

Sediment Starvation Destroys New York City Marshes' Resistance to Sea Level Rise

What is the science question? Why are New York City marshes disappearing?

What are the findings? Urbanization has cut off supply of mineral sediment to marshes, leaving the organic plant and animal matter vulnerable, which leads to erosion at the edges.

Additionally, heavy metals (lead, zinc, copper) are stored in the marshes. With more erosion, the heavy metals will flow into the water, further contaminating the estuary.

What was the impact? For maintaining marsh resilience, active enrichment of mineral sediment is needed for both marshes and borrow pits. (Areas that have been dug out for use in construction projects.)

Why does it matter? Worldwide, urban coastal marshes are important as ecological nurseries for fish, birds, and other wildlife. They also filter water, protect shorelines, and sequester carbon. For all of these reasons, it is important to maintain marshes with sea level rise.

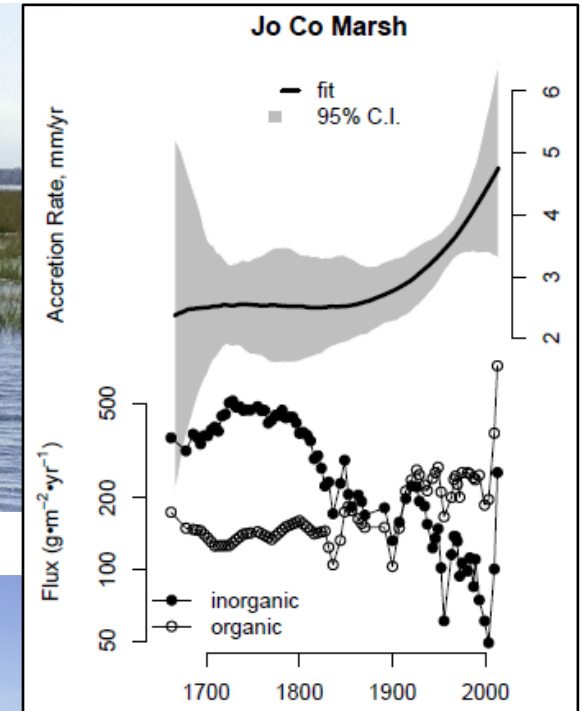


Figure 1. While sediment accretion rates over 300 years have increased to almost 5 mm/yr, inorganic (mineral) supply has declined, and the remaining organic sediment is easily eroded.

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