



On the stability of the geomagnetic field 1 – 15 million years ago

L. Kristjansson

Institute of Geosciences, University of Iceland, Reykjavik, Iceland (leo@raunvis.hi.is / Phone: +354-525-4800)

The author concluded in 1989 after processing primary remanence directions from about 4000 lava flows in Iceland, that the scatter of virtual geomagnetic poles (computed for age intervals of the order of 3 Ma in duration) decreased in the period from 15 to 1 Ma ago. Sampling of Icelandic lava sequences has continued since then, emphasizing good exposures of long lava sequences with minimal hydrothermal or tectonic disturbances. Improved collection and measurement procedures have resulted in generally excellent within-lava agreement of directions (mean α_{95} less than 5 degrees). Repeated analyses of the Icelandic lava data set, with newer directional data replacing those from the earliest surveys included in the 1989 study, have confirmed its conclusions (see L. Kristjansson, *Phys. Chem. Earth* 27, 1205-1213, 2002). Few if any collections of comparable size and geological quality are available from other regions of the world. The author and others have in the last five years completed additional paleomagnetic surveys on lava sequences in various parts of Iceland. In both the new and the previous surveys, many instances have been found where the lavas recorded short polarity events and major excursions. Examples of erratic movement of the pole, indicating occasional periods of instability of the field, have also been noted in some of the surveys. An updated estimate of the scatter (a.s.d.) of virtual poles and some other properties of the local paleofield 1 – 15 Ma ago will be presented. It appears that the magnitude of this parameter at the latitude of Iceland has in general been somewhat underestimated in global compilations and models in the literature, and the same applies to the number of polarity reversals and excursions.