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The synthetic spectra of potential earthquakes for Taipei basin

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Modeling the amplitude spectra based on the source term, the path one and site ones for 54 sites located in and around the Taipei basin is the aim of this study. The site term includes the amplification function varied with frequency and the site-specific parameter (k_0). The amplification functions for Class-C, -D, and -E site are from Huang et al. (2007) for the central Taiwan. Meanwhile, the amplification function for Class-B site can be referred to Boore and Joyner (1997). The root-mean-squared spectral amplitudes of two horizontal shear waves after three-point smoothing from the observed seismograms are compared to the synthetic amplitude spectra. The goodness of fit coefficient (GFC) and the residual errors (ERR) are calculated for concluding the fitness of the modeling amplitude spectra. Results show both the GFC and ERR of stations are varied with the earthquake magnitude and hypo-central distance. The averaged GFC are larger than 0.8 for 42 stations. Meanwhile, there are 12 station with averaged GFC smaller than 0.8. Besides, the ERRs of 28 stations are less than 0.5. Meanwhile, there are 18 stations with ERRs in the range of 0.5-0.6. The obtained results may be used for modeling the amplitude spectra for the Taipei area. The more accurate amplitude spectra can be improved by updating the parameters utilized in the source-, the path- and the site terms.