

Sediment stratigraphy in NYC salt marsh reveals extensive wetland loss, heavy metal pollution, and blue carbon release

Peteet, Dorothy, NASA/GISS

Key Research Result: In NYC Pelham Bay Marsh, between 1974 and 2018 CE, ~65% of marsh disappeared at a rate of 1.5%/yr or 800 m²/yr. The marsh loss coincided with increasing RSL rates of 3.5 mm/yr from 1958-1975 CE to 6.7 mm/yr from 1999-2024 CE. Developed areas expanded 568 m² /yr from 1985-2023 CE, replacing wetland areas and disrupting hydrologic processes with hardened shorelines.

Significance: Marsh loss resulted in the release of soil organic carbon stored over many centuries and a concerning amount of lead (Pb-750,000 tons) into Long Island Sound, presenting risks to public health and wildlife. This study improves our understanding of compounded stressors that prevent the capacity of salt marshes to withstand anthropogenic impacts, and provides adaptive management of marsh resilience in the face of urbanization and climate change.

NASA Assets and Data: This research was supported by the NASA Carbon Monitoring System under NASA Award number 80NSSC23K1572.

Reference publication: Goetz N, Chang C, Kovari S, Alfano M, Pal-Yadav A, Vaughn D and Peteet D (2025) *Front. Environ. Sci.* 13:1688420. doi: 10.3389/fenvs.2025.1688420

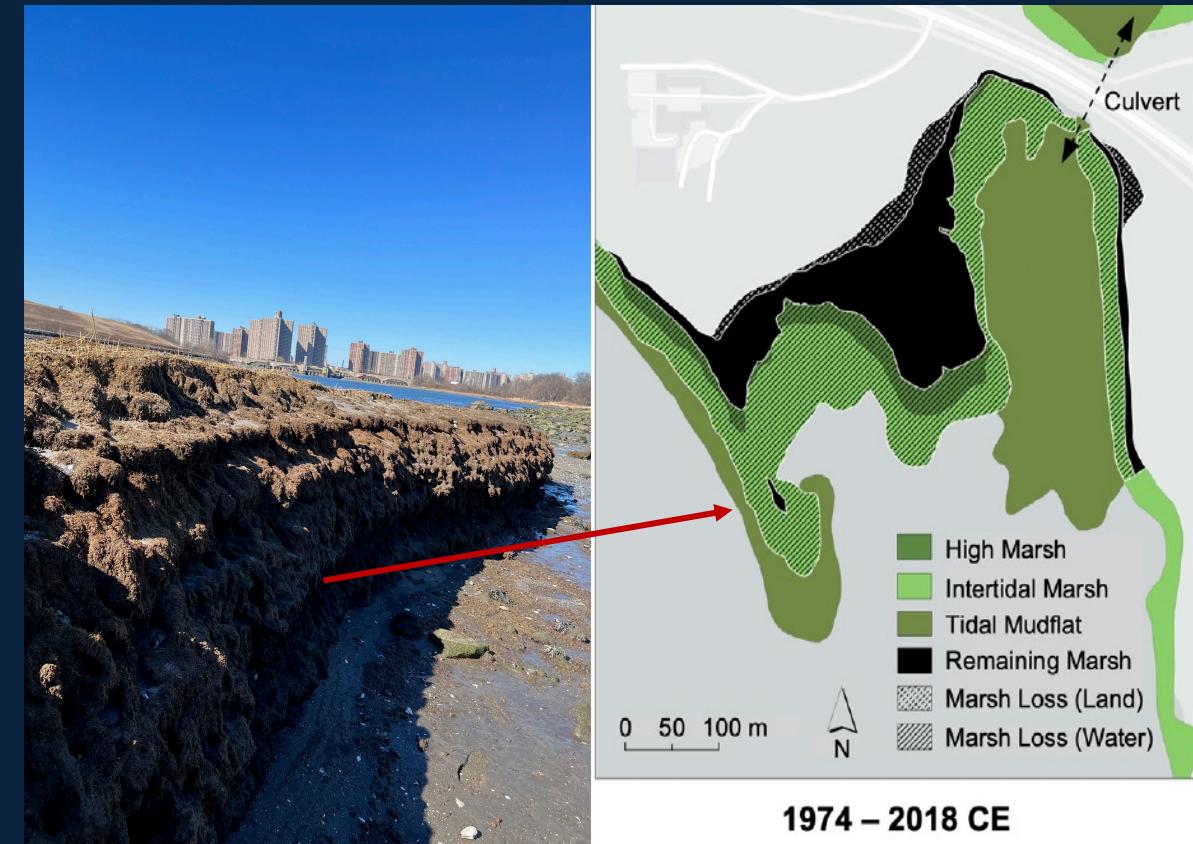


Figure 1. Remnant marsh shown in black and photographed at left reveals that roughly 2/3 of the Pelham Bay Turtle Cove marsh disappeared due to accelerating sea level rise and coastal development between 1974-2018.