# Low-Q zone beneath the subducting Pacific plate?

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Interesting systematic change in waveform is observed in seismic networks on Japan islands from events in Java - Tonga subduction zones (the epicentral distances are from 40-80 degrees). Some waveforms sampling eastern region (oceanward) of Japan subduction zones from Tohoku to Izu have been broadened and the amplitude has been decayed. These characteristics can be due to anelasticity in the propagating media.

We estimated anelasticity using two kinds of differential attenuation (dt$*$) method; S-So method and S-P method. The methods are based on forward modeling of waveform by using absorption band model. A reference signal is modified synthetically with changing parameter Q to find best fit with observed signal. The S-So method determines differential attenuation of S-wave to a reference So-wave. The S-P method determines differential attenuation of S-wave to P-wave. In the modeling, we used normalized amplitude. Therefore, we only take account of dispersion but amplitude decay.

Waveform data used in this study were corded by broad band seismograph network (F-net). The network is operated by National Research Institute for Earth Science and Disaster Prevention (NIED).

Using data from five events, a high attenuation region is detected in the upper mantle beneath subducting Pacific plate in Japan subduction zones from Tohoku to Izu. If we assume that all the absorption occurred only in the upper mantle (400 km thick), the estimate value of Qs is 40-60. The spatial distribution of the high attenuation zone is correspondent to that of a low velocity zone suggested by Obayashi et al. [2005]. The origin of the high attenuation and low velocity zone will be discussed in the future work.