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Deposition and Resuspension of Fluid Mud on the Western Louisiana Inner Shelf

Recent time-series cores collected on the western Louisiana inner shelf show the region is subject to transient fluid mud deposition, leading to high long-term accumulation rates. Sediment cores were collected in May 2001, March, May, and October 2002 from the inner shelf landward of the 10 m isobath, 100 km west of Atchafalaya Bay. The cores were analyzed using ^{7}Be, ^{210}Pb and ^{137}Cs geochronology, x-radiography, porosity and granulometry. ^{7}Be activities indicate the presence of high-porosity event layers 2-25 cm thick composed of clay with basal silt laminations. These event layers appear to concentrate around a depocenter located 95-110 km west of the Atchafalaya River, landward of the 7 m isobath, but are ephemeral features on a seasonal time scale. Preliminary results of ^{210}Pb and ^{137}Cs indicate that the short-term deposition rates of fluid mud layers leads to long-term accumulation rates ranging from ~3.5-6.5 cm/yr.

Sediment cores collected in October 2002 after the passage of Hurricane Lili show deposits of ^{7}Be laden fluid mud are controlled by bathymetry and proximity to their source. Cores collected throughout most of the study area have a ~4 cm thick fluid mud layer that does not contain ^{7}Be, indicating likely resuspension of old sediment, with little to no deposition of fresh fluvial sediments. This provides further evidence that fluid mud deposition on the western Louisiana inner shelf is associated with high spring discharge, and subsequent resuspension by storms and hurricanes.