

## Science Question

- How do we best measure marsh accretion rates for carbon accumulation and marsh resilience?
- How do standard Surface Elevation Tables (SET) measurements compare with sediment cores?
- Accurate measurements are important for marsh managers facing sea level rise and marsh loss.

## Analysis

- Field data including SET measurements compared to marsh sediment core acquisition and accretion rates at Piermont Marsh, New York, a tidal Hudson River wetland.

## Results

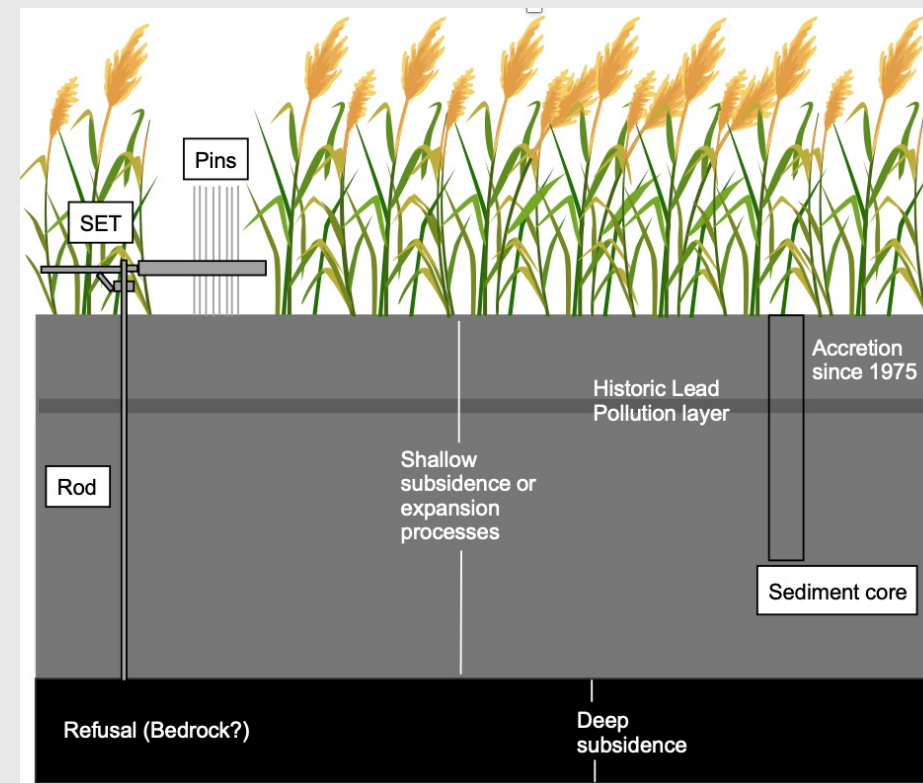
- Scanning X-ray Fluorescence Spectroscopy (XRF) is a rapid way to measure historical pollution in the northeastern US to calculate 50-yr accretion rates.
- Piermont Marsh is at risk for inundation from sea level rise at medium to high sea level rates (Tabak et al., 2016), contrasting with earlier standard SET studies.

## Significance

- Sediment core records provide necessary constraints on slow occurring processes not adequately captured by SET methods such as subsurface decomposition and compaction.
- XRF-generated lead stratigraphy toward measuring marsh accretion at decadal scales could be widely applied throughout urban regions of the United States and other urban areas.
- This long timescale view is relevant for land management in the context of sea level rise and carbon accumulation.

## Acknowledgements

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**Figure 1.** Sediment core records provide necessary constraints on slow occurring processes not adequately captured by SET methods such as subsurface decomposition and compaction.