

The SWAIS 2C Project - Sensitivity of the West Antarctic Ice Sheet in a Warmer World

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Antarctic ice sheet dynamics remain the largest uncertainty in projections of future sea level rise. The SWAIS 2C Project is a new international effort that aims to understand past and current drivers and thresholds of WAIS dynamics to improve projections of the rate and size of ice sheet changes under a range of elevated greenhouse gas levels in the atmosphere and associated average global temperature scenarios to and beyond the 2°C target of the Paris Climate Agreement. A primary goal of SWAIS 2C is to acquire geological records of WAIS extent from past intervals of warmth including Quaternary super-interglacials. Previous drilling by the Deep-Sea Drilling Project (DSDP), Ocean Drilling Program (ODP), and recent International Ocean Discovery Program (IODP), MeBO, and ANDRILL recovered stratigraphic records of past ice sheet behaviour across the mid to outer continental shelf. Similarly, the response of WAIS to past warmer-than-present climates has been inferred from far-field globally-integrated records of sea level and ocean $\delta^{18}O$. We will utilize new drilling technology to obtain a sedimentary history of past ice sheet dynamics at two locations (Kamb Ice Stream and Crary Ice Rise) along the Siple Coast in the West Antarctic interior. Geological records from this location have proven difficult to obtain but are critical to better constrain marine ice sheet sensitivity to past and future increases in global mean temperature up to 2°C.