

Tectonics and History of the Andaman Sea Region

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The Andaman Sea is an active backarc basin lying above and behind the Sunda subduction zone where convergence between the overriding southeast Asian plate and the subducting Australian plate is highly oblique. The effect of the oblique convergence has been formation of a sliver plate between the subduction zone and a right lateral fault system, which has evolved since the Oligocene into the Sumatra Fault System, the Sagaing Fault in Myanmar, and the obliquely-opening Andaman Sea at the bend in the once-continuous strike slip fault.

The middle Eocene hard continent-continent collision of India and Asia started clockwise rotation and bending of the northern and western Sunda Arc. Sliver faulting started in the Oligocene on the West Andaman Fault extending through the outer arc ridge offshore from Sumatra, through the present region of the Andaman Sea into the Sagaing fault. In late Oligocene, ca 32 Ma, the Mergui Basin started opening at the intersection with the Klong Marui and Ranong faults by extension of continental and/or volcanic arc crust. In early Miocene, ca 23 Ma, backarc spreading started forming the sea floor which later became Alcock and Sewell Rises. From middle Miocene, ca 16 Ma, these contiguous features were separated from the foot of the continental slope by NW-SE spreading, and the motion of the southern part of the West Andaman Fault was taken up by the Mentawai Fault in the forearc basin off Sumatra. At about 3-4 Ma, the present plate edge was formed, Alcock and Sewell were separated by formation of the central Andaman Basin, and the faulting started moving from the Mentawai Fault to the Sumatra Fault System bisecting Sumatra.