



## **Ionosphere Disturbances Triggered by the 2011 Pacific Tsunami With GPS Observation**

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In recent years, the seismo-traveling ionospheric disturbances (STIDs) triggered by large earthquakes and the following tsunamis have been intensively studied. The tsunami-related ionospheric perturbations have been detected in the ionospheric total electron content (TEC) by means of GPS measurement. Although the tsunami and the associated STIDs have been reported, the relationship between them has not been clarified yet. We examine GPS TEC data with NOAA model data for the Pacific Tsunami after the Tohoku earthquake (magnitude 9.0) near Japan in March 2011 to confirm the STIDs being triggered by the tsunami. We also estimate the vertical and horizontal mean speeds of the tsunami-induced waves in the atmosphere/ionosphere and then trace back to the origin point of the tsunami with the ray-tracing method to find the occurrence and the location of the tsunami. The results suggest that the ocean-atmosphere-ionosphere coupling can play an important role in the tsunami-ionosphere disturbances.