

Predicting Delta Morphology on a Global Scale

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ABSTRACT

Delta morphology varies tremendously between different environments, from coarse-grained alluvial fans, to sandy strandplains, to muddy alluvial estuaries. Here I will show quantitatively how waves, tides, and fluvial sediment supply affect delta morphology and explain a significant portion of this global variability. Simple parameterizations and the availability of global wave, tide, and fluvial sediment data have allowed us to use these relationships and make morphologic predictions for Earth's deltas ($n \sim 14000$). This analysis can be used to study modern day delta variability and delta change in response to climate and land use changes. This general theory can also help paleo environmental reconstructions of observed ancient deltas in poorly constrained settings.

BIOGRAPHY



Jaap Nienhuis is a postdoctoral fellow in Earth and Environmental Sciences at Tulane University working with Torbjörn Törnqvist. He obtained his BS and MS in civil engineering from Twente University in the Netherlands, and his PhD in marine geology from MIT-WHOI. His experience includes morphologic modelling of coastal sedimentary environments.