



Regional modelling of the Geomagnetic Field in Europe for the last 8000 years

Francisco Javier Pavon-Carrasco (1), Maria Luisa Osete (1), and J. Miquel Torta (2)

(1) Grupo de Paleomagnetismo. Dpto. Geofísica y Meteorología. Universidad Complutense de Madrid. Avda. Complutense, s/n. 28040. Madrid. Spain. (fjpavon@fis.ucm.es), (2) Observatori del'Ebre. CSIC – Universitat Ramon Llull, Horta Alta 38, 43520 Roquetes. Spain

From a selected compilation of sedimentary and archaeomagnetic data a new low-degree regional geomagnetic model for the European Continent valid for the period 6000 BC to 1000 BC has been developed. This model provides information about the direction (declination and inclination) and intensity of the Earth's Magnetic Field in Europe during 5000 years, from 6000 BC to 1000 BC. By connecting it with our SCHA.DIF.3K previous model valid from 1000 BC to 1900 AD and the IGRF, we furnish continuous geomagnetic field information for the last 8000 years. The new model is called SCHA.DIF.8K. It has been developed using the Revised Spherical Cap Harmonic Analysis in 2 Dimensions technique (R-SCHA2D, Thébault, 2008, GJI) and the norm of the Earth's Magnetic Field to constrain the inversion problem. The size of the cap is 22° . The maximum degree of the expansion is 2. The linearization problem has been solved using the truncation Taylor's series applied to the expressions of the relationship between the declination, inclination and intensity data and the Cartesian component of the geomagnetic field. As initial or reference we used the Geocentric Axial Dipole field. In time, we used the classical sliding overlapping window method. The size of the window was set to 100 years shifted 50 years. We have compared the model's prediction with the input data and with the global CALS7K.2 model. The regional model shows a better fitting to the input data than the global model, especially for the intensity data.