

Peculiarities of the ionospheric disturbances in the East-Asian region during geoactive periods on November 2004

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In this study we present the results of investigations of variations of ionospheric parameters in the sector 20–80°N, 60–180°E during intensive geomagnetic storm on November 7-11, 2004. The data obtained at ionosonds and receivers of the global GPS network and receiver, located on board of low-orbital satellite CHAMP are used for the analysis. During this storm with two main phases the periods of total absorption and the blanketing Es layers typical for high- intensity geomagnetic storms are observed at high latitudes. The prolonged negative disturbances are observed at the mid latitudes. The large-scale traveling ionospheric disturbance of the frontal type is registered after during postmeridian LT hours on November 8. An analysis of disturbance front form shows that it presents the fragment of circular disturbance propagated from the region of Chukotka. This disturbance exists during several hours and reaches Ural in the west direction and the south region of China in the south direction. The velocity of its moving decreases with propagation \sim from 300 m/c to 200m/s. The characteristic spatial size is about 2000 km. A comparison of relative amplitudes of this large-scale disturbance according to the TEC ($\Delta \text{TEC}/\text{TEC} \approx 70\%$) and foF2 ($\Delta \text{N}/\text{N} \approx 80\%$) data suggests it to be extensive in altitude. The similar disturbance of smaller intensity was observed on November 10.

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