



The identification of wave origin of a temperature fluctuations and determination of the intrinsic frequency of internal gravity waves in Earth's stratosphere derived from radio occultation data

V.N. Gubenko, V.E. Andreev, A.G. Pavelyev

Institute of Radioengineering and Electronics RAS (Fryazino branch), Fryazino, Moscow region, Russia (vitali-a@mail.ru)

In order to examine internal gravity wave characteristics we have analyzed small-scale fluctuations of normalized temperature in the Earth's stratosphere using radio occultation data. An analysis technique to identify the wave origin of observed fluctuations, assuming a gravity wave saturation, is proposed. This technique is based upon a comparison of the experimental and theoretical values of the relative amplitude threshold. The theoretical amplitude threshold, assuming a minimum Richardson number of $1/4$, is a function of f/ω , where f and ω are inertial and intrinsic frequencies correspondingly. The theoretical threshold values are confined from 0 to 1. In case, when this criterion is satisfied for its experimental counterpart and the wave origin of the analyzed fluctuations is positively identified, then the intrinsic frequency of the monochromatic gravity wave can be determined from only a single, occultation. The results of determination of the intrinsic frequency and other characteristics of internal gravity waves, propagating in Earth's stratosphere are presented and discussed.