

# What Does the Data Say? South Florida Climate Indicators

Tuesday, December 16, 2025  
10:50am – 11:05am

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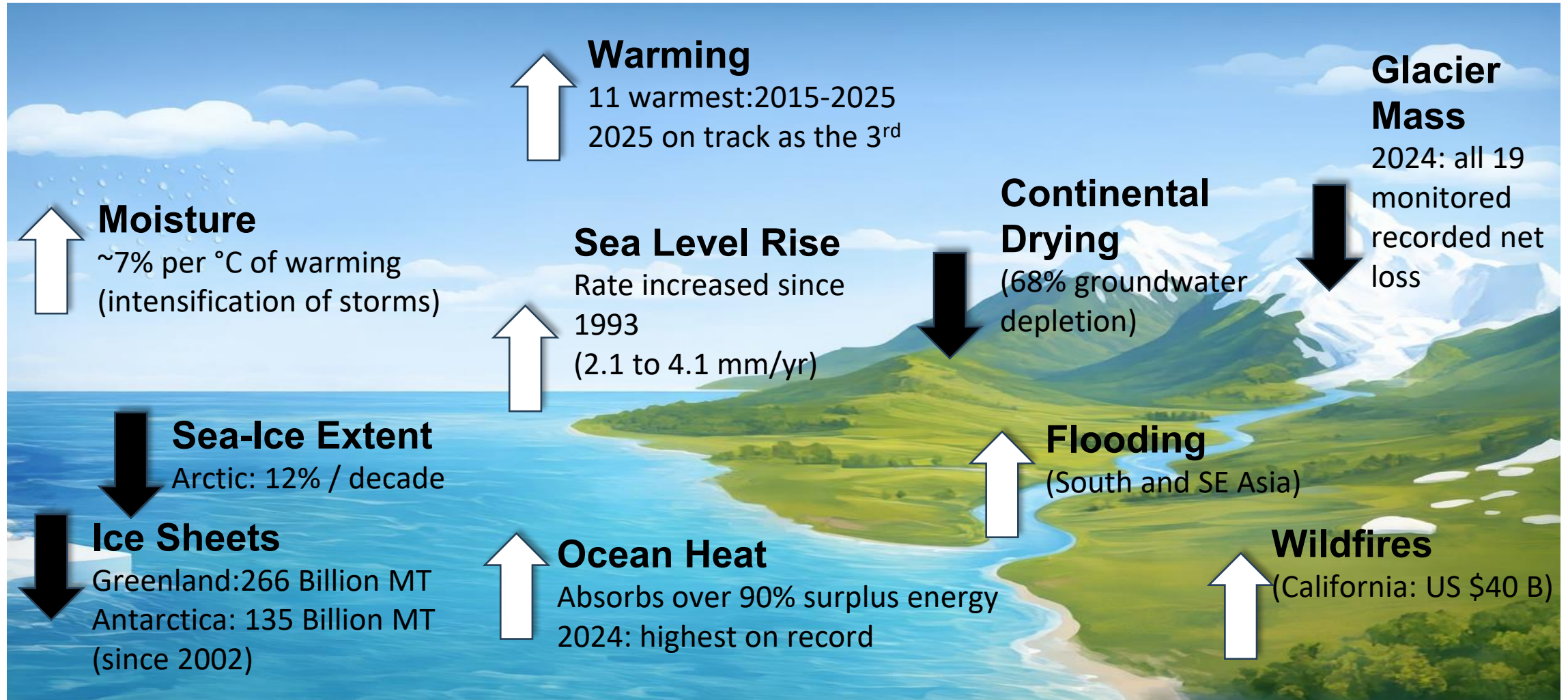
**17<sup>TH</sup> ANNUAL**  
**SOUTHEAST FLORIDA**  
**CLIMATE LEADERSHIP**  
**SUMMIT**



**December 16–17, 2025**  
**West Palm Beach, FL**

**ROOTS OF RESILIENCE:**  
**Cultivating a Sustainable Future**

# Global: Key Indicators



# United States (Based on 5<sup>th</sup> National Climate Assessment)

## Temperature and Heat



- ☐ Warming everywhere (especially in Alaska and the North)
- ☐ Increasing warm nights
- ☐ More frequent heatwaves, longer lasting

## Wildfires



- ☐ Longer fire seasons
- ☐ Area burned has increased
- ☐ Degrading air quality in regions far downwind

## Precipitation & Extremes



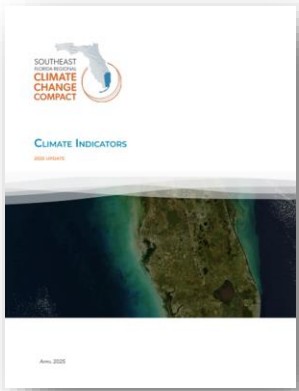
- ☐ Increase in heavy downpours
- ☐ Northeast has seen a ~60% increase in top 1%
- ☐ Increasing drought severity
- ☐ Tropical Cyclones that form are becoming stronger with more rainfall

## Sea Level Rise, Coastal Change & Ocean Conditions



- ☐ Rising relative sea level along much of the coastline
- ☐ Increased high-tide flooding
- ☐ Marine heatwaves





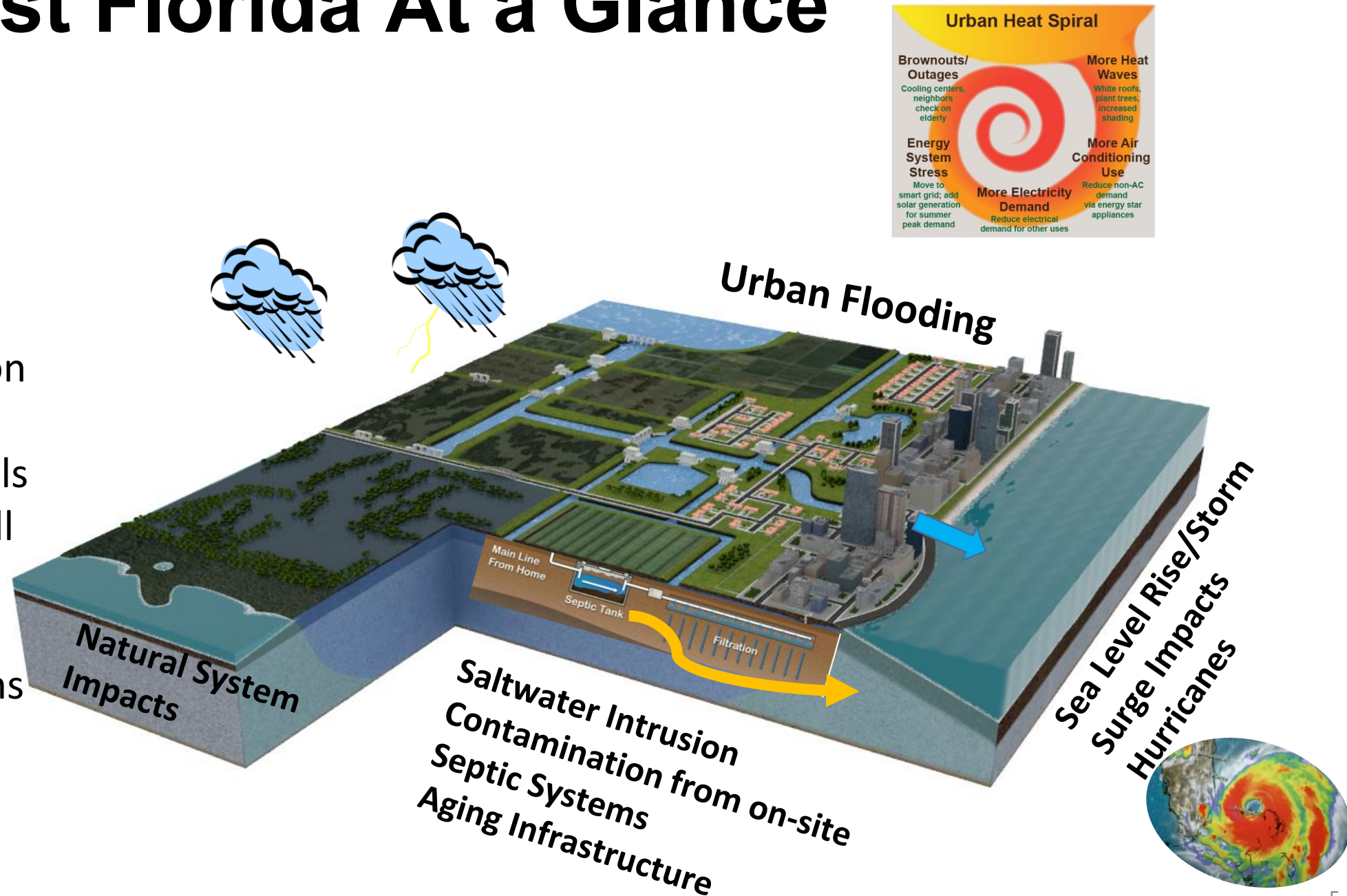
# Compact Climate Indicator Report: An effort of co-production

- Tina Batoh-Jenning, City of Boca Raton
- Karina Castillo, Miami-Dade County
- Lauren Evans, Independent Consultant and Staff to the Southeast Florida Regional Climate Change Compact
- Natalie Frendberg, Palm Beach County
- Jane Gilbert, Miami-Dade County (retd.)
- Alannah Irwin, City of Boynton Beach
- Michelle Irizarry-Ortiz, USGS (now @SFWMD)
- Christian Kamrath, Miami-Dade County
- Ben Kirtman, Ph.D., University of Miami
- Paul Linton, Palm Beach County
- Carolina Maran, Ph.D., South Florida Water Management District
- Brian McNoldy, University of Miami
- Jayantha Obeysekera, Ph.D., Florida International University
- Rajendra Sishodia, Ph.D., Broward County
- William Sweet, Ph.D., National Oceanic and Atmospheric Administration
- Tiffany Troxler, Ph.D., Florida International University

# Southeast Florida At a Glance

## Stressors:

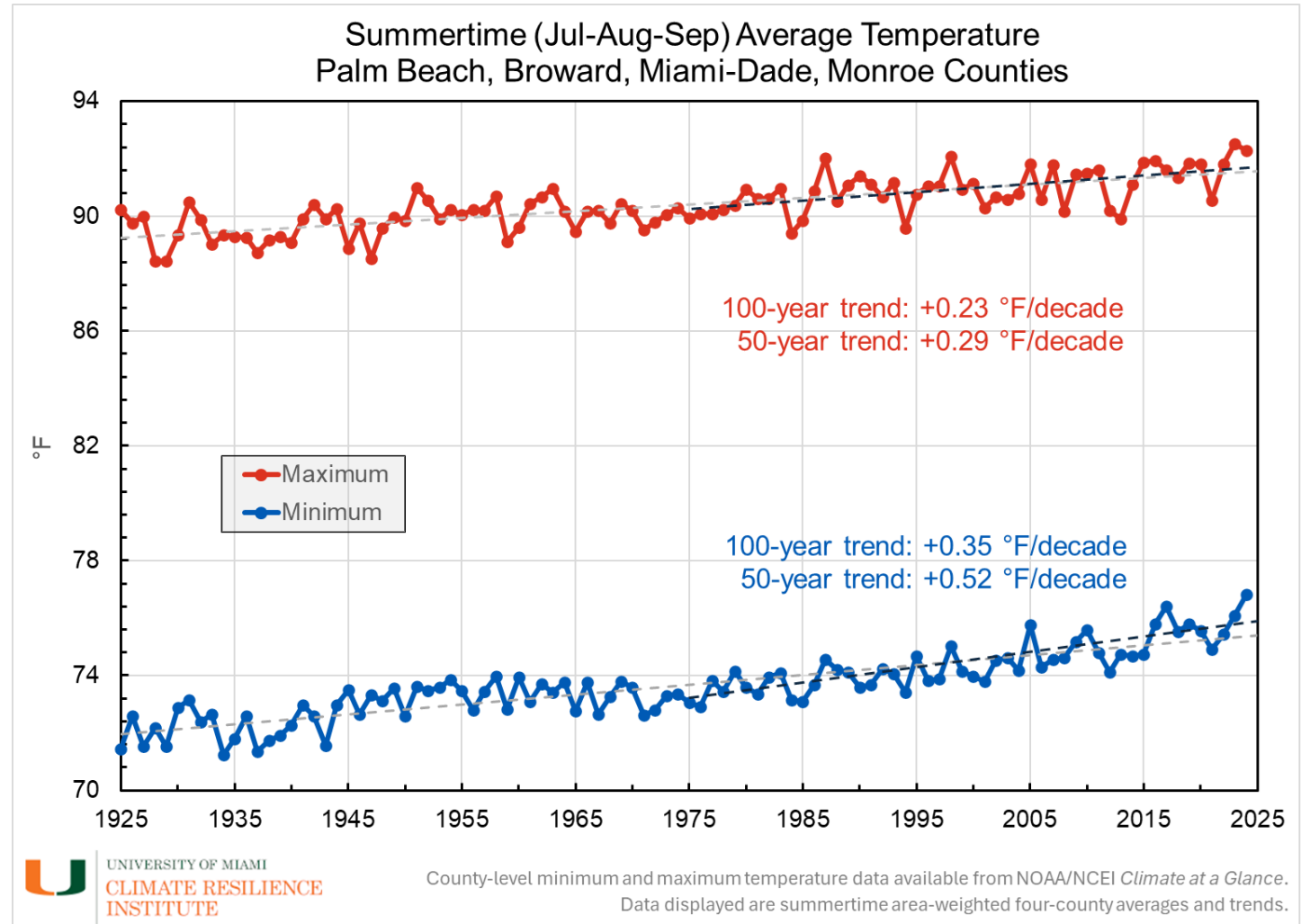
- Rising Temperatures
- Sea Level Rise & Storm Surge
- Saltwater intrusion
- Rising groundwater levels
- Changes in rainfall patterns
  - Fronts
  - Thunderstorms
- Frequency and Magnitude of Hurricanes

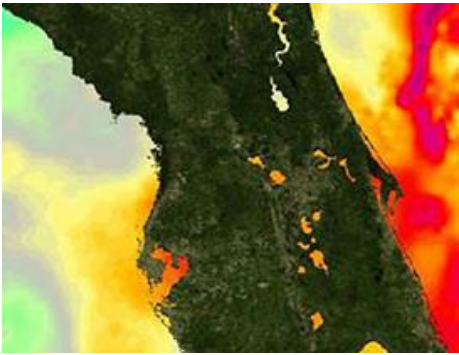




# Temperature

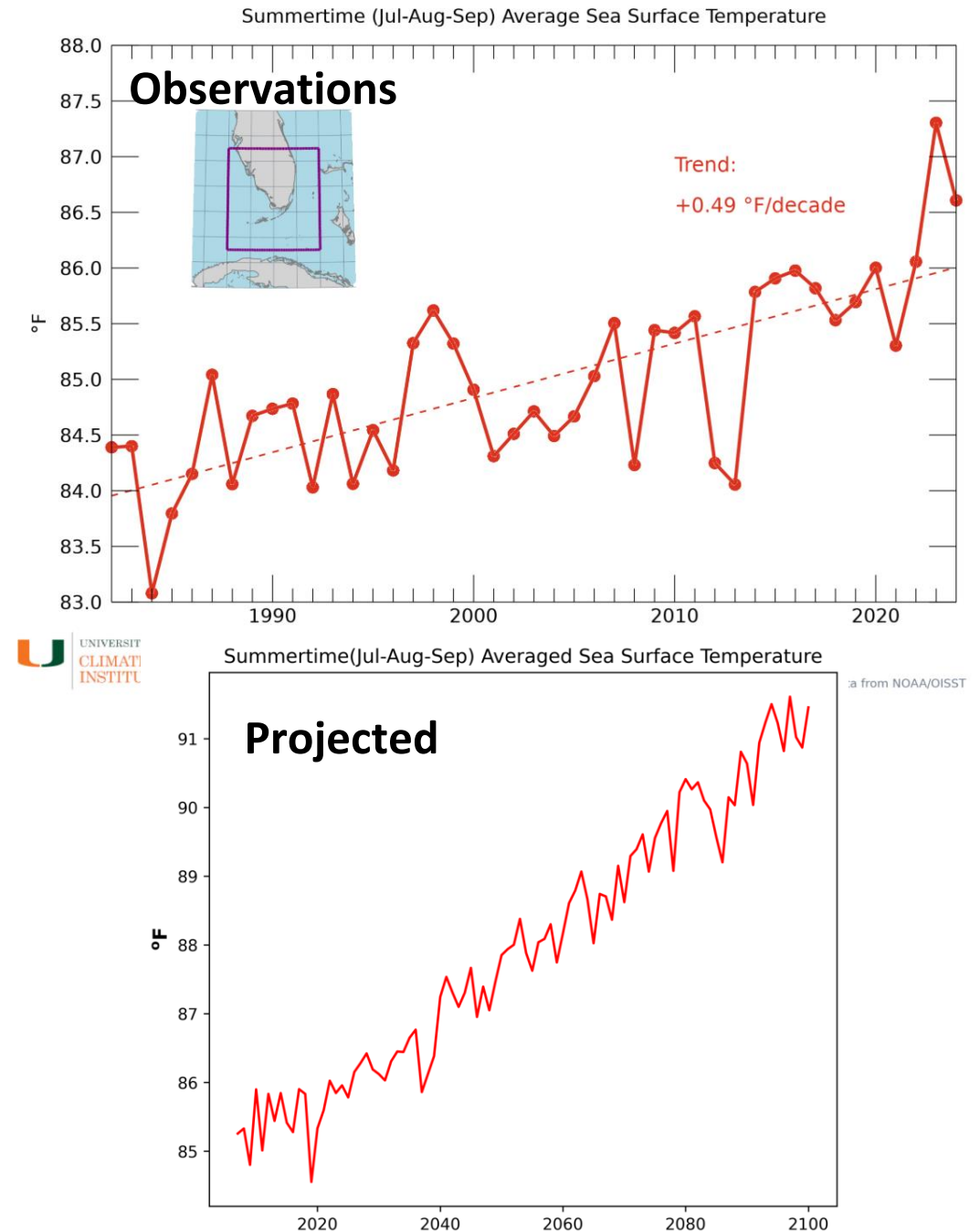
- Steadily warming daytime high temperature
  - about 0.3 °F per decade in the past 50 years
- Nighttime temperatures are increasing even more noticeably
  - About 0.5 °F per decade in the last 50 years
- Region's nights are heating up faster than its days





# Sea Surface Temperature

- Southeast Florida's sea surface temperatures are rising rapidly—about 0.5 °F per decade, driving record marine heat events, widespread coral bleaching (including the severe 2023 event)
- Long-term NOAA OISST data shows warming oceans closely mirror rising overnight minimum air temperatures, indicating that hotter surrounding waters are strongly influencing South Florida's nighttime heat



## HEAT INDEX



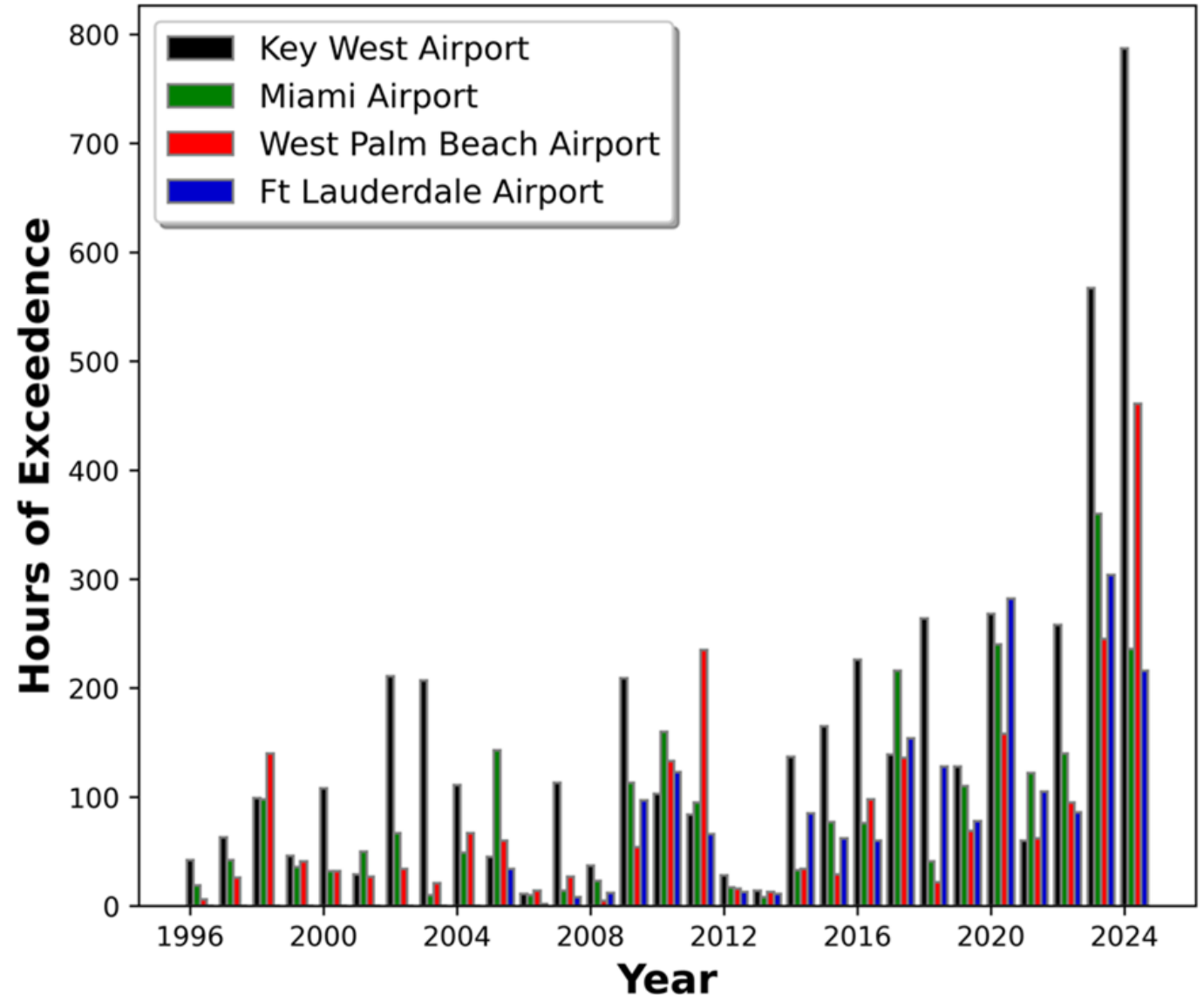
TEMPERATURE  
+ HUMIDITY

TEMPERATURE	HUMIDITY	HEAT INDEX
90°F	50%	93°F
95°F	65%	118°F
100°F	80%	127°F

# Heat Index

- Miami-Dade and Broward are piloting updated heat advisory thresholds based on local climate and health data
- New criteria: 105°F (Heat Advisory) and 110°F (Excessive Heat Warning) for at least two hours
- Projected Heat Index over 100 °F increases up to 200 days by 2100

## MJJAS Hours of Heat Index Exceedence: 100F

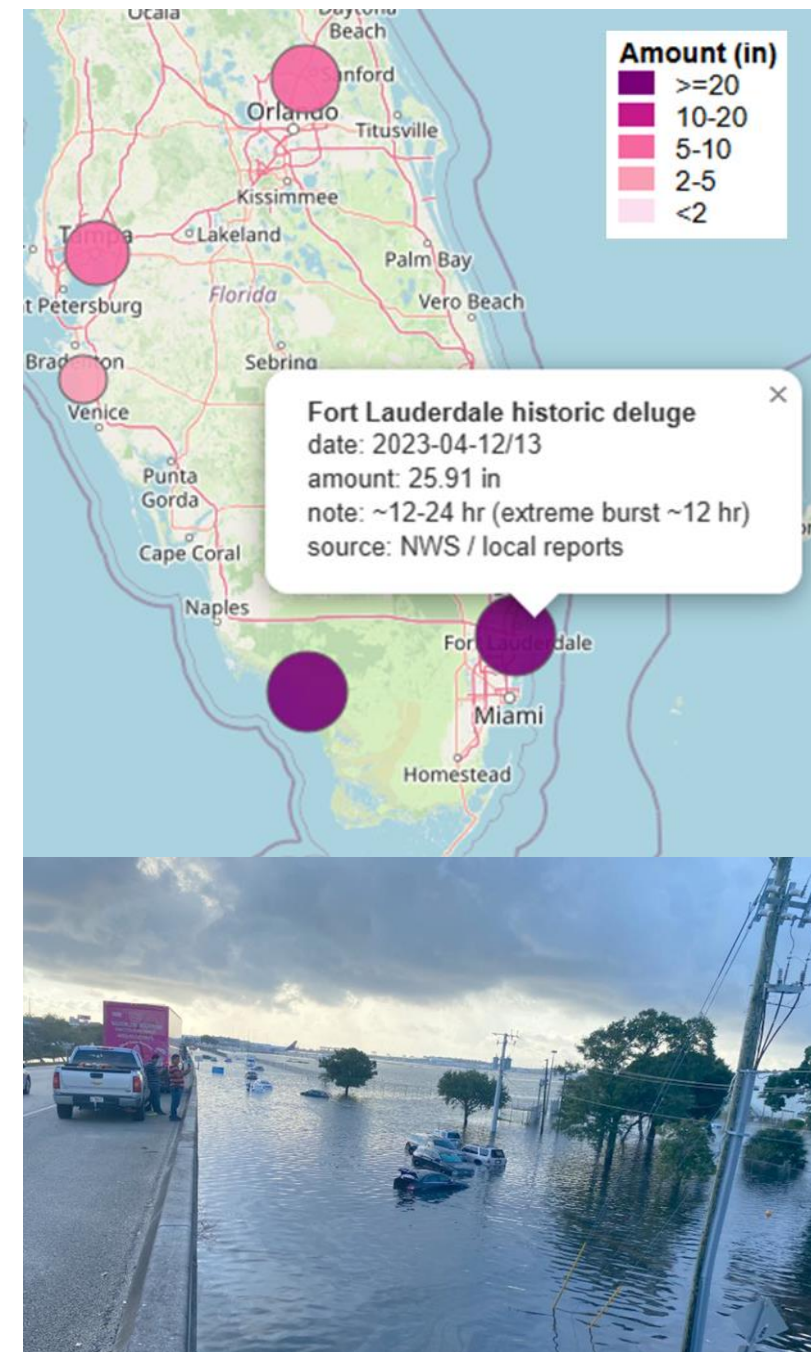






# Precipitation

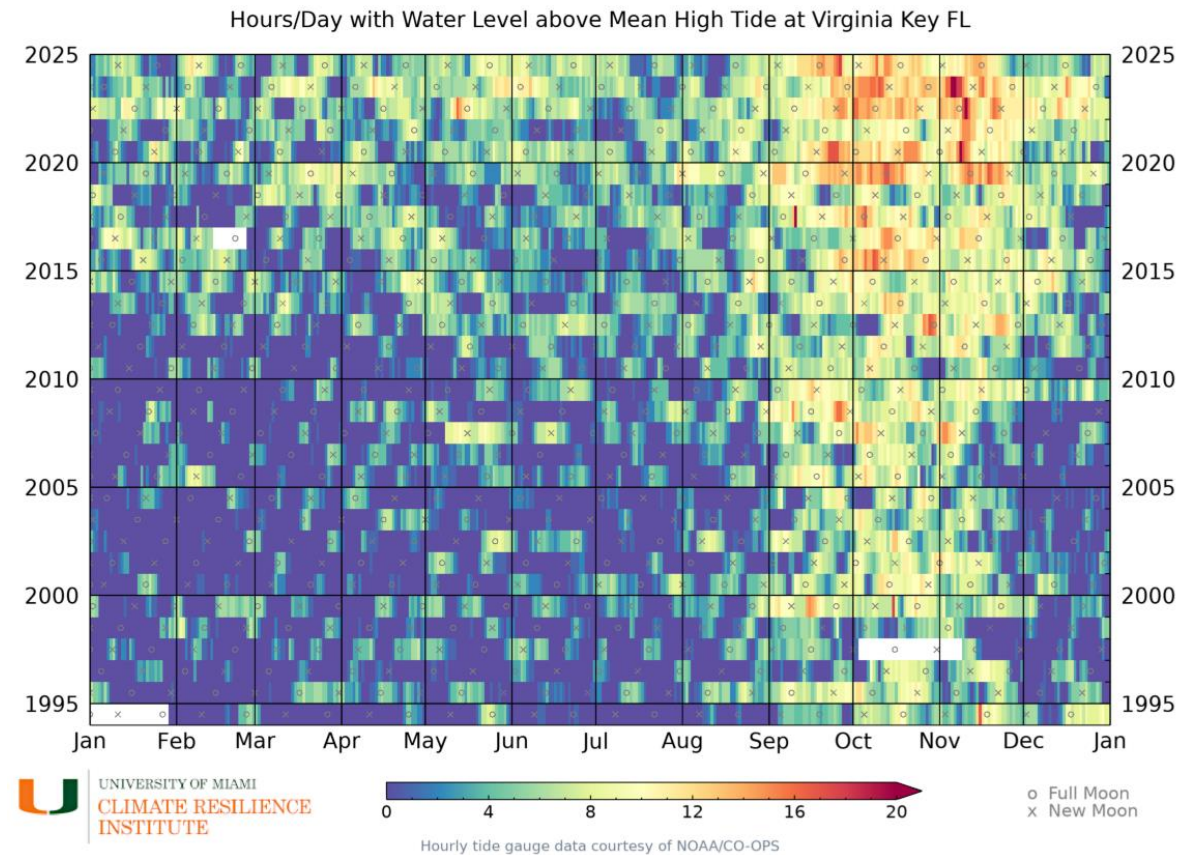
- No clear long-term trends in annual or seasonal totals, though moderate rainfall events ( $\geq 1$  inch/day) have become more frequent since about 1980 across major airport stations
- Limited sub-daily observations is a hindrance to research
- Globally and in Southeast Florida, extreme rainfall is intensifying with warming ( $\sim 7\%$  per  $^{\circ}\text{C}$ )
- Agencies like USGS, SFWMD, and the Florida Flood Hub have developed “change factors” (about 10 to 20% increase by 2100)



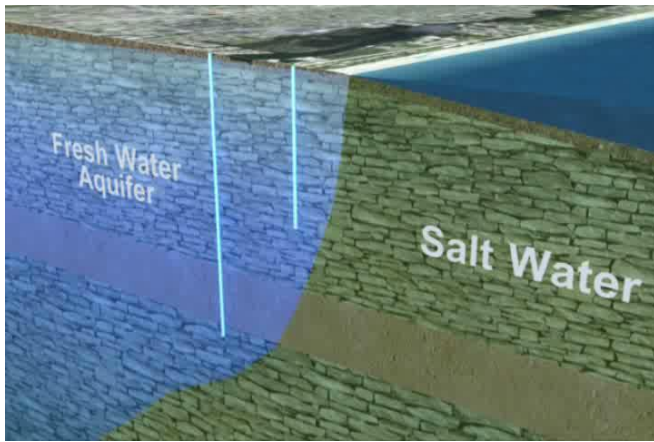


# Sea Level Rise & High Tide Flooding

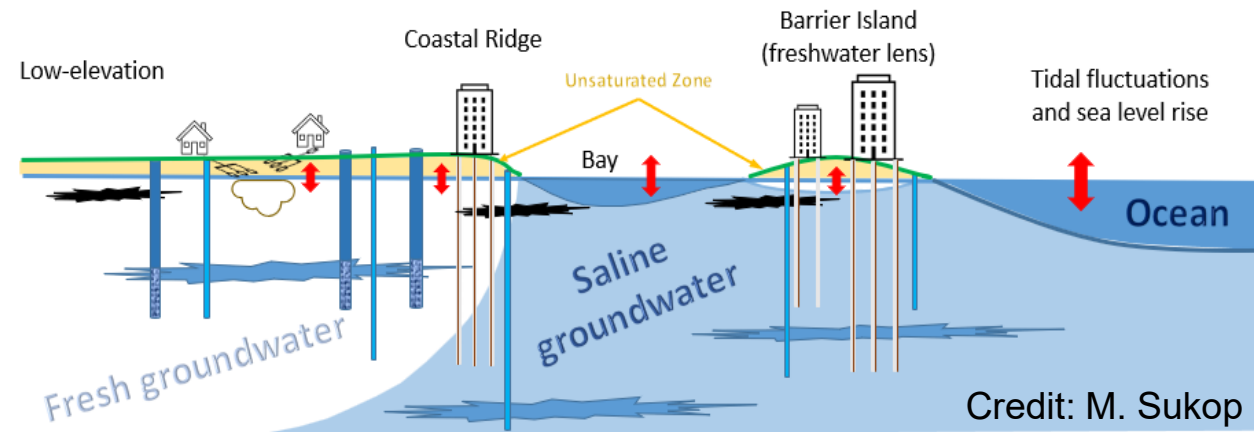
- NOAA tide gauges show a consistent rise in sea level across Southeast Florida, 1–2 inches per decade including about 6 inches at Key West since 2000
- Rapid increase observed from 2012 to 2023
- Southeast Florida's 2019 unified sea level rise projection, still recommended for planning, anticipates roughly 10–17 inches by 2040, 21–54 inches by 2070, and 40–136 inches by 2120





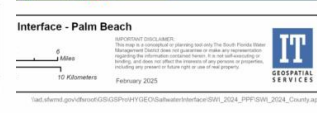
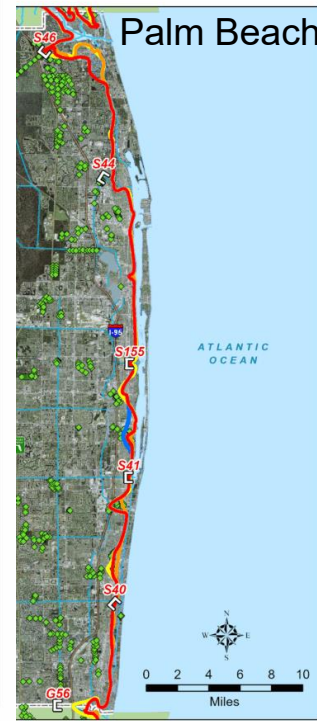
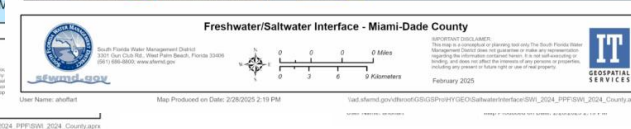
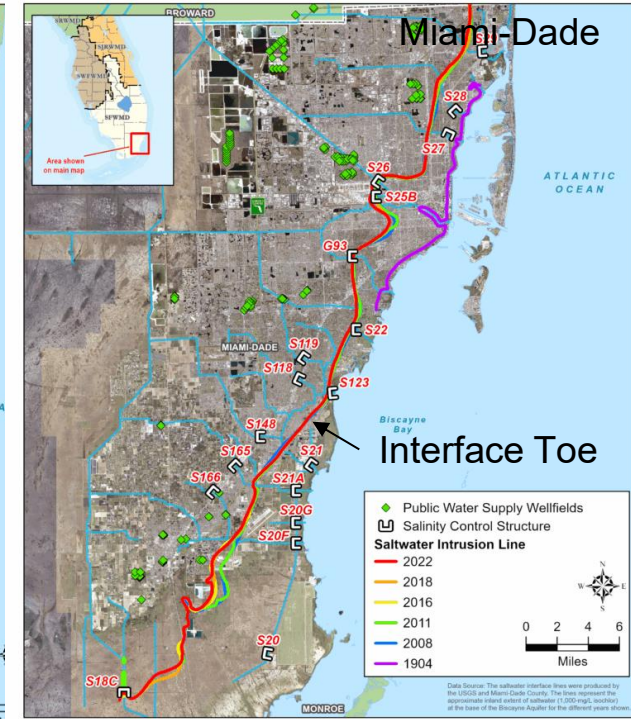
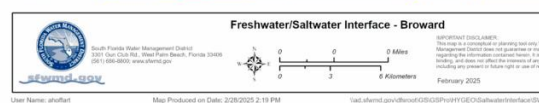


# Saltwater Intrusion



Credit: M. Sukop

- Saltwater intrusion in Southeast Florida is advancing inland threatening drinking water supplies
- SFWMD and USGS regularly map the saltwater interface and provide tools tracking water-level and salinity trends



# Key Takeaways

Consistent trends at Global, National, and Regional scales

Compact is playing an important role in assessing current climate trends based on data as a planning tool

Region faces significant climate hazards and risks, most trending in the wrong direction, underscoring the need to continue investment in resilience