Strong hydro-morphodynamic interactions in the Sittaung Estuary, Myanmar

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The estuary morphology evolves in response to changes in external forces by natural and anthropogenic factors. Moreover, an estuary inherently accommodates cyclic processes that are internally generated through hydro-morphodynamic interactions. Morphological changes under the different controls often hinder the comprehension of the evolutionary processes of estuaries. The study investigated large-scale channel migration in the Sittaung estuary in the Gulf of Martaban, Myanmar, which has great morphological dynamism by large sediment inputs and extreme tidal energy. Rapid bank erosion has occurred recently on one side of the estuary at a peak erosion rate exceeding 3 km/yr. Field and satellite observations revealed that the tremendous erosion has occurred as a subprocess of the large-scale channel migration by intense tidal flows in decadal to multidecadal cycles. The presentation overviews the strong hydro-morphodynamic interactions under fluvial and tidal forces in different time scales. The extreme case with minimal human intervention provides insights into processes of the evolution of tide-dominated estuaries.

Keywords: estuary, geomorphology, tide

