

Wrench tectonics in Sundaland — subsurface and offshore evidence

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Wrenching is widespread in Sundaland. Convincing evidence from onshore mapping is now combined with lesser known information from the subsurface and from the offshore. Maximum principal stress (S_H) directions were determined from wrench patterns, well-bore breakouts, and first-motion of major earthquakes occurring in the last century. Most of Sundaland is currently subjected to north-south S_H . Towards its margins the stress trajectories deviate from the meridian, probably as result of interference with S_H of the convergence of adjoining megaplates and the southeast extrusion of Indosinia. From at least the late Oligocene onward Sundaland has been the focus of converging plates and subplates. Fracture zones that are suitably orientated with respect to the convergence direction in various parts of the region responded by wrenching. Until approximately the onset of Mid-Miocene most wrenching was transtensional forming pullapart depressions and modifying the structuration of the large depocentres: the backarc basins of Sumatra-Java, the aulacogens Malay-Penyu-West Natuna,

and the forearc/marginal basins Soikang-Sarawak-NW Sabah-East Kalimantan. Cessation of spreading in the Philippine Sea and Caroline basins by Mid-Miocene changed the wrenching into transpressional structures that was accompanied by slip-sense reversals and substantial structural inversion.
