



Are Old World Deltas Human Constructs?

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Deltas are vulnerable sedimentary landforms at the land-sea interface that are influenced by both terrestrial and marine processes. Worldwide deltas are heavily impacted by human activities, in particular river damming that has reduced the amount of sediment reaching the coast. Large dams are relatively recent phenomena, but human alteration of landscapes has been ongoing ever since the advent and expansion of agriculture. Combining field data and modeling, I discuss how human activities have significantly influenced the formation of the modern Old World deltas including the Danube delta in Europe and the Indus, Krishna, and Godavari deltas in Asia. Can rates of growth of these deltas be attributed to climate change, land-use impacts, or both? The inverse effects of Holocene deltaic landscape changes on ancient, historic and current civilizations will also be discussed (e.g., Europe Neolithic, Romans, Moors, Indus Civilization, India, as well as modern preindustrial vs. industrial). Understanding the historic and future morphologic change in deltas has become increasingly important as sea levels rise and sediment loads feeding deltas continue to be sequestered behind dams in the hinterland. Traditionally deltas have been densely populated while providing disproportionately high ecosystem services and resources to society. In regions that have been affected by humans, deltas can serve as a record of climate and land-use changes across large watersheds. If human activities are in some degree responsible for the development of the world's deltas, this would provide an important context for understanding how humankind will manage these resources over the coming centuries, particularly as climate changes and humans continue to alter these landforms.