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Magnetostratigraphy and Environmental Magnetism of Cores from DSDP Sites 270 and 274 (Leg 28), Ross Sea Sector (Antarctica)

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Global syntheses indicate that the Paleogene was a time of transition from the stable warm climates of the Late Cretaceous to the cooler, more heterogeneous, climates of the Neogene. The glaciation of East Antarctica and the sudden shift to cold conditions over high southern latitudes near the Eocene/Oligocene boundary marks one of the most fundamental reorganizations of the global climate system in the Cenozoic. A greater understanding of this region is crucial to a broader understanding of the global climates and palaeoceanography at all scales. Much of our understanding of both the antiquity and extent of Cenozoic glaciation in the Southern Hemisphere derives from peri-Antarctic ship-based investigations (e.g., ODP, DSDP), together with studies on the continent itself (e.g., DVDP, CIROS, CRP and ANDRILL projects). The DSDP Site 270, located in the Eastern Basin of the Ross Sea (422.5 meters; lat: -77.4413; long: -178.5032), and Site 274, located at 250 km northwest of Cape Adare (421 meters; lat: -68.9968; long: 173.4273), were cored on the continental shelf of the central Ross Sea in 1973 during Leg 28. The most striking finding of DSDP Leg 28 was the recognition that the history of Antarctic glaciation spanned an interval of time that was an order of magnitude greater than that of the Northern Hemisphere ice sheets. Here we present a magnetostratigraphic chronology and an environmental magnetic study of Oligocene portion of these sequences. Environmental magnetic data, along with a chronology obtained from a high-resolution integrated magnetostratigraphy, can be used to obtain a better understanding of environmental and climate changes during the investigated intervals. In addition, paleomagnetic data from these sites can be combined with those from other Antarctic sites, in order to refine the Oligocene apparent polar wander path (APWP) of Antarctica.