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Observations of acoustic gravity waves in the auroral ionosphere

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Since April 2007 the Sodankyla Geophysical Observatory in Northern Finland (geomagnetic latitude 64 deg.) routinely performs vertical ionosphere sounding ones per minute, with using frequency-modulated continuous-wave chirp at the rate of 500 kHz/s from 500 kHz to 16 MHz. This allows studies of rapid variations in the auroral ionosphere. In particular, signatures of acoustic gravity waves (AGW) are frequently observed in the ionosonde data. The AGW are manifested as quasi-periodic oscillations of the F region virtual height at 200-300km. Periods of the oscillations are typically of the order of ten to tens minutes, and their amplitudes may be from few to tens kilometers. The most prominent oscillations were observed in a vicinity of the terminator. We present morphological and statistical characteristics of the AGW as dependent on season, local time, and geomagnetic activity. The study is based on the data collected during five years (2007-2011) of low solar activity.