

## **The tectonostratigraphic architecture of NE South China Sea rifted margin: revisiting offshore & onshore constraints**

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The northeastern continental margin of the South China Sea (SCS) formed during the early-Cenozoic rifting with continental breakup at ca. 32 Ma. The eastern part of this rifted margin has been imbricated in the Taiwan orogen and is now exposed due to the late-Cenozoic collision between the Luzon Arc and Eurasian Continent. This setting enables us to characterize the preserved structure of the margin offshore complemented with direct observations of rocks on its remnants exposed in the field. This integrated dataset aims to provide a revisited and updated tectonostratigraphic evolution of this rifted margin.

Offshore, based on marine geophysical studies, we investigate the crustal structure and seismic stratigraphy, from proximal to distal parts of the rifted margin.

Onshore, based field-based studies on Taiwan and new observations, we describe the pre-, syn-, post-rift lithologies and across the margin and depositional environment variation.

The tectonostratigraphic architecture of the northeastern SCS margin is made of: (1) Pre-rift basement consisting of pre-Cenozoic metasedimentary rock, marbles, and Mesozoic granitic intrusions. (2) Eocene-early Oligocene sequences in Hsuehshan Range and Central Range that sample different syn-rift basins developed from the proximal to the distal margin, respectively. (3) The proximal and distal rift basins are covered by post-rift Miocene shallow-water sequence and deep-water sequence respectively, reflecting the depositional environments and amount of lithospheric thinning across the passive margin. Based on this framework, further points will be discussed: (1) The provenances and depositional history of Eocene sediments in Hsuehshan Range and Central Range revealing the syn-rift evolution of proximal and distal margins, respectively. (2) The spatial variations and significance of syn-rift Eocene igneous rocks observed in Taiwan Strait, western foothill, Hsuehshan Range, and Central Range.

These onshore data will be integrated with the general structure and seismic stratigraphy from the adjacent offshore rifted margin. These results are helping us to better understand not only the geological history in northeastern SCS margin but also the nature and processes of the rifting tectonics in SCS area.

**Keywords:** South China Sea, rifted margin, Taiwan, tectonostratigraphy, crustal structure