

Three-dimensional Vs ambient noise tomography around the Meishan fault zone in southwestern Taiwan from dense seismic array

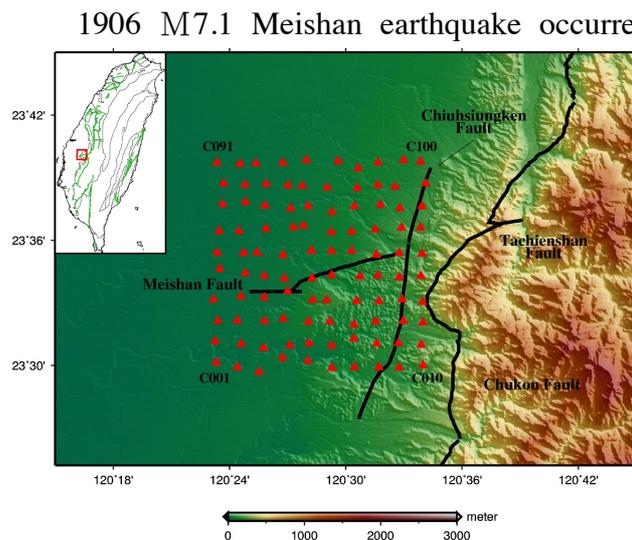
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1906 M7.1 Meishan earthquake occurred near Chiayi city in southwestern Taiwan and resulted in more than three thousands casualties and six thousands of buildings collapsed. Based on the geological survey, the Meishan fault zone a right-lateral strike-slip fault with a length of 25 kilometers, was the main contributor for this event. In previous studies, researchers have done investigation about the Meishan Fault zone, including

geologic researches on the surface and seismic explorations for the shallow crust. However, there is still limited information about 3-D shallow crustal structure of this study area. Therefore, we deployed 100 Texan instruments (~2 km interval) between Aug. and Nov. 2015, covered around the Meishan Fault zone. We obtained a 3-D shear wave shallow crustal velocity structure using ambient noise tomography. The reliable periods of phase velocity from Rayleigh wave are 0.6 to 6.8 seconds, which correspond to around 0-6 km at depths. As a result, the sub-surface structure around the Meishan fault zone is very complex. The structures of the basement varied across the Meishan fault zone: the basement is thicker in the north of the fault zone than that in the south. Also, the Xiaomei anticline near the fault zone is also observed from this study.