



West Antarctic Ice Sheet signatures on recent deposits in the Eastern Ross Sea

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It has already been noted in the literature that during the Late Quaternary the Ross Sea continental shelf was subject to different phases of expansion and retreat of the ice sheet. In particular, during the last glacial advance, the grounding ice sheet acted as a “conveyor belt”, eroding and transporting sediments from the inner shelf to the central-outer sectors. There is less high- and very high resolution seismic data available for the eastern area than for the other sectors of the Ross Sea. In this study we present the results obtained from an analysis of a total of 422 nm of high resolution seismic profiles (3.5 kHz Sub Bottom Profiler and 0.2-1 kJ Sparker) collected during the 2001-2002 PNRA Oceanographic Cruise in the eastern Ross Sea, in a sector of continental shelf between 172°W and 165°W, to better define the evolution of the ice sheet in this area during the Late Quaternary, with particular attention to the way the near-surface layers (geometry and internal structures of deposits) evolved with respect to the ice flow. This area is characterized by a basin where the recent sedimentary deposits and the morphology have recorded different oscillations and the erosive action of the ice shelf on the sea floor during periods of glacial advance and retreat. Seismic correlations show at least 5 unconformity-bound seismic layers (with a sedimentary cover of about 130 ms TWTT) and deposits on the outer shelf due to events preceding the last glacial maximum (LGM). Infact, the central-outer shelf is characterized by the thickest deposits relating to the depositional zones of the LGM and shows two grounding zone wedges that cover a layer with a complex geometry probably related to a phase of retreat/advance with a different evolution to the ice flow of the West Antarctic Ice Sheet. Seismic data highlighted differences between the geometry of the deposits along the eastern and western flanks, and differences of internal structure in the northern and southern parts of the basin. Seismic lines in the southern sector

show deposits such as glacial till tongues, especially on the western flank, and several unconformities sub-outcropping under thin glacialmarine cover on the eastern flank.