



Marine sediments and Beryllium-10 record of the geomagnetic moment variations during the Brunhes period.

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Over millennial time scales, the atmospheric production of the cosmogenic nuclide ^{10}Be (half-life 1.387 ± 0.012 Ma [Shmeleff et al., 2009; Korschinek et al., 2009]) is modulated by the geomagnetic field strength, following a negative power law (e.g. Lal, 1988; Masarik and Beer, 2009). With respect to paleomagnetic reconstructions, ^{10}Be -derived paleointensity records can therefore constitute an alternative, global and independent reading of the dipole moment variations. During the last years, efforts have been made to extract a geomagnetic signal from single and stacked ^{10}Be records in natural archives such as ice and marine sediments (e.g. Carcaillet et al., 2004; Christl et al., 2007; Muscheler et al., 2005). In marine sediments, the ^{10}Be concentration results from complex interplay of several processes: cosmogenic production, adsorption on sediment particles, redistribution by fluvial and oceanic transport, and deposition. Therefore, a correction procedure is required to consider both sediment redistribution and enhanced scavenging, which can alter the primary signatures. To reconstruct the succession of field intensity lows accompanying excursions during the Brunhes chron, we investigated authigenic $^{10}\text{Be}/^9\text{Be}$ record of marine sequences also studied for paleomagnetism and oxygen isotopes. Mid and low latitude sites were preferred in order to benefit from the most efficient modulation by the magnetospheric shielding. We present a high resolution authigenic $^{10}\text{Be}/^9\text{Be}$ record of the last 50 ka recovered from the Portuguese Margin, that deciphers the cosmogenic ^{10}Be overproduction created by the geomagnetic dipole low associated with the Laschamp excursion. This record is compared to other proxy records of the geomagnetic field variations for the same time interval: (1) the relative paleointensity (RPI) reconstructed from the same sediments and the GLOPIS-75 record (Laj et al., 2004), (2) the absolute VDM record based on absolute paleointensities measured on lava flows, (3) the high-resolution deep sea floor magnetization record of the South East Pacific (Gee et al., 2000) and (4) other cosmogenic records obtained from different archives. A second normalization method using the ^{230}Th (e.g. Frank et al., 1997) is presently applied on these samples and the results will allow establishing a cross evaluation and intercalibration. Two other marine sequences collected in the west-equatorial Pacific are also under investigation. These data and their combination to previous $^{10}\text{Be}/^9\text{Be}$ records will constitute the basis for the construction of a global marine ^{10}Be -stack covering the whole Brunhes period and the numerous relevant excursions, as well as the Brunhes-Matuyama boundary. This study is funded through the "MAG-ORB" project ANR- 09-BLAN-0053-01.