Geophysical Research Abstracts
Vol. 16, EGU2014-12942, 2014
EGU General Assembly 2014

Separation of Earth's magnetic field internal component from observed data by means of Empirical Mode Decomposition

Roberta Tozzi (1), Paola De Michelis (1), and Giuseppe Consolini (2)

(1) Istituto Nazionale di Geofisica e Vulcanologia, Roma, Italy, (2) INAF - Istituto di Astrofisica e Planetologia Spaziali, Roma, Italy

The need to separate the magnetic field recorded at the Earth's surface into as many components as the sources are, has led to develop different methods of internal/external magnetic field separation. For this purpose, we have recently tested Empirical Mode Decomposition (EMD) over magnetic data registered by a few European observatories. Here we show an extension of the previous work using EMD to separate the internal component from data observed at a larger number of magnetic observatories from low to high latitudes.
With respect to the methods used so far to achieve internal/external separation of Earth's magnetic field, EMD has many advantages as, for instance, to give the opportunity to be applied on data from a single observatory or also to be suitable to be implemented for real time internal/external separation.
So, EMD has been applied to monthly means of X, Y and Z components of the geomagnetic field measured at the selected observatories and, after the evaluation of the properties of the EMD single monocomponents, the separation of the Earth's magnetic field internal contribution has been achieved. The internal component derived in this way has then been compared with the internal field provided not only by CM4 model, as in the previous test, but also with that provided by CHAOS4 model and by the more recently developed COV-OBS model. Encouraging results have been obtained.