# Hurricane Updates

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# Salinity Drives SAV Dynamics in Coastal Springs

- Hoyer et al. (2004): freshwater SAV tolerate 4 ppt salinity
- Tootoonchi et al. (2020): tolerance depends on cultivar & duration
- Trowbridge (2023): ecological zones
- Unknown: recovery

Biological Sciences

## Indicators of salinization in spring-fed rivers using submerged aquatic vegetation

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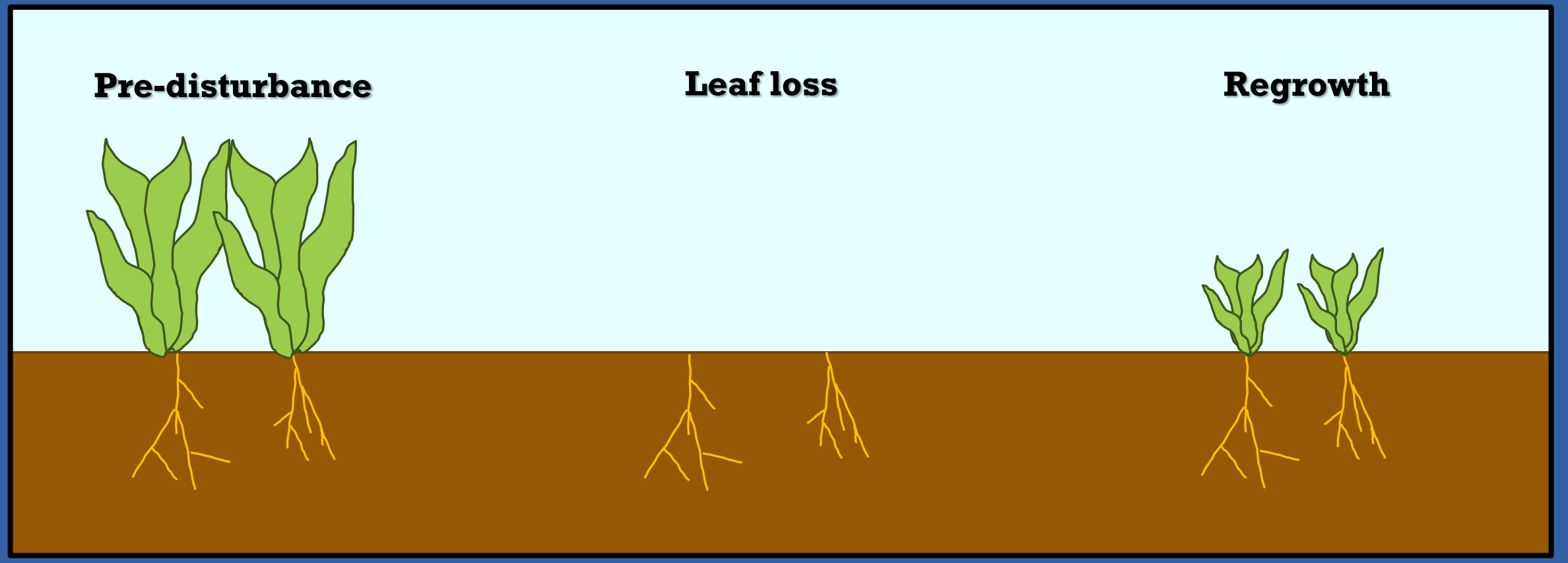
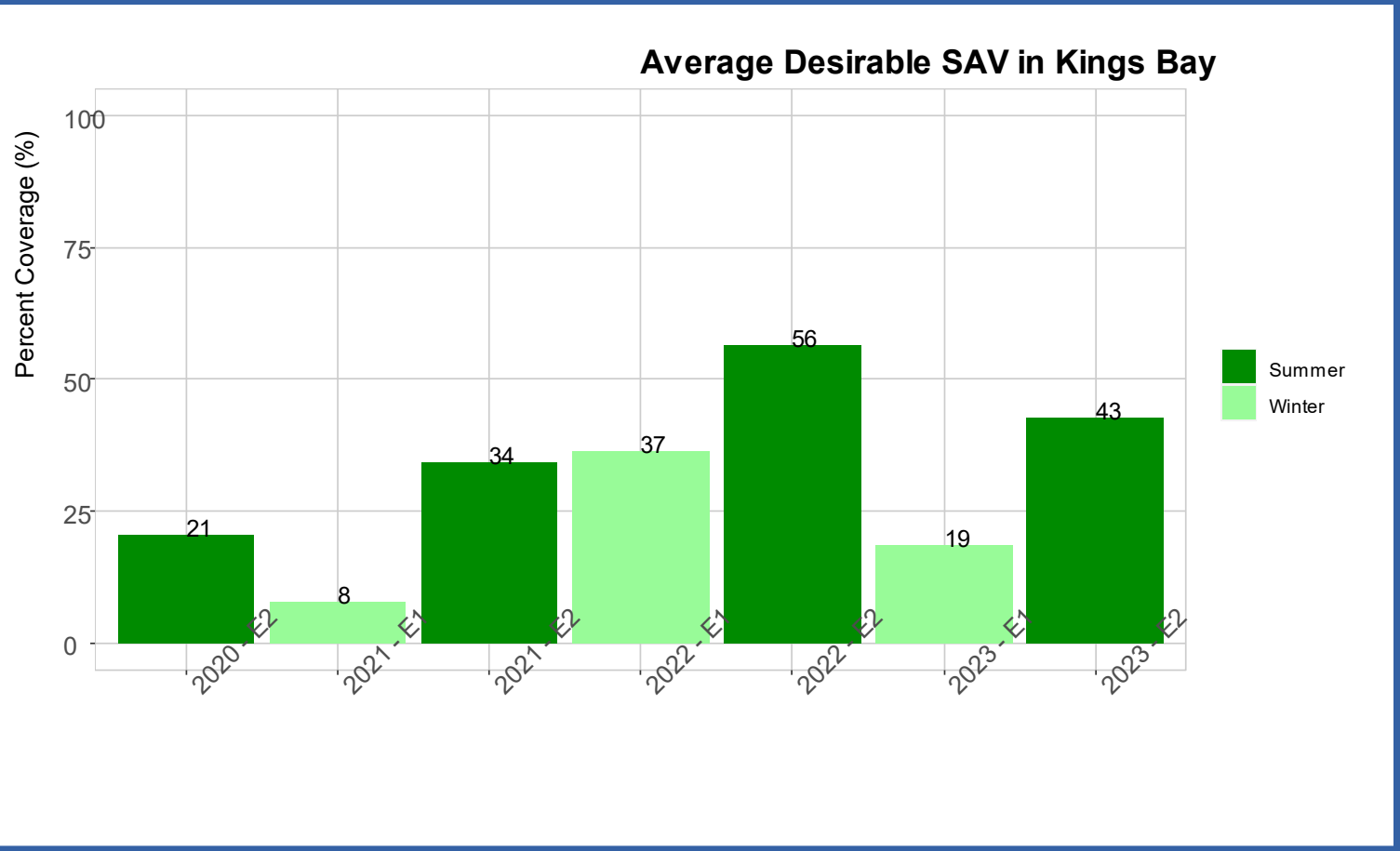
**Abstract** Florida spring-fed rivers are known for their submerged aquatic vegetation (SAV), which provides habitat for fish and aquatic crustaceans and food for the Florida manatee. Salinization of coastal spring-fed rivers due to climate change and sea level rise have been documented and can cause changes to SAV communities. This study investigated patterns and relationships between the SAV community and salinity of the Chassahowitzka River (Citrus County, FL, USA) to extrapolate the long-term effects of river salinization. A distinct dichotomy was seen in the SAV community structure: communities where salt tolerant *Chaetomorpha* spp. was present and communities where freshwater filamentous algae species were present. Freshwater filamentous algae demonstrated an inverse relationship with salinity. *Chaetomorpha* spp. replaced the freshwater filamentous algae in regions too salty for freshwater algae to grow. These patterns in the SAV community resulted in three different ecological zones in the Chassahowitzka River: low salinity/freshwater tidal, transition, and brackish zones. While freshwater filamentous algae and *Chaetomorpha* spp. were characteristic of the freshwater and brackish zones respectively, both species were identified within the transition zone. Utilizing the presence/absence of these macroalgae types could allow for an in-situ approach of characterizing regions of coastal spring-fed rivers that show increased salinization.

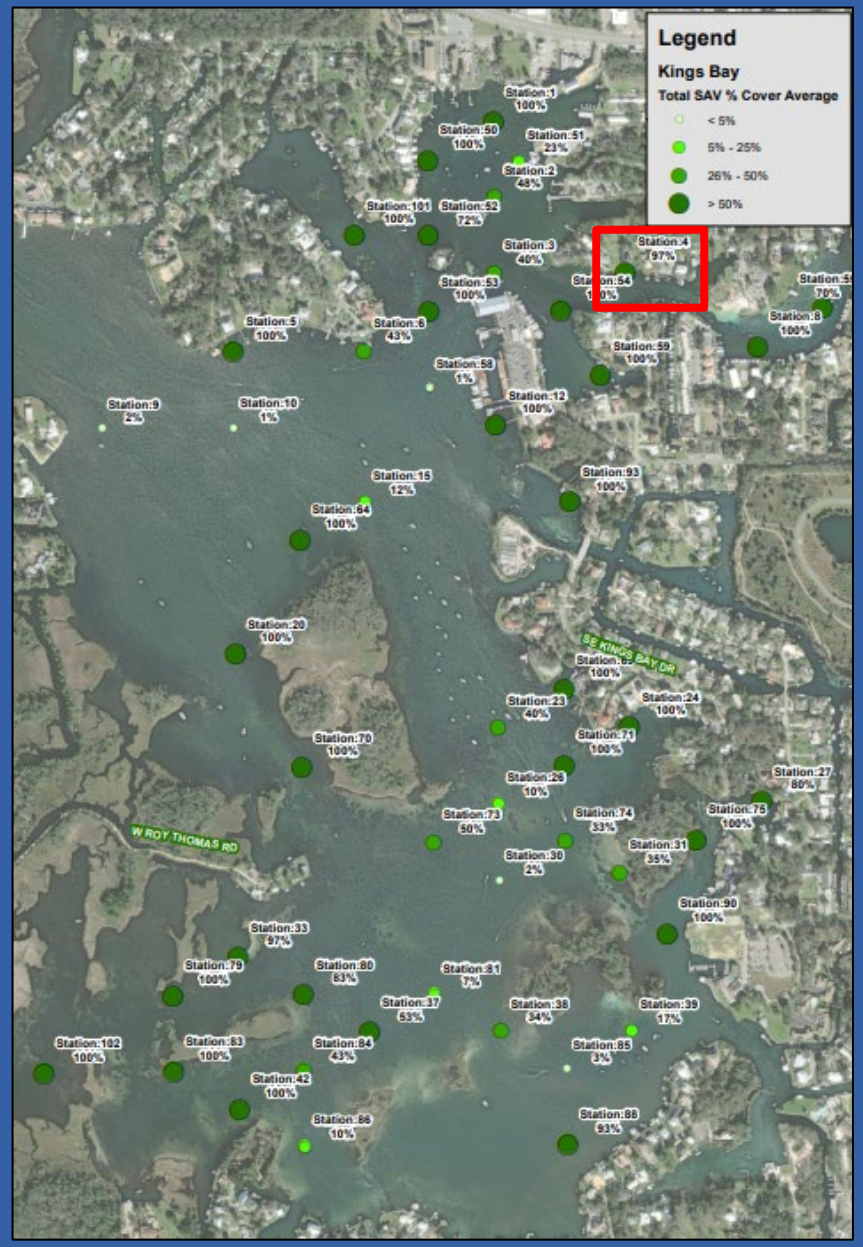
**Keywords** Climate change, Florida, salinization, sea level rise, springs, submerged aquatic vegetation

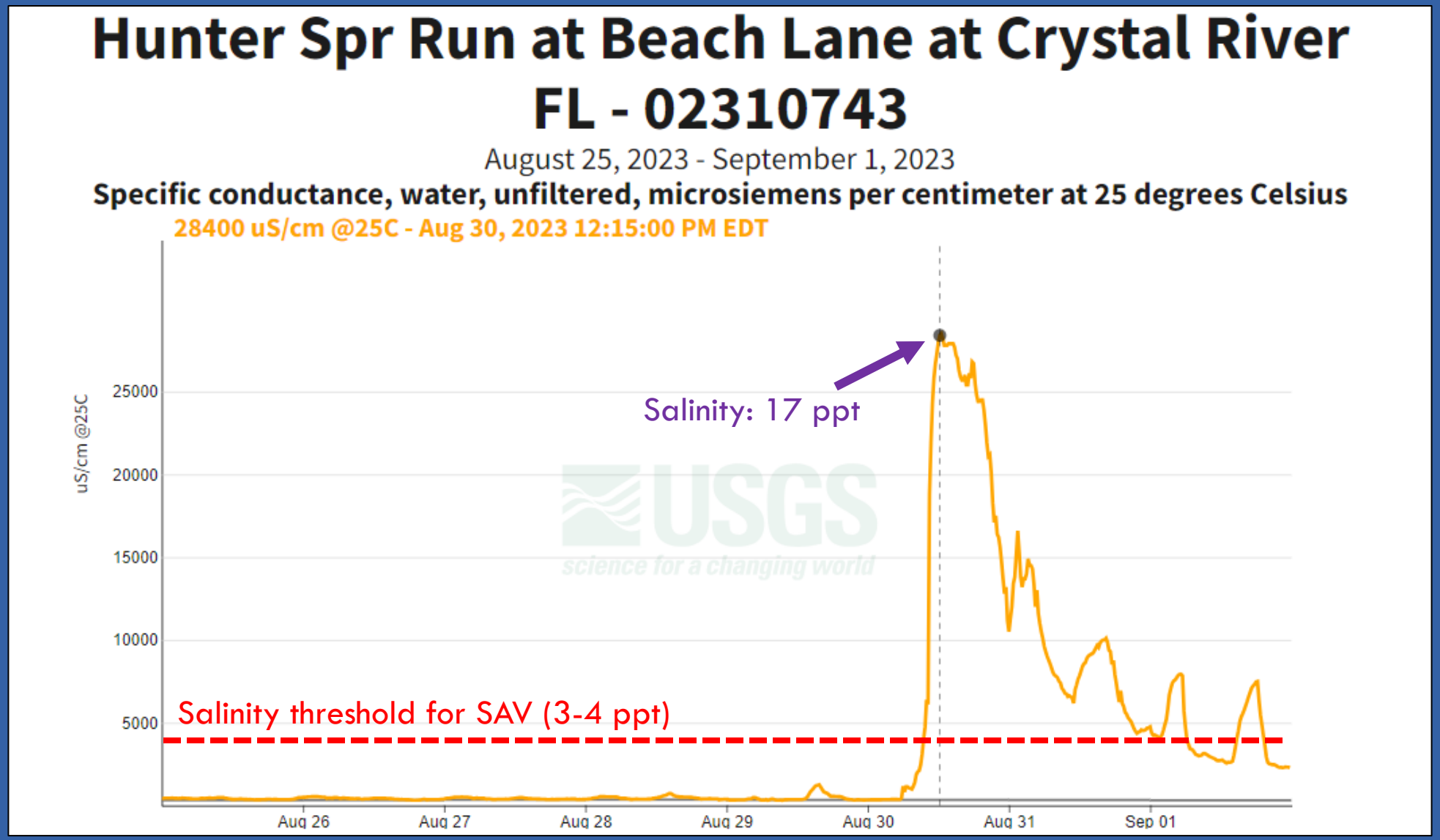
# Conceptual SAV Recovery Mechanism



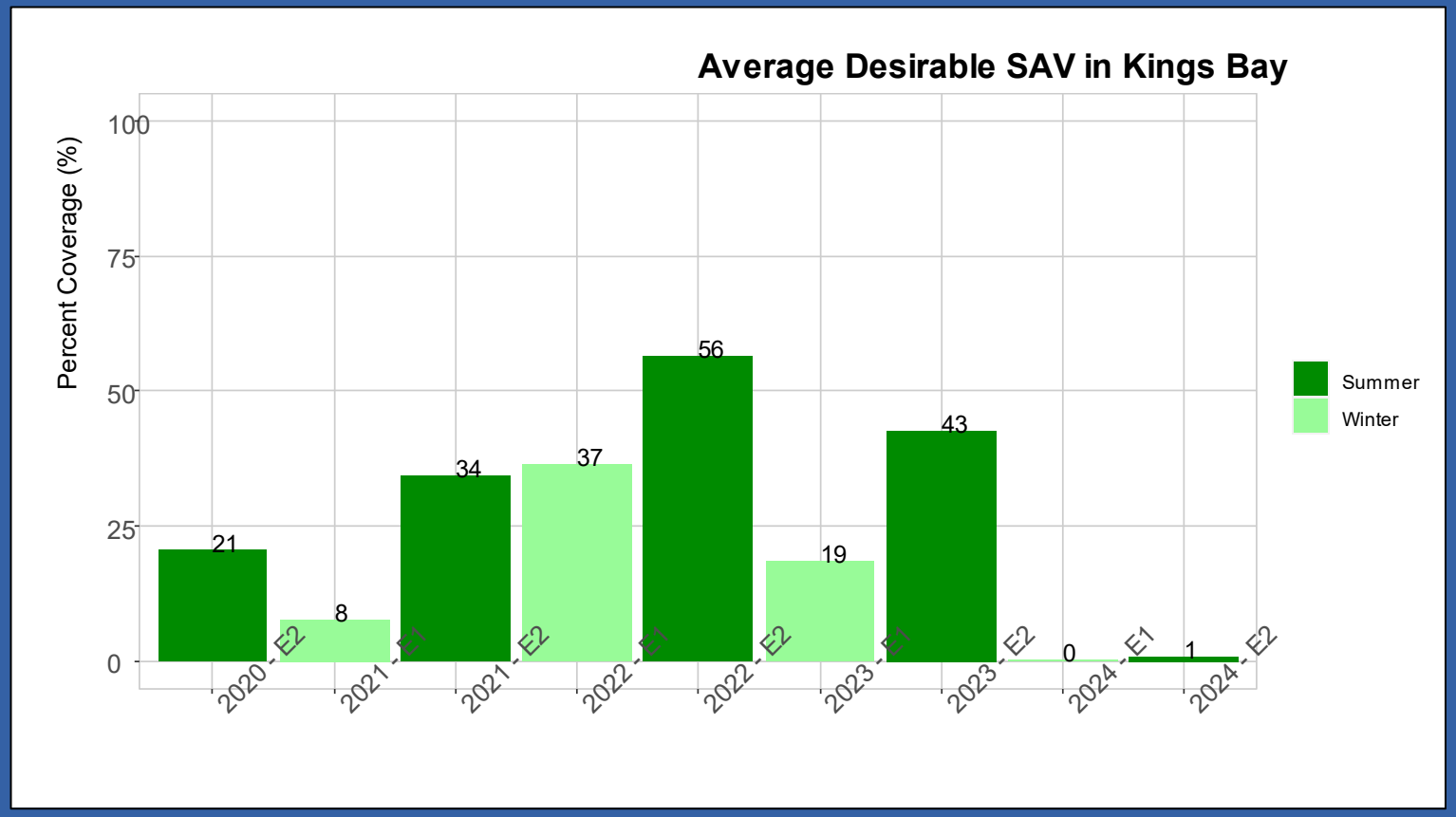
# Pre-Idalia Conditions – Kings Bay

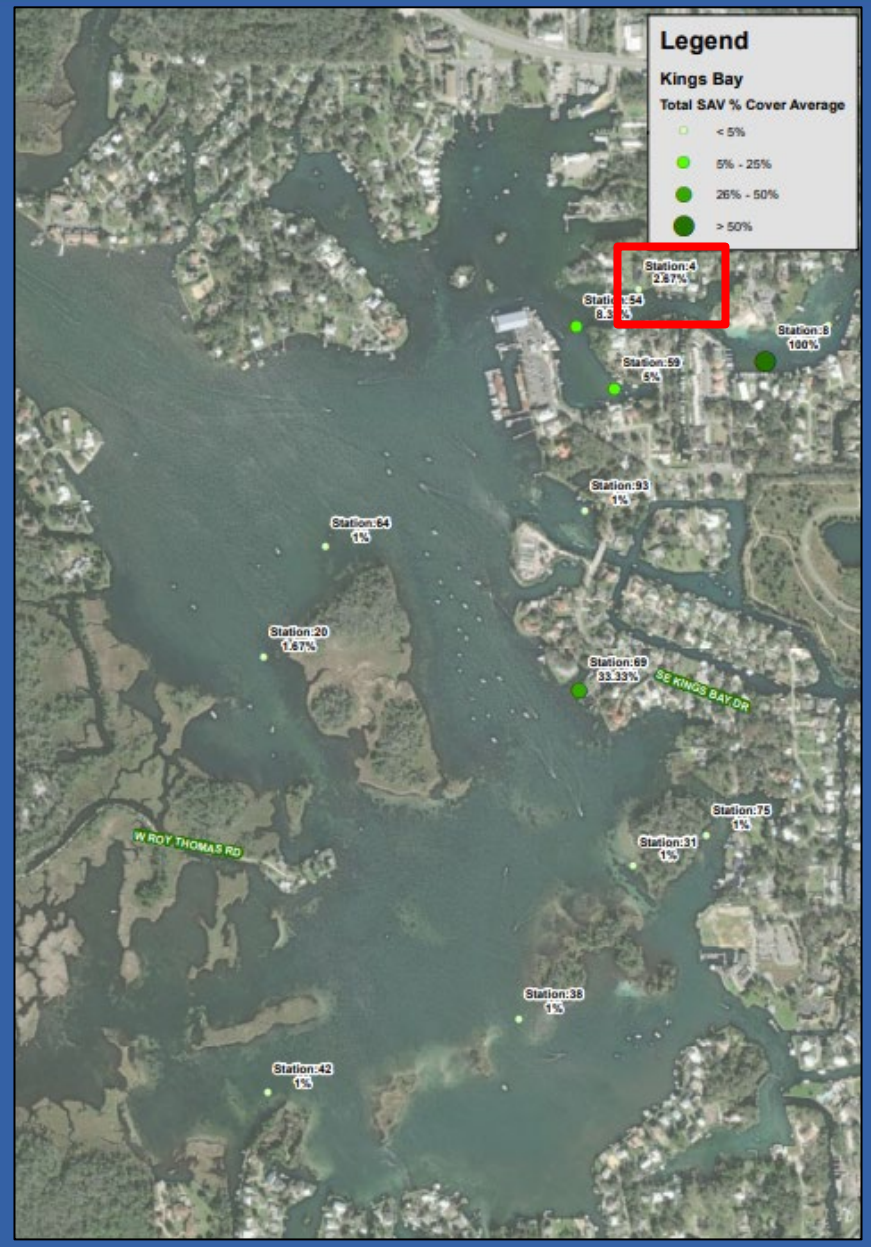


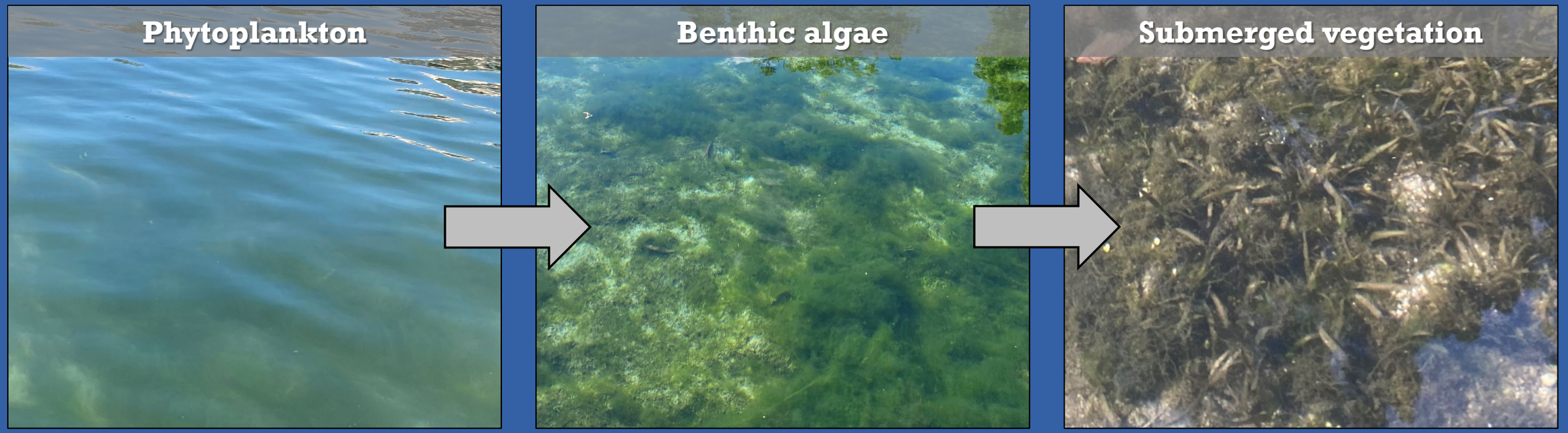

Hunter Spr Run at Beach Lane at Crystal River FL - 02310743
August 25, 2023 - September 1, 2023
Specific conductance, water, unfiltered, microsiemens per centimeter at 25 degrees Celsius
28400 uS/cm @25C - Aug 30, 2023 12:15:00 PM EDT
uS/cm @25C
25000
20000
15000
10000
5000
Salinity: 17 ppt
Salinity threshold for SAV (3-4 ppt)
USGS
science for a changing world
Aug 26
Aug 27
Aug 28
Aug 29
Aug 30
Aug 31
Sep 01

# Post-Idalia Conditions – Kings Bay



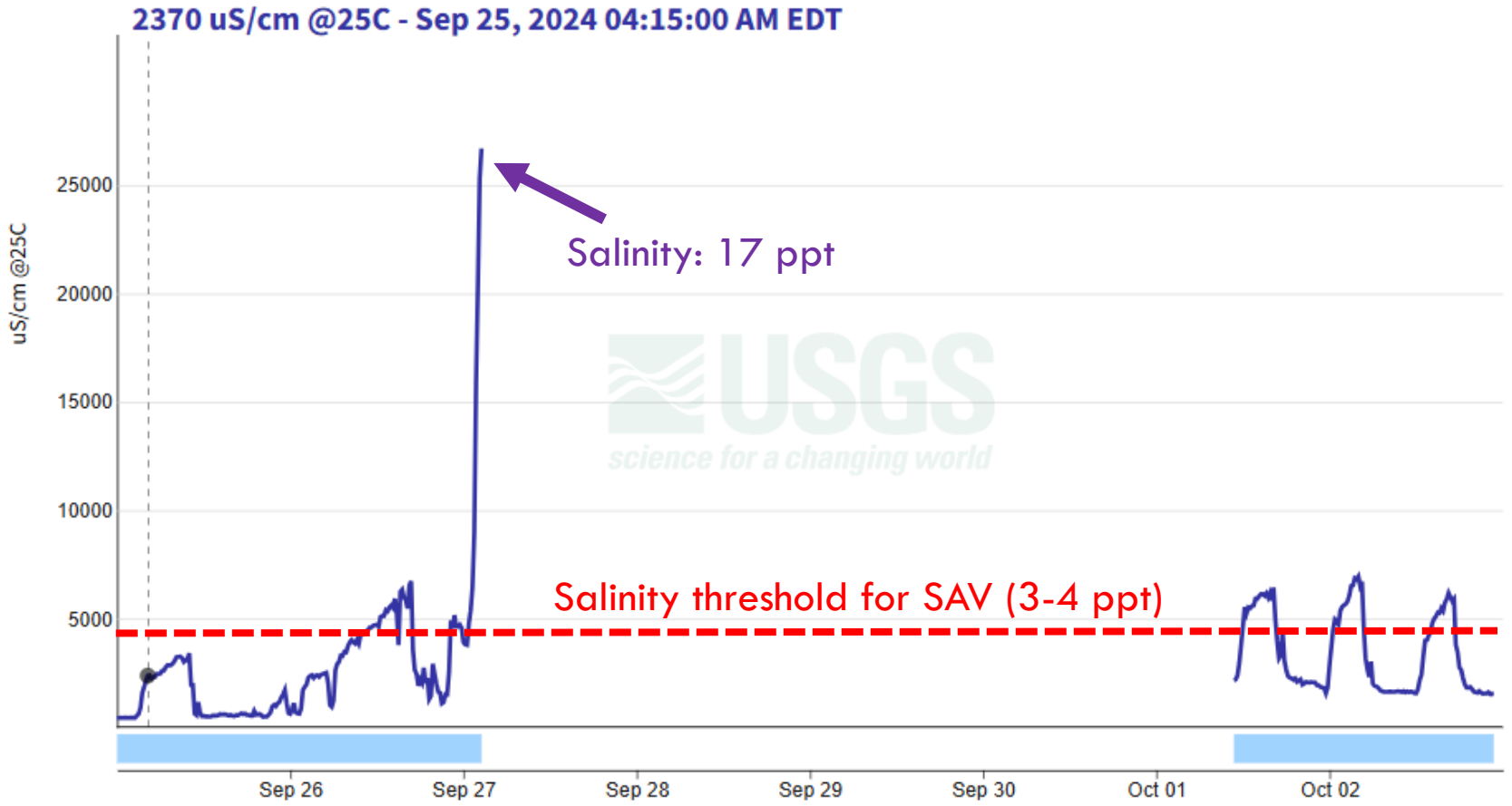
# Conceptual Ecological Succession Following Hurricanes



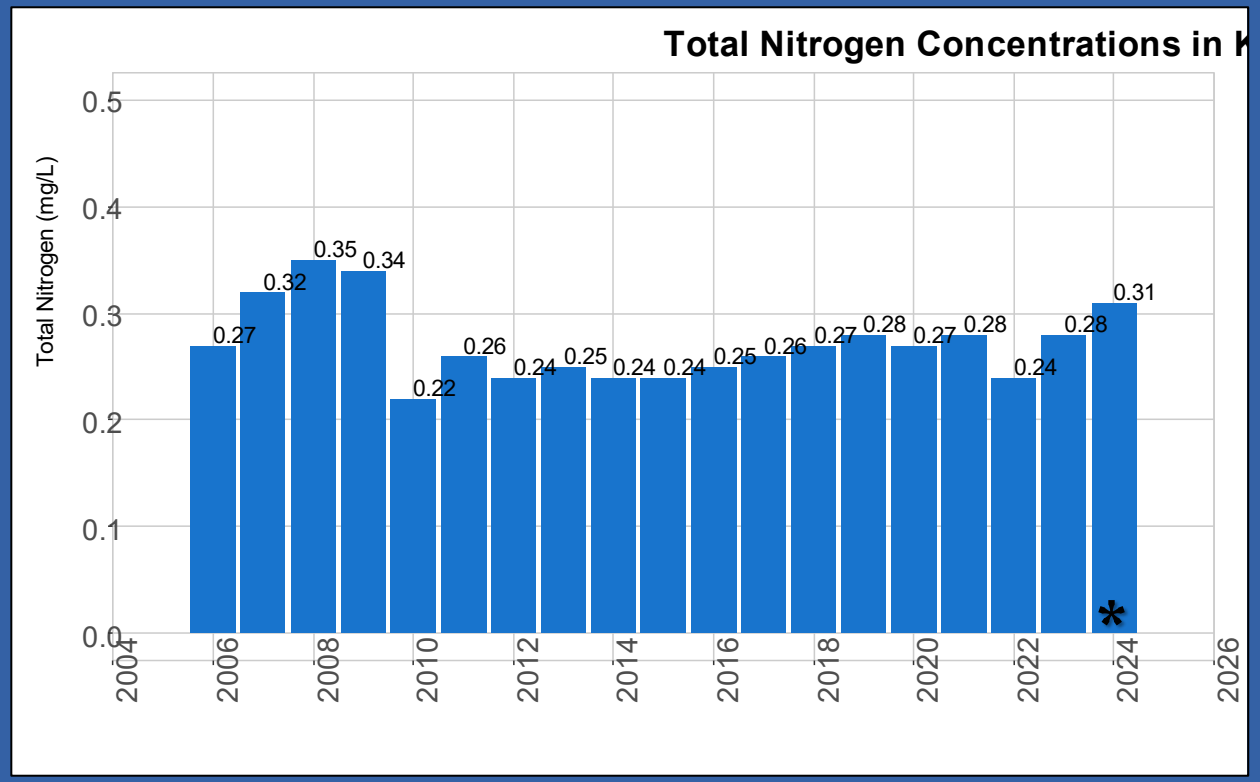
# Hunter Spr Run at Beach Lane at Crystal River FL - 02310743

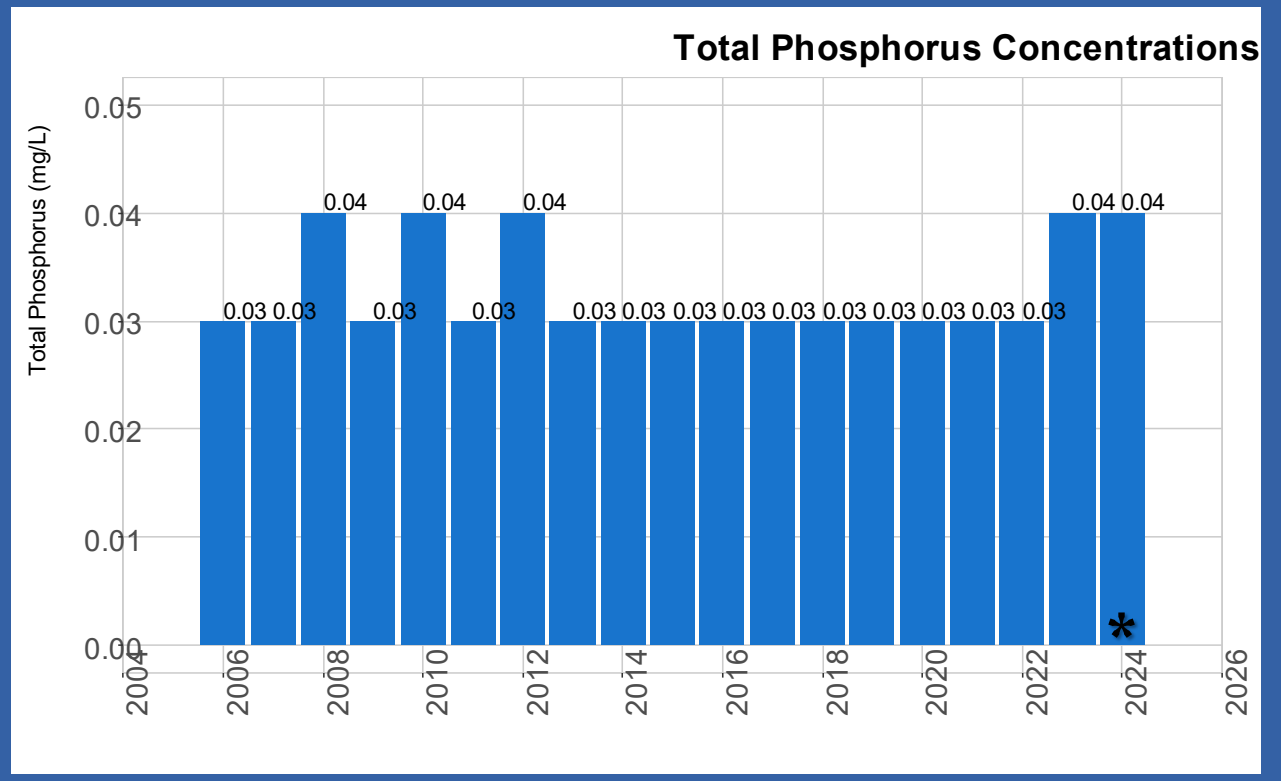
September 25, 2024 - October 2, 2024

**Specific conductance, water, unfiltered, microsiemens per centimeter at 25 degrees Celsius**



# Kings Bay Preliminary Water Quality Data




*** Data collection ongoing, subject to change**

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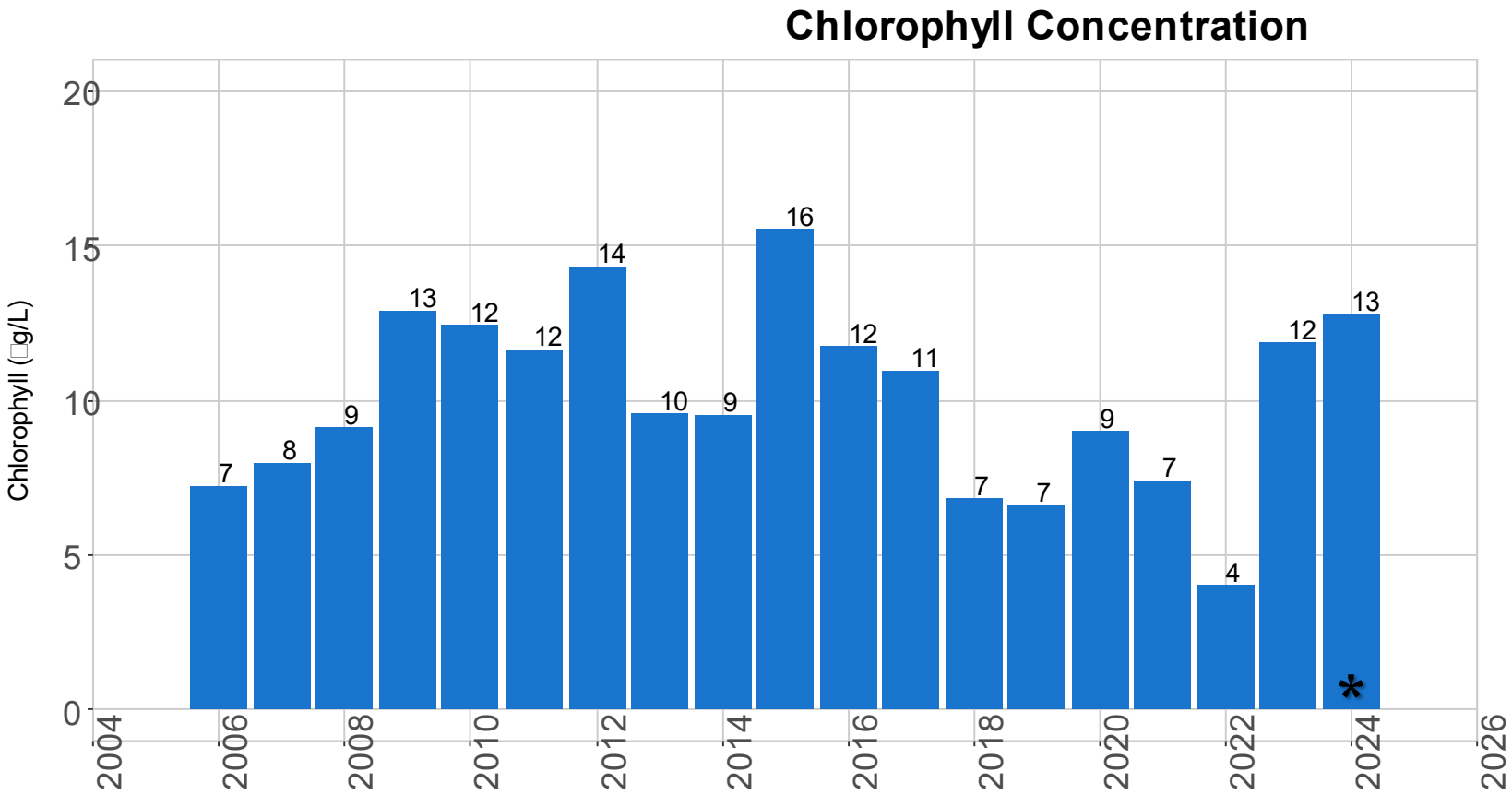
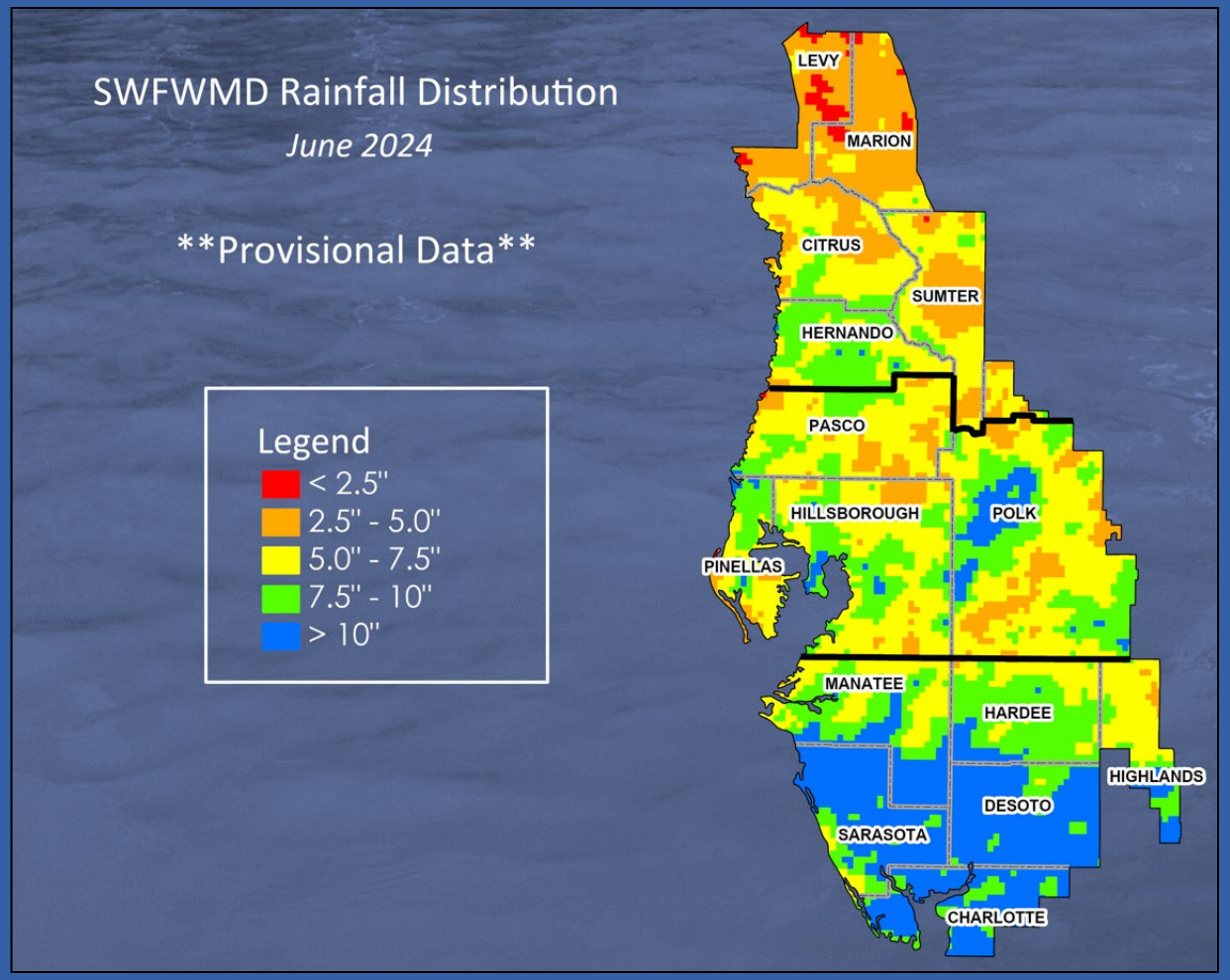
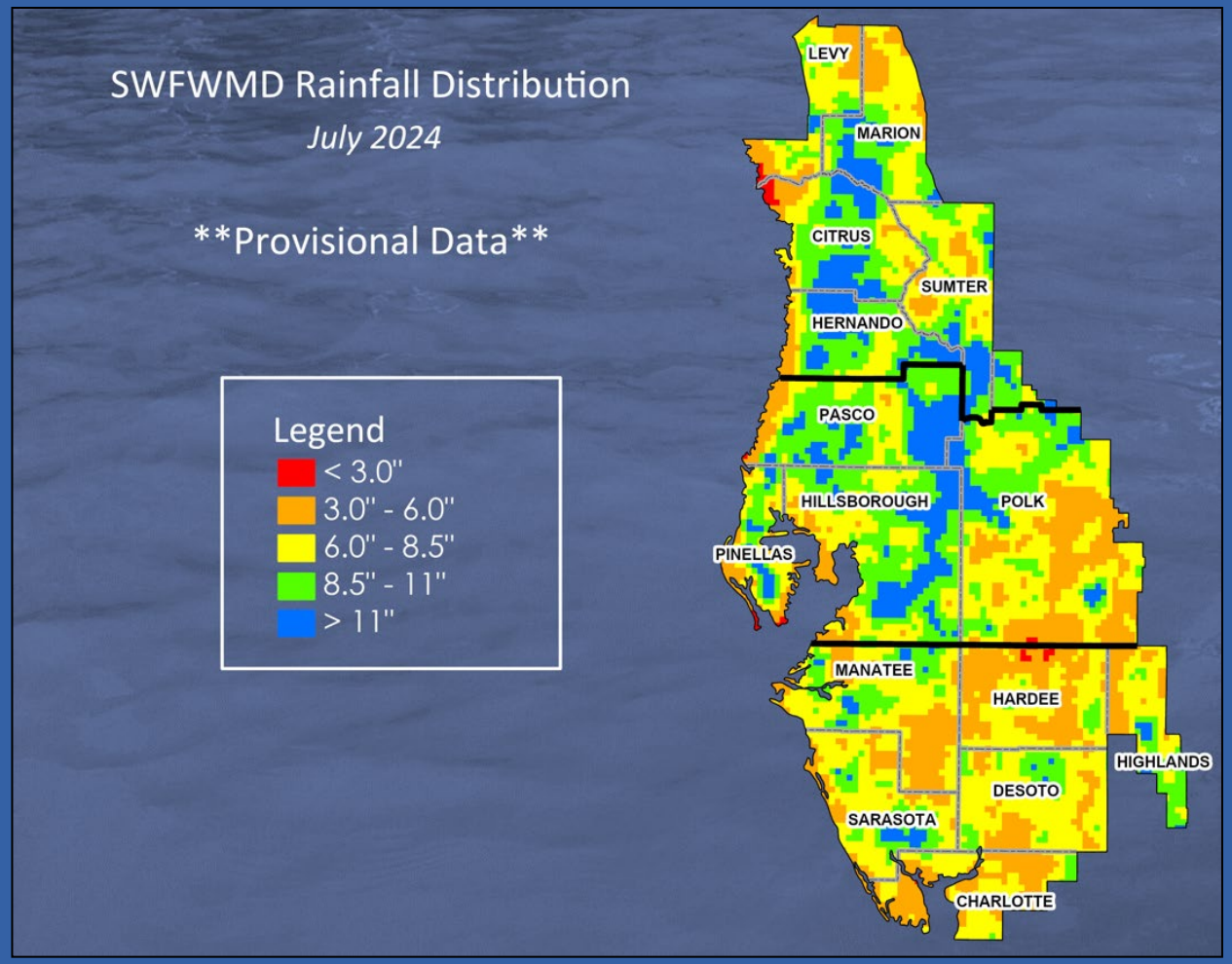


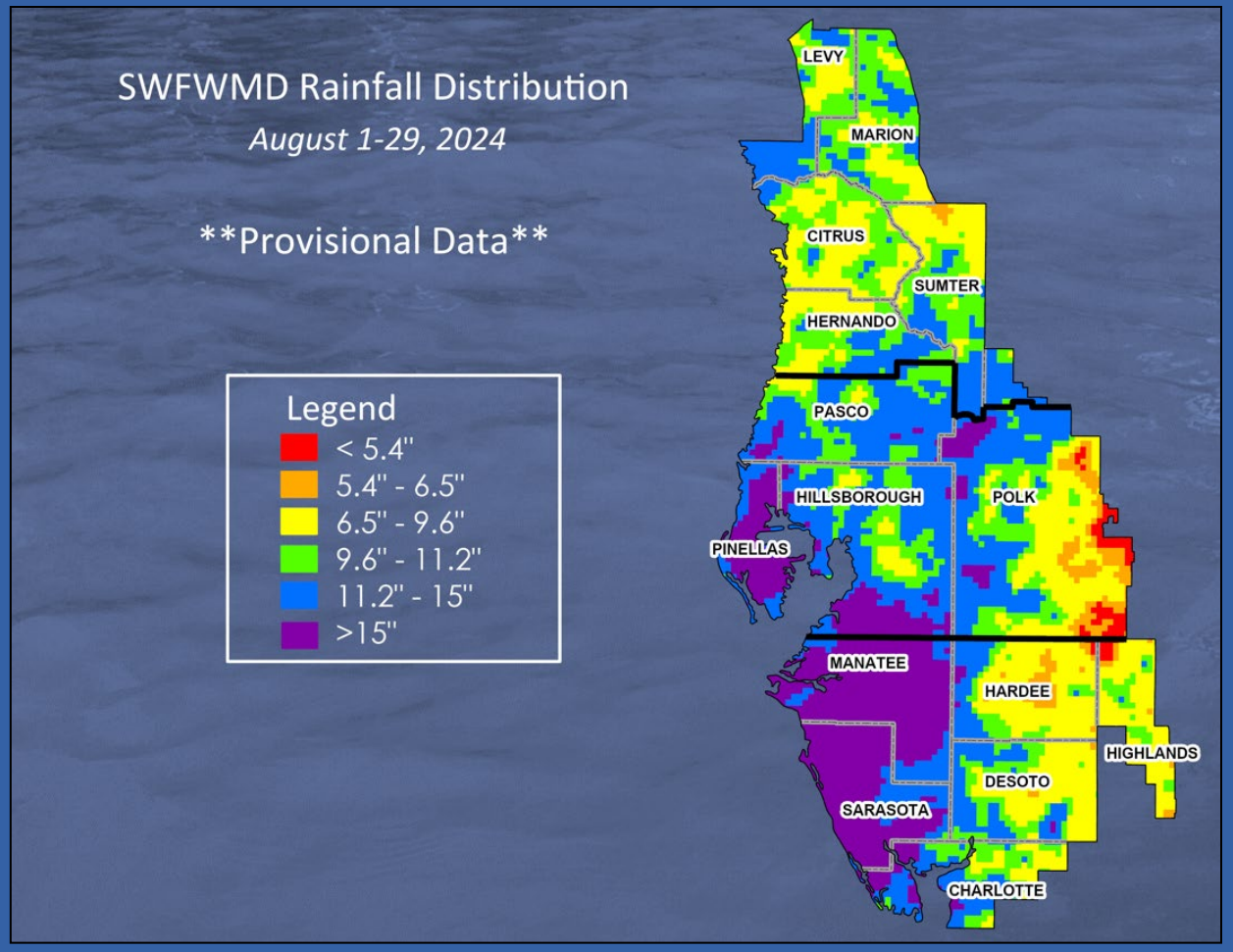

*** Data collection ongoing, subject to change**

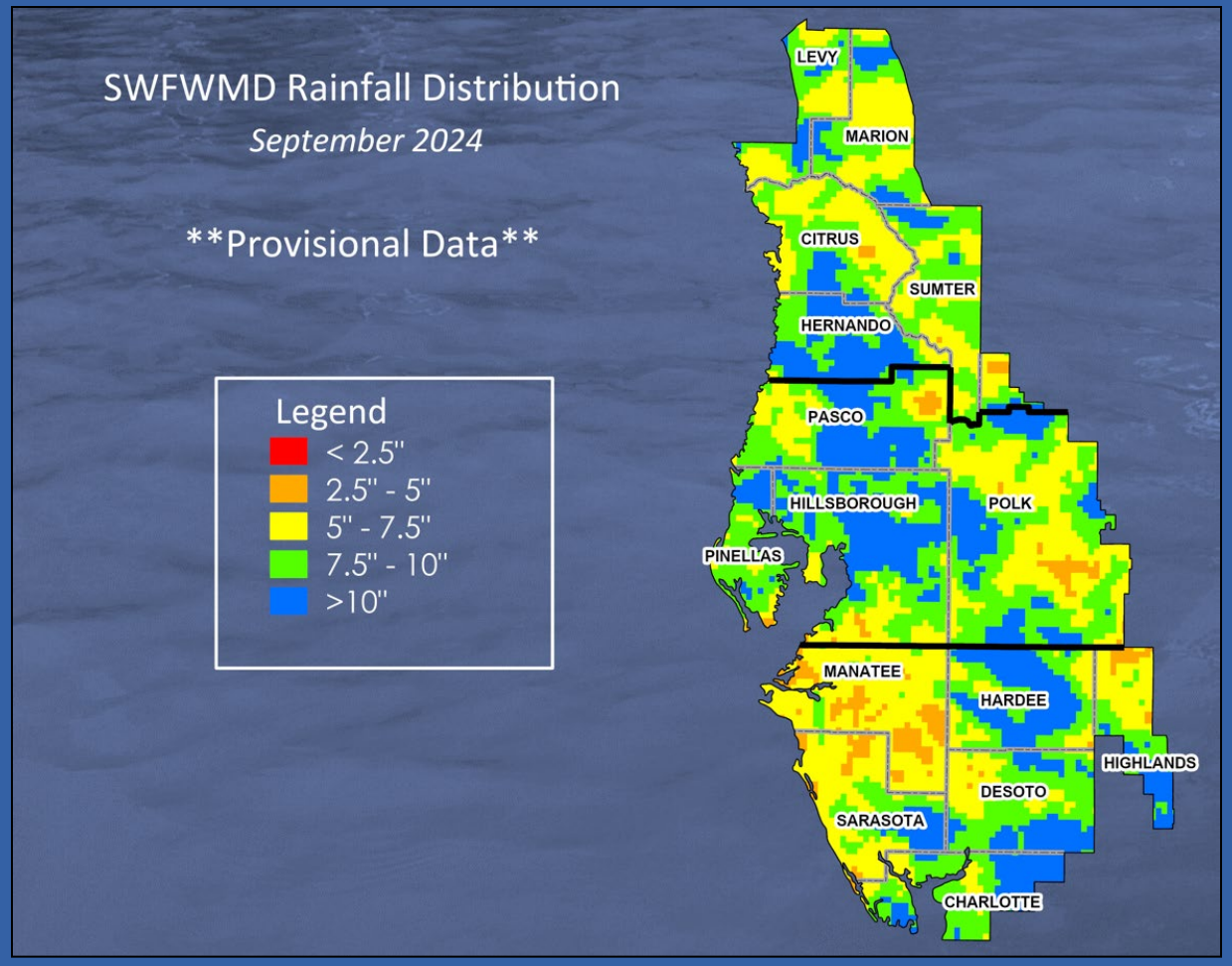
# Rainfall – June & July



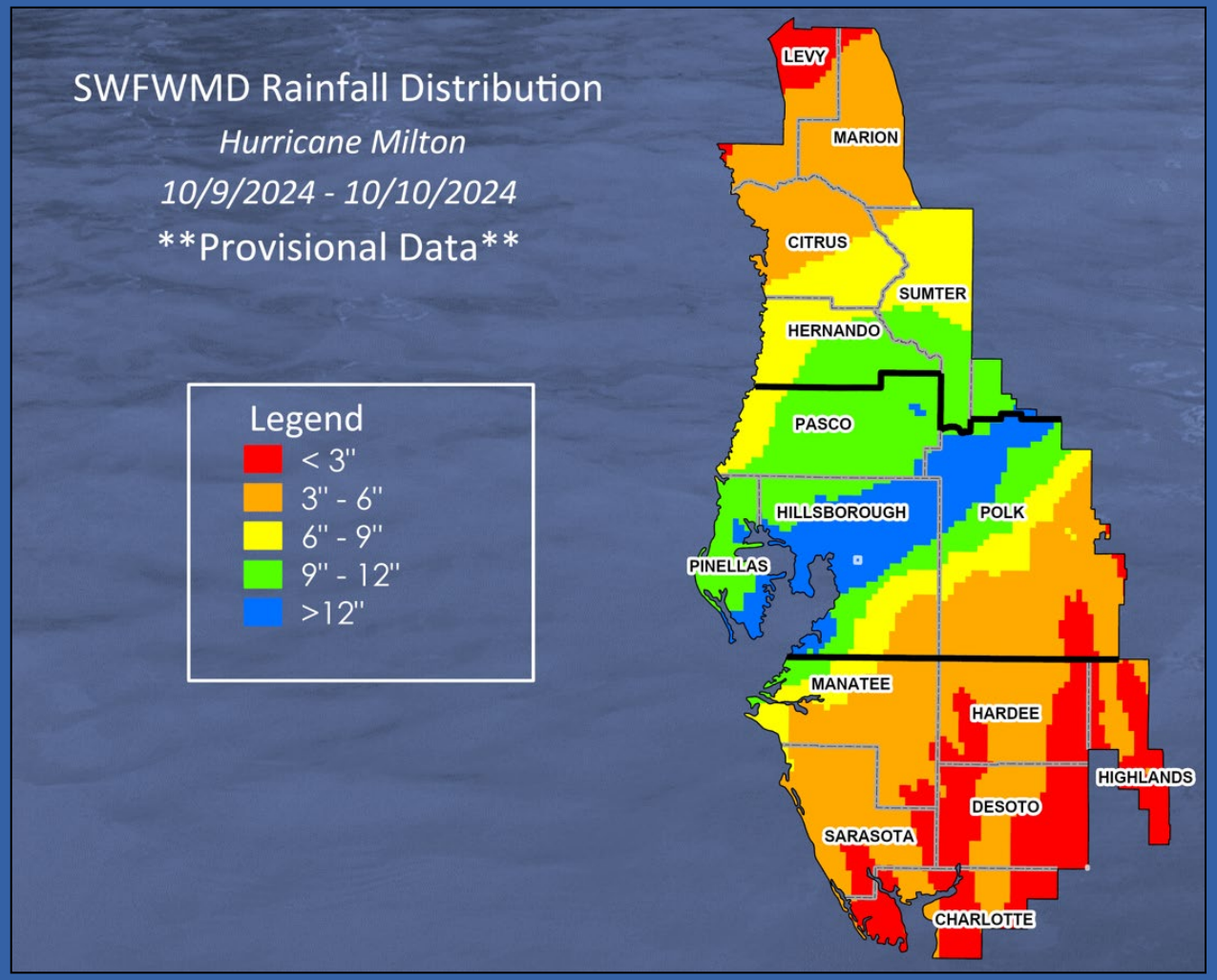



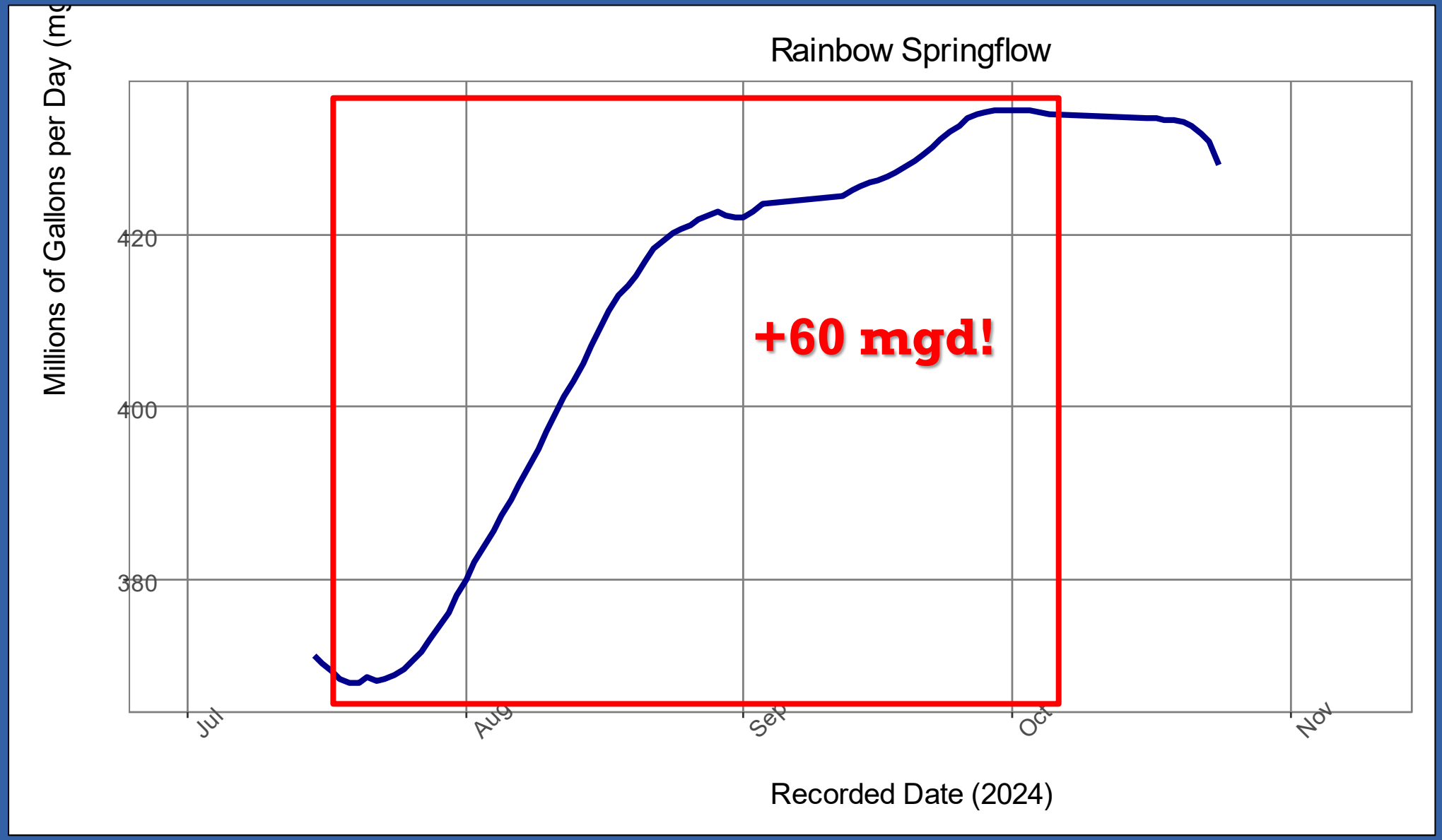
# Rainfall – August & September



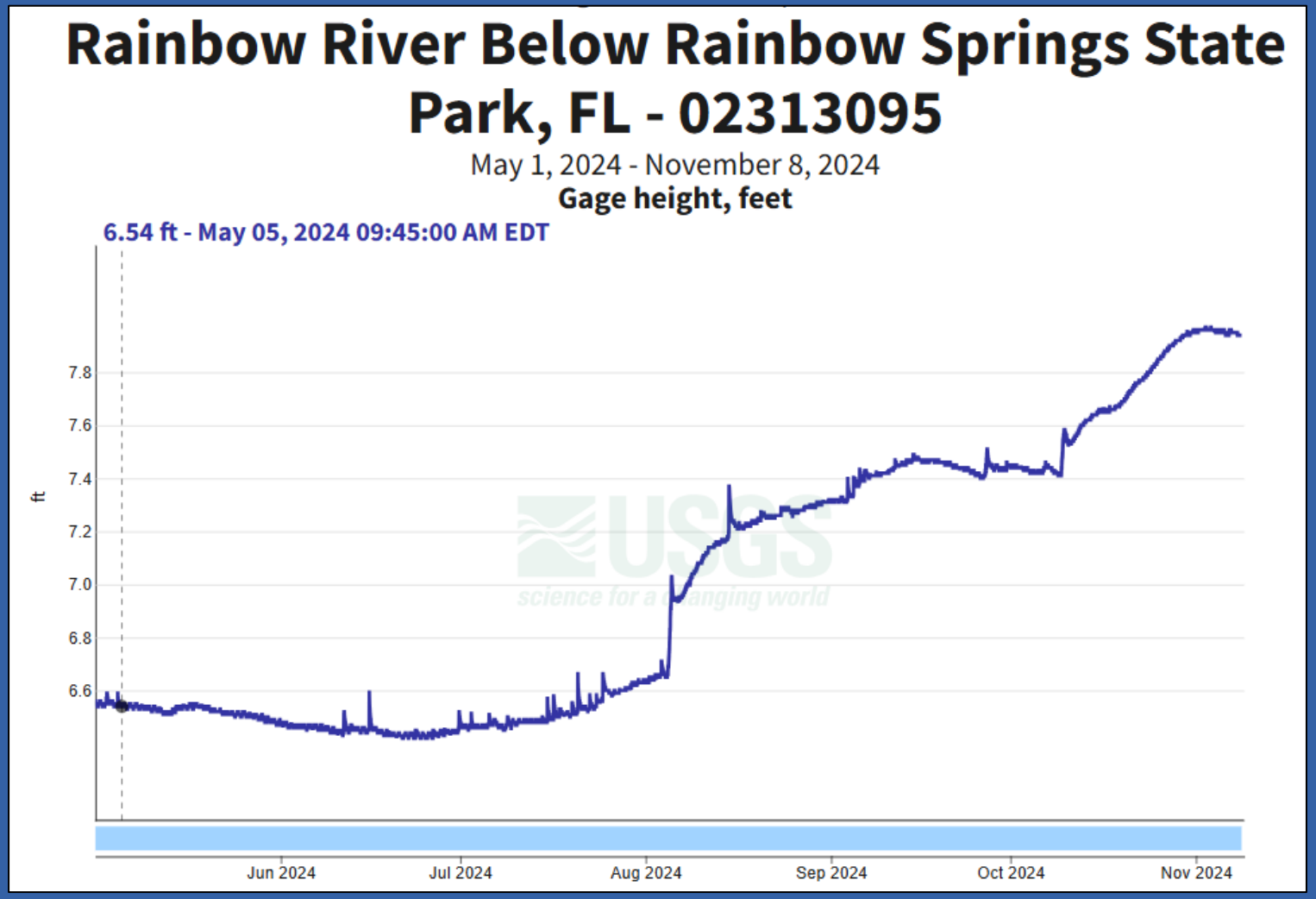



# Rainfall – Hurricane Milton




Rainbow Springflow
Millions of Gallons per Day (mg
420
400
380
+60 mgd!
Jul
Aug
Sep
Oct
Nov
Recorded Date (2024)

# Water Levels - Rainbow River



# District Resources

- Environmental Data Portal:
  WaterMatters.org/EDP

- Springs webpages:
  WaterMatters.org/Springs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