

## IODP Expedition 318 Wilkes Land Glacial History-Overview

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The Antarctic Ice Sheet plays a key role in global sea level, Earth's albedo, and oceanographic and biotic evolution. Sedimentary successions on the Antarctic continental margin are a direct record of Antarctic ice volume fluctuations and allow the resolution of inconsistencies between records of eustatic sea-level changes, oxygen isotope ratios in deep water foraminifera, and Antarctic glacial history inferred from onshore evidence. IODP Expedition 318 (January-March, 2010) was planned to reveal the Wilkes Land glacial history. The continental margin of the Wilkes Land is a key area of interest because of the sensitivity of the East Antarctic Ice Sheet (EAIS) to temperature increase.

The principal goals of Expedition 318 were to obtain:

1. the timing and nature of the first arrival of ice at the Wilkes Land margin inferred to have occurred during the earliest Oligocene (Oligocene isotope event-1),
2. the nature and age of the changes in the geometry of the progradational wedge interpreted to correspond with large fluctuations in the extent of the East Antarctic Ice Sheet (EAIS) and possibly coinciding with the transition from a wet-based to a cold-based glacial regime (late Miocene?Pliocene?),
3. a high-resolution record of Antarctic climate variability during the late Neogene and Quaternary ; and
4. an unprecedented, ultrahigh resolution (i.e., annual to decadal) Holocene record of climate variability.

The initial results of chronostratigraphic and paleoenvironmental information from IODP Expedition 318, which would provide major constraints to ice sheet models. The sedimentary records obtained from the Wilkes Land margin provide information about the tectonic scale to millennial-decade scale variability and vulnerability of this sector of the EAIS.

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