

MEDIA RELEASE

NEWS FROM THE UNIVERSITY OF TASMANIA

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ATTENTION: Chiefs of Staff, News Directors



Improved sea-level forecasts to flow from glacier movement study

New research involving the University of Tasmania has shed light on how glaciers are responding to climate change, allowing scientists to more accurately forecast sea-level rise.

In 2012, the Greenland Ice Sheet experienced unprecedented rates of melt due to an exceptionally warm summer. However, researchers have discovered that the fast summer flow resulting from the large volumes of melt was cancelled out by slower motion the following winter. This is because the large channels formed by the meltwater helped to lower the water pressure under the ice thereby slowing it down.

The implication of these findings is that ice motion in the sections of the ice sheet that terminate on land are insensitive to surface melt rates. These results improve our understanding of the behaviour of the Greenland Ice Sheet and reduce the error in estimating its likely contribution to sea-level rise in a warming world.

Scientists gathered detailed GPS ice flow data and ice surface melt rates along a 115 km transect in west Greenland and compared ice motion between an average melt year, 2009, with the exceptionally high 2012 melt year.

“If there’s one thing that ice hates, it’s temperatures above zero degrees,” co-author Professor Matt King, an Australian Research Council Future Fellow and Professor of Polar Geodesy with the University of Tasmania’s School of Geography and Environmental Studies said.

“As the climate warms, there’s no doubt that Greenland’s surface will melt more and raise sea levels. But some of that melt finds its way through the ice and gets into the bed where it acts like a wet floor – lubricating it and making it so much easier for the ice to slide faster into the oceans.

“It’s been suggested that may result in even more sea level rise. However the results of our field study suggest it’s going to be a minor player in the future,” Prof King said.

“The IPCC recently assessed the importance of increased lubrication as being unlikely to make a significant contribution to future sea level change, but they

could only do it with medium confidence. Our research suggests they got it absolutely right, and will increase confidence that the things that matter to Greenland are the warming oceans and atmosphere.”

The study, carried out in collaboration with the Universities of Edinburgh, Sheffield, Aberdeen and Newcastle in the UK, is published in *Proceedings of the National Academy of Sciences* today.

View the full paper:

<http://www.pnas.org/content/early/2013/11/12/1315843110.full.pdf+html>

Public lecture:

Professor King will deliver an Australian Institute of Physics public lecture entitled What Goes Up Must Come Down at the UTAS Sandy Bay campus next Tuesday (26 November). In this lecture he will examine the role of glacial isostatic adjustment in understanding Antarctica's contribution to sea level. Venue is Physics Lecture Theatre 3, 5-6pm.

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