

# Ground Motion Evaluation and Validation of the 1920 Hualien M8.0 Earthquake

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We implemented scenario cases with various characterized source models to explain the intensity distribution from historical literatures of the 1920 June 5 earthquake with magnitude 8.0. This earthquake is located on offshore Hualien, east of Taiwan and led to shaking-induced casualties and building damage in northern Taiwan. Historical seismic intensity map showed that the earthquake shook whole Taiwan. Subduction zone of east offshore Taiwan are potential source regions of larger inter-plate earthquakes. Northeast Taiwan area is under inevitable threat from strong ground motions generated by future large earthquakes along the subducting plate-boundary. After this event, it has no such great event occurred in the similar region during the period of digital seismic observation. It is worth to validate the intensity of seismological bulletin records and reevaluate the possible shaking on specific site of critical metropolitan with scenario simulations. By combining the simulations of deterministic method for low frequency and the stochastic method for high frequency, the broadband-frequency ground motion time history could be obtained. We tuned the source parameters to build up possible source model that can best explain the spatial distribution of historical seismic intensity for this great earthquake. The shaking level from validated simulation for the other specific metropolitan area will be helpful for the advance application in seismic hazard assessment.