



Hurricanes Helene and Milton - Fresh Experiences

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The FL Big Bend Perspective

- **Third Taylor County hurricane landfall in a 13-month period and the first landfalls since 1935!**
- **Effective messaging: record surge, but no fatalities**
- **Challenges in providing focused partner support when nearly the entire forecast area will have major impacts**
- **Alerting challenges for onset of significant inland impacts that fall below Extreme Wind Warning criteria**
- **Challenges when the NWS office itself is in the cross hairs**

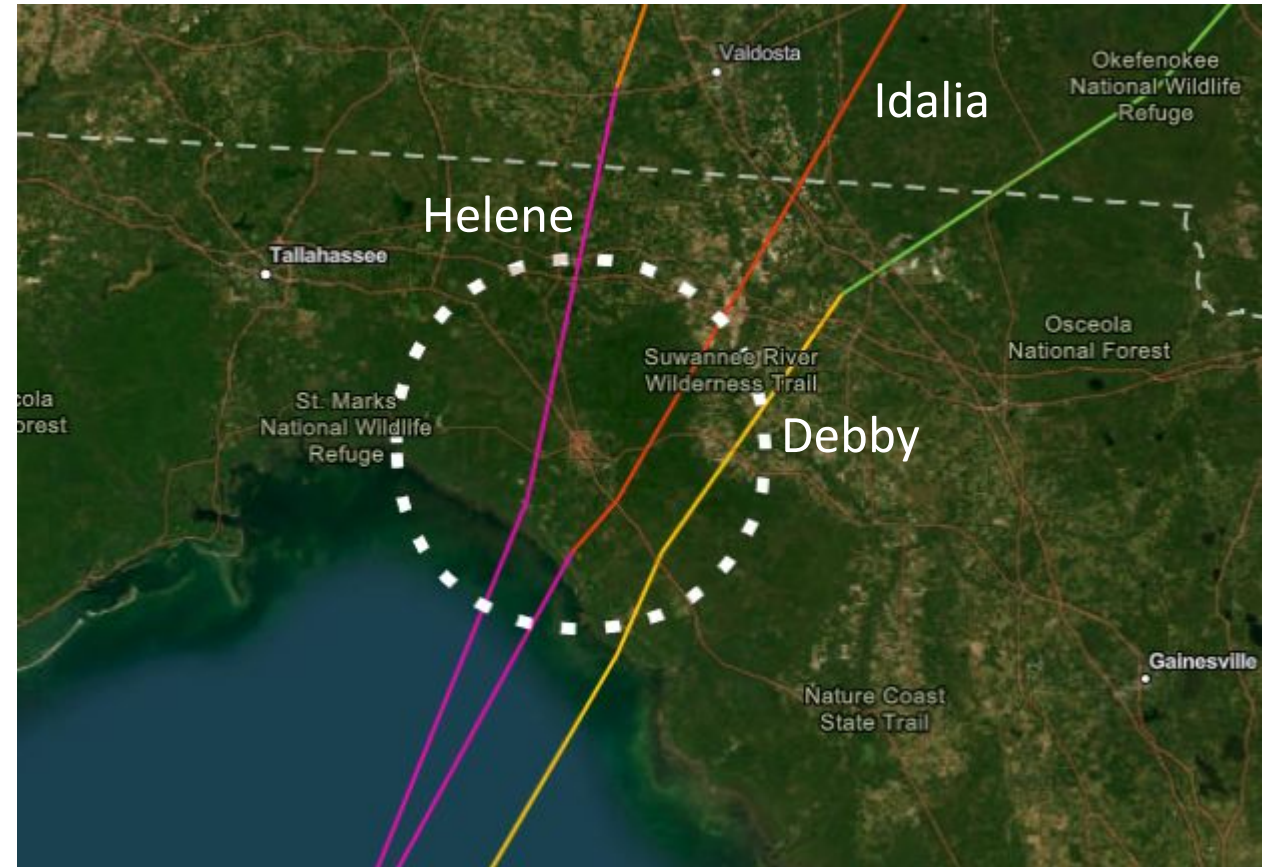
Third Taylor Co. Hurricane in 13 Months



Cat 3 Idalia: August 30, 2023

Cat 1 Debby: August 5, 2024

Cat 4 Helene: Sept. 26, 2024





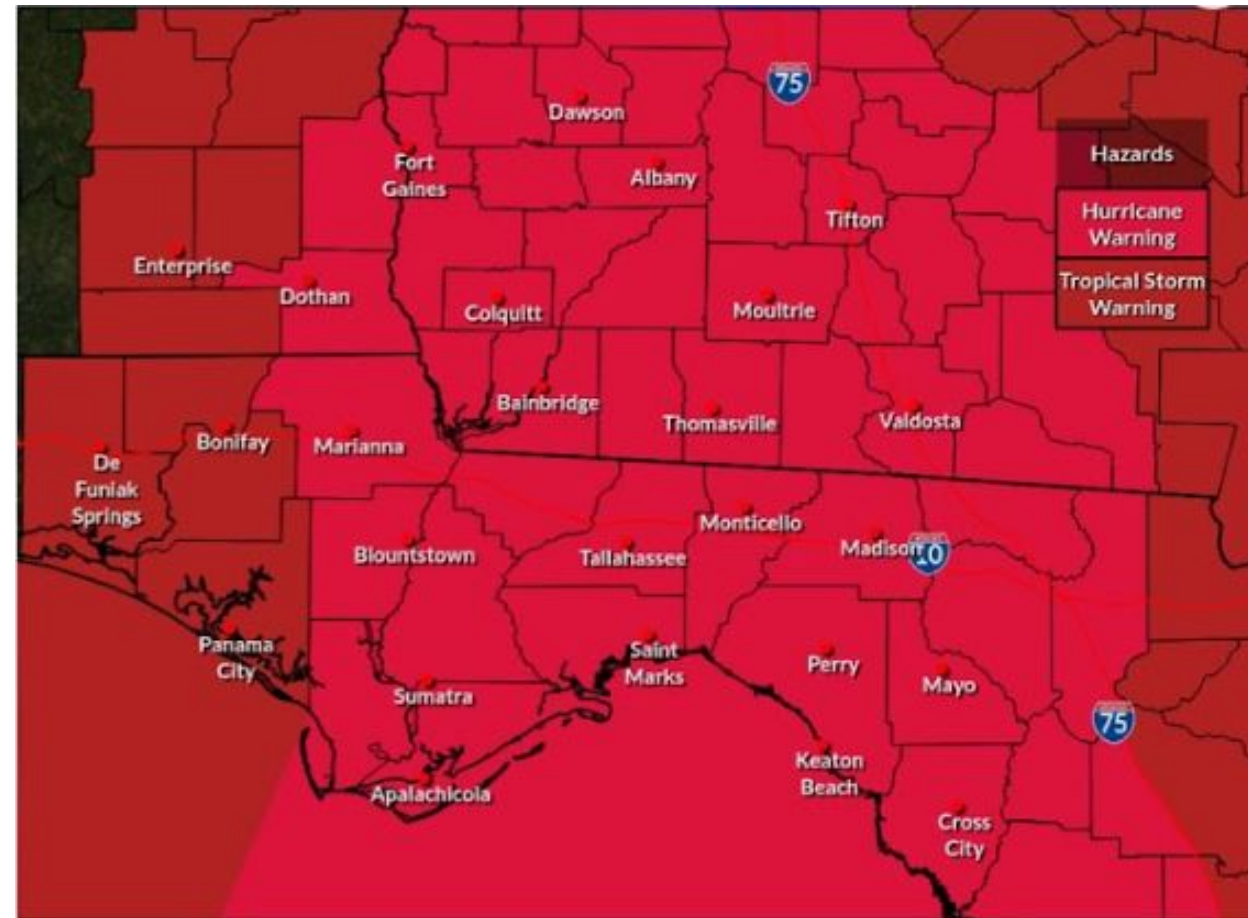
Effective Messaging

- **Idalia's surge eclipsed the March '93 Superstorm record.**
- **Helene's surge obliterated the Idalia record one year later.**
- **No surge fatalities were recorded in the FL Big Bend for all three hurricanes.**
- **Special FDEM-crafted WEA message: "Severe storm surge expected. Emergency Management urges you to evacuate."**
- **Taylor Co. EM alarming SM post: "If you stay, write your identifying info on your extremities so we can identify your body later."**
- **Tallahassee keeps getting missed; cry wolf concerns**



Deployment Challenge

- Hurricane warnings issued for 41 counties
- Two virtual deployment pods opened
- Far more partners than ideal were in these pods



Poll: Evaluate Virtual Deployment Pods



1. **Virtual deployment Google Meet sessions are an adequate replacement for onsite deployments**
2. **Onsite deployments are preferable to virtual deployments**
3. **Virtual deployments are preferable to onsite deployments**
4. **Virtual deployments could be improved**

Ideally, virtual deployment pods should be: (show of hands)

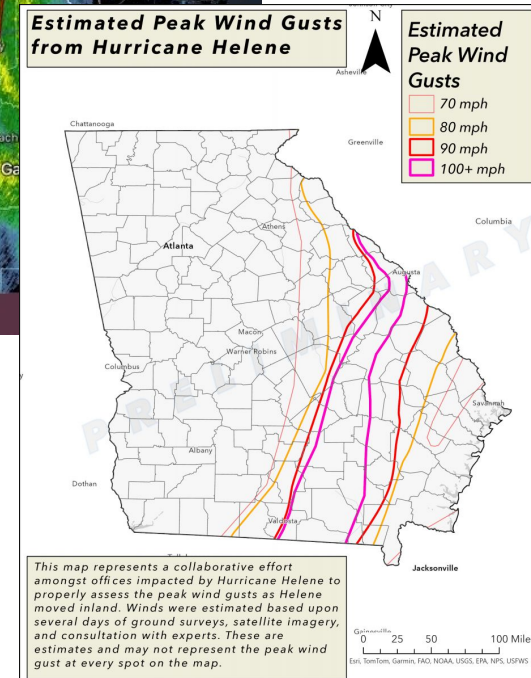
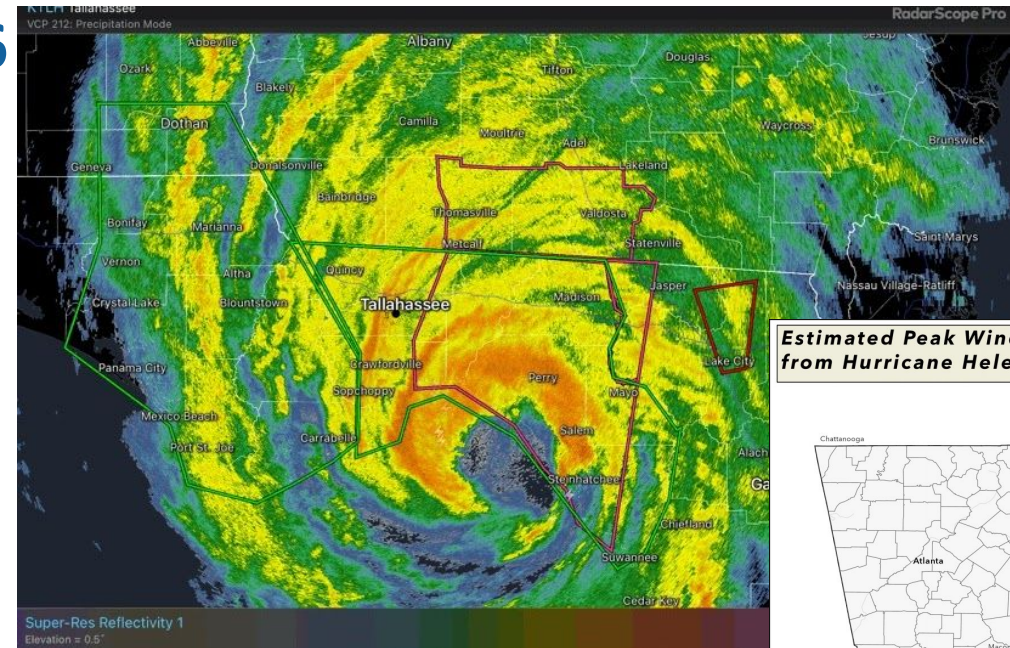


- 1. Limited to the 6 or less of the most-impacted EOCs**
- 2. Limited to the 12 or less of the most-impacted EOCs**
- 3. Open to all who request entry**
- 4. Initiated with the watch issuance**
- 5. Initiated with the warning issuance**

Lesson Learned: No short-fused alerting capability for Sub-EWW wind impacts



- Hurricane warnings are issued 36 hours prior to onset of wind impacts.
- Extreme Wind Warning (EWW) criteria requires sustained Cat 3+ (major hurricane) winds.
- How can we trigger WEA for imminent Cat 2 winds?
- Counties north of first tier in GA got no short-fused warning.
- TV & EM partners decried this.





Poll: How Should NWS Message Sub-EWW Wind Impacts?

- 1. Lower criteria for EWW issuance**
- 2. Issue a warning using the severe thunderstorm product**
- 3. Create a new product for sub-EWW winds**
- 4. Make no changes and rely on social media posts**



When the NWS Office is Threatened

- 2002 Love Bldg. extension never rated for wind, but the old building was only rated for a Cat 2.
- Cat 4 hurricane is bearing down.
- Was it safe to shelter in place? We didn't have an answer!





The FL West Coast Perspective

- Record surge (since records began) from a distant storm.
- Paralleling Storm vs Perpendicular Storm with respect to surge uncertainty and messaging.
- Quick turn-around between storms and getting the word out.
- Deploying meteorologists in-person and virtually.
- Strongest winds felt since the 1940s - not a tornado.
- Prolific tornadoes across Southwest Florida and survey challenges with office impacted by landfall and power/gas delays.
- 100, 200 year floods and what that really means.
 - Flooding in areas “not in a flood zone”.
 - Delayed impacts to other neighborhoods and confusion with the “all clear” message.
 - Lingering impacts for almost 2 months.



Helene's Record Surge



Hernando County




Pinellas County



Manatee County



Charlotte County

 Location	Preliminary Surge Observed (ft MHHW)	Record (ft MHHW, date)
Cedar Key	9.30	6.89, 8/30/2023
Clearwater Beach	6.67	4.02, 3/13/1993
St. Petersburg	6.31	3.97, 8/31/1985
Old Port Tampa	6.83	4.18, 8/30/2023
East Bay	7.20	4.56, 8/30/2023
Port Manatee	6.04	3.69, 8/30/2023
Fort Myers	5.12	7.26, 9/28/2022

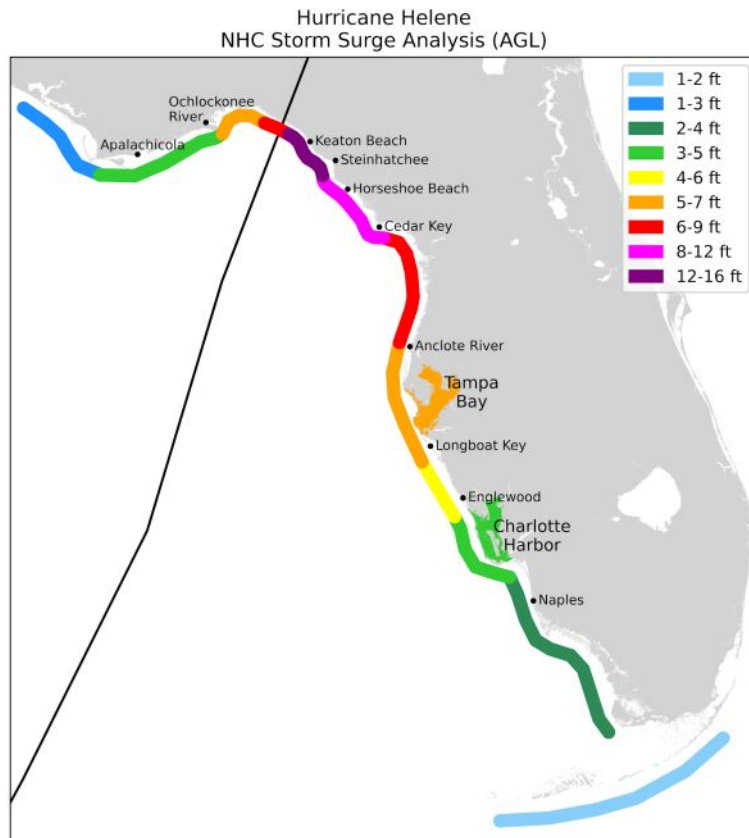
Records began in:

- 1914 at Cedar Key
- 1973 at Clearwater Beach
- 1947 at St. Petersburg
- 1996 at Old Port Tampa
- 1990 at East Bay
- 1990 at Port Manatee



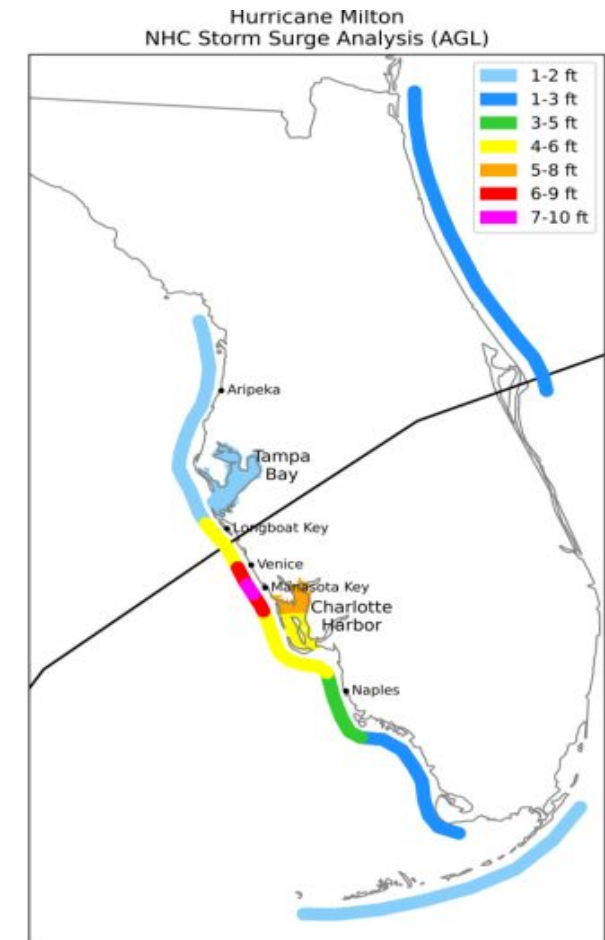
Parallel vs Perpendicular Track

How a storm tracks with relation to the coast affects your surge risk.



Parallel tracks (like Helene, Debby, Idalia) mean the entire coastline is at risk of inundation. Levels will increase as you get closer to landfall location.


Perpendicular tracks (like Milton, Wilma) will have the highest surge occurring just to the right (or south in our area) of landfall; but due to uncertainty, that exact area will begin broad and then narrow as the storm approaches. With this uncertainty, the forecast may be more variable than that of a paralleling track.






Complex and Cascading Events Messaging

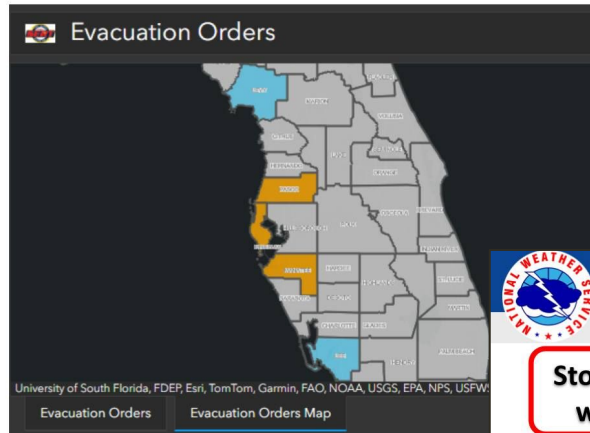
Feeling Fatigue Due to Disasters? October 6, 2024 7:46 PM

 It is normal for any disaster response to increase stress and fatigue. One of the symptoms is finding it hard to make decisions when so many decisions must be made.

Here are some tips to ensure you make it safely through Milton



- Restock your disaster supplies
- Complete your preparations by Tuesday.
- Follow advice of local officials
- Consider your threats: storm surge, wind, flooding from heavy rainfall
- RUN from the WATER, HIDE from the WIND.





University of South Florida, FDEP, Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, NPS, USFWS

[Evacuation Orders](#) [Evacuation Orders Map](#)


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Weather Forecast Office
— Tampa Bay Area, Florida —

Stay Informed: weather.gov/tampabay


Storm Surge - Understanding Your Risk October 8, 2024 3:24 AM

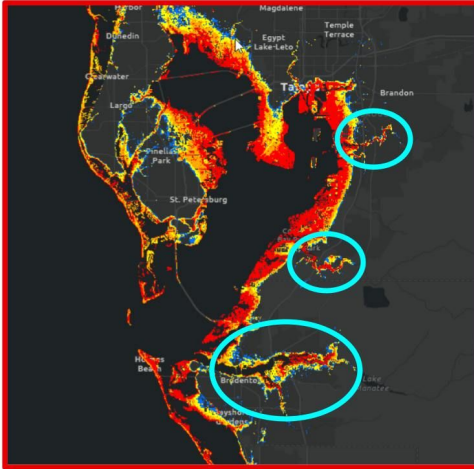
Storm Surge is NOT just a coastal threat. Water will travel inland up rivers, canals, creeks...



 Fresh water flooding due to heavy rain combined with storm surge can create unexpectedly high water levels on rivers and streams well inland. This combination may keep water levels elevated well after the storm passes.

Tips:

- **KNOW YOUR ZONE** - these waterways are incorporated into evacuation zones.
- If you live near rivers, creeks or canals, **be prepared to evacuate** from rapidly rising water.





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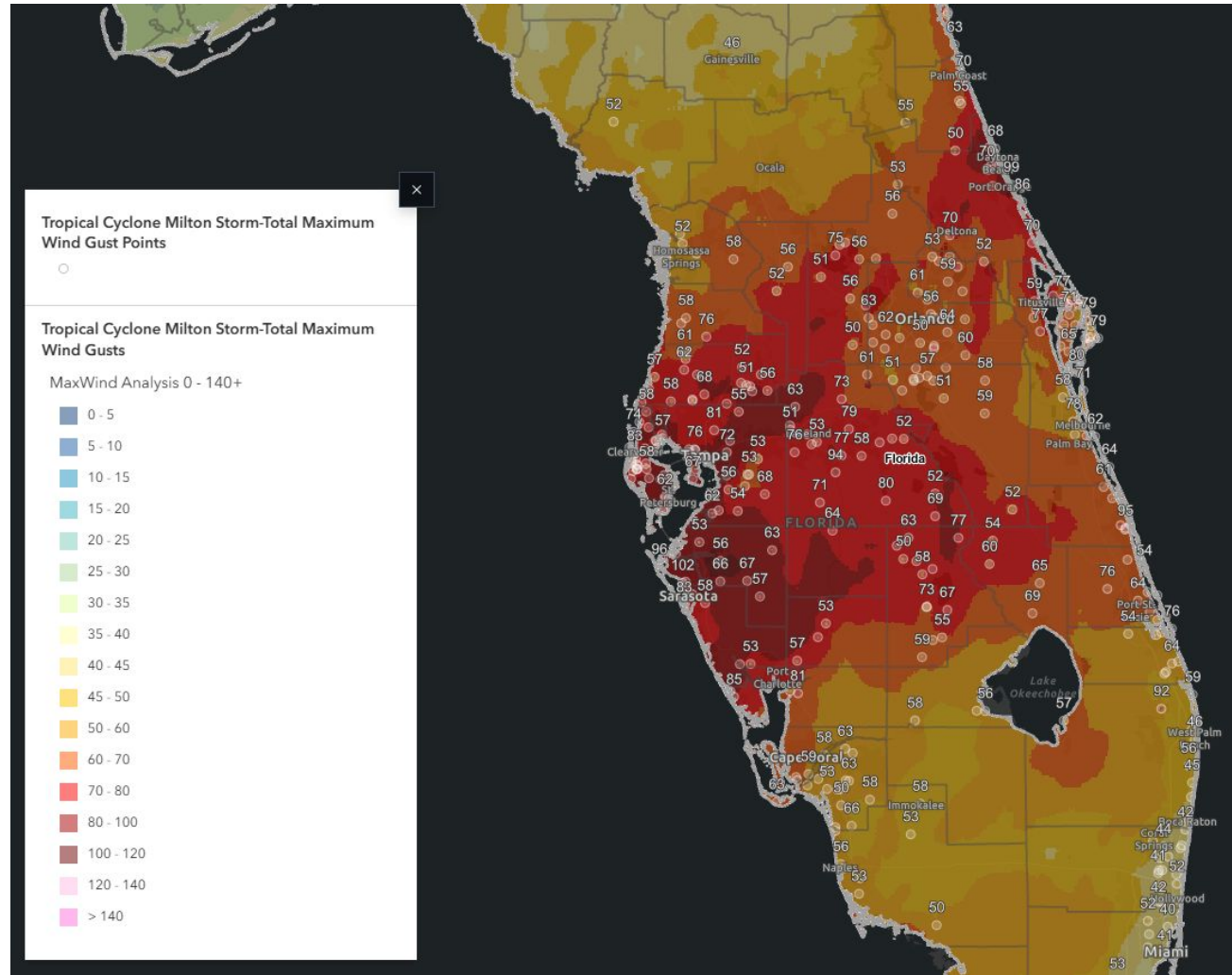
- Breaking down threats
- Acknowledging the fatigue



Deploying In-Person and Virtually

- **A virtual deployment pod was set up for the expected main impact areas in Pinellas, Hillsborough, Manatee, and Sarasota counties and their municipalities.**
 - **Municipalities utilized this for decision support for critical infrastructure, including water treatment facilities.**
- **Deployed one meteorologist to Pinellas County through landfall for continuity of communications concerns.**
 - **Heavily utilized for county operations while there and greatly assisted in recovery operations planning.**

Reminder of Major Hurricane Force Winds



Milton was transitioning to an extratropical system as it approached landfall, allowing the wind field to expand and stronger winds to maintain strength further inland, with a broad area of Cat 2 winds well inland.

This area hadn't experienced this level of wind since 1944.

Major Hurricane Force Wind Damage



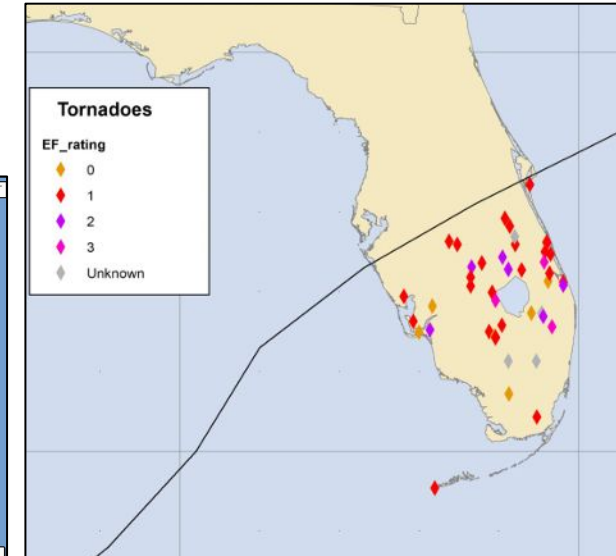
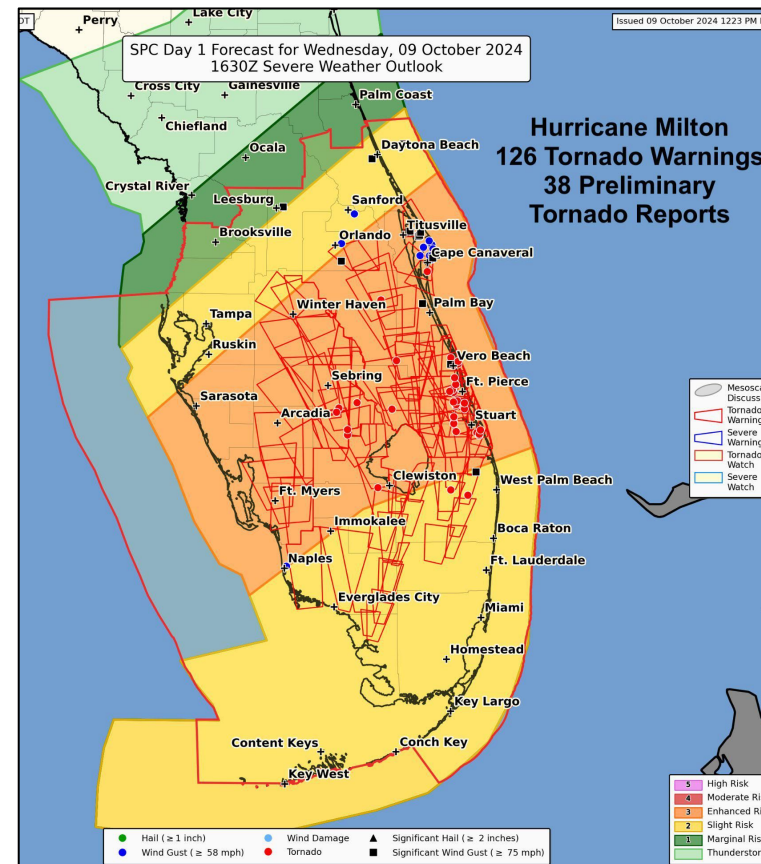
The 100-120 mph winds from Hurricane Milton around Sarasota/Manatee Counties near the landfall/eyewall region saw damage similar to that of the tornado damage across south Florida.

The difference - tornado damage is narrowly focused with a distinct path whereas the landfall damage is broad and scattered. But 100-120 mph winds either way (Cat 2-3 or EF-1-2).



Milton's Tornadoes

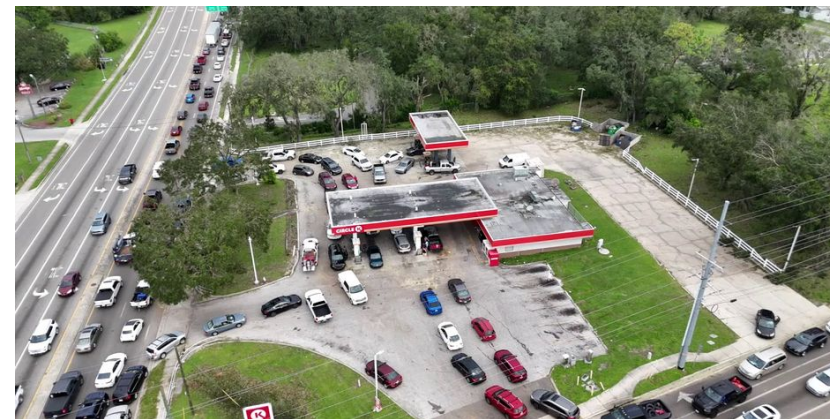
- 45 total tornadoes and 1 tornadic waterspout found in NWS Surveys in one band that moved through over a 9 hour period.
- 3 EF-3 Tornadoes and 6 EF-2
 - First tropical cyclone in SPC's database (since 1995) to produce more than one EF-3.
- 6 deaths and 13 injuries, with over \$681M in damages just from the tornadoes.





Surveying Challenges

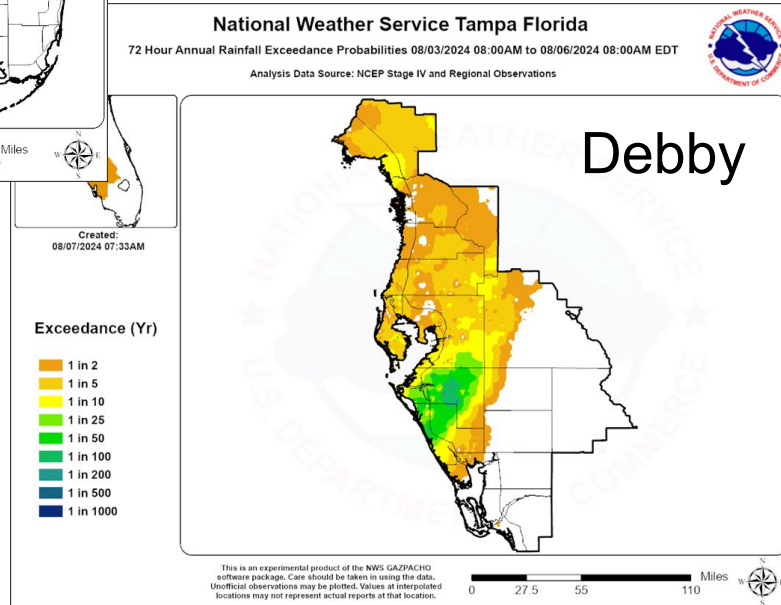
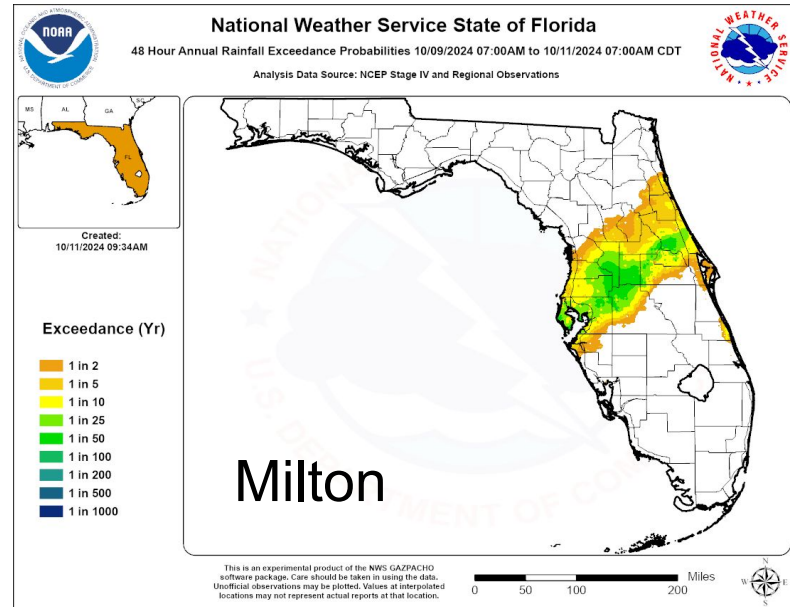
- There was an immediate and aggressive demand for tornado surveys to be completed.
 - Meteorologists faced response challenges due to limited phone service, a lack of safe road conditions, extremely limited gas availability, and need for rest and assessment of personal damage.
- Required multiple trips to similar regions due to lack of information sharing of damage reports.





Historic Flooding

These were around 100 to 200 year events. This does not mean an event like this will not happen again for another 100 to 200 years in these areas. It is more of a statistical chance of an event like this could occur in any given year.

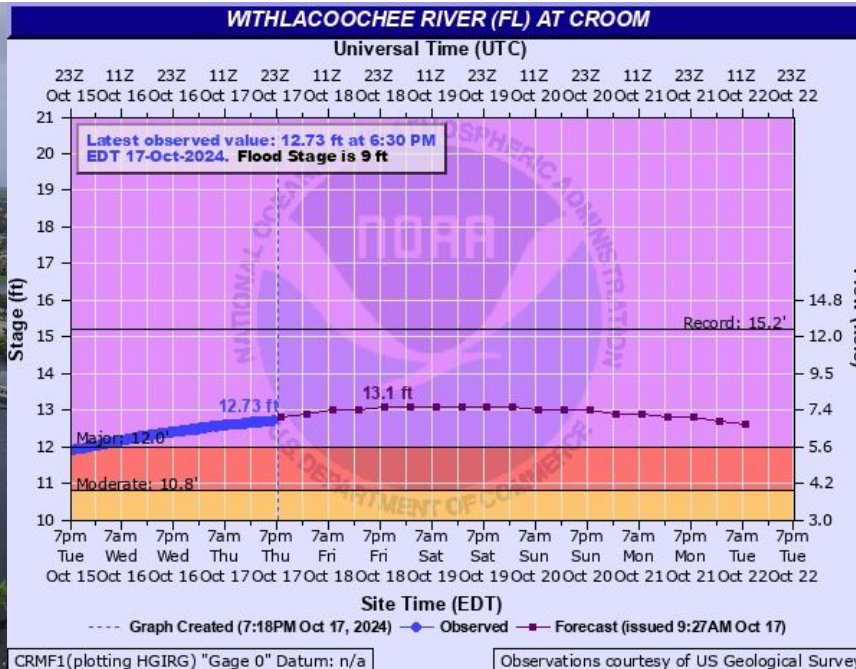


15-20" of rain fell across the areas in green in both storms.

Essentially, an event like this has a 0.5-1% chance of occurring in any year.



Delayed and Lingering Flood Impacts



Fresh water flooding from tropical rainfall events doesn't have to fall overhead to inundate homes. With a day or two delay from when the storm moved through, as the water is moving toward its basin is when waters may rise.

It can also take days to weeks for this kind of flooding to subside. Areas can be isolated as a result and damage to roads/bridges can occur. Areas of the Withlacoochee basin experienced flooding for almost two months after Milton.



Questions?