Seismo-ionospheric disturbances sensing using GPS data: catching the seismic wavefield from space

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Abstract

This paper will present typical observations of irregular (and moving) sampling of the ionosphere total electron content using GPS and related applications. A special focus on the detection and modeling of ionospheric disturbances triggered by earthquakes and tsunamis will be made. The last decade has shown that the imprint of the ground or sea-surface motion related to these disruptive phenomena can be imaged in the ionosphere using dense GPS networks like in Japan, opening the area space seismology. To retropropagate the observations back to the source and estimate quantitatively the size of the earthquake or tsunami, we need to estimate a regularly sampled wavefield from the data.

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