



Observational research for scattering FM broadcasting radio waves as a precursor of the earthquake occurrence

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In order to confirm that VHF scattering electromagnetic (FM radio broadcasting) waves beyond line-of-sight propagate before earthquake occurrence, we have tentatively installed five observatories in Hokkaido, Japan, and started observation on December 2002. From our observation we think that before 66 earthquakes, which occurred in and around the northern Japan and Hokkaido until November 2004, the scattering waves had observed. We found that logarithm of the total duration time of anomalous transmission, $\text{Log}(T_e)$, has important information about Magnitude (M) of earthquake, though T_e seems to be function of many parameters containing depth of hypocenter, distance to and power of broadcasting station, and surface condition of the Earth, that is sea or land. Beneath southern Hidaka Mountains, depth of hypocenter concentrates in a narrow range from 48 to 54km, and relation between $\text{Log}(T_e)$ and M has good linearity. We could show that the scattering wave as a precursor of earthquake really exists. It is possible to analyze statistically duration time of the scattering waves, therefore monitoring of the scattering VHF FM radio waves observation is useful to forecast earthquake occurrence and reduce seismic disaster.