South Florida Water Management District

RESILIENCY COORDINATION FORUM
AGENDA

February 28, 2024
9:00 AM
District Headquarters - B-1 Auditorium
3301 Gun Club Road
West Palm Beach, FL 33406

FINAL REVISED

1. Opening Remarks - Jennifer Smith, Chief of Staff, SFWMD

2. Statewide Office of Resilience - Wes Brooks, Ph.D., Chief Resilience Officer, State of Florida

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

4. 2024 Legislative Update - Phil Flood, Principal External Affairs Specialist, SFWMD

5. National Oceanic and Atmospheric Administration (NOAA) Atlas 15 - Kenneth Kunkel, Ph.D., Senior Scientist and Research Professor, North Carolina State University

6. Break

7. Florida Flood Hub Update - Thomas K. Frazer, Ph.D., Dean and Professor, University of South Florida

8. C&SF Flood Resiliency Study Updates - Tim Gysan, P.E., Resilience Senior Project Manager, USACE; Eva Velez, P.E., Chief, Ecosystem Branch, USACE

9. 2024 Wet Season Flood Information Resources
   A. South Florida Flood Information Resource, Tools and Training for the Upcoming Wet Season - Christine Carlson, Geospatial Architect, SFWMD
   B. Flood Insights for Florida - Mark Antonik, Strategic Account Manager, ICEYE; Mike Bennett, Head of North America Government Solutions, ICEYE; and Jin Lee, Client Success Manager, ICEYE

C. Flood Tracking in South Florida - Julia Kumari Drapkin, CEO and Founder, ISeeChange

10. Around the Table Updates from Local, Tribal and State Agencies

11. Public Comment

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

13. Adjourn

Presentations for Agenda Items 3, 4, 5, 7, 8, 9A, 9B and 9C: (Staff contact, Yvette Bonilla)

Agenda Item Background:

3 District Resiliency Updates
4 2024 Legislative Updates
5 NOAA Atlas 15
7 Florida Flood Hub Update
8 C&SF Flood Resiliency Study Updates
9 2024 Wet Season Flood Information Resources

District Resiliency Updates

Resiliency Coordination Forum – February 2024

Carolina Maran
Chief of District Resiliency
South Florida Water Management District

Critical Elevations Data Request

From the November 29th Forum Discussions

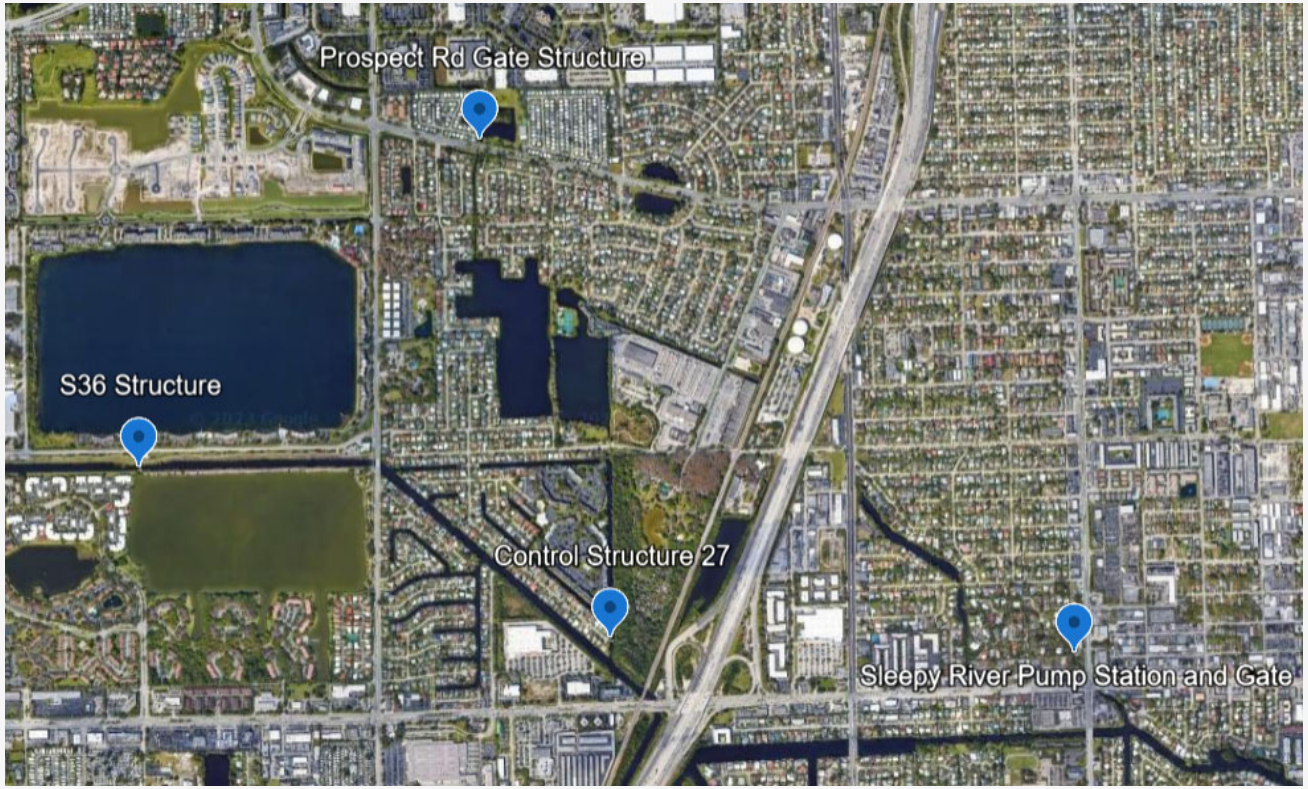


Image Courtesy of City of Oakland Park

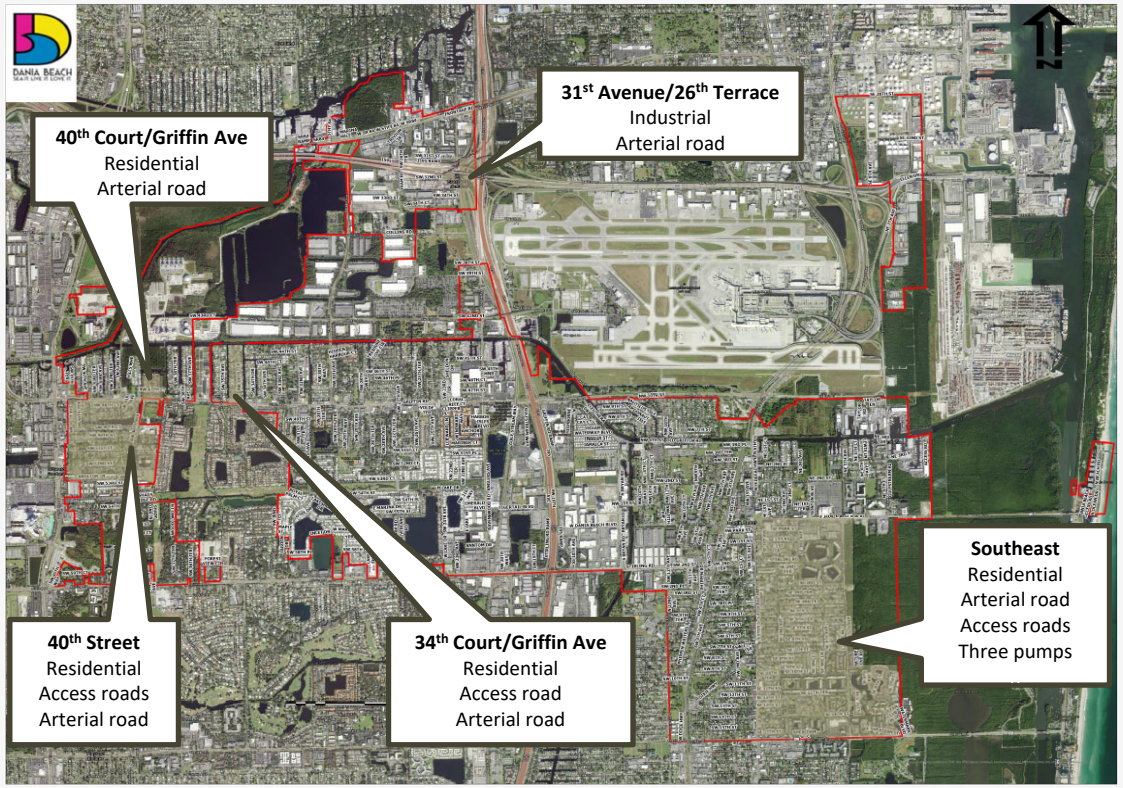


Image Courtesy of City of Dania Beach

Critical Elevations Data Request

From the November 29th Forum Discussions

- **Defining Critical Elevations**: We define critical elevations as those at primary and secondary canals that could exacerbate flood risks within drainage basins. These risks extend beyond street flooding, impacting finish floor elevations, and causing limited road access, particularly for emergency vehicles.

- **Request Details**: Please provide all relevant critical elevations and associated durations, along the primary canals (applicable both upstream and downstream of coastal structures) and secondary canals. In addition, please detail vulnerable areas/locations within the respective drainage basin that would be affected if the critical elevation is exceeded and add a brief description of local operational issues/limitations.

Critical Elevations Request

From the November 29th Forum Discussions

Interagency Canal Critical Elevations Data Tracking Sheet

Directions: Please provide information by 2/16/24 to resiliency@sfwmd.gov

County	Agency/ District Name	Canal Name	Primary / Secondary System	Canal Operator	Gauge Name (if existing)	Location of Elevation Measurement Lat/Long (Decimal Degrees)	Critical Elevation (Note if NAVD/NGVD)	Duration	Areas/Loca+K7tions Impacted if Critical Elevation is (Name Neighborhood/Community or Lat/Lon
Osceola	City of St. Cloud	C-31 Canal	2nd Street Ditch	SFWMD		28.259; -81.315	57.2 NGVD	Multiple days/weeks during last hurricane	Blackberry Creek; Commerce Center Drive
Osceola	City of St. Cloud	Ohio Lateral Ditch	C-31	FDOT		28.246; -81.312	65 NGVD	Strucutral flooding during Hurricane Ian	Cypress Court
Osceola	City of St. Cloud	Gator Bay Slough	Lake Toho	Osceola County		28.201; -81.282	73.7 NGVD	approx.1 day	Bayview Lane
Osceola	City of St. Cloud	Gator Bay Slough	Lake Toho	Osceola County		28.177; -81.292	69.3 NGVD	approx.1-2 days	Moon Dancer
Osceola	City of St. Cloud	Gator Bay Slough	Lake Toho	Osceola County		28.180; -81.298	68.1 NGVD	approx.1 day	Pixie Lane

Initial Responses received from:

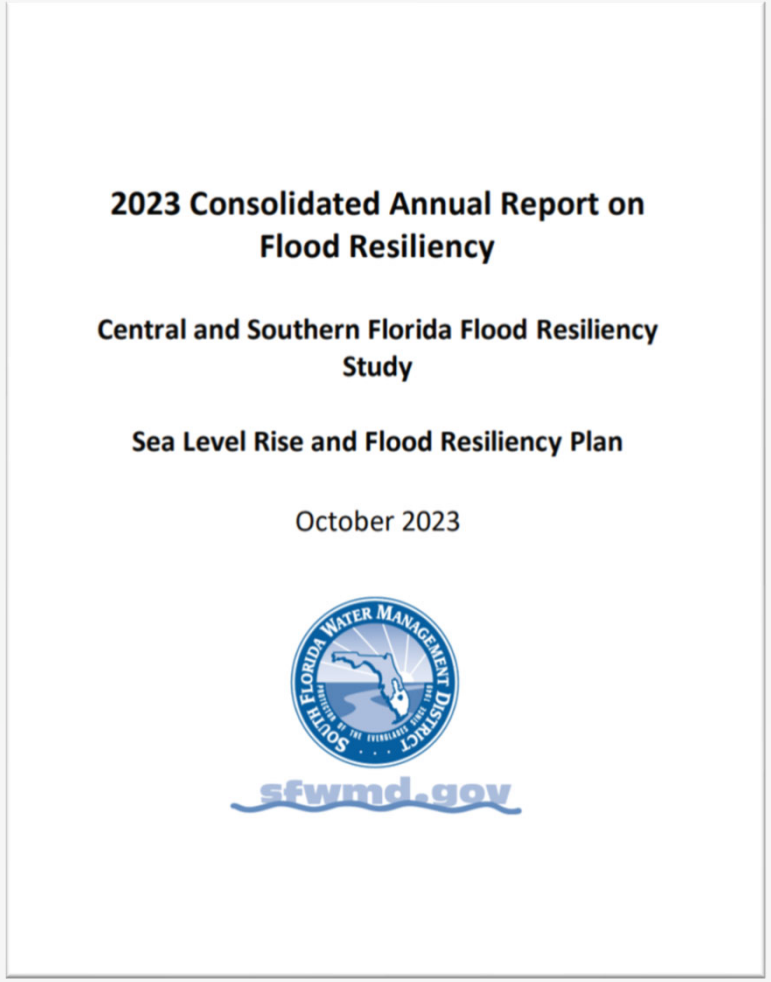
- Seminole Tribe of Florida
- Okeechobee County
- Polk County
- St. Lucie County
- Osceola County
- City of Fort Lauderdale
- City of Cape Coral
- City of St. Cloud
- City of Pompano Beach
- City of Oakland Park
- City of Dania Beach
- Northern Palm Beach county Improvement District
- Coral Springs Improvement District
- Spring Lake Improvement District

Water and Resilience Climate Metrics Updates

- **South Florida Environmental Report (SFER)** Chapters will be published on March 1st and Open House on April 10-11
  - sfwmd.gov/SFER (Chapters 2A and 2B)
  - sfwmd.gov/meetings
- **Sub-daily Rainfall Trends and Drought Projections** under development, in collaboration with USGS/FIU to support upcoming Water Supply Vulnerability Assessment and other ongoing Flood Vulnerability Assessments

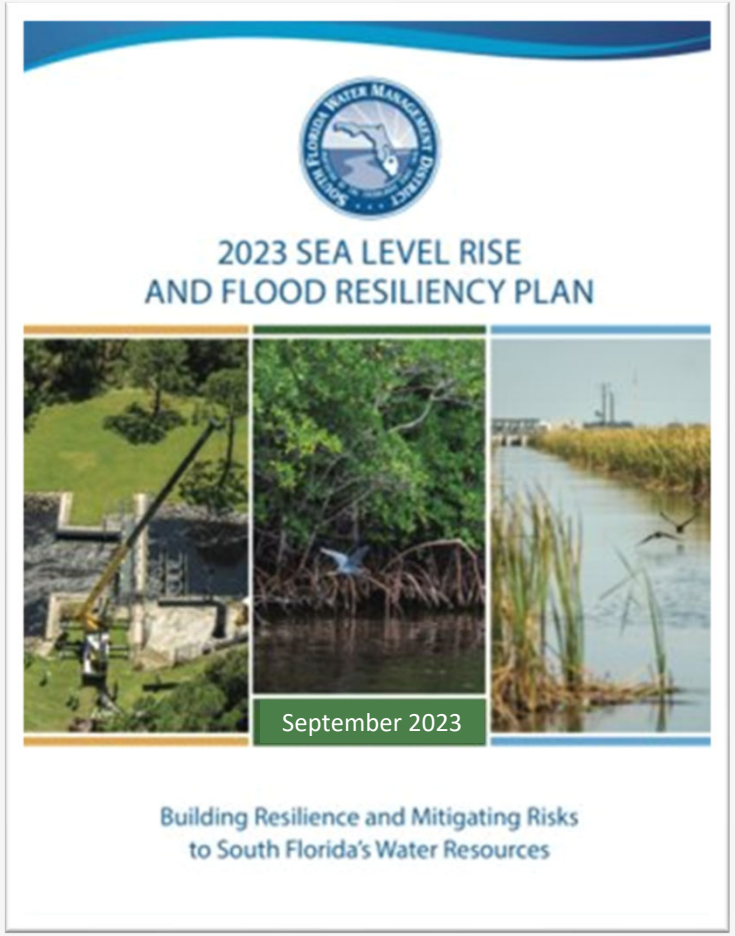
- Year 2 **Enhanced NOAA Tide Predictions**, in collaboration with UM Rosenstiel School (new global climate model, one potential new west coast site)
- Ongoing Collaboration with the **Florida Flood Hub** on **Statewide Rainfall Projections**

Resiliency Planning: 2024 Updates



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

Draft Version to be shared and open for comments at the upcoming Forum on May 29



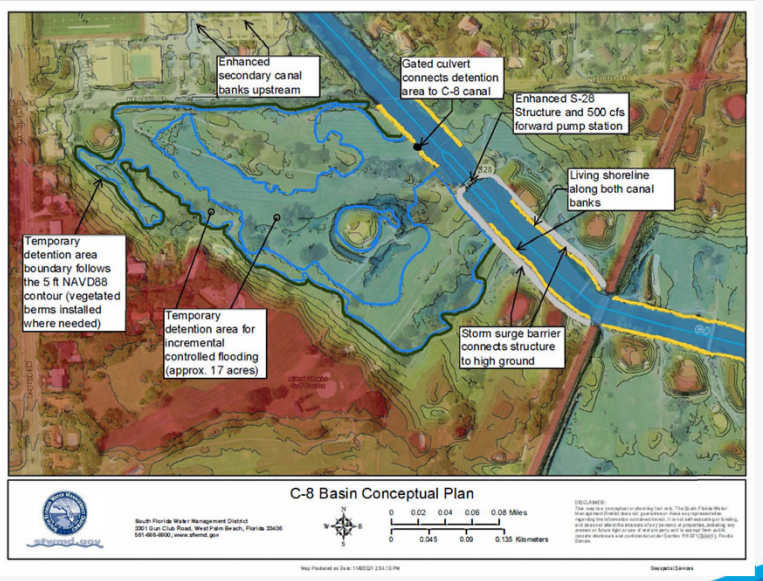
Grant Proposals

- Further exploring project partnership opportunities in 2024
- Initial coordination meetings with partner agencies
- Resilient Florida, FEMA BRIC and other HGMP (DR), Florida Commerce, NOAA, others.

Projects/Grant Implementation

Ongoing Coordination with:

- **FDEP** on **Resilient Florida Implementation Grants** – 2 Agreements Executed; Anticipated execution this month of additional grant agreement for Corbett Levee.
- **FEMA/FDEM** to advance **FEMA BRIC** implementation (no draft agreements received for FY21 and FY22 recommended grants)
- **FDEP Innovative Tech Grant** – Finalizing workplan in collaboration with Miami-Dade County
- **FDEP** on **Resilient Florida Planning Grant** - FPLOS Phase I Studies initiated for Martin/St. Lucie Counties - currently being expanded to include Adaptation Planning



USACE-SFWMD Resiliency Coordination Efforts

- **C&SF Flood Resiliency Study:**
  - Future Without Runs and Upcoming Performance Metrics Public Workshop on March 6th and 7th
  - Study Funding Limitations and Counties Support

- **C&SF Comprehensive Study**
  - Waiting for Implementation Guidance
  - Review of FS Cost-Share Agreement Template
  - Compound Flood Proposal being evaluated by ERDC

US Army Corps of Engineers®
Jacksonville District

www.sfwmd.gov/C&SF

SFRPC

February 1, 2024

The Honorable Daniella Levine Cava
Mayor, Miami-Dade County
111 NW 1st Street, 29th Floor
Miami, Florida 33128

The Honorable Nan Rich
Mayor, Broward County
County Commissioner &
Former State Senator
115 South Andrews Avenue, #421
Fort Lauderdale, Florida 33301

The Honorable Oliver Gilbert, III
Chairman, Miami-Dade County Board
of County Commissioners
111 NW 1st Street, Suite 220
Miami, Florida 33128

Re: County Funding Effort needed for Flood Protection / Salinity Control Structures

Dear Mayor Rich, Mayor Levine Cava, and Chairman Gilbert:

At the Council's recent Board Meeting, the Council Members met with the Chief Resilience Officers and staff from Broward County (Dr. Jurado), Miami-Dade County (Mr. Murley), South Florida Water Management District (Dr. Maran), and U.S. Army Corps of Engineers (ACOE), Jacksonville District (Mr. Gysan, P.E., Ms. Veléz, P.E., and Major Cory Bell). Following a presentation by Dr. Jurado, the Council Members discussed the current and foreseeable failure of flood protection / salinity control structures in Miami-Dade County and Broward County and the need to work in partnership with the South Florida Water Management District to provide local funding to advance Level 3 Engineering Studies.

In summary, there are 23 flood control / coastal salinity structures in Broward (7) and Miami-Dade (16). Absent retrofitting and/or replacement, and complementary infrastructure investments, these structures are failing, or are expected to fail in the foreseeable future, to provide regional flood protection. Of these, three structures have received some level of partial funding. Four additional structures, two in each county, are under consideration for funding through the ongoing C&SF Flood Resiliency Study by the ACOE / SFWMD leaving 16 FPLOS Phase I structures without funding for the Level 3 Engineering Studies required to qualify for federal funding. Without these Level 3 Engineering Studies, funding for infrastructure replacement and/or improvements are likely to extend past 2032 at the earliest. To move these studies forward, the counties are proposing to collaborate with SFWMD to conduct the Level 3 Engineering Studies for the anticipated 5 unfunded structures in Broward and 11 structures in Miami-Dade.

1 Oakwood Boulevard, Suite 250 | Hollywood, Florida 33020 | 954-924-3653 | www.sfregionalcouncil.org

The SFWMD is able to undertake these studies expeditiously and at an estimated cost of $1.5 million per structure. The payment would be spread over two years. This translates to an expenditure by Broward County of $7.5 million and $16.5 million by Miami-Dade County over two years, or $3.5 million and $8.25 million per year respectively.

Given the urgency of this matter for the region, its residents, and economy, the Council recommends that the counties undertake and fund the studies for the 16 remaining FPLOS Phase 1 Control Structures in partnership with the SFWMD. It is critically important to fast track this work and submit it for Federal Funding (project authorization and appropriations) on an expedited schedule. It is also important to convey to the U.S. ACOE and SFWMD the importance of moving forward with the C&SF Flood Resiliency Study for a minimum of 4 Flood Control / Coastal Salinity Structures; two each in Miami-Dade and Broward. A unified regional voice and local funding will assist both the SFWMD and U.S. ACOE, Jacksonville District in moving this critical work forward at the federal level.

Additional materials accompany this correspondence for your review and information. In addition, you can view the meeting presentation and conversation at https://youtu.be/kMeXRdhI_7I?si=2HRqlaEbzSm9ol4w . Please do not hesitate to let me or Isabel Cosio Carballo, Executive Director, know if we can provide you with additional information or otherwise be of assistance to you.

Sincerely yours,

Steve Geller

Steve Geller
Chair, SFRPC
Broward County Commissioner & Former State Senator

Enclosures

ICC/JMJ

cc Jimmy Morales, Chief Operating Officer, Miami-Dade County
Monica Cepero, County Administrator, Broward County
Jennifer Jurado, Ph.D., Deputy Director & Chief Resilience Officer, Broward County
James F. Murley, Chief Resilience Officer, Miami-Dade County
Drew Bartlett, Executive Director, SFWMD
Ana Carolina Coelho Maran, P.E., Ph.D., District Resiliency Officer, SFWMD
Colonel James Booth, District Commander, U.S. ACOE, Jacksonville District
Mayor Cory J. Bell, Deputy District Commander for South Florida, U.S. ACOE
Eva B. Velez, P.E. Chief Ecosystem Branch, U.S. ACOE
E. Timothy Gysan, P.E., PMP, Senior Project Manager, Ecosystems Branch, U.S. ACOE
Council Members, South Florida Regional Planning Council
Isabel Cosio Carballo, MPA, Executive Director, SFRPC

Update on the Central & Southern Florida Flood Risk Study – Status and Timing

South Florida Regional Planning Council Meeting

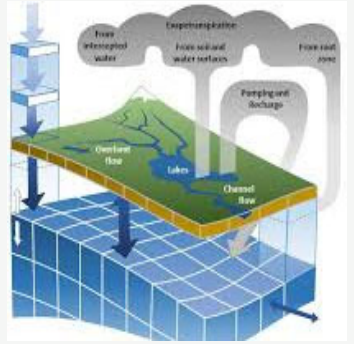
January 22, 2024

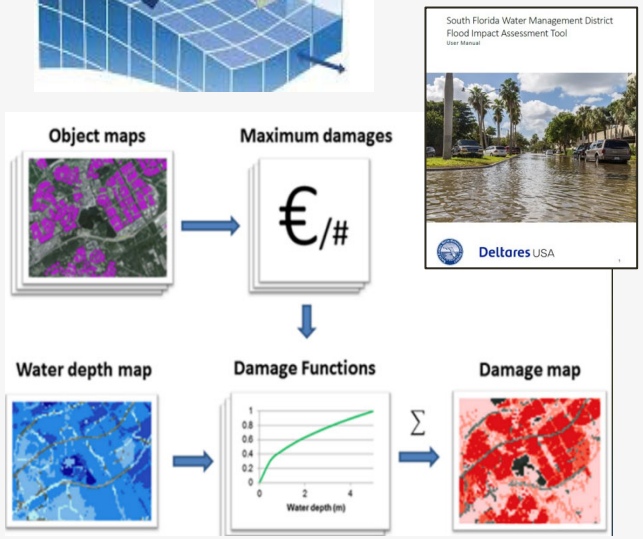
RESILIENT BROWARD

Other Relevant Recent Updates

- Flood Risk Modeling (Silver Jackets / WMDs)

- Flood Vulnerability Assessments and the need for advanced H&H tools in South Florida
  - minimum requirements to represent surface-subsurface interactions; water control structures operational rules; overall low-lying flat areas
  - One-pager being developed, and we welcome your input





District RESILIENCY
4 Years at a Glance

4 Million People

directly and indirectly benefited by the projects under implementation

$340M

in grant award funds, including District's match

14 Grants

awarded with contracts being executed

25 Partner Agencies

2407 Stake-holders

District RESILIENCY
4 Years at a Glance

38
Priority Projects
identified and described in the 2023 Sea Level Rise and Flood Resiliency Plan

9 H&H Model Reviews
in support of flood vulnerability assessments and being leveraged by the C&SF Flood Resiliency Study

15
documented Water and Climate Resilience Metrics

8
observed trends fully automated with real time data access

14
observed trends scientifically described in the SFER

District RESILIENCY
4 Years at a Glance

South Florida Flood Information Resource Hub

launched, with 600+ past flood observation datapoints compiled by flood prone areas

2 Metrics Future Projections

derived from global climate models to inform rainfall and tide scenario formulation

Building Resilience in South Florida Now and in the Future

We are hiring!

- **2 new positions within the Office of District Resiliency**
    1. Resiliency Planning Manager*
    2. Resiliency Project Manager (Implementation)*

    *to be posted

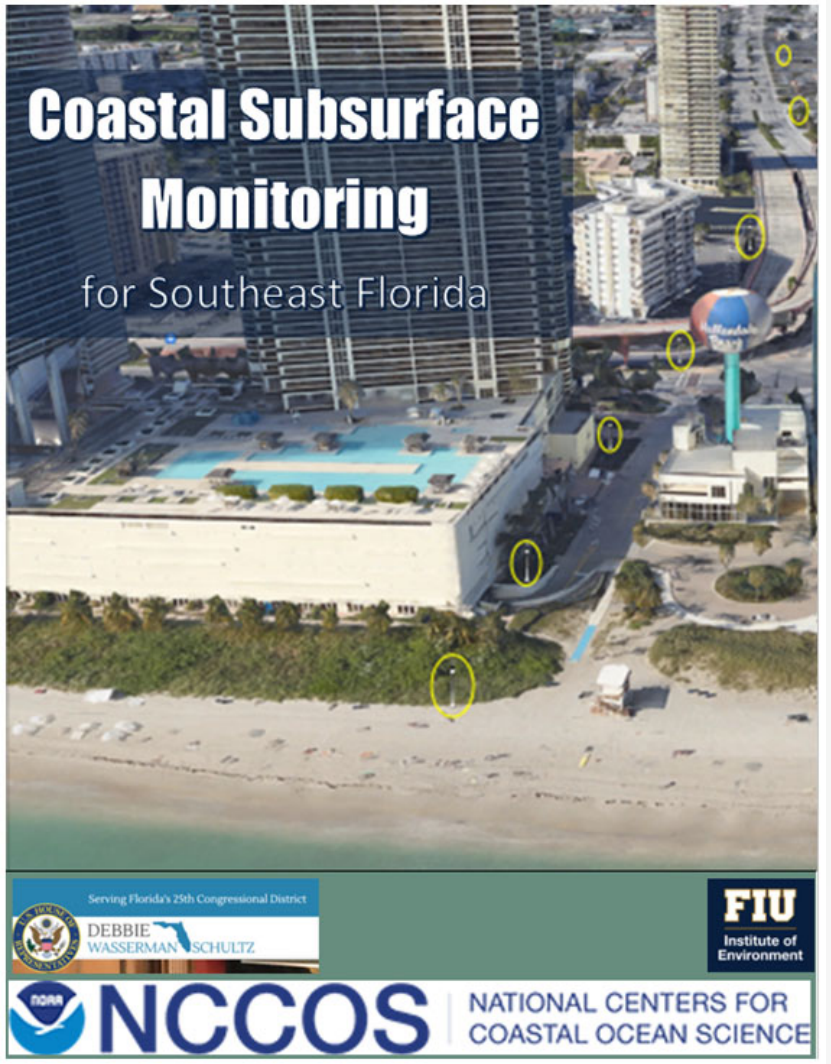
- **Visit sfwmd.gov/careers for more information**

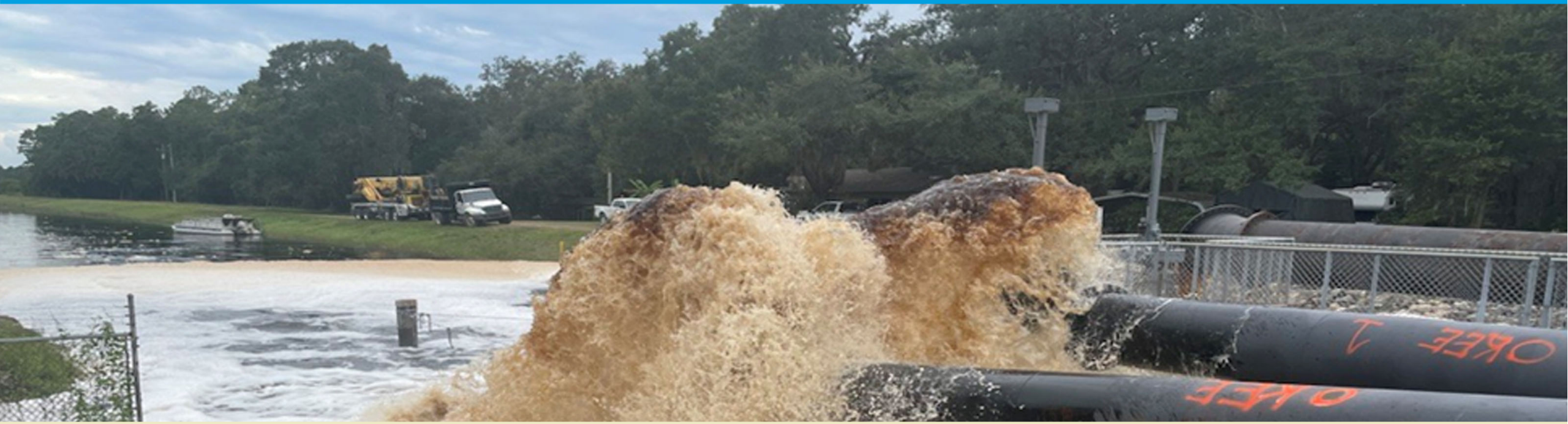
Upcoming Events

- February 28th (today) and 29th (tomorrow) – **Southwest Florida Climate Summit** https://www.chnep.org/climate-summit
- March 5th – **South Florida Hydrologic Society**

  Near-shore Coastal Subsurface Monitoring for Southeast Florida, by Dr. Mike Sukop, Professor, Florida International University at Weston Wing Plus, 1354 SW 160th Ave, Weston FL - 5:30pm
- March 7th (1PM) & 8th (8:30AM) – **USACE/SFWMD C&SF Flood Resiliency Study** Virtual Public Workshops*
- March 26th to 29th **NOAA Climate Diagnostics and Prediction Workshop**, Tallahassee, FL https://www.weather.gov/climateservices/cpasw
- April 10th & 11th – **SFWMD SFER Open House** @ SFWMD HQ
- May 29th – **SFWMD Resiliency Coordination Forum**

*different agenda on each day





Thank You

Carolina Maran, P.E., Ph.D.
Chief of District Resiliency
cmaran@sfwmd.gov
www.sfwmd.gov/resiliency

2024 Legislative Session Update on Resilience

Phil Flood
Legislative Liaison / External Affairs Specialist
February 28, 2024

2024 Legislative Session

Legislature began January 9
March 8 is last day of Regular Session

1954 Legislative Bills Filed

- 708 Bills Never Heard in Committee
- 32 Presented to Governor for his Consideration, 2 Signed into Law
- Approximately 650 Bills Still in Play

Over 60 Bills Reference Resiliency, Flooding, Sea Level Rise or Climate Change

Presenter: Phil Flood

Legislative Bills of Interest

SB 298 Local Government Coastal Protections

Restricts new coastal construction control measures and amends funding provisions for saltwater intrusion vulnerability assessments.

- Authorizes DEP to provide grants for coastal counties to conduct saltwater intrusion vulnerability assessments.
- Specifies that saltwater intrusion vulnerability assessments must include an analysis of the county's primary water utilities, current maps, projections of intrusion over the next decade, and costs to relocate impacted freshwater wellfields.
- Obligates DEP to use vulnerability assessment information to update the statewide flood vulnerability and sea level rise dataset and provide a 50 percent cost-share funding up to $250,000 for each grant.

Status: Awaiting Senate vote

Presenter: Phil Flood

Legislative Bills of Interest

SB 1526/HB 1647 Local Regulation of Nonconforming and Unsafe Structures
Establishes the "Resiliency and Safe Structures Act" aimed at regulating the demolition and redevelopment of certain nonconforming or unsafe structures.

Status: Awaiting Senate vote, awaiting House vote

Presenter: Phil Flood

Legislative Bills of Interest

HB 1581 Mangrove Replanting and Restoration

Mandates DEP to adopt new rules for mangrove replanting and restoration, along with conducting a statewide feasibility study on utilizing mangroves for flood insurance benefit.

- Assist in Everglades restoration and support Biscayne Bay revitalization, including living shoreline designs.
- Support partnerships with local governments for coastal protection projects under the Resilient Florida Grant Program.
- Conduct a feasibility study on using mangroves for coastal flood risk reduction to potentially lower insurance premiums and enhance community ratings.

Status: Awaiting House vote

Presenter: Phil Flood

Legislative Bills of Interest

HB 1557/SB1368 Department of Environmental Protection

The bill amends various Florida Statutes to enhance environmental protection and management, particularly focusing on aquatic conservation, water management, and wastewater treatment.

- Requires water management districts to develop rules promoting reclaimed water use and encouraging quantifiable potable water offsets.
- Defines "Florida Flood Hub" and revises terms and requirements concerning the Resilient Florida Grant Program and the statewide flood vulnerability and sea level rise assessment.

Status: Passed by House, awaiting Senate vote

Presenter: Phil Flood

Legislative Bills of Interest

HB 1417/SB 1638 Funding for Environmental Resource Management

Allocates revenue from the Seminole Tribe gaming compact to environmental and water quality initiatives.

- Requires a specified percentage of revenue share payments for Florida wildlife corridor, land management, invasive species removal, the Statewide Flooding and Sea Level Rise Resilience Plan and water quality improvements.
- The lesser of 26.042 percent or $100 million each fiscal year to the Resilient Florida Trust Fund.

Legislative Bills of Interest

HB 1417/SB 1638 Funding for Environmental Resource Management - cont.

- For the 2024-2025 fiscal year, the sum of $100 million for the Statewide Flooding and Sea Level Rise Resilience Plan pursuant to s. 380.093, Florida Statutes.
- For the 2024-2025 fiscal year, the sum of $150 million to the South Florida Water Management District for operations and maintenance responsibilities.

Status: Passed by House, awaiting Senate vote

Presenter: Phil Flood

Legislative Bills of Interest

HB 5001/SB 2500 General Appropriations Act

House: $115,547,289,055

Senate: $115,939,248,697

Status: Currently in Budget Conference

Governor Ron DeSantis Budget

Focus on Florida's Future
FY 2024-25 Budget

$875 million for Protection of Water Resources

- **$745 million Florida's Everglades**

$150 million Central & South Florida Infrastructure

$157 million Resilient Florida Program

- $100 million implementation of statewide resiliency projects
- $57 million planning and coral reef protection

$50 million Beach Management Program

Presenter: Phil Flood

2024 Legislative Update

Questions?

Presenter: Phil Flood

Scientific Challenges for NOAA Atlas 15 Projections of Heavy Rainfall Design Values

Kenneth E. Kunkel
Atmospheric Sciences Professor, Dept of Marine, Earth and Atmospheric Sciences
Lead Scientist for Assessments, North Carolina Institute for Climate Studies
North Carolina State University

OWP | OFFICE OF WATER PREDICTION

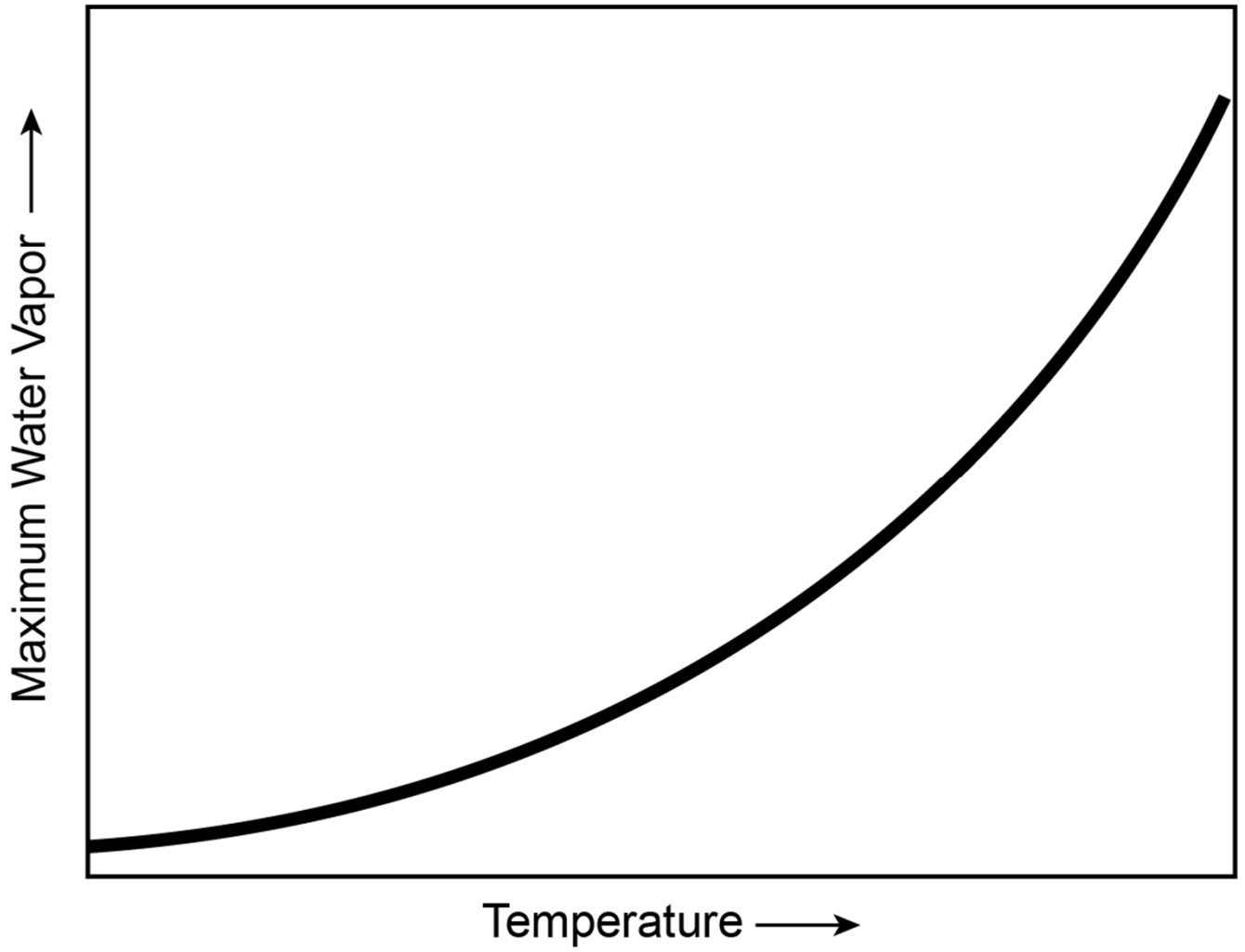
The Basics

The six Assessment Reports of the Intergovernmental Panel on Climate Change and the 5 U.S. National Climate Assessment Reports have been uniform in projecting increases in extreme precipitation if the globe continues to warm

The Basics

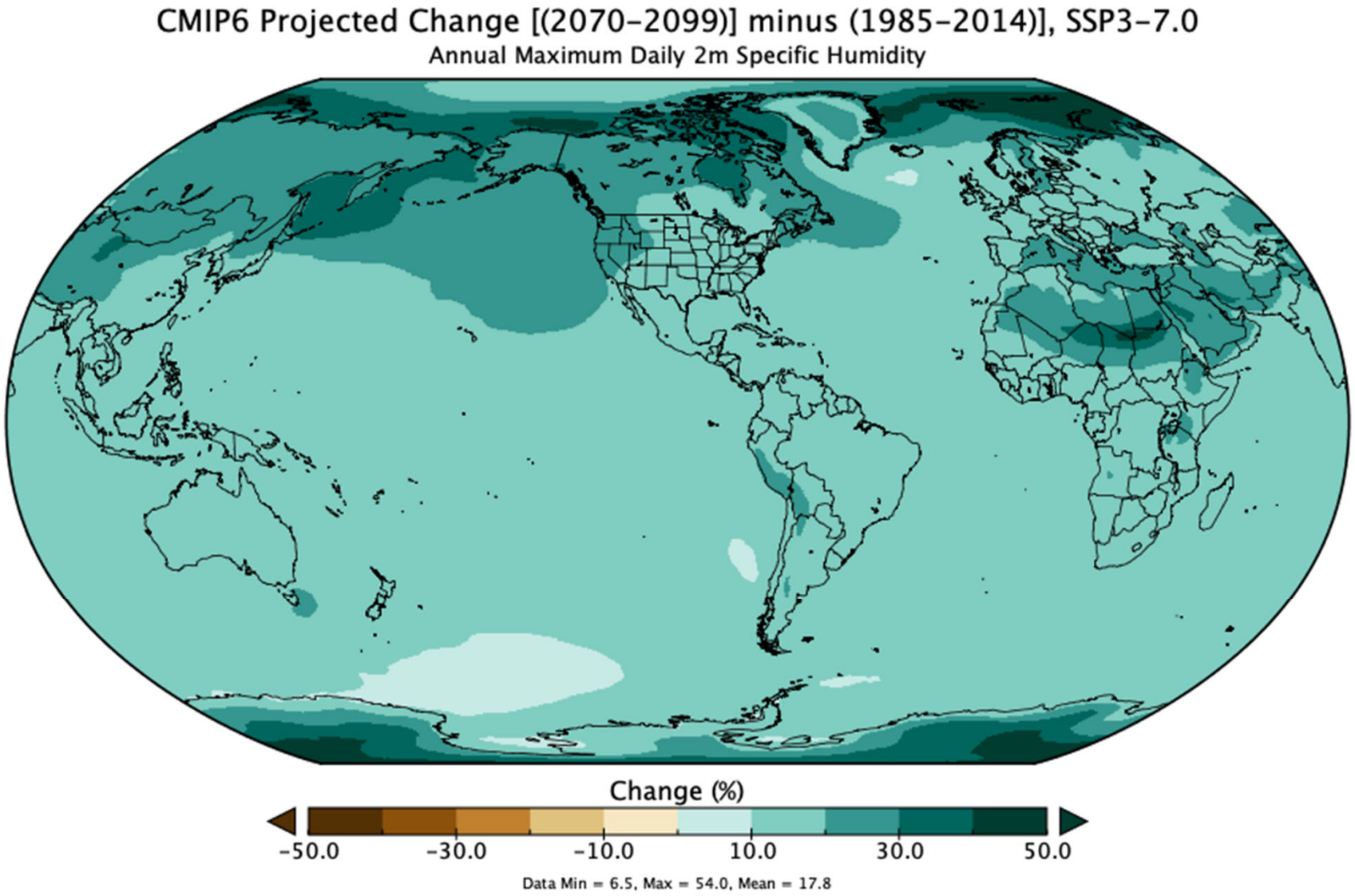
- Why?
  - The potential for increased atmospheric moisture content due to the Clausius-Clapeyron relationship

Warmer -> (Potentially) Moister

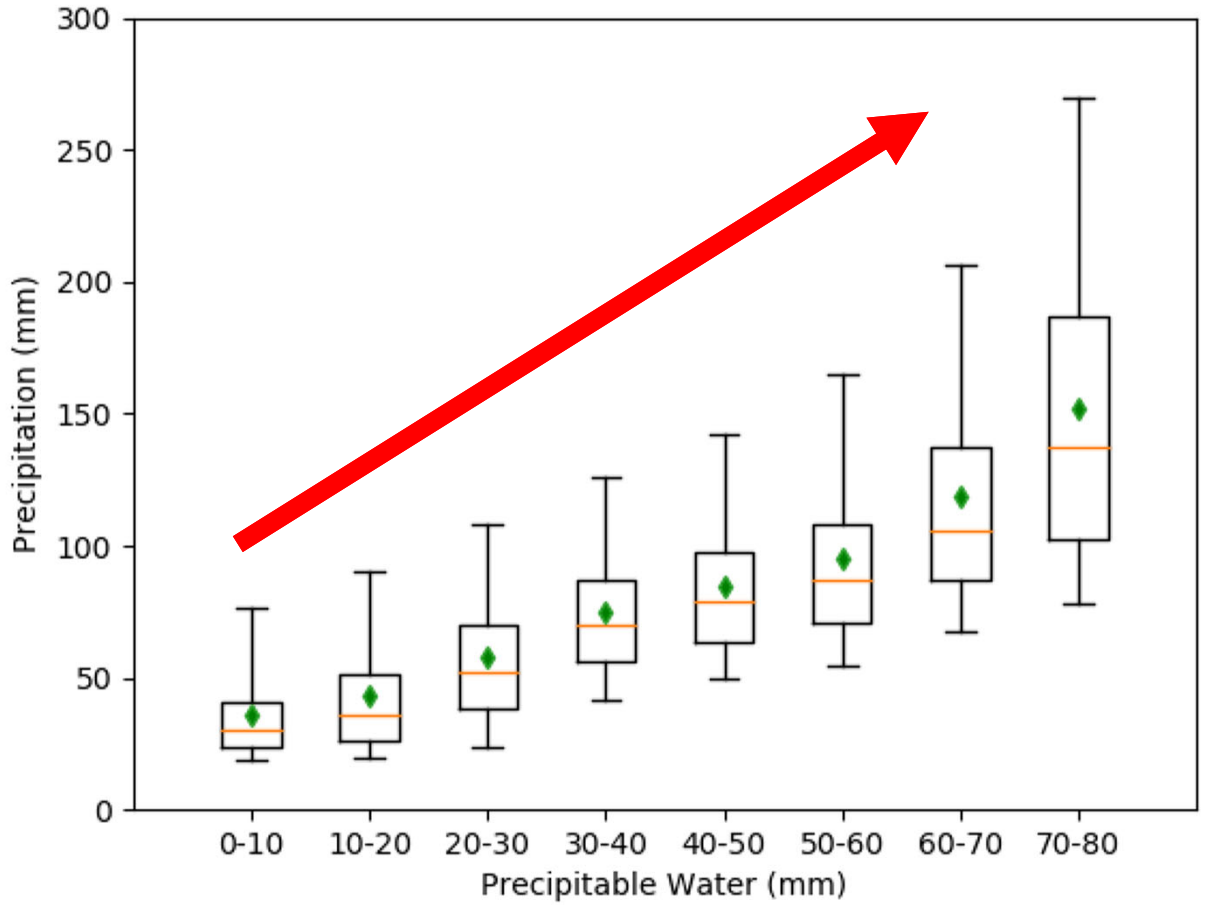


Clausius-Clapeyron relationship: Maximum (saturation) water vapor increases by about 7% per °C

CMIP6 Projections



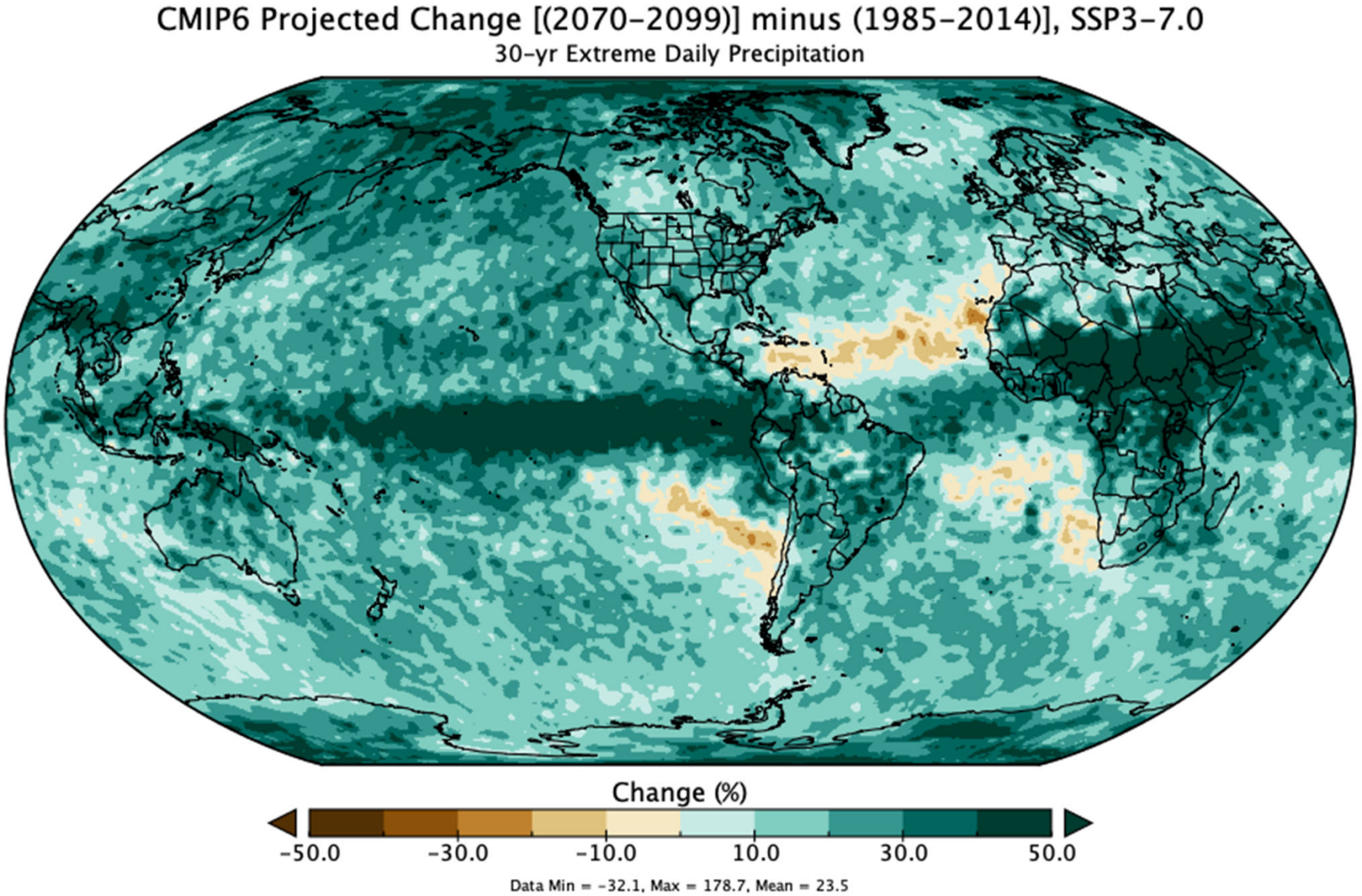
Extreme Precipitation Amounts vs Water Vapor



Over CONUS, heavy precipitation amounts on average increased monotonically with precipitable water

Kunkel, K.E., S.E. Stevens, L.E. Stevens, and T.R. Karl, 2020: Observed climatological relationships of extreme daily precipitation events with precipitable water and vertical velocity in the contiguous United States. *Geophys. Res. Lett.*, **47**, e2019GL086721.

CMIP6 Projections



Magnitude of Increases

- An exact scaling of extreme precipitation based on the C-C relationship is unlikely everywhere for at least 2 reasons:
  - Vertical uplift in convective storms may be enhanced because of increased latent heat release
  - Changes in frequency and/or intensity of weather systems that cause extreme precipitation may occur

The Challenge

The Challenge

- Durations (19)
  - 5 minutes up to 60 days
- Annual Exceedance Probabilities (10)
  - 63% down to 0.1%

Where to turn for answers?

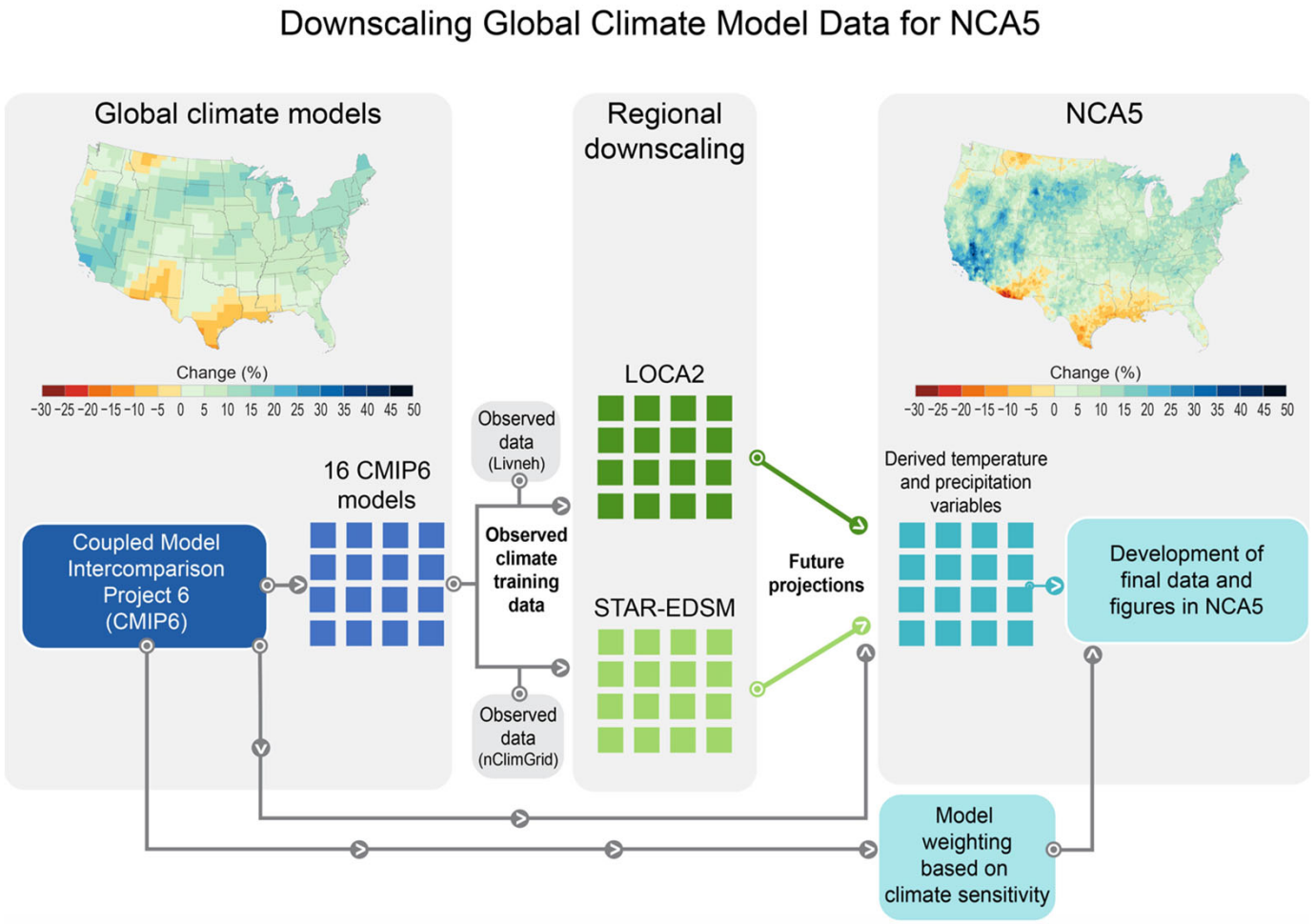
- Climate Model Simulations are a prime source
- We would like lengthy (multi-decadal) simulations from multiple models for multiple future emissions pathways
  - High spatial resolution
  - Data storage at sub-hourly time resolution
- But, **we do not have this**

So, what do we have?

NA15-Vol.2 Science Tasks/Challenges

- Downscaled Climate Model Datasets (at this point in time)
  - LOCA2 (1/16th degree resolution)
  - STAR (1/24th degree resolution)
  - UWPD (1/10th degree resolution)

Used in 5th National Climate Assessment

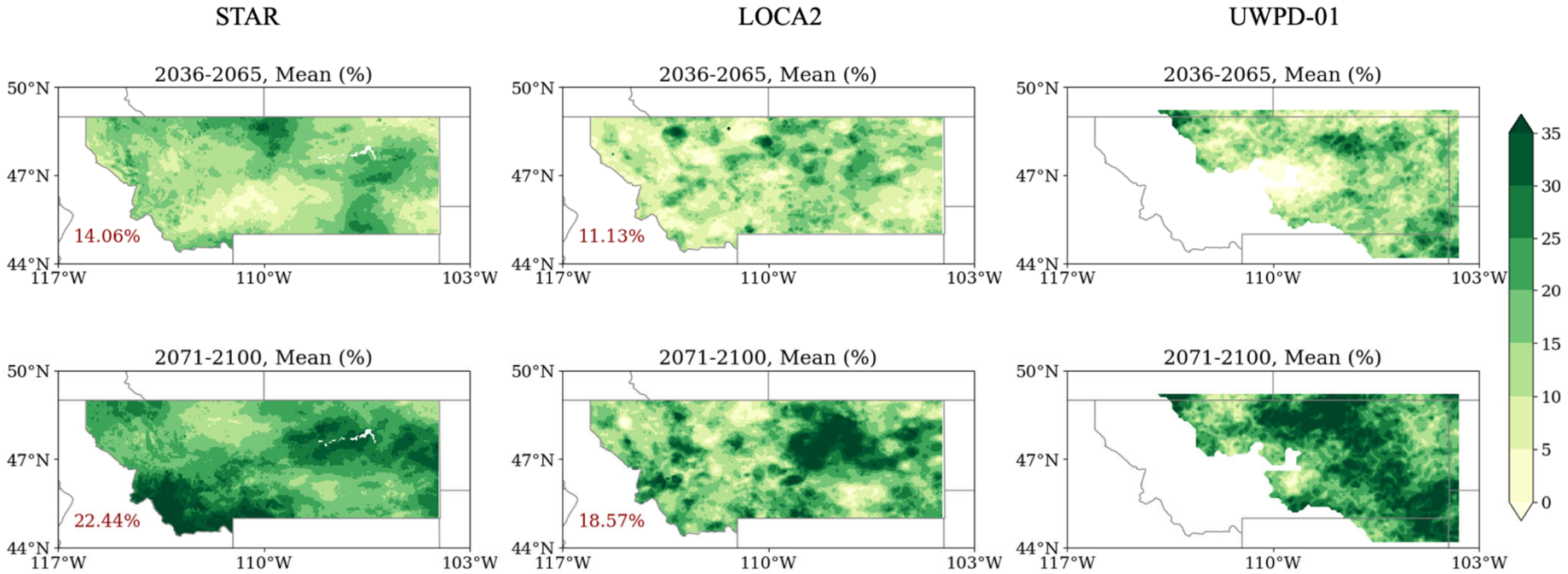


NA15-Vol.2 Science Tasks/Challenges

- Downscaled Climate Model Datasets
  - LOCA2, STAR, UWPD (daily precipitation)
  - Provides information for 24-hr and longer durations, maybe down to the 1-2% AEP range

Preliminary Results of Downscaled Data Analysis

- Comparison of 5% AEP, daily values among the 3 downscaled datasets
- Overall changes are similar, but lots of spatial variability
- **Our conclusion**: Adjustment factors should be averaged over large areas and multiple models



Estimated daily, 20-yr values under SSP5-8.5 for mid-Century (top) and end of Century (bottom)

NA15-Vol.2 Science Tasks/Challenges

- Downscaled Climate Model Datasets
  - LOCA2, STAR, UWPD (daily precipitation)
  - Provides information for 24-hr and longer durations, maybe down to the 1-2% AEP range
- Limitations
  - Statistically downscaled data typically available only at daily resolution
  - Limited CMIP6 data availability at sub-daily resolutions

So, what about sub-daily durations?

NA15-Vol.2 Science Tasks/Challenges

- As duration shortens, localized convection may play a more important role in extreme events
- Convection-resolving Climate Models
  - Sidesteps uncertainties in cumulus parameterization schemes

Sub-daily durations

- Convection-resolving Climate Models (CRCMs)
  - National Center for Atmospheric Research simulations (CONUS404)
    - 4 km spatial resolution, 15 min time resolution
    - Historical simulation (1979-2022) completed
    - Future simulation possibly available in spring 2024

Rasmussen, R.M., Chen, F., Liu, C.H., Ikeda, K., Prein, A., Kim, J., Schneider, T., Dai, A., Gochis, D., Dugger, A. and Zhang, Y., 2023. CONUS404: The NCAR–USGS 4-km Long-Term Regional Hydroclimate Reanalysis over the CONUS. *Bulletin of the American Meteorological Society*, *104*(8), pp.E1382-E1408.

Sub-daily durations

- Convection-resolving Climate Models (CRCMs)
  - Northern Illinois University
    - 3.75 km spatial resolution, 15-min time resolution
    - Historical and future 15-yr simulations

Sub-daily durations

- Other model resources
  - NA-CORDEX
    - 25 km spatial resolution, 1-hr time resolution precip data
    - 1950s/1970s-2100

Sub-daily durations

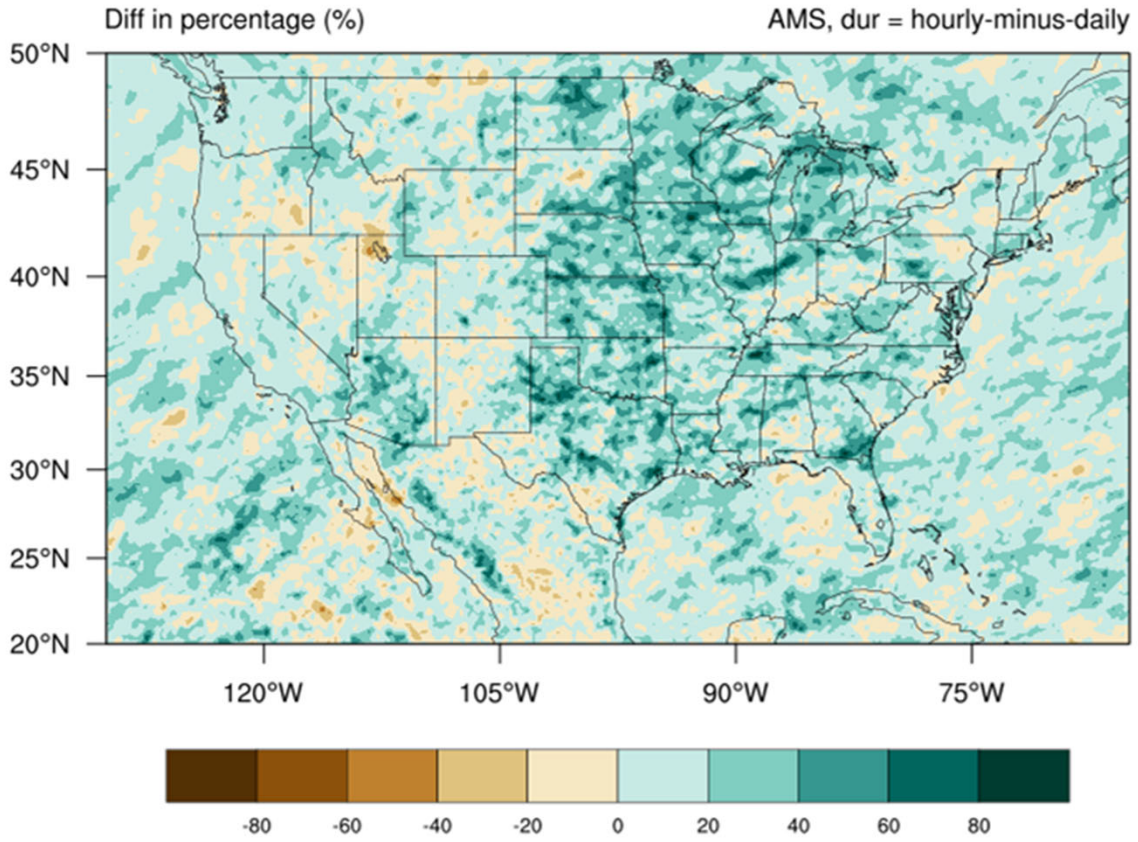
- Other high resolution simulations may become available during the project

Sub-daily durations

- Sub-daily climate model simulation data
  - Null hypothesis: the relative adjustment [(future-historical)/historical] is the same for durations from 5 minutes to 24-hr
  - Will the CRCM simulations provide robust evidence that this is not the case?

Preliminary Results of NA-CORDEX hourly data

- Comparison of Annual Maximum Series (AMS) average values for late 21st Century relative to late 20th Century
- Hourly AMS minus 24-hr AMS
- **Our conclusion**: Adjustment factors for hourly duration may be higher than 24-yr over central U.S



Difference (%) in average AMS between hourly and daily durations

What about small AEPs?

NA15-Vol.2 Science Tasks/Challenges

- Small Annual Exceedance Probabilities (AEPs)
  - How to reliably estimate
    - With only about 100 years of high quality historical data
    - From future projections from single model simulations extending to 2100
- Pooling of climate model data one possible research approach

Small AEPs

- Large single GCM ensembles
  - NOAA SPEAR
    - 50 km resolution
    - 30 members (1920-2100) completed
  - CESM LENS
    - ~100 km resolution
    - 40 members (1920-2100)

Small AEPs

- CMIP6 multi-model ensembles
  - ~40 models with daily precipitation for historical and scenarioMIP experiments
  - Pooling of data is more challenging than with single model large ensembles

Small AEPs

- Large ensembles analysis
  - Null hypothesis: the relative adjustment [(future-historical)/historical] is the same for AEPs from 2% down to 0.1%
  - Will the large ensemble simulations provide robust evidence that this is not the case?

Questions?

Acknowledgements

- Technical assistance provided by Xia Sun and Liqiang Sun
- Funding for my effort on this project provided by NOAA through CIROH in cooperation with RTI

FLORIDA FloodHub FOR APPLIED RESEARCH AND INNOVATION

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Estimates of Sea Level Rise to Inform Resilience Planning in Florida

TOM FRAZER - tfrazer@usf.edu

RESILIENCY COORDINATION FORUM

SFWMD – 28 FEBRUARY 2024

Florida Flood Hub

OVERVIEW

Represents a first in Florida

Established by the State at the University of South Florida College of Marine Science

Focus on some of the state's most pressing environmental challenges

Improve flood forecasting and inform science-based policy, planning, and management

Bridge gaps among scientists, policymakers, practitioners, and the public to help communities mitigate and adapt to flooding

Inform resilience — the ability of communities to prepare for, withstand, and rebound from floods and other natural hazards

FloodHub

UNIVERSITY OF SOUTH FLORIDA
College of MARINE SCIENCE

Scientific and Technical Workgroups

WORKGROUPS ARE CENTRAL TO THE SUCCESS OF THE FLORIDA FLOOD HUB

Sea Level Rise Workgroup

Rainfall Workgroup

Comprehensive Modeling Workgroup

Sea Level Rise Workgroup

INITIAL PRODUCTS

Use data in the Federal Task Force report released in 2022

Focus on sea level rise as it affects Florida

Assess risk = Magnitude of impact × Likelihood of impact

Reunite the west and east coasts of Florida

Predict changes in sea level from a 2000 baseline

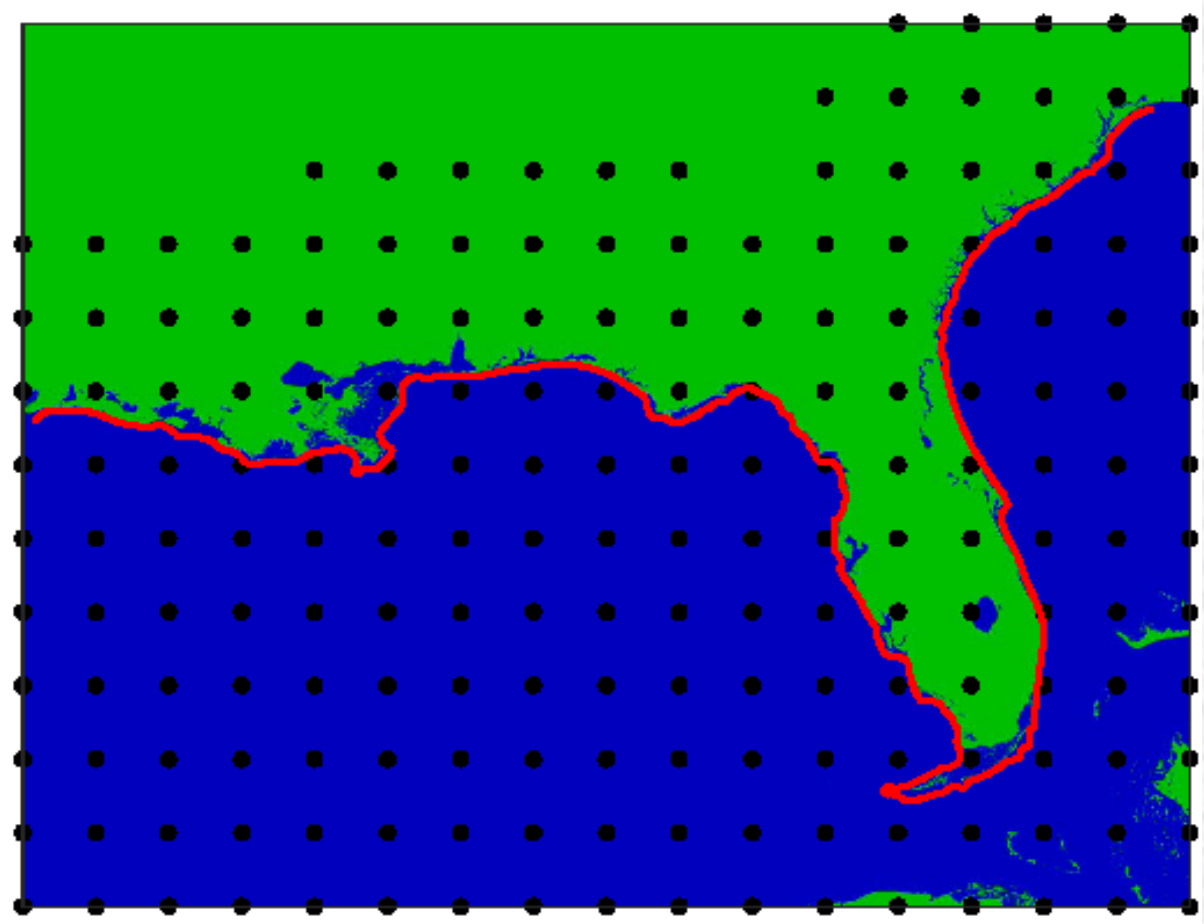
Focus on five changes in sea level by 2100

Report on four intermediate time horizons (2020, 2040, 2050, and 2070)

Document increases in sea level for time horizons **(magnitude for risk)**

Incorporate five likely increases in mean global surface air temperatures

Calculate the likelihood of exceeding increases **(likelihood for risk)**



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Sea Level Rise Scenarios for Florida

SEA LEVEL RISE WORKGROUP INITIAL PRODUCTS: **MAGNITUDE FOR RISK**

Table 1: Sea level change relative to 2000 for Florida across four time horizons

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

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College of MARINE SCIENCE

Exceedance Probabilities

SEA LEVEL RISE WORKGROUP INITIAL PRODUCTS: **LIKELIHOOD FOR RISK**

Table 2: Exceedance probabilities for sea level rise scenarios projected to 2100

Global mean sea level rise scenario	Predicted increase in global mean surface air temperature				
	1.5°C	2.0°C	3.0°C	4.0°C	5.0°C
Low	92%	98%	>99%	>99%	>99%
Intermediate low	37%	50%	82%	97%	>99%
Intermediate	<1%	2%	5%	10%	23%
Intermediate high	<1%	<1%	<1%	1%	2%
High	<1%	<1%	<1%	<1%	<1%

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College of MARINE SCIENCE

Exceedance Probabilities

SEA LEVEL RISE WORKGROUP INITIAL PRODUCTS: **LIKELIHOOD FOR RISK**

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Low	92%	98%	>99%	>99%	>99%
Intermediate low	37%	50%	**82%**	97%	>99%
Intermediate	<1%	2%	**5%**	10%	23%
Intermediate high	<1%	<1%	<1%	1%	2%
High	<1%	<1%	<1%	<1%	<1%

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Sea Level Rise Scenarios for Florida

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Sea Level Rise Scenarios for Florida

POTENTIAL APPLICATION: COMBINE LIKELY RISK WITH PLANNING HORIZON TO INFORM RESILIENT APPROACHES

Table 1: Sea level change relative to 2000 for Florida across four time horizons

Global mean sea level rise scenario	Time horizon			
	2000 – 2020	2000 – 2040	2000 – 2050	2000 – 2070
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High	104 / 4.1	298 / 11.7	459 / 18.1	979 / 38.5

Examples:

- Transportation (roads and bridges)
- Energy systems (replacement and upgrades)
- Stormwater systems (improved design)
- Shoreline protection (green and gray)
- Other critical assets

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College of MARINE SCIENCE

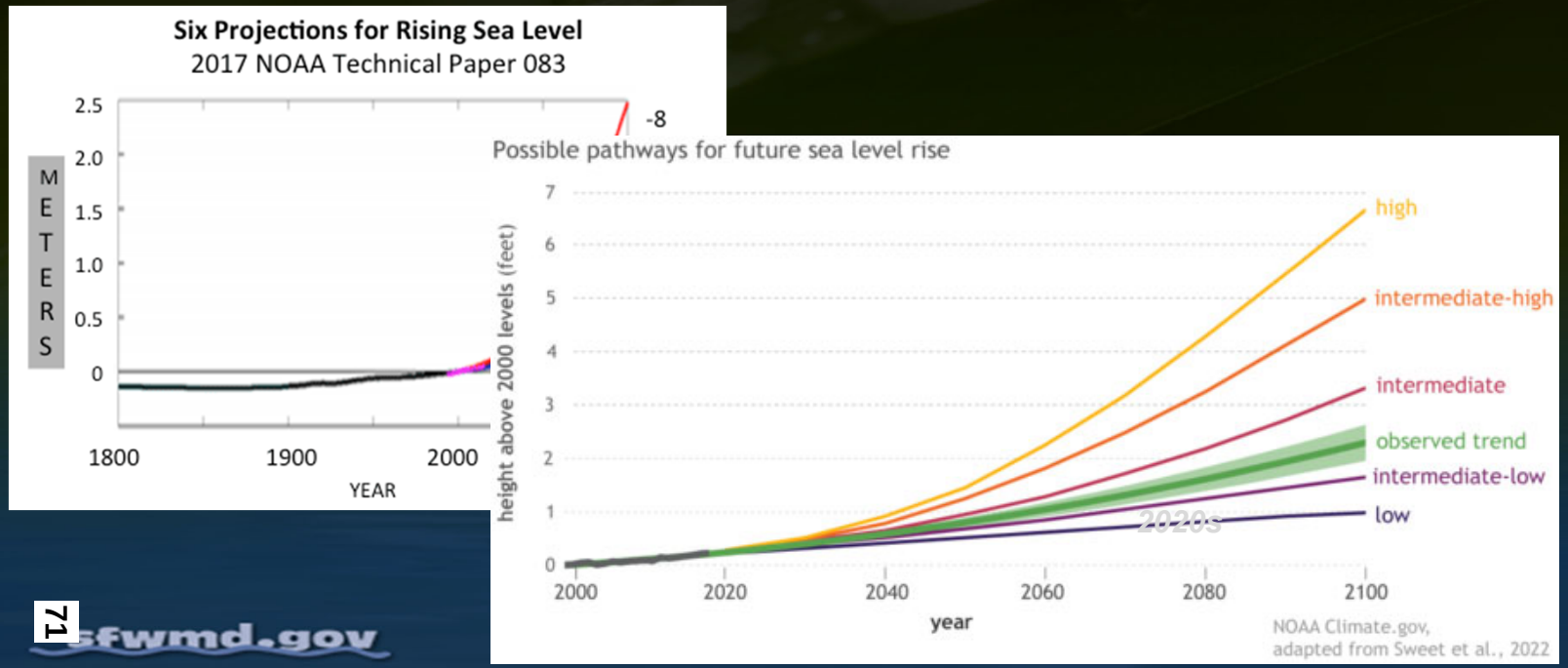
Next steps

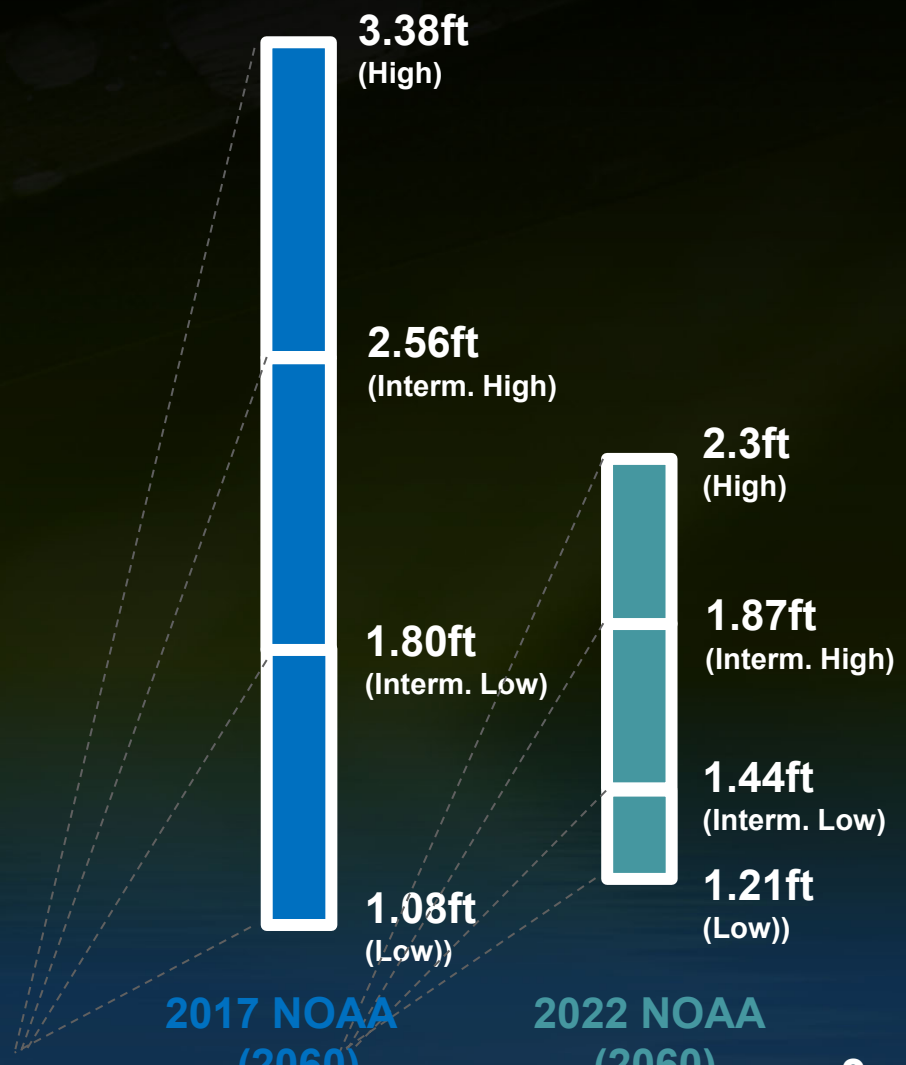
SEA LEVEL RISE WORKGROUP

- Link exceedance probabilities to specific emission pathways and time horizons
- Look at the frequency of occurrence of high tide flooding and weather events
- Do a careful quality control and analyses of the regional tide gauge time series
- Explore possible contributions by regional ocean processes

SLR Projections – Reducing Uncertainty

NOAA Curve/SLR (ft)	2017 (2040)	2022 (2040)	2017 (2060)	2022 (2060)	2017 (2080)	2022 (2080)
Intermediate Low	0.69	0.36	1.08	1.21	1.44	1.67
Intermediate	1.05	0.82	1.80	1.44	2.72	2.36
Intermediate High	1.41	0.92	2.56	1.87	4.10	3.38
High	1.77	1.02	3.38	2.30	5.61	4.46





Questions?

TOM FRAZER
tfrazer@usf.edu

FLORIDA FloodHub FOR APPLIED RESEARCH AND INNOVATION

UNIVERSITY OF SOUTH FLORIDA College of MARINE SCIENCE

SFWMD RESILIENCY COORDINATION FORUM:

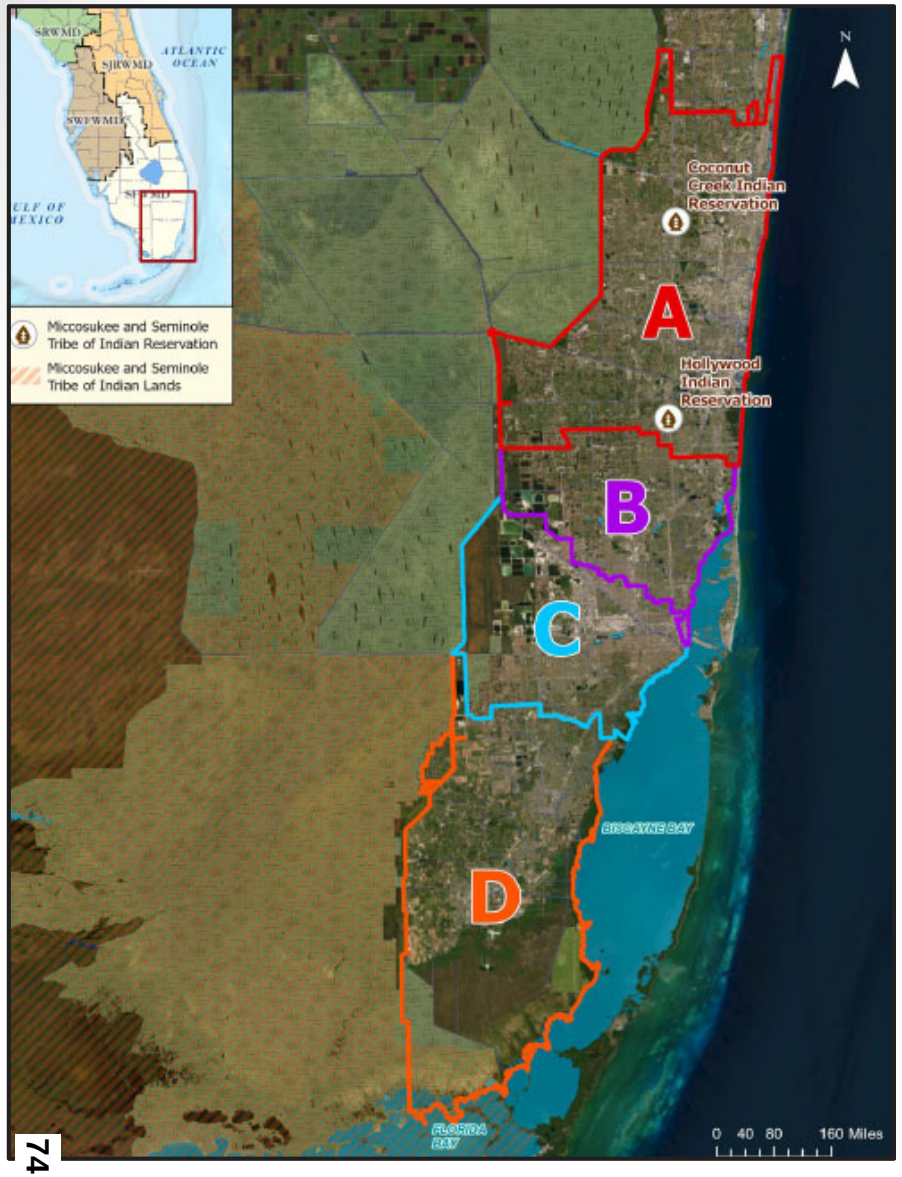
C&SF FLOOD RESILIENCY STUDY AND SE FLORIDA PROJECT INTEGRATION UPDATE

28 February 2024

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

US Army Corps of Engineers

C&SF FLOOD RESILIENCY (SECTION 216) STUDY



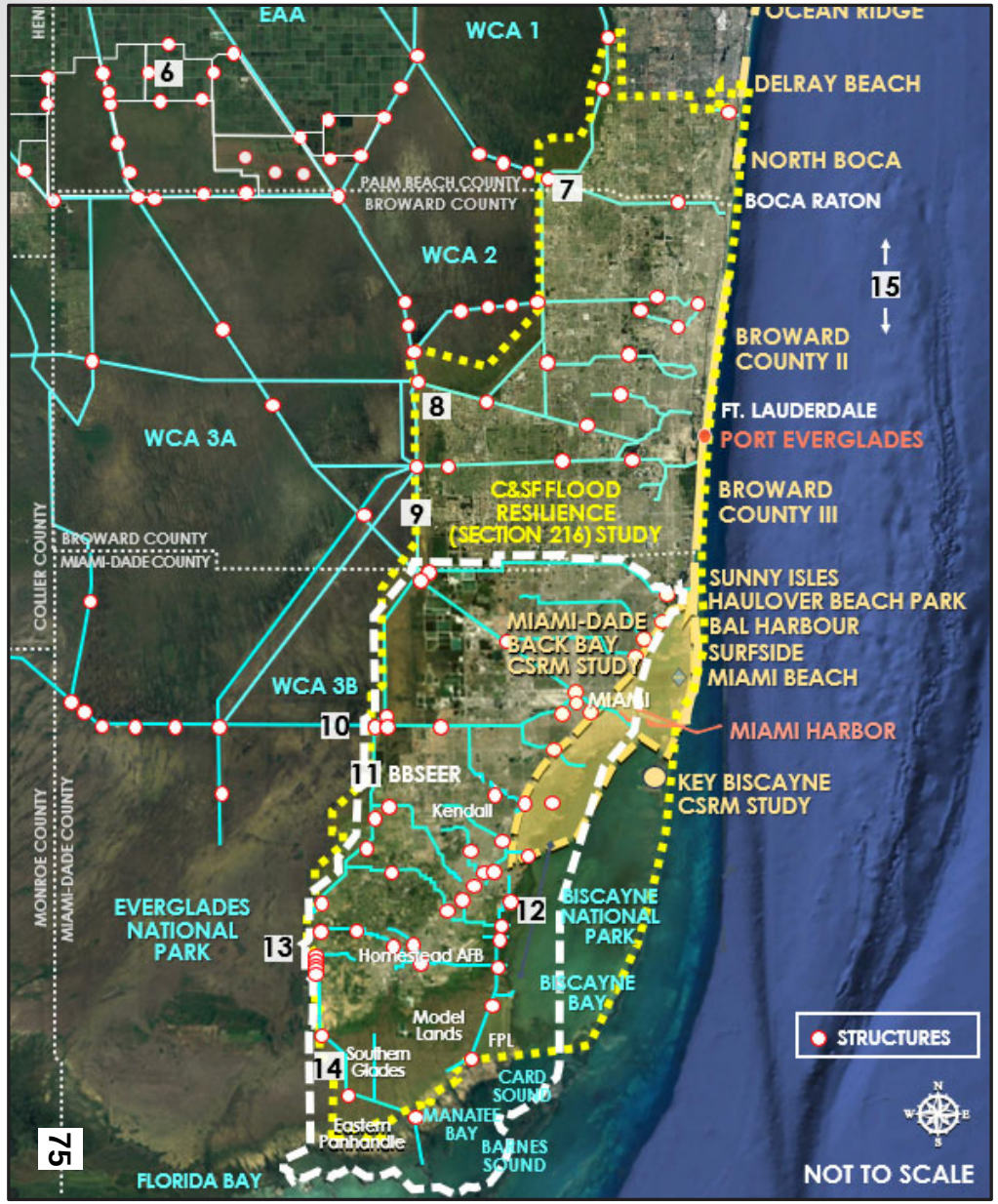
STUDY PURPOSE:

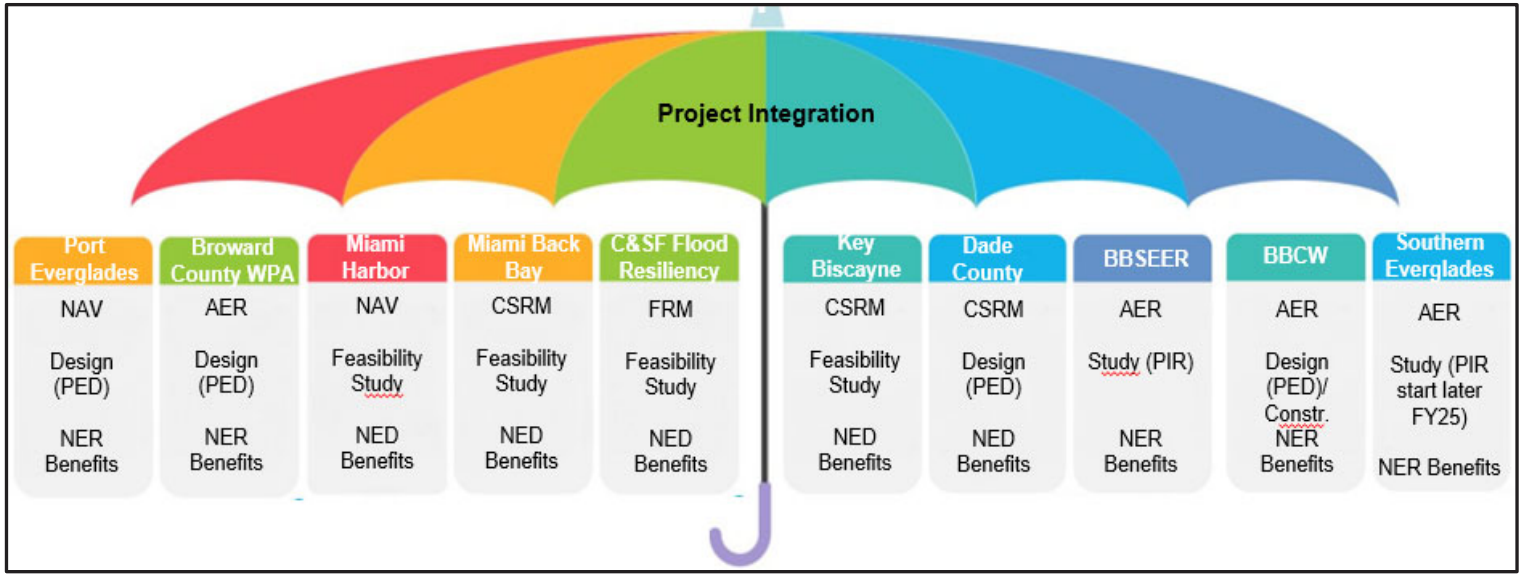
- Enhance existing C&SF water control system functionality and capacity to improve flood risk management and resiliency which has been degraded by inland inundation and changed conditions within southern Palm Beach, Broward and Miami Dade Counties

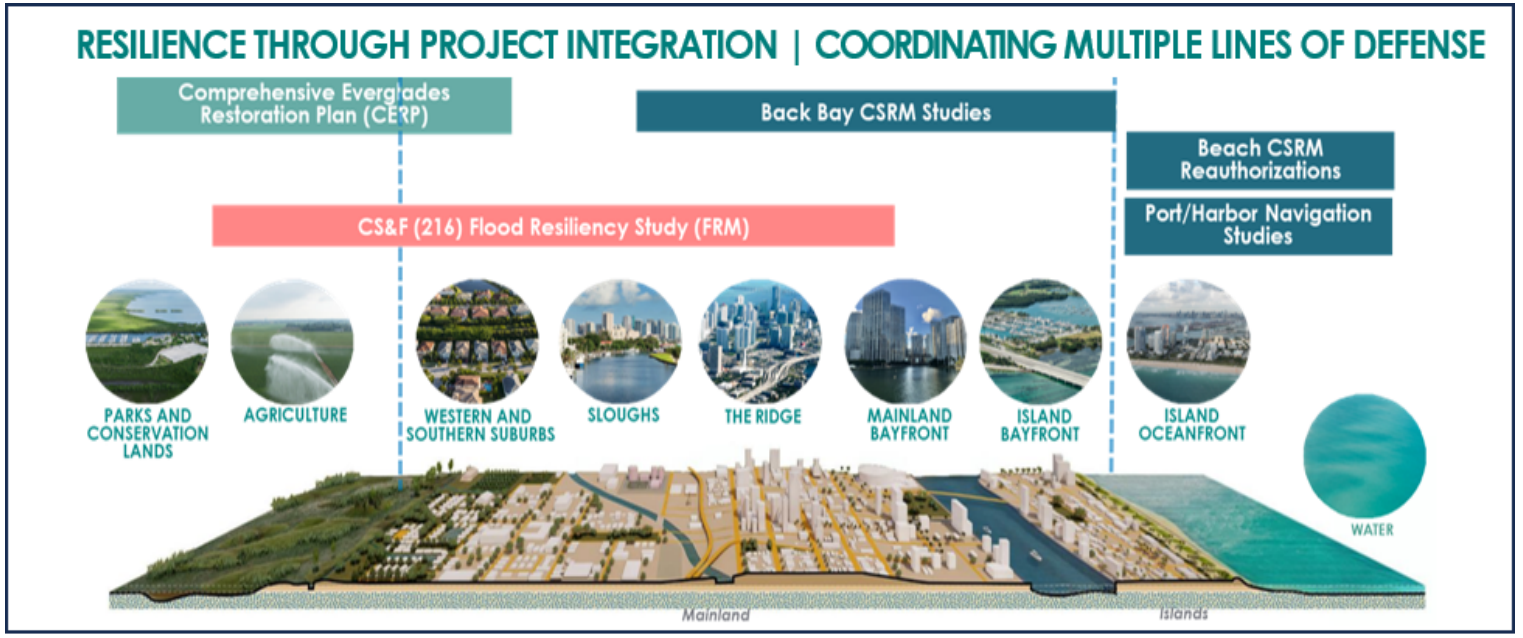
STATUS:

- VTAM briefing with MG Graham January 8, 2024
  - Application of June 5, 2023 guidance on ER 1110-2-1302 (engineering design maturity to support Class 3 cost estimate) lead to increased study cost;
  - HQUSACE did not approve current scope;
- Path forward
  - SAJ-SFWMD team will complete future without project modeling and evaluations by May 2024
  - SAJ-SFWMD team will work with stakeholders to determine prioritization for ~4 locations to carry forward for Class 3 cost and develop recommendation to advance remaining locations
  - Revised VTAM to be submitted summer 2024
- Public Engagement
  - 22 JAN 2024 – SFRPC meeting – council endorsed Broward and Dade counties support of design efforts
  - 7-8 MAR 2024 - Virtual Project Delivery Team Public Workshop performance metrics

SE FLORIDA PROJECT INTEGRATION







WE ARE HIRING!
Join the Jacksonville District Team

Seeking to fill multiple positions:

Biologist, Physical Scientist, Program Analyst, Engineers, Geologist, Chemist, Landscape Architect and many more.

Scan the QR Code

Or visit

www.saj.usace.army.mil/NowHiring

U.S. ARMY

US Army Corps of Engineers

76

2024 Wet Season Flood Information Resources

Christine Carlson, Geospatial Architect, South Florida Water Management District

Mike Bennett, Head of North America Government Solutions, ICEYE
Mark Antonik, Strategic Account Manager, ICEYE; and
Jin Lee, Client Success Manager, ICEYE

Julia Kumari Drapkin, CEO and Founder, ISeeChange

Today's Agenda Item

9A. South Florida Flood Information Resource, Tools and Training

9B. ICEYE's Flood Insights for Florida

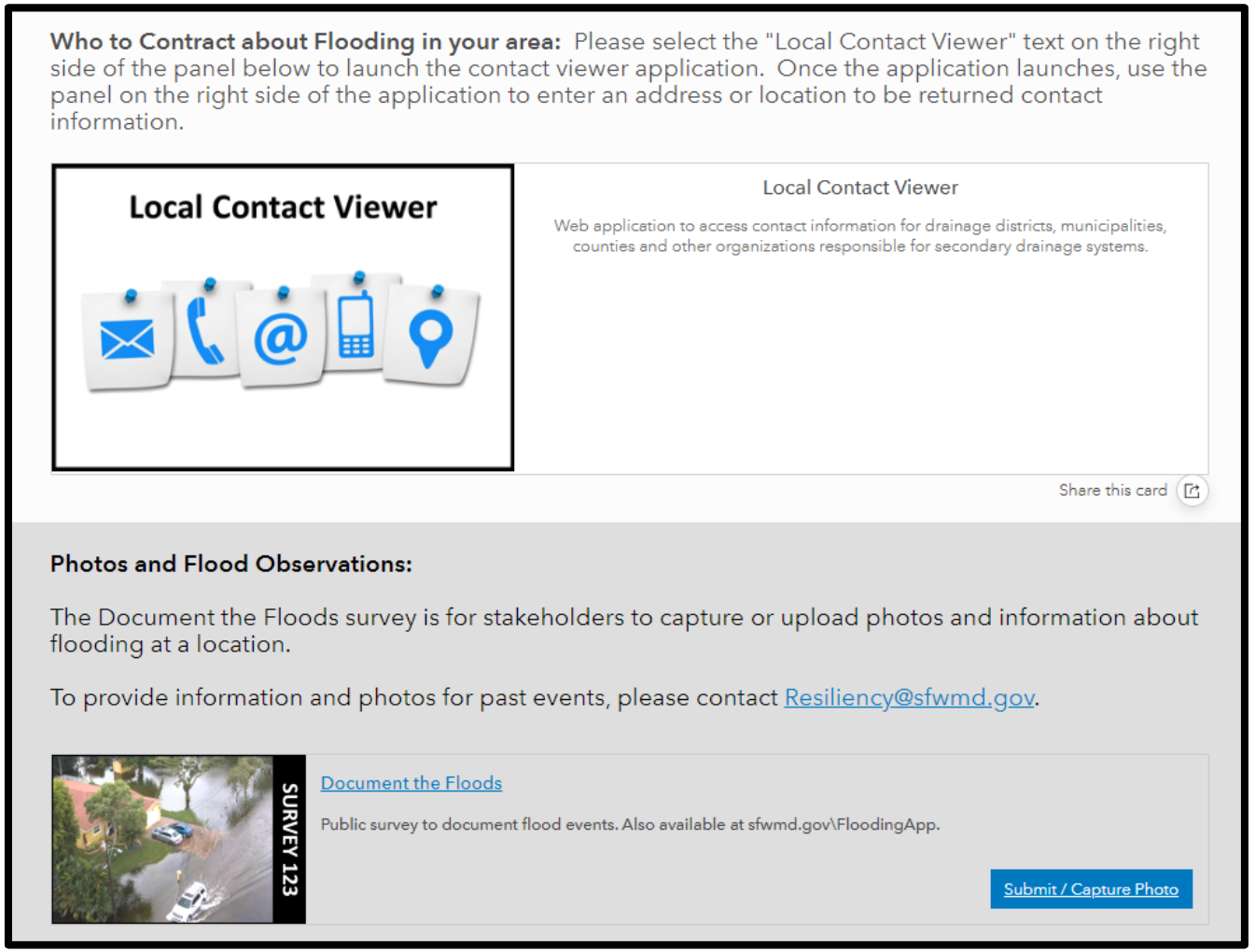
9C. ISeeChange Flood Tracking in the City of Miami Dade and Miami-Dade County

South Florida Flood Information Resource Hub

https://sfresiliency-sfwmdgis.hub.arcgis.com/

Public Tools

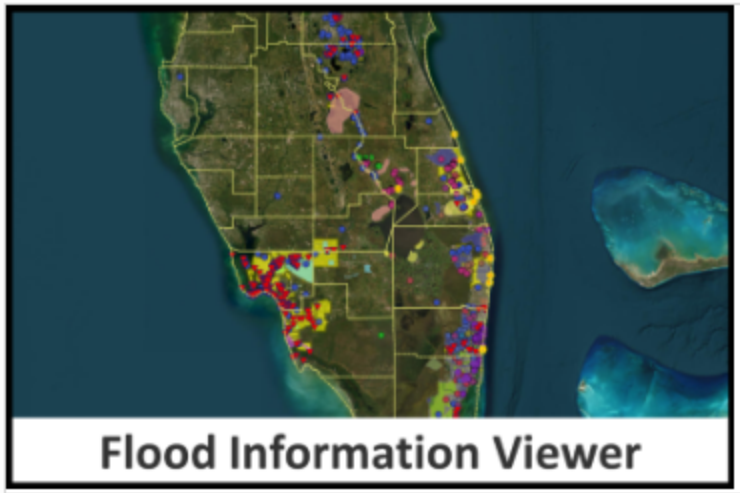
https://apps.sfwmd.gov/WAB/LocalContactViewer/index.html



sfwmd.gov/floodingapp

Public Flood Information Viewer

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.

2024 Wet Season Current Event Viewer

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

South Florida Current Event Flood Information Viewer

Public viewer application to access current event flood observations and photos.

South Florida Flood Information Resource Accounts

- Notification with instructions will be sent for account registration
- Local government staff can gain access to secured content after agreeing to comply with our data access and use agreement
- Agreement is required to honor data access and use licensing agreements SFWMD has with vendors like ICEYE
- In 2024, local government staff will have access to
  - SFWMD High Water Mark Survey (Silver Jacket Derived)
  - “Private” flood reports in areas with restricted sharing policies
  - Flood Repository Application providing access to review and download compiled data

Resource Tools

High Water Mark Survey:

The High Water Mark (HWM) Survey is for SFWMD and local governments to mark and measure flood extents associated with rainfall, storm surge, tidal, and tropical events.

To provide high water marks associated with past events, please contact Resiliency@sfwmd.gov.

SFWMD HWM Survey

SFWMD and Local Government High Water Mark Application

Take Survey

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

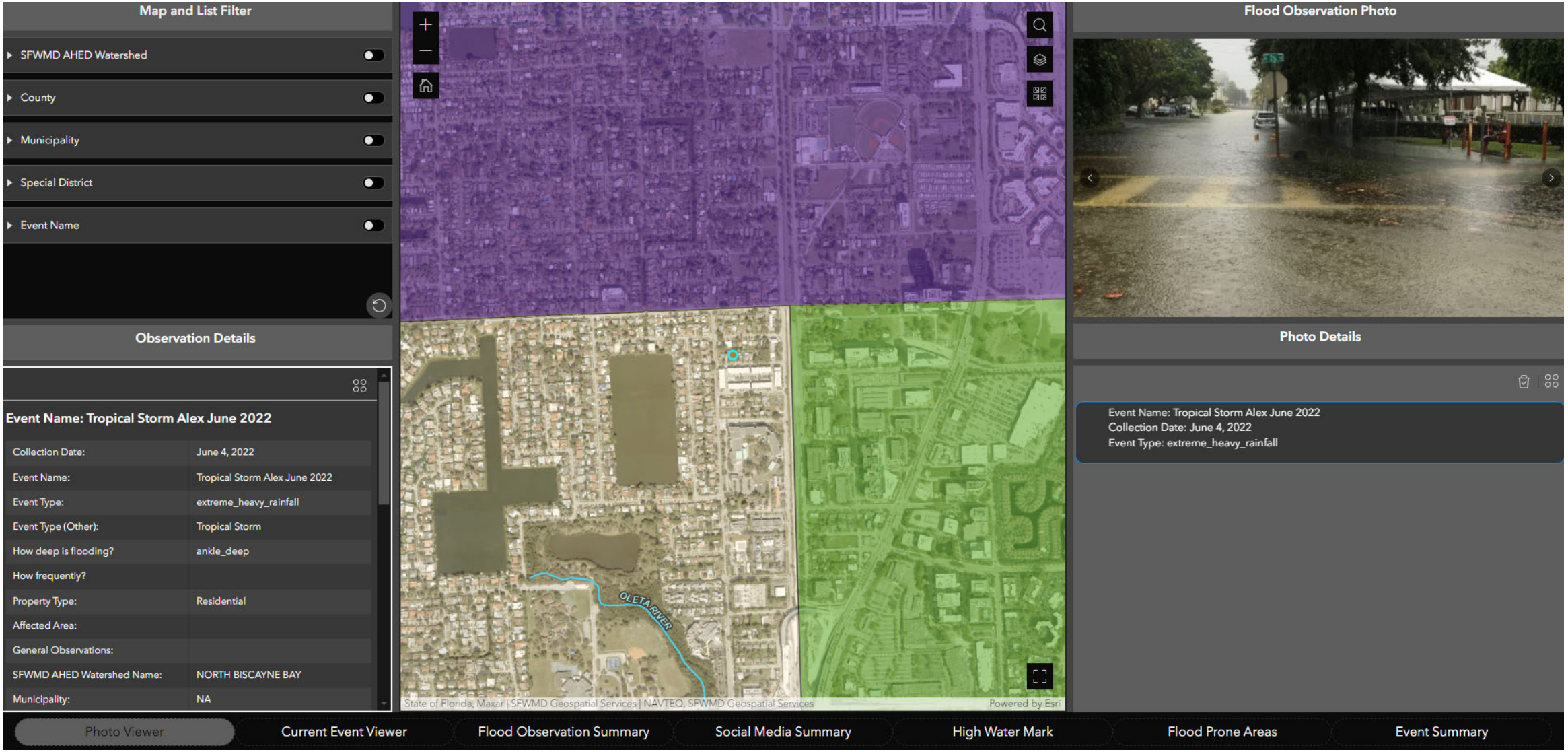
South Florida Flood Information Resource Application

Web application to view and query flood documentation compiled as part of the SFWMD Water and Climate Resilience Flood Metric.

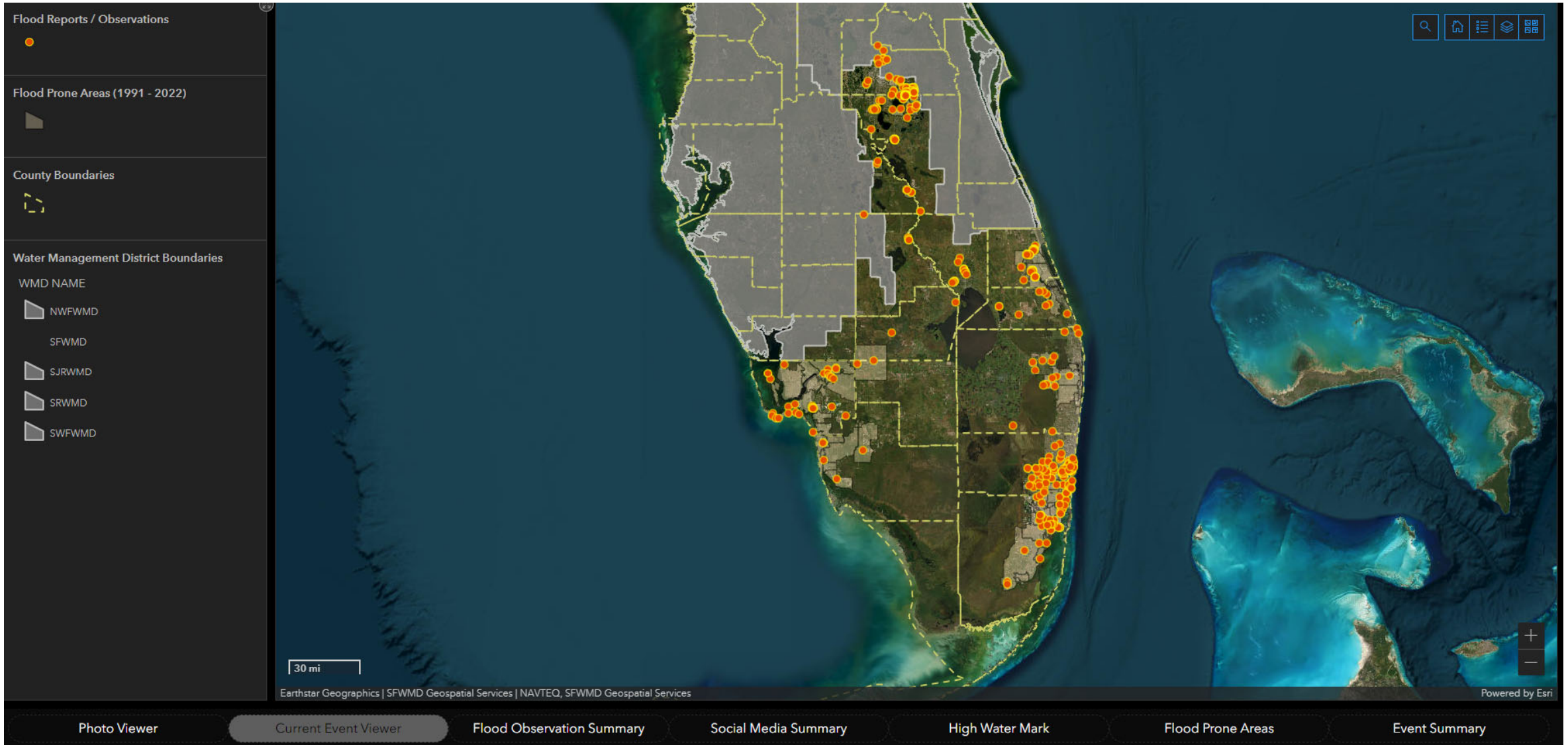
High Water Mark / Flood Observation Training Opportunities

- Training is open to Local Government Staff
- Sign Up is through Microsoft Form
- First Come First Serve
- Training Locations, Dates, and Times
  - West Palm Beach Field Station – Tuesday, April 2, 9:30 – 12:30
  - Big Cypress Basin Field Station – Tuesday, April 9, 9:30 – 12:30
  - Clewiston Field Station – Thursday, April 11, 9:30 – 12:30
  - Fort Lauderdale Field Station – Wednesday, April 17, 9:30 – 12:30
  - Homestead Field Station – Tuesday, April 23, 9:30 – 12:30
  - Miami Field Station – Wednesday, April 3, 9:30 – 12:30
  - Okeechobee Field Station – Wednesday, April 24, 9:30 – 12:30
  - St. Cloud Field Station – Thursday, April 18, 9:30 – 12:30

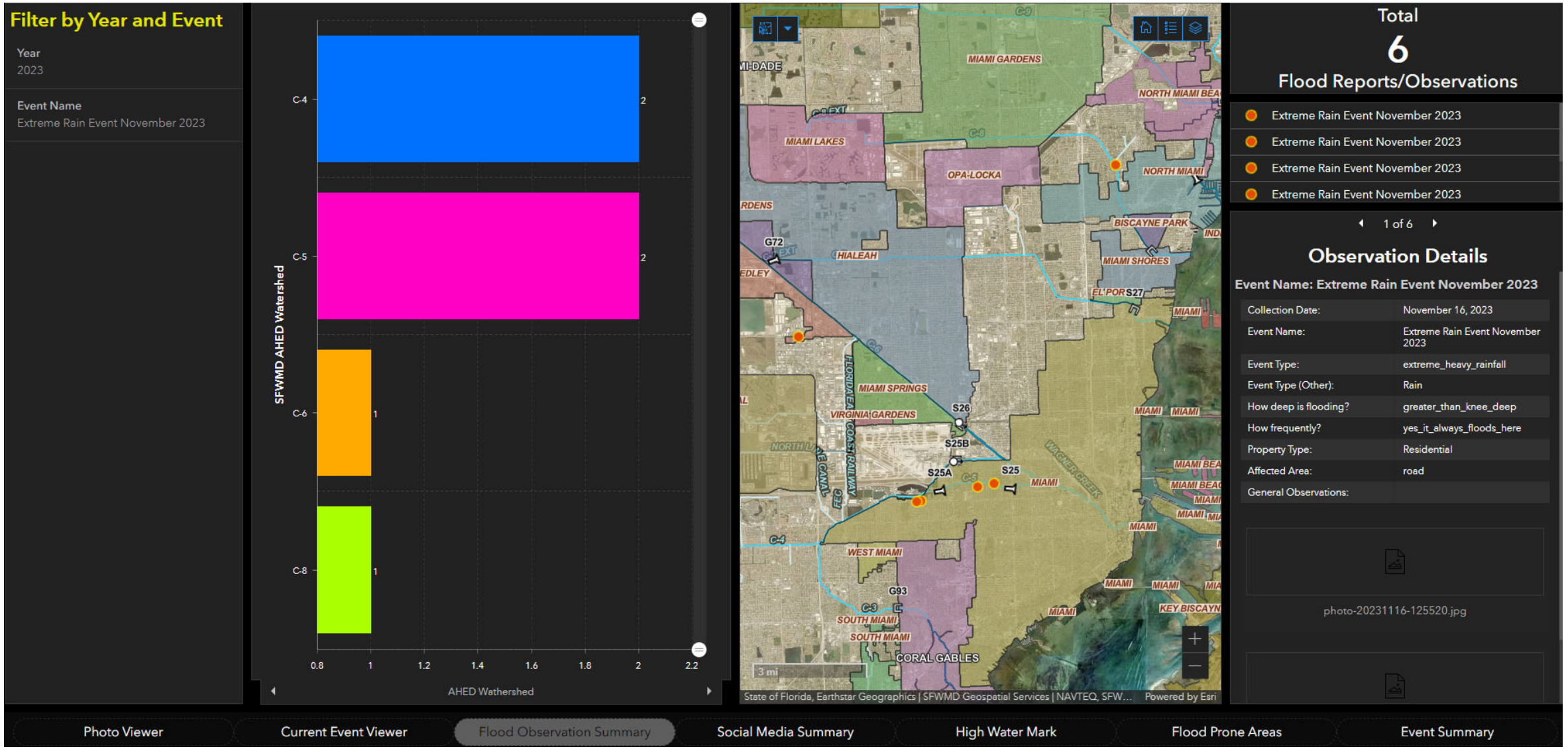
Photo Viewer



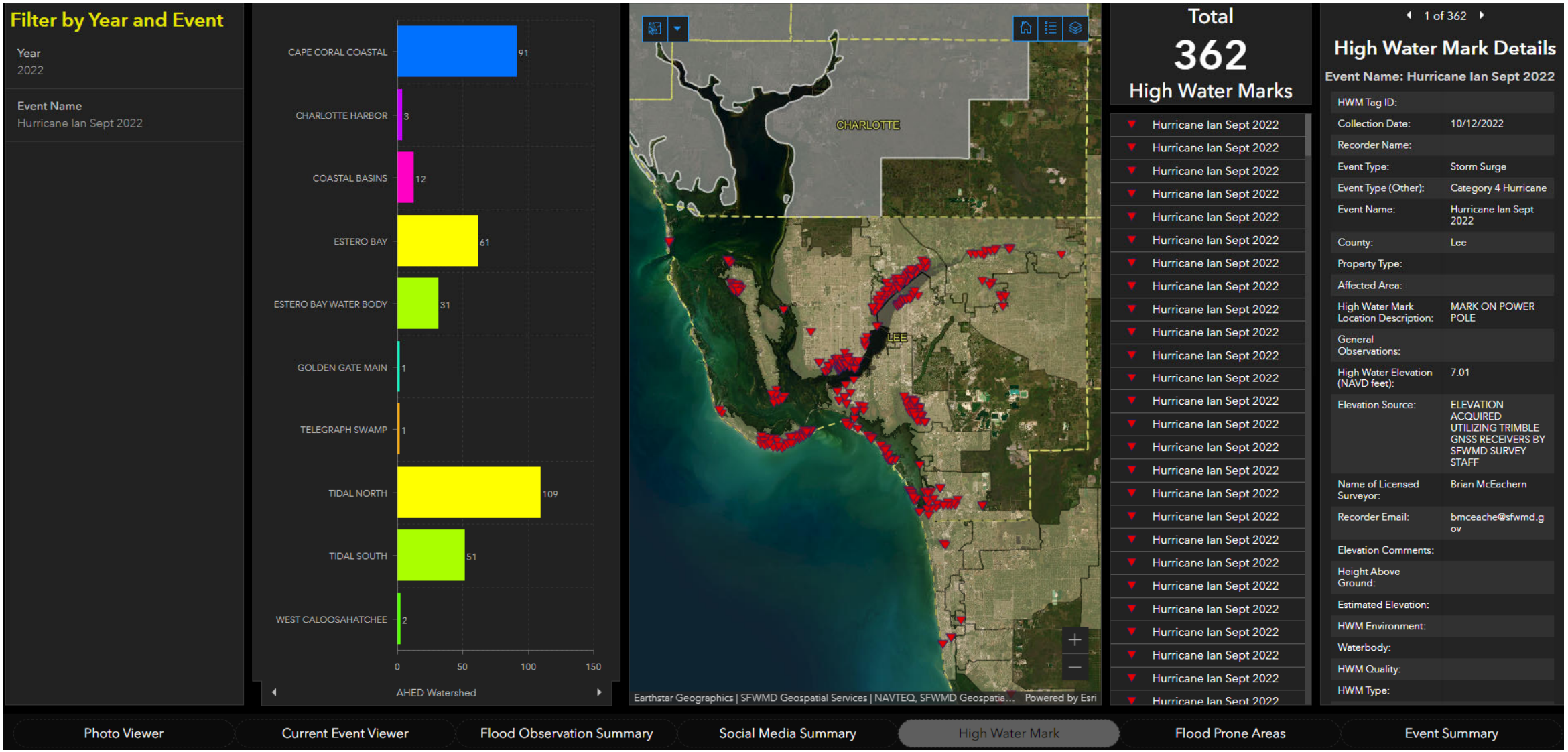
Current Event Viewer



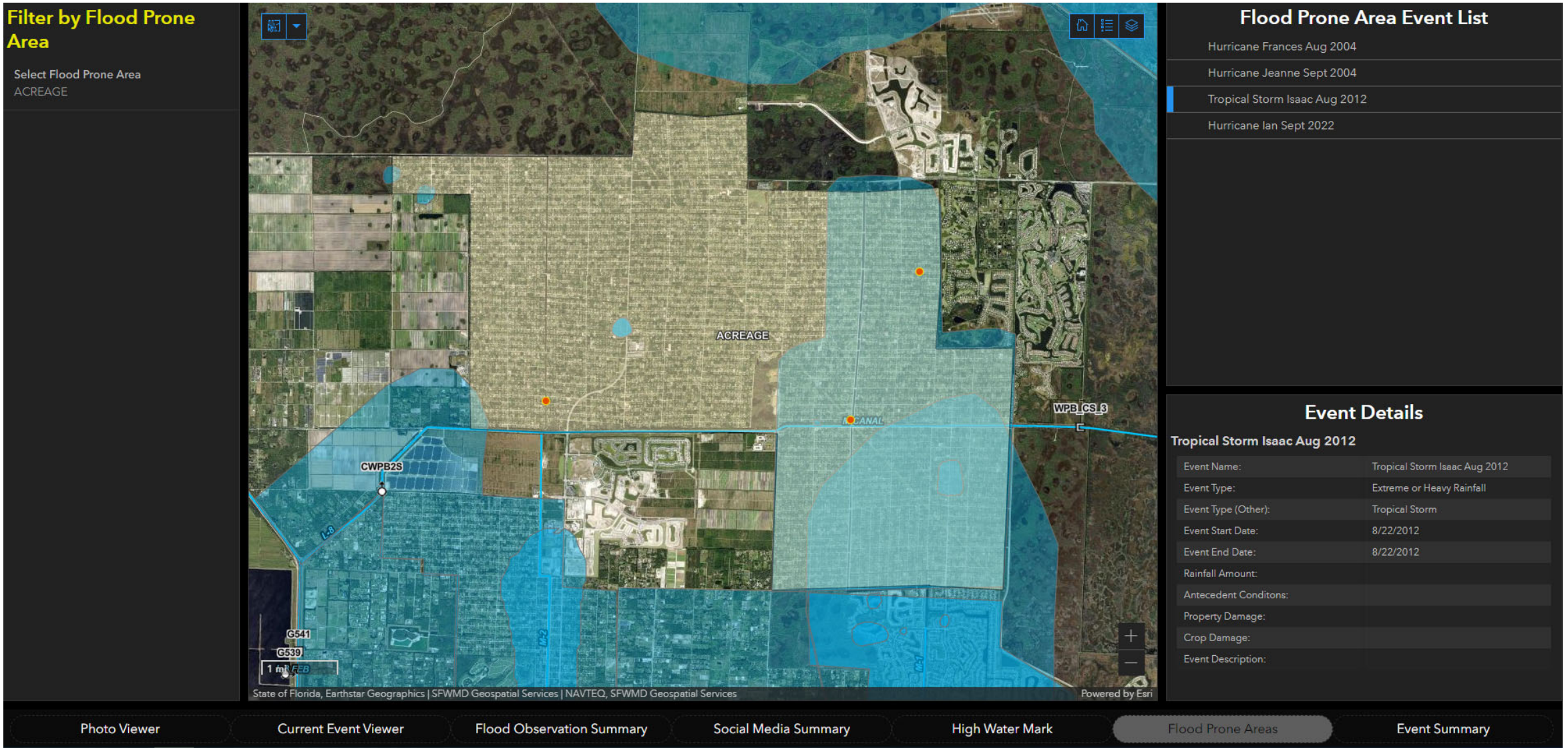
Flood Observation Viewer



Highwater Mark Viewer



Flood Prone Area Event Summaries



Flood Extent within a Flood Prone Area

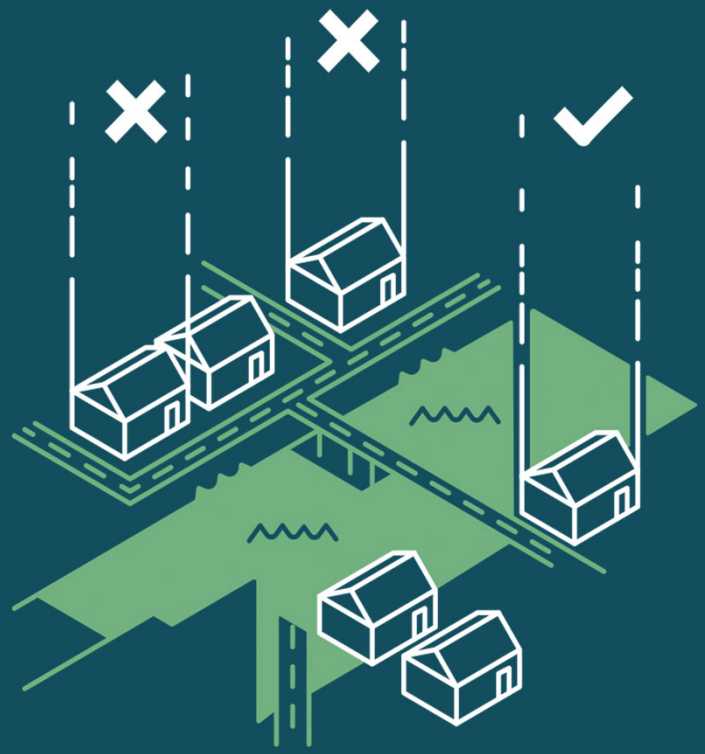
- Flood prone areas are being identified to
  - Evaluate monitoring gaps
  - Identify priorities for flood sensors deployment
  - Prioritize satellite / radar image acquisition
- Long-term objective is to identify the location and extent of recurrent flooding within flood prone areas using
  - High water marks
  - Satellite/radar imagery
  - Water level and flood sensor data
- Flood extents are being compiled for
  - SFWMD Resilience flood metric
  - Flood Protection Level of Service (FPLOS) model validation
  - Mitigation planning

9B. Flood Insights for Florida

Mike Bennett, Head of North America Government Solutions, ICEYE;
Mark Antonik, Strategic Account Manager, ICEYE; and
Jin Lee, Client Success Manager, ICEYE

ACTIONABLE DISASTER INTELLIGENCE TO

TRANSFORM GOVERNMENT RESPONSE, RECOVERY, MITIGATION & RESILIENCE



UNMATCHED PERSISTENT MONITORING CAPABILITIES
WITH THE WORLD'S LARGEST SAR CONSTELLATION

2014

ICEYE
LAUNCHED

650+

PEOPLE WITH
60+ NATIONALITIES

150+

FLOODS MAPPED GLOBALLY
IN **25 COUNTRIES**

50+

FLOODS MAPPED IN THE
USA

HEADQUARTERS IN FINLAND
US HEADQUARTERS IN CALIFORNIA

PRESENCE IN:
POLAND, SPAIN, JAPAN, LUXEMBOURG, & UK

WORLD LEADER
IN NATURAL DISASTER MONITORING
&
SYNTHETIC APERTURE RADAR (SAR) MINIATURIZATION TECHNOLOGY

1st SATELLITE LAUNCHED:
2018
31st SATELLITE LAUNCHED:
Nov 2023

ICEYE


RADAR IMAGING
THROUGH CLOUDS
THROUGH DARKNESS
THROUGH SMOKE
THROUGH RAIN & WIND
ICEYE

ICEYE Constellation

About the Fleet

More than 30 satellites launched since 2018, with more launched every year

South Florida Capacity:

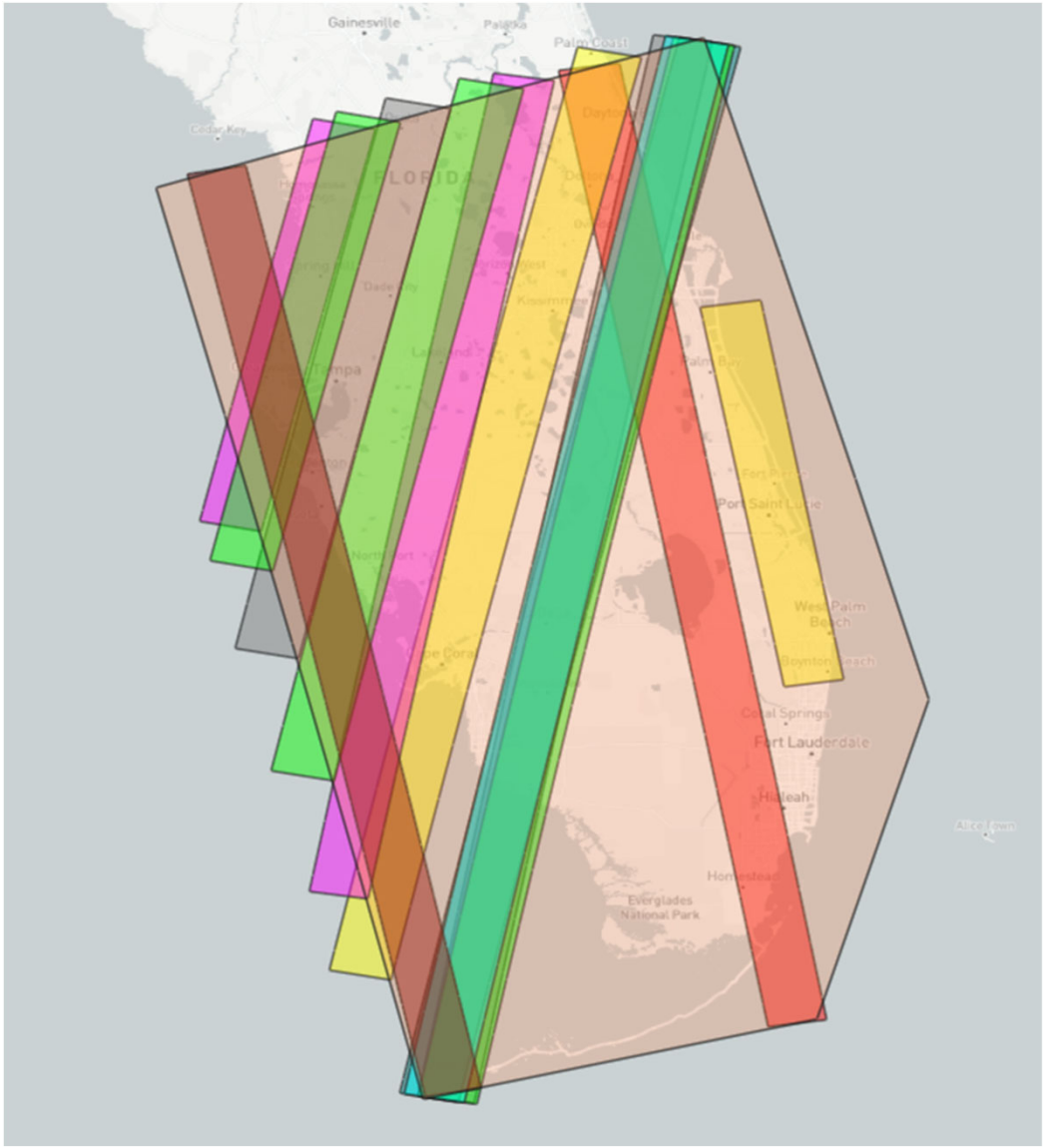
Passes Per Day:

10-12 passes; up to 20 on a limited basis

Revisit Time:

3-4 hours

(Exact time between revisits will vary based on exact location and satellite orbits)

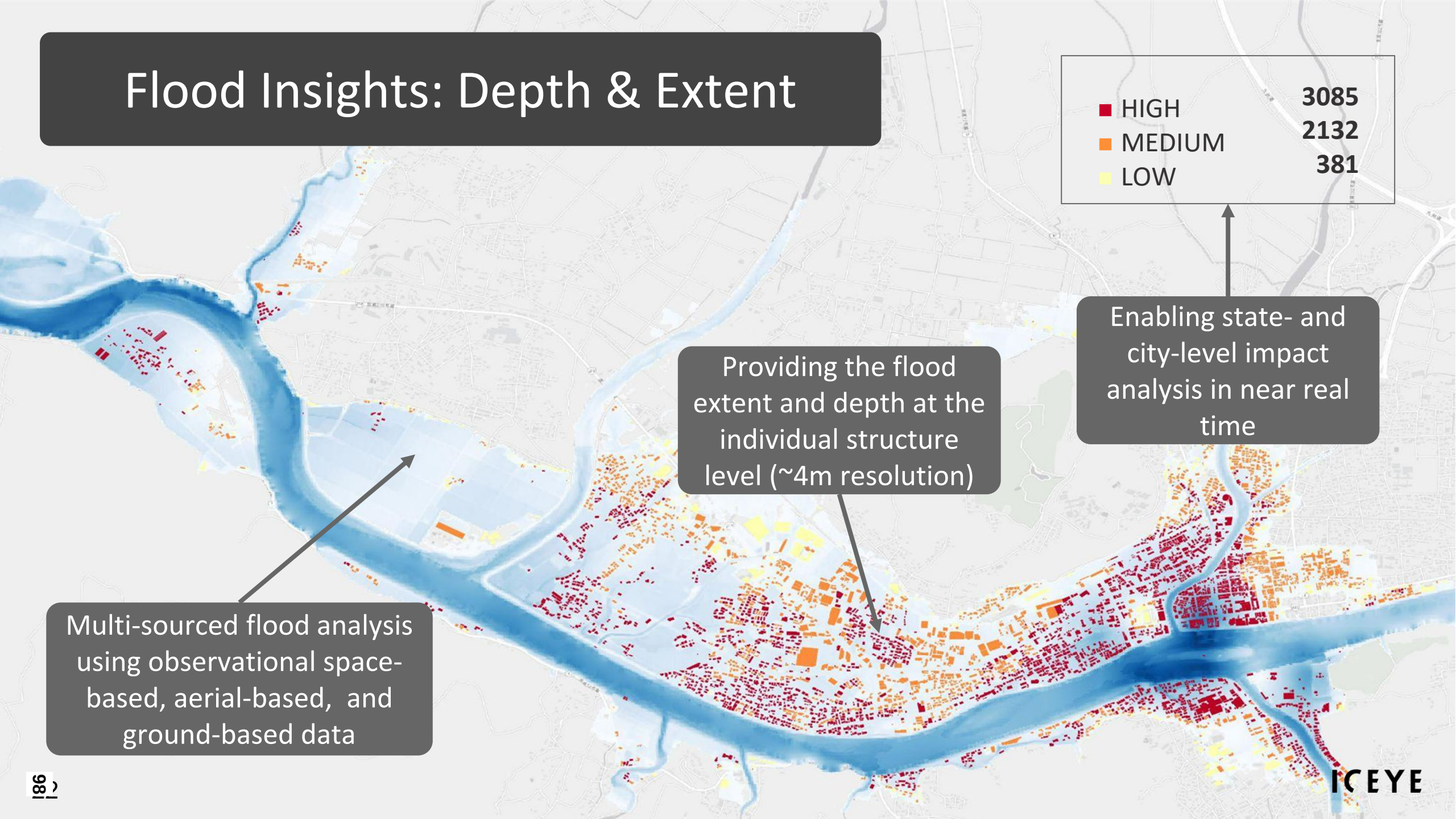


ICEYE

Flood Insights

UNIQUE FLOOD INSIGHTS FROM SPACE

Flood Insights: Depth & Extent

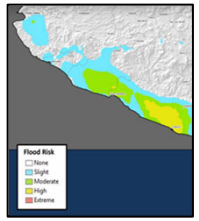


ICEYE

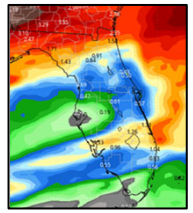
BEST IN CLASS GLOBAL 3-DAY FLOOD TARGETING

Multiple teams chaired by meteorologists meet **four times daily** for potential flood event review and satellite targeting

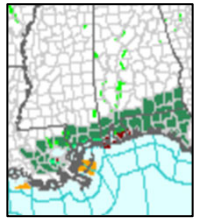
SAMPLE FLOOD AWARENESS INPUTS



FLOOD PREDICTION MODELS



PRECIPITATION FORECASTS



FLOOD WARNINGS & ALERTS

HURRICANE & TYPHOON FORECAST TRACKS

RIVER & TIDAL GAUGES

FLOOD PROPENSITY MAPS

OBSERVED FLOOD EVENT IMPACT

ICEYE Observed Flood Event Impact

ICEYE aims to produce an analysis for every flood event in Priority 1 markets that meets ICEYE's analysis threshold (see below for threshold definitions). Events on this page are either being actively monitored or undergoing an analysis.
If you have questions about an event we are monitoring please send a message to the following address: floodactivation@iceye.com

=analysis initiated

Country	Area of Interest	Event	Estimated Peak Start Date	Estimated Peak End Date	Market Priority[1]	Flooding Observed	Observed Flooding Meets ICEYE's Analysis Threshold[2]	Analyzed Population Centers
Australia	Victoria (FSD-1316)	Heavy Precipitation	23-Oct	26-Oct	1	YES	YES	Moama, Shepparton, Lilydale, Springvale, Wandin North, Tecoma, Kerang, Mooroolbark
Australia	Victoria, Tasmania (FSD-1299)	Heavy Precipitation	12-Oct	14-Oct	1	YES	YES	Future releases pending completion of FSD-1312 & FSD-1316
Australia	New South Wales, Queensland (FSD-1312)	Heavy Precipitation	19-Oct	24-Oct	1	YES	YES	Future releases pending completion of FSD-1299 & FSD-1316
Ghana	Greater Accra Region (FSD-1294)	Heavy Precipitation	5-Oct	7-Oct	2	YES	YES	Analysis on hold
Philippines	Mindanao, Visayas, Luzon (FSD-1319)	Tropical Storm Paeng	27-Oct	31-Oct	2	YES	NO	-

ICEYE Forecasted Flood Event Impact[1]

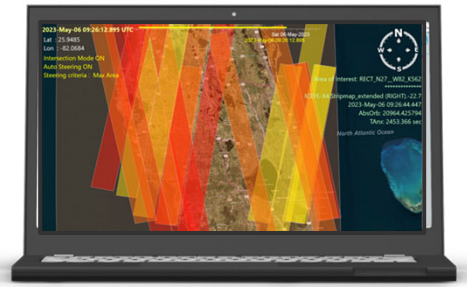
(Note: if you are aware of a flood that is not listed and would like ICEYE to take action please send us an email to the following address with a brief description of the location and event. floodactivation@iceye.com)

FORECASTED LEVEL OF IMPACT:	LOW	MEDIUM	HIGH
FLOOD IMPACT CLASSIFICATION SCORE:	1-2	2.1-2.5	2.6-3

Event	Estimated Peak Start Date	Estimated Peak End Date	Market Score	Population Score	Severity Score	Confidence Score	Forecasted Flood Score	Number of Planned Acquisition
Heavy Precipitation	19-Oct	24-Oct	3	2	1	2	2	-
Heavy Precipitation	16-Oct	17-Oct	2	3	3	1	2.4	17
Heavy Precipitation	18-Oct	19-Oct	2	3	1	2	1.7	6
Heavy Precipitation	16-Oct	18-Oct	1	3	1	2	1.3	4
Heavy Precipitation	17-Oct	19-Oct	2	3	2	2	2.1	10
Heavy Precipitation	16-Oct	19-Oct	2	3	1	2	1.7	13

FORECASTED FLOOD EVENT IMPACT

DAILY FLOOD EVENTS REPORT

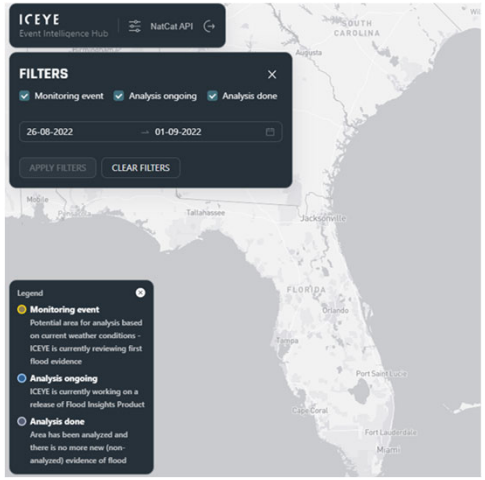


FLOOD TARGETING WITH ICEYE SAR SATELLITE SWATHS

ICEYE

HOW IS ICEYE'S FLOOD INSIGHTS PRODUCT CREATED?

MONITOR
Potential flooding globally

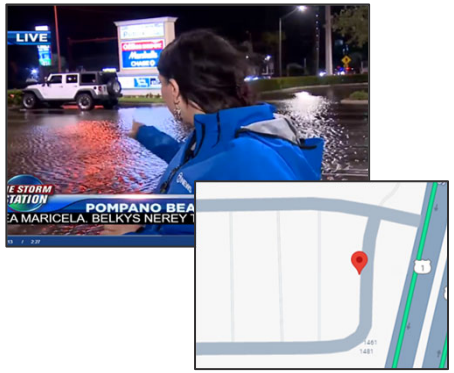


COLLECT
SAR + auxiliary flood data

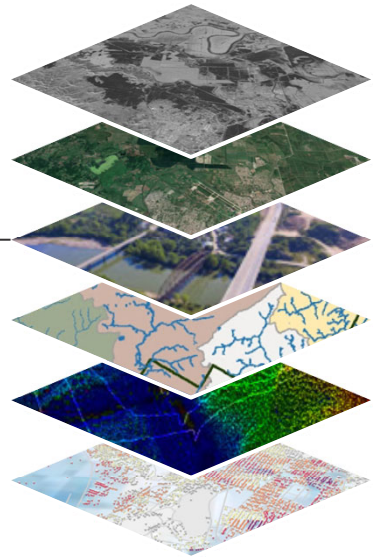
SAR imagery

+

Geolocated Flood Evidence

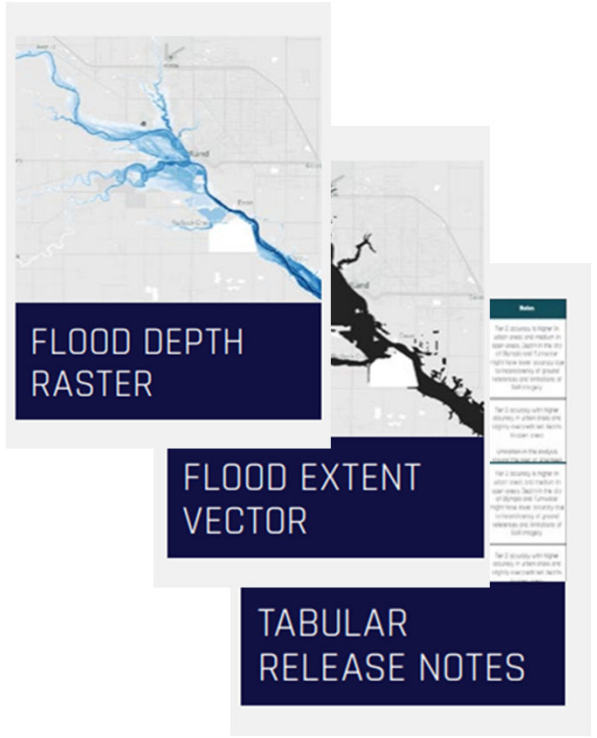


ANALYZE
Multi-Source Insights



SFWMD Observation Data

DELIVER
Flood Insights to customers



ICEYE

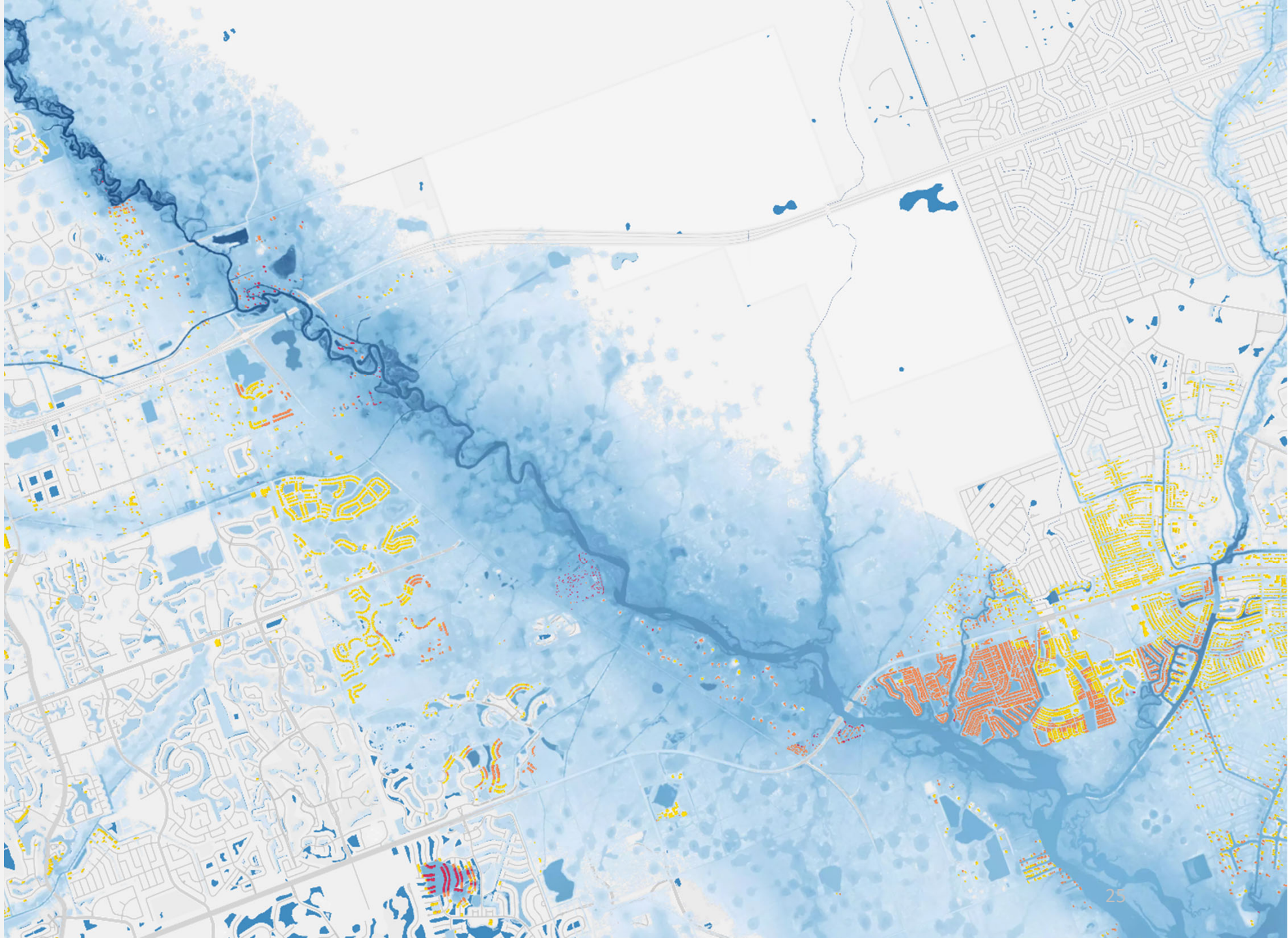
ICEYE

Flooding From Hurricane Ian in Florida, US

- → **1,937 mi²** total flood extent.
- → **1,32 ft** average inundation at building level

Total buildings affected

- **2,231 very high** *(>8ft)*
- **11,132 high** *(5-8ft)*
- **70,887 medium** *(2-5ft)*
- **274,608 low** *(<2ft)*



FLOOD INSIGHTS PRODUCT OUTPUT TIMING

Communication to Government

DAILY | START TO PEAK | IMMEDIATELY AFTER PEAK OF FLOOD | AFTERMATH

FLOOD MONITORING

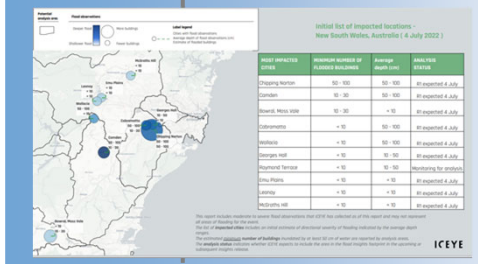
START OF FLOOD

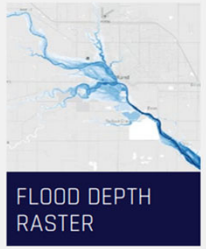
PEAK OF FLOOD

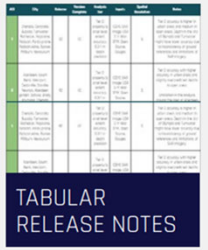
FEW HOURS

24HR

48HR







Meteorologists meeting for advanced flood detection

Daily flood report

Observed Flood Report

Flood event analysis release 1

Flood event analysis release 2

Flood event analysis release n

TIMELINE OF ENTIRE FLOOD EVENT

ICEYE initiates analysis when flooding is estimated to pass the analysis threshold of over 100 buildings impacted by at least 30 cm of flood waters.

ICEYE

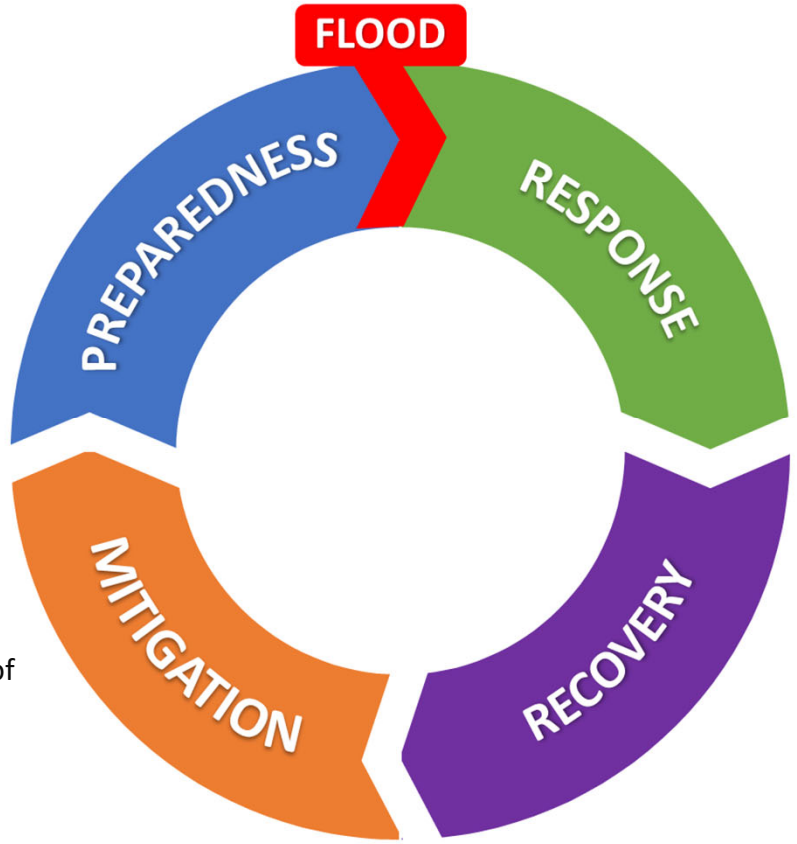
DELIVERY OPTIONS

1. **DocSend**: We provide access to download files in a zip archive
2. **Cloud Sync**: Amazon S3 or Microsoft Azure, we can write directly to cloud storage
3. **Esri**: Provide data on ArcGIS Online via group sharing or **SFWMD HUB**

USE CASES - FLOOD/HURRICANE RESPONSE

Planning & Analysis

- Calibrating and assessing predictive modeling
- Utilizing historical flood data for zoning and land-use planning to minimize future flood risks.
- Comparing current flood zones with historical flood data to improve citizen communication on risk



Situational Awareness and Response

- Assist search and rescue teams in identifying flood impacted areas with the highest need for assistance
- Optimize the deployment of emergency response teams, equipment, and supplies to the high-priority areas
- Identify safe evacuation routes and monitor their potential impact from flooding
- Prioritize High Water Mark collections based on ICEYE impact data

Remediation & Resilience Planning

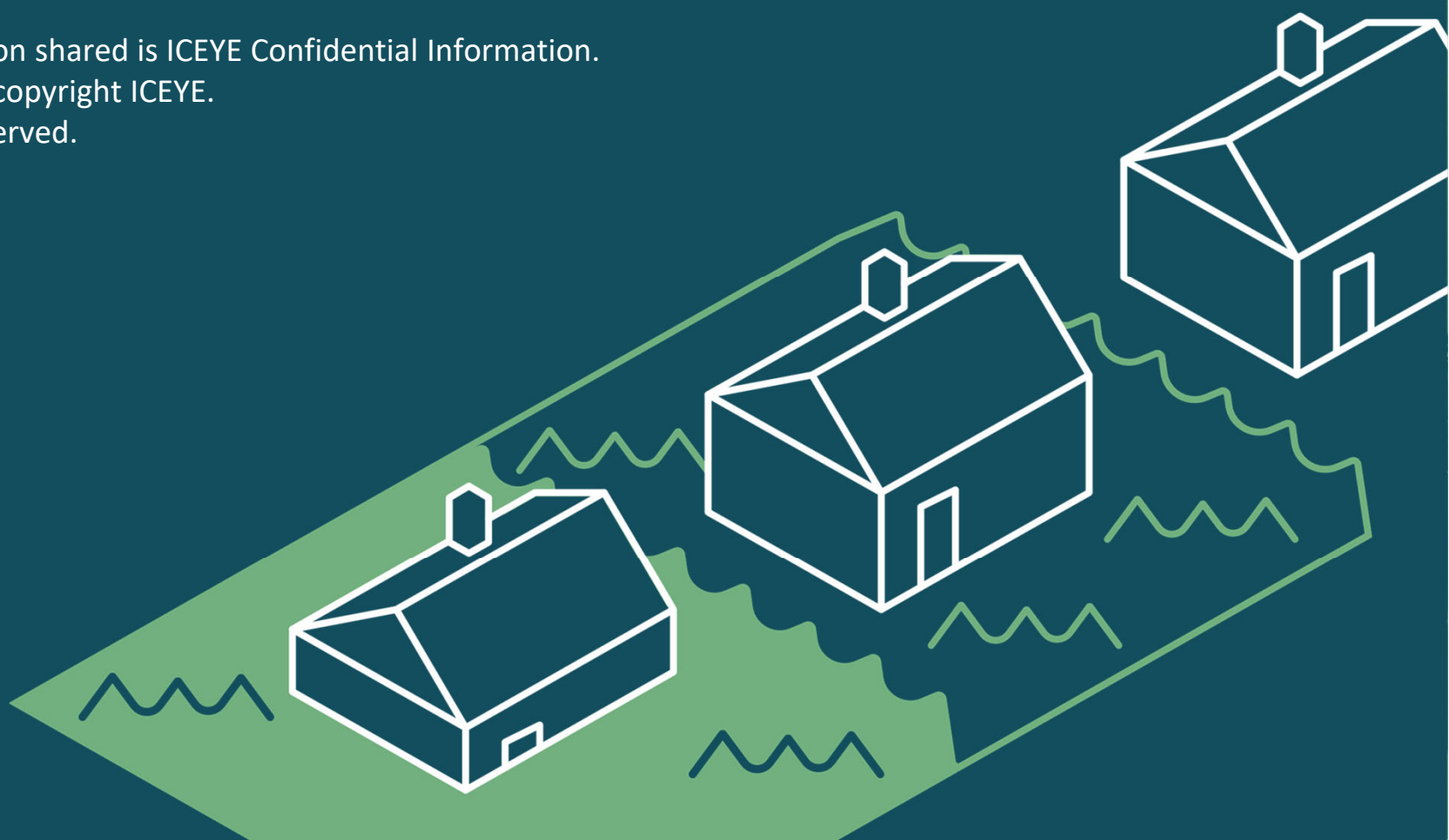
- FEMA BRIC funding & grants: guide the allocation of post-event resilience funding.
- Utilize for flood mitigation and infrastructure improvements.
- Identify areas with potential health/safety risks and address post-flood health concerns.

Post-Event Support & Damage Assessment

- Support preliminary damage assessments and subsequent disaster declarations
- Prioritize recovery efforts by identifying areas that require immediate attention
- Use data to assess the extent of damage to buildings, roads, and utilities

ICEYE

ICEYE



9C. Flood Tracking in South Florida

Julia Kumari Drapkin, CEO and Founder, ISeeChange

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SFWMD Resiliency Coordination Forum

Julia Kumari Drapkin

Founder & CEO

www.iseechange.com

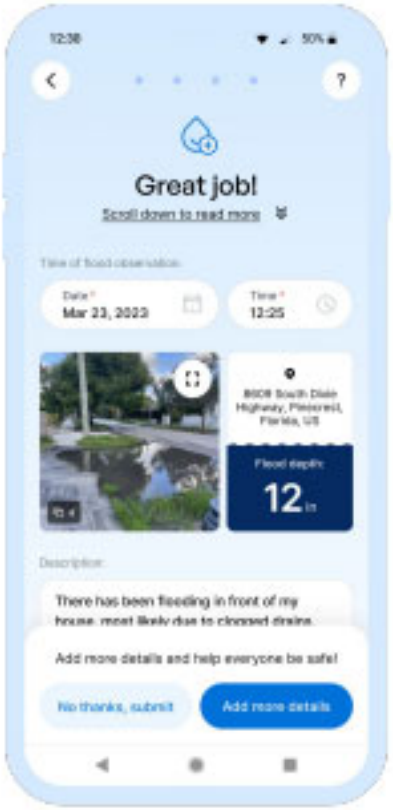
February 2024

What is ISeeChange?

ISeeChange is an AI-enabled data and community engagement platform that equips local governments and utilities with the data and insights they need to respond to climate impacts

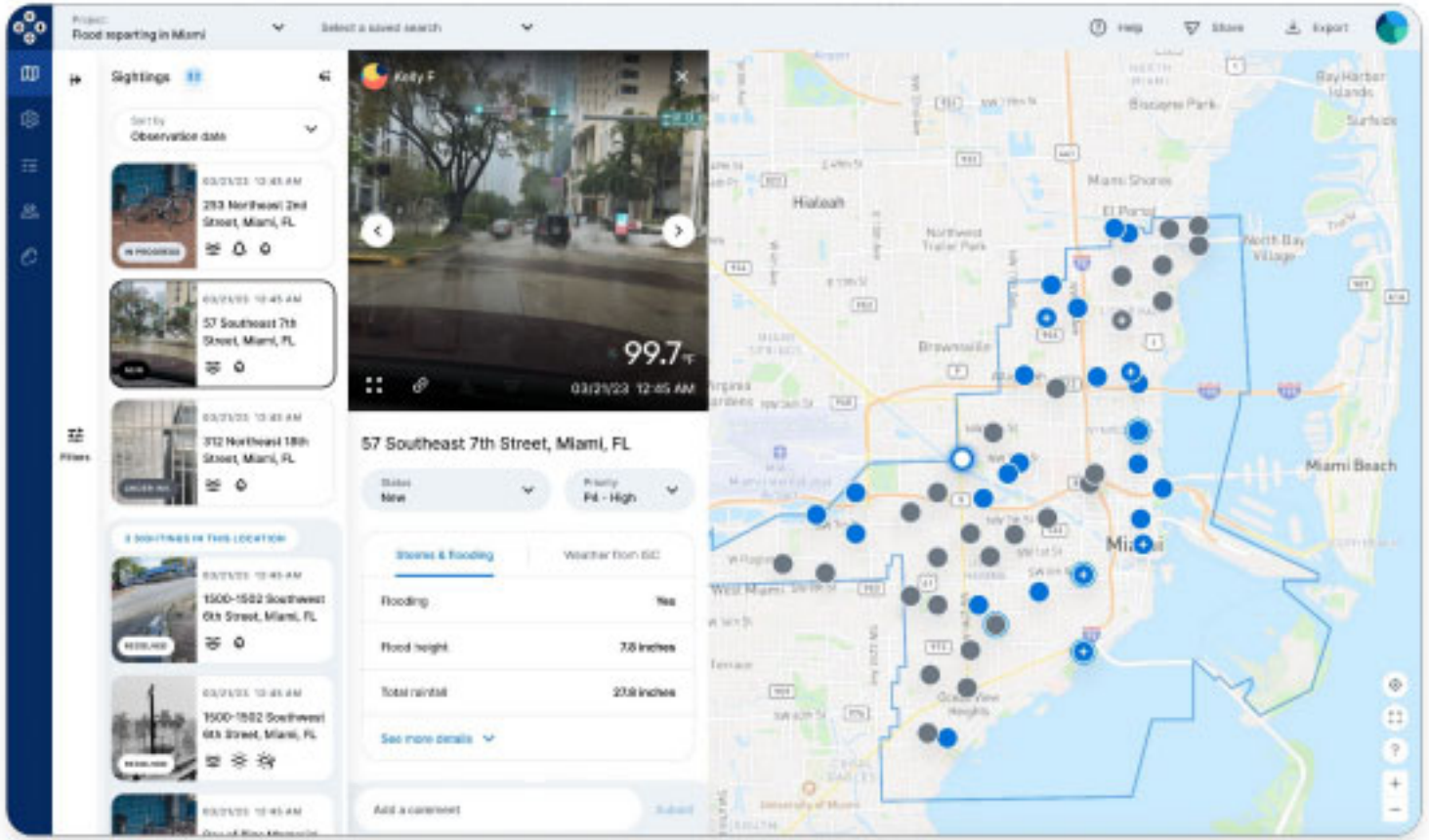
Community Engagement App

Detailed issues



Hyper-Local Data

Insights Platform



Prioritized Actions for Efficient Response

ISeeChange can connect South Florida residents to more efficiently monitor, maintain, and plan for climate-ready infrastructure **together.**

Hyper-local engagement and resident recruitment

High-leverage, real time, AI-driven data

Incident management and planning

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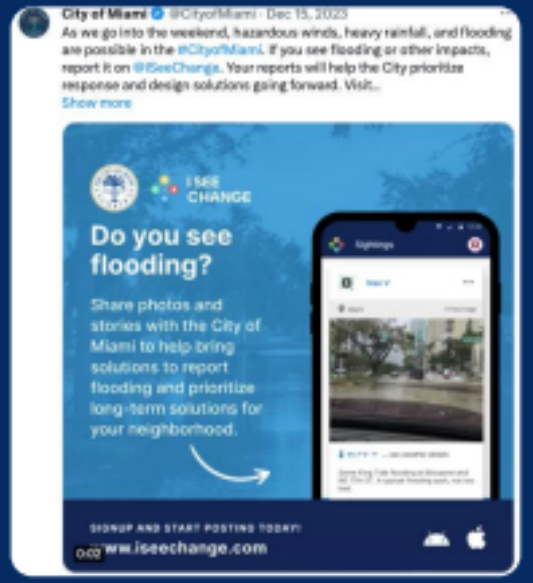
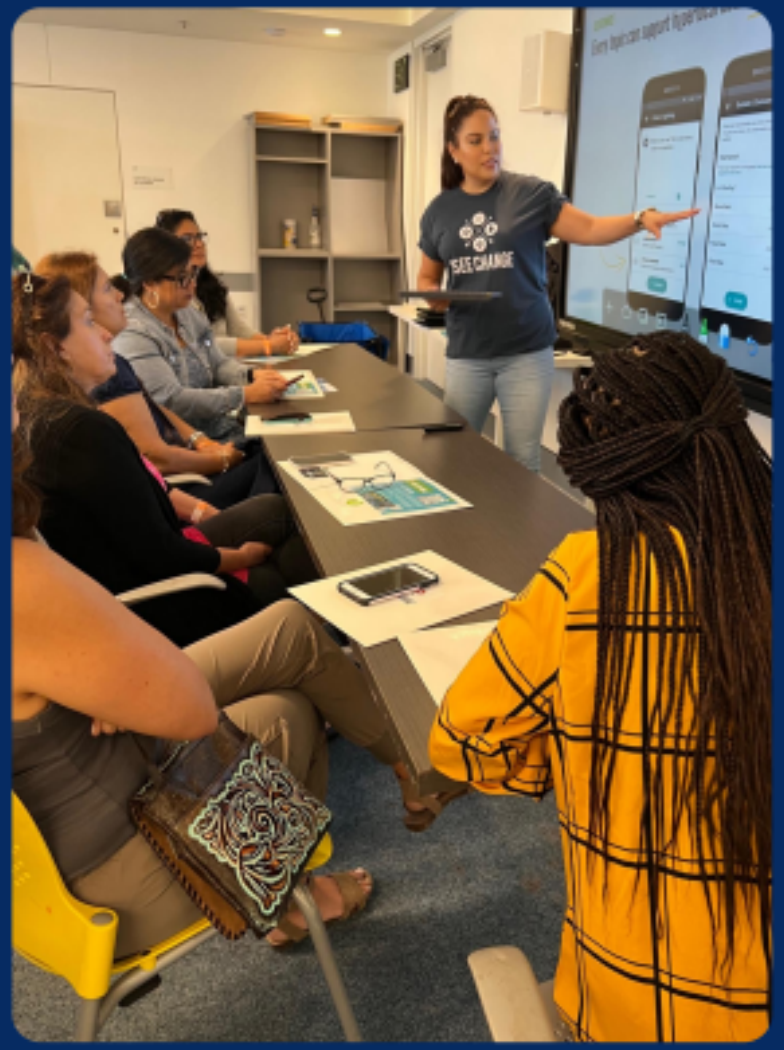
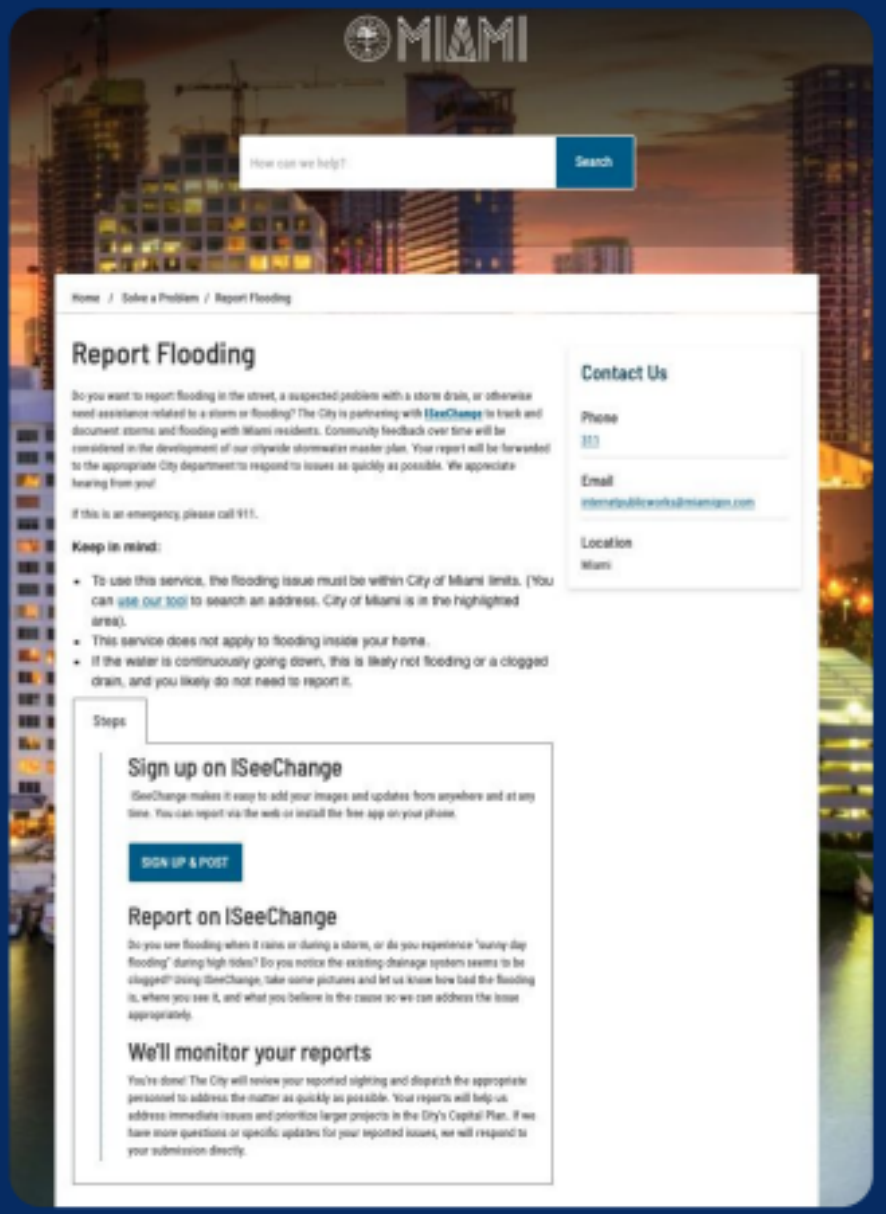
Hyperlocal engagement + resident recruitment

Partnered promotion & events with local partners

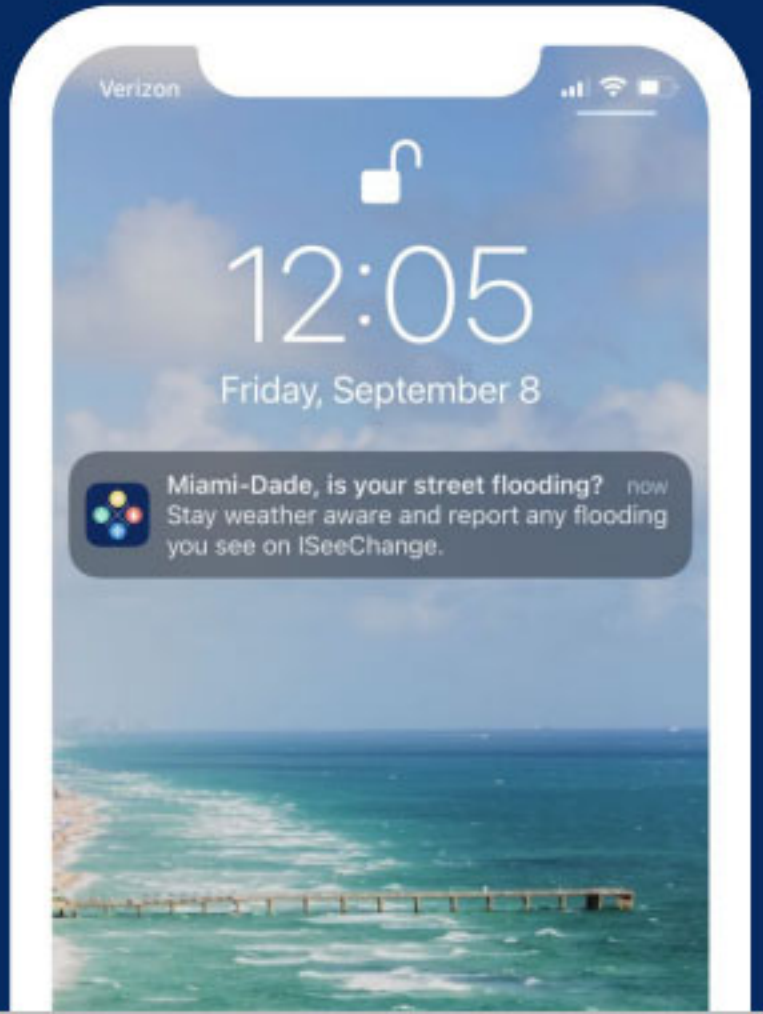


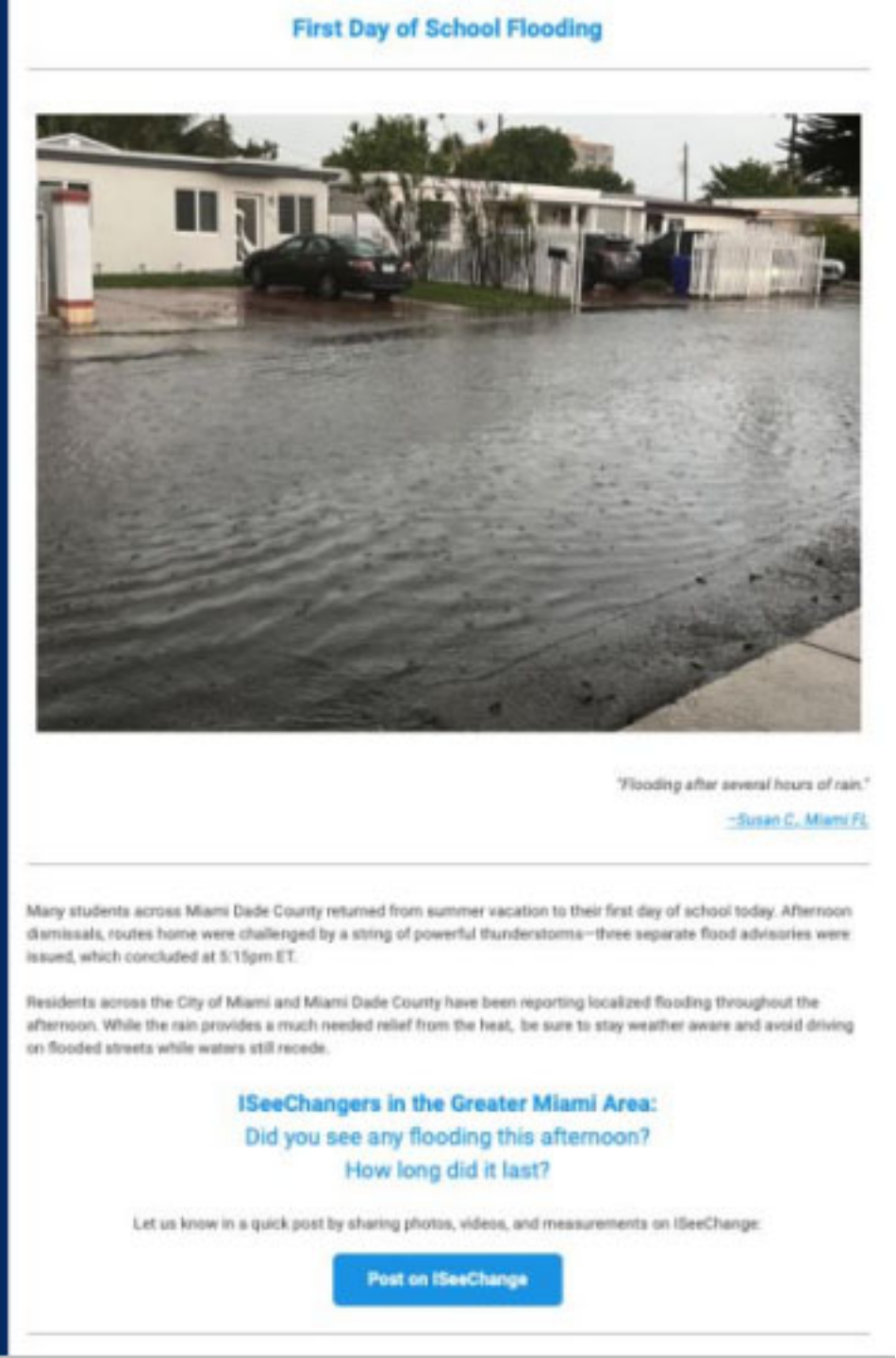




Complementary Messaging Strategy: Realtime & Event-driven

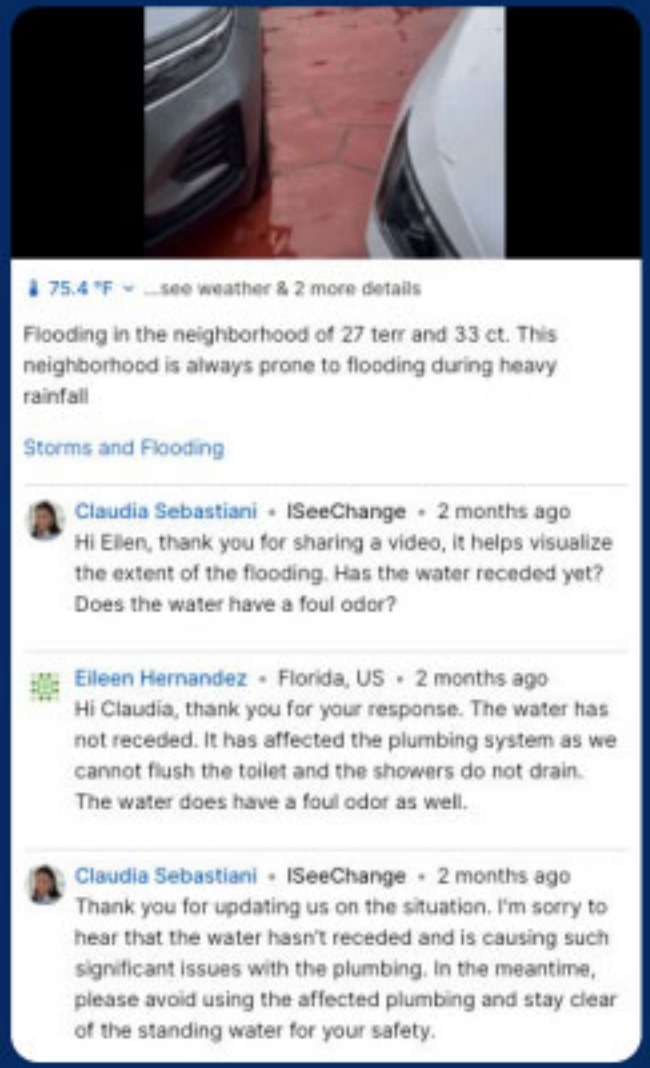
Real-time alerts directly to residents phones with tailored messaging



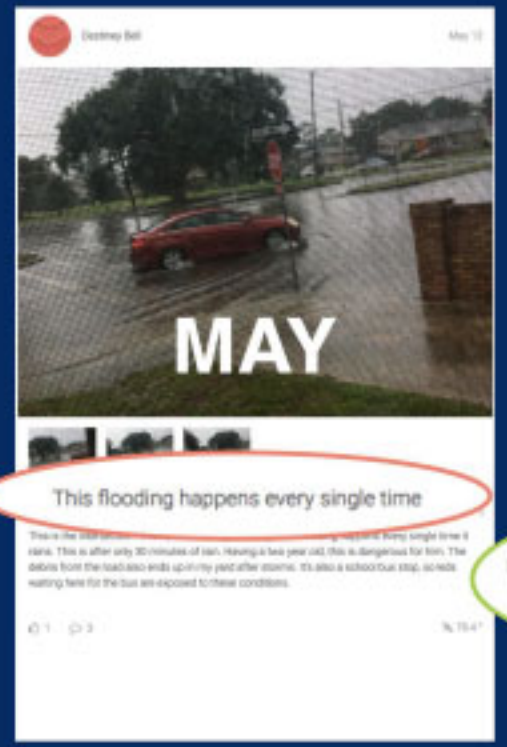


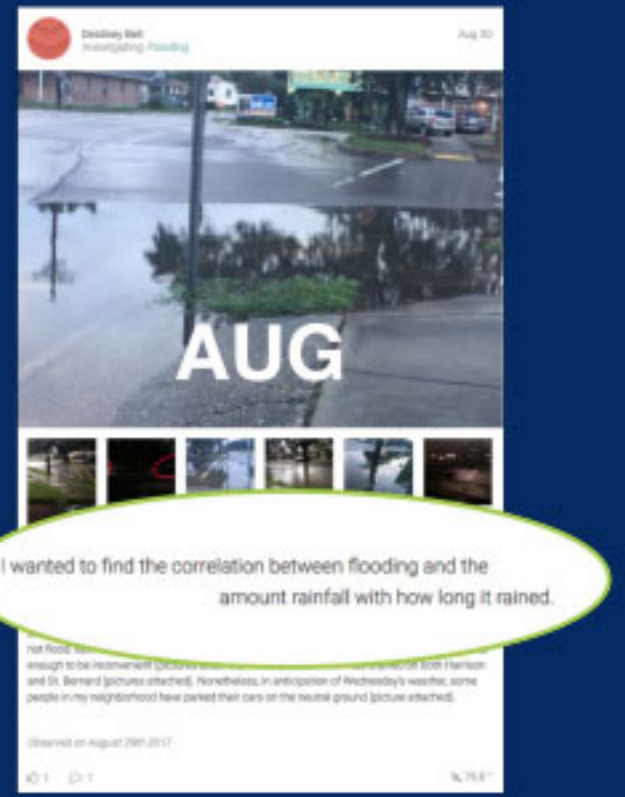
Driving resident education & stewardship

Community managers monitoring and engaging with residents, gathering more data and providing resources



Language change over time is a quantitative indicator of learning on the platform





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High-leverage + real time flooding data

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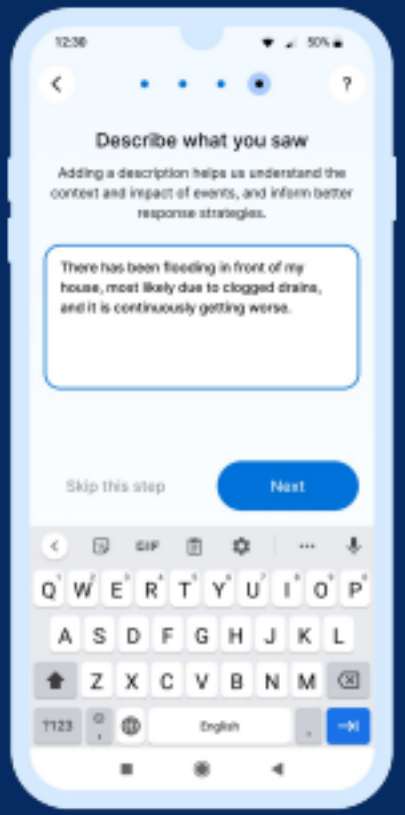
The User Experience

Efficiently collecting & centralizing data & feedback to prioritize solutions and save time



Real Time

Geo Social

Context

Hyper-Local Data

Hyper-local Value & Community Trends

with each contribution

GIS Data/ESRI

Target areas in need of prioritized attention.

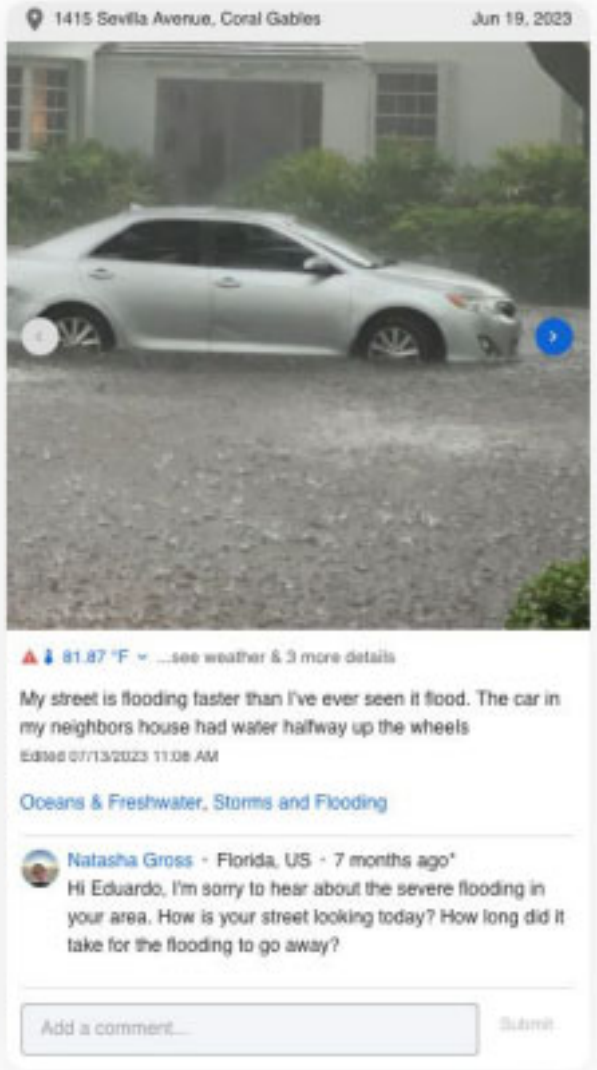
Impact Images

Impact Stories

Understand community need, severity, health concerns and community led solutions/ideas.

Dialogue

Discuss details and solutions with residents in real time.



Custom Sensors & Measurements

Activate communities to help measure and fill data gaps around local impact.

+ *many more*

DETAILS	WEATHER
TOTAL RAINFALL	5 INCHES
RAIN START/STOP TIME	6/19/2023 12:38 PM–6/19/2023 2:38 PM
FLOOD HEIGHT	3 INCHES

This day's high could be abnormally high and this day's low could be abnormally low compared to the last 30 years!
Learn about the data

Local data from nearby weather networks for Coral Gables, Florida, US on Jun 19 2023, 02:32 PM

SUMMARY	SCATTERED STORMS
FEELS LIKE	88.73°F
CLOUD COVERAGE	85.00%
HUMIDITY	81.00%
PRECIPITATION (LAST 12 HOURS)	0.8 INCHES
DEW POINT	75.46°F
PRESSURE	29.99 MBAR
WIND BEARING	203°
WIND SPEED	3.91 MPH

Source: aerisweather.com

Data API Integrations

Each submission is synced with climate and weather network data which can include official municipal or regional sensor networks via API.

City of Miami Case Study

$20M+ Impact

1. Activate

Centralizes data across city departments and local organizations.

2. Notify

Facilitates direct service requests with the City. **First to report** pump outages during Tropical Storm Eta. Triaging citywide response during PTC1 and Hurricane Ian. Receives same number of posts as 911.

3. Track

Residents demonstrate inland flooding in non-english speaking neighborhoods is **more severe than modeling suggests.**

4. Analysis & action

ISeeChange data used to win **$20M** in grants.

ISeeChange cited in City's **Bloomberg smart city certification.**

Pilot with Miami Dade County to track flooding, heat, and pollution.

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Incident management & planning across stakeholders

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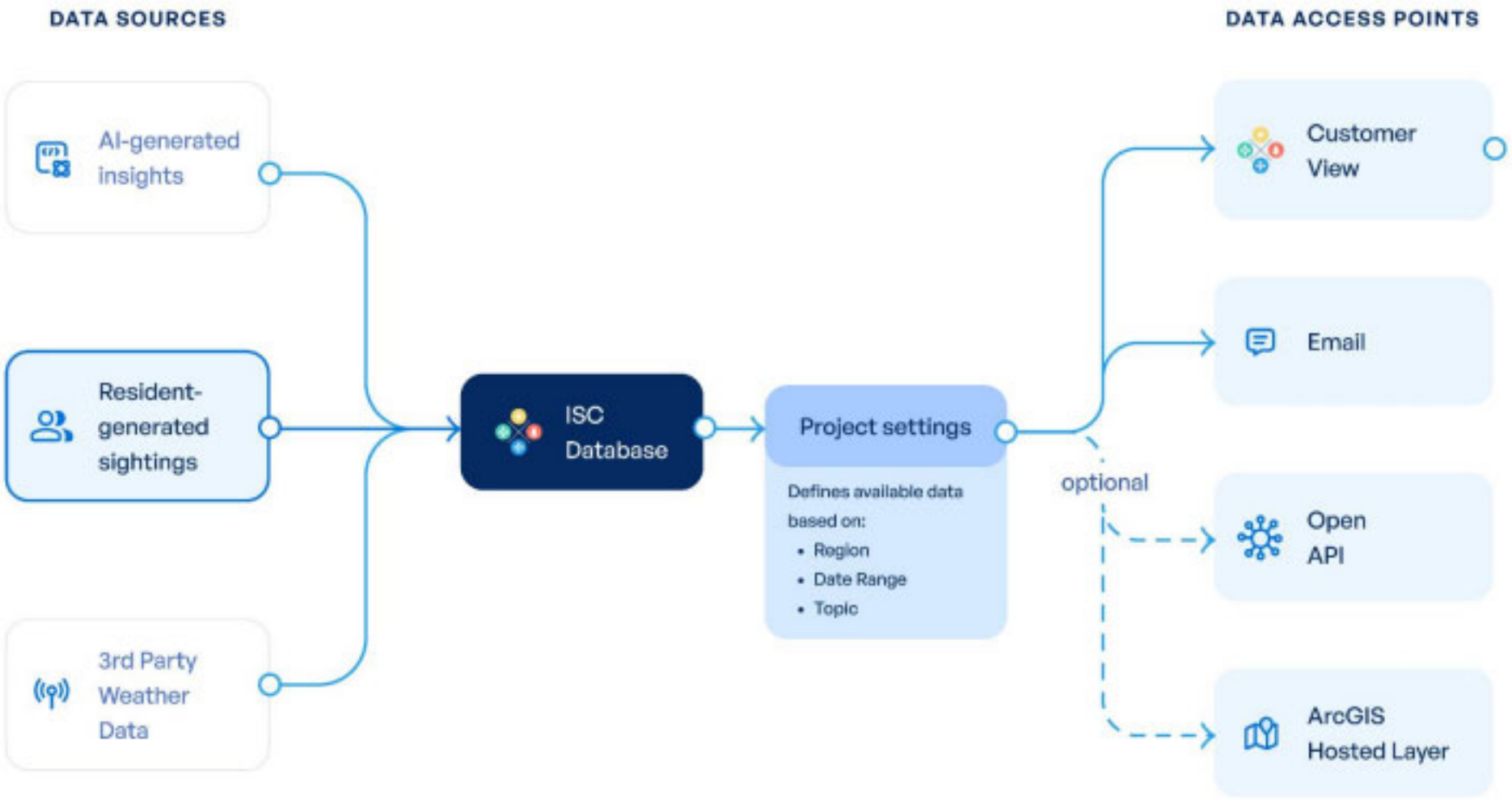
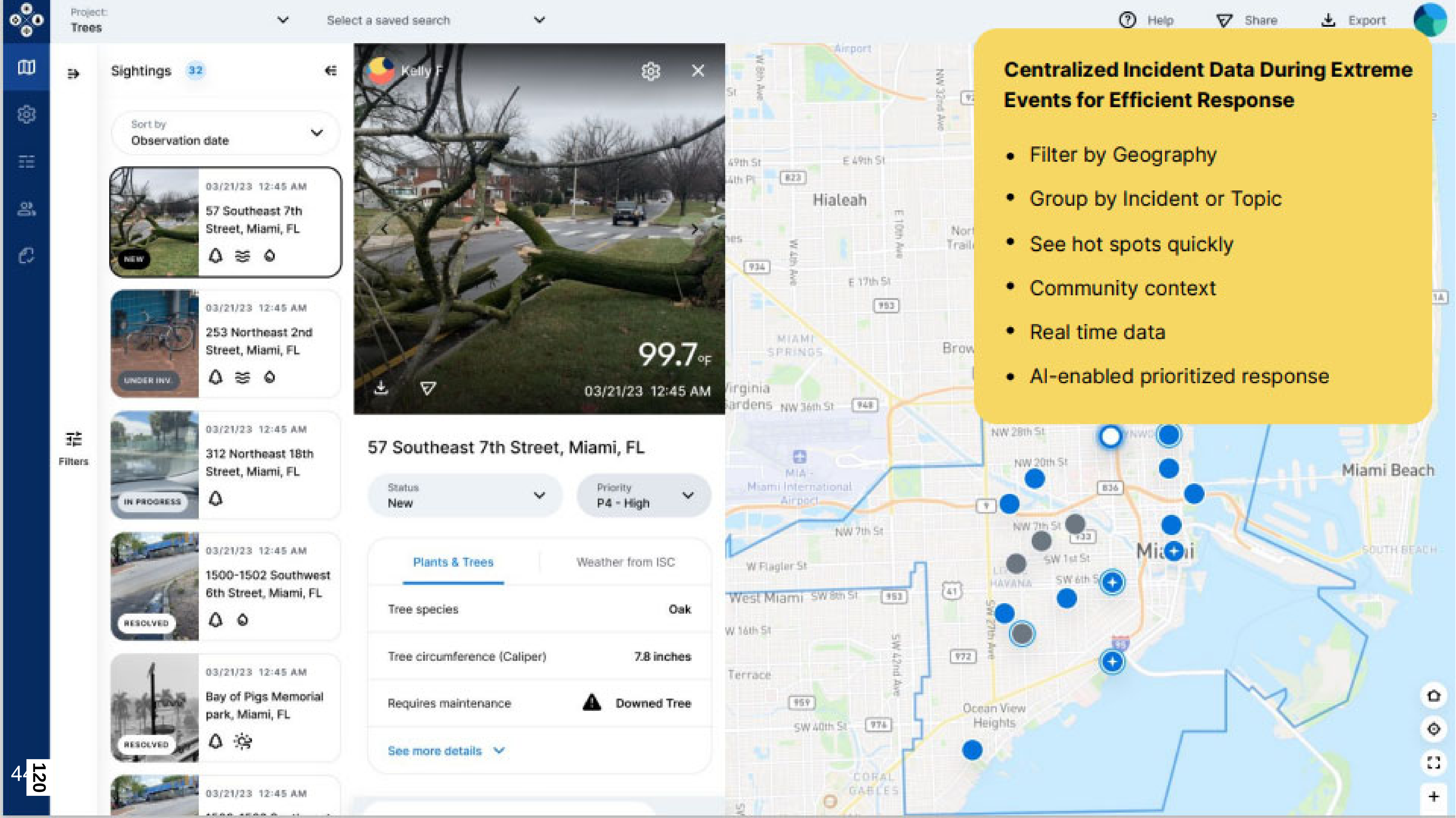
Delivering data where it needs to go.

ISC sightings fields can map 1:1 to match the feature attributes your layer expects

To configure the integration, ISC only needs a few simple details regarding your ArcGIS Online account set-up

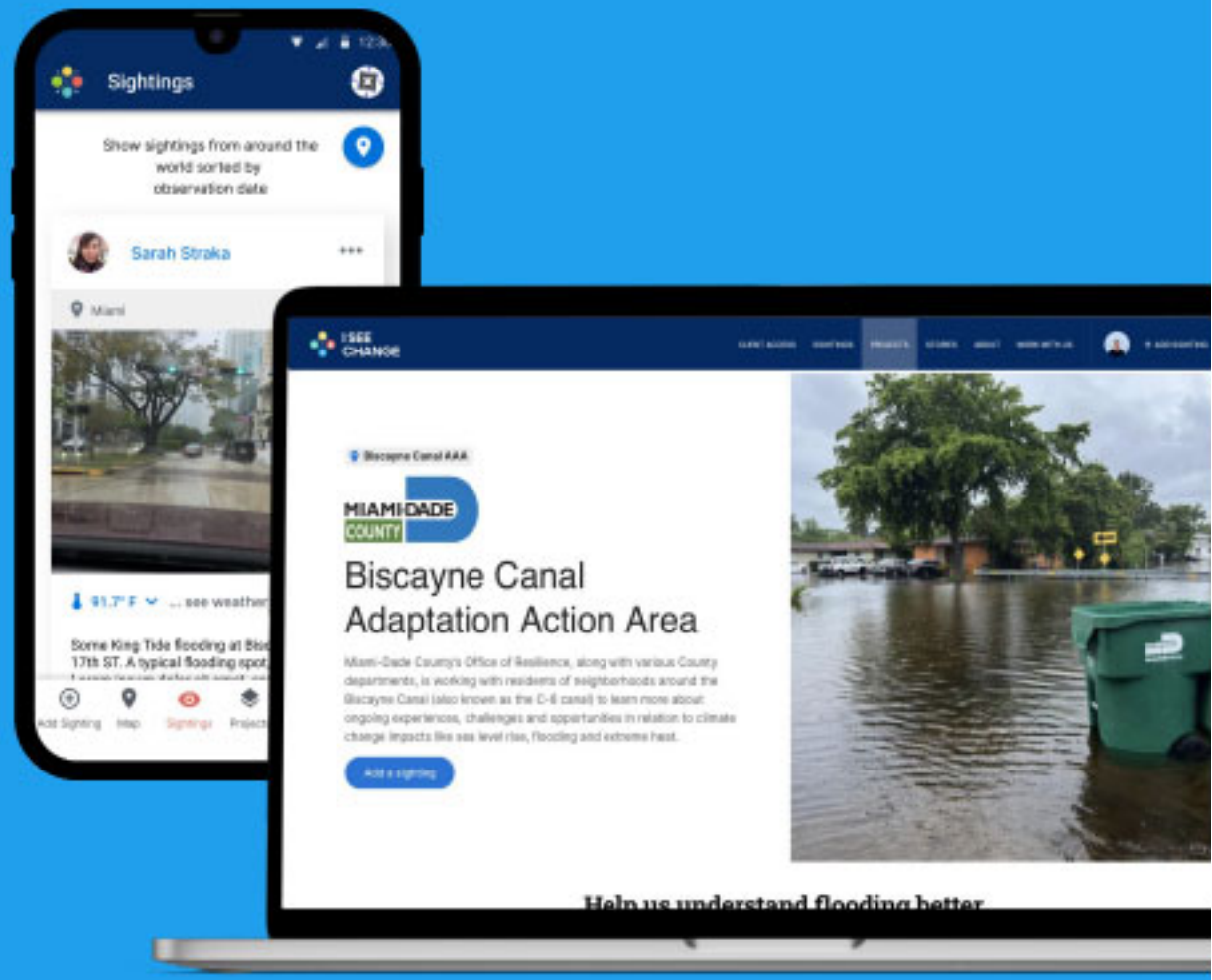
Our ArcGIS Online integration adds features to new or existing feature layers in real-time




Centralized Incident Data During Extreme Events for Efficient Response
Filter by Geography
Group by Incident or Topic
See hot spots quickly
Community context
Real time data
AI-enabled prioritized response
Project:
Trees
Select a saved search
Help
Share
Export
Sightings 32
Sort by
Observation date
03/21/23 12:45 AM
57 Southeast 7th Street, Miami, FL
NEW
03/21/23 12:45 AM
253 Northeast 2nd Street, Miami, FL
UNDER INV.
03/21/23 12:45 AM
312 Northeast 18th Street, Miami, FL
IN PROGRESS
03/21/23 12:45 AM
1500-1502 Southwest 6th Street, Miami, FL
RESOLVED
03/21/23 12:45 AM
Bay of Pigs Memorial park, Miami, FL
RESOLVED
03/21/23 12:45 AM
Filters
Kelly F
99.7°F
03/21/23 12:45 AM
57 Southeast 7th Street, Miami, FL
Status
New
Priority
P4 - High
Plants & Trees
Weather from ISC
Tree species
Oak
Tree circumference (Caliper)
7.8 inches
Requires maintenance
Downed Tree
See more details
Hialeah
Miami Springs
Miami International Airport
West Miami
Miami
Miami Beach
Ocean View Heights
Coral Gables

County and Municipal Use Cases for ISeeChange

- Situational awareness and real-time communication
- Hot spot identification and preparedness
- Triages and augments both 311 and 911 systems
- Model validation
- Federal and state grant applications
- Design-build infrastructure projects
- Community stewardship and trust building



Get in touch with us to schedule a demo.

I SEE CHANGE
Community Climate & Weather Journal

Julia Kumari Drapkin
Founder & CEO
julia@iseechange.com

Or visit:
partners.iseechange.com

ACTION

Dr. Carolina Maran

Local Government Partner Wet Season Call To Action

- Promote flood observation survey applications on local outreach/social media efforts
- Acquire a **Flood Information Resource** Account
- Login to the **Flood Information Resource** to monitor incoming reports
- Sign available staff up for flood observation surveys and high-water mark **training**
- Attend training and download applications to a mobile device, as needed
- Deploy staff to mark and measure high water marks, as available

High Water Mark / Flood Observation Training Opportunities

- Training is open to Local Government Staff
- Sign Up is through Microsoft Form
- First Come First Serve
- Training Locations, Dates, and Times
  - West Palm Beach Field Station – Tuesday, April 2, 9:30 – 12:30
  - Big Cypress Basin Field Station – Tuesday, April 9, 9:30 – 12:30
  - Clewiston Field Station – Thursday, April 11, 9:30 – 12:30
  - Fort Lauderdale Field Station – Wednesday, April 17, 9:30 – 12:30
  - Homestead Field Station – Tuesday, April 23, 9:30 – 12:30
  - Miami Field Station – Wednesday, April 3, 9:30 – 12:30
  - Okeechobee Field Station – Wednesday, April 24, 9:30 – 12:30
  - St. Cloud Field Station – Thursday, April 18, 9:30 – 12:30