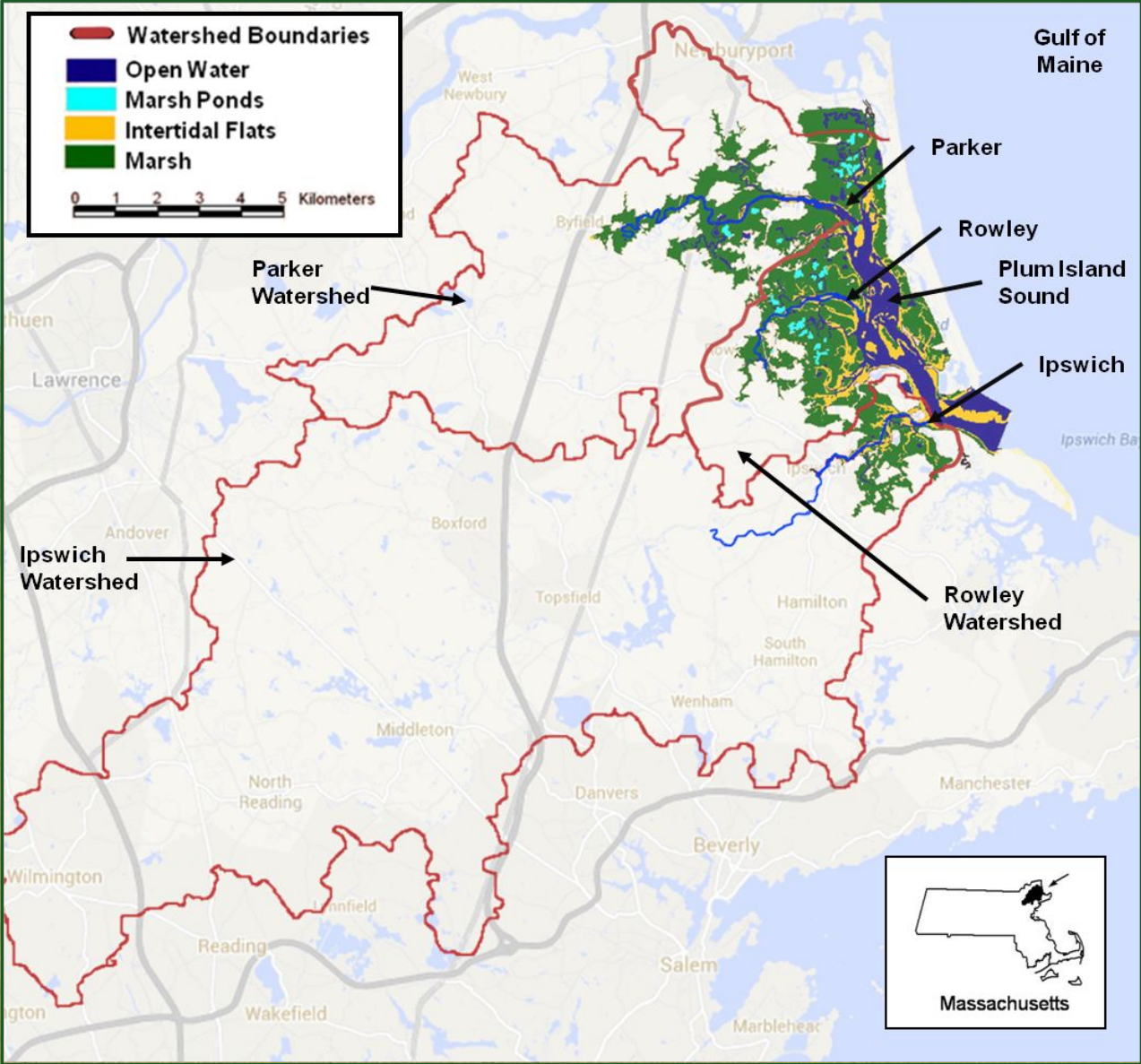
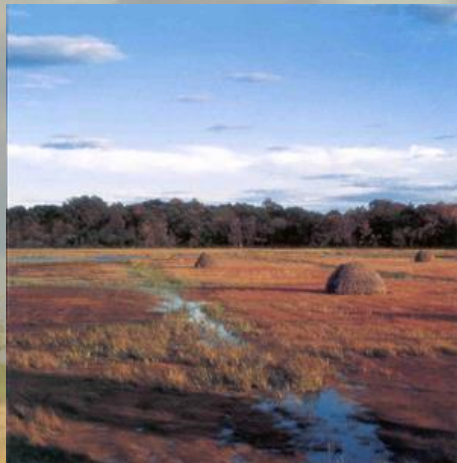
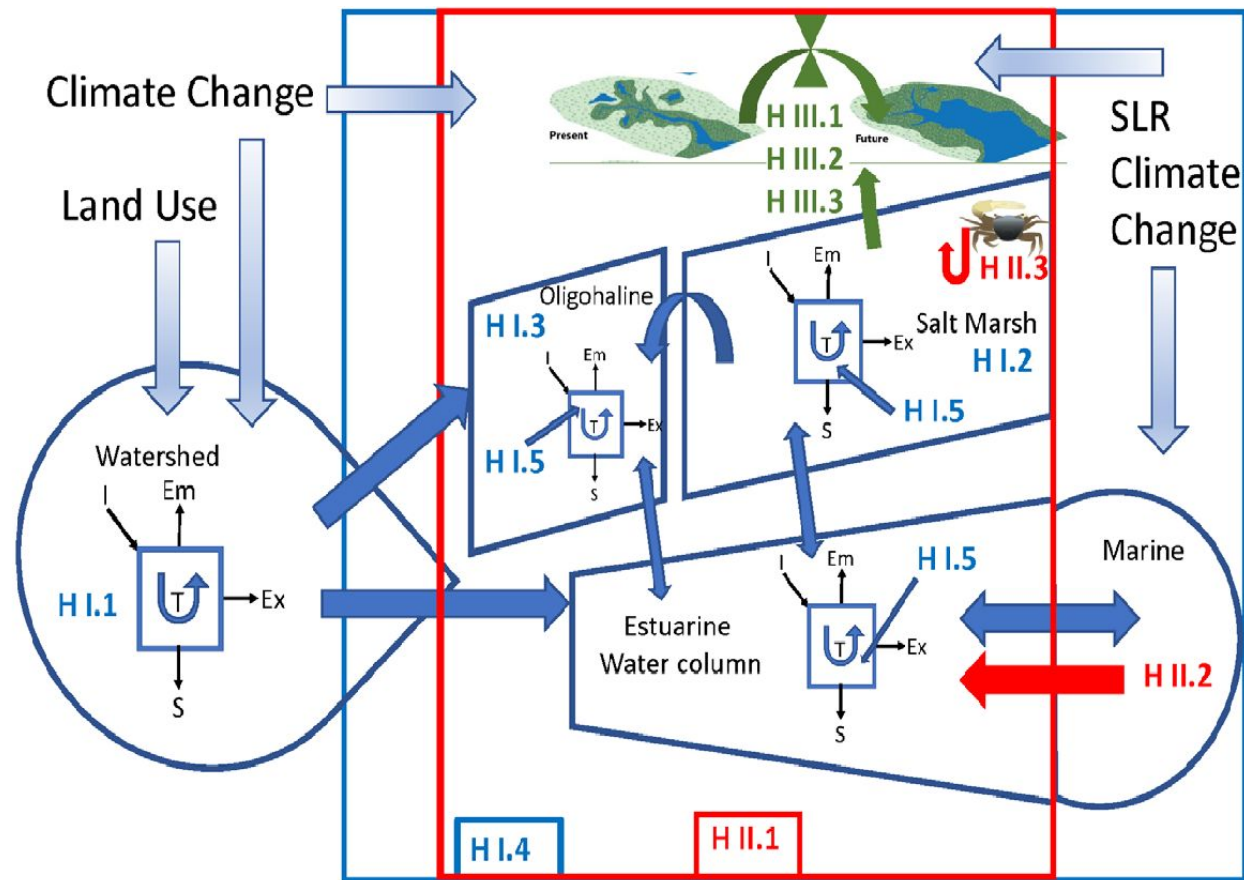


Plum Island Ecosystems LTER Monitoring and Research



Reese LaVea talked about the watershed work yesterday



H.I. How are the sources and fates of organic matter and nutrients in a linked watershed/estuary being altered by SLR, climate and geomorphology?

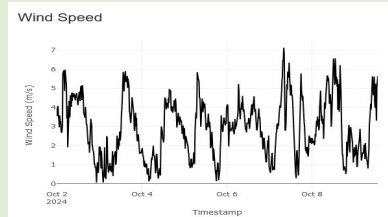
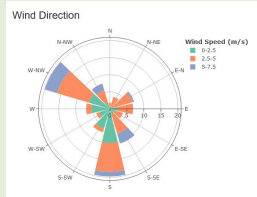
H.II. How do food webs and energy flow respond to new geomorphic configurations, SLR, climate and associated estuarine responses?

H.III. What internal feedbacks might accelerate, slow down or reverse the predicted changes in emergent marsh configuration, and the fate of C, nutrients and energy?

WIND, WATER, AND WEATHER

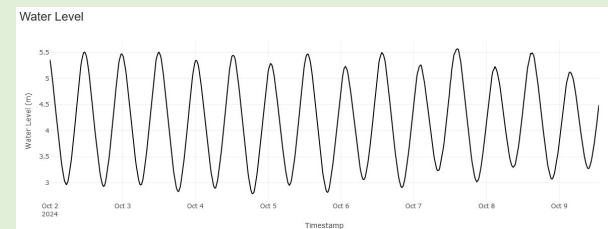
WIND

The wind sensor is located at the Ipswich Bay Yacht Club pier



SEA LEVEL

Sea level is measured with an OTT RLS (radar level sensor) that measures distance between the sensor and the surface of the water.



WATER QUALITY

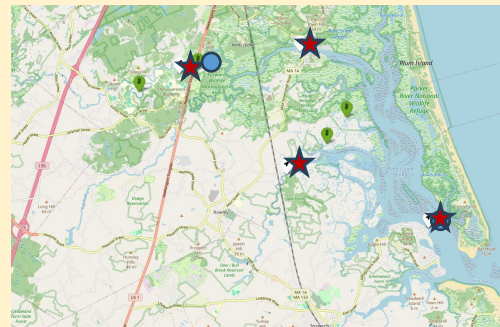
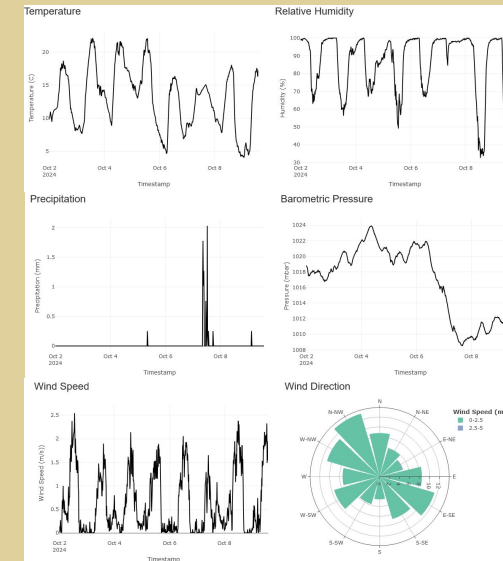
Data are collected from water quality sondes located at 4 stations in the estuaries, one of which is at BYC.



Data are collected every 15 minutes during the non-winter seasons, and are available through the data catalog on our website: <https://pie-lter.mbl.edu/data-catalog/>. For assistance, contact pie_im@mbl.edu

WEATHER

A meteorological station is located at the MBL Marshview Farm Field Station in Newbury, MA. The station measures temperature, relative humidity, precipitation, barometric pressure, wind speed and direction (below), and atmospheric pressure and solar radiation (not shown).



Locations of Weather and Water Quality Stations

- Weather Stations
- Ipswich Bay Yacht Club (also has water level sensor)
- Marshview Farm Field station, Newbury
- Near real-time data

- available at:
- Water quality stations
- <https://pie-lter.mbl.edu/live-data/>
- Rowley River at PIE Field Station
- Parker River at near the Railroad Bridge
- Parker River near Triton High School
- Instrument towers also collecting weather data

Live data available at:

<https://pie-lter.mbl.edu/live-data/>

https://pie-lter.mbl.edu/data-catalog/



[ABOUT](#) [RESEARCH](#) [PUBLICATIONS](#) [DATA](#) [EDUCATION & OUTREACH](#) [FOR RESEARCHERS](#) [NEWS](#) [Q](#)

Data Catalog

PIE data is hosted in the [Environmental Data Initiative Repository](#) and is freely available for download.

PIE data is also available in these national public repositories: [Biological & Chemical Oceanography Data Management Office \(BCO-DMO\)](#), [DOE Ameriflux Network](#), and the NIH National Center for Biotechnology Information [NCBI Databases](#). Broader scope of data can also be found using the [DataOne network](#) which consists of a Federation of member node data repositories of which EDI, the LTER Data Portal and BCO-DMO are member nodes.

All PIE data is licensed under [CC BY 4.0](#). Please visit [Information Management](#) for more details.

[DataONE](#)

[USGS Ipswich & Parker Provisional Discharge Data](#)

[Massachusetts Interactive Property Map](#)

[Massachusetts Geological Survey](#)

[NOAA Climate Data](#)

Enter a search term like "water" (enclose compound terms in quotes e.g. "water temperature"), or click **Advanced** for more options. Datasets will be summarized on the page with external links to more details at the original data archive. If you do not enter any search terms, all datasets will be returned, which is the default behavior when first loading the page.

► **Advanced**

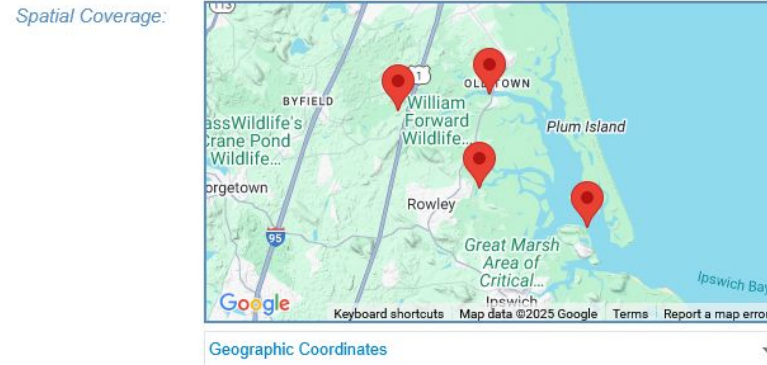
Found 441 results for **water quality sondes**. Showing results 1 to 20.

« **1** 2 3 4 5 »

Sort by

Data is available but be SURE to look at Metadata to be sure you know what you are getting

Abstract: Four YSI EXO2 water quality sondes were deployed from April 2024 to October 2024 at four sites in the Plum Island Estuary. One was at the mouth of the sound at the Ipswich Bay Yacht Club, one in the Rowley River, and two in the Parker River. The sondes measured water column temperature, salinity, oxygen, pH, algae, organic matter,...



Package ID: knb-iter-pie.635.1 (Uploaded 2025-01-15)

Resources: [View Full Metadata \(106 views\)](#)
[View Quality Report](#)

[Full Data Package \(Zip\)](#) (3 downloads)

Data Entities:

1. 2024_PIE_YSI_IB (1.9 MiB; 17 downloads)

[Download](#)

[Explore Data](#)

2. 2024_PIE_YSI_MR (2.5 MiB; 14 downloads)

[Download](#)

[Explore Data](#)

3. 2024_PIE_YSI_RO (2.2 MiB; 16 downloads)

[Download](#)

[Explore Data](#)

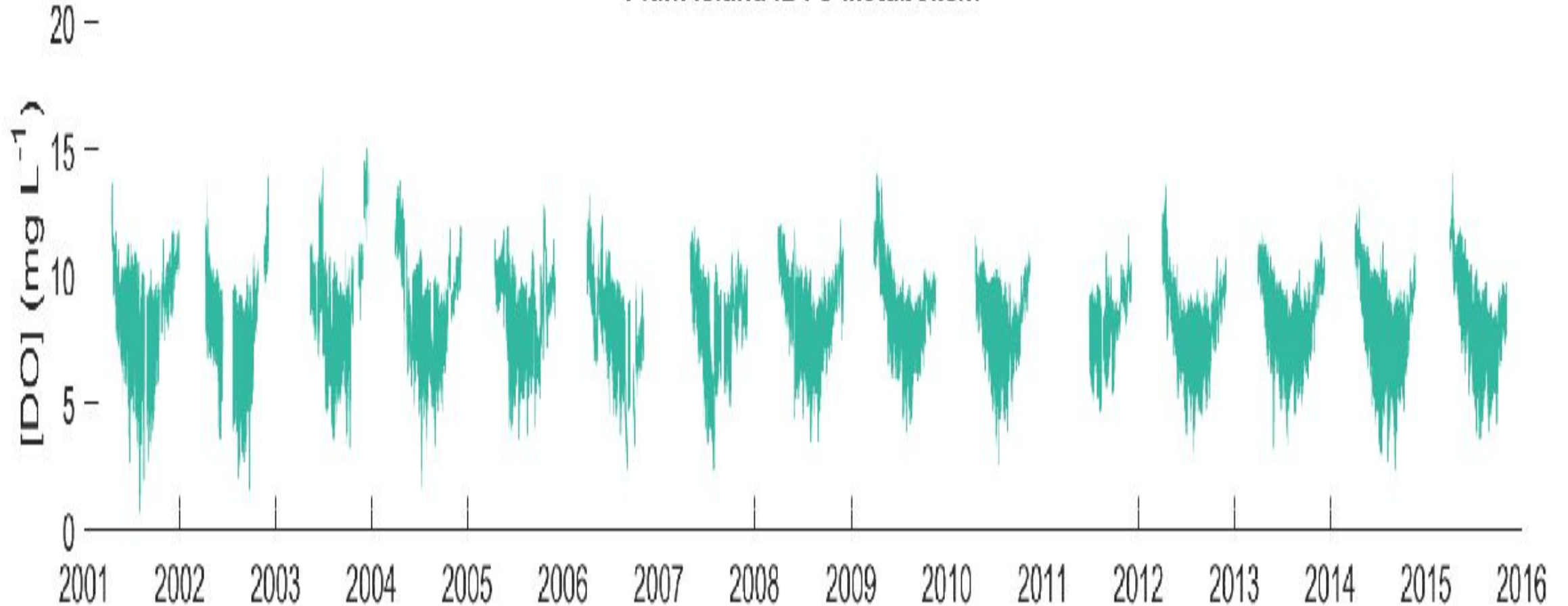
4. 2024_PIE_YSI_RR (2.1 MiB; 19 downloads)

[Download](#)

[Explore Data](#)

You will get a data sheet
with 30 columns and
12,674 rows

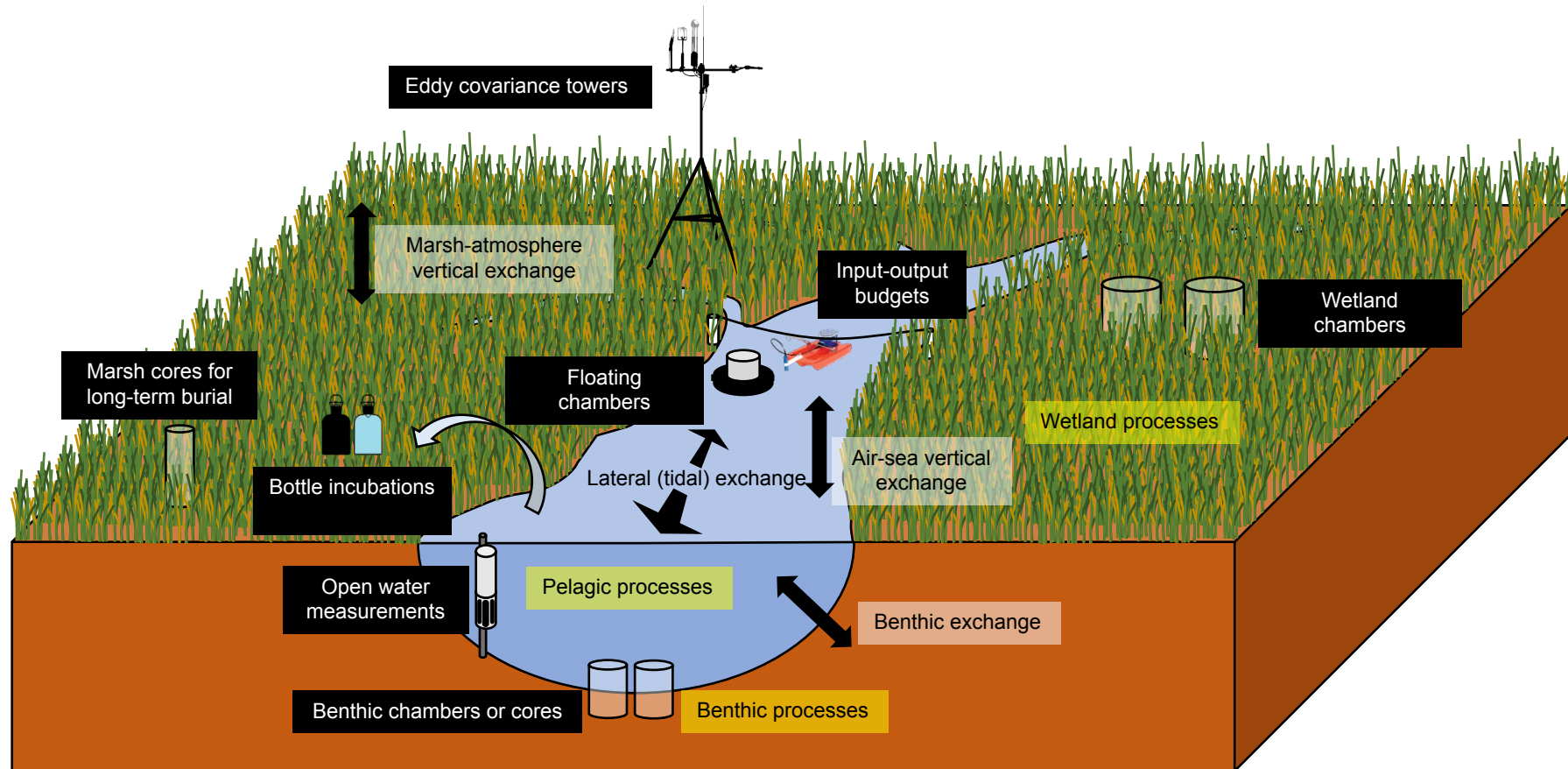
Plum Island IBYC Metabolism



Data also available for pH, conductivity, temperature, and more recently turbidity, “Chlorophyll” fluorescence and a fluorescence proxy for dissolved organic matter

Tidal Wetland-Estuary Processes

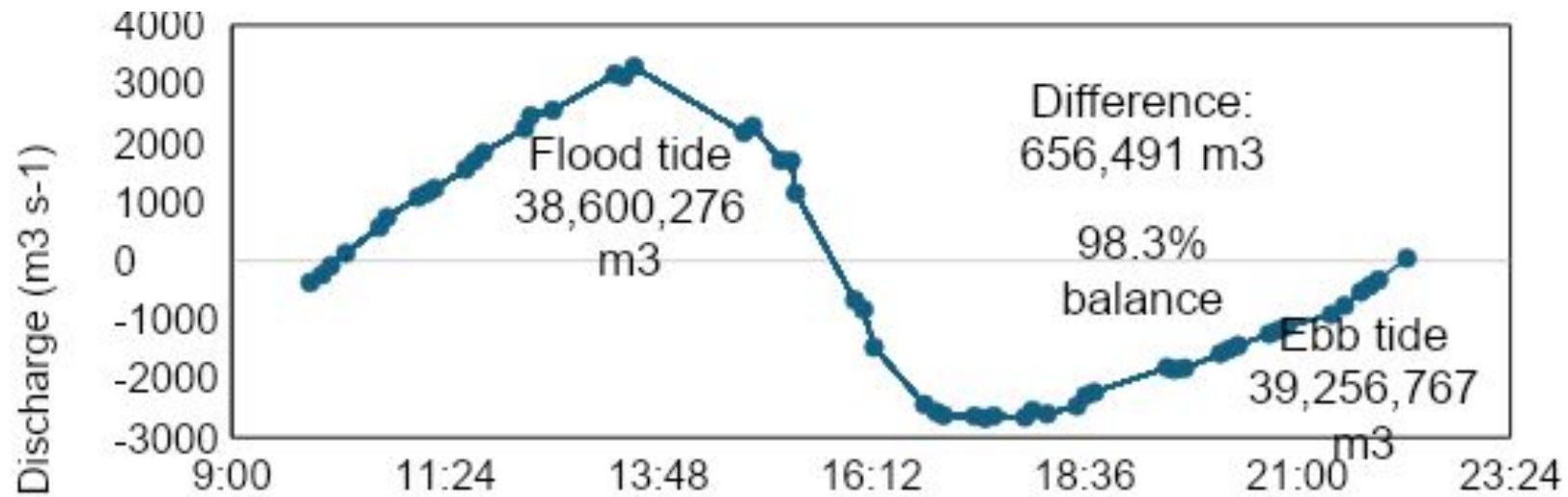
How do the estuary and marsh interact
Where is most of the primary production?
What is the balance of carbon, nutrient, sediments, acidity?



Cross System Exchange



ONE tidal cycle at the mouth as an example



	Q (m^3)	Salt (10^6 g)	DO (kmol)	TSS (kg)	NO_3^- (mol)
Flood	38,604,876	1,228,950	10,988,228	240,278,940	16,011
Ebb	-39,256,676	-1,249,155	-11,256,128	-161,283,561	-3,099
Difference	-651,800	-20,205	-267,899	78,995,378	12,912
Balance	98.3	98.4	97.6	149.0	516.6
		<i>Salt Balance</i>	<i>Slight Export?</i>	<i>Retention</i>	<i>Retention</i>

Weston unpub

Nutrient and Metabolism Transects



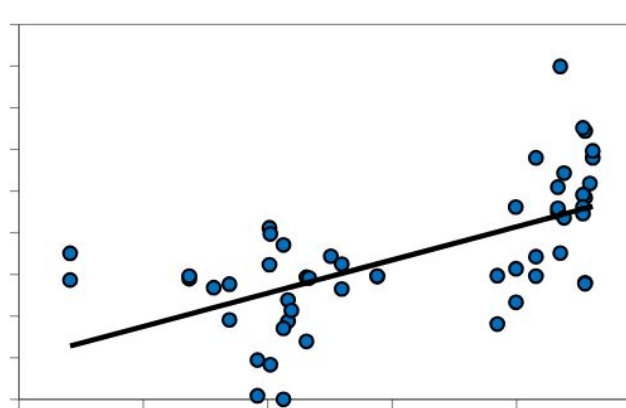
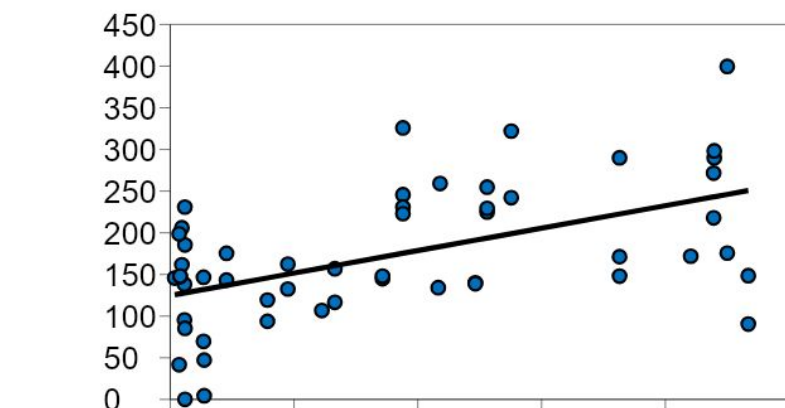
Dawn and Dusk for 3-4 tidal cycles three times a year (Weston et al.)

10 yrs of data

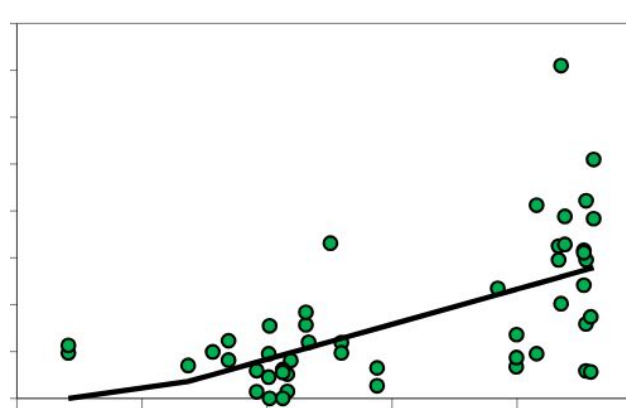
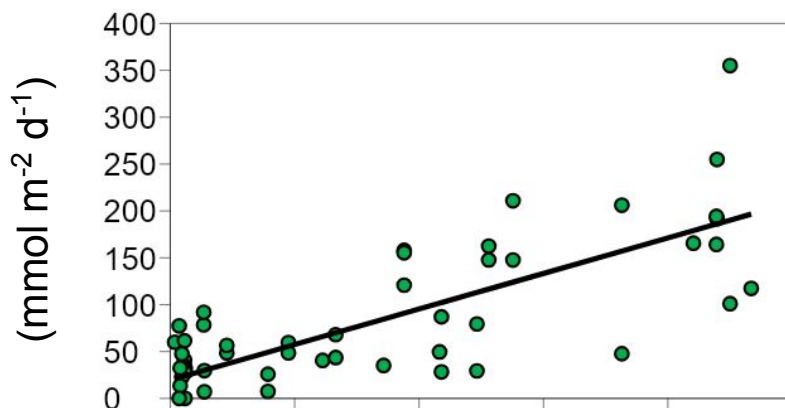
Middle Parker
is “net
heterotrophic,
i.e. the estuary
is gaining C
from the
marsh and the
watershed

Weston et al.
unpublished

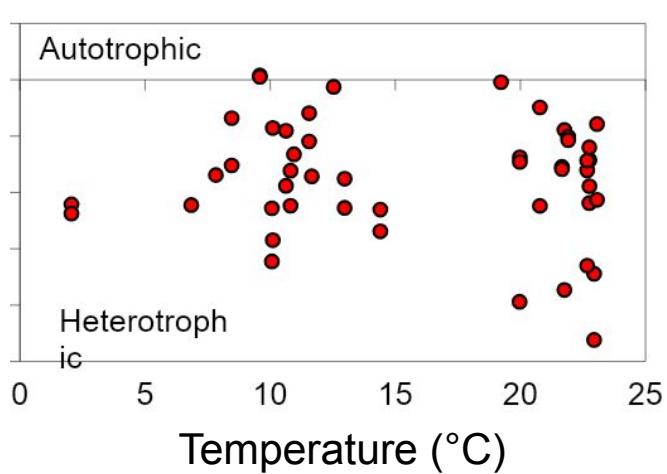
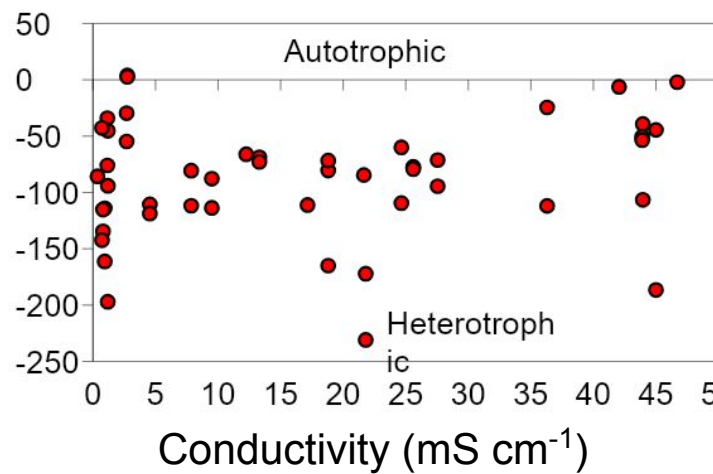
Respiration



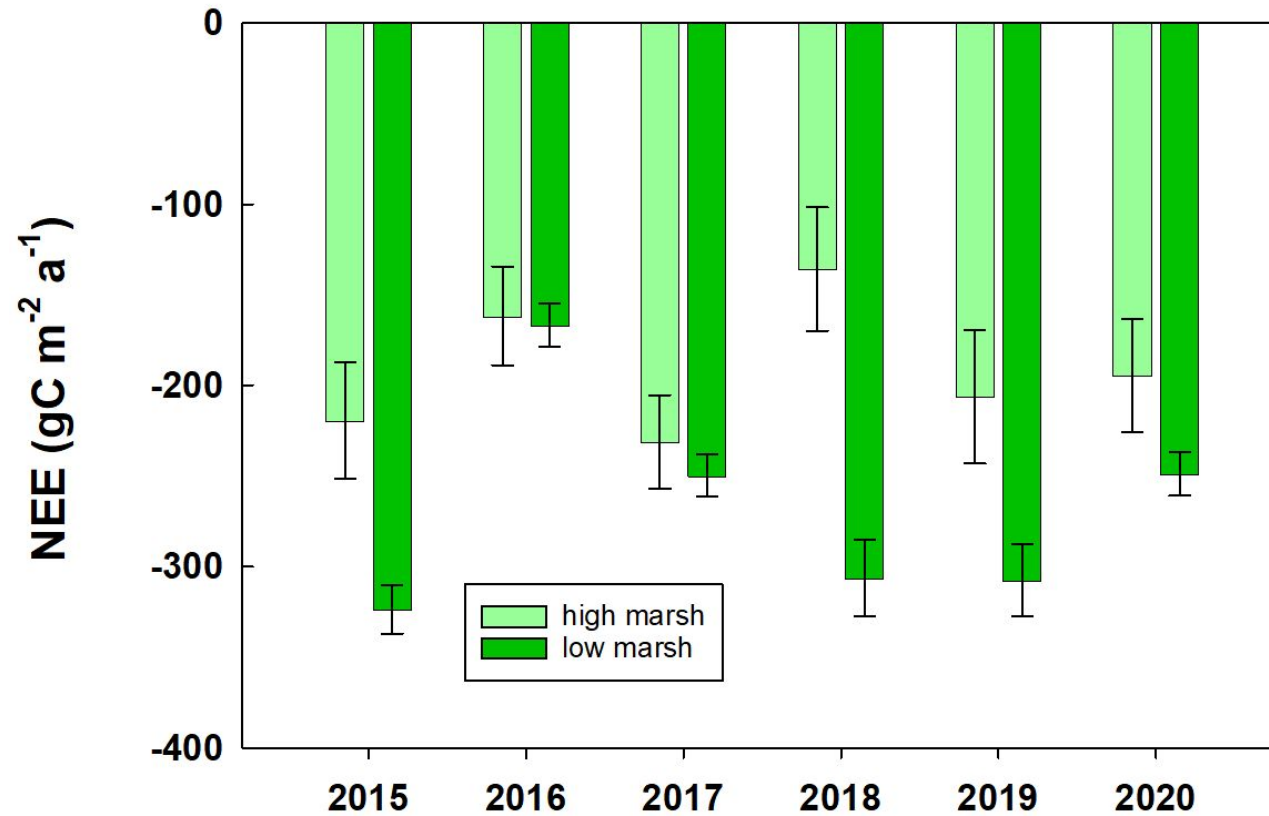
Gross Primary
Production
(mmol m⁻² d⁻¹)



Net Ecosystem
Production

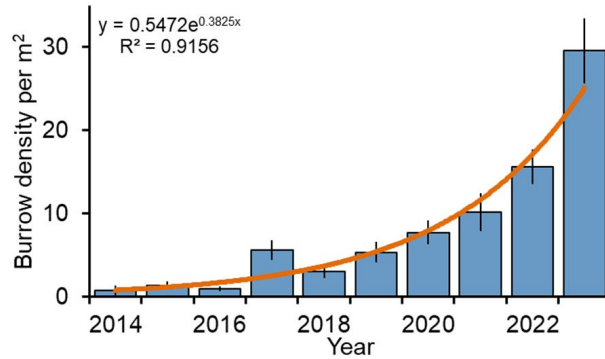


We measure NEE now at 3 marsh sites, low marsh, high marsh and the upstream Typha zone



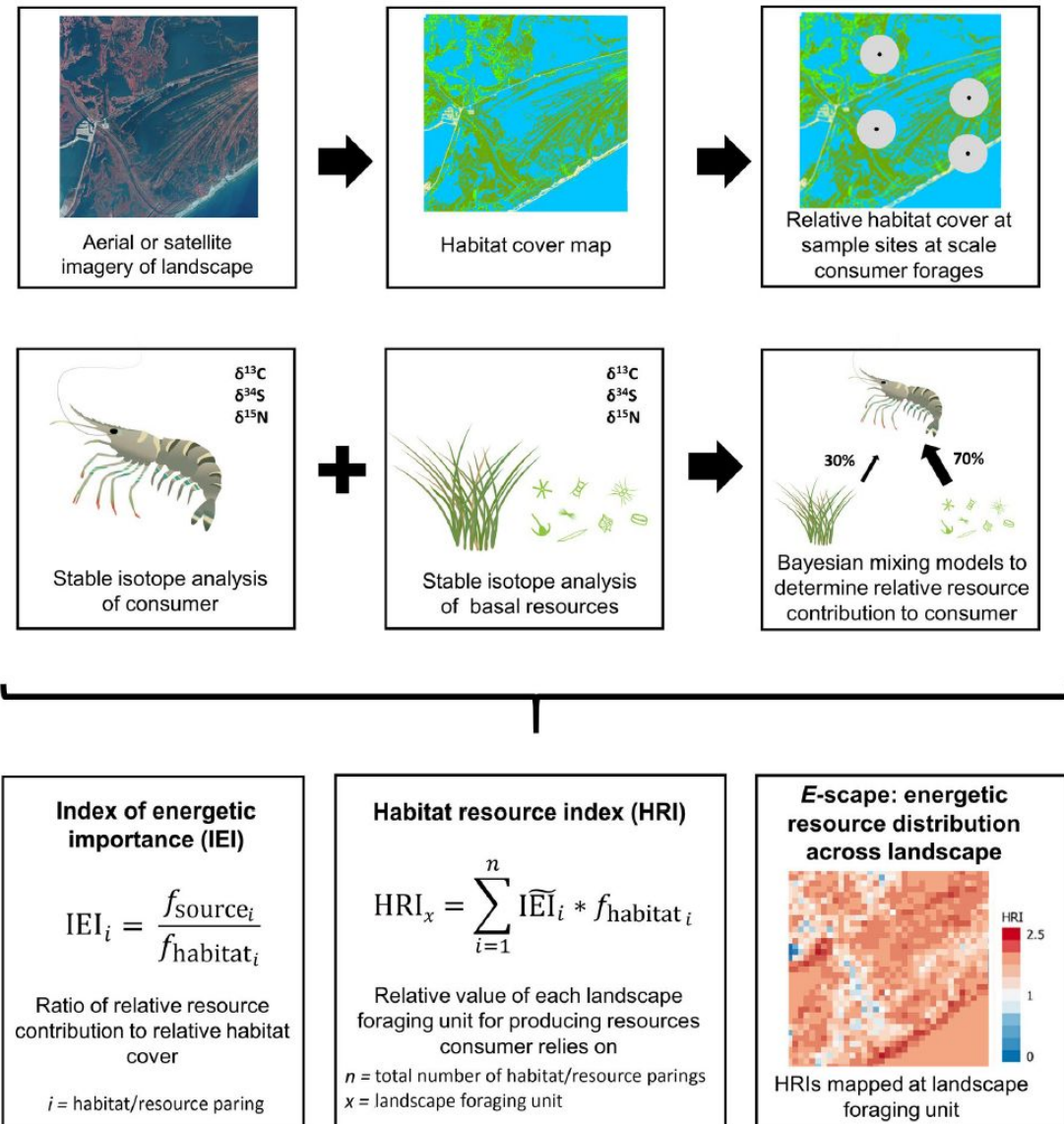
NEE exceeds marsh carbon burial supporting the metabolism we are seeing in the water column

We do critters too

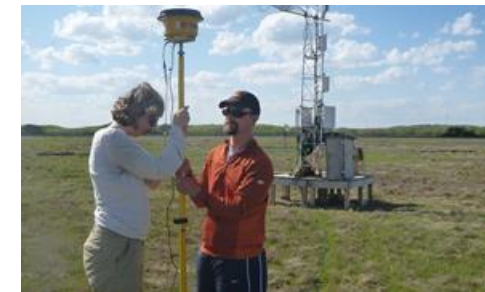
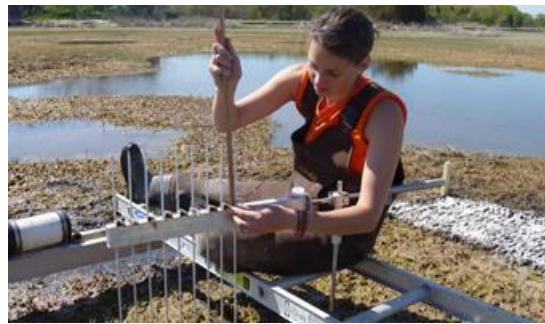


Monitoring the expansion of the fiddler crab

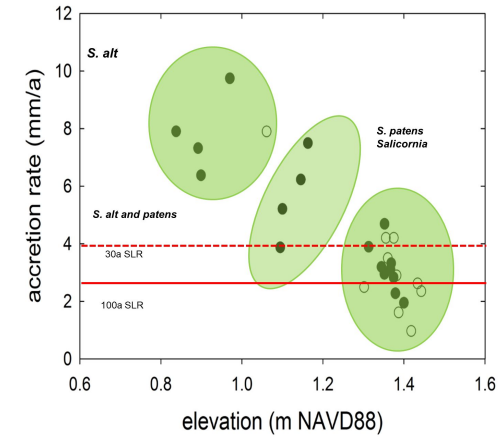
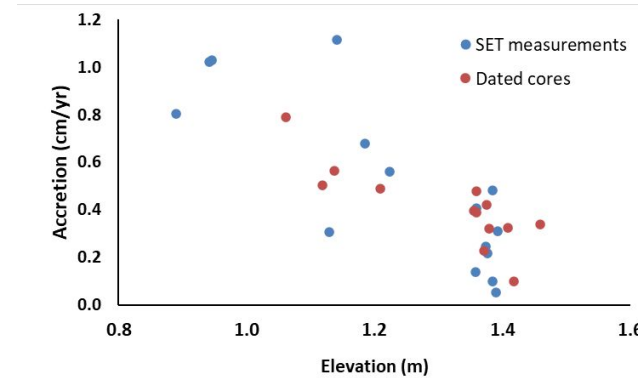
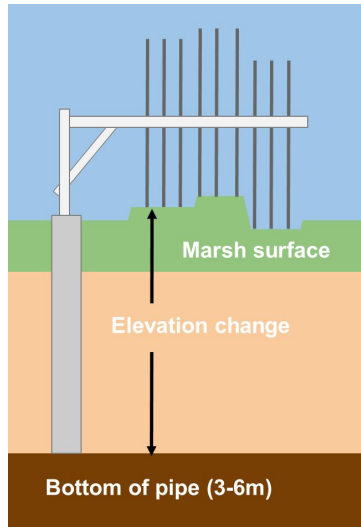
Johnson and Nelson



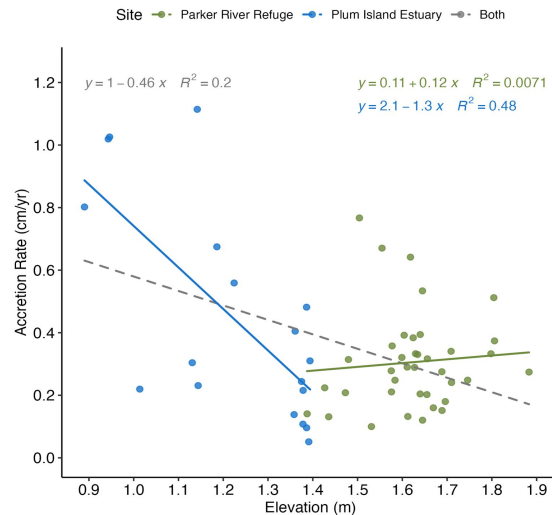
IT TAKES A VILLAGE



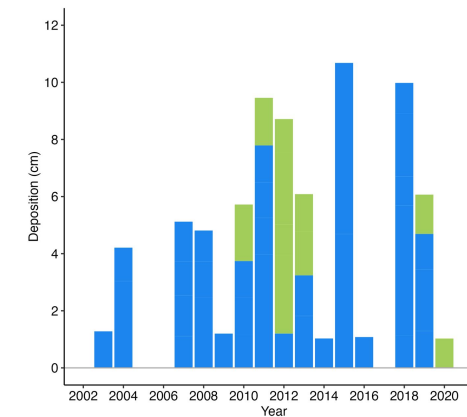
Point measurements of Sediment Accretion using SETs and cores



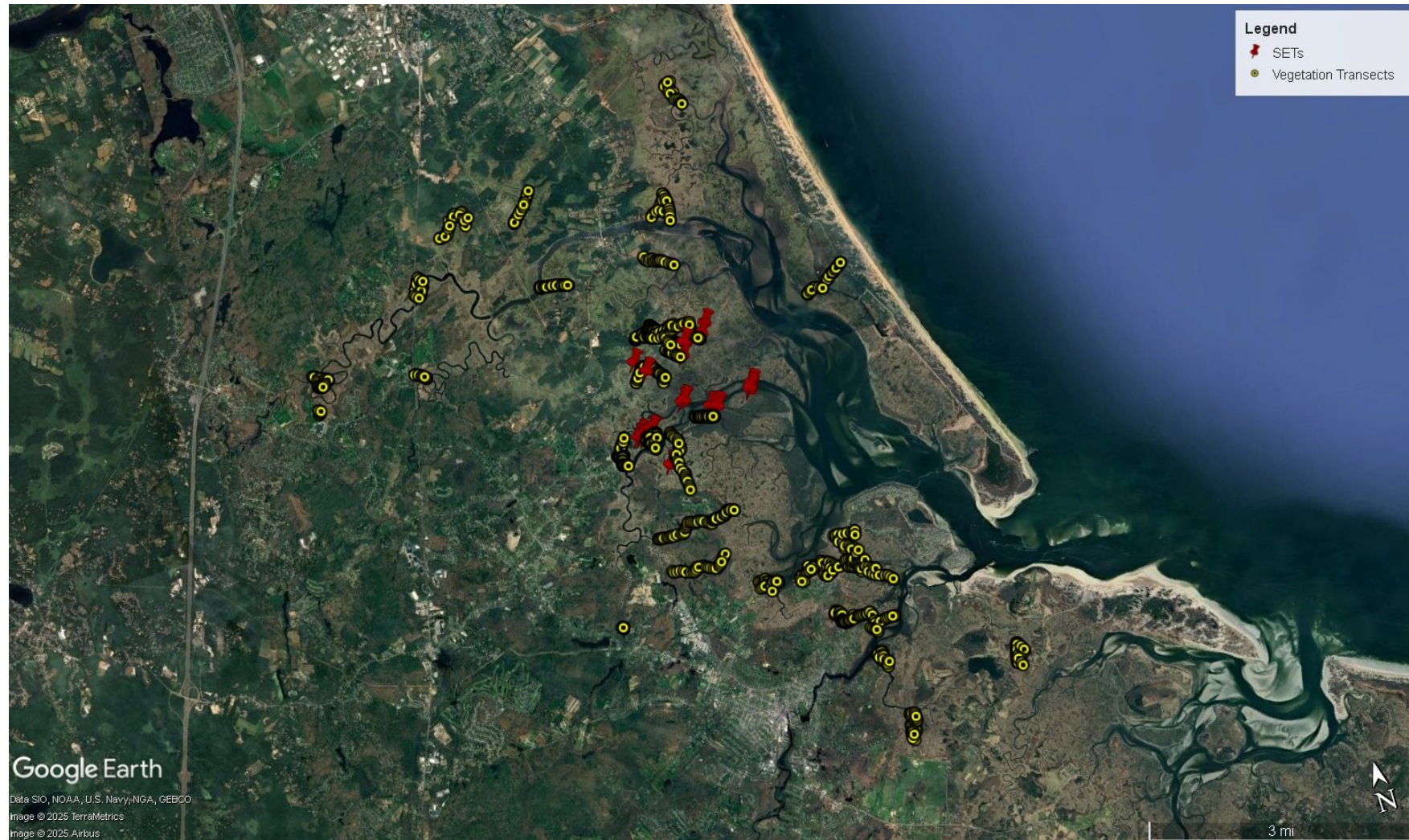
Site ■ Parker River Refuge ■ Plum Island Estuary



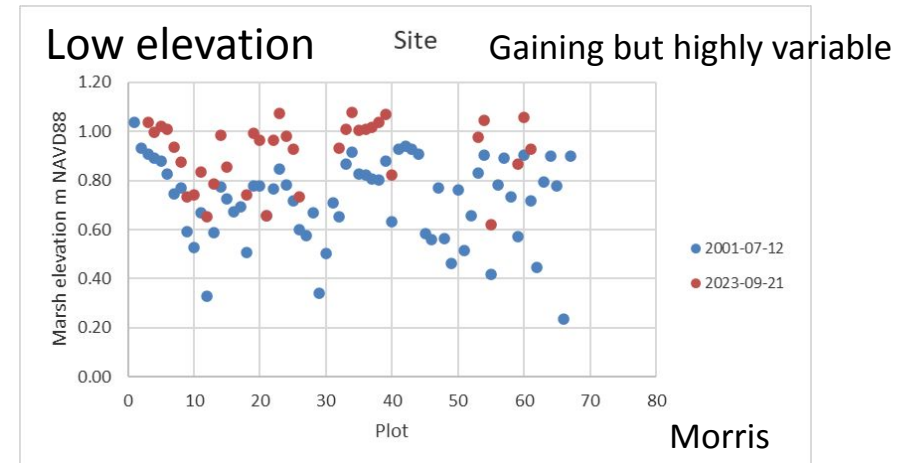
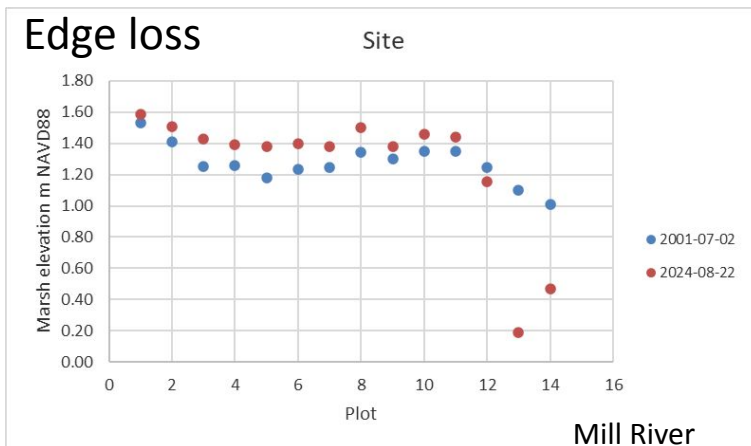
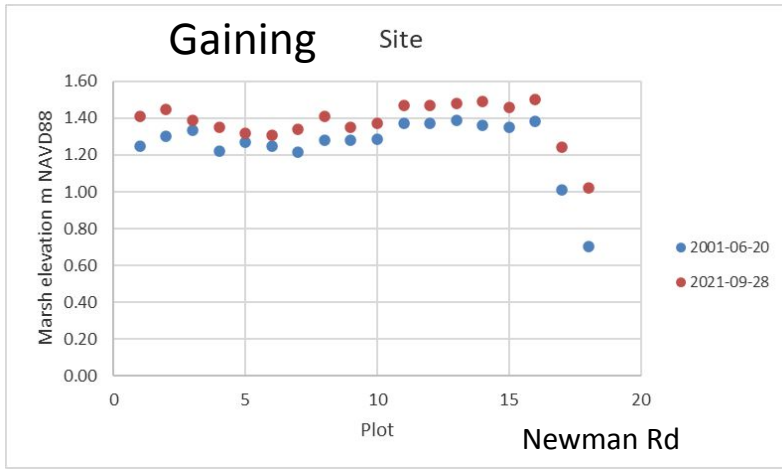
The data suggested that episodic events were also important but hard to measure



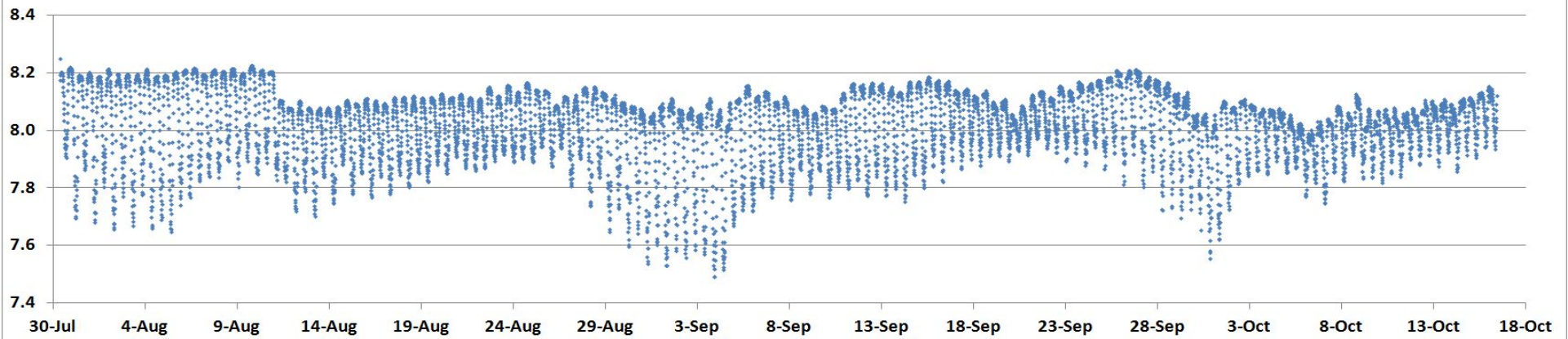
Vegetation/Elevation Transects 20 years apart



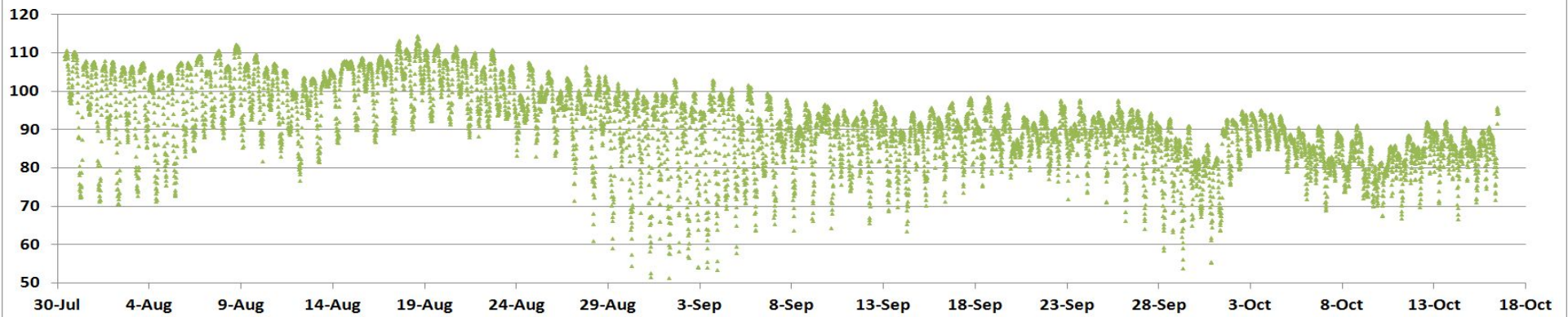
These transects have allowed us to see where the “general” patterns hold and when they don’t.



2015 IBYC SeapHOx pH



2015 IBYC Dissolved Oxygen (Percent Saturation)



2015 IBYC Salinity (ppt)

