

Andaman Sea: A Major and Diachronous Cenozoic Structuration

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ABSTRACT

The Andaman Sea is constituted by a series of pull-apart basins all formed in a strike-slip environment within a back arc setting. This strike-slip tectonic regime results from a strain-partitioning process due to the oblique subduction of the Indian plate below the Sunda plate. The stratigraphic sequence is composed of a volcanic basement overlain by carbonate and clastic sequences. The older deposits encountered by wells are Eocene in age (M5 Basin margin and Mergui Basin). The Oligocene-Lower Miocene series are characterized by thick shelf clastics sourced from the east and by carbonate platforms and reefs that develop on western volcanic highs. Huge Upper Miocene to present siliciclastic sequences indicate the onset of the Irrawaddy Delta. Intrusions by volcanic sills and dykes indicative of a persistent volcanic activity are locally evidenced. The interpretation of available well and seismic data reveals a more complex rifting history rather than just a single Mio-Pliocene episode. A depth map of the basement covering the whole Andaman Sea is presented and interpreted in terms of major structural elements and is used to illustrate the evolution of this world class laboratory. The structural architecture of the Andaman Sea Basins is typical of an oblique rift system in a strike-slip regime with NE-SW normal faults and N-S right-lateral strike-slip faults. This tectonic regime is persistent from probably Eocene to the present day and has resulted in the opening of a series of pull-apart basins, separated by volcanic ridges and culminating in proto-oceanisation (?) along the Central Andaman Basin.