

MERTZ, LISA MARIE, University of Florida, Department of Geological Sciences, 241 Williamson Hall, PO Box 112120, Gainesville, FL 32611, MARYLEA HART, and JOHN JAEGER, University of Florida, Department of Geological Sciences, 241 Williamson Hall, PO Box 112120, Gainesville, FL 32611

Preservation Potential Of Paleocyclone Deposits In Gulf of Mexico Coastal Sediments

Tropical cyclones affect the Gulf of Mexico coastline annually; however, the historical record of these events is limited to about 400 years. To establish the occurrence frequency and the importance of cyclones in creating strata, this record needs to be validated by examining coastal sediments for preservation potential of storm bedding. St. Vincent Island National Wildlife Refuge is located in Apalachicola Bay, FL, and provides a research area with minimal human impact and frequent occurrence of tropical cyclone landfall making it ideal to study the natural processes controlling bed preservation. Cores were collected in two coastal ponds and salt marshes on to establish preservation potential of storm bedding. The preservation potential of a storm event in coastal sediments is related to three factors: biologic mixing depth and intensity, storm layer thickness, and sediment accumulation rate in the coastal environment. Storm deposition can be detected by changes in bulk density, magnetic susceptibility, or lithology. Radioisotopes were used to quantify these various processes including: mixing depth and intensity by ^{234}Th and ^7Be ; accumulation rates by ^{210}Pb and ^{137}Cs . Mixed depths in ponds were <1 cm but >5 cm in coastal marshes, and sedimentation rates are <3 mm y^{-1} in both. A comparison of transit time of a storm layer through the surface mixed layer to the dissipation time of the bed through mixing reveals that beds >1 cm thick are likely preserved. The most important control on preservation appears to be the initial thickness of the storm bed, which is expected to be highly variable for each storm.