

CERAMAH TEKNIK TECHNICAL TALK

Crustal structure and tectonics of Borneo and Sulawesi

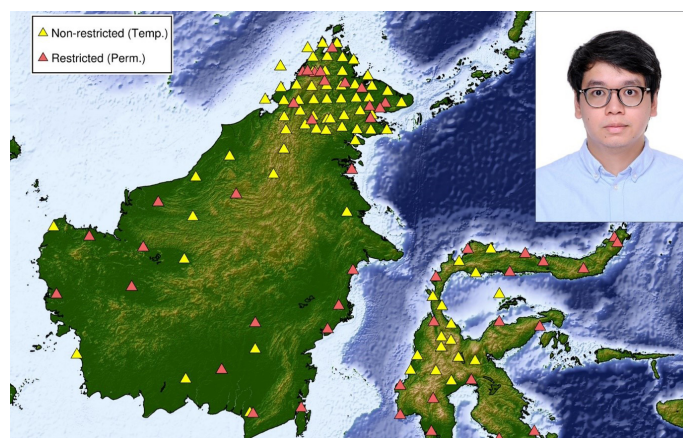
Harry Telajan Anak Linang
Universiti Malaya
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Platform: Zoom

The above talk was delivered by Dr. Harry Telajan Anak Linang (UM) on 18th August, 2023 via Zoom. Some 71 members participated. An abstract of the talk is given below:

Abstract: Southeast Asia (SEA) is arguably the most tectonically active region on the planet, fuelled to a large extent by nearly 10,000 km of ongoing subduction on its western, southern and eastern flanks that accommodates the northward motion of the Indo-Australian plate and westward motion of the Philippine Sea plate. It has hosted one of the largest earthquakes ever recorded (Mw 9.2 Sumatra-Andaman earthquake in 2004) and perhaps the most famous volcanic eruption in history (Krakatoa eruption of 1883), which profoundly affected the Earth's climate. While the western Pacific margin and Indonesian archipelago along the Sunda and Banda arcs have been well studied, the same is not true of the interior region of Southeast Asia, which includes Borneo and Sulawesi. Borneo is the 3rd largest island in the world and lies on the eastern margin of Sundaland, the continental core of Southeast Asia, but its intraplate setting means that it has no active volcanoes and little in the way of seismicity. By contrast, the adjacent island of Sulawesi features active subduction and a network of continental transform faults that give rise to high levels of earthquake activity. How this central region of southeast Asia was formed, and the tectonic relationship between Borneo and Sulawesi, is still poorly understood.

In this study, the Receiver Function Analysis (RFA) and the Virtual Deep Seismic Sounding (VDSS) were applied to data from 135 seismic stations across Borneo and Sulawesi, with the aim of obtaining reliable crustal thickness estimates; to determine whether a major difference in lithospheric structure between the two islands exists. Results in this study show that the crust in Sulawesi is much more complex than that of Borneo. The crustal thickness gradually changes throughout Borneo with northern Borneo (Sabah) having an overall thicker crust than other parts of the island. In Sulawesi, the crustal thickness is much more varied across small distances, especially along the northern and southern arms of the island.

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Prepared by,
Meor Hakif Amir Hassan
Chairman, Working Group on Regional Geology and Stratigraphy
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