Preliminary Assessment of Recent Deposition Related to a Crevasse Splay on the Mississippi River Delta: Implications for Coastal Restoration

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ABSTRACT

Historically, the Mississippi River has replenished sediment across the lower deltaic plain, abating land loss. Flood-control structures along the river now restrict this natural process and divert sediment from the modern delta offshore to the shelf break, thereby removing it from the coastal system. Localized crevasse splays, however, can deposit significant amounts of sediment in a short span of time. Satellite imagery and field investigations, including eight sediment vibracores, have identified a recent crevasse splay originating from Brant Bayou within the Delta National Wildlife Refuge on the lower Mississippi River delta. The splay deposits are estimated to be as much as 3 m thick and are located stratigraphically above shallow interdistributary-bay deposits. In addition, the deposits exhibit physical characteristics similar to those of large scale prograded deltas. The Bayou Brant crevasse splay began forming in 1978 and has built approximately 3.7 km^2 of land. Coastal planners hope to utilize this natural process of sediment dispersion to create new land within the delta plain.