

Neogene tectonics and orogeny of Indonesia

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The present tectonic configuration of the Indonesian archipelago is thought to have been developed during Neogene times, and it shows typical triple junction convergence due essentially to the interaction of three megaplates: the westward-moving Pacific Plate, the northward-moving Indo-Australian Plate and the south-southeastward-moving Eurasian Craton.

The archipelago is built up of at least 5 distinctive crustal elements that includes: 1) Sunda Shield (SE Eurasian Craton), 2) Indian (Oceanic) Plate, 3) Australian Craton, 4) Pacific Plate and 5) Transitional Complex. Each unit consists of several distinctive tectonic units (provinces, zones or belts).

This tectonic convergence was subsequently followed by the development of *orogenic belts* in most parts of the region, which kinematically can be divided and recognized into 4 types:

1. **SUNDA OROGENY** in western Indonesia due essentially to a back-arc thrusting in Jawa and Nusatenggara, and transpressional movement of the Barisan Fault System in Sumatera. The orogeny gave rise to the development of the Southern Mountain Ranges in Jawa and the Barisan Mountain

Ranges in Sumatera, which are coincident with the fold and fault belt. In Sumatera the belt shows a typical *flower structural setting*.

2. **BANDA OROGENY** in Sulawesi and its surroundings due essentially to the development of a Tethyan type convergence together with the transcurrent movement of the Palu-Koro Fault System, which gave rise to the development of mountain ranges in Sulawesi.

3. **MELANESIAN OROGENY** in Irian Jaya & Papua New Guinea and Sahul Platform due to the development of thin-skinned tectonics causing the development of the Central Irian Jaya Fold and Thrust Belt coincident with the Central Irian Jaya Mountain Ranges.

4. **TALAUT OROGENY** in the northern Maluku region due to the development of double arc collision coupled with the transpressional movement of southern extension of the Philippine Fault System giving rise to the development of the imbricated Talaud-Tifore ridge in the form of *flower structure*, which partly emerged above sea level.