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A statistical study on the correlation between lower ionospheric perturbations as seen by subionospheric VLF/LF propagation

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The subionospheric VLF/LF propagation is extensively used to study the lower ionospheric perturbation in possible association with earthquakes. An extensive period of data over seven years and a combination of different propagation paths are used to examine the statistical correlation between the VLF/LF propagation anomaly (average nighttime amplitude, dispersion and nighttime fluctuation) and earthquakes with magnitude greater than 6.0. It is then found that the propagation anomaly exceeding the 2 sigma (standard deviation) criterion indicating the presence of ionospheric perturbation is significantly correlated with earthquakes with shallow depth (<40km). Finally some comments on the mechanism of seismo-ionospheric perturbations are discussed.

Keywords: VLF/LF propagation, earthquakes, statistical study