North-south asymmetry of coseismic ionospheric disturbance related to Rayleigh wave

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Coseismic ionospheric disturbances (CIDs) related to the M9.0 off the Pacific coast of Tohoku earthquake (Tohoku EQ) are investigated using data of total electron content measured by receivers of GEONET and seismic wave measured by seismometer of F-net. CID with ˜3.0 km/s related to Rayleigh wave propagates only in west southwest while CID with 1.2 km/s or slower related to acoustic and gravity wave concentrically propagates. The north-south asymmetry of the CID related to Rayleigh wave comes from magnetic inclination effect of superimposed wave front of acoustic wave excited by Rayleigh wave while CIDs with a period of 4-min above and south of the tsunami source area is excited by a point source at the tsunami source area.