Preliminary study of total electron content model over Japan derived from GEONET data

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Empirical models of the Total Electron Content (TEC) over Japan are developed with GPS-based observations to investigate the local time and seasonal dependence of TEC. The network of about 1000 GPS receivers, which are installed by the Geographical Survey Institute (GSI), realizes the dense mapping of TEC over Japan. Two coherent signals emitted from a GPS satellite enable us to estimate the slant TEC along the ray path between the GPS satellite and a receiving station. The TEC are observed every 30 seconds. To obtain the local time variation, the TEC data are hourly averaged.

We have processed TEC variation of Japan from January to December 2001. Seasonal anomaly and equinoctial asymmetry of Electron density in the ionosphere observed with MU radar has been confirmed using TEC derived from the GPS data. And it was found that TEC observed in autumn are greater than in spring in all latitude over Japan.