

An Ionospheric Topside-Sounder Investigation in Search of Unique Ionospheric Signatures of Earthquake Precursors

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There have been published reports, received by the scientific community with considerable skepticism, of ionospheric electron-density (N_e) signatures associated with earthquake precursors. The signatures are attributed to a quasi-static electromagnetic coupling between enhanced atmospheric electric fields, which have been observed in seismoactive regions, and the ionosphere. A major problem in this research is to discriminate such effects from alternative causes of ionospheric variability. Intensive research efforts have been performed in Japan and Russia. Proponents claim that ionospheric signatures associated with seismic activity exist days before the main shock event. Here we report the results of an independent investigation of this topic based on ionospheric topside-sounder data available from the National Space Science Data Center (NSSDC), including newly-available ISIS-2 digital ionospheric topside-sounder data. While there were some suggestive trends observed in one case, in general no obvious ionospheric signatures of earthquake precursors were detected.