Understanding the Effects of Oyster Bio-Deposits in the Ecosystem

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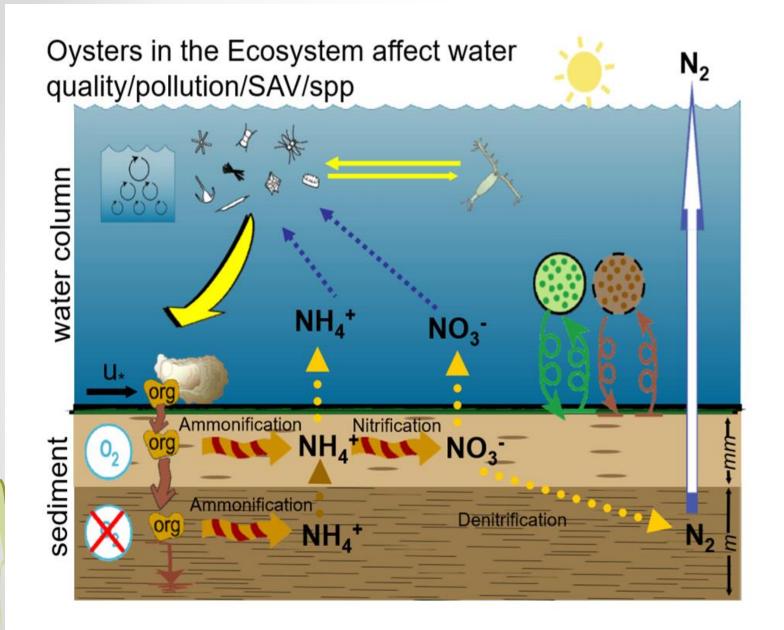
Understanding Oysters



- Oysters or *Crassostrea virginica* are filter feeders.
 - Food particles like micro algae will be directed towards the 'mouth' while other particles, like sediment, are rejected and deposited outside of the shell in the form of biodeposits.
- There is not a lot of research about their bio-deposits

Why are we studying this?

We want to better understand how oyster bio-deposits effect its natural ecosystem. Especially in tidal waterways (like the Chesapeake Bay).



<u>Understanding how</u> <u>Oyster bio-deposits factor</u> <u>into the ecosystem web</u>

An adult oyster can filter up to 50
 Gallons of water every day.



Setting the experiment

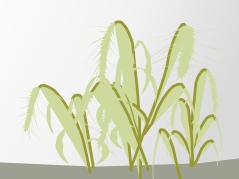
- (3) non-resuspension mesocosms
- (3) STURM Tanks
 - Mimics natural tidal shear stress
- 10cm of sediment was added to each tank
- Each tank was filled with 1000L of seawater



Hypothesis

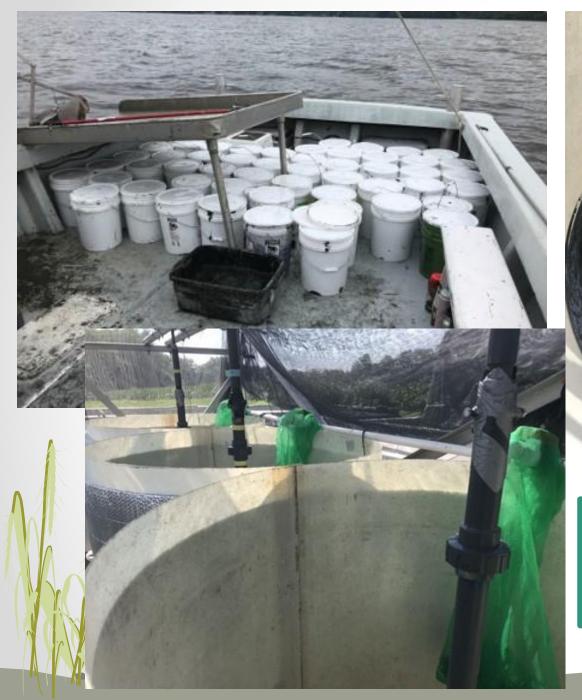
- The non-suspension systems will have a higher concentration of nutrients in the benthic layer.
- Processes will be benthic dominated.

- The resuspension systems will experience more nutrient resuspension within the water column which will promote more algal growth.
- Processes will be water column dominated.





Prep Work -I







Field Methods

- Every day we collected data for:
 - Secchi Stick readings
 - In vivo fluorescence
 - Dissolved Oxygen (YSI)
 - Temperature
 - Turbidity (OBS)
- Twice a week we collected samples for a multitude of tests including
 - Seston analysis
 - Phytoplankton counts
 - Particulates

- Light Intensity (PAR)
- > Nutrients
- \circ Zooplankton





Oyster Bio-deposit

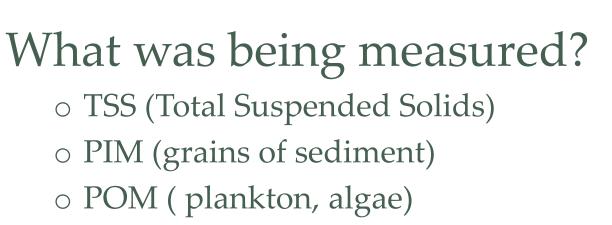




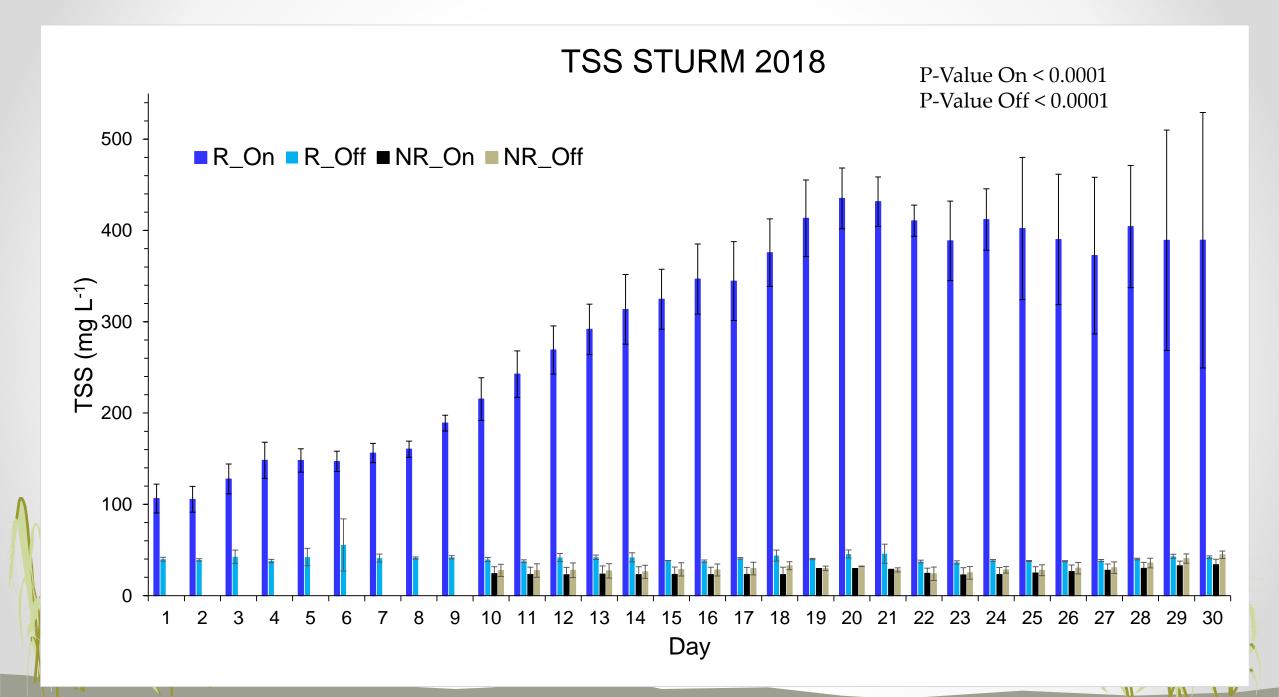


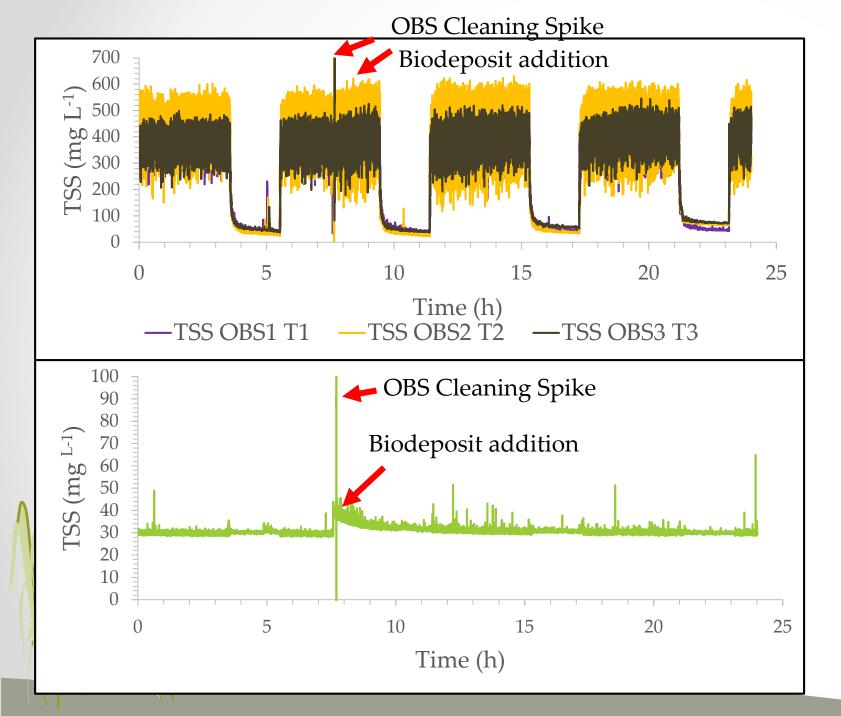


Seston





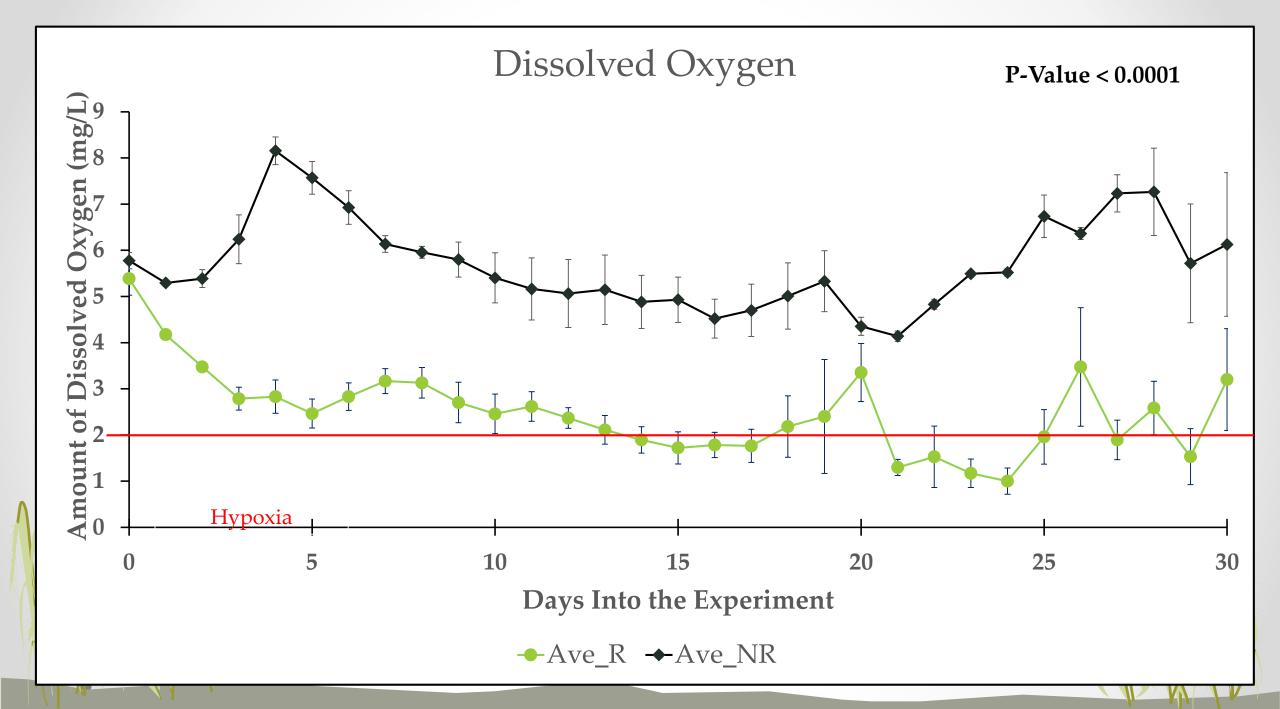


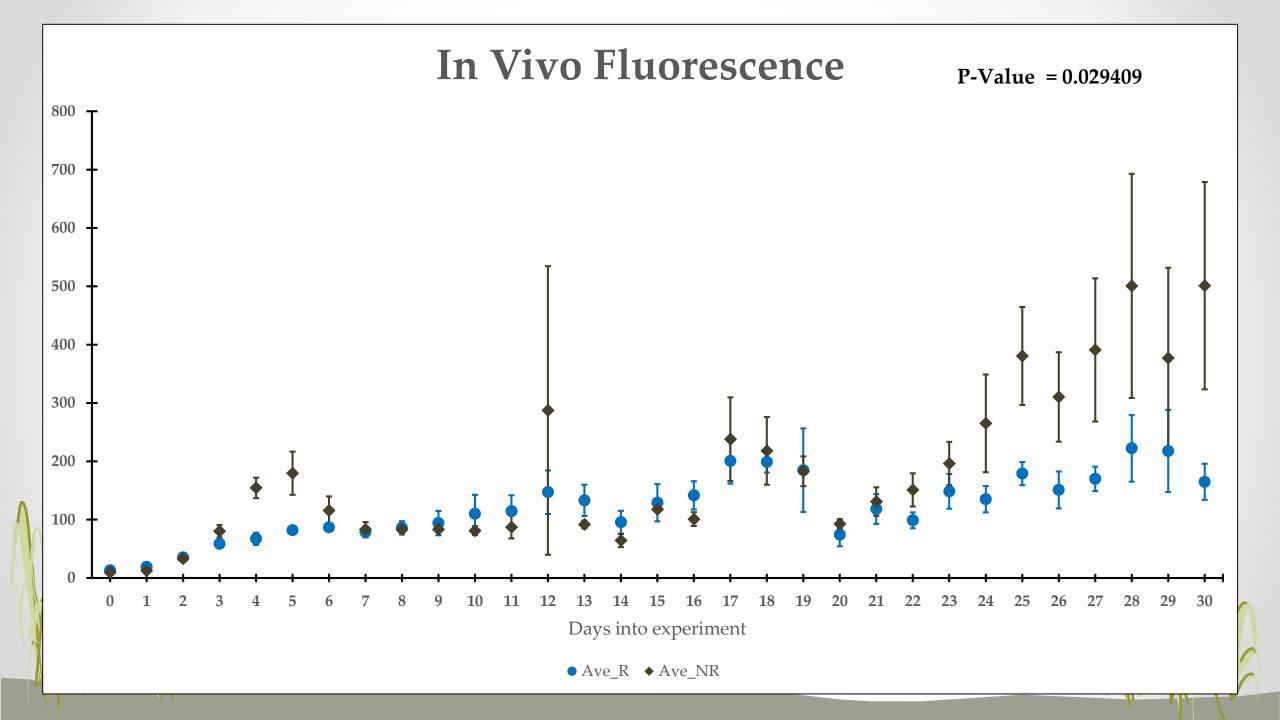


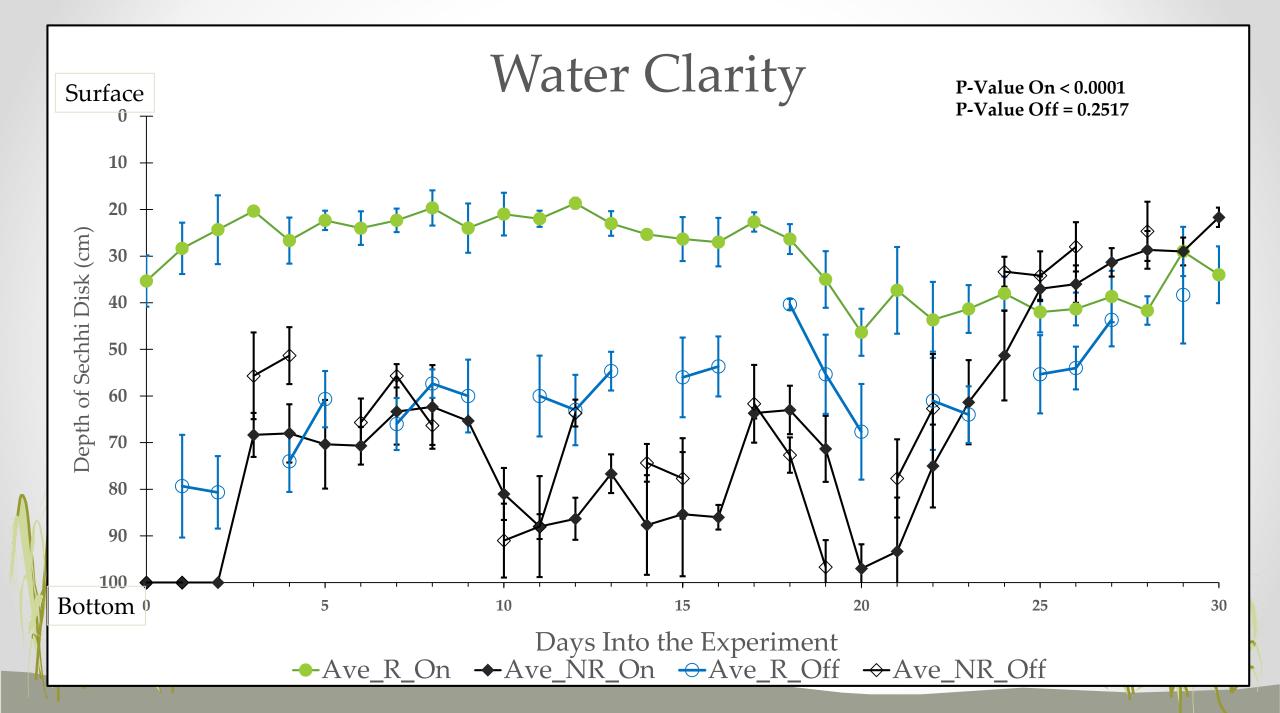
TSS R Tanks

Note scale of axes









Conclusions

- What did we learn?
 - As hypothesized the resuspension tanks were water column dominated.
 - The hypothesis proposing higher rate of algal growth within the resuspension tank was rejected.

What are we still researching/looking into?
What processes were (if any) happening in the benthic level?
What differences are found in resuspension sediment versus the non-resuspension sediments?



Special thanks to:

- All of the PEARL staff
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- All of the PEARL interns
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- Melanie Jackson (Horn Point Lab)
- Maryland Sea Grant
- Friendly mesocosm visitors



Questions?

Thank you for a great internship experience



