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CHANGES IN TOTAL ELECTRON CONTENT ASSOCIATED WITH RECENTLY EARTHQUAKES
(M>5) OVER THE MEDITERRANEAN REGION**Abstract**

Earthquakes are actually dangerous physical phenomena. The ability to properly predict them would go a long way in reducing the damage which they cause. The last Five earthquakes ($M \geq 5$) detecting method being researched uses the ionospheric Total Electron Content (TEC). We took advantage of GPS records obtained by the GPS Earth Observation Network and satellites data of the Mediterranean region which contained the TEC data needed. This data was used to visualize the TEC over the course of the day of the Mediterranean region during earthquakes, also before and after it. These abnormalities were shown to not be caused by solar and geomagnetic activity. These results suggest that detectable ionospheric activity precedes earthquakes. In addition, we are at the start of solar cycle 25 (minimum solar activity), Ionospheric disturbances are also known to be caused by other confounding factors such as solar and geomagnetic activity. To ensure the geomagnetic disturbances due to solar activity, we also compare TEC values during earthquake times with the Dst index in the same time window. Our study on earthquakes in the last five months showed TEC fluctuations observed by GPS networks and satellites over the Mediterranean region. This paper discussed ionospheric earthquake effects detection using TEC data. It was needed continuous monitoring of TEC data to detect the earthquake effects in the ionosphere. This study gives hope in strengthening the earthquake effect early warning system using TEC data. The method development of continuous TEC observation derived from GPS observation network and satellites data that already exists over the Mediterranean region is needed to support earthquake effects early warning systems. The hope is that the potential correlation between TEC Data and pre-earthquake activities may be used as an earthquake precursor towards the development of an earthquake forecasting method.