

A Statistical Investigation of Pre-earthquake Ionospheric Anomaly

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Abstract

Empirical evidence of the preearthquake ionospheric anomalies (PEIAs) is reported by statistically investigating the relationship between variations of the plasma frequency at the ionospheric F2 peak foF2 and 184 earthquakes with magnitude $M \geq 5.0$ during 1994–1999 in the Taiwan area. The PEIA, defined as the abnormal decrease more than about 25% in the ionospheric foF2 during the afternoon period, 1200–1800 LT, significantly occurs within 5 days before the earthquakes. Moreover, the odds of earthquakes with PEIA increase with the earthquake magnitude but decrease with the distance from the epicenter to the ionosonde station. These results indicate that the PEIA is energy related.