

Geomorphological Assessment of the Vertical Stability of Palawan, Philippines During the Holocene

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Abstract

Palawan, an island underlain by granitic crust and located west of the Philippines, is commonly considered to be geologically stable because of the absence of active volcanoes and its aseismic nature. This study re-examines this idea through interpretation of remotely sensed images, measurement of paleosea levels using uplifted tidal notches and marine terraces, and establishment of land tilting with quantitative geomorphic parameters of river channels. ¹⁴C and ²³⁰Th/²³⁴U age dates of corals and mollusk shells associated with paleo-sea level indicators provide age control. Remotely sensed images reveal the common occurrence of lineaments cutting across the coasts which generally trend NNE-SSW and NNW-SSE. However, the most geomorphologically well-expressed, the Ulugan Bay Fault, runs north-south and cuts across the island through Puerto Princesa. Segmentation into tilted blocks with overall opposing northeast and southwest down tilts across the Ulugan Bay Fault is indicated by the river channel geomorphic indices and trends of lateral changes in the elevation of Holocene paleosea level indicators. Defined lines of discontinuities coincide with some lineaments. This indicates a fault origin for these lineaments. Multiple movements across these faults are indicated by the variation in the number of paleosea level stillstands across adjacent blocks. These faults are active faults since the sea level indicators that are displaced are within 3-7 kyBP or within the Holocene.