Geophysical Research Abstracts
Vol. 20, EGU2018-11562, 2018
EGU General Assembly 2018

Areal Source/ Active Fault/Fault System for Next Seismic Hazard Assessment: Case Study for 1906 M7.1 Meishan, and 2016 Meinong M6.6 Taiwan Earthquakes

Kuo-Fong Ma and Ya-Ting Lee
Department of Earth Sciences, National Central University (fong@ncu.edu.tw)

Taiwan Earthquake Model published the first public PSHA map of Taiwan in late 2015, and had been widely discussed and adopted in a way toward seismic hazard mitigation and risk assessment. The model adopts the source parameters of 38 seismogenic structures under a single fault segment basis, and shallow areal source for crustal events, and, intraplate, and interplate subduction events. To evaluate the potential ground-shaking resulting from each seismic source, the corresponding ground-motion prediction equations for crustal and subduction earthquakes are adopted. The highest hazard probability is evaluated to be in Southwestern Taiwan and the Longitudinal Valley of Eastern Taiwan. Right after the publication of PSHA2015, a damaging earthquake of 2016 Meinong M6.6 earthquake occurred in southwestern Taiwan from non-identified seismogenic structure with unexpected large ground motion in PGA and PGV due to the composite sources in this single event.Historically, significant crustal damaging earthquakes in Taiwan mostly were from complicated fault system rather than from a single fault segment (e.g. 1935 M7.5 Hsinchu-Taichung, and 1906 M7.1 Meishan earthquakes). Technically, the 2016 M6.6 Meinong earthquake could be categorized into areal source event. The 1906 M7.1 Meishan earthquake, recently, had been resolved to be from a fault system of blind NE strike thrust with EW surface breaching fault (one of the identified seismogenic structures). These events suggest that a single fault segment evaluation for seismic hazard might be inadequate. However, in the same time, PSHA evaluation of ground motion from areal source and active fault might double count the hazard for an event involved from the both category. This presentation gives the facts on the difficulty in categorizing the earthquake sources into PSHA, and look for suggestion for our next seismic hazard assessment in a complex fault system.