Geophysical Research Abstracts, Vol. 9, 08391, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-08391

The Blake excursion recognized in marine cores from the southern hemisphere

C. Kissel, C. Laj , C. Waelbroeck, C. Wandres

Laboratoire des Sciences du Climat et de l'Environnement, CEA/CNRS/UVSQ, Avenue de la Terrasse, 91198 Gif-sur-Yvette cedex (kissel@lsce.cnrs-gif.fr, phone: (33-1-69-82-43-28)

The reality of a geomagnetic excursion as a global phenomenon is based on its wide recognition from different localities. So far, the Blake excursion has been identified in sediments from the Blake outer ridge, the Mediterranean area, the Portuguese margin and in the Chinese loess. All these records are located in the northern hemisphere.

We report here on a detailed magnetic study of two marine cores located at mid southern latitudes in the southwestern Indian ocean (MD94-102: 43˚30'34 S; 079˚50'18 E; 3205 m and core MD97-2101: 43˚29.74 S, 079˚50.30 E, 3145 m). These two cores are close to each other and the bulk magnetic parameters are used to perfectly intercorrelate them and transfer the oxygen isotopic record obtained from core MD94-102 to core MD97-2101.

In both cores, the main magnetic carrier is magnetite (S-ratio around 0.97, median destructive field of ARM and IRM around 28 and 17 mT respectively) with very limited changes in grain size showing that these sediments meet the criteria for being reliable recorders of the earth magnetic field.

At about 5.9 m.b.s.f in core MD97-2101 and at about 4.5 m.b.s.f in core MD94-102, a broad low in the relative paleointensity (RPI) record is present with some slight fluctuations in it. A directional change occurs in both cores during this intensity low: when studied using u-channels, the inclination which averages about –65˚ (expected gad inclination value at this site)changes suddenly to –20˚. When single samples 1 cm thick are used, a better resolution is achieved and the inclination shifts from –65˚ to about +22˚. According to the oxygen isotopic record, this change occurs at the boundary between substage 5e and substage 5d, consistently with the timing of the Blake excursion in the Mediterranean and at the Portuguese margin.

The data which will be presented therefore represent in the first record of the Blake excursion from the southern Hemisphere.