

## PROCESSES OF BARRIER ISLAND EROSION

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### ABSTRACT

During 1986, the U.S. Geological Survey and the Louisiana Geological Survey began a five-year study of the processes causing the extreme rates (up to 66 ft/yr, or 20 m/yr) of erosion of Louisiana's barrier islands. These processes must be better understood in order to predict future erosion and to adequately assess management and erosion mitigation plans. The study is divided into three parts: the geological development of barrier islands, the critical processes leading to erosion, and applications of results. This paper provides an overview of the part of the study on critical processes. The process part includes modeling erosion of the barrier islands due to sea-level rise, the net loss of sand offshore, gradients in longshore transport, and overwash. In addition to the overview, evidence will be presented that the low lying barrier beaches on much of the Louisiana coast do not approach an equilibrium configuration. These beaches, which, in many places, are not protected by dunes, are overwashed even during moderate storms and apparently are not evolving to a configuration limiting overwash. As a result, even with stable sea level the beaches will continue to overwash and migrate landward during storms. Commonly used methods of modeling beach response to rising sea level assumes beaches approach an equilibrium configuration, hence applying these methods to coastal Louisiana is problematical.

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