



## **Geomorphology and regional stratigraphic model of Cenozoic deposits from “Continental to Marine” of Western Peninsular Malaysia and Strait of Malacca.**

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Coastal basins have been greatly influenced worldwide by their geological heritage (lithology, structural control) and eustatic sea-level fluctuations. Along the western side of Peninsular Malaysia, both the structures of the tertiary-quaternary basement and the geomorphology are poorly known. The coast is characterized landward by an absence of tertiary deposits on the alluvial and coastal plains and seaward by numerous deeply incised valleys although the incision potential is low. Offshore, in the Strait of Malacca, the thickness of sediments increases drastically, particularly at the apex of some N-S elongated basins (> 2 Km), and in the central part of the Strait of Malacca. Onshore, the geomorphology of the Western Peninsular Malaysia is controlled mostly by climatic effects on an old (Indosinian) orogen affected by transtensional brittle tectonics during the Tertiary. We investigate the effects of Tertiary extension and associated vertical motions on the Cenozoic geomorphology and stratigraphy. The study is based on a combined morphobathymetric approach of based on GEBCO data, supported by low and recent high resolution offshore seismic data, and DTM data from ASTER and SRTM. The main results are the followings: (1) the structural control appears to be responsible of the positioning and preservation of the Tertiary deposits; while the Quaternary (marine) deposits thinner, drowned the western Malaysia Peninsular coast, independently of the geomorphological and structural context; (2) The offshore Tertiary deposits seem disconnected from the modern drainage network, suggesting probable uplift during the late Tertiary period, which reactivated NW-SE trending faults and fractures; (3) The orientation, the shape and the depth of the ancient and modern incised valleys (Perak, Kerian, Kinta rivers) are controlled by the structural context and lithological contrast; (4) Finally, from a landward to a seaward directions, the Cenozoic deposits seems to have transited via incised valleys, therefore by-passing the platform.