Preliminary paleomagnetic results from PS97 cores from the Drake Passage for the past 110 ka

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Paleomagnetic records reconstructed from globally distributed marine sediments have greatly improved our understanding of long-term paleosecular variations and geomagnetic excursions. Nevertheless, questions regarding to the development of the geomagnetic field anomaly in the Southern Atlantic Ocean and the asymmetric geomagnetic field between Northern and Southern Hemispheres are not yet satisfactorily resolved. Paleomagnetic data, particularly from the Southern Hemisphere, is needed to better define the global geomagnetic field configurations spanning paleosecular variations and excursions. In this study, three sediment cores (PS97-085, PS97-84, PS97-079) recovered from the Drake Passage, Southern Ocean were subjected to detailed rock magnetic and paleomagnetic investigations. Preliminary age models were obtained by correlating their magnetic susceptibility to the δ18O master record from Dome C, Antarctica. In addition, rock magnetic records of the studied PS97 cores were further correlated to that of core PS67/197-1 with AMS 14C age constraints. The results from PS97 cores are thus continuously covering the past about 110 ka. Rock magnetic results indicate titanomagnetite is the dominant magnetic carrier in the studied PS97 cores. Relative paleointensities (RPI) derived from these PS97 cores are comparable with the regional relative paleointensity records and the South Atlantic paleointensity stack (SAPIS). Additionally, anomalous inclinations at about 41 ka and 35 ka, observed in core PS97-085, are coeval with the Laschamps and the Mono Lake excursions, respectively. This study provides new paleomagnetic records from the Southern Ocean, though further age constrains are needed to consolidate the paleomagnetic interpretations. The up to now obtained paleomagnetic records, together with previous studies from the Southern Ocean, are aiming to clarify the asymmetric pattern of non-dipole geomagnetic field between Northern and Southern Hemispheres.