



An Impending geomagnetic transition? Hints from the past

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The rapid decrease of the geomagnetic field intensity in the last centuries together with a growth of the South Atlantic Anomaly has led to speculations that an attempt to a reversal or an excursion might be under way. Here we investigate this hypothesis by examining past records of geomagnetic field intensity obtained from sedimentary cores and from the study of cosmogenic nuclides. The selected records describe geomagnetic changes with an unprecedented temporal resolution between 20 and 75 kyr B.P. The precise age model and the accurate calibration of intensities on absolute scale allow to calculate the duration and the rate of change of the field during the well documented excursions of Laschamp and Mono Lake. The rate of decay of the field intensity during these excursions is virtually similar to that observed over the last few centuries and much higher than that observed for other low intensity periods of the same duration but not associated to any polarity change. Although these records do not provide undisputable information on future evolution of the field, we find that some aspects of the present-day geomagnetic field have some similarities with those documented for the Laschamp excursion 41 kyr ago. Under the assumption that the dynamo processes for an eventual future reversal or excursion would be similar to those of the Laschamp excursion, we tentatively suggest that, whilst irreversible processes that will drive the geodynamo into a polarity change may have already started, a reversal or an excursion should not be expected before 500 to 1000 years.