



Ocean Temperature Change in the Amundsen Sea: An Organic Biomarker Approach

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The West Antarctic Ice Sheet (WAIS) is one of the largest potential sources of future sea-level rise. For the last 40 years glaciers flowing into the Amundsen Sea have thinned at an accelerating rate resulting in greater destabilisation of the WAIS. These changes may be driven by warming in the Amundsen Sea, however, data extending beyond the last few decades is lacking largely due to difficulties in recovering and calibrating temperature proxies in polar waters. This project uses a multiproxy approach to reconstruct palaeo ocean properties through time, including changes in temperature and biological productivity. Here we present down-core biomarker characterisations to consider changes in sea ice, phytoplankton productivity, and terrestrial (ice sheet) inputs. We analyse glycerol dialkyl glycerol tetraethers (GDGT) and apply TEX86(L) index for reconstruction of palaeo ocean temperature. Our new data show that GDGT relative abundance has varied significantly during the past c.13kyrs in accordance with the deglaciation. However, the recovery of the target lipids in the Amundsen Sea is complex and we discuss the implications this has for reconstructing palaeo-ocean temperature in this environment.