill Road** (which runs alongside Churchill College, off Storey's Way) Also, the **first lecture of 2011** will take place on **MONDAY 7TH FEBRUARY**, not the following evening as stated in the CSAR Year Card See <http://www.mollercentre.co.uk/location/index.html> for a map and directions.

About this lecture:

Dr Jenkins writes:

"The part of the West Antarctic Ice Sheet that drains into the Amundsen Sea is currently thinning at such a rate that it contributes nearly 10% of the observed rise in global mean sea level. Acceleration of the outlet glaciers means that the sea level contribution has grown over the past decades, while the likely future contribution remains a key unknown. The synchronous response of several independent glaciers, coupled with the observation that thinning is most rapid at their downstream ends, where the ice goes afloat, is generally taken as an indicator that the changes are being forced by the ocean. On Pine Island Glacier (PIG), in particular, the signatures of acceleration, thinning and inland retreat of the grounding line, where the ice goes afloat, have been almost monotonic in the admittedly short and patchy observational record. Understanding the causes of these changes and their relationship to climate variability is imperative if we are to make quantitative estimates of sea level into the future. Observations made since the mid-1990s on the Amundsen Sea continental shelf have revealed that the deep troughs, carved by previous glacial advances, are flooded by almost unmodified Circumpolar Deep Water (CDW) with temperatures around 3-4°C above the freezing point, and that this water mass drives rapid melting of the floating ice. This talk summarises the results of recent work, including both observations made by an Autonomous Underwater Vehicle beneath the floating tongue of PIG and numerical modelling of ocean circulation in the Amundsen Sea. The results give us important insight into the processes that could cause variability of CDW inflows and how the impact of such variability on PIG would have been influenced by the seabed topography beneath the floating glacier tongue."

About the speaker:

Adrian Jenkins is a Science Programme Coordinator at the British Antarctic Survey (BAS) with 25 years of experience in the study of interactions between Antarctic ice shelves and



the Southern Ocean. His undergraduate studies were in Physics at the University of Durham and his postgraduate career began with a Masters in Geophysics and Planetary Physics from the University of Newcastle-upon-Tyne. He joined BAS in 1985 and spent the following three austral summers engaged in fieldwork on Ronne Ice Shelf. This work formed the basis of a thesis for which he received his PhD in 1992. He has subsequently participated in nine further research expeditions to observe the ice shelves and oceans of West Antarctica, culminating in a joint programme with the

US in 2009 as part of which he led the deployment of an Autonomous Underwater Vehicle beneath the 60 km long floating tongue of Pine Island Glacier.

The Organising Secretary adds....

Everything about Antarctica is different; a friend of mine was a pilot there for five years (and won the coveted Fuchs Medal for his services). Some of his tales were hair-raising. I think the Antarctic is the nearest thing we have to being on another planet.

See <http://uk.reuters.com/article/idUKLNE50603P20090107> for more background, or simply Google "Adrian Jenkins + submarine".

Churchill College is refurbishing the Wolfson Lecture Theatre (again), but the conference office has kindly provided us with alternative accommodation at the nearby Møller Centre, located at the **far end of Churchill Road**. There is ample parking, and an excellent lecture hall. Coffee will also be provided as usual, from 7pm.

Please watch our website for any last-minute changes

Best Regards

Richard Freeman

Organising Secretary

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