



Earthquake-related Electric Field Changes Observed in the Ionosphere and Ground

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A b s t r a c t

The changes of the ionospheric electric field before and after four huge earthquakes, which include the *Ms* 8.7 earthquake of 2004 and the *Ms* 8.5 earthquake of 2005 in Sumatra of Indonesia, the *Ms* 8.0 Wenchuan earthquake of 2008 in China, the *Ms* 8.8 earthquake of 2010 in Chile, and their strong aftershocks are studied in this paper. The significant results revealed that the power spectral density of low-frequency electric field below 20 Hz in the ionosphere, a kind of electromagnetic radiation phenomena, increased abnormally before and after the earthquakes and partially corresponded to the increased power spectral density of the low-frequency geoelectric field in time. This research preliminarily indicates that the low-frequency electromagnetic radiation during the imminent stages before such earthquakes could be detected by the observation of the ionospheric electric field. However, the spatial, temporal, and intensive complexities of the electric field anomalies in the ionosphere before earthquakes have come in sight also.

Key words: ionosphere, satellite, electric field, earthquake, changes.