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Studies on the signatures of two Earthquakes over Kolkata on August 11, 2009 upon the two VLF transmitted signals and the fourth mode of Schumann resonance spectra

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Abstract

The electromagnetic effects associated with any vast earthquake are the ionospheric perturbations which are generally justified through its influence on the subionospherically transmitted VLF / LF signals. Here some attempts are made to secure informations about seismo-electromagnetic effects through ionospheric perturbations associated with the two earthquakes occurred at Andaman Island (lat: 14.018° N, long: 92.92° E), India and South Coast of Honsu (lat: 34.78° N, long: 138.27° E), Japan on August 11, 2009 at a gap of 11 min. 29 sec., upon the two transmitted signals at 16.4 kHz and 19.8 kHz, recorded near Kolkata. Earthquakes near the great-circle path from the source to the point of reception are found to affect the propagation characteristics of VLF transmitted signals.

The anomalous enhancements of the VLF signal intensity and frequency of the fourth mode of Schumann Resonance spectra as observed through the recorded data from nearby Kolkata during the times of occurrences of these two earthquakes have been reported. The variations may be interpreted in terms of the reduction of ionization in the middle atmosphere and the influences of the three global thunderstorm centers during the earthquake.