



The Holocene evolution of the Pearl River delta, China

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This Holocene evolutionary history of the Pearl River delta has been reconstructed using borehole data and cultural records. An evolutionary model spanning the last 9000 years was constructed and demonstrates the land–sea interaction in a large deltaic complex which formed under the influence of Asian monsoon climate. Specifically, this research examines the delta evolution in the context of three driving mechanisms: (1) rising sea level that influences the available accommodation space, (2) fluvial discharge as influenced by monsoon climate and (3) human activities that alter sedimentation within the deltaic system. Results reveal that the formation of deltaic sequences was initiated as a consequence of rapid sea-level rise between 9000 and 7000 cal. yr BP. The rate of sea-level rise slowed down markedly around 7000 cal. yr BP and sedimentation switched from transgressive to regressive. Initially, both the progradation of the delta plains near the apex and aggradation of delta front sedimentation in the central and lower parts of the receiving basin were fast owing to strong monsoonal-driven runoff. The progradation rate gradually slowed down between 6800 and 2000 cal. yr BP as monsoonal-driven runoff weakened. Rapid shoreline advances during the last 2000 years were the result of significantly increased human activities, a practice that trapped sediments in the encircled tidal flats along the front of delta plains. The evolutionary history of the Pearl River delta demonstrates the interplay between the three driving mechanisms.