

## **RAPID FLUCTUATIONS OF THE EARTH'S MAGNETIC FIELD OVER EUROPE (1960-2001)**

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Geomagnetic secular variation, the generally slow, continuous change of the core magnetic field, is characterized by occasional rapid variations known as geomagnetic jerks. Detailed studies of these phenomena for a long time suffered from the sparse distribution of geomagnetic observatories over many parts of the Earth. Recent studies on magnetic data obtained by satellites with a good global coverage suggest that more rapid and smaller scale features than previously thought occur in the field change. We have taken advantage of the comparatively high density of geomagnetic observatories in Europe and have derived a regional model for the detailed study of secular variation and acceleration over the past four decades by means of improved and regularized spherical cap harmonic analysis. We show the improvements of our regional model over a global model. All the known jerks are seen in our model, but further times with rapid changes in secular variation exist. Moreover, times of zero acceleration in general do not occur simultaneously in all magnetic field components, although this nearly is the case in 1969.6 and 1982.2. Secular variation and acceleration show very dynamic patterns indicating rapid and complex causal processes in the Earth's fluid core.

European secular variation, secular acceleration, geomagnetic jerks

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