



Kinematic reconstruction of deformation in SE Asia: unfolding Earth's largest Cenozoic orocline

Eldert Advokaat (1,2) and Douwe van Hinsbergen (1)

(1) Utrecht University, Faculty of Geosciences, Department of Earth Sciences, Utrecht, Netherlands, (2) Utrecht University, Faculty of Geosciences, Department of Physical Geography, Utrecht, Netherlands

SE Asia comprises a heterogeneous assemblage of fragments derived from Cathaysia (Eurasia) in the north and Gondwana in the south, separated by suture zones representing closed former ocean basins. The western part of the region comprises Sundaland, which was formed by Late Permian-Triassic amalgamation of continental and arc fragments now found in Indochina, the Thai-Malay Peninsula, and Sumatra. On Borneo, the western part of Kuching Zone formed the eastern margin of Sundaland since the Triassic. Gondwana-derived terranes accreted to the southern margin of the western Kuching Zone in the Cretaceous, whereas South China-derived fragments accreted to the northern margin of the Kuching Zone in the Miocene.

SE Asia now hosts the strongly curved Sunda and Banda subduction zones. Based on paleomagnetic data and seismic tomographic evidence, recent studies argue that these Cenozoic subduction zones were straight when they were formed, and became curved through opposite rotation on the northwestern and southeastern ends of this system. These rotations may be driven by India-Asia collision-related extrusion processes in the northwest and the Australian continent advancing in the southeast. SE Asia represents a closing orocline on a scale similar to the major oroclines present in most continental interiors. Studying SE Asia may thus aid in understanding how the interplay of multiple oceanic spreading centres and subduction zones accommodate orocline formation, and how convergence in surrounding plates may form a driver in forming the complex geological records in oroclines.