

# The Importance of Seagrass in Upper Florida Bay in Modulating Flow, Waves, and Sediment Dynamics



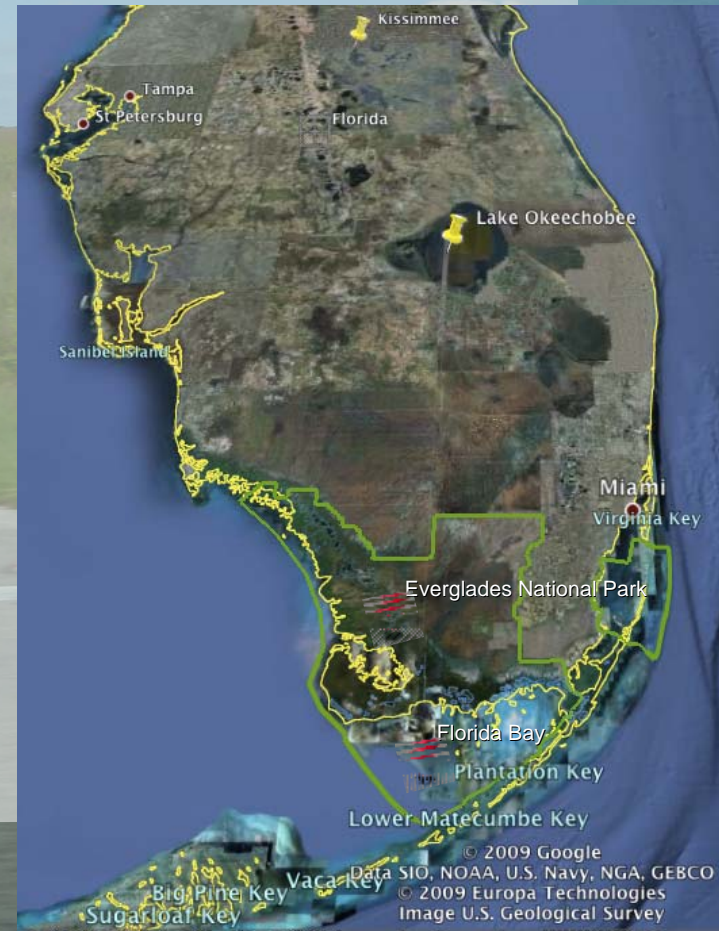
Jennifer Romanowich

University of Virginia Department of Environmental Sciences

Brown Bag Seminar, 13 January 2010

# Everglades and Florida Bay:

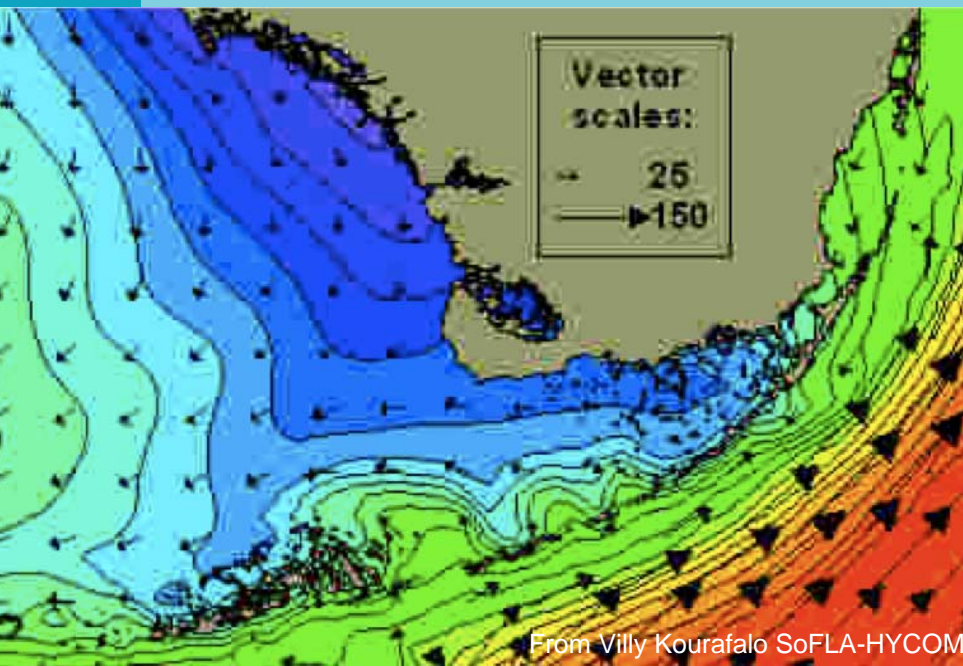
- Everglades:
  - 50% human population of Florida
  - Loss of 50% of wetlands and 90% of bird population
- Florida Bay:
  - Seagrass support entire food chain
  - Naturally variable and currently vulnerable



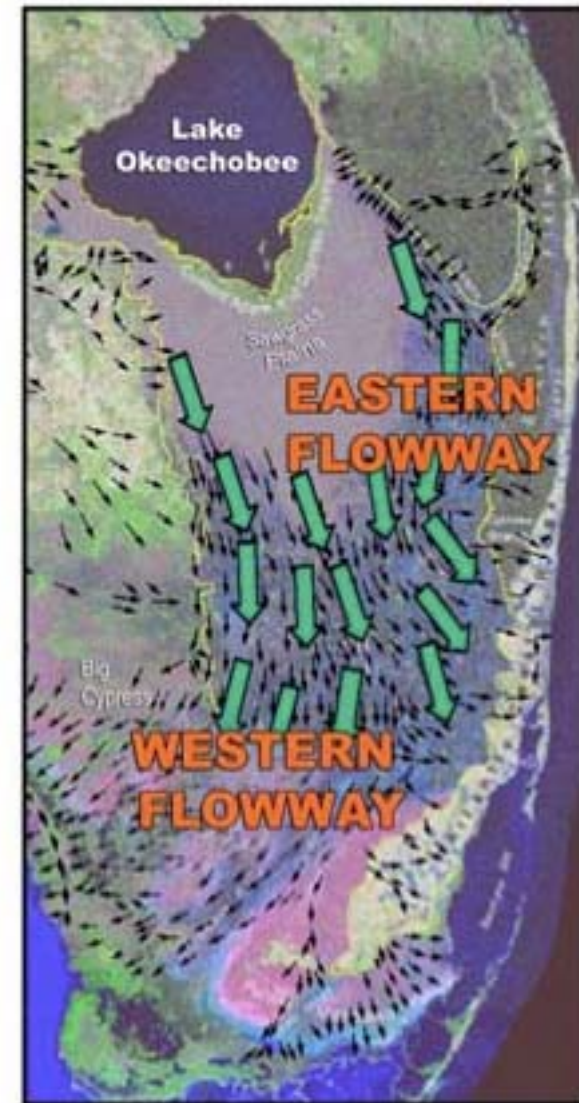


# Connectivity:

- 11,000 mi<sup>2</sup> area of connected flow
- Everglades buffered storms and floods
- Drainage to Florida Bay
  - Salinity impact



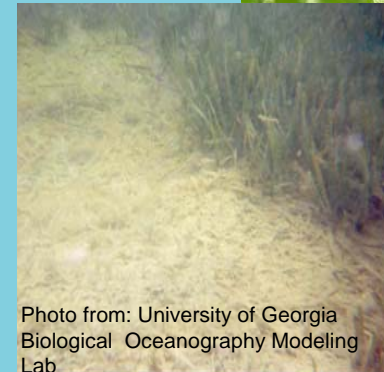
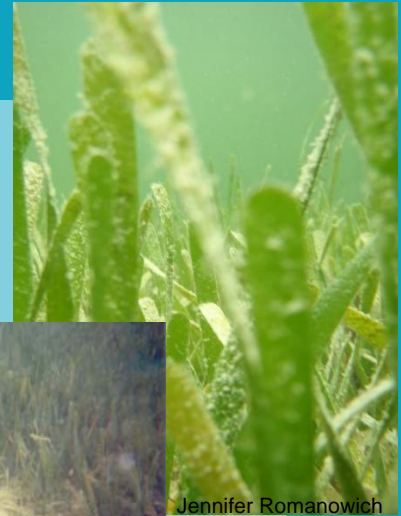
From Villy Kourafalo SoFLA-HYCOM



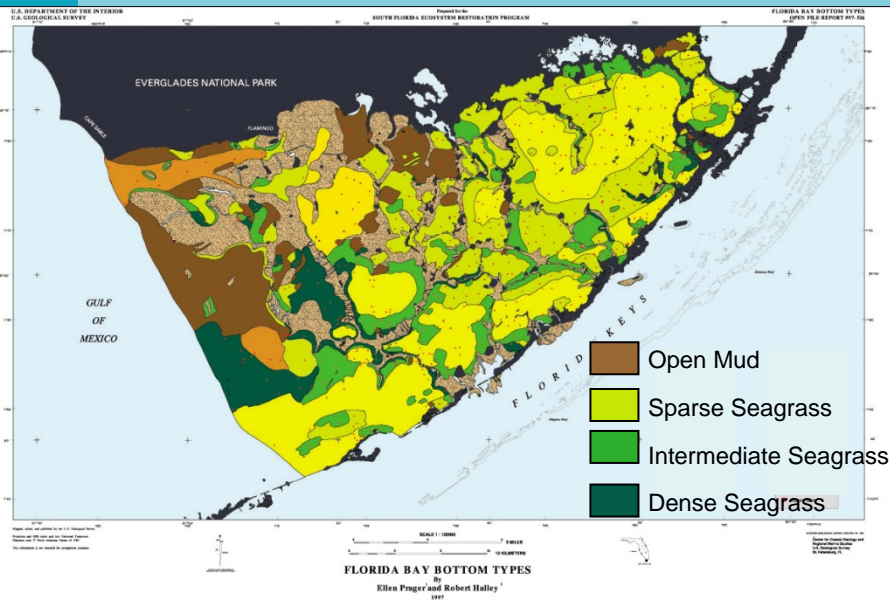
From Everglades Foundation

# Seagrass Ecosystem:

- Die-offs:
  - Drought salinity 60% greater
  - Sulfide toxicity and hypoxia
  - Slime mold
  - Boat scarring

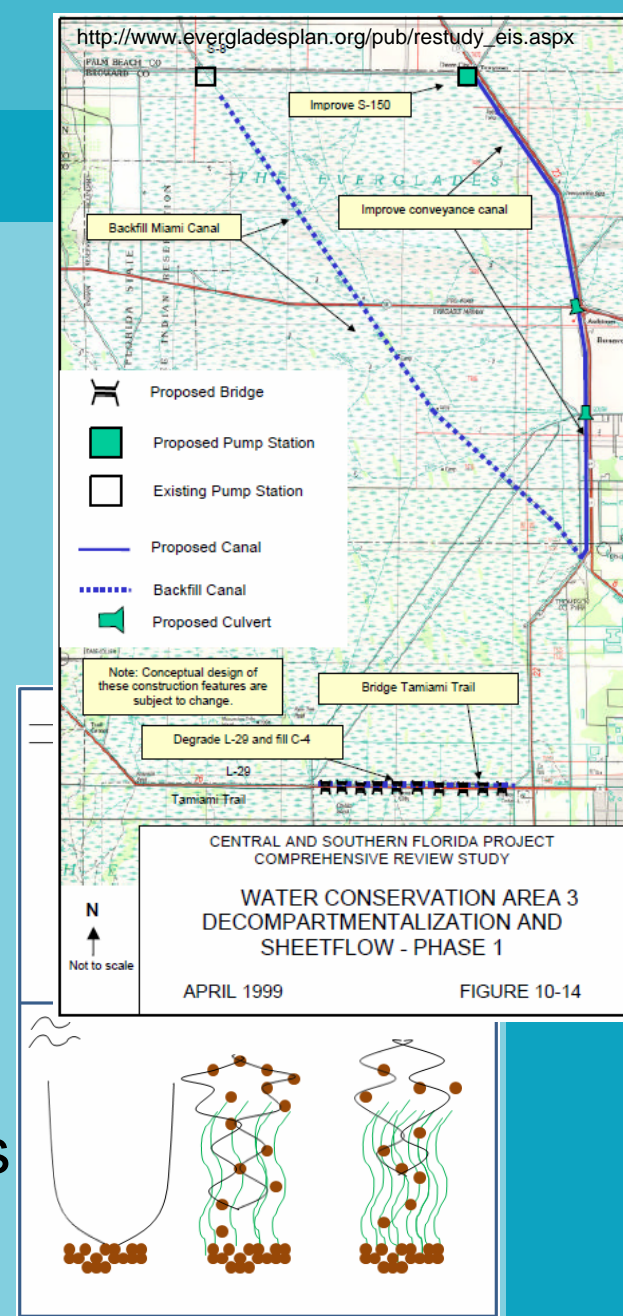


- Distribution depends on:
  - Water depth/light
  - Nutrient availability and delivery
  - Salinity
  - Water clarity



# Restoration Efforts:

- Everglades:
  - New levee and drainage canal
  - Remove sections of Tamiami Trail
  - Widen spatial distribution of flow
- Improve quantity, quality, timing and distribution of flow
- Understand flow interactions with seagrass and sediment dynamics
- Determine storm effects on seagrass beds





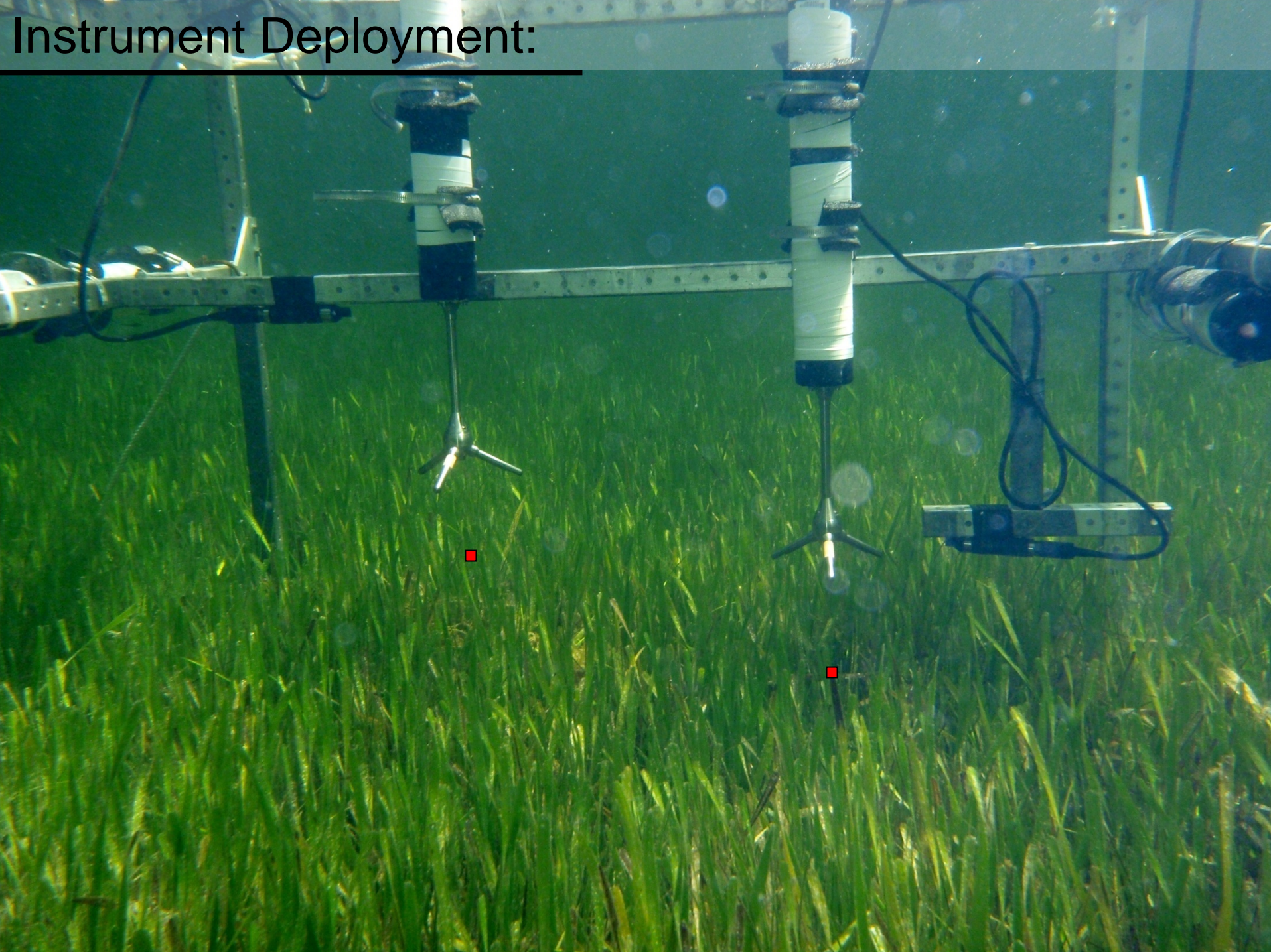
# Site Description:

- Florida Bay Seagrass Meadows:
  - Depth: 3-4m
  - Tidal range: 0.1-0.3m
  - Seagrass species: *Thalassia testudinum*



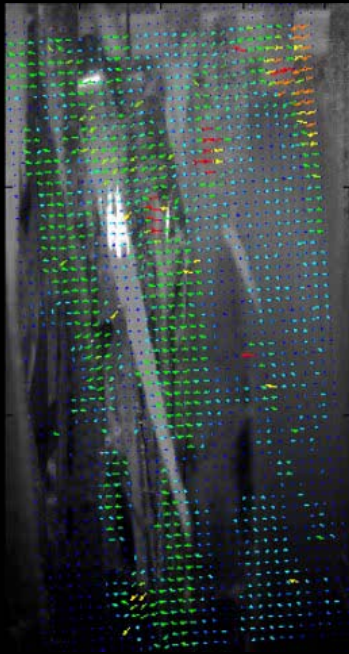
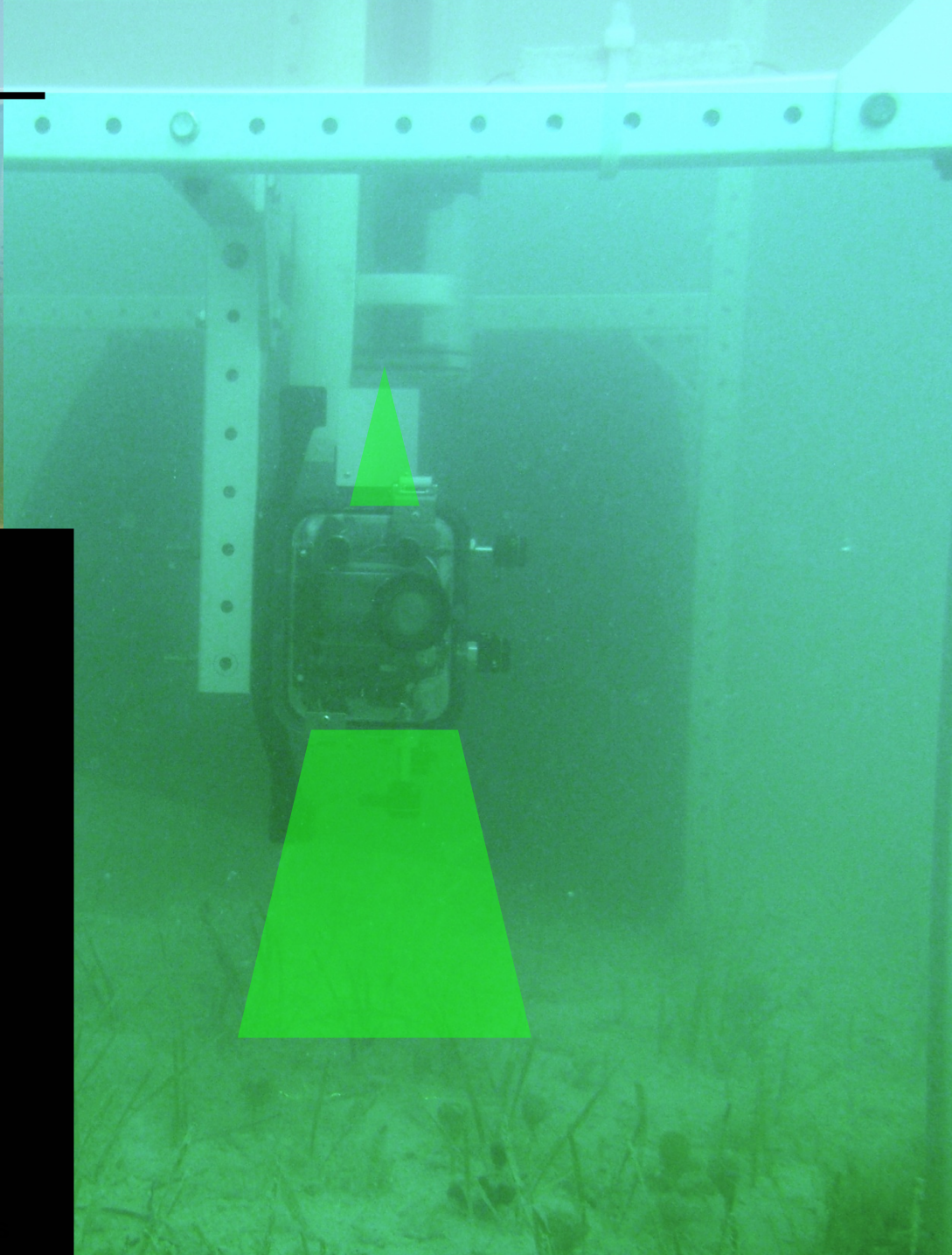
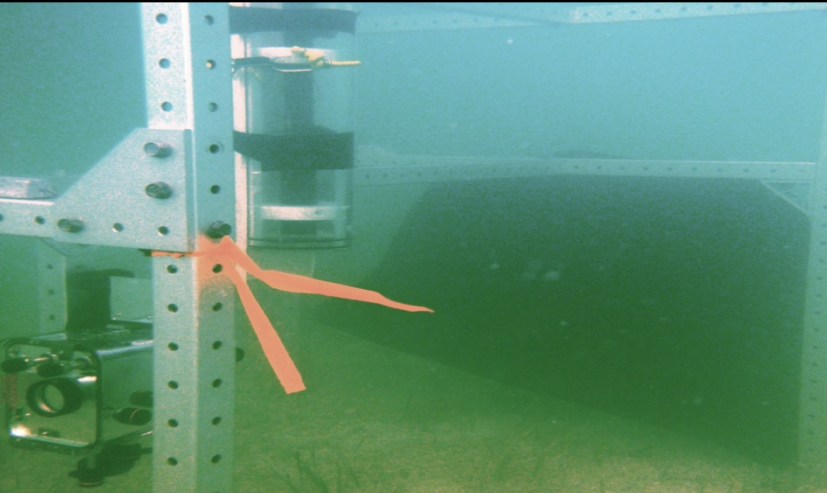


# Instrument Deployment:



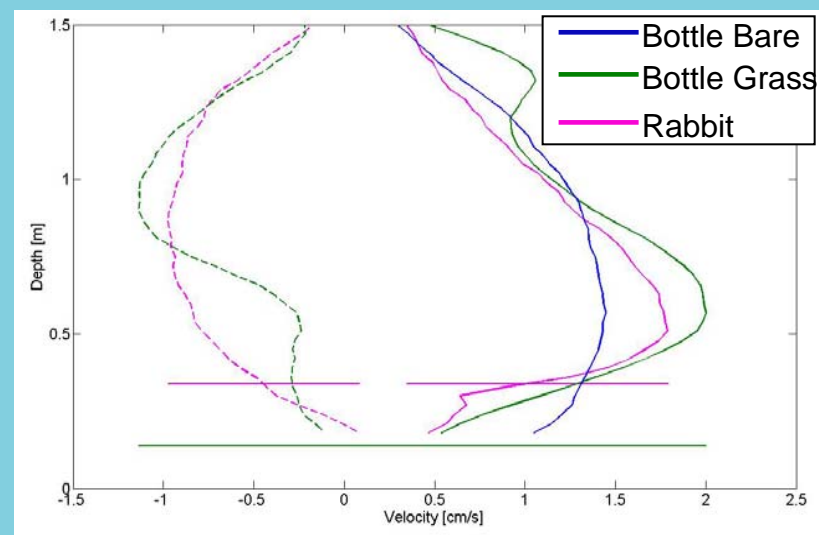
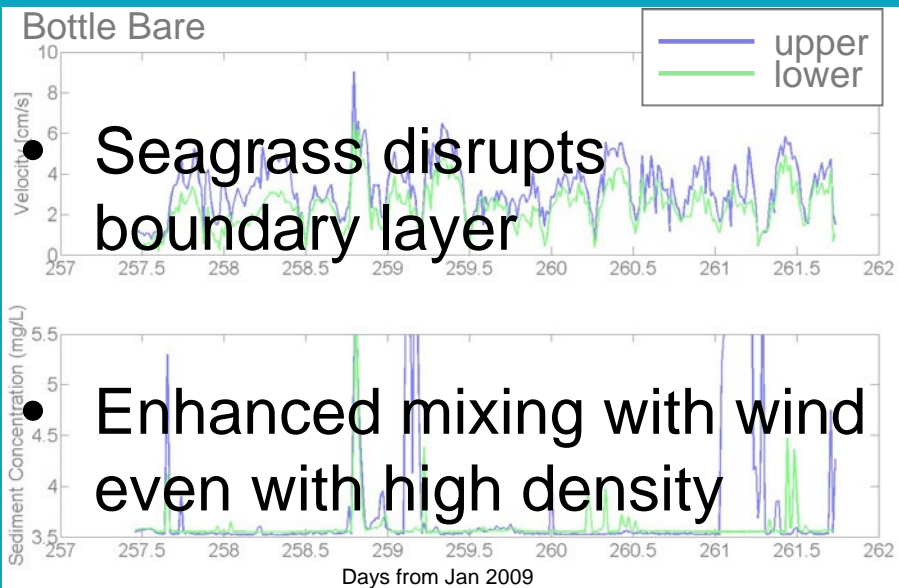


# Instrument Deployment:

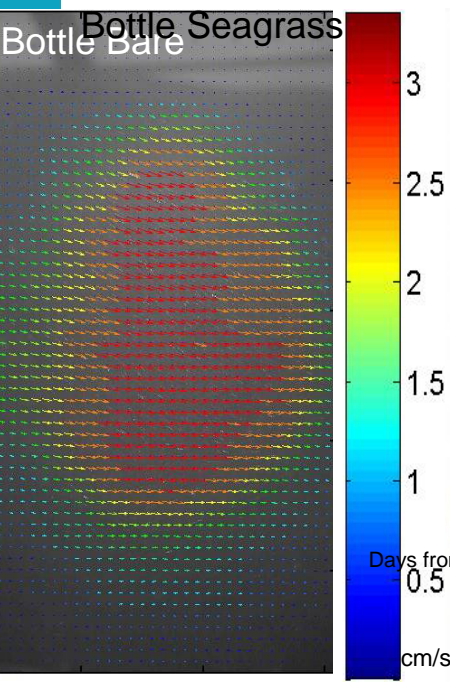




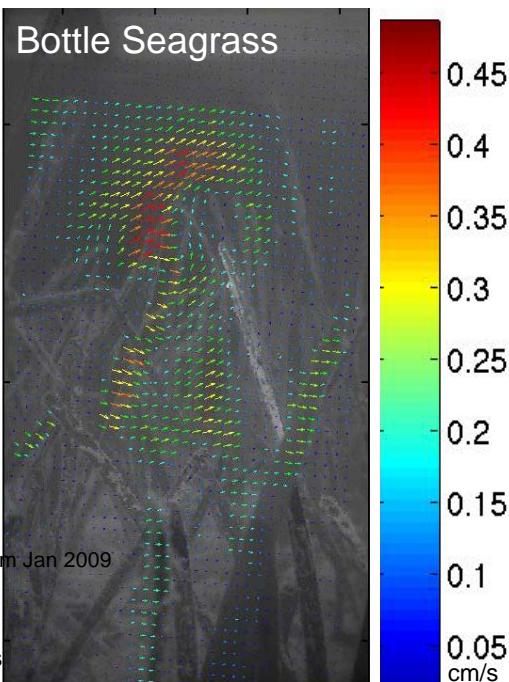
# Results:



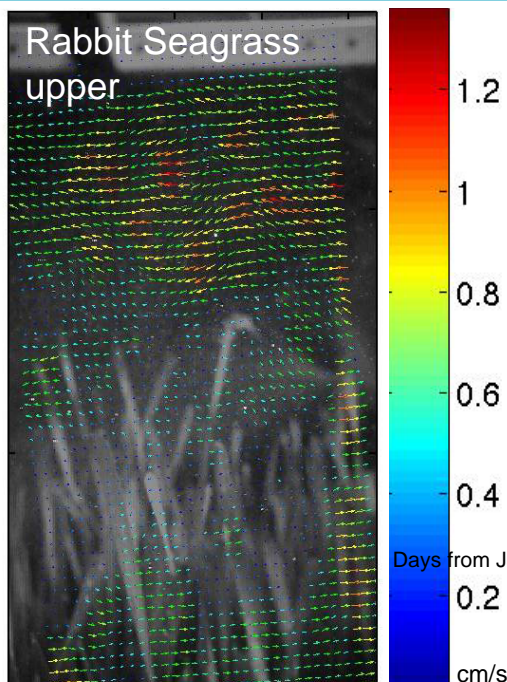
**Bottle Bare**



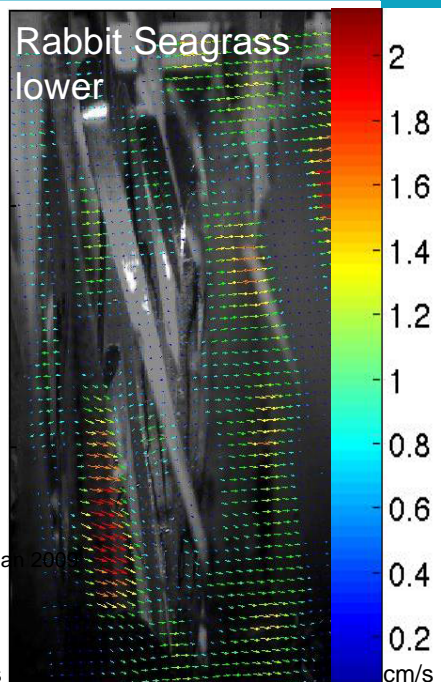
**Bottle Seagrass**



**Rabbit Seagrass upper**



**Rabbit Seagrass lower**





# Summary:

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- Seagrass slow flow near bed
- Waves in Florida bay increase sediment suspension
- Small scale velocity patterns suggest enhanced mixing in meadows
- Bulk water from Everglades may be mixed into seagrass meadow



# Acknowledgements:

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