

SAGE 2009

SOUTHEAST ASIAN GATEWAY EVOLUTION

14 - 17 SEPTEMBER 2009

ROYAL HOLLOWAY UNIVERSITY OF LONDON

Information, Conference Programme & Abstracts

A multidisciplinary meeting concerned with SOUTHEAST ASIAN GATEWAY EVOLUTION focusing on the geological history and biological diversity (past, present and future) of SE Asia.



<http://sage2009.rhul.ac.uk>

PALAEOZOIC-MESOZOIC HISTORY OF SE ASIA

Ian Metcalfe

Earth Sciences, Earth Studies Building C02, School of Environmental and Rural Science,
University of New England, Armidale NSW 2351, Australia.

SE Asia comprises a heterogeneous collage of continental blocks derived from the India-Australian margin of eastern Gondwana and assembled by the closure of multiple Tethyan and back-arc ocean basins now represented by suture zones. The region includes two major biogeographic boundaries, the Late Palaeozoic Gondwana-Cathaysia divide and the Cenozoic-Recent Australia-Asia divide (Wallace Line). Palaeozoic and Mesozoic evolution involved the rifting and separation of three collages of continental terranes from eastern Gondwana and the opening and closure of three successive ocean basins, the Palaeo-Tethys (Devonian-Triassic), Meso-Tethys (Early Permian-Cretaceous) and Ceno-Tethys (Late Triassic-Cenozoic). Subduction processes produced both continental margin and intra oceanic volcanic arcs and back-arc basins. Changing continent-island arc--ocean configurations during the dispersion, amalgamation and accretion of terranes resulted in the opening and closure of ocean gateways and provision of shallow-marine and terrestrial land bridges and stepping-stones for biotic migration.

Continental terranes and island arcs that were isolated within the eastern Tethys may also have acted as crucibles for biotic evolution. Changing biotic provinces with time are reflected in changing latitudes, environments, climates and degrees of isolation of migrating blocks and terranes, and changing ocean current patterns. The continental core of mainland SE Asia (Sundaland) comprises a western Sibusu block, an eastern Indochina-East Malaya block, and an island arc terrane, the Sukhothai Island Arc System, sandwiched in between. This island arc, comprising the Linchang, Sukhothai and Chanthaburi blocks, formed on the margin of Indochina-East Malaya, and then separated 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 by the Changning-Menglian, Chiang Mai/Inthanon and Bentong-Raub suture zones. The Cathaysian West Sumatra block, and possibly West Burma, derived from Gondwana in the Devonian along with Indochina and East Malaya, was accreted to the Sundaland core by strike-slip tectonics in the Late Permian – Early Triassic at the zone of convergence between the Meso-Tethys and Palaeo-Pacific plates. South West Borneo and/or East Java-West Sulawesi are now tentatively identified as the missing "Argoland" which must have separated from NW Australia in the Jurassic and accreted to SE Sundaland in the Cretaceous. Revised palaeogeographic reconstructions illustrating the Palaeozoic-Mesozoic history of SE Asia are presented.