

Hidden Suture and the Formation of Thailand Basement Complex

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Abstract

High graded metamorphic rocks of amphibolite facies are widely exposed as elongated north-south-trending outcrops in northwestern Thailand and sporadically occurred in the western, eastern and southern regions of the country. These exposed metamorphic rock sequences from different localities are quite similar in the rock types and characteristics but they may exhibit slight variations from area to area. The representative and well exposed roadcut sections (> 1,100 m thick) at Doi Inthanon National Park and its vicinity from the lowermost unit to the uppermost one include: (i) biotite gneiss and migmatite, (ii) quartzo-feldspathic gneiss, (iii) biotite gneiss and schist and (iv) phlogopite marble and calc-silicates. These four rock units display sub-horizontal foliations that are dipping eastward at small angles about 10 - 20 degrees. Ordovician fossiliferous limestones are found over thrusting westward on top of unit iv, the phlogopite marble and calc-silicate. Although these high-grade metamorphic rocks have received much attention and have been studied extensively, the formation history and tectonic settings of these rocks remain uncertain. This study, we present tectonic evidence *i.e.* the Triassic-Jurassic accretionary prism features, relic of the Paleozoic–Mesozoic, present day east-northeastward subduction, the hidden suture and the formation of the amphibolite facies basement complex of Thailand, based on detailed field investigations and careful analyses of available scientific information including data from airborne geophysics, geology, petrology, geochemistry, geochronology, magnetotelluric and tele-seismic receiver function studies.

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