

Regional characteristics of the VHF scattering waves (EQ echo) observed before earthquakes in Hokkaido

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We will show some regional difference of appearance characteristics of EQ echo. We confirmed existence of the EQ echo as a precursor, which observed before earthquakes and could establish some empirical formula between total duration time T_e and M , depth of hypocenter h , and maximum seismic intensity I_{max} for each observation site.

At ERM, in the southern Hidaka Mountains, central Hokkaido, we got a formula for 50km deep earthquakes;

$\text{Log}(T_e) = 1.06M - 2.89$ (1)

At OCI, in the eastern Hokkaido, we got a formula for about 50km deep earthquakes;

$\text{Log}(T_e) = 1.08M - 2.75$ (2)

At HSS, in the western Hokkaido, we got a formula for 40~60km deep earthquakes in the coastal region;

$\text{Log}(T_e) = 1.0M - 1.5$ (3)

(1) is similar to (2), but (3) shows that duration times of EQ echoes at HSS is very long about 30 times of ERM and OCI. Indeed, at HSS lower limit of M of detectable earthquake in the coastal and ocean regions is smaller than those of ERM and OCI. In generally, propagation of electromagnetic waves depends on resistivity of the underground, regional difference of sensitivity of T_e may be caused by resistivity distribution in the crust and mantle.