Two-dimensional structures of traveling ionospheric disturbance detected with GEONET

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Traveling ionospheric disturbances (TIDs) were studied with high spatial and temporal resolution observation of total electron content (TEC) by GEONET (GPS earth observation network).
GEONET consists of about 1000 GPS receivers in Japan and is operated by Geophysical Survey Institute.
Wavelength, propagation velocity and direction, and amplitude of TIDs are studied with these two-dimensional TEC data. Dominant wave length is 100-300km. TID travels from northeast to southwest in 80-150 m/s propagation velocity in the time sector between the sunset of the F-region to the midnight. The amplitude of TID enhances as it travels from higher latitude to lower latitude.
Seasonal and local time dependence of TID characteristics are discussed.