



Re-evaluating high-latitude warming in the Pliocene Nordic Seas

Daniel Hill, Yvonne Smith, and Aisling Dolan

University of Leeds, School of Earth and Environment, Leeds, United Kingdom (eardjh@leeds.ac.uk)

The Pliocene warm period was generally been seen as stable warm climate with global temperatures of 2-3K above pre-industrial and significant polar amplification. Northern Hemisphere ice has been reconstructed to be restricted to the high altitude areas of Greenland and global reconstructions of sea surface temperatures show an especially strong warming in the Nordic Seas, most often attributed to increased ocean heat transport in the North Atlantic Ocean.

Here we present climate model results that show that the strongest warming recorded in the Nordic Seas and Arctic is forced by changes in orbital forcing and palaeogeographic changes. Of particular importance is the presence of a sub-aerial landmass in the Barents Sea region, which has subsequently been eroded by Pleistocene glaciation. While climate models can produce strong warming signals in the Nordic Seas, a new iceberg modelling study showing that through much of the Pliocene the conditions in the Nordic Seas were suitable for the presence of significant quantities of icebergs. The locations of IRD records also raises the possibility of significant glaciations in places previously considered to be ice free in the Pliocene.