An Estimation of Q-values of Deep Soil Deposits as revealed by the Crustal Activity Observation Well VSP (Part 3)

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Seismic wave attenuation, Q-values, in deep sediments down to about 2km in depth are directly and systematically estimated at the Kamogawa and Yamakitaminami observation wells in Kanto area. Under an assumption of frequency-independent Q, apparent attenuation factors in some depth range are determined by the spectral ratio method. The Q-values are graphically obtained by using the attenuation factor vs. travel time plot.

At the Kamogawa well, P and S wave velocities are gradually increasing with depth. Q-values obtained show a similar trend, and those for P and S wave are 20-40 and 10-20, respectively. Q-values at the Yamakita well are about 30 for S wave and about 10 for P wave. P and S velocities at the Yamakita well also increase gradually, but show a clear boundary at about 800m in depth. Waveforms observed at depths deeper than 800m are not clear, then estimations of Q-values seems to be less reliable. Q-values at the Kamogawa well are consistent to the other wells in Kanto area.