

Matching trends in channel width, sinuosity, and depth along the fluvial to marine transition zone of tide-dominated river deltas: the need for a revision of depositional and hydraulic models

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Along their fluvial to marine transition zone, tide-dominated river deltas show upstream to downstream trends in channel width, sinuosity, and depth, which at present have been only partially reported. This review article aims to describe these morphological trends from five modern tide-dominated river deltas using original data collected from satellite images and bathymetric maps and published data from field surveys. All the studied channels show similar trends with two distinct tracts separated by areas of morphological changes. The upstream tracts are characterized by constant width, relatively high sinuosity, and seaward-increasing depth, and are mainly controlled by the fluvial dynamics. The downstream tracts are characterized by seaward-increasing width, relatively low sinuosity, and seaward-decreasing depth, and are mainly controlled by the tidal dynamics. The delineation of this morphological configuration of the channels is crucial to understand the responses of deltas to the interacting riverine and marine processes. Additionally, this has important implications for depositional and hydraulic models, and for the long-term evolution and the assessment of human-induced versus natural modifications of these systems.