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Evolution of level of the medium scale wave-like disturbances in the ionosphere at transition of earth's magnetic field from quiet to disturbed conditions

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One of the most typical displays of non-uniform non-stationary structure of an ionosphere and in natural geophysical conditions, and at active influences on the top atmosphere is wave disturbances (WD) in the top atmosphere. We shall consider results of the analysis of dynamics of spectral structure WD at transition of the top atmosphere and an ionosphere from quiet conditions to disturbed and back. The data used in the analysis was given by Tomsk ionospheric station together with results of inclined Doppler HF-sounding received on middle-latitude HF-radio line in length $\sim$ of 500 km.

For data processing on WD in a daily cycle the interval from 16 o'clock till 24 o'clock local time was chosen. Duration of an interdaily interval was about two weeks: 5 day prior to the beginning of a storm and 10 day after it. In total 4 storms (all storms with the maximal value of an index $ap > 50$) have been investigated: 22.08 - 06.09.98y., 20.09 - 05.10.98y., 14.10 - 29.10.98y., 03.11 - 21.11.98y.

Characteristic feature of a site of spectrum WD with the periods from 8 till 200 minutes, received on variations of frequency, is falling amplitudes of spectral components with reduction of period WD (growth of frequency F). Therefore the spectrum has been submitted as the multiplicative model containing monotonously declining factor (trend), linear in logarithmic system of coordinates, and variable spectral function of

a kind.

Change of sedate factor b shows, that during a magnetic storm not only the general increase in amplitude of components of a spectrum of wave indignations occurs, but also character of distribution of energy between various WD components in a spectrum varies. As against factor a and an *ap*-index at which restoration up to non-disturbed values takes three day after a magnetic storm, b after a magnetic storm it is restored up to non disturbed values during longer interval of time.

Thus, the estimation of a deviation of a level of spectral components WD at transition from quiet geomagnetic conditions to disturbed and back allowed to establish:

In all analyzed cases increase of an *ap*-index is accompanied by increase in a level of WD. The first to increase of an *ap*-index react large-scale WD, however, the bigger the *ap*-index, the more contribution of mesoscale WD.

The increase in level WD averages $\sim$ 10 dB concerning non-disturbed condition (before a magnetic storm).