

Host-target adjustment factor for Ground Motion Model in Taiwan based on stochastic point simulation

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Ground motion prediction equation (GMPE) is now widely used in the world, development of regional GMPE can help to predict possible future earthquake in specific magnitude and distance range. But in many regions, historical earthquake database will have some gap (lack of data with specific magnitude range) when developing GMPE. In this case, database from foreign region might help to decide the trend of regression feature of the extrapolate part, but regional difference should be considered carefully due to different seismological structure and different geological settings.

Stochastic point source simulation technique (Boore, 1983; Boore, 2003) is a seismological based ground motion simulation method to generate Fourier spectrum and random phase time history, which become a valuable tool to generate basic spectrum for foreign (host) and Taiwan (target) region. Meanwhile, site correction method from Empirical Transfer Function (ETF, Wen et al., 2013) for stochastic point source simulation was proposed using selected stochastic parameters (Sokolov et al. 2009; D'amico et al., 2012). In this study, accuracy of simulated Fourier amplitude spectra (FAS) was calibrated for Taiwan earthquake database first to make sure stochastic models works well with specific dataset. Secondly, California region was selected for calculating host-target adjustment factor using model parameters from Atkinson (2015). Preliminary results show different feature within high (5-10Hz), medium (1-5 Hz) and low frequency (0.2-1Hz) band within magnitude range 5.5 to 6.5. Which might need to take into consideration on using foreign seismology data to capture the features within gaps in our database.

References

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