

## Climatology of plasmaspheric total electron content obtained from Jason-1 satellite

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We used more than 40 million Total Electron Content (TEC) measurements obtained from the GPS TRSR (TurboRogue Space Receiver) receiver onboard the Jason-1 satellite in order to investigate the global morphology of the plasmaspheric TEC (pTEC) including the variations with local time, latitude, longitude, season, solar cycle, and geomagnetic activity. The pTEC corresponds to the total electron content between Jason-1 (1336 km) and GPS (20,200 km) satellite altitudes. The pTEC data were collected during the seven-year period from January 2002 to December 2008. It was found that pTEC increases by about 10 - 30 % from low to high solar flux conditions with the largest variations occurring at low latitudes for equinox. During low solar flux condition, pTEC is largely independent of geomagnetic activity. However, it slightly decreases with increasing geomagnetic activity at low latitudes during high solar flux. The seasonal variations such as the annual and semiannual anomalies in the ionosphere also exist in the low-latitude plasmasphere. In particular, the American sector (around 300°E) shows strong annual asymmetry in the plasmaspheric density, being larger in December than in June solstice.

Keywords: Plasmasphere, Total electron content (TEC), JASON satellite