

Statistical Analysis and assessment of Ionospheric TEC anomaly prior to large earthquake

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The detection of electromagnetic perturbations prior to large earthquakes has been proposed as a useful way to monitor the crustal activities. One of the most promising candidates is the measurement of Total Electron Content (TEC). There have been many reports on TEC anomaly associated with large earthquakes from different parts of the world. To verify the relation between TEC anomalies and seismicity around Japan, statistical studies by superposed epoch analysis have been carried out. The results have indicated that before a M>6 earthquake there are clearly higher probabilities of positive TEC anomalies in Japan. These results indicate the correlation between TEC anomalies and sizeable earthquakes. Furthermore, by making use of long-term TEC data over Japan during 2000-2013 and applying Molchan's error diagram, we can evaluate the optimal parameter for earthquake forecasting. The results show that the TEC data contain potentially useful information on earthquake forecasts.

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