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Distinguishing "nourished" from "natural" sediments along the Grand Strand, SC: Implications to the Beach Erosion Research and Monitoring (BERM) program

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The Grand Strand in South Carolina is a heavily developed area that supports local populations, infrastructure, and tourism industry. Beaches in the Grand Strand, however, are very susceptible to storms and hurricanes, and long-term localized erosion has been severe. Coastal erosion reduces the ability of shorelines to buffer upland areas and human infrastructure, and results in the urgent needs for costly coastal modification projects. South Carolina has adopted beach nourishment (placement of presumably beach-compatible sands onto an eroding beach to replace lost sand) as the predominant strategy for slowing the effects of coastal erosion. In the year 2010 (about 1-2 years after the most recent nourishment), about 400 sediment samples were collected along the beaches (at dune top, dune base, berm and swash) in the Grand Strand from Little River Inlet to Garden City Beach in South Carolina. Grain size, organic matter, and carbonate contents of sediments were analyzed. Preliminary results show that sediment grain size varies locally along the beach transacts in response natural longshore sediment transport processes. Nourished sediment tends to be poorly sorted and contain more carbonate than the natural sediment. The dispersal extent of "nourished" sediments was analyzed. Results from this study provide valuable information for coastal resource management and future nourishment projects.

Biography of the presenters

Jeffrey Obelcz and Thomas Bierce are seniors in the department of marine science at Coastal Carolina University.

Dr. Kehui Xu is an assistant professor in the department of marine science at Coastal Carolina University. Dr. Xu is a marine geologist whose research centers in the flux and fate of fluvial sediment from the land to the ocean. He has been involved in a range of interdisciplinary projects studying sequence stratigraphy, sediment transport, surficial processes, and numerical modeling. He is currently using ROMS to study sediment transport processes in the Gulf of Mexico and the Long Bay in South Carolina.

Dr. Clay McCoy is Senior Research Scientist and Coastal Processes Specialist at Burroughs & Chapin Center for Marine & Wetland Studies, Coastal Carolina University. Dr. McCoy's research is focused on coastal erosion, beach nourishment and coastal processes.