



Core, crustal and other field sources: Identifying what's what in the spectrum

J. Bloxham

Harvard University (jeremy_bloxham@harvard.edu)

The change in slope of the Lowes power spectrum provides an empirical basis for the separation of the core field from the crustal field and other field sources. Typically, it is asserted that the core field dominates to around degree 13, with the crustal field dominating at higher degree. Core field models are thus usually constrained to have little or no power beyond degree 13. In this study we re-examine this in the light of new magnetic field models derived from recent satellite observations. Specifically, we address two questions.

First, at what spherical harmonic degree does the change in slope occur and is the interpretation of the change in slope correct? The stochastic model of Jackson (1990) provides a theoretical basis for addressing this question.

Second, is the Lowes spectrum stationary? In other words can we detect regional differences in the power spectrum? The spectrum of the continental crustal field should differ from that of the oceanic crust. Can we detect these differences, and are they important in determining the resolution of the core field from surface or satellite observations?