

MORPHOLOGICAL ANALYSIS OF GEOMAGNETIC FIELD THROUGH WAVELET PROCESSING

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We used some methods for spectral analyses and wavelet of geomagnetic data acquisitioned at Surlari National Geomagnetic Observatory (SNGO) and data from different observatories in the world.

These methods can be used for determining a spectrum of geomagnetic phenomena at the different time.

Disadvantages of applying only the spectral analysis of geomagnetic data are related to lack of capacity of locating frequencies, amplitudes and phases in time. Other limitations of harmonic analysis occur when processing analog or digital signals, particularly when they are non-stationary phenomena, such as the great majority of real signals. In the harmonic spectrum, calculated using Fourier transformers, is variable in time, however, for time intervals of convenient length (depending on the frequencies that fall within the signal and speed of change of the spectrum), it can be considered invariant. Modeling of these signals can be simultaneously both but considering their properties in time, and those of frequency. The time - frequency allows us to identify the frequency characteristics of signal at a time. For this is considered a window which moves on the signal, starting from t_0 to any position on the temporal axis t_i , the content is analyzed, there by achieving the desired frequency information: a spectrum of frequencies located.

The complex methodology for analyzing spectral and wavelet fills easily visible results of morphological analysis. We used the Morlet, Paul and Gauss windows, for different adjustable parameters. For examples of this we have used geomagnetic data recorded in SNGO, and in other planetary geomagnetic observatories at different latitude and longitude.

Wavelet, geomagnetic, spectral analysis

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