Neural network model for Kp prediction based on solar wind data and ground-based magnetic observations

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A b s t r a c t : Several neural network (NN) models for the prediction of the Kp index have been proposed recently. Usually only solar wind data are used as inputs. In this paper an attempt is made to consider ground-based observations of geomagnetic variations as input to the NN model. The horizontal component H variations of the geomagnetic field from the Hurbanovo Geomagnetic Observatory were used for this purpose. The modeled geomagnetic activity level within the stormy intervals obtained by means of the modified NN model was compared with previous results to judge how the additional input information on a current state of the magnetosphere improves the accuracy of modeling. The results reveal that the November 2004 superstorm with a more complicated development is replicated better when the information on H component variations is taken into account.

Key words: neural network, Kp index, magnetic storm, solar wind

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