











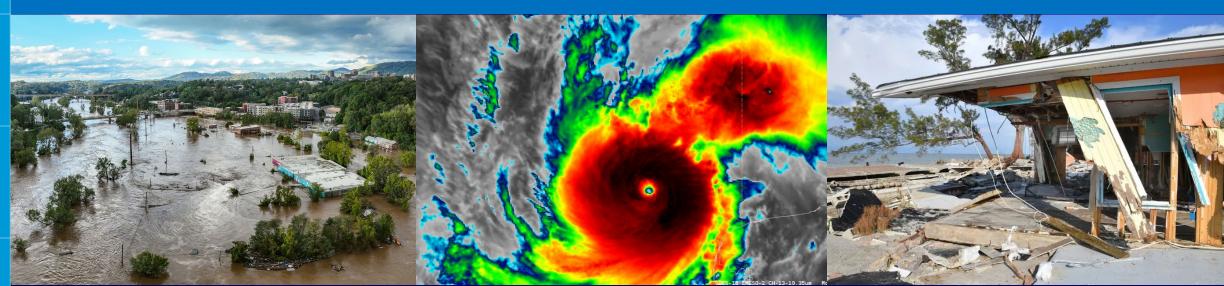


Weather
Forecast
Office
Melbourne, FL

# Hurricane Season 2025

Focus on the Hazards

Will Ulrich
Warning Coordination Meteorologist
National Weather Service, Melbourne, FL



#### Hurricane Season 2025

- National Weather Service Overview
- Tropical Storms & Hurricanes Basics
- NWS Products & Services
- Lessons Learned from 2024
- Looking Ahead to 2025

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### **National Weather Service**

# WEATHER FORECAST OFFICE Melbourne Florida —

#### An Overview

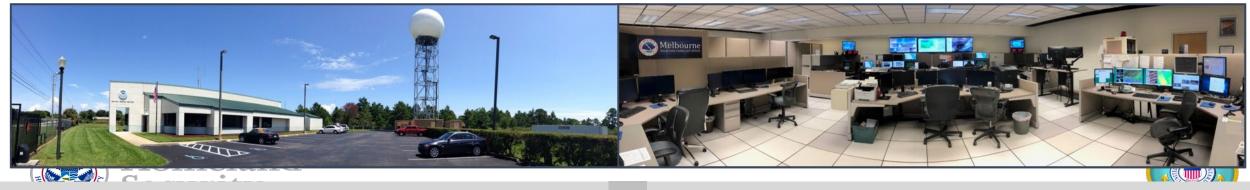


#### **Weather Forecast Offices**

...a total of **122** across the country.

...each staffed with 20-25 employees.

...operates **24** hours a day, **7** days a week.



### **National Weather Service**



Our Mission & Vision

The Mission

"Providing weather, water, and climate data, forecasts, warnings, and impact-based decision support services for the protection of life and property..."



"A Weather-Ready Nation where **society is prepared for and responds to** weather, water, and climatedependent events."

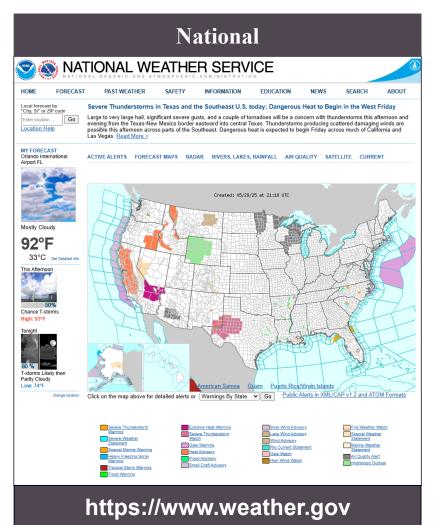


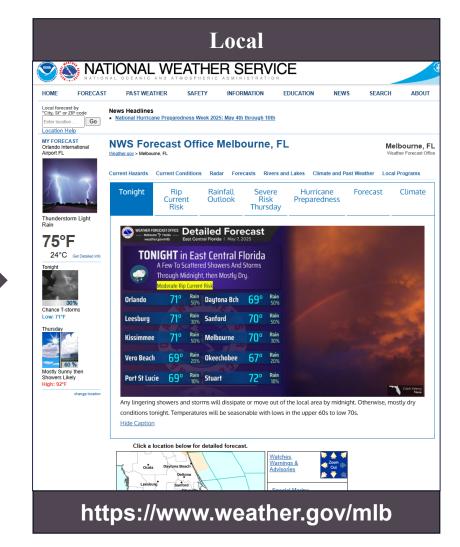


### **National Weather Service**

# WEATHER FORECAST OFFICE Melbourne Florida —

#### Accessing Our Information









#### Hurricane Season 2025

- National Weather Service Overview
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WEATHER FORECAST OFFICE

Melbourne Florida —

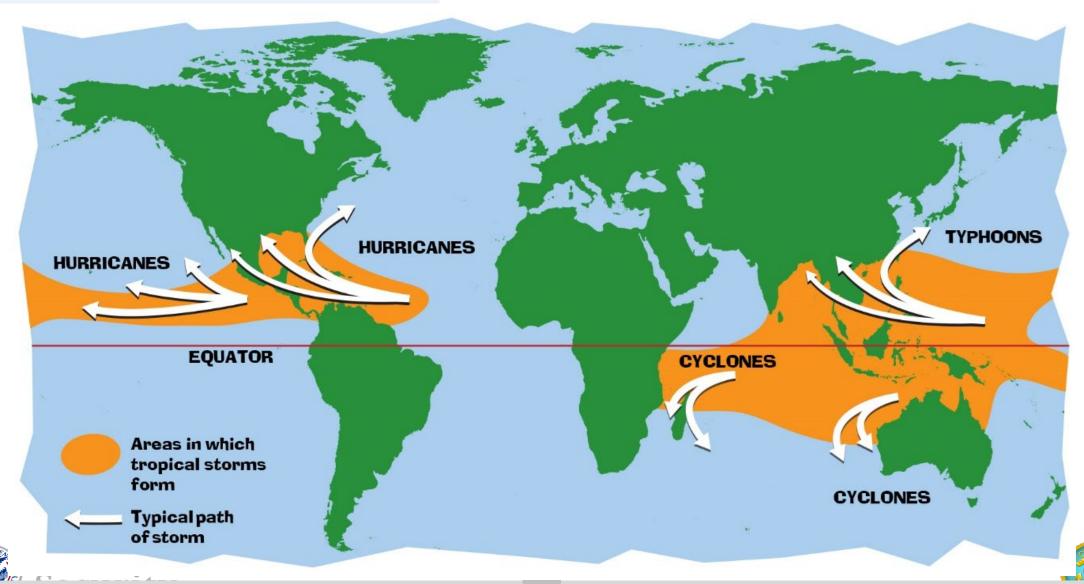
Definition

Definition: A rotating, organized system of clouds and thunderstorms that starts over tropical or subtropical waters and has a closed circulation Subtropical Ridge near the surface. 8.00 Hurrisans Tropical Tropical Depression Tropical

WEATHER FORECAST OFFICE

— Melbourne \*\* Florida —

**Development Regions** 



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Don't Judge a Book by its Cover

#### Tropical Cyclone Come in All Shapes & Sizes!

**Tropical Depression** (winds at or below 38 mph)



Hurricane (winds at or above 74 mph)



**Tropical** Storm (winds between 39 – 73 mph)



Major Hurricane (winds at or above 111 mph)







Hazards



All tropical cyclones can produce one or combination of these!







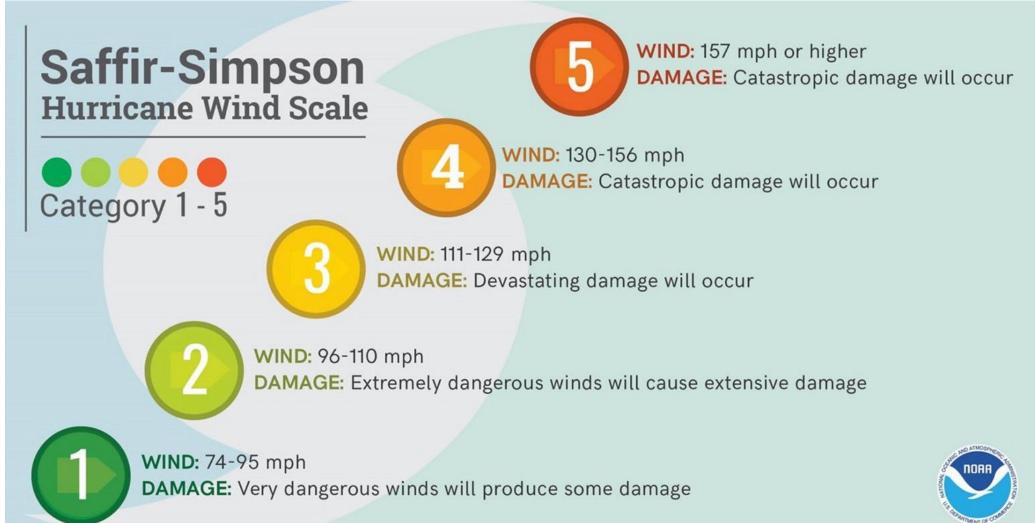




WEATHER FORECAST OFFICE

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Wind Threat

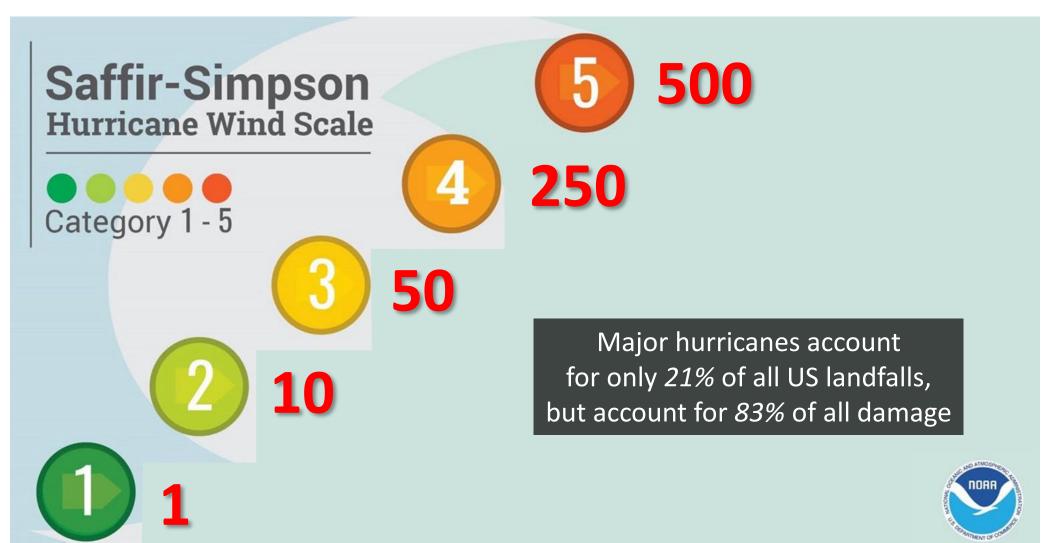




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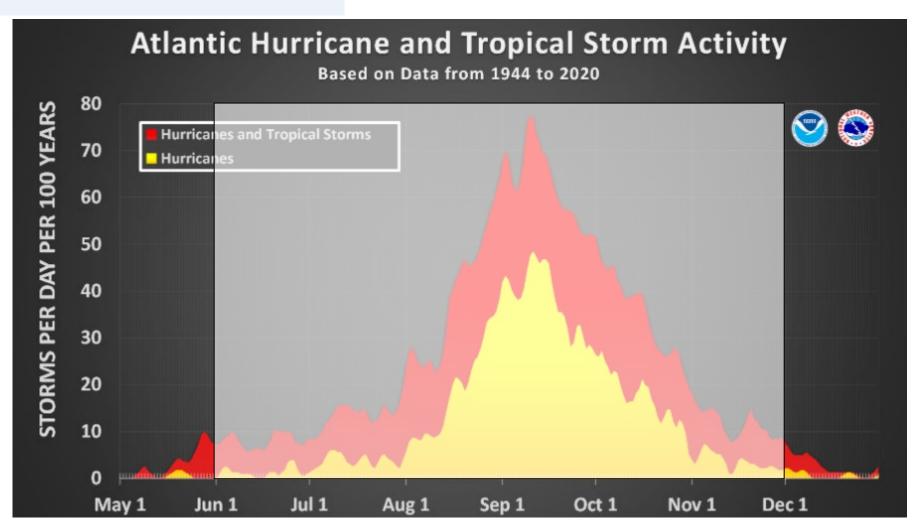
Damage Potential







Seasonality



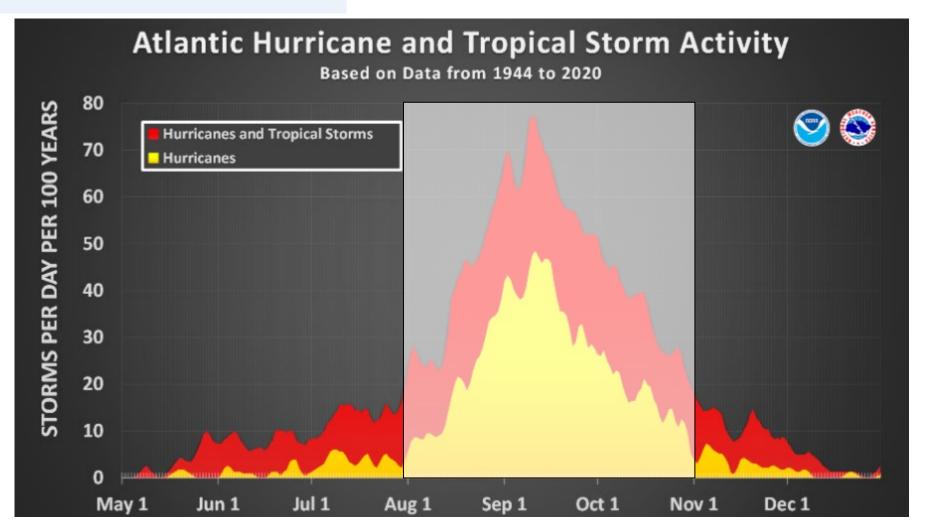


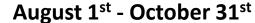






Seasonality



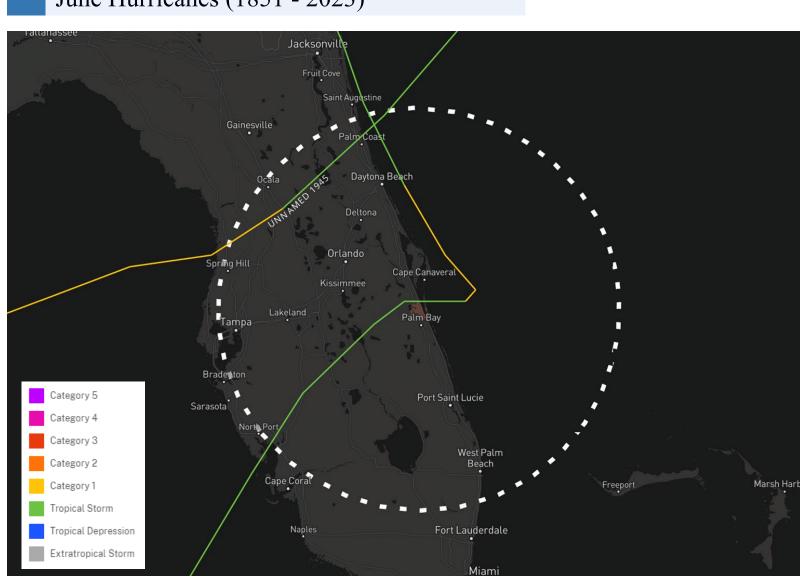


> 85% of Tropical Storms & Hurricanes Form in Aug, Sep, Oct











within **100 nm** of **Melbourne** 

**2** Hurricanes

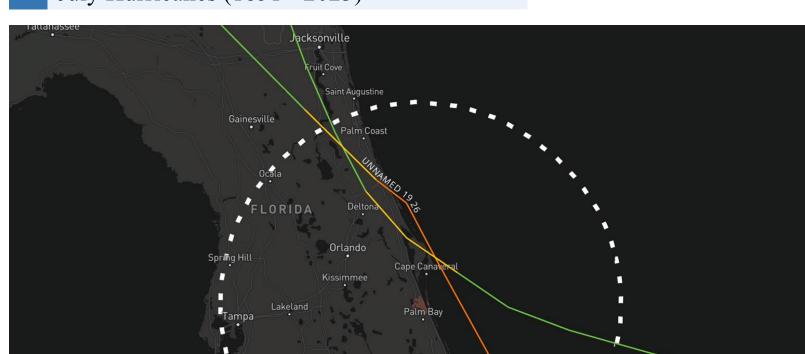
**8** Tropical Storms



E

July Hurricanes (1851 - 2023)

Sarasota



Port Saint Lucie

West Palm

Beach

Fort Lauderdale

Miami



within **100 nm** of **Melbourne** 

\_\_\_\_\_

**3** Hurricanes

**6** Tropical Storms



Freeport

UNNAMED 1915

Marsh Harb

Category 5

Category 4 Category 3

Category 2

Category 1

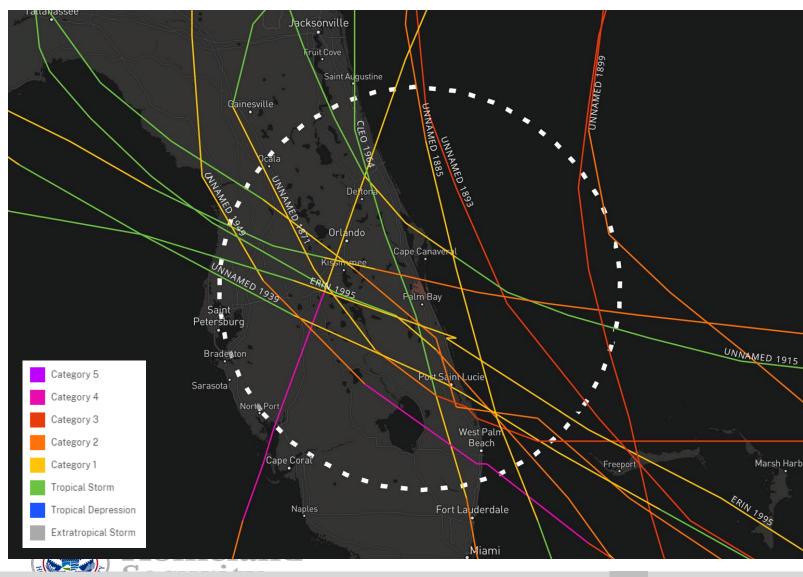
Tropical Storm
Tropical Depression

Extratropical Storm

I I







within **100 nm** of **Melbourne** 

-----

**14** Hurricanes

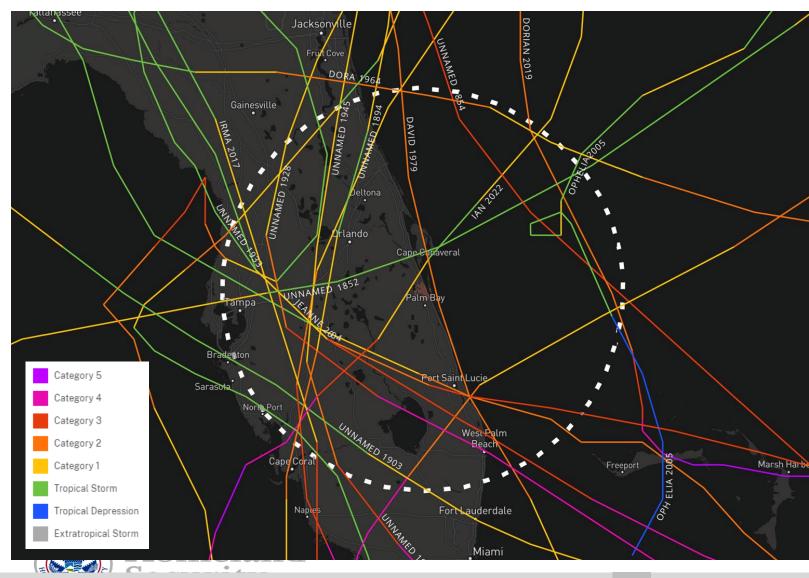
**17** Tropical Storms



September Hurricanes (1851 - 2023)







within **100 nm** of **Melbourne** 

Meibourne

**19** Hurricanes

**22** Tropical Storms



October Hurricanes (1851 - 2023)



Daytona Beach

Cape Canaveral

Fort Lauderdate



within 100 nm of Melbourne

**22** Hurricanes

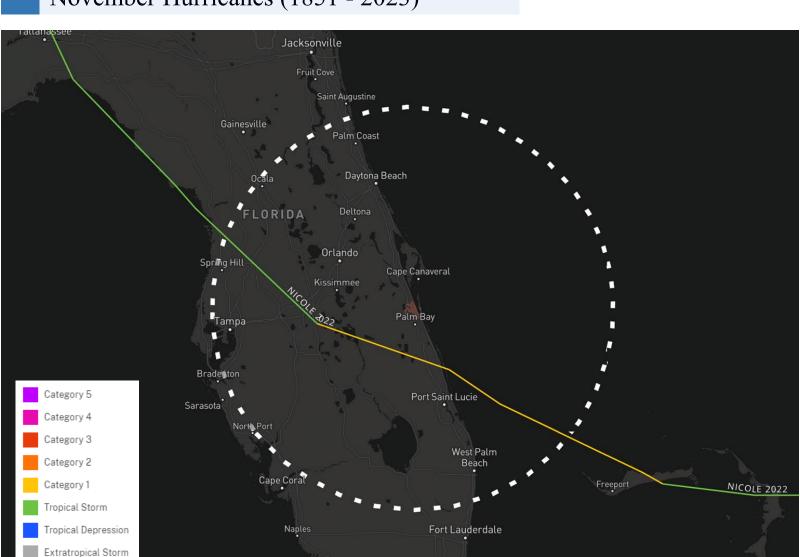
**19** Tropical Storms



Extratropical Storm

Category 5 Category 4 Category 3 Category 2 Category 1 Tropical Storm

November Hurricanes (1851 - 2023)



Miami



within **100 nm** of **Melbourne** 

**1** Hurricanes

**5** Tropical Storms



I I

#### Hurricane Season 2025

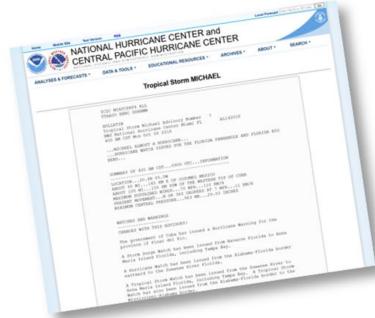
- National Weather Service Overview
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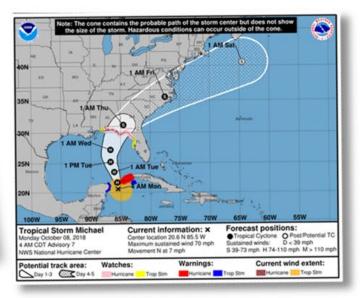
# WEATHER FORECAST OFFICE Melbourne Florida —

#### National Center Roles

- National Hurricane Center
- Weather Prediction Center
- Storm Prediction Center
- National Water Center

...provide the 'big picture' that complements and guides local NWS forecast office products











# WEATHER FORECAST OFFICE — Melbourne \*\* Florida —

Timeline



Tropical Weather Outlook



Tropical Watches & Warnings
 Potential & Expected Storm Surge

Hurricane Threats & Impacts

**Days 6-7** 

**Day 3-5** 

**Days 1-2** 

**Impact Day** 

Potential Track Forecast

Wind Speed Probabilities

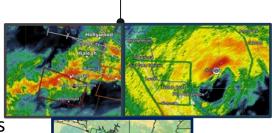
Time of Arrival Graphics

NHC Key Messages





- Tornado Warnings
- Extreme Wind Warnings
- Flash Flood Warnings









# Tropical Weather Outlook

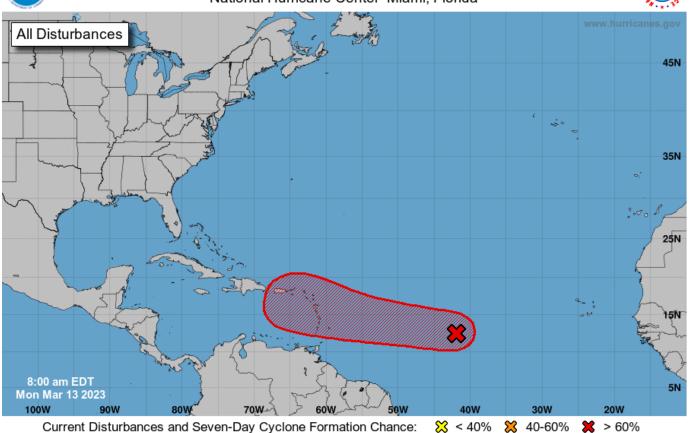




#### Seven-Day Graphical Tropical Weather Outlook

National Hurricane Center Miami, Florida





Tropical or Sub-Tropical Cyclone: O Depression Storm Hurricane
O Post-Tropical Cyclone or Remnants

 Shading represents the potential formation area and NOT the track of the system

Highlights area of potential

the next 7 days

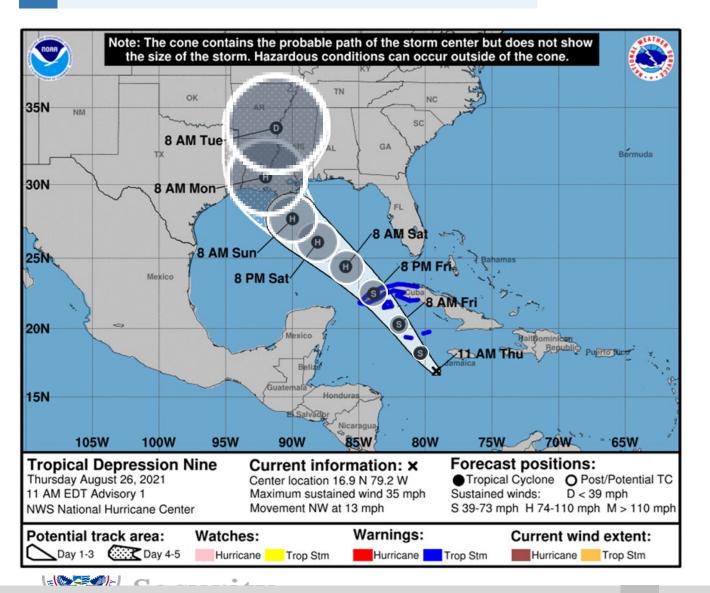
tropical development over

Homeland



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#### Track Forecast



- Depicts the most likely track (2/3<sup>rd</sup> of the time) of the center of the storm
- Based on NHC's performance over the past five years
- Does NOT convey impacts



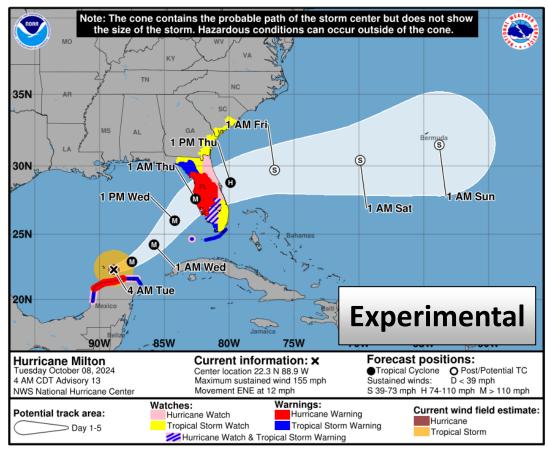
Information about the NHC cone and reminders





#### Track Forecast (Old vs. New)



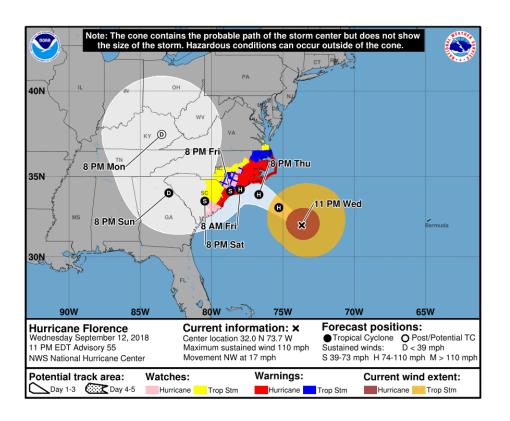


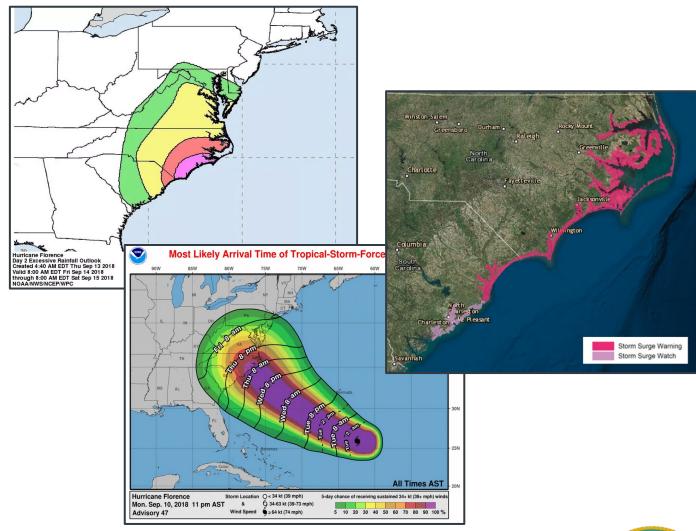




# WEATHER FORECAST OFFICE — Melbourne \*\* Florida —

#### Evaluate Individual Risk



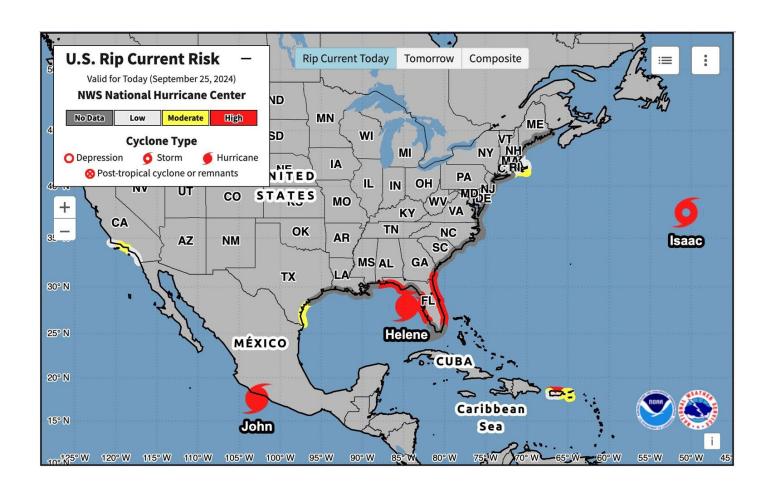






# WEATHER FORECAST OFFICE — Melbourne \*\* Florida —

#### Rip Current Risk

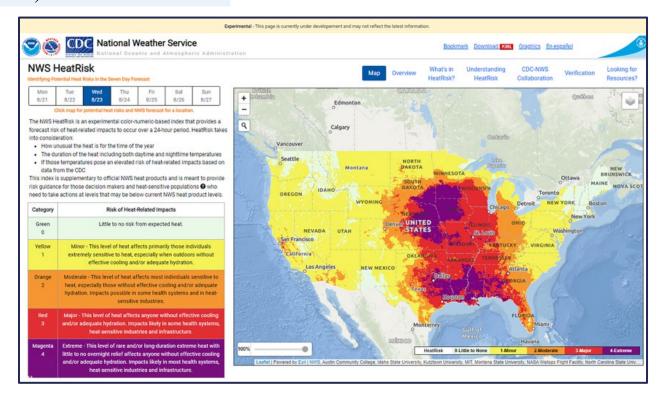








Heat Risk (After the Storm)





#### Hurricane Season 2025

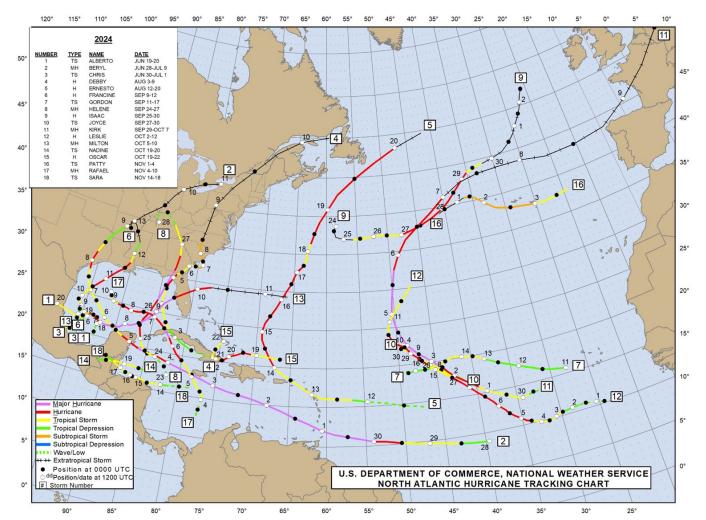
- National Weather Service Overview
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# **2024 Atlantic Season Summary**

#### By The Numbers









# **2024 Fatality Statistics**

#### Water is Still the Main Villain

- Water was responsible for
  - o 59% of direct deaths from tropical cyclones in the United States (127)
- Freshwater flooding accounted for the most direct deaths
  - Hurricane Helene: 95
- 12 of the 13 storms that caused direct deaths had at least 1 fatality attributed to freshwater flooding





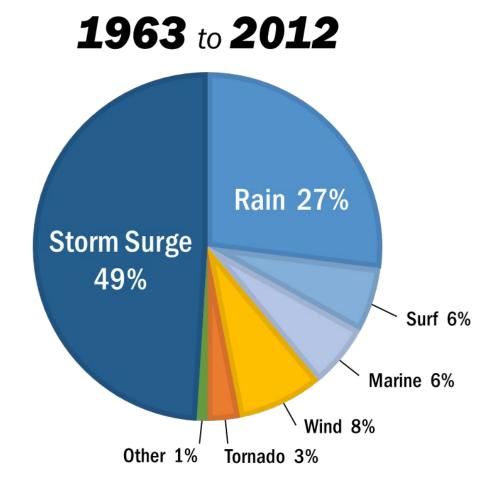


### **Tropical Cyclone Direct Fatalities**

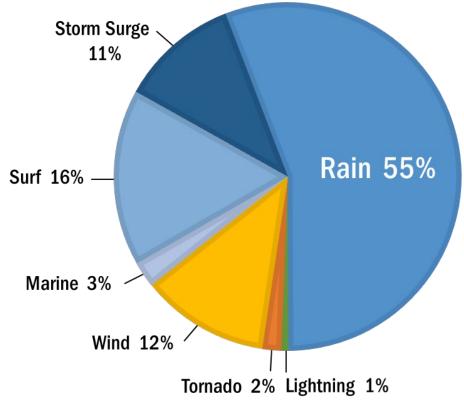
WEATHER FORECAST OFFICE

Melbourne Florida —

By the Numbers









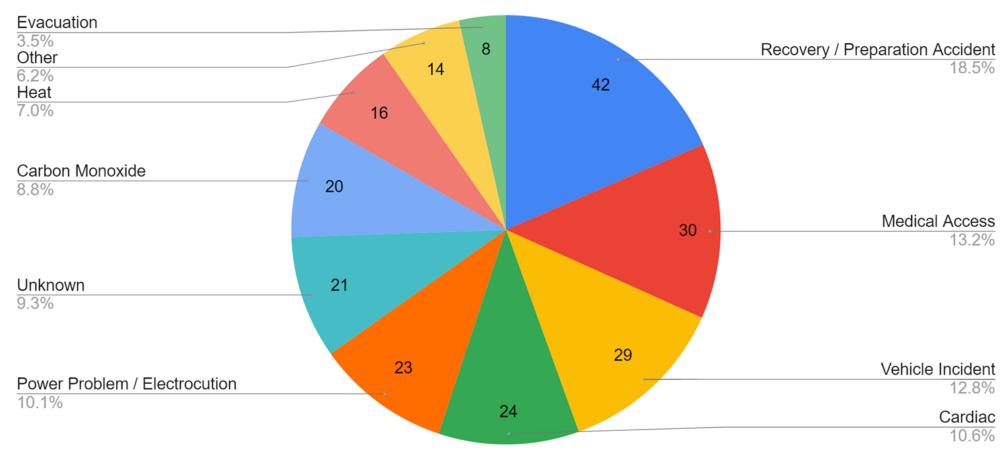


### **Tropical Cyclone Indirect Fatalities**



By the Numbers

#### Florida Indirect Fatalities 2013-2023



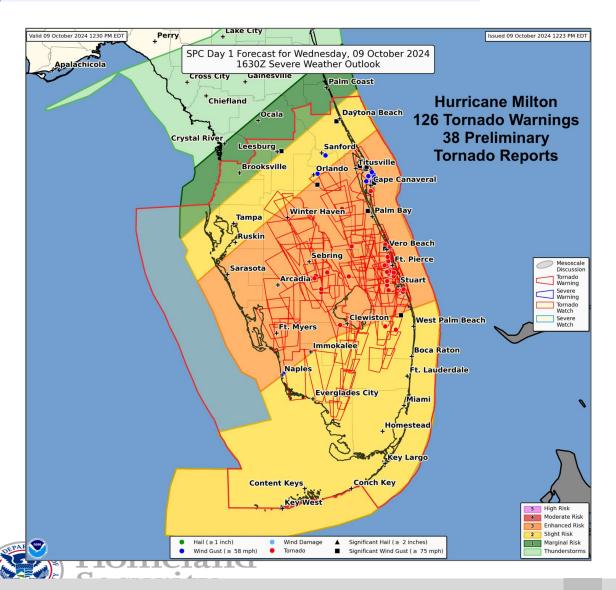




#### **Hurricane Milton**

# WEATHER FORECAST OFFICE Melbourne \*\* Florida ——

#### Tornado Impacts



#### **Tornado Warnings for Milton:**

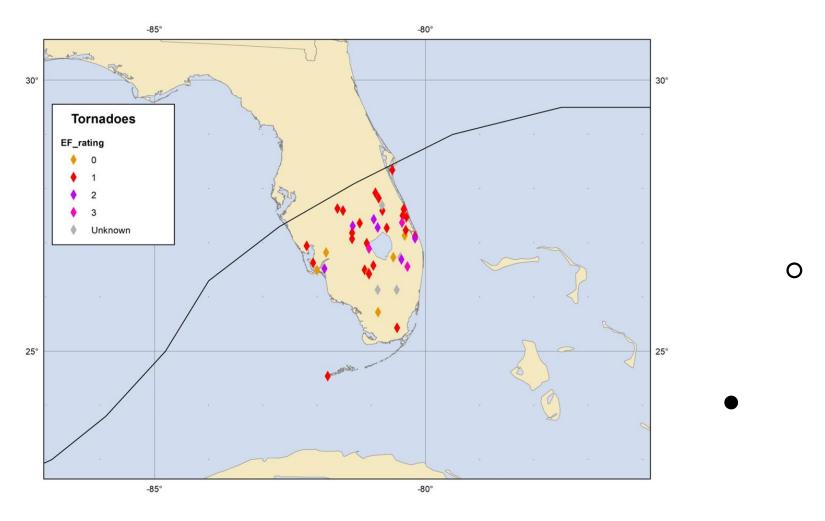
- NWS offices issued 126 tornado warnings
- 2nd largest number for a single state on a single day
- 1st is 134 in Alabama on April 27,
  2011



### **Hurricane Milton**

## WEATHER FORECAST OFFICE — Melbourne Florida —

#### Tornado Impacts







### **Hurricane Milton**

## WEATHER FORECAST OFFICE — Melbourne Florida —

#### Tornado Impacts



EF-3 tornado near Lakeport



EF3 tornado near





#### **Hurricane Milton**

## WEATHER FORECAST OFFICE Melbourne Florida —

#### Tornado Impacts

St. Lucie/Indian River/Martin/Okeechobee October 9, 2024 - Hurricane Milton 1 EF-3 (155 mph) & 4 EF-2 (115 - 125 mph) 6 Fatalities







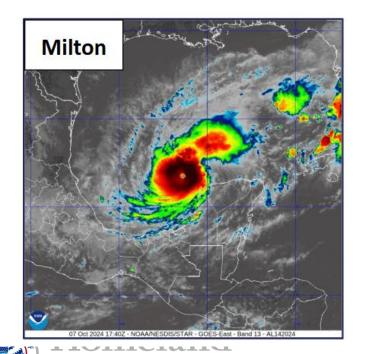


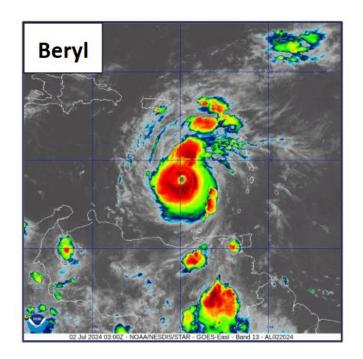
### **Rapid Intensification**

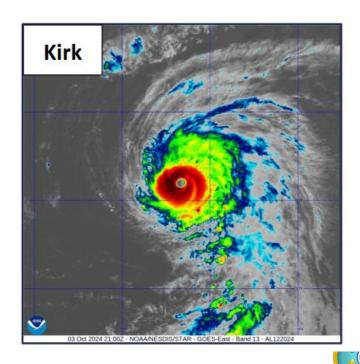
## WEATHER FORECAST OFFICE Melbourne Florida —

#### Considerations

- There were <u>34</u> cases of rapid intensification (RI) in the Atlantic in 2024
  - Each case is defined as a separate 24-hour period of at least a 35 mph (30 knot) increase in winds
  - O Nearly double the mean number of RI cases in a typical year [18 (2014-2023)]
- Hurricane Milton strengthened by 90 mph (80 kt) over 24 hours on from Oct. 6 to 7
  - O Pressure dropped by 82 mb in about 16 ½ hours to 895 mb



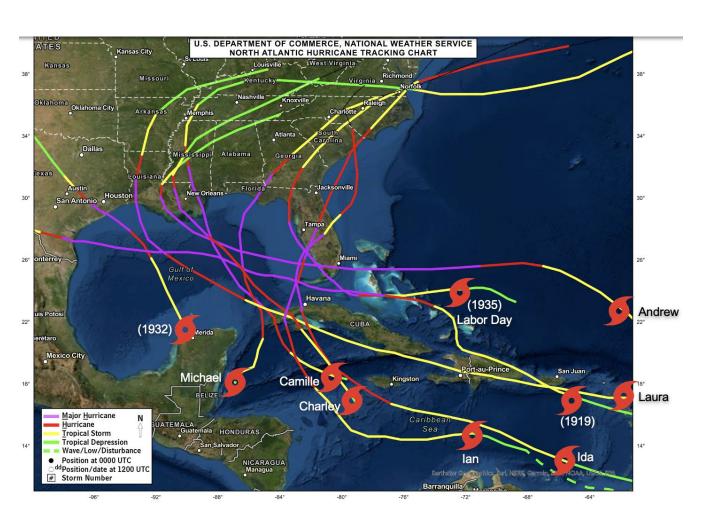




### **Rapid Intensification**

#### Considerations





Rapid intensification near land means shorter lead time & less time to prepare!





#### Hurricane Season 2025

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#### **Hurricane Season 2025**

WEATHER FORECAST OFFICE

— Melbourne \*\* Florida —

The Forecast

Climatology

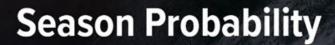
- An above normal hurricane season is favored
- Busier than usual seasons are often associated with more/greater impacts from landfalling systems in the U.S.

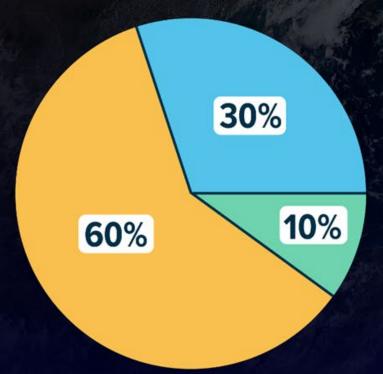






## 2025 Atlantic Hurricane Season Outlook





**Near Normal Below Normal Above Normal** 

**Named Storms** 13 - 19

> **Hurricanes** 6 - 10

**Major Hurricanes** 3-5



## **2025 Atlantic Tropical Cyclone Names**

**Andrea** 

Barry

Chantal

**Dexter** 

Erin

**Fernand** 

Gabrielle

Humberto

**Imelda** 

Jerry

Karen

Lorenzo

Melissa

**Nestor** 

Olga

**Pablo** 

Rebekah

Sebastien

Tanya

Van

Wendy













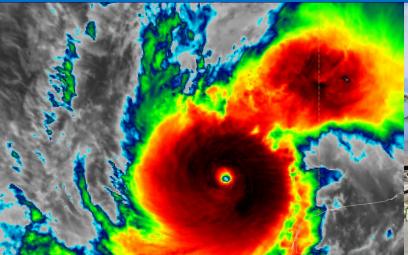


Weather
Forecast
Office
Melbourne, FL

## Questions?

Contact: Will Ulrich
Warning Coordination Meteorologist
National Weather Service, Melbourne, FL
E-Mail: william.ulrich@noaa.gov







# 2025-2027 Port Heavy Weather Plan for Northeast and Eastern Central Florida





Port Canaveral, FL June 2nd



## Heavy Weather Plan Scope

- Guides CG Units & Port Stakeholders
- Area of Responsibility:
  - Crooked Creek, GA to Malabar, FL
  - Port of Fernandina, Port of Jacksonville, and Port Canaveral
- Unit Hurricane Conditions and Port Conditions
- Coast Guard Unit and Personnel Preparedness
- Port Preparedness
- Pre Storm and Post Storm Actions & Operations





## Accessing the HWP

- Sector Jacksonville Website
  - Sector Jacksonville
    - Regional Contingency Plans
    - Port Information Port Status
      - Forwards to NAVCEN Page
      - Jacksonville
      - MSIBs
      - Weather Page





### Port Coordination Teams

- 2 Teams (Northeast and East Central Florida)
- Multi-Agency and Stakeholder Team
- Activates at Request of COTP or Team Mbrs
- Marine Transportation System Status Reporting
- Advise and Recommend Courses of Action
  - Prioritization of Vessels and Recovery Actions
  - Identification of Critical Cargoes or Operations





### Port Preparedness

- Chapter 4 Pre-Storm Procedures
  - Outlines action to be taken by maritime interests
  - Actions are broken down by Port Condition, who, what and when
- Port Canaveral is not suitable for refuge, vessels or barges greater than 500 GT ITC will not be permitted to remain in Port
- Port Authorities/private terminal operators direct vessels to depart during YANKEE





### Port Conditions

Port Condition	When Set	Port Status
Condition 5	(General) 01 Dec – 31 May.	Port status: Open.
Condition 4	Hurricane seasonal alert. 1 June – 30 Nov (return to this condition after passage of storm during season).	Port status: Open.
<b>Condition Whiskey</b>	Sustained Tropical Storm Force Winds are predicted within 72 hours.	Port status: Open.
Condition X-Ray	Sustained Tropical Storm Force Winds are predicted within 48 hours.	Port status: Open.
Condition Yankee	Sustained Tropical Storm Force Winds are predicted within 24 hours.	Port status: Restricted, vessel/facility control measures in effect.
Condition Zulu	Sustained Tropical Storm Force Winds are predicted within 12 hours.	Port status: Closed to all vessel traffic and waterside ops except for activities approved by COTP.





Port Condition	Action Required by Commercial, Oceangoing Vessels and Barges Over 500 GT
Condition WHISKEY (Alert – 72 Hrs)	Make preparations to get underway in sufficient time to ensure the safety of the vessel and its crew. Set navigation and radio watch. "Dead" vessels unable to put to sea must make written application to the COTP to remain in port (refer to Annex H). Written requests should be submitted within 12 hours of setting Port Hurricane Condition WHISKEY.
Condition X-RAY (Readiness – 48 Hrs)	All vessels, including tugs and barges and vessels on domestic voyages are required to give COTP advanced notice of arrival. All vessels should prepare to complete cargo operations and depart port in sufficient time to ensure the safety of the vessel and its crew, or when Condition YANKEE is set. Vessels and barges unable to depart must request written permission from COTP (refer to Annex H).
Condition YANKEE  (Warning – 24 Hrs)	Port is closed to incoming traffic without specific written approval of COTP. All ship-to-shore cargo operations must stop 6 hrs prior to setting ZULU. All vessels must put to sea unless in receipt of specific written approval of the COTP to remain in port.
Condition ZULU (Max Prep – 12 Hrs)	Port is closed to vessel movements. No ship-to-shore movement of cargo is permitted. Vessel owners and operators with COTP preapproved mooring or anchoring plan must still notify the COTP if the vessel intends to remain in port during Port Condition ZULU.





## Remain in Port Request Requirements

- Required for foreign and domestic commercial ocean-going vessels & barges over 500 GT ITC
- Requests must be submitted w/in 12 hours of Port Condition Whiskey
- Vessels entering port after Whiskey must submit prior to entering port
- Vessels planning inbound & outbound transit prior to Condition Zulu must still submit



## Submitting Remain in Port Requests

- Complete Remain in Port Request Form
  - Annex H of Port Heavy Weather Plan
  - Fillable Version on Homeport
- Submit to COTP via email to:
  - jaxdomestic@uscg.mil
- Utilize RIPLO for questions:
  - ENS Anderson @ Joseph.C.Anderson@uscg.mil
  - Chief Bryan Chavers @

Bryan.J.Chavers@uscg.mil





## Lay-Up Vessels

- No vessel will be permitted to enter or remain in lay-up status during the hurricane season.
  - Vessels unable to depart before June 1<sup>st</sup> must obtain written permission from the COTP to remain in port.
  - These requests shall include a lay-up plan containing specific provisions for all categories of hurricanes.
- Utilize Lay Up Officers for questions:
   ENS Anderson and Chief Chavers





### Heavy Weather Shelter Plans

• All U.S. flag vessels 500 GT ITC with base operations that routinely originate from or within the COTP Jacksonville zone shall submit a Heavy Weather Shelter Plan by May 30<sup>th</sup>.





### Evacuation Considerations: Canaveral Locks

• 12 hrs prior to 30 mph sustained winds locks stop operating

• 401 lift bridges will stop operating at gale

force winds







### Post-Storm Assessments

- Channel Assessments
- Essential ATON Assessments
- Infrastructure Assessments
- Assessment results will be discussed with the PCT to determine safe port opening procedures.
- Incident Action Plan Annex M





### Coast Guard Points of Contact

LCDR Barton Nanney

Office: 904-714-7546

Email: Barton.S.Nanney@uscg.mil

• LT Ace Conner

Office: 904-714-7616

Email: Avierre.J.Conner@uscg.mil

Sector Jacksonville Incident Management Team

Phone: 206-815-7026





## Questions?







## 2025 FWC Hurricane Season





### At Risk Vessels

- F.S. 327.4107
  - The vessel is taking on or has taken on water without an effective means to dewater.
  - Spaces on the vessel that are designed to be enclosed are incapable of being sealed off or remain open to the elements for extended periods of time.
  - The vessel has broken loose or is in danger of breaking loose from its anchor.
  - The vessel is listing due to water intrusion.
  - The vessel does not have an effective means of propulsion for safe navigation.
  - The vessel is tied to an unlawful or unpermitted structure or mooring.
  - A person who anchors or moors a vessel at risk of becoming derelict on the waters of this state or allows such a vessel to occupy such waters commits a noncriminal infraction.



### Derelict Vessels

- F.S. 832.11
  - In a wrecked, junked, or substantially dismantled condition upon any waters of this state.
    - Wrecked sunken; aground without the ability to extricate itself absent mechanical assistance.
    - Junked substantially stripped of vessel components, if vessel components have substantially degraded or been destroyed.
    - Substantially Dismantled 2/3 vessel systems are missing, compromised, incomplete, inoperable, or broken.
      - Steering
      - Propulsion
      - Exterior Hull Integrity



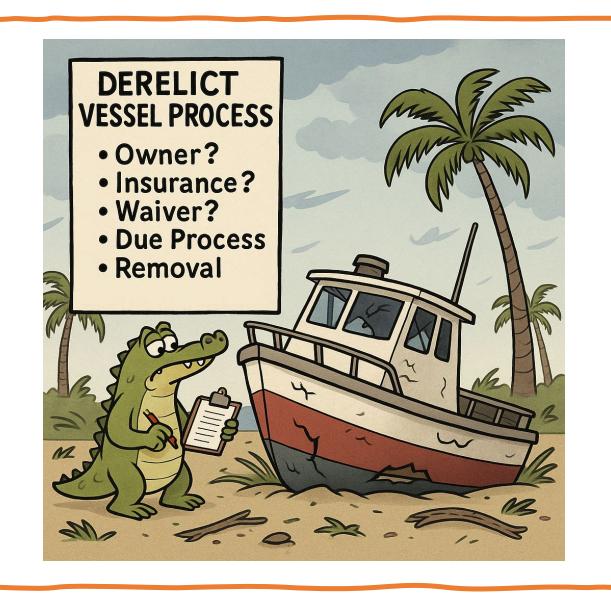
### Pre - Storm

- 72 Hours Out
  - Officers survey waterways and collect vessel / owner information.
- 48 Hours Out
  - All vessels (except 2 Quick Response) removed from waters and staged.
- 24 Hours Out
  - Quick Response Vessels pulled and staged.



## Post - Storm

- Variables.
- Conduct survey of affected areas.
- Initiate DV process.
- Deploy additional resources if there is a significant impact.



# Derelict Interactive Map



## 2025 Law Changes



#### **At-Risk**

Propulsion Test

Adjudication issues

3 citations in 24-month period =
Public Nuisance - DV



### **Derelict Vessel**

 $1^{st} / 3^{rd} / 2^{nd}$ 

**Owner Definition** 



### **Safety Inspection**

**Probable Cause** 

Safety / Marine Sanitation – Secondary Offense

Questions?



### Contact

- FWC Dispatch 407-275-4150
- Lt. Ray Cybula
  - State: 321.317.0825
  - Personal: 321.537.7199
  - Raymond.Cybula@MyFWC.Com





## Canaveral Fire Rescue

EST. 1962

## Hurricane Preparedness

EST. 1962



#### **Pre-Storm**

72-96 Hours Pre-landfall

#### Prepare Stations, apparatus, and equipment

Crews will ensure all training props, loose equipment, and debris is removed or secured on the grounds of all stations

Ensure all apparatus, equipment and fuel convaults are full

Order any additional supplies that would be needed throughout the duration of the storm

**Open Communications with the Canaveral Port Authority** 

EST. 1962



#### **Pre-Storm**

48 Hours Pre-landfall

#### Assign shift personnel to stations

2 shifts of personnel will be assigned to each station

The remaining shift will be expected to return to duty when it is safe to be recalled and will relieve the shifts that have been working during the storm.

Fireboats will be moved to safe locations and personnel will be assigned

EST. 1962



#### **Pre-Storm**

24 Hours Pre-landfall

#### Non-essential equipment evacuated to mainland

All equipment, staff vehicles, or back up apparatus that are not expected to be used during or immediately after the storm, will be evacuated to a safe facility inland.

#### Assist general population if required

If possible, personnel will help the general population with facilitating resources or preparations

EST. 1962



#### **Pre-Storm**

12 Hours Pre-landfall

#### **Stations staffed**

Each station will be staffed with 2 shifts of personnel and one Assistant Chief

Personal vehicles will be moved to a predetermined parking garage

Shifts will rotate between work and rest cycles as deemed necessary

Stations will be locked down, and apparatus will stop responding when winds reach 45mph

EST. 1962



#### **Post Storm**

Post Storm operations will begin when winds fall below 45mph

One personnel will be assigned to the IMOC to assist with communications between CPA, BCSO, USCG, and CFR.

Damage and hazard assessments will be preformed in Port Canaveral and the City of Cape Canaveral.

Mitigate Hazards.





# Brevard County Sheriff's Office Port Canaveral USCG Heavy Weather Overview

Commander Byron Keck
Canaveral Precinct





## Pre-Storm (72-hours)

- Designate Storm Coordinator
- Resource Accountability
- Secure Physical Assets/Structures
- MSO's assists CPA
- Marine Unit Active Patrols
- Emergency Mgt. Meetings





## Pre-Storm (48-hours)

- Staff Preparations Emergency Plan
- Directed Patrols of Secured Areas
- Marine Unit Active Patrols
- Emergency Mgt. Meetings





## Pre-Storm (24-hours)

- A / B Staffing if Necessary
- MSO's Replaced with Deputies
- Marine Unit Vessel Evacuations
- Non-Essential Equipment Secured
- Emergency Mgt. Meetings





## Storm Landfall

- Law Enforcement Response
   Determined by Incident Cmdr.
- Command Post at IMOC
- Personnel at Canaveral Precinct & IMOC
- Coordinate Post Storm Response





## Post-Storm

- Emergency Mgt. Meetings
- Re-entry Traffic Control
- Assist CCFR & CPA with Hazard
   Assessments
- Assessment of Secured Areas
- Marine Unit Assist USCG with Waterway Assessments



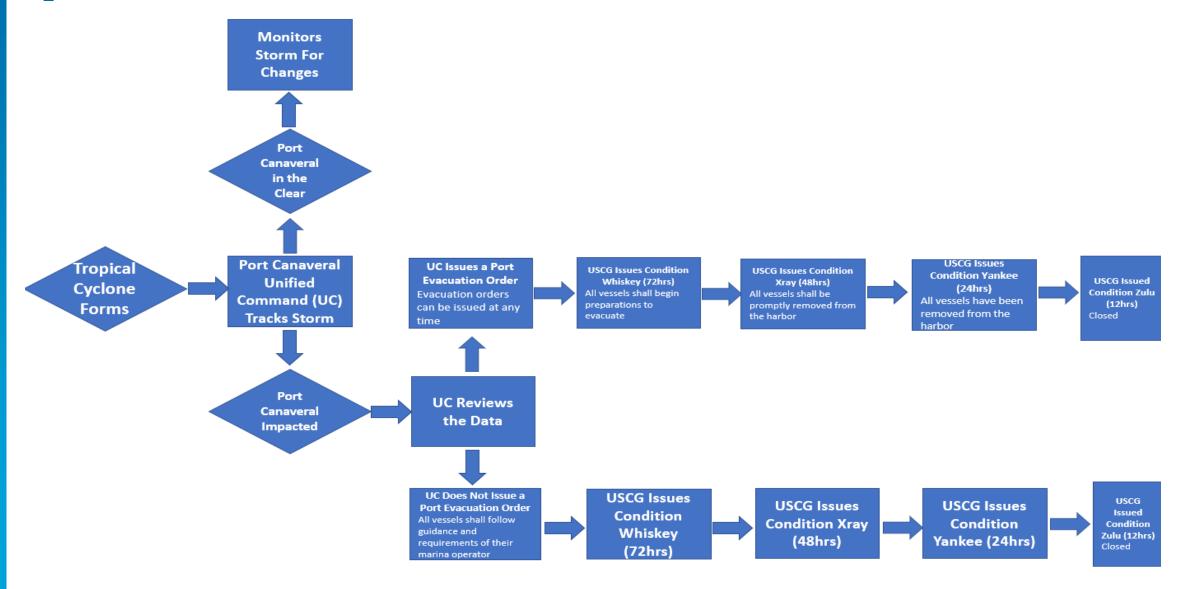
## Planning and Mitigation (Doing This Now)

- Monthly hazard surveys of all Port facilities start June and continue through Nov
  - Get your facility plan ready clear/organize sites now and update contact info
- Identify and secure staging locations
  - Survey vessel for post-storm channel assessment
  - Incident response equipment
- Order equipment/supplies and stockpile consumables
  - Food, water, and portable toilets
- Update Mutual Aid agreements
- Ensure all vessels aware of evacuation requirements
  - Commercial fishing fleet to Barge Canal
  - Recreational boats removed from Port Canaveral harbor
  - Over 500GT out to sea (USCG)
  - Under 500GT, out to sea or Remain in Port Request (CPA and USCG)

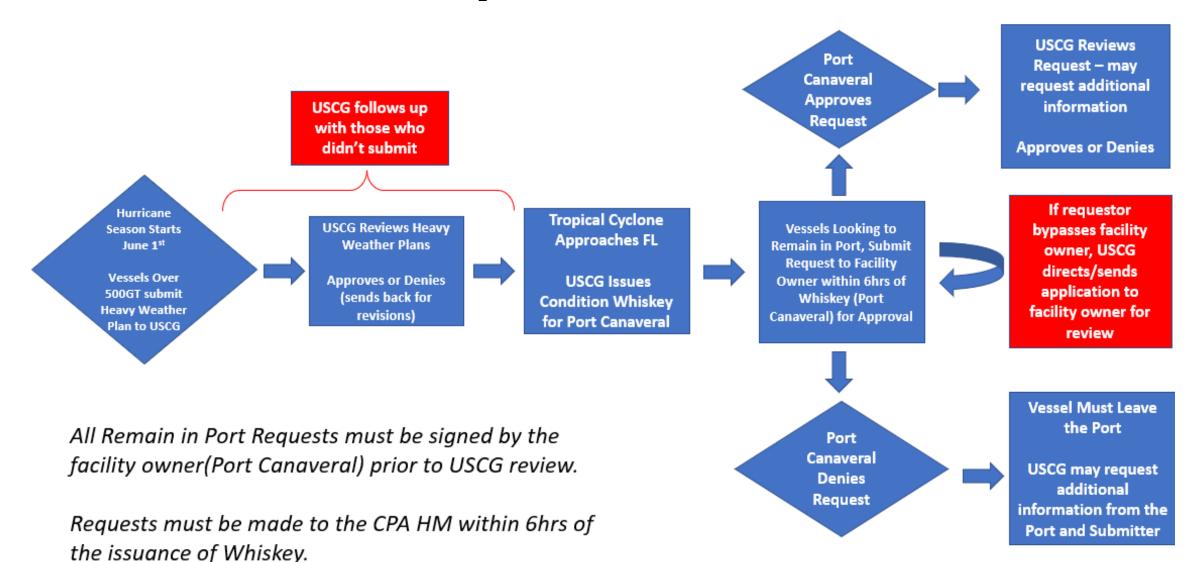




## Marina Evacuation Flowchart



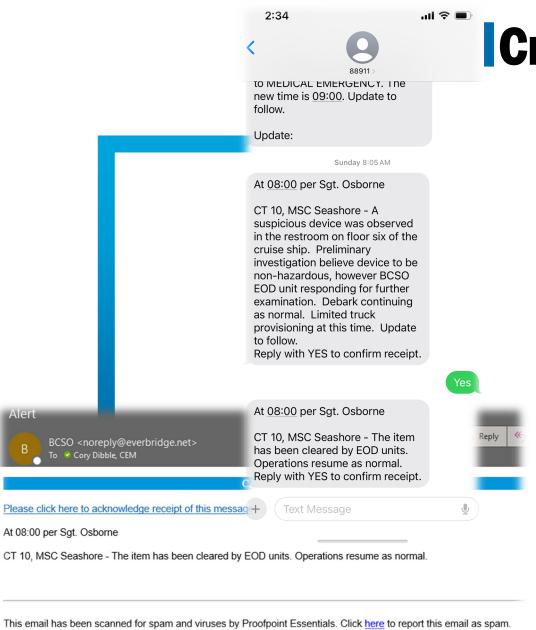
## Remain in Port Request Flow Chart





## **Objectives / Priorities Pre-storm**

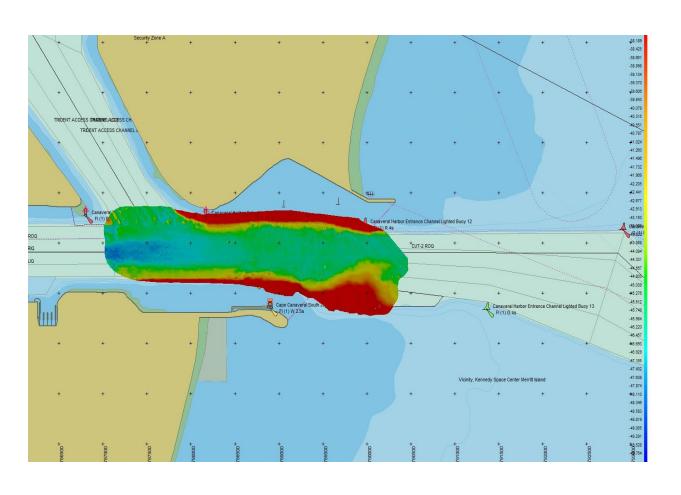
- Activate heavy weather plan and Unified Command
  - Coordinate with NWS, Brevard EM, USCG Sec Jax, and Port Community
- Track storm UC discuss vessel evacuations
- Ensure Port is clear of debris
- Phased closure of Port Canaveral businesses
- Continuous fuel deliveries until no longer safe
- Complete shutdown of all operations at Condition Zulu
- "Ride Out Team" (Sheriff's Dept. & Fire Rescue)
- Notify Critical Return Members of timing and check-in location



### **Critical Return List and Notifications**

- Critical Return Members
  - Activated based on responsibilities
    - Damage Assessment Team
    - Alpha, Bravo and Bravo1
- Everbridge Notifications
  - Critical Return Members
  - CPA and stakeholder staff
- Social Media, Website, and Hotline
  - Port Community
  - Hotline #321-394-3411

## **Objectives / Priorities Post-storm**



- Conduct life safety/windshield assessment
- Recall Damage Assessment Team
  - Critical Return List members will be phased
- Dispatch response equipment Clear channel first
- Restore water, power, sewer services ASAP
- Receive fuel ships
  - Restore fuel truck deliveries to Central Florida
- Receive cruise ships for passenger operations
- Survey needs within Port community
- Recall commercial and recreational vessels

