

Planetary Waves seen in Ionospheric Total Electron Content (TEC) Perturbations and Comparison with other Neutral Atmosphere and Ionosphere Analyses

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At DLR Neustrelitz monitoring of the total ionisation (total electron content - TEC) on a global scale using Global Navigation Satellite System (GNSS) data to diagnose and forecast space weather effects is performed. Here we analyse GNSS TEC maps with respect to long-period TEC variations with zonal wavenumbers up to 5 and in the time scale of several days at middle and higher latitudes during September–November 2004. In order to investigate the meteorological influences on ionospheric variability the results are compared with planetary wave analysis using assimilated stratospheric data, mesosphere/lower thermosphere radar wind and temperature data at Collm observatory (51.3N, 13.0E) as well as data from ionosonde observed F2 layer critical plasma frequency at Juliusruh (54.6N, 13.4E). Some correspondence between neutral atmospheric waves and ionospheric disturbances at time scales around 10 days is found.