



Parameters of the geomagnetic noise in the Pc5/Pi3 frequency range for different space weather conditions

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Narrow-band Pc pulsations occur from time to time in the magnetosphere and on the ground, while the broad-band noise is the ubiquitous manifestation of the geomagnetic activity. The geomagnetic noise was continuously recorded for several decades at hundreds of ground stations and many satellites. However, noise parameters have not been still analyzed and summarized in a systematic way. In this study we analyze the parameters of the geomagnetic noise and pulsations with in the frequency range 1–4 mHz (Pc5/Pi3) from more than 50 observatories from the polar to middle latitudes by calculating Legendre polynomials of spectral distribution. As the bi-logarithmic scale is used, only zero coefficient depends on amplitude and all the higher describe spectral forms.

Pi3 spectral amplitude varies in a correlated way in the interplanetary space and on the ground from polar to middle latitudes in all MLT sectors. Essentially positive correlation between stations also exists for higher spectral moments (spectral slope and the parameters describing the spectral form) on the ground surface. The analysis of correlation with extra-magnetospheric parameters shows that a contribution of each of them differs for spectral amplitude and higher spectral moments and for polarized and non-polarized components. We conclude that a positive correlation on regional scale for higher spectral moments is caused mostly by intra-magnetospheric mechanisms and it is the manifestation of magnetosphere active response to external driving.