



# Hurricane Michael

## A Look Back and a Look Ahead From the Local Office Perspective

Tom Johnstone, MIC

National Weather Service Forecast Office, Tallahassee, Florida

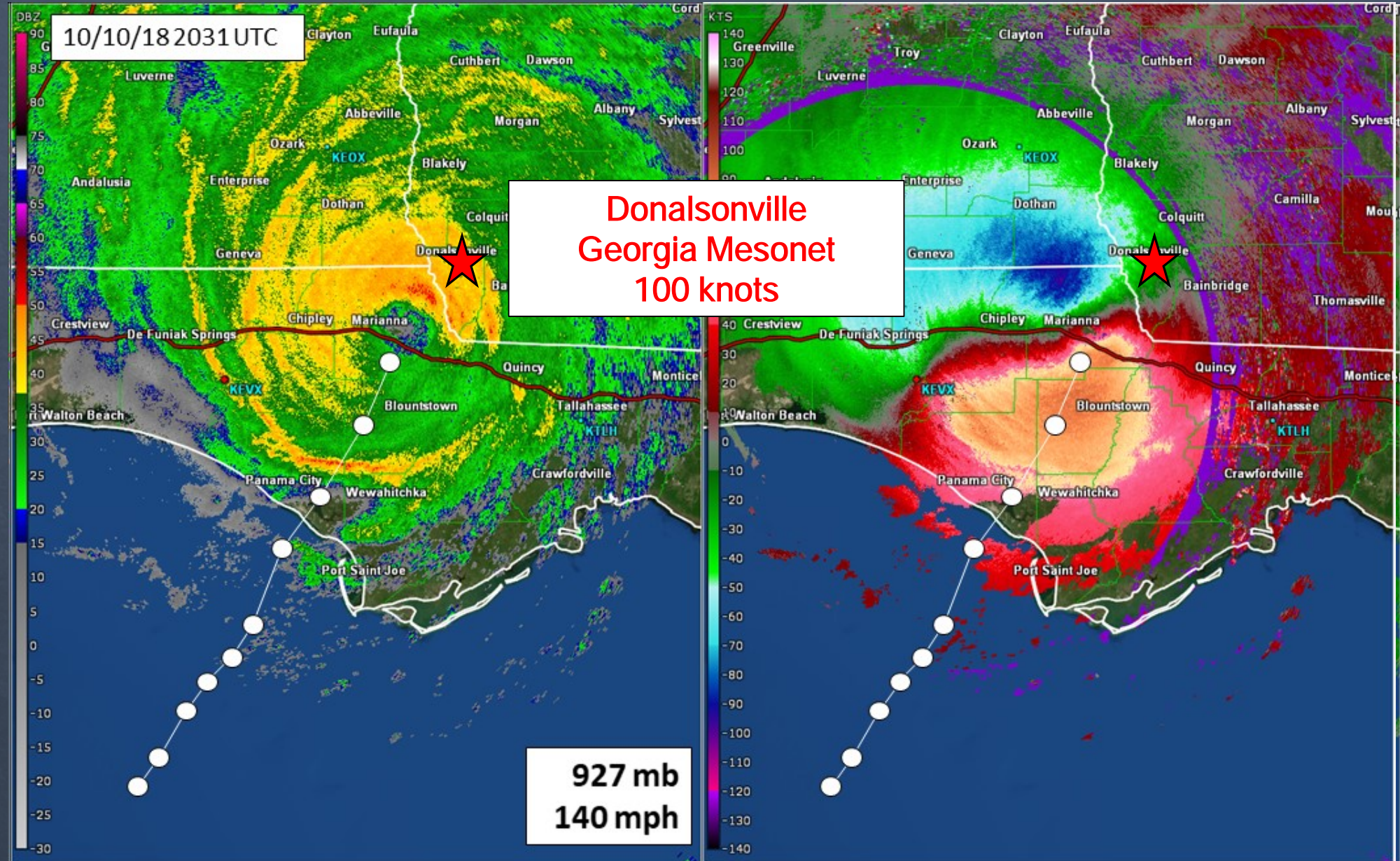


# One for the Record Books\*

- 1<sup>st</sup> category 4 hurricane on record to make landfall in the Florida Panhandle
- First GA Major since 1898
- 3<sup>rd</sup> strongest hurricane at U.S. landfall based on pressure (behind 1935 unnamed FL Keys hurricane and Camille 1969)
- 4<sup>th</sup> strongest hurricane at U.S. landfall based on wind (155 mph) behind the 1935 FL Keys hurricane, Camille (1969) and Andrew (1992)
- 46 drop in 24 hours before landfall - 9 mb drop in final three hours

\* Based on NHC Advisories and preliminary best track data.

# Peak Measured Gusts\*



# Surge

<b>Location</b>	<b>Preliminary Peak Storm Surge Inundation (AGL)</b>
Mexico Beach to Indian Pass	9 to 14 feet
Indian Pass to Lanark Village	6 to 9 feet
Lanark Village to Ecofina State Park	9 to 11 feet
Ecofina State Park to Steinhatchee	6 to 8 feet
Steinhatchee to Suwanee River	4 to 6 feet

# Impacts



# Estimated Maximum Power Outages



# Timber Industry

Georgia - 2,368,226 acres of forestland was impacted by Hurricane Michael; estimated value of \$762,683,909

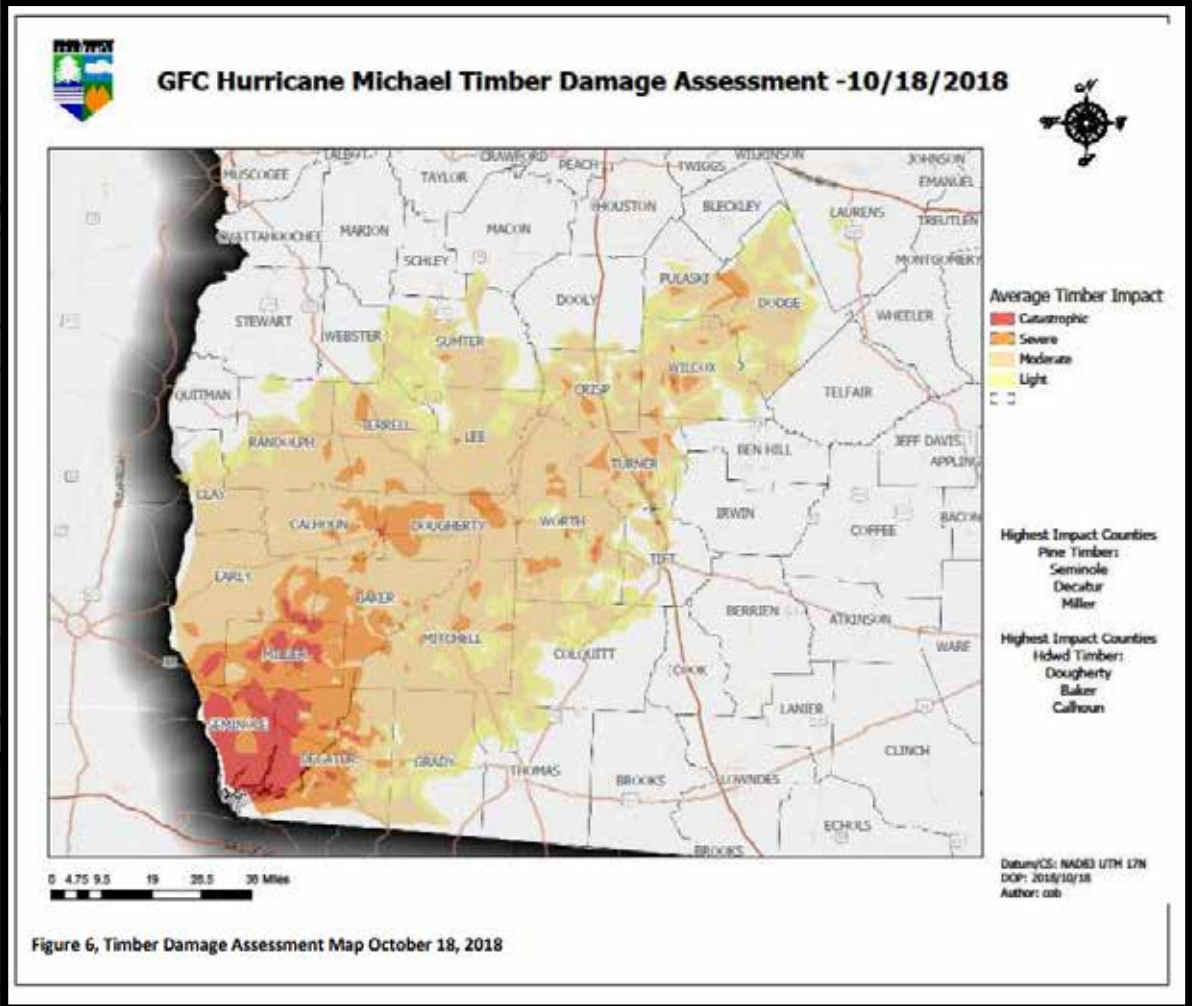
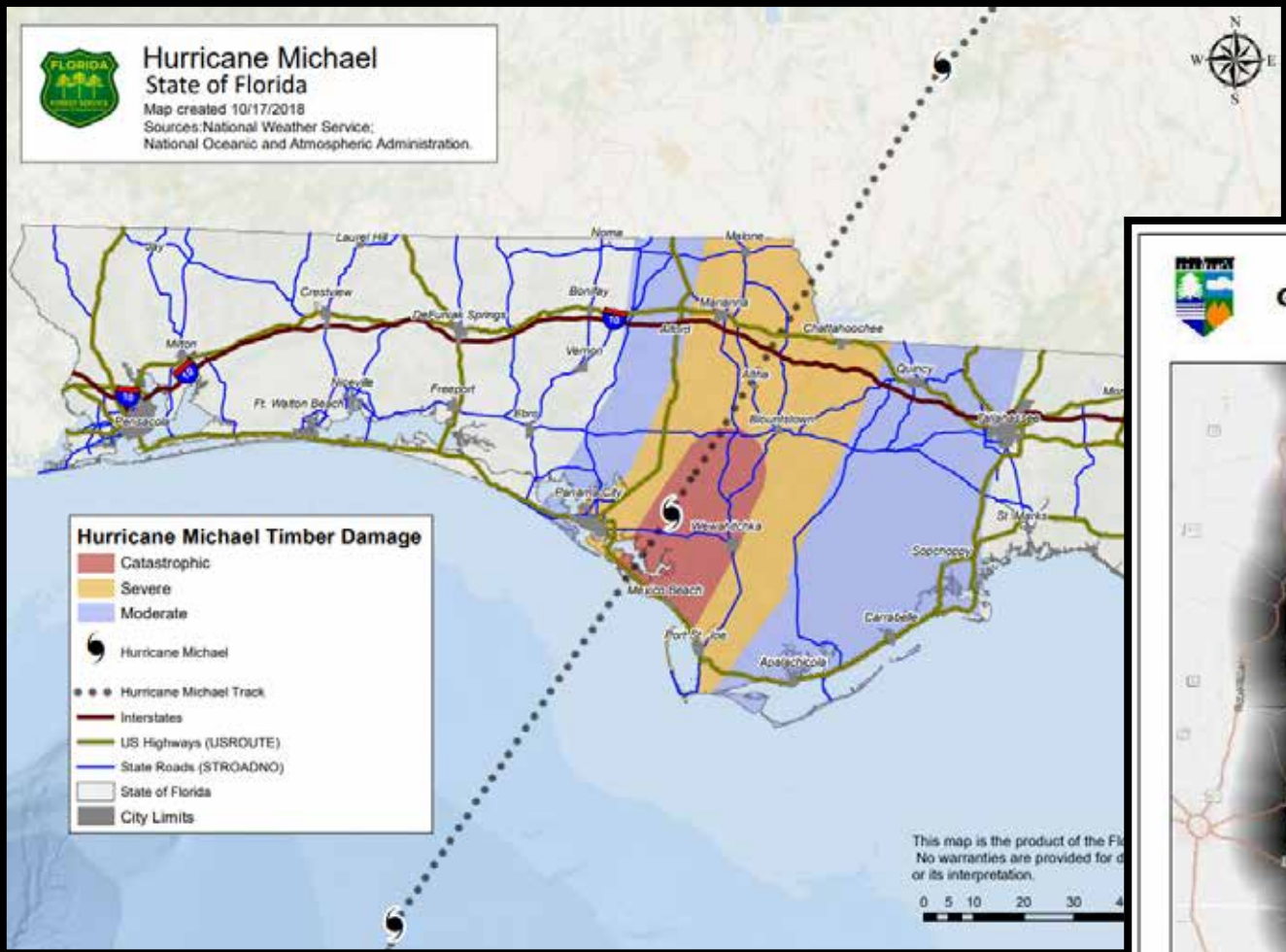


Figure 6, Timber Damage Assessment Map October 18, 2018

Florida - almost 3 million acres of forested land was damaged; costs estimate of \$1.29 billion

# Other Agriculture

- Florida

- Cotton: \$50 million
- Cattle: \$43 million
- Peanuts: \$23 million
- Poultry and eggs: \$10 million
- Pecans: \$4 million
- Other ag: \$33 million

- Georgia

- Cotton: \$550-600 million
- Pecans: \$560 million
- Vegetables: \$480 million
- Poultry: \$28 million
- Peanuts: \$10-20 million
- Other ag: \$28 million



Credit: National Geodetic Survey



Credit: Georgia Department of Agriculture



# Mexico Beach, Florida

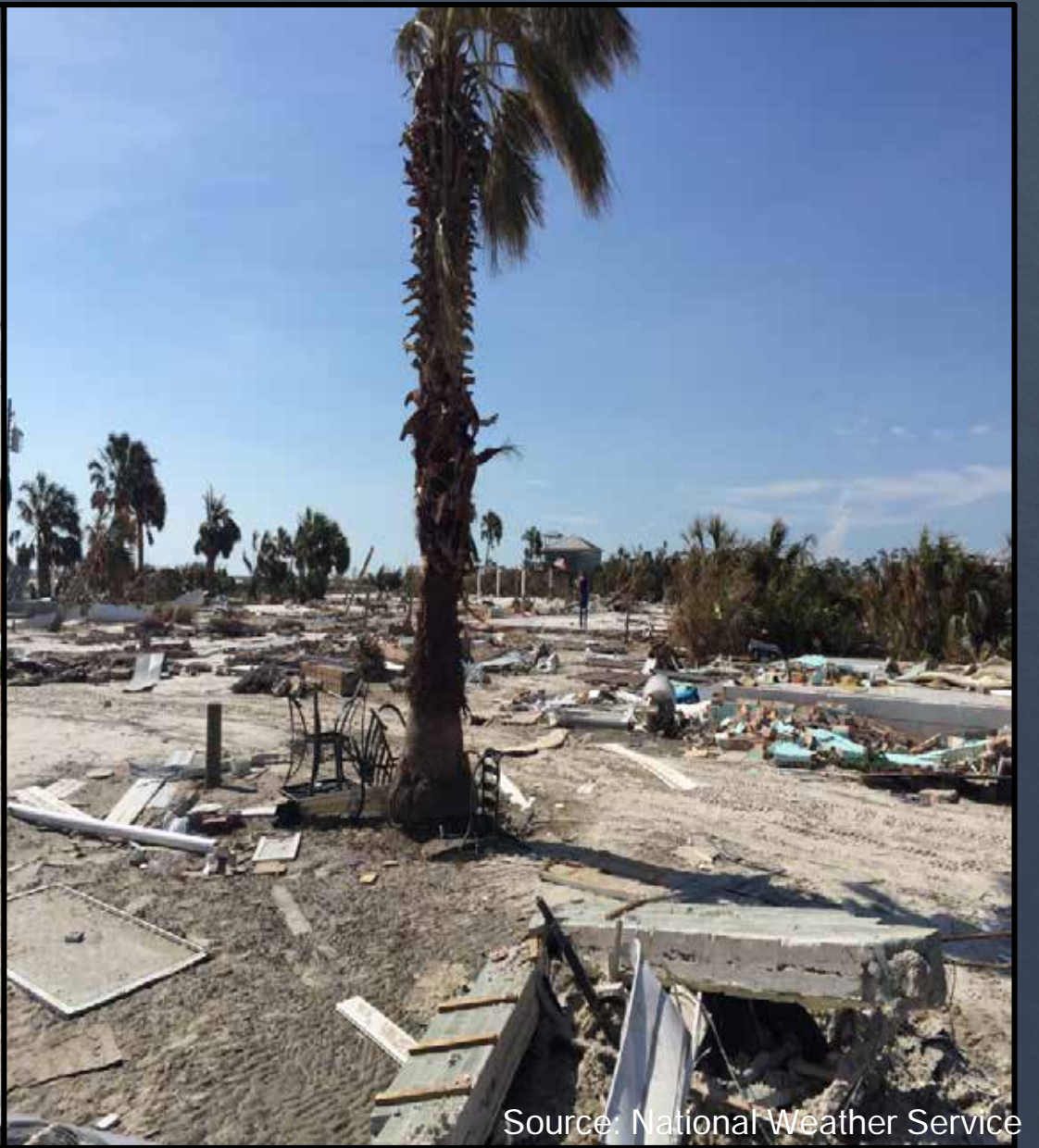


Source: NOAA/National Geodetic Survey

# Mexico Beach, Florida



# Mexico Beach, Florida



# Mexico Beach, Florida



Source: National Weather Service

# Mexico Beach, Florida



Source: National Weather Service

# Tyndall Air Force Base

- All base houses sustained significant roof and siding damage
- The Tyndall marina was destroyed
- Every building sustained severe damage and many were a complete loss



# Panama City, Florida



# Lynn Haven, Florida (Panama City Area)



Source: Google



Source: National Weather Service



# Callaway, Florida (Panama City Area)

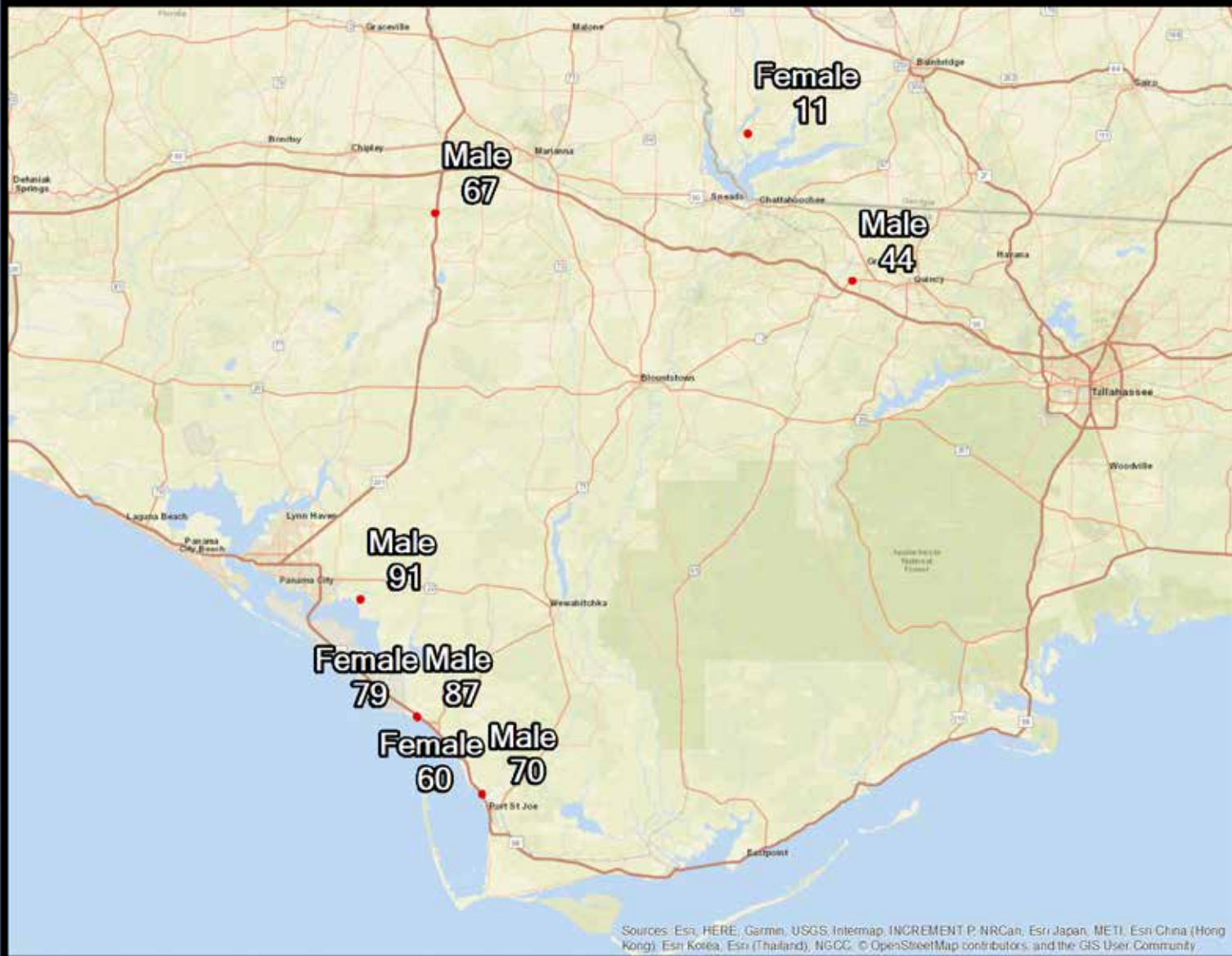


# Marianna, Florida

- 56 miles inland from landfall point



# Fatalities



- 8 Direct Fatalities
- 3 Wind Related
- 5 Surge Related
- 5 Male
- 3 Female

# Agnes Vicari, 79 – Bay County



Found in Mexico Beach, moved by storm surge

# Agnes Vicari's Conversation With Her Niece

TALLAHASSEE — In the final hours before Hurricane Michael crumbled her Mexico Beach home around her, Agnes Vicari was on the phone with her niece with a promise.

“I made a mistake. I won't make a mistake again,” she told Joanne Garone Behnke the morning the storm hit. Vicari, 79, who lived in a small one-story home just yards from the Gulf of Mexico, promised she'd evacuate the next time a storm came, that she'd see them soon to celebrate Behnke's husband retiring.

“Aunt Aggie, you can still go to a shelter,” Behnke begged.

“There are no shelters in Mexico Beach,” Vicari said, before the call ended.

When Hurricane Michael began to churn into the Gulf two weeks ago, her family begged her to leave. Her pilot nephew called the day before the storm. Her granddaughter, who evacuated north to Wewahitchka, asked her to do the same. Even a police officer stopped by. She chuckled at them, Behnke remembered.

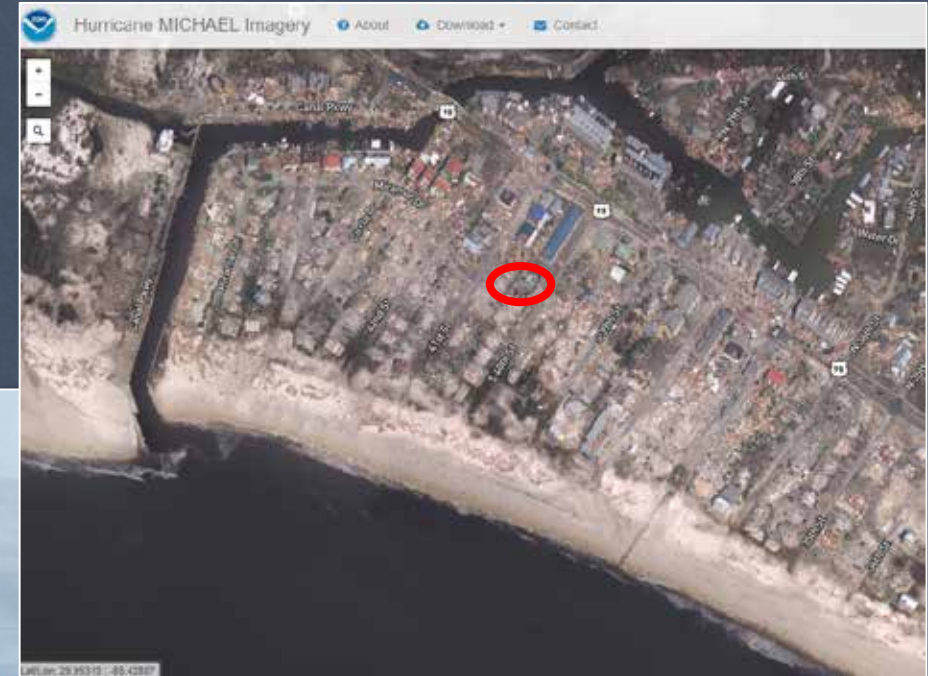
“She was still struggling with the concept of getting in her car and going somewhere,” she said. “She's an old-time Italian, kept her money in her house, very stubborn.”

Her somewhat reclusive aunt might also have not wanted to go to a shelter, she added, “probably afraid of leaving her home where she had her sense of security.”

The Wednesday the storm hit, Behnke called Vicari around 11 a.m. Vicari worried about the storm, which had strengthened to a Category 4 overnight. But as it approached, she sounded hopeful she would see her family soon.

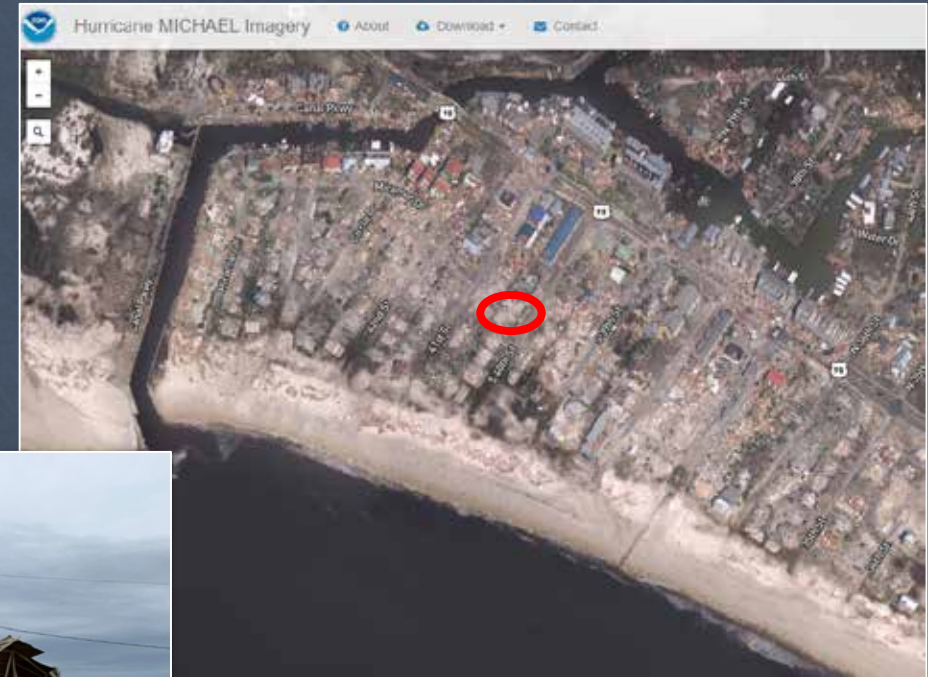
“My aunt didn't want to die,” Behnke added. “She didn't think she was going to die.”

# Donald Vonderhaar, 87 - Bay County



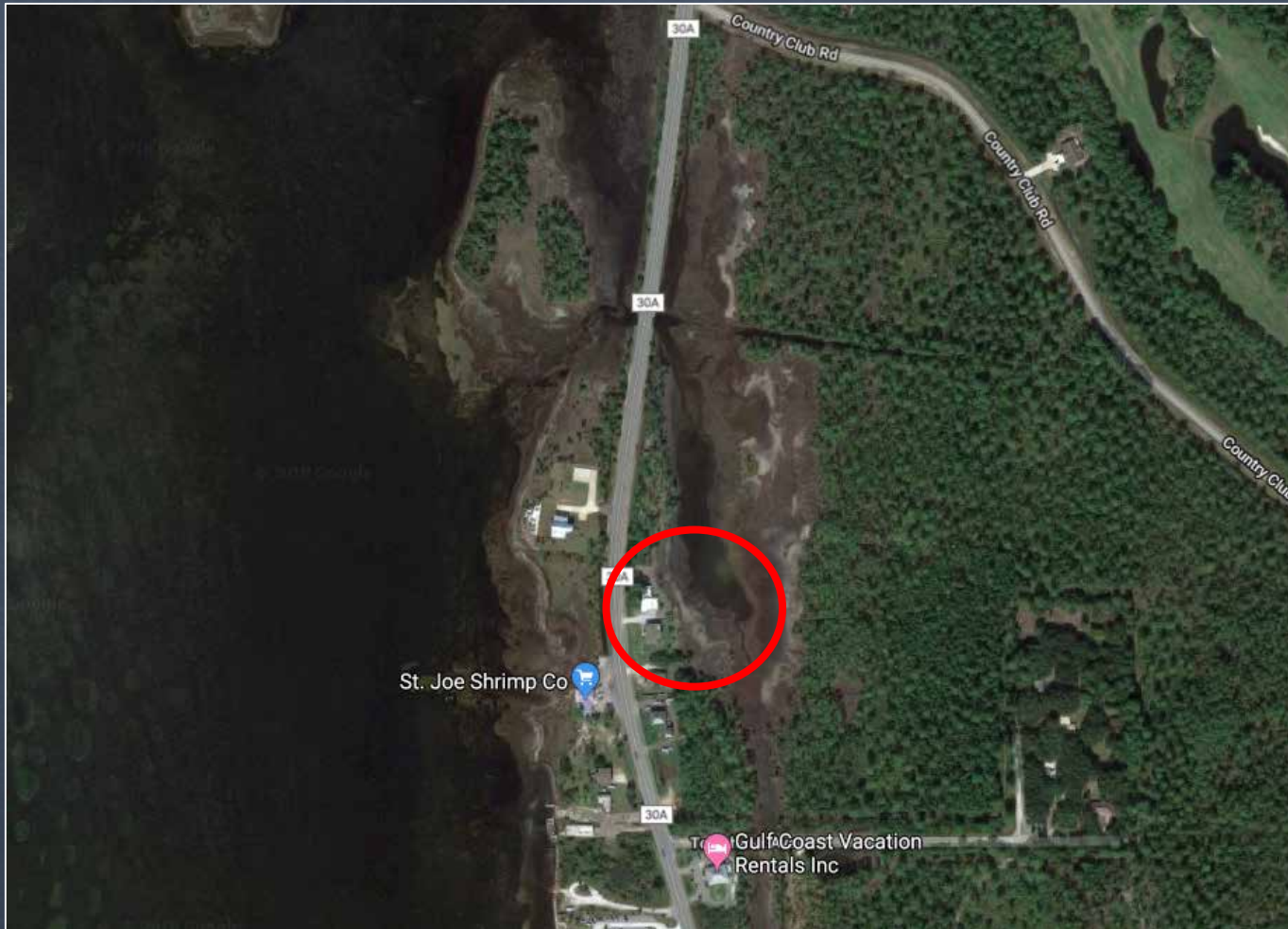
Swept away by house during the storm

# Sandra Lucas Detrick, 60 – Bay County



Found in Mexico Beach rubble, moved by storm surge

# William McConnell, 70 – Gulf County



MATIAS J. OCNER/Miami Herald

Found in Cape San Blas debris - was fleeing in truck

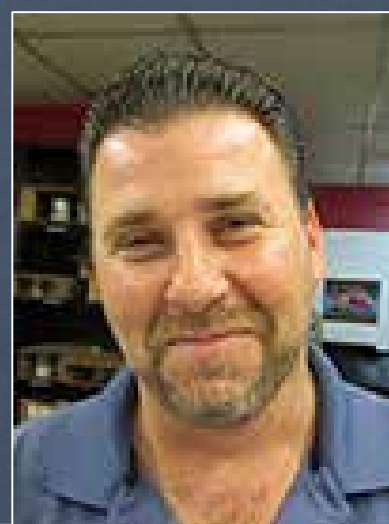


# John Gombos, 67 – Jackson County



Tree collapsed on mobile home, roof collapsed onto decedent

# Steve Sweet, 44 – Gadsden County



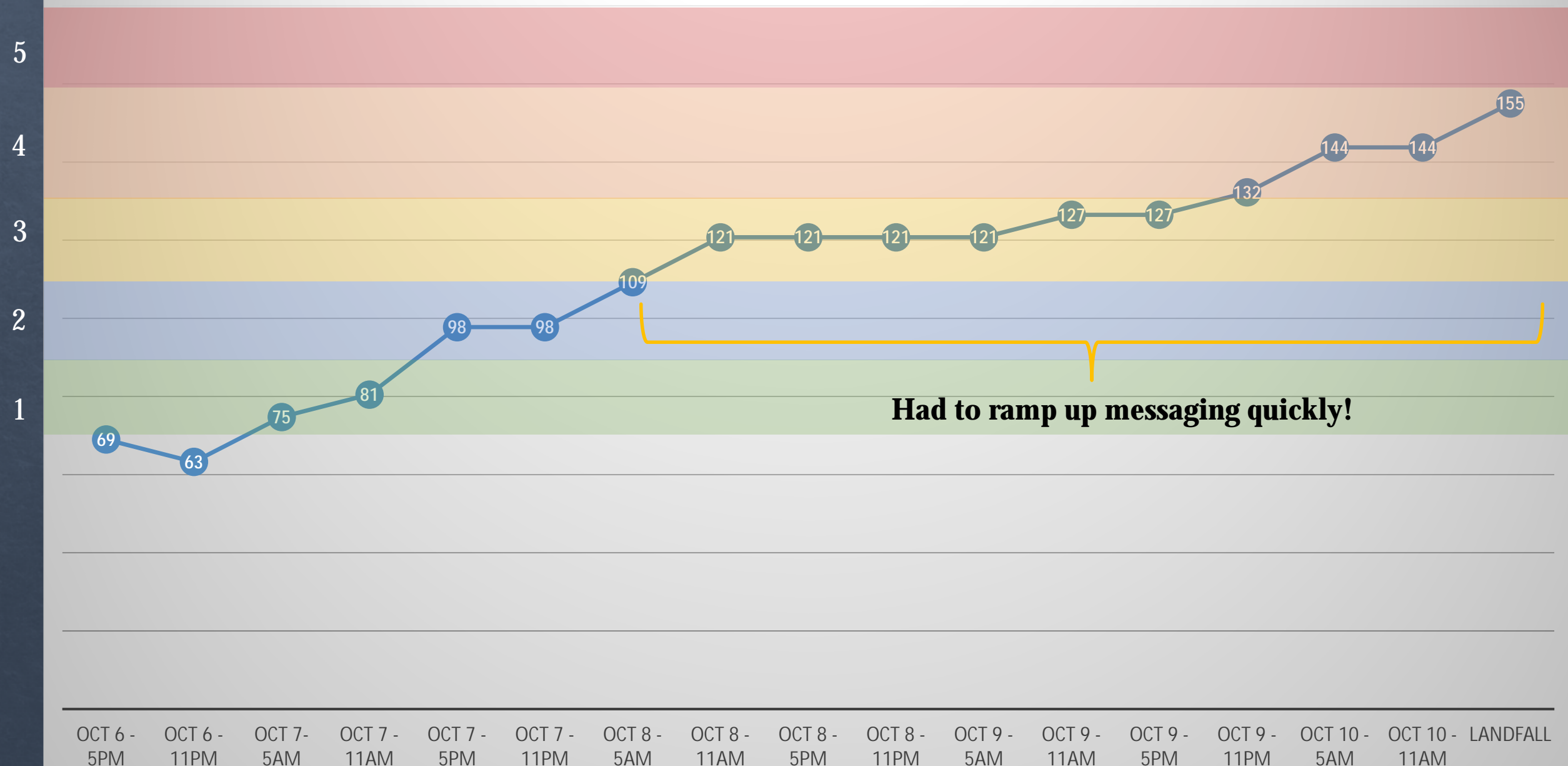
Plattner Quincy Chevrolet



Due to trauma following a tree falling on a home

# Local WFO Response and Communication

# Forecast Max Wind Speed (mph)

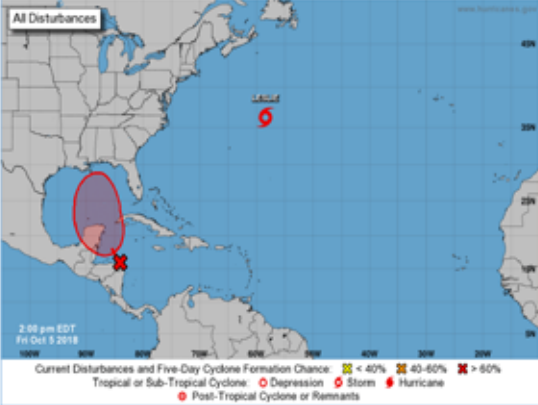


# Started with typical early event DSS Friday - Sunday

**Tropical Outlook (NHC)**  
Latest Information As Of: 2 PM EDT October 5, 2018

Weather Forecast Office  
Tallahassee  
Issued October 5, 2018 2:13 PM ET

Five-Day Graphical Tropical Weather Outlook  
National Hurricane Center Miami, Florida



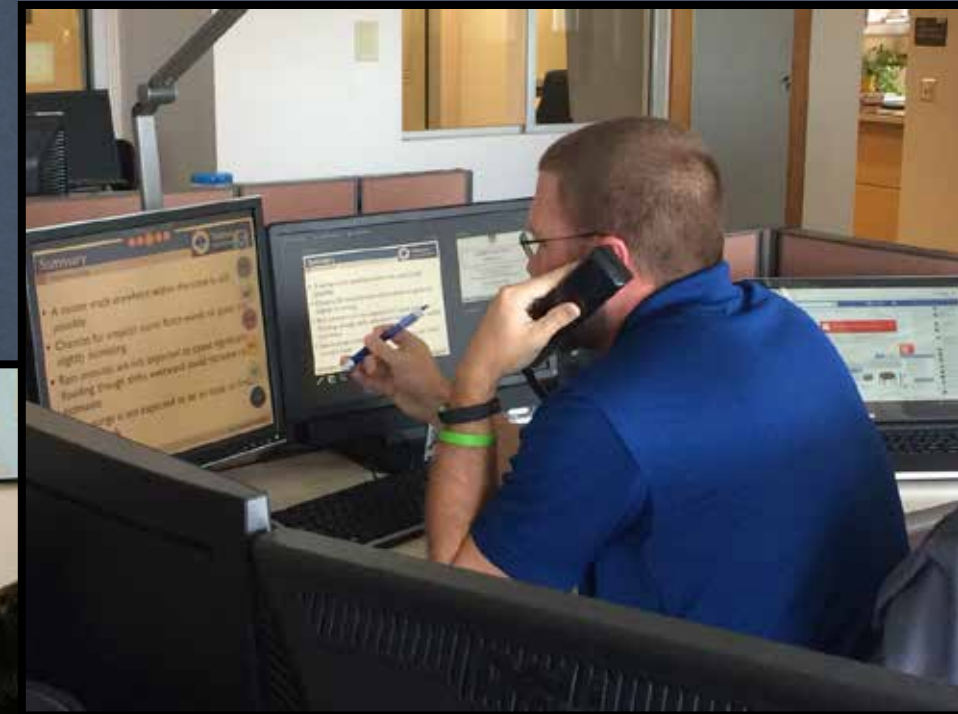
**Things to Know For the Tri-State Area**

- Area of tropical activity has a **70% chance of development in the next 5 days**
- There is **low confidence** for future track and intensity
- Regardless of development, this system will **increase chances** for the FL Big Bend and Panhandle toward middle of next week
- Continue to monitor the system through the weekend

Visit [hurricanes.gov](http://hurricanes.gov) and [floridadisaster.org](http://floridadisaster.org) for preparedness information

NWSTallahassee

Briefing emails and packets



Webinars



Preparedness Posts

# Strengthen Social Media Messaging



US National Weather Service Tallahassee Florida

Published by Joe Gempak [?] · October 10 at 5:46 AM · 🌐

5AM EDT update: This is as **SERIOUS** as it gets gets. Major [#HurricaneMichael](#) has continued to intensify over the Gulf of Mexico. We want everyone to know this is an **EXTREMELY** dangerous storm and unfortunately the time for preparation is now ending!

Landfall will be near PCB/Mexico beach area. However, life threatening storm surge, Hurricane force winds, and heavy rainfall is expected all along the northeastern Gulf Coast.

Michael will produce potentially catastrophic and unprecedented wind damage where the core of the hurricane moves onshore. Additionally, storm surge along the coast is expected to be life-threatening.

If you are near the coast please begin to seek shelter if you have not done so already.



NWS Tallahassee ✓

@NWSTallahassee

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5:16 AM - Oct 10, 2018

👍 919 💬 713 people are talking about this

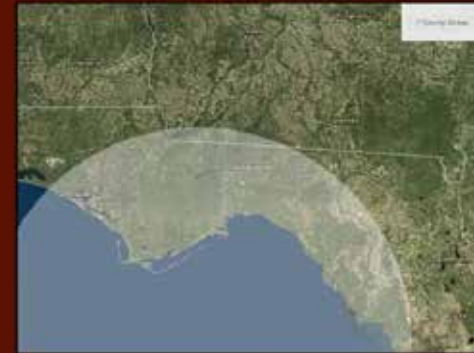
Unprecedented Event Unfolding Weather Forecast Office

Tallahassee

Issued October 10, 2018 1:06 AM ET



We searched the historical database for category 4 hurricanes that have made landfall in the Florida Panhandle and Big Bend. This map says it all – it's **BLANK** – this situation has **NEVER** happened before.



This is your **LAST** chance to get to a safe place and the time for that is closing. This storm will bring deadly surge to the Florida Panhandle and Big Bend coast and is not comparable to anything we have seen before. **If you have been told to evacuate, LEAVE.** Do not stay and risk your life or that of your family.

Facebook Twitter YouTube NWSTallahassee

weather.gov/tallahassee

# Skype Interviews



# Proactive About Explaining First Time Products for the Area



[10:11:30] <media-fred.gossage@nwschat.weather.gov/Home> For all my Panama City and Dothan TV friends, please don't forget about the "Extreme Wind Warning" product that will be issued as the eyewall approaches later today. I know you all know what that means and how serious it is, but they are so rare that most of the folks we serve don't know they exist... and an EWW has actually never been issued in the Panama City or Dothan TV viewing areas since they were implemented after the 2005 hurricane season.

[10:48:21] <nws-jessica.fieux@nwschat.weather.gov/Home> I know Fred mentioned the Extreme Wind Warning above...if anyone is curious to read more on it, it's noted in our directives that can be found here...(Link) on page 29 and 30

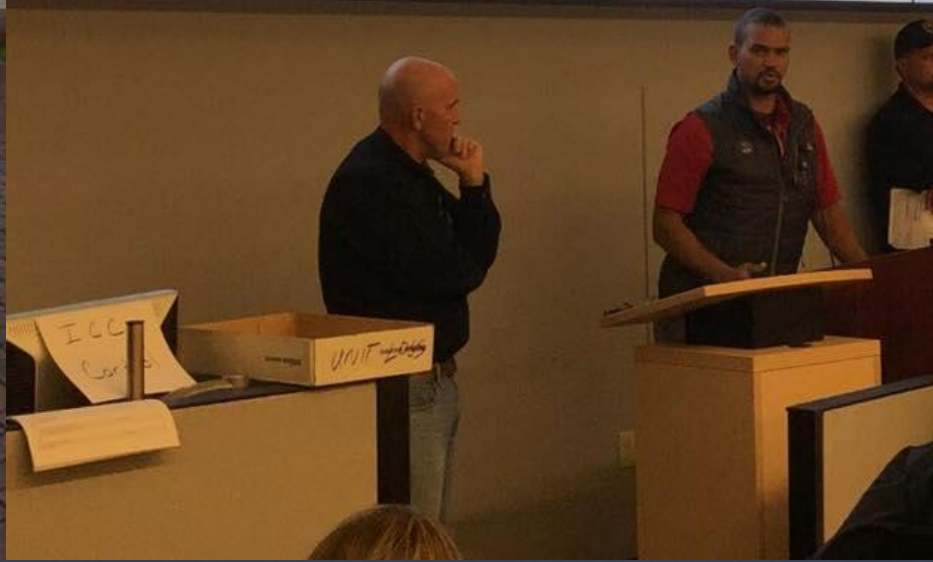
[15:07:22] <nws-kelly.godsey@nwschat.weather.gov/31c94325> Partners: We are in the initial stages of preparing an Extreme Wind Warning. This warning is for the onset of destructive eyewall winds in excess of 115 mph in association with Hurricane Michael. We anticipate that these dangerous eyewall winds are approximately 2 hours from the coast. Geographic extent will post with the warning when issued. Please stand by.



# Three EOC Deployments

## 1) Bay County

INCIDENT OBJECTIVES (ICS 202)	
1. Incident Name: Hurricane Michael Bay County	2. Op Period: Date From: 10/11/2018 Time From: 2000 Date To: 10/12/2018 Time To: 0800
3. Objective(s):	
<ul style="list-style-type: none"><li>Document ongoing progress of Urban Search and Rescue (USAR) Task Forces</li><li>Continue to complete wellness checks of healthcare facilities</li><li>Triage, treat and transport critical patients to appropriate medical facility</li><li>Law Enforcement to maintain order and respond to calls for service</li><li>Maintain visibility within the community to deter crime</li><li>Continue mass care operations</li><li>Begin establishment of local staging area (LSA) at Old Airport</li><li>Begin establishment of Base Camp for 500 personnel at Golf Course</li></ul>	
4. Operational Period Command Emphasis	
<ul style="list-style-type: none"><li>Determine and fill needed ESF positions for Alpha, Bravo and Charlie</li><li>Establish resource ordering process for local and state resources</li><li>Provide supportive care for responders and EOC staff</li></ul>	



# Three EOC Deployments

## 2) Leon County



# Three EOC Deployments

## 3) FSU



# Lessons Learned – Looking Ahead

# Michael Challenges

- Lost OneNWS shortly after Landfall
  - VSAT was inconsistent or unusable
  - No Hurricane Hotline
- Lost comms to TAE radar early in event
- Inland wind coordination was difficult
- Post event surveys – 2000+ data points surveyed
  - Inter-office coordination was hard
  - Lack of coastal survey experience
  - EF Scale does not work for hurricanes
- ASOS!!!

# Lessons Learned/Applied

- All hands on deck/12 hour shifts
- IT expertise and Management on duty 24/7
- ET and facility personnel here throughout
- Backup internet critical – FSU and hot spots
- 10 hotel rooms reserved
- Internal coordination document and DSS schedule

# More Lessons Learned/Applied

- One person dedicated to supporting deployees
- Use DAT to coordinate internal and partner surveys
- Coastal survey support from NOAA and HCFCD
- Late season tropical training
- Coop and service backup???

# Future Needs

- Redundant operational internet
- Time of departure graphics
- Robust/reliable observing equipment
- Tropical messaging training for inland WFOs
- Two person deployments to EOCs for tropical ops
- Apply Dr. Myers' post-Michael findings





**Thank You!**  
**Tom Johnstone**  
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