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Lower Ionospheric turbulence variations during the intense seismic activity of the last half of 2019 in the broader Balkan region.

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In this paper, we investigate the ionospheric turbulence from TEC observations, before and during the intense seismic activity of September 2019 at Albania (main shock at l=19.445^{o}E, j=41.372^{o} N, M_w=5.6) and at Marmara sea (main shock at l=28.19 ^{o}E, j=40.872^{o}N, M_w=5.7), as well as of November 2019 at Albania (main shock at l=19.470^{o}E, j=41.381^{o}N, M_w=6.4), and at Bosnia-Herzegovina (main shock at l=17.961^{o}E, j=43.196^{o}N, M_w=5.4).

The Total Electron Content (TEC) data of 6 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. The results of this investigation indicate that the High- Frequency limit f_o, of the ionospheric turbulence content, increases by aproaching the site and the time of the earthquake occurrence, pointing to the earthquake location (epicenter). We conclude that the LAIC mechanism, through acoustic or gravity wave, could explain this phenomenology. In addition the proximity of the tectonic active areas to the GPS stations offer us an opportunity to discriminate the origin of the disturbances