Fraud Equatorial Ionization Anomaly as a Precursor of Large Earthquake

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Data obtained by DE-2 US satellite is used to study precursor features associated with a large earthquake (lat; -33.13, Longitude; 73.07, M=7.5), which occurred on October 16, 1981 during the period of large magnetic storm. It is found that atomic oxygen ion which increased due to the geomagnetic disturbance shows the reduction over the epicenter, starting from 5 days before the earthquake and ending 4days after the earthquake. If the geomagnetic latitude is not informed in advance, the minimum is surely misidentified as the trough of Equatorial Ionization Anomaly (EIA), which generally appears over the geomagnetic equator. The reduction is found along the same geomagnetic latitude as that of the epicenter. The detectable reduction of atomic oxygen ion density is in the area of 40° in latitude, and more than 150° in longitude.

The reduction might be able to be explained as a combination of eastward electric field associated with geomagnetic disturbance and locally generated westward electric filed associated with the earthquake.

However there is also a possibility that this interesting feature is created by the combination of satellite orbit and plasma density feature in low/mid latitude ionosphere. We discuss these two possibilities.