

# CHANNEL ANNEALING PROCESSES ON THE HUANGHE DELTA: APPLICATIONS FOR SCIENCE AND SOCIETY

Brandee Carlson

*Earth Science/Geomorphology, Rice University, Houston, Texas*

[bc15@rice.edu](mailto:bc15@rice.edu)

## Abstract

For the Huanghe (Yellow River) delta, China, high sediment loads and frequent flood events contribute to rapid delta dynamics, whereby the system typically operates on expeditious timescales that exceed those associated with external influences, for example, base level fluctuations and climate change. Avulsions are a dynamic behavior where rapid in-channel sedimentation coupled with floods, results in abandonment of the primary channel, and a new channel path to the sea evolves. The Huanghe delta is unique in regard to the fate of its abandoned channels because fluid mud sourced from the adjacent Bohai Sea infills the channels rapidly after avulsion events. Minimal upstream water input into abandoned channels is insufficient to prohibit the landward movement of mud, so over time deltaic channels are infilled. Hence, all but one of the five most recently abandoned channels have been infilled; only the active channel retains its self-formed geometry. With my research I propose to collect measurements that constrain infilling rates as well as the spatio-temporal evolution of infilling channels. Channel volume will be estimated by collecting bathymetry data within the active channel, under the assumption that the abandoned channels possess similar form before infill. Grainsize evolution within the channels will be examined through a series of coring campaigns. These data are critical to inform numerical modeling efforts that I wish to produce to evaluate physical processes of channel infilling. The results of this work will enhance understanding of deltaic channel infilling, and more broadly the dynamics of channel life cycles in deltaic settings.

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