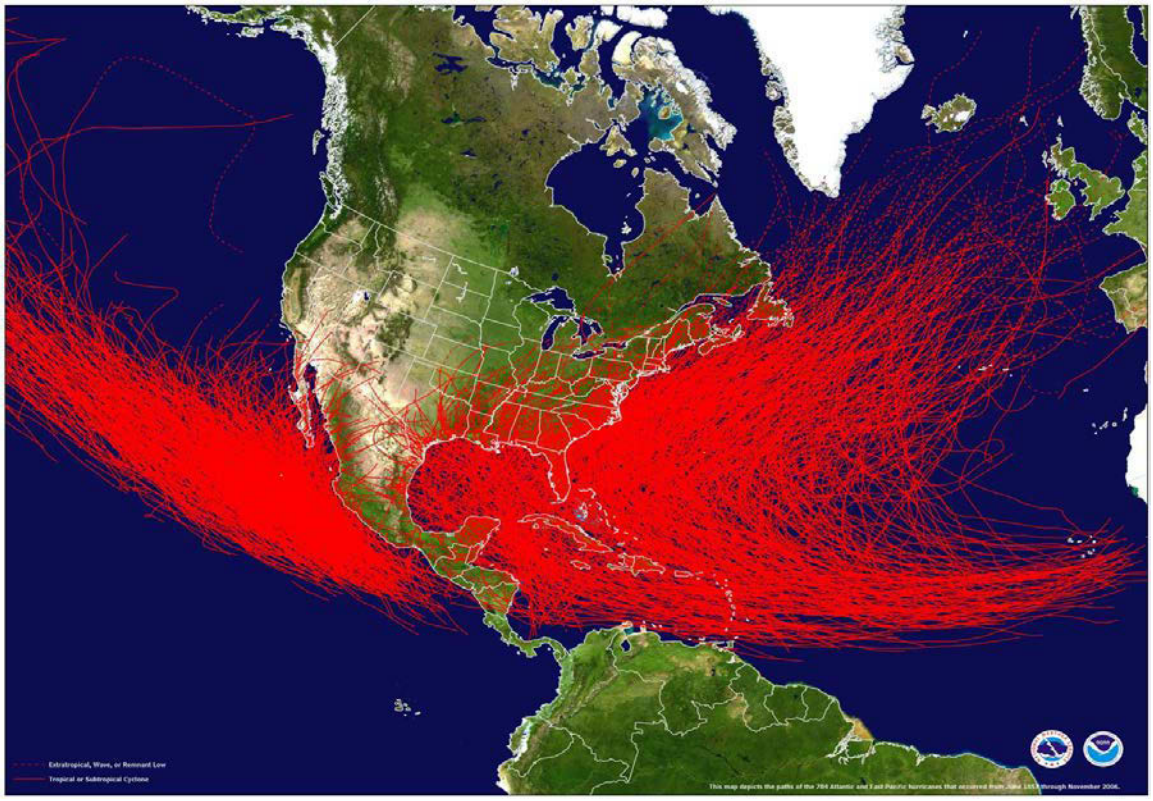
# National Hurricane Center Product Description Document: A User's Guide to Hurricane Products

June 2017




**Department of Commerce**

**National Oceanic and Atmospheric Administration**

**National Weather Service**

**National Centers for Environmental Prediction**

**National Hurricane Center**

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# National Hurricane Center
# Tropical Cyclone[2] Advisories

Whenever a tropical cyclone is active, the National Hurricane Center (NHC) issues tropical cyclone advisory packages comprising a suite of official text and graphical products. Advisory packages are also issued for certain post-tropical cyclones[3] and potential tropical cyclones[4]. This suite of advisory products is issued every 6 hours, at 0300, 0900, 1500, and 2100 UTC. Local issuance times are shown in the table below.

| Basin | Advisory Issuance Times (UTC) | Local Issuance Times During Daylight Saving Time | Local Issuance Times During Standard Time |
|---|---|---|---|
| Atlantic | 0300, 0900, 1500, 2100 | 5 am, 11 am, 5 pm, 11 pm EDT | 4 am, 10 am, 4 pm, 10 pm EST |
| Eastern North Pacific | 0300, 0900, 1500, 2100 | 2 am, 8 am, 2 pm, 8 pm PDT | 1 am, 7 am, 1 pm, 7 pm PST |

The primary text products are the Public Advisory, the Forecast/Advisory, the Tropical Cyclone Discussion, and the Wind Speed Probability product. Graphical products include the track forecast cone/watch-warning graphic, wind speed probability graphics, the tropical cyclone wind field graphic, and a cumulative wind history graphic. A Storm Surge Watch and Warning Graphic will be available whenever life-threatening inundation from storm surge is possible along any portion of the Gulf or Atlantic coasts of the continental United States within 48 hours. A potential storm surge flooding map, tropical cyclone storm surge probabilities, and exceedance probability graphics are also issued with each advisory whenever a storm surge watch or warning or a hurricane watch or warning is in effect for any portion of the Gulf or Atlantic coasts of the continental United States, and can be issued at other times as appropriate.

[2] Except when clear from context, in this document the term "tropical cyclone" is understood to also include subtropical cyclones, potential tropical cyclones, and post-tropical cyclones. The definition of these terms can be found in the NHC on-line glossary at: http://www.hurricanes.gov/aboutgloss.shtml

[3] Post-tropical cyclone advisories are issued when a post-tropical cyclone continues to pose a significant threat to life and property, and if the transfer or responsibility to another office would result in an unacceptable discontinuity of service.

[4] Advisories on potential tropical cyclones may be issued for disturbances that are not yet a tropical cyclone, but which pose the threat of bringing tropical storm or hurricane conditions to land areas within 48 hours.

Intermediate Public Advisories are issued at 3-hour intervals between regular advisory packages when coastal tropical cyclone watches or warnings are in effect. A Special Advisory package may be issued at any time to advise of an unexpected significant change in the cyclone, or when watches or warnings for the United States need to be unexpectedly issued.

If a tropical cyclone dissipates, NHC advisories are discontinued. Under certain circumstances, advisory responsibility is transferred to the National Weather Service's Weather Prediction Center (WPC). This will occur when a tropical depression or its remnants is inland over the conterminous United States or northern Mexico, poses a threat of heavy rains and flash floods in the United States, and is not forecast to regain tropical storm intensity or re-emerge over water.

NHC has the option to continue issuing advisory packages after tropical cyclones have become post-tropical (a post-tropical cyclone is any closed area of low pressure that used to be a tropical cyclone but no longer is one). NHC will continue its advisory packages on post-tropical cyclones when they pose a significant threat to life and property, and when the transfer of responsibility to another office would result in an unacceptable discontinuity in service. In addition, hurricane and tropical storm watches and warnings can remain in place for these systems. For systems that become post-tropical over water and no longer pose a significant threat to life and property, the meteorological agency with marine warning responsibility will assume responsibility for the system.

# NHC Text Product Descriptions

## Tropical Cyclone Public Advisory

**Product Description**: The Tropical Cyclone Public Advisory is the primary tropical cyclone information product intended for a general audience. It provides critical tropical cyclone watch, warning, and forecast information for the protection of life and property.

The Public Advisory has five sections:

1) A summary table of several cyclone parameters is placed at the top of the product in a fixed format that is suitable for parsing by computer software. This section contains the cyclone position in latitude and longitude coordinates, its distance from a well-known reference point, the maximum sustained winds, the cyclone's current direction and speed of motion, and the estimated or measured minimum central pressure.

2) A summary of all current coastal watches and warnings for the cyclone with recent changes to the watches and warnings highlighted at the top.

3) A discussion of the cyclone's current characteristics, including location, motion, intensity, and pressure and a general description of the predicted track and intensity of the cyclone over the next 24 to 48 hours. Any pertinent weather observations will also be included in this section.

4) A section that includes information on hazards to land such as storm surge/tide, wind, rainfall, tornadoes, and rip currents associated with the cyclone.

5) A section that states the time of the next advisory issuance.

**Availability**: Public Advisories are part of a suite of products issued for active cyclones every six hours at 0300, 0900, 1500, and 2100 UTC. Local issuance times are shown in the table on the following page. When coastal watches or warnings are in effect, Intermediate Public Advisories are issued at 3-hour intervals between the regular Public Advisories. Special Public Advisories may be issued at any time to advise of an unexpected significant change in the cyclone or when watches or warnings for the United States are to be issued.

| Basin | Advisory Issuance Times (UTC) | Local Issuance Times During Daylight Saving Time | Local Issuance Times During Standard Time |
|---|---|---|---|
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| Eastern North Pacific | 0300, 0900, 1500, 2100 | 2 am, 8 am, 2 pm, 8 pm PDT | 1 am, 7 am, 1 pm, 7 pm PST |

**Product Headers:** WMO and AWIPS headers are given in the table below. The final numeric digit in each header is assigned on a rotating basis by cyclone number, i.e., WTNT31 KNHC would be used for the first, sixth, and eleventh Atlantic cyclones, while WTNT32 KNHC would be used for the second, seventh, or twelfth cyclones, and so on.

| Basin | WMO Header(s) | AWIPS Header(s) |
|---|---|---|
| Atlantic | WTNT31-5 KNHC | MIATCPAT1-5 |
| Eastern North Pacific | WTPZ31-5 KNHC | MIATCPEP1-5 |

Example:

```
ZCZC MIATCPAT4 ALL
TTAA00 KNHC DDHHMM

BULLETIN
Tropical Storm Isaac Advisory Number 25
NWS National Hurricane Center Miami FL       AL092012
500 AM EDT Mon Aug 27 2012
```

*Product header/valid time*

```
...NEW WATCHES AND WARNINGS ISSUED FOR THE COAST OF LOUISIANA...
```

*Headline*

```
SUMMARY OF 500 AM EDT...0900 UTC...INFORMATION
-----------------------------------------------
LOCATION...25.2N 84.2W
ABOUT 180 MI...290 KM SW OF FT. MYERS FLORIDA
ABOUT 405 MI...650 KM SE OF THE MOUTH OF THE MISSISSIPPI RIVER
MAXIMUM SUSTAINED WINDS...65 MPH...100 KM/H
PRESENT MOVEMENT...WNW OR 300 DEGREES AT 14 MPH...22 KM/H
MINIMUM CENTRAL PRESSURE...990 MB...29.23 INCHES
```

*Summary table formatted for parsing*

WATCHES AND WARNINGS
--------------------
CHANGES WITH THIS ADVISORY:

A Storm Surge Warning has been issued from Destin Florida to Morgan City Louisiana.

A Tropical Storm Warning has been issued from Intracoastal City to Morgan City Louisiana.

A Hurricane Watch has been issued from Intracoastal City to Morgan City Louisiana.

A Tropical Storm Watch has been issued from east of Sabine Pass to west of Intracoastal City Louisiana.

The Hurricane Watch for the Florida Panhandle from east of Destin to Indian Pass has been discontinued.

The Tropical Storm Warning has been discontinued along the east coast of Florida North of Ocean Reef and for Lake Okeechobee.

SUMMARY OF WATCHES AND WARNINGS IN EFFECT:

A Storm Surge Warning is in effect for...
* Destin Florida to Morgan City Louisiana

A Hurricane Warning is in effect for...
* East of Morgan City Louisiana to Destin Florida, including metropolitan New Orleans, Lake Pontchartrain, and Lake

A Hurricane Watch is in effect for...
* Intracoastal City to Morgan City Louisiana

A Tropical Storm Warning is in effect for...
* The Florida Peninsula from Ocean Reef southward on the east coast and from Tarpon Springs southward on the west coast
* Florida Keys, including the Dry Tortugas and Florida Bay
* East of Destin Florida to the Suwannee River
* Intracoastal City to Morgan City

A Tropical Storm Watch is in effect for...
* East of Sabine Pass to west of Intracoastal

A Storm Surge Warning means that there is a danger of life-threatening inundation, from rising water moving inland from the coastline, during the next 36 hours in the indicated locations. For a depiction of the areas at risk, please see the National Weather Service Storm Surge Watch/Warning Graphic, available at hurricanes.gov. This is a life-threatening situation. Persons located within these areas should take all necessary actions to protect life and properly from rising water the potential for other dangerous conditions. Promptly follow evacuation and other instructions from local officials.

A Hurricane Warning means that hurricane that hurricane conditions are expected somewhere within the warning area. A warning is typically issued 36 hours before the anticipated first occurrence of

*Watch/Warning section with changes highlighted at the top*

tropical storm force winds, conditions that make outside preparations difficult or dangerous. Preparations to protect life and property should be rushed to completion.

A Hurricane Watch means that hurricane conditions are possible within the watch area. A watch is typically issued 48 hours before the anticipated first occurrence of tropical storm force winds, conditions that make outside preparations difficult of dangerous.

A Tropical Storm Warning means that tropical storm conditions are expected somewhere within the warning area within 36 hours.

A Tropical Storm Watch means that tropical storm conditions are possible within the watch area, generally within 48 hours.

For storm information specific to your area, including possible inland watches and warnings, please monitor products issued by your local National Weather Service Forecast Office.

*Storm discussion and outlook for the next 48 hours*

DISCUSSION AND 48-HOUR OUTLOOK
---

At 500 AM EDT (0900 UTC), the center of Tropical Storm Isaac was located by an Air Force Reserve Hurricane Hunter Aircraft near latitude 25.2 North, longitude 84.2 West. Isaac is moving toward the west-northwest near 14 mph (22 km/h), and this general motion is expected to continue today with a gradual decrease in forward speed. A turn toward the northwest is expected on Tuesday. On the forecast track, the center of Isaac will move over the eastern Gulf of Mexico today and approach the northern Gulf Coast in the Hurricane Warning area on Tuesday

*Location and movement*

Maximum sustained winds are near 65 mph (100 km/h) with higher gusts. Some strengthening is forecast during the next 48 hours, and Isaac is expected to become a hurricane in a day or so.

*Intensity*

Tropical storm force winds extend outward up to 240 miles (390 km) from the center.

*Size*

The estimated minimum central pressure based on data from the aircraft is 990 mb (29.23 inches).

*Pressure*

*Hazards Section*

HAZARDS AFFECTING LAND
---

STORM SURGE: The combination of a dangerous 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...

Southeastern Louisiana, Mississippi, and Alabama...6 to 12 ft
South-central Louisiana...3 to 6 ft
Florida panhandle...3 to 6 ft
Florida west coast including Apalachee Bay...1 to 3 ft
Southeast Florida coast and Florida Keys...1 to 2 ft

*Storm surge*

The deepest water will occur along the immediate coast in areas of onshore flow. 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 National Weather Service forecast office. Near the coast, the surge will be accompanied by large and dangerous waves.

WIND: Tropical storm conditions are occurring over the Florida Keys, and should spread northward along the Florida west coast in the Tropical Storm Warning area today.

Tropical storm conditions are expected to reach the northern Gulf Coast in the Hurricane Warning area later today, with hurricane conditions expected on Tuesday.

*Wind*

RAINFALL: Isaac is expected to produce additional rain accumulations of 1 to 3 inches over central and southern Florida, where isolated maximum storm total amounts of 15 inches are possible. Total rainfall amounts of 6 to 12 inches, with maximum amounts of 18 inches, are possible in southeastern Louisiana, southern Alabama, Mississippi, and the western Florida Panhandle.

*Rainfall*

TORNADOES: Isolated tornadoes are possible from Central Florida through the northeastern Gulf Coast today and tonight. The tornado threat will diminish over South Florida and the Florida Keys this morning.

*Tornadoes*

SURF: Dangerous surf and rip current conditions will continue to affect the Northwestern Bahamas, the Florida Peninsula, and the Florida Keys during the next day or so, and begin to affect portions of the northern Gulf Coast today. Please consult products from your local weather office for more information.

*Surf*

NEXT ADVISORY
---
Next intermediate advisory at 800 AM EDT.
Next complete advisory at 1100 AM EDT.

*Information on next Advisory issuance*

$$
Forecaster Brennan

NNNN

## Tropical Cyclone Forecast/Advisory

**Product Description:** The Tropical Cyclone Forecast/Advisory contains current and forecast storm information in a fixed format suitable for parsing by computer software. It contains a list of all current coastal watches and warnings, cyclone position, intensity, and direction and speed of motion. It also includes the current maximum radial extent of 12-ft seas, as well as the maximum radial extent of winds of 34, 50, and 64 kt in each of four quadrants around the storm. The Forecast/Advisory contains quantitative forecast information on the track and intensity of the cyclone valid 12, 24, 36, 48, 72, 96, and 120 h from the forecast's nominal initial time, with size information forecast out to 72 h.

The Forecast/Advisory also contains the predicted status of the cyclone for each forecast time. This status may include any of the following: inland, dissipating, dissipated, or post tropical. "Post tropical" describes a cyclone that no longer possesses sufficient tropical characteristics to be considered a tropical cyclone; however these cyclones can continue to produce heavy rains and high winds. A remnant low is a post-tropical cyclone that no longer possesses the convective organization required of a tropical cyclone and has maximum sustained winds of less than 34 knots. An extratropical cyclone is a cyclone of any intensity for which the primary energy source results from the temperature contrast between warm and cold air masses.

**Availability**: Forecast/Advisories are part of a suite of products issued for active cyclones every six hours at 0300, 0900, 1500, and 2100 UTC. Local issuance times are shown in the table below. Special Forecast/Advisories may be issued at any time to advise of an unexpected significant change in the cyclone or when watches or warnings are to be issued.

| Basin | Advisory Issuance Times (UTC) | Local Issuance Times During Daylight Saving Time | Local Issuance Times During Standard Time |
|---|---|---|---|
| Atlantic | 0300, 0900, 1500, 2100 | 5 am, 11 am, 5 pm, 11 pm EDT | 4 am, 10 am, 4 pm, 10 pm EST |
| Eastern North Pacific | 0300, 0900, 1500, 2100 | 2 am, 8 am, 2 pm, 8 pm PDT | 1 am, 7 am, 1 pm, 7 pm PST |

**Product Headers:** WMO and AWIPS headers are given in the table below. The final numeric digit in each header is assigned on a rotating basis by cyclone number, i.e., WTNT21 KNHC would be used for the first, sixth, and eleventh Atlantic cyclones, while WTNT22 KNHC would be used for the second, seventh, or twelfth cyclones, and so on.

| Basin | WMO Header(s) | AWIPS Header(s) |
|---|---|---|
| Atlantic | WTNT21-5 KNHC | MIATCMAT1-5 |
| Eastern North Pacific | WTPZ21-5 KNHC | MIATCMEP1-5 |

**Example**:

```
ZCZC MIATCMAT4 ALL
TTAA00 KNHC DDHHMM

TROPICAL STORM DEAN FORECAST/ADVISORY NUMBER  11
NWS NATIONAL HURRICANE CENTER MIAMI FL   AL042007
0300 UTC THU AUG 16 2007
```

*Product header/valid time*

```
CHANGES TO WATCHES AND WARNINGS WITH THIS ADVISORY...

A HURRICANE WATCH HAS BEEN ISSUED FOR THE FOLLOWING LOCATIONS BY
THEIR RESPECTIVE GOVERNMENTS...ST. LUCIA...MARTINIQUE...GUADELOUPE
AND ITS DEPENDENCIES...SABA...AND ST. EUSTATIUS.

A TROPICAL STORM WATCH HAS BEEN ISSUED FOR ST. MAARTEN BY THE
GOVERNMENT OF THE NETHERLANDS ANTILLES.

SUMMARY OF WATCHES AND WARNINGS IN EFFECT...

A HURRICANE WATCH IS IN EFFECT FOR...
* ST. LUCIA...MARTINIQUE...GUADELOUPE AND ITS DEPENDENCIES...SABA
AND ST. EUSTATIUS

A TROPICAL STORM WATCH IS IN EFFECT FOR...
* ST. MAARTEN

A HURRICANE WATCH MEANS THAT HURRICANE CONDITIONS ARE POSSIBLE
WITHIN THE WATCH AREA.  A WATCH IS TYPICALLY ISSUED 48 HOURS
BEFORE THE ANTICIPATED FIRST OCCURRENCE OF TROPICAL-STORM-FORCE
WINDS...CONDITIONS THAT MAKE OUTSIDE PREPARATIONS DIFFICULT
OR DANGEROUS.

A TROPICAL STORM WATCH MEANS THAT TROPICAL STORM CONDITIONS ARE
POSSIBLE WITHIN THE WATCH AREA WITHIN 48 HOURS.
```

*Watch/ Warning section*

```
TROPICAL STORM CENTER LOCATED NEAR 13.1N  50.2W AT 16/0300Z
POSITION ACCURATE WITHIN  20 NM

PRESENT MOVEMENT TOWARD THE WEST OR 280 DEGREES AT  20 KT

ESTIMATED MINIMUM CENTRAL PRESSURE  991 MB
MAX SUSTAINED WINDS  60 KT WITH GUSTS TO  75 KT.
50 KT....... 20NE   0SE   0SW  20NW.
34 KT....... 60NE  45SE  30SW  45NW.
12 FT SEAS..210NE  60SE  60SW 150NW.
WINDS AND SEAS VARY GREATLY IN EACH QUADRANT.  RADII IN NAUTICAL
MILES ARE THE LARGEST RADII EXPECTED ANYWHERE IN THAT QUADRANT.

REPEAT...CENTER LOCATED NEAR 13.1N  50.2W AT 16/0300Z
AT 16/0000Z CENTER WAS LOCATED NEAR 13.0N  49.2W
```

*Current position, intensity, and structure*

```
FORECAST VALID 16/1200Z 13.6N  53.2W
MAX WIND  65 KT...GUSTS  80 KT.
64 KT... 20NE   0SE   0SW  20NW.
50 KT... 30NE  30SE  20SW  30NW.
34 KT... 75NE  60SE  45SW  60NW.
```

*12 hour forecast*

```
FORECAST VALID 17/0000Z 14.2N  57.2W
MAX WIND  70 KT...GUSTS  85 KT.
64 KT... 20NE   0SE   0SW  20NW.
50 KT... 40NE  30SE  20SW  30NW.
34 KT... 90NE  70SE  50SW  80NW.
```

*24 hour forecast*

```
FORECAST VALID 17/1200Z 14.8N  61.1W
MAX WIND  75 KT...GUSTS  90 KT.
64 KT... 25NE  20SE  20SW  25NW.
50 KT... 50NE  40SE  30SW  45NW.
34 KT...100NE  75SE  60SW  90NW.
```

*36 hour forecast*

```
FORECAST VALID 18/0000Z 15.3N  64.7W
MAX WIND  85 KT...GUSTS 105 KT.
50 KT... 50NE  40SE  30SW  45NW.
34 KT...100NE  75SE  60SW  90NW.
```

*48 hour forecast*

```
FORECAST VALID 19/0000Z 16.3N  71.5W
MAX WIND  95 KT...GUSTS 115 KT.
50 KT... 50NE  40SE  30SW  45NW.
34 KT...110NE  90SE  75SW 100NW.
```

*72 hour forecast*

```
EXTENDED OUTLOOK. NOTE...ERRORS FOR TRACK HAVE AVERAGED NEAR 150 NM
ON DAY 4 AND 200 NM ON DAY 5...AND FOR INTENSITY NEAR 15 KT EACH DAY
```

```
OUTLOOK VALID 20/0000Z 17.8N  78.5W
MAX WIND 105 KT...GUSTS 130 KT.
```

*96 hour forecast*

```
OUTLOOK VALID 21/0000Z 19.5N  85.5W
MAX WIND 115 KT...GUSTS 140 KT.
```

*120 hour forecast*

```
REQUEST FOR 3 HOURLY SHIP REPORTS WITHIN 300 MILES OF 13.1N  50.2W
```

NEXT ADVISORY AT 16/0900Z

$$
FORECASTER BROWN

## Tropical Cyclone Discussion

**Product Description:** The Tropical Cyclone Discussion describes the rationale for the forecaster's analysis and forecast of a tropical cyclone. It will typically discuss the observations justifying the analyzed intensity of the cyclone, a description of the environmental factors expected to influence the cyclone's future track and intensity, and a description of the numerical guidance models. It may also describe the forecaster's degree of confidence in the official forecast, discuss possible alternate scenarios, and highlight unusual hazards, and provide a summary of key messages. The product also includes a table of forecast positions and intensities in knots and miles per hour out to 120 h. This table also indicates the forecast status of the cyclone, which may include any of the following: inland, dissipated, or post tropical. "Post tropical" describes a cyclone that no longer possesses sufficient tropical characteristics to be considered a tropical cyclone; however these cyclones can continue to produce heavy rains and high winds. A remnant low is a post-tropical cyclone that no longer possesses the convective organization required of a tropical cyclone and has maximum sustained winds of less than 34 knots. An extratropical cyclone is a cyclone of any intensity for which the primary energy source results from the temperature contrast between warm and cold air masses.

**Availability**: Tropical Cyclone Discussions are part of a suite of products issued for active cyclones every six hours at 0300, 0900, 1500, and 2100 UTC. Local issuance times are shown in the table below. Special Discussions may be issued at any time to advise of an unexpected significant change in the cyclone or when watches or warnings are to be issued.

| Basin | Advisory Issuance Times (UTC) | Local Issuance Times During Daylight Saving Time | Local Issuance Times During Standard Time |
|---|---|---|---|
| Atlantic | 0300, 0900, 1500, 2100 | 5 am, 11 am, 5 pm, 11 pm EDT | 4 am, 10 am, 4 pm, 10 pm EST |
| Eastern North Pacific | 0300, 0900, 1500, 2100 | 2 am, 8 am, 2 pm, 8 pm PDT | 1 am, 7 am, 1 pm, 7 pm PST |

**Product Headers:** WMO and AWIPS headers are given in the table below. The final numeric digit in each header is assigned on a rotating basis by cyclone number, i.e., WTNT41 KNHC would be used for the first, sixth, and eleventh Atlantic cyclones, while WTNT42 KNHC would be used for the second, seventh, or twelfth cyclones, and so on.

| Basin | WMO Header(s) | AWIPS Header(s) |
|---|---|---|
| Atlantic | WTNT41-5 KNHC | MIATCDAT1-5 |
| Eastern North Pacific | WTPZ41-5 KNHC | MIATCDEP1-5 |

**Example**:

```
ZCZC MIATCDAT1 ALL
TTAA00 KNHC DDHHMM

Hurricane Felix Discussion Number  15
NWS National Hurricane Center Miami FL   AL062007
1100 PM EDT Mon Sep 03 2007
```

*Product header/valid time*

```
There have been no additional aircraft data since 2100 UTC, but there
have been some structural changes over the past several hours apparent
in microwave and conventional imagery. An 1800 UTC microwave pass
showed than an outer eyewall had formed, and over the past several
hours the inner eyewall has decayed in infrared images and the outer
feature is now more prominent.  Raw objective Dvorak numbers are higher
than six hours ago, up to T6.7, but I'm guessing that the inner core
pressure gradient has not yet recovered from the eyewall replacement,
and it may take a few more hours for these structural changes to be
reflected in the wind field. The advisory intensity is being held at
115 kt, with some re-strengthening expected prior to landfall in
another 6-9 hours.  Another reconnaissance aircraft will be in the
hurricane around 0500 UTC.

The initial motion estimate is 270/17, as Felix continues to be steered
by deep-layer high pressure to the north of the cyclone.  There is a
little less ridging ahead of Felix and so some decrease in forward
speed is likely over the next 24 hours, but the ridging should be
sufficient to keep Felix basically on track.  Most of the model
guidance keeps Felix out of the Bay of Campeche, with only the 1200 UTC
UKMET and 1800 UTC NOGAPS taking Felix back over water.  The 1800 UTC
UKMET, which is available only out to 48 hours, is also a little south
of its earlier run.  The official forecast has been shifted a little to
the south of the previous advisory and now keeps Felix entirely over
land.  As a result of the southward adjustment in the track forecast,
the intensity forecast is adjusted sharply downward after 12 hours, and
if the track forecast verifies the small circulation of Felix is likely
to dissipate much earlier than shown below.
```

*Free form forecast discussion*

```
Forecast positions and max winds

INIT  04/0300Z 14.4N  81.1W   115 KT 130 MPH
 12H  04/1200Z 14.6N  83.5W   125 KT 145 MPH...Inland
 24H  05/0000Z 15.1N  85.9W    65 KT  75 MPH...Inland
 36H  05/1200Z 15.7N  88.1W    40 KT  45 MPH...Inland
 48H  06/0000Z 16.4N  90.2W    30 KT  35 MPH...Inland
 72H  07/0000Z 18.0N  94.0W    25 KT  30 MPH...Inland
 96H  08/0000Z 19.5N  97.5W    20 KT  25 MPH...Inland
120H  09/0000Z...Dissipated
```

*Forecast position and intensity table*

```
$$
Forecaster Franklin
```

## Tropical Cyclone Surface Wind Speed Probabilities

**Product Description:** The Tropical Cyclone Surface Wind Speed Probability product is a tabular text product that provides the likelihood (expressed as a percentage) of sustained (1-min average) winds meeting or exceeding specific thresholds at particular locations. There is also a graphical version of this product, described in part immediately below and more fully later in this document.

Location-specific information is given in the form of probabilities of sustained winds occurring at or above the thresholds of 34 kt (tropical storm force), 50 kt, and 64 kt (hurricane force), over specific periods of time as discussed below. These probabilities are provided for coastal and inland cities as well as for offshore locations (e.g., buoys). These probabilities are based on the track, intensity, and wind structure (size) forecasts from the National Hurricane Center and their historical error characteristics.

Two kinds of location-specific probabilities are defined below:

*Cumulative occurrence probabilities* – These values tell you the probability the wind event will *occur* sometime during the specified *cumulative* forecast period (0-12, 0-24, 0-36 hours, etc.) at each specific point. These values are provided in both the text and graphical form of the Surface Wind Speed Probability product. In the text product, the cumulative probabilities appear in parentheses (example provided below). The graphical products depict only cumulative values.

*Onset probabilities* – These values tell you the probability the wind event will *start* sometime during the specified individual forecast period (0-12, 12-24, 24-36 hours, etc.) at each specific point. These values are provided only in the text NHC product. They are the values outside of the parentheses.

**Availability**: This product is part of a suite of products issued for active cyclones every six hours at 0300, 0900, 1500, and 2100 UTC. Local issuance times are shown in the table below. Special Wind Speed Probability products may be issued at any time to advise of an unexpected significant change in the cyclone or when watches or warnings are to be issued.

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| Eastern North Pacific | 0300, 0900, 1500, 2100 | 2 am, 8 am, 2 pm, 8 pm PDT | 1 am, 7 am, 1 pm, 7 pm PST |

**Product Headers:** WMO and AWIPS headers are given in the table below. The final numeric digit in each header is assigned on a rotating basis by cyclone number, i.e., FONT11 KNHC would be used for the first, sixth, and eleventh Atlantic cyclones, while FONT12 KNHC would be used for the second, seventh, or twelfth cyclones, and so on.

| Basin | WMO Header(s) | AWIPS Header(s) |
|---|---|---|
| Atlantic | FONT11-5 KNHC | MIAPWSAT1-5 |
| Eastern North Pacific | FOPZ11-5 KNHC | MIAPWSEP1-5 |

**Example**:

```
ZCZC MIAPWSAT4 ALL
TTAA00 KNHC DDHHMM

TROPICAL STORM ISAAC WIND SPEED PROBABILITIES NUMBER  23
NWS NATIONAL HURRICANE CENTER MIAMI FL       AL092012
2100 UTC SUN AUG 26 2012

AT 2100Z THE CENTER OF TROPICAL STORM ISAAC WAS LOCATED NEAR
LATITUDE 24.2 NORTH...LONGITUDE 82.3 WEST WITH MAXIMUM SUSTAINED
WINDS NEAR 50 KTS...60 MPH...95 KM/H.

Z INDICATES COORDINATED UNIVERSAL TIME (GREENWICH)
   ATLANTIC STANDARD TIME (AST)...SUBTRACT 4 HOURS FROM Z TIME
   EASTERN  DAYLIGHT TIME (EDT)...SUBTRACT 4 HOURS FROM Z TIME
   CENTRAL  DAYLIGHT TIME (CDT)...SUBTRACT 5 HOURS FROM Z TIME

WIND SPEED PROBABILITY TABLE FOR SPECIFIC LOCATIONS

CHANCES OF SUSTAINED (1-MINUTE AVERAGE) WIND SPEEDS OF AT LEAST
   ...34 KT (39 MPH... 63 KPH)...
   ...50 KT (58 MPH... 93 KPH)...
   ...64 KT (74 MPH...119 KPH)...
FOR LOCATIONS AND TIME PERIODS DURING THE NEXT 5 DAYS

PROBABILITIES FOR LOCATIONS ARE GIVEN AS OP(CP) WHERE
    OP  IS THE PROBABILITY OF THE EVENT BEGINNING DURING
        AN INDIVIDUAL TIME PERIOD (ONSET PROBABILITY)
   (CP) IS THE PROBABILITY OF THE EVENT OCCURRING BETWEEN
        18Z SUN AND THE FORECAST HOUR (CUMULATIVE PROBABILITY)

PROBABILITIES ARE GIVEN IN PERCENT
X INDICATES PROBABILITIES LESS THAN 1 PERCENT
PROBABILITIES FOR 34 KT AND 50 KT ARE SHOWN AT A GIVEN LOCATION WHEN
THE 5-DAY CUMULATIVE PROBABILITY IS AT LEAST 3 PERCENT.
PROBABILITIES FOR 64 KT ARE SHOWN WHEN THE 5-DAY CUMULATIVE
PROBABILITY IS AT LEAST 1 PERCENT.
```

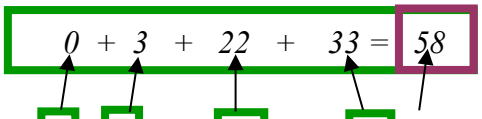
- - - - WIND SPEED PROBABILITIES FOR SELECTED LOCATIONS - - - -

| TIME PERIODS | | FROM 18Z SUN TO 06Z MON | FROM 06Z MON TO 18Z MON | FROM 18Z MON TO 06Z TUE | FROM 06Z TUE TO 18Z TUE | FROM 18Z TUE TO 18Z WED | FROM 18Z WED TO 18Z THU | FROM 18Z THU TO 18Z FRI |
|---|---|---|---|---|---|---|---|---|
| FORECAST HOUR | | (12) | (24) | (36) | (48) | (72) | (96) | (120) |
| LOCATION | KT | | | | | | | |
| FT PIERCE FL | 34 | 9 2(11) | X(11) | X(11) | X(11) | X(11) | X(11) | |
| W PALM BEACH | 34 | 14 2(16) | X(16) | X(16) | X(16) | X(16) | X(16) | |
| MIAMI FL | 34 | 99 X(99) | X(99) | X(99) | X(99) | X(99) | X(99) | |
| MARATHON FL | 34 | 99 X(99) | X(99) | X(99) | X(99) | X(99) | X(99) | |
| MARATHON FL | 50 | 14 X(14) | X(14) | X(14) | X(14) | X(14) | X(14) | |
| KEY WEST FL | 34 | 99 X(99) | X(99) | X(99) | X(99) | X(99) | X(99) | |
| KEY WEST FL | 50 | 99 X(99) | X(99) | X(99) | X(99) | X(99) | X(99) | |
| MARCO ISLAND | 34 | 99 X(99) | X(99) | X(99) | X(99) | X(99) | X(99) | |
| FT MYERS FL | 34 | 48 1(49) | 2(51) | X(51) | X(51) | X(51) | X(51) | |
| VENICE FL | 34 | 37 5(42) | 2(44) | 1(45) | X(45) | 1(46) | X(46) | |
| TAMPA FL | 34 | 18 8(26) | 3(29) | 2(31) | X(31) | 1(32) | X(32) | |
| TALLAHASSEE FL | 34 | X 7( 7) | 10(17) | 6(23) | 6(29) | 1(30) | X(30) | |
| ST MARKS FL | 34 | 1 9(10) | 9(19) | 6(25) | 5(30) | 1(31) | 1(32) | |
| APALACHICOLA | 34 | 3 11(14) | 16(30) | 9(39) | 7(46) | 1(47) | X(47) | |
| APALACHICOLA | 50 | X X( X) | 2( 2) | 2( 4) | 1( 5) | 1( 6) | X( 6) | |
| APALACHICOLA | 64 | X X( X) | X( X) | 1( 1) | X( 1) | X( 1) | X( 1) | |
| PANAMA CITY FL | 34 | 1 11(12) | 20(32) | 13(45) | 7(52) | 1(53) | 1(54) | |
| PANAMA CITY FL | 50 | X X( X) | 3( 3) | 4( 7) | 3(10) | 1(11) | X(11) | |
| PANAMA CITY FL | 64 | X X( X) | X( X) | 1( 1) | 1( 2) | X( 2) | X( 2) | |
| COLUMBUS GA | 34 | X X( X) | 3( 3) | 6( 9) | 11(20) | 2(22) | 1(23) | |
| MONTGOMERY AL | 34 | X X( X) | 7( 7) | 10(17) | 18(35) | 3(38) | 1(39) | |
| MONTGOMERY AL | 50 | X X( X) | X( X) | X( X) | 5( 5) | 2( 7) | X( 7) | |
| MONTGOMERY AL | 64 | X X( X) | X( X) | X( X) | 1( 1) | 1( 2) | X( 2) | |
| PENSACOLA FL | 34 | X 6( 6) | 24(30) | 25(55) | 14(69) | 2(71) | X(71) | |
| PENSACOLA FL | 50 | X X( X) | 2( 2) | 14(16) | 12(28) | 1(29) | 1(30) | |
| PENSACOLA FL | 64 | X X( X) | X( X) | 4( 4) | 5( 9) | 2(11) | X(11) | |
| MOBILE AL | 34 | X 3( 3) | 22(25) | 31(56) | 20(76) | 2(78) | X(78) | |
| MOBILE AL | 50 | X X( X) | 2( 2) | 15(17) | 21(38) | 2(40) | X(40) | |
| MOBILE AL | 64 | X X( X) | X( X) | 3( 3) | 12(15) | 1(16) | X(16) | |

*Probability of winds of at least 34 kt beginning at Pensacola, FL during the 12-hour period from 06z Tuesday to 18z Tuesday*

*Cumulative probability of winds of at least 34 kt at Pensacola, FL for the 48-hour period ending at 18z Tuesday*

*Note the sum of the onset probabilities from 0-48 hours is equal to the cumulative occurrence probability at 48 hours*




```
GULFPORT MS     34  X   3( 3)  22(25)  33(58)  21(79)   2(81)   X(81)
GULFPORT MS     50  X   X( X)   2( 2)  19(21)  22(43)   2(45)   X(45)
GULFPORT MS     64  X   X( X)   X( X)   5( 5)  13(18)   2(20)   X(20)

STENNIS SC      34  X   2( 2)  19(21)  32(53)  23(76)   3(79)   1(80)
STENNIS SC      50  X   X( X)   1( 1)  15(16)  22(38)   2(40)   X(40)
STENNIS SC      64  X   X( X)   X( X)   4( 4)  12(16)   1(17)   X(17)

BURAS LA        34  X   5( 5)  29(34)  33(67)  14(81)   2(83)   1(84)
BURAS LA        50  X   X( X)   5( 5)  25(30)  15(45)   2(47)   X(47)
BURAS LA        64  X   X( X)   1( 1)   8( 9)  11(20)   1(21)   X(21)

JACKSON MS      34  X   X( X)   3( 3)  11(14)  33(47)   6(53)   1(54)
JACKSON MS      50  X   X( X)   X( X)   X( X)  12(12)   4(16)   X(16)
JACKSON MS      64  X   X( X)   X( X)   X( X)   3( 3)   2( 5)   X( 5)

NEW ORLEANS LA  34  X   1( 1)  16(17)  29(46)  23(69)   3(72)   1(73)
NEW ORLEANS LA  50  X   X( X)   1( 1)  10(11)  18(29)   3(32)   1(33)
NEW ORLEANS LA  64  X   X( X)   X( X)   1( 1)   9(10)   1(11)   X(11)

BATON ROUGE LA  34  X   X( X)   9( 9)  18(27)  24(51)   6(57)   X(57)
BATON ROUGE LA  50  X   X( X)   X( X)   2( 2)  14(16)   3(19)   X(19)
BATON ROUGE LA  64  X   X( X)   X( X)   X( X)   5( 5)   2( 7)   X( 7)

NEW IBERIA LA   34  X   X( X)   7( 7)  12(19)  20(39)   7(46)   X(46)
NEW IBERIA LA   50  X   X( X)   X( X)   1( 1)   9(10)   2(12)   1(13)
NEW IBERIA LA   64  X   X( X)   X( X)   X( X)   3( 3)   2( 5)   X( 5)

SHREVEPORT LA   34  X   X( X)   X( X)   1( 1)   9(10)   6(16)   1(17)

PORT ARTHUR TX  34  X   X( X)   X( X)   3( 3)  10(13)   5(18)   X(18)
PORT ARTHUR TX  50  X   X( X)   X( X)   X( X)   1( 1)   2( 3)   1( 4)
PORT ARTHUR TX  64  X   X( X)   X( X)   X( X)   X( X)   1( 1)   X( 1)

$$
FORECASTER PASCH
NNNN
```

## Tropical Cyclone Update

**Product Description:** The Tropical Cyclone Update (TCU) is issued to inform users of significant changes in a tropical cyclone between regularly scheduled public advisories. Such uses include:

- To provide timely information of an unusual nature, such as the time and location of landfall, or to announce an expected change in intensity that results in an upgrade or downgrade of status (e.g., from a tropical storm to a hurricane).
- To provide a continuous flow of information regarding the center location of a tropical cyclone when watches or warnings are in effect and the center can be easily tracked with land-based radar.
- To provide advance notice that significant changes to storm information will be conveyed shortly, either through a subsequent TCU or Special Advisory.
- To announce changes to international watches or warnings made by other countries, or to cancel U.S. watches or warnings.
- To issue a U.S. watch or warning, but only if the TCU precedes a special advisory that will contain the same watch/warning information, and indicates the special advisory will be issued shortly.

When a TCU is issued and any storm summary information has changed from the previous Public Advisory (e.g., upgrade from tropical storm to hurricane), a storm summary section identical in format to that found in the Public Advisory will also be included. If new data suggest that a change in status of the tropical cyclone has occurred, but the forecaster is not prepared to update all of the storm information, a TCU can be issued without the storm summary information and indicate that another TCU or special advisory changing the storm status will be issued shortly. In that case, the first TCU will not officially change the storm status, but will simply provide users with the information that a change in status is forthcoming. If a TCU is issued to only modify watches and warnings and there are no changes to the storm summary information (e.g., position, intensity, movement, pressure, etc.) from the previous NHC public advisory, then the storm summary information will not be included in the TCU.

**Availability**: TCUs issued to provide updated center position information when watches/warnings are in effect are issued in between scheduled TCPs near the beginning of each hour. All other TCUs are issued on an event-driven basis.

**Product Headers:** WMO and AWIPS headers are given in the table below. The final numeric digit in each header is assigned on a rotating basis by cyclone number, i.e., WTNT61 KNHC would be used for the first, sixth, and eleventh Atlantic cyclones, while WTNT62 KNHC would be used for the second, seventh, or twelfth cyclones, and so on.

| Basin | WMO Header(s) | AWIPS Header(s) |
|---|---|---|
| Atlantic | WTNT61-5 KNHC | MIATCUAT1-5 |
| Eastern North Pacific | WTPZ61-5 KNHC | MIATCUEP1-5 |

**Example 1: TCU to provide a continuous flow of information when watches or warnings are in effect and the center can be easily tracked with land-based radar.**

```
ZCZC MIATCUAT4 ALL
TTAA00 KNHC DDHHMM

Hurricane Isaac Tropical Cyclone Update
NWS National Hurricane Center Miami FL       AL092012
1100 AM CDT Wed Aug 29 2012

...11 AM POSITION UPDATE...

A gust to 67 mph was recently reported at Shell Beach Louisiana.
Tropical storm conditions are continuing 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
```

*Product header/valid time*

*Free form discussion*

*Summary Table Formatted for Parsing*

**Example 2: TCU to change the status of a tropical cyclone**

```
ZCZC MIATCUAT4 ALL
TTAA00 KNHC DDHHMM

Hurricane Isaac Tropical Cyclone Update
NWS National Hurricane Center Miami FL       AL092012
1120 AM CDT Tue Aug 28 2012

...RECONNAISSANCE DATA INDICATE ISAAC FINALLY ACHIEVES HURRICANE
STATUS...

Reports from and Air Force Reserve Hurricane Hunter Aircraft indicate
that maximum winds associated with Isaac have increased to 75 mph (120
km/h).  On this basis, Isaac is being upgraded to a hurricane
```

*Product header/valid time*

*Free form discussion*

```
SUMMARY OF 1120 AM CDT...1620 UTC...INFORMATION
-----------------------------------------------
LOCATION...28.1N 88.6W
ABOUT 75 MI...115 KM SSE OF THE MOUTH OF THE MISSISSIPPI RIVER
ABOUT 160 MI...250 KM SE OF NEW ORLEANS LOUISIANA
MAXIMUM SUSTAINED WINDS...75 MPH...120 KM/H
PRESENT MOVEMENT...NW OR 310 DEGREES AT 10 MPH...17 KM/H
MINIMUM CENTRAL PRESSURE...975 MB...28.79 INCHES
```

*Summary Table Formatted for Parsing*

```
$$
Forecaster Stewart/Beven

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```

**Example 3 - TCU to notify users that change in status is forthcoming**

```
ZCZC MIATCUAT2 ALL
TTAA00 KNHC DDHHMM

Tropical Depression Seven Tropical Cyclone Update
NWS National Hurricane Center Miami FL   AL072008
200 PM EDT Mon Aug 25 2008
```

*Product header/valid time*

```
Preliminary reports from an Air Force Hurricane Hunter aircraft
indicate that Tropical Depression Seven has strengthened. A Special
Advisory will be issued within the next 30 minutes to update the
intensity forecast and watches and warnings for Hispaniola.
```

*Free form discussion*

```
$$
Forecaster Pasch

NNNN
```

**Example 4 - TCU to update watches or warnings (no change in storm summary information)**

```
ZCZC MIATCUAT4 ALL
TTAA00 KNHC DDHHMM

Hurricane Ike Tropical Cyclone Update
NWS National Hurricane Center Miami FL   AL092008
600 PM AST Fri Sep 05 2008
```

*Product header/valid time*

```
At 600 PM AST (2200 UTC), the Government of the Bahamas has issued a
Hurricane Watch for the Southeastern Bahamas, including the Acklins,
Crooked Island, the Inaguas, Mayaguana, and the Ragged Islands, as well
as for the Turks and Caicos Islands.

No other changes are required from the 500 PM AST Advisory.
```

*Free form discussion*

```
$$
Forecaster Blake/Beven
```

## Tropical Cyclone Watch Warning Product

**Product Description**: The Tropical Cyclone Watch Warning product summarizes all new, continued, and canceled tropical cyclone wind and storm surge watches and warnings for the U.S. Atlantic, Gulf, and Pacific coasts, Puerto Rico, and the U.S. Virgin Islands, in a form suitable for decoding by computer software.

**Availability**: This product is issued concurrently with all Tropical Cyclone Public Advisories (whether routine, Intermediate, or Special) for which a U.S. watch or warning is continued, posted, changed, or cancelled.

**Product Headers:** WMO and AWIPS headers are given in the table below. The final numeric digit in each header is assigned on a rotating basis by cyclone number, i.e., WTNT81 KNHC would be used for the first, sixth, and eleventh Atlantic cyclones, while WTNT82 KNHC would be used for the second, seventh, or twelfth cyclones, and so on.

| Basin | WMO Header(s) | AWIPS Header(s) |
|---|---|---|
| Atlantic | WTNT81-5 KNHC | MIATCVAT1-5 |
| Eastern North Pacific | WTNT81-5 KNHC | MIATCVEP1-5 |

**Example:**

```
WTNT81 KNHC 030123
TCVAT1

NATE WATCH/WARNING BREAKPOINTS/ADVISORY NUMBER 6
NWS NATIONAL HURRICANE CENTER MIAMI FL    AL812015
823 PM EST WED DEC 2 2015

.HURRICANE NATE.

CAUTION...THIS PRODUCT ONLY APPROXIMATELY CONVEYS THE EXTENT OF
TROPICAL CYCLONE WIND AND SURGE WATCHES AND WARNINGS.  PLEASE SEE
THE LATEST PUBLIC ADVISORY FROM THE NATIONAL HURRICANE CENTER FOR
THE PRECISE LATERAL EXTENT OF WIND WATCHES AND WARNINGS ALONG THE
COAST...AS WELL AS THE APPROXIMATE LATERAL EXTENT OF SURGE WATCHES
AND WARNINGS. THE PRECISE EXTENT OF SURGE WATCHES AND WARNINGS
CAN BE FOUND IN THE NWS NATIONAL DIGITAL FORECAST DATABASE HAZARD
GRIDS.

FLZ024-025-GAZ116>119-138>141-153-154-165-166-SCZ043-045-047>056-
030930-
/O.NEW.KNHC.HU.A.1001.151203T0123Z-000000T0000Z/
/O.NEW.KNHC.SS.A.1001.151203T0123Z-000000T0000Z/
823 PM EST WED DEC 2 2015

$$
```

```
FLZ032-033-037-038-NCZ045>047-080-081-093>095-098-103>110-030930-
/O.NEW.KNHC.HU.A.1001.151203T0123Z-000000T0000Z/
823 PM EST WED DEC 2 2015

$$

FLZ020>023-030-031-035-036-040-030930-
/O.NEW.KNHC.TR.A.1001.151203Y0123Z-000000T0000Z/
823 PM EST WED DEC 2 2015

$$

ATTN...WFO...CHS...ILM...JAX...MHX
```

## Aviation Tropical Cyclone Advisory

**Product Description**: The Aviation Tropical Cyclone Advisory is issued to provide short-term tropical cyclone forecast guidance for international aviation safety and routing purposes. The Aviation Advisory lists the current cyclone position, motion, and intensity, and includes forecast positions and intensities valid 6, 12, 18, and 24 h after the advisory issuance time (0300, 0900, 1500, or 2100 UTC). This is in contrast to the forecast positions provided in the Tropical Cyclone Discussion and Forecast/Advisory, which are relative to the nominal initial times of 0000, 0600, 1200, and 1800 UTC. It is important to note that forecast values in the Aviation Tropical Cyclone Advisory are obtained by interpolation from the values contained in the Forecast/Advisory.

**Availability**: This product is part of a suite of products issued for active cyclones every six hours at 0300, 0900, 1500, and 2100 UTC. Local issuance times are shown in the table below. Special Aviation Tropical Cyclone Advisory products may be issued at any time to advise of an unexpected significant change in the cyclone or when watches or warnings are to be issued.

| Basin | Advisory Issuance Times (UTC) | Local Issuance Times During Daylight Saving Time | Local Issuance Times During Standard Time |
|---|---|---|---|
| Atlantic | 0300, 0900, 1500, 2100 | 5 am, 11 am, 5 pm, 11 pm EDT | 4 am, 10 am, 4 pm, 10 pm EST |
| Eastern North Pacific | 0300, 0900, 1500, 2100 | 2 am, 8 am, 2 pm, 8 pm PDT | 1 am, 7 am, 1 pm, 7 pm PST |

**Product Headers:** WMO and AWIPS headers are given in the table below. The final numeric digit in each header is assigned on a rotating basis by cyclone number, i.e., FKNT21 KNHC would be used for the first, sixth, and eleventh Atlantic cyclones, while FKNT22 KNHC would be used for the second, seventh, or twelfth cyclones, and so on.

| Basin | WMO Header(s) | AWIPS Header(s) |
|---|---|---|
| Atlantic | FKNT21-5 KNHC | MIATCAAT1-5 |
| Eastern North Pacific | FKPZ21-5 KNHC | MIATCAEP1-5 |

**Example**:

```
FKPZ23 KNHC 070835
TCAPZ3

HURRICANE FELICIA ICAO ADVISORY NUMBER  15
NWS TPC/NATIONAL HURRICANE CENTER MIAMI FL   EP082009
0900 UTC FRI AUG 07 2009

TC ADVISORY
DTG:                      20090807/0900Z
TCAC:                     KNHC
TC:                       FELICIA
NR:                       015
PSN:                      N1730 W13424
MOV:                      WNW 09KT
C:                        0960HPA
MAX WIND:                 100KT
FCST PSN + 06 HR:         071500 N1758 W13516
FCST MAX WIND + 06 HR:    090KT
FCST PSN + 12 HR:         072100 N1824 W13612
FCST MAX WIND + 12 HR:    080KT
FCST PSN + 18 HR:         080300 N1848 W13712
FCST MAX WIND + 18 HR:    075KT
FCST PSN + 24 HR:         080900 N1906 W13818
FCST MAX WIND + 24 HR:    070KT
RMK                       THE FORECAST POSITION INFORMATION IN
                          THIS PRODUCT IS INTERPOLATED FROM
                          OFFICIAL FORECAST DATA VALID AT 0000...
                          0600...1200...AND 1800Z.
NXT MSG:                  20090807/1500Z

$$
```

## Tropical Weather Outlook

**Product Description:** The Tropical Weather Outlook discusses significant areas of disturbed weather and their potential for development during the next 5 days, including a categorical forecast of the probability of tropical cyclone formation during the first 48 hours, and during the entire 5-day forecast period. The 48 h and 5-day probabilities of formation for each disturbance are given to the nearest 10% and expressed in terms of one of the following categories: low probability of development (0-30%), medium probability (40-60%), and high probability of development (70-100%). The Outlook also includes a general description of locations of any active cyclones and their WMO and AWIPS headers during the first 24 hours of their existence.

**Availability**: Tropical Weather Outlooks are issued every six hours from 1 June–30 November for the Atlantic Basin and from 15 May–30 November for the eastern North Pacific Basin, at 0000, 0600, 1200, and 1800 UTC. Local issuance times are shown in the table below.

| Basin | Outlook Issuance Times (UTC) | Local Issuance Times During Daylight Saving Time | Local Issuance Times During Standard Time |
|---|---|---|---|
| Atlantic | 0000, 0600, 1200, 1800 | 2 am, 8 am, 2 pm, 8 pm EDT | 1 am, 7 am, 1 pm, 7 pm EST |
| Eastern North Pacific | 0000, 0600, 1200, 1800 | 5 am, 11 am, 5 pm, 11 pm PDT | 4 am, 10 am, 4 pm, 10 pm PST |

**Product Headers:** WMO and AWIPS headers are given in the table below.

| Basin | WMO Header | AWIPS Header |
|---|---|---|
| Atlantic | ABNT20 KNHC | MIATWOAT |
| Eastern North Pacific | ABPZ20 KNHC | MIATWOEP |

**Example**:

```
ZCZC MIATWOAT ALL
TTAA00 KNHC DDHHMM

Tropical Weather Outlook
NWS National Hurricane Center Miami FL
800 PM EDT Mon Oct 14 2014

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

The National Hurricane Center is issuing advisories on newly formed
Tropical Depression Eleven, located in the central Gulf of Mexico.

A broad area of low pressure located a couple of hundred miles south-
southwest of Jamaica is accompanied by showers and thunderstorms.  This
disturbance remains disorganized, and development, if any, should be
slow to occur over the next couple of days while it moves slowly
northwestward.  Environmental conditions are expected to be marginally
conducive for some development when the system moves over the
northwestern Caribbean Sea and the southern Gulf of Mexico later this
week.  Locally heavy rainfall is possible over portions of Haiti and
Jamaica today, and will likely spread across the Cayman Island and
eastern Cuba on Tuesday.
* Formation chance through 48 hours...low...10 percent.
* Formation chance through 5 days...low...30 percent.

A trough of low pressure could form over the extreme southwestern Gulf
of Mexico and Bay of Campeche in a few days...and some development of
this system is possible by midweek.
* Formation chance through 48 hours...low...near 0 percent.
* Formation chance through 5 days...low...20 percent.

&&
Public advisories on Tropical Depression Eleven are issued under
WMO header WTNT31 KNHC and under AWIPS header MIATCPAT1.
Forecast/Advisories on Tropical Depression Eleven are issued under
WMO Header WTNT22 KNHC and under AWIPS header MIATCMAT1.

$$
Forecaster Brown
NNNN
```

*Product header/valid time*

*Free form discussion about existing disturbances*

*Product header information for active tropical cyclones that have formed within the past 24 h*

## Special Tropical Weather Outlook

**Product Description**: A Special Tropical Weather Outlook is issued when there have been important changes with areas of disturbed weather over tropical or subtropical waters that need to be conveyed before the next scheduled release of the Tropical Weather Outlook. The potential for tropical cyclone formation for each disturbance within the next 48 hours, and 5 days is given to the nearest 10% and expressed in terms of one of the following categories: low probability of development (0-30%), medium probability (40-60%), and high probability of development (70-100%). The Special Tropical Weather Outlook can be used to report the findings of reconnaissance aircraft missions, and can also be used for disturbances outside of the normal hurricane season when Tropical Weather Outlooks are not routinely issued. The disturbance being updated in the Special Tropical Weather Outlook will be highlighted at the top of the product, and other systems discussed in previous Tropical Weather Outlooks will also be included.

**Availability**: This is an event-driven product issued as needed.

**Product Headers:** WMO and AWIPS headers are given in the table below.

| Basin | WMO Header | AWIPS Header |
|---|---|---|
| Atlantic | ABNT20 KNHC | MIATWOAT |
| Eastern North Pacific | ABPZ20 KNHC | MIATWOEP |

**Example**

```
Special Tropical Weather Outlook
NWS National Hurricane Center Miami FL
530 PM EDT Wed Jun 5 2013

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

Special Outlook issued to update discussion on the low pressure
area in the Gulf of Mexico.
```

*Product header/valid time*

```
Updated...An Air Force reconnaissance aircraft was able to identify a
well-defined circulation in the low pressure area over the east-central
Gulf of Mexico late this afternoon. Based on this finding, the National
Hurricane Center will initiate advisories on Tropical Storm Andrea
within the next hour or so.
* Formation chance through 48 hours...high...near 100 percent.
* Formation chance through 5 days...high...near 100 percent.

Although the shower activity associated with a tropical wave located a
little less than 1000 miles east of the Lesser Antilles has increased
some, the wave is heading westward toward a region where the upper
level winds are not favorable for development.
* Formation chance through 48 hours...low...10 percent.
* Formation chance through 5 days...low...20 percent.
```

*Free form discussion*

```
$$
Forecaster Berg
```

## Monthly Tropical Weather Summary

**Product Description**: The Monthly Tropical Weather Summary briefly describes the previous month's tropical cyclone activity and provides a summary table for all of the season's tropical cyclones to date.

**Availability:** The Monthly Tropical Weather Summary is issued at 8 am local time on the first day of the month following each month of the hurricane season. The Tropical Weather Summary issued on 1 December will give a brief account of the entire season.

**Product Headers:** WMO and AWIPS headers are given in the table below.

| Basin | WMO Header | AWIPS Header |
|---|---|---|
| Atlantic | ABNT30 KNHC | MIATWSAT |
| Eastern North Pacific | ABPZ30 KNHC | MIATWSEP |

**Example**:

```
ABNT30 KNHC 011156
TWSAT

Monthly Tropical Weather Summary
NWS 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.
Also, the formation of eight named storms ties 2002 for the record
number of named storms formation in 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.

Reports on individual cyclones, when completed, are at the web site of
the National Hurricane Center:  www.hurricanes.gov/2014atlan.shtml

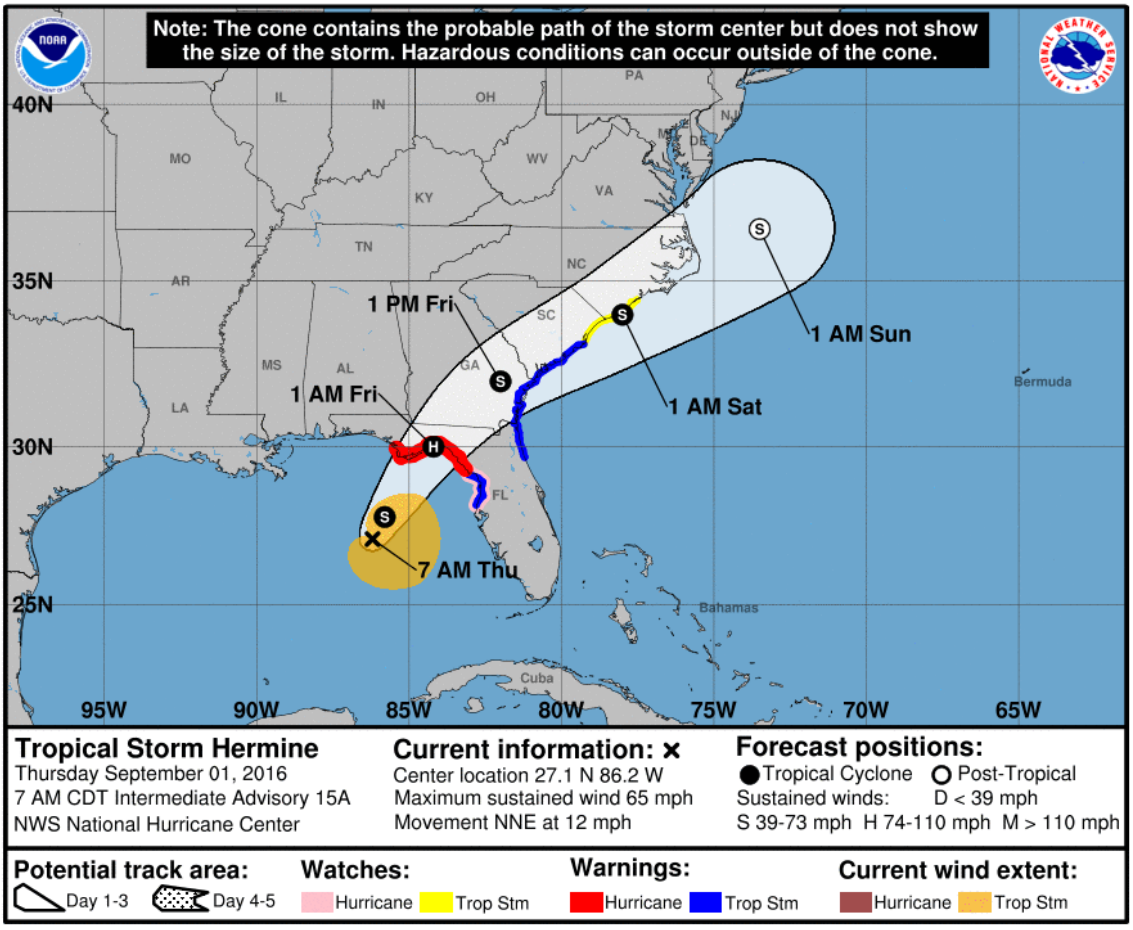

SUMMARY TABLE
```

| 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 |
| MH Igor | 8-21 Sep | 155 |
| MH Julia | 12-20 Sep | 135 |
| MH Karl | 14-18 Sep | 120 |
| H  Lisa | 21-26 Sep | 80 |
| TS Matthew | 23-26 Sep | 60 |
| TS Nicole | 28-29 Sep | 40 |

$$
Hurricane Specialist Unit

# NHC Graphics Product Descriptions

## Tropical Cyclone Track Forecast Cone and Watch/Warning Graphic




**Product Description:** This graphic depicts the most recent NHC track forecast of the center of a tropical cyclone along with an approximate representation of associated coastal areas under a hurricane warning (red), hurricane watch (pink), tropical storm warning (blue) and tropical storm watch (yellow). The "X" indicates the current position of the center of the tropical cyclone. The black dots show the NHC forecast position of the center at the times indicated. The letter inside the dot indicates the forecast strength of the cyclone category: (D)epression, (S)torm, (H)urricane, (M)ajor hurricane, or remnant (L)ow. Systems forecast to be post-tropical are be indicated by white dots with black letters indicating intensity using the thresholds given above. For example, a post-tropical system forecast to have winds of 65 kt would be depicted by a black H inside a white dot, even though it is not a hurricane.

The cone represents the probable track of the center of a tropical cyclone, and is formed by enclosing the area swept out by a set of circles (not shown) along the forecast track (at 12, 24, 36 hours, etc.). The size of each circle is set so that two-thirds of historical official forecast errors over a 5-year sample fall within the circle. The circle radii defining the cones in 2017 for the Atlantic and eastern North Pacific basins are given in the table below.

Radii of NHC forecast cone circles for 2017, based on error statistics from 2012–2016:

| Forecast Period (hours) | 2/3 Probability Circle, Atlantic Basin (nautical miles) | 2/3 Probability Circle, Eastern North Pacific Basin (nautical miles) |
|---|---|---|
| 12 | 29 | 25 |
| 24 | 45 | 40 |
| 36 | 63 | 51 |
| 48 | 78 | 66 |
| 72 | 107 | 93 |
| 96 | 159 | 116 |
| 120 | 211 | 151 |

One can also examine historical tracks to determine how often the *entire* 5-day path of a cyclone remains completely within the area of the cone. This is a different perspective that ignores most timing errors. For example, a storm moving very slowly but in the expected direction would still be within the area of the cone, even though the track forecast error could be very large. Based on forecasts over the previous 5 years, the entire track of the tropical cyclone can be expected to remain within the cone roughly 60-70% of the time.

It is important to remember that tropical cyclones are not a point. Their effects can span many hundreds of miles from the center. The area experiencing hurricane force (one-minute average wind speeds of at least 74 mph) and tropical storm force (one-minute average wind speeds of 39-73 mph) winds can extend well beyond the white areas shown enclosing the most likely track area of the center. A version of this graphic also shows the areas potentially being affected by the sustained (1 min average) winds of tropical storm force (in orange) and hurricane force (in red) at the time of the advisory issuance. Users are reminded that the wind radii represent the maximum possible extent of a given wind speed within particular quadrants around the tropical cyclone. As a result, not all locations falling within the orange or red shaded areas will be experiencing sustained tropical storm or hurricane force winds, respectively.

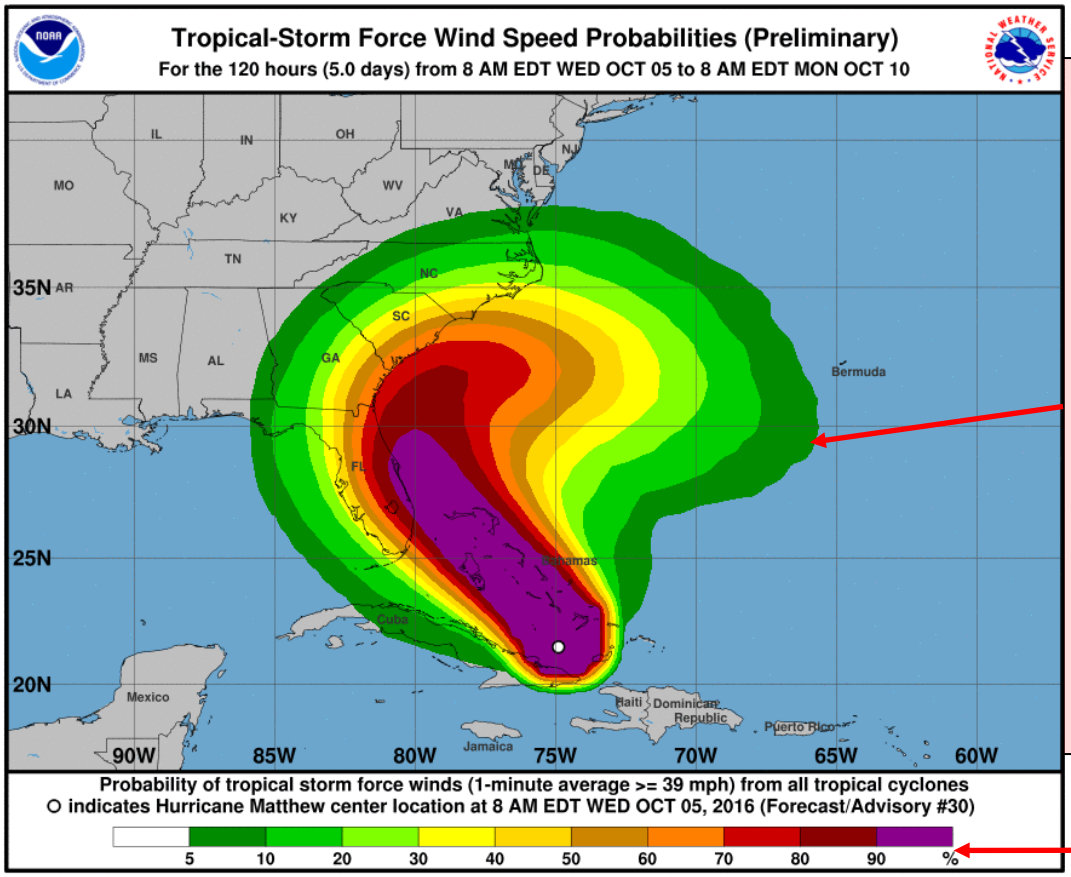
The distribution of hurricane and tropical storm force winds in this tropical cyclone can be seen in the Cumulative Wind Distribution graphic described below.

**Availability**: This graphic is part of a suite of products issued for active cyclones every six hours at 0300, 0900, 1500, and 2100 UTC. Local issuance times are shown in the

table on the next page. When coastal watches or warnings are in effect, the graphic will be updated at either two or three hour intervals concurrent with the issuance if Intermediate Public Advisories. The graphic will also be updated with the issuance of Special Advisories.

| Basin | Graphic Issuance Times (UTC) | Local Issuance Times During Daylight Saving Time | Local Issuance Times During Standard Time |
|---|---|---|---|
| Atlantic | 0300, 0900, 1500, 2100 | 5 am, 11 am, 5 pm, 11 pm EDT | 4 am, 10 am, 4 pm, 10 pm EST |
| Eastern North Pacific | 0300, 0900, 1500, 2100 | 2 am, 8 am, 2 pm, 8 pm PDT | 1 am, 7 am, 1 pm, 7 pm PST |

## Tropical Cyclone Surface Wind Speed Probabilities




*To determine the probability of sustained winds exceeding a threshold (in this example 39 mph or tropical storm force) for a particular location, match the colors depicted on the map with the corresponding probability ranges below.*

**Product Description**: This graphic depicts the probability (likelihood, expressed as a percentage) that sustained (1-min average) winds meeting or exceeding specific thresholds will occur at particular locations over particular intervals of time. These probabilities are based on the track, intensity, and wind structure (size) forecasts from the National Hurricane Center and their historical error characteristics. Separate graphics are provided for the 34 kt (tropical storm force), 50 kt, and 64 kt (hurricane force) wind thresholds.

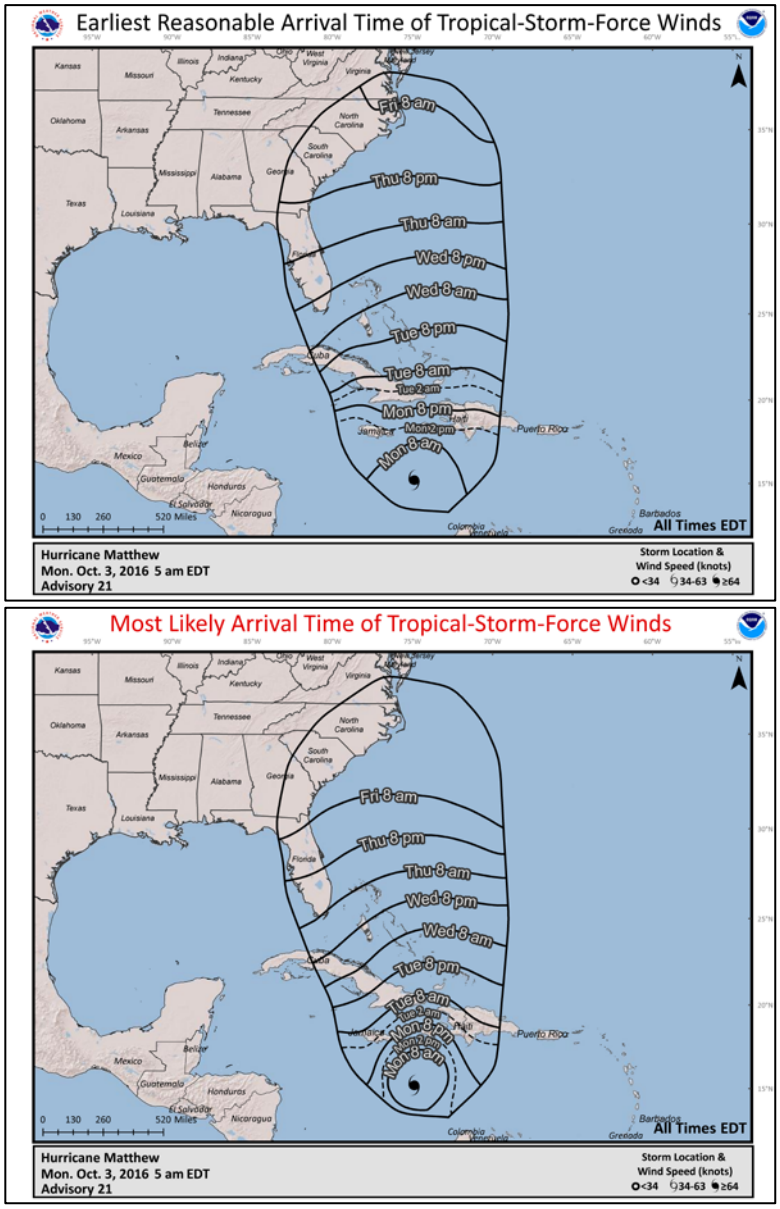
The graphic provides location-specific c*umulative occurrence probabilities* – these values tell you the probability the wind event will occur sometime during the specified cumulative forecast period (0-12, 0-24, 0-36 hours, etc., out to 0-120 h) at each specific point. The images can be looped to show how the threat evolves over the five-day period of the forecast.

*It is important for users to realize that probabilities that may seem relatively small (e.g., 5-10%) may still be quite significant. Users are urged to consider the potentially large costs (in terms of lives, property, etc.) of not preparing for an extreme event.*

**Availability**: This graphic is part of a suite of products issued for active cyclones every six hours at 0300, 0900, 1500, and 2100 UTC. Local issuance times are shown in the table below. The graphic will also be updated with the issuance of Special Public Advisories.

| Basin | Graphic Issuance Times (UTC) | Local Issuance Times During Daylight Saving Time | Local Issuance Times During Standard Time |
|---|---|---|---|
| Atlantic | 0300, 0900, 1500, 2100 | 5 am, 11 am, 5 pm, 11 pm EDT | 4 am, 10 am, 4 pm, 10 pm EST |
| Eastern North Pacific | 0300, 0900, 1500, 2100 | 2 am, 8 am, 2 pm, 8 pm PDT | 1 am, 7 am, 1 pm, 7 pm PST |

## Tropical-Storm-Force Wind Time-of-Arrival Graphics




**Product Description**: These graphics depict the earliest reasonable and most likely arrival times of sustained (1-min average) tropical storm force winds at a particular location on the map. These probabilities are based on the track, intensity, and wind structure (size) forecasts from the National Hurricane Center and their historical error characteristics. For many users, preparations for hazardous winds ideally should be completed by the earliest reasonable arrival time.

The earliest reasonable arrival time is based the time at which the first 10% of the wind speed probability realizations bring tropical-storm force winds to a given location. The most likely time of arrival is the time at which the arrival of tropical storm force winds at

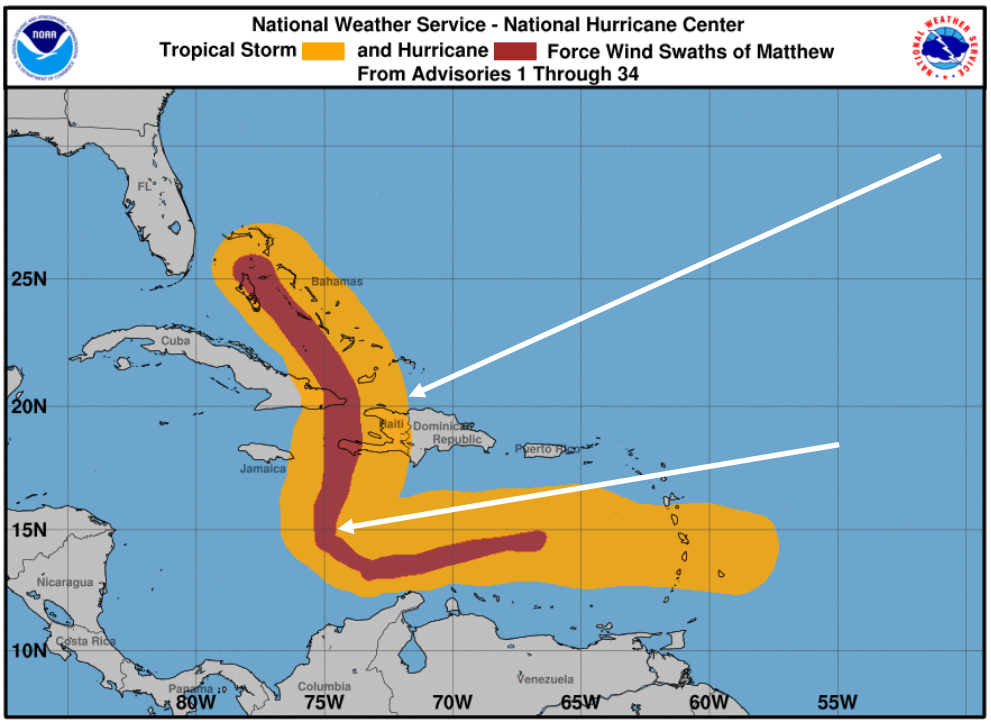
a given location is equally likely to occur before or after the indicated time. The arrival times are shown along a series of black contours with the times depicted in local time, with the time zone based on the initial location of the cyclone.

A second version of the graphics also depicts the cumulative probability likelihood, expressed as a percentage) that sustained (1-min average) 34-kt winds thresholds will occur at particular locations during the next 5 days in color filled contours.

**Availability**: This graphic is part of a suite of products issued for active cyclones every six hours at 0300, 0900, 1500, and 2100 UTC. Local issuance times are shown in the table below. The graphic will also be updated with the issuance of Special Public Advisories.

| Basin | Graphic Issuance Times (UTC) | Local Issuance Times During Daylight Saving Time | Local Issuance Times During Standard Time |
|---|---|---|---|
| Atlantic | 0300, 0900, 1500, 2100 | 5 am, 11 am, 5 pm, 11 pm EDT | 4 am, 10 am, 4 pm, 10 pm EST |
| Eastern North Pacific | 0300, 0900, 1500, 2100 | 2 am, 8 am, 2 pm, 8 pm PDT | 1 am, 7 am, 1 pm, 7 pm PST |

## Cumulative Wind History



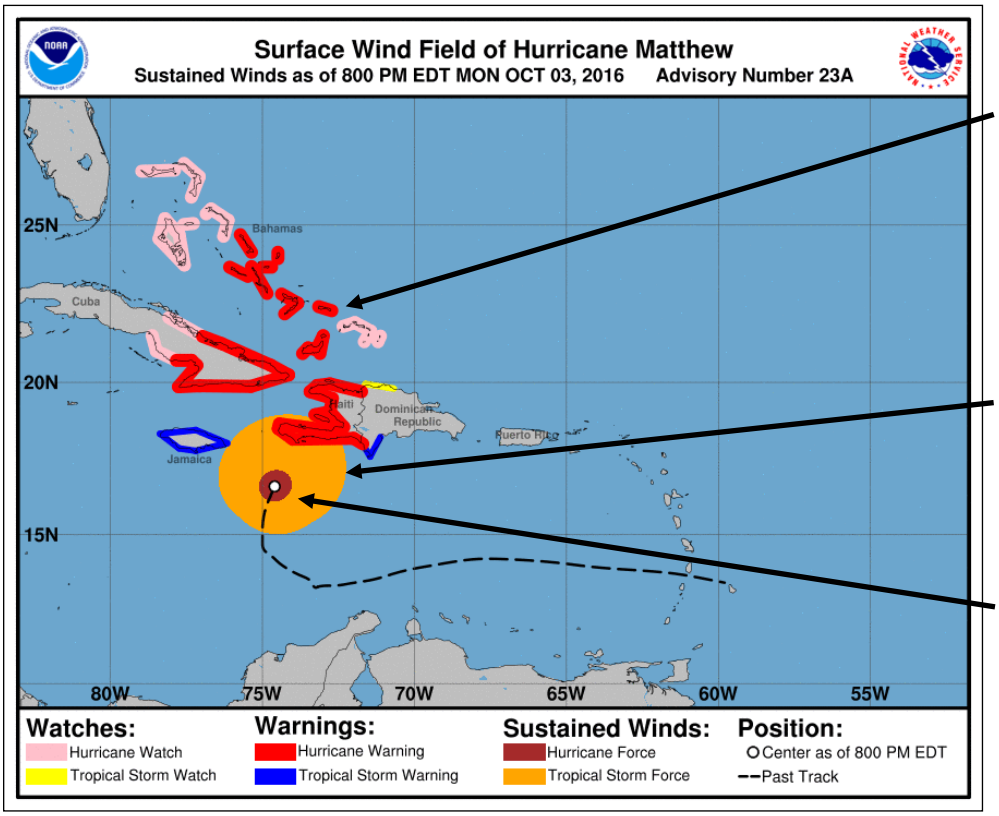

**Product Description:** This graphic shows how the size of the storm has changed, and the areas potentially affected so far by sustained winds of tropical storm force (in orange) and hurricane force (in red). The display is based on the wind radii contained in the set of Forecast/Advisories indicated at the top of the figure. Users are reminded that the Forecast/Advisory wind radii represent the maximum possible extent of a given wind speed within particular quadrants around the tropical cyclone. As a result, not all locations falling within the orange or red swaths will have experienced sustained tropical storm or hurricane force winds, respectively.

**Availability**: This graphic is part of a suite of products issued for active cyclones every six hours at 0300, 0900, 1500, and 2100 UTC. Local issuance times are shown in the table at the top of the following page. The graphic will also be updated with the issuance of Special Public Advisories.

| Basin | Graphic Issuance Times (UTC) | Local Issuance Times During Daylight Saving Time | Local Issuance Times During Standard Time |
|---|---|---|---|
| Atlantic | 0300, 0900, 1500, 2100 | 5 am, 11 am, 5 pm, 11 pm EDT | 4 am, 10 am, 4 pm, 10 pm EST |

| | | | |
|---|---|---|---|
| Eastern North Pacific | 0300, 0900, 1500, 2100 | 2 am, 8 am, 2 pm, 8 pm PDT | 1 am, 7 am, 1 pm, 7 pm PST |

## Tropical Cyclone Wind Field Graphic




- Includes representation of coastal areas under a hurricane warning (red), hurricane watch (pink), tropical storm warning (blue) and tropical storm watch (purple).
- Graphic shows the areas potentially being affected by the sustained winds of tropical storm force (in orange) and hurricane force (in red)
- Current position of the center of the tropical cyclone shown with white dot while the past track is shown with a dashed line.

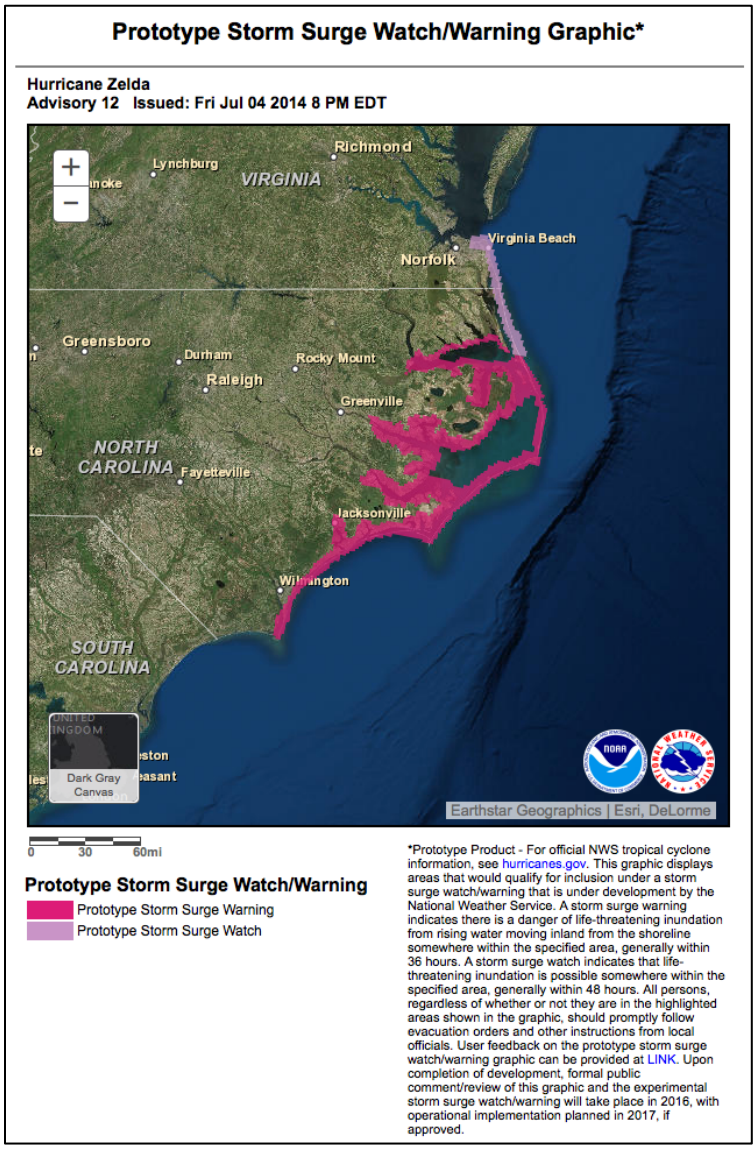
**Product Description**: This graphic shows the areas potentially being affected by the sustained (1 min average) winds of tropical storm force (in orange) and hurricane force (in red). The display is based on the wind radii contained in the latest Forecast/Advisory (indicated at the top of the figure). Users are reminded that the Forecast/Advisory wind radii represent the maximum possible extent of a given wind speed within particular quadrants around the tropical cyclone. As a result, not all locations falling within the orange or red shaded areas will be experiencing sustained tropical storm or hurricane force winds, respectively.

In addition to the wind field, this graphic shows an approximate representation of coastal areas under a hurricane warning (red), hurricane watch (pink), tropical storm warning (blue) and tropical storm watch (purple). The white dot indicates the current position of the center of the tropical cyclone, and the dashed line shows the previous track of the center of the tropical cyclone.

**Availability**: This graphic is part of a suite of products issued for active cyclones every six hours at 0300, 0900, 1500, and 2100 UTC. Local issuance times are shown in the table at the top of the next page. The graphic will also be updated with the issuance of Special Public Advisories.

| Basin | Graphic Issuance Times (UTC) | Local Issuance Times During Daylight Saving Time | Local Issuance Times During Standard Time |
|---|---|---|---|
| Atlantic | 0300, 0900, 1500, 2100 | 5 am, 11 am, 5 pm, 11 pm EDT | 4 am, 10 am, 4 pm, 10 pm EST |
| Eastern North Pacific | 0300, 0900, 1500, 2100 | 2 am, 8 am, 2 pm, 8 pm PDT | 1 am, 7 am, 1 pm, 7 pm PST |

## Storm Surge Watch and Warning Graphic

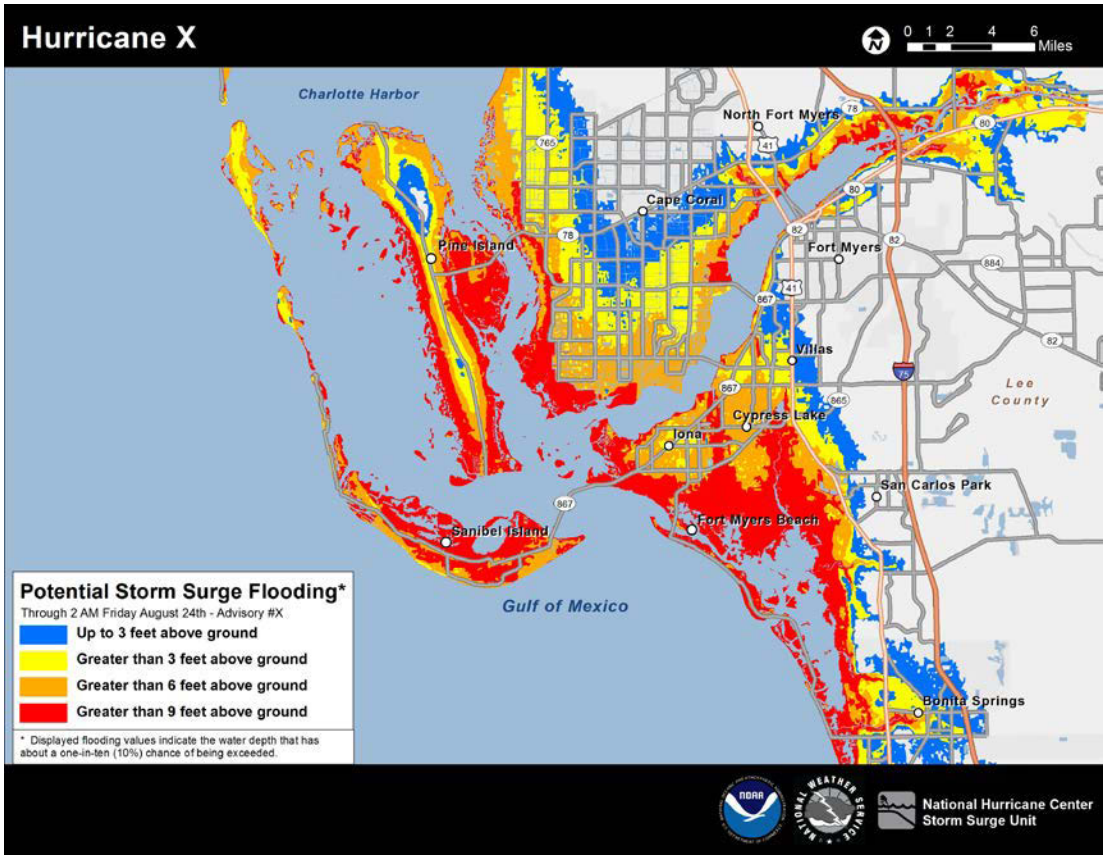



**Product Description**: Storm surge is rising water moving inland from the shoreline, pushed onshore by the force of the wind. The storm surge watch/warning graphic displays areas under a storm surge watch or warning. A storm surge warning means that there is a danger of life-threatening inundation from rising water moving inland from the shoreline somewhere within the specified area, generally within 36 hours. A storm surge watch means that life-threatening inundation is possible somewhere within the specified area, generally within 48 hours.

Due to forecast uncertainty, the actual areas that experience life-threatening inundation may differ from the areas shown on this map. All persons, regardless of whether or not they are in the highlighted areas shown by the graphic, should promptly follow evacuation orders and other instructions from local emergency management officials.

**Availability**: This graphic is part of a suite of products issued for active cyclones every six hours at 0300, 0900, 1500, and 2100 UTC whenever storm surge watches or warnings are in effect along any portion of the Gulf or Atlantic coasts of the continental United States.

## Potential Storm Surge Flooding Map

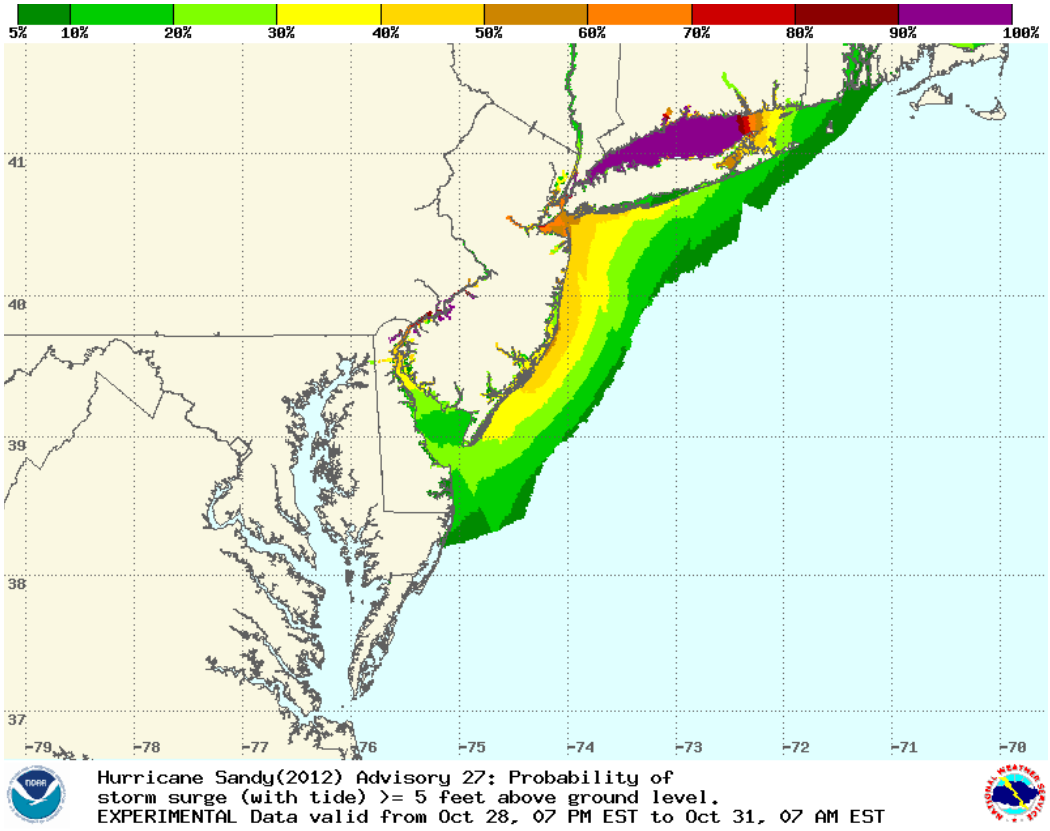



**Product Description**: The Potential Storm Surge Flooding Map shows geographical areas where inundation from storm surge could occur and how high above ground the water could reach in those areas. The map is based on the latest forecast track and intensity of the tropical cyclone, and takes into account likely forecast errors. The shading represents inundation levels that have a 10 percent chance of being exceeded, which can therefore be thought of as representing a reasonable worst-case scenario for any individual location. The first map will usually be issued at the same time as the initial hurricane watch or, in some cases, with a tropical storm watch. The map is subject to change every six hours in association with every new NHC full advisory package.

**Availability**: This graphic is part of a suite of products issued for active cyclones every six hours at 0300, 0900, 1500, and 2100 UTC, whenever a hurricane or storm surge watch or warning is in effect for any portion of the Gulf or Atlantic coasts of the continental United States. The graphic can be issued at other times as appropriate, including for some tropical storm watches or warnings. *Due to the processing time required to produce the map, there will generally be a delay of an hour or more in the posting of this graphic to the NHC web site, or soon after the availability of the Probabilistic Tropical Cyclone Storm Surge and Tide products.*

## Probabilistic Tropical Cyclone Storm Surge and Tide Graphics

### *Tropical Cyclone Storm Surge and Tide Probabilities*



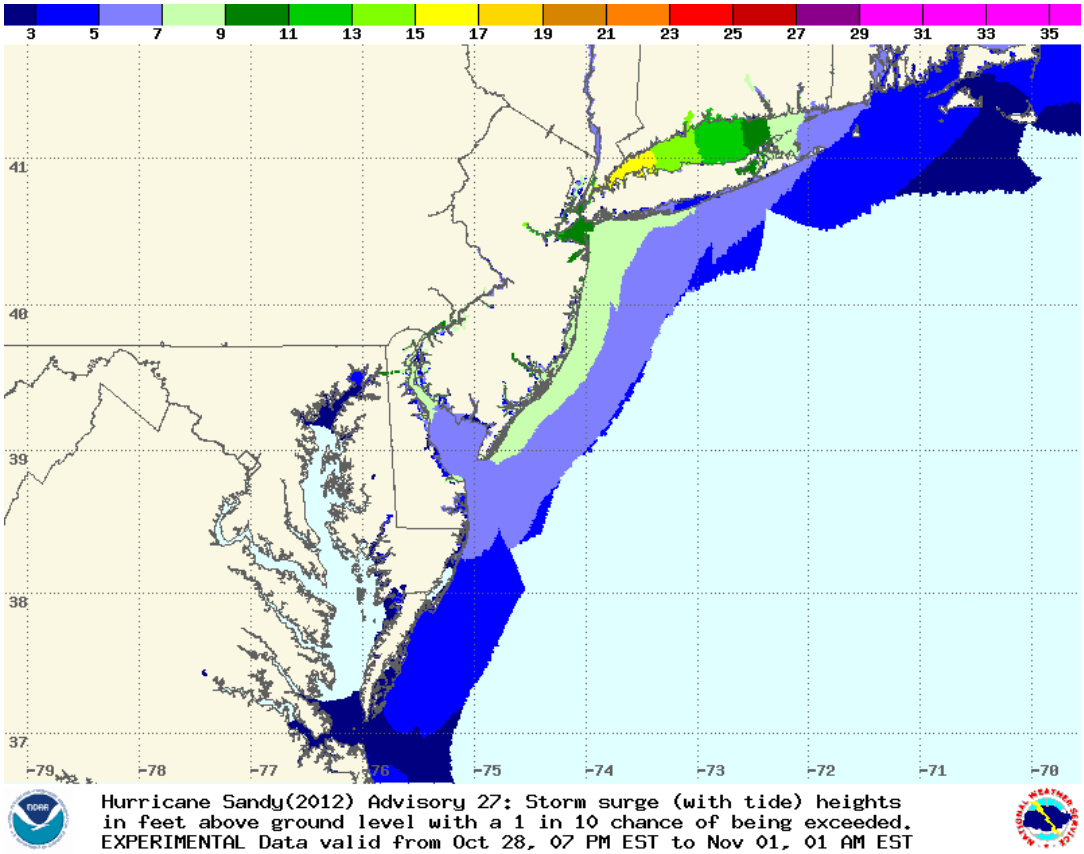

**Product Description**: The Tropical Cyclone Storm Surge and Tide Probabilities graphics depict the likelihood that a storm tide will occur at particular locations during the next 78 hours, specified in one-foot increments from 2 to 25 feet above ground level *or* above the North American Vertical Datum of 1988 (NAVD88). The probabilities are based on an ensemble of Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model runs using the National Hurricane Center (NHC) official advisory and account for uncertainties in forecast track, size, and intensity errors based on historical errors.

*It is important for users to realize that probabilities that may seem relatively small (e.g., 5-10%) may still be quite significant. Users are urged to consider the potentially large cost (in terms of lives, property, etc.) of not preparing for an extreme event.*

**Availability**: These graphics are part of a suite of products issued for active cyclones every six hours at 0300, 0900, 1500, and 2100 UTC, whenever a hurricane watch or hurricane warning is in effect for any portion of the Gulf or Atlantic coasts of the continental United States and on a case by case basis for tropical storm watches and

warnings. *Due to the nature of the computations involved in producing this product, however, there will generally be a delay of an hour or more in the posting of this graphic to the NHC web site.*

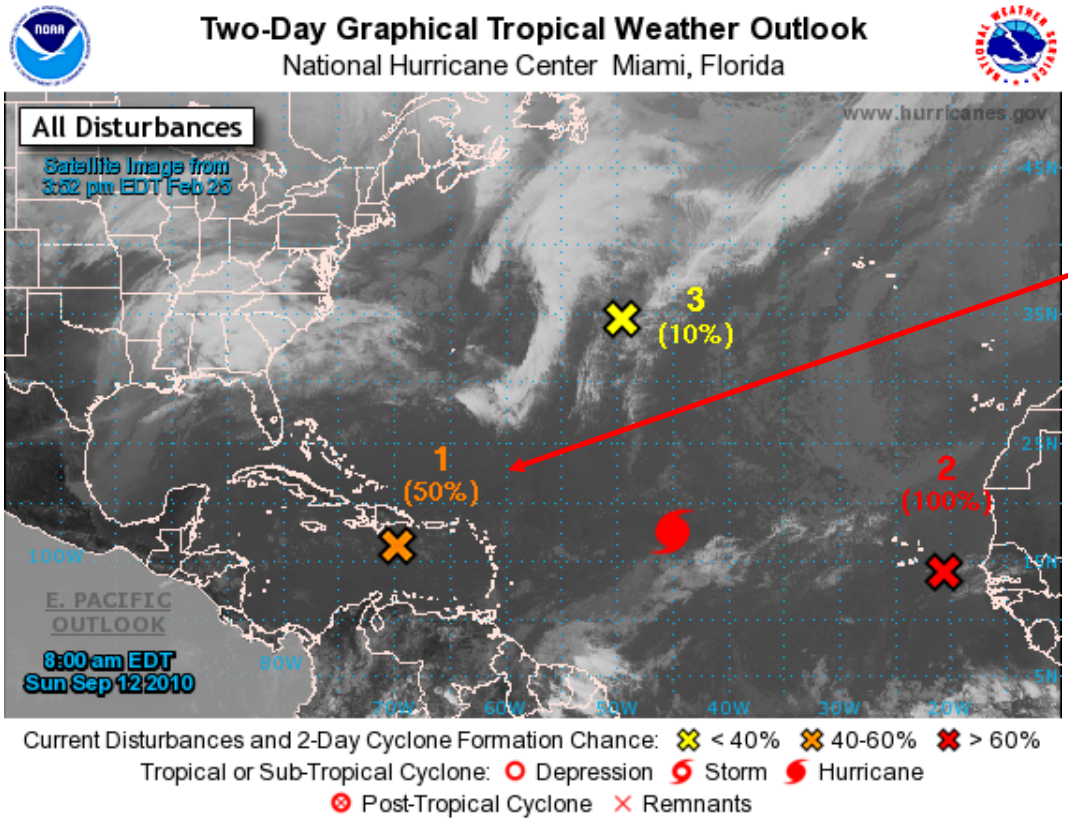
## *Tropical Cyclone Storm Surge and Tide Exceedance Heights*




**Product Description:** The storm surge exceedance height graphics show the storm surge and tide height, in feet above ground level *or* above the North American Vertical Datum of 1988 (NAVD88), which has a specific probability of being exceeded in the next 78 hours. The available probability thresholds range from 10 to 90 percent, at 10 percent intervals. The probabilities are based on an ensemble of Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model runs using the National Hurricane Center (NHC) official advisory and account for uncertainties in forecast track, size, and intensity errors based on historical errors.

**Availability**: These graphics are part of a suite of products issued for active cyclones every six hours at 0300, 0900, 1500, and 2100 UTC, whenever a hurricane watch or hurricane warning is in effect for any portion of the Gulf or Atlantic coasts of the continental United States and on a case by case basis for tropical storm watches and warnings. *Due to the nature of the computations involved in producing this product, however, there will generally be a delay of an hour or more in the posting of this graphic to the NHC web site.*

## 48-Hour Graphical Tropical Weather Outlook




*Area 1 in the graphic corresponds with area 1 discussed in the text below. Users can also mouse over the disturbance in the graphic and a pop-up window will appear providing the same text as below.*

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ZCZC MIATWOAT ALL
TTAA00 KNHC DDHHMM

Tropical Weather Outlook
NWS National Hurricane Center Miami FL
800 AM EDT Sun Sep 12 2010

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

The National Hurricane Center is issuing advisories on Hurricane Igor,
location about midway between the Cape Verde Islands and the Northern
Leeward Islands.

1. Showers and thunderstorms remain disorganized in association with a
broad area of low pressure located over the east-central Caribbean Sea.
Environmental conditions still appear favorable for gradual development
of this system, and a tropical depression could form during the next
few days as it moves westward at 10 to 15 mph.  Regardless of
development, locally heavy rainfall is possible in the Virgin Islands,
Puerto Rico, Hispaniola, Jamaica and Cuba during the next day or two.
These rains could cause life-threatening flash floods and mud slides,
especially in mountainous terrain
* Formation chance through 48 hours...medium...50 percent
* Formation chance through 5 days...high...70 percent
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```
2. Satellite data indicate that the area of low pressure location about
315 miles east-southeast of the southernmost Cape Verde Islands has
continued to become better organized, and a tropical depression appears
to be forming.  If current trends continue, advisories will be
initiated later this morning, and watches or warnings will likely be
required for portions of the Cape Verde Islands.  This system is
expected to move generally westward at 10-15 mph during the next
several days.
* Formation chance through 48 hours...high...near 100 percent
* Formation chance through 5 days...high...near 100 percent

3. A weak area of low pressure location about 900 miles east-northeast
of Bermuda continues to produce disorganized shower activity.
Development of this system appears unlikely before it is absorbed by a
frontal system in the next day or so, while it moves northward at 20 to
25 mph.
* Formation chance through 48 hours...low...10 percent
* Formation chance through 5 days...low...10 percent

4. A trough of low pressure could form over the extreme southwestern
Gulf of Mexico and Bay of Campeche in a few days...and some development
of this system is possible by midweek.
* Formation chance through 48 hours...low...near 0 percent
* Formation chance through 5 days...low...20 percent

$$
Forecaster Brennan
```

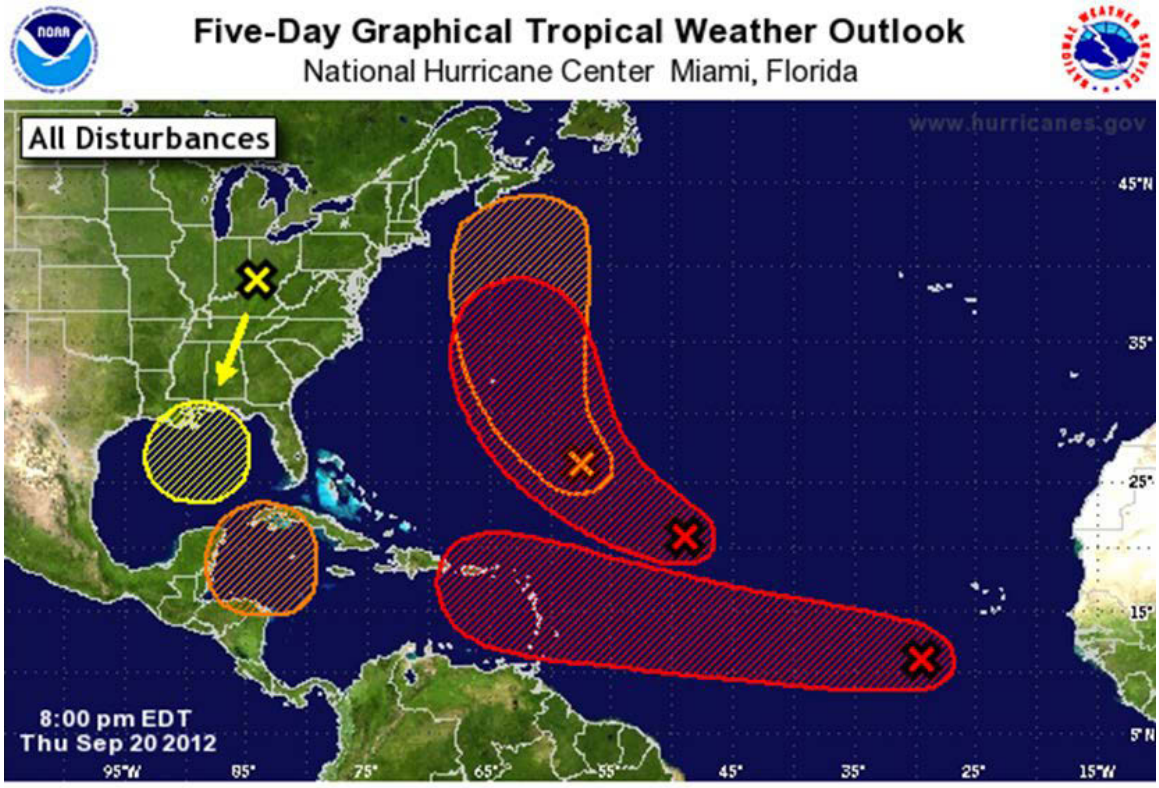
**Product Description**: The 48-hour Graphical Tropical Weather Outlook depicts significant areas of disturbed weather and their potential for development during the next 48 hours. The Outlook also shows the locations of any active tropical cyclones and potential tropical cyclones that NHC is issuing advisories on. The location of areas of disturbed weather on the graphic are denoted by an X and numbered, with text discussions for each disturbance given beneath the graphic. The potential for tropical cyclone formation for each disturbance within the next 48 hours will be indicated by the color of the X: yellow indicates a low probability of development (0-30%), orange indicates medium likelihood (40%-60%), and red indicates a high likelihood of development (70-100%). Potential tropical cyclones that NHC is issuing advisories on will be denoted by an X color-coded by the probability of development, and the number of the potential tropical cyclone will be shown above the X. The graphic is interactive; users can mouse over cyclones or disturbances in the graphic and pop-up windows will appear with cyclone advisory information or the text Outlook discussion for that disturbance. Clicking on a tropical cyclone symbol or a potential tropical cyclone will take the user to a new web location that contains all advisories and products for that system.

Information on the motion and potential impacts of each disturbance is available in the text descriptions but is not displayed graphically.

**Availability**: Graphical Tropical Weather Outlooks are issued every six hours from 1 June–30 November for the Atlantic Basin and from 15 May–30 November for the eastern North Pacific Basin, at 0000, 0600, 1200, and 1800 UTC. Local issuance times are shown in the table at the top of the next page. The Graphical Tropical Weather Outlook is also updated whenever a Special Tropical Weather Outlook is issued.

| Basin | Outlook Issuance Times (UTC) | Local Issuance Times During Daylight Saving Time | Local Issuance Times During Standard Time |
|---|---|---|---|
| Atlantic | 0000, 0600, 1200, 1800 | 2 am, 8 am, 2 pm, 8 pm EDT | 1 am, 7 am, 1 pm, 7 pm EST |
| Eastern North Pacific | 0000, 0600, 1200, 1800 | 5 am, 11 am, 5 pm, 11 pm PDT | 4 am, 10 am, 4 pm, 10 pm PST |

## 5-Day Graphical Tropical Weather Outlook




Tropical Cyclone Formation Potential for the 5-Day Period Ending 8:00 pm EDT Tue Sep 25 2012
Chance of Cyclone Formation in 5 Days: Low < 40% Medium 40-60% High > 60%
X indicates current disturbance location; shading indicates potential formation area.

Tropical Weather Outlook
NWS National Hurricane Center Miami FL
800 PM EDT Fri Sep 20 2012

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

1. The area of low pressure located several hundred miles east-northeast of the northern Leeward Islands has become better organized this afternoon, and a tropical depression could form later tonight or on Saturday. This system is moving northwestward at 10-15 mph. Interests in Bermuda should follow the progress of this disturbances.
* Formation chance through 48 hours...high...70 percent
* Formation chance through 5 days...high...80 percent

2. The area of low pressure a few hundred miles southeast of Bermuda is becoming less organized and the chances of development are decreasing as the system encounters strong upper-level winds.
* Formation chance through 48 hours...medium...40 percent
* Formation chance through 5 days...medium...40 percent

3. A tropical wave in far eastern Atlantic is showing increasing signs of organization as it moves westward at 10 mph. Gradual development is expected over the next few days.

```
* Formation chance through 48 hours...low...20 percent
* Formation chance through 5 days...high...70 percent

4. The remnants of Tropical Storm Ike are located over the Ohio Valley,
and expected to drift southward over the next several days.  This
system has some chance of redevelopment if it reaches the Gulf of
Mexico.
* Formation chance through 48 hours...low...near 0 percent
* Formation chance through 5 days...low...10 percent

5. An area of disturbed weather is expected to develop over the next
several days in the northwestern Caribbean Sea, where upper-level winds
could be favorable for development.
* Formation chance through 48 hours...low...near 0 percent
* Formation chance through 5 days...medium...40 percent

$$
Forecaster Pasch
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**Product Description**: The 5-day Graphical Tropical Weather Outlook provides formation potential for individual disturbances during the next 5-day period. The areas enclosed on the graph represent the potential formation area during the forecast period[4]. The areas are color-coded based on the potential for tropical cyclone formation during the next 5-days. Areas in yellow indicate a low probability of development (0-30%), orange indicates medium likelihood (40-60%), and red indicates a high likelihood of development (70-100%). The location of existing disturbances is indicated by an X. If the formation potential of an existing disturbance does not include the area in which the disturbance is currently location, an arrow will connect the current location of the disturbance to its area of potential formation. Areas without an X or connected by an arrow to an X indicate that the disturbance does not currently exist, but is expected to develop during the 5-day period. Potential tropical cyclones that NHC is issuing advisories on will be denoted by a X and the number of the potential tropical cyclone will be shown above the X; note, however, that formation areas are not provided for potential tropical cyclones. The graphic is interactive; users can mouse over disturbances in the graphic and pop-up windows will appear with the text Outlook discussion for that disturbance. Clicking on a disturbance will take the user to a graphic that shows only that disturbance. Beginning in 2017, active tropical cyclones and potential tropical cyclones will be depicted on this graphic. Clicking on a tropical cyclone symbol or a potential tropical cyclone will take the user to a new web location that contains all advisories and products for that system.

**Availability**: Graphical Tropical Weather Outlooks are issued every six hours from 1 June–30 November for the Atlantic Basin and from 15 May–30 November for the eastern North Pacific Basin, at 0000, 0600, 1200, and 1800 UTC. Local issuance times are

[4] Development areas for potential tropical cyclones that NHC is issuing advisories on will not be depicted on the graphic.

shown in the table on the next page. The Graphical Tropical Weather Outlook is also updated whenever a Special Tropical Weather Outlook is issued.

| Basin | Outlook Issuance Times (UTC) | Local Issuance Times During Daylight Saving Time | Local Issuance Times During Standard Time |
|---|---|---|---|
| Atlantic | 0000, 0600, 1200, 1800 | 2 am, 8 am, 2 pm, 8 pm EDT | 1 am, 7 am, 1 pm, 7 pm EST |
| Eastern North Pacific | 0000, 0600, 1200, 1800 | 5 am, 11 am, 5 pm, 11 pm PDT | 4 am, 10 am, 4 pm, 10 pm PST |

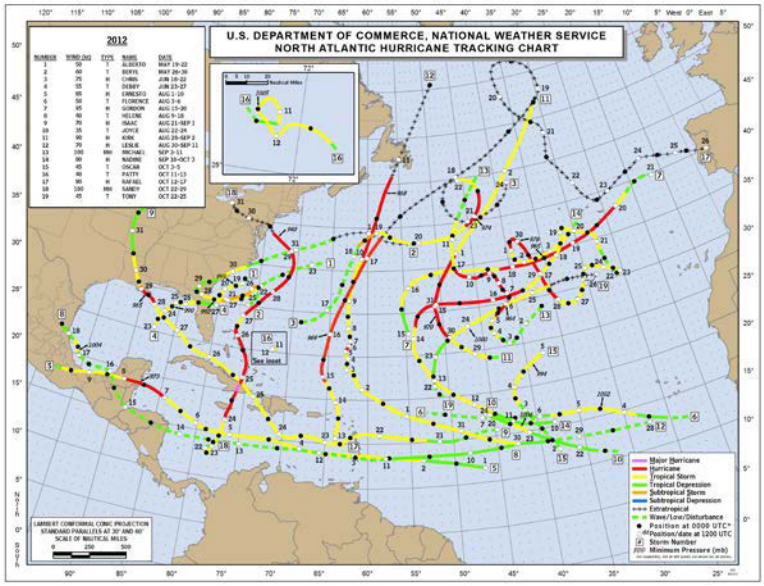
# NHC Non-Operational Product Descriptions

## Tropical Cyclone Reports

**Product Description:** The National Hurricane Center's Tropical Cyclone Reports (TCRs) contain comprehensive information on each storm, including a final best track and synoptic history, meteorological statistics, casualties and damage, and a forecast and warning critique.

**Availability:** TCRs are available in the data archive portion of the NHC website (www.nhc.noaa.gov/data#tcr) in pdf format. The time to prepare a TCR after the tropical cyclone has ended can vary from a couple of weeks to several months, depending on the longevity of the cyclone, available data, and the extent of the cyclone's impacts.

## Seasonal Summary Table and Track Maps




**Product Description:** The National Hurricane Center's publishes a seasonal summary table and seasonal track map near the beginning of each month from July through

December. The table provides a summary of all of the season's tropical cyclones to date and the map shows the tracks of all of the season's tropical cyclones. The data for each tropical cyclone are considered preliminary until the Tropical Cyclone Report is issued. The seasonal summary table and track maps can be found in the archive section of the NHC website with the season's tropical cyclone reports.