



Sensitivity of the Antarctic ice sheet to evolving bed topography

Edward Gasson (1), Guy Paxman (2), Rob DeConto (3), Yige Zhang (4), Stewart Jamieson (2), and David Pollard (5)

(1) School of Geographical Sciences, University of Bristol, Bristol, United Kingdom (egw.gasson@gmail.com), (2) Department of Geography, Durham University, Durham, United Kingdom, (3) Department of Geosciences, University of Massachusetts, Amherst, USA, (4) Department of Oceanography, Texas A&M University, College Station, USA, (5) Earth and Environmental Systems Institute, Penn State University, USA

When a continental sized ice sheet first formed on Antarctica across the Eocene-Oligocene boundary the bed topography was significantly different to the modern day bed. As the bed evolved due to the effects of glacial erosion, sedimentation, subsidence and tectonics, it is hypothesised that the ice sheet sensitivity to climate forcing also changed. This hypothesis has been tested in a number of recent ice sheet modelling studies, but these efforts have been limited by the use of idealised bed topography estimates. Here we explore the ice sheet sensitivity to evolving bed topography using a recently produced suite of palaeotopographies for the Eocene-Oligocene and Oligocene-Miocene transitions, the mid-Miocene climatic optimum, and the late Miocene to early Pliocene. Although we present results for all of these intervals, we are particularly interested in whether bed topography played a role in Antarctic ice sheet stabilisation following the mid-Miocene climatic optimum and the final descent into the icehouse.