Geophysical Research Abstracts
Vol. 20, EGU2018-5344, 2018
EGU General Assembly 2018
© Author(s) 2018. CC Attribution 4.0 license.

# Formation of the Mekong Subaqueous Delta: proximal versus distal accumulation

Paul Liu (1), David DeMaster (1), Charles Nittrouer (2), Emily Eidam (3), and Thanh Nguyen (4)

(1) NC State University, Marine, Earth, & Atmospheric Sciences, USA (jpliu@ncsu.edu), (2) University of Washington, School of Oceanography, Seattle, WA 98195, USA, (3) Dept. of Earth Sciences, University of Oregon. Eugene, OR 97403, USA, (4) Institute of Marine Geology and Geophysics, VAST, Hanoi, Vietnam

Extensive geophysical and geochemical surveys in 2006-2015 conducted off the Mekong Delta on the inner and portions of the adjacent continental shelf show the Mekong River has formed a classic sigmoidal cross-shelf clinoform, up to 15 m thick, with topset, foreset and bottomset facies, but constrained to water depths of $<$20 m. Beyond this depth, the East Sea/western South China Sea shelf is dominated by relict sand and gravel with patches of early to middle Holocene mud deposits. Parallel to shore, the Mekong-derived sediment has extended $>$250 km southwestward to the tip of the Ca Mau Peninsula, forming a distal mud depocenter up to 22 m thick, and extending into the Gulf of Thailand. A large erosional trough or channel (up to 8 m deeper than the surrounding seafloor and parallel to the shore) was found on the top of the clinoform, east of the Ca Mau Peninsula.

Compared to other tide-dominated fluvial dispersal systems, the Mekong River system has a relatively young ($\leq$1000 yr) subaqueous delta, a shallow rollover at 4-6 m water depth, gentle foreset gradients (0.03-0.57$^o$), and a short cross-shelf dimension of 15–20 km within 20-m water depths. The total estimated volume of the Mekong River subaqueous clinoform on the shelf is estimated as $\sim$120 km$^3$, which is equivalent to $\sim$120-140$\times$10$^9$tons of sediment using an average sediment dry-bulk density of 1.0-1.2 g/cm$^3$. The calculated millennial-timescale average sediment discharge to the shelf is $\sim$120-140$\times$10$^6$ tons per year. Spatially, the proximal subaqueous delta has accumulated 33% of sediment; the distal part around the Ca Mau Peninsula has received $\sim$42% of sediment; and the remaining 25% has accumulated within the central transition area, although the coastline and shoreface in this area are presently eroding. The spatially averaged 1000-yr-scale accumulate rate is up to 2 cm/yr.