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Neogene sea surface temperature reconstructions from the Southern McMurdo Sound and the McMurdo Ice Shelf (ANDRILL Program, Antarctica)

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During the austral summers 2006 and 2007 the ANtarctic DRILLing Program (ANDRILL) drilled two cores, each recovering more than 1000m of sediment from below the McMurdo Ice-Shelf (MIS, AND-1B), and sea-ice in Southern McMurdo Sound (SMS, AND-2A), respectively, revealing new information about Neogene Antarctic cryosphere evolution. Core AND-1B was drilled in a more distal location than core AND-2A. With the aim of obtaining important information for the understanding of the history of Antarctic climate and environment during selected interval of the Neogene, we applied novel organic geochemistry proxies such as TEX86 (Tetra Ether IndeX of lipids with 86 carbon atoms) using a new calibration equation specifically developed for polar areas and based on 116 surface sediment samples collected from polar oceans (Kim et al., subm.), and BIT (Branched and Isoprenoid Tetraether), to derive absolute (sea surface) temperature values and to evaluate the relative contribution of soil organic matter versus marine organic matter, respectively. We will present the state-of-the-art of the methodology applied, discussing its advantages and limitations, and the results so far obtained from the analysis of 60 samples from core AND-2A covering the Miocene Climatic Optimum (and the Mid-late Miocene transition) and of 20 pilot samples from core AND-1B covering the late Pliocene.