



## **Probabilistic Seismic Hazard Assessment of North East India**

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### **Abstract**

Probabilistic Seismic Hazard Assessment of the North-East Indian region is carried out considering three models of seismic source, i.e., areal sources, line sources, and smoothed gridded seismicity model. Between 87°- 98° E and 20°- 30° N, earthquake catalogs and various tectonic features are collected from multiple sources which produce a seismotectonic map. Based on seismicity, tectonic provinces, and fault rupture mechanism, the study region is divided into six area source zones. Thirty-two identified fault sources are modelled as linear source models; the gridded seismicity model is modelled as a point source model. For each source model, seismicity parameters are calculated by considering only the completed earthquake catalog. Four Next-generation (NGA) Ground Motion Models are applied to estimate the hazard at the reference rock condition. The logic tree framework is implemented in the source models and GMPEs to account for the epistemic uncertainties. Peak ground acceleration (PGA) and spectral acceleration ( $S_a$ ) are estimated at different cities of Northeastern states for a 2% and 10% probability of exceedance in 50 years. The hazard curves and uniform hazard spectra are also presented.

**Keywords:** PSHA, Logic tree, OpenQuake