

Active tectonics of the northern Banda Arc, eastern Indonesia: a preliminary geomorphic mapping

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The 180°-curved Banda Arc is located in the tectonically complex region where the Eurasian, Indo-Australian, and Pacific plates converge. The northern Banda Arc, which includes Seram, Buru, Ambon, and surrounding islands, is a seismically active region. Seismicity is mainly observed around the northeast Seram with the domination of thrust faulting mechanisms, while strike-slip faulting activity is mainly located in the central Seram. Although the area is vulnerable to earthquakes, there has been limited effort to study the active tectonics of the area. This study investigates the tectonic geomorphology of the northern Banda Arc based on the Indonesian DEM (DEMNAS) to understand the active tectonics of the region and relates the interpreted structures to seismicity in the region. The Kawa and Bobol faults elongate across Seram and show a left-lateral movement. The faulting activity is recorded in geomorphic features such as triangular facet, beheaded river, pressure ridge, and river offset. The northeast Seram lacks geomorphic expression, but evidence such as uplifted marine terrace, deformed fluvial terrace, and water gap illustrate thrust faulting activity. Other faults with less than 20-km length are observed in Ambon, Haruku, and Saparua, majorly deforming uplifted marine terraces. The faulting activities in the region might be related to the oblique convergence between the northern Banda Arc and the West Papua.

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