



The spatial and temporal evolution of the thinning of Pine Island Glacier 1995 – 2006.

D.J. Wingham (1), D.W. Wallis (1), and A. Shepherd (2)

(1) University College London, London, United Kingdom, (2) University of Edinburgh, Geosciences, Edinburgh, United Kingdom (andrew.shepherd@ed.ac.uk)

We have derived the acceleration in elevation change over Pine Island Glacier drainage basin from ERS-2 and Envisat radar altimetry. Each time-series is individually cross calibrated between the two satellites to produce continuous time-series from 1995 to 2006. The region of lightly grounded ice above the grounding line is extending upstream. The thinning rate in the largest tributary to Pine Island Glacier increased 17 times between 1995 and 2006. Thinning is now contributing to a mass loss equivalent to a $\sim 16\%$ imbalance. Accelerated thinning is spatially correlated with InSAR ice flow velocity measurements in the main trunk and in the tributaries to the South of the main trunk of the glacier. If the acceleration continues at its present rate, which is of course uncertain, the main trunk of PIG will be afloat within 200 years.