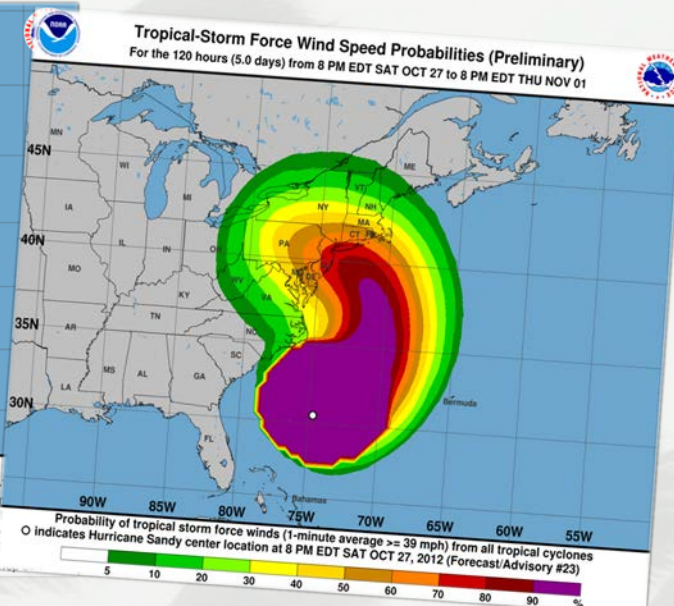
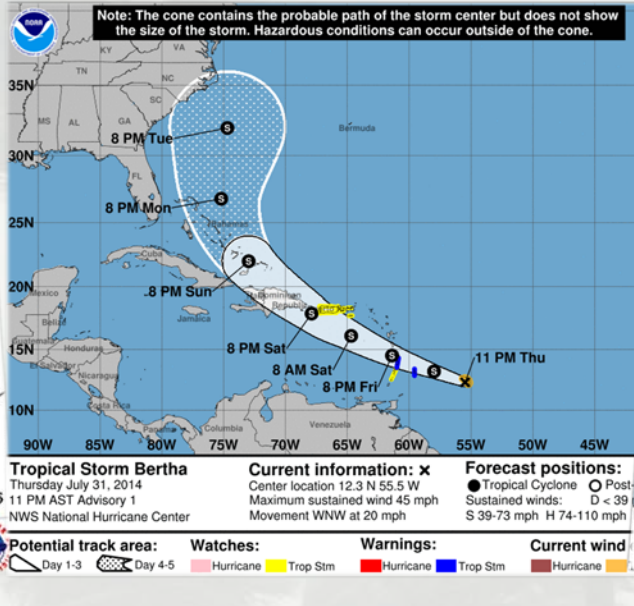
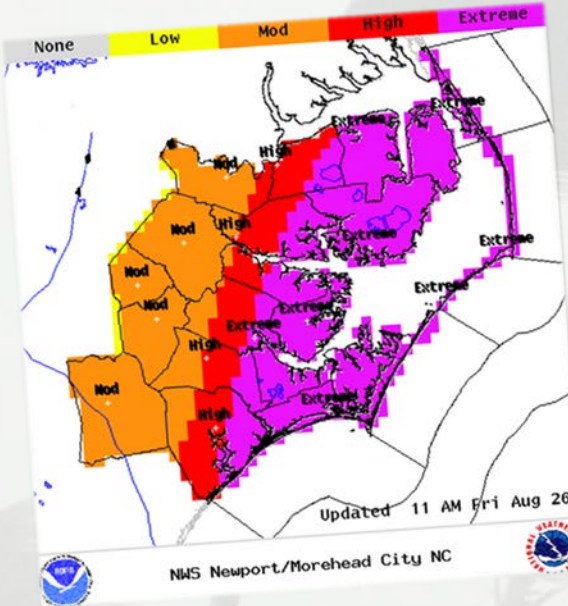


NHC Forecasts

There is a Storm. What's the Info?

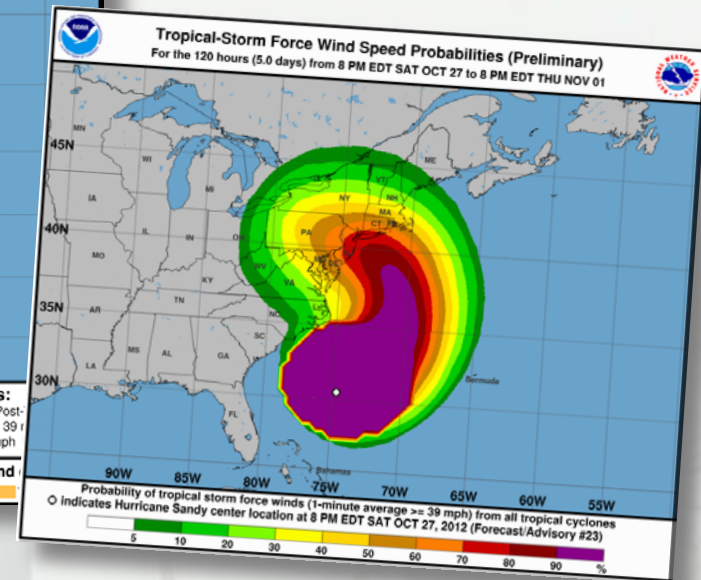
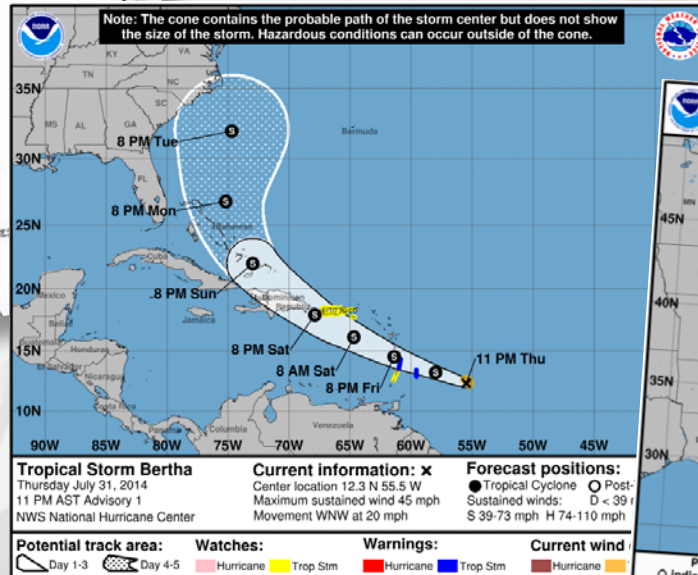
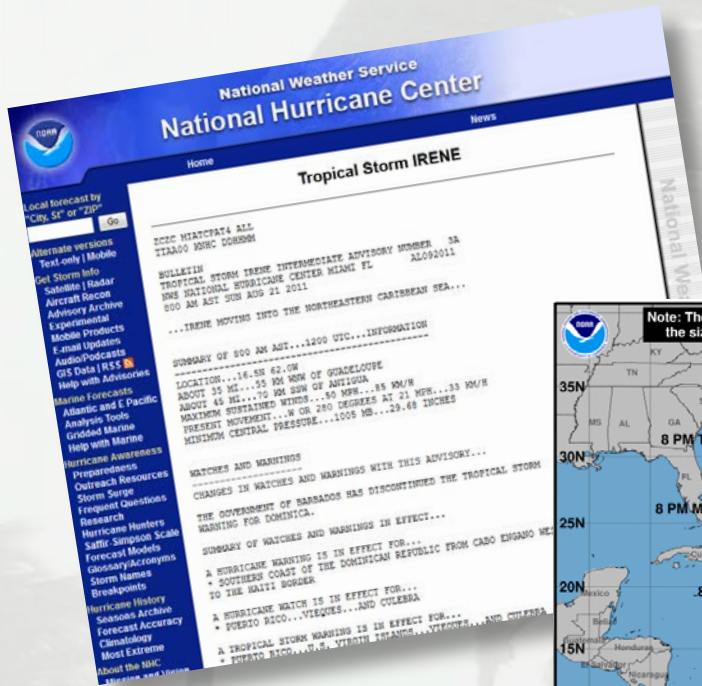


National Weather Service
Tropical Cyclone Products

National Weather Service

Tropical Cyclone Products

NHC provides the “big picture” that complements and guides local NWS forecast office products



National Weather Service

Tropical Cyclone Products



National Hurricane Center

Frequently Asked Questions

- **What's going on in the Tropics?**
- **Anything to worry about?**
- **How many days out is the storm?**
- **How strong?**
- **What do the forecasters really think?**

National Hurricane Center

Text Products

- **Tropical Weather Outlook**
- **Public Advisory**
- **Forecast Advisory**
- **Forecast Discussion**
- **Wind Speed Probabilities**
- **Tropical Cyclone Update**
- **Tropical Cyclone Reports**
- **Monthly Tropical Weather Summary**

National Hurricane Center

Graphical Products

- **Graphical Tropical Weather Outlook**
- **Track Forecast Cone**
- **Surface Wind Field**
- **Wind Speed Probabilities**
- **Cumulative Wind History**
- **Storm Surge Probabilities**
- **Potential Storm Surge Flooding Map**
- **Storm Surge Warning Graphic**

Situational Awareness

What's going on in the tropics?

- **Tropical Weather Outlook**

Tropical Outlook

Scheduled Updates

- 2 am – **Tropical Outlook**
- 8 am – **Tropical Outlook**
- 2 pm – **Tropical Outlook**
- 8 pm – **Tropical Outlook**

Time in EDT

Tropical Outlook

Assessment of tropical activity



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



TROPICAL WEATHER OUTLOOK

NWS NATIONAL HURRICANE CENTER MIAMI FL

800 PM EDT MON OCT 20 2014

For the North Atlantic...Caribbean Sea and the Gulf of Mexico:

Showers and thunderstorms associated with an area of low pressure located over the southwestern Bay of Campeche have changed little in organization since this afternoon. This system has the potential to become a tropical cyclone during the next couple of days while it moves slowly eastward across the southern Bay of Campeche. Later in the week, the low is forecast to interact and possibly merge with a frontal system over the southeastern Gulf of Mexico or northwestern Caribbean Sea. An Air Force Reserve reconnaissance aircraft is scheduled to investigate the disturbance tomorrow afternoon, if necessary. Interests in the Yucatan Peninsula should monitor the progress of this system.

- * Formation chance through 48 hours...medium...50 percent.
- Formation chance through 5 days...medium...60 percent.

Forecaster Brown

Potential for development?
Headed where?

Tropical Outlook

Assessment of tropical activity



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



TROPICAL WEATHER OUTLOOK

NWS NATIONAL HURRICANE CENTER MIAMI FL

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Forecaster Brown

Sending a plane?

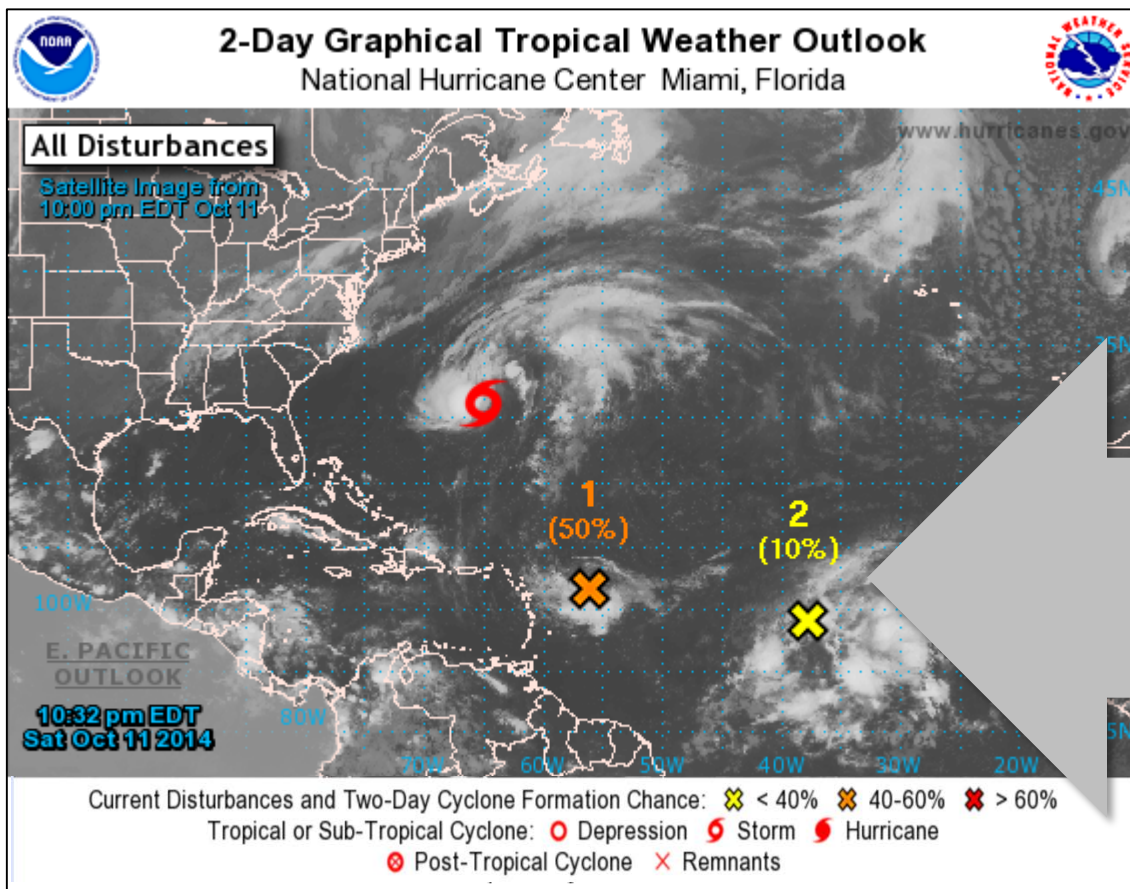
Situational Awareness

Do we need to be concerned?

- **Graphical Tropical Outlook**
(Tropical Outlook Probabilities)

Tropical Outlook

2-Day Formation Potential



Current location of disturbances

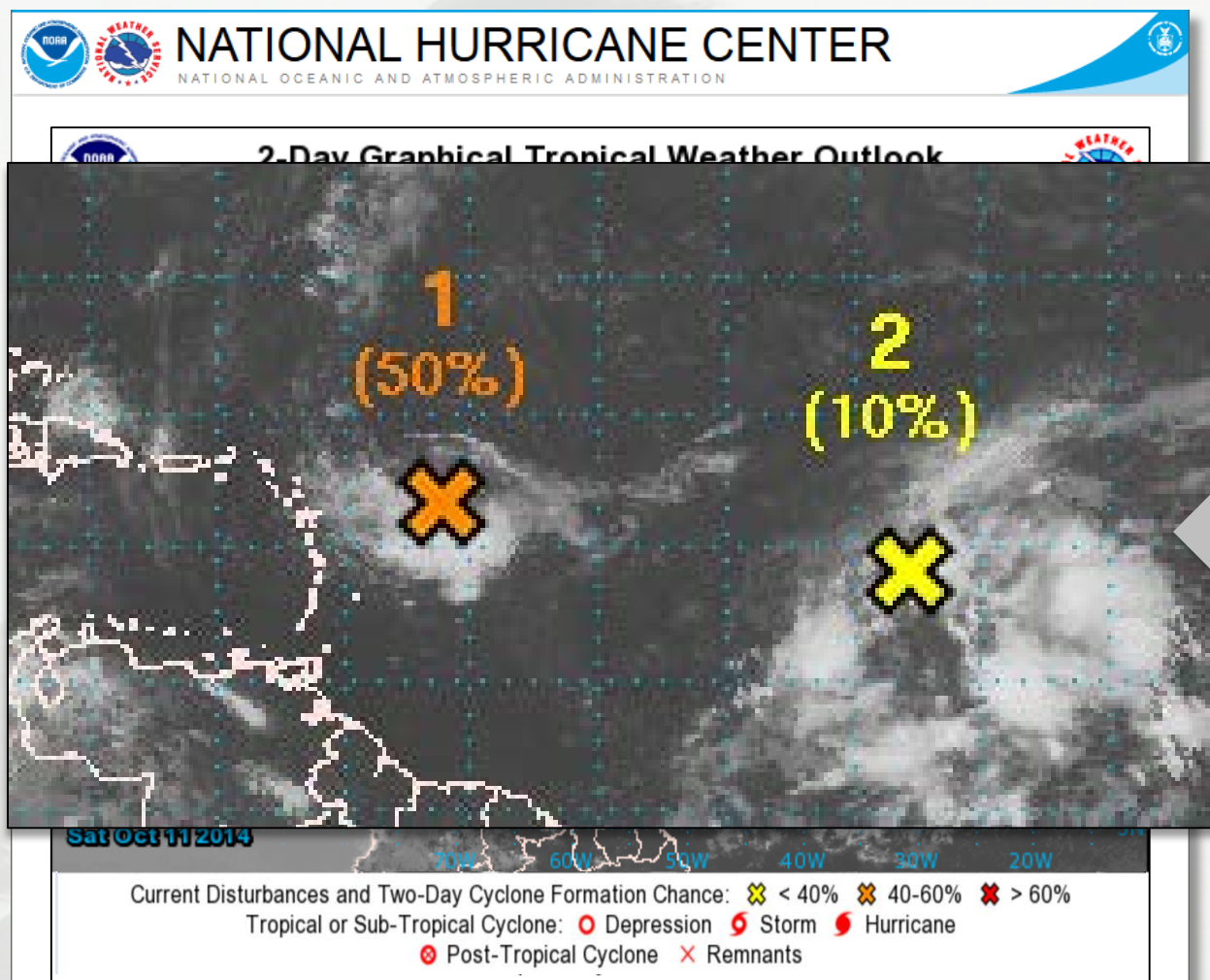
(discussed in the Tropical Weather Outlook)

Formation chance during the next 48 hrs

- **Categorical**
(Low, Medium, and High)
- **Probabilities**

Tropical Outlook

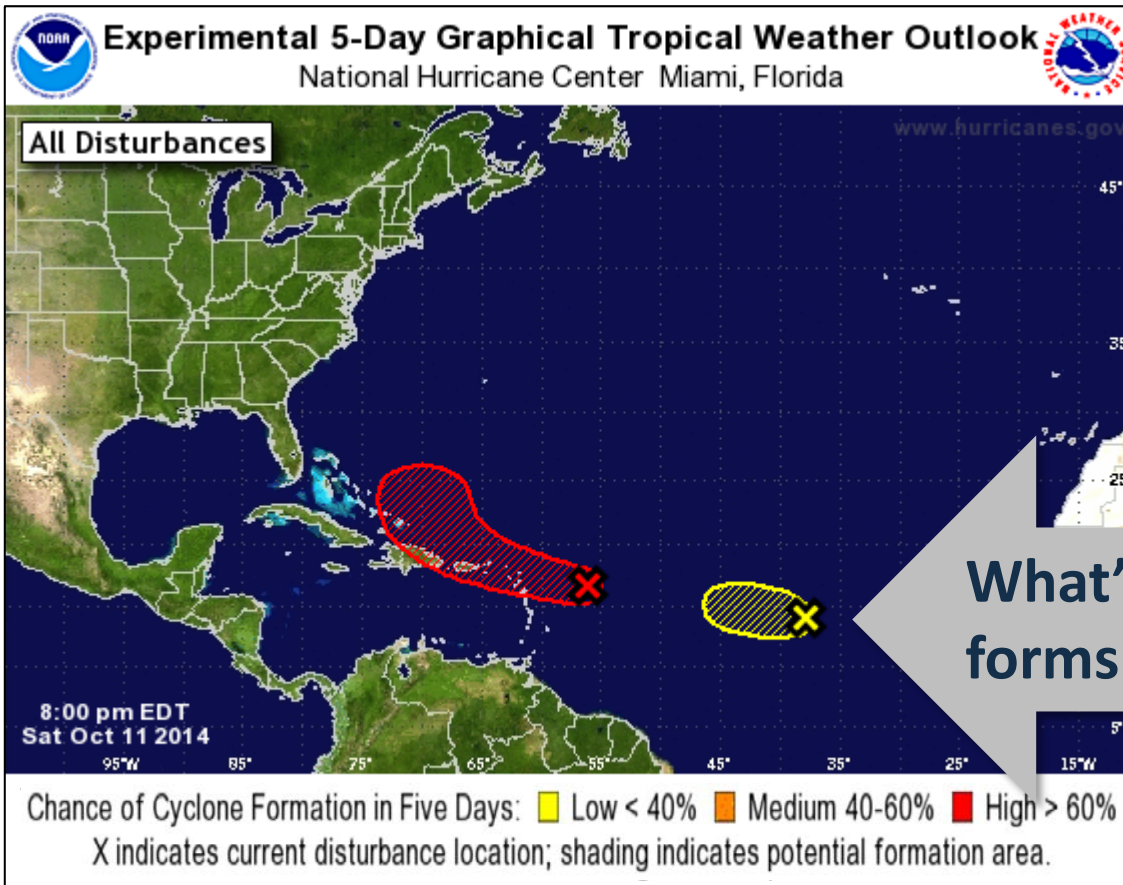
2-Day Formation Potential



Should we be concerned?

Tropical Outlook

5-Day Formation Potential



- Formation potential during the next 5 days
- Initial location of disturbance (X) indicated
- Shading represents potential formation area

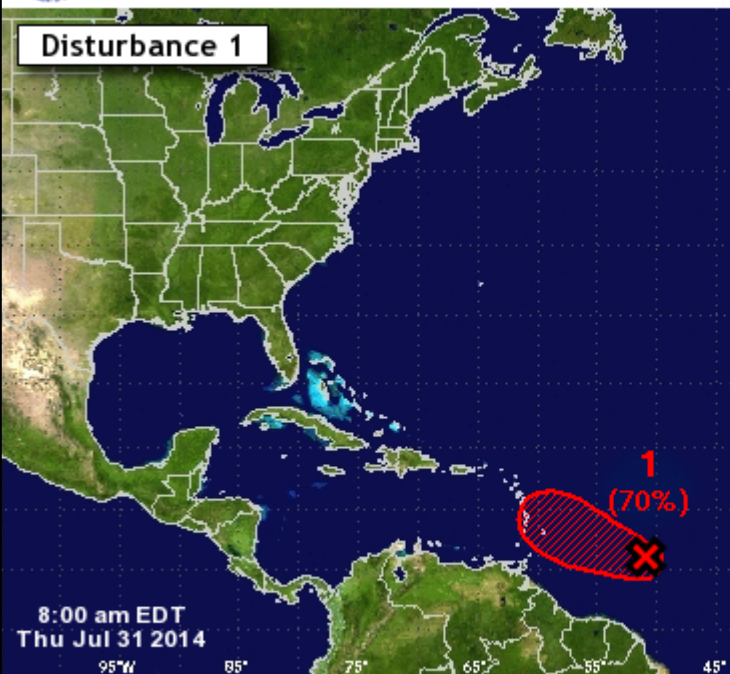
What's the chance this area forms during the next 5 days?

Tropical Outlook

5-Day Formation Potential

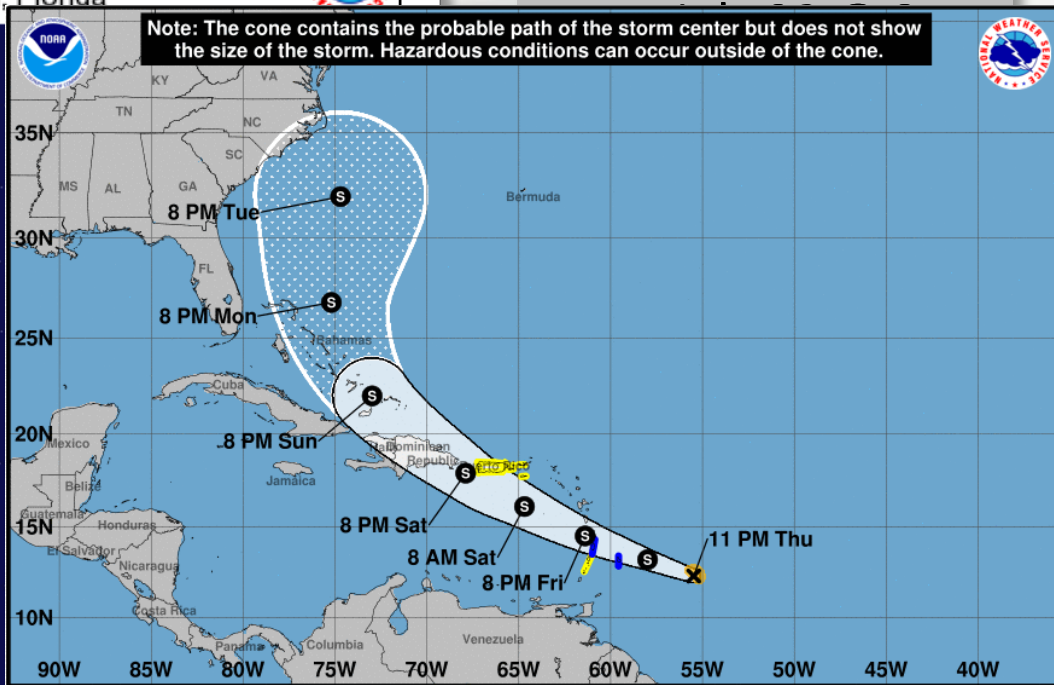


Experimental 5-Day Graphical Tropical Weather Outlook National Hurricane Center Miami, Florida



Low < 40%
 Medium 40-60%

Tropical Outlook



Tropical Storm Bertha
 Thursday July 31, 2014
 11 PM AST Advisory 1
 NWS National Hurricane Center

Current information: x
 Center location 12.3 N 55.5 W
 Maximum sustained wind 45 mph
 Movement WNW at 20 mph

Forecast positions:
 ● Tropical Cyclone ○ Post-Tropical
 Sustained winds: D < 39 mph
 S 39-73 mph H 74-110 mph M > 110 mph

Potential track area: Day 1-3 (solid line), Day 4-5 (dotted line)
Watches: Hurricane (pink), Trop Stm (yellow)
Warnings: Hurricane (red), Trop Stm (blue)
Current wind extent: Hurricane (brown), Trop Stm (orange)

Special Tropical Outlook

Significant or unexpected changes



SPECIAL TROPICAL WEATHER OUTLOOK
NWS NATIONAL HURRICANE CENTER MIAMI FL
430 PM EDT MON JUN 30 2014

Special outlook issued to update discussion of the area of low pressure east of Florida.

Updated: An Air Force Reserve unit reconnaissance aircraft is investigating the area of low pressure centered about 110 miles east of Melbourne, Florida. While the low is well defined, the associated thunderstorm activity is just below the organizational threshold required to initiate tropical cyclone advisories. Environmental conditions continue to be favorable for development, and only a slight increase in the organization and persistence of the thunderstorm activity would result in the formation of a tropical depression.

Data from the reconnaissance aircraft indicate that peak sustained winds with the low are about 30-35 mph. The low is moving southwestward at around 5 mph, but is expected to turn westward tonight and northward by Wednesday when it will be near the east coast of Florida. If this system becomes a tropical cyclone, a tropical storm watch could be required for portions of the central or northern Atlantic coast of Florida. A turn toward the northeast near the southeastern U.S. coast is expected by Thursday.



What is it issued for?

Special Tropical Outlook

Significant or unexpected changes



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



SPECIAL TROPICAL WEATHER OUTLOOK
NWS NATIONAL HURRICANE CENTER MIAMI FL
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What did the aircraft find?

Special Tropical Outlook

Significant or unexpected changes



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



SPECIAL TROPICAL WEATHER OUTLOOK
NWS NATIONAL HURRICANE CENTER MIAMI FL
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Watches possible?

There is a Storm.

Potential, Post-, Tropical Cyclones

Tropical Cyclones

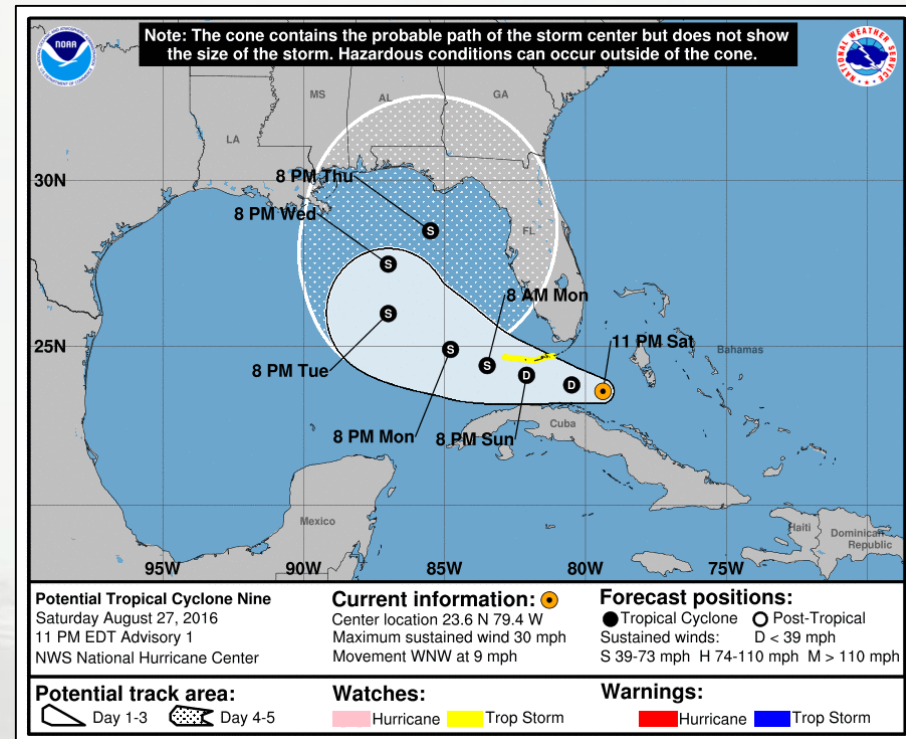
- Tropical Depressions
- Tropical Storms
- Hurricanes

Post-Tropical Cyclones

- Remains a threat to land (e.g., Sandy & Hermine)

Potential Tropical Cyclones

- Systems not yet a tropical cyclone
- Threat of TS-force winds to land within 48 hours. (New for 2017)



Potential Tropical Cyclone Advisory
example from Pre-Hermine (2016)

There is a storm.

What's the info?



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



Hurricane ISAAC

...ISAAC DRENCHING SOUTHEASTERN LOUISIANA...DANGEROUS STORM SURGE AND FLOOD THREAT FROM HEAVY RAINS LIKELY TO CONTINUE THROUGH TONIGHT... ..U.S. Warnings in Effect...

10:00 AM CDT Wed Aug 29

Location: 29.6°N 90.7°W
Moving: NW at 6 mph
Min pressure: 972 mb
Max sustained: 75 mph

Public
Advisory
#10

1000 AM CDT

Aviso
Publico
#10

1000 AM EDT

Forecast
Advisory
#10

1500 UTC

Forecast
Discussion
#10

1000 AM CDT

Wind Speed
Probabilities
#10

1500 UTC

NWS Local
Statements

US Watch/
Warning
1000 AM EDT



Hurricane Wind Speed Probability



50-knot Wind Speed Probability



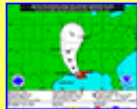
Trop Storm Wind Speed Probability



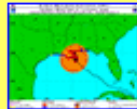
Wind History



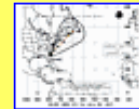
Warnings/Cone Interactive Map



Warnings/Cone Static Images



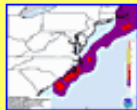
Warnings and Surface Wind



Mariner's 1-2-3 Rule



Storm Surge Inundation



U.S. Rainfall Potential

There is a storm.

How strong?

What are the hazards?

Any warnings?

- **Public Advisory**
- 
- A background image showing palm trees in a storm, with their fronds blowing in the wind. The image is faded and serves as a backdrop for the text.

Public Advisory

Location. Strength. Hazards. Warnings.



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



HURRICANE ISAAC ADVISORY NUMBER 34
NWS NATIONAL HURRICANE CENTER MIAMI FL AL092012
1000 AM CDT WED AUG 29 2012

... ISAAC DRENCHING SOUTHEASTERN LOUISIANA...DANGEROUS STORM SURGE
AND FLOOD THREAT FROM HEAVY RAINS LIKELY TO CONTINUE THROUGH
TONIGHT...

SUMMARY OF 1000 AM CDT...1500 UTC...INFORMATION

LOCATION...29.6N 90.7W
ABOUT 0 MI...0 KM N OF HOUMA LOUISIANA
ABOUT 45 MI...75 KM SW OF NEW ORLEANS LOUISIANA
MAXIMUM SUSTAINED WINDS...75 MPH...120 KM/H
PRESENT MOVEMENT...NW OR 310 DEGREES AT 6 MPH...9 KM/H
MINIMUM CENTRAL PRESSURE...972 MB...28.70 INCHES

WATCHES AND WARNINGS

CHANGES WITH THIS ADVISORY...

The Tropical Storm Warning has been discontinued east of the
Alabama-Florida border.

- Plain-language text
- Originally intended as “rip and read”

miXeD-caSe in 2015

Public Advisory

Location. Strength. Hazards. Warnings.



HURRICANE ISAAC ADVISORY NUMBER 34
NWS NATIONAL HURRICANE CENTER MIAMI FL AL092012
1000 AM CDT WED AUG 29 2012

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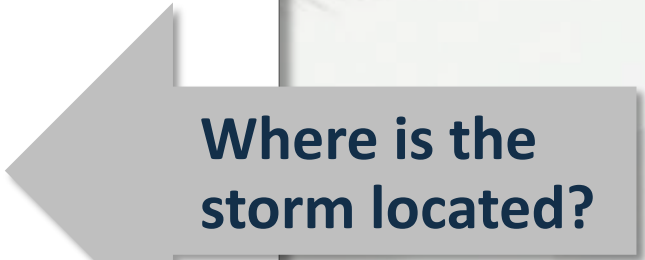
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WATCHES AND WARNINGS

CHANGES WITH THIS ADVISORY...

The Tropical Storm Warning has been discontinued east of the
Alabama-Florida border.



Public Advisory

Location. Strength. Hazards. Warnings.



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



HURRICANE ISAAC ADVISORY NUMBER 34
NWS NATIONAL HURRICANE CENTER MIAMI FL AL092012
1000 AM CDT WED AUG 29 2012

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WATCHES AND WARNINGS

CHANGES WITH THIS ADVISORY...

The Tropical Storm Warning has been discontinued east of the
Alabama-Florida border.

How strong is the storm?

Public Advisory

Location. Strength. Hazards. Warnings.



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



HURRICANE ISAAC ADVISORY NUMBER 34
NWS NATIONAL HURRICANE CENTER MIAMI FL AL092012
1000 AM CDT WED AUG 29 2012

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MINIMUM CENTRAL PRESSURE...972 MB...28.70 INCHES

WATCHES AND WARNINGS

A HURRICANE WARNING IS IN EFFECT FOR...
* EAST OF MORGAN CITY LOUISIANA TO THE MISSISSIPPI-ALABAMA BORDER...
INCLUDING METROPOLITAN NEW ORLEANS...LAKE PONTCHARTRAIN...AND LAKE
MAUREPAS

Watches or Warnings?

Public Advisory

Location. Strength. Hazards. Warnings.



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



DISCUSSION AND 48-HOUR OUTLOOK

At 1000 AM CDT, 1500 UTC, the center of Hurricane Isaac was located by NOAA Doppler weather radar near latitude 29.6 North, longitude 90.7 West, or very near Houma, Louisiana. Isaac is moving toward the northwest near 6 mph (9 km/h). This general motion is expected to continue through tonight, followed by a turn toward the north-northwest by Thursday night or early Friday. On the forecast track, the center of Isaac will move farther inland over Louisiana today and tomorrow, and over southern Arkansas by early Friday.

Maximum sustained winds have decreased to near 75 mph (120 km/h) with higher gusts. Isaac is a category one hurricane on the Saffir-Simpson Hurricane Wind Scale. Gradual weakening is forecast during the next 48 hours as the hurricane continues moving farther inland and Isaac is expected to weaken to a tropical storm later today.

Hurricane-force winds extend outward up to 45 miles (75 km) from the center, and tropical-storm-force winds extend outward up to 175 miles (280 km).

A gust to 74 mph was recently reported at the Mid Lake station in Lake Pontchartrain and a wind gust to 63 mph was reported at

Covers a 2-day period

Where is the storm headed?

Public Advisory

Location. Strength. Hazards. Warnings.



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



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Covers a 2-day period

Forecast to
weaken?
Strengthen?

Public Advisory

Location. Strength. Hazards. Warnings.



HAZARDS AFFECTING LAND

STORM SURGE...THE COMBINATION OF A STORM SURGE AND THE TIDE WILL CAUSE NORMALLY DRY AREAS NEAR THE COAST TO BE FLOODED BY RISING WATERS. THE WATER COULD REACH THE FOLLOWING DEPTHS ABOVE GROUND IF THE PEAK SURGE OCCURS AT THE TIME OF HIGH TIDE...

- * MISSISSIPPI AND SOUTHEASTERN LOUISIANA...6 TO 12 FT
- * ALABAMA...3 TO 6 FT
- * SOUTH-CENTRAL LOUISIANA...3 TO 6 FT
- * FLORIDA PANHANDLE AND APALACHEE BAY...2 TO 4 FT

THE DEEPEST WATER WILL OCCUR ALONG THE IMMEDIATE COAST IN AREAS OF ONSHORE WINDS. SURGE-RELATED FLOODING DEPENDS ON THE RELATIVE TIMING OF THE SURGE AND THE TIDAL CYCLE...AND CAN VARY GREATLY OVER SHORT DISTANCES. FOR INFORMATION SPECIFIC TO YOUR AREA...PLEASE SEE PRODUCTS ISSUED BY YOUR LOCAL WEATHER SERVICE OFFICE. NEAR THE COAST...THE SURGE WILL BE ACCOMPANIED BY LARGE AND DANGEROUS WAVES.

STORM SURGE VALUES OF NEAR 8 FEET HAVE RECENTLY BEEN REPORTED AT SHELL BEACH LOUISIANA AND WAVELAND MISSISSIPPI.

WIND...TROPICAL STORM CONDITIONS WILL CONTINUE ACROSS THE WARNING AREA TODAY...AND HURRICANE CONDITIONS WILL CONTINUE TO AFFECT PORTIONS OF SOUTHEASTERN LOUISIANA AND MISSISSIPPI IN THE HURRICANE WARNING AREA INTO THIS AFTERNOON.



How much storm surge is forecast?

Public Advisory

Location. Strength. Hazards. Warnings.



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



HAZARDS AFFECTING LAND

WIND...TROPICAL STORM CONDITIONS WILL CONTINUE ACROSS THE WARNING AREA TODAY...AND HURRICANE CONDITIONS WILL CONTINUE TO AFFECT PORTIONS OF SOUTHEASTERN LOUISIANA AND MISSISSIPPI IN THE HURRICANE WARNING AREA INTO THIS AFTERNOON.

WINDS AFFECTING THE UPPER FLOORS OF HIGH-RISE BUILDINGS WILL BE SIGNIFICANTLY STRONGER THAN THOSE NEAR GROUND LEVEL. AT ABOUT THE 30TH STORY...WINDS WOULD LIKELY BE ONE SAFFIR-SIMPSON CATEGORY STRONGER THAN AT THE SURFACE.

RAINFALL...ISAAC IS EXPECTED TO PRODUCE TOTAL RAINFALL AMOUNTS OF 7 TO 14 INCHES...WITH POSSIBLE ISOLATED MAXIMUM AMOUNTS OF 20 INCHES...OVER MUCH OF LOUISIANA...SOUTHERN MISSISSIPPI...AND SOUTHWEST ALABAMA THROUGH FRIDAY MORNING. THESE RAINS COULD RESULT IN SIGNIFICANT LOWLAND FLOODING. RAINS ARE EXPECTED TO INCREASE NORTHWARD INTO ARKANSAS ON THURSDAY...WITH AMOUNTS OF 3 TO 6 INCHES EXPECTED OVER SOUTHERN ARKANSAS BY FRIDAY MORNING.

TORNADOES...ISOLATED TORNADOES ARE POSSIBLE ALONG THE CENTRAL GULF COAST REGION AND PARTS OF THE LOWER MISSISSIPPI RIVER VALLEY THROUGH THURSDAY.

SURF...DANGEROUS SURF AND RIP CURRENT CONDITIONS WILL CONTINUE TO AFFECT THE WEST COAST OF FLORIDA AND THE NORTHERN GULF COAST FOR THE

How much rain is forecast?

Public Advisory

Intermediate Advisories



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



HURRICANE ISAAC INTERMEDIATE ADVISORY NUMBER 34A
NWS NATIONAL HURRICANE CENTER MIAMI FL AL092012
100 PM CDT WED AUG 29 2012

...ISAAC SOAKING SOUTHEASTERN LOUISIANA AND SOUTHERN MISSISSIPPI
WITH HEAVY RAIN...DANGEROUS COASTAL STORM SURGE AND INLAND FLOOD
THREAT EXPECTED THROUGH TONIGHT...

SUMMARY OF 100 PM CDT...1800 UTC...INFORMATION

LOCATION...29.7N 90.8W
ABOUT 10 MI...15 KM NW OF HOUMA LOUISIANA
ABOUT 45 MI...75 KM WSW OF NEW ORLEANS LOUISIANA
MAXIMUM SUSTAINED WINDS...75 MPH...120 KM/H
PRESENT MOVEMENT...NW OR 310 DEGREES AT 6 MPH...9 KM/H
MINIMUM CENTRAL PRESSURE...973 MB...28.73 INCHES

WATCHES AND WARNINGS

A HURRICANE WARNING IS IN EFFECT FOR...
* EAST OF MORGAN CITY LOUISIANA TO THE MISSISSIPPI-ALABAMA
BORDER...
INCLUDING METROPOLITAN NEW ORLEANS...LAKE PONTCHARTRAIN...AND LAKE
MAUREPAS

Similar content but
issued 3 hours after
full advisory package

✓ Watch or Warning
is in effect

There is a storm.

How big is it?

Where is it going?

I can't wait!

- **Forecast Advisory**
- 
- The background of the lower half of the slide features a light, hazy image of palm trees. The fronds of the palm trees are bent and blowing, suggesting a strong wind or storm. The overall tone is pale and atmospheric.

Forecast Advisory

Position. Size. Radii. Intensity.



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HURRICANE ISAAC FORECAST/ADVISORY NUMBER 34
NWS NATIONAL HURRICANE CENTER MIAMI FL AL092012
1500 UTC WED AUG 29 2012

THE TROPICAL STORM WARNING HAS BEEN DISCONTINUED EAST OF THE ALABAMA-FLORIDA BORDER.

SUMMARY OF WATCHES AND WARNINGS IN EFFECT...

A HURRICANE WARNING IS IN EFFECT FOR...

* EAST OF MORGAN CITY LOUISIANA TO THE MISSISSIPPI-ALABAMA BORDER... INCLUDING METROPOLITAN NEW ORLEANS...LAKE PONTCHARTRAIN...AND LAKE MAUREPAS

HURRICANE CENTER LOCATED NEAR 29.6N 90.7W AT 29/1500Z
POSITION ACCURATE WITHIN 15 NM

PRESENT MOVEMENT TOWARD THE NORTHWEST OR 310 DEGREES AT 5

ESTIMATED MINIMUM CENTRAL PRESSURE 972 MB
MAX SUSTAINED WINDS 65 KT WITH GUSTS TO 80 KT.
64 KT..... 30NE 40SE 0SW 0NW.
50 KT..... 80NE 70SE 40SW 40NW.
34 KT.....150NE 150SE 140SW 100NW.
12 FT SEAS..180NE 240SE 90SW 0NW.

WINDS AND SEAS VARY GREATLY IN EACH QUADRANT. RADII IN NAUTICAL

Only source for all the forecast data

Watches and Warnings

Data is used in HURREVAC and other commercial tracking software

Forecast Advisory

Position. Size. Radii. Intensity.



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



HURRICANE ISAAC FORECAST/ADVISORY NUMBER 34
NWS NATIONAL HURRICANE CENTER MIAMI FL AL092012
1500 UTC WED AUG 29 2012

THE TROPICAL STORM WARNING HAS BEEN DISCONTINUED EAST OF THE ALABAMA-FLORIDA BORDER.

SUMMARY OF WATCHES AND WARNINGS IN EFFECT...

A HURRICANE WARNING IS IN EFFECT FOR...

* EAST OF MORGAN CITY LOUISIANA TO THE MISSISSIPPI-ALABAMA BORDER... INCLUDING METROPOLITAN NEW ORLEANS...LAKE PONTCHARTRAIN...AND LAKE MAUREPAS

HURRICANE CENTER LOCATED NEAR 29.6N 90.7W AT 29/1500Z
POSITION ACCURATE WITHIN 15 NM

PRESENT MOVEMENT TOWARD THE NORTHWEST OR 310 DEGREES AT 5 KT

ESTIMATED MINIMUM CENTRAL PRESSURE 972 MB
MAX SUSTAINED WINDS 65 KT WITH GUSTS TO 80 KT.

64 KT..... 30NE 40SE 0SW 0NW.

50 KT..... 80NE 70SE 40SW 40NW.

34 KT.....150NE 150SE 140SW 100NW.

12 FT SEAS..180NE 240SE 90SW 0NW.

WINDS AND SEAS VARY GREATLY IN EACH QUADRANT. RADII IN NAUTICAL

Forecast wind radii

Forecast Advisory

Position. Size. Radii. Intensity.



NHC estimates and forecast cyclone "size" via wind radii in four quadrants

HURRICANE ISAAC FORECAST/ADVISORY NUMBER 34

NWS NATIONAL HURRICANE CENTER MIAMI FL AL092012
1500 UTC WED AUG 29 2012

THE TROPICAL STORM WARNING HAS BEEN DISCONTINUED EAST OF THE ALABAMA-FLORIDA BORDER.

SUMMARY OF WATCHES AND WARNINGS IN EFFECT...

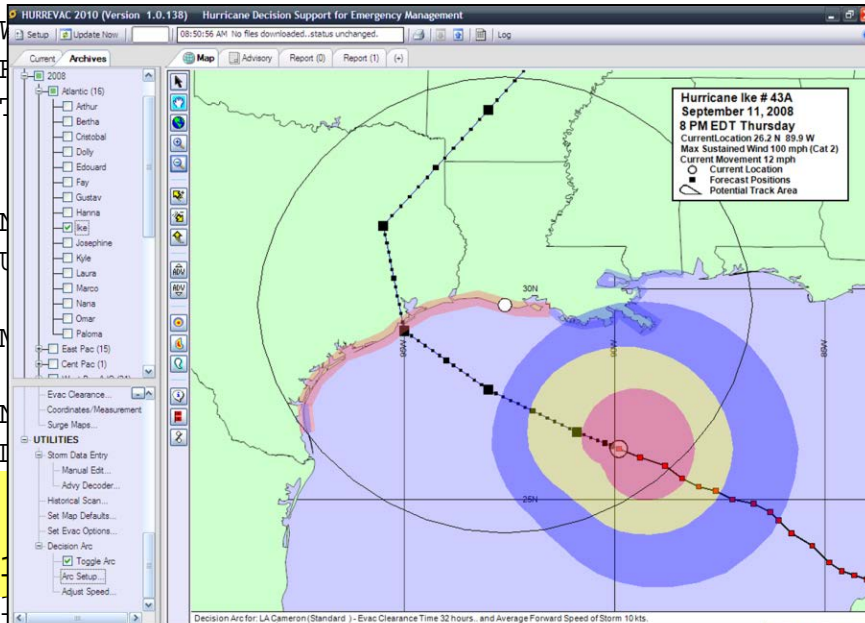
A HURRICANE WARNING IS IN EFFECT EAST OF MOBILE BAY INCLUDING THE MAUREPAS

HURRICANE CENTER POSITION ACCURATE

PRESENT MOVEMENT

ESTIMATED MINIMUM MAX SUSTAINED

- 64 KT.....
- 50 KT.....
- 34 KT.....
- 12 FT SEAS...



Radii represent the largest distance from the center in particular quadrant

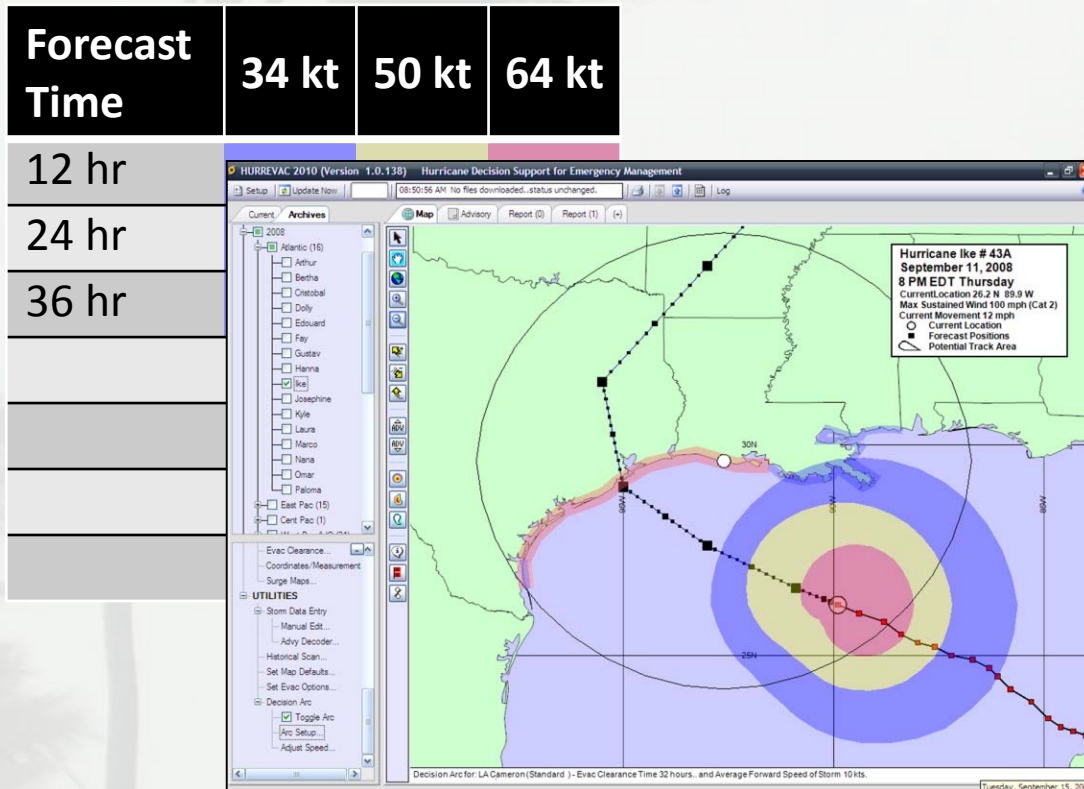
Leads to an inherent over-estimate of radii, especially near land

WINDS AND SEAS VARY GREATLY IN EACH QUADRANT. RADII IN NAUTICAL

Forecast Advisory

Position. Size. Radii. Intensity.

NHC estimates and forecast cyclone “size” via wind radii in four quadrants

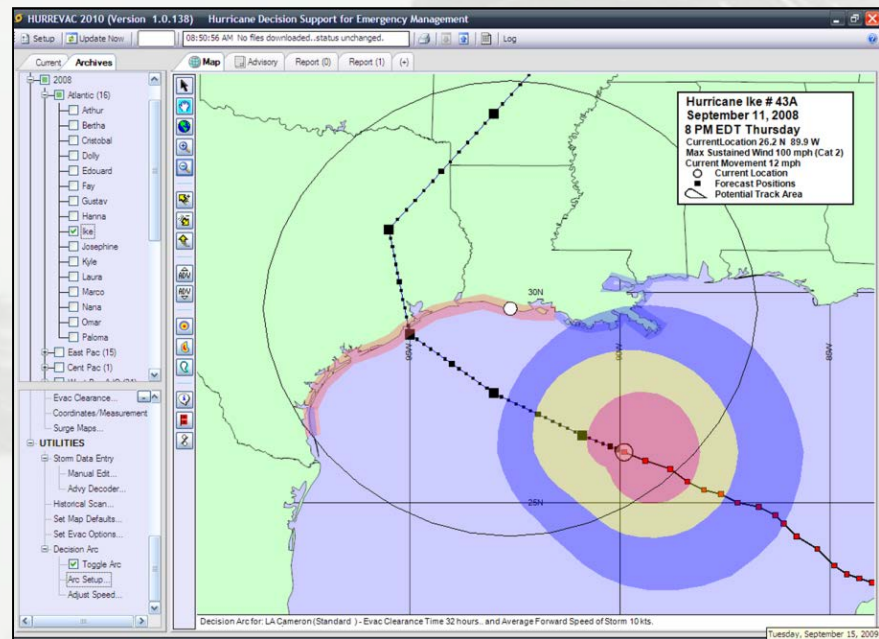


Forecast Advisory

Position. Size. Radii. Intensity.

NHC estimates and forecast cyclone
 “size” via wind radii in four quadrants

Forecast Time	34 kt	50 kt	64 kt
12 hr			
24 hr			
36 hr			
48 hr			N/A

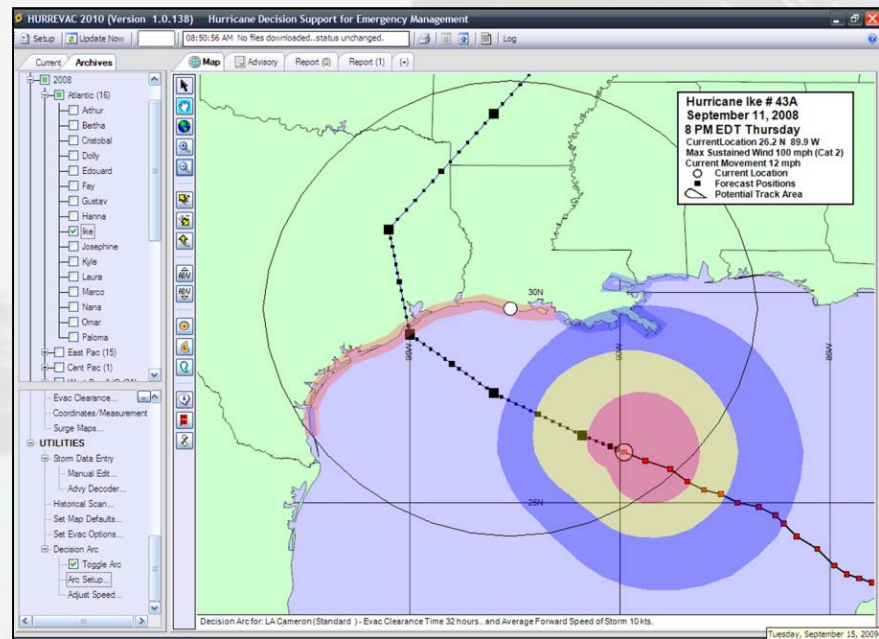


Forecast Advisory

Position. Size. Radii. Intensity.

NHC estimates and forecast cyclone
 “size” via wind radii in four quadrants

Forecast Time	34 kt	50 kt	64 kt
12 hr			
24 hr			
36 hr			
48 hr			N/A
72 hr			N/A

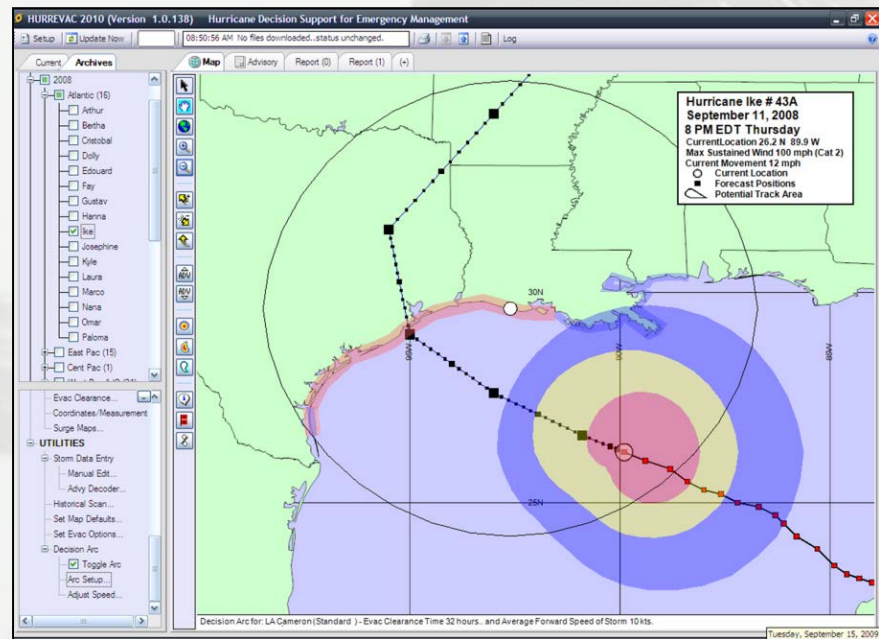


Forecast Advisory

Position. Size. Radii. Intensity.

NHC estimates and forecast cyclone
 “size” via wind radii in four quadrants

Forecast Time	34 kt	50 kt	64 kt
12 hr			
24 hr			
36 hr			
48 hr			N/A
72 hr			N/A
96 hr	N/A	N/A	N/A
120 hr	N/A	N/A	N/A



There is a storm.

Chance for some effects?

Will we get hurricane winds?

Staging areas safe?

- **Wind Speed Probabilities**

Wind Speed Probabilities

How Likely. Arrival Times. Inland Threat.



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



TROPICAL DEPRESSION ONE WIND SPEED PROBABILITIES NUMBER 1
 NWS NATIONAL HURRICANE CENTER MIAMI FL AL012014
 0300 UTC TUE JUL 01 2014

- - - - WIND SPEED PROBABILITIES FOR SELECTED LOCATIONS - - - -

TIME PERIODS	FROM 12Z WED TO 00Z THU	FROM 00Z THU TO 12Z THU	FROM 12Z THU TO 00Z FRI	FROM 00Z FRI TO 12Z FRI	FROM 12Z FRI TO 12Z SAT	FROM 12Z SAT TO 12Z SUN	FROM 12Z SUN TO 12Z MON
FORECAST HOUR	(12)	(24)	(36)	(48)	(72)	(96)	(120)

LOCATION	KT						
OCEAN CITY MD	34	X	X(X)	X(X)	X(X)	1(1)	20(21) 1(22)
OCEAN CITY MD	50	X	X(X)	X(X)	X(X)	X(X)	5(5) 1(6)
OCEAN CITY MD	64	X	X(X)	X(X)	X(X)	X(X)	1(1) X(1)
RICHMOND VA	34	X	X(X)	X(X)	X(X)	2(2)	10(12) X(12)
NORFOLK NAS	34	X	X(X)	X(X)	X(X)	5(5)	19(24) X(24)
NORFOLK NAS	50	X	X(X)	X(X)	X(X)	X(X)	4(4) X(4)
NORFOLK VA	34	X	X(X)	X(X)	X(X)	5(5)	21(26) X(26)
NORFOLK VA	50	X	X(X)	X(X)	X(X)	X(X)	5(5) X(5)

Location-specific Probabilities

- Tropical-Storm-Force
- 58 mph
- Hurricane-Force



Wind Speed Probabilities

How Likely. Arrival Times. Inland Threat.



TROPICAL DEPRESSION ONE WIND SPEED PROBABILITIES NUMBER 1
 NWS NATIONAL HURRICANE CENTER MIAMI FL AL012014
 0300 UTC TUE JUL 01 2014

- - - - WIND SPEED PROBABILITIES FOR SELECTED LOCATIONS - - - -

TIME PERIODS	FROM 12Z WED TO 00Z THU	FROM 00Z THU TO 12Z THU	FROM 12Z THU TO 00Z FRI	FROM 00Z FRI TO 12Z FRI	FROM 12Z FRI TO 12Z SAT	FROM 12Z SAT TO 12Z SUN	FROM 12Z SUN TO 12Z MON
FORECAST HOUR	(12)	(24)	(36)	(48)	(72)	(96)	(120)

LOCATION	KT	12Z WED TO 00Z THU	00Z THU TO 12Z THU	12Z THU TO 00Z FRI	00Z FRI TO 12Z FRI	12Z FRI TO 12Z SAT	12Z SAT TO 12Z SUN	12Z SUN TO 12Z MON
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RICHMOND VA	34	X	X(X)	X(X)	X(X)	2(2)	10(12)	X(12)
NORFOLK NAS	34	X	X(X)	X(X)	X(X)	5(5)	19(24)	X(24)
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Wind Speed Probabilities

How Likely. Arrival Times. Inland Threat.



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 0300 UTC TUE JUL 01 2014

--- WIND SPEED PROBABILITIES FOR SELECTED LOCATIONS ---

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RICHMOND VA	34	X	X(X)	X(X)	X(X)	2(2)	10(12)	X(12)
NORFOLK NAS	34	X	X(X)	X(X)	X(X)	5(5)	19(24)	X(24)
NORFOLK NAS	50	X	X(X)	X(X)	X(X)	X(X)	4(4)	X(4)
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Location-specific Probabilities

- Tropical-Storm-Force
- **58 mph**
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Wind Speed Probabilities

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OCEAN CITY MD	64	X	X(X)	X(X)	X(X)	X(X)	1(1)	X(1)
RICHMOND VA	34	X	X(X)	X(X)	X(X)	2(2)	10(12)	X(12)
NORFOLK NAS	34	X	X(X)	X(X)	X(X)	5(5)	19(24)	X(24)
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Wind Speed Probabilities

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TROPICAL DEPRESSION ONE WIND SPEED PROBABILITIES NUMBER 1
 NWS NATIONAL HURRICANE CENTER MIAMI FL AL012014
 0300 UTC TUE JUL 01 2014

--- WIND SPEED PROBABILITIES FOR SELECTED LOCATIONS ---

TIME PERIODS	FROM 12Z WED TO 00Z THU	FROM 00Z THU TO 12Z THU	FROM 12Z THU TO 00Z FRI	FROM 00Z FRI TO 12Z FRI	FROM 12Z FRI TO 12Z SAT	FROM 12Z SAT TO 12Z SUN	FROM 12Z SUN TO 12Z MON
FORECAST HOUR	(12)	(24)	(36)	(48)	(72)	(96)	(120)

LOCATION	KT	34	50	64	34	50	64	34	50	64	34	50	64	34	50	64	34	50	64
OCEAN CITY MD	34	X	X(X)	X(X)	X(X)	1(1)	20(21)	1(22)											
OCEAN CITY MD	50	X	X(X)	X(X)	X(X)	X(X)	5(5)	1(6)											
OCEAN CITY MD	64	X	X(X)	X(X)	X(X)	X(X)	1(1)	X(1)											
RICHMOND VA	34	X	X(X)	X(X)	X(X)	2(2)	10(12)	X(12)											
NORFOLK NAS	34	X	X(X)	X(X)	X(X)	5(5)	19(24)	X(24)											
NORFOLK NAS	50	X	X(X)	X(X)	X(X)	X(X)	4(4)	X(4)											
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NORFOLK VA	50	X	X(X)	X(X)	X(X)	X(X)	5(5)	X(5)											

Location-specific Probabilities

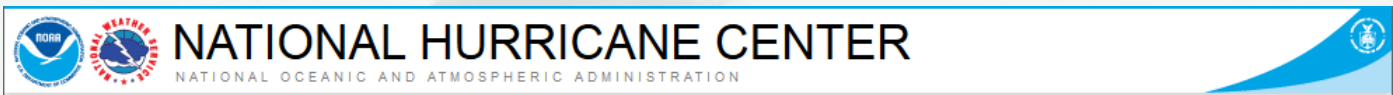
- Tropical-Storm-Force
- 58 mph
- Hurricane-Force

Onset Probabilities

- Timing information

Wind Speed Probabilities

How Likely. Arrival Times. Inland Threat.



TROPICAL DEPRESSION ONE WIND SPEED PROBABILITIES NUMBER 1
 NWS NATIONAL HURRICANE CENTER MIAMI FL AL012014
 0300 UTC TUE JUL 01 2014

--- WIND SPEED PROBABILITIES FOR SELECTED LOCATIONS ---

TIME PERIODS	FROM 12Z WED TO 00Z THU	FROM 00Z THU TO 12Z THU	FROM 12Z THU TO 00Z FRI	FROM 00Z FRI TO 12Z FRI	FROM 12Z FRI TO 12Z SAT	FROM 12Z SAT TO 12Z SUN	FROM 12Z SUN TO 12Z MON
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OCEAN CITY MD	64	X	X (X)	X (X)	X (X)	X (X)	1 (1)	X (1)
RICHMOND VA	34	X	X (X)	X (X)	X (X)	2 (2)	10 (12)	X (12)
NORFOLK NAS	34	X	X (X)	X (X)	X (X)	5 (5)	19 (24)	X (24)
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Location-specific Probabilities

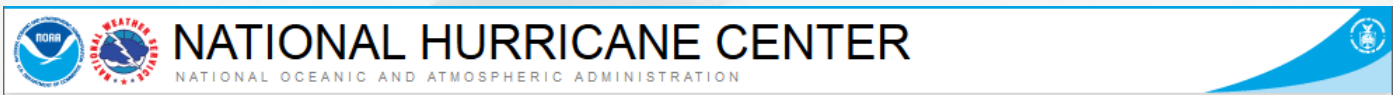
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- 58 mph
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Onset Probabilities

- Timing information

Wind Speed Probabilities

How Likely. Arrival Times. Inland Threat.



TROPICAL DEPRESSION ONE WIND SPEED PROBABILITIES NUMBER 1
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 0300 UTC TUE JUL 01 2014

--- WIND SPEED PROBABILITIES FOR SELECTED LOCATIONS ---

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OCEAN CITY MD	50 X	X(X)	X(X)	X(X)	X(X)	5(5)	1(6)
OCEAN CITY MD	64 X	X(X)	X(X)	X(X)	X(X)	1(1)	X(1)
RICHMOND VA	34 X	X(X)	X(X)	X(X)	2(2)	10(12)	X(12)
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Location-specific Probabilities

- Tropical-Storm-Force
- 58 mph
- Hurricane-Force

Onset Probabilities

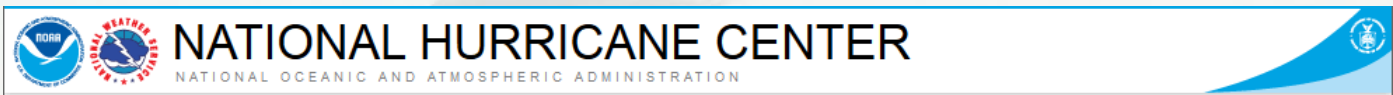
- Timing information

Cumulative probabilities

- Total risk through the time period

Wind Speed Probabilities

How Likely. Arrival Times. Inland Threat.



TROPICAL DEPRESSION ONE WIND SPEED PROBABILITIES NUMBER 1
 NWS NATIONAL HURRICANE CENTER MIAMI FL AL012014
 0300 UTC TUE JUL 01 2014

--- WIND SPEED PROBABILITIES FOR SELECTED LOCATIONS ---

TIME PERIODS	FROM 12Z WED TO 00Z THU	FROM 00Z THU TO 12Z THU	FROM 12Z THU TO 00Z FRI	FROM 00Z FRI TO 12Z FRI	FROM 12Z FRI TO 12Z SAT	FROM 12Z SAT TO 12Z SUN	FROM 12Z SUN TO 12Z MON
FORECAST HOUR	(12)	(24)	(36)	(48)	(72)	(96)	(120)

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OCEAN CITY MD	34	X	X(X)	X(X)	X(X)	1(1)	20(21)	1(22)
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OCEAN CITY MD	64	X	X(X)	X(X)	X(X)	X(X)	1(1)	X(1)
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Location-specific Probabilities

- Tropical-Storm-Force
- 58 mph
- Hurricane-Force

Onset Probabilities

- Timing information

Cumulative probabilities

- Total risk through the time period

There is a storm.

How confident is the NHC?

Contingencies?

Are watches possible?

- **Forecast Discussion**
- 
- The background of the slide features a light, hazy image of palm trees. The fronds of the palm trees are bent and blowing, suggesting a strong wind or storm. The overall tone is pale and atmospheric, with a focus on the silhouettes and movement of the vegetation.

Forecast Discussion

Confidence. Scenarios. Key Concerns.



HURRICANE JOAQUIN DISCUSSION NUMBER 15
NWS NATIONAL HURRICANE CENTER MIAMI FL AL112015
1100 AM EDT THU OCT 01 2015

An Air Force Reserve Hurricane Hunter aircraft reported 700-mb flight-level winds of 119 kt in the northwestern eyewall, with a 117 kt surface wind estimate from the Stepped Frequency Microwave Radiometer in the southwestern eyewall. The latest central pressure was 942 mb. Based on these data, the advisory intensity is increased to 110 kt. Satellite imagery indicates that an eye is trying to form in the central dense overcast, and that the cirrus outflow is good in all directions. Joaquin is expected to intensify a little more in the next 12 to 24 hours as it remains over very warm waters and in an environment of decreasing vertical shear. After that time, there could be some fluctuations in intensity due to eyewall replacement cycles. There is some uncertainty in the intensity forecast in the 48-96 hour period. The statistical models suggest that Joaquin should weaken due to increasing shear. However, several of the global models forecast the hurricane to move into an area of strong upper-level divergence and show a falling central pressure. The new forecast will continue to show weakening during this time, but it would not be a surprise if it is stronger than currently forecast. The initial motion is 220/5. Water vapor imagery shows a mid- to upper-level ridge north of the hurricane, with a developing deep-layer trough over the eastern and southeastern United States. The

- Forecast reasoning
- Relevant Observations
- Model Guidance
- Forecast Uncertainties

Forecast Discussion

Confidence. Scenarios. Key Concerns.



KEY MESSAGES:

1. Preparations to protect life and property in the central Bahamas should be complete. The slow motion of Joaquin over the next day or so will bring a prolonged period of hurricane force winds, storm surge, and very heavy rainfall to those islands.

2. Confidence in the details of the forecast after 72 hours is still low, since there have been some large changes in the model guidance overnight and a large spread in the model solutions remains, with potential impacts from the Carolinas through New England. It is also possible that Joaquin will remain far from the U.S. east coast. A hurricane watch for the U.S. coast would likely not occur until at least Friday morning.

3. Efforts to provide the forecast models with as much data as possible continue, with twice daily NOAA G-IV jet missions in the storm environment, and extra NWS balloon launches.

4. It's too early to talk about specific wind, rain, or surge impacts from Joaquin in the United States. Regardless of Joaquin's track, strong onshore winds will create minor to moderate coastal flooding along the coasts of the mid-Atlantic and northeastern states through the weekend.

5. Many portions of the eastern U.S. are currently experiencing

Key Messages

- Forecast Confidence
- Highlight Threats

Forecast Discussion

Confidence. Scenarios. Key Concerns.



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



4. It's too early to talk about specific wind, rain, or surge impacts from Joaquin in the United States. Regardless of Joaquin's track, strong onshore winds will create minor to moderate coastal flooding along the coasts of the mid-Atlantic and northeastern states through the weekend.

5. Many portions of the eastern U.S. are currently experiencing heavy rains and gusty winds associated with a frontal system. These heavy rains are likely to continue for the next few days, even if the center of Joaquin stays offshore. The resulting inland flood potential could complicate preparations for Joaquin should it head toward the coast, and even more substantial inland flooding is possible if Joaquin later passes near or over these same areas.

FORECAST POSITIONS AND MAX WINDS

INIT	01/1500Z	23.0N	73.9W	110 KT	125 MPH
12H	02/0000Z	22.9N	74.2W	115 KT	130 MPH
24H	02/1200Z	23.7N	74.6W	120 KT	140 MPH
36H	03/0000Z	25.2N	74.4W	120 KT	140 MPH
48H	03/1200Z	27.5N	73.7W	110 KT	125 MPH
72H	04/1200Z	32.0N	73.0W	95 KT	110 MPH
96H	05/1200Z	36.0N	73.5W	75 KT	85 MPH
120H	06/1200Z	40.0N	72.5W	55 KT	65 MPH

Table of track and intensity forecasts

Tropical Cyclone Update

Unexpected Changes. Location. Landfall.



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



HURRICANE ISAAC TROPICAL CYCLONE UPDATE
NWS NATIONAL HURRICANE CENTER MIAMI FL AL092012
1100 AM CDT WED AUG 29 2012

...ISAAC CONTINUES TO MOVE SLOWLY OVER SOUTHEASTERN LOUISIANA...
HEAVY SQUALLS LASHING NEW ORELANS AND THE MISSISSIPPI COAST...

At 1100 am CDT...1600 UTC...The center of hurricane Isaac was
Estimated near latitude 29.6 north...Longitude 90.7 west...Or very
Near Houma Louisiana...And about 45 miles southwest of New Orleans
Louisiana. Isaac is moving toward the northwest near 6 mph...9
Km/h and this general motion is expected to continue through
tonight.

A gust to 67 mph was recently reported at Shell Beach, Louisiana.
Tropical storm conditions continue along the Mississippi and
Alabama coasts.

SUMMARY OF 1100 AM CDT...1600 UTC...INFORMATION

LOCATION...29.6N 90.7W
ABOUT 1 MI...2 KM W OF HOUMA LOUISIANA
ABOUT 45 MI...75 KM SW OF NEW ORLEANS LOUISIANA
MAXIMUM SUSTAINED WINDS...75 MPH...120 KM/H
PRESENT MOVEMENT...NW OR 310 DEGREES AT 6 MPH...9 KM/H
MINIMUM CENTRAL PRESSURE...972 MB...28.70 INCHES

\$\$
FORECASTER STEWART/BEVEN/ZELINSKY

- Unexpected changes occur in the cyclone

- Cyclone landfall

- Issuing international watches and warnings

- 1-hourly position estimates when a cyclone with an eye is nearing land

There is a storm.

Where is the greatest concern?

When will the hazards begin?

- **Watches and Warnings**

Watches & Warnings

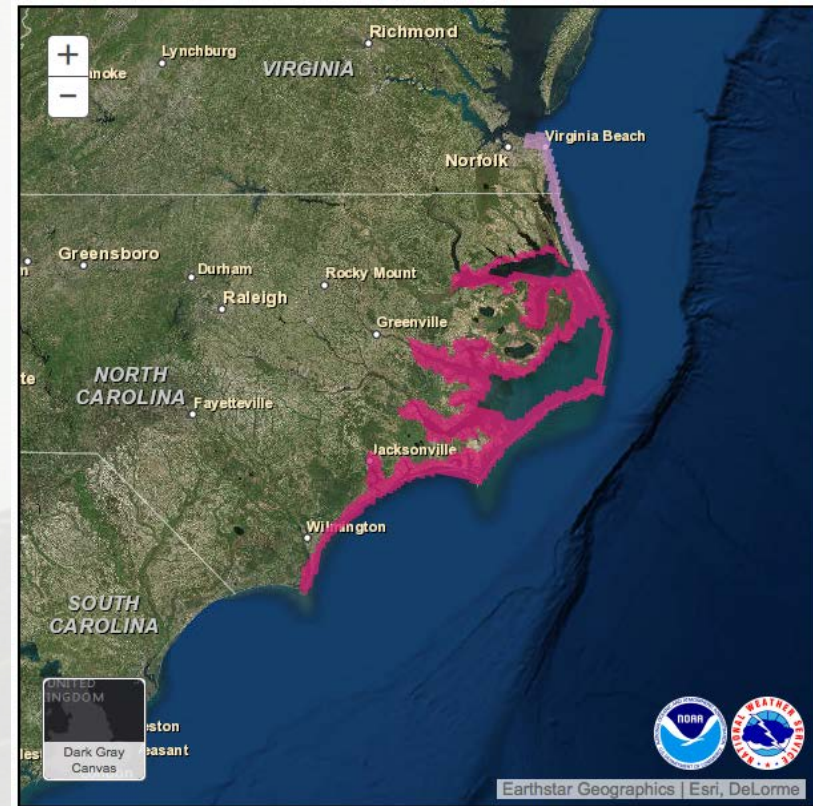
Where. When. What. Action.

Storm Surge Watch

- There is the possibility of life-threatening inundation from rising water moving inland from the shoreline somewhere within the specified area, generally within 48 hours.

Storm Surge Warning

- There is a danger of life-threatening inundation from rising water moving inland from the shoreline somewhere within the specified area, generally within 36 hours.



Watches & Warnings

Where. When. What. Action.



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



Hurricane Watch

- Hurricane conditions are possible within the watch area, generally within 48 hours

Hurricane Warning

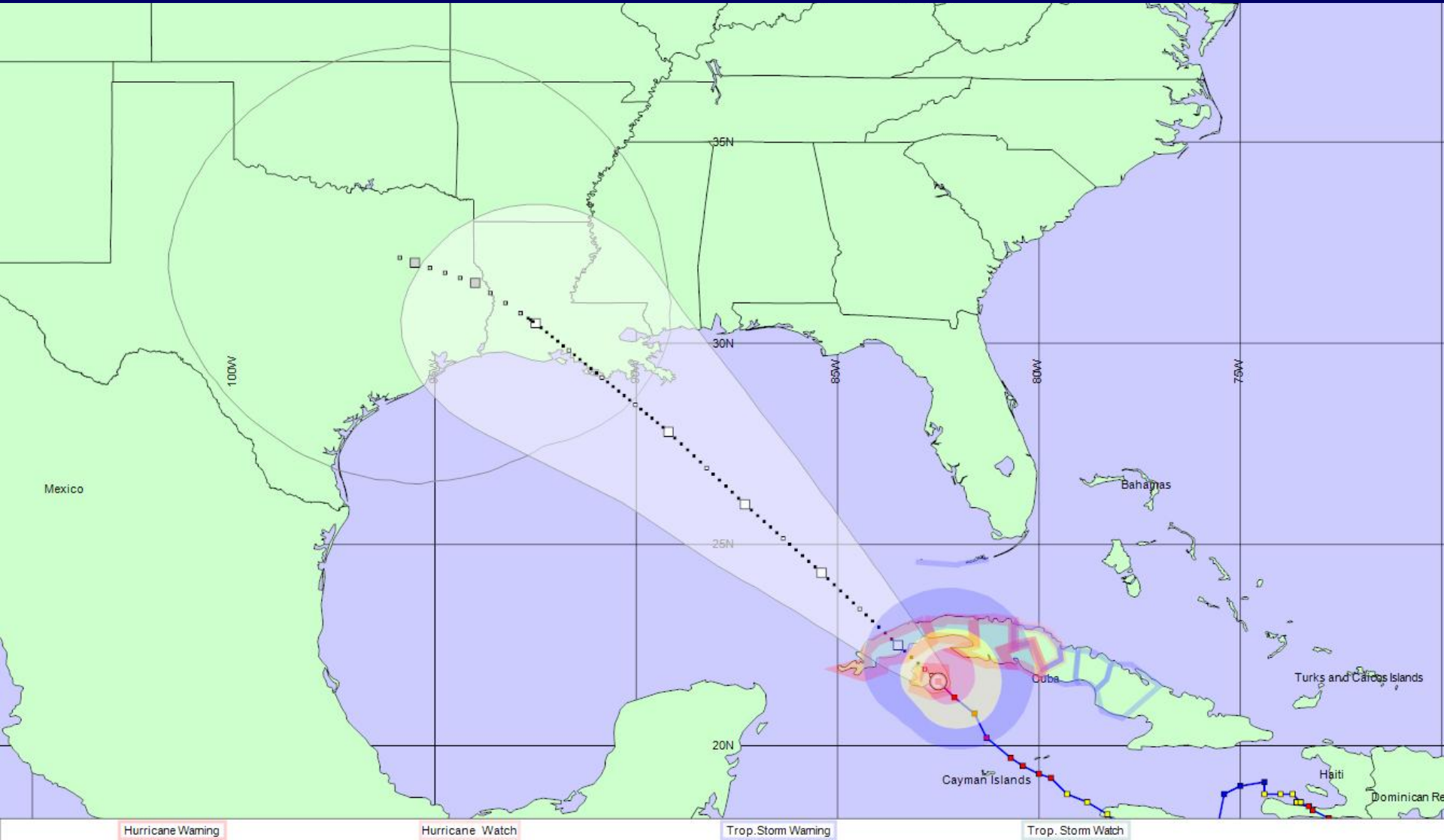
- Hurricane conditions are expected within the warning area, generally within 36 hours

Note: The lead time for Hurricane Watches and Warnings is tied to the anticipated arrival time of tropical-storm-force winds



Watches & Warnings

Where. When. What. Action.



Watches & Warnings

Where. When. What. Action.



Watches & Warnings

Where. When. What. Action.



Area of Hurricane-Force Winds (red)

Where would you issue the hurricane warning?

Hurricane Warning

Hurricane Watch

Trop. Storm Warning

Trop. Storm Watch

Watches & Warnings

Where. When. What. Action.

Must account for track and size (wind radii) uncertainties when issuing watches or warnings

— Hurricane Warning
— Tropical Storm Warning

Where would you issue the hurricane warning?

Hurricane Warning

Hurricane Watch

Trop. Storm Warning

Trop. Storm Watch



There is a storm.

When is the next update?

Can we get a briefing?

- **Timeline for advisories**

Timeline for Advisories

Scheduled Updates

No Watches/Warnings In Effect

- 5 am – **Advisory**
- 11 am – **Advisory**
- 5 pm – **Advisory**
- 11 pm – **Advisory**

Time in EDT

Timeline for Advisories

Scheduled Updates

Watches/Warnings In Effect

- 5 am – Advisory
- 8 am – Intermediate Advisory
- 11 am – Advisory
- 2 pm – Intermediate Advisory
- 5 pm – Advisory
- 8 pm – Intermediate Advisory
- 11 pm – Advisory
- 2 am – Intermediate Advisory

Time in EDT

Timeline for Advisories

Scheduled Updates

*Watches/Warnings In Effect
and Eye Tracked by Radar*

- **5 am – Advisory**
 - **6 am – Tropical Cyclone Update**
 - **7 am – Tropical Cyclone Update**
 - **8 am – Intermediate Advisory**
 - **9 am – Tropical Cyclone Update**
 - **10 am – Tropical Cyclone Update**
- **11 am – Advisory**

Time in EDT

Timeline for Advisories

Unscheduled Updates

Special Advisory

- Issued whenever an unexpected significant change has occurred
- When watches or warnings are to be issued between regularly scheduled advisories.
(Watches or warnings may be discontinued on intermediate public advisories.)

There is a storm.

Many words... little time.

Any pictures to help explain?

- **NHC Graphical Products**

Graphical Products

Location. Strength. Hazards. Warnings.



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



Hurricane ISAAC

...ISAAC DRENCHING SOUTHEASTERN LOUISIANA...DANGEROUS STORM SURGE AND FLOOD THREAT FROM HEAVY RAINS LIKELY TO CONTINUE THROUGH TONIGHT... ..U.S. Warnings in Effect...

10:00 AM CDT Wed Aug 29

Location: 29.6°N 90.7°W

Moving: NW at 6 mph

Min pressure: 972 mb

Max sustained: 75 mph

Public
Advisory
#10

1000 AM CDT

NWS Local
Statements

Aviso
Publico
#10

1000 AM EDT

US Watch/
Warning
1000 AM EDT

Forecast
Advisory
#10

1500 UTC

Forecast
Discussion
#10

1000 AM CDT

Wind Speed
Probabilities
#10

1500 UTC



Hurricane Wind Speed Probability



50-knot Wind Speed Probability



Trop Storm Wind Speed Probability



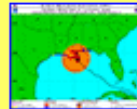
Wind History



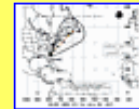
Warnings/Cone Interactive Map



Warnings/Cone Static Images



Warnings and Surface Wind



Mariner's 1-2-3 Rule



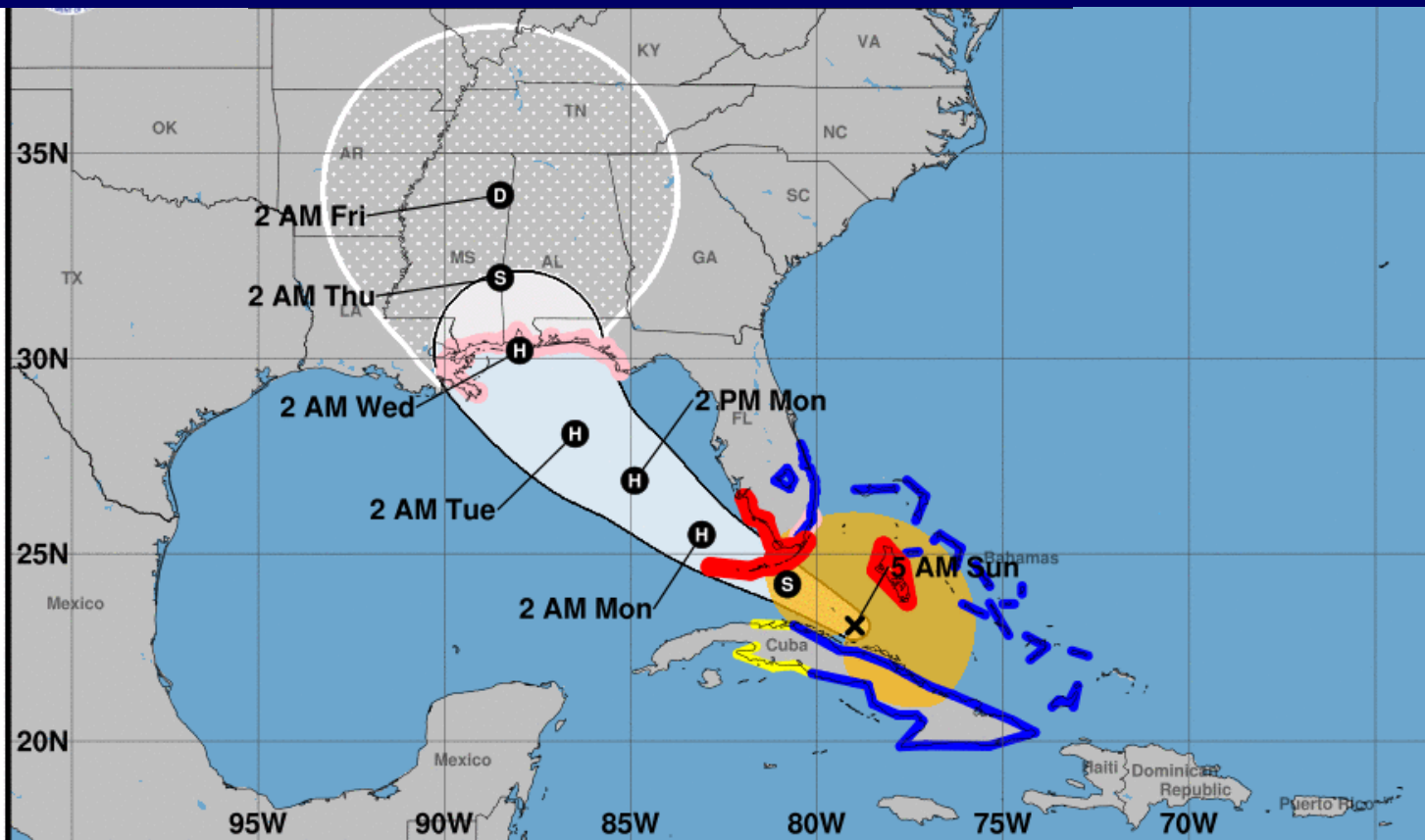
Storm Surge Inundation



U.S. Rainfall Potential

5 Day – Forecast Cone

Probable Track. Watches. Warnings.



Tropical Storm Isaac
Sunday August 26, 2012
5 AM EDT Advisory 21
NWS National Hurricane Center

Current information: x
Center location 23.1 N 79.0 W
Maximum sustained wind 65 mph
Movement NW at 18 mph

Forecast positions:
● Tropical Cyclone ○ Post-Tropical
Sustained winds: D < 39 mph
S 39-73 mph H 74-110 mph M > 110 mph

Potential track area:

Day 1-3 Day 4-5

Watches:

Hurricane Trop Stm

Warnings:

Hurricane Trop Stm

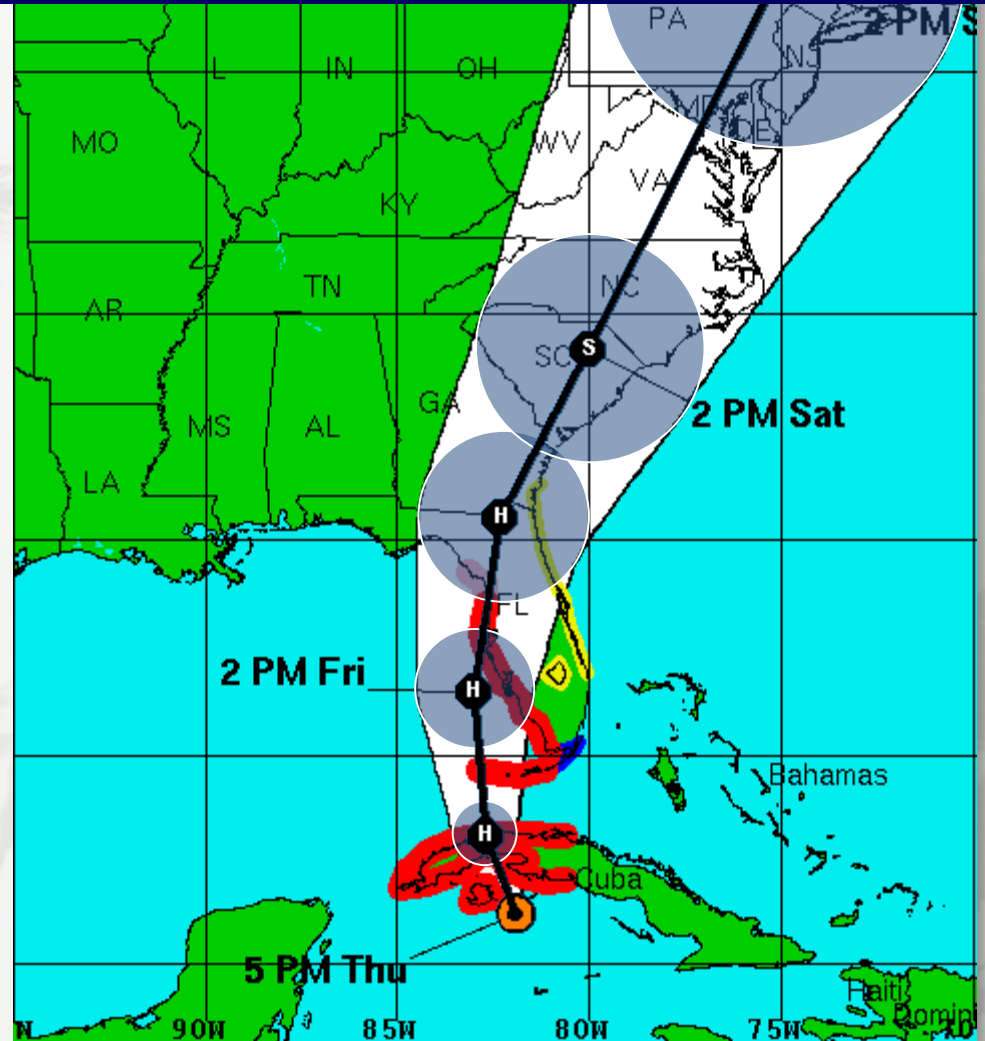
Current wind extent:

Hurricane Trop Stm

NHC Forecast Cone

The cure for the skinny black line?

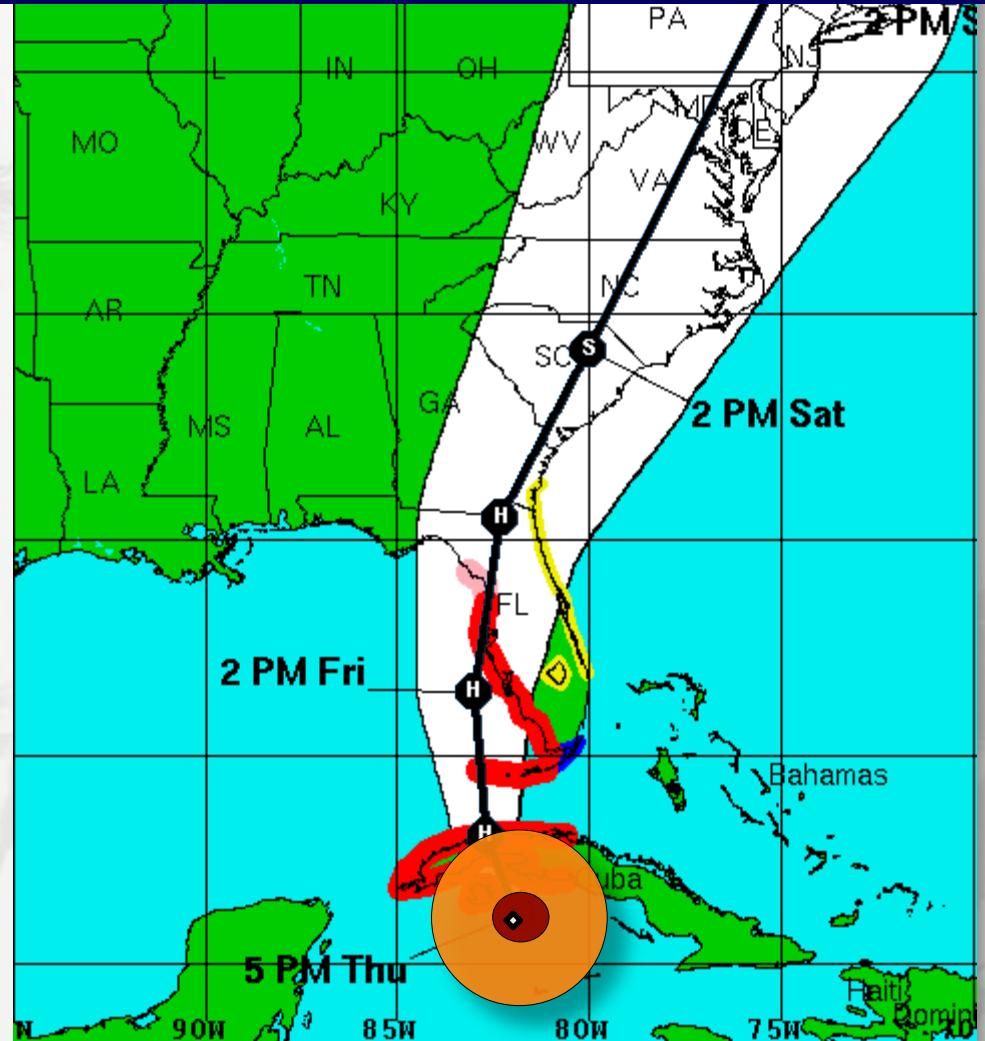
- **Probable track of tropical cyclone center**
- Formed by connecting circles centered on each forecast point
- **Each circle uses NHC historical track errors**
Actual storm position will be within the circle 67% of the time.



NHC Forecast Cone

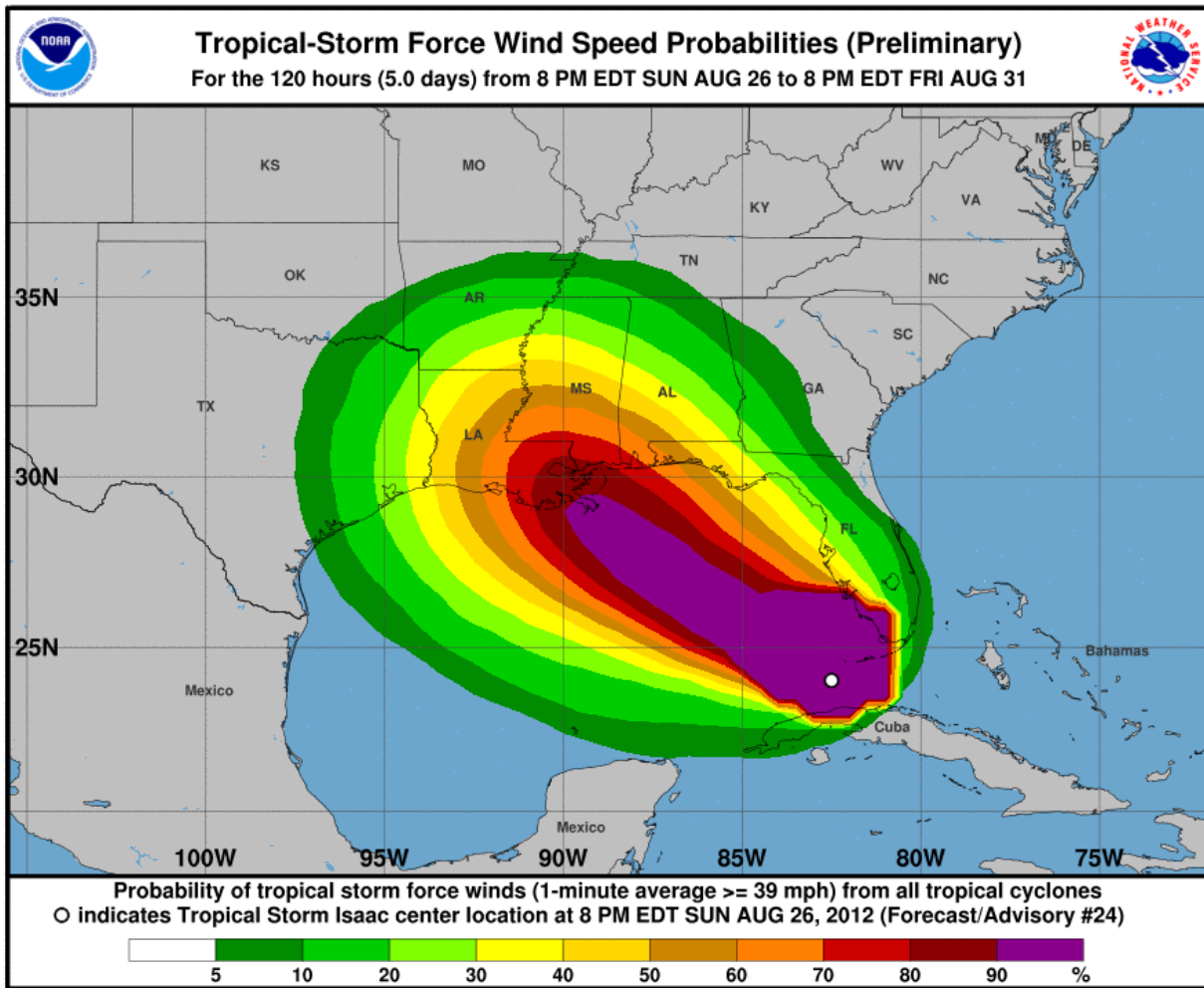
No worries, not in the cone?

- **Only displays information about track uncertainty**
No information about specific impacts
- **Impacts can occur well outside the area enclosed by the cone**
Center is expected to move outside the cone about 1/3 of the time.



Wind Speed Probabilities

How Likely. Arrival Times. Inland Threat



Depicts location-specific probabilities

- Tropical-storm-force
- 58 mph
- Hurricane-force

Time of Arrival Graphic

Timing of Onset of TS-force winds

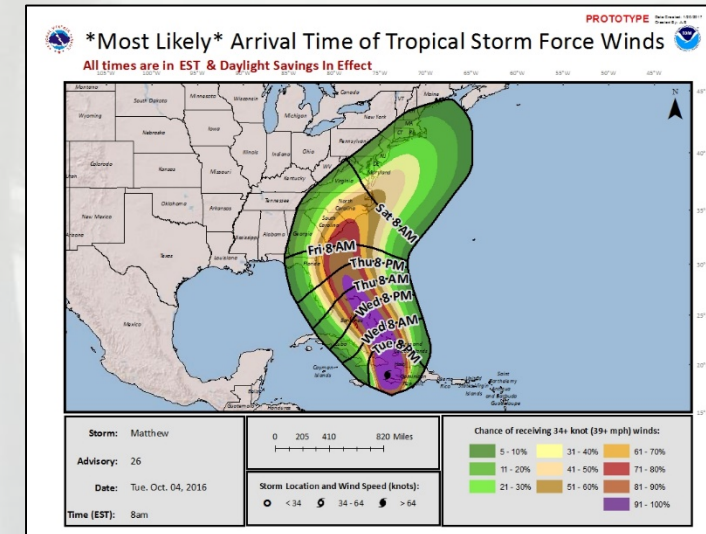
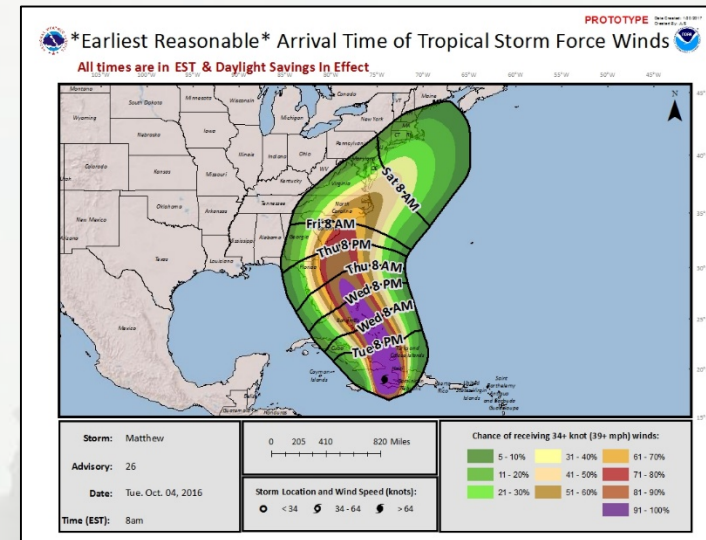
Earliest reasonable (10%) onset

Depicts the time window that one can safely assume will be free from TS-force winds

Most likely (50%) onset

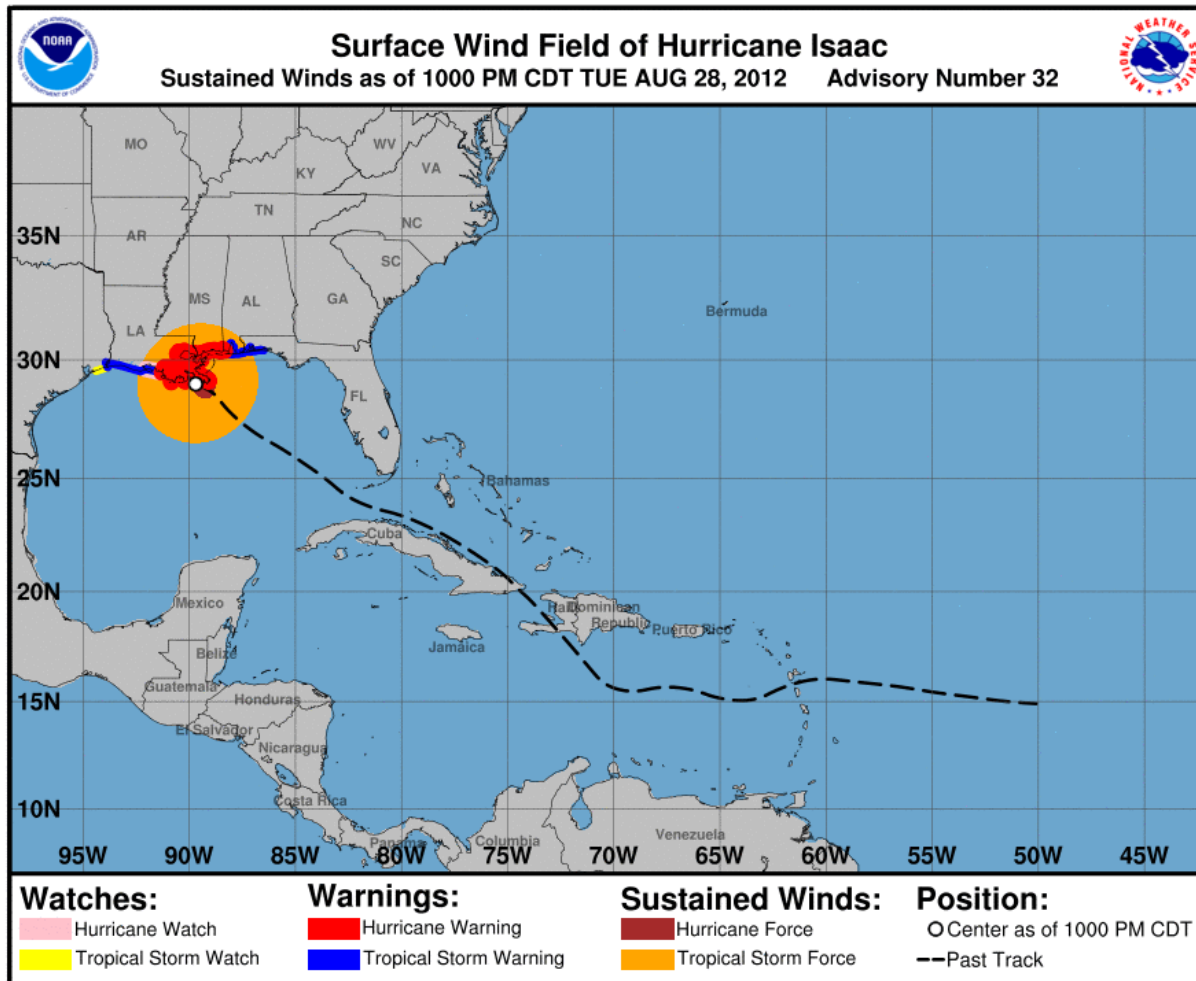
Depicts the time before or after which the onset is equally likely

Accounts for track, intensity, and size uncertainties.



Surface Wind Field

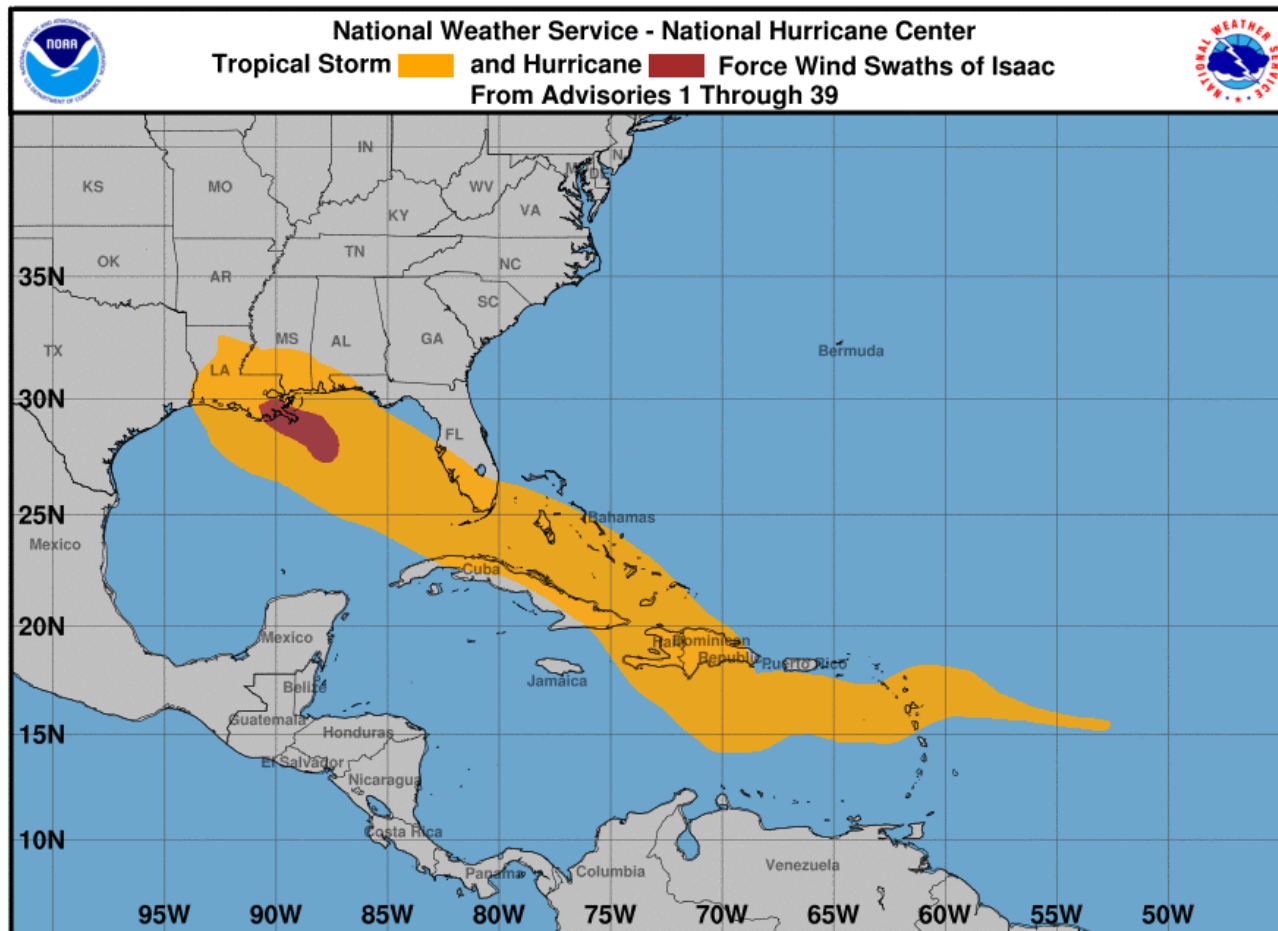
Size. Watches. Warnings.



- Wind field
- Past track
- Current watches & warnings

Cumulative Wind History

Areas Affected

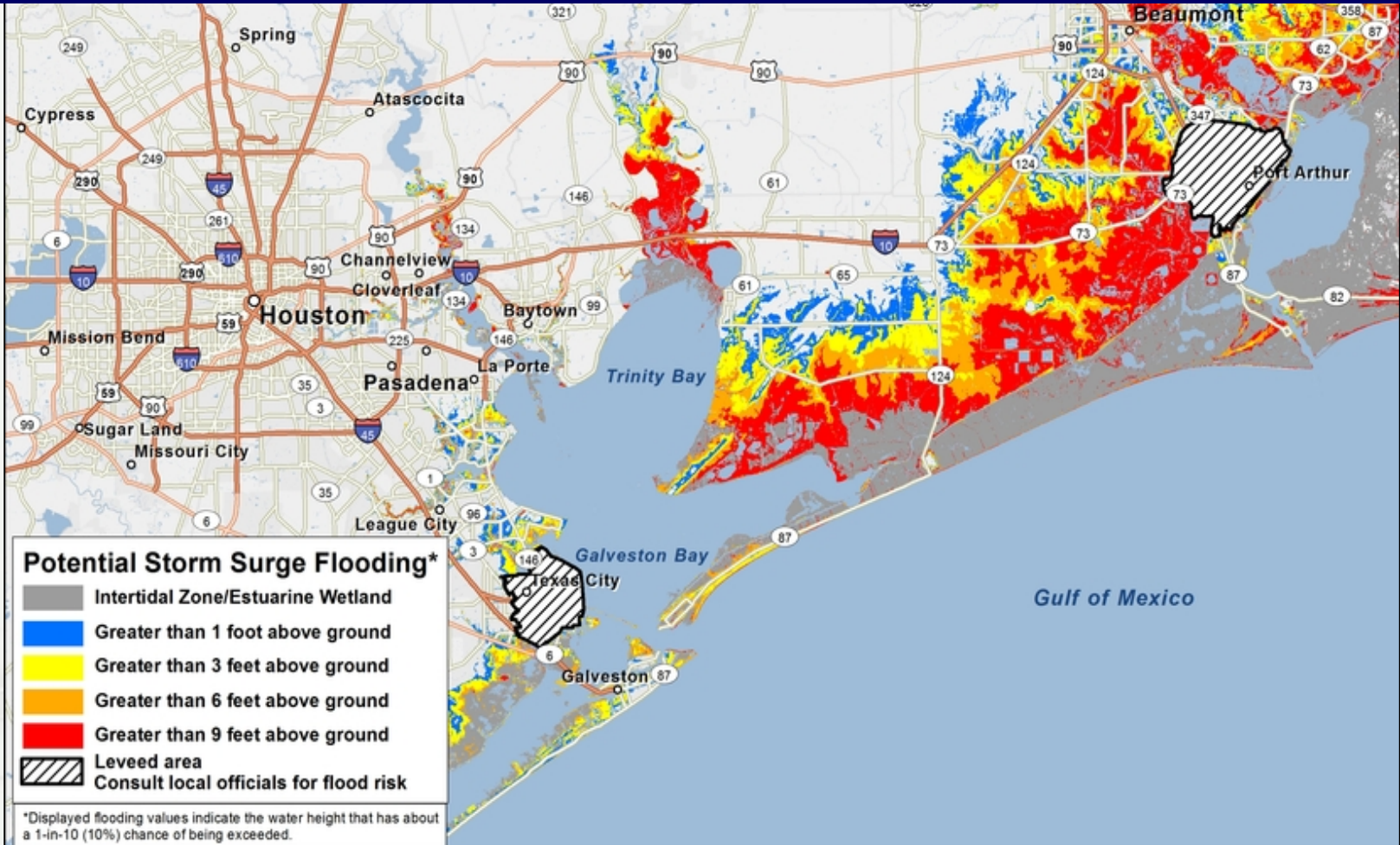


Areas potentially affected by the Tropical Cyclone (through that advisory)

- **Tropical Storm** (in orange)
- **Hurricane** (in red)

Storm Surge

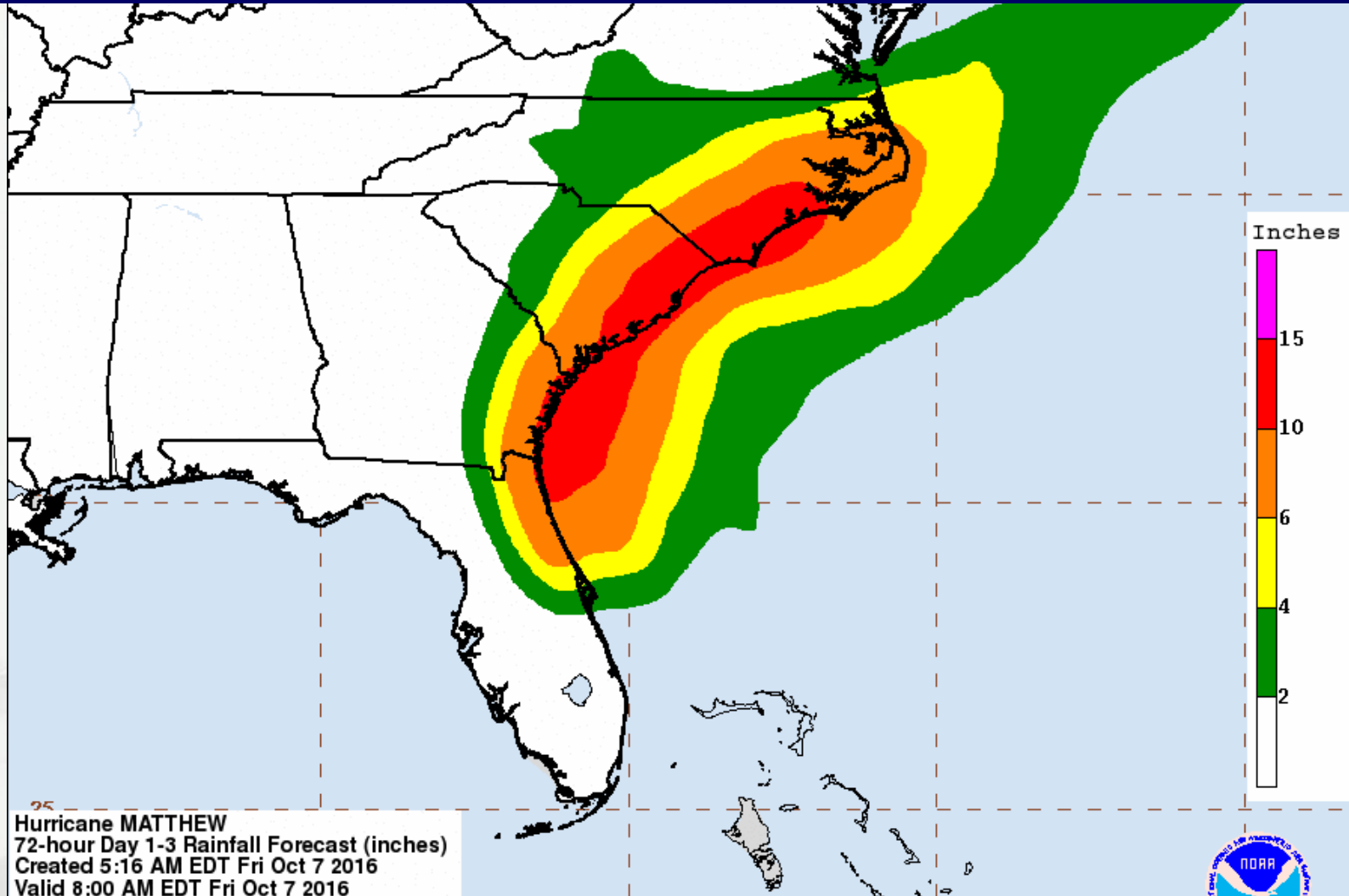
Potential Inundation Graphic



National Hurricane Center
Storm Surge Unit

U.S. Rainfall Potential

Weather Prediction Center



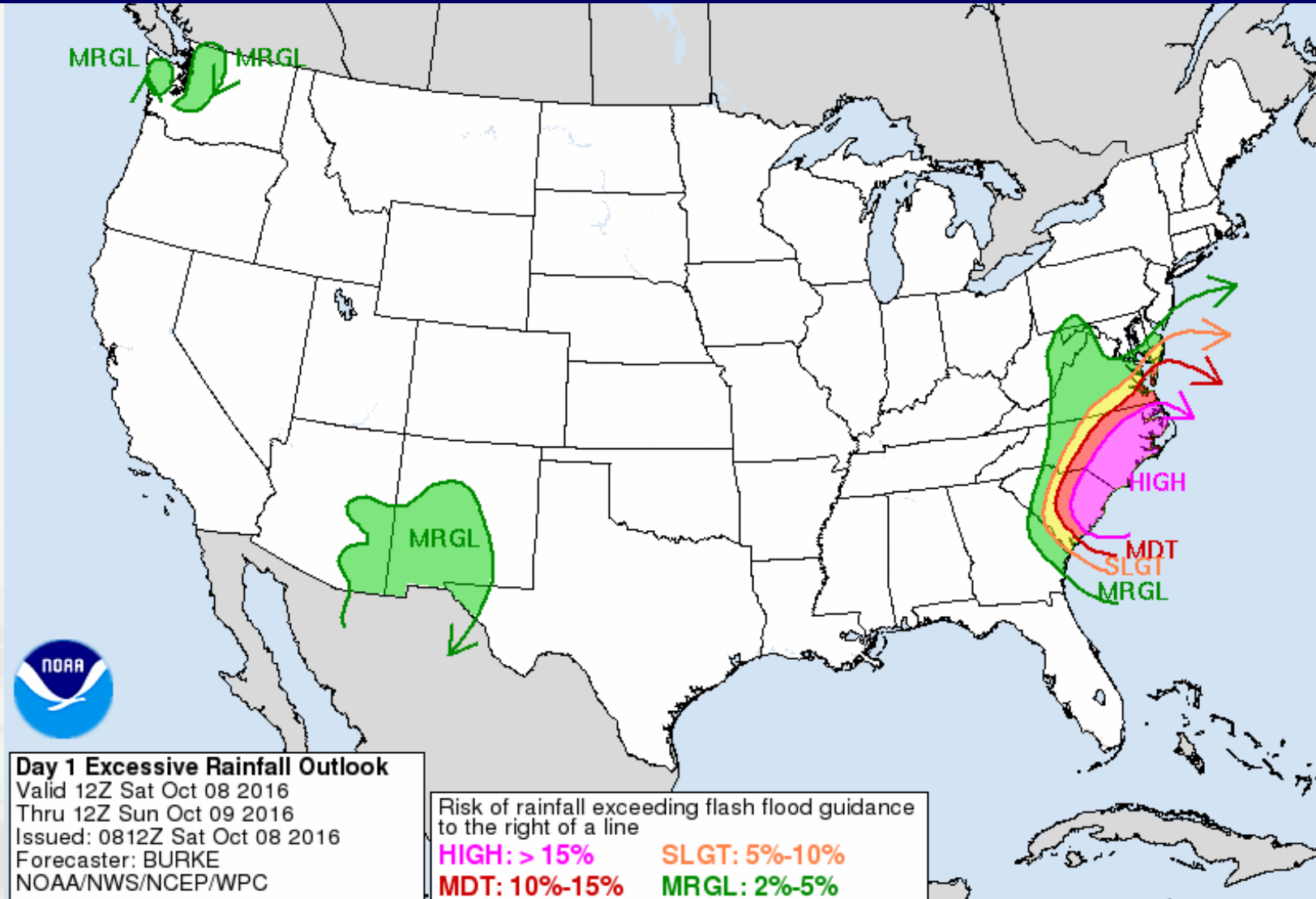
Hurricane MATTHEW
72-hour Day 1-3 Rainfall Forecast (inches)
Created 5:16 AM EDT Fri Oct 7 2016
Valid 8:00 AM EDT Fri Oct 7 2016
through 8:00 AM EDT Mon Oct 10 2016
NOAA/NWS/NCEP/WPC

Local point maximum rainfall may be higher than shown.
See the NHC public advisories for the latest tropical cyclone information.



Excessive Rainfall

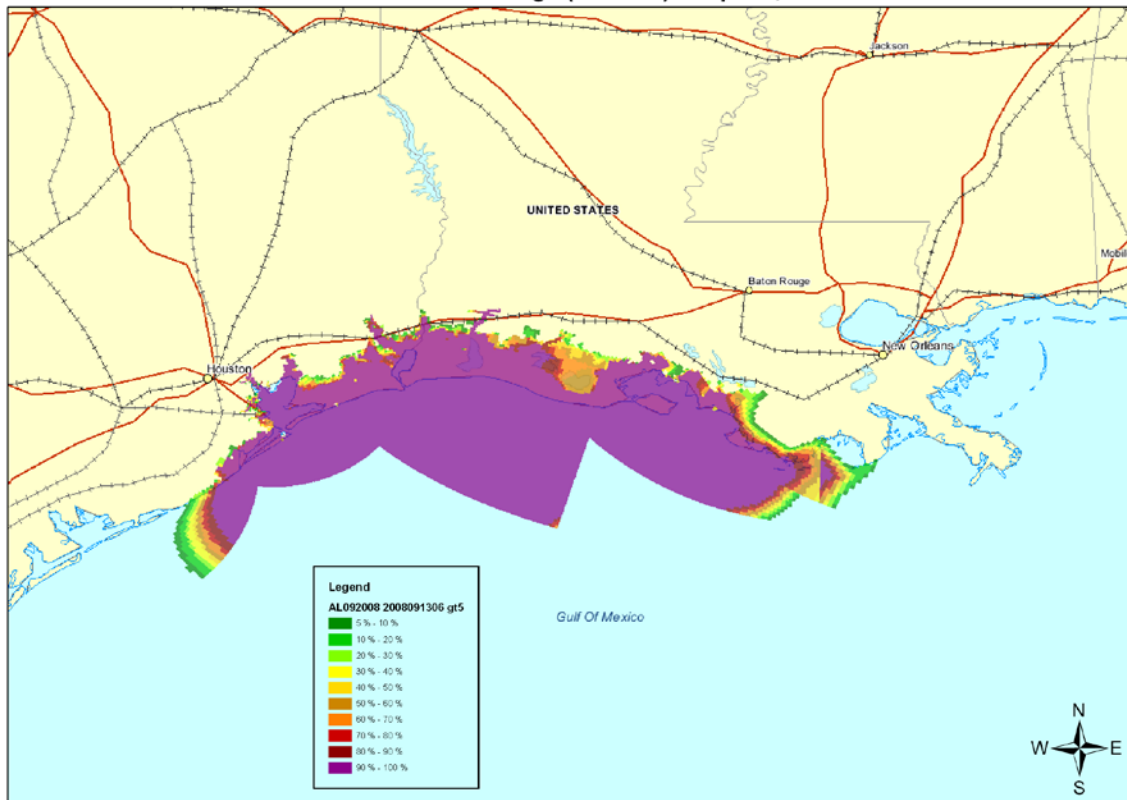
Weather Prediction Center



NHC GIS Products

hurricanes.gov/GIS

Hurricane Ike (AL092008)
Probabilistic Storm Surge (> 5 feet) - Sept 13, 2008 6z



- Forecast Track/Cone/ Watches and Warnings
- Surface Wind Field
- Past Wind Swath
- Forecast Wind Radii
- Breakpoints
- Wind Speed Probability
- Probabilistic Storm Surge

There is a storm.

Local impacts?

Localized forecast information?

- **NWS Forecast Offices**
- 
- The background of the slide features a light, hazy image of palm trees. The fronds of the palm trees are blurred and appear to be blowing in a strong wind, suggesting a storm or tropical weather system. The overall tone is light and somewhat desaturated, providing a subtle visual context for the text.

NWS Forecast Offices

Localized Impacts. Local Products.



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



Hurricane ISAAC

...ISAAC DRENCHING SOUTHEASTERN LOUISIANA...DANGEROUS STORM SURGE AND FLOOD THREAT FROM HEAVY RAINS LIKELY TO CONTINUE THROUGH TONIGHT... ..U.S. Warnings in Effect...

10:00 AM CDT Wed Aug 29

Location: 29.6°N 90.7°W

Moving: NW at 6 mph

Min pressure: 972 mb

Max sustained: 75 mph

Public
Advisory
#10

1000 AM CDT

NWS Local
Statements

Aviso
Publico
#10

1000 AM EDT

US Watch/
Warning
1000 AM EDT

Forecast
Advisory
#10

1500 UTC

Forecast
Discussion
#10

1000 AM CDT

Wind Speed
Probabilities
#10

1500 UTC



Hurricane Wind Speed Probability



50-knot Wind Speed Probability



Trop Storm Wind Speed Probability



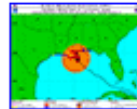
Wind History



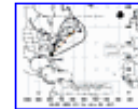
Warnings/Cone Interactive Map



Warnings/Cone Static Images



Warnings and Surface Wind



Mariner's 1-2-3 Rule



Storm Surge Inundation



U.S. Rainfall Potential

NWS Forecast Offices

Hurricane Local Statements



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HURRICANE WILMA LOCAL STATEMENT ADVISORY NUMBER 32
NATIONAL WEATHER SERVICE MIAMI FL AL242005
530 AM EDT SUN OCT 23 2005

THIS PRODUCT COVERS MAINLAND SOUTH FLORIDA

****EXTENSIVE TO DEVASTATING DAMAGE AND LIFE-THREATENING CONDITIONS
EXPECTED AS HURRICANE WILMA MOVES NORTHEAST ACROSS SOUTH FLORIDA****

NEW INFORMATION

* CHANGES TO WATCHES AND WARNINGS:

- A HURRICANE WATCH HAS BEEN UPGRADED TO A HURRICANE WARNING FOR MIAMI-DADE...BROWARD...PALM BEACH...COLLIER...GLADES AND MONROE COUNTIES

* CURRENT WATCHES AND WARNINGS:

- A HURRICANE WARNING IS IN EFFECT FOR MIAMI -DADE...BROWARD...PALM BEACH...COLLIER...HENDRY...GLADES AND MAINLAND MONROE COUNTIES

* STORM INFORMATION:

- ABOUT 405 MI SW OF NAPLES FL
- 22.1N 86.6W
- STORM INTENSITY 100 MPH WITH HIGHER GUSTS
- MOVING NORTHEAST AT 3 MPH

SITUATION OVERVIEW

EXTREMELY DANGEROUS HURRICANE WILMA IS EXPECTED TO IMPACT SOUTH FLORIDA BEGINNING THIS EVENING. THE MAIN CONCERN IS FOR LIFE-THREATENING INUNDATION IN SURGE-PRONE AREAS OF COLLIER/MAINLAND

Issued by local NWS office

- Hurricane (Tropical Storm) Watch/Warning in effect

Situation overview

- Watch/warning information
- Potential impact information
- Preparedness actions

NWS Forecast Offices

Hurricane Local Statements



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



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What is the affected area?

NWS Forecast Offices

Hurricane Local Statements



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



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SITUATION OVERVIEW

EXTREMELY DANGEROUS HURRICANE WILMA IS EXPECTED TO IMPACT SOUTH
FLORIDA BEGINNING THIS EVENING. THE MAIN CONCERN IS FOR LIFE-
THREATENING INUNDATION IN SURGE-PRONE AREAS OF COLLIER/MAINLAND



**Are there any
changes since
the last update?**

NWS Forecast Offices

Hurricane Threats & Impacts (HTI)

- **Hazards**

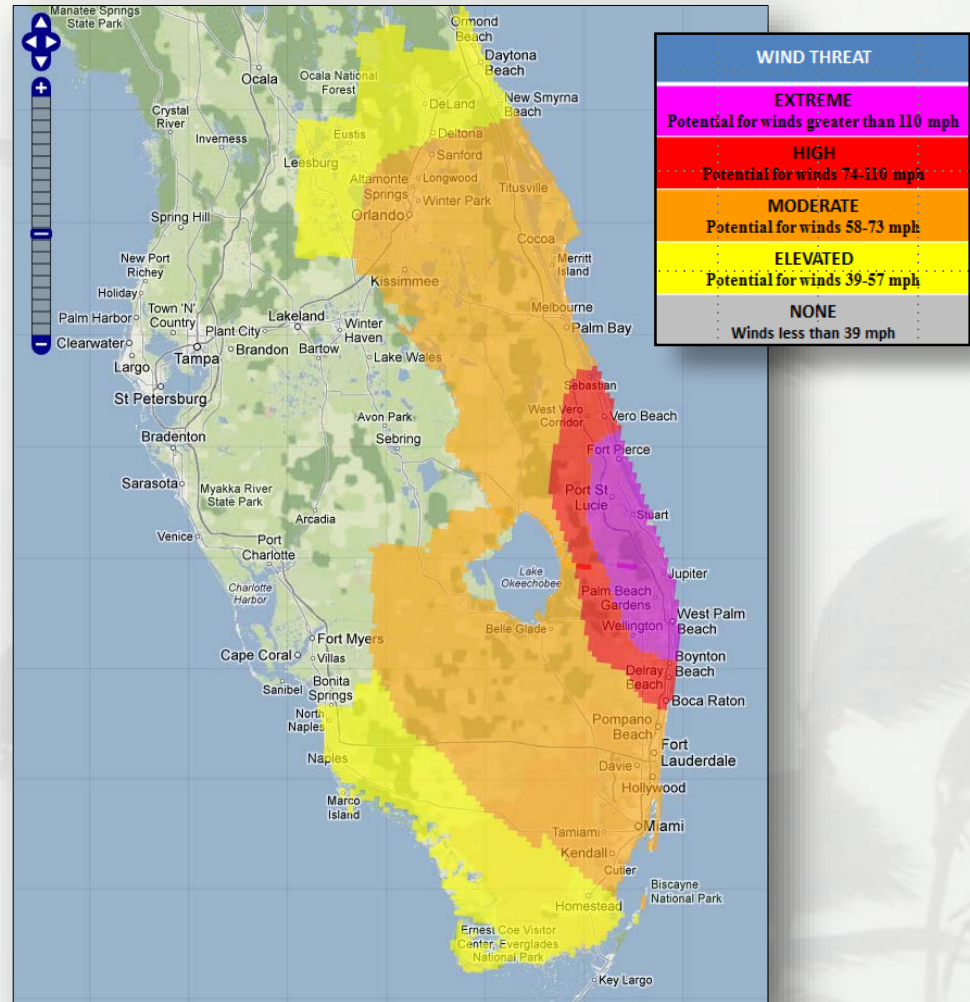
- Wind
- Storm Surge Flooding
- Inland Flooding
- Tornadoes
- Marine Hazards

- **Color-coded for risk, threat, and impact**

- Standard scheme applied
- Elevated (yellow)



Extreme (Magenta)



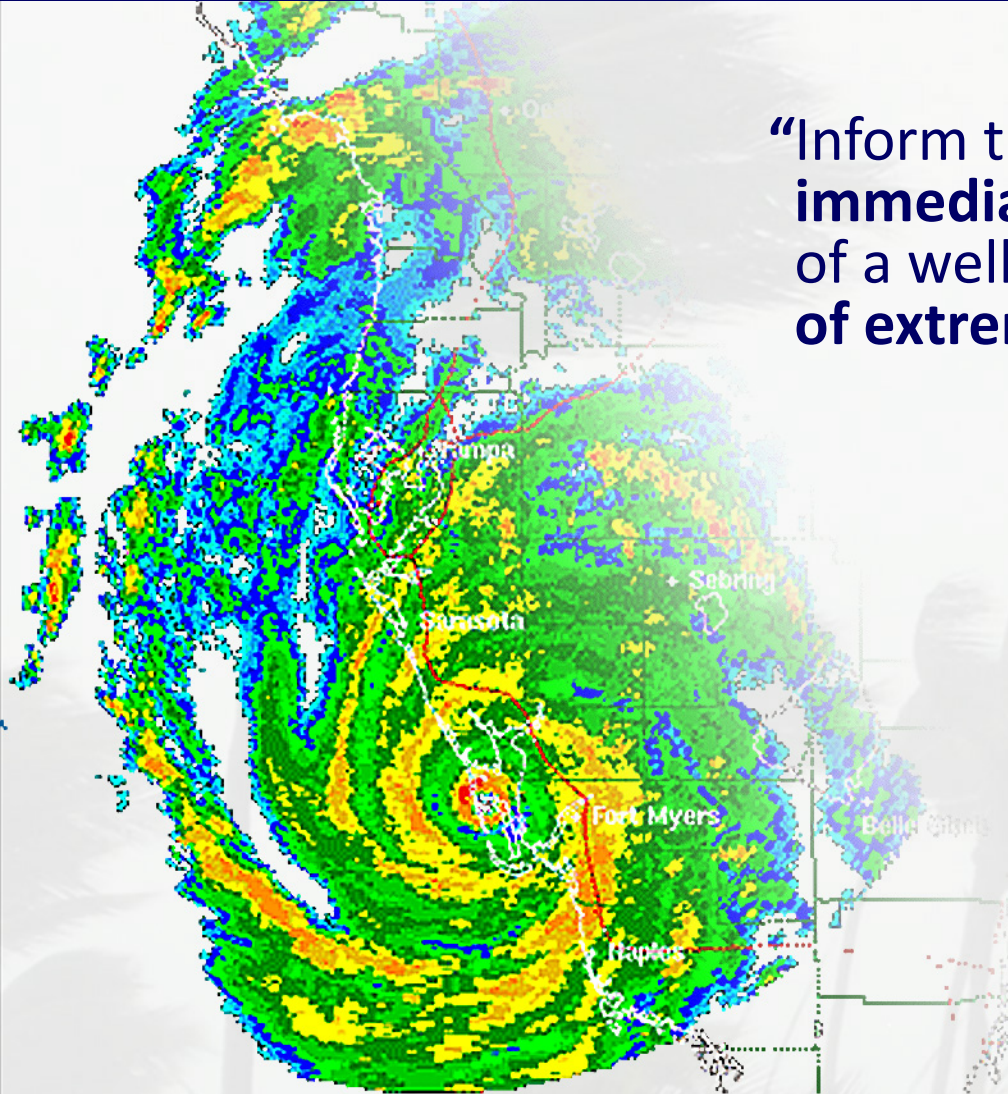
NWS Forecast Offices

Extreme Wind Warning

“Inform the public of the need to take **immediate shelter** in an interior portion of a well-built structure **due to the onset of extreme tropical cyclone winds.**”

Issuance criteria:

- Category 3 or greater
- Valid time 2 hours or less



Other NHC Products

Monthly Tropical Cyclone Summary



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MONTHLY TROPICAL WEATHER SUMMARY

NWS TPC/NATIONAL HURRICANE CENTER MIAMI FL
800 AM EDT FRI OCT 01 2010

FOR THE NORTH ATLANTIC...CARIBBEAN SEA AND THE GULF OF MEXICO...

EIGHT TROPICAL STORMS FORMED IN THE ATLANTIC BASIN DURING THE MONTH OF SEPTEMBER. THREE OF THESE STORMS...IGOR...JULIA...AND KARL... BECAME MAJOR HURRICANES...AND LISA REACHED HURRICANE STATUS. THESE NUMBERS ARE WELL ABOVE THE LONG-TERM (1944-2009) AVERAGES OF 4 TROPICAL STORMS...2 HURRICANES...AND ABOUT 1 MAJOR HURRICANE FOR THE MONTH OF SEPTEMBER. IN TERMS OF ACCUMULATED CYCLONE ENERGY... ACE...WHICH MEASURES THE COMBINED STRENGTH AND DURATION OF TROPICAL STORMS AND HURRICANES...TROPICAL CYCLONE ACTIVITY IN SEPTEMBER WAS ABOUT 78 PERCENT ABOVE AVERAGE.

SO FAR THIS SEASON...OVERALL TROPICAL CYCLONE ACTIVITY TO DATE IS ABOUT 53 PERCENT ABOVE THE LONG-TERM MEDIAN.

NAME	DATES	MAX WIND (MPH)
------	-------	----------------

H ALEX	25 JUN-2 JUL	105
TD TWO	7-8 JUL	35
TS BONNIE	22-24 JUL	40
TS COLIN	2-8 AUG	60
TD FIVE	10-11 AUG	35
MH DANIELLE	21-31 AUG	135
MH EARL	25 AUG-5 SEP	145
TS FIONA	30 AUG-4 SEP	60
TS GASTON	1-2 SEP	40
TS HERMINE	6-8 SEP	65

Issued monthly

- July 1st to December 1st

Tropical Summary

- Summarizes activity for the previous month
- Preliminary statistics for the season

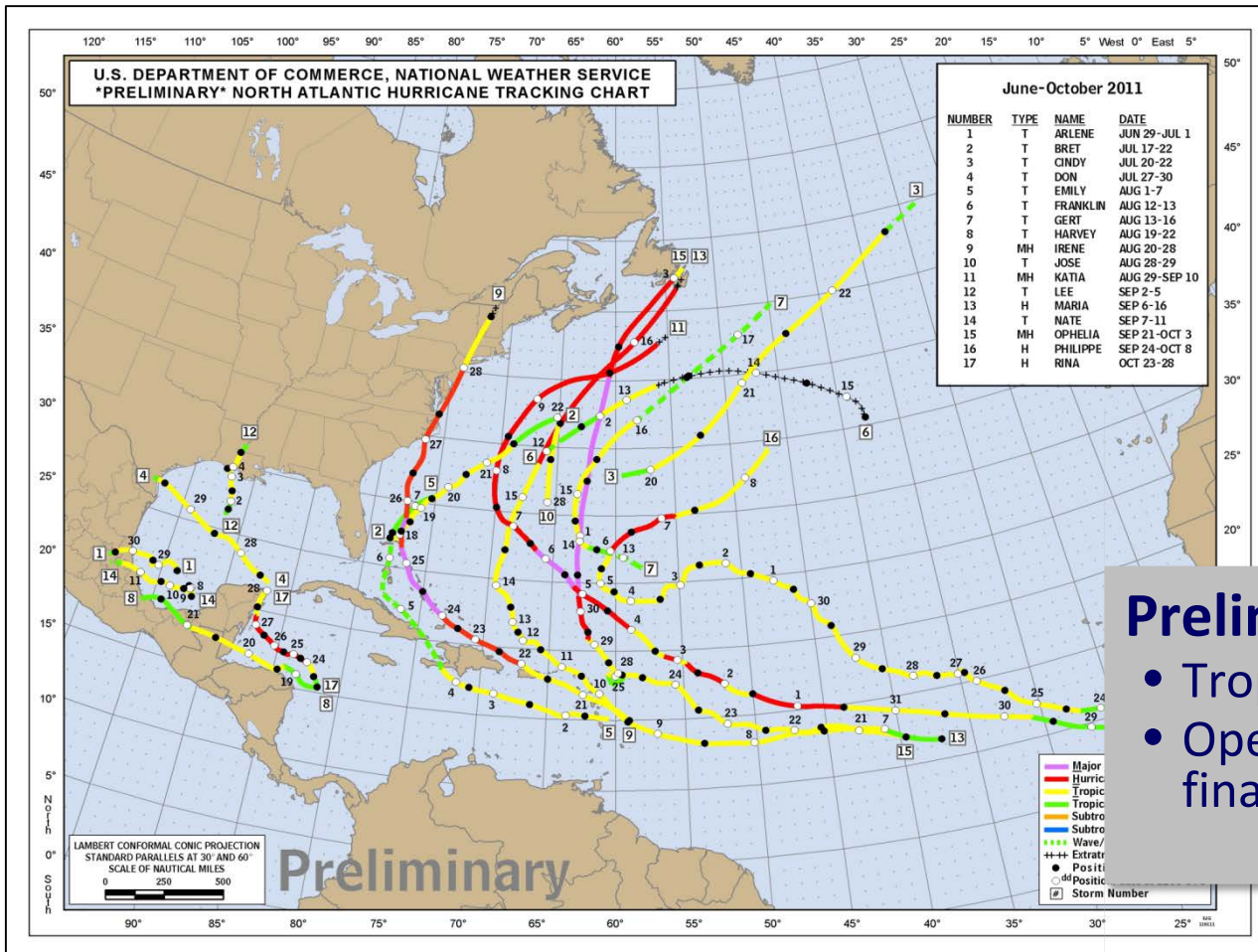
National Hurricane Center

Preliminary Track Maps



NATIONAL HURRICANE CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



Updated Monthly



- 1st of the month

Preliminary Data

- Tropical Cyclones to date
- Operational data until final 'best-track' issued

National Hurricane Center

Tropical Cyclone Reports

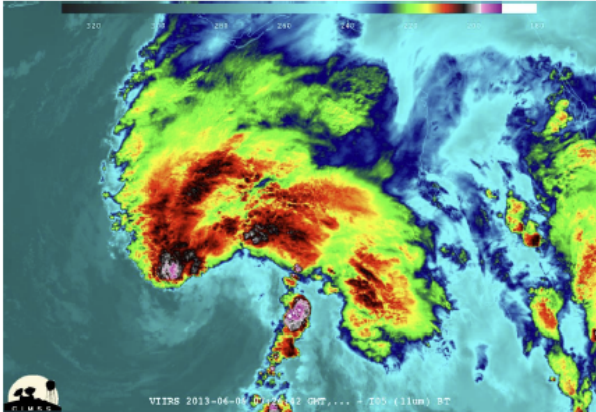


**NATIONAL HURRICANE CENTER
TROPICAL CYCLONE REPORT**

TROPICAL STORM ANDREA
(AL012013)

5 – 7 June 2013

John L. Beven II
National Hurricane Center
22 August 2013



VIIRS 2013-06-06 07:26 GMT, ... (11um) BT
SNPP VIIRS INFRARED IMAGE OF ANDREA 0726 UTC 6 JUNE 2013. IMAGE COURTESY OF CIMSS

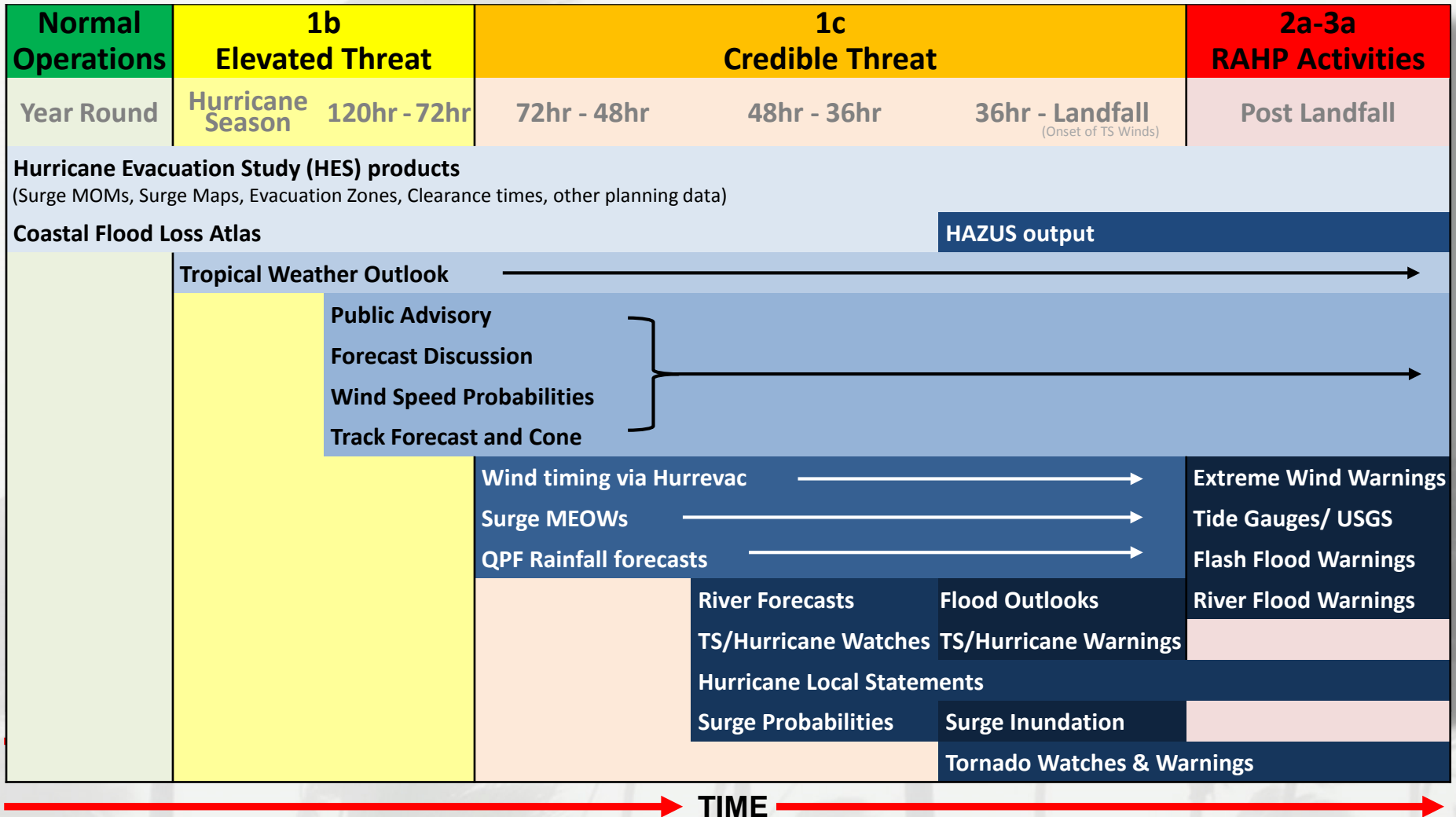
Andrea was a tropical storm that made landfall on the northwest coast of the Florida Peninsula. It became a gale-force extratropical low over the southeastern United States.

Tropical Cyclone Reports provide a complete summary report for every Atlantic and East Pacific storm

- Available on NHC website weeks to a few months after each storm
- Provide final track, intensity, and size information
- Damage and casualties figures
- Forecast critique

National Weather Service

When is key information available?



National Weather Service

Tropical Cyclone Products





Questions/Comments?

Learn More

Recommended Sessions

THURSDAY

8:30-10:00 – National Hurricane Program (NHP) Technology Modernization

- Updates on the next generation HURREVAC (HVX) and RtePM model

10:30-12:00 – New Products to Aid in Hurricane Forecast and Hazard Communication

- What's New and What's Next in Tropical Cyclone Forecasting and Observations
- New Products to Communicate Tropical Cyclone Hazard Arrival Times

1:30-3:00 – Potential Tropical Cyclone Forecasts and Warnings

- Tropical Cyclone Genesis Forecasting and Potential Tropical Cyclone Advisories

3:30-5:00 – NWS Storm Surge Products

- How NHC Real-Time Storm Surge Products are Created
- First Impressions of the New NWS Storm Surge Watch/Warning
- Use of Real-Time Storm Surge Products in Decision Making

What's the 411?

*National Weather Service
Tropical Cyclone Products*

Questions & Answers

A background image showing a row of palm trees silhouetted against a light, hazy sky. The trees are slightly blurred, suggesting a breeze or a shallow depth of field. The overall tone is light and tropical.

What's the 411?

Which product shows the probable track or path of the center of the tropical cyclone?

**A. Cumulative
Wind History**

**B. Wind Speed
Probability Graphic**

C. Cone Graphic

**D. Graphical Tropical
Weather Outlook**

What's the 411?

Which product gives the chance of tropical cyclone formation?

A. Tropical Weather Outlook

B. Tropical Cyclone Discussion

C. Public Advisory

D. Wind Speed Probability Graphic

What's the 411?

Which product provides wind timing information beyond 72 hours?

A. Forecast Advisory

B. Cone Graphic

C. Public Advisory

D. Wind Speed Probabilities

What's the 411?

Which product shows the current size of the tropical cyclone wind field?

A. NWS Hurricane Threats and Impacts Graphic (HTI)

B. Wind Speed Probability Graphic

C. Tropical Cyclone Cumulative Wind History

D. Cone Graphic

What's the 411?

Which product provides the reasoning behind the forecast?

A. Public Advisory

B. Forecast Discussion

C. Hurricane Local Statement

D. Forecast Advisory

What's the 411?

Which product shows areas of possible tropical cyclone formation?

A. Cone Graphic

B. Tropical Weather Outlook

C. Graphical Tropical Weather Outlook

D. Wind Speed Probability Graphic

What's the 411?

Which product contains forecast position, intensity, and wind radii information?

A. Public Advisory

B. Tropical Cyclone Discussion

C. Tropical Weather Outlook

D. Forecast Advisory

What's the 411?

When are Special Advisories issued?

A. Upon request

C. When a significant, unexpected change in the storm occurs

A. When a tropical cyclone is within Radar range

D. Before an Emergency Management briefing

What's the 411?

Which products provide continuous flow of information when a tropical cyclone is near land?

A. Public Advisory & Tropical Outlook

B. Public Advisory & Forecast Discussion

C. Public Advisory & Cone Graphic

D. Public Advisory, Intermediate Advisory, & TC Update

What's the 411?

When are intermediate public advisories issued?

A. All of the time

B. When the 5-day forecast reaches land

C. When ships are crossing the path of the storm

D. When coastal watches and warnings are in effect

What's the 411?

Which warning is issued when a major (cat 3 or stronger) hurricane is about to make landfall?

**A. Extreme Wind
Warning**

B. Hurricane Warning

C. Tornado Warning

**D. Severe Thunderstorm
Warning**

What's the 411?

How many days does the forecast information in the Public Advisory cover?

A. 1 day

B. 2 days

C. 5 days

D. 7 days

What's the 411?

The lead time for a Hurricane Watch or Warning is tied to the arrival of _____.

A. Hurricane force winds

B. Life threatening inundation

C. Tropical storm force winds

D. Strong tropical storm force winds

What's the 411?

Which product is often issued when a hurricane makes landfall?

A. Special Advisory

**B. Intermediate
Public Advisory**

**C. Tropical Cyclone
Update**

**D. Special Tropical
Weather Outlook**

What's the 411?

Which product shows the areas that may have been affected by sustained tropical storm winds?

**A. Tropical Cyclone
Cumulative Wind
History**

**C. Tropical Cyclone
Report**

**B. Tropical Cyclone
Surface Wind Field
Graphic**

**D. Monthly Tropical
Cyclone Summary**