



NOAA

NWS: *The Last Critical Mile Agenda*

Unifying Innovations in Forecasting Capabilities

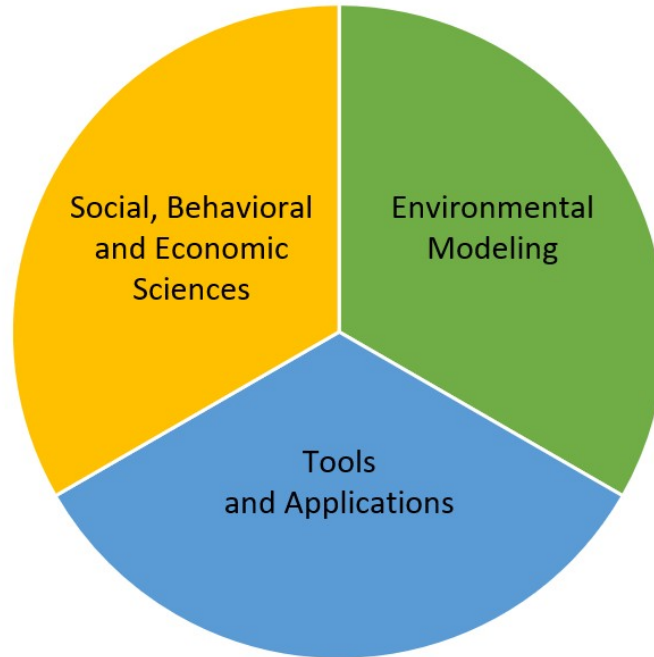
Workshop

July 24, 2023

Dr. Stephan Smith,
Director, NWS Office of Science and Technology Integration



NWS Mission: Provide weather, water, and climate data, forecasts, warnings and Impact-based Decision Support Services (IDSS) for the protection of life and property and enhancement of the national economy.



The Last Critical Mile of Our Mission

NWS must transform the manner in which we provide our forecasts, warnings and IDSS by focusing on operational service delivery infrastructure and the ***Last Critical Mile of our mission*** to address the following: (a) adopting a robust, reliable, and Community-centric paradigm for dissemination of life-saving information, (b) exploiting cloud technology solutions to enable our workforce to become mobile, nimble, and flexible inside emergency operations centers in communities we serve, and (c) investing in the last critical mile and providing equitable services that account for the changing demographics of society and the unique vulnerabilities of each community we serve.



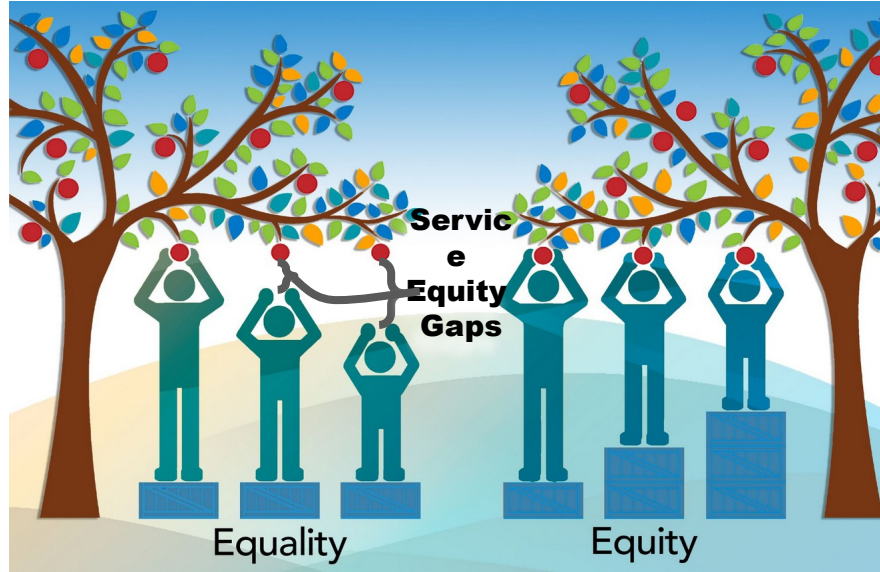
The Last Critical Mile of Our Mission (cont.)

The need for onsite service delivery and decision support is driven by NWS partners in the field, who rely on our ability to provide critical, life-saving information, not only for the billion-dollar disasters but also for day-to-day weather events. NWS is focused on establishing a Whole-Community engagement approach for education and outreach by applying social and behavioral science to save more lives and fully realize the vision for a Weather/Water/Climate-Ready Nation.



Equitable Services for a Weather-Ready Nation

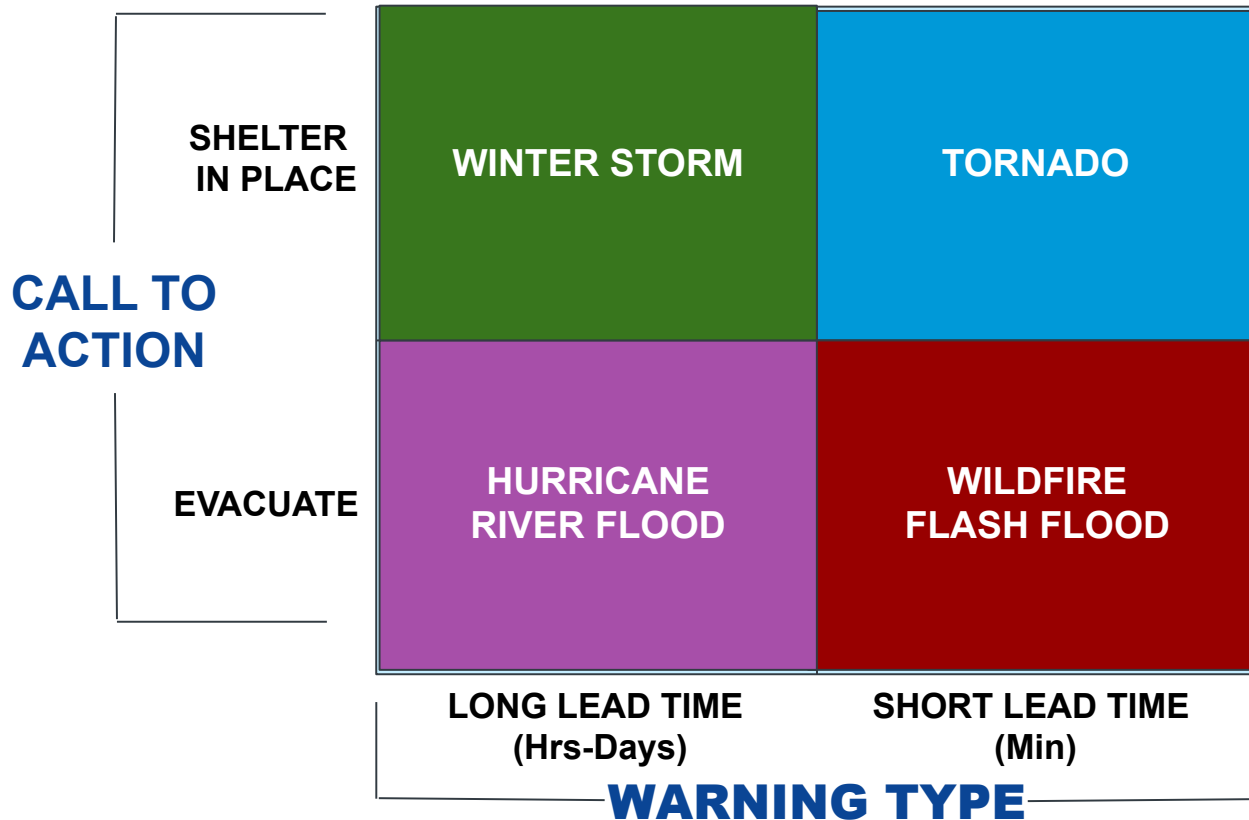
“Building a Weather-Ready Nation, One Community at a Time”



**“One-Size”
Services** □
**Unequal
Outcomes**

**Equitable
Services** □
**Equality of
Outcomes**

Transforming Services from (One-Size-Fits-All) HAZARDOUS WEATHER & FLOOD PROTECTION MATRIX



CORE ASSUMPTIONS:

1. People can receive the warning
2. People can understand the warning
3. People can act upon the warning
4. People are able and willing to evacuate
5. People have a safe shelter



Delivering Our Services Equitably is Core to the NWS Mission



SPECIAL REPORT **NEWS**
U.S. NEWS

Ian was one of the most lethal hurricanes in decades. Many of the deaths were preventable.

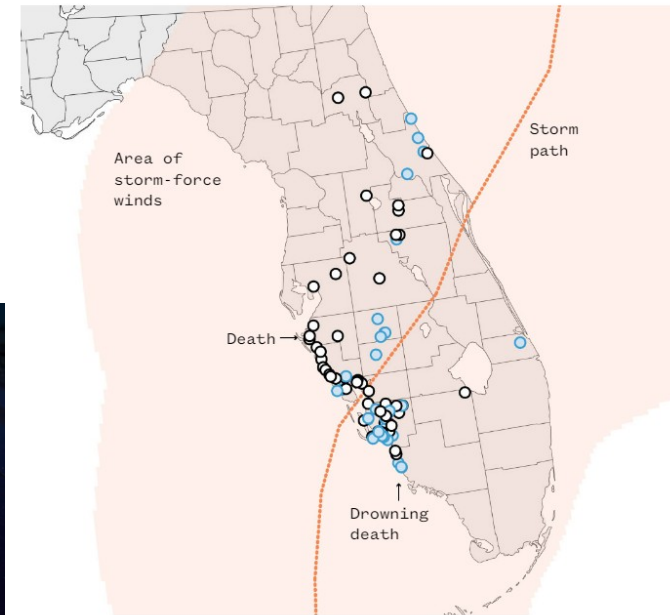
Hurricane Ian illustrated the challenges of protecting densely populated waterfront communities and exposed shortcomings in how local governments respond, an NBC News investigation found.

Vulnerable and overlooked, many older people stayed home



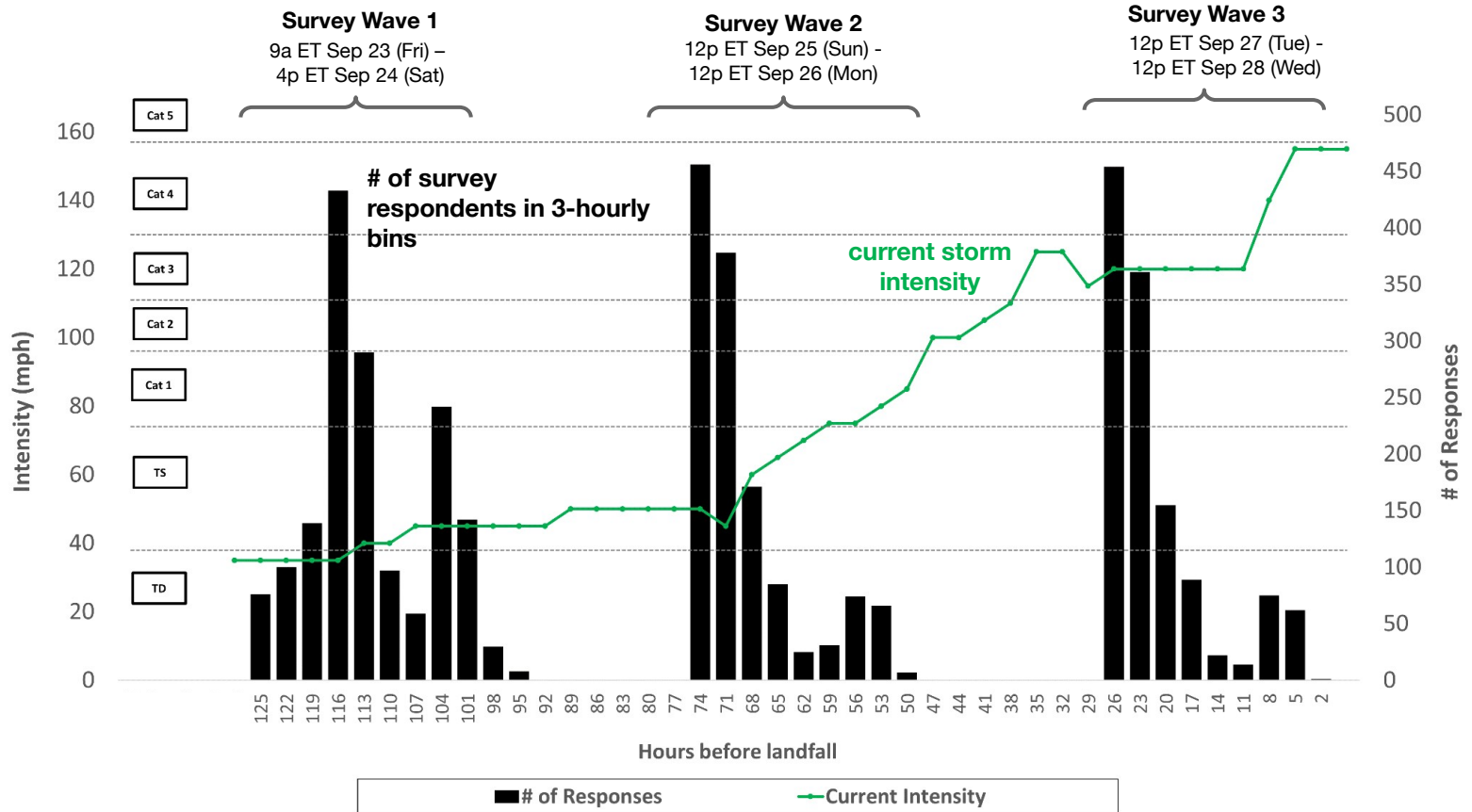
Where Hurricane Ian killed

More than 140 people died because of Hurricane Ian. Here is where 86 of those deaths took place.



Source: Staff reporting, Florida Department of Law Enforcement
Graphic: Nigel Chiwaya / NBC News

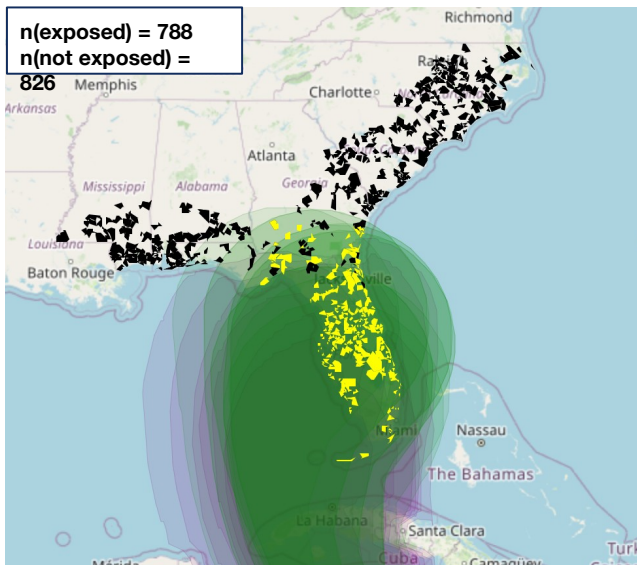
Timeline of survey waves for Ian (2022)



2 exposure levels: Exposed vs. not

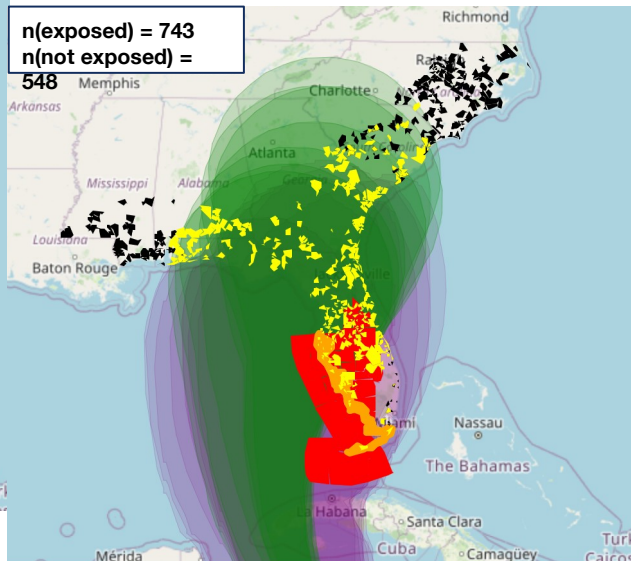
Wave 1 survey

9a ET Sept 23 (Fri) - 4p ET Sept 24 (Sat)



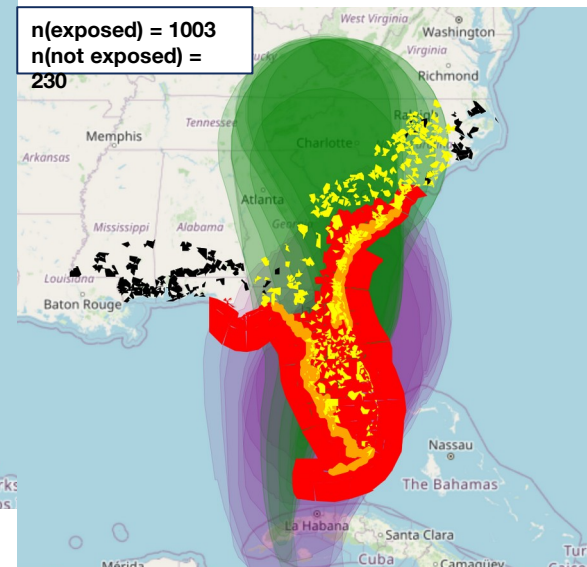
Wave 2 survey

12p ET Sept 25 (Sun) - 12p ET Sept 26 (Sun)



Wave 3 survey

12p ET Sept 27 (Tue) - 12p ET Sept 28 (Wed)



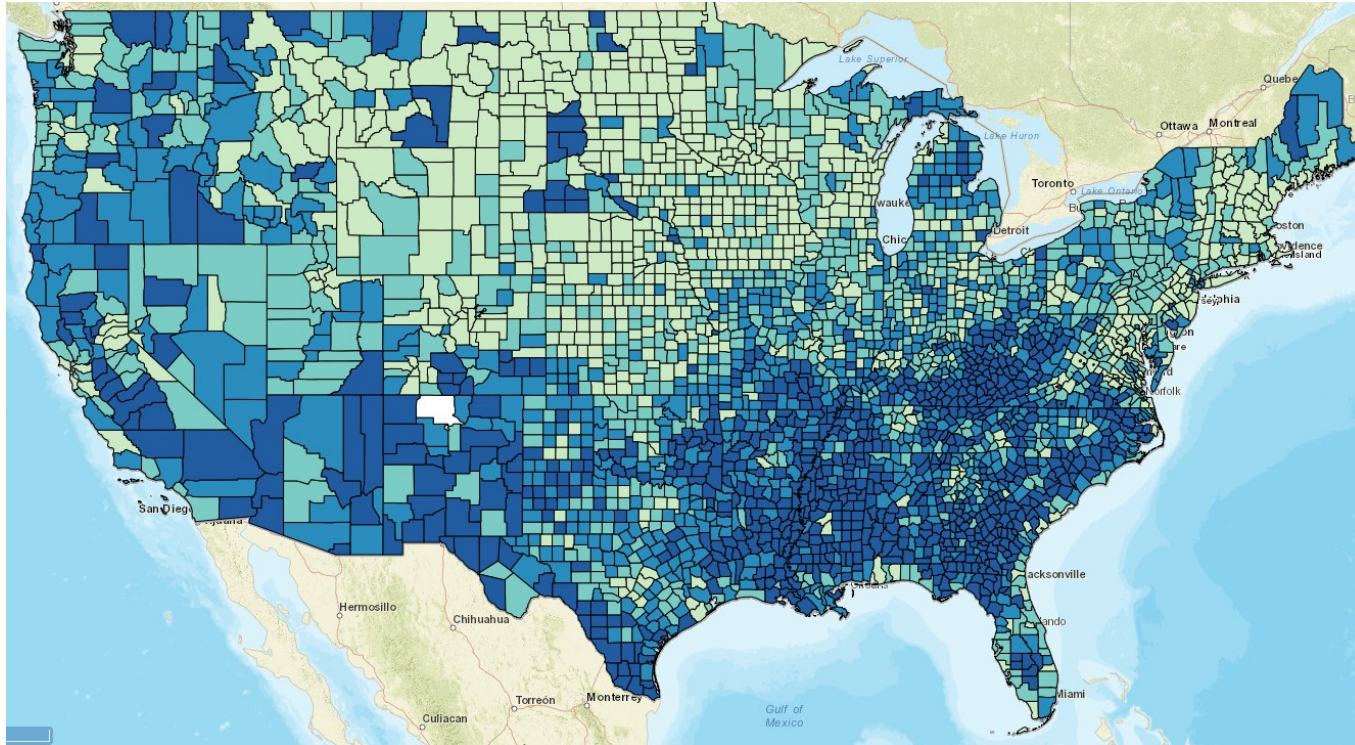
Green = Cone
Purple = WSP34kt > 30%

Red = TS or hurricane watch/warning
Orange = Surge watch/warning

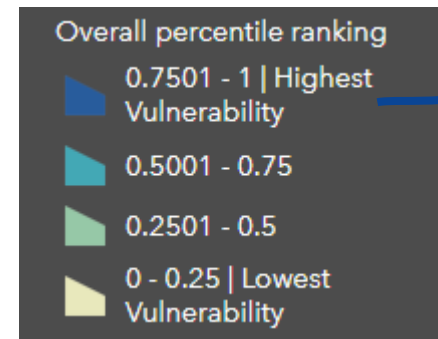
Yellow = Exposed
Black = Not exposed

TS = tropical storm
WSP = wind speed probability

CDC Social Vulnerability Index



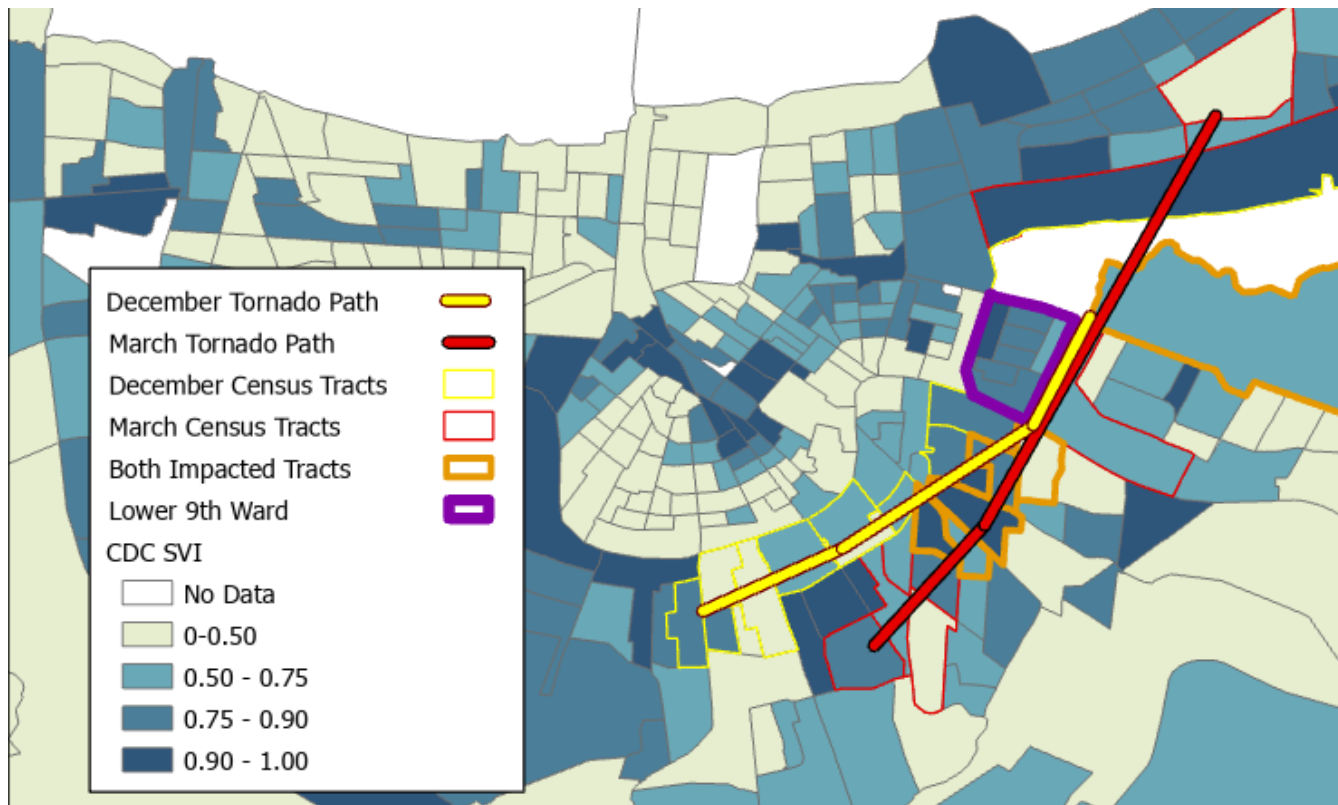
\$104M excess damage and 40 fatalities annually (VSL \$458M)





Case Study: Arabi, LA Tornadoes


March 22 and December 14, 2022




Flash Flood Emergency


Valid Until
11:00 PM EDT Wednesday
April 12, 2023

Safety Information

 Move immediately to higher ground!

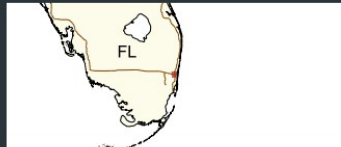
 Avoid walking or driving through flood waters!

Potential Exposure

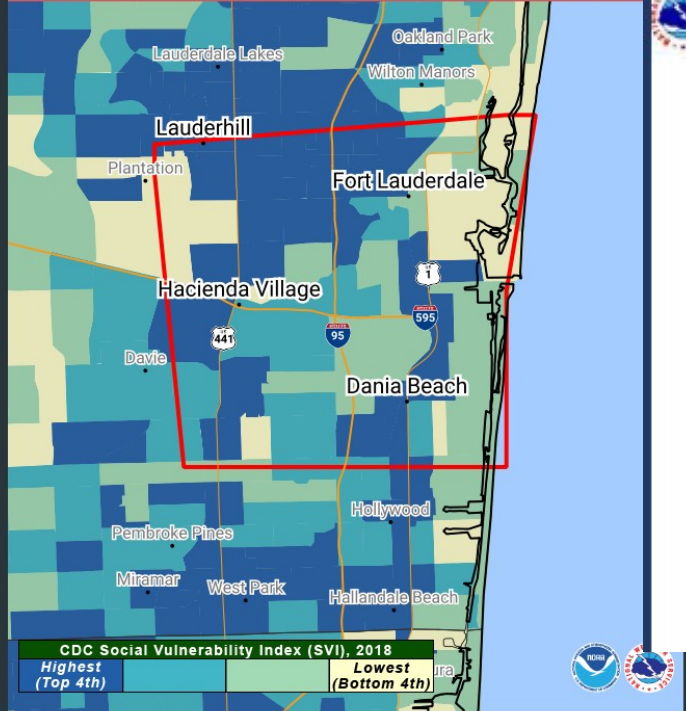
 Population: 255,690
Schools: 57
Hospitals: 5

Social Vulnerability Index

 SVI Max: 0.9928
SVI Min: 0.0025
SVI Avg: 0.5851



 This is a life threatening situation. Seek higher ground now



NWS Miami @NWSMiami · 1m

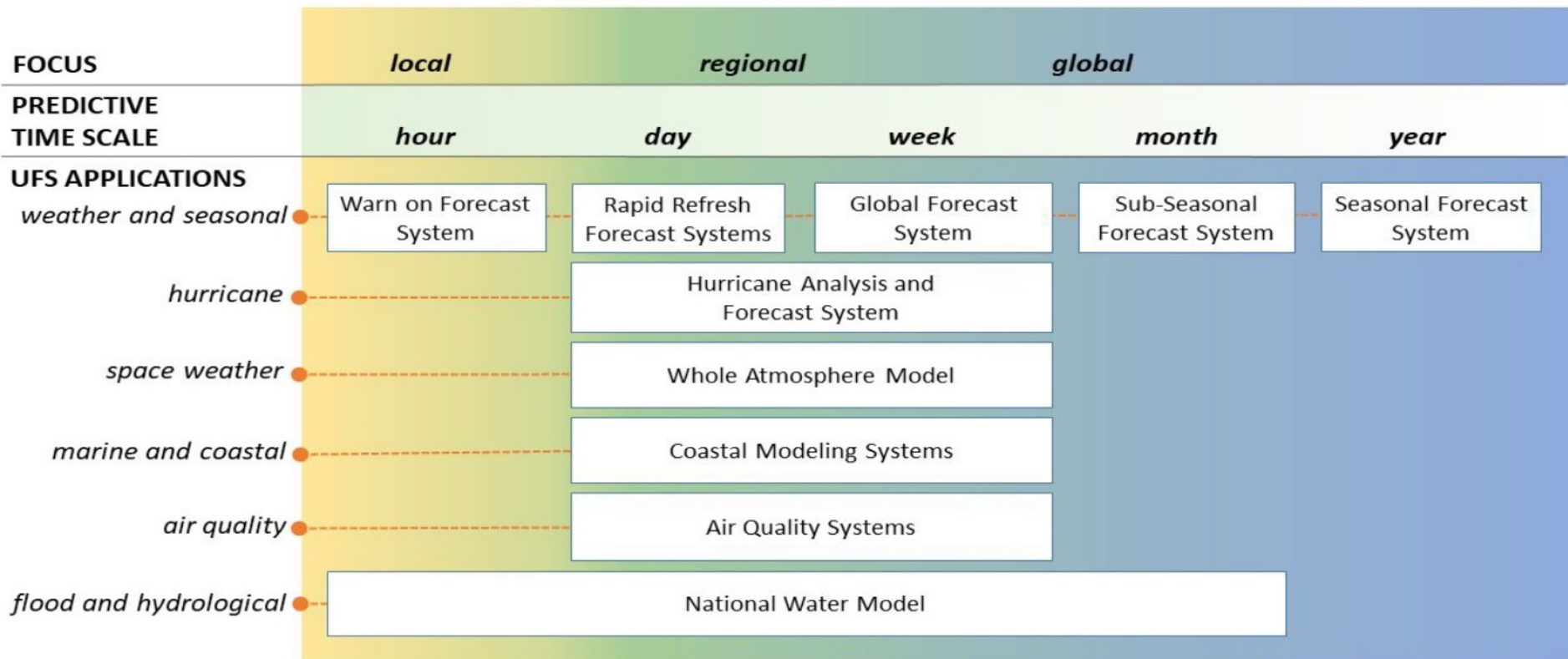
From the FLL airport. It's a dangerous situation around the Fort Lauderdale area this evening. Please stay home and don't venture out. #TurnAroundDontDrive #flwx

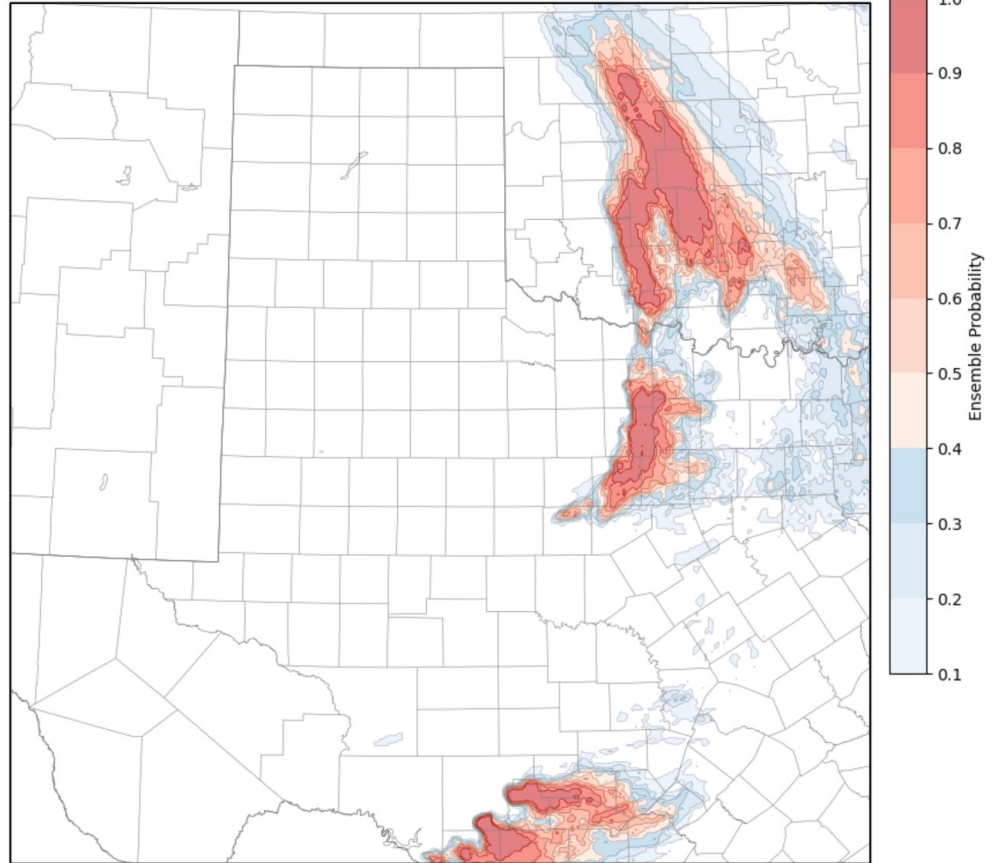
Brooke Silverang @WPBF_BROOKE · 3m

Fort Lauderdale Airport (pics from a friend of a friend) @NWSMiami



The Goal: Transition to UFS Applications and Simplify NCEP Production Suite





NSSL Warn on Forecast System (WoFS) ENSEMBLE:

Event-driven, hyper-local, modeling for tactical, probabilistic IDSS in the Last Critical Mile/Hour

