Establishing sediment fluxes for the upper and central Texas coast

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The Texas coast is one of the most developed sections of the Gulf Coast, and each year, millions of dollars are spent on coastal nourishment projects due to erosion. In order to understand how this system will respond in the future, we aim to quantify past sediment transport within offshore, barrier, and backbarrier environments along the upper and central Texas coast. These two systems are connected via longshore transport; as material is eroded from the upper Texas coast, longshore currents transport and deposit sediment along the central Texas coast. The sediment fluxes within these environments are established using a combination of sediment cores and high resolution elevation data (LIDAR) coupled with radiocarbon and isotopic dating techniques. Recently, sediment fluxes for washover fans and barrier environments have been established using this methodology, however, the offshore sediment fluxes due to hurricane impacts remain uncertain. Therefore, we will collect and reanalyze sediment cores from the Texas shelf. This information will be used to determine the fluxes associated with erosion and deposition over both geologic and historic timescales. These results will then be compared to sea-level changes, sediment supply variations, and hurricane impacts for the past several millennia to understand the response of this system. Ultimately, this work will become crucial for predicting future changes along the Texas coast (and other low-lying coastal systems) to various forcing mechanisms.