



## **Southern Hemisphere Precession forcing of Subantarctic Atlantic Temperatures in a warmer climate**

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The Mid-Pliocene is the most recent time in Earth's history when mean global temperatures were substantially warmer than today for a sustained period of time, and thus represents an accessible scenario for testing climate sensitivity in a future warmer world. High resolution paleotemperature reconstructions of this period and the subsequent transition to colder climate conditions are hence essential for assessing hypotheses and validation of climate models. However, no quantitative continuous paleotemperature estimates have previously been available from the Southern Ocean, a key region in the regulation of global climate. Here we report the first high resolution reconstruction of Subantarctic Plio-Pleistocene sea surface temperatures, which provides new insights on high southern latitude evolution over the last 3,650,000 years. We show that contrary to the established view of the late Pleistocene glacial cycles, changes in the precession component of high southern latitude temperatures were paced by Southern Hemisphere (SH) insolation forcing during the late Pliocene and early Pleistocene. These findings imply that Antarctic climate dynamics may have been more sensitive to changes in local SH insolation forcing during intervals of warmer climate than previously thought.