

## General feature of TEC over Japan obtained GEONET data

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Basic behavior of the Total Electron Content (TEC) over Japan is studied by using with GPS-based observations to investigate the fundamental behavior of absolute TEC. As TEC is the value integrated along the ray path, the behavior of TEC differs from that of maximum electron density of the F2 layer ( $N_mF_2$ ), which is obtained by ground based Ionosonde. TEC is influenced by the compositions of the bottomside of the ionosphere, the neutral winds of topside of the ionosphere, and by the inter-hemisphere transport of the plasmasphere.

Recently, many studies using TEC are conducted since practical application is strongly needed. For example, TEC is used to evaluate the influence of the earth ionosphere on the satellite communication. But the model of absolute TEC of over Japan has not been developed.

Statistical analyses of absolute TEC over Japan from May 1999 to December 2003 are performed. Data which were obtained by the network of about 1000 GPS receivers which has been installed by the Geographical Survey Institute. Absolute TEC is derived with time resolution of 30 second and spatial resolution of 0.15 deg x 0.15 deg in latitude and longitude [Otsuka et al.,2002]. We investigate the dependence of the TEC variation on the local-time, 10.7-cm solar radio flux index (F10.7), latitude, and season. Diurnal variation has the minimum at dawn and the maximum at near noon. TEC decreases with an increase in latitude. Annual variation has peaks at spring and autumn. During the nighttime, the peak in autumn disappears at mid latitude and high latitude.

Solar activity dependence of TEC has high positive correlation in spring and winter and low correlation in summer and autumn.

The TEC which was observed by GEONET was compared with IRI model.