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# Comparing the Trend of F2-layer Planetary Wave Type Oscillations with Stratospheric Planetary Waves Activity in Midlatitudes during 2002 to 2008

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Regional maps of Total Electron Content, covering the Northern Hemisphere from 50°N to the North Pole, are used to derive a first trend of the F2-layer ionosphere oscillations with periods between 2 to 30 days (so called planetary wave type oscillations, PWTO). Oscillations forced by quasi-periodic variations of solar signals (e.g. EUV irradiation and solar wind) are identified and separated using wavelet transformation. It is found that up to 45% of the PWTO in the F2-layer ionosphere occur due to solar variability.
The signals which are not obviously related to solar variability are spectrally decomposed to characterize oscillations by their period and wavenumber. Trend analyses of the occurring oscillations reveal similarities to stratospheric planetary waves (PW). The dominant oscillations have typical periods of PW, the strongest wave activity is during winter and the wave activity maximizes at similar latitudes. But there are also major differences to stratospheric PW. In the ionosphere zonal mean oscillations are dominant, stationary waves are quite weak and the dominant periods are shorter. The results agree with recent numerical modelling results which showed no stationary wave penetration into the F2-region ionosphere and only fast short period waves propagating up to the lower thermosphere.