Geophysical Research Abstracts
Vol. 13, EGU2011-5293, 2011
EGU General Assembly 2011

Recovery of Geomagnetic Reversals from Relative Paleointensity Data

Keith Aldridge and David McMillan
York University, Earth & Space Science and Engineering, Toronto, Canada (keith@yorku.ca, 1 416 399 0124)

It is found that reversals of the geomagnetic field can be precisely located in time by finding peak rates of change in the temporal gradient of relative paleointensity from the SINT 2000 and PISO1500 data sets. As dipole reversals have been defined by the change in direction of the dipole, locating reversals by our intensity-based procedure is further examined. We find that not all of the many rapid rates of change of the temporal gradient of relative paleointensity are associated with known reversals, and furthermore, that known excursions are not found using this method.

Our survey of relative paleointensity records for reversals was motivated by our model of parametric instability and its prediction, from experimental observation, that external strain rates producing the instability may be determined from the difference between growth and decay rates of the instability. The successful location of reversals using this method, which searches for peak rates of change in the temporal gradient of relative paleointensity, could be interpreted as evidence that parametric instability plays a significant role in Earth's dynamo. Alternatively, it could be claimed that the relative paleointensity record contains reversal information that has been revealed by our intensity-based procedure. This presentation describes the relative merits of these two possibilities.