

## Comparison between observed and calculated Sq variations at the surface of the Earth - preliminary results

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We report on a preliminary result of analyzing the observed computed Sq variations at the surface of the Earth on Oct.8-10, 2007. The computed Sq variation was obtained from the GAIA model by Fujita et al. (2018). The observed one was collected by the INTERMAGNET program, WDC for geomagnetism, Kyoto, Geospatial Information Authority of Japan, the 210MM project, etc. We used the 1 hour values of the geomagnetic field for 3 days to extract the Sq variation for comparison with calculated one by GAIA.

The three vector components of the geomagnetic field were decomposed in order to remove unnecessary variations such as the main field and variations of the magnetospheric origin. The main field was estimated by using the CHAOS-5 model. Spherical harmonic coefficients of the residual show that a significant dipole field is included indicating the existence of the variation of the magnetospheric origin. Since the dipole component shows a long term variation, a trend component computed by a Kalman filter procedure was removed from the residual geomagnetic field.

The spherical harmonic analysis was applied to the extracted Sq variation at worldwide sites and obtained SPH coefficients for the external field were compared with those from the geomagnetic field computed from the GAIA. A location difference between the computed and observed Sq was investigated in order to a spatial shift which the GAIA model contains.