A unique late Cenozoic archive of Greenland climate evolution recovered by IODP Exp 400

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When was the onset of glacial expansion in northern Greenland? And how has the Greenland Ice Sheet responded to past climate warmings? Motivated by these key questions IODP Expedition 400 drilled six sites along a transect covering the deep basin of Baffin Bay and the glaciated margin of north west Greenland. To obtain data capturing the late Cenozoic ice sheet history as well as gaining high-resolution paleo-oceanographic records, the campaign targeted four different settings of the continental margin succession: (1) A lower slope sediment drift - channel system; (2) Aggrading shelf units of the Melville Bugt trough-mouth fan; (3) Mounded contourite deposits buried by early glacigenic progradation; (4) Strata infill of an inner shelf rift basin. Sites U1603-U1608 yielded a total of 2,299 m of sediment core from a composite stratigraphic section >3 km thick, covering the last 25 million years, i.e. from Oligocene to Holocene. From four sites we obtained a comprehensive logging suite that ties the core data to the seismic-scale development of the northwest Greenland margin. This presentation provides an overview of the preliminary results, and the scientific objectives for understanding late Cenozoic climate evolution in northwest Greenland.