



The High frequency decay parameter (Kappa) in Taiwan

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The high frequency decay parameter, kappa (κ) was computed by fitting the Fourier amplitude spectra from the seismic network of Taiwan Strong Motion Instrumentation Program (TSMIP). The kappa values of the SH-wave are calculated station by station. And then, based on each event's hypocentral distance (R_{hpy}) and κ , we can model the relationship between κ and R_{hpy} . κ at $R_{hpy}=0$ (denoted as κ_0) can be referred as one of the site factors. There are 33,756 seismograms with R_{hpy} ranging 10~150 km and focal depth (D_H) smaller than 30 km at 689 stations of TSMIP from 1993 to 2014 that are taken to compute the κ_0 value. Furthermore, the site-specific κ_0 from 426 stations are correlated with the averaged shear-wave velocity of the top 30 m of strata (V_{S30}) given by Kuo et al. (2012). The resultant relation is $\kappa_0=0.157-0.0167\cdot\ln(V_{S30})\pm 0.0047$ ($R^2=0.69$). At last, the correlation of κ_0 with the engineering-application depth of $V_S=1.0$ km/s ($Z_{1.0}$) and the elevation (h) of station are discussed.