Geophysical Research Abstracts,
Vol. 11, EGU2009-7240, 2009
EGU General Assembly 2009

High frequency ingredients of the secular variation as revealed by 150 years of observatory data and global geomagnetic field models

C. Demetrescu and V. Dobrica
Institute of Geodynamics, Bucharest-37, Romania (CRISAN@GEODIN.RO, 0040-21-3172120)

High frequency secular variation components at 22 and $\tilde{8}0$ years timescales were evidenced in the 100-150 years-long series of geomagnetic annual means from several geomagnetic observatories, after eliminating solar activity related variations (Schwabe and Hale cycles effects). They are superimposed on a so-called steady variation that carries the largest part of the field. The 22- and $\tilde{8}0$-year variations, with amplitudes of 20-100 nT and, respectively, several hundred nT, are significant in terms of secular variation at regional and local scale and in terms of ingredients of geomagnetic jerks. In terms of the present analysis, the geomagnetic jerks are a result of the superposition of the 11-year external contribution on the 22- and the $\tilde{8}0$-year variations; the external contribution is decisive in establishing the very short time scale characterizing jerks and, to some extent, also the amplitude and timing of the jerk. Main field geomagnetic models (IGRF-10th, CM4) are used to improve the geographical coverage of our analysis and to associate the evidenced components to various terms in the spherical harmonic representation of the surface field. The time-space evolution of the radial component of the ingredients of the field, as appears from time-longitude and time-latitude diagrams, is presented.