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Event sedimentation and long-term accumulation in a salt marsh: St. Louis Bay, Mississippi

Several push cores (1 m x 10 cm i.d.) were taken from channel and high marsh settings in a brackish marsh environment at St. Louis Bay, Mississippi, to investigate the relationship between long-term marsh accretion rates and sediment transport associated with tropical storms and hurricanes. Cores were analyzed for gamma density using a multi-sensor core logger, as well as grain size, organic carbon, and ^{210}Pb-^{137}Cs geochronology.

Two fining-upward sandy layers, with relatively sharp basal contacts and low organic content, were found interbedded in organic-rich marsh muds, and are inferred to be layers deposited by major storm events. Accumulation rates estimated from ^{210}Pb and ^{137}Cs distributions range from 2.4-5.1 mm/y, and indicate that the two event layers were produced by major hurricanes that made landfall within 10 km of the study area in 1947 and 1969. Because the event layers total 5 cm thick, and compose at least ~27% of total accumulation during the past fifty-six years, sediments deposited by storms in this region appear to be an important component of the long-term sediment budget.