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Preliminary Study on Ground Motion Prediction Equation of Response Spectra on Seismic Bedrock

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Prediction of the response spectra for the strong motion on seismic bedrock based on an attenuation relationship is very important for the earthquake mitigation and the nuclear power plant safety. So far, since the data are rarely derived on seismic bedrock, it remains many difficulties to develop an attenuation relationship on seismic bedrock directly.

In this study, we constructed a response spectra database on seismic bedrock including the following data: (1) Data directly estimated from the recordings derived at the vertical array at KiK-net stations at which the bottom seismograph is located on seismic bedrock with V_s over 2km/sec; (2) Recordings derived at hard rock sites in RK-NET and dam sites; (3) Near source data estimated using the substructure model and an equivalent linear method for records at K-NET and KiK-net sites.

Based on this database, we developed a new attenuation relationship for response spectra on seismic bedrock, including the effects of focal depth, earthquake type.

Comparison with the other studies shows that our results are generally consistent with the recent previous studies.

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