

A Source to Sink study of the Mekong Subaqueous Delta

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As Asia's third largest river, with regard to sediment load, the Mekong River delivers approximately 160 million tons of sediment per year to the South China Sea. High-resolution seismic profiling and coring during 2006 and 2007 cruises revealed a low gradient, subaqueous delta system, up to 20 m thick, surrounding the modern Mekong River Delta (MRD) in the west of the South China Sea. Based on clinoform structure, grain size, ^{210}Pb , AMS ^{14}C , and $\delta^{13}\text{C}$ results, the subaqueous delta is divided into four zones defined by different sedimentation processes and depositional features.

In the last 3,000 yrs, the evolution of the MRD shows a morphological asymmetry indicated by a large downdrift area and a fast progradation around Cape Camau, ~ 200 km alongshore from the river mouth. Numerical modeling of the nearshore sediment transport and dispersal shows this asymmetric feature is explained by an increased wave influence. The strong southwestward coastal current strengthened by the strong NE monsoon plays an important role locally in longshore transport of re-suspended sediments into the Gulf of Thailand.

A late Holocene sediment budget for the MRD is updated based on the area and thickness of deltaic sediment. Approximately 80% of Mekong delivered sediment has been trapped within the delta area, which, together with a falling sea-level, results in a fast prograding MRD in the last 3,000 yrs.