

**A Comparison of Hotspot and Palaeomagnetic frames (0-95 Ma) and Estimates of non-dipole Fields**

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**In the Indo-Atlantic realm, hotspots have remained relatively stationary with respect to the spin axis for the last 95 million years. However, small but systematic discrepancies (c. 5°) between Late Cretaceous and Tertiary fixed hotspot and paleomagnetic reference frames can be interpreted as the result of plume drift within a convective mantle, non-dipole field contributions or a combination of these causes. In order to test for non-dipole fields we recalculated all paleomagnetic poles (globally) with different non-dipole field contributions (2 to 16%), calculated new APW paths and rotated the new mean poles into the fixed hotspot frame. An octupole contribution of 10% yields the lowest discrepancy (3.1 " 2.1°) for the last 95 million years. We also tested the palaeomagnetic data against mantle models for the last 65 Ma, and Mantle-Model 2 produces the best fit (2.6 " 1.8°). Comparing the paleomagnetic and fixed hotspot frame over the 95 Ma range shows that a mean octupole field contribution of 10% uniformly improves the Tertiary record whilst the Cretaceous section shows a worse fit. The latter may imply that octupole field contributions vary with time.**

- 1. Chapman conference on Timescales of the Geomagnetic Field**
- 2. Invited by J. E. T. Channell**
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- 4. No**