



Observations with a high temporal resolution of variations in electrical and meteorological values in the atmospheric surface layer

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Investigations of interconnections between the atmospheric electrical and meteorological values have shown that these connections have a complex nonlinear structure. In the full it is referred to the oscillations of electrical and meteorological values appropriate to the acoustic and gravity waves with period from 2 to 100 min. The results of data analysis of observations in 2006–2007 with a high temporal resolution of variations of major electrical and meteorological values are presented. It was found that the oscillations of electrical, actinometrical and meteorological values in an interval from units to tens minutes were occurred simultaneously. For some temporal intervals from 1.5 to 3 hours, the coefficients of a cross-correlation between electrical and meteorological values were 0.65-0.95. Spectral analysis of oscillations of the atmospheric electric intensity in the range of running 3-hour intervals defined the availability of three sections in the average spectrum structure which it is well approximated by the linear functions. The sections coincide the oscillation periods at 2-4.9, 5.2-20 è 20-90 min. The first section coincides to low-frequency mode of infrasound waves, the second section – middle-scale internal gravity waves (IGW), and the third section – large-scale IGW. However for other values including the air electrical conduction, the oscillation analysis didn't define the evident structures in average spectra.