



## **Turbulent phenomena in the dynamics of the magnetosphere**

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We investigate the dynamics of the magnetosphere–ionosphere system using the methods of turbulent studies, i.e. structure function analysis, probability density function analysis, multifractal spectrum analysis. It is emphasized that the applicability of these methods is based on the presumably infinite number of degrees of freedom and the nonlinearly coupled physical parameters of the magnetosphere akin with the behaviour of real turbulent systems. Mostly geomagnetic time–series are analysed from time periods of different levels of geomagnetic activity and from different regions of the Earth. It is shown that the investigated signals exhibit cascade–like fluctuations in certain temporal ranges that can be associated with the loading–unloading phases of substorms. In majority of cases the fractal and multifractal scaling symmetries of the cascade processes can be accurately depicted by a simple intermittent multifractal model of hydrodynamical or magneto–hydrodynamical turbulence, i.e. the P model. The results are also discussed in terms of the geomagnetic latitudes of different geomagnetic records.