

Ground Motion Observation of Sabah Earthquakes on the Use of Next Generation Attenuation (NGA) Ground-Motion Models

ABSTRACT

Ground motion prediction equations (GMPEs) are being used for the estimation of the ground motion parameters which are needed for the design and evaluation of important structures. The seismic hazard may contribute greatly to the total risk; therefore the selection of appropriate GMPEs may have a substantial influence on the design and safety evaluation. For low-seismicity areas, however, the available database of strong ground motion measurements is limited, with determination of an appropriate GMPE been a rather difficult task. The objective of this study is to evaluate the next generation attenuation (NGA) ground-motion models to be applied in Sabah region. In this study, six next generation attenuation (NGA) models have been selected to be evaluated. The representation of all NGA models, are compared with the Sabah ground motion database comprises 209 two horizontal-component acceleration time series recorded within 10 to 1000 km of source to site distances for 173 earthquakes with moment magnitudes (MW) ranging between 3.0–6.0. The comparisons are made using analyses of root of the mean square (RMS) and residuals. Two GMPEs present better residual fits than other models with smaller RMS value and indicates better estimation of the peak ground acceleration (PGA). Based on these findings, it is recommended on using the NGA relations for seismic hazard assessment of Sabah.