

SCG011-11

会場:304

時間:5月25日 11:15-11:30

The correlation between lower ionospheric perturbations as seen by VLF/LF propagation and EQs

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The subionospheric VLF/LF propagation is extensively used to investigate the lower ionospheric perturbation in possible association with earthquakes. An extensive period of data over 7 yr from January 2001 to December 2007 and a combination of different propagation paths in and around Japan are used to examine the statistical correlation between the VLF/LF propagation anomaly (average nighttime amplitude, dispersion, and nighttime fluctuation) and earthquakes with magnitude >6.0. It is then found that the propagation anomaly exceeding the 2s (standard deviation) criterion indicating the presence of ionospheric perturbation is significantly correlated with earthquakes with shallow depth (<40 km). Finally, the mechanism of seismoionospheric perturbations is discussed.

Keywords: Earthquakes, VLF/LF propagation, correlation study