

Magnetosphere power budget role in the task of classification of magnetospheric activity sources

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The self-training artificial neural networks (ANN) of self-organizing Kohonen map type permitting classification of complexes of perturbed space weather parameters is created. In outcome eight basic classes - complexes of perturbed parameters including parameters of solar wind and interplanetary magnetic field, power budget of the magnetosphere and Dst-index dynamics adequate to different global magnetospheric situations are determined. Validation of the announced number of classes of complexes of perturbed parameters is confirmed by different samplings of studied events. The classification of types of solar plasma flows is executed and the basic classification parameters of events corresponding to the physical essence of the task of classification defining the disturbed flow type are determined. The revision of classification reliability is executed using the experimental references data on events with known type of disturbing flow and solar source.

The approach designed here allows to consider the classification of disturbing flows as both space and physical, as within the framework of classification the space origin of different types of disturbances is considered. The given classification can be used for creation of new standards of space weather phenomena description using ANN technique. The ANN method allows to computerize the process of classification, and make the magnetic storms prediction possible.

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