



Signatures of core perturbations in geomagnetic field dynamics – preliminary results

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Earth's magnetic field is continuously evolving in time. Research is carried out in order to understand its characteristics and also to describe types of perturbations which can exist in the Earth's liquid core. The aim of this work is to analyze the geomagnetic ground observatory data for the occurrence of magnetohydrodynamic (MHD) waves described in literature traveling at the top of the Earth's liquid core.

Hourly means data from 150 observatories collected from the World Data Center for Geomagnetism (WDC) were used in this work. Local topocentric magnetic field components: X (East), Y (North), Z (vertical), and also spherical coordinates: B_r , B_θ , B_Φ were analyzed. Hourly means were averaged to one day means and to one month means, missing values were interpolated by different methods. Fourier analysis and Empirical Mode Decomposition (EMD) method were applied to extract periods of oscillations visible in datasets. Similar analysis was also made for data generated from the IGRF12 model for comparison.

The times associated with peaks within these data were identified for all components and plotted versus colatitude and longitude to find possible travelling perturbations. Possible candidates of MHD waves for future investigation will be presented.