



Ionospheric TEC disturbances over the area of Thessaloniki, possibly related to the local tectonic activity

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Using the data from the permanently operating GPS Reference Station of the Department of Surveying and Geodesy of the University of Thessaloniki (latitude 40 37 39.0885N and longitude 22 57 34.0885E), we estimate the Total Electron Content (TEC) over the area of the receiver. Our first measurements of TVEC around the time of occurrence of an earthquake of $M_w=3.7$ at an epicentral distance of 82.15km from the receiver indicate a remarkable increase of TVEC around the time of the earthquake. This TVEC increase cannot be attributed to the solar activity or the solar wind, thus it is quite possible that it is related with the tectonic activity which is responsible for this earthquake. In addition the large rms-error in the two hours TVEC estimations and the decrease of TVEC two days before the day of the earthquake occurrence points to the same conclusion. In order to get a statistical sense of a possible relation between TVEC disturbances and local tectonic activity we continue the TVEC follow up for one year (June, 2003 to June 2004) with some interruptions. We discriminate the days with unusual TVEC disturbances by correlating the daily disturbances of consecutive days. A sense for the influence of the geomagnetic field has been gotten with the help of Dst-intex . We compare the Consecutive Day Correlation Coefficient variations with the time occurrence of earthquakes with $M>3.0$ and epicentral distance <250 Km. CDCC decrease precede the time occurrence of all the shocks one to five days and in some cases on time CDCC decrease occurred. These results reinforce the notion that TVEC disturbances are probably connected with the local tectonic activity and in addition CDCC may be proved a useful tool for a quick detection of unusual TVEC disturbances.