

Development of interferometric system for the study of pre-seismic atmospheric anomalies

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VHF electromagnetic waves cannot usually propagate long distance because they penetrate through the ionosphere. They can reach far away receivers beyond the line-of-sight only when reflection and scattering due to ionospheric or atmospheric disturbances happen. According to Fujiwara et al. (Geophys. Res. Lett., 2004), appearance of anomalies in the atmosphere before earthquakes has been verified, through observation of anomalous transmission of VHF electromagnetic (EM) waves beyond line-of-sight. The cross-correlation between the earthquake occurrences and the anomalies shows that the appearance of anomalies was significantly enhanced within 5 days before earthquakes. Through the polarization measurement of the received EM waves, the anomalies were found to occur in the atmosphere. From this paper, temporal correlation between pre-seismic atmospheric anomalies and earthquakes was found.

In order to verify the spatial correlation, thus, we developed interferometric system to find the coming direction of scattered electromagnetic waves. In our presentation, we will show basic characteristic of our interferometric system by observing line-of-sight FM radio stations.