



Lower Ionospheric turbulence variations during the intense tectonic activity of October, 2018 at Zakynthos area, Greece

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In this paper we investigate the ionospheric turbulence from TEC observations before and during the intense seismic activity of October of 2018 at Zakynthos area (Long=20.51o E, Lat = 37o.34 N),(Main shock: ML 6.6, 60,6 km SW of Zakynthos). The Total Electron Content (TEC) data of 5 Global Positioning System (GPS) stations of the EUREF network, which are being provided by IONOLAB (Turkey), were analysed using Discrete Fourier Analysis in order to investigate the TEC variations (Contadakis et al. 2009, Contadakis et al. 2012, Contadakis et al. 2015). The results of this investigation indicate that the High- Frequency limit f_o , of the ionospheric turbulence content, increases as the site and the moment of the earthquake occurrence is approaching, pointing to the earthquake locus. We conclude that the LAIC mechanism through acoustic or gravity wave could explain this phenomenology. That is, tectonic activity during the earthquake preparation period produces anomalies at the ground level which propagate upwards in the troposphere as Acoustic or Standing gravity waves. These Acoustic or Gravity waves affect the turbidity of the lower ionosphere, where sporadic Es-layers may appear too, and the turbidity of the F layer. Subsequently the produced disturbance starts to propagate in the ionosphere's wave guide. Thus observing the frequency content of the ionospheric turbidity we will observe a decrease of the higher limit of the turbidity frequency band, as a result of the differential frequency attenuation of the propagating wave.

Reference

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