



# Area of Interest Tool Resilience Report Update

Virtual Training Workshop  
August 13, 2024



Strategic  
development

# Attendee Participation Panel



Attendees are automatically muted throughout the webinar



Click the  to open the panel box and submit a question to the panelists



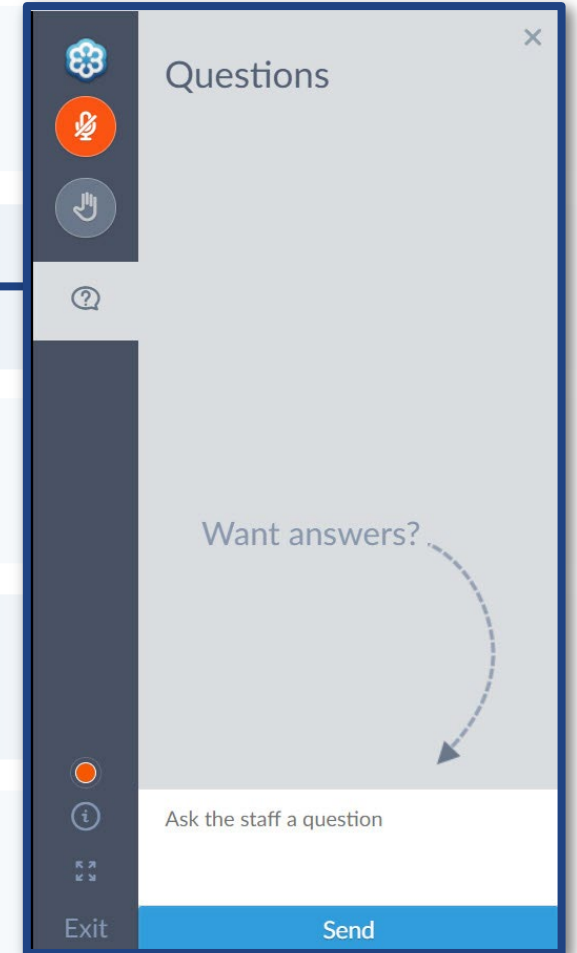
Questions will be answered by panelists either verbally or in the question box



Webinar is being recorded and will be available with other materials on the FDOT website



Please complete the evaluation survey that will be sent via email at the conclusion of this webinar



# AICP Certification Maintenance (CM) Credits



Certification  
Maintenance

- AICP members can earn 1.5 CM credits for this activity
  - Course number: 9295178
  - Course name: FDOT Area of Interest Tool -- Resilience Report Virtual Training Workshop
- More information can be found at [www.planning.org/cm](http://www.planning.org/cm)

# Agenda

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Time	Activity
3:00 pm	FDOT Introduction & Resilience Initiatives
3:10 pm	Background, Objectives & Overview of Hazards
3:20 pm	Data Included in Resilience Report
3:45 pm	Demo: How to access and use the report
4:20 pm	Next Steps, Q&A
4:30pm	Close



# TRANSPORTATION RESILIENCY AT FDOT



*Tony Frye, State  
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*Contact:*

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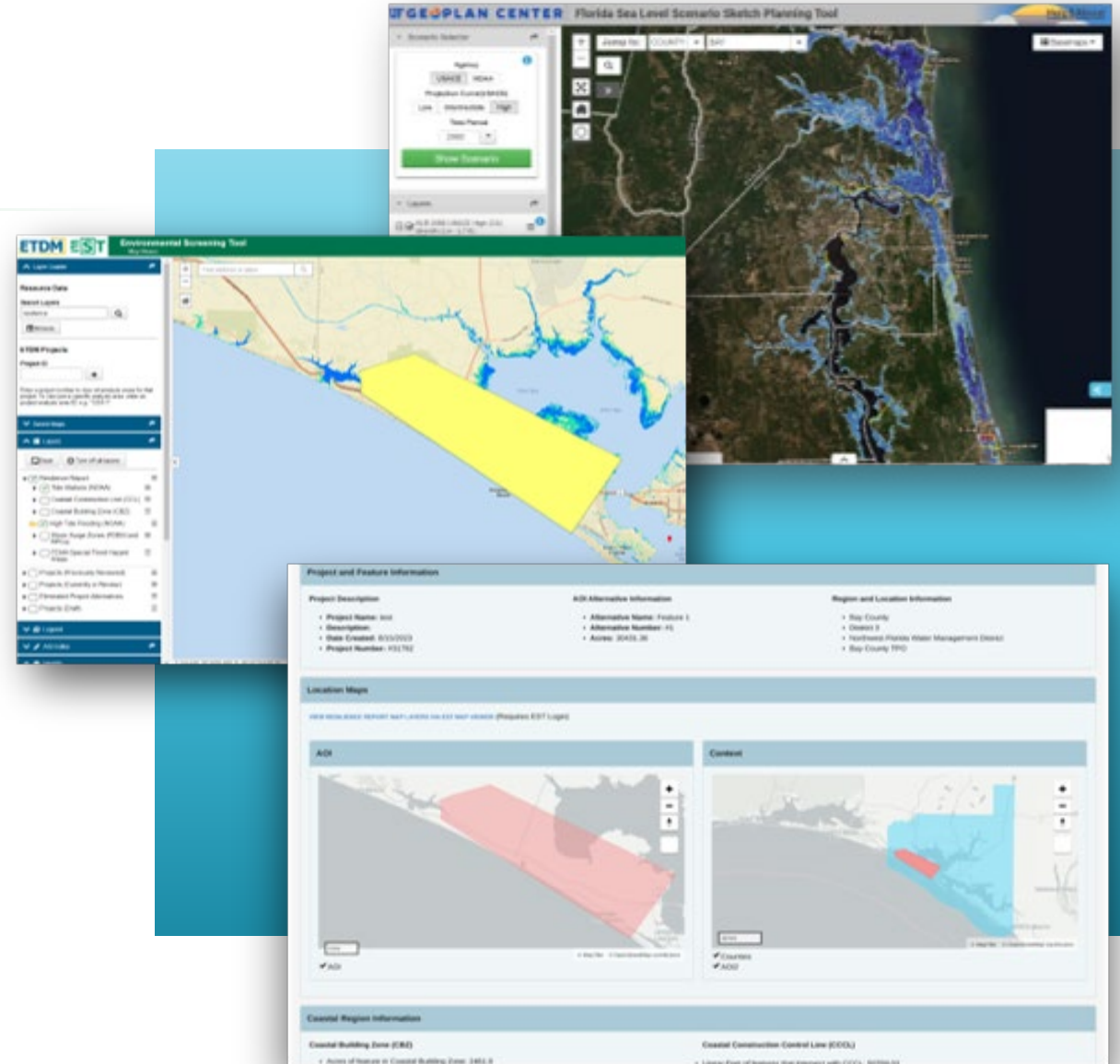
# INHERENT RESILIENCE

- Design Criteria
- Stormwater/Drainage Design Procedures
- Nature-Based Solutions
- Context Sensitive, Complete Streets
- Local Partner Coordination



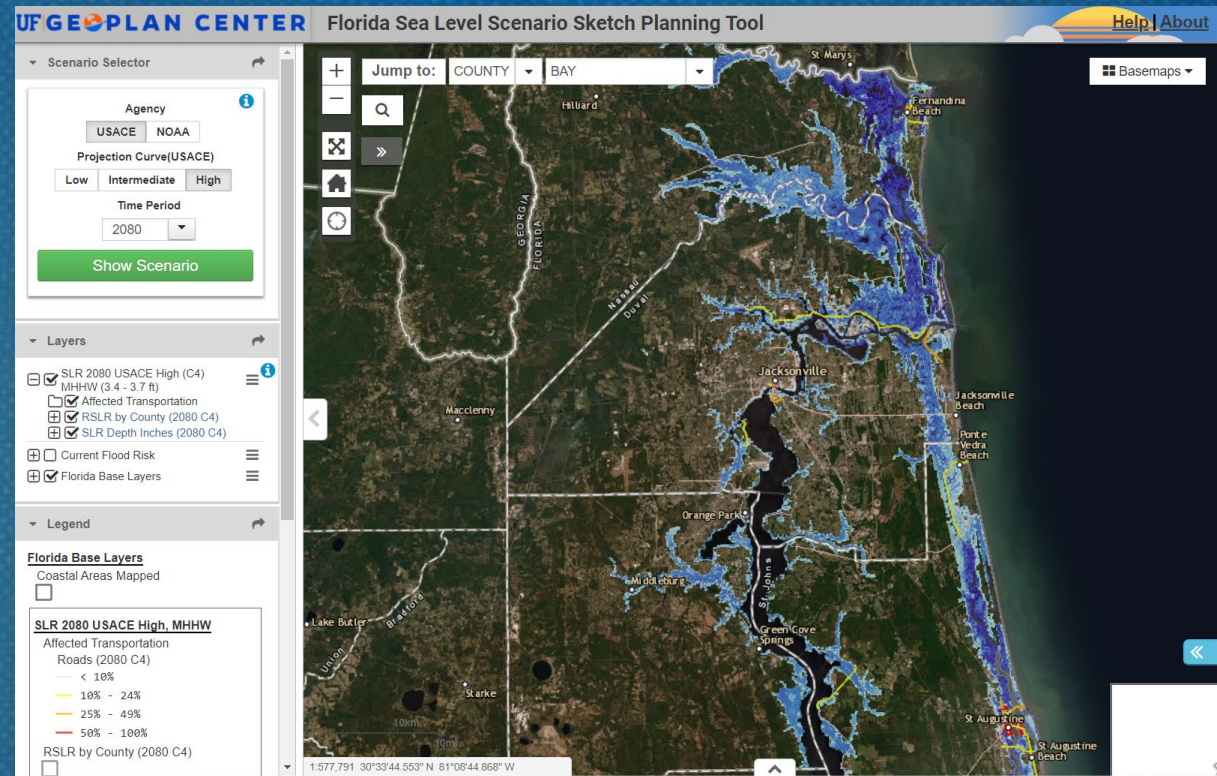
# RESILIENCE TOOLS/ACTIVITIES

- Sea Level Scenario Sketch Planning Tool
- Resilience Action Plan Data Viewer
- Environmental Screening Tool (EST) Area of Interest (AOI) Tool Resilience Report
- PD&E Manual Resilience Chapter (July 2025)
- Project Suite (PSEE) Resilience Tracker Module
- Development of Statewide Resilience Website



# Background: Sketch Planning Tool

- Launched in 2013
- **Sea Level Scenario Sketch Planning Tool** provides **planning-level analyses of where and when SLR** may impact the transportation system.
- Offers broad context, but wanted to allow for **project level impacts**.
- Requests from users to integrate SLR information into ETDM/ EST.





# Background: Environmental Screening Tool (EST)

Web application to facilitate ETDM.

Screening process for potential impacts to environmental and human resources from proposed transportation projects.

## EST integrates:

- Database of transportation projects and information
- 500+ environmental, cultural, community resource GIS layers
- Automated screening/ analyses of layers

**Area of Interest (AOI) Tool:** allows a user to define and analyze an area anywhere in Florida to learn about people, places, natural resources



# AOI Tool Resilience Report

- Serves as a screening tool to evaluate potential impacts from multiple hazards.
- Summarizes and displays analyses of flood exposure for a user-specified area of interest.
- Integrated into the EST – Area of Interest tool.
- Flexible infrastructure – can *support additional data layers as they become available*.



# Supporting Resilience Goals

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- The report supports FDOT's goals of **increasing transportation resilience** by developing **geospatial tools** to facilitate assessment of infrastructure vulnerable to designated hazards.
- **Facilitates resiliency decision making** by increasing accessibility and utilization of data derived from hazard probability analyses.
- Supports FDOT's Resiliency Policy 000-525-053
- Supports FTP 2045: Goal of Agile, Resilient, and Quality Transportation Infrastructure

# Risk & Vulnerability of Transportation Assets

## Heat - Increased Temperatures

- Damage to roads (cracking, buckling, rutting), runways, rails (buckling); Health risks to outdoor workers and public/ active transportation

## Coastal Flooding & Sea Level Rise

- More frequent high-tide flooding and more intense tropical storms; Flooding of roads and facilities
- Direct and indirect economic damages from system disruption and re-routing

## Heavy Precipitation

- Increased runoff, erosion, risk of washout; riverine flooding - damaged roads; more bridge scour

## Wildfire

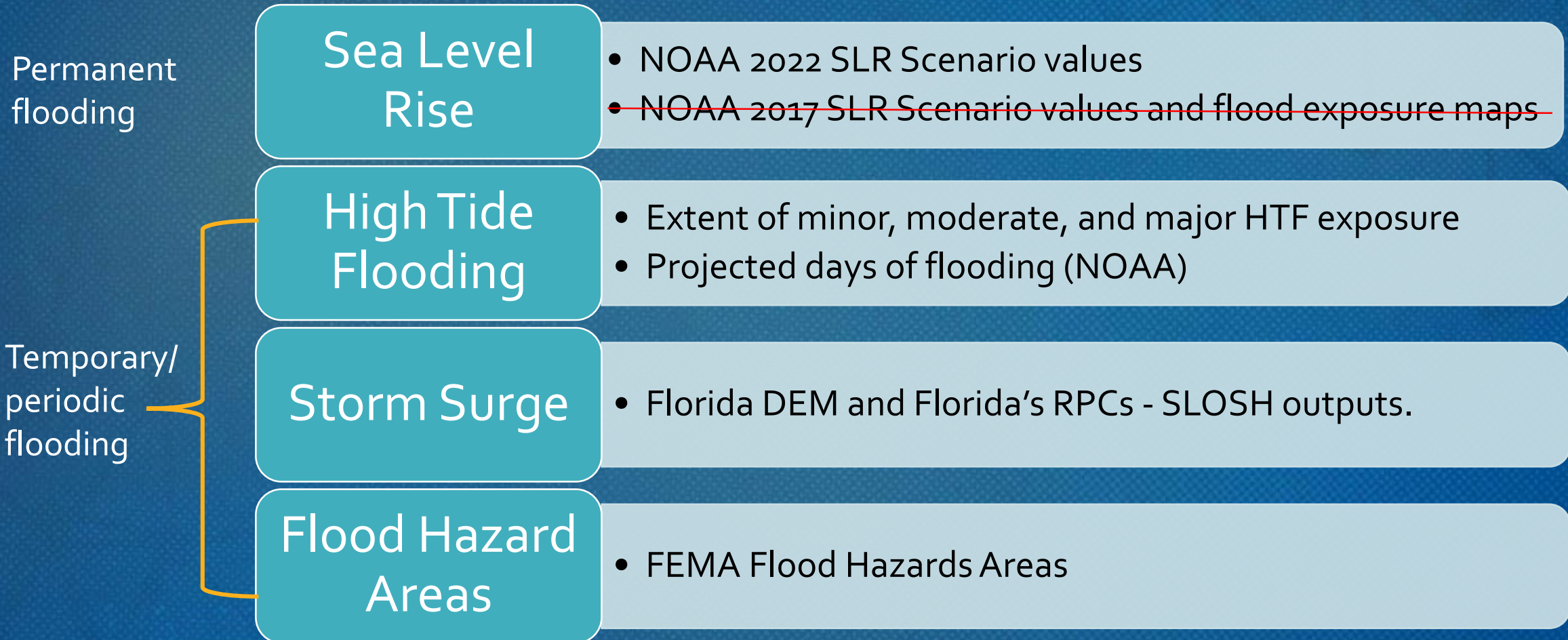
- Road closures; reduced visibility; increased chance of runoff; system disruption and re-routing



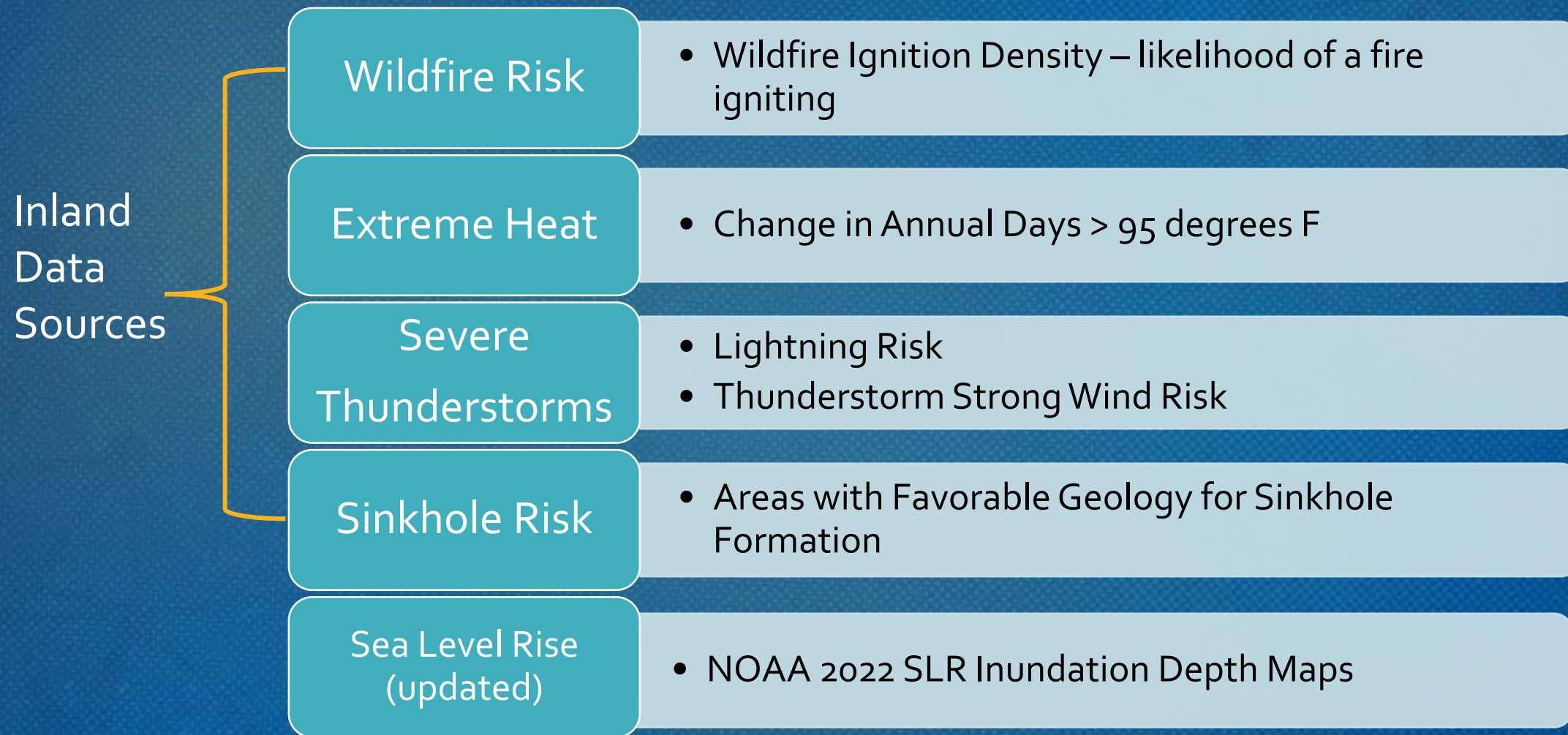
Images: Union of Concerned Scientists, NOAA, istock, FDEM)

# Hazards Included in the Resilience Report

# Hazards Data for Version 1



# New Hazard Data



# Hazards Data Layers



# Flooding Data

# Areas at Risk Due to Sea Level Rise (SLR)

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Identifies areas in need of a **Sea-Level Impact Projection (SLIP) Study**.

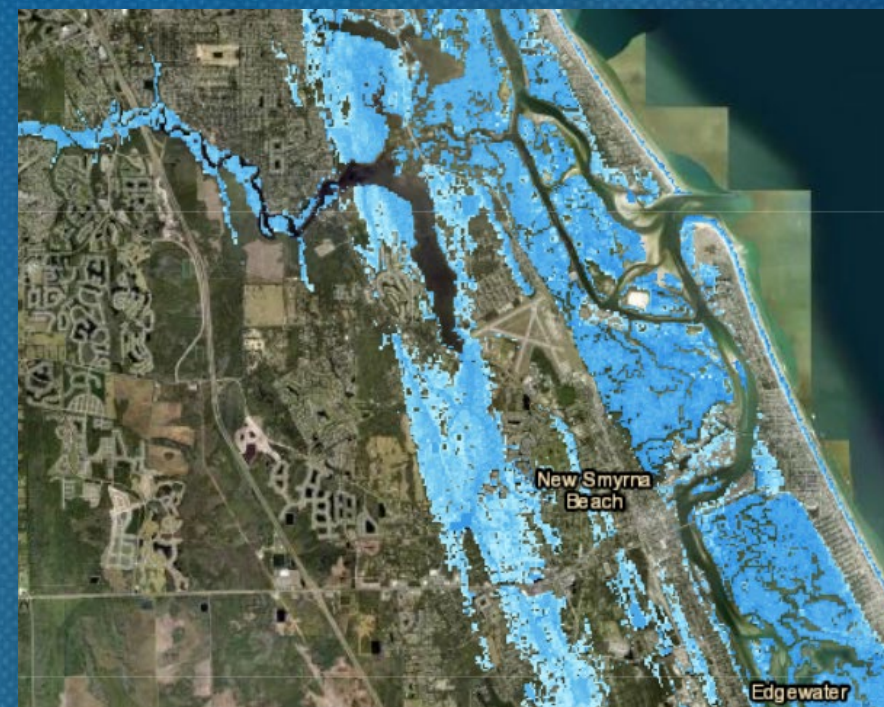
Section 380.0937, Florida Statutes, requires state agencies, municipalities, counties, special districts, authorities, or other corporate bodies of the state, which commission or manage a construction project within the area at risk due to SLR using state funds, to conduct a SLIP study.

New SLIP requirements for state-financed construction projects within areas at risk due to SLR that begin after July 1, 2024. Expands the Coastal Building Zone of Florida.

Projects initiated prior to July 1, 2024 remain subject to the current SLIP study requirements and standards.

# Sea Level Rise Inundation Layers

- Layers represent: extent and depth of potential permanent flooding due to future sea levels.
- Layers available in 1-foot increments of SLR above MHHW (high tide).
- Report includes 1-7ft SLR, with 7ft representing upper range of projected SLR by end of century (2100).
- Inundation layers use the most current LiDAR elevation data in Florida.



Data Source: NOAA Coastal Services Center

# High Tide Flooding

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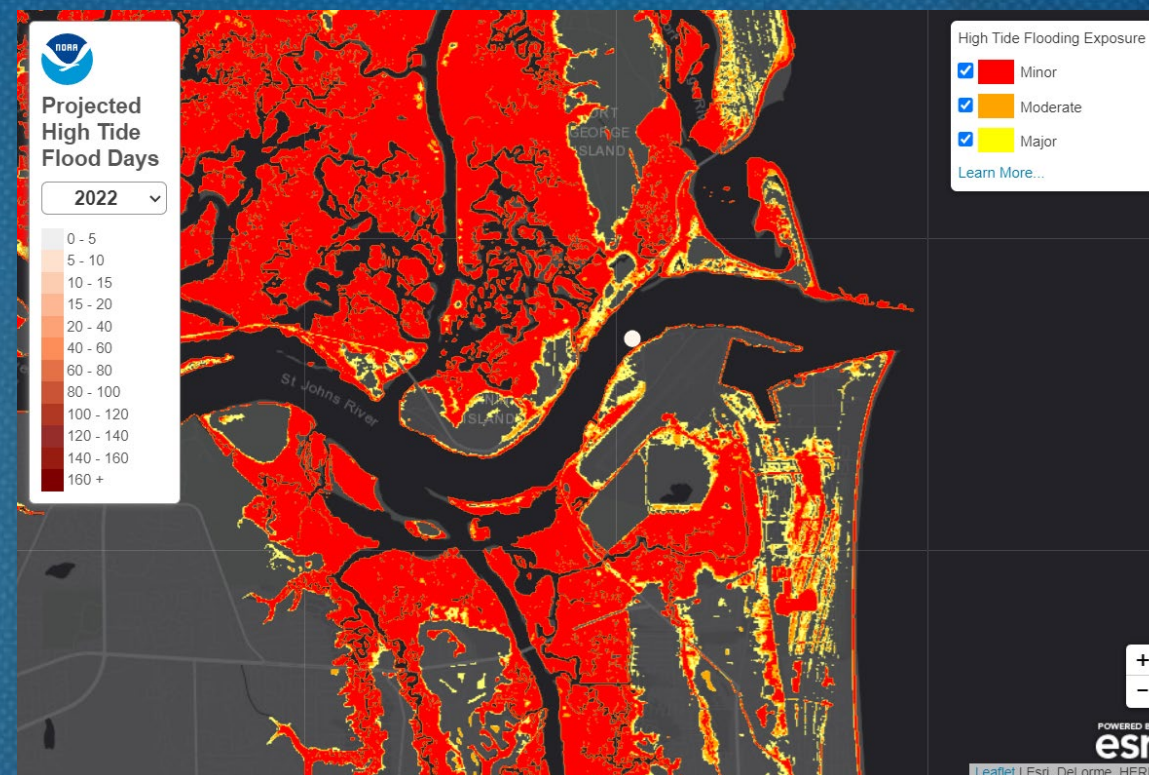
- Recurrent flooding that occurs during high tides.
- Also known as: *nuisance, sunny day, king tides*
- **Occurs more frequently, as much as double** in some U.S. coastal communities compared to 20 years ago, due to SLR, land subsidence, and loss of natural barriers
- Frequency of HTF may increase depending on future sea levels and mitigation activities.



# Extent of High Tide Flooding (NOAA)

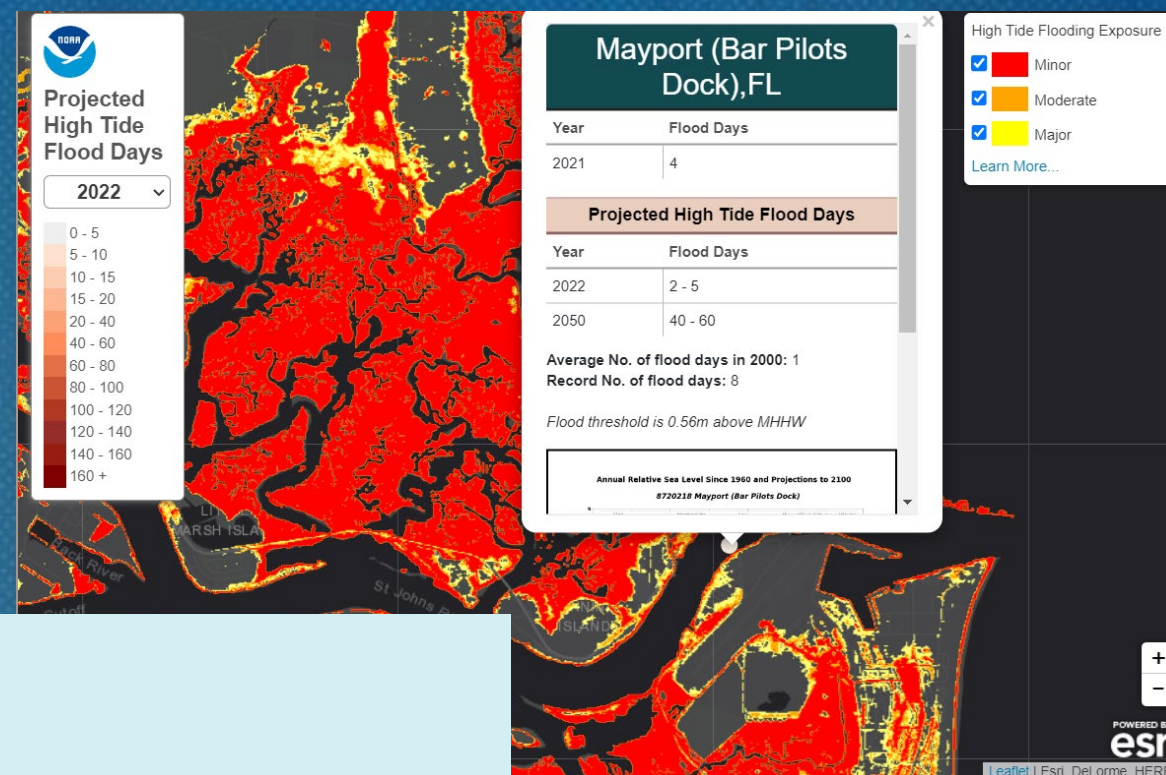
Three HTF levels, using standard thresholds above the daily high tide:

- **Minor**: tides exceed approximately 0.55m (1.8ft). Low threat of property damage.
- **Moderate**: tides exceed 0.85m (2.8ft).
- **Major**: tides exceed 1.2m (3.9ft).



# Projected Days of High Tide Flooding (NOAA)

- Frequency of HTF may increase depending on future sea levels
- NOAA produces projected annual days of minor HTF by decade and SLR scenario.



## National estimates of minor HTF:

- 2022: average of 3-7 days/ year
- 2030: expected increase of 2-3 times (7-15 days/ year)
- 2050: increase of 5-15 times (45-70 days)

# Using the High Tide Flooding Data

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Two parts to this data:

1. Spatial Extent of HTF

- Minor, moderate, major – determined by elevation threshold

2. Projected Days of Flooding Annually

- For each decade (to 2100), projected days of HTF under 2022 SLR Scenarios
- Currently only available for minor HTF

## *Where?*

*Where will this temporary flooding occur?*

## *How Often?*

*Average # of days per year*

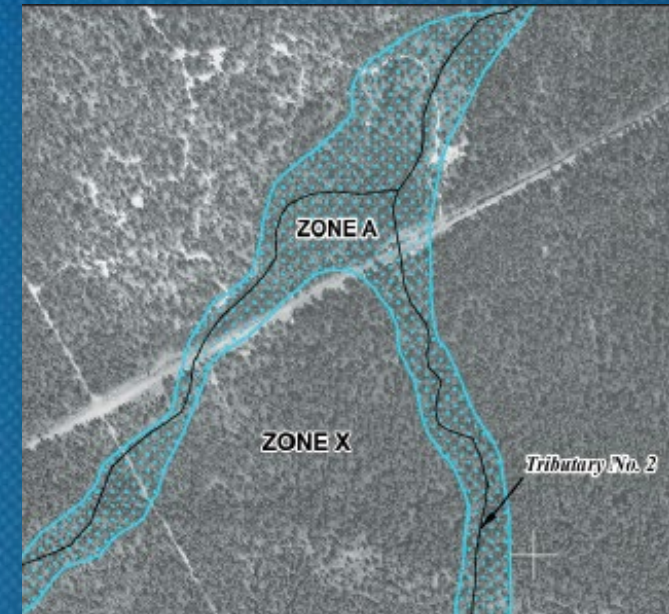
# FEMA Flood Hazard Areas

## Special Flood Hazard Areas (SFHA)

- Areas inundated by the **1% annual chance flood event**. Also known as: “base flood” or “100-year flood”
- Over a 30-year period, 26% chance of occurring

## Moderate flood hazard areas:

- Areas between base flood and **0.2% annual chance flood event**
- Also known as “500-year flood”
- Represents *current* flood hazard areas, based on historical data; does not include future precipitation or SLR

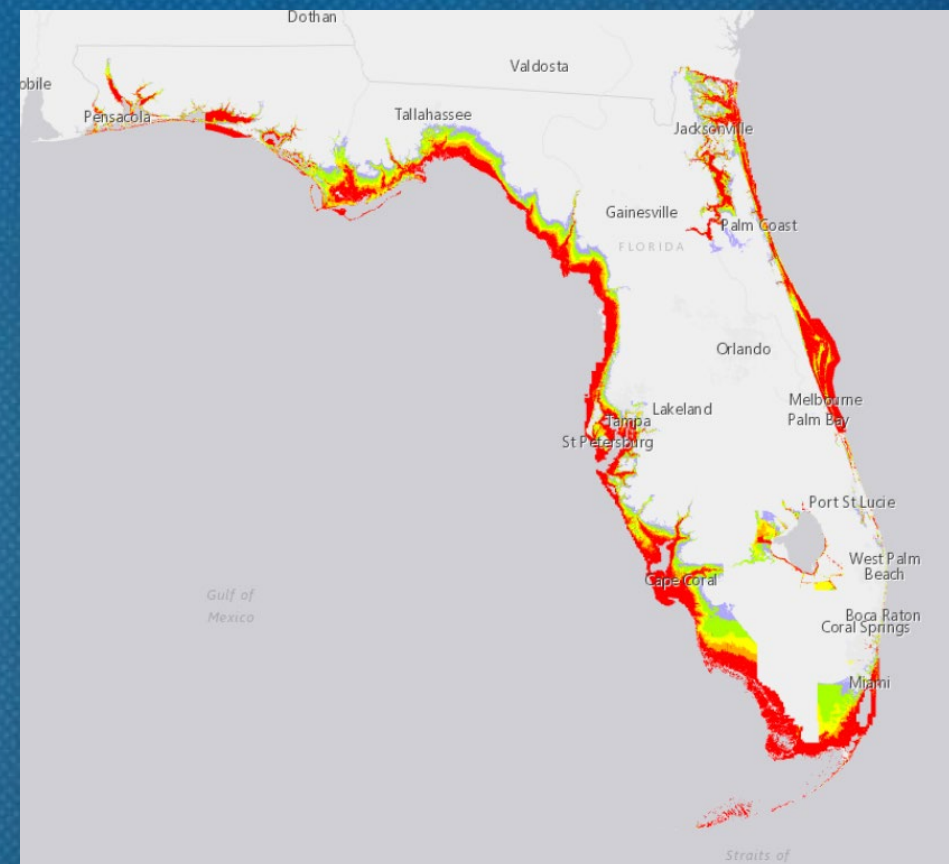


Source: FEMA National Flood Hazard Layer - Digital Flood Insurance Rate Map



# Storm Surge Zones

- Derived from National Hurricane Center SLOSH.
- Provides worst case snapshot of surge for each hurricane category (1-5) under perfect storm conditions.
- Developed by Florida's Regional Planning Councils - part of Florida Statewide Regional Evacuation Update Study (August 2021).
- Represents current surge, does not include future SLR



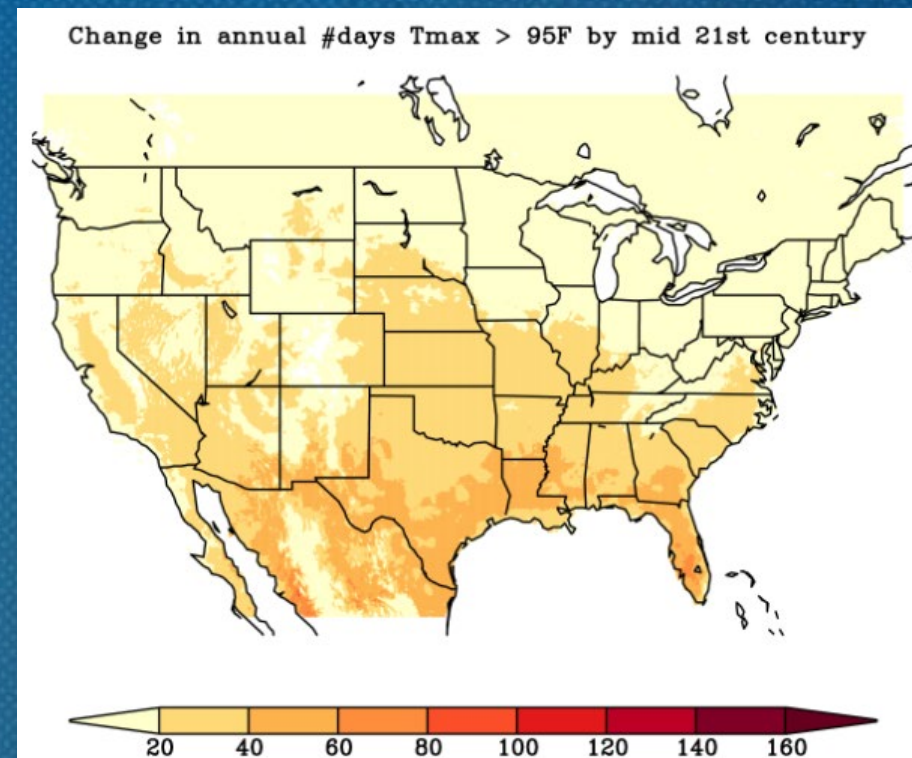
# Statewide (Non-Flood) Hazards

# Extreme Heat: Projected Change in Annual Days over 95°F

**Early century (2016 - 2045):** Lower Emissions simulated change for 2016–2045, compared to 1976–2005

**Mid-Century (2036 - 2065):** Lower emissions simulated change for 2036–2065, compared to 1976–2005

Lower Emissions scenario under Representative Concentration Pathway (RCP) 4.5.



Data Source: Localized Constructed Analogs (LOCA) data set. Univ of California San Diego - Scripps Institute

# Wildfire Risk: Ignition Density

- Wildfire - unplanned and uncontrolled fire in a natural area, caused by natural sources (lightning) or human activity.
- Occur in Florida every year and are part of the natural cycle of fire-adapted ecosystems (FDEM).
- Wildfire Ignition Density: Likelihood of a wildfire igniting in an area, based on available fuel and other factors (e.g. lightning).
- Represents current wildfire risk, does not account for future conditions.
- Transportation considerations: impaired visibility from smoke, evacuation needs.



Data Source: Southern Group of State Foresters (SGSF)

# Sinkhole Risk

- Sinkholes – naturally occurring geologic features in Florida, due to porous karst geology. Can form suddenly.
- Periods of severe drought followed by extreme rainfall can destabilize ground conditions and increase formation potential.
- Transportation infrastructure are at risk of collapse or damage from sinkholes, leading to disruptions, delays, or damage to the transportation system.
- Data source: Florida Geological Survey. Favorable geology for sinkhole formation.
- Represents current risk, does not account for future conditions.



Data Source: Florida Geological Survey;  
Image: Florida Museum (Univ of Florida)

# Severe Thunderstorms

Severe thunderstorms can be life-threatening and cause impacts to the transportation system.

- Wind and rain can cause flash floods; knock down trees and limbs, cause power outages and blocked roadways. Can cause mobility disruptions and reduce access to critical services.

**Lightning and strong winds** used as proxy for severe thunderstorms. Data source: FEMA National Risk Index

- **Lightning:** Visible electrical discharge or spark of electricity in the atmosphere between clouds, the air, and/or the ground often produced by a thunderstorm (FEMA).
- **Strong Winds:** damaging winds, often originating from thunderstorms, that are classified as exceeding 58 mph (FEMA).



Images: NOAA National Severe Storms Lab



# Demo

# How to Use This Report

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- Project level screening – gathering data
  - E.g. corridor/ feasibility studies, PD&E
- Look at full range of potential impacts (low to high scenarios)
  - Can help to not over-adapt – based on context & full range
- Screening can trigger for more refined study
- LRTP screening



# Requesting Access to AOI Tool & Resilience Report

## FDOT staff or consultants with FDOT IT accounts

- District users request access through your FDOT District ETDM Coordinator
- Central Office users request through Statewide ETDM Coordinator or contacting ETDM Help Desk
- Once approved by the ETDM Coordinator, submit an AARF selecting the EST – AOI Only application

## MPO and FDOT consultants without FDOT IT accounts

- Request access through your MPO or FDOT Project Manager
- Your Project Manager can then request through the appropriate ETDM Coordinator
- The ETDM Coordinator can then email authorization to the ETDM Help Desk

## MPO staff

- Request access through your MPO ETDM Coordinator
- If MPO ETDM Coordinator position is vacant, contact the FDOT District ETDM Coordinator
- The ETDM Coordinator can then email authorization to the ETDM Help Desk

EST & ETDM contacts here: <https://etdmpub.flas-etat.org/est/index.jsp?url=contacts.jsp>

# Continued Development

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- Working on the PD&E Manual Resilience Chapter to provide guidance on how information in the report should be considered on a project specific basis (e.g., ETDM projects).
- Develop summary report for quicker assessment and to facilitate comparison of alternatives
- Adaptation toolbox & mitigation strategies
- Adding new & updated data as available
- Sketch Tool: update roadway exposure analysis with new SLR inundation layers (NOAAs); expand analysis inland

# Feedback Please!

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Please send us your input on desired additional datasets, analyses, or functionality. We'd love to hear how you're using the Resilience Report.

## Contacts:

- FDOT Resilience: [resiliency@dot.state.fl.us](mailto:resiliency@dot.state.fl.us)
- Technical Issues with Resilience Report webpage: [cgoody@ufl.edu](mailto:cgoody@ufl.edu)
- EST and AOI Questions:
  - Jonathon A Bennett ([jonathon.bennett@dot.state.fl.us](mailto:jonathon.bennett@dot.state.fl.us)), State Environmental Quality and Performance Administrator, (850) 414-5330
  - ETDM Help Desk: [help@fla-etat.org](mailto:help@fla-etat.org); (850) 414-5334
- To view Resilience Report website (for non-AOI users):
  - <https://apex.geoplan.ufl.edu/ords/r/prod/resilience-report/>

*Don't Drive Into the Unknown.....*



*.....Stay Away from Flooded Streets!*

**Thank you!**