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TEC variations over South Europe before and during the M6.3 Abruzzo earthquake of 6th April 2009

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In this paper the Total Electron Content (TEC) data of 16 Global Positioning System (GPS) stations of the EUREF network which are being provided by IONOLAB (Turkey) were analysed using wavelet analysis and Discrete Fourier Analysis in order to investigate the TEC variations over South Europe during the last month before the catastrophic Abruzzo earthquake of M=6.3 of 6th April 2009. The main conclusion of this analysis is that abrupt TEC variations, accompanied by enhanced oscillations in a broad range of frequencies of TEC, occur randomly over a broad area of several hundred km from the earthquake, even 26 days before the earthquake. High frequency oscillations ($f \geq 0.0003$Hz, periods $T \leq 1$h) seems to point to the location of the earthquake with relatively higher accuracy but the fractal characteristics of the frequencies distribution points to the locus of the earthquake with high accuracy.