



Hurricane signals in salt marsh sediments: Inorganic sources and soil volume

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ABSTRACT: The inorganic content of 51 dated sediment cores from Mississippi River deltaic plain salt marsh wetlands peaks with the landfall of hurricanes. Variations in the inorganic sediment content demonstrate no temporal coherence with changes in either the Mississippi River suspended matter concentration or discharge, or with wetland losses on this coast. The inorganic matter brought to wetlands during hurricanes is sufficient to account for the accumulated inorganic sediment, and the volume averages 9% of the soil volume. A "sediment deficit" hypothesis, which makes a causal connection between a changing inorganic supply and the dramatically high wetland losses on this coast, is therefore rejected. Our results support the hypothesis that wetlands of an undeveloped coast receive the majority of their inorganic sediments from offshore and not from overbank flooding or through crevasses. Restoration and wetland maintenance (prevention) goals should be implemented with this in mind: the coastal wetland losses of the last century along this coast appear to be a consequence of the diminished accumulation of organic matter and not from variations in inorganic sediment loading.

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