Geophysical Research Abstracts
Vol. 12, EGU2010-2439, 2010
EGU General Assembly 2010

Non-reflected propagation of the acoustic – gravity waves in inhomogeneous atmospheres

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The monochromatic disturbance propagation in the inhomogeneous atmosphere is discussed in the framework of the linear theory of the ideal compressible gas with non-uniform temperature distribution. The conditions of "non-reflected" propagation of the acoustic – gravity waves are formulated. Following (Didenkulova et al, 2008, 2009; Talipova et al, 2009; Grimshaw et al, 2010) the ordinary second-order variable-coefficient differential equation for "non-reflected" sound speed profiles is derived. Qualitative analysis of the possible solutions is given on the phase plane. Some approximated solutions are obtained in the explicit form. The comparison with the observed atmosphere stratification taken from the book (Hossard. Wave in Atmospheres) is given.