



Microzonation of Seismic Hazard Potential in Tainan, Taiwan

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Majority of Tainan area is densely populated in alluvial plains. Medium- and high-story buildings are increasing. Reconstruction speed of old buildings in some communities is slow. Considering at least six active faults are distributed in this area, we can foresee very high earthquake hazard potential. In this study, a catalog of 2044 shallow earthquakes occurred from 1900 to 2010 with M_w magnitudes ranging from 5.0 to 8.2, and 11 disastrous earthquakes occurred from 1683-1899 are used to estimate the seismic hazard potential in Tainan area for seismic microzonation. The results reveal that the highest the earthquake hazard potential in Tainan area is located in the northern part, including Houbi Dist., Xinying Dist., Liuying Dist., western Baihe Dist., western Liujia Dist., northeastern Yanshui Dist., northeastern Xiaying Dist., northern Guantian Dist. and northern Madou Dist. The probabilities of seismic intensity exceeding MMI VIII in 10, 30, and 50-year periods in above areas are greater than 30%, 50% and 70%, respectively. Moreover, the probabilities of seismic intensity exceeding MMI VI in 10-year period are greater than 70% in the central and northern areas of Tainan. Finally, by comparing with the seismic zoning map of Taiwan in current building code that was revised after 921 earthquakes, we find that classification of whole Tainan are zone I has underestimated the following areas: southern Houbi Dist., western Baihe Dist., western Tungshan Dist., central and eastern Liuying Dist., northern Liujia Dist. and northeastern Xinying Dist.. Results of this study show high earthquake hazard potential in Tainan area. They provide a valuable database for the seismic design of critical facilities. It will help mitigate Tainan earthquake disaster loss in the future, as well as provide critical information for emergency response plans.