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The response of the ionospheric total electron content to the stratospheric m = 2 westward quasi 6-day wave

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The response of ionospheric Total Electron Content (TEC) to stratospheric planetary wave (PW) activity at higher middle latitudes (˜52.5°N) is investigated to estimate the vertical coupling by PW. Ionospheric TEC variability is regularly monitored by DLR Neustrelitz since 2002 through constructing northern hemisphere TEC maps from GPS observations. This data base is used for comparing simultaneous observations of wave activity in both stratosphere and ionosphere. The analysis of planetary wave type oscillations is performed by separating waves into their zonal wavenumber, period and travelling direction. A previous case study of autumn 2004 has shown that among other things the quasi 6-day wave (m=2, westward) is visible in the mean spectra of stratospheric geopotential height at 1 hPa pressure level and of ionospheric TEC data, as well as in upper mesospheric radar data. This analysis is extended to cover a larger time interval. The results indicate simultaneous occurrence of the quasi 6-day wave in middle atmosphere and ionosphere at selected time intervals