

# Nonlinear Ground Motion Response During the 2016 Meinong Taiwan Earthquake

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The Meinong Taiwan earthquake occurred on February 6, 2016, at 03:57 (UTC+8) with  $M_L$  6.6. The strong ground motion induced the soil liquefaction in Sinshih and Annan districts. To investigate the nonlinear site response during Meinong mainshock, the degree of nonlinear site response (DNL) which summation of the horizontal to vertical spectral ratios (HVSr) differences between weak-motions and Meinong mainshock records from the Taiwan Strong Motion Instrumentation Program (TSMIP) network are calculated. We compare the DNL values with the ground motion parameters such as peak ground acceleration (PGA), peak ground velocity (PGV), and also the ratio between PGV and  $V_{s30}$ . The DNL shows a positive correlation with ground motion intensity, particular with PGV, and the surface site conditions also leading the DNL strength. We also applied a stochastic method for modeling the ground motion of the Meinong earthquake with site correction by the HVSr of weak and strong motions respectively. The percentage of PGA reduction calculated in this study can be an indicator of the spatial distribution of the degree of nonlinear soil effects of the 2016 Meinong Taiwan earthquake.

Keywords: Meinong earthquake, nonlinear site response, HVSr