Geophysical Research Abstracts, Vol. 9, 04965, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-04965

Geomagnetic Variability from Beryllium-10 in deep-sea Sediments

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We present a correction procedure to extract geomagnetic variability from the depositional flux of Beryllium-10 into deep-sea sediments. As an example this technique is tested by applying it to a new, highly resolved Be-10 record from a rapidly accumulating sediment core located in the Cape Basin (ODP Leg 177, Site 1089). First, sediment redistribution is quantified by applying Thorium-230-normalization, then lateral transport of Be-10 and Th-230 is assessed using simple box model calculations. Our results strongly suggest that the transport corrected Be-10 record at Site 1089 reflects long-term variations of the global Be-10 production rate over the past 300 kyr that is mainly controlled by geomagnetic variability. The combination of several highly resolved and transport corrected Be-10 records may lead to a significantly improved reconstruction of geomagnetic variability and of global cosmic ray flux and over the past 300'000 years.