Ionospheric perturbations due to earthquakes observed simultaneously by subionospheric VLF/LF wave and GPS TEC measurements

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The Gravity Waves (GWs) produced by an earthquake propagate upward from the epicenter to the ionosphere. The GWs interact with the ionospheric plasma and generate the density perturbations which can be detected by different radio remote sensing techniques. In this paper, we study the vertical coupling between the lithosphere-atmosphere-ionosphere (LAI) coupling through signature of IGW waves generated from major seismic activities observed in different altitudes (D and F layers) by subionospheric VLF/LF waves and GPS TEC measurements. We will demonstrate the Travelling ionospheric disturbances (TIDs) induced by major earthquakes observed in the both ionospheric altitudes and deduce their propagation characteristics.

Keywords: VLF subionospheric waves, GPS TEC, very low frequency, earthquake, gravity wave, travelling ionospheric disturbance

