

Review of seismological studies on global scale 3-D structure of the Earth's interior analyzing broadband data

Tatsuhiko Hara[1]

[1] IISEE, BRI

Waveform data from broadband stations installed all over the world have been intensively analyzed to investigate the Earth's interior during the last two decades. Normal mode analyses have been conducted to determine long wavelength lateral heterogeneity. Surface wave tomographic studies have been performed to determine 3-D structure of seismic velocity, anelasticity, and anisotropy of the upper mantle. Travel times of various body wave phases are determined using correlation techniques, and used for seismic tomography for 3-D structure of the whole mantle. Also, body wave data have been directly used for inversion for 3-D structure. In this talk, we review previous studies to investigate the Earth's interior using broadband waveform data, and discuss future prospects.

Waveform data from broadband stations installed all over the world have been intensively analyzed to investigate the Earth's interior during the last two decades. Normal mode analyses have been conducted to determine long wavelength lateral heterogeneity (e.g., Masters et al., 1982; Resovsky and Ritzwoller, 1999). Surface wave tomographic studies have been performed to determine 3-D structure of seismic velocity (e.g., Woodhouse and Diewonski, 1984; Zhang and Tanimoto, 1991), anelasticity (e.g., Romanowicz, 1995), and anisotropy (e.g., Ekström and Dziewonski, 1998.) of the upper mantle. Travel times of various body wave phases are determined using correlation techniques (e.g., Woodward and Masters, 1991), and used for seismic tomography for 3-D structure of the whole mantle (e.g., Su et al., 1994). Also, body wave data have been directly used for inversion for 3-D structure (e.g., Li and Romanowicz, 1996). In this talk, we review previous studies to investigate the Earth's interior using broadband waveform data, and discuss future prospects.