

# Effective Messaging:

*Changing the Outcome of the Event*





## Communicating Hurricane Threats & Impacts

**David Sharp**  
Meteorologist-in-Charge  
NOAA/National Weather Service  
Melbourne, FL

August 24, 1992





## Communicating Hurricane Threats & Impacts

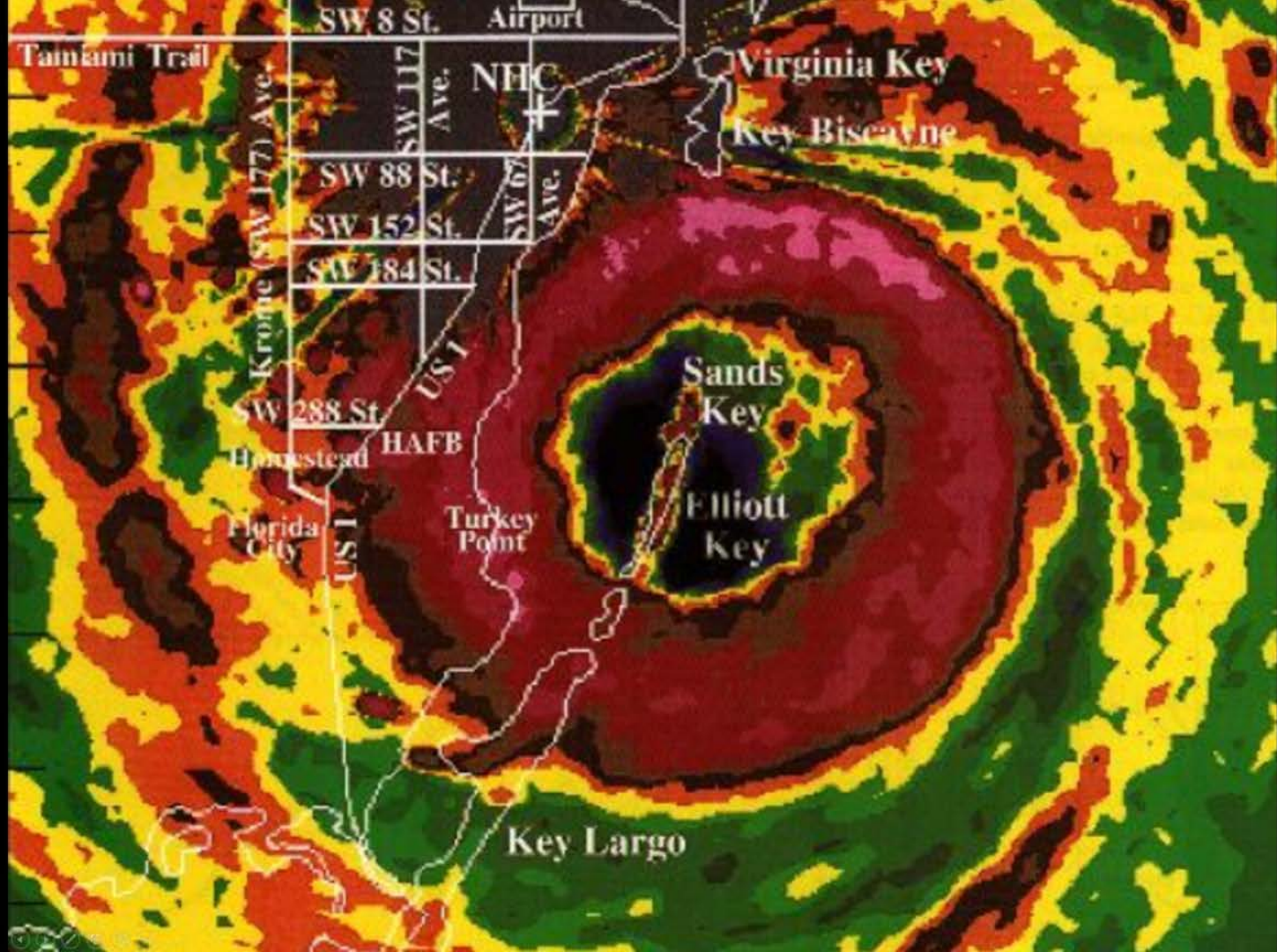
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**When the  
Physical Science  
intersects the  
Social Science**





Tamiami Trail

SW 8 St. Airport

NHC

Virginia Key







Ultimately, it's about people!



**QUESTION:** If you could go back in time to about 12-18 hours before Hurricane Andrew's landfall and take with you the knowledge of the wind impacts about to be realized, what **main message** would you have for the people of Homestead, FL?







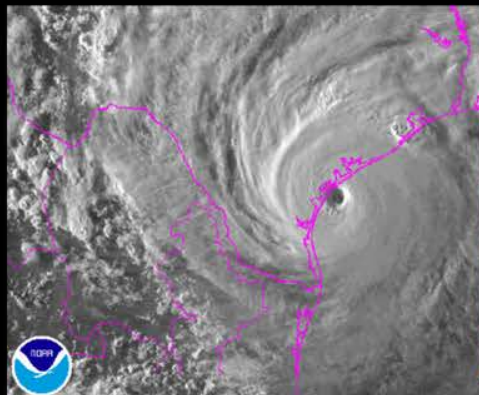
**QUESTION:** If you could go back in time to about 12-18 hours before Hurricane Andrew's landfall and take with you the knowledge of the wind impacts about to be realized, what **main message** would you have for the people of Homestead, FL?

- “The probability of hurricane force winds is increasing for Homestead.”
- “A hurricane warning remains in effect for South Florida, which includes the town of Homestead.”
- “Act now to protect your life! This is an extremely dangerous and potentially catastrophic wind situation for Homestead.”

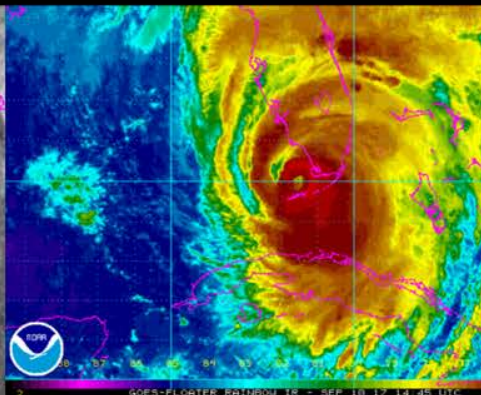


*Now consider recent seasons ...*

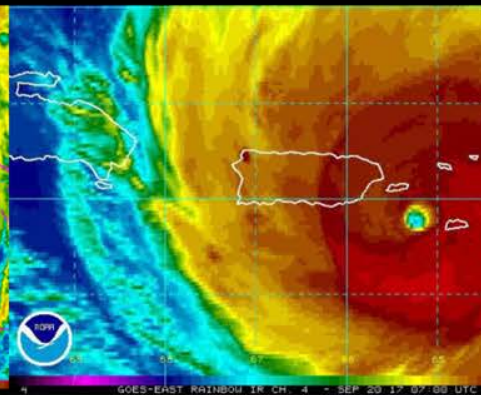
2017



Hurricane Harvey



Hurricane Irma



Hurricane Maria







Hurricane  
Harvey (2017)



Hurricane  
Irma (2017)



Hurricane  
Matthew (2016)



Hurricane  
Maria (2017)

## Hurricane Michael (2018)





Hurricane Dorian (2019)

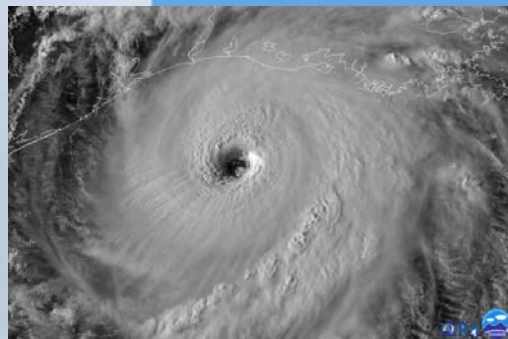








Hurricane Laura (2020)





# It's All About Impacts

*"The Impact Footprint"*



- **Hurricane Hazards:**

- High Wind
- Storm Surge & Tide
- Flooding Rain
- Pounding Surf/Dangerous Seas
- Tornadoes & Waterspouts

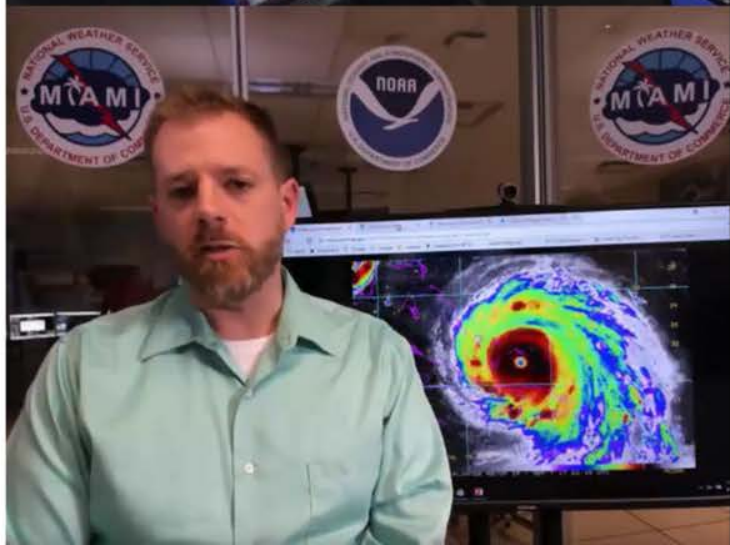




# Messaging Types

- **Community Decision-making**
  - Emergency Managers
  - Community plans
  - Potential impacts relative to established weather/water thresholds and triggers
- **Personal Decision-making**
  - Public; Individuals/Families; Small Businesses
  - Personal plans
  - Potential impacts relative to local watches/warnings; any orders issued from local officials

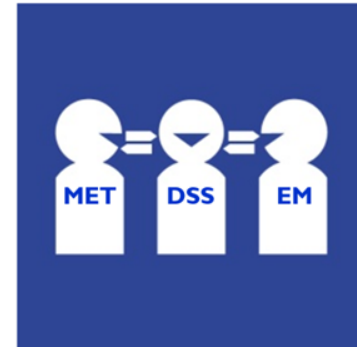
➤ *Limited sophistication with some safety instruction included*





# Making Things Simple

- **FACT:** The majority of our customers are not meteorologists, hydrologists, or oceanographers.
  - *"Some are weather-wise; most are other-wise."*
- To effectively communicate, we must learn to speak the language of the customer.
  - *Especially during emergencies when lives are imperiled.*

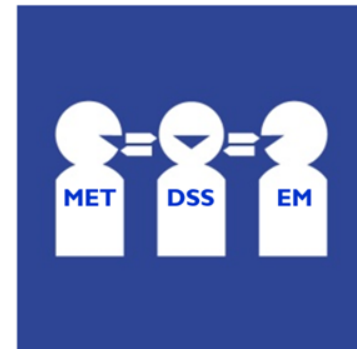






# Making Things Simple

- Our science-based hurricane information must be:
  - **Distilled** ... *focused and succinct; nice and concise*
  - **Translated** ... *put in customer-speak*
  - **Interpreted** ... *maintain message meaning*



# Communication of Weather-related Hurricane Emergency Information

## 3 Routes



From *Social and Behavior Influences on Weather-Driven Decisions* (Galluppi et al. 2013)



# Public Safety Messaging

An aerial photograph of a long, multi-lane bridge spanning a body of water. The bridge has multiple support pillars and stretches far into the distance under a clear sky.

1. **Coordinate Public Safety Messages**
  - in conjunction with emergency management partners
2. **Communicate Public Safety Messages**
  - in conjunction with media partners

*An integrated approach*

Messaging in ways:

*“To help get the right people...  
to do the right things...  
at the right time.”*





August 26, 2011  
8:00 AM Advisory  
Cat 2 (marginal Cat 3)  
Large cyclone  
Moving north at 14 mph.



Potential Impacts



Realized Impacts

Impacts = Customer Language

# Relatable Information = Actionable Information

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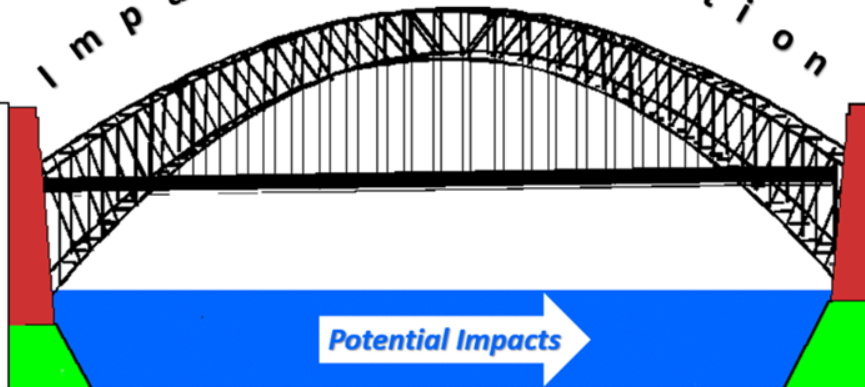


Forecast Mode: Wind

### Threat Assessment

*Likelihood of  
tropical winds*

I m p a c t   R e c o g n i t i o n



*Potential Impacts*

### Message Communication

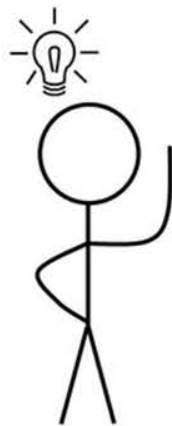
*Protective action  
according to risk*

**Impact Recognition:** Bridges the latest threat assessment to a well-calibrated message by considering the imperilment to life and/or potential property damage ... according to locally established thresholds and community impact descriptions.





# THINKING AND FEELING



Thinkers  
focus first on the  
use of things



# THINKING AND FEELING



**Thinkers**

Focus first on the  
use of things



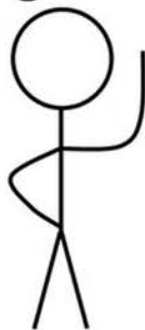
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## THINKING AND FEELING



**Thinkers**  
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**Feelers**  
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*"Act now to protect your life!  
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wind situation for Homestead."*



# Societal Vulnerability to Hurricanes

Exposure:

Incidence:



Pielke & Pielke 1997



# Societal Vulnerability to Hurricanes

## Exposure:

Populations at Risk

Properties at Risk

Community Preparedness

## Incidence:



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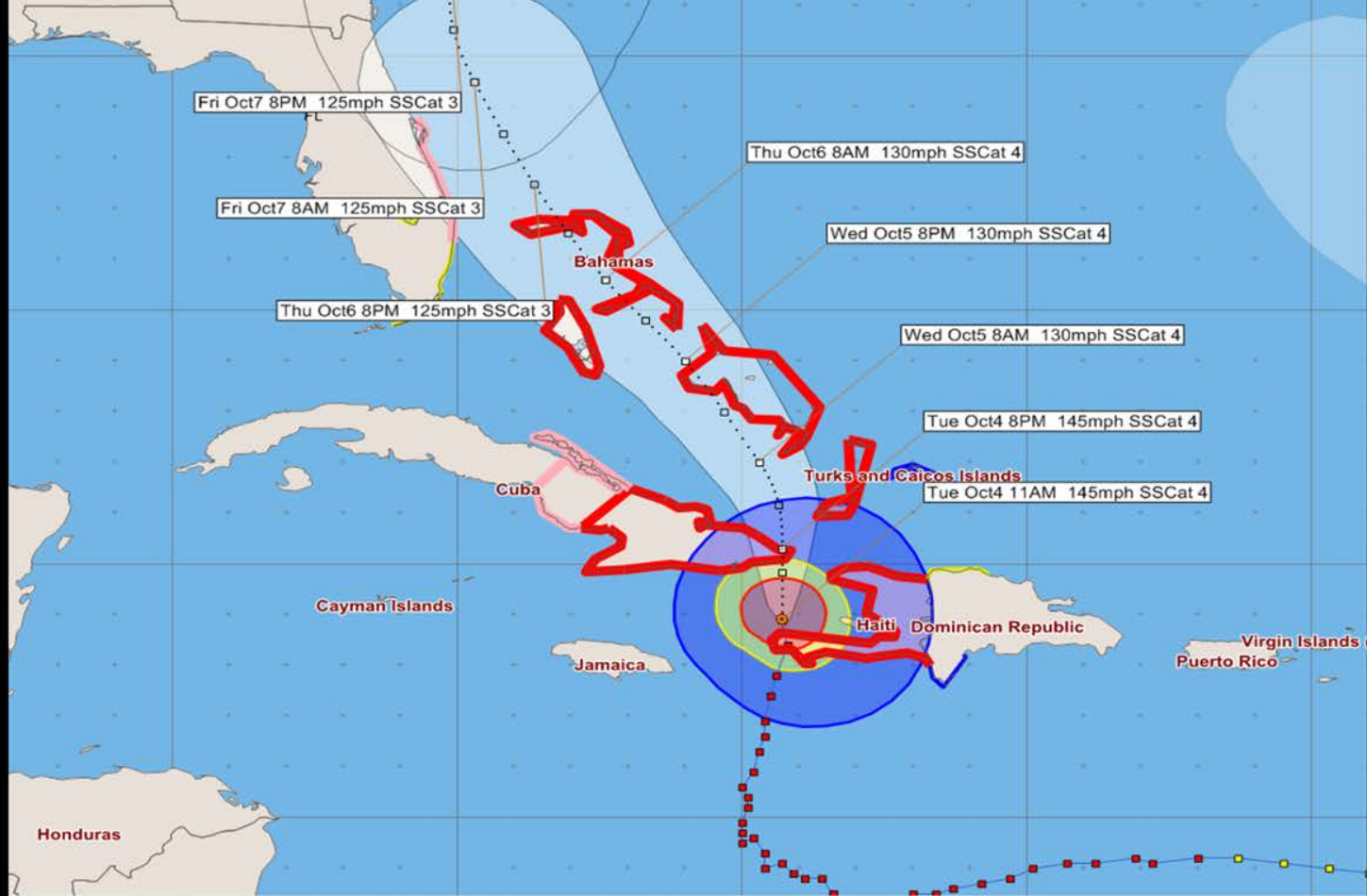
Frequency / Return Period

Intensity



Pielke & Pielke 1997





### Hurricane Matthew - Tuesday, October 4, 2016 11 AM EDT Advisory #26

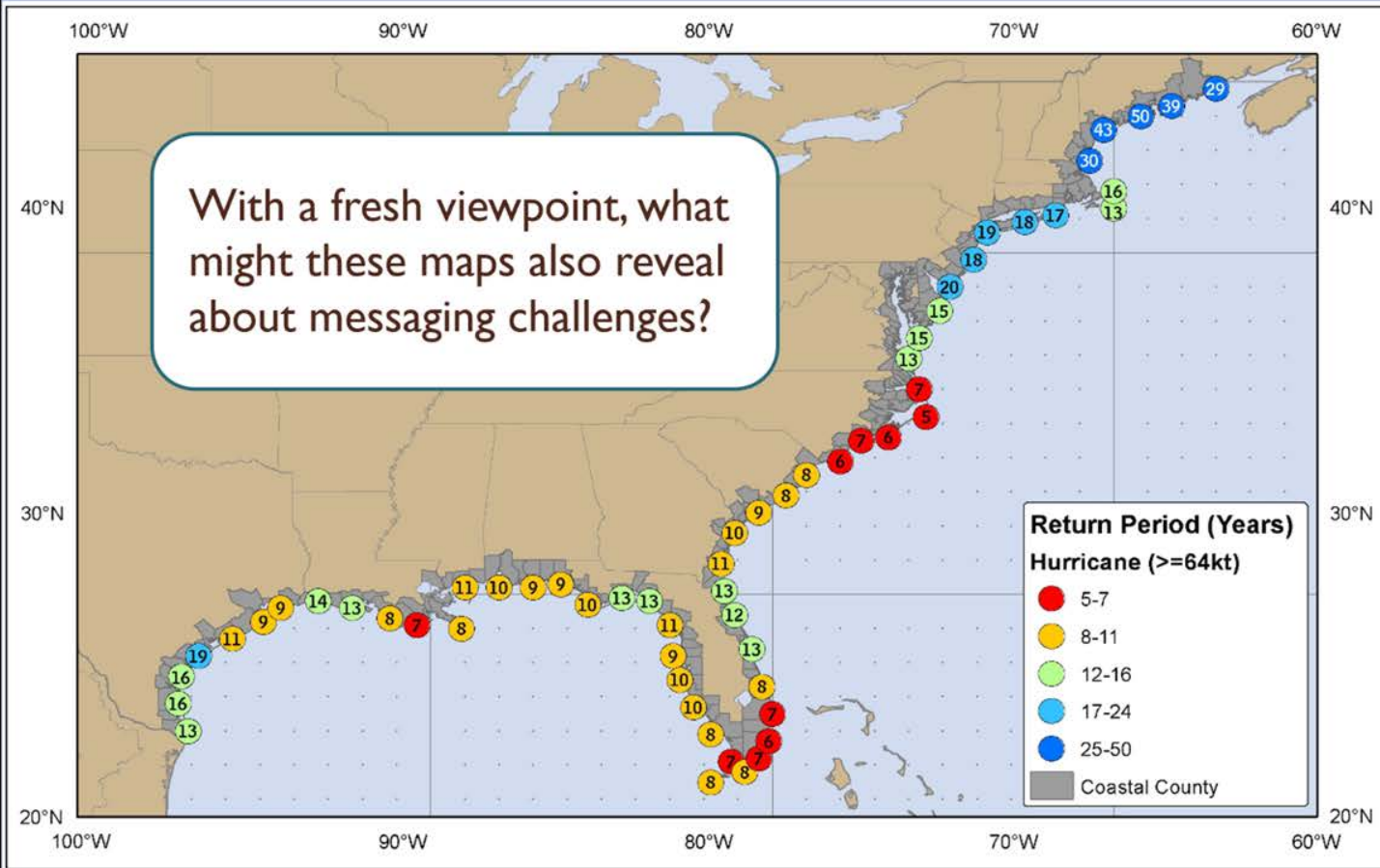
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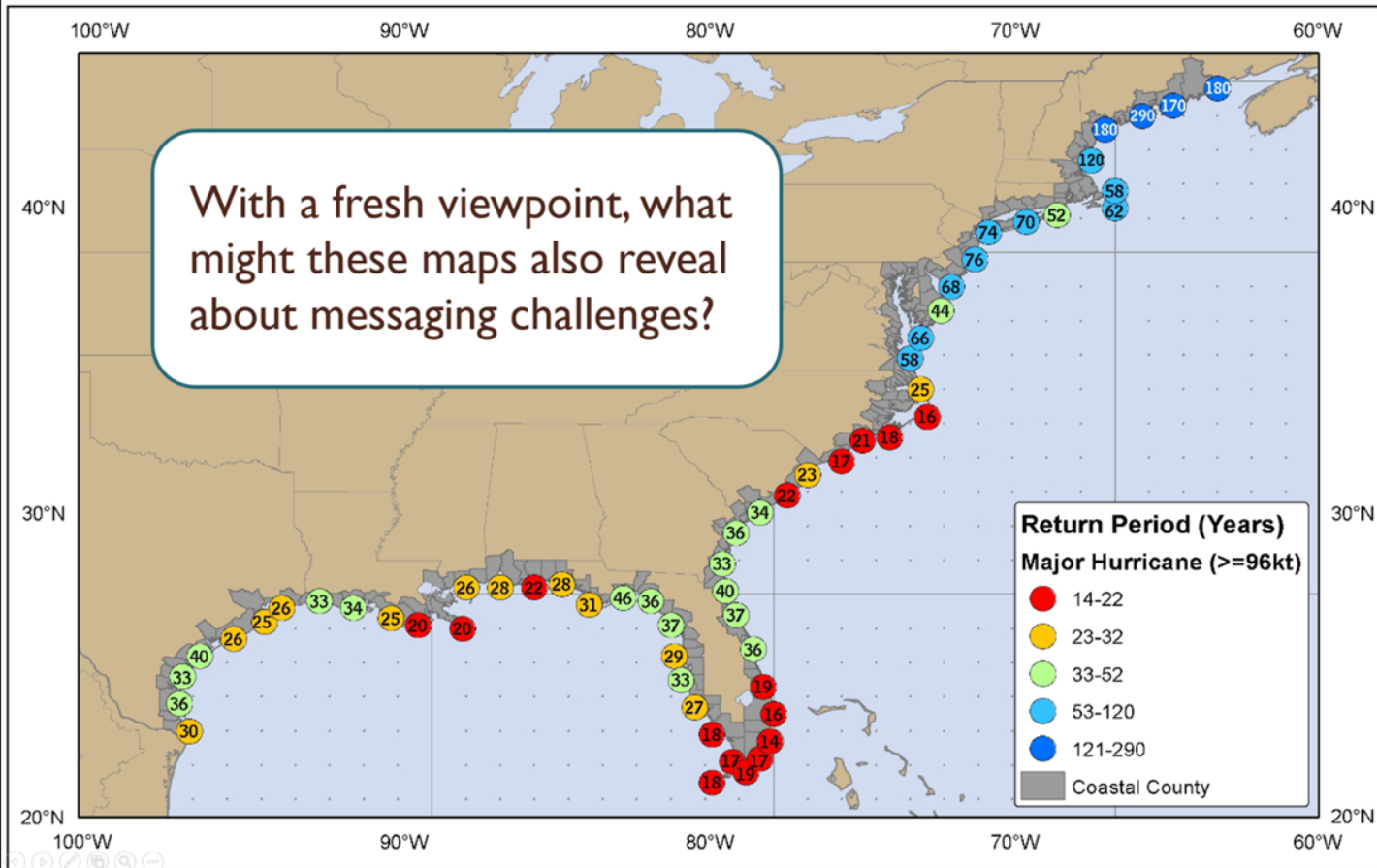
Watches: hurricane tropical storm Warnings: hurricane tropical storm

Sustained Wind Speeds: tropical storm  $\geq 34$ kt/39mph strong tropical storm  $\geq 50$ kt/58mph hurricane  $\geq 64$ kt/74mph

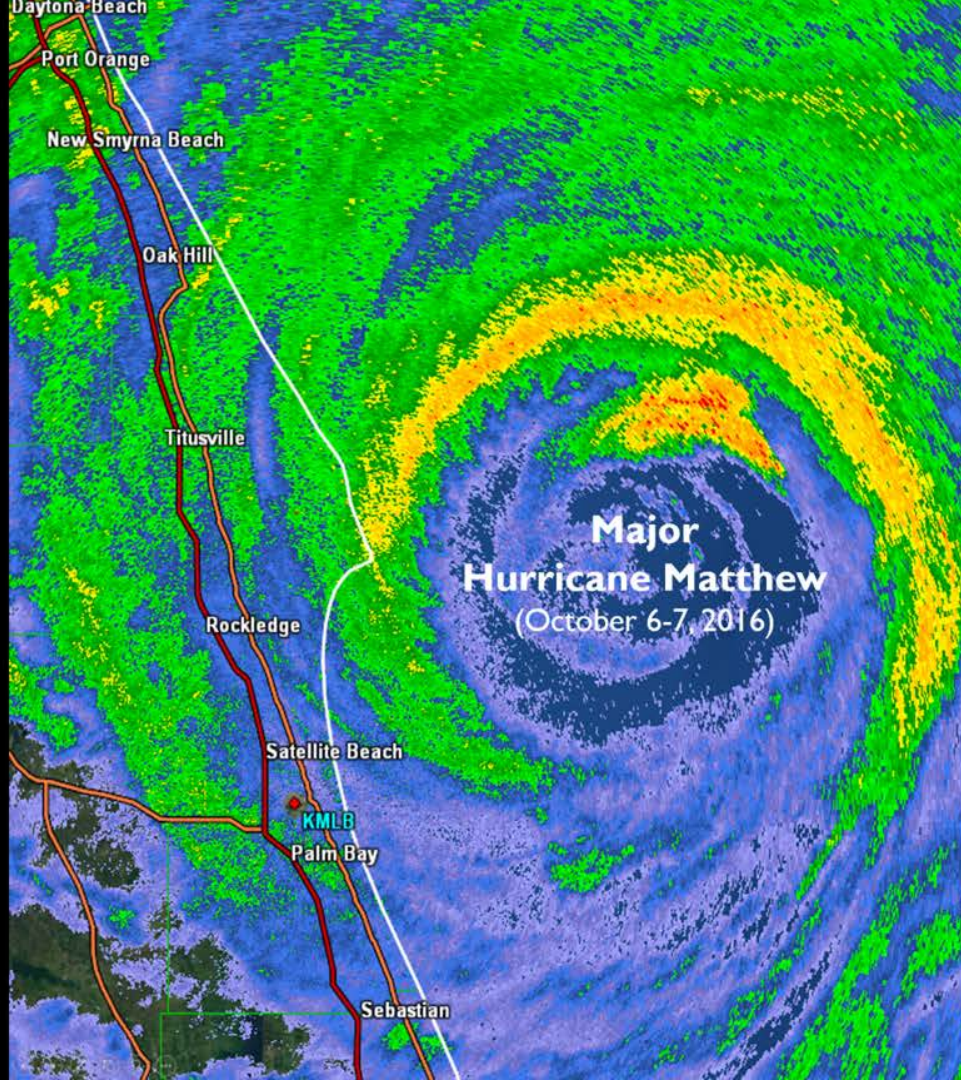
# Return Frequencies



## Return Frequencies





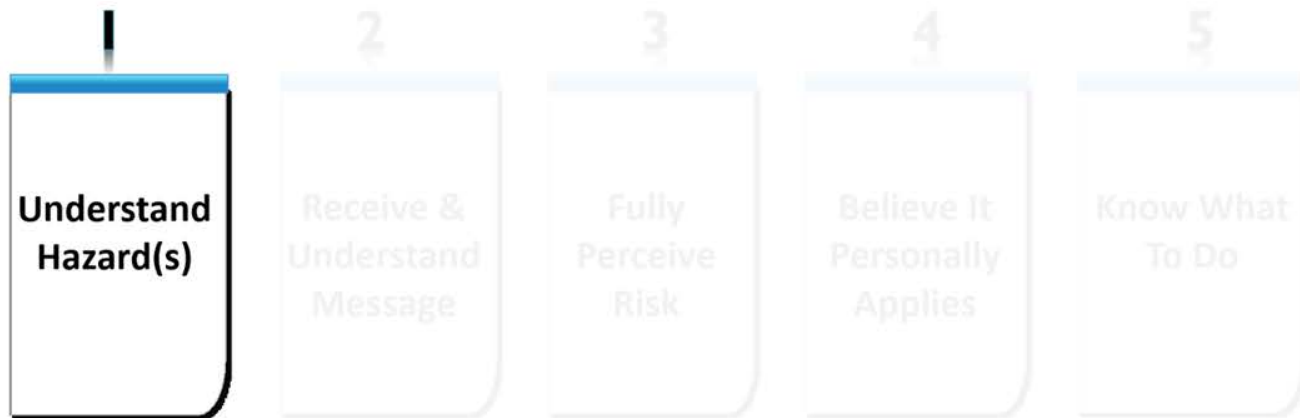




It is important to maintain a full appreciation of the precarious nature of low probability (or frequency) vs. high impact events.



# Steps To Effective Warning Response



## **Appropriate Protective Action**

*Considerations for Public Safety Messaging to evoke Desired Societal Response*



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# Steps To Effective Warning Response



**Resources, Ability,  
& Time**

**Appropriate Protective Action**

*Considerations for Public Safety Messaging to evoke Desired Societal Response*



# The Nature of Information



- **A Danger of the Information Age** - we can now yield an overwhelming volume of weather/water data and information.
  - But, are we simply adding to the *information fire hose*?







# The Nature of Information

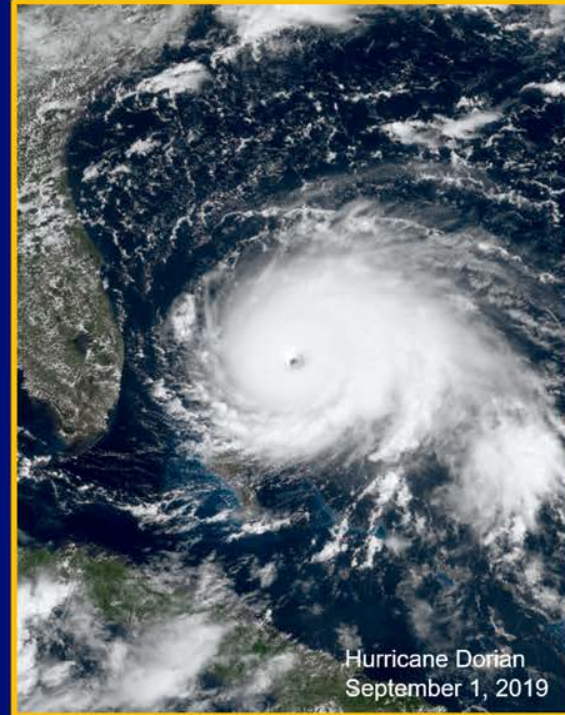


- Providing increasingly more information of ambiguous utility is not helpful.
- ***This neither helps community decision-makers nor serves the public!***
  - “Drowning in Information”
  - “Information Overload & Paralysis”
  - “Over-Anxiety & Hurricane Fatigue ”



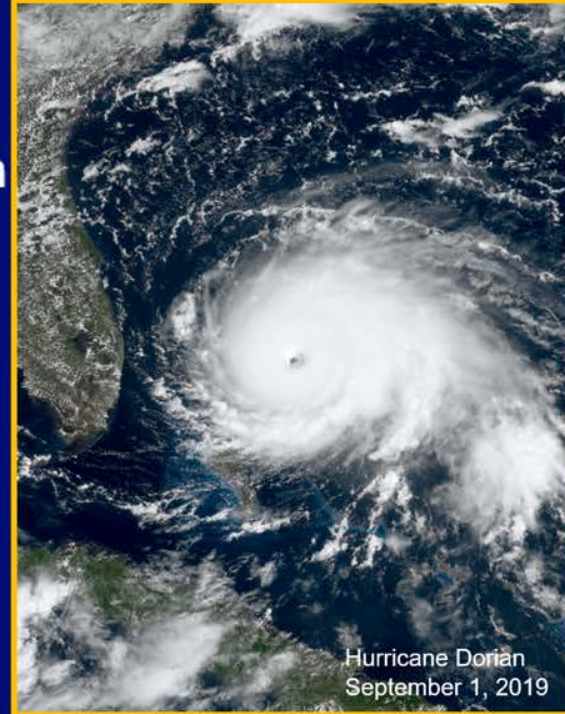
# Mental Noise Model

- ❑ Stress affects information processing



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- ❑ **Stress affects information processing**
- ❑ **Impact of stress on attention**  
(Covello)
  - High stress conditions: people lose 80 – 90% of what they hear
  - Scientific facts account for less than 5%

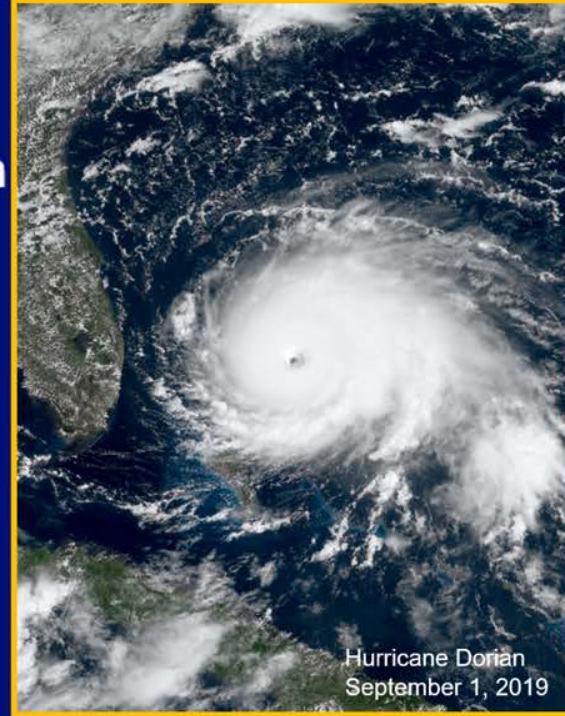


Hurricane Dorian  
September 1, 2019



# Mental Noise Model

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- ❑ **Impact of stress on attention**  
(Covello)
  - High stress conditions: people lose 80 – 90% of what they hear
  - Scientific facts account for less than 5%
- ❑ **Effect of emotion on information seeking**  
(Turner, et al, 2006)
  - Greater emotion = less information retention





# The Nature of Information



- **Information Management Age** - we must move beyond the information age and onward to the *information management* & *decision support* age.
  - Providing **targeted**, **actionable**, and **timely** information
  - While remaining a **trusted** source



# Being a Trusted Source Makes the Difference



- Plan for Threats
- Prepare for Impacts
- Act on Thresholds

***Supporting Both Community Actions & Family Actions***





# Why Should I Listen To You?



*Craig Fugate, FEMA Director (retired)*



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*For community decision-making ...*



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- I need to listen to someone who is credible.
  - **Credibility = Expertise + Trust**



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*“Things really start clicking when these are found in a common source.”*



***What is the one thing everyone  
wants but we cannot provide?***





***What is the one thing everyone  
wants but we cannot provide?***

***... a perfect forecast !!!***







***What, then, should be our intent?***



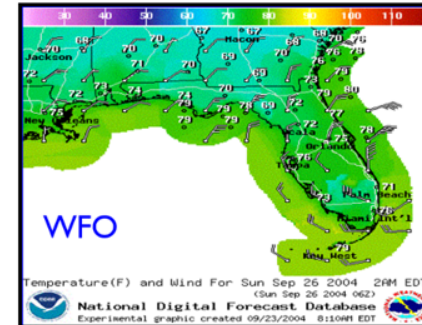
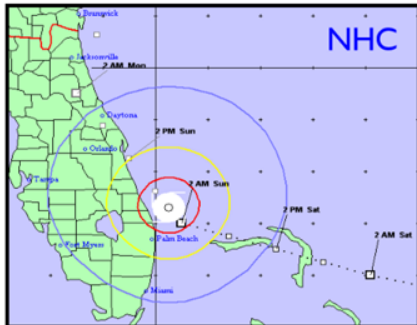
***What, then, should be our intent?***



*“Our mutual intent is to change the outcome of the event!”*

# We ...

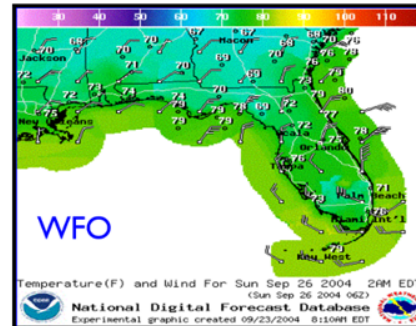
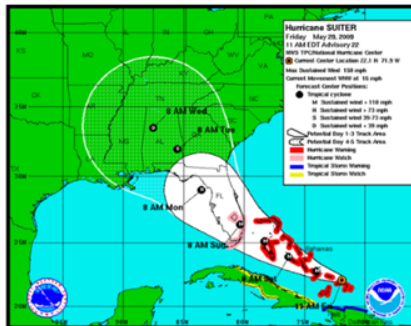
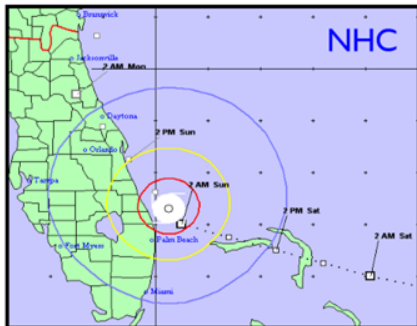
- Are comfortable with conveying our latest forecast





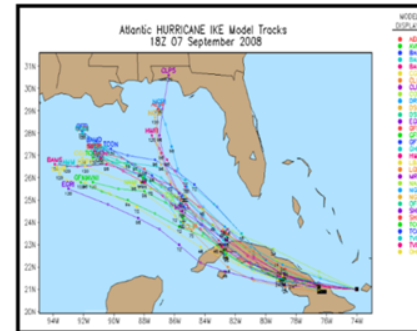
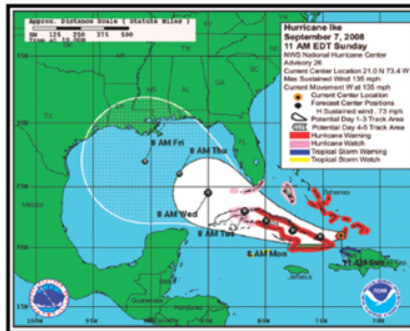
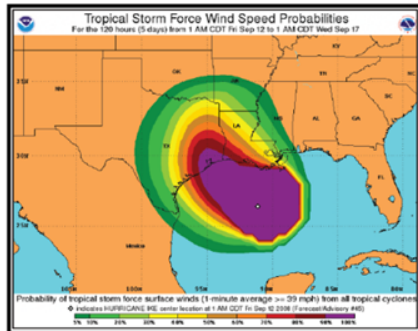
# We ...

- Are comfortable with conveying our latest forecast
- But still struggle with conveying forecast uncertainty
  - Rules of Thumb (subjective; empirical)
  - Error Cone (track errors only)

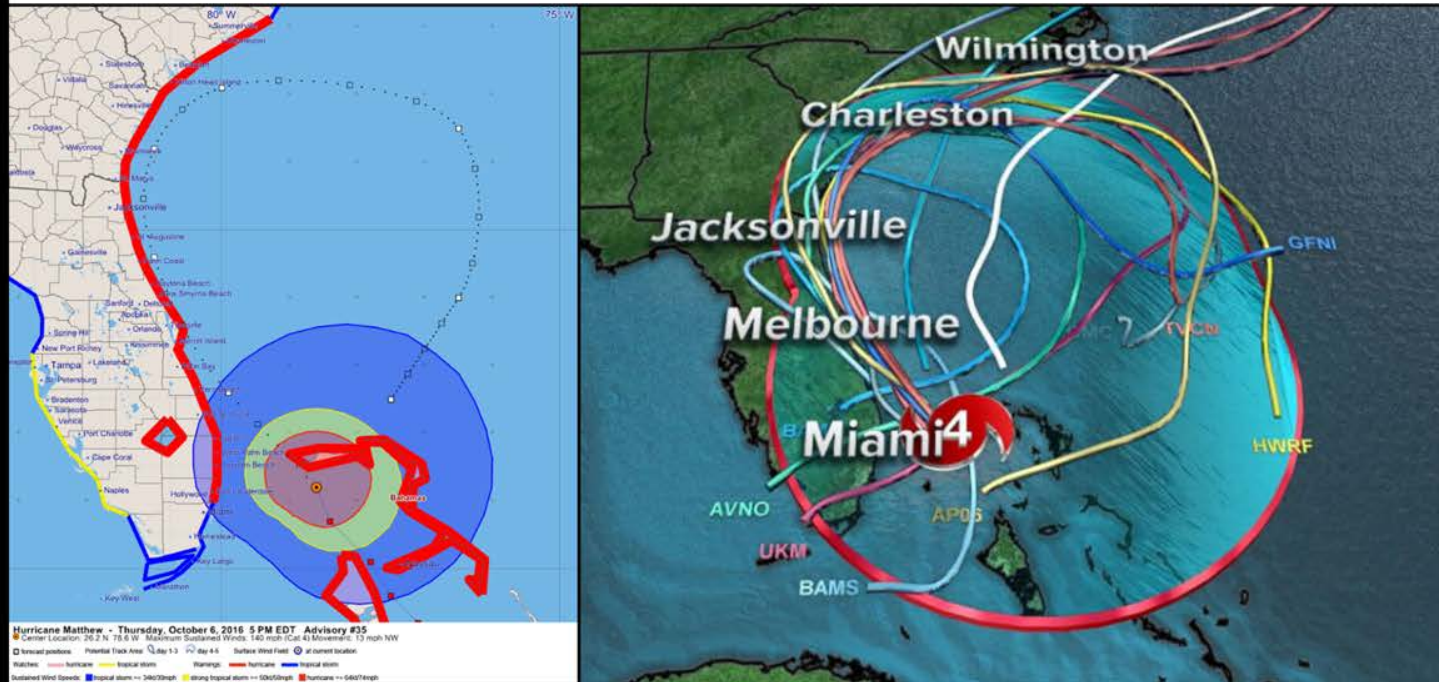


# We ...

- Are comfortable with conveying our latest forecast
- But still struggle with conveying forecast uncertainty
  - Rules of Thumb (subjective; empirical)
  - Error Cone (track errors only); Spaghetti Plots (for confidence)
  - Wind Speed Probabilities (for critical thresholds)

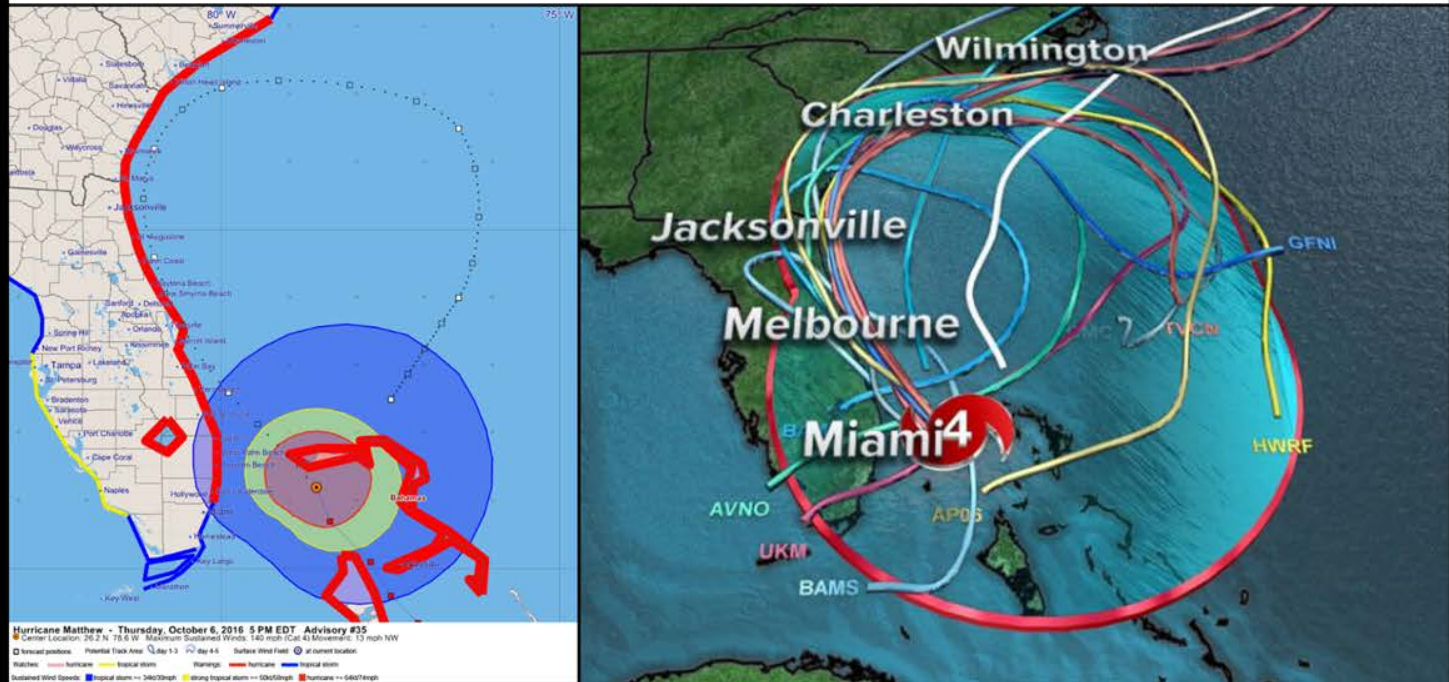


# Spaghetti Plots (as seen on TV)



*What's the main message?*

# Spaghetti Plots (as seen on TV)



**What's the main message?**

**Helping? ... or ... Hurting?**



# Scenario Types for Supporting Decisions



**Latest Forecast**

**Most Likely Scenario**

**Most Likely Alternate Scenario**

**Reasonable Worst Case Scenario**

**Reasonable Best Case Scenario**



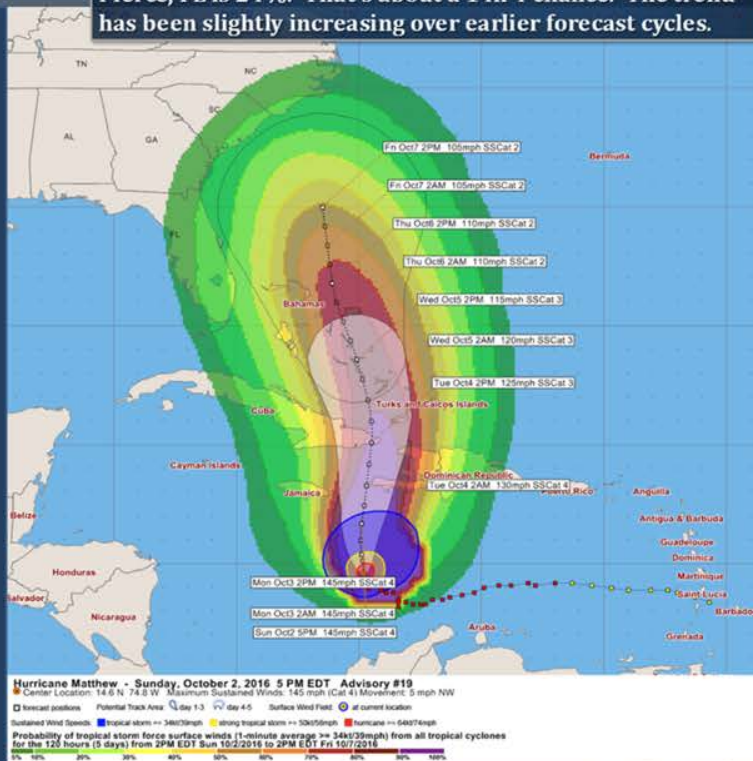
# Situation Overview

East Central Florida & Adjacent Coastal Waters

The probability for tropical storm force winds at Fort Pierce, FL is 24%. That's about a 1 in 4 chance. The trend has been slightly increasing over earlier forecast cycles.

## According to the latest forecast...

- A most likely scenario still keeps Matthew to the east of the Florida Peninsula.
  - Offering significant marine and coastal/beach concerns to ECFL
- An alternate scenario could bring Matthew closer to ECFL.
  - Increasing the concern for potential wind impacts for land locations



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WEATHER FORECAST OFFICE



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<http://www.weather.gov/melbourne>

October 2, 2016



# Situation Overview

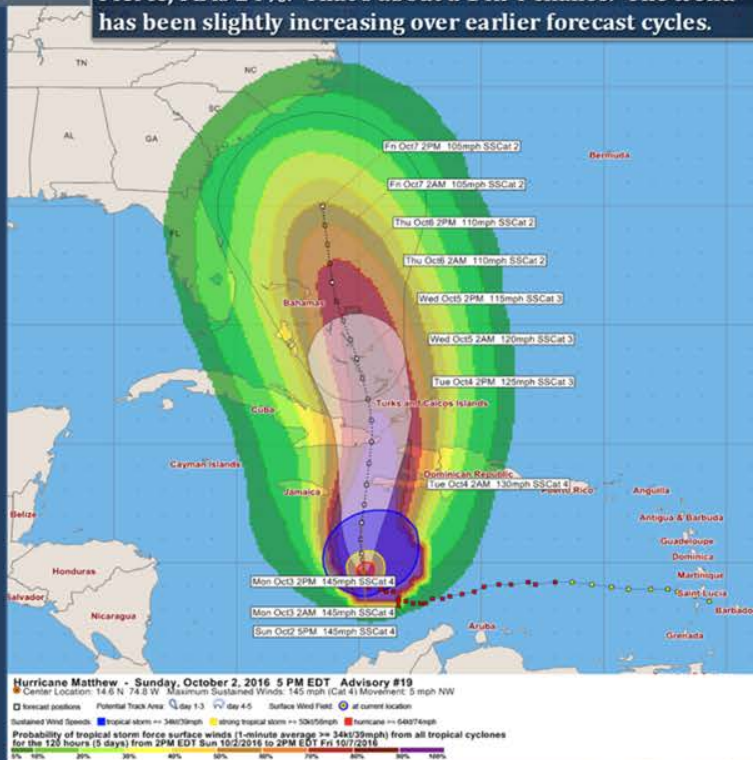
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**Key Point:** It is possible for a major hurricane to be in our vicinity (ECFL) by mid-late week.



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<http://www.weather.gov/melbourne>

October 2, 2016



## Situation Overview

East Central Florida & Adjacent Coastal Waters

The probability for tropical storm force winds at Fort Pierce, FL is 24%. That's about a 1 in 4 chance. The trend is for a decrease in the probability over the next 2-3 forecast cycles.

According to

- A...
- to...
- A...
- M...
- I...
- im...
- EC...
- I...
- vic...
- Stay...

### Key Point & Public Safety Message:

**It is possible for a major hurricane to be in our vicinity by mid-late week.**



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East Central Florida & Adjacent Coastal Waters

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According to

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### Key Point & Public Safety Message:

**It is possible for a major hurricane to be in our vicinity by mid-late week.**

**Stay informed of the latest forecast.  
Review your hurricane emergency plan and check your seasonal supplies.**



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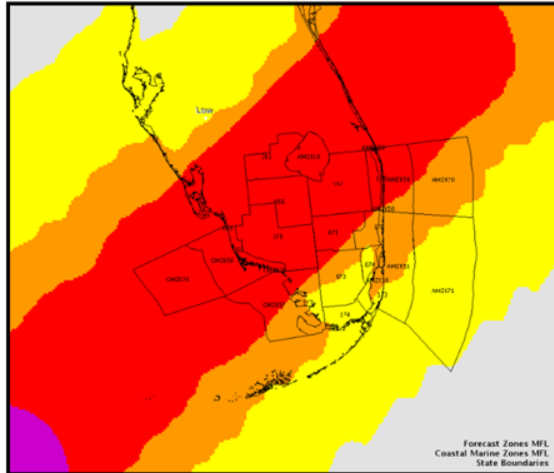
October 2, 2016



*To be safe, to what extent  
should preparations be made?*

Wind Threat
Potential for wind greater than 110 mph
Potential for wind 74 to 110 mph
Potential for wind 58 to 73 mph
Potential for wind 39 to 57 mph
Wind less than 39 mph

Forecast: **“Peak Wind Swath”**



**Most Likely Scenario**

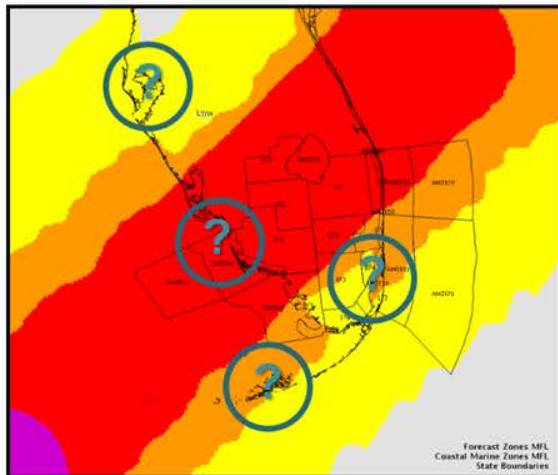
No Safety Margin



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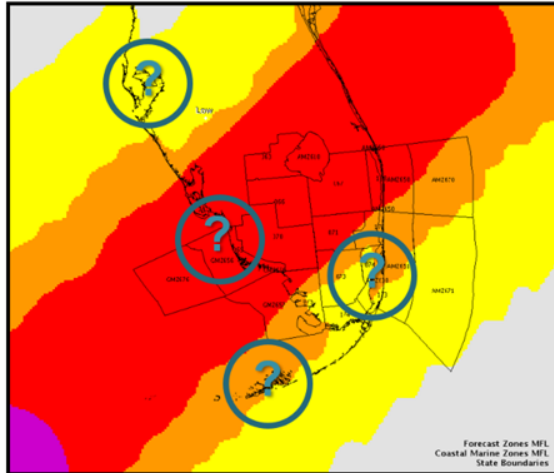
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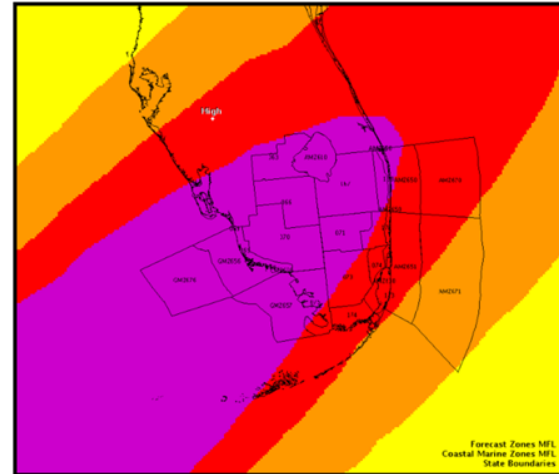
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**Most Likely Scenario**

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Forecast: **“Peak Wind Threat Swath”**



**Reasonable Worst Case Scenario**

Wide Safety Margin



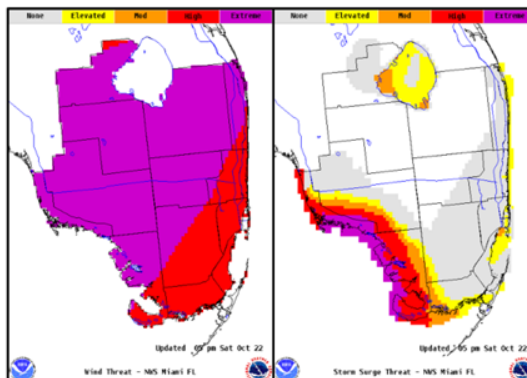


# Threat Assessments x 4



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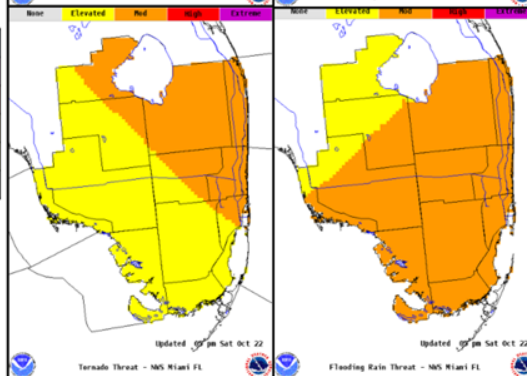


## Storm Surge Threat

Potential for storm surge flooding greater than 9 ft above ground
Potential for storm surge flooding greater than 6 ft above ground
Potential for storm surge flooding greater than 3 ft above ground
Potential for storm surge flooding greater than 1 ft above ground
Little to no storm surge flooding

## Tornado Threat

Potential for an outbreak of tornadoes
Potential for many tornadoes
Potential for several tornadoes
Potential for a few tornadoes
Tornadoes not expected



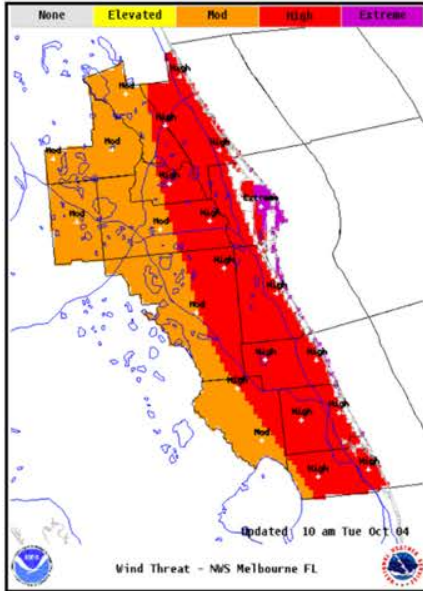
## Flooding Rain Threat

Potential for extreme flooding rain
Potential for major flooding rain
Potential for moderate flooding rain
Potential for localized flooding rain
Little to no potential for flooding rain

## Tornadoes

## Flooding Rain

# To be Safe, Prepare for This



## Wind Threat

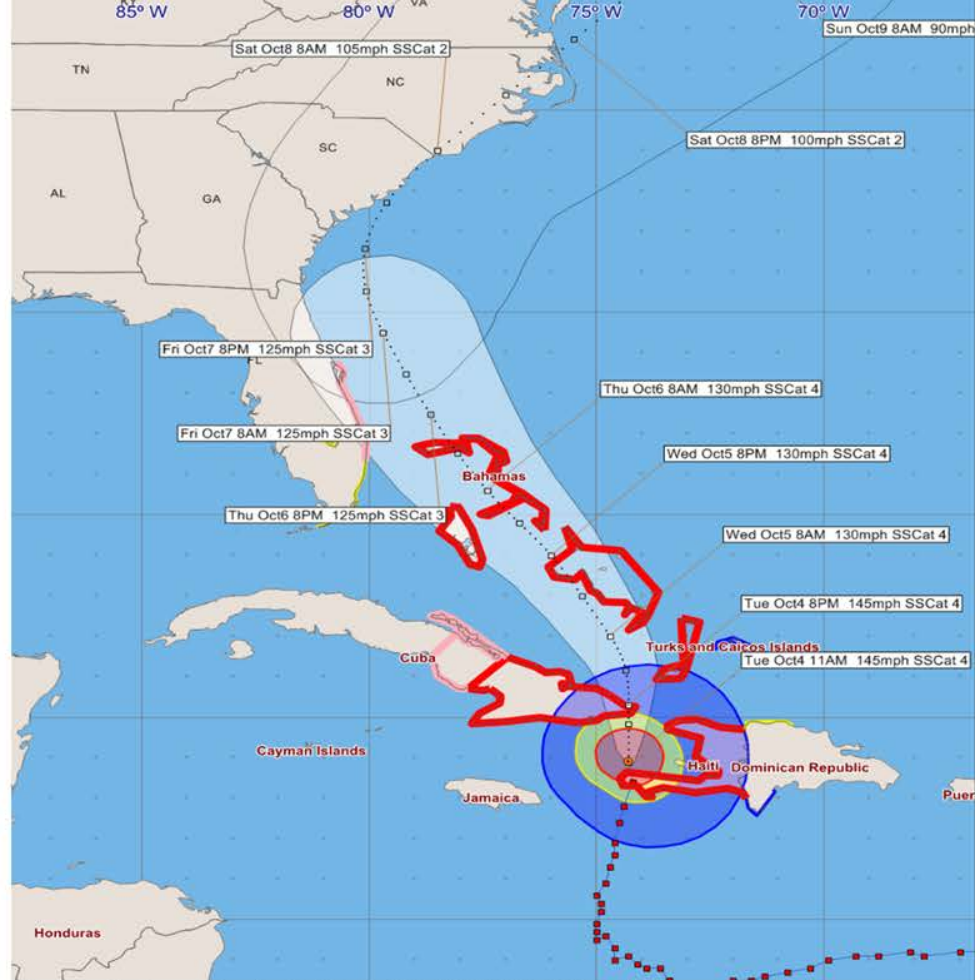
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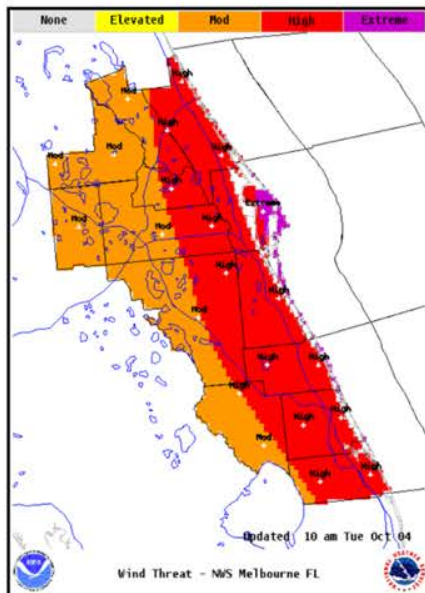
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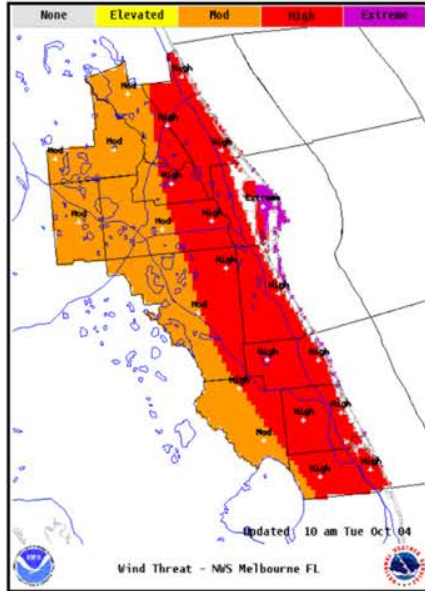
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## Key Point & Public Safety Message:

The threat to our area from  
Hurricane Matthew has increased.  
A hurricane watch is now in effect.

## To be Safe, Prepare for This



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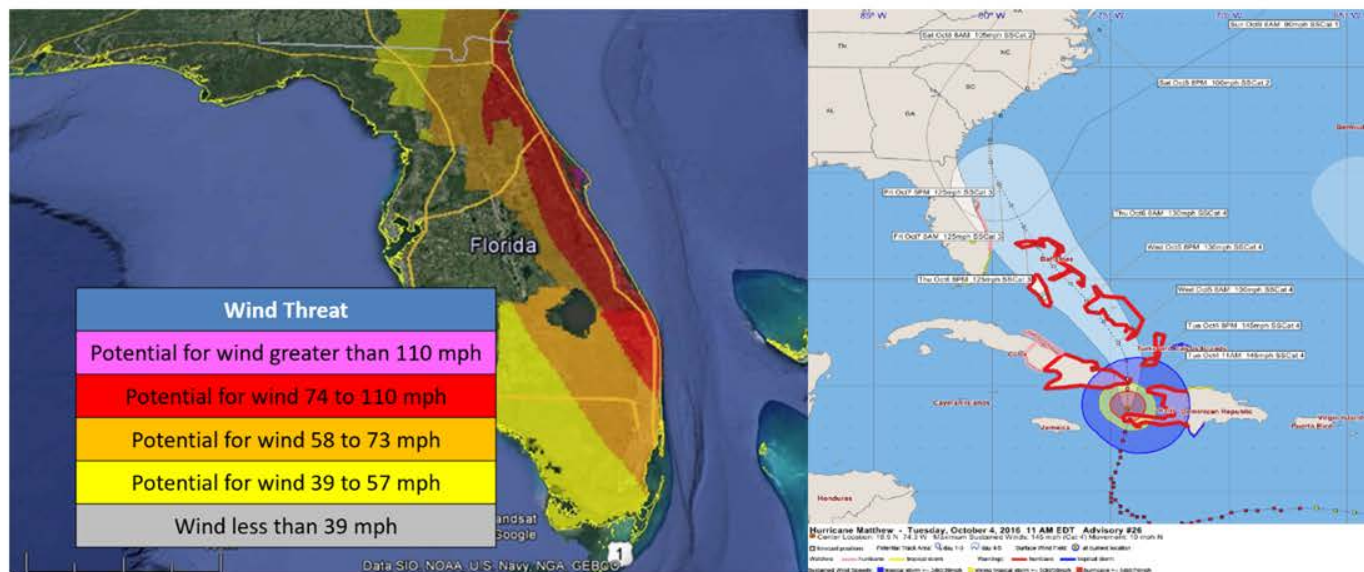
## Key Point & Public Safety Message:

The threat to our area from Hurricane Matthew has increased. A hurricane watch is now in effect.

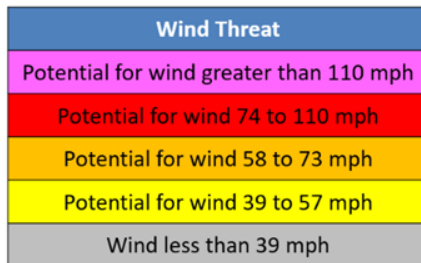
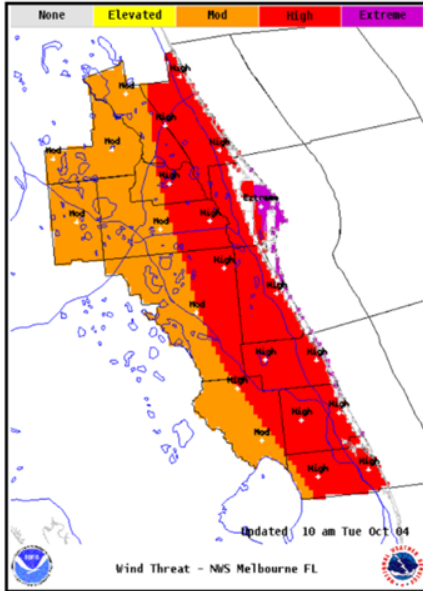
People located in coastal counties should prepare for the threat of hurricane force winds while those on barrier islands should make ready for possible extreme winds. Listen for evacuation orders, and heed them if issued.



# Wind Threat Mosaic (HTI)

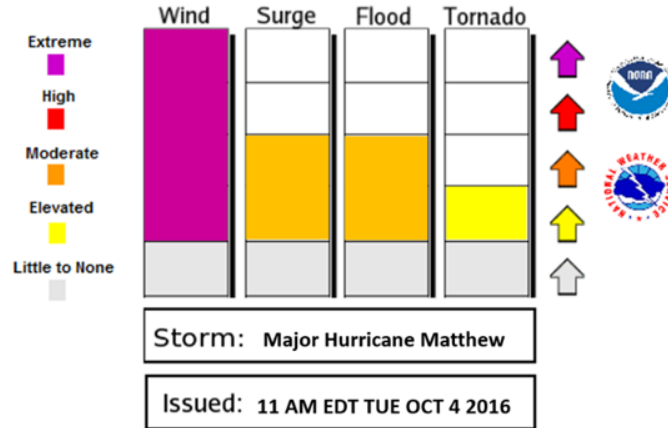


## To be Safe, Prepare for This



## Hurricane Hazards Threat Meter

Specific to East Central Florida



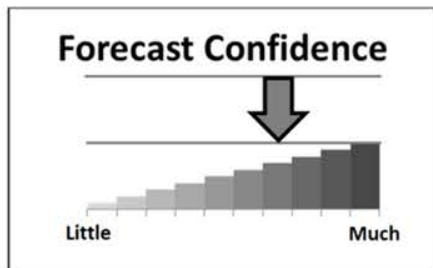
## Composite Hazards Bar Chart

# Hazards Assessment

Hurricane Irma



Melbourne  
WEATHER FORECAST OFFICE

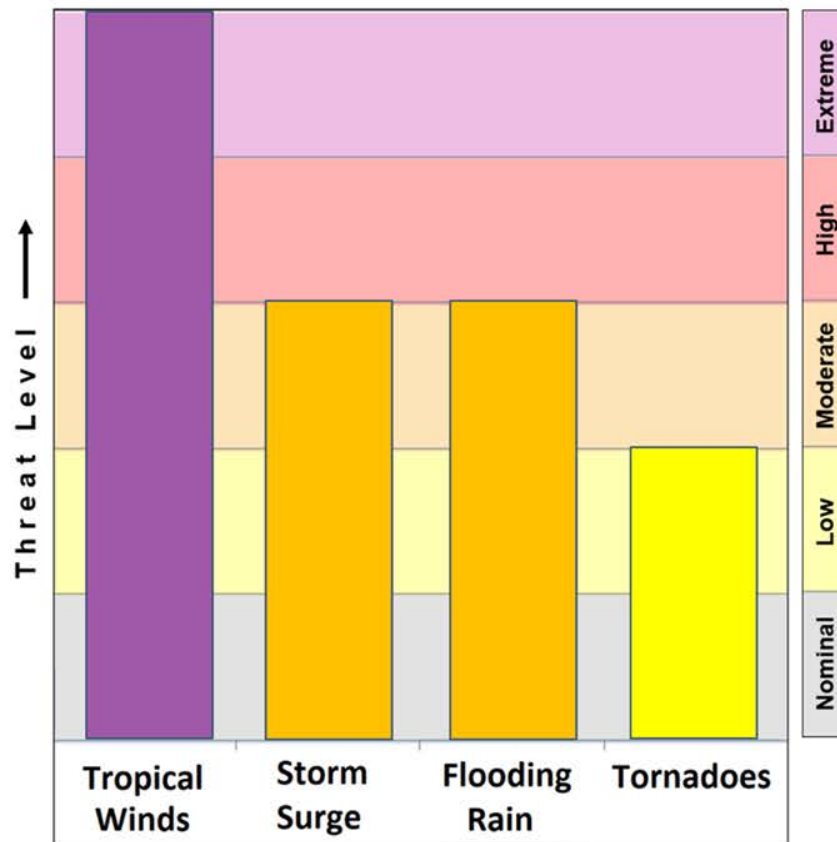


## Main Hazards:

- Extreme wind threat

## Other Hazards:

- Moderate threat of storm surge
- Moderate threat of flooding rain





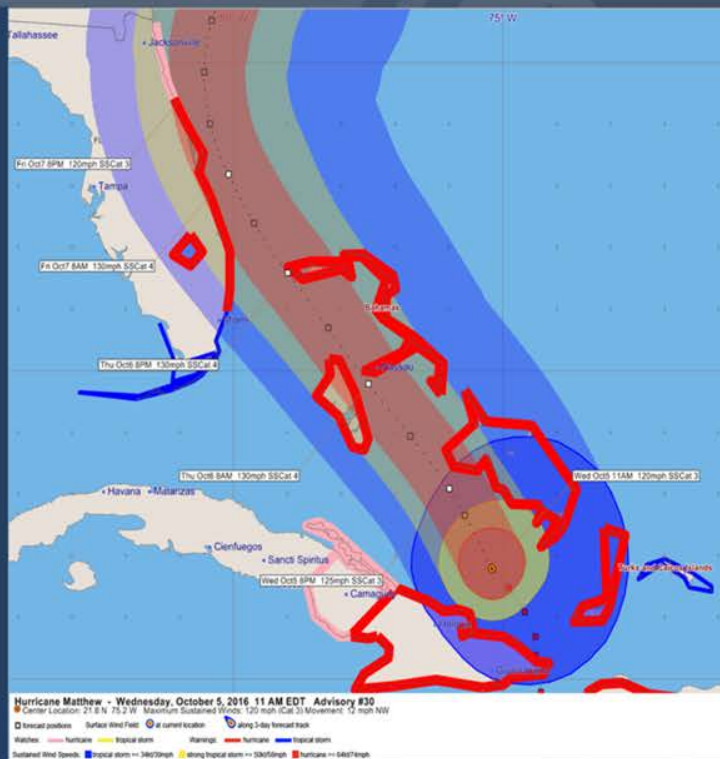
# Situation Overview

## East Central Florida & Adjacent Coastal Waters

- This is a very serious situation! Major Hurricane Matthew is headed for ECFL!
- Hurricane Warnings are now in effect for all ECFL counties, except for Lake County where a Tropical Storm Warning is now in effect.

**Key Point: A rare and historic hurricane event in the making.**

**The situation is very serious!  
Wind and surge impacts to coastal counties could be devastating.**



**Melbourne**  
WEATHER FORECAST OFFICE



<http://www.weather.gov/melbourne>



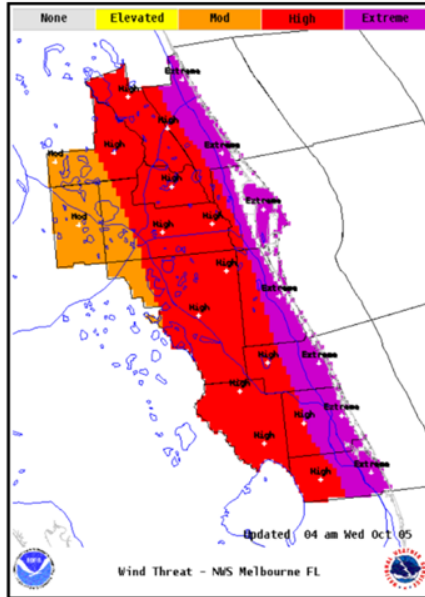
[facebook.com/NWSMelbourne](https://www.facebook.com/NWSMelbourne)

[@NWSMelbourne](https://twitter.com/NWSMelbourne)

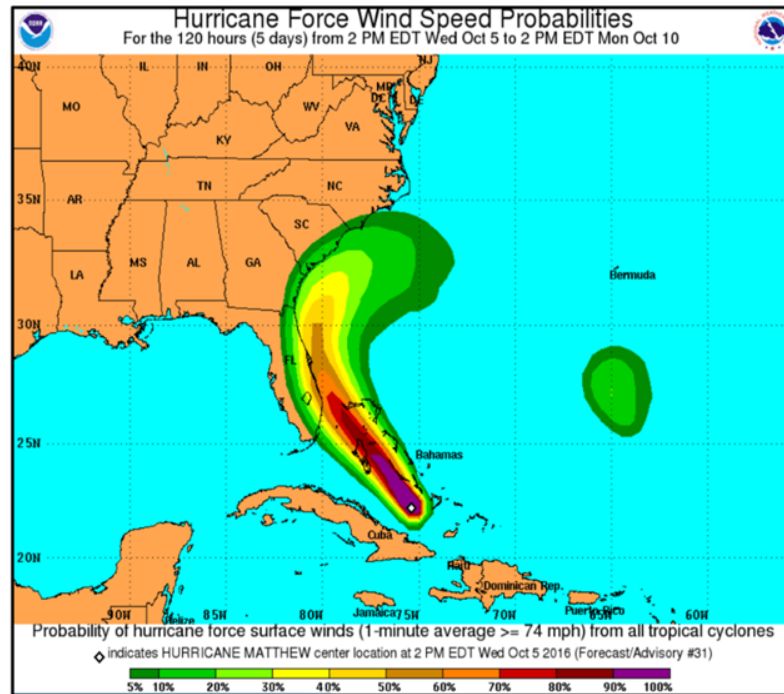
**October 5, 2016**



## To be Safe, Prepare for This



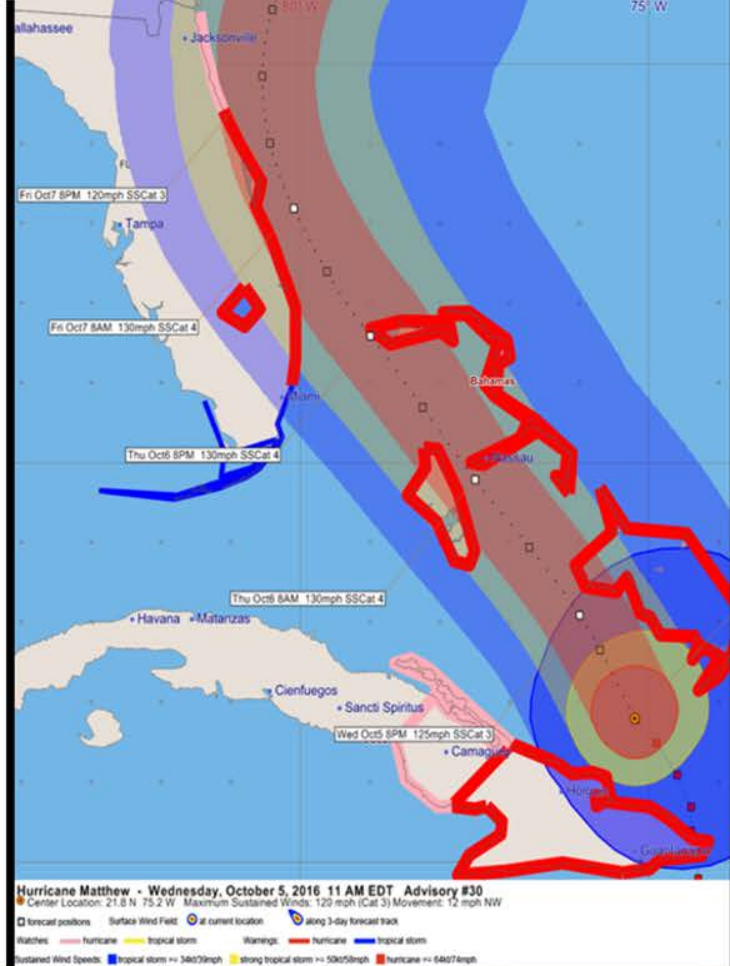
<b>EXTREME THREAT</b> for wind greater than 110 mph
<b>HIGH THREAT</b> for wind 74-110 mph
<b>MODERATE THREAT</b> for wind 58-73 mph
<b>ELEVATED THREAT</b> for wind 39-57 mph
<b>LITTLE TO NO THREAT</b> wind less than 39 mph



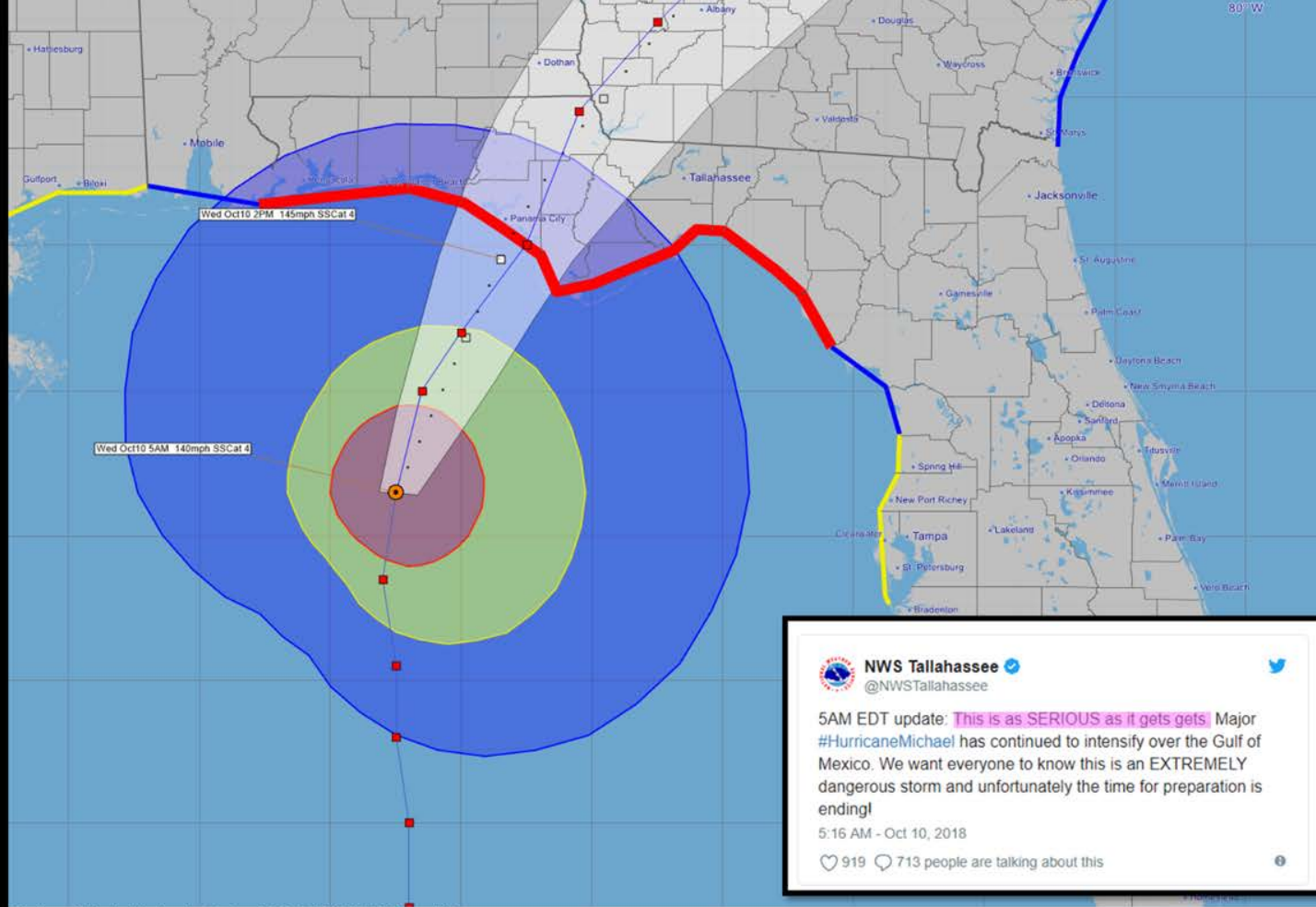
### Extreme Wind Threat

- Most locations along the ECFL coast have a similar chance to receive hurricane force winds
- The best chance for major hurricane force winds is east of I-95, especially for the barrier islands and Cape Canaveral

*“[Brace yourselves for a] heart-breaking loss of life. Hurricane Matthew is likely to make history ... and we don't want you to be part of that history.”*



**...HURRICANE EMERGENCY: This is an Extremely Dangerous Situation...**



**Hurricane Michael - Wednesday, October 10, 2018 5 AM EDT Advisory #15**  
 Center Location: 28.3 N 86.5 W Maximum Sustained Winds: 140 mph (Cat 4) Movement: 13 mph N

Forecast positions: Potential Track Area: day 1-3 day 4-5 Surface Wind Field: at current location

Watches: hurricane tropical storm Warnings: hurricane tropical storm

Sustained Wind Speeds: tropical storm  $\geq 34$ kt/39mph strong tropical storm  $\geq 50$ kt/58mph hurricane  $\geq 64$ kt/74mph

## Hurricane Michael (2018)

## Hurricane Irma (2017)



**A simple, but highly effective, hurricane message!**

**Cause:** Extreme Wind/Surge

**Effect:** *"Nowhere will be safe"*





# Using “**BIG**” Words

*Great motivators, but use sparingly.*

## MEGA - DESCRIPTORS

OK

UNSURVIVABLE  
EXTREME RARE HISTORIC RECORD-BREAKING UNPRECEDENTED  
DISASTROUS CATASTROPHIC EPIC OVERWHELMING CATAclysmic

NO

~~MEATGRINDER HELLACIOUS APOCALYPTIC~~

## Some Things You Should Know

### Hurricane Irma



- **Hurricane Irma remains powerful and very dangerous !!!**
  - Irma likely to bring extreme winds to South and Central Florida late this weekend
  - Sustained winds could be greater than 110 mph along with higher gusts
- **Hurricane Watches have been issued for parts of ECFL.**
  - Hurricane watches are in effect for the Treasure Coast and near Lake Okeechobee
  - Additional watches and initial warnings likely issued tomorrow
  - To be safe - evacuations/preparations should be completed before Saturday afternoon
- **Lives and livelihoods are greatly imperiled !!!**
  - The threat to life and property is extreme; wind damage may be devastating
  - Potential impacts from storm surge and flooding rain are also of particular concern
  - Tornadoes will become an increasing concern with any westward shift in track

**Public Safety Message:** "Listen to local officials. Evacuate if ordered to do so. If you are vulnerable to high winds, make plans to relocate to safer shelter. Now is the time to ready yourself and your loved ones for a possible extreme hurricane event."

9/7/2017 11:30 PM

For East Central Florida & Adjacent Coastal Waters

[www.weather.gov/melbourne](http://www.weather.gov/melbourne)

9/7/2017 11:30 PM

For East Central Florida & Adjacent Coastal Waters

[www.weather.gov/melbourne](http://www.weather.gov/melbourne)

hottest and most humid (in a tropical sense) weather system...  
approaching to near hurricane force to hurricane force...  
hurricane force...  
hurricane force...  
hurricane force...

# The Power of 3



# Hurricane Dorian (2019)

Martin-  
522 PM EDT Sun Sep 1 2019

**Martin County  
Stuart, FL**

...HURRICANE WARNING IN EFFECT...  
...STORM SURGE WARNING IN EFFECT...

A Hurricane Warning means hurricane-force winds are expected somewhere within this area within the next 36 hours

A Storm Surge Warning means there is a danger of life-threatening inundation, from rising water moving inland from the coastline, somewhere within this area within the next 36 hours

\* LOCATIONS AFFECTED

- Stuart
- Hobe Sound

\* WIND

- LATEST LOCAL FORECAST: Equivalent Tropical Storm force wind
  - Peak Wind Forecast: 40-50 mph with gusts to 75 mph
  - Window for Tropical Storm force winds: early Monday morning until early Wednesday morning
- **POTENTIAL THREAT TO LIFE AND PROPERTY: Potential for wind 74 to 110 mph**
  - The wind threat has remained nearly steady from the previous assessment.
  - **PLAN:** Plan for life-threatening wind of equivalent CAT 1 or 2 hurricane force due to possible forecast changes in track, size, or intensity.
  - **PREPARE:** Remaining efforts to protect life and property should be urgently completed. Prepare for considerable wind damage.
  - **ACT:** Move to safe shelter before the wind becomes hazardous.
- **POTENTIAL IMPACTS:** Extensive
  - Considerable roof damage to sturdy buildings, with some having window, door, and garage door failures leading to structural damage. Mobile homes severely damaged, with some destroyed. Damage accentuated by airborne projectiles. Locations may be uninhabitable for weeks.
  - Many large trees snapped or uprooted along with fences and roadway signs blown over.
  - Some roads impassable from large debris, and more within urban or heavily wooded places. Several bridges, causeways, and access routes impassable.
  - Large areas with power and communications outages.

## Florida's Space & Treasure Coasts

- **WIND**
  - **POTENTIAL THREAT TO LIFE AND PROPERTY:** Potential for wind 74 to 110 mph
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    - **PLAN:** Plan for life-threatening wind of equivalent CAT 1 or 2 hurricane force due to possible forecast changes in track, size, or intensity.
    - **PREPARE:** Remaining efforts to protect life and property should be urgently completed. Prepare for considerable wind damage.
    - **ACT:** Move to safe shelter before the wind becomes hazardous.

Hurricane Charley (2004)



## Threat Statements:

Actionable information that is proportional to the threat and according to phase of the event.

- **Media Sound Bites**
  - Interviews; Products/Services
- **Social Media Posts**
  - FaceBook; Twitter; Instagram
- **Facilitate Media Messaging**
  - NWSChat; TV Crawls
- **Facilitate EM Messaging**
  - Smart Devices/Signs
  - IDSS Briefings





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Martin-

522 PM EDT Sun Sep 1 2019

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...STORM SURGE WARNING IN EFFECT...

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  - ACT: Move to safe shelter before the wind becomes hazardous.

### - POTENTIAL IMPACTS: Extensive

- Considerable roof damage to sturdy buildings, with some having window, door, and garage door failures leading to structural damage. Mobile homes severely damaged, with some destroyed. Damage accentuated by airborne projectiles. Locations may be uninhabitable for weeks.
- Many large trees snapped or uprooted along with fences and roadway signs blown over.
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- Large areas with power and communications outages.

## Florida's Space & Treasure Coasts

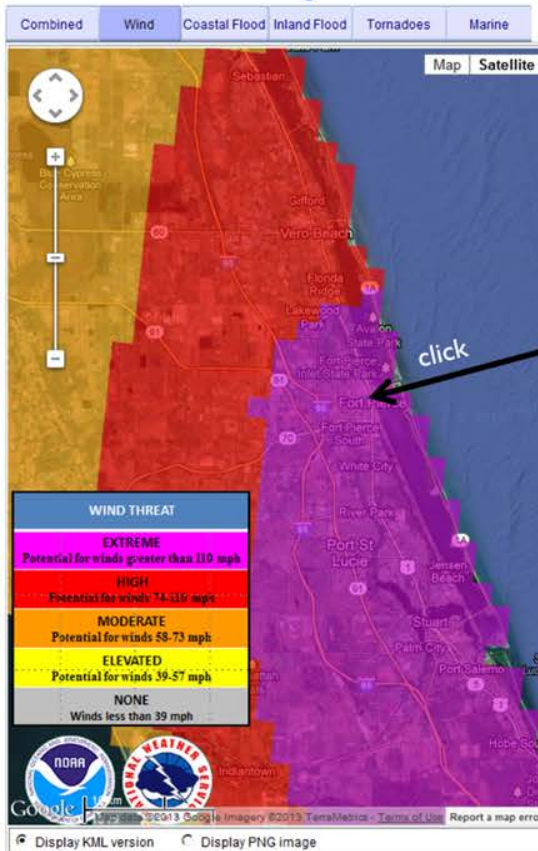
### • WIND

#### - POTENTIAL IMPACTS: Extensive

- Considerable roof damage to sturdy buildings, with some having window, door, and garage door failures leading to structural damage. Mobile homes severely damaged, with some destroyed. Damage accentuated by airborne projectiles. Locations may be uninhabitable for weeks.
- Many large trees snapped or uprooted along with fences and roadway signs blown over.
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- Large areas with power and communications outages.



## Hurricane Omega Exercise



ZOOM

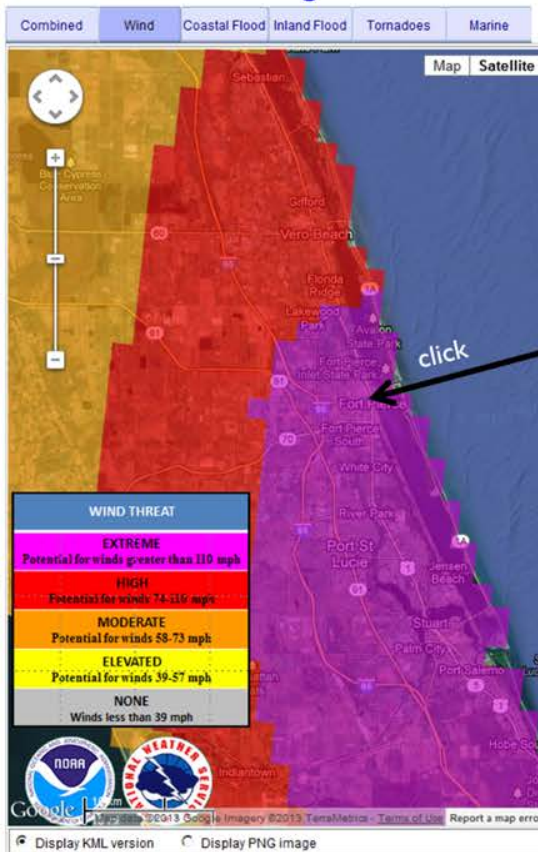
## Prepare for These Potential Impacts:

Wind Threat	Potential Wind Impacts (generalized)
<b>EXTREME THREAT</b> for wind greater than 110 mph	<b>DEVASTATING TO CATASTROPHIC IMPACTS</b> <ul style="list-style-type: none"><li>To be safe, aggressively prepare for the potential of devastating to catastrophic wind impacts from major hurricane force wind of equivalent Category 3 intensity or greater.</li><li>Life threatening wind possible. Failure to adequately shelter from extreme wind may result in serious injury, loss of life, or immense human suffering.</li><li>Structural damage to sturdy buildings with some experiencing complete roof and wall failures. Complete destruction of mobile homes. Damage greatly accentuated by large airborne projectiles. Hardest hit locations may be uninhabitable for weeks or months.</li><li>Numerous large trees snapped or uprooted along with fences and roadway signs blown over.</li><li>Many roads impassable from large debris. Many bridges, causeways, and access routes connecting barrier islands impassable.</li><li>Widespread power and communication outages with many areas suffering extended outages.</li></ul>

Also good for local hurricane briefings ... with added detail.



## Hurricane Omega Exercise



## Prepare for These Potential Impacts:

Wind Threat	Potential Wind Impacts (generalized)
<b>EXTREME THREAT</b> for wind greater than 110 mph	<b>DEVASTATING TO CATASTROPHIC IMPACTS</b> <ul style="list-style-type: none"> <li>To be safe, aggressively prepare for the potential of devastating to catastrophic wind impacts from major hurricane force wind of equivalent Category 3 intensity or greater.</li> <li>Life threatening wind possible. Failure to adequately shelter from extreme wind may result in serious injury, loss of life, or immense human suffering.</li> <li>Structural damage to sturdy buildings with some experiencing complete roof and wall failures. Complete destruction of mobile homes. Damage greatly accentuated by large airborne projectiles. Hardest hit locations may be uninhabitable for weeks or months.</li> <li>Numerous large trees snapped or uprooted along with fences and roadway signs blown over.</li> <li>Many roads impassable from large debris. Many bridges, causeways, and access routes connecting barrier islands impassable.</li> <li>Widespread power and communication outages with many areas suffering extended outages.</li> </ul>

Imperiled Lives

Buildings

Trees/Signs

Roads/Bridges

Power/Comms

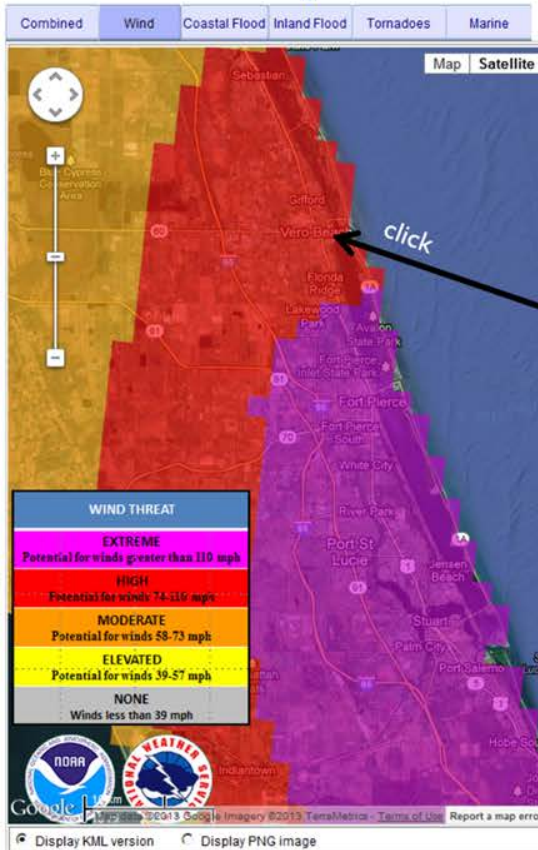
Also good for local hurricane briefings ... with added detail.



# East Central Florida - Hurricane Threats & Impacts



## Hurricane Omega Exercise



## Prepare for These Potential Impacts:

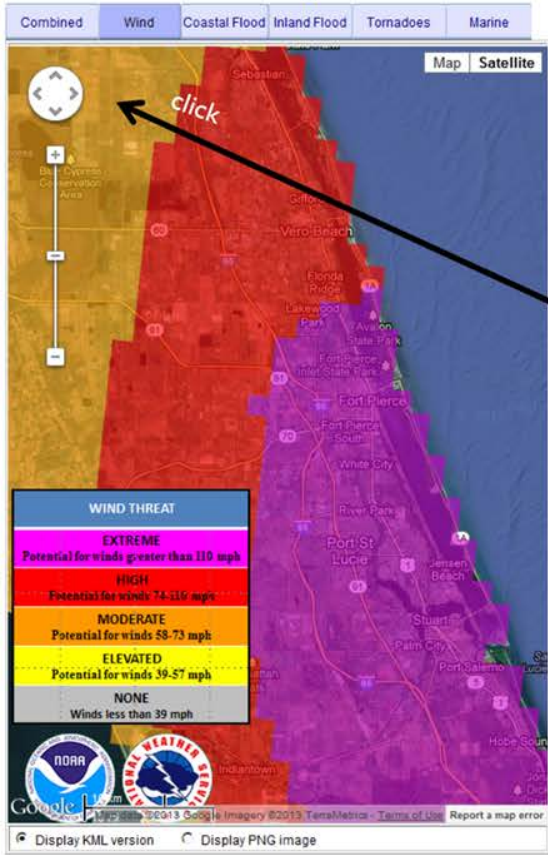
Wind Threat	Potential Wind Impacts (generalized)
<b>HIGH THREAT</b> for wind 74-110 mph	<b>EXTENSIVE IMPACTS</b> <ul style="list-style-type: none"> <li>To be safe, aggressively prepare for the potential of extensive wind impacts from hurricane force wind of equivalent Category 1 or 2 intensity.</li> <li>Life threatening wind possible. Failure to adequately shelter may result in serious injury or loss of life.</li> <li>Considerable damage to roofing and siding materials of sturdy buildings, with some having window, door, and garage door failures leading to structural damage. Mobile homes severely damaged, with some destroyed. Damage accentuated by airborne projectiles. Hardest hit locations may be uninhabitable for weeks.</li> <li>Many large trees snapped or uprooted along with fences and roadway signs blown over.</li> <li>Some roads impassable from large debris, and more within urban or heavily wooded places. Several bridges, causeways, and access routes connecting barrier islands impassible.</li> <li>Power and communications outages across large areas, with several places suffering extended outages.</li> </ul>

Also good for local hurricane briefings ... with added detail.





## Hurricane Omega Exercise



### Prepare for These Potential Impacts:

Wind Threat	Potential Wind Impacts (generalized)
<b>MODERATE THREAT</b> for wind 58-73 mph.	<b>SIGNIFICANT IMPACTS</b> <ul style="list-style-type: none"> <li>To be safe, earnestly prepare for the potential of significant wind impacts from strong tropical storm force wind.</li> <li>Dangerous wind possible. Failure to adequately shelter may result in serious injury, and in some cases loss of life.</li> <li>Some damage to roofing and siding materials, along with damage to porches, awnings, carports, and sheds. A few buildings experiencing window, door, and garage door failures. Mobile homes damaged, especially if unanchored. Unsecured lightweight objects become dangerous projectiles.</li> <li>Several large trees snapped or uprooted, but with greater numbers in places where trees are shallow rooted. Several fences and roadway signs blown over.</li> <li>A few roads impassable from large debris, and more within heavily wooded places. A few bridges, causeways, and access routes connecting barrier islands impassable.</li> <li>Scattered power and communications outages, but more prevalent in areas with above ground lines.</li> </ul>

Also good for local hurricane briefings ... with added detail.

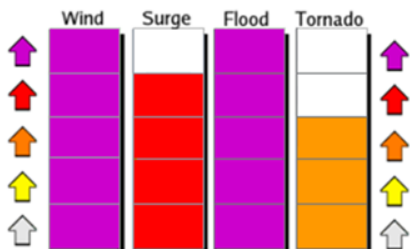


# All Hazards Assessments



## Hurricane Frances - All Hazards

Saint Lucie County, FL

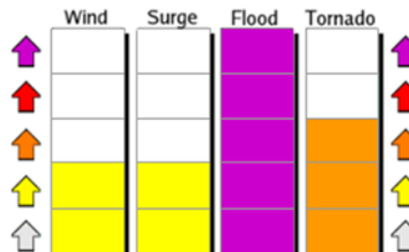


Storm: **Hurricane Frances**

Issued: **4 September 2004**

## Tropical Storm Fay - All Hazards

Lat/Lon 28.12N 80.62W



Storm: **Tropical Storm Fay**

Issued: **19 August 2008**

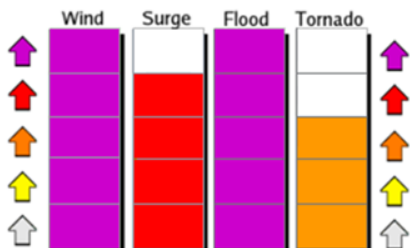


# All Hazards Assessments



## Hurricane Frances - All Hazards

Saint Lucie County, FL

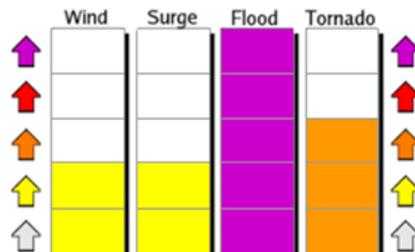


Storm: Hurricane Frances

Issued: 4 September 2004

## Tropical Storm Fay - All Hazards

Lat/Lon 28.12N 80.62W



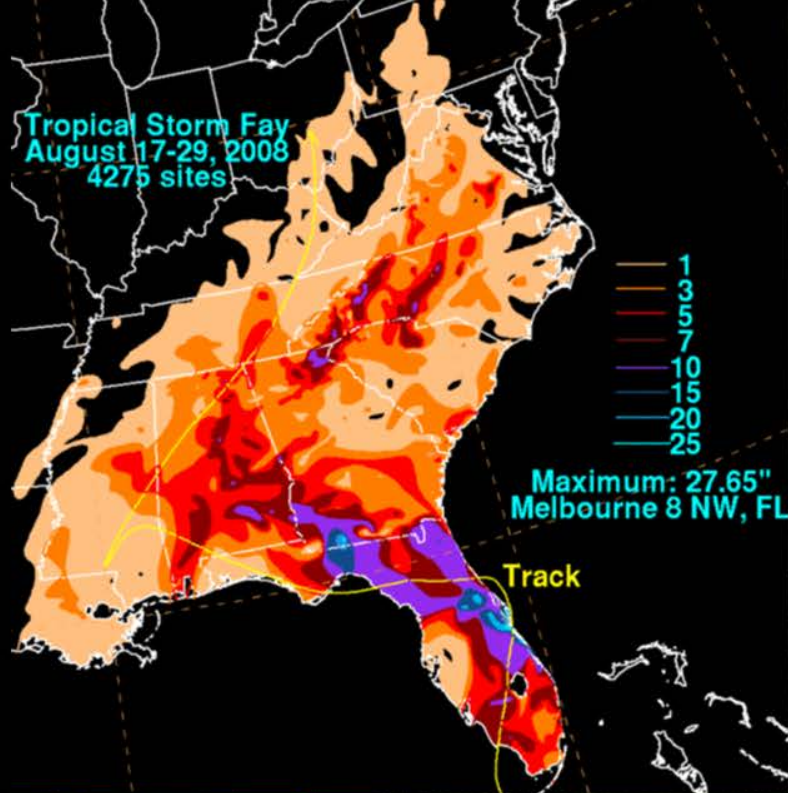
Storm: Tropical Storm Fay

Issued: 19 August 2008

*"Emoticons"  
to help overcome  
language barriers?*



## Community Distress Index





# Using Social Media to Communicate Public Safety Messages

Kimberly Prosser, Former Director  
Brevard County Emergency Management

- EM & WFO sharing and commenting on each others' Facebook posts and re-tweeting on Twitter increases the ...
  - **Timeliness** of information received
  - **Visibility** of posts and agencies themselves
  - **Credibility** as one agency bolsters credibility of the other
  - **Accuracy** as EMs no longer need to rewrite WFO alerts/emails
  - **Interaction** public is likely to interact with both entities
  - **Reach** each agency's audience is largely unique
  - **Opportunity** to inform one more citizen.

VCP121  
0.25 km, 0.5 dBZ  
MX: 5240Z

Strikes  
Strikes

# Hurricane Matthew

Gust to 107 MPH at the 620 AM at the tip of the Cape

Extreme Wind Warning

0001  
BRANCHVILLE  
VCP121 05:52Z  
000111 152.0

Impact Weather Update  
for East Central Florida  
National Weather Service Melbourne FL  
630 AM Fri Oct 7 2016  
Valid through 830 AM

Fri 10:30Z 07-Oct-16

Gust to 107 MPH at the 620 AM at the tip of the Cape

# Extreme Wind Warning

630 AM Fri Oct 7 2016  
Valid through 830 AM

Fri 10:30Z 07-Oct-16



# NWSChat

Use of NWSChat to keep the media “on message” during the event.

**NWSChat Live - Internet Explorer**

Address bar: <https://nwschat.weather.gov/live/>

**NWSChat Live**

Actions ▾ Available ▾ [Speaker Icon]

**Buddies**

- SR SOO Group
  - nwsfwd-soo
  - nwslix-soo
  - nwsffc-soo
  - nwsmeq-soo-Tom S.
- WDTB Group
  - wdtb-elliott
  - nws-wdtb-don
  - nws-wdtb-chris-spannagle
- Southern Region HQ
- Southern Region - Regional Op
- NWSChat Admin Team
  - Daryl Herzmann
  - nwsbot

Chatroom Bookmarks [+]

Chatrooms [+]

**Map Panel**

Map Valid: 3:20 PM Tools ▾ Opacity [Slider]

Map controls: [Navigation Icons]

Map labels: Sarasota, Port St Lucie, West Palm Beach, Wellington, Fort Lauderdale, Miami, Kendall, Homestead, Everglades National Park, Cape Coral, Bonita Springs, Naples, Freeport.

**Layers Control**

- Base Layer
  - Blank
  - Google Street
- Satellite
  - GOES Water V
  - GOES West V
  - GOES East Vi
  - GOES Visible
  - GOES IR
- Precip/RADAR
  - NMQ Q2 3 Da
  - NMQ Q2 2 Da
  - NMQ Q2 1 Da

Terms of Use

Help All Chats sr-roc x mlbchat x mlbemchat x tbwchat x tbwemchat x

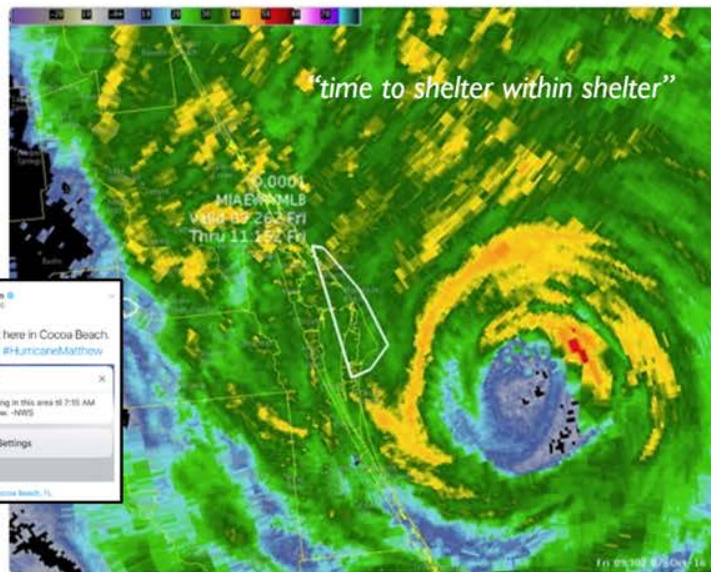
**nws-david.sharp:** If an EWW is issued, it means that it is time to shelter within shelter. The message - move now to the safest place within your shelter and protect your head and body from extreme winds.



NWS Melbourne @NWSMelbourne · Oct 7

543 am | Extreme Wind Warning for  
Brevard [FL] till Oct 7, 7:15 AM EDT

[forecast.weather.gov/product.php?si ...](https://forecast.weather.gov/product.php?si...)



59 32



## Fact Sheet:

# Extreme Wind Warnings



Near Mexico Beach, FL after Hurricane Michael (2018)

**Extreme hurricane winds** ... are associated with the eyewall of major hurricanes of Category 3, 4, or 5 intensity. When they threaten, lives are greatly imperiled even for those who have already sheltered from the storm. For any given city or town along the coast, the occurrence of such deadly winds is rare. However, when they do occur skies become filled with flying debris as large objects become airborne. Damage can be devastating to catastrophic as buildings once thought to be safe are blown apart by winds exceeding 110 mph. During Hurricane Andrew (1992), the winds reached 165 mph in South Florida and caused many to scramble in search of a safer place within whatever was left of their home or shelter as extreme winds blew all around them.

Whenever extreme hurricane winds threaten, the local National Weather Service office now issues an **Extreme Wind Warning (EWW)** at the imminent onset (about 1 hour before arrival) of winds greater than 110 mph. The intent is to leverage the final opportunity to save lives by encouraging people to move to the safest place within their home or shelter. Since it's hard to know exactly when or where the narrow path of extreme winds will ultimately occur with a major hurricane, the EWW offers last chance information to save lives.



### When extreme wind warnings are issued ...

- Move to the safest place within your home or shelter such as a small interior room or hallway.
- If possible, take your flashlight and cell phone with you. Keep your shoes on (closed-toe).
- Protect your head and body making good use of pillows, cushions, helmets, etc.
- Take the same protective action as if a violent tornado was approaching.

**Shelter within Shelter** ... the recommendation to urgently move to the safest place within your hurricane shelter.

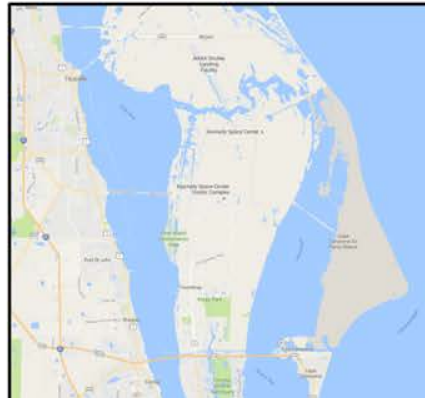
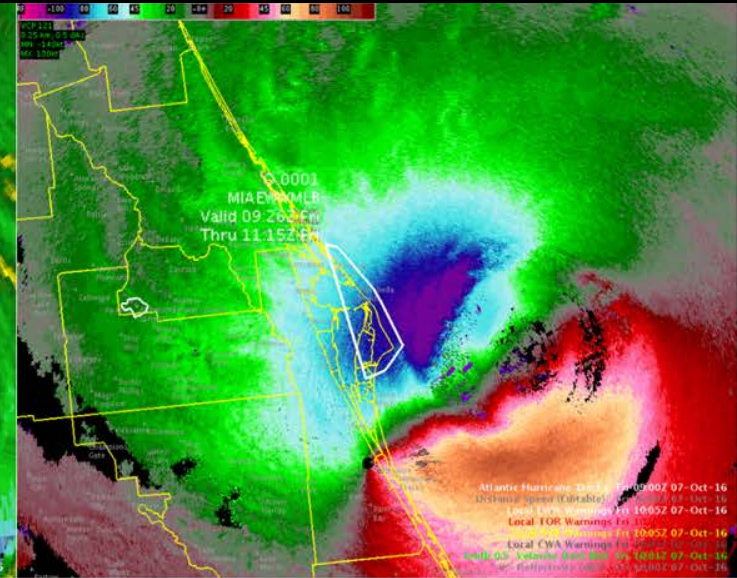
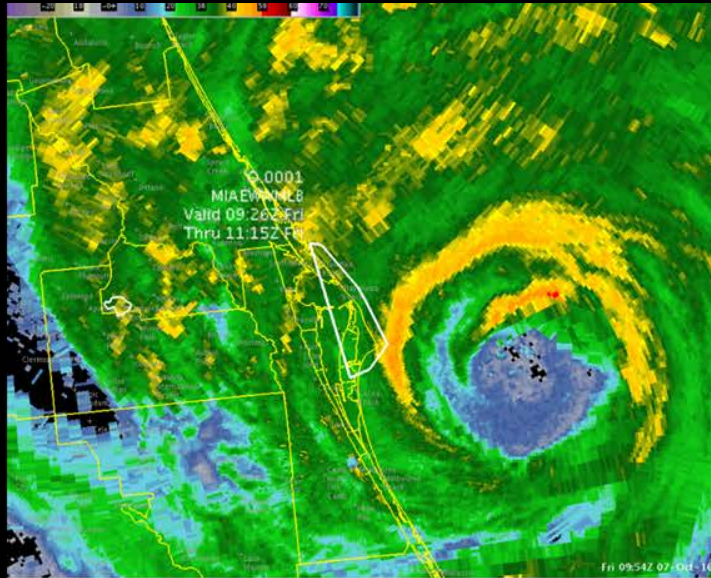


National Weather Service  
Melbourne, FL  
[www.weather.gov/mlb/](http://www.weather.gov/mlb/)

## Local Fact Sheets

Pre-made hand-outs;  
ready to give to reporters





## Extreme Winds & Major Hurricane Matthew





### **Major Hurricanes & Societal Impacts:**

- Lives greatly imperiled
- Devastating to catastrophic damage
- Increased projectile loading
- Numerous rescues
- Difficult initial response
- Community infrastructure collapsed
- Long-term recovery





# Hurricane Winds

When wind speeds reach tropical storm strength, they become dangerous. That's why evacuation plans and shelter decisions are based on these speeds. If winds reach hurricane strength, the threat to life and property significantly increases. The wind threat is extreme with hurricanes of Category 3 force or greater.



## High Wind Safety Tips:



- Know your vulnerability relative to hurricane winds.
- Those living in mobile homes, high rise buildings, along the immediate coast, and at higher elevations are most susceptible.
- If you are vulnerable to high winds, relocate to safer shelter.
- Securing doors and deploying shutters can help reduce the risk of property damage.
- Securing yard objects can help reduce the chance for dangerous projectiles.



National Weather Service  
Melbourne, FL





## Extreme Wind Warning

- **Issuance Criteria:** An EWW is issued when both of the following criteria are met:
  - The tropical cyclone is a CAT 3 or greater.
  - Sustained winds of 100 kt (115 mph) or greater are expected to occur in a WFO's county warning area within 1 hour; product valid time is not to exceed 2 hours.

**Message: Shelter within shelter**

## Sage Advice

Breathe!

Stay Calm

Stay Focused

Be the Voice  
of Reason

Stay Connected

Follow Through





*Thank You*