

Understanding the tectonics of Thailand from lithospheric stress modeling

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ABSTRACT

Thailand is surrounded by the major tectonic plate boundaries that several moderate to large earthquakes have occurred. However, Thailand have experienced very few moderate to large earthquakes. The objective of this work is trying to understand the how the major tectonic system of Thailand is influenced by the surrounding tectonic conditions. We construct a mathematical model of lithospheric stress of the Thailand and surroundings using finite element analysis to understand the detailed tectonic structure of Thailand and its surroundings. The study indicates that the Sagaing Fault and the Red River Fault are directly influenced by the Himalayan Extrusion. For Thailand, we notice that the tectonic in the northern and western Thailand is influenced mainly by the Himalayan Extrusion while the tectonics of the southern Thailand is mainly affected by the Sumatra-Andaman Subduction Zone. With this insight, we cannot neglect the tectonic activities occurring outside Thailand as it could affect the tectonics inside Thailand in the long run and can increase seismic hazard for Thailand.

Keywords: Thailand, tectonics, lithospheric stress modeling, earthquakes, seismic hazard