Barrier Island geomorphic trajectories using OCS Sand vs. Nearshore Sand

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In Louisiana barrier islands are undergoing rapid morphological change due to shoreface retreat and increasing bay tidal prism driven by high rates of relative sea-level rise (RSLR; 1 cm/yr) and interior wetland loss. These processes result in diminished sand supply within the barrier island systems. To reduce continued disintegration and conversion of islands to subaqueous shoals, barrier island restoration strategies involve dredging and placing sand on islands, extending their area and projected lifespan. Over the past decade dedicated dredging to construct barrier island projects in Louisiana has more than doubled. It is estimated that 90 million yd^3 of sediment will be needed for barrier shoreline and wetland restoration over the next 50 years. Sediment for these projects is typically restricted to two primary sources: near shore (NS) sediments of limited quantity and quality and within the barrier island system (BIS), and outer continental shelf (OCS) inputs of potentially higher quality and outside the BIS. While geomorphic trajectories for barrier island nourished using these sources have been examined systematically at the project (local) level, understanding of the impact of sediment input/output and geomorphic trajectories at the local-to-regional framework are lacking. In October 2015, BOEM initiated a study to characterize these constraints and integrate them into a comparative, geo-economic framework useful for estimating the costs incurred, and the ecosystem services derived, from projects relying on these two source materials. This presentation provides an update on the geomorphic modeling framework developed to facilitate increased understanding of local-to-regional sediment pathways and budgets and help support the economic analysis. The update will include an overview of the tools and framework used to develop the geomorphic trajectories, the modeling framework and scenario development, and preliminary results of geomorphic change.