Anticipating and Adapting to Climate Change in Coastal Deltas

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The UN's Intergovernmental Panel on Climate Change 2007 4th Assessment Report ranks heavily populated coastal deltas among the world's most vulnerable regions to the effects of climate change due to their low elevation, unstable geologic character, association with rivers, and proximity to the open coast. The IPCC classifies deltas as "hotspots of societal vulnerability" with nearly 300 million people inhabiting deltas globally. In addition to serving as a land base for many of the world's most densely populated cities, deltaic wetlands and the estuaries they fringe are among the most biologically productive systems in the world. Their high fertility and biological productivity account for a large percentage of world fisheries landings and many have been drained, deforested, or impounded for agriculture and aquaculture. Even in the absence of a changing climate, 70% of the world's major deltas are deteriorating as a result of human activities that have affected their natural flood (cycles) pulses and sedimentary processes. Climate change has the potential to amplify the decline of deltaic systems through several mechanisms, but the most important drivers are sea-level rise, increased storm intensity, and changes in rainfall and runoff to the coast. This presentation will provide an overview of how climate change affects deltaic landforms and alters the processes that created and sustain them. It will examine how human development patterns can accelerate or ameliorate the impacts of climate change.