

Seasonal features in the spread-F probability near midnight over Moscow

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Abstract

Using the data of Moscow station for 1975-1985, the seasonal features in the dependence of the spread-F probability P near midnight on the levels of solar and geomagnetic activity have been analyzed. It has been found that the P dependence on solar activity is most substantial in winter and fall, the P dependence on geomagnetic activity is maximal during equinoxes, and the P dependence on solar activity prevails in summer but is much weaker than in winter and fall. Based on the qualitative analysis of the known mechanisms of the midlatitude spread-F, the regression equation, which shows the P dependence on the solar activity level and thermospheric parameters (temperature and density) at a fixed average level of geomagnetic activity, has been obtained. In this equation the character of the seasonal changes in P is determined by the thermospheric parameters, the relative contribution of which depends on solar activity. The found dependence of the character of the P seasonal variations on the solar activity level has been interpreted based on this equation. © Pleiades Publishing, Ltd. 2009.

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