SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Implications of Temporal and Spatial Vegetation Patterns on Performance of the Everglades Stormwater Treatment Areas

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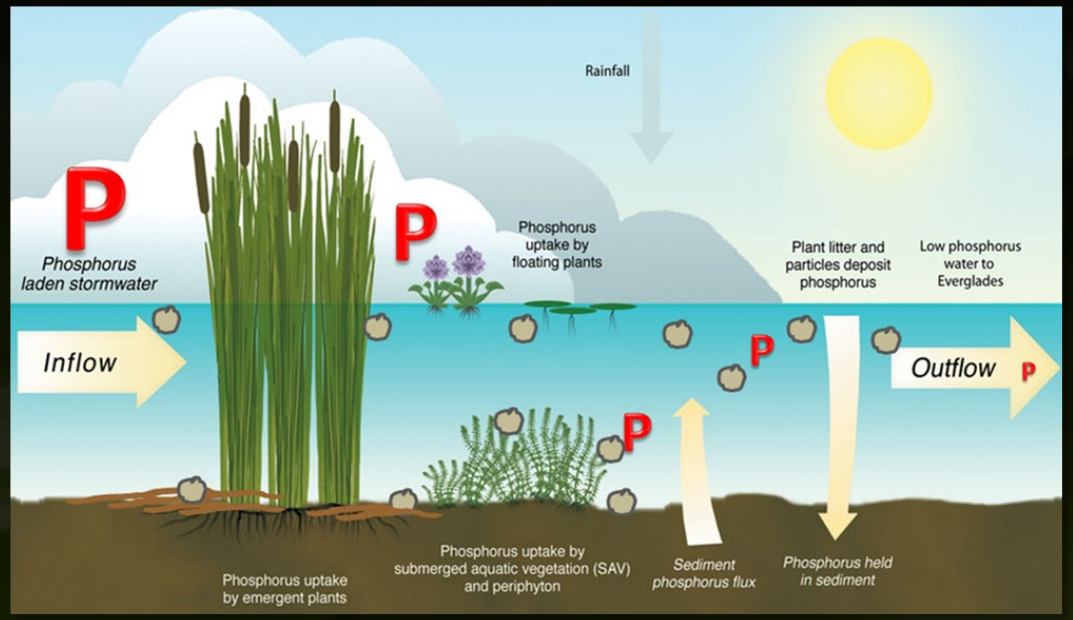
Vegetation Study Objectives

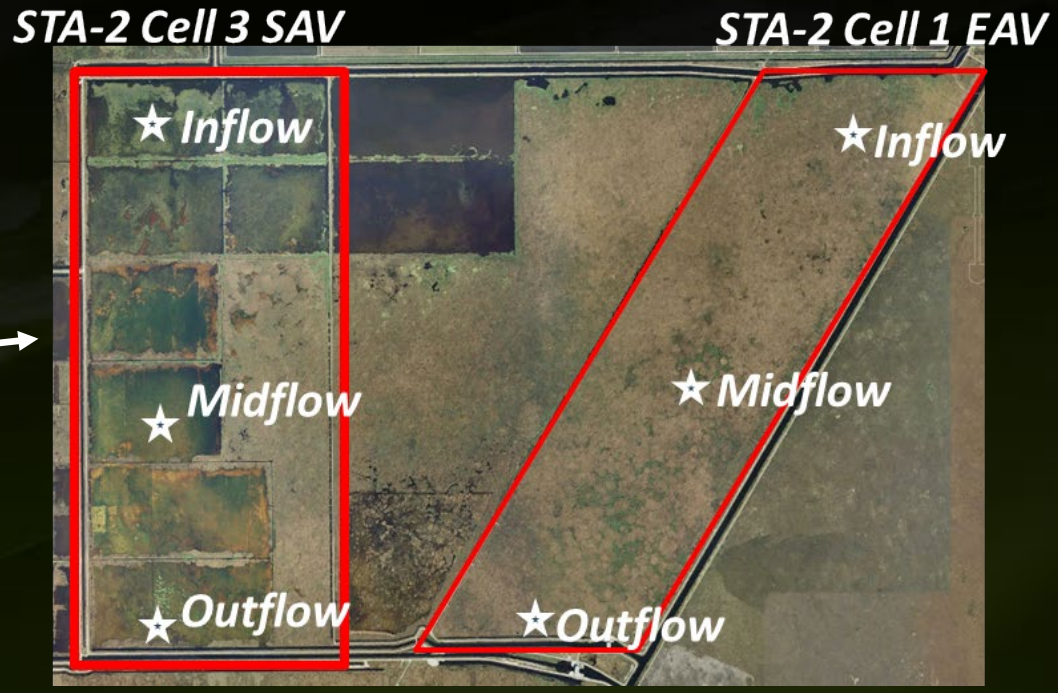
- Evaluate STA vegetation biomass and nutrient storage
- Provide comparisons among Emergent Aquatic Vegetation (EAV) and Submerged Aquatic Vegetation (SAV)
- Relate results to performance

Importance of Vegetation in the STAs



- Provide hydraulic resistance
- Enhance settling of nutrients
- Surface for periphyton/microbial
- Nutrient storage
- Co-precipitation mechanisms

Vegetation Study Sites



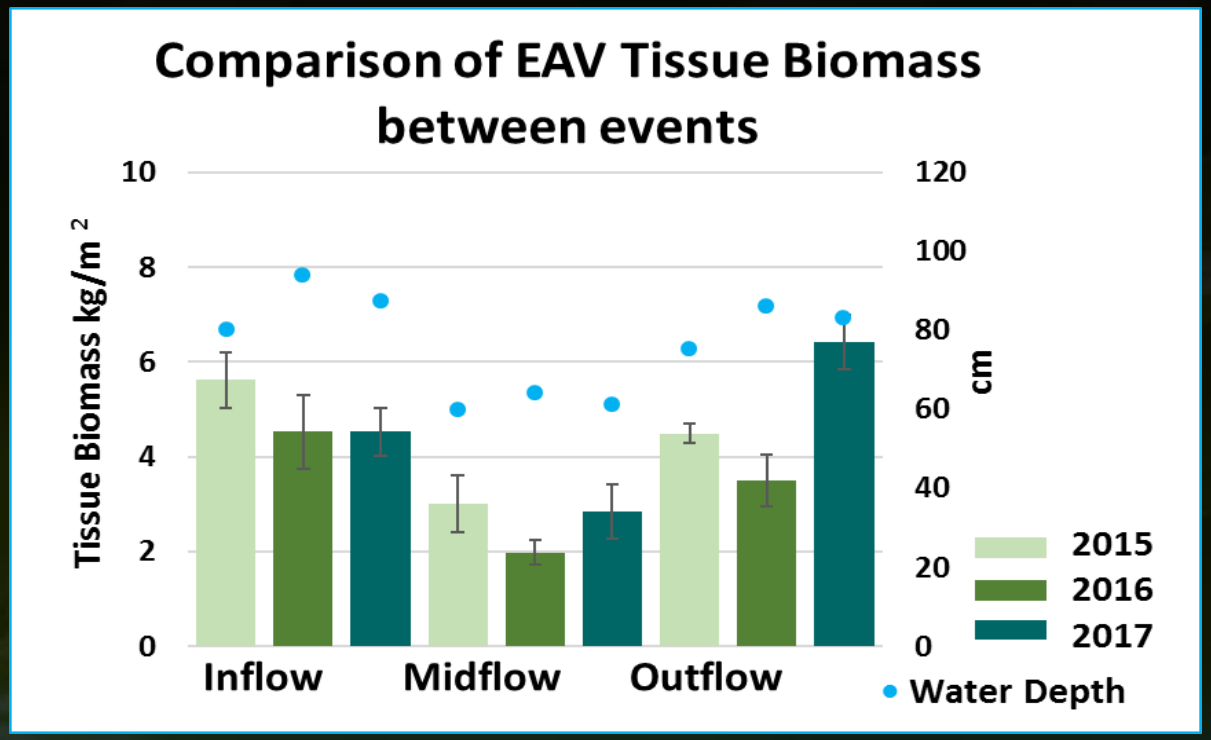
Sampling Design	SAV	EAV
Sampling Dates	Nov. 2015, Sept. 2016, Aug. 2017	Nov. 2015, Sept. 2016, March 2018
Information Collected	% coverage, Species composition, Total Biomass,Total Phosphorus (TP), Total Carbon (TC), Total Nitrogen (TN), Ash Content, Total Calcium (SAV only)	% coverage, Species composition, Total Biomass,TP, TC, TN, Ash Content

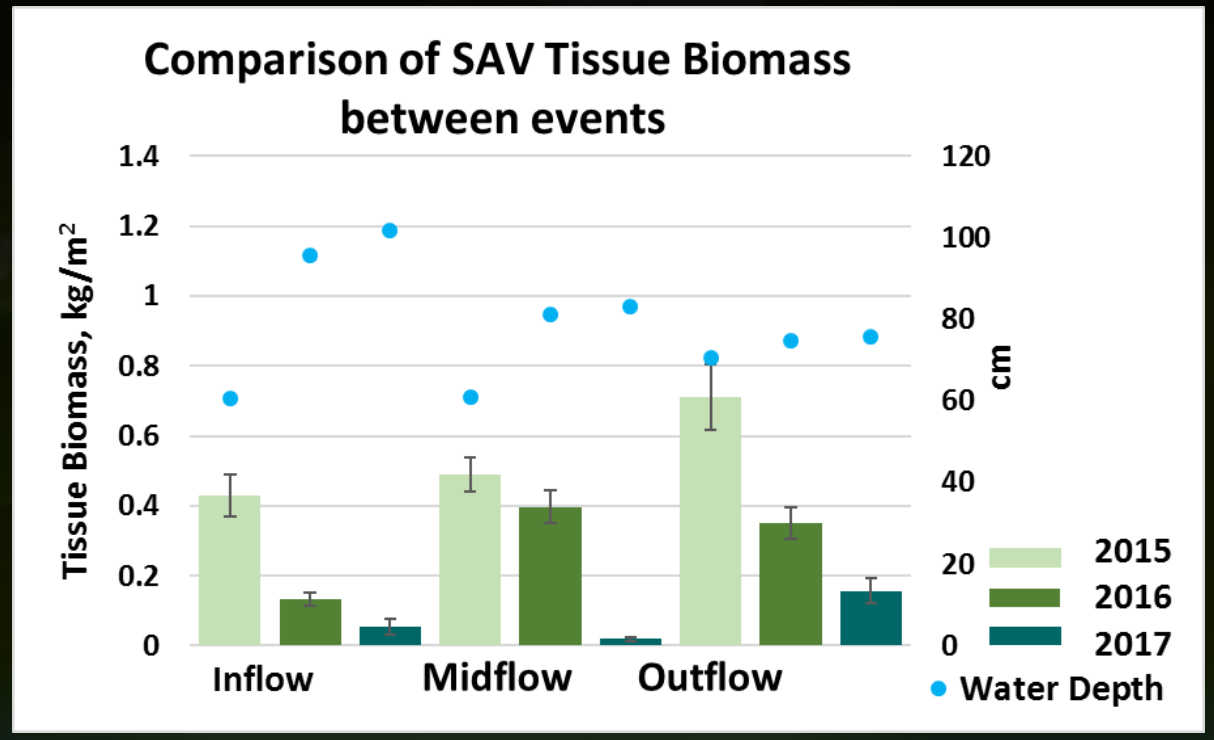
SAV Biomass Decline

STA-2 Cell 3 SAV

	Inflow	Midflow	Outflow
Nov. 2015			
Sept. 2016			
Aug. 2017			

Total Tissue Biomass Comparisons

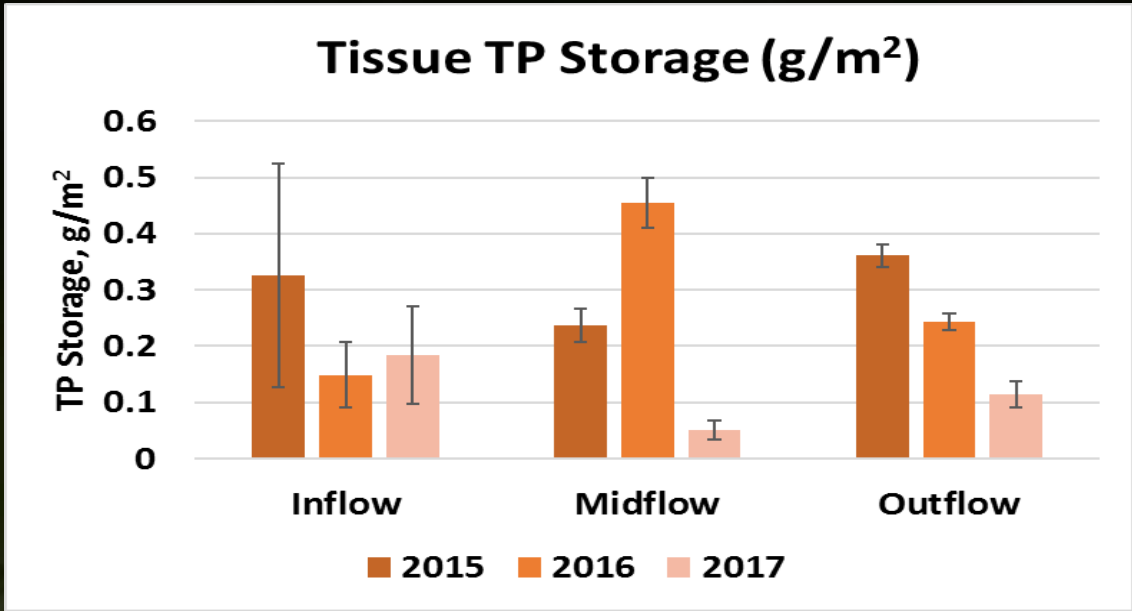




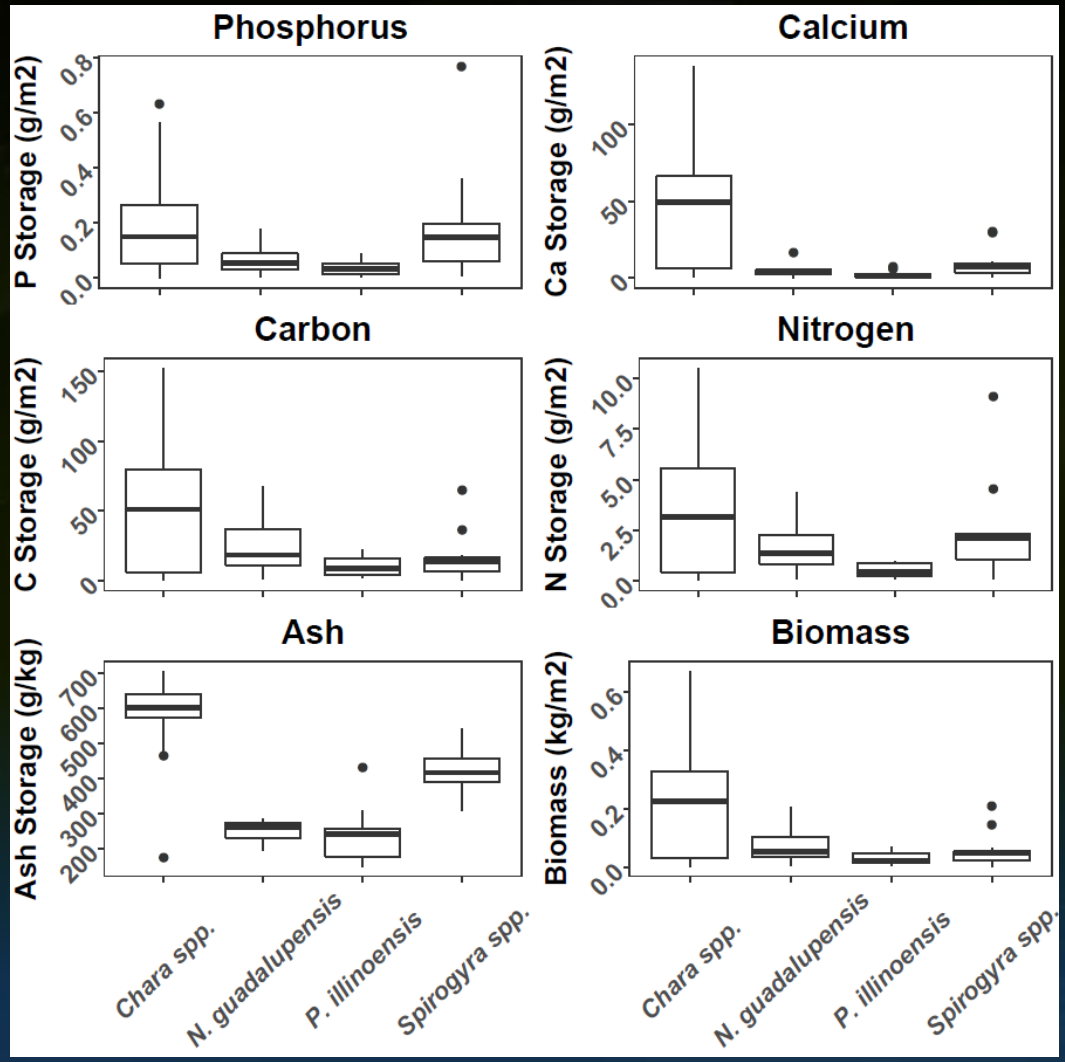
- Inflow typically had highest biomass for EAV
- Midflow lowest biomass

- Midflow and outflow typically had highest biomass
- Substantial loss of SAV over three events in each location

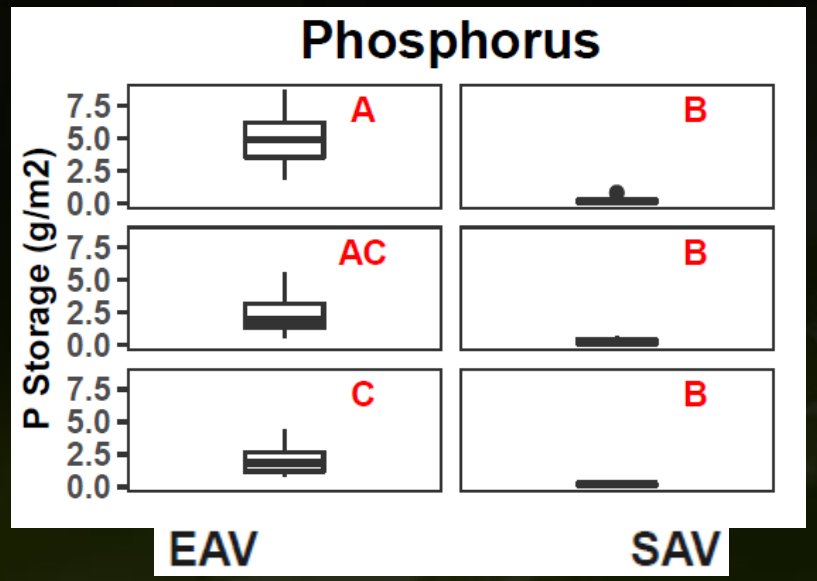
SAV Tissue Nutrient Storage

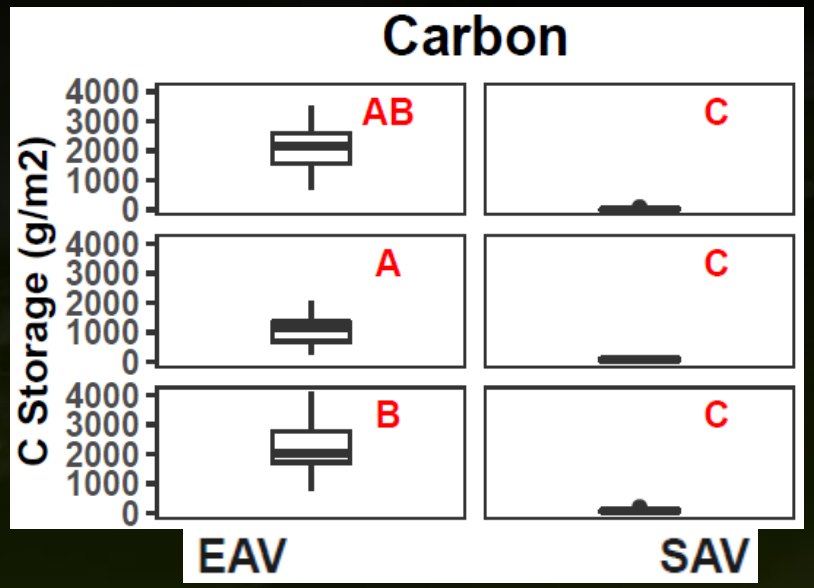


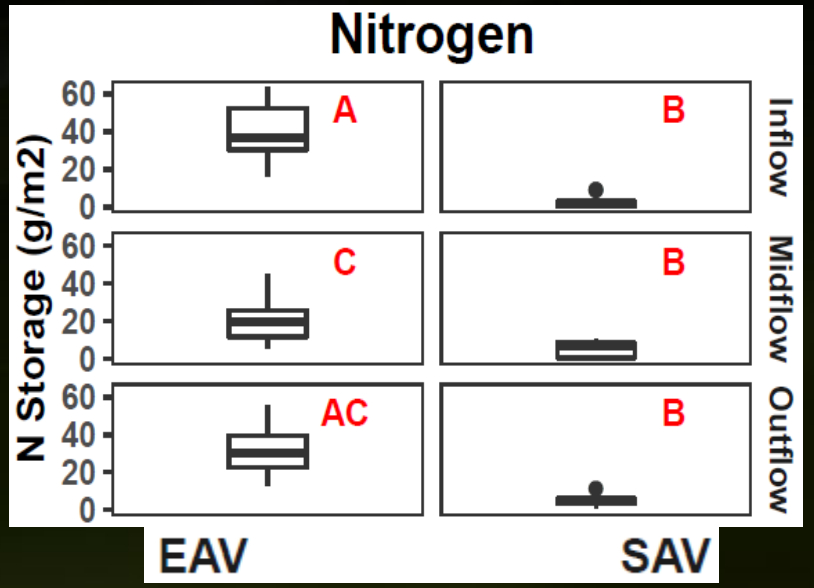
- Species observed in STA 2 Cell 3:
  - *Chara* spp.
  - *Naja guadalupensis*
  - *Potamegeton illinoensis*
  - *Spirogyra* spp.



Nutrient Storage Comparisons

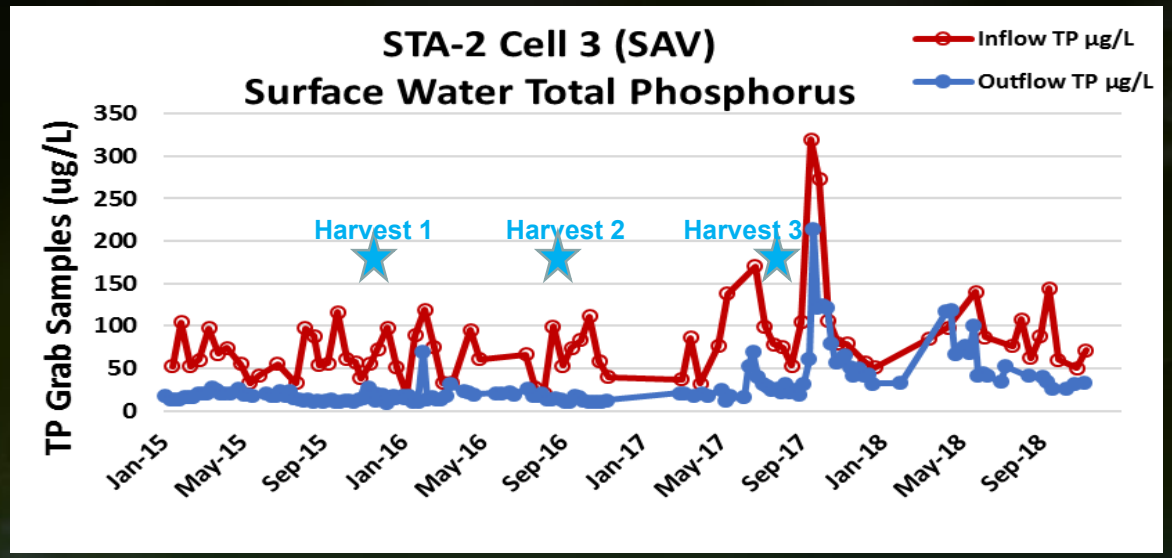


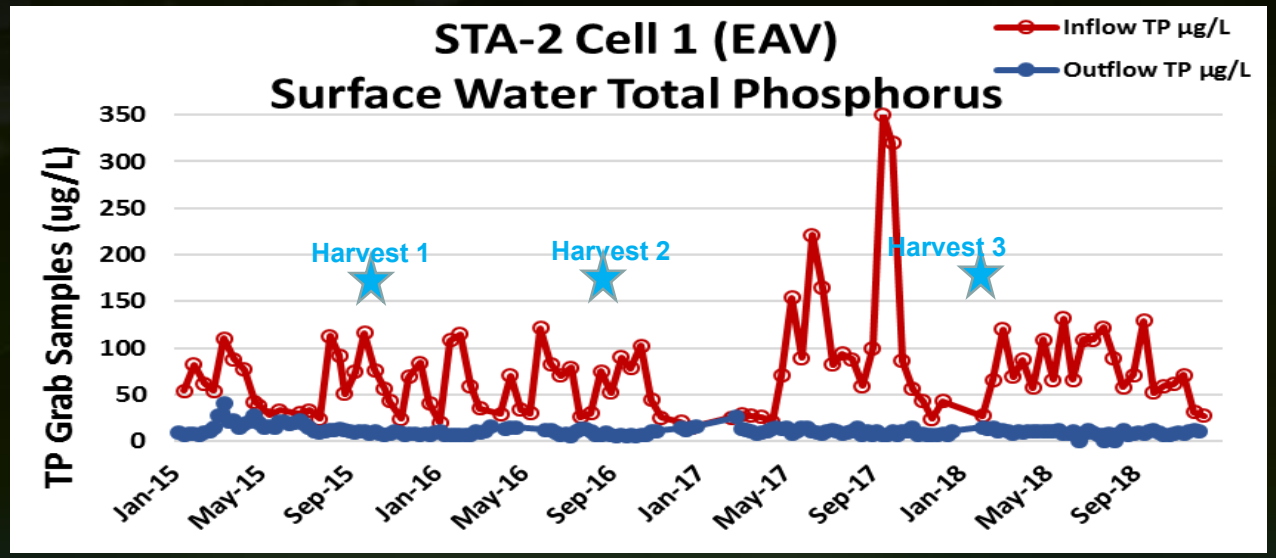




- Declining gradient for phosphorus storage from inflow to outflow for both vegetation types
- Nutrient storages were all significantly different among the two vegetation types

STA- 2 Performance Comparisons

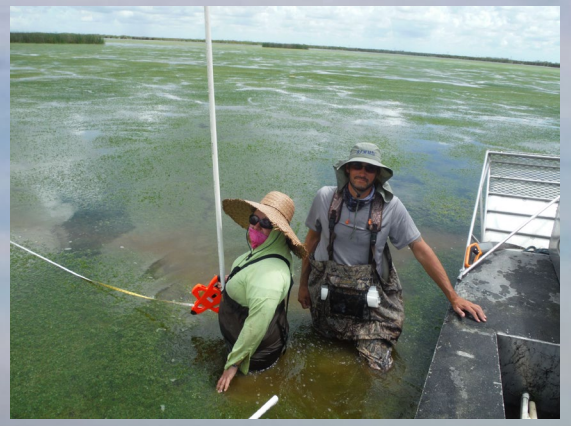


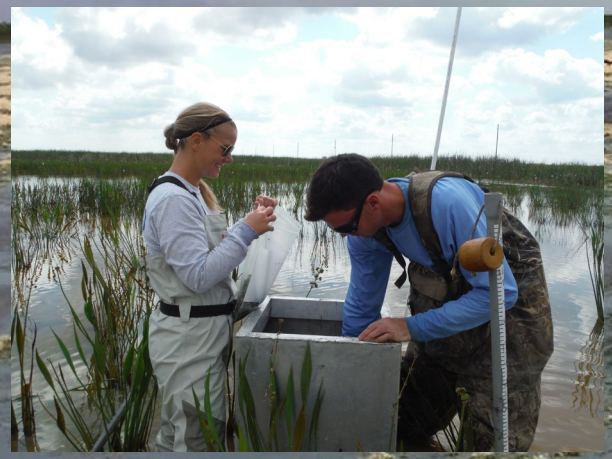


Summary

- Biomass
  - Spatial differences in SAV vs. EAV along nutrient gradient
  - Temporal loss of SAV biomass over course of study at all sites
- Nutrient Storage
  - Nutrient storages significantly higher for EAV compared to SAV
  - Spatial differences in SAV species, *Chara* had highest storage capacity
- Performance
  - Performance decline following loss of SAV biomass
  - Storm impacts complicated correlations between performance and SAV biomass loss
  - EAV biomass and performance were fairly consistent throughout study

THANK YOU





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