

Application of probabilistic seismic hazard assessment (PSHA) to Taiwan

Po-Shen Lin¹, Chin-Tung Cheng¹, Poa-Shan Hsieh¹, Ying-Tung Yen¹, and Chung-Han Chan²

¹Disaster Prevention Technology Research Center, Sinotech Engineering Consultants Inc., Taipei, Taiwan

²Department of Geosciences, National Taiwan University, Taipei, Taiwan

Abstract. In this study we assess the probabilistic seismic hazard for the Taiwan region by integration of the information on tectonic setting, geology, geomorphology, earthquake catalog, and ground motion prediction equations. The treatment of seismogenic sources is based on several categories, which are from shallow crust regions, deep crust regions, crustal active faults, subduction intraslab, and subduction interface. By further considering ground motion prediction equations for different types of sources and site conditions, probabilistic seismic hazard can be assessed. The obtained high hazards can mainly be contributed by the crustal active faults with short recurrence intervals. Thus, higher hazards are evaluated along the active faults in the Coastal Plain and the Logitudinal Valley. In northern Taiwan, by contrast, a low hazard level is obtained. It corresponds to relative inactive tectonics and faults in this region and its vicinity. Since this assessment is widely applied for each administrative region in Taiwan, when the information of vulnerability (fragility curve) and exposure (distribution of structures and population) is further considered, probabilistic seismic risk map could be assessed. The result would be a benefit to decision-makers and public officials for seismic hazard mitigation.