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Comparison of site effect and damage distribution of Chi-chi earthquake in the western Taichung area

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Central Taiwan suffered very severely damages during the 1999 Chi-Chi earthquake. It includes buildings collapsed, casualties, and economic loss, etc. The Chelungpu fault is thrust fault that dipping to east. Although the ground motions in the footwall area were smaller than that in the hanging wall area. But the western Taichung area which located in the footwall also shows very large building damages. In this study, we performed the microtremor survey in the western Taichung area. By using the horizontal-to-vertical spectral ratio, we can analysis the site response in the western Taichung area. The site response can be used to compare with the ground motion response by earthquake and the damage distributions of the 1999 Chi-Chi earthquake. On the basis of this analysis, the results can also use as a reference for the future seismic hazard mitigation, seismic safety design, and planning of land use.