

## Soil Characteristics and Liquefaction Potential of the Bengkulu Region Based on the Microtremor Method

**Authors :** Aditya Setyo Rahman, Dwikorita Karnawati, Muzli, Dadang Permana, Sigit Pramono, Fajri Syukur Rahmatullah, Oriza Sativa, Moehajirin, Edy Santoso, Nur Hidayati Oktavia, Ardian Yudhi Octantyo, Robby Wallansha, Juwita Sari Pradita, Nur Fani Habibah, Audia Kaluku, Amelia Chelcea, Yoga Dharma Persada, Anton Sugiharto

**Abstract :** Earthquake vibrations on the surface are not only affected by the magnitude of the earthquake and the distance from the hypocenter but also by the characteristics of the local soil. Variations and changes in soil characteristics from the depth of the bedrock to the surface can cause an amplification of earthquake vibrations that also affect the impact they may have on the surface. Soil characteristics vary widely even at relatively close distances, so for earthquake hazard mapping in cities with earthquake threats, it is necessary to study the characteristics of the local soil on a detailed or micro-scale (microzonation). This study proposes seismic microzonation and liquefaction potential based on microtremor observations. We carried out 143 microtremor observations, and the observation sites were spread across all populated sub-districts in Bengkulu City; the results showed that the dominance of Bengkulu City had medium soil types with a dominant period value of  $0.4 < T_0 < 0.6$ , and there was one location with soft soil characteristics in the river, shaved with  $T_0 > 0.6$ . These results correlate with the potential for liquefaction as indicated by a seismic vulnerability index ( $K_v$ ) greater than 5.

**Keywords :** microtremor, dominant period, microzonation, seismic vulnerability index

**Conference Title :** ICSEE 2023 : International Conference on Seismology and Earthquake Engineering

**Conference Location :** Buenos Aires, Argentina

**Conference Dates :** February 20-21, 2023