

Gondwana Dispersion & Asian Accretion: An update

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Extended Abstract

East & Southeast Asia comprises a collage of continental terranes derived directly or indirectly from the India-Australian margin of eastern Gondwana (Figures 1 and 2 below). The Late Palaeozoic and Mesozoic evolution of the region involved the rifting and separation of three elongate continental slivers or collages of terranes from eastern Gondwana and the successive opening and closure of three ocean basins, the Palaeo-Tethys, Meso-Tethys and Ceno-Tethys. Recent work in mainland SE Asia (Thailand, Sumatra and Burma in particular) has led to reinterpretation of some tectonic units and their origins and palaeogeographic positions in the Palaeozoic and Mesozoic. The Sukhothai Island Arc System, including the Linchang, Sukhothai and Chanthaburi terranes is identified between the Sibumasu and Indochina-East Malaya terranes in Thailand (Sone & Metcalfe, 2008) and possibly extends into Peninsular Malaysia beneath the Central Belt of the Malay Peninsula (Metcalfe, in press) and was formed by back-arc spreading in the Permian. The Jinghong, Nan-Uttaradit and Sra Kaeo sutures represent this closed back arc basin. The Palaeo-Tethys is represented to the west by the Changning-Menglian, Chiang Mai/Inthanon and Bentong-Raub suture zones. The Cenozoic Mai Yuam Fault does not represent the trace of the Palaeo-Tethys as suggested by some authors (e.g. Ueno & Hisada 2001; Ueno 2003; Ferrari et al. 2008). The concept, definition and recent contradictory application of the term "Shan-Thai" to tectonic units in the region has caused unnecessary confusion and recent usage of this term for a Cathaysian composite terrane in Thailand (Ferrari et al., 2008) is considered inappropriate. Recent re-evaluations of the geology of Sumatra and western Burma (Barber & Crow, in press) now suggest that the West Sumatra and West Burma blocks rifted and separated from Gondwana, along with Indochina and East Malaya in the Devonian and together with South China formed a composite terrane "Cathaysialand" in the Permian. If this interpretation is correct, then they must have been translated westwards to their positions outboard of the Sibumasu Terrane in the Late Permian-Early Triassic. The mechanism for this westwards translation remains unclear but strike-slip tectonics at the zone of convergence between the Meso-Tethys and Palaeo-Pacific plates seems a likely scenario. If West Burma is now considered to be Cathaysian in nature and similar to West Sumatra, then it is likely that it originally formed an extension of West Sumatra and was separated by opening of the Andaman Sea basin. This interpretation raises a flow-on question as to the identity of "Argoland" (previously interpreted to be West Burma), which must have separated from NW Australia in the Jurassic. South West Borneo is now tentatively identified as possibly being this missing "Argoland". The occurrence of diamonds in SW Borneo may support this. Revised palaeogeographic reconstructions for the Palaeozoic and Mesozoic illustrating the tectonic and palaeogeographic evolution of SE Asia are presented.

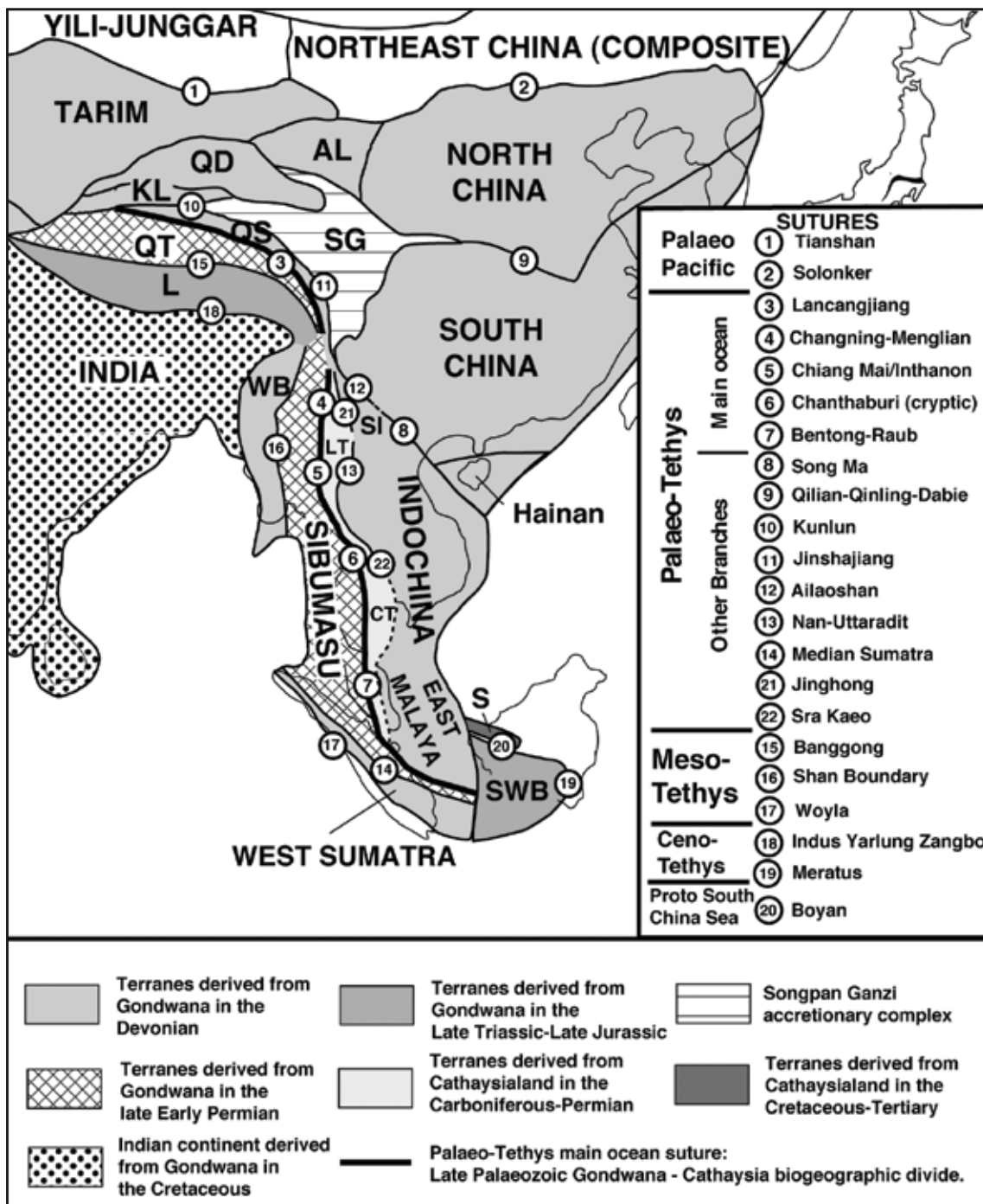


Figure 1 Distribution of principal continental terranes and sutures of East and Southeast Asia. WB = West Burma, SWB = South West Borneo, S = Semitau Terrane, L = Lhasa Terrane, QT = Qiangtang Terrane, QS = Qamdo-Simao Terrane, SI = Simao Terrane, SG = Songpan Ganzi accretionary complex, KL = Kunlun Terrane, QD = Qaidam Terrane, AL = Ala Shan Terrane, LT = Linchang Terrane, CT = Chanthaburi Terrane.

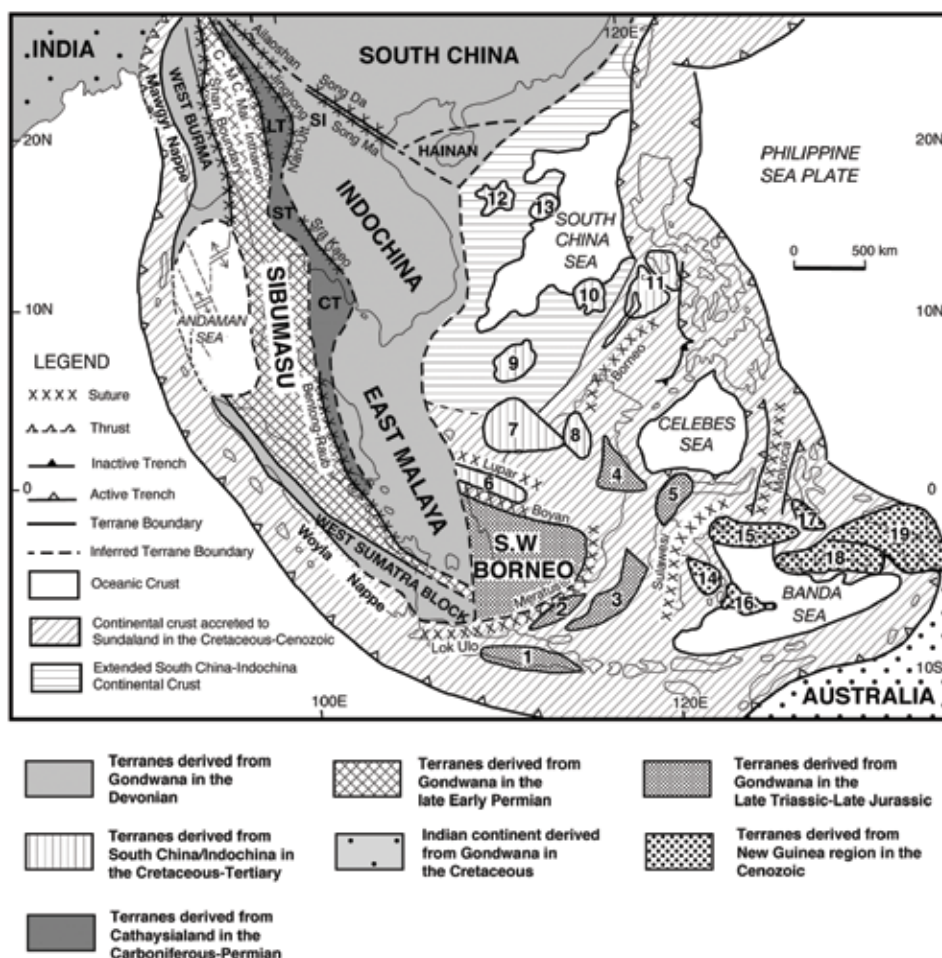


Figure 2 Distribution of continental blocks, fragments and terranes and principal sutures of Southeast Asia. Numbered microcontinental blocks, 1. East Java 2. Bawean 3. Paternoster 4. Mangkalihat 5. West Sulawesi 6. Semitau 7. Luconia 8. Kelabit-Longbowan 9. Spratly Islands-Dangerous Ground 10. Reed Bank 11. North Palawan 12. Paracel Islands 13. Macclesfield Bank 14. East Sulawesi 15. Bangai-Sula 16. Buton 17. Obi-Bacan 18. Buru-Seram 19. West Irian Jaya. LT = Lincang Terrane, ST = Sukthothai Terrane CT = Chanthaburi Terrane. C-M = Changning-Menglian Suture, C-Mai = Chiang Mai Suture, Nan-Utt. = Nan-Uttaradit Suture.

Keywords: Gondwana dispersion, Asian accretion, Palaeozoic, Mesozoic, palaeogeography

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