

Evidence for diminished Ross Ice Shelf and West Antarctic Ice Sheet during the Last Interglacial at the Allan Hills, Antarctica

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The Last Interglacial or Marine Isotope Stage (MIS) 5e (129–116 ka) was Earth’s most recent warm interval, with sea levels comparable to the present. MIS 5e provides examples of Earth System behavior during climates warmer than today, which may be relevant to future warming. However, the contributors to rising sea levels during this period, such as the timing and loss of the West Antarctic Ice Sheet (WAIS), remain poorly constrained. Here we present a high-resolution record of dust composition from an ice core from Allan Hills, Antarctica spanning the transition from MIS 6 through 5e. Geochemical data show that the dust is locally derived and contains young volcanic material sourced from the West Antarctic Rift System and Transantarctic Mountains. The unique dust composition and Earth System model simulations suggest reorganized atmospheric circulation consistent with an open Ross Sea and/or diminished WAIS as early as 134 ka, which is significantly before the start of the Last Interglacial at 129 ka.