

Analysis of total electron content variations after earthquakes using GPS networks

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Total electron content (TEC) data obtained from Global Positioning System (GPS) networks were analyzed to investigate effects of the earthquakes on the ionosphere.

20 earthquakes with magnitude greater than 6.0 occurred around between January 2000 and October 2007. In 4 cases of these earthquakes, TEC variations were observed approximately 10 minutes after the earthquakes. In the 3 cases, amplitude of the TEC variations was larger to the south of the epicenter than to the east and west of the epicenter.

This directivity of the TEC variations with respect to the azimuth from the epicenter could be caused by the directivity in the response of the plasma to the acoustic waves originated from the earthquakes.