South Florida Water Management District

RESILIENCY COORDINATION FORUM
AGENDA

May 28, 2025
9:30 AM
SFWMD Headquarters, B-1 Auditorium
3301 Gun Club Road
West Palm Beach, FL 33406

FINAL

1. Opening Remarks - Drew Bartlett, Executive Director, SFWMD

2. Statewide Office of Resilience - Mark Rains, Ph.D., Chief Science Officer, Florida Department of Environmental Protection

3. District Resiliency Updates - Carolina Maran, Ph.D., P.E., Chief of District Resiliency, SFWMD

4. 2025 Wet, Hurricane, and King Tide Seasons Preparedness - Carolina Maran, Ph.D., P.E., Chief of District Resiliency, SFWMD; and Libby Pigman, External Affairs Director, SFWMD

5. Update on the Florida Flood Hub with a Focus on Upcoming Modeling - Charles Jacoby, Strategic Planning Coordinator, The Florida Flood Hub for Applied Research and Innovation

6. Break

7. 2025 Sea Level Rise and Flood Resiliency Plan Update - David Colangelo, Resiliency Plan Coordinator, SFWMD

8. Central and Southern Florida Flood Resiliency Study and Integration Studies Updates - Tim Gysan, P.E., Resilience Senior Project Manager, USACE; Eva Velez, P.E., Chief of the Ecosystem Branch, USACE; Jennifer Smith, Project Manager, USACE; Matthew Morrison, Chief Policy Advisor, SFWMD; and Carolina Maran, Ph.D., P.E., Chief of District Resiliency, SFWMD

9. Around the Table Updates from Local, State and Tribal Partners

10. Public Comment

11. Closing Remarks - Carolina Maran, Ph.D., P.E., Chief of District Resiliency, SFWMD

12. Adjourn

Presentations (Staff contact, Yvette Bonilla)

Agenda Item Background:

03 Maran District Resiliency Updates
04 Pigman 2025 Season Preparedness
05 Jacoby FL Flood Hub
07 Colangelo Resiliency Plan
08 Gysan USACE C&SF

District Resiliency Updates

Resiliency Coordination Forum – May 28, 2025

Carolina Maran, Ph.D., P.E.

Chief of District Resiliency

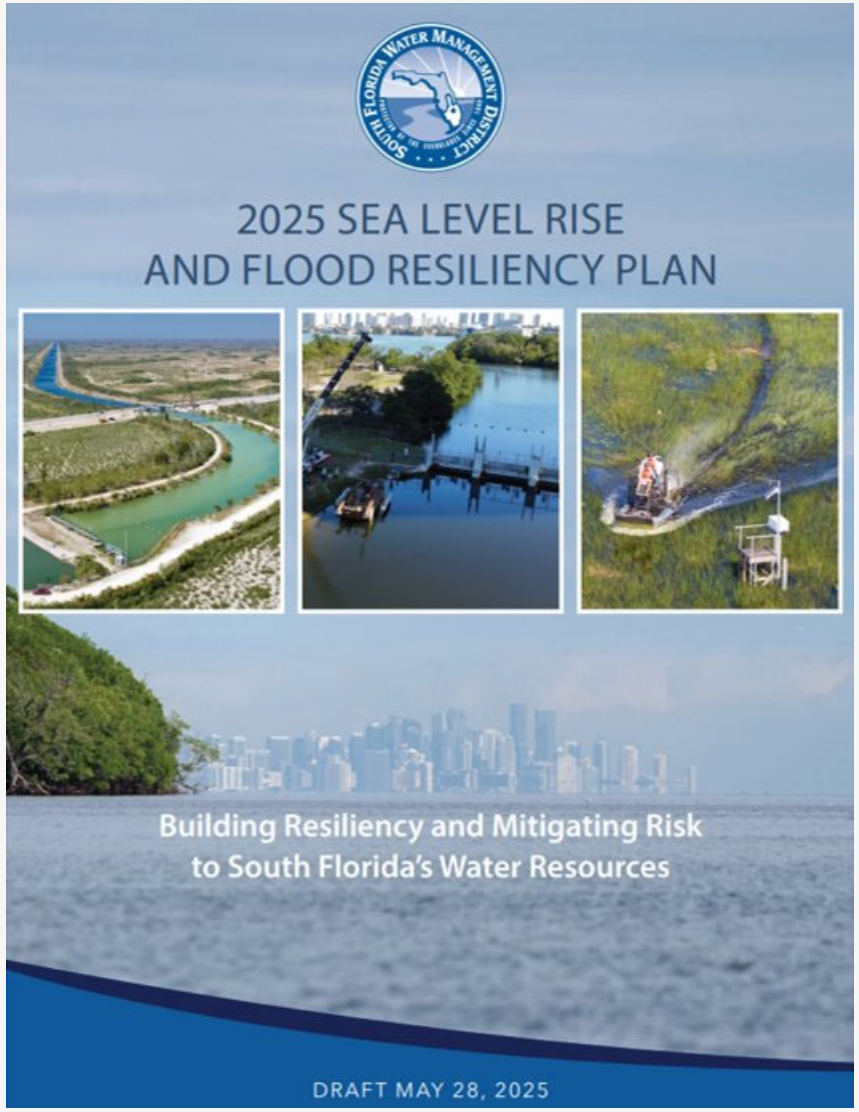
South Florida Water Management District

Our February Forum: Plan Update Workshops

- Successful workshops with participation of 200+ attendees from 12 Counties, 19 Municipalities, 3 Water Control Districts, 4 Federal Agencies, 5 State Agencies, 10 NGOs, 36 Consulting Firms, Utilities, Planning Councils, Academia, Seminole Tribe, Public

2025 SLR & Flood Resiliency Plan

- Comprehensive Update, covering most of the urban areas within SFWMD jurisdiction
- Thank you all project partners for your contributions
- Thank you Carollo, Brizaga and Delta teams



Projects Implementation

Ongoing Coordination with:

- **FDEM/FEMA HMGP Grants Implementation:**
  - Environmental and Historic Preservation Deliverables are being finalized for submission
  - 3 grant agreements executed
  - 3 interagency agreements executed
  - 2 draft MOAs with key stakeholders ongoing

- **FDEP Resilient Florida Grants Implementation:**
  - Periodic Site visits and quarterly reports for 4 grants. 2-additional grant agreement currently in-process.
  - Flood Adaptation Planning Study ongoing for Martin/St. Lucie Counties and Broward Basins

- **FDEP Innovative Tech Grant Implementation:**
  - In collaboration with Miami-Dade County – grant agreement executed

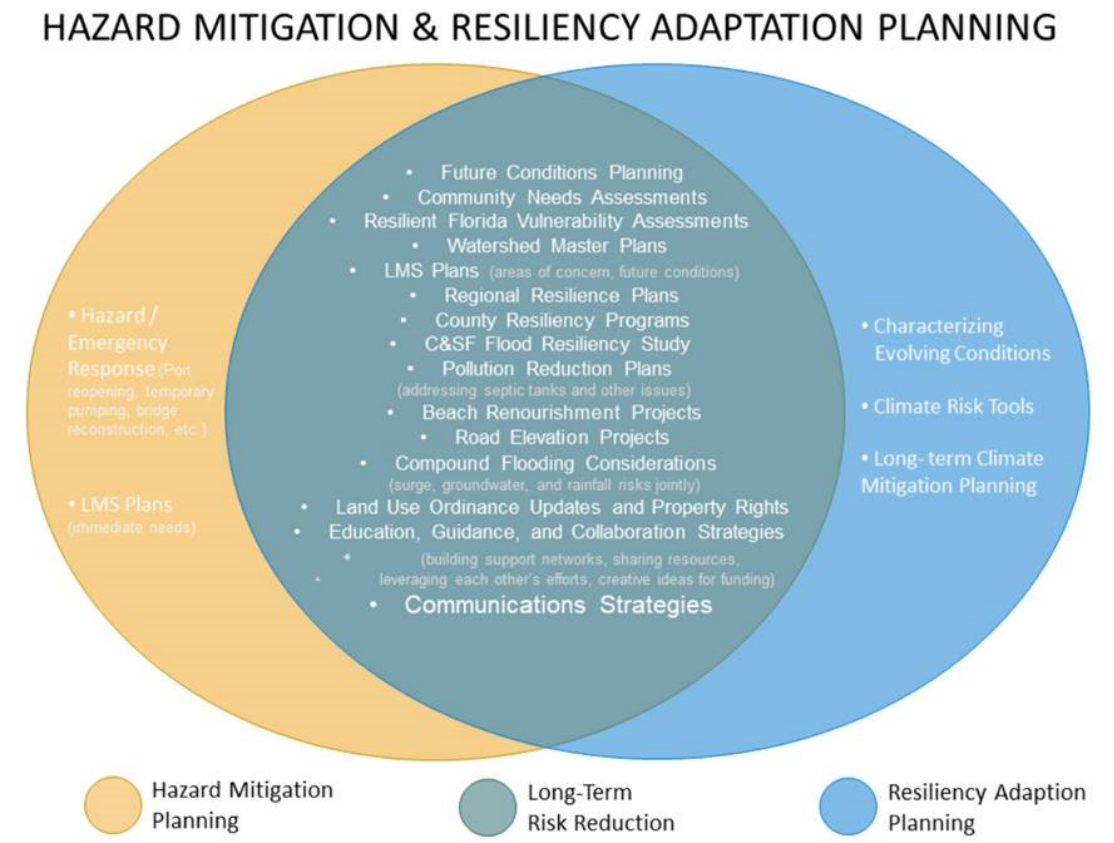
Projects/Grant Implementation (continued)

Coordination with project partners and key stakeholders ongoing:

- Public Workshop on C-9 Basin Project - March 20, 2025
- Public Workshop on C-7 Basin Project - April 09, 2025
- Projects coordination, site visit with FDEP, Miami-Dade County, City of North Miami Beach
- Design and real estate coordination with Miami Shores Village and Miami-Dade County (Parks, DERM, Office of Resilience), South Broward Drainage District, Miami-Dade County Schools and City of North Miami Beach

LMS Coordination – Hazard Mitigation

- Meetings Attendance
- Updating priority resiliency projects list in each county for inclusion in the respective LMS plans
- Submitting projects for post disaster funding (Milton, July 2025, undergoing final ranking)



Projects for Review and Award Consideration

- FDEM Hurricane Ian HGMP DR4673 (Waiting Tier II Allocation)
  - S-61 Structure Enhancement & S-61 Navigation Lock Erosion Control
  - S-59 Structure Enhancement and C-31 Canal Conveyance Improvements
  - S-58 Structure Enhancement
- FDEP 2025 Resilient Florida – Statewide Plan (pending Legislative Session)
  - C-9 Basin Resiliency
  - C-7 Basin Resiliency
  - L-8 / G-539 Structure Enhancement
  - G-6A Pump Station
  - L-15 Culverts

FPLOS Program Updates – Ongoing Studies

- St. Lucie/Martin Counties FPLOS Phase I & II Study
  - Model Calibration report is ongoing
- C-7 Basin (Miami-Dade County) FPLOS Phase II Study
  - Future with Project Alternatives model runs are underway (04/2025)
- Western Basins (Hendry & Collier Counties) FPLOS Phase I Study
  - Model Calibration report is ongoing
- Taylor Creek/Nubbin Slough (S-154C) and Basin 8 – Lake Okeechobee Watershed / Okeechobee County
  - Kicked off 04/25/25, Model Selection is underway

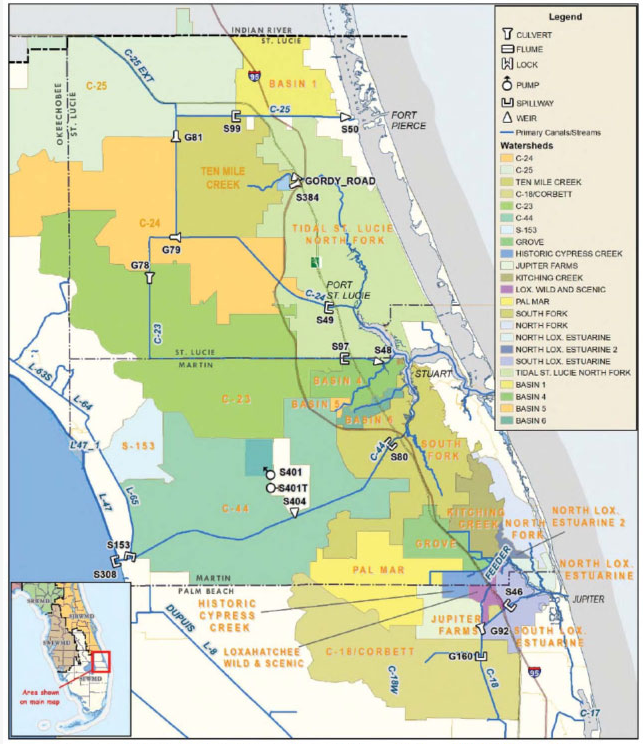


Figure 1: St Lucie/Indian River and Loxahatchee System FPLOS Study Areas

Phase I: Flood Vulnerability Assessment
Phase II Adaptation and Mitigation Planning

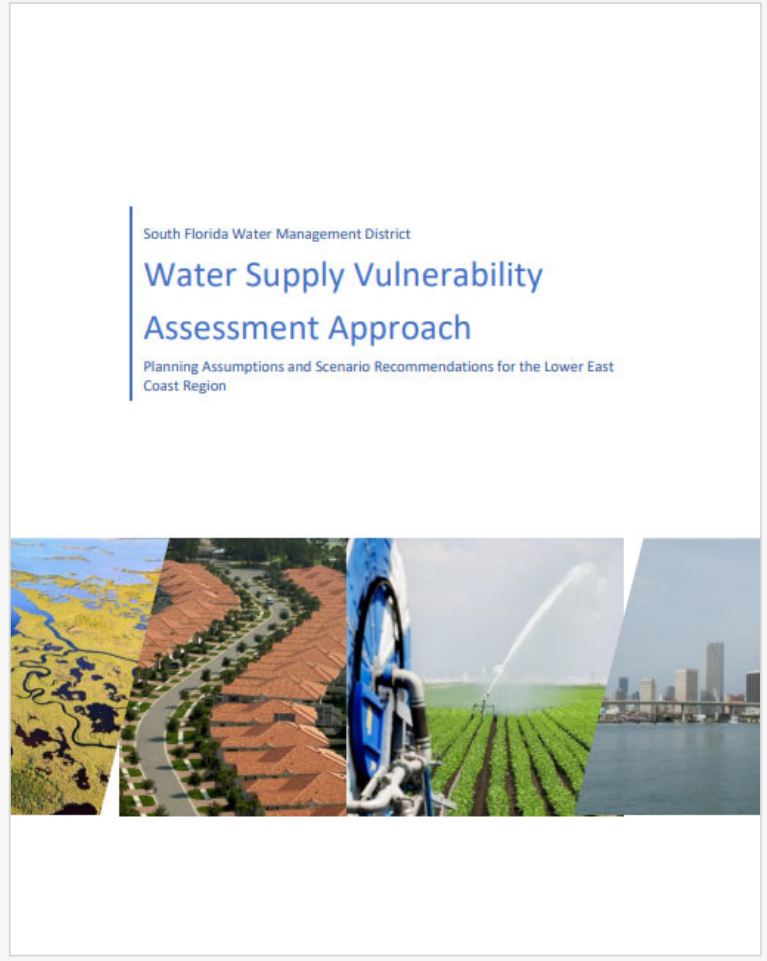
Water Supply Vulnerability Assessment Update

Modeling Effort

- Utilize the East Coast Surficial Model (ECSM) - Lower East Coast Plan
- 50-year look ahead (2075) at growth
- Sea Level Rise Intermediate Curves and Future Climate Scenarios
- Characterize future potential impacts on water supply sources
- Future iterations will inform strategies and projects to build resiliency

Current Status

- Model data inputs under development:
  - Drought rainfall, ET & temperature data
  - Future land use
  - Future population distribution per utility service area
  - Public supply and irrigation well withdrawals
- Model runs anticipated in Summer/Fall 2025



Water and Climate Resilience Metrics Update

Ongoing Phase 2 Metrics

2026 South Florida Environmental Report (SFER) – *analyses and content development are underway!*

- **Chapter 2A:** Water Year 2025 Hydrology, Water Management, and Event Summaries
- **Chapter 2B:** Long-term Trends in Rainfall (including sub-daily), Drought, High Tide Events, Saltwater Intrusion

Important Dates

- Fall 2025 – Public Comment Period
- March 1, 2026 – Publication date

SFER Chapter 2B

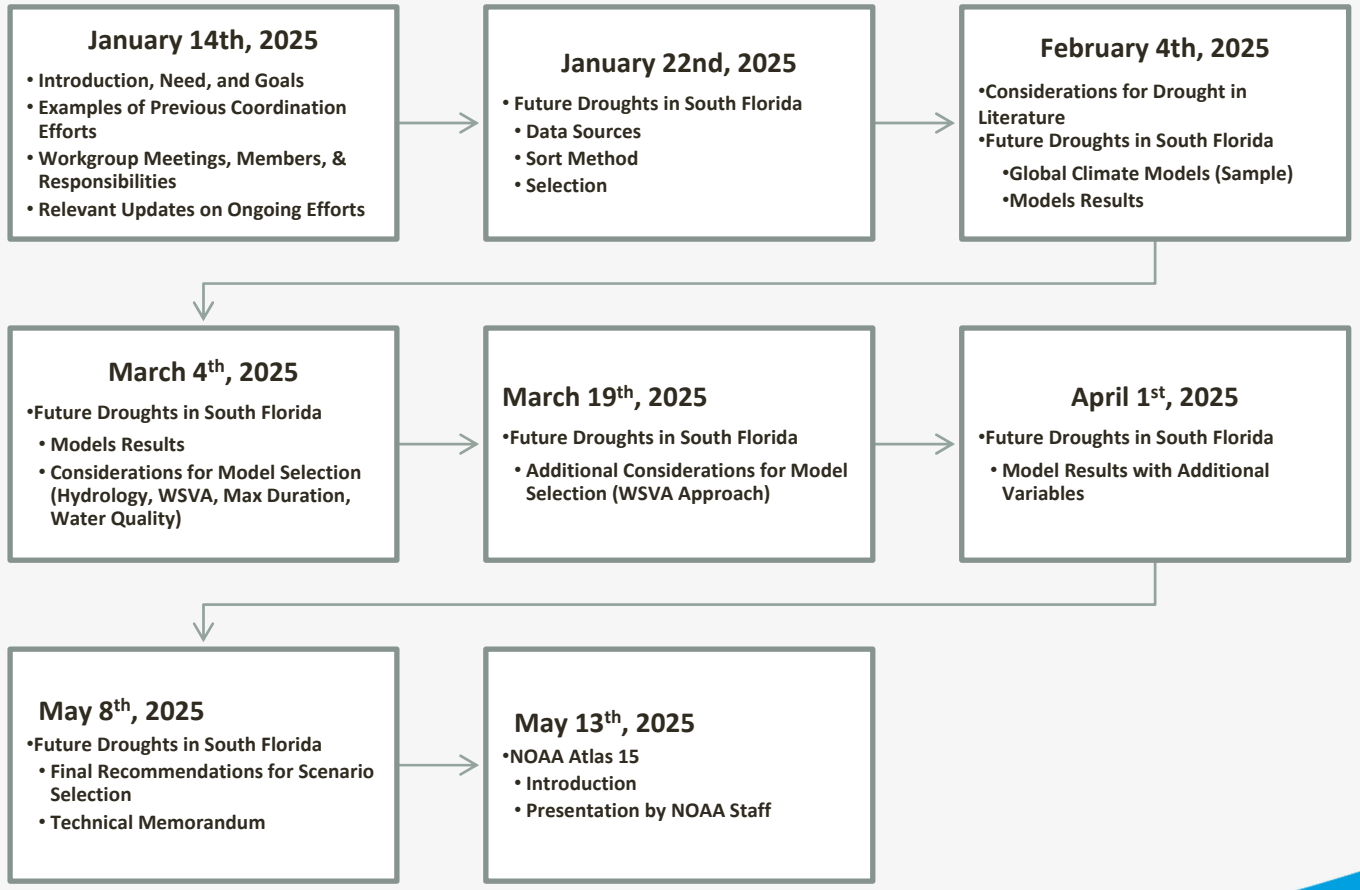
Water and Climate Resilience Metrics Update

Future Climate Scenarios Workgroup

- First Agenda Item: Drought (supporting WSVA)
- Future Agenda Items: Rainfall, NOAA Atlas 15, Multidecadal Variations, and more.

Florida Flood Hub

- Ongoing collaboration on Ocean-Atmospheric Statewide Regional Model



Flood Observations and High-Water Mark Trainings

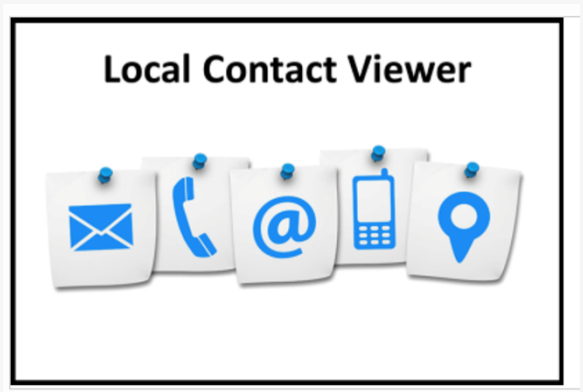
- SFWMD hosted 7 training sessions at various locations across the region throughout the month of April.
- New local notification under final implementation

Recognition/Special Thanks

- Chris Carlson, Geospatial Mapping
- Madelyn Rinka, Geospatial Mapping
- Diana Alvarez, Geospatial Mapping
- Kealan Weldon, Survey & Mapping
- Nicole Cortez, Resiliency
- Aaron Duecaster, Resiliency

Flood Observations & South Florida Flood Information Resource

- Resiliency partners can now:
  - Submit flood observations at sfwmd.gov/FloodingApp
  - View flood event data at sfwmd.gov/FloodResource*
  - Find who to contact via the Local Contact Viewer



Note: Users will be asked to create their own accounts and accept terms and conditions.

Dashboard functionalities will be added mid-June

C&SF Flood Resiliency Study (Section 203 – Broward Basins)
Public Workshop on April 29

- **Initial Array of Alternatives Results**
- **Comprehensive Benefits and Plan Formulation**
- **Draft Final Array of Alternatives**

South Florida Water Management District

CENTRAL AND SOUTHERN FLORIDA (C&SF) SECTION 203 FLOOD RESILIENCY STUDY - BROWARD BASINS PROJECT ALTERNATIVES PUBLIC MEETING

AGENDA

April 29, 2025
10:00 AM
Broward County Government Center East
115 S. Andrews Avenue, Room 422
Fort Lauderdale, FL 33301

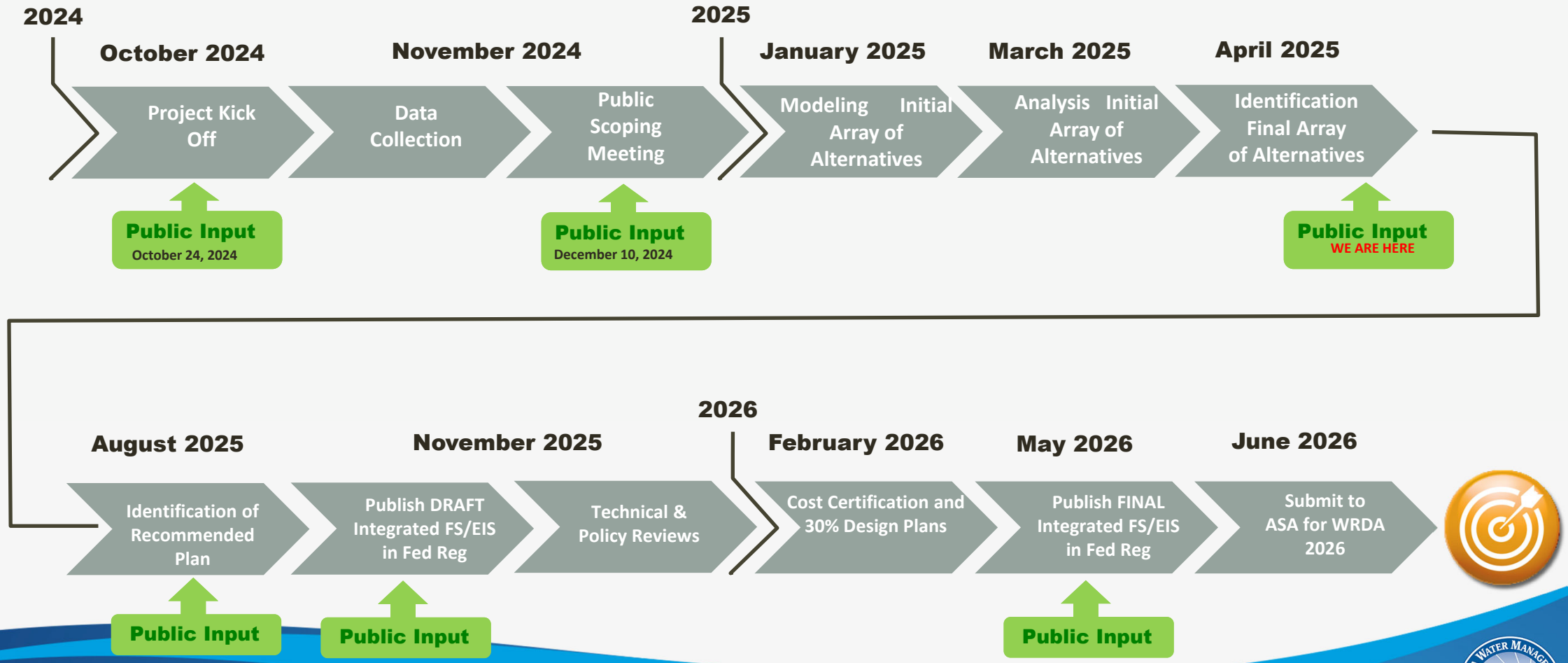
Zoom Link: https://broward-org.zoomgov.com/j/1607059115

1. Opening Remarks - Beam Furr, Mayor, Broward County; Carolina Maran, Ph.D., P.E., Chief of District Resiliency, SFWMD
2. Flood Resiliency Study for Broward Basins Project Overview - Matthew Morrison, Chief Policy Advisor, SFWMD
3. Plan Formulation Strategy and Comprehensive Benefits Analysis - Matthew Morrison, Chief Policy Advisor, SFWMD
4. Initial Array of Alternatives Screening Analysis - Walter Wilcox, Water Resources Systems Modeling Bureau Chief, SFWMD
5. Draft Final Array of Alternatives - Walter Wilcox, Bureau Chief, Water Resources Systems Modeling, SFWMD
6. Integrated Strategy - Carolina Maran, Ph.D., P.E., Chief of District Resiliency, SFWMD
7. Next Steps - Matthew Morrison, Chief Policy Advisor, SFWMD
8. Public Comment
9. Closing Remarks - Carolina Maran, Ph.D., P.E., Chief of District Resiliency, SFWMD
10. Adjourn

Visit www.sfwmd.gov/C&SF for more information.

Project Schedule

Targeting June 2026 - Deliver Corrected Final Feasibility Report & Environmental Impact Statement to ASA Civil Works



C&SF Flood Resiliency Study for Miami River Basins (Reach C, Section 216)

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET, NW
WASHINGTON, DC 20314-1000

CECW-SAD 21 April 2025

MEMORANDUM FOR Assistant Secretary of the Army (Civil Works)

SUBJECT: Central and Southern Florida Flood Resiliency (Section 216) Study, Flood Risk Management, Request for Additional Time and Funding

1. Purpose. To provide the subject request for your approval of a 46-month study extension and additional expenditures of up to $8,132,000 (including approximately 4% contingency and $200,000 for a federally funded Independent External Peer Review (IEPR)). The total study cost would be $14,132,000 ($7,166,000 federal including IEPR/ $6,966,000 non-federal). The total study duration would be 6 years, 10 months culminating with a signed Chief's Report in July 2029.

2. Authority. The Central and Southern Florida (C&SF) Project was originally authorized by the Flood Control Act of 1948 and 1954 with numerous modifications in laws up to and including the Water Resources Development Act of 2022. The current flood risk management study was initiated under the authority of Section 216 of the Flood Control Act of 1970. Per Section 1001 of the Water Resources Reform and Development Act of 2014 (WRRDA 2014), the U.S. Army Corps of Engineers' (USACE) final feasibility reports are, to the extent practicable, to be completed in three years and have a maximum federal cost of $3,000,000. Section 1001 provides further that the Secretary of the Army may extend the timeline or approve federal costs greater than $3,000,000, subject to notification to the non-federal sponsor and the Senate Committee on Environment and Public Works and the House of Representatives Committee on Transportation and Infrastructure.

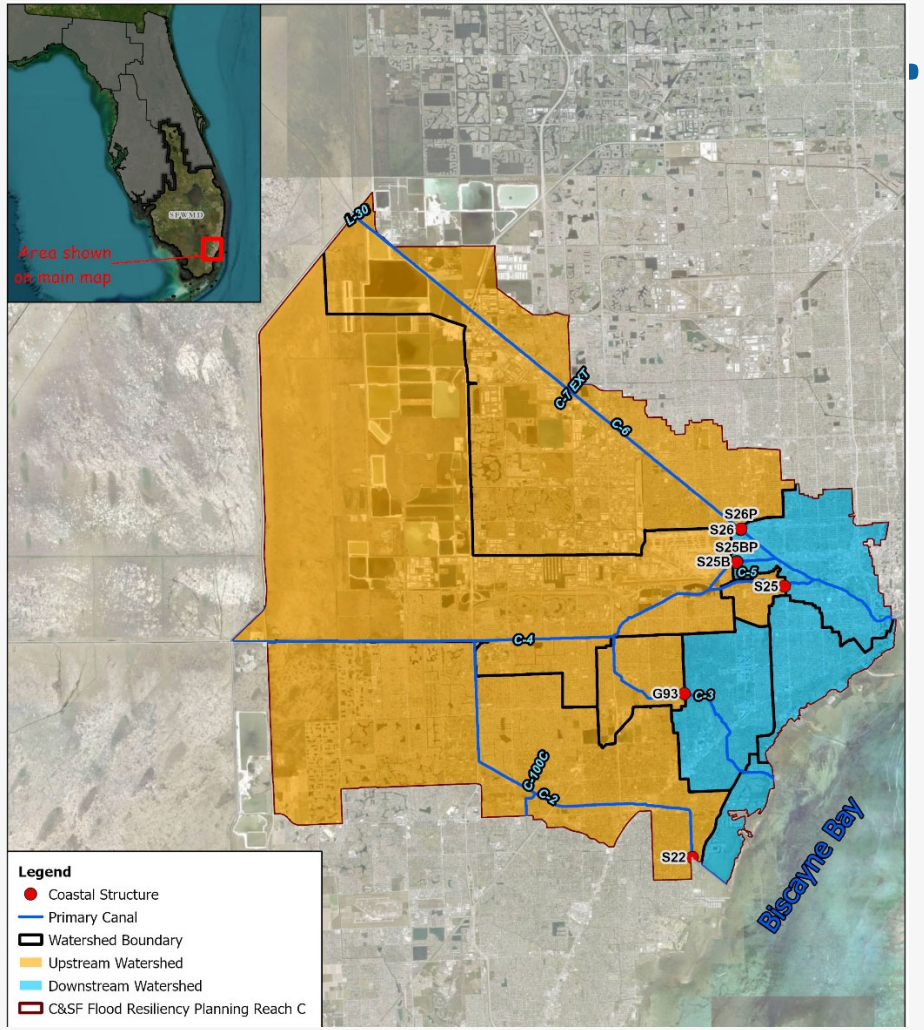
3. Background. The C&SF is a multipurpose project with authorized purposes that include flood risk management, prevention of saltwater intrusion, regional water supply for agricultural and urban areas, groundwater recharge, preservation of fish and wildlife, water supply to Everglades National Park, navigation, and recreation. The original C&SF Flood Resiliency Study initially included 18 structures across four planning reaches. In response to guidance to reduce the study to fewer structures and a smaller geographic area, the non-federal sponsor and stakeholders supported a plan to address two of the reaches themselves with state and Federal Emergency Management Agency grants and defer one basin to a future study. This resulted in the current scope with a limited study focusing on Reach C, the Miami River and Nearby Basins planning reach. The C&SF Flood Resiliency Study (Reach C) focuses on reducing flood damage resulting from fluvial (riverine) flooding upstream of the coastal water control structures.

CECW-SAD
SUBJECT: Central and Southern Florida Flood Resiliency (Section 216) Study, Flood Risk Management, Request for Additional Time and Funding

7. Recommendation. I concur with the recommendation of the Chief of Planning and Policy on the funding and schedule extension requests. The total study cost would be $14,132,000 ($7,166,000 federal including IEPR/ $6,966,000 non-federal). The total study duration would be 6 years 10 months. Also, I have approved $1,500,000 in additional federal budget authority since it is below the threshold that requires your approval. I recommend you approve the total request for additional expenditures of up to $8,132,000 ($4,166,000 federal including IEPR / $3,966,000 non-federal) and for a 46-month study extension to complete a report of the Chief of Engineers. While we are seeking approval for the full duration and expenditure, we have included interim checkpoints as described in paragraph 5 and plan to conduct an In-Progress Review in October 2025 (including your office). Pending your approval, please forward the enclosed letters to the Authorization Committees.

JASON E. KELLY
Major General, USA
Deputy Commanding General
for Civil and Emergency Operations

8 Encls
1. District request memo 13 AUG 24
2. MSC VTAM & RAR 12 OCT 24
3. Report summary
4. Project management plan
5. Presentation
6. MFR – Alternatives Milestone Meeting
7. Draft House notification letter
8. Draft Senate notification letter



https://www.sfwmd.gov/our-work/central-and-southern-florida-flood-resiliency-study-section-216

Resiliency Coordination Forum

- **Take our survey to provide feedback and share suggestions**
  - https://forms.office.com/g/MkZuHNhCPZ
- **Save the date for our 2025 meetings**
  - Wednesday, September 3, 2025
  - Wednesday, December 3, 2025

Upcoming Events

- 4th Florida Resilience Conference, Sept 17-19, 2025 – Charlotte Harbor, FL (Call for Abstracts is Open) https://floridaresilienceconference.org

- 2025 Southwest Florida Climate Summit, Sept. 16-17, 2025 - Charlotte Harbor, FL (coinciding) https://www.chnep.org/climate-summit

- 17th Annual Southeast Florida Climate Leadership Summit, Dec. 16-17, 2025 – West Palm Beach, FL https://southeastfloridaclimatecompact.org/event/17th-annual-southeast-florida-climate-leadership-summit/

Please share other relevant events during *Around the Table Updates*

https://conference.ifas.ufl.edu/waterinstitute/

Thanks!

Carolina Maran, Ph.D., P.E.

Chief of District Resiliency, SFWMD

cmaran@sfwmd.gov

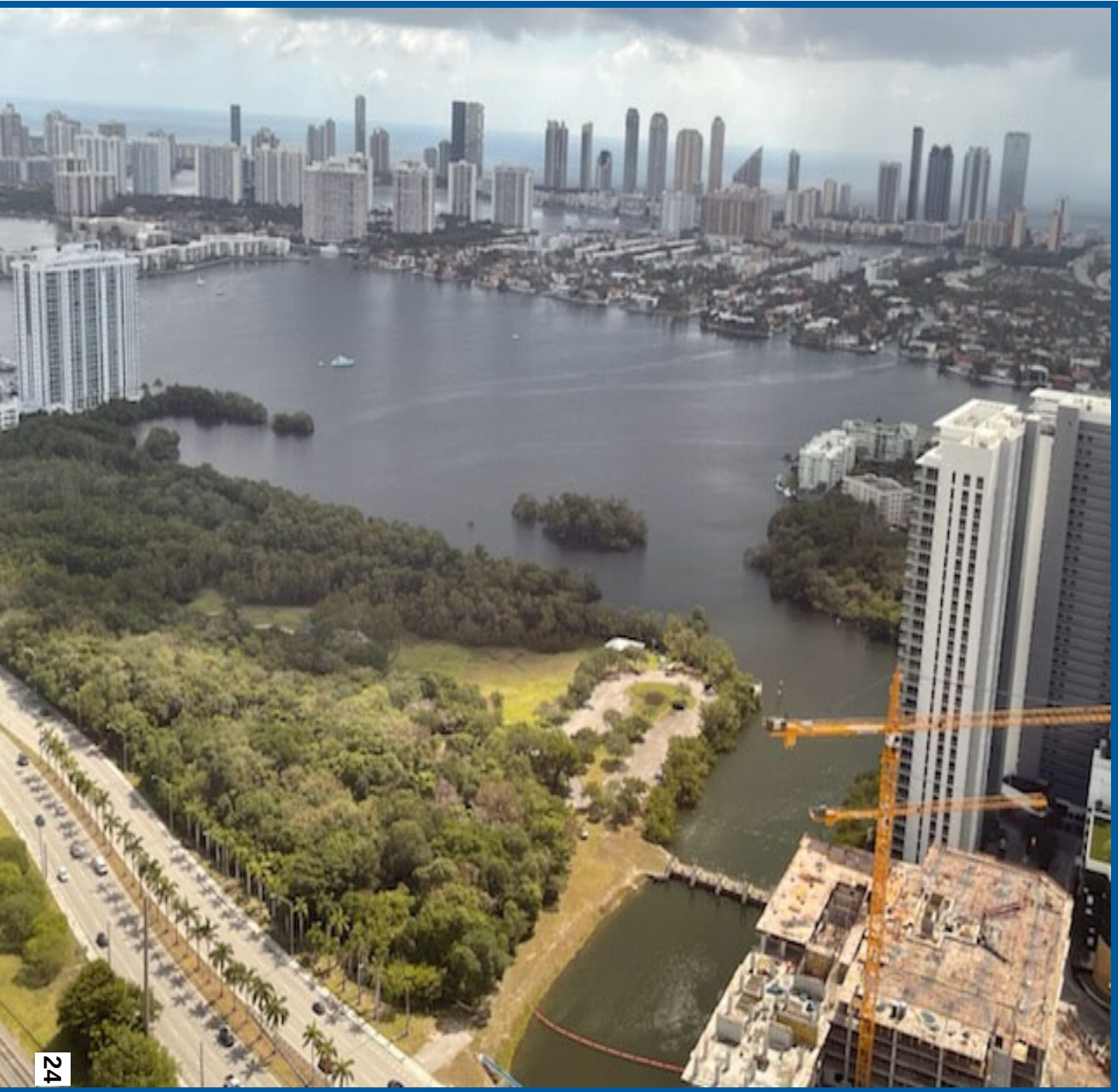
www.sfwmd.gov/resiliency

Photo by Paul Krashefski

FLOOD OBSERVATION TOOLS AND ENGAGEMENT WITH LOCAL GOVERNMENTS & 298 DISTRICTS

PRESENTED BY:

Libby Pigman
External Affairs Director
South Florida Water Management District
May 28, 2025



Welcome Partners

Today we will be:

- Going through the **“Report Flooding and Early Concerns"** survey step-by-step.
- Discussing the importance of this tool and why we are looking for collaboration.
- Discussing what we will do with this data.

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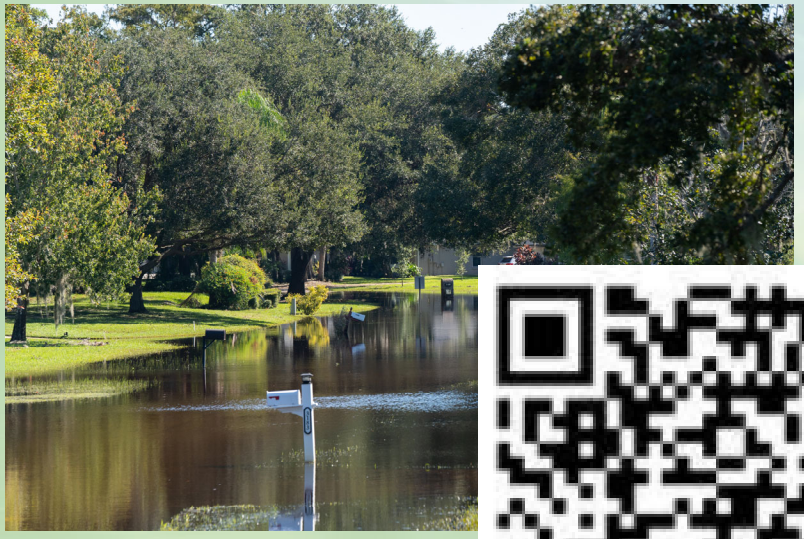
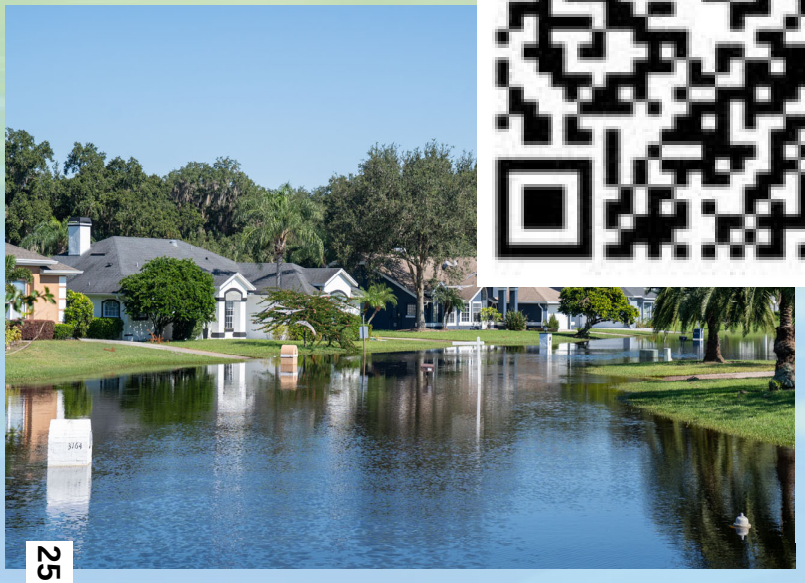
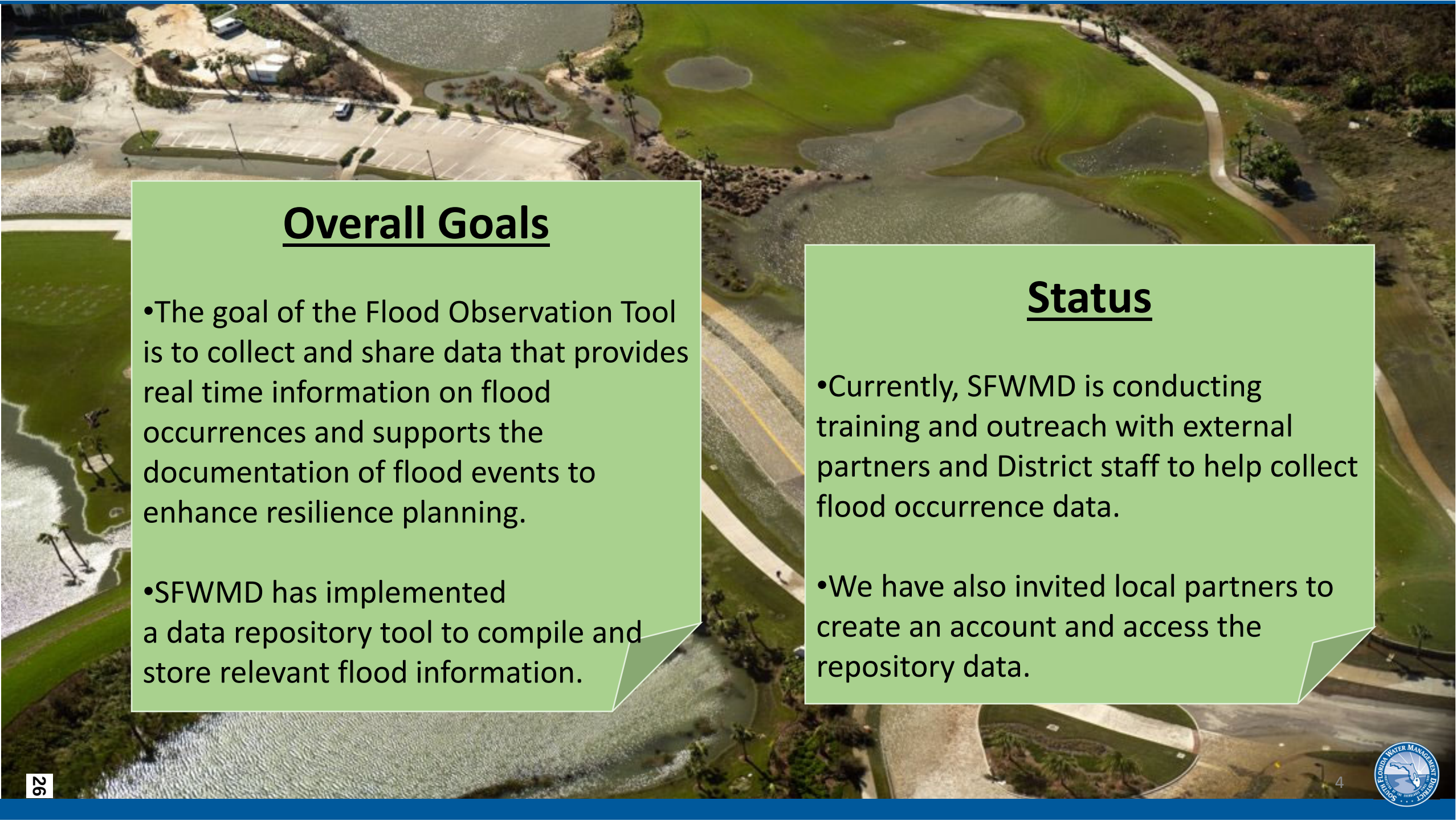




Defining Flooding

- Flooding is water in areas that are not designed to hold it or where it is not normal for it to occur
  - *Not* water in swales, wetlands, or retention ponds, unless it is rising quickly or there is cause for other concern



Overall Goals

•The goal of the Flood Observation Tool is to collect and share data that provides real time information on flood occurrences and supports the documentation of flood events to enhance resilience planning.

•SFWMD has implemented a data repository tool to compile and store relevant flood information.

Status

•Currently, SFWMD is conducting training and outreach with external partners and District staff to help collect flood occurrence data.

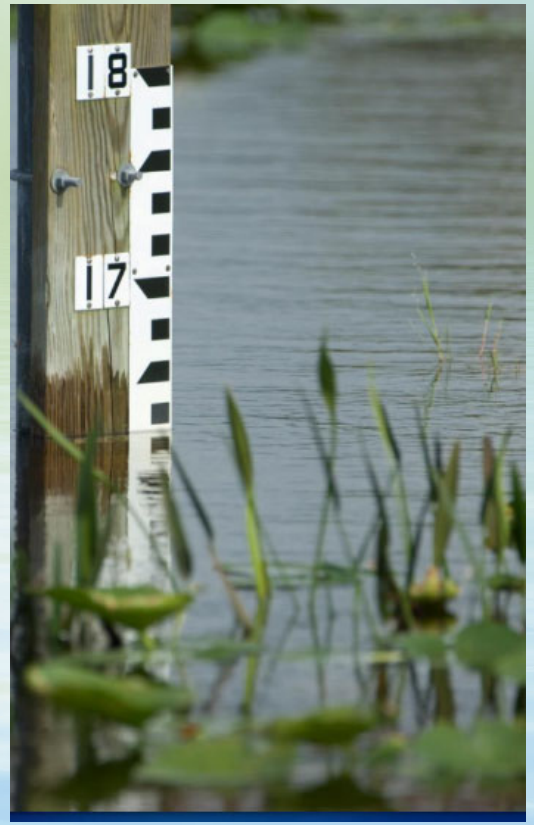
•We have also invited local partners to create an account and access the repository data.

Flood Observations and High-Water Mark Trainings

- SFWMD hosted 7 training sessions at various locations across the region throughout the month of April.

- Trainings were open to local government staff and SFWMD field staff.
  - Total of 93 participants from across the region:
    - 45 from SFMWD field stations
    - 13 from 6 counties
    - 31 from 12 municipalities

We welcome your feedback and any suggestions on how we can further support your local staff. Email us at resiliency@sfwmd.gov or reach out directly.



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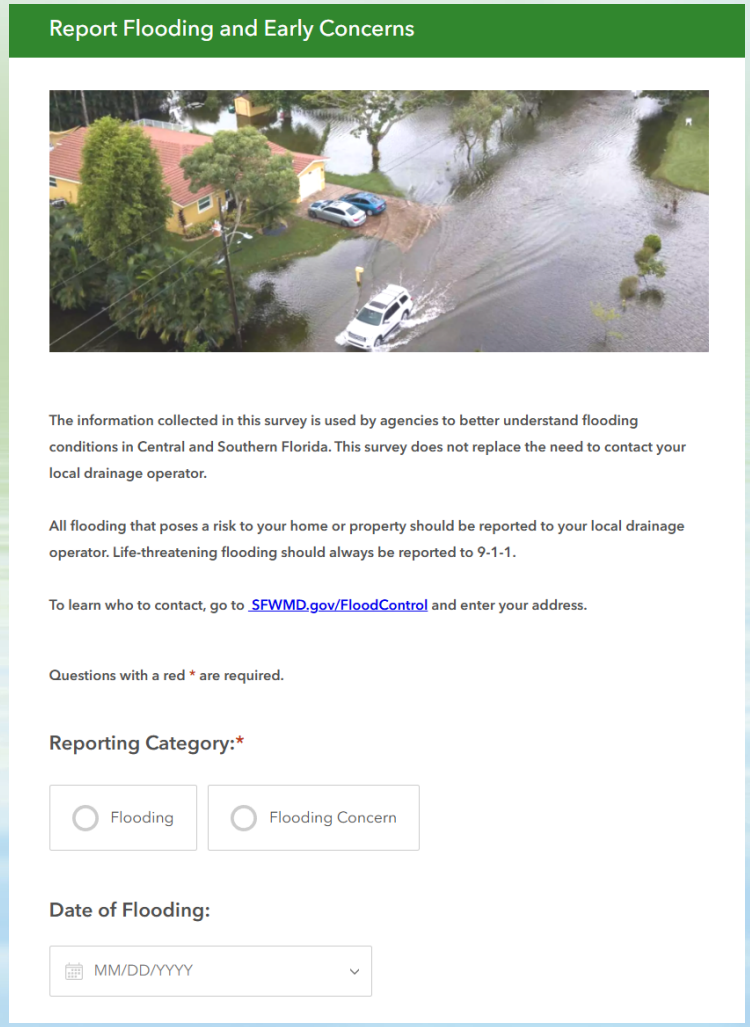
- All required questions are symbolized with a red asterisk "*"
- Select the reporting category:
  - "Flooding"
  - "Flooding Concern"
- Enter the "Date of Flooding"

Note: *this is the date flooding or flooding concern was observed, not the date the flood observation is being entered (if entering later)*



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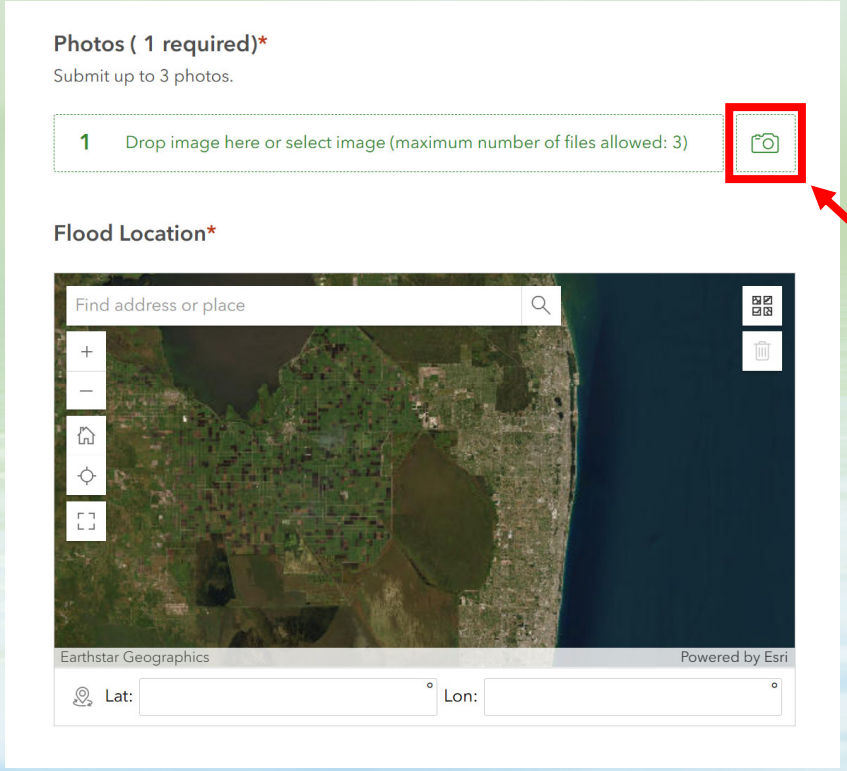
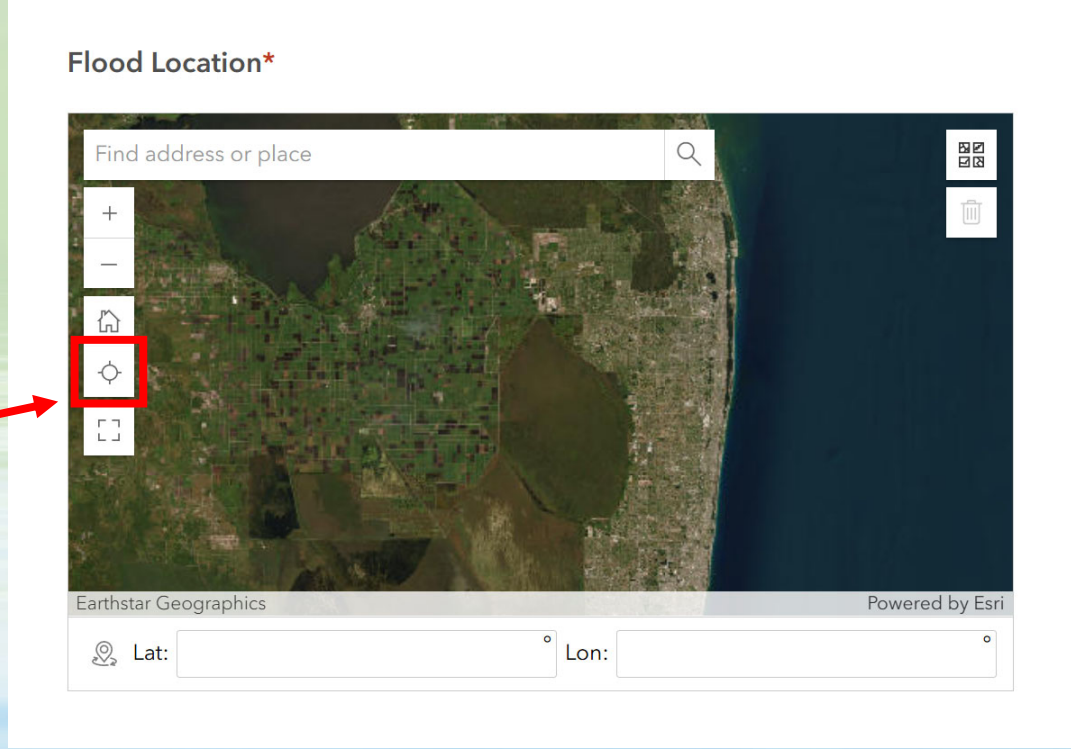
- All required questions are symbolized with a red asterisk "*"
- Pictures can be taken directly from your mobile device by selecting the camera icon or photos can be uploaded by selecting files from your device or camera roll.



SFWMD.GOV/FLOODINGAPP

Identify the Flood Location

- Use the camera icon to take a picture. If location services are on for the camera device, the location will automatically be uploaded.
- Use the "Find My Location" icon then accept or adjust pin location.
- Enter an address or street crossroads then place a pin once location is verified.
- Use navigation tools to zoom in and out to identify the flooding location.



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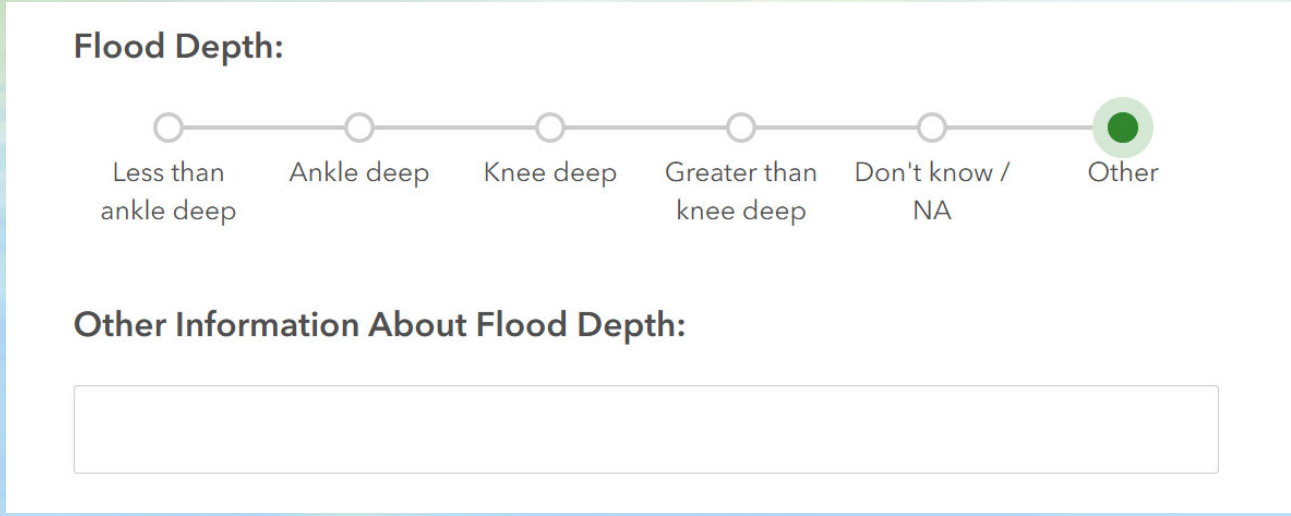
- Select one of the corresponding options based on how deep the water is.
- If you aren't sure of either of these answers, select "Don't Know / N/A".
- If none of the available options seem to fit, please select 'Other' and provide additional details when the text box appears.



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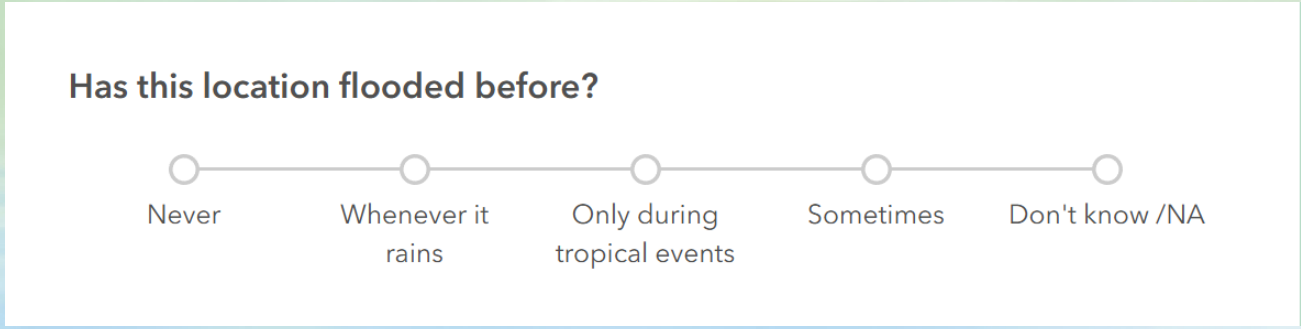
- Select one of the corresponding options based on your knowledge of this location.
- If you aren't sure of either of these answers, select "Don't Know / N/A".



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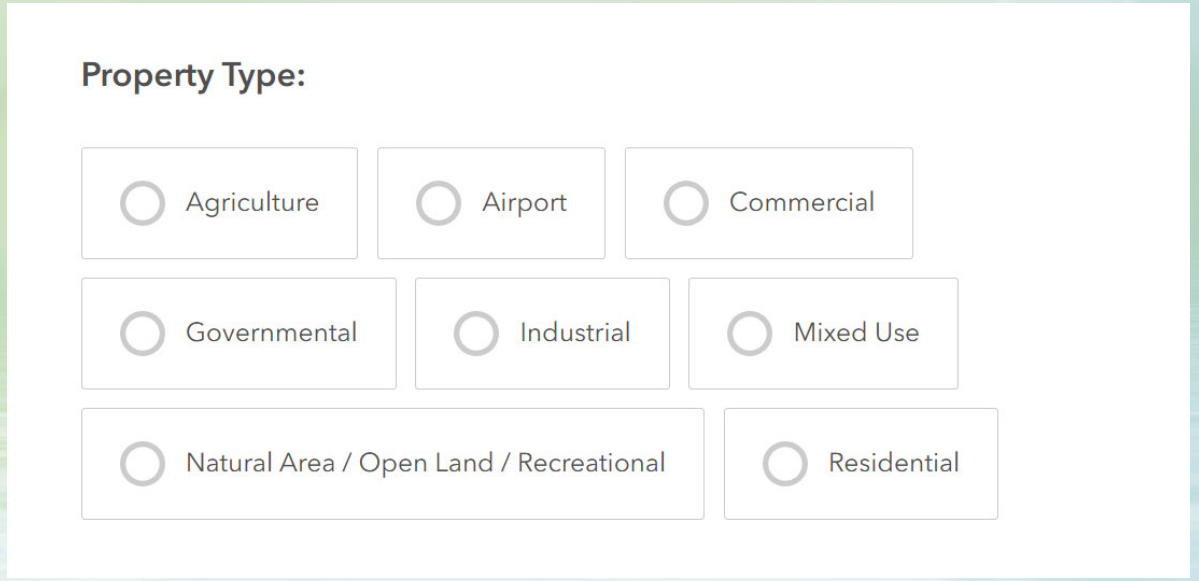
- Select the option that best identifies the “Property Type”.



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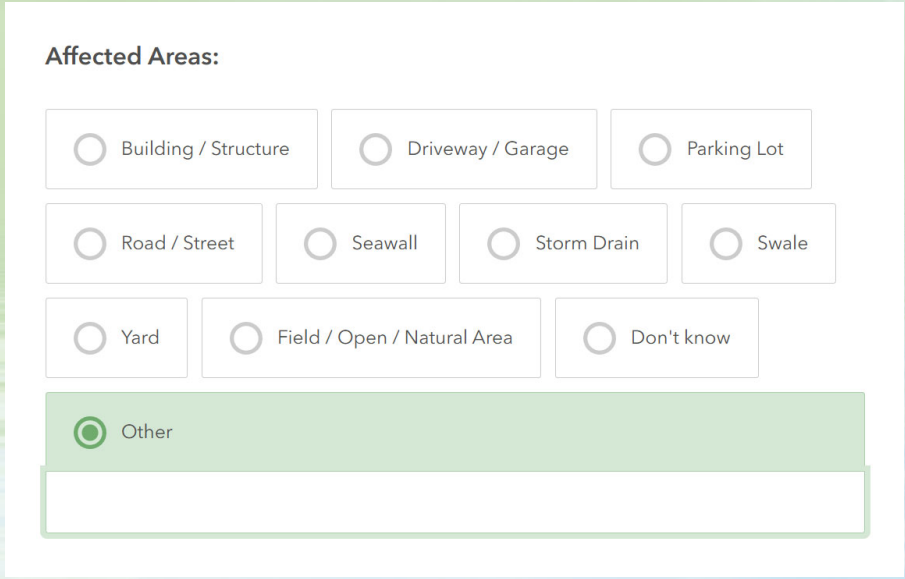
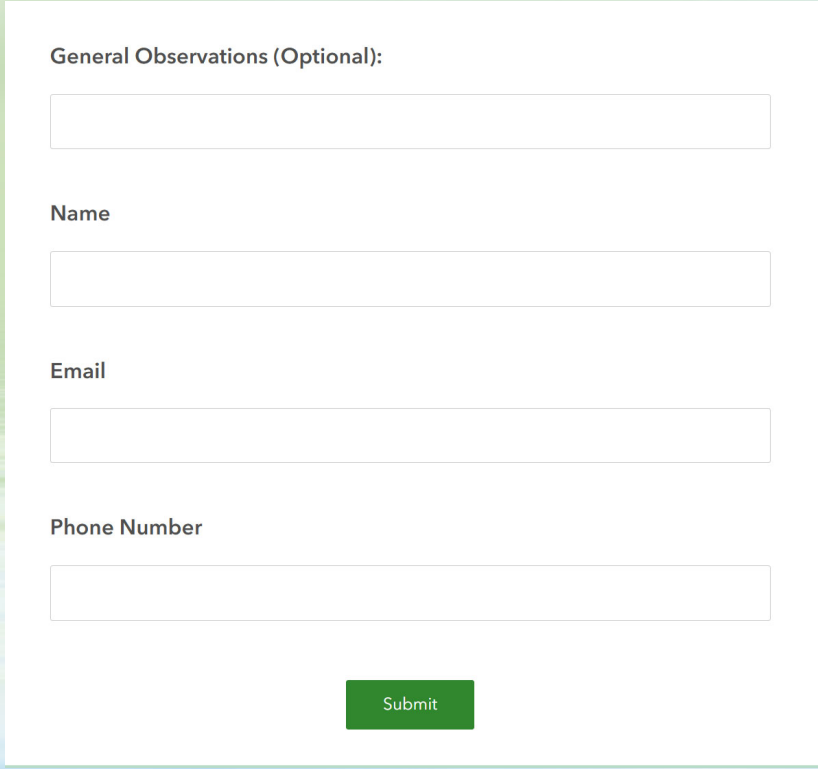
- Select the option that best identifies the “Affected Area”.
- If none of the available options seem to fit, please select ‘Other’ and provide additional details when the text box appears.

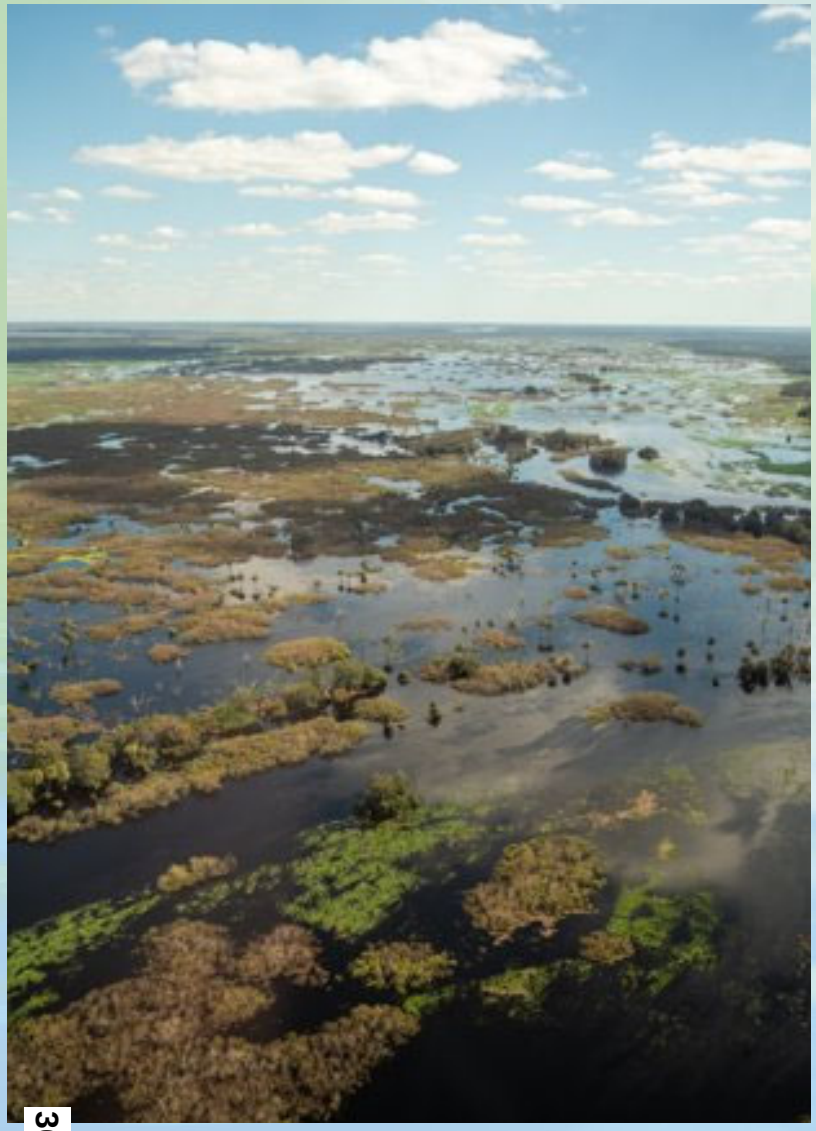


SFWMD.GOV/FLOODINGAPP

- We are interested in other information you can provide about flooding that was not provided in the survey questions above. Please use the Comments box to convey this information and provide your email if you would like it associated with your survey submittal.



WHY IS THIS IMPORTANT?



- SFWMD is looking for better ways to know and document where flooding is occurring and how often.
- SFWMD is seeking improved insights into how frequently and under what types of conditions flooding occurs.
- SFWMD wants to continue to improve communication, collaboration and coordination between water managers, county and city governments and local drainage districts on reported conditions.
- SFWMD wants to provide resources to assist stakeholder agencies in the evaluation of conditions and the collection of information to assist with mitigation project planning and documentation.

HOW WILL SUBMITTED FLOOD OBSERVATION INFORMATION BE USED?

- This information will be used as an additional data point to assess overall system performance and flood conditions
- Location information will be used in the Flood Protection Level of Service (FPLOS) modeling to calibrate and validate model simulated overland flood levels and in remote sensing analyses to validate estimated flood extent.
- Location information will be used in planning to identify areas most vulnerable to recurrent flooding.
- This information is incorporated into the South Florida Flood Information Resources. This repository includes an inventory of the best available information on flood locations dating back to 1991 as well as the newly acquired information.
- Flood Repository information is made available to support grant applications and other initiatives that require documentation of past flood occurrences.
- To access the flood repository, users can register to create an account.

NEW in 2025: Local Contact Notification System

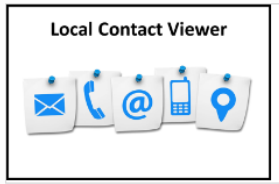
- SFWMD is implementing a “Local Contact Notification System” to inform flood control partners in South Florida.
- System will automatically notify County, City, and Local Drainage District contacts via email when a report is received from their area.
- The notification is shared for informational purposes only.
- Notifications will include a URL to the South Florida Flood Information Resource application for report access.
- Local contacts must have a South Florida Flood Information Resource account to have full access to reports and relevant information.
- Look for an email soon regarding training on account creation and application use.

South Florida Flood Information Resource

Search, Visualize, Download, Create, Communicate, Collaborate

Search...

Who to Contract about Flooding in your area: Please select the "Local Contact Viewer" text on the right side of the panel below to launch the contact viewer application. Once the application launches, use the panel on the right side of the application to enter an address or location to be returned contact information.



Local Contact Viewer

Web application to access contact information for drainage districts, municipalities, counties and other organizations responsible for secondary drainage systems.

Share this card

Photos and Flood Observations:

The Document the Floods survey is for stakeholders to capture or upload photos and information about flooding at a location.

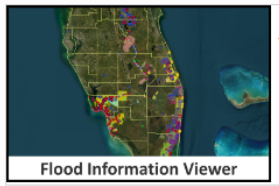
To provide information and photos for past events, please contact Resiliency@sfwmd.gov.

Document the Floods

Public survey to document flood events. Also available at sfwmd.gov\FloodingApp.

Submit / Capture Photo

Flood Documentation: Please select the "South Florida Flood Information Viewer" text on the right side of the panel below to launch the viewer application.

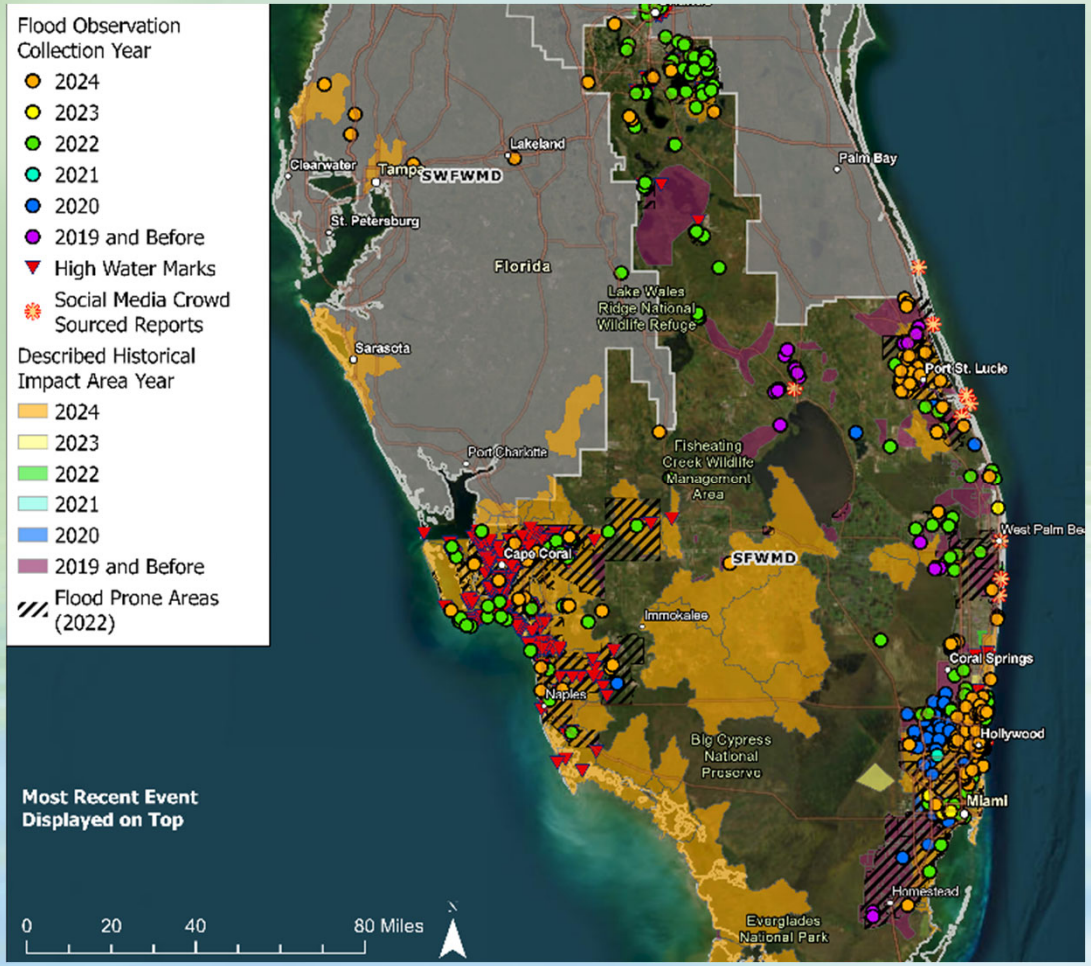


South Florida Flood Information Viewer

Web Application to provide access to the first version of flood documentation compiled as part of the SFWMD Water and Climate Resilience Flood Metric.

A resource for collecting and consolidating flood observations to help us better understand evolving flood patterns associated with King Tides, Rainfall, Tropical Storms, Hurricanes and Storm Surge.

SOUTH FLORIDA FLOOD INFORMATION RESOURCES



- Flood Data and Information
  - Inventory of past flood documentation
  - High Water Marks
  - Flood Photos and Survey Information
  - Estimated Flood extents mapped from satellite or other remotely sensed products
- Real-Time Access to Information
  - Emerging Conditions
  - Stakeholder submitted flood observations
- Provide Regional Insights
  - Flood Occurrence and Recurrence
  - Communities most vulnerable to flooding
- Provide Documentation
  - Mitigation Grants
  - Model Calibration and Validation
  - Mitigation Project Planning

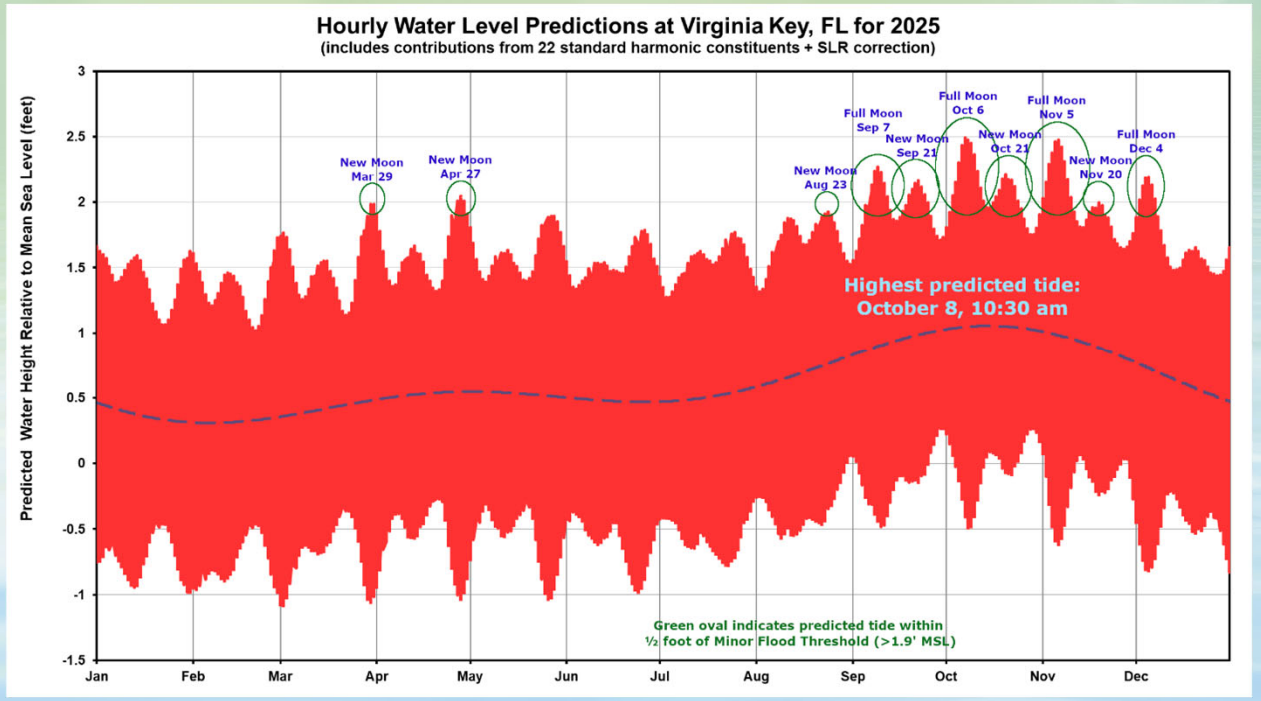
2025 King Tide Season

- sfwmd.gov/HighTidePredictions

- As the 2025 King Tide Season approaches (from September through December), SFWMD is continuing efforts for the monitoring, operational response, and documentation of these events.

- SFWMD staff employs advanced tools, user-friendly apps, latest technology, and traditional methodologies to collect data, photos, and high-water marks to also document high tide flood conditions.

The Flood Observation Survey can be used to document any flood event, including King Tide



Astronomical and climatological tide predictions plus a sea level rise adjustment at the Virginia Key, FL NOAA Tide Gauge showing predicted 2025 king tide season peaks. Source: Brian McNoldy, University of Miami.

New in 2025: Local EOC Coordination Call

Leading up to EOC Activation / Extreme Events:

- District will provide water management system update
- Targeting Emergency Managers and Local Government Officials

Throughout the Event / EOC Response and Recovery:

- Ongoing coordination and information update on system status
- EOC County Liaison making information available to impacted EM/County Officials
- Follow up meetings with more severely impacted Counties (as relevant, and upon request)

QUESTIONS?

FLORIDA
FloodHub
FOR APPLIED RESEARCH AND INNOVATION

Update on the Florida Flood Hub with a focus on upcoming modeling

MAY 28, 2025

RESILIENCE COORDINATION FORUM

Florida Flood Hub: workgroups

Sea Level Change Workgroup

Rainfall Workgroup

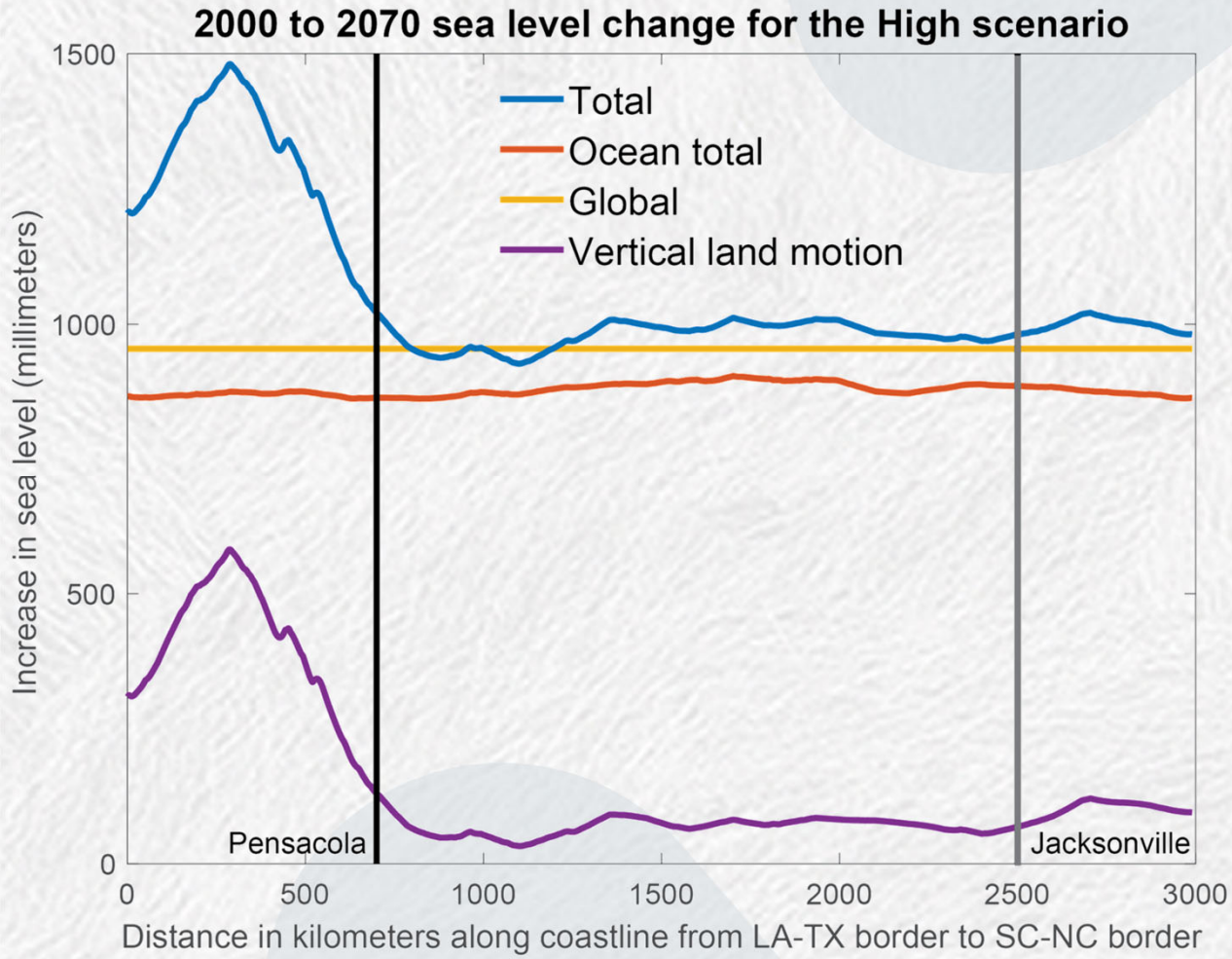
Comprehensive Modeling Workgroup

Sea Level Change Workgroup: Florida focus

Note vertical land motion beyond Florida (especially to the west)

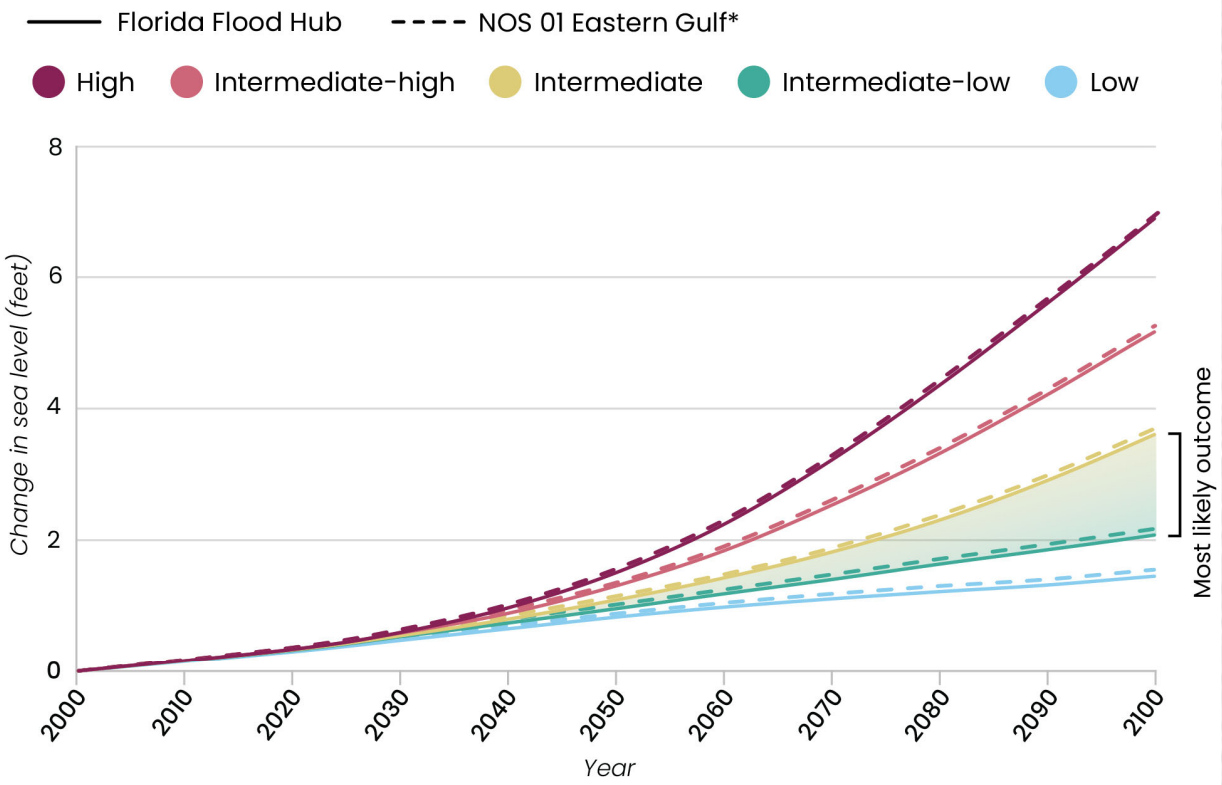
Note coherence between Total increase and Global increase across Florida

Regionalization affects estimates



Sea Level Change Workgroup: compare to federal report

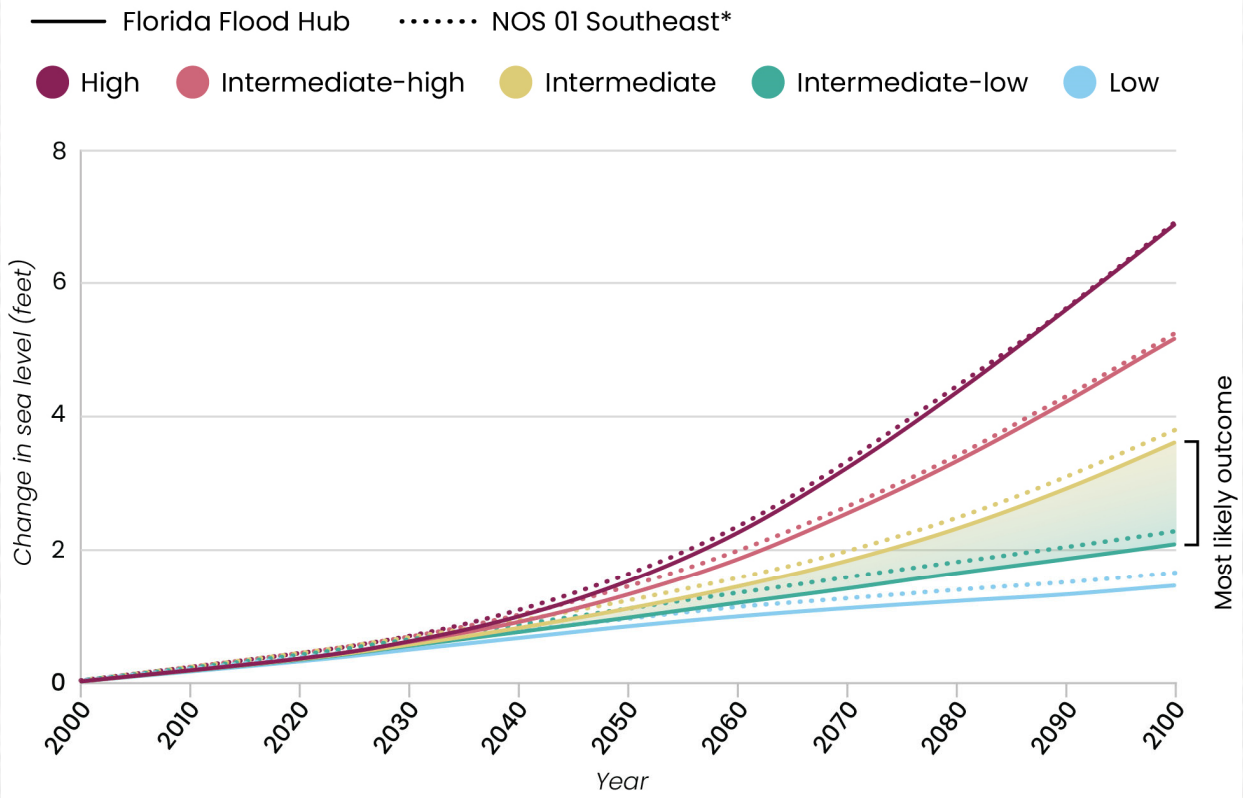
Comparison of sea level rise scenarios:
Florida Flood Hub and NOAA Technical Report NOS 01 (2022)



READ THE FULL REPORT: *https://shorturl.at/T9DME*

*Global and Regional Sea Level Rise Scenarios for the United States:
Updated Mean Projections and Extreme Water Level Probabilities Along U.S. Coastlines

Comparison of sea level rise scenarios:
Florida Flood Hub and NOAA Technical Report NOS 01 (2022)



READ THE FULL REPORT: *https://shorturl.at/T9DME*

*Global and Regional Sea Level Rise Scenarios for the United States:
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Sea Level Change Workgroup: magnitude for risk

Table 1: Mean change in sea level relative to 2000 for Florida at four time horizons

Global mean sea level rise scenario (rise 2000–2100)	Time horizon			
	2000 – 2020	2000 – 2040	2000 – 2050	2000 – 2070
	----------mm / inches----------			
Low (0.3 m)	91 / 3.6	198 / 7.8	251 / 9.9	336 / 13.2
Intermediate low (0.5 m)	100 / 3.9	**227 / 8.9**	**293 / 11.5**	**428 / 16.9**
Intermediate (1.0 m)	103 / 4.1	**245 / 9.6**	**333 / 13.1**	**554 / 21.8**
Intermediate high (1.5 m)	104 / 4.1	272 / 10.7	399 / 15.7	771 / 30.4
High (2.0 m)	104 / 4.1	298 / 11.7	459 / 18.1	979 / 38.5

Sea Level Change Workgroup: likelihood for risk

Table 2: Exceedance probabilities for Florida projected to 2100 with emissions scenarios used in the Federal Task Force Report

Global mean sea level rise scenario (rise 2000–2100)	Predicted increase in global mean surface air temperature				
	1.5°C	2.0°C	**3.0°C**	4.0°C	5.0°C
Low (0.3 m)	92%	98%	>99%	>99%	>99%
Intermediate Low (0.5 m)	37%	50%	**82%**	97%	>99%
Intermediate (1.0 m)	<1%	2%	**5%**	10%	23%
Intermediate high (1.5 m)	<1%	<1%	<1%	1%	2%
High (2.0 m)	<1%	<1%	<1%	<1%	<1%

Sea Level Change Workgroup: promulgate changes in sea levels at tide gauges

NOAA TIDE GAUGE STATION	DATUM	SEA LEVEL ELEVATIONS, 1983-2001 EPOCH (*in FEET relative to NAVD88*)																<== Reference Year
		1992	2000	*2020*		*2030*		*2040**		*2050^*		*2060*		*2070***		*2080^^*		<== NOAA 2022 SLR Scenario
				Int-Low	*Int*	*Int-Low*	*Int*	*Int-Low*	*Int*	*Int-Low*	*Int*	*Int-Low*	*Int*	*Int-Low*	*Int*	*Int-Low*	*Int*	
8720030 Fernandina Beach, FL	MHHW	2.74	2.83	3.16	3.17	3.36	3.39	3.57	3.64	3.79	3.93	4.01	4.26	4.23	4.66	4.46	5.13	
	MSL	-0.53	-0.44	-0.11	-0.10	0.09	0.12	0.30	0.37	0.52	0.66	0.74	0.99	0.96	1.39	1.19	1.86	
	MLLW	-3.82	-3.73	-3.40	-3.39	-3.20	-3.17	-2.99	-2.92	-2.77	-2.63	-2.55	-2.30	-2.33	-1.90	-2.10	-1.43	
8720218 Mayport (Bar Pilots Dock), FL	MHHW	1.96	2.05	2.38	2.39	2.58	2.61	2.79	2.86	3.01	3.15	3.23	3.48	3.45	3.88	3.68	4.35	
	MSL	-0.52	-0.43	-0.10	-0.09	0.10	0.13	0.31	0.38	0.53	0.67	0.75	1.00	0.97	1.40	1.20	1.87	
	MLLW	-2.99	-2.90	-2.57	-2.56	-2.37	-2.34	-2.16	-2.09	-1.94	-1.80	-1.72	-1.47	-1.50	-1.07	-1.27	-0.60	
8720219 Dames Point, FL	MHHW	1.42	1.51	1.84	1.85	2.04	2.07	2.25	2.32	2.47	2.61	2.69	2.94	2.91	3.34	3.14	3.81	
	MSL	-0.38	-0.29	0.04	0.05	0.24	0.27	0.45	0.52	0.67	0.81	0.89	1.14	1.11	1.54	1.34	2.01	
	MLLW	-2.24	-2.15	-1.82	-1.81	-1.62	-1.59	-1.41	-1.34	-1.19	-1.05	-0.97	-0.72	-0.75	-0.32	-0.52	0.15	
8720226 Southbank Riverwalk, St Johns River, FL	MHHW	0.65	0.74	1.07	1.08	1.27	1.30	1.48	1.55	1.70	1.84	1.92	2.17	2.14	2.57	2.37	3.04	
	MSL	-0.24	-0.15	0.18	0.19	0.38	0.41	0.59	0.66	0.81	0.95	1.03	1.28	1.25	1.68	1.48	2.15	
	MLLW	-1.30	-1.21	-0.88	-0.87	-0.68	-0.65	-0.47	-0.40	-0.25	-0.11	-0.03	0.22	0.19	0.62	0.42	1.09	
8720357 I-295 Buckman Bridge, FL	MHHW	0.39	0.48	0.81	0.82	1.01	1.04	1.22	1.29	1.44	1.58	1.66	1.91	1.88	2.31	2.11	2.78	
	MSL	-0.11	-0.02	0.31	0.32	0.51	0.54	0.72	0.79	0.94	1.08	1.16	1.41	1.38	1.81	1.61	2.28	
	MLLW	-0.62	-0.53	-0.20	-0.19	0.00	0.03	0.21	0.28	0.43	0.57	0.65	0.90	0.87	1.30	1.10	1.77	

								**** 20-yr planning horizon** required by DEP Resilient Florida program for data incorporation into **2024 Statewide VA***		***^ 20-yr planning horizon** required by DEP Resilient Florida program for data incorporation into **2029 Statewide VA***				***** 50-yr planning horizon** required by DEP Resilient Florida program for data incorporation into **2024 Statewide VA***		***^^ 50-yr planning horizon** required by DEP Resilient Florida program for data incorporation into **2029 Statewide VA***	

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Sea Level Change Workgroup: next steps

Link exceedance probabilities to specific emission pathways and time horizons

Look at the frequency of occurrence for high tide flooding and flooding due to severe weather

Apply careful quality control and analyze time series for data from tide gauges around Florida

Explore possible contributions by regional ocean processes

Florida Flood Hub: workgroups

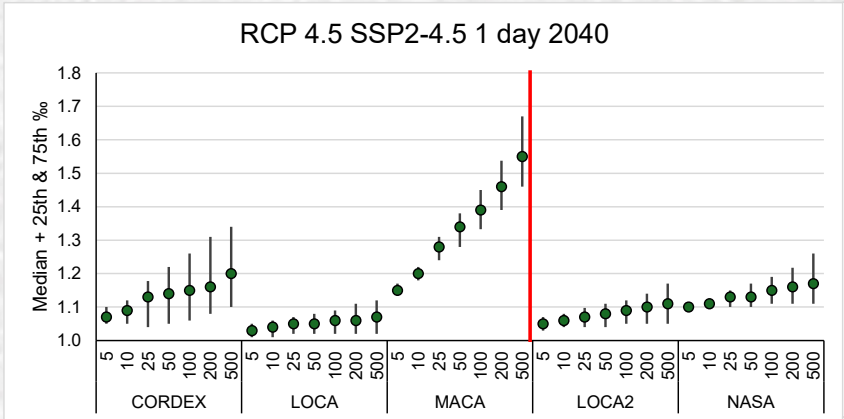
Sea Level Change Workgroup

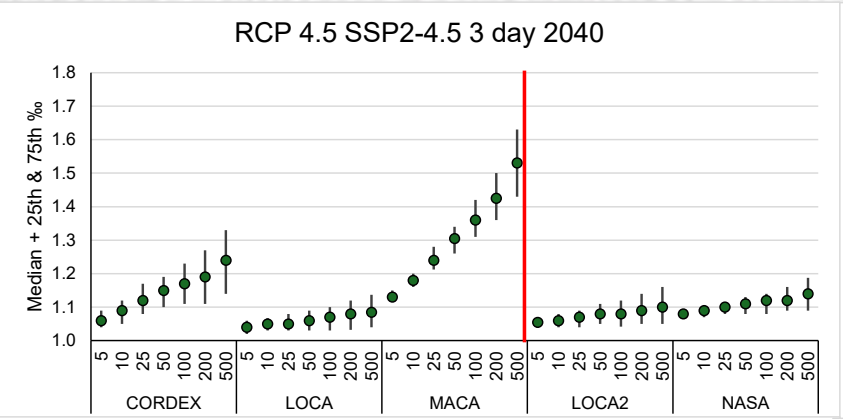
Rainfall Workgroup

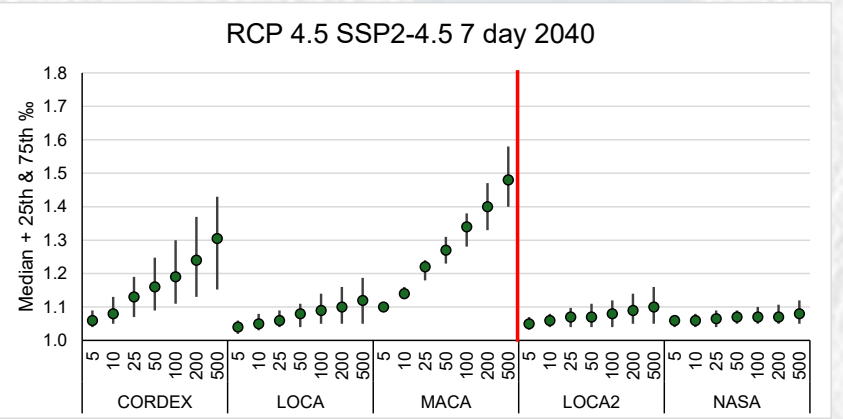
Comprehensive Modeling Workgroup

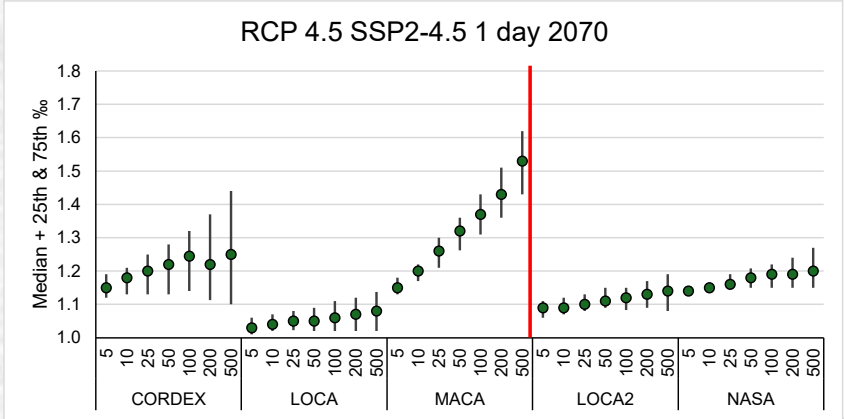
CMIP5 & CMIP6

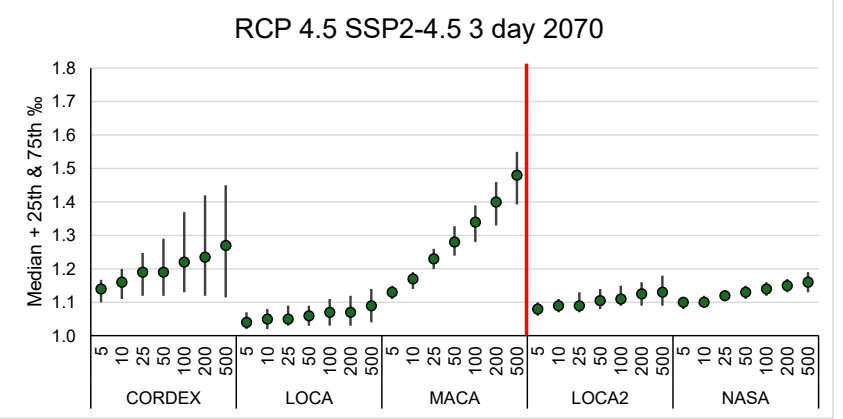
Median + 17th & 83rd percentiles

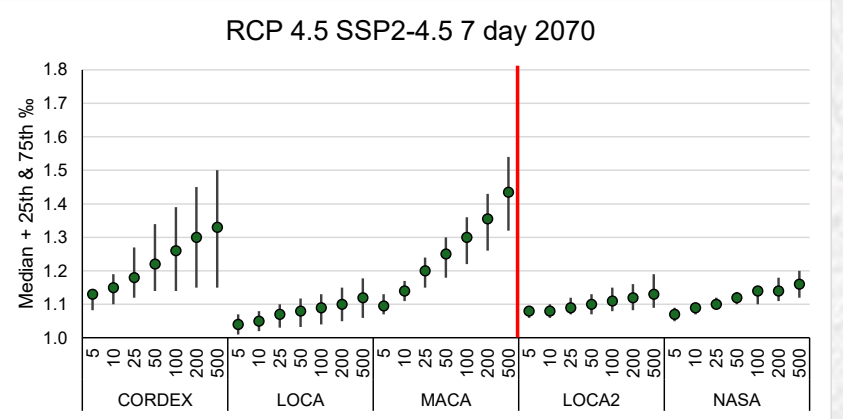










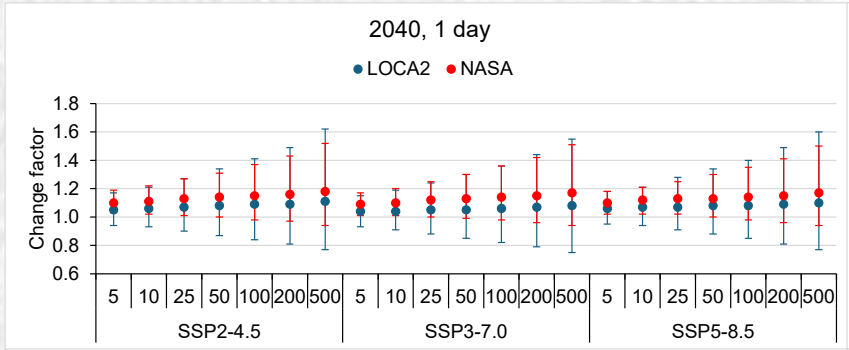


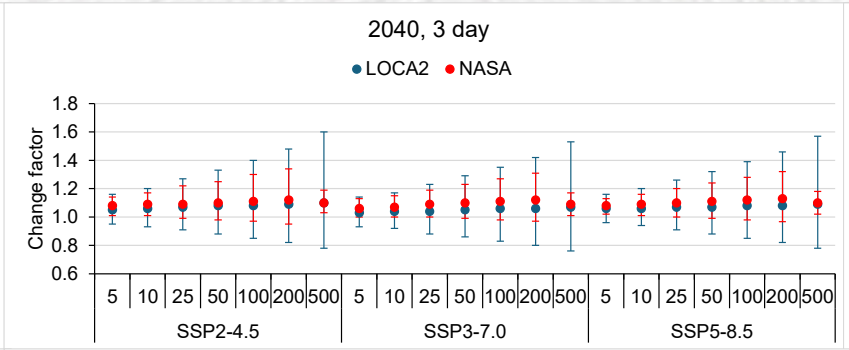
242 stations

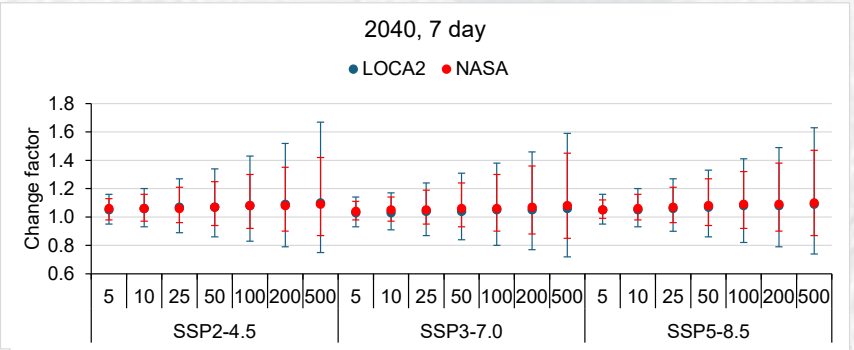
FLORIDA FloodHub

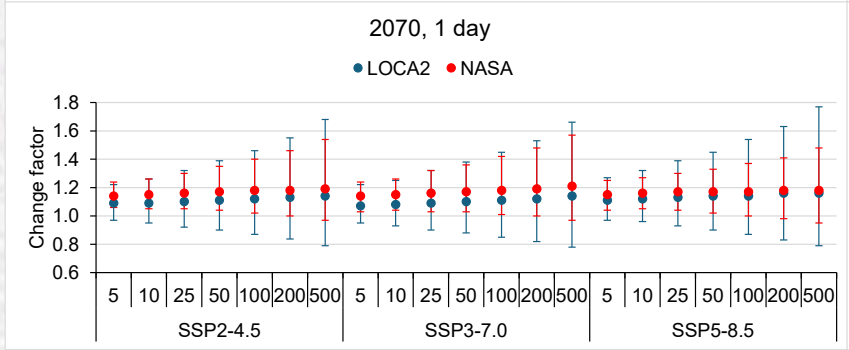
LOCA2 (localized constructed analog) & NASA (bias corrected spatial disaggregation)

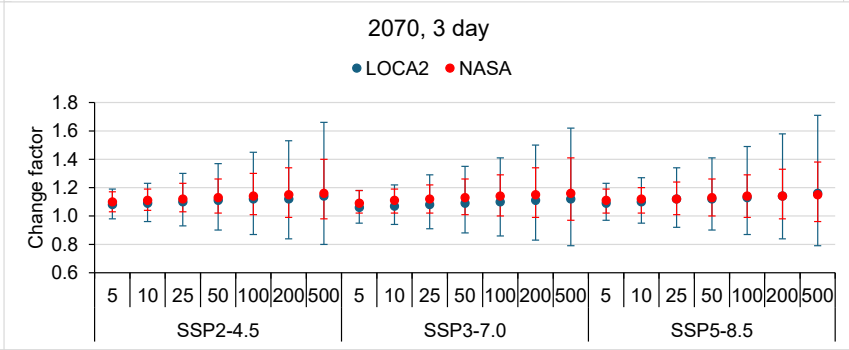
Median + 17th & 83rd percentiles

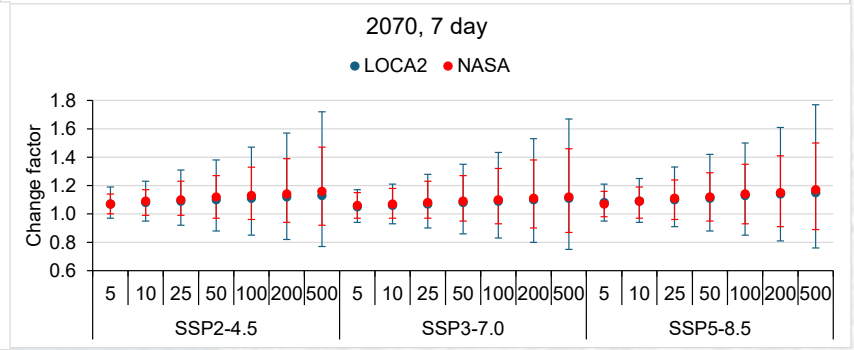






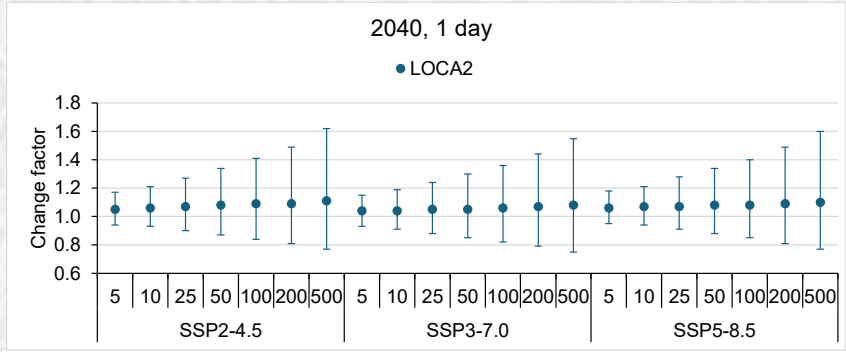


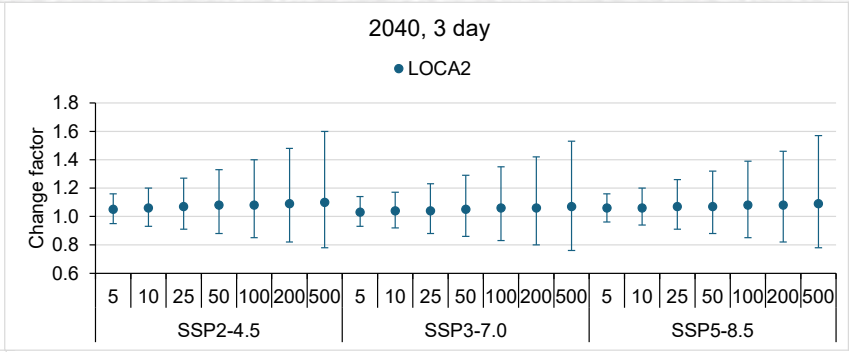


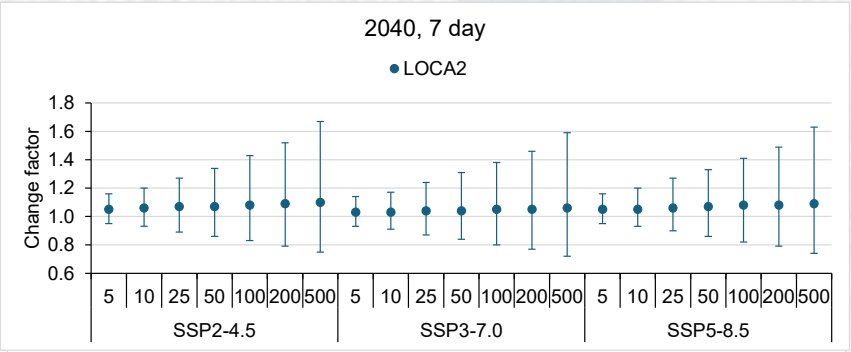


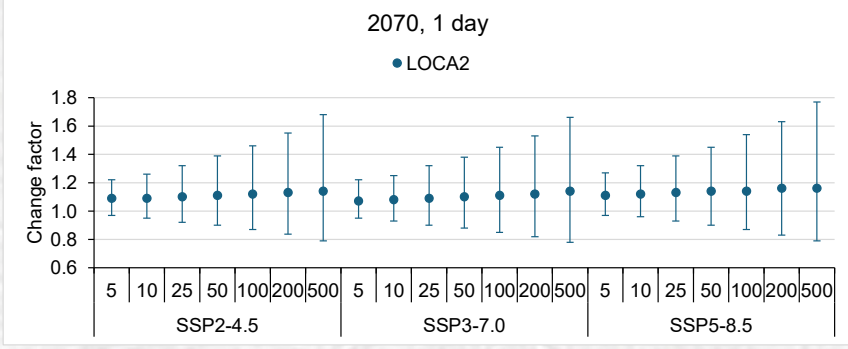
LOCA2 (27 models) in CMIP6

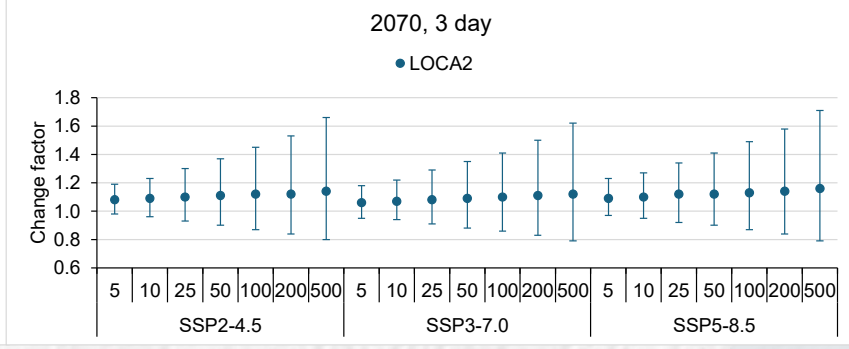
Median + 17th & 83rd percentiles

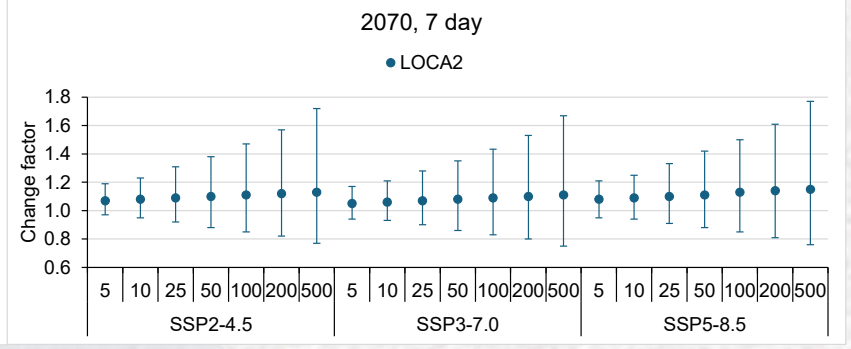












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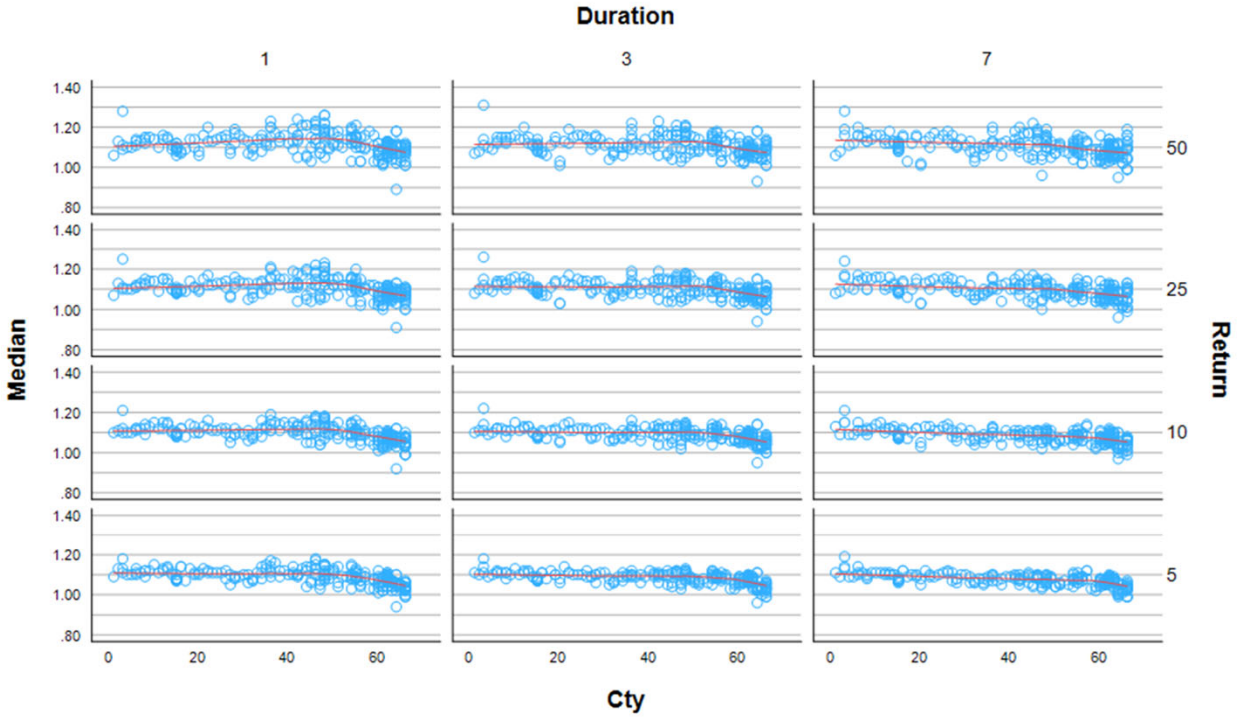
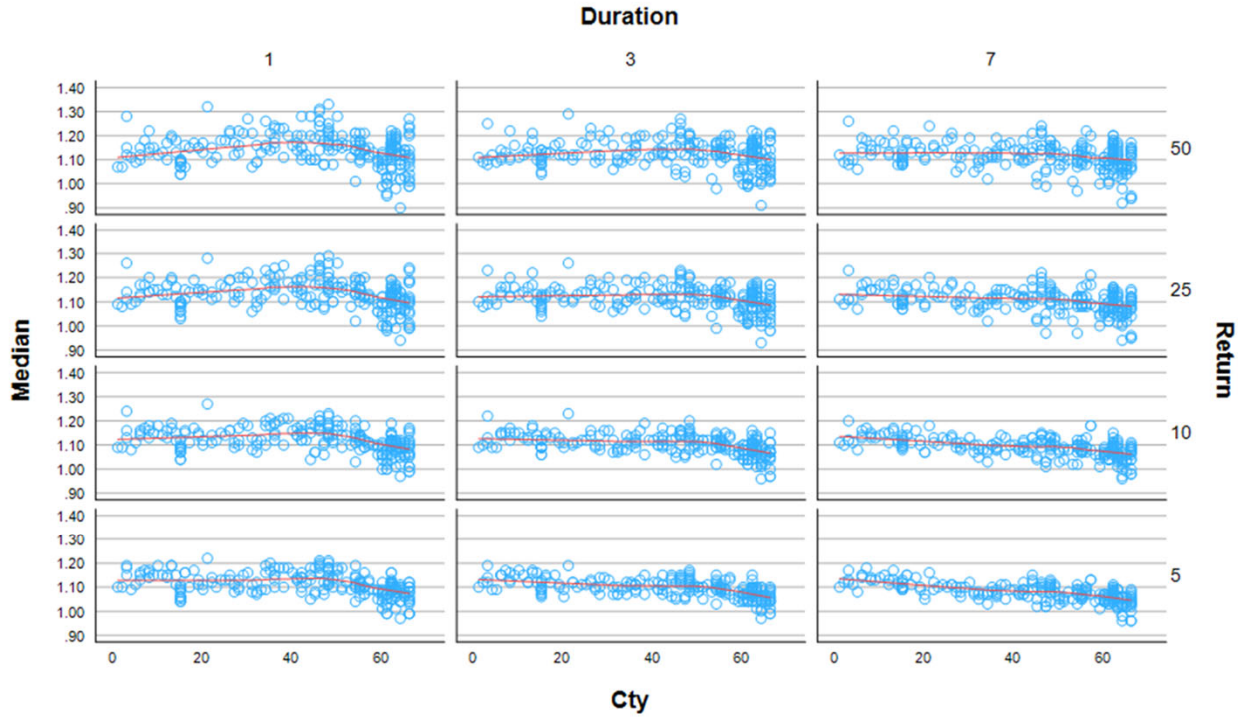
Spatial pattern in CMIP6

LOCA2 RCP 4.5/SSP2-4.5 2070



Range 0.8–1.4

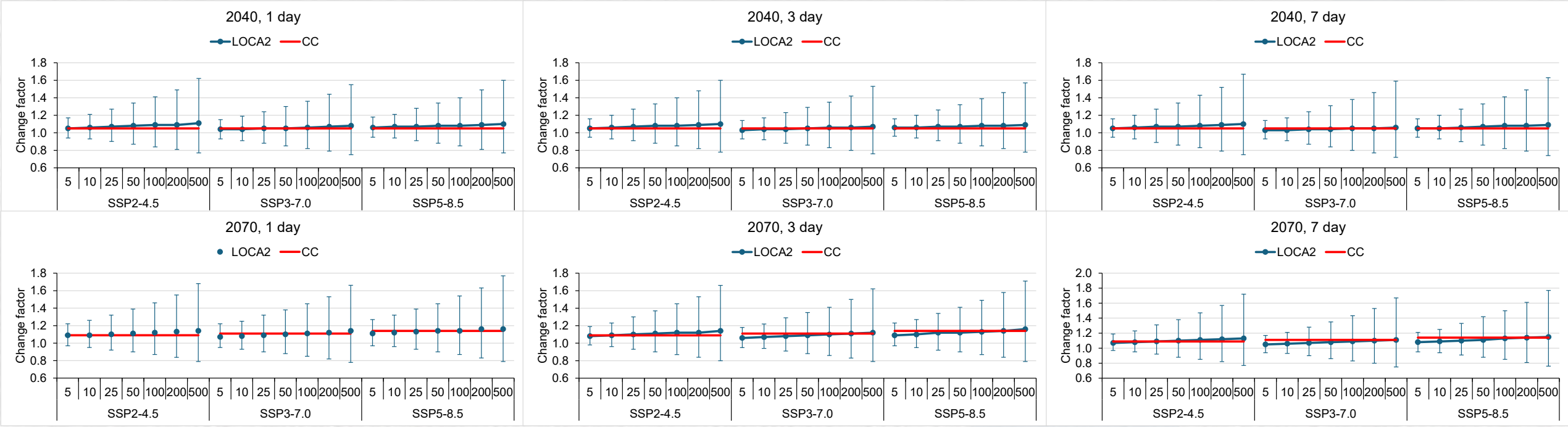
LOCA2 RCP 8.5/SSP5-8.5 2070



Range 0.9–1.4

CMIP6 & Clausius-Clapeyron scaling

Median + 17th & 83rd percentiles

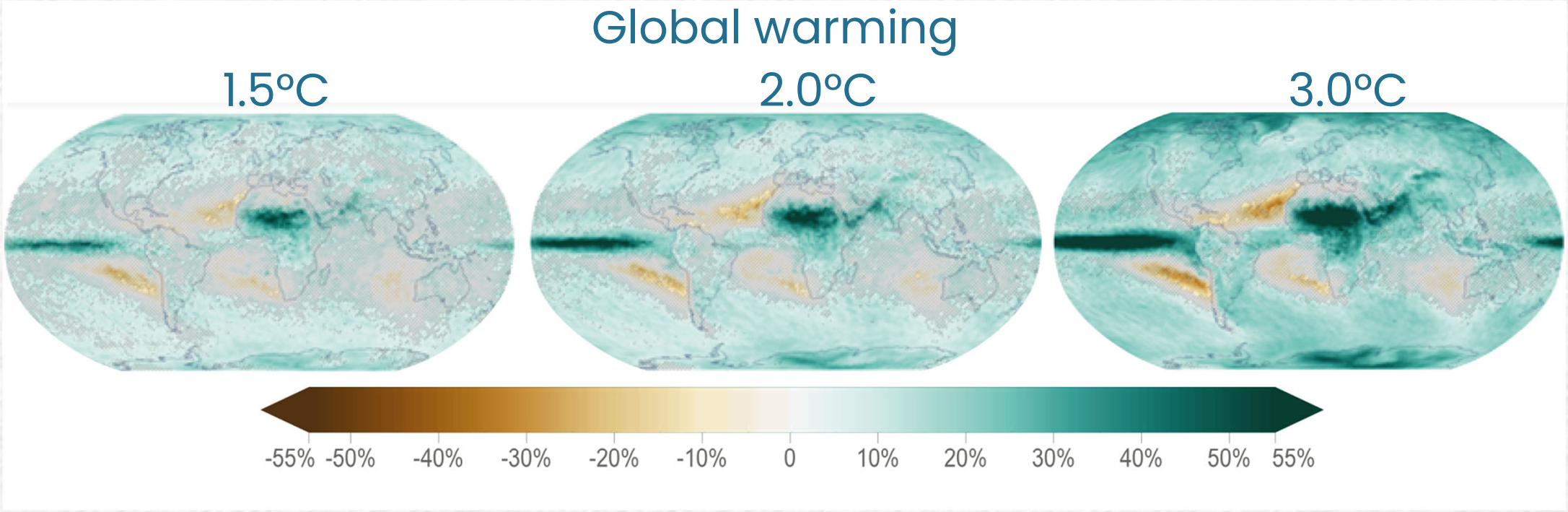


Questions & answers

- CMIP5, CMIP6, or CMIP5 + CMIP6? **CMIP6**
- Individual datasets or combine (LOCA2 & NASA)? **LOCA2 only**
- Individual SSPs or combine? **Individual**
- Spatially differentiated values or statewide values? **Statewide values**
- Cull using Clausius-Clapeyron scaling? **Probably not – medians are consistent**
- Estimates for 2050 & 2080 **Underway**

Phase II

- Florida Statute 380.093 mandates a Statewide Flood Vulnerability Assessment
- Projections from CMIP6 not informative at 2–4 km scale



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Phase II

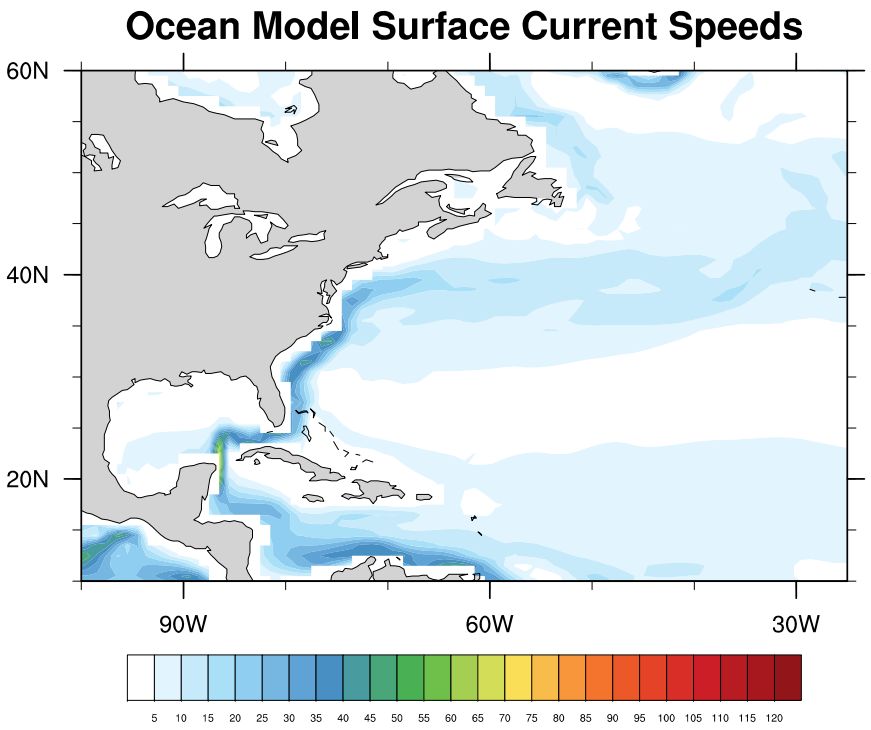
- Seek fine-resolution models that capture local effects on extreme rainfall:
  - sea breeze
  - lake effects
  - urban vs rural land surface processes
  - coastal geometry
  - nearshore oceanic features (e.g., West Florida Shelf, the Bahama Bank, & Florida Current)
- Retain large-scale drivers
  - Gulf Stream & Gulf processes
  - remote Pacific drivers (e.g., Intertropical Convergence & South Pacific Convergence)
  - land surface drivers

FLORIDA FloodHub

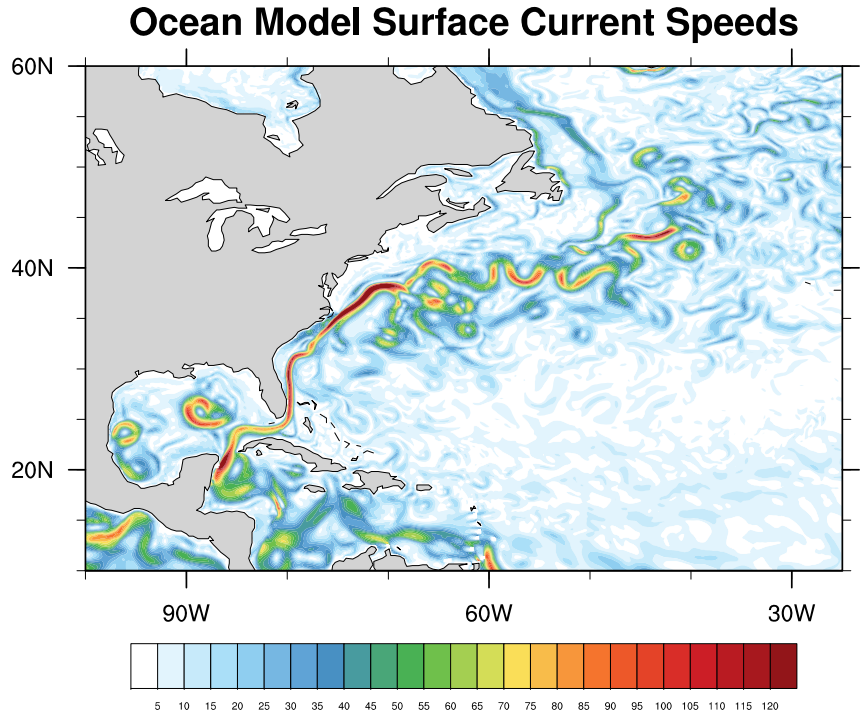
Approach

1) Large scale: Community Earth System Model, ~25 km atmospheric & ~10 km oceanic grids, UM

CMIP6



CESM



Approach

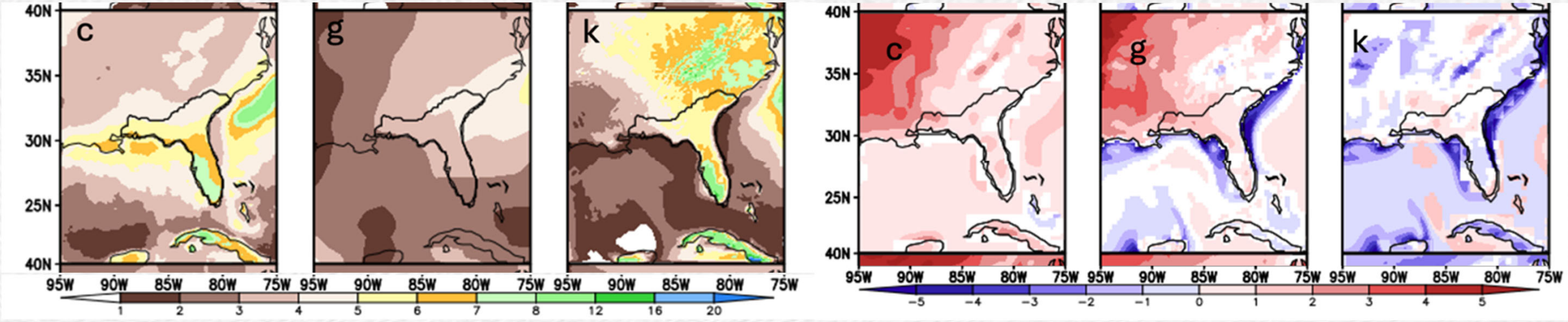
2) Regional scale: Regional Spectrum Model–Regional Ocean System Model, ~10 km grids, FSU

Precipitation (mm/day)

Observations CESM2 RSM-ROMS

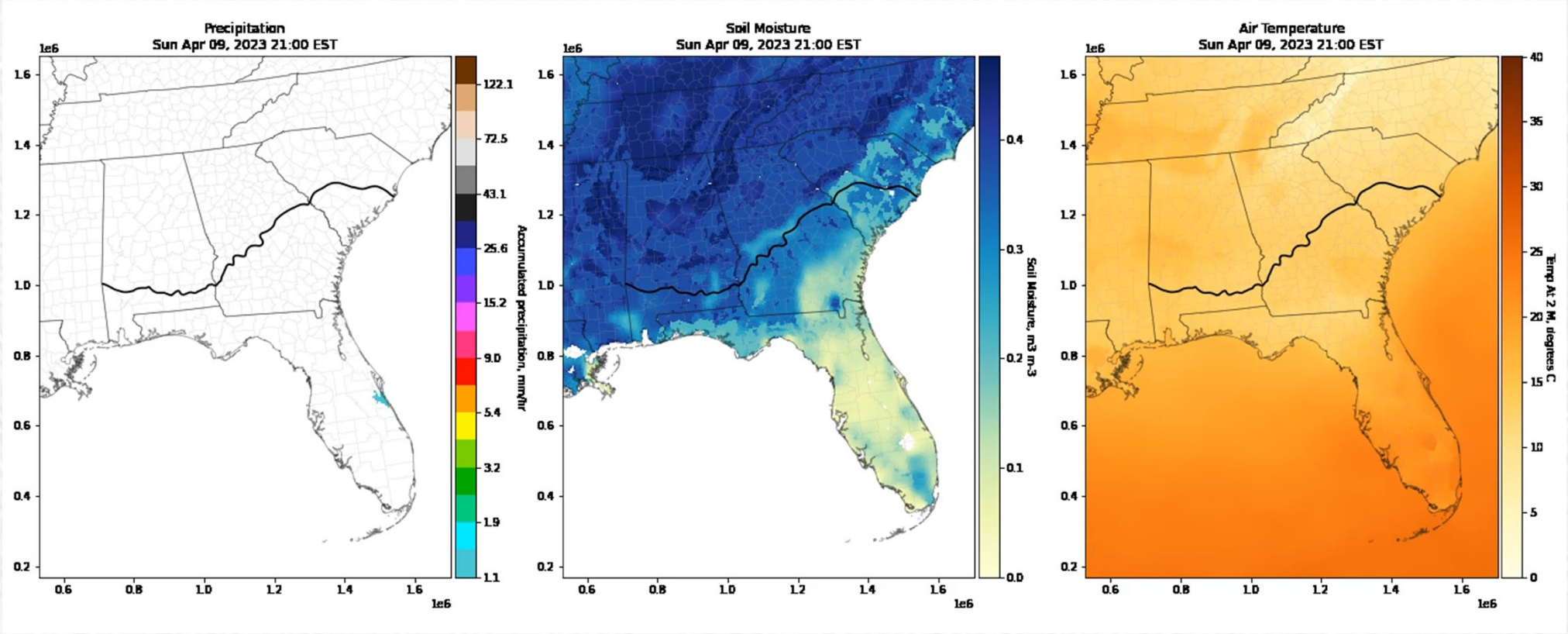
Seasonal bias (mm/day)

CESM2 RSM-ROMS RSM-ROMS-CESM2



Approach

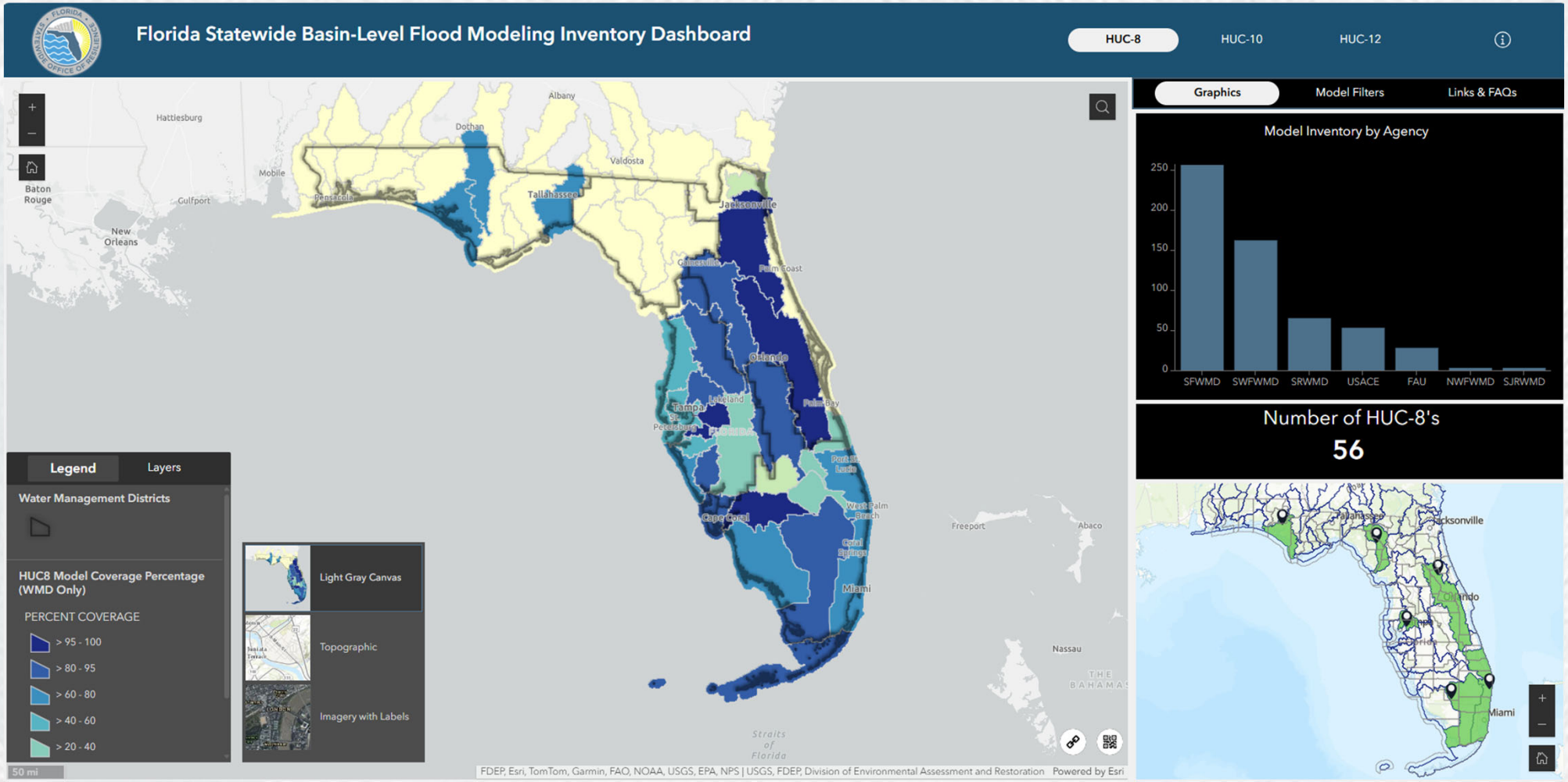
3) Hyper-local scale: Weather Research & Forecasting Model, 2–4 km grid, USGS Projections of Extreme Rainfall



Approach

1) Establish reference period
2) Complete historical ensemble = 5 × 10-year simulations
3) Complete 2°C warming ensemble = 5 × 10-year simulations
4) Complete 3°C warming ensemble = 5 × 10-year simulations
5) Process data ⇒ changes in extremes

Other tasks: inventory of models



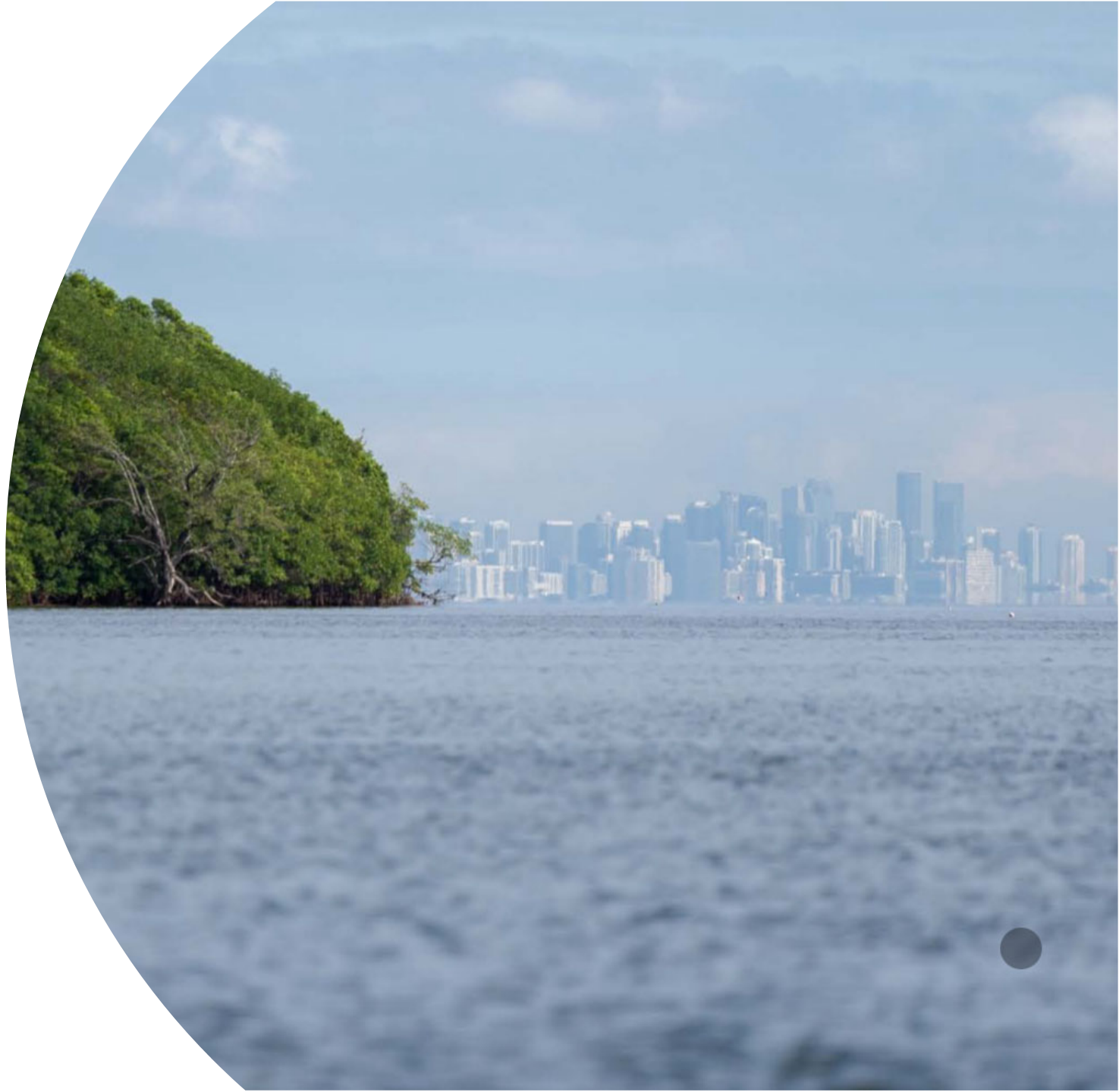
FLORIDA FloodHub

Thank You!

FLORIDA
FloodHub
FOR APPLIED RESEARCH AND INNOVATION

South Florida Water
Management District

2025 Sea Level Rise and Plan Update



May 28, 2025

Resiliency Coordination Forum

David Colangelo
SFWMD Resiliency Plan Coordinator

SFWMD Project Team

Office of Resiliency
Budget and Finance
Engineering and Construction
Hydrology and Hydraulics
Applied Sciences
Ecosystem Restoration
GeoSpatial Services
Water Supply
Big Cypress Basin
Land Resources/Real Estate
Field Operations
Operations (Flood Control Systems)
Emergency Operations Center

Acknowledgment - Project Partners

Comments and Contributions Received

Local Governments / Districts:

- Broward County
- Collier County
- Lee County
- Martin County / Martin MPO
- Miami-Dade County
- Monroe County
- Orange County
- Palm Beach County
- St. Lucie County
- City of Apopka
- City of Fort Lauderdale
- City of Hallandale Beach
- Town of Cutler Bay
- Town of Jupiter
- Village of El Portal
- Florida Keys Aqueduct Authority
- Lake Worth Drainage District
- South Broward Drainage District

NGOs

- Audubon of Florida
- Center for Biological Diversity
- Everglades Foundation
- Everglades Law Center
- Florida Bay Forever
- Florida Veterans for Common Sense
- Friends of Biscayne Bay
- Growing Climate Solutions
- Miami Waterkeepers
- National Parks Conservation Association
- Sanibel-Captiva Conservation Foundation
- South Florida Water Coalition
- South Florida Wildlands Association
- Tropical Audubon Society
- Urban Paradise Guild

Tribes:

- Seminole Tribe of Florida

State Agencies:

- Statewide Office of Resilience
- Florida Flood Hub for Applied Research and Innovation
- Florida Department of Transportation
- Florida Department of Emergency Management

Federal Agencies:

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- Coastal and Heartland National Estuary Partnership

Planning Councils:

- Central Florida Regional Planning Council
- South Florida Regional Planning Council

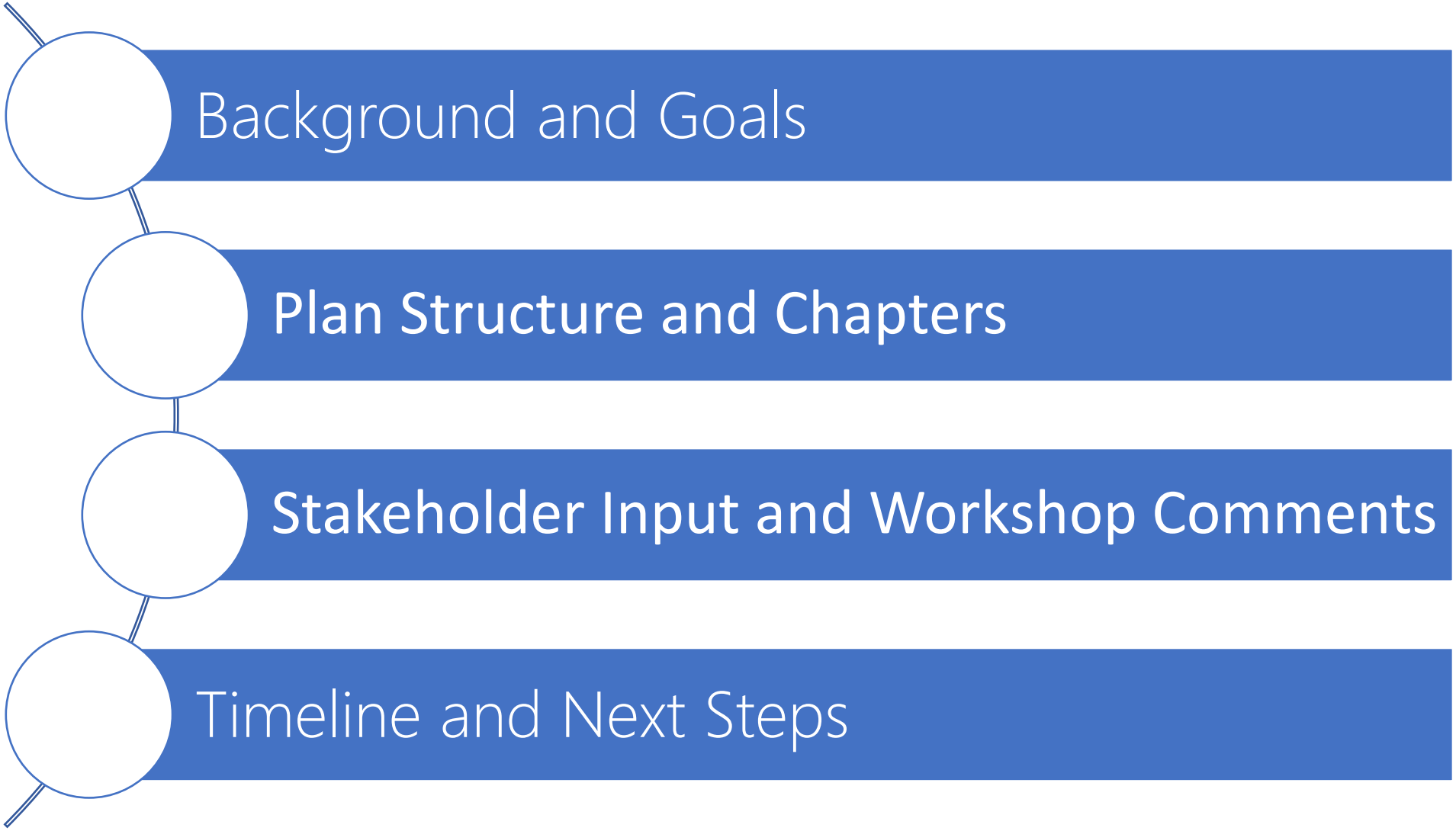
Universities:

- University of Miami
- Florida International University

Private Companies

Other individuals

Today's Outline



Background and Goals

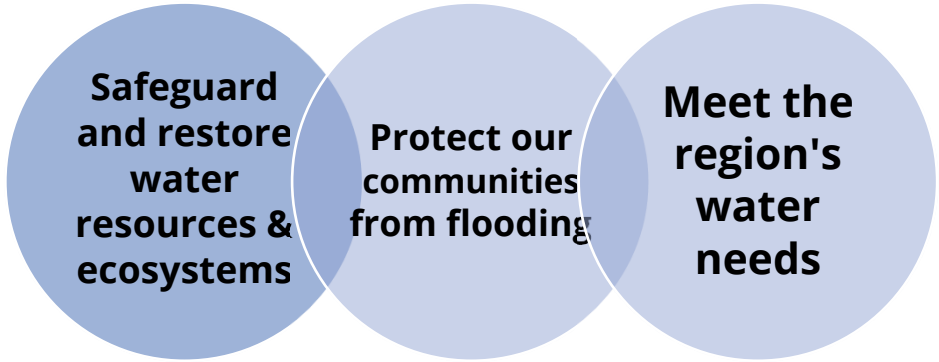
Goals for the 2025 Plan Update

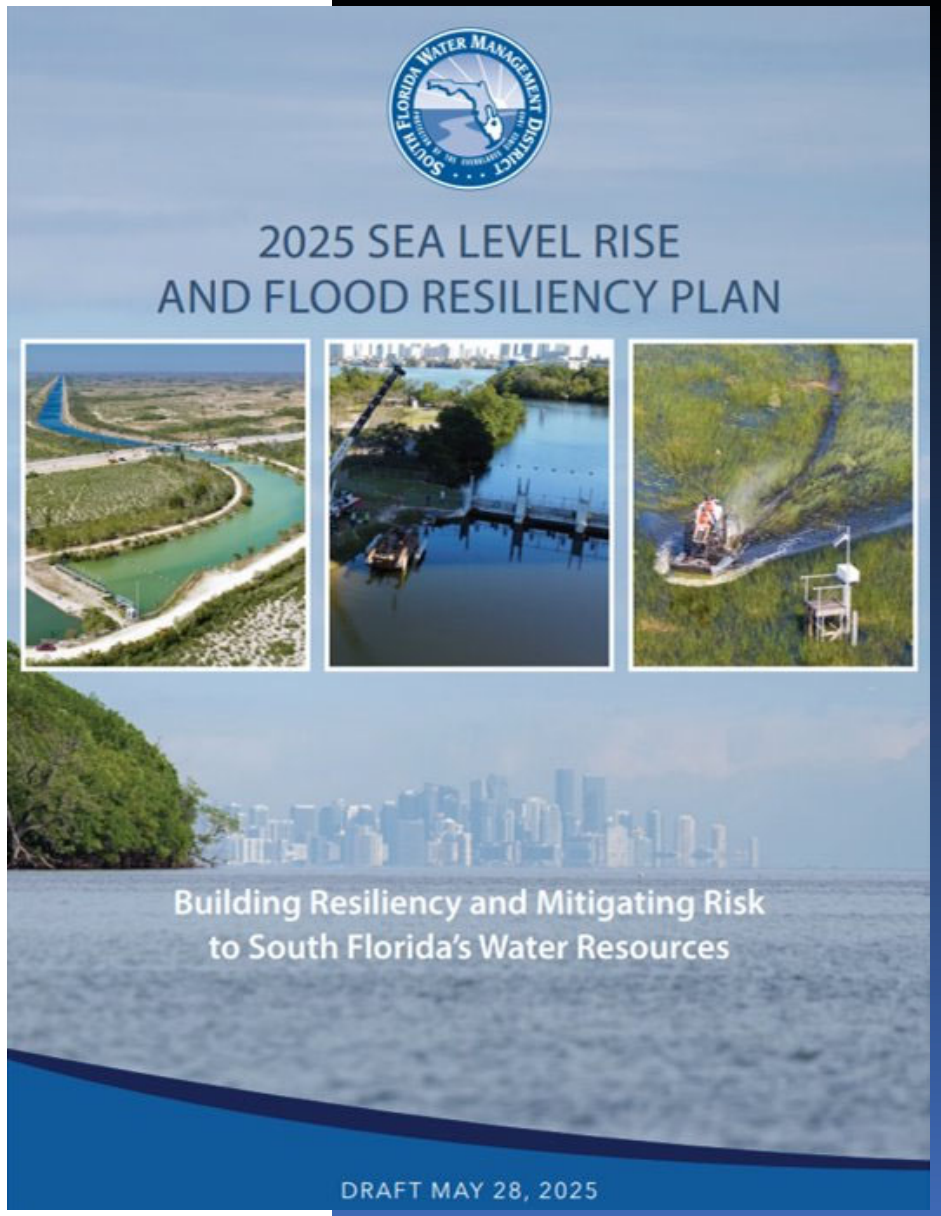
- Create a robust 2025 Plan with latest project information
  - Thorough internal review
  - Obtain early input from resiliency partners and stakeholders
    - Four public workshops held across the region

- Update Plan to include most comprehensive set of projects
  - Living document with projects continually refined as needs, strategies, and opportunities for risk reduction emerge
  - Completed LOS studies in most of the urban areas in South Florida, including recently completed Upper Kissimmee Basin and Palm Beach County FPLOS Results
- Strengthen Statewide Alignment, through Resiliency Florida Program
  - Statewide Flood Vulnerability Assessment recently completed
- Future updates will be on a 5-year cycle (not annually, going forward)

Goals of the Plan

Reduce the risks of flooding, sea level rise, and other climate impacts on water resources and water management infrastructure and increasing community, economy and ecosystem resiliency in South Florida





Justification

- Florida Statutes Chapter 380 Section 093: Resilient Florida Program established by Senate Bill 1954, May 12, 2021: comprehensive legislation ensures a coordinated approach to Florida's coastal and inland resilience
  - Section 380.093 (5)(d)(2), F.S. Statewide Flooding and Sea Level Rise Resilience Plan, due to FDEP annually on Sept 1st
  - Section 373.1501(10)(a), F.S. Consolidated Report on Flood Resiliency, due to the Governor, Senate, House, FDEP and EDR annually on Oct 1st

Plan Structure and Chapters

How Projects Get Into the Plan

FPLOS Phase II Studies

Project recommendations from adaptation planning studies
- Includes specific project recommendations such as properly sized engineering and nature-based solutions

C&SF Flood Resiliency Studies

- **Project recommendations from feasibility and engineering studies**
- Primary Structures Enhancements
- Class 4 Cost Estimates
- Engineering Studies

FPLOS Phase I Studies

Project recommendations from flood vulnerability assessments
- No-regret strategies

Event Response

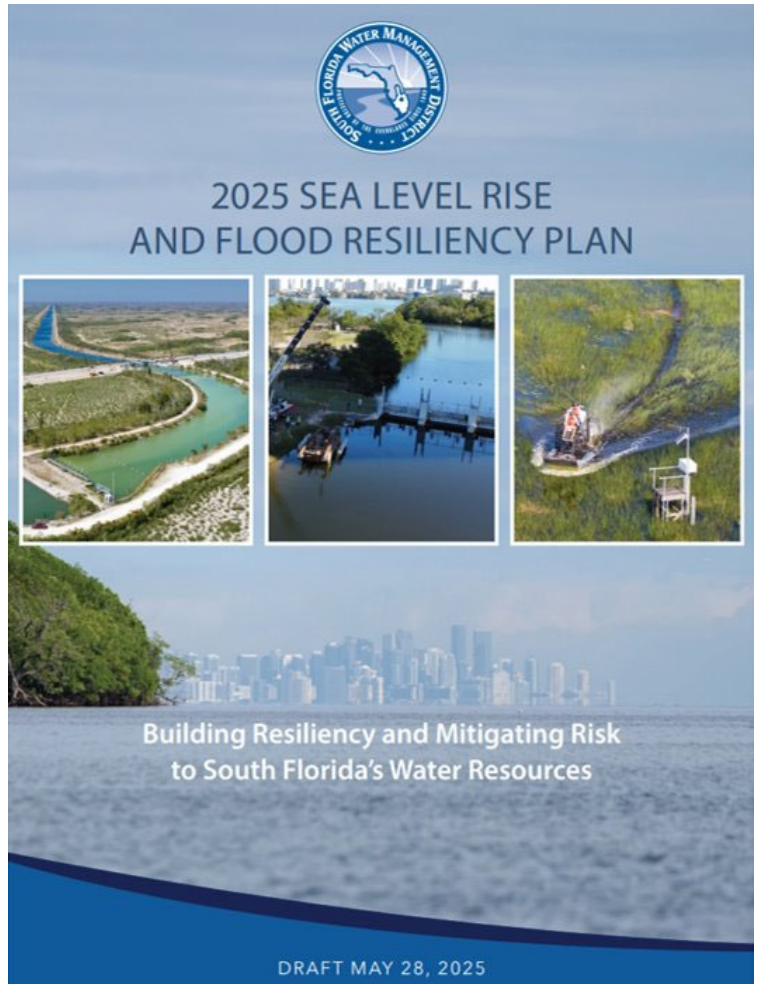
Project recommendations from extreme events
- Post-Storm or Event Response
- Hurricanes Ian and Milton

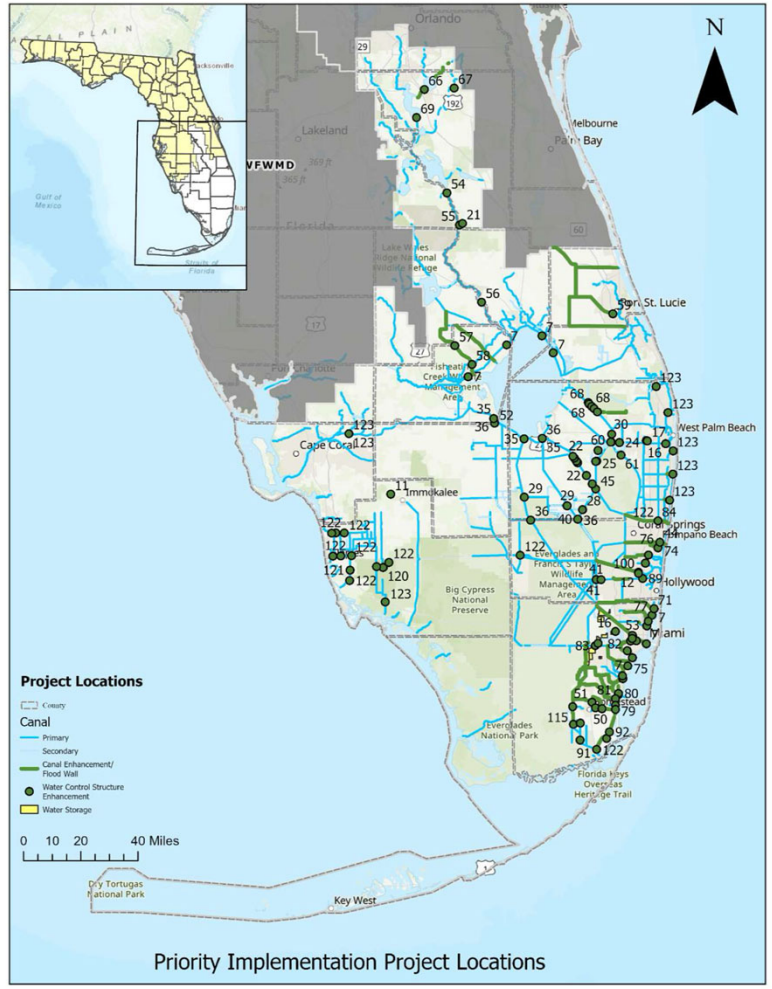
CIP Projects

Project recommendations that are integrated into CIP need
- Water control infrastructure improvements

Innovative Projects

Project recommendations that are new and innovative
- Nature-Based Solutions
- Integration to Existing CERP Projects
- Alternative energy sources
- Other grant funding requirements





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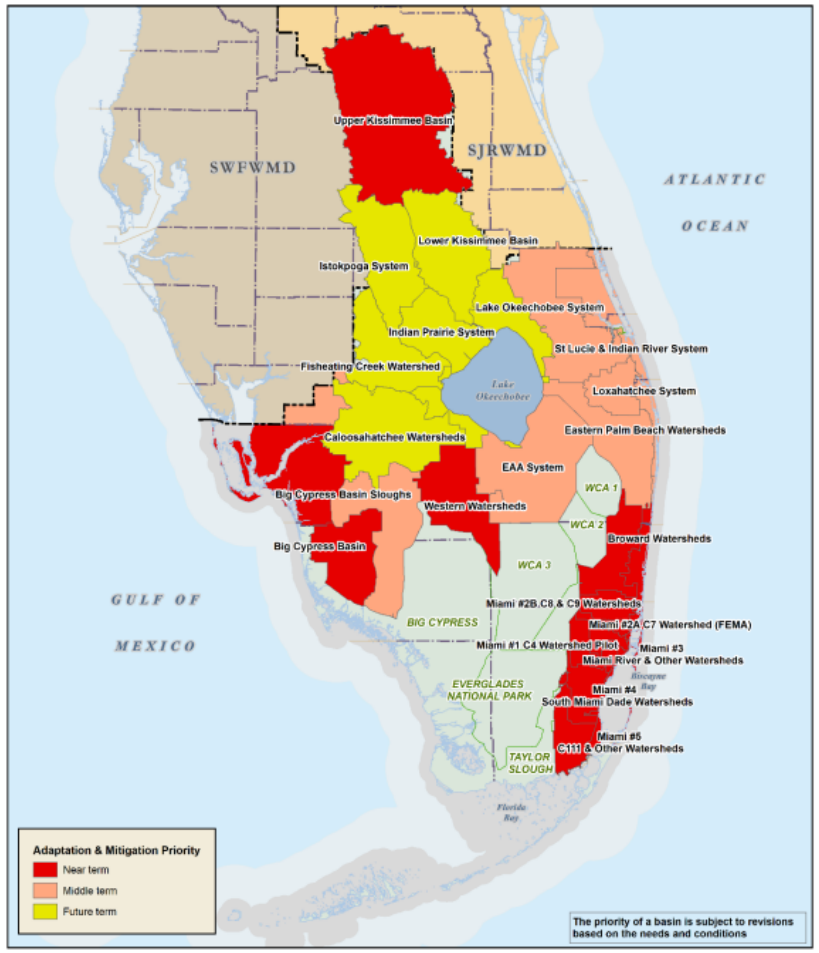
Flood Protection Level of Service Program

SFWMD's strategy for assessing the impacts of land development and changing climate on flood control infrastructure

Evaluate current and future flood risks to communities in South Florida

- Pre-defined performance metrics: canal stages, discharge capacity, overland flood inundation and duration
- Considers rainfall, groundwater levels, tides, storm surge and sea level: compound flooding analysis
- Basin-wide integrated modeling: supports the assessment of structural, non-structural and nature-based solutions
- **Support decision making on prioritizing and sequencing infrastructure investments**
- **Safeguarding tomorrow, today**



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C&SF Flood Resiliency Studies

Planning Reach A - Broward County Basins

- C&SF Flood Resiliency Study Section 203 Authorization
- Feasibility Study – Target WRDA 26
- Funding support from FDEP and Broward County

Planning Reach B - C-7, C-8, C-9 Basins

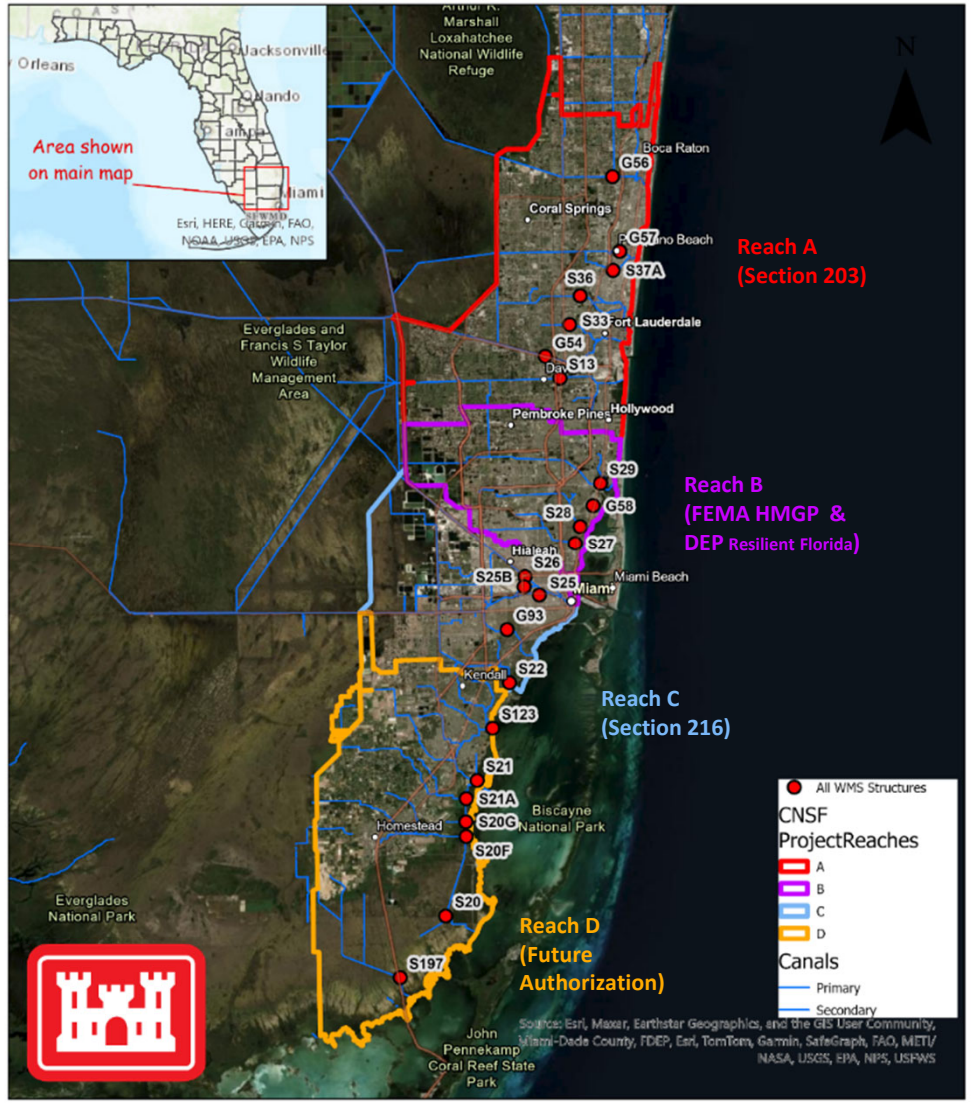
- FDEM/FEMA Hazard Mitigation Grant
- Resilient Florida Grant
- Funding support from Miami Dade County

Planning Reach C – Miami River Basins

- C&SF Flood Resiliency Study Section 216 Authorization
- Feasibility Study – Target WRDA 30

Planning Reach D - South Dade Basins

- CS&F Comprehensive Study or future planning studies



Event Response - Post Disaster Assessments

- SFWMD's post disaster efforts:
  - DS 4673 Hurricane Ian – 6 projects submitted
  - DS 4834 Hurricane Milton – to be confirmed
- Working with LMS at Orange, Osceola, Collier, Palm Beach, Broward and Miami Dade County for project review and approval
- Technical Review and Support from the Florida Department of Emergency Management
- Initial Feasibility assessements being developed (H&H models, BCA, Basis of Design)

e.g. Ian's Projects Estimated Costs $115M

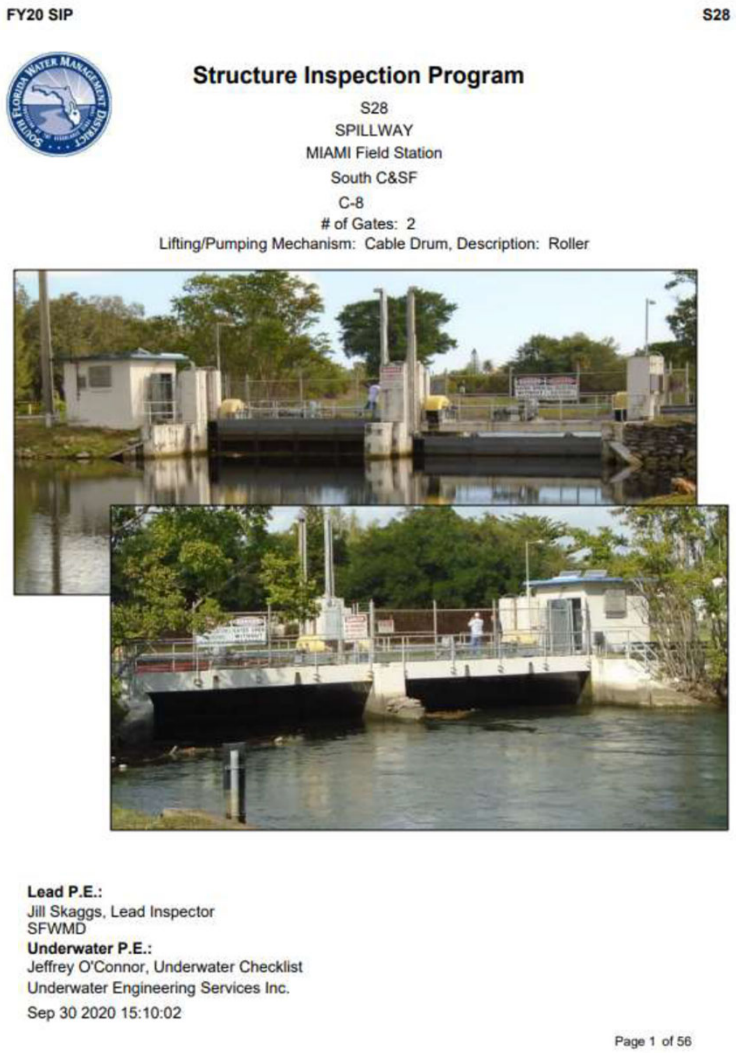
Estimated Benefits $185M (Flood Damages, Existing Properties)

Capital Improvement Program Needs

- The SFWMD Capital Improvement Plan identifies projects that are needed to keep the water control system operating effectively and efficiently

- These projects often mesh with Resiliency needs and therefore are integrated into the implementation strategy

Go one time and get it all done


FY20 SIP S28

Structure Inspection Program

S28
SPILLWAY
MIAMI Field Station
South C&SF
C-8
# of Gates: 2
Lifting/Pumping Mechanism: Cable Drum, Description: Roller

Lead P.E.:
Jill Skaggs, Lead Inspector
SFWMD
Underwater P.E.:
Jeffrey O'Connor, Underwater Checklist
Underwater Engineering Services Inc.
Sep 30 2020 15:10:02

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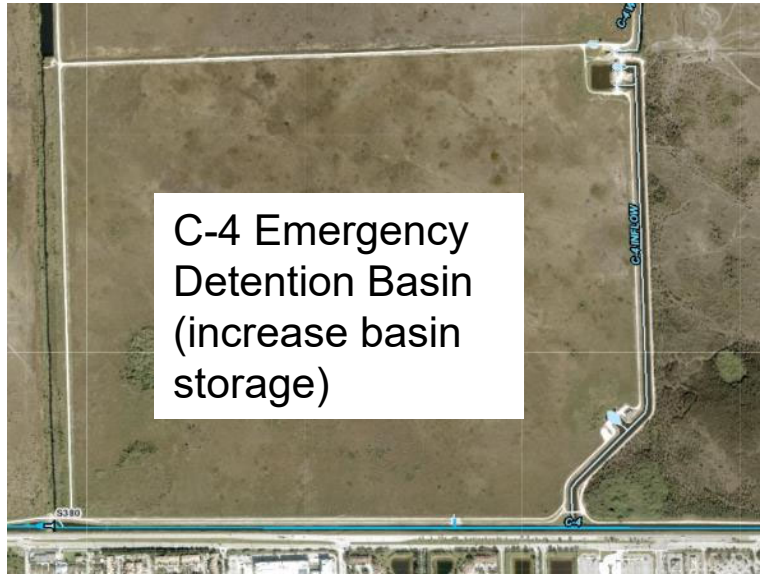
Examples of Flood Mitigation Solutions

Seawall (protect against surge)

S-26 Forward pump (maintain basin discharge)



C-4 Emergency Detention Basin (increase basin storage)

Raised Canal Banks C-4 Floodwall (conveyance)

Convertible Flood Barrier (harden infrastructure)

Flap Gate (enhance basin connectivity & backflow prevention)

Green Infrastructure / Nature Base Features

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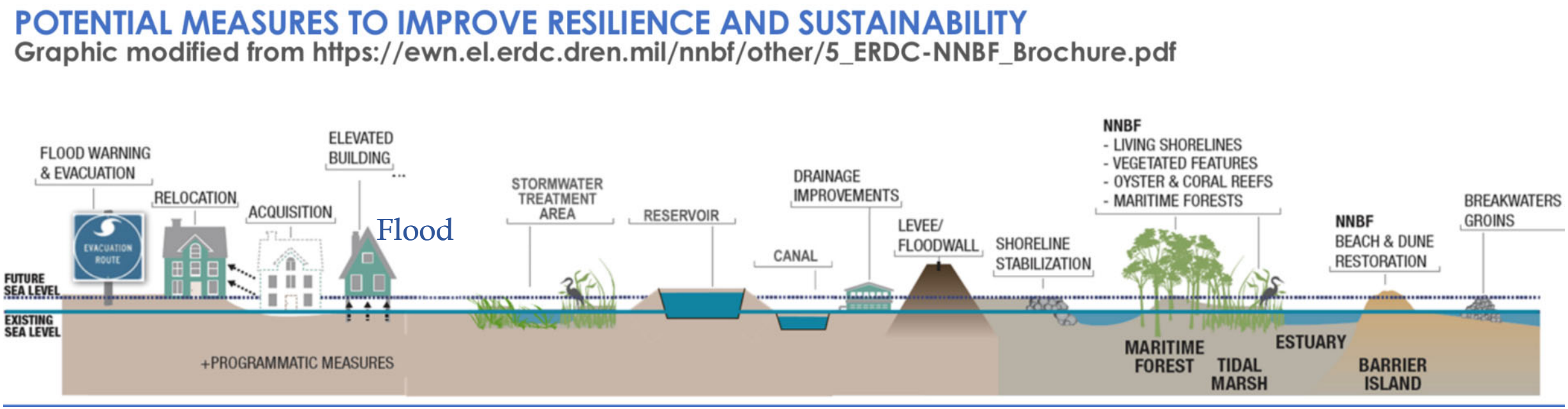
Integrating Local, Regional, Natural, Inland Drainage and Coastal Flood Resiliency Strategies



Need BOTH Structural Measures & Non-Structural Measures

(Moving Flood Risk Away from Communities & Living with the Water)

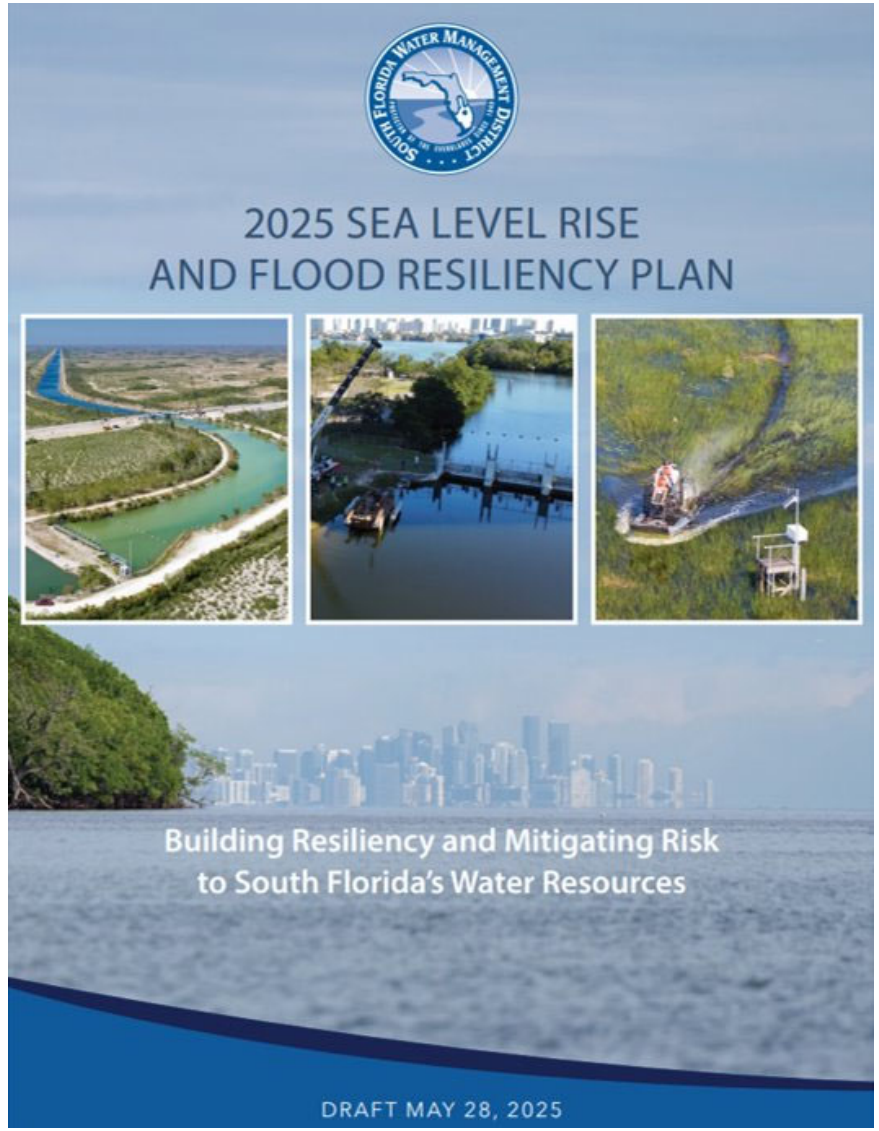
Along with Nature Based Features

SFWMD Resiliency Plan - Chapters

1. Resiliency Vision
2. The Central and Southern Florida System and BCB Flood Control Systems
3. Bridging Science and Data to Inform Resiliency Planning
4. Assessing Flood Vulnerabilities: Flood Protection Level of Service Program and C&SF Flood Resiliency Studies
5. Nature-Based Solutions
6. Ecosystem Restoration Projects & Resiliency
7. Water Supply Resiliency
8. Characterizing and Ranking Resiliency Projects
9. Planning Projects
10. Resiliency Implementation Projects
11. Resilience by Implementation: Navigating the Path to Robust Water Infrastructure
12. Closing Comments and Next Steps

Appendix A. Project Descriptions and High Level Cost Estimates

Appendix B. Water Supply Vulnerability Assessment (Approach)



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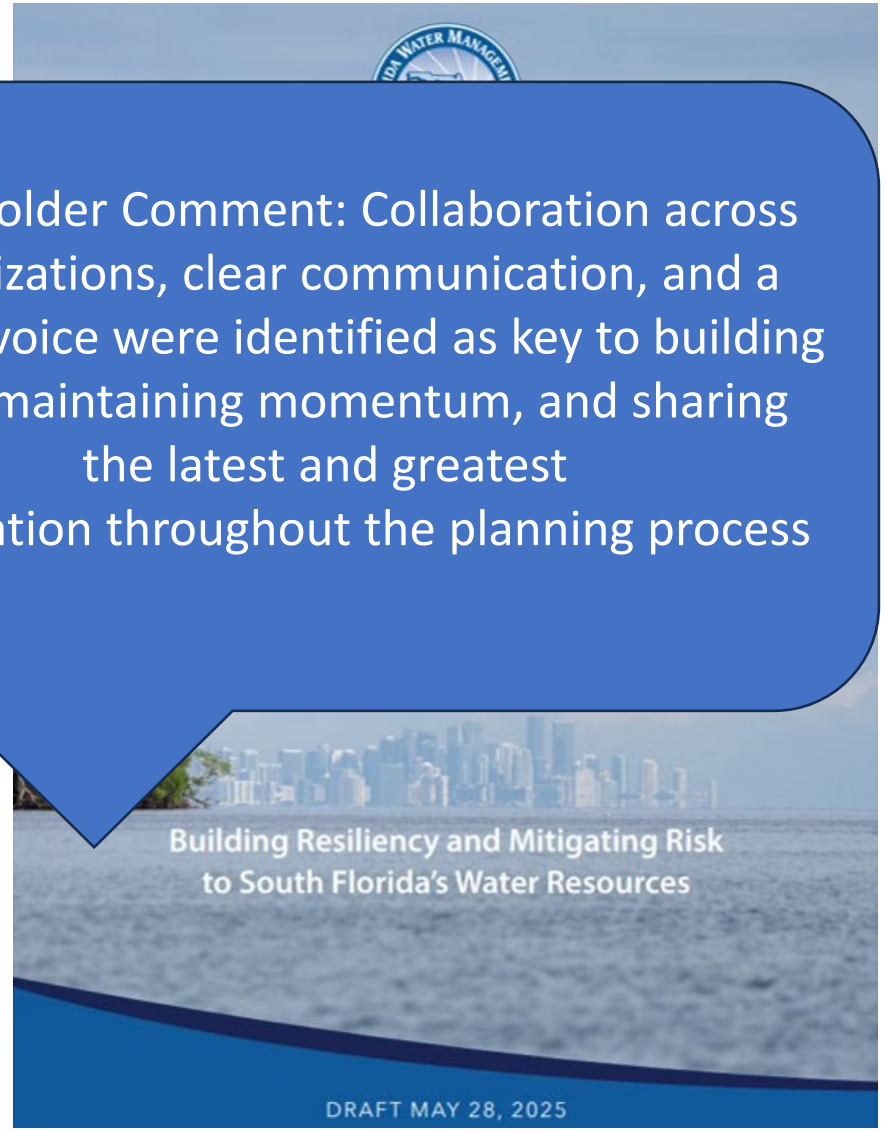
Chapter 1 – Resiliency Vision

- Risk Reduction / Effectiveness
- Implementation Resources
- Anticipated Future Conditions
- Population and Critical Infrastructure Impacted
- Public Engagement & Leveraging Partnerships
- Ongoing Ecosystem Restoration Efforts
- Innovative Green/Nature-Based Solutions
- Statewide Alignment and the Resilient Florida Program

Stakeholder Comment: Collaboration across organizations, clear communication, and a unified voice were identified as key to building trust, maintaining momentum, and sharing the latest and greatest information throughout the planning process



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Statewide Alignment and Resilient Florida

- Resilient Florida Program, under FDEP's leadership
- Statewide Flooding and Sea Level Rise Plan
  - Driven by statewide vulnerability assessment, statewide database, FFH data analysis and modeling tools and RF grant program
- SFWMD Resiliency Plan adds to state's plan by providing regional perspective on building resiliency and prioritizing investments
- SFWMD aims to facilitate integration of state and federal resources into local plans to align regional, locally relevant and effective structural, non-structural and nature-based solutions.

Chapter 2 - Central & Southern Florida and BCB Systems

- Current Challenges and Limitations
  - Population growth
  - Land development
  - Extreme rainfall events
  - Sea level rise
- Capital Improvement Plan
  - Building resiliency into projects
  - Mitigating flooding risks
  - CIP feeds into FPLOS

Chapter 3 – Science and Data to Inform Resiliency Planning

Water and Climate Resilience Metrics

- Phase I – Analyze and determine trends in climate records
  - SFWMD DBHydro database
  - 50 metrics evaluated, 15 chosen
- Phase II
  - Refine and expand assessment of changing conditions

Chapter 4 – Assessing Flood Vulnerabilities: FPLOS & C&SF Flood Resiliency Studies

2025 Plan Reflects Latest Studies and Results

- Phase I – Flood Vulnerability Assessments
  - Identify basin-wide flood vulnerabilities
- Phase II – Adaptation and Mitigation Planning
  - Identify solutions to vulnerabilities
- Studies in most urban areas have been completed
- Flood Impact Assessment Tool (SFWMD-FIAT)
  - Calculate flood damage costs
- C&SF Flood Resiliency Study (initial assessments)

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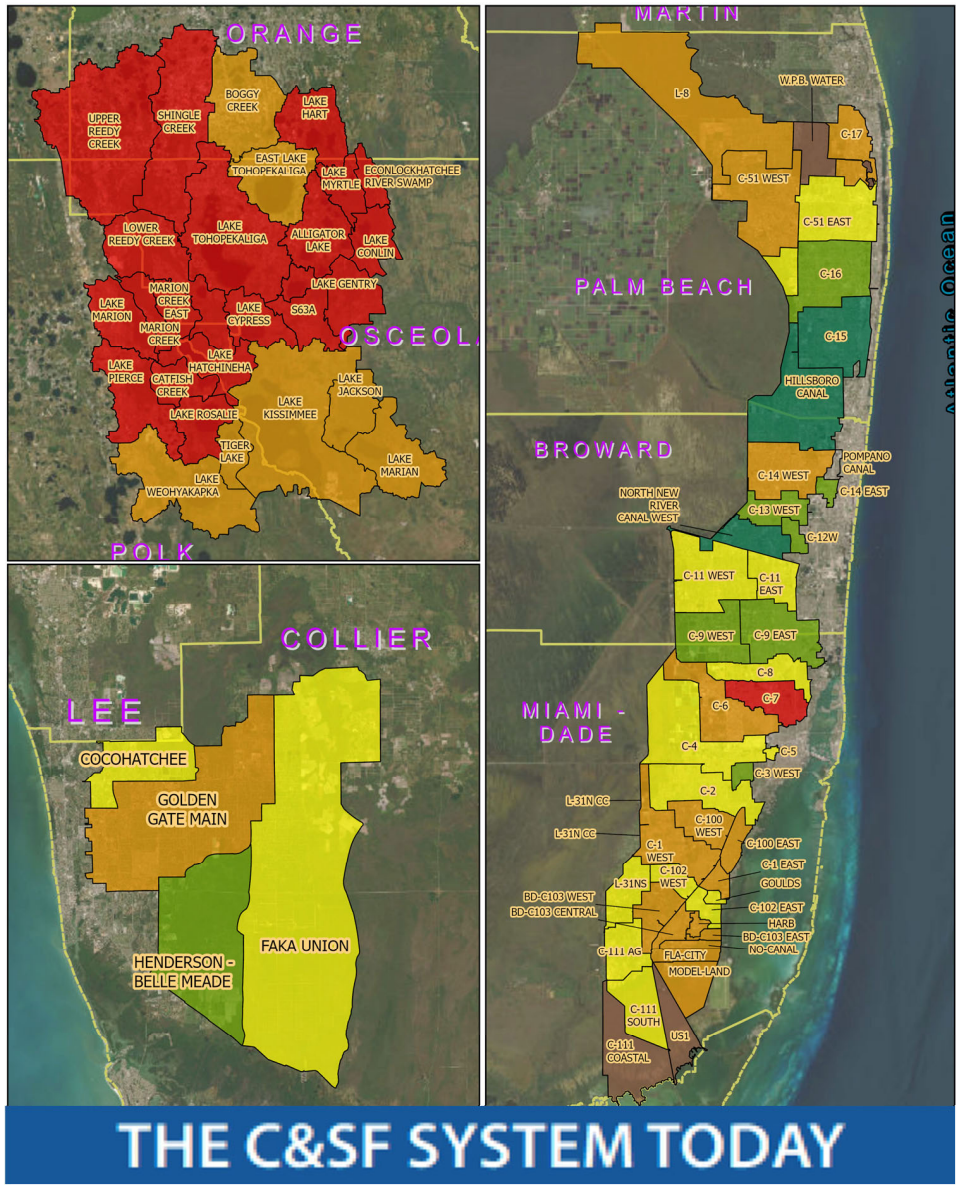
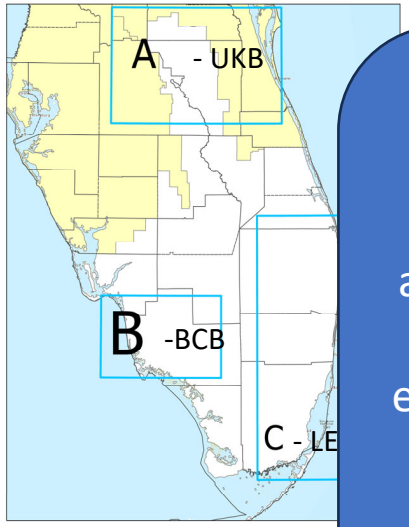
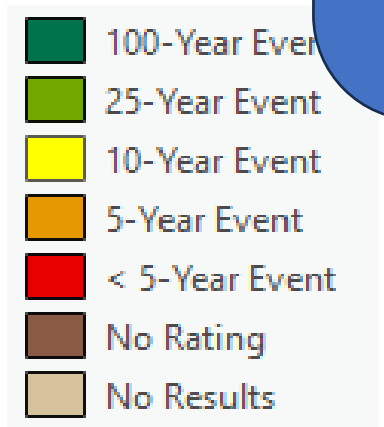
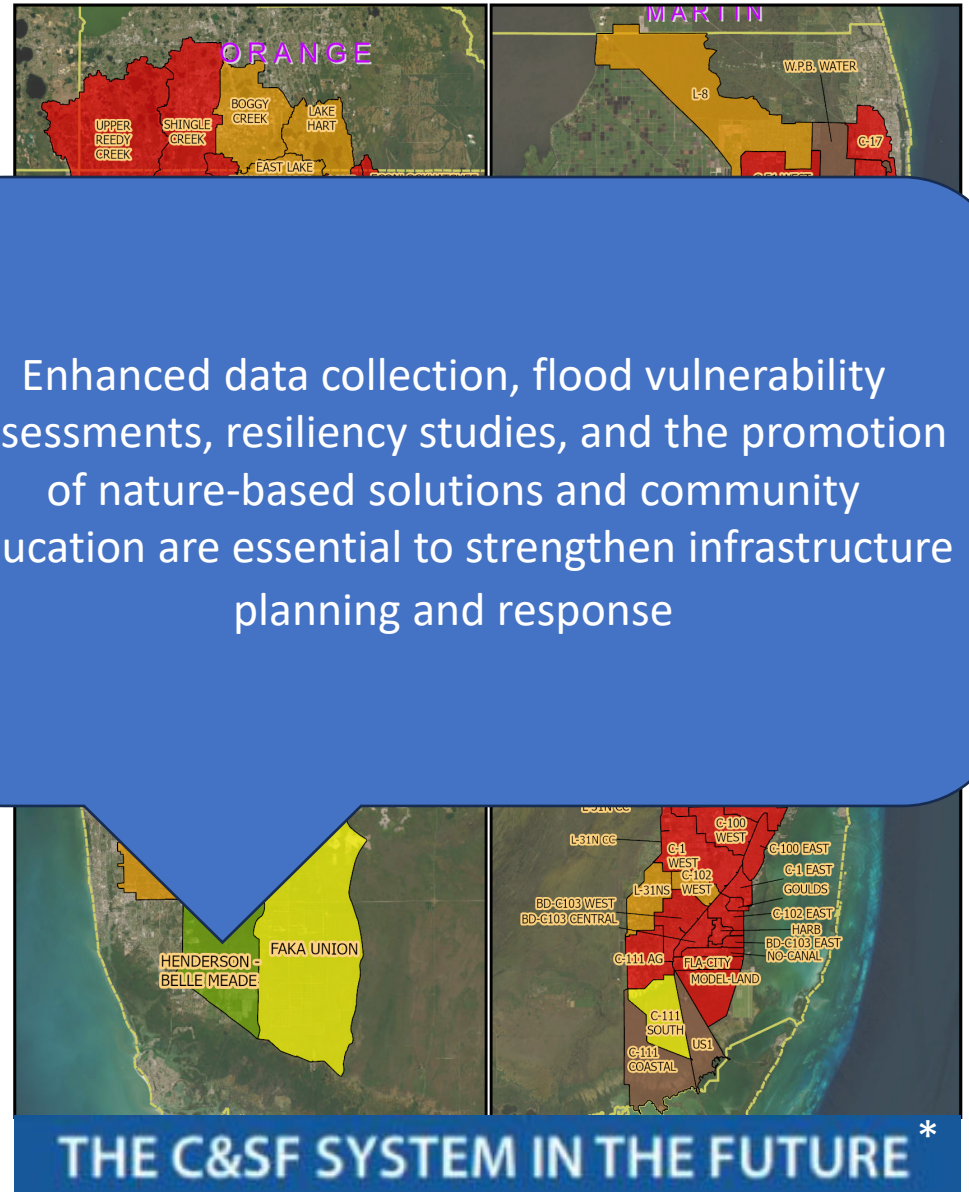
Overview of Available FPLOS Results



THE C&SF SYSTEM TODAY







THE C&SF SYSTEM IN THE FUTURE *

Enhanced data collection, flood vulnerability assessments, resiliency studies, and the promotion of nature-based solutions and community education are essential to strengthen infrastructure planning and response

* Flood Protection Level of Service under future conditions of Sea Level Rise (2ft, for LEC and BCB), rainfall intensification (for UKB) and land use development.

Chapter 5 – Nature-Based Solutions

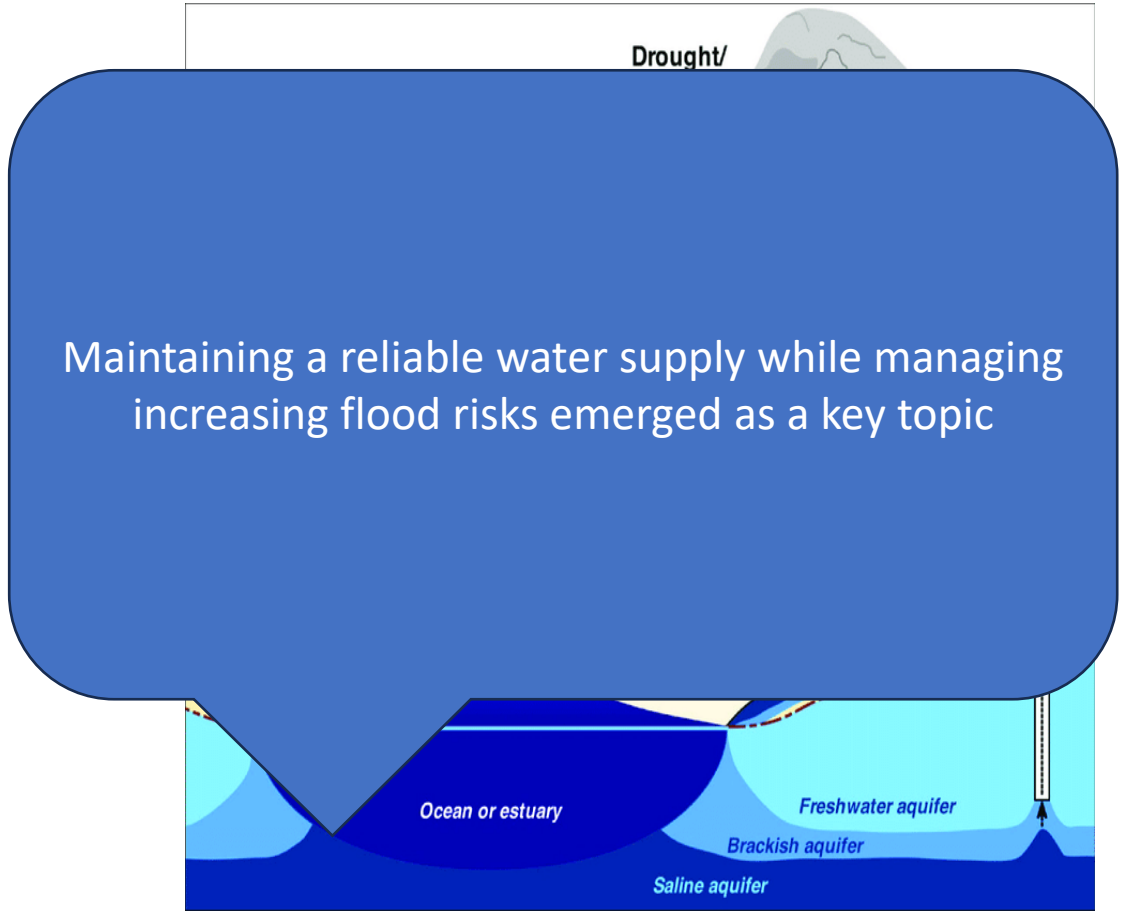
- Nature-Based Solutions – Reduce Flood Risk
  - Reconnecting Floodplains
  - Wetland Restoration
  - Living Shorelines
  - Bioswales
- Integrate into Gray Infrastructure
- Collect, Store and Slow the Flow

Chapter 6 – Ecosystem Restoration

- Ongoing Ecosystem Restoration projects Increase Resiliency
  - by reducing flood impact
  - by protecting the regional water supply and storing water that can be available to attend dry season need
  - by providing enhanced hydrology for environmental restoration efforts
- Ongoing CERP projects restore preserve, and protect water related needs of the region
  - Stormwater Storage
  - Wetland Restoration
  - Water Quality Treatment

Chapter 7 – Water Supply

- Understand and assess water supply vulnerabilities to future conditions
- Protect existing water supply sources
  - MFLs, monitoring, salinity control structures
- Develop alternative water sources
  - Conservation, reuse, brackish water
- Storage of excess water
  - Reservoirs, aquifer storage, WCAs, WMAs, SWM
- Water Supply Vulnerability Assessment



Chapter 8 – Characterizing and Ranking Projects

- Ranking Criteria – Four Tiers
- Likelihood of System Deficiency (40%)
- Consequence of System Deficiency (30%)
- Project Benefits and System Enhancement (20%)
- Structure Inspection Program Rating and CIP Status (10%)

Key ID	Projects	Prioritization Class
135	C-17 Basin Resiliency	High
73	C-6 Basin Resiliency	High
70	C-7 Basin Resiliency	High
76	C-14 Basin Resiliency	High
74	Pompano Canal Basin Resiliency	High
75	C-2 Basin Resiliency	High
79	C-103 and C-103N Basin Resiliency	High
72	C-8 Basin Resiliency	High
80	C-1 Basin Resiliency	High
136	C-51 East Basin Resiliency	High
69	Toho LMA Basin Resiliency	High
77	North Biscayne Bay Basin Resiliency	High
88	HARB Basin Resiliency	High
93	South Miami-Dade Curtain Flood Barrier	High
78	C-100 Basin Resiliency	High
129	Cypress LMA Basin Resiliency	High
71	C-9 Basin Resiliency	High
137	C-51 West Basin Resiliency	Medium High
92	MODEL-LAND Basin Resiliency	Medium High
115	C-111 AG Basin Resiliency	Medium High
83	C-4 Basin Resiliency	Medium High
125	Gentry LMA Basin Resiliency	Medium High
139	Kissimmee LMA Basin Resiliency	Medium High
89	C-11 Basin Resiliency	Medium High
91	C-111 South and C-111 Coastal Basin Resiliency	Medium
126	Alligator LMA Basin Resiliency	Medium
87	C-12 Canal Enhancement with Green & Gray Infrastructure	Medium
132	East Lake Toho LMA Basin Resiliency	Medium
106	C-5 Basin Resiliency	Medium
104	Basin Resiliency	Medium
127	Hart LMA Basin Resiliency	Medium
90	C-13 Basin Resiliency	Medium
81	C-102 and C-102N Basin Resiliency	Medium
138	L-8 Basin Resiliency	Medium
37	L-31E Flood Barrier Improvements	Medium
100	North New River Canal Basin Resiliency	Medium
117	US1 Basin Resiliency	Medium
131	LMA Basin Resiliency	Medium
130	Hatchineha LMA Basin Resiliency	Medium
134	C-16 Basin Resiliency	Medium
114	L-31NS Basin Resiliency	Low
109	Goulds Canal Basin Resiliency	Low
121	Henderson-Belle Meade Basin Resiliency	Low
133	C-15 Basin Resiliency	Low
84	Hillsboro Canal Basin Resiliency	Low
95	Directing Coastal Ecosystem Resilience	Low

Legend
Priority Levels
- Lower
- Medium
- Medium High
- High

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Project Ranking: Alignment with Resilient Florida

Resilient Florida Project Ranking

Tier 1: 40 Points

- 10 Points – Degree to which the project addresses flood risks
- 10 Points – Reduces risk to regional significant assets
- 10 Points – Reduces risk located in areas with higher vulnerable assets
- 10 Points – Awarded if projects contributes to existing flooding mitigation projects

Tier 2: 30 Points

- 7.5 Points – Awarded based on the degree to which flooding and erosion impact the project impact area.
- 7.5 Points – Project Readiness
- 7.5 Points – Environmental Habitat enhancement or nature-based solutions
- 7.5 Points – Project is demonstrated to be cost effective

Tier 3: 20 Points

- 6.5 Points – Available Local, State, and/or Federal cost share
- 6.5 Points – Verification of state funding previously awarded
- 7 Points – Awarded if project demonstrates exceedance of flood resistant requirements in the Florida Building Codes Act

Tier 4: 10 Points

- 5 Points – Awarded if project includes innovative technologies designed to reduce project costs and provide regional collaboration
- 5 Points – will be awarded if the proposal demonstrates that the project impact area includes a community eligible for reduced cost share (ongoing rule making Chapter 62S-8)

SFWMD Project Ranking

Tier 1: 40% - Likelihood of System Deficiency

- FPLOS Phase 1 Results – 15%
- Known or Chronic Nuisance Flooding Report – 13%
- FEMA Flood Zone Exposure – 3%
- Storm Surge Inundation Results
- No Alternatives or Backups in Worst Case Scenario 6%
- Return Period of Overbank Flooding
- Sea Level Resulting in Overbank Flooding
- Exceedance of Canal Normal Operating Range (OR) 3%
- Finished Floor Elevation < Base Flood Elevation

Tier 2: 30% - Consequence of System Deficiency

- Critical Assets & Regional Assets - 12%
- Impact Areas Across Administration Boundaries – 2.5%
- At Risk Population – 5%
- Environmental Protected Areas – 3.5%
- Total Population – 1%
- Public Water Supply Wellfields – 5%
- Adaptation Action Areas – 1%
- 20% - Benefits From System Enhancements

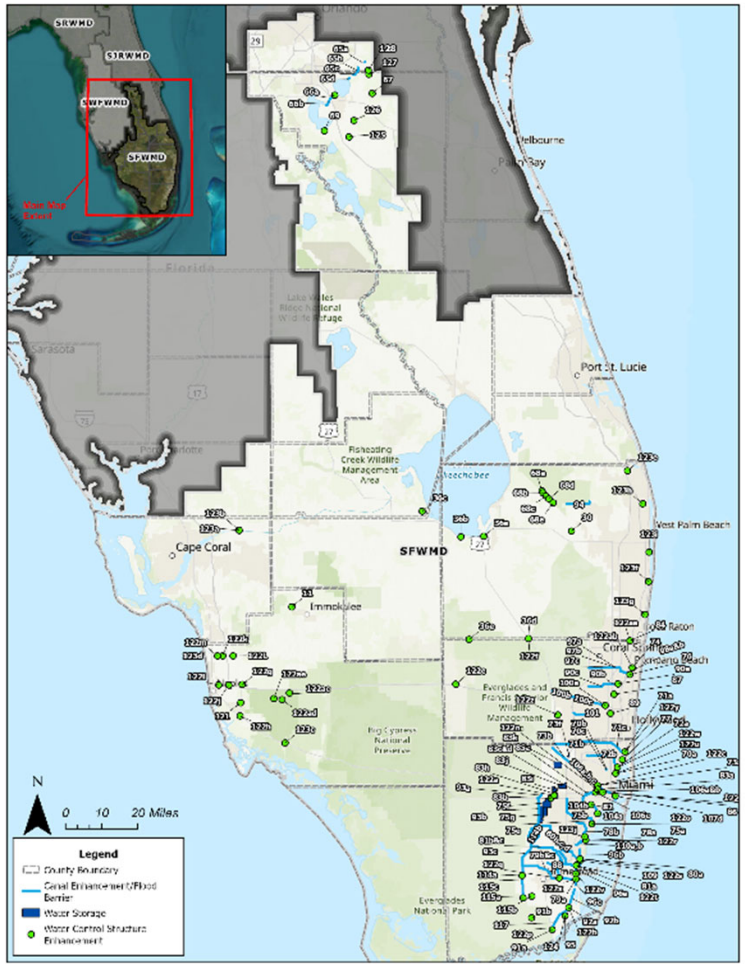
Tier 3: 20% - Benefits From System Enhancements

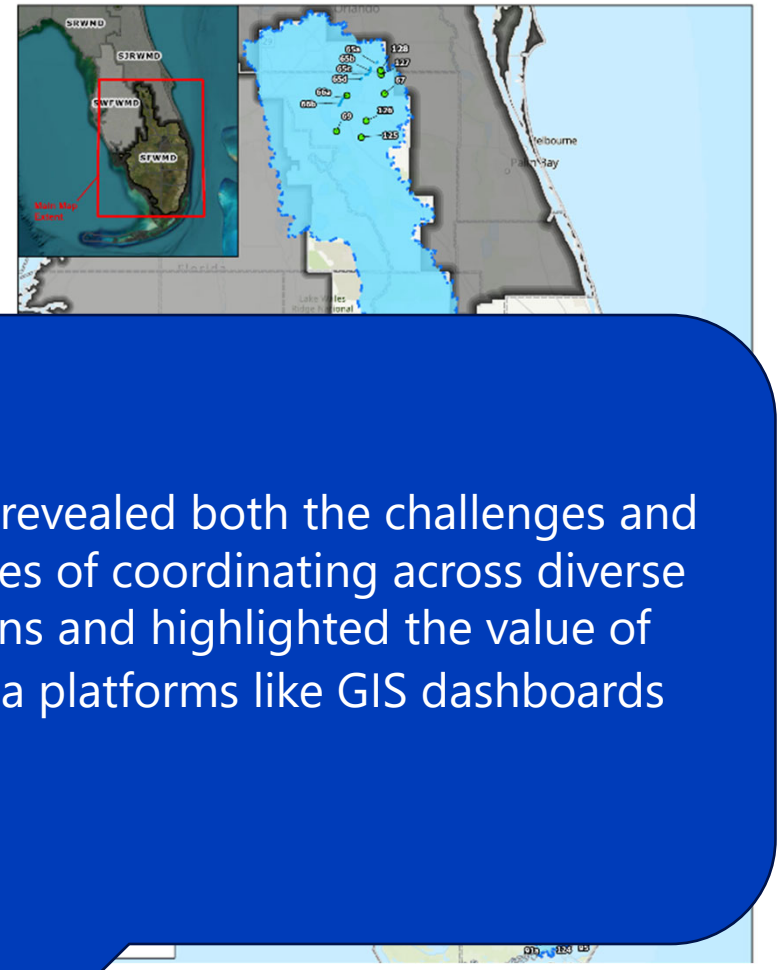
- Nature Based Solutions 5% (from Tier2 RF)
- Ecosystem Restoration
- Cost Benefit Analysis – 2.5%
- Previous State Funding – 2.5%
- Available Match – 2.5%
- Florida Building Code Design Criteria – 2.5%
- Innovative Technologies – 5%

Tier 4: 10% - Project Status

- SIP Overall Rating – 5% / CIP Status – 5%

Project Locations – Impact Areas and Components





Discussions revealed both the challenges and opportunities of coordinating across diverse jurisdictions and highlighted the value of shared data platforms like GIS dashboards

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Critical Assets

Critical Community and Emergency Facilities

Affordable Public Housing	Critical Assets
Colleges and Universities	Critical Assets
Community Centers	Criti
Correctional Facilities	C
Disaster Recovery Centers	
Emergency Medical Service Facilities	Reg
Emergency Operation Centers	Reg
Fire Stations	
Health Care Facilities	
Hospitals	
Law Enforcement Facilities	
Local Government Facilities	
Logistical Staging Areas	
Risk Shelter Inventory	Reg
Schools	
State Government Facilities	

Natural, Cultural, and Historical Resources

Historical and Cultural Assets - PT	Critical Assets
Historical and Cultural Assets - PL	Critical Assets
Shorelines	Critical Assets
Surface Waters - PL	Critical Assets
Conservation Lands	Critical Assets
Historical and Cultural Assets - PG	Critical Assets
Parks	Critical Assets
Surface Waters - PG	Critical Assets
Wetlands	Critical Assets

Alignment of planning approaches and outreach efforts across municipal, county, and state levels was seen as essential for consistency and scalability

Transportation and Evacuation Routes

Airports	Critical Assets
Bus Terminals	Regionally Significant
Marinas	Critical Assets
Ports - PT	Regionally Significant
Rail Facilities - PT	Regionally Significant
Railroad Bridges	Regionally Significant
	Critical Assets
	Regionally Significant
	Critical Assets
	Regionally Significant
	Regionally Significant

	Critical Assets
	Critical Assets
	Regionally Significant
PT	Regionally Significant
	Critical Assets
G	Critical Assets
D	Critical Assets
SB	Critical Assets
Stormwater Treatment Facilities and Pump Stations - PT	Regionally Significant
Wastewater Treatment Facilities and Lift Stations	Regionally Significant
Water Utility Conveyance Systems	Regionally Significant
Electric Production and Supply Facilities - PL	Regionally Significant
Stormwater Treatment Facilities and Pump Stations - PL	Regionally Significant
Stormwater Treatment Facilities and Pump Stations - PG	Regionally Significant
Military Installations	Regionally Significant

Locally Provided Assets From Vulnerability Assessments

Locally Provided Assets - PT	Critical Assets
Locally Provided Assets - PL	Critical Assets
Locally Provided Assets - PG	Critical Assets

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Chapter 9 – Priority Planning Projects

Participants proposed incorporating storm surge modeling and economic loss projections into ranking criteria to strengthen the case for funding and better reflect regional risk

Table 9-1:
List of Resiliency Priority Planning Studies

Enhanced Data Collection and Long-Term Trend Analyses

1. Water and Climate Resiliency Metrics (Phase I and II)
2. Flooding Documentation (survey, sensors, imagery, repository, and automated notification system)
3. Hydrometeorological Data Monitoring (wells, sensors, etc.)
4. Everglades Mangrove Migration Assessment (EMMA - Pilot Project)
5. Mangrove Experimental Manipulation Exercise (MEME)
6. Waterways Impact Protection Effort (Project WIPE-Out)
7. Carbon Storage (Monitoring and Reporting)
8. Accretion Analyses (SET Network Monitoring)

Formulation and Evaluation of Future Climate Scenarios

1. Future Drought Scenarios
2. Atmosphere-Ocean Simulations to Compute Boundary Conditions for the Statewide Regional Climate Model
3. Future Conditions Internal Resources for District Regulation Reviews

Modeling Assessments

1. FPLOS Vulnerability Assessments (Phase I Studies)
   a. Western Basins – Hendry and Collier County
   b. Taylor Creek/Nubbin Slough (S-154C) and Basin 8 – Lake Okeechobee Watershed / Okeechobee County
   c. Everglades Agricultural Area (EAA)
2. FPLOS Adaptation and Mitigation Planning assessments (Phase II Studies)
   a. C-7 Basin – Miami-Dade County
   b. St. Lucie and Martin County (combined Phases I and II study)
3. C&SF Section 216 Flood Resiliency Study
   a. Miami River Basins
4. C&SF Section 203 Flood Resiliency Study
   a. Broward Basins
5. Comprehensive C&SF Flood Resiliency Study
6. Water Supply Vulnerability Assessment
   a. Lower East Coast
7. Corkscrew Watershed Initiative
8. Evaluating the Performance of the SFINCS Hazard Model to Support and Accelerate the FPLOS and SEFL Regional Adaptation Planning Efforts
9. Green Infrastructure Flood Mitigation Strategies - Associating Water Quality Benefits in the Little River Watershed
10. Designing Wetland Habitat Enhancement and Flooding Improvements for Charlotte Harbor Flatwoods Project

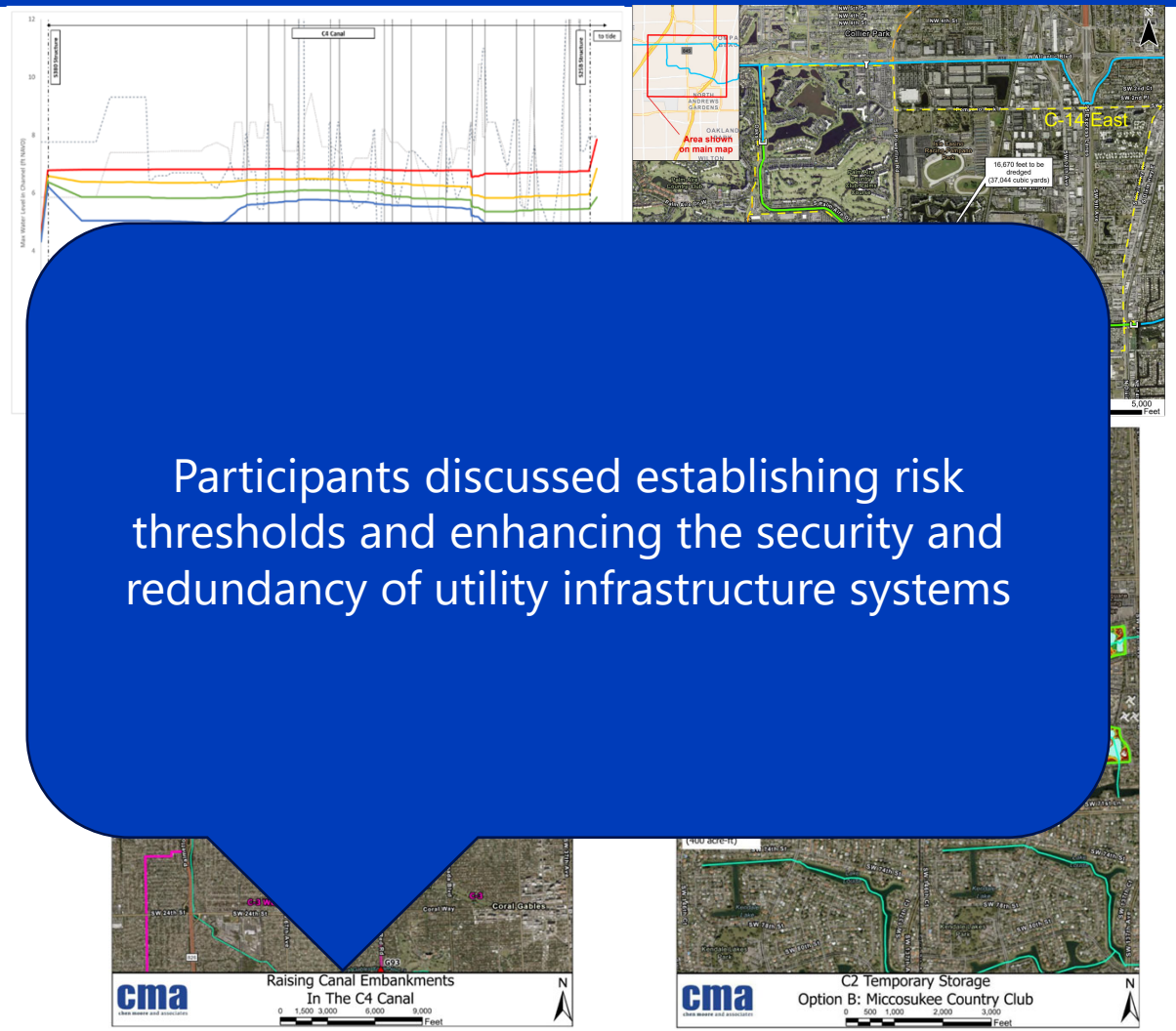
Completed and Ongoing Projects Highlights

1. Flood Observations
2. King Tides

Chapter 10 – Resiliency Implementation Projects

- Added conceptual project component descriptions and high-level cost estimates from FPLOS Phase I Studies and Phase II project recommendations
- Updated costs estimate assumptions for 8 types of conceptual project components:
  - Canal Widening
  - Canal Bank Enhancement,
  - Spillway
  - Culvert
  - Forward Pump
  - Dredging
  - Distributed Storage
  - Storage Areas

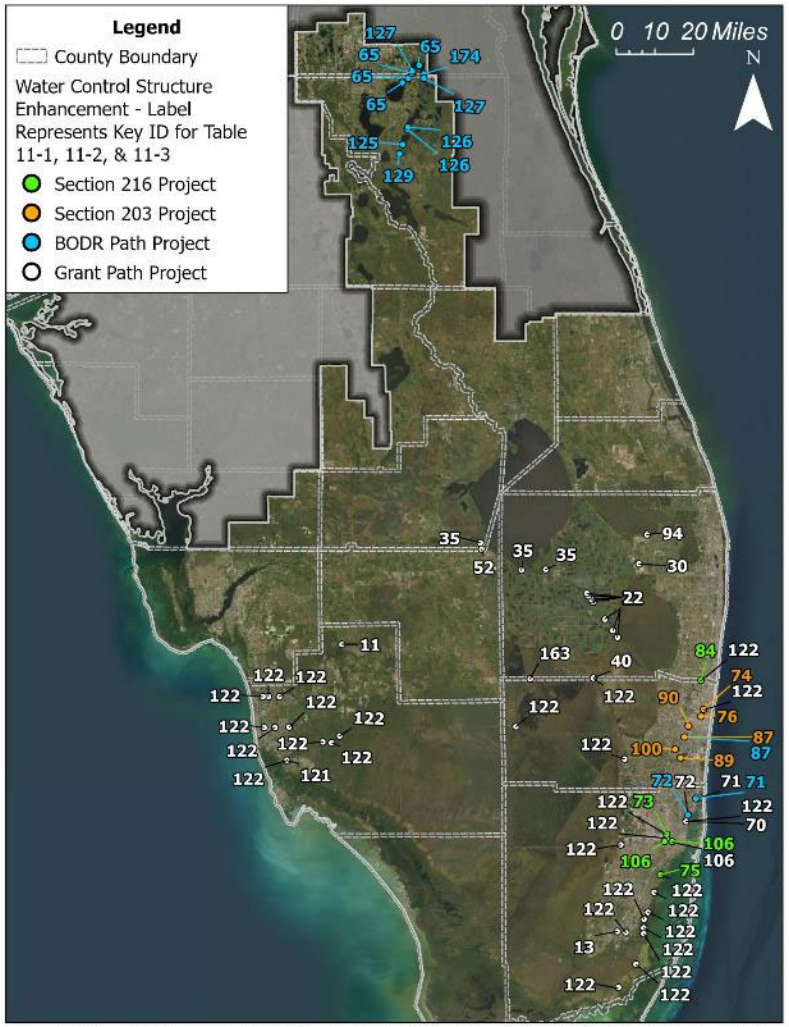
- **Total main projects: 52**
- **Total components: 162**

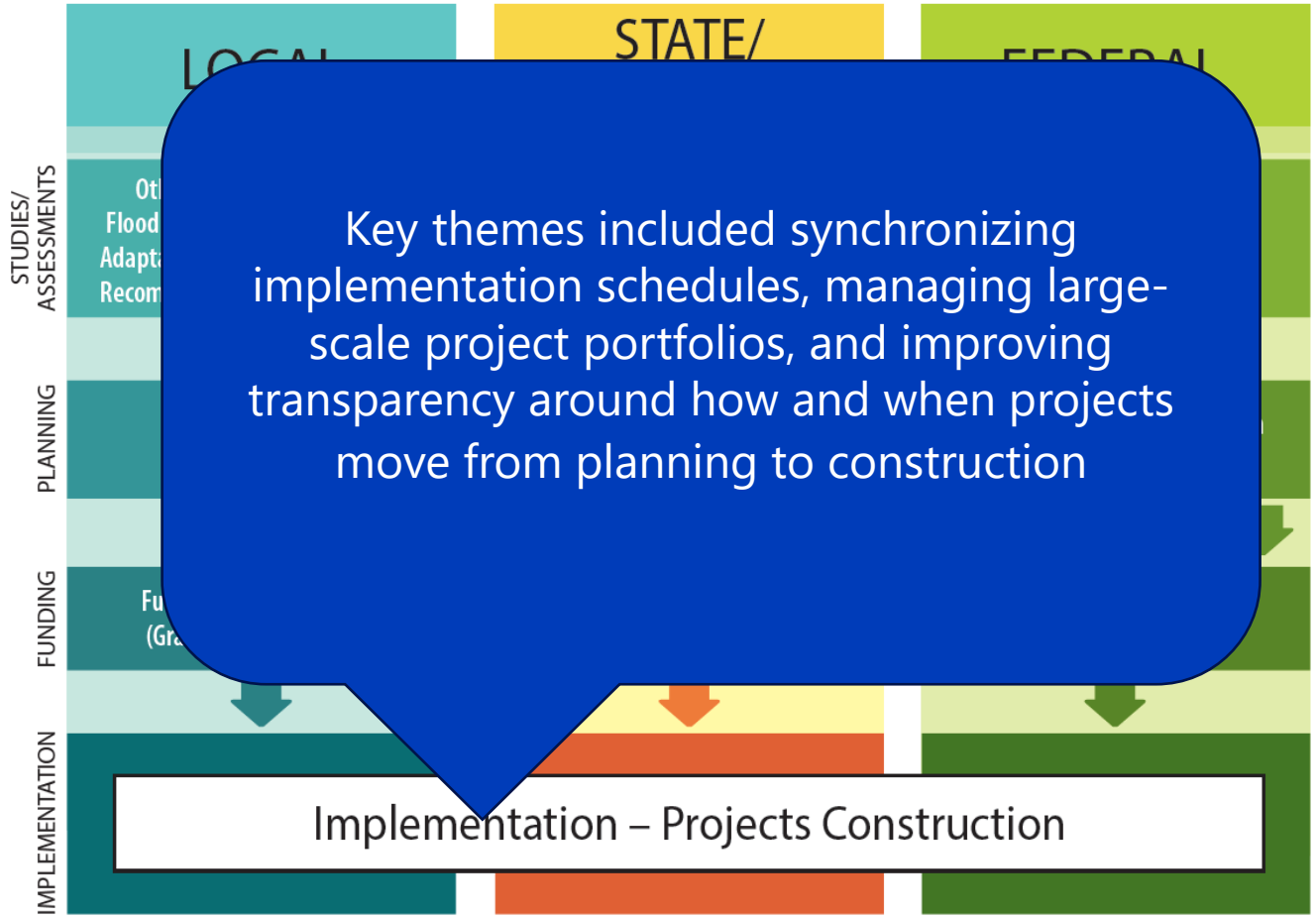


Participants discussed establishing risk thresholds and enhancing the security and redundancy of utility infrastructure systems

David Colangelo

Chapter 11 – Resiliency by Implementation: Navigating the Path to Robust Water Infrastructure





Stakeholder Input and Workshop Comments

2025 Resiliency Plan Update Coordination Workshops

- Four Workshops, 201 Attendees
  - » Lower East Coast – 62 Attendees
  - » Upper East Coast – 38 Attendees
  - » Southwest Coast – 53 Attendees
  - » Kissimmee Basin – 48 Attendees

2025 Resiliency Plan Update Coordination Workshops

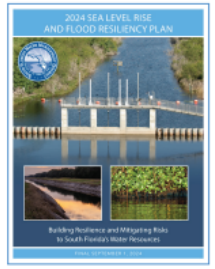
Highlights from the Workshops

2025 Sea Level Rise and Flood Resiliency Plan

Public Workshop Highlights

The Sea Level Rise and Resiliency Plan by the South Florida Water Management District (District) is a strategic roadmap to reduce the risks of sea level rise, flooding, extreme storm events and other evolving conditions on South Florida's critical assets, water management operations, water supplies and water resources.

The District is also making significant infrastructure adaptation investments that are needed to continue to successfully implement its mission of safeguarding and restoring South Florida's water resources and ecosystems, protecting communities from flooding, and ensuring an adequate water supply for all of South Florida's needs. Working to ensure the region's water resources and ecosystems resiliency, now and in the future, is part of everything the District does.



Bringing Stakeholders Together

As part of the 2025 Sea Level Rise and Flood Resiliency Plan Update, the District organized four public workshops. These workshops brought together over 220 stakeholders representing 100 organizations across the region. Meetings were held in four locations Lower East Coast, Upper East Coast, Southwest Coast, and Kissimmee River Basin.

Why We Came Together

These in-person workshops brought together key stakeholders to engage in meaningful discussions, share insights, and provide early feedback on the 2025 Sea Level Rise and Flood Resiliency Plan Update. The workshops served as an opportunity to explore available tools, resources, and information, including the latest Resilient Florida Program updates from the State of Florida, and to ensure the Plan update reflects the diverse needs and priorities of our local communities.

WORKSHOP #1
Lower East Coast
Doral, FL

WORKSHOP #2
Upper East Coast
Stuart, FL

WORKSHOP #3
Lower West Coast
Bonita Springs, FL

WORKSHOP #4
Kissimmee Basin
Orlando, FL

"Collaboration is the key to tackling flood resilience in our region. These workshops sparked great discussions and next steps for a stronger, more resilient future for our region and the City of Miami."
– Sonia Brubaker, Chief Resilience Officer, City of Miami

Key Outcomes

- As a region, we need to **align local and regional flood risk projects** and priorities. Regional collaboration is key to our shared success.
- The District shares technical resources to support local governments to design and implement projects. **Leveraging already available data, models, and tools** will lead to improved results and more effective action.
- South Florida's water management system is complex and has many players that must continue to collaborate closely. **Aligning projects through collaboration and data-driven decision-making** is essential to reduce costs and implementation time.
- **Nature-based solutions should be prioritized** where possible for projects at various levels. Using nature for flood risk reduction can provide additional community benefits.

Our Commitment to Collaboration

Our communities recognize the urgent need for action, and we must work together to find the best solutions.

- **Collaboration Increases Effectiveness:** A well-planned combination of structural measures – designed to reduce flood risk regionally without shifting it to neighboring communities – and non-structural measures, such as living with water, elevating structures, and hardening infrastructure, ensures a sustainable and effective approach to flood risk management.
- **Collaboration Optimizes Solutions:** Effective resource allocation maximizes impact, ensuring that flood risk reduction efforts are strategic, efficient, and aligned with long-term resilience goals.
- **Collaboration Expands Funding Opportunities:** Coordinated efforts strengthen project positioning for competitive funding, increasing access to critical financial resources for resilience and adaptation initiatives.

Shared Goals

The importance of resilience was underscored, as flooding risks pose significant threats to communities, economies, and ecosystems. Building resilience through collaborative efforts is crucial to:

- Protect property and lives
- Support economic growth and stability
- Preserve environmental resources

Our State Partners

This collaboration is supported by the Department of Environmental Protection's Resilient Florida Program, the Florida Flood Hub for Applied Research and Innovation and the Statewide Office of Resilience within the Governor's Office.

Our community recognizes and appreciates the significant resources available to advance resilience projects across Florida from those programs, along with the Hazard Mitigation Programs at the Florida Department of Emergency Management.

The District's resiliency efforts include advancing scientific data and research to ensure the District's resiliency planning and implementation projects are founded on the best available science and robust technical analyses.

These efforts are in collaboration and cooperation with regional, state and federal agencies, local and tribal governments, non-governmental entities, universities, and citizens throughout Central and Southern Florida.

SFWMD.gov/Resiliency

You can view the workshop highlights in PDF format here.

David Colangelo

Timeline and Next Steps

Important Dates – Submit Your Review Comments

February/March: Public Workshops & Early Input

May 28, 2025: Draft Plan Presented at Resiliency Forum and Open for Public Comments

June 20, 2025: Public Comment Period Closes

July / August 2025: We will follow up accordingly on relevant comments and incorporate them into the final plan

September 1, 2025: Final Plan Submission

David Colangelo

Relevance of 2025 Update: plan updates will occur every 5 years

Open Public Comment Period

- Draft Plan Document Available at: https://www.sfwmd.gov/our-work/sea-level-rise-and-flood-resiliency-plan

- The public comment period is open through Friday, June 20, 2025

- Please provide comments by email to resiliency@sfwmd.gov

David Colangelo

Thank you

SFWMD RESILIENCY COORDINATION FORUM:

USACE RESILIENCY PROJECTS UPDATE

May 28, 2025

E. Timothy Gysan, P.E.,PMP
Resilience Sr Project Manager
Jacksonville District
U.S. Army Corps of Engineers

U.S. ARMY

US Army Corps of Engineers

USACE RESILIENCY PROJECTS UPDATE

SFWMD RESILIENCY COORDINATION FORUM

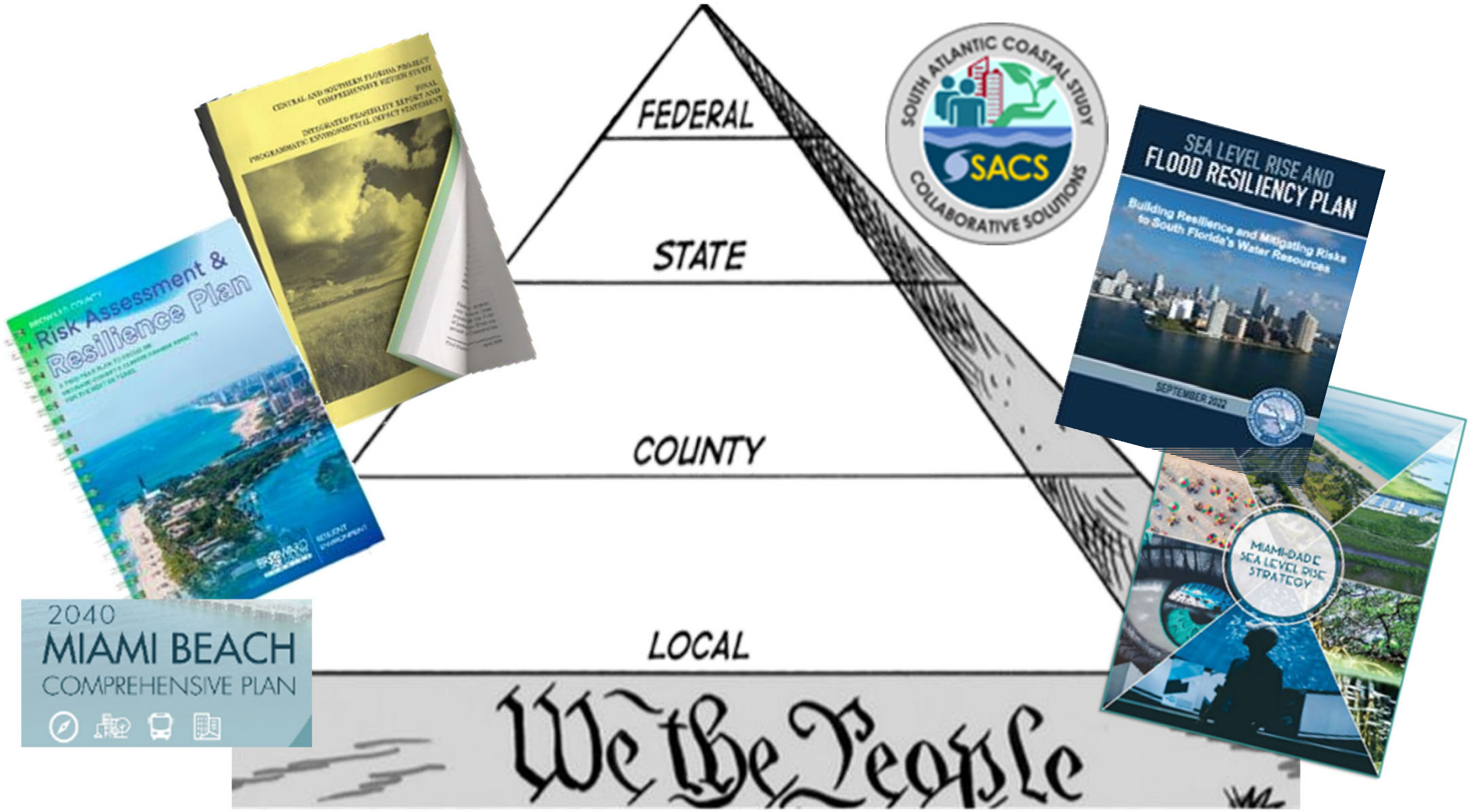
28 May 2025

E. Timothy Gysan, P.E.,PMP
Resilience Sr Project Manager
Jacksonville District
U.S. Army Corps of Engineers

US Army Corps of Engineers®

BUILDING COMMUNITY RESILIENCE

A COMPREHENSIVE AND COLLABORATIVE APPROACH



Water Resource Infrastructure is the Connector

Working Today to Build a Better Tomorrow

RESILIENCY THROUGH PROJECT INTEGRATION

USACE Projects within SFWMD Boundaries

C&SF Flood Resiliency Studies

Authorized CSRM* Projects

New CSRM* Studies (+ Back Bay)

Authorized Navigation Projects (DEEP DRAFT)

SOUTH FLORIDA ECOSYSTEM RESTORATION (SFER) PROJECTS, STUDIES, AND REGULATION SCHEDULES

4)C-111 South Dade
5)Kissimmee River Restoration (KRR)
6)Herbert Hoover Dike (HHD)
7)Lake Okeechobee System Operating Manual (LOSOM)
8) Shingle Creek & Kissimmee River Study
10)Picayune Strand Restoration Project (PSRP)
11)Indian River Lagoon – South (IRL-S) C-44 Reservoir and STA
12)C-111 Spreader Canal Western Project
13)Biscayne Bay Coastal Wetlands (BBCW) – Phase 1
14)Caloosahatchee River C-43 Reservoir
15)Broward County Water Preserve Areas (BCWPA)
17)Central Everglades Planning Project (CEPP)
18)Loxahatchee River Watershed Restoration Project (LOWRP)
19)Lake Okeechobee Watershed Restoration Project (LOWRP)
20)Western Everglades Restoration Project (WERP)


Jupiter/Carlin Beach CSRM


C&SF Water Management | LOSOM Operations


2020 Flooding | Ft. Lauderdale


CERP Broward County WPA C-11

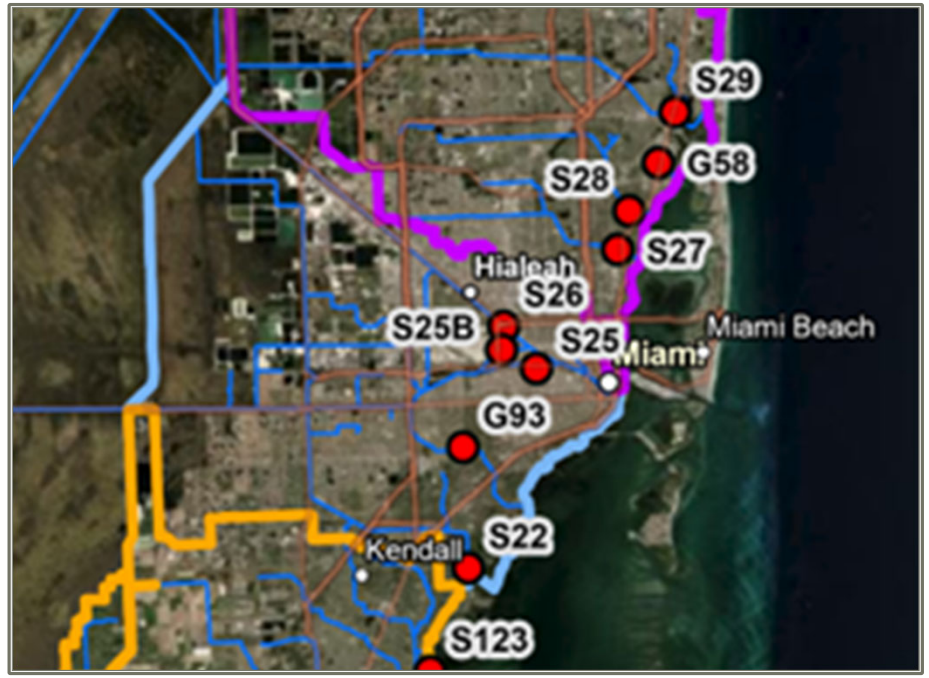
C&SF FLOOD RESILIENCY (SECTION 216) STUDY

Study Process

- USACE Jacksonville District and SFWMD finalized an overall integrated strategy; Revised Section 216 will focus on Reach C
  - Five Structures in the reach to be evaluated
- USACE Jacksonville submitted revised Vertical Team Alignment Memorandum (VTAM) which was endorsed by HQUSACE 22 April 2025; VTAM details the resources required to complete the study
  - SAJ received FY2025 Work Plan funding totaling $1.75M to continue work
  - Next steps: Approval of full VTAM funding request and time extension by the Assistant Secretary of the Army for Civil Works for review and approval

Technical Efforts

- Coordination with Section 203 team on formulation strategy and evaluations
- Conversion of economic model HEC-FDA to v2.0
- Completion of full Future Without Project (FWOP) FDA runs
- Agency Technical Review of modeling tools
- Coordination with SFWMD, Miami-Dade County, and stakeholders
- Development of Final Alternatives Array



Planning Reach C – Miami River

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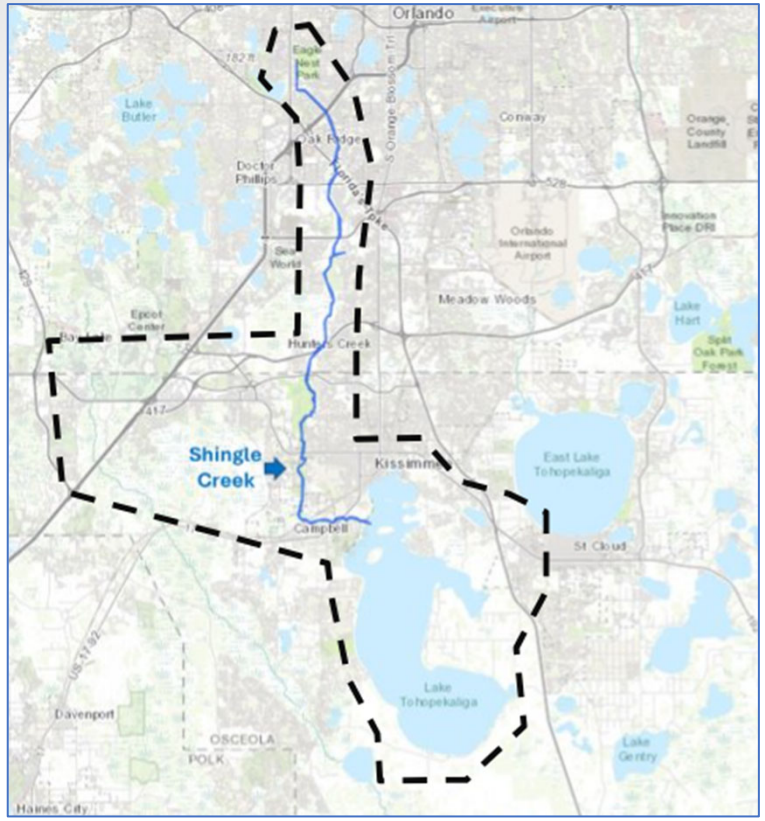
SHINGLE CREEK & KISSIMMEE RIVER STUDY



Shingle Creek flow-way through Orlando to Kissimmee and outlet into Lake Tohopekaliga

Current Status:

- Feasibility Cost Share Agreement signed with Osceola County Feb 2025
- Osceola County and USACE determined study area and project goals
- Courses of Action (COA's) were discussed and a final COA chosen
- COA is currently under review for approval by USACE in a VTAM process

Authority: Section 201 of the Water Resources Development Act of 2020, Division AA of Public Law 116-260 as amended, in Division H Section 8201 of the National Defense Authorization Act for Fiscal Year 2023..

Scope: The purpose of the project is to improve flood risk management, provide ecosystem restoration, and additional water storage conditions in Shingle Creek and Lake Toho within the Kissimmee Chain of Lakes by improving the storage and hydrologic connection throughout the system. This may include taking actions to develop cost-effective structural, non-structural, and natural and nature-based features to re-establish native riparian, upland, and riverine habitat and the hydrologic functions they historic performed.

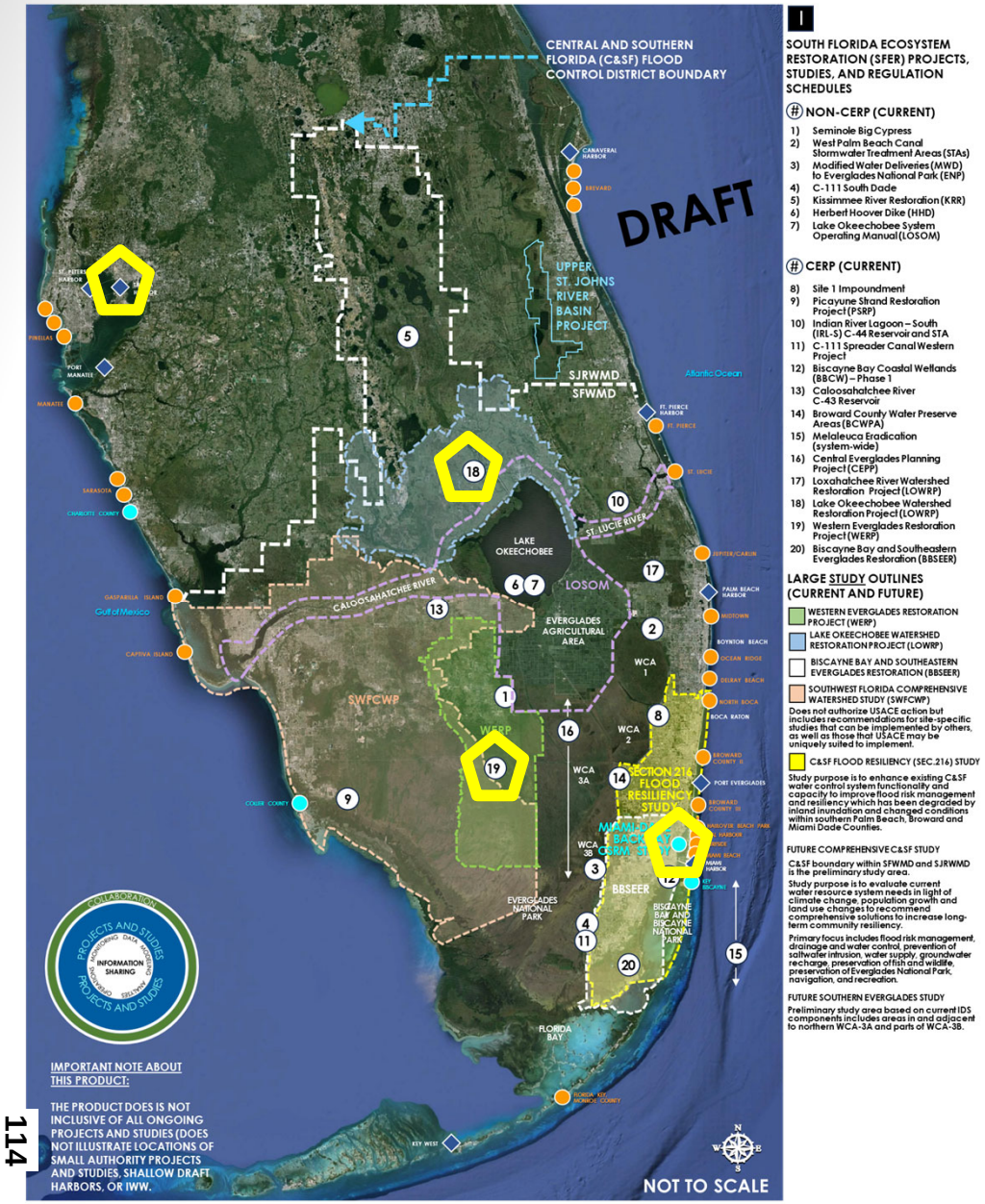
Key themes:

- Shingle Creek and the surrounding floodplain could convey the runoff from storm events and the S-61 outlet structure at Lake Toho could pass high flows into the lower lakes. Continued urbanization has constricted the flow area, filled natural storage, and increased the volume of runoff
- Opportunities exist for development of multipurpose features optimizing total benefits of the flood risk management, aquatic ecosystem restoration, and water storage solutions
- Project will support federal goals for benefits to disadvantaged communities, habitat restoration, navigation, flood risk management, and recreation

QUESTIONS?

COMMUNITY RESILIENCE PROGRAMS

WRDA 2024 PROJECTS



Coastal Storm Risk Management (CSRM)

- Miami-Dade Back Bay
- Ponte Vedra

Navigation (NAV)

- Tampa Harbor

Aquatic Ecosystem Restoration (AER)

- Western Everglades Restoration Project (WERP)
- Lake Okeechobee Component A Reservoir (LOCAR)