ABSTRACT

Semarang City has potential seismic hazards because it is passed by the Semarang and Ungaran fault lines and is near subduction in southern Java. This study aims to analyze the seismic hazard in Semarang City using the Probabilistic Seismic Hazard Analysis (PSHA) method. The data used is earthquake data obtained by from BMKG for the period 2020-2024 and USGS, IRIS, and ISC for the period 1970-2024 with magnitude ≥4 Mw. The analysis process includes magnitude conversion, declustering, earthquake source zone modeling (megathrust, fault, and background), and calculation of seismic parameters using ZMAP and R-CRISIS software. The results of the analysis show that the Peak Ground Acceleration (PGA) value for a probability of being exceeded by 2% in 50 years ranges from 0.2531 to 0.2843 g, while for a probability of being exceeded by 10% in 50 years it ranges from 0.0993 to 0.1084 g. The highest values of PGA and Spectral Acceleration (SA) are located in Mijen, Gunungpati, and Banyumanik sub-districts. In contrast, the lowest values are in the sub-districts of Genuk and its surroundings. The distribution of seismic hazard shows that the southern part of Semarang City has a higher seismic hazard level due to the direct influence of the subduction zone and local fault zones.

Keywords: *Seismic Hazard, PSHA, Semarang, PGA, SA*