Trapped signals in subducting oceanic crust observed in the seismograms of deep-focus earthquakes occurring in Hokkaido

Takashi Furumura[1]

[1] ERI, Univ. Tokyo

The subducting plate is highly heterogeneous due to the dominance of small-scale heterogeneities within the former oceanic crust and mantle. High-frequency signals with wavelength shorter than the correlation distances of the plate heterogeneities cause strong multiple forward scattering within the crust and propagate longer distances with less attenuation than propagating through outer mantle. Thin but low-velocity former oceanic crust can also guide high-frequency seismic waves as a trapped signal within the crust. We find such trapped signals in the seismograms of deep-focus earthquakes occurring in Hokkaido, Japan. Numerical FDM simulation of seismic wave propagation using detail subsurface structural model below Hokkaido, Japan, was used for understanding seismic behavior interacted with heterogeneous structure.