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Dipole Lows and Excursions of the Brunhes epoch linked with Interglacials?

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The contribution of astronomical precession to the geodynamo energy budget recently re-gained some credibility on theoretical and experimental grounds. Paleomagnetic tests of such an hypothesis remains highly controversial mostly because the geomagnetic moment variations reconstructed at the 10^4 – 10^6 y scale are suspected to be biased by paleoenvironmental signals. However, taken together the geomagnetic indicators based on i) depositional remanent magnetization of sediment (paleodirections and paleointensity), ii) thermoremanent magnetization of basalts of the deep sea floor, iii) geochemical records of cosmogenic isotopes production, produce a reasonably well-dated and well-constrained series of geomagnetic dipole lows associated with excursions for the last million years. Analyzing this series by a method of continuous complex wavelet transform allows determining characteristic periods spanning the range of Earth's orbital periods. Moreover, dipole lows present a tendency to occur during interglacials or at their termination (more precisely they follow the deglaciations by $\sim$20 ka). For 2/3 of the last 800 ka, the dipole moment appears to have increased during glaciations or decreased during deglaciations, which at least definitely implies that excursions did not occur during glacials. Such a dependence of the dipole field -if confirmed- would have two crucial implications for the understanding of the

present Earth evolution: I) the next excursion or reversal may be forecast before the end of the present Holocene interglacial; II) dipole collapses, despite their immediate effect on the cosmic particles penetration in the atmosphere (i.e. cosmogenic isotope overproduction) had no direct and significant consequences on the Earth's climate.