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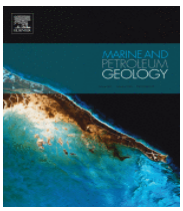

Unveiling the transtensional geodynamics of Cenozoic depocenter changes in the Andaman sea: Seismic evidence for the existence of the East Sagaing Fault and the Andaman Basin Central Fault Zone in the Tanintharyi region

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Abstract

The Andaman Sea, situated at the highly oblique convergent boundary of the Indian and the Sunda Plates in the eastern Indian Ocean, has been shaped by transtensional geodynamics throughout the Cenozoic and has given rise to the formation of fault systems in the Andaman back-arc region. Out of these faults, the Sagaing Fault system exists as the active transform boundary between the Burmese and Eurasian Plates. The East Sagaing Fault, which runs through the Gulf of Martaban in the Andaman Sea, is a critical component of this Sagaing Fault system in fostering the transtensional regime and contributing to the opening of the Andaman Sea as a pull-apart basin. In contrast, the Andaman Basin Central Fault Zone, previously misinterpreted as the South Sagaing Fault, is an inactive fault system that experienced deformation until the Middle Miocene and is currently concealed beneath the East Andaman Basin. This temporal disparity in the Andaman Basin Central Fault Zone and East Sagaing Fault activity patterns has led to uncertainty regarding their existence within the Tanintharyi region of the Andaman Sea. To address this uncertainty, 2D and 3D seismic data interpretations were used to explore the distribution of faults, including the presence and extent of these two faults in the

Tanintharyi region. Through a comparative analysis of the structural characteristics of the East Sagaing Fault in the northern part, and the Andaman Basin Central Fault Zone in the southern part of the Andaman Sea, this study presents compelling evidence confirming the existence of both faults in the Tanintharyi region with their structural implications. The innovative discoveries in this article contribute to a deeper understanding of Cenozoic depocenter changes in the Tanintharyi region, substantiating the significance of these two faults in transtensional geodynamics and allowing for a comprehensive examination of geodynamic evolution in the Andaman Sea region.

Keywords:

Andaman Sea, Andaman Basin, Central Fault Zone, Tanintharyi region.