



## **Geomagnetic jerks detected from comprehensive magnetic field models**

**A. Chambodut** (1), M. Mandaia (2) and C. Eymin (3)

(1) Department of Applied Mathematics, University of Potsdam, Germany,

(2) GeoForschungsZentrum Potsdam, Section 2.3, Germany,

(3) Laboratoire de Geophysique Interne et Tectonophysique, Universite de Grenoble, France.  
(chambodu@math.uni-potsdam.de)

The rate of secular variation of the magnetic field occasionally undergoes a sudden, sharp change, called a geomagnetic jerk. Over the last four decades, jerks have been detected in geomagnetic time series around 1971, 1980, 1991, and 1999. Recognized as events from internal origin, their characteristics are still not well understood. In this context, we decided to use an indirect approach, which is no more based on analysing only direct measurements of the magnetic field.

A global geomagnetic model is used to estimate the occurrence dates and the surfaces "covered" by geomagnetic jerks. Firstly, we study the global occurrence date distribution of the 1971, 1980 and 1991 events through a simple linear approximation by part of the Eastern component of the secular variation over the whole globe, for both observational and synthetic series. Secondly, the geomagnetic jerks are detected as a change of sign in the second field derivative from synthetic time series of the CM4 model.

Our results indicate that the three studied geomagnetic jerks might not have been worldwide in occurrence. Moreover, the obtained dates suggest that jerks, detected in the CM4 model over the last four decades, occurred not simultaneously but at slightly different times around 1971, 1980 and 1991.