

Late Quaternary Deglaciation IN the Amundsen Sea sector of the West Antarctic Ice Sheet: PRELIMINARY RESULTS FROM RECENT CRUISES OF RRS JAMES CLARK ROSS AND RV POLARSTERN

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The Amundsen Sea Embayment drains approximately 25% of the area of the West Antarctic Ice Sheet (WAIS) and its future stability is crucial to predictions about eustatic sea level rise. The majority of ice in this area drains through the fast flowing Pine Island and Thwaites Glaciers, which have thinned significantly in recent decades, probably in response to intrusions of Upper Circumpolar Deep Water onto the continental shelf. In order to put these recent changes in perspective and to determine whether they form part of an ongoing retreat from the Last Glacial Maximum (LGM) or represent recent dynamical changes it is necessary to establish the maximum extent of the ice sheet at the LGM and its subsequent retreat pattern. So far, only the deglacial history in the southeastern Amundsen Sea (Pine Island Bay) has been reconstructed, and its chronology is limited to a few radiocarbon dates. Here we present preliminary results from RRS *James Clark Ross* cruise JR141 and RV *Polarstern* expedition ANT-XXIII/4 undertaken in early 2006 which significantly expanded the existing marine geophysical and geological datasets. Multibeam bathymetry and seismic data collected in the Amundsen Sea Embayment during these cruises illustrate the interaction between seabed morphology and the flow of grounded ice across the continental shelf. Along with determining the maximum extent of the WAIS during the LGM and its retreat history, the new geophysical data and sediment cores will provide information on the controls and locations of rapid ice flow, variability in sedimentary processes on the margin, and whether the size of the LGM ice sheet and its deglaciation are representative of glaciations during earlier Quaternary climatic cycles.