



# A Probabilistic Seismic Hazard Model for Mainland China

**Yufang Rong**

Staff Vice President and Principal Research Scientist, FM, Research Division, Norwood, MA

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**Abstract:** We construct a probabilistic seismic hazard model for mainland China by integrating historical earthquakes, active faults, and geodetic strain rates. We delineate large seismic source zones based on geologic and seismotectonic characteristics. For each source zone, a tapered Gutenberg-Richter (TGR) distribution is used to model the total seismic activity rates. We construct a linked-fault model and use GPS velocities to invert for fault slip rates. The TGR a- and b-values are calculated using a new earthquake catalog, while corner magnitudes are constrained using the seismic moment rate inferred from a geodetic strain rate model. For hazard calculations, the total TGR distribution is split into two parts, with smaller ( $M_w < 6.5$ ) earthquakes being distributed within the zone using a smoothed seismicity method, and larger earthquakes put both onto active faults, based on fault slip rates and dimensions, and into the zone as background seismicity. We select ground motion models by performing residual analysis using ground motion recordings. Site amplifications are considered based on a site condition map developed using geology as a proxy. The resulting seismic hazard is consistent with the fifth-generation national seismic hazard model for most major cities.

**Biography:** Yufang Rong is Staff Vice President and Principal Research Scientist at FM (Factory Mutual Insurance Company). She leads strategic research on earthquake hazards for risk analysis and modeling, aiming to develop cost-effective loss prevention solutions. Yufang joined FM in 2011. Prior to her tenure at FM, she was a Principal Research Scientist at AIR Worldwide (now Verisk) in Boston, Massachusetts. Yufang has published numerous papers in scientific journals and conference proceedings. Beyond her work at FM, she contributes to the scientific community as an Associate Editor for the Seismological Research Letters and a peer reviewer for several scientific journals. Additionally, she has chaired sessions at annual meetings of the American Geophysical Union (AGU) and the Seismological Society of America (SSA). Yufang holds a Doctorate in Earth and Space Sciences from the University of California, Los Angeles, and both a Master's and Bachelor's degree in Geophysics from Peking University in China.