



About relationship of magnetospheric activity with a chaotic component of the solar activity

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The magnetosphere can be viewed as the system which is in a metastable state. The influence of an external noise on such systems will lead to occurrence of casual switching between attractors of the system. As a result the geomagnetic activity will be defined by properties of the external noise. The relationship between dynamics of average daily values of solar activity chaotic component (Sunspots number) and dynamics of average daily values of the Earth magnetospheric activity (Ap-index) has been investigated. The simple model which explains statistics of the Ap -index has been suggested. In this model the Gaussian noise (the solar activity chaotic component) has an influence on an input of the system (magnetosphere). On an output of the system the noise (Ap -index) has properties of the distribution with a "heavy tail". It was shown that the magnetospheric activity has two various modes which are found out in dynamic spectrum of the Ap -index. Change of modes is characterized by decrease of noise level and occurrence of the 27-day periodicity harmonics. The moment of modes change is correspond to the occurrence of zeros in dynamics of the Wolf numbers and modification of Ap -index chaotic components statistics accordingly. The main result of this study is that exactly chaotic component of the solar activity defines features of magnetospheric activity dynamics.