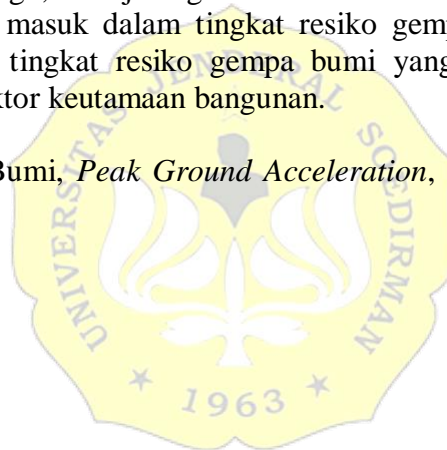


## ABSTRAK

*Peak Ground Acceleration* (PGA) merupakan nilai percepatan getaran tanah tertinggi yang pernah terjadi pada suatu wilayah akibat gempa bumi. Penelitian ini bertujuan untuk memetakan gempa bumi berdasarkan kedalaman dan kekuatan magnitudo, menentukan nilai *Peak Ground Acceleration* (PGA) berdasarkan persamaan Fukushima dan Tanaka, serta menentukan tingkat resiko gempa bumi berdasarkan hasil perhitungan *Peak Ground Acceleration* (PGA) wilayah Jawa Tengah. Data gempa bumi periode 1971-2021 didapatkan dari hasil rekaman USGS dan BMKG pada koordinat  $5^{\circ}40'LS-8^{\circ}30'LS$  dan  $108^{\circ}30'BT-111^{\circ}30'BT$  dengan magnitudo  $M \geq 3$ . Kemudian data gempa bumi diolah dan dibuat peta kontur menggunakan software ArcMap 10.8. Hasil pengolahan dan perhitungan menunjukkan sebaran gempa Jawa Tengah didominasi oleh gempa dangkal dengan magnitudo  $M < 4$  dan nilai PGA berdasarkan persamaan Fukushima dan Tanaka berkisar antara 0,079-0,748 g, dimana nilai maksimum berada di Kecamatan Banjarmangu, Banjarnegara. Berdasarkan klasifikasi nilai PGA, wilayah Jawa Tengah masuk dalam tingkat resiko gempa bumi rendah sampai tinggi. Sehingga nilai tingkat resiko gempa bumi yang didapatkan digunakan sebagai dasar untuk faktor keutamaan bangunan.

**Kata kunci:** Gempa Bumi, *Peak Ground Acceleration*, Fukushima dan Tanaka, Tingkat Resiko.



## ABSTRACT

Peak Ground Acceleration (PGA) is the highest ground vibration acceleration value that has ever occurred in an area due to an earthquake. This study aims to map earthquakes based on depth and magnitude, determine the Peak Ground Acceleration (PGA) value based on the Fukushima and Tanaka equations, and determine the level of earthquake risk based on the results of the Peak Ground Acceleration (PGA) calculation for the Central Java region. Earthquake data for the period 1971-2021 were obtained from USGS and BMKG recordings at coordinates  $5^{\circ}40'S-8^{\circ}30'S$  and  $108^{\circ}30'E-111^{\circ}30'E$  with magnitude of  $M \geq 3$ . Then the earthquake data was processed and made a contour map using ArcMap 10.8 software. The results of processing and calculations show that the distribution of the Central Java earthquake is dominated by shallow earthquakes with a magnitude of  $M < 4$  and the PGA value based on the Fukushima and Tanaka equations ranges from 0,079-0,748 g, where the maximum value is in Banjarmangu District, Banjarnegara. Based on the classification of PGA values, the Central Java region is included in the low to high earthquake risk level. So the value of the earthquake risk level obtained is used as the basis for the building priority factor.

**Keywords:** Earthquake, Peak Ground Acceleration, Fukushima and Tanaka, Risk Level.

