



Influence of AGWs on layered structure of the ionosphere F2 region

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The influence of atmospheric gravity waves (AGWs) on the behavior of nighttime mid-latitude ionosphere F2 region electron density is considered in the case of presence of the background thermospheric wind. It is noted that the declined propagation of AGWs can lead to the formation of layered structure in the height profile of F2 region electron density $N_e(h,t)$. The properties of the $N_e(h,t)$ layered structure depend on the waves amplitude, their vertical wavelength, horizontal phase velocity, as well as on the direction and values of the thermospheric wind. When AGWs vertical wavelength is close to the atmospheric scale height and its horizontal phase velocity is opposite and equal to the horizontal thermospheric wind velocity, then the peak electron densities of the layered F2 region are comparatively bigger than in the case of absence of wind. In this case the secondary peak electron densities of the F2 region can be the same order as its main peak density. The duration of presence of layered structure of the ionosphere F2 region is longer for the case of southward wind than for northward and eastward winds.

The layering of the height profile of mid-latitude ionosphere F2 region electron density under the influence of AGWs in the case of presence of zonal and meridional wind is demonstrated using numerical simulations.

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