# Mantle anelasticity inferred from velocity dispersion of body-wave

# Azusa Shito[1]; Hitoshi Kawakatsu[2]; Kazushige Obara[3]

[1] ERI, Univ. of Tokyo; [2] ERI, Univ of Tokyo; [3] NIED

Mantle anelasticity is studied using body-wave (P and S waves) dispersion. The method is based on direct measurement of arrival time of different frequency components of P and S waves. Because the velocity dispersion of body-wave is less sensitive to focusing effect, we can expect more stable measurement by using velocity dispersion than amplitude.

Waveform data from regional events (the epicentral distances are smaller than 30 degrees) were recorded by tiltmeters installed at stations of the High Sensitivity Seismograph Network of Japan (Hi-net) operated by National Research Institute for Earth Science and Disaster Prevention (NIED), which can be used as broadband seismometers with horizontal components. The broadband and high S/N data is suitable for the analysis in this study.

The waveforms are low-pass filtered with two corner frequencies of 0.1 Hz and 1.0 Hz. We manually picked P and S waves arrivals by hand at each frequency band. For causality to be preserved, the highest frequency component included in the waveform should arrive fastest. Therefore, we can assume that the frequency component of the picked phase can be defined by the highest frequency of the each frequency band, 0.1 Hz and 1.0 Hz. Path averaged Q is calculated by using differential (frequency-dependent) arrival times between the two frequencies 0.1 Hz and 1.0 Hz. In order to measure the dispersion only due to anelasticity, we need to correct source time function effect. We will discuss absorption band to account for intrinsic attenuation in mantle.