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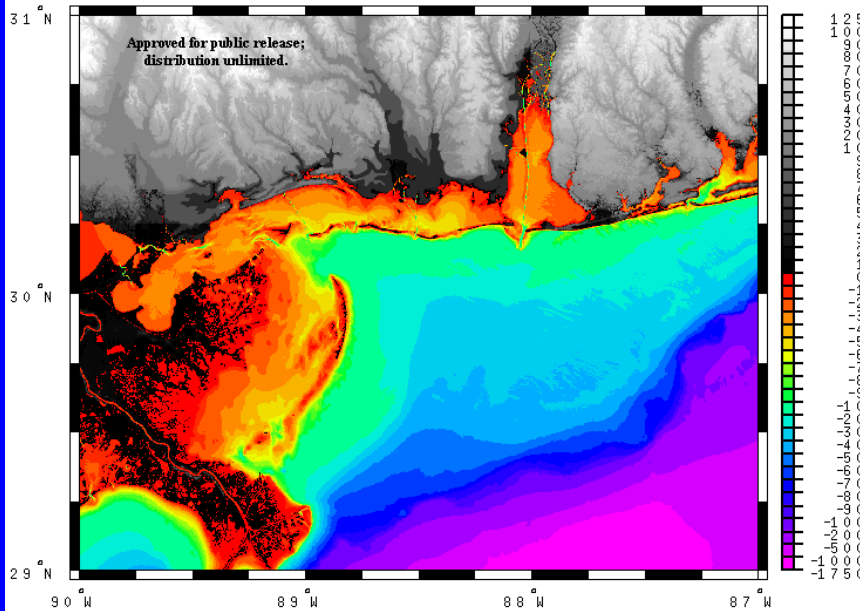
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Project: Sediment Transport Pathways,
Lateral Inlet and Island Migration,
and Detailed Sediment Budgets for
the Mississippi Coastal
Improvements Program (MsCIP)

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Along the Mississippi Sound coast, barrier island beaches and associated backbarrier environments help protect mainland beaches from storms. A series of devastating hurricanes since 2001 has significantly reduced the width and elevation of barrier beaches, exposing mainland beaches, infrastructure, and navigation channels to increasing storm damage. The primary purpose for analyzing historical shoreline and bathymetry

data sets is to document the evolution of beach, nearshore, and channel environments most directly influenced by major storms for determining net sediment transport pathways, quantifying net changes on a regional scale, and developing detailed sediment budgets (using SBAS-A).

The exchange of sediment between the barrier island littoral drift system, navigation channels, inlet shoals between the islands, and Mississippi Sound controls the sand budget throughout the system. Geomorphic changes caused by normal and storm conditions document cause and effect relationships that are often difficult to capture with short-term, site specific process measurements. Long-term shoreline and bathymetry change analyses document net sediment transport pathways and the volume of material in transit within a barrier island system. Data sets spanning long time periods accurately describe the geomorphic evolution of coastal systems by minimizing measurement uncertainties relative to the magnitude of detected change. In other words, measured change over short time intervals is generally small relative to longer time intervals, but the uncertainty associated with survey measurements remains relatively constant. Historical shoreline surveys recorded rapid lateral island migration in response to dominant east to west directed longshore sediment transport throughout the study area, and changes in island area relative to historical shoreline movement. These data, in addition to recorded bathymetry changes, were used to quantify regional sediment dynamics and evaluate historical sediment budgets for use in planning and design of restoration efforts for the Mississippi Sound barrier islands.