

A study of mid-latitude ionosphere using a GPS network in Japan

Yuichi Otsuka[1], Toru Aramaki[2], Tadahiko Ogawa[3], Akinori Saito[4], Takuya Tsugawa[4]

[1] STEL, Nagoya Univ., [2] STEL, Nagoya Univ., [3] STE Lab., Nagoya Univ., [4] Dept. of Geophysics, Kyoto Univ.

The dual frequency radio signals (1575.42 and 1227.60 MHz) the Global Positioning System (GPS) provide the total number of electrons, called total electron content (TEC), along a ray path from GPS satellite to receiver. Two-dimensional maps of TEC perturbations with high temporal and spatial resolutions are derived from using nearly 1,000 GPS receivers of Geographical Survey Institute (GSI) GPS network in Japan. We investigate TEC perturbations, which have been known as traveling ionospheric disturbances (TIDs). Large-scale traveling ionospheric disturbances (LSTIDs)

propagating equatorward were observed during geomagnetic storms. We revealed that medium-scale traveling ionospheric disturbances (MSTIDs), which have wavelength of 100-500 km, propagate southwestward during nighttime and equatorward during daytime.