ON CONDITIONS OF INTERNAL GRAVITY WAVES PASSAGE THROUGH TROPOSPHERE WIND STRUCTURES INTO THE IONOSPHERE

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Abstract. On the basis of ray tracing analysis the propagation of large scale internal gravity waves (IGW) from the troposphere through vertically inhomogeneous wind structures up to the ionospheric altitudes is considered. Using numerical calculations for the different choice of incoming parameters the specific behavior of ray trajectories caused by the presence of both critical layers and horizontal and vertical reflection is studied. It has been shown that large scale IGW's generated in the troposphere may propagate up to the ionosphere. The typical travel time of such an IGW passage has been determined, and a wide variety of this time depending on the incoming parameters has been revealed. The typical values of an IGWs horizontal displacement (from the point of the source) after their arrival to the ionosphere have been estimated.

Keywords: internal gravity waves, atmosphere, ionosphere, zonal winds, critical layer, ray trajectory.