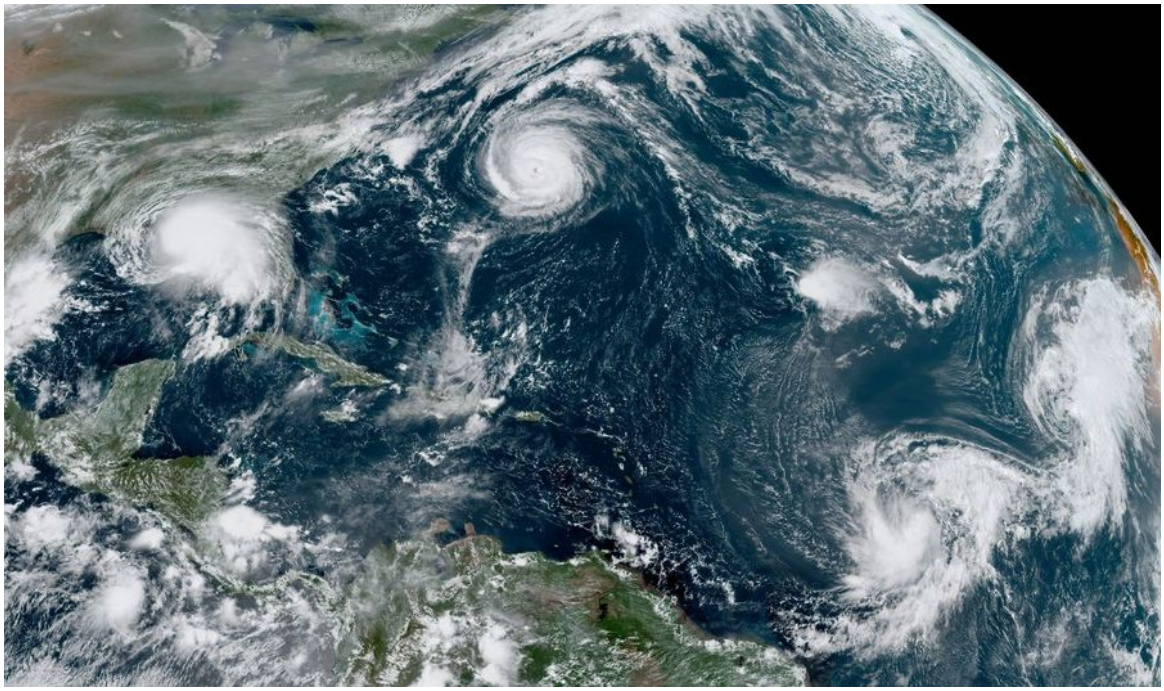
National Hurricane Center Product Description Document: A User's Guide to Hurricane Products

May 2026



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[1] Advisories

The National Hurricane Center (NHC) issues tropical cyclone advisory packages comprising a suite of official text and graphical products. These advisory packages are issued for active tropical cyclones, potential tropical cyclones[2], and certain post-tropical cyclones at 6-hour intervals at 0300, 0900, 1500, and 2100 Coordinated Universal Time (UTC). Local issuance times are shown in the following table[3].

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
Central North Pacific	0300, 0900, 1500, 2100		5 am, 11 am, 5 pm, and 11 pm HST

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 and watch/warning graphic, wind speed probability graphics, arrival time of tropical-storm-force wind graphics, the tropical cyclone wind field graphic, and a cumulative wind history graphic. A storm surge watch and warning graphic, a potential storm surge flooding map, and a peak storm surge forecast graphic will be available whenever life-threatening inundation from storm surge is possible along any portion of the Gulf or Atlantic coasts of the United States or along the coasts of Puerto Rico, the U.S. Virgin Islands, or the main Hawaiian Islands.

Intermediate Public Advisories are issued at 3-hour intervals between regular advisory packages when coastal tropical cyclone watches or warnings are in effect. United States

[1] 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 online glossary at: http://www.hurricanes.gov/aboutgloss.shtml

[2] Advisories on potential tropical cyclones may be issued for disturbances that are not yet a tropical cyclone, but for which there is high confidence that the system could bring tropical storm or hurricane conditions to land areas within 72 hours.

[3] Local issuance times here are shown for the Eastern and Pacific time zones; however, the time zone used in the advisory will vary depending on the initial location of the tropical cyclone at the advisory issuance time. Since most of Mexico no longer observes Daylight Saving Time, Central Standard and Mountain Standard Time will be used when a tropical cyclone is located within those two time zones.

tropical cyclone watches or warnings can be issued with regular or intermediate Public Advisories. A Special Advisory package may be issued at any time to advise of an unexpected significant change in the cyclone.

If a tropical cyclone dissipates, NHC advisories are typically discontinued. Under certain circumstances, advisory responsibility is transferred to the National Weather Service's Weather Prediction Center (WPC). This transfer will occur when a tropical depression or its remnants are 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 also has the option to continue issuing advisory packages after tropical cyclones have become post-tropical[4]. NHC will continue its advisory packages on a post-tropical cyclone when it poses 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 this case, hurricane and tropical storm watches and warnings can remain in place. For systems that become post-tropical over water and no longer pose a significant threat to life and property on land, future forecast and warning information will be provided by the appropriate marine forecasting office.

[4] A post-tropical cyclone is an area of low pressure that used to be a tropical cyclone but no longer possesses sufficient tropical characteristics to be considered a tropical cyclone.

NHC Text Product Descriptions

Tropical Cyclone Public Advisory (TCP)

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 or two, 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, along with a general description of the predicted track and intensity of the cyclone over the next 72 hours. When conditions warrant, a discussion of the cyclone's forecast track and intensity through 5 days will be included. Any pertinent weather observations will also be included in this section.

4) A section that includes information on hazards to land, generally within the time period when watches and/or warnings are in effect. These hazards may include storm surge, wind, rainfall, tornadoes, surf/rip currents, and other relevant hazards, such as post-storm heat, associated with the cyclone. When numerous locations are affected by storm surge or rainfall, weblinks will be provided to direct users to pertinent graphical hazard information.

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 following table. 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.

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
Central North Pacific	0300, 0900, 1500, 2100		5 am, 11 am, 5 pm, 11 pm HST

Product Headers: WMO and AWIPS headers for English and Spanish products are given in the following table. The final numeric digit in each header (1–5) is a "bin number" assigned on a rotating basis throughout the season.

Basin	WMO Header(s)	AWIPS Header(s)
Atlantic (English)	WTNT31-5 KNHC	MIATCPAT1-5
Atlantic (Spanish)	WTCA41-5 KNHC	MIATASAT1-5
Eastern North Pacific (English)	WTPZ31-5 KNHC	MIATCPEP1-5
Eastern North Pacific (Spanish; *experimental*)	WTPZ11-5 KNHC	MIATASEP1-5
Central North Pacific (English)	WTPA31-5 PHFO	HFOTCPCP1-5
Central North Pacific (Spanish; *experimental*)	WTPA11-5 PHFO	HFOTASCP1-5

TCP Example:

```
ZCZC MIATCPAT5 ALL
TTAA00 KNHC DDHHMM

BULLETIN
Hurricane Idalia Advisory Number  14
NWS National Hurricane Center Miami FL       AL102023
1100 PM EDT Tue Aug 29 2023
```

Product header/ valid time

```
...IDALIA STILL STRENGTHENING...
...FORECAST TO BE AN EXTREMELY DANGEROUS CATEGORY 4 INTENSITY AT
LANDFALL...
```

Headline

```
SUMMARY OF 1100 PM EDT...0300 UTC...INFORMATION
-----------------------------------------------
LOCATION...27.7N 84.5W
ABOUT 125 MI...200 KM W OF TAMPA FLORIDA
MAXIMUM SUSTAINED WINDS...110 MPH...175 KM/H
PRESENT MOVEMENT...N OR 10 DEGREES AT 18 MPH...30 KM/H
MINIMUM CENTRAL PRESSURE...958 MB...28.29 INCHES
```

Summary table formatted for parsing

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

The Tropical Storm Warning for the Dry Tortugas is discontinued,
and the Tropical Storm Watch for the Lower Florida Keys is
discontinued.

SUMMARY OF WATCHES AND WARNINGS IN EFFECT:

A Storm Surge Warning is in effect for...
* Englewood northward to Indian Pass, including Tampa Bay

A Hurricane Warning is in effect for...
* Middle of Longboat Key northward to Indian Pass, including Tampa
Bay

A Tropical Storm Warning is in effect for...
* Chokoloskee northward to the Middle of Longboat Key
* West of Indian Pass to Mexico Beach
* Sebastian Inlet Florida to Surf City North Carolina

A Storm Surge Watch is in effect for...
* Bonita Beach northward to Englewood, including Charlotte Harbour
* Mouth of the St. Mary's River to South Santee River South
Carolina
* Beaufort Inlet to Drum Inlet North Carolina
* Neuse and Pamlico Rivers North Carolina

A Hurricane Watch is in effect for...
* Mouth of the St. Mary's River to Edisto Beach South Carolina
```

Watch/Warning section with changes highlighted at the top

A Tropical Storm Watch is in effect for...
* North of Surf City North Carolina to the North Carolina/Virginia border
* Pamlico and Albemarle Sounds

A Hurricane Warning means that hurricane conditions are expected somewhere within the warning area. Preparations to protect life and property should be rushed to completion.

A Storm Surge Warning means 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 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 property from rising water and the potential for other dangerous conditions. Promptly follow evacuation and other instructions from local officials.

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

A Storm Surge Watch means there is a possibility of life-threatening inundation, from rising water moving inland from the coastline, in the indicated locations during the next 48 hours. For a depiction of areas at risk, please see the National Weather Service Storm Surge Watch/Warning Graphic, available at hurricanes.gov.

A Hurricane Watch means that hurricane conditions are possible within the watch area.

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

Additional warnings will likely be required tonight or on Wednesday.

For storm information specific to your area in the United States, including possible inland watches and warnings, please monitor products issued by your local National Weather Service forecast office.

Watch/ Warning section

DISCUSSION AND OUTLOOK

Storm discussion and outlook

At 1100 PM EDT (0300 UTC), the center of Hurricane Idalia was located near latitude 27.7 North, longitude 84.5 West. Idalia is moving toward the north near 18 mph (30 km/h). A northward to north-northeastward motion is expected through tonight, with Idalia's center forecast to reach the Big Bend coast of Florida on Wednesday morning. After landfall, the center of Idalia is forecast to turn toward the northeast and east-northeast, moving near or along the coasts of Georgia, South Carolina, and North Carolina late Wednesday and Thursday.

Location and movement

Hurricane Hunter aircraft data indicate that maximum sustained winds are near 110 mph (175 km/h) with higher gusts. Additional strengthening is forecast, and Idalia is expected to become a major hurricane during the next few hours before it reaches the Big Bend coast of Florida. Idalia is likely to still be a hurricane while moving across southern Georgia, and possibly when it reaches the coast of Georgia or southern South Carolina on Wednesday.

Intensity

Hurricane-force winds extend outward up to 25 miles (35 km) from the center and tropical-storm-force winds extend outward up to 160 miles (260 km).

Size

The estimated minimum central pressure based on Hurricane Hunter aircraft observations is 958 mb (28.29 inches).

Pressure

HAZARDS AFFECTING LAND

Key messages for Idalia can be found in the Tropical Cyclone Discussion under AWIPS header MIATCDAT5 and WMO header WTNT45 KNHC, and on the web at hurricanes.gov/text/MIATCDAT5.shtml

Hazards section

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 moving inland from the shoreline. The water could reach the following heights above ground somewhere in the indicated areas if the peak surge occurs at the time of high tide...

Wakulla/Jefferson County line, FL to Yankeetown, FL...12-16 ft
Ochlockonee River, FL to Wakulla/Jefferson County line, FL...8-12 ft
Yankeetown to Chassahowitzka, FL...7-11 ft
Chassahowitzka, FL to Anclote River, FL...6-9 ft
Carrabelle, FL to Ochlockonee River, FL...5-8 ft

For a complete depiction of areas at risk of storm surge inundation, please see the National Weather Service Peak Storm Surge Graphic, available at hurricanes.gov/graphics_at5.shtml?peakSurge.

The deepest water will occur along the immediate coast in areas of onshore winds, where the surge will be accompanied by large and dangerous waves. 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.

Storm surge

WIND: Hurricane conditions are expected within the hurricane warning area in Florida early Wednesday morning, with tropical storm conditions beginning within the next few hours.

Tropical storm conditions will begin within the tropical storm warning area along the Florida Gulf coast and the Florida west coast soon.

Hurricane conditions are possible within the hurricane watch area along the coasts of Georgia and South Carolina Wednesday and Wednesday night.

Wind

Tropical storm conditions are expected to begin on Wednesday in the warning area along the east coast of Florida, Georgia, and South Carolina, and spread into North Carolina Wednesday night and Thursday. Tropical storm conditions are possible within the watch area in North Carolina by Thursday.

Wind

RAINFALL: Idalia is expected to produce a swath of 4 to 8 inches of rainfall with isolated maxima up to 12 inches from the Florida Big Bend through central Georgia and South Carolina, and through eastern North Carolina into Thursday. These rainfall amounts will lead to areas of flash, urban, and moderate river flooding, with locally considerable impacts.

For a complete depiction of forecast rainfall and flash flooding associated with Idalia, please see the National Weather Service Storm Total Rainfall Graphic, available at hurricanes.gov/graphics_at5.shtml?rainqpf and the Flash Flood Risk graphic at hurricanes.gov/graphics_at5.shtml?ero

Rainfall

SURF: Swells generated by Idalia are affecting the southwestern coast of Florida and will spread northward and westward to the north-central Gulf coast through Wednesday. These swells are likely to cause life-threatening surf and rip current conditions.

Surf

TORNADOES: A few tornadoes are possible tonight from the coast of west-central Florida northward into the Florida Big Bend region. The tornado risk will shift into southeast Georgia and the coastal Carolinas on Wednesday.

Tornadoes

NEXT ADVISORY

Next intermediate advisory at 200 AM EDT.
Next complete advisory at 500 AM EDT.

Information on next advisory issuance

$$
Forecaster Pasch

NNNN

Tropical Cyclone Forecast/Advisory (TCM)

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 the cyclone position, intensity, and direction and speed of motion. It also includes the current maximum radial extent of 4-meter seas, as well as the maximum radial extent of 34-, 50-, and 64-kt winds in each of four quadrants around the storm. The Forecast/Advisory contains quantitative forecast information on the track, intensity, and size of the cyclone valid 12, 24, 36, 48, 60, 72, 96, and 120 h from the forecast's nominal initial time. Tropical storm and 50-kt wind radii are forecast out to 120 h, and hurricane-force wind radii are 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, dissipated, potential tropical cyclone, post tropical, or change in status from subtropical to tropical (or vice versa). "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 strong 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 kt. 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 following table. Special Forecast/Advisories may be issued at any time to advise of an unexpected significant change in the cyclone.

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
Central North Pacific	0300, 0900, 1500, 2100		5 am, 11 am, 5 pm, 11 pm HST

Product Headers: WMO and AWIPS headers are given in the following table. The final numeric digit in each header (1–5) is a "bin number" assigned on a rotating basis throughout the season.

Basin	WMO Header(s)	AWIPS Header(s)
Atlantic	WTNT21-5 KNHC	MIATCMAT1-5
Eastern North Pacific	WTPZ21-5 KNHC	MIATCMEP1-5
Central North Pacific	WTPA21-5 PHFO	HFOTCMCP1-5

TCM Example:

```
WTNT23 KNHC 102156
TCMAT3

HURRICANE LEE FORECAST/ADVISORY NUMBER  22
NWS NATIONAL HURRICANE CENTER MIAMI FL       AL132023
2100 UTC SUN SEP 10 2023
```

Product header/ valid time

```
HURRICANE CENTER LOCATED NEAR 22.1N  61.7W AT 10/2100Z
POSITION ACCURATE WITHIN  15 NM

PRESENT MOVEMENT TOWARD THE WEST-NORTHWEST OR 300 DEGREES AT 7 KT

ESTIMATED MINIMUM CENTRAL PRESSURE  954 MB
EYE DIAMETER  20 NM
MAX SUSTAINED WINDS 105 KT WITH GUSTS TO 120 KT.
64 KT....... 40NE  35SE  30SW  40NW.
50 KT....... 90NE  70SE  50SW  80NW.
34 KT.......150NE 140SE 100SW 140NW.
4 M SEAS....300NE 180SE 240SW 300NW.
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 22.1N  61.7W AT 10/2100Z
AT 10/1800Z CENTER WAS LOCATED NEAR 21.9N  61.4W
```

Current position, intensity, and structure

```
FORECAST VALID 11/0600Z 22.7N  62.7W
MAX WIND 115 KT...GUSTS 140 KT.
64 KT... 50NE  40SE  35SW  50NW.
50 KT... 90NE  80SE  50SW  80NW.
34 KT...150NE 140SE 100SW 140NW.
```

12 hour forecast

```
FORECAST VALID 11/1800Z 23.3N  63.9W
MAX WIND 120 KT...GUSTS 145 KT.
64 KT... 50NE  50SE  35SW  50NW.
50 KT... 90NE  80SE  60SW  80NW.
34 KT...150NE 150SE 110SW 140NW.
```

24 hour forecast

```
FORECAST VALID 12/0600Z 23.8N  65.1W
MAX WIND 120 KT...GUSTS 145 KT.
64 KT... 60NE  60SE  40SW  50NW.
50 KT... 90NE  90SE  70SW  80NW.
34 KT...150NE 150SE 120SW 140NW.
```

36 hour forecast

```
FORECAST VALID 12/1800Z 24.2N  66.2W
MAX WIND 115 KT...GUSTS 140 KT.
64 KT... 60NE  50SE  40SW  50NW.
50 KT... 90NE  90SE  70SW  80NW.
34 KT...160NE 160SE 120SW 150NW.
```

48 hour forecast

```
FORECAST VALID 13/0600Z 24.7N  67.0W
MAX WIND 105 KT...GUSTS 130 KT.
64 KT... 60NE  50SE  40SW  50NW.
50 KT...100NE 100SE  80SW  80NW.
34 KT...170NE 170SE 130SW 160NW.
```

60 hour forecast

```
FORECAST VALID 13/1800Z 25.6N  67.6W
MAX WIND 100 KT...GUSTS 120 KT.
64 KT... 60NE  50SE  40SW  50NW.
50 KT...100NE  90SE  80SW  90NW.
34 KT...180NE 180SE 140SW 180NW.
```

72 hour forecast

```
EXTENDED OUTLOOK. NOTE...ERRORS FOR TRACK HAVE AVERAGED NEAR 125 NM
ON DAY 4 AND 175 NM ON DAY 5...AND FOR INTENSITY NEAR 15 KT EACH DAY

OUTLOOK VALID 14/1800Z 28.9N  68.0W
MAX WIND  90 KT...GUSTS 110 KT.
50 KT...110NE 100SE  90SW 100NW.
34 KT...200NE 200SE 160SW 200NW.
```

96 hour forecast

```
OUTLOOK VALID 15/1800Z 33.6N  67.4W
MAX WIND  80 KT...GUSTS 100 KT.
50 KT...120NE 100SE  90SW  90NW.
34 KT...210NE 200SE 160SW 200NW.
```

120 hour forecast

```
REQUEST FOR 3 HOURLY SHIP REPORTS WITHIN 300 MILES OF
22.1N  61.7W

NEXT ADVISORY AT 11/0300Z

$$
FORECASTER BROWN
NNNN
```

Tropical Cyclone Discussion (TCD)

Product Description: The Tropical Cyclone Discussion describes the rationale for the forecaster's analysis and forecast of a tropical cyclone. It typically includes 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, highlight unusual hazards, and provide a summary of key messages for select tropical cyclones. The product 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, potential tropical cyclone, post tropical, or change in status from subtropical to tropical (or vice versa). "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 strong 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 kt. 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 following table. Special Discussions may be issued at any time to advise of an unexpected significant change in the cyclone.

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
Central North Pacific	0300, 0900, 1500, 2100		5 am, 11 am, 5 pm, 11 pm HST

Product Headers: WMO and AWIPS headers for English and Spanish products are given in the following table. The final numeric digit in each header (1–5) is a "bin number" assigned on a rotating basis throughout the season.

Basin	WMO Header(s)	AWIPS Header(s)
Atlantic (English)	WTNT41-5 KNHC	MIATCDAT1-5
Atlantic (Spanish, *experimental*)	WTNT51-5 KNHC	MIATDSAT1-5
Eastern North Pacific (English)	WTPZ41-5 KNHC	MIATCDEP1-5
Eastern North Pacific (Spanish; *experimental*)	WTPZ51-5 KNHC	MIATDSEP1-5
Central North Pacific (English)	WTPA41-5 PHFO	HFOTCDCP1-5
Central North Pacific (Spanish; *experimental*)	WTPA51-5 PHFO	HFOTDSCP1-5

TCD Example:

```
ZCZC MIATCDAT3 ALL
TTAA00 KNHC DDHHMM
Hurricane Laura Discussion Number  26
NWS National Hurricane Center Miami FL       AL132020
400 AM CDT Wed Aug 26 2020
```

Product header/ valid time

```
Satellite images indicate that Laura has become a formidable
hurricane since yesterday evening.  Deep convection has intensified
and become more symmetric, with an eye now trying to clear out.  An
earlier Air Force Hurricane Hunter mission found flight-level winds
of 104 kt, along with peak SFMR values of 86 kt, which supported the
90-kt intensity on the intermediate advisory.  Since that time,
however, the cloud pattern has only continued to improve, so the
initial wind speed is set to 95 kt for this advisory.  Notably, the
aircraft recorded that the extent of the hurricane-force winds have
increased substantially northeast of the center. A pair of Hurricane
Hunter planes should be in the area within a couple of hours.

The hurricane has intensified a remarkable 40 kt during the past 24
hours, and there are no signs it will stop soon, with shear
remaining low-to-moderate over the deep warm waters of the central
Gulf.  Guidance is noticeably higher than before, so the new peak
intensity will be raised to 115 kt, and some models are even a little
higher.  Increasing shear is expected to slightly weaken the hurricane
close to landfall, so the new forecast keeps the previous 105-kt
intensity near the coast.  Laura will weaken rapidly after landfall,
but it will likely bring hurricane-force winds well inland over western
Louisiana and eastern Texas.  In the extended range, there is some
chance that Laura re-intensifies as a tropical cyclone off the Mid-
Atlantic coast, instead of becoming part of a frontal system, but for
now the forecast will stay extratropical at 96 hours and beyond.

Recent satellite shows that Laura has turned northwestward, now
estimated at 13 kt.  There are no substantial changes to the track
forecast to report.  The hurricane should gradually turn toward the
northwest and north over the next day or two as it moves around the
```

Free form forecast discussion

western periphery of a mid-level high. The models are in very good agreement on the center of Laura moving into extreme southwestern Louisiana or southeastern Texas in about 24 hours, so no changes were made to the previous NHC forecast. Later in the forecast period the weakened cyclone should turn toward the east-northeast and move with increasing forward speed while embedded within the mid-latitude westerlies. The official track forecast is shifted southward at longer range, not too far from the latest consensus track model.

It should be mentioned Laura is now a large hurricane, and wind, storm surge, and rainfall hazards will extend far from the center. Do not use the cone graphic for any representation of these hazards, it is just for the center uncertainty.

Free form forecast discussion

Key Messages:

1. Life-threatening storm surge with large and dangerous waves is expected to produce potentially catastrophic damage from San Luis Pass, Texas, to the Mouth of the Mississippi River, including areas inside the Port Arthur Hurricane Flood Protection system. This surge could penetrate up to 30 miles inland from the immediate coastline in southwestern Louisiana and southeastern Texas. Actions to protect life and property should be rushed to completion.

2. Hurricane-force winds are expected tonight in the warning area from San Luis Pass, Texas, to west of Morgan City, Louisiana, and the strongest winds associated with Laura's eyewall will occur somewhere within this area. Hurricane-force winds and widespread damaging wind gusts are also expected to spread well inland into portions of eastern Texas and western Louisiana early Thursday.

3. Widespread flash flooding along small streams, urban areas, and roadways is expected to begin this afternoon into Thursday from far eastern Texas, across Louisiana and Arkansas. This will also lead to minor to isolated moderate freshwater river flooding. The heavy rainfall threat and localized flash and urban flooding potential will spread northeastward into the middle-Mississippi, lower Ohio and Tennessee Valleys Friday night and Saturday.

Key Messages. Note that these are not provided with every discussion

FORECAST POSITIONS AND MAX WINDS

INIT	26/0900Z	26.1N	90.7W	95 KT 110 MPH	
12H	26/1800Z	27.4N	92.4W	115 KT 130 MPH	
24H	27/0600Z	29.7N	93.5W	105 KT 120 MPH	...NEAR COAST
36H	27/1800Z	32.4N	93.7W	50 KT 60 MPH	...INLAND
48H	28/0600Z	34.8N	92.9W	30 KT 35 MPH	...INLAND
60H	28/1800Z	36.4N	91.0W	25 KT 30 MPH	...INLAND
72H	29/0600Z	37.3N	87.3W	30 KT 35 MPH	...INLAND
96H	30/0600Z	38.0N	74.5W	35 KT 40 MPH	...POST-TROP/EXTRATROP
120H	31/0600Z	44.0N	60.0W	45 KT 50 MPH	...POST-TROP/EXTRATROP

Forecast position and intensity table

$$
Forecaster Blake
NNNN

Tropical Cyclone Surface Wind Speed Probabilities (PWS)

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 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 NHC text 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 following table. Special Wind Speed Probability products may be issued at any time to advise of an unexpected significant change in the cyclone.

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

Central North Pacific	0300, 0900, 1500, 2100		5 am, 11 am, 5 pm, 11 pm HST

Product Headers: WMO and AWIPS headers are given in the following table. The final numeric digit in each header (1–5) is a "bin number" assigned on a rotating basis throughout the season.

Basin	WMO Header(s)	AWIPS Header(s)
Atlantic	FONT11-5 KNHC	MIAPWSAT1-5
Eastern North Pacific	FOPZ11-5 KNHC	MIAPWSEP1-5
Central North Pacific	FOPA11-5 PHFO	HNLPWSCP1-5

PWS Example:

```
ZCZC MIAPWSAT4 ALL
TTAA00 KNHC DDHHMM

HURRICANE IDA WIND SPEED PROBABILITIES NUMBER   8
NWS NATIONAL HURRICANE CENTER MIAMI FL       AL092021
0900 UTC SAT AUG 28 2021

AT 0900Z THE CENTER OF HURRICANE IDA WAS LOCATED NEAR LATITUDE 24.0
NORTH...LONGITUDE 85.2 WEST WITH MAXIMUM SUSTAINED WINDS NEAR 70 KTS
...80 MPH...130 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 KM/H)...
   ...50 KT (58 MPH... 93 KM/H)...
   ...64 KT (74 MPH...119 KM/H)...
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
        06Z SAT AND THE FORECAST HOUR (CUMULATIVE PROBABILITY)

PROBABILITIES ARE GIVEN IN PERCENT
X INDICATES PROBABILITIES LESS THAN 1 PERCENT
```

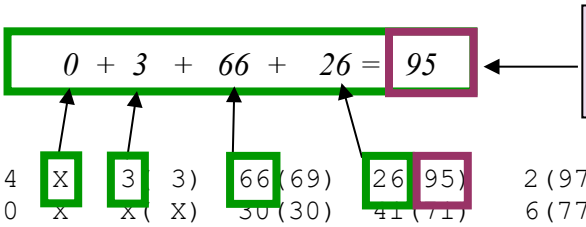
PROBABILITIES FOR 34 KT AND 50 KT ARE SHOWN AT A GIVEN LOCATION WHEN
THE 5-DAY CUMULATIVE PROBABILITY IS AT LEAST 3 PERCENT.
PROBABILITIES FOR 34...50...64 KT SHOWN WHEN THE 5-DAY
64-KT CUMULATIVE PROBABILITY IS AT LEAST 1 PERCENT.

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

TIME PERIODS		FROM 06Z SAT TO 18Z SAT	FROM 18Z SAT TO 06Z SUN	FROM 06Z SUN TO 18Z SUN	FROM 18Z SUN TO 06Z MON	FROM 06Z MON TO 06Z TUE	FROM 06Z TUE TO 06Z WED	FROM 06Z WED TO 06Z THU
FORECAST HOUR		(12)	(24)	(36)	(48)	(72)	(96)	(120)
LOCATION	KT							
MOBILE AL	34	X	3(3)	15(18)	21(39)	5(44)	1(45)	X(45)
MOBILE AL	50	X	X(X)	2(2)	5(7)	1(8)	X(8)	X(8)
MOBILE AL	64	X	X(X)	X(X)	1(1)	X(1)	X(1)	X(1)
GULFPORT MS	34	X	3(3)	35(38)	25(63)	5(68)	X(68)	X(68)
GULFPORT MS	50	X	X(X)	7(7)	13(20)	2(22)	X(22)	X(22)
GULFPORT MS	64	X	X(X)	1(1)	5(6)	1(7)	X(7)	X(7)
STENNIS MS	34	X	3(3)	46(49)	27(76)	5(81)	X(81)	X(81)
STENNIS MS	50	X	X(X)	11(11)	24(35)	2(37)	X(37)	X(37)
STENNIS MS	64	X	X(X)	3(3)	9(12)	2(14)	X(14)	X(14)
BURAS LA	34	1	12(13)	69(82)	7(89)	1(90)	X(90)	X(90)
BURAS LA	50	X	1(1)	39(40)	12(52)	1(53)	X(53)	X(53)
BURAS LA	64	X	X(X)	17(17)	9(26)	1(27)	X(27)	X(27)
GFMX 280N 890W	34	2	90(92)	7(99)	X(99)	X(99)	X(99)	X(99)
GFMX 280N 890W	50	X	59(59)	30(89)	1(90)	X(90)	X(90)	X(90)
GFMX 280N 890W	64	X	21(21)	38(59)	1(60)	X(60)	X(60)	X(60)
JACKSON MS	34	X	X(X)	7(7)	37(44)	15(59)	X(59)	X(59)
JACKSON MS	50	X	X(X)	X(X)	7(7)	10(17)	X(17)	X(17)
JACKSON MS	64	X	X(X)	X(X)	2(2)	2(4)	X(4)	X(4)
NEW ORLEANS LA	34	X	4(4)	64(68)	22(90)	3(93)	X(93)	X(93)
NEW ORLEANS LA	50	X	X(X)	24(24)	39(63)	4(67)	X(67)	X(67)
NEW ORLEANS LA	64	X	X(X)	8(8)	28(36)	3(39)	X(39)	X(39)
GFMX 280N 910W	34	1	32(33)	56(89)	3(92)	1(93)	X(93)	X(93)
GFMX 280N 910W	50	X	4(4)	52(56)	6(62)	1(63)	X(63)	X(63)
GFMX 280N 910W	64	X	1(1)	38(39)	8(47)	2(49)	X(49)	X(49)
BATON ROUGE LA	34	X	2(2)	43(45)	43 88	7(95)	X(95)	X(95)
BATON ROUGE LA	50	X	X(X)	12(12)	48(60)	10(70)	X(70)	X(70)
BATON ROUGE LA	64	X	X(X)	2(2)	36(38)	6(44)	X(44)	X(44)

Probability of winds of at least 34 kt beginning at Baton Rouge, LA, during the 12-hour period from 18z Sunday to 06z Monday

Cumulative probability of winds of at least 34 kt at Baton Rouge, LA, for the 48-hour period ending at 06z Monday




```
MORGAN CITY LA 34   X   3  3)   66(69)   26(95)    2(97)    X(97)    X(97)
MORGAN CITY LA 50   X   X( X)   30(30)   41(71)    6(77)    X(77)    X(77)
MORGAN CITY LA 64   X   X( X)   13(13)   38(51)    5(56)    X(56)    X(56)

ALEXANDRIA LA  34   X   X( X)   10(10)   46(56)   13(69)    1(70)    X(70)
ALEXANDRIA LA  50   X   X( X)    1( 1)   23(24)   10(34)    X(34)    X(34)
ALEXANDRIA LA  64   X   X( X)    X( X)    9( 9)    5(14)    X(14)    X(14)

LAFAYETTE LA   34   X   2( 2)   33(35)   46(81)    7(88)    X(88)    X(88)
LAFAYETTE LA   50   X   X( X)    7( 7)   42(49)    8(57)    1(58)    X(58)
LAFAYETTE LA   64   X   X( X)    2( 2)   27(29)    7(36)    X(36)    X(36)

NEW IBERIA LA  34   X   2( 2)   41(43)   43(86)    4(90)    X(90)    X(90)
NEW IBERIA LA  50   X   X( X)   11(11)   42(53)    8(61)    X(61)    X(61)
NEW IBERIA LA  64   X   X( X)    4( 4)   30(34)    7(41)    X(41)    X(41)

GFMX 280N 930W 34   X   4( 4)   24(28)   12(40)    3(43)    X(43)    X(43)
GFMX 280N 930W 50   X   X( X)    4( 4)    3( 7)    2( 9)    X( 9)    X( 9)
GFMX 280N 930W 64   X   X( X)    1( 1)    1( 2)    1( 3)    X( 3)    X( 3)

SHREVEPORT LA  34   X   X( X)    2( 2)   16(18)    8(26)    X(26)    X(26)
SHREVEPORT LA  50   X   X( X)    X( X)    1( 1)    2( 3)    X( 3)    X( 3)

FORT POLK LA   34   X   X( X)    7( 7)   36(43)   11(54)    X(54)    X(54)
FORT POLK LA   50   X   X( X)    1( 1)   11(12)    6(18)    X(18)    X(18)
FORT POLK LA   64   X   X( X)    X( X)    3( 3)    3( 6)    X( 6)    X( 6)

LAKE CHARLES   34   X   1( 1)   11(12)   38(50)    7(57)    X(57)    X(57)
LAKE CHARLES   50   X   X( X)    1( 1)   14(15)    7(22)    X(22)    X(22)
LAKE CHARLES   64   X   X( X)    X( X)    6( 6)    3( 9)    X( 9)    X( 9)

CAMERON LA     34   X   2( 2)   22(24)   28(52)    4(56)    1(57)    X(57)
CAMERON LA     50   X   X( X)    4( 4)   11(15)    4(19)    X(19)    X(19)
CAMERON LA     64   X   X( X)    1( 1)    4( 5)    3( 8)    X( 8)    X( 8)

JASPER TX      34   X   X( X)    4( 4)   23(27)    8(35)    X(35)    X(35)
JASPER TX      50   X   X( X)    1( 1)    4( 5)    3( 8)    X( 8)    X( 8)
JASPER TX      64   X   X( X)    X( X)    1( 1)    X( 1)    X( 1)    X( 1)

PORT ARTHUR TX 34   X   X( X)    5( 5)   22(27)    8(35)    X(35)    X(35)
PORT ARTHUR TX 50   X   X( X)    1( 1)    4( 5)    3( 8)    X( 8)    X( 8)
PORT ARTHUR TX 64   X   X( X)    X( X)    1( 1)    1( 2)    X( 2)    X( 2)

GALVESTON TX   34   X   X( X)    6( 6)    9(15)    5(20)    X(20)    X(20)
GALVESTON TX   50   X   X( X)    1( 1)    1( 2)    X( 2)    1( 3)    X( 3)

HOUSTON TX     34   X   X( X)    3( 3)    5( 8)    4(12)    1(13)    X(13)

HIGH ISLAND TX 34   X   X( X)    4( 4)   14(18)    6(24)    X(24)    X(24)
HIGH ISLAND TX 50   X   X( X)    X( X)    2( 2)    1( 3)    X( 3)    X( 3)

$$
FORECASTER BEVEN
```

Tropical Cyclone Update (TCU)

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.
- To announce the forthcoming issuance or cancellation of a U.S. watch or warning, but only if the TCU precedes a regular or special advisory that will contain the same watch/warning information, and indicates the 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 for English and Spanish products are given in the following table. The final numeric digit in each header (1–5) is a “bin number” assigned on a rotating basis throughout the season.

Basin	WMO Header(s)	AWIPS Header(s)
Atlantic (English)	WTNT61-5 KNHC	MIATCUAT1-5
Atlantic (Spanish; *experimental*)	WTNT71-5 KNHC	MIATUSAT1-5
Eastern North Pacific (English)	WTPZ61-5 KNHC	MIATCUEP1-5
Eastern North Pacific (Spanish; *experimental*)	WTPZ71-5 KNHC	MIATUSEP1-5
Central North Pacific (English)	WTPA61-5 PHFO	HFOTCUCP1-5
Central North Pacific (Spanish; *experimental*)	WTPA71-5 PHFO	HFOTUSCP1-5

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 MIATCUAT3 ALL
TTAA00 KNHC DDHHMM

Hurricane Laura Tropical Cyclone Update
NWS National Hurricane Center Miami FL AL132020
300 PM CDT Wed Aug 26 2020
```

Product header/ valid time

```
...300 PM CDT POSITION UPDATE...
...CATASTROPHIC STORM SURGE, EXTREME WINDS, AND FLASH FLOODING EXPECTED
ALONG THE NORTHWEST GULF COAST THIS EVENING...
...WATER LEVELS RISING ALONG THE COAST OF SOUTHEAST TEXAS AND
LOUISIANA...

Water levels are beginning to rise along the coast of Texas. A National
Ocean Service water level station at Sabine Pass, Texas, recently
reported about 2.3 feet of inundation above ground level.

The Eugene Island, Louisiana, NOS station recently measured sustained
winds of 36 mph (58 km/h) and a gust to 45 mph (72 km/h).
```

Free form discussion

```
SUMMARY OF 300 PM CDT...2000 UTC...INFORMATION
-----------------------------------------------
LOCATION...27.6N 92.7W
ABOUT 175 MI...280 KM SSE OF PORT ARTHUR TEXAS
ABOUT 175 MI...280 KM S OF LAKE CHARLES LOUISIANA
MAXIMUM SUSTAINED WINDS...140 MPH...220 KM/H
PRESENT MOVEMENT...NW OR 315 DEGREES AT 16 MPH...26 KM/H
MINIMUM CENTRAL PRESSURE...948 MB...27.99 INCHES
```

Summary table formatted for parsing

```
$$
Forecaster Roberts/Brennan
```

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

```
ZCZC MIATCUAT3 ALL
TTAA00 KNHC DDHHMM

Hurricane Zeta Tropical Cyclone Update
NWS National Hurricane Center Miami FL AL282020
210 PM CDT Mon Oct 26 2020
```

Product header/ valid time

```
...AIR FORCE RESERVE HURRICANE HUNTERS FIND ZETA HAS STRENGTHENED TO A
HURRICANE...

Data from an Air Force Reserve Hurricane Hunter aircraft indicate that
Zeta has become a hurricane, with maximum sustained winds near 80 mph
(130 km/h) with higher gusts.
```

Free form discussion

```
SUMMARY OF 210 PM CDT...1910 UTC...INFORMATION
-----------------------------------------------
LOCATION...19.4N 85.8W
ABOUT 105 MI...170 KM SE OF COZUMEL MEXICO
MAXIMUM SUSTAINED WINDS...80 MPH...130 KM/H
PRESENT MOVEMENT...NW OR 305 DEGREES AT 10 MPH...17 KM/H
MINIMUM CENTRAL PRESSURE...981 MB...28.97 INCHES
```

Summary table formatted for parsing

```
$$
Forecaster Brennan/Pasch
```

Example 3: TCU to notify users that a change in status is forthcoming (no change in storm summary information)

```
ZCZC MIATCUEP5 ALL
TTAA00 KNHC DDHHMM

Tropical Storm John Tropical Cyclone Update
NWS National Hurricane Center Miami FL       EP102024
1000 AM CDT Mon Sep 23 2024
```

Product header/ valid time

```
Recent satellite imagery indicates that John continues to become
better organized, and that it is likely to become a hurricane later
today. Continued strengthening appears likely while John approaches
the coast of southern Mexico within the Hurricane Warning area.
This will result in changes to the initial and forecast intensity
that will be reflected in the next forecast advisory issued by the
National Hurricane Center at 900 AM CST (1500 UTC).
```

Free form discussion

```
$$
Forecaster Brown
```

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

```
ZCZC MIATCUAT1 ALL
TTAA00 KNHC DDHHMM

Hurricane Iota Tropical Cyclone Update
NWS National Hurricane Center Miami FL AL312020
420 PM EST Mon Nov 16 2020
```

Product header/ valid time

```
The government of Colombia has replaced the Hurricane Warning with
a Tropical Storm Warning for Providencia and discontinued the
Hurricane Watch for San Andres.
```

Free form discussion

```
$$
Forecaster Cangialosi/Reinhart
```

National Tropical Cyclone Watch/Warning Product (TCV)

Product Description: The National 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 following table. The final numeric digit in each header (1–5) is a "bin number" assigned on a rotating basis throughout the season.

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

TCV Example:

```
000
WTNT84 KNHC 081457
TCVAT4

MICHAEL WATCH/WARNING ADVISORY NUMBER 8
NWS NATIONAL HURRICANE CENTER MIAMI FL     AL142018
1057 AM EDT MON OCT 8 2018

.HURRICANE MICHAEL

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.

FLZ014-015-027-108-112-114-115-118-127-128-134-204-206-082300-
/O.CON.KNHC.HU.A.1014.000000T0000Z-000000T0000Z/
/O.CON.KNHC.SS.A.1014.000000T0000Z-000000T0000Z/
1057 AM EDT MON OCT 8 2018 /957 AM CDT MON OCT 8 2018/

$$
```

```
FLZ050-139-142-148-149-151-155-082300-
/O.CON.KNHC.SS.A.1014.000000T0000Z-000000T0000Z/
/O.CON.KNHC.TR.A.1014.000000T0000Z-000000T0000Z/
1057 AM EDT MON OCT 8 2018

$$

FLZ007>013-016>018-026-028-034-201>203-205-GAZ155>157-082300-
/O.CON.KNHC.HU.A.1014.000000T0000Z-000000T0000Z/
1057 AM EDT MON OCT 8 2018 /957 AM CDT MON OCT 8 2018/

$$

GAZ123-125-127-142>146-158-159-082300-
/O.UPG.KNHC.TR.A.1014.000000T0000Z-000000T0000Z/
/O.EXA.KNHC.HU.A.1014.000000T0000Z-000000T0000Z/
1057 AM EDT MON OCT 8 2018

$$

ALZ055>060-065>069-262>266-FLZ019-029-239-242-248-249-251-
GAZ120>122-124-126-128>131-147-148-160-161-082300-
/O.CON.KNHC.TR.A.1014.000000T0000Z-000000T0000Z/
1057 AM EDT MON OCT 8 2018 /957 AM CDT MON OCT 8 2018/

$$

ATTN...WFO...MOB...TAE...TBW...
```

Aviation Tropical Cyclone Advisory (TCA)

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 3, 6, 9, 15, 21, and 27 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 following table. Special Aviation Tropical Cyclone Advisory products may be issued at any time to advise of an unexpected significant change in the cyclone.

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
Central North Pacific	0300, 0900, 1500, 2100		5 am, 11 am, 5 pm, 11 pm HST

Product Headers: WMO and AWIPS headers are given in the following table. The final numeric digit in each header (1–5) is a "bin number" assigned on a rotating basis throughout the season.

Basin	WMO Header(s)	AWIPS Header(s)
Atlantic	FKNT21-5 KNHC	MIATCANT1-5
Eastern North Pacific	FKPZ21-5 KNHC	MIATCAPZ1-5
Central North Pacific	FKPA21-5 PHFO	HFOTCAPA1-5

TCA Example:

```
FKNT25 KNHC 280238
TCANT5

HURRICANE ISAAC ICAO ADVISORY NUMBER   9
NWS NATIONAL HURRICANE CENTER MIAMI FL       AL102024
0300 UTC SAT SEP 28 2024

TC ADVISORY
DTG:                      20240928/0300Z
TCAC:                     KNHC
TC:                       ISAAC
ADVISORY NR:              2024/009
OBS PSN:                  28/0300Z N3812 W04324
MOV:                      ENE 14KT
INTST CHANGE:             INTSF
C:                        0973HPA
MAX WIND:                 080KT
FCST PSN +3 HR:           28/0600Z N3837 W04233
FCST MAX WIND +3 HR:      080KT
FCST PSN +6 HR:           28/0900Z N3904 W04144
FCST MAX WIND +6 HR:      080KT
FCST PSN +9 HR:           28/1200Z N3930 W04054
FCST MAX WIND +9 HR:      080KT
FCST PSN +15 HR:          28/1800Z N4015 W03945
FCST MAX WIND +15 HR:     080KT
FCST PSN +21 HR:          29/0000Z N4100 W03836
FCST MAX WIND +21 HR:     075KT
FCST PSN +27 HR:          29/0600Z N4145 W03748
FCST MAX WIND +27 HR:     075KT
RMK:                      THE FORECAST POSITION INFORMATION IN
                          THIS PRODUCT IS INTERPOLATED FROM
                          OFFICIAL FORECAST DATA VALID AT 0000...
                          0600...1200...AND 1800Z.
NXT MSG:                  20240928/0900Z
```

Tropical Weather Outlook (TWO)

Product Description: The Tropical Weather Outlook discusses significant areas of disturbed weather and their potential for development during the next 7 days, including a categorical forecast of the probability of tropical cyclone formation during the first 48 hours and during the entire 7-day forecast period. The 48-hour and 7-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 (<40%), medium probability of development (40–60%), and high probability of development (>60%). 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 at 0000, 0600, 1200, and 1800 UTC from 15 May–30 November for the Atlantic and the eastern North Pacific basins, and from 1 June–30 November for the central North Pacific basin. Local issuance times are shown in the following table.

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
Central North Pacific	0000, 0600, 1200, 1800		2 am, 8 am, 2 pm, and 8 pm HST

Product Headers: WMO and AWIPS headers for English and Spanish products are given in the following table.

Basin	WMO Header	AWIPS Header
Atlantic (English)	ABNT20 KNHC	MIATWOAT
Atlantic (Spanish)	ACCA62 KNHC	MIATWOSAT
Eastern North Pacific (English)	ABPZ20 KNHC	MIATWOEP
Eastern North Pacific (Spanish; *experimental*)	ABPZ21 KNHC	MIATWOSEP
Central North Pacific (English)	ABPA20 PHFO	HFOTWOCP

Central North Pacific (Spanish; *experimental*)	ACPN51 PHFO	HFOTWOSCP

TWO Example:

```
ZCZC MIATWOAT ALL
TTAA00 KNHC DDHHMM

Tropical Weather Outlook
NWS National Hurricane Center Miami FL
800 PM EDT Wed Sep 24 2025

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

Active Systems:
The National Hurricane Center is issuing advisories on Hurricane
Gabrielle, located over the central subtropical Atlantic, and on
newly formed Tropical Storm Humberto, located several hundred
miles east-northeast of the northern Leeward Islands.

1. Eastern Caribbean Sea (AL94):
Showers and thunderstorms have become better organized since
yesterday in association with a tropical wave centered near Puerto
Rico.  This wave is expected to move west-northwestward around 10
to 15 mph, spreading heavy rainfall and gusty winds across Puerto
Rico and the Dominican Republic through early tomorrow.  The system
is then expected to slow down and turn northwestward when it
reaches the southwestern Atlantic.  A tropical depression is likely
to form when the disturbance is in the vicinity of the Bahamas late
this week.  Interests in Puerto Rico, the Dominican Republic, the
Turks and Caicos Islands, and the Bahamas should monitor the
progress of this system.
* Formation chance through 48 hours...medium...40 percent.
* Formation chance through 7 days...high...80 percent.

Public Advisories on Humberto are issued under WMO header
WTNT33 KNHC and under AWIPS header MIATCPAT3.
Forecast/Advisories on Humberto are issued under WMO header
WTNT23 KNHC and under AWIPS header MIATCMAT3.

Forecaster Blake

NNNN
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Product header/ valid time

Location of active cyclones

Section header with invest identifier (AL90-99), if available. Note 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 7 days is given to the nearest 10% and expressed in terms of one of the following categories: low probability of development (<40%), medium probability of development (40–60%), and high probability of development (>60%). The Special Tropical Weather Outlook can be used to report the findings of reconnaissance aircraft missions, and it can also be used to discuss disturbances outside of time periods when Tropical Weather Outlooks are 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 following table.

Basin	WMO Header	AWIPS Header
Atlantic (English)	ABNT20 KNHC	MIATWOAT
Atlantic (Spanish)	ACCA62 KNHC	MIATWOSAT
Eastern North Pacific (English)	ABPZ20 KNHC	MIATWOEP
Eastern North Pacific (Spanish; *experimental*)	ABPZ21 KNHC	MIATWOSEP
Central North Pacific (English)	ABPA20 PHFO	HFOTWOCP
Central North Pacific (Spanish; *experimental*)	ACPN51 PHFO	HFOTWOSCP

Special TWO Example

```
ZCZC MIATWOAT ALL
TTAA00 KNHC DDHHMM

Special Tropical Weather Outlook
NWS National Hurricane Center Miami FL
915 AM EDT Sat Oct 19 2024
```

Product header/ valid time

```
For the North Atlantic...Caribbean Sea and the Gulf of America:

Special Tropical Weather Outlook issued to update the discussion
on AL94.
```

Disturbance being updated

```
Active Systems:
The National Hurricane Center is issuing advisories on Tropical
Storm Nadine, located just off the coast of Belize over the
northwestern Caribbean Sea.
```

Location of active cyclones

```
1. Near the Southeastern Bahamas (AL94):
Updated: Satellite data indicate that the low pressure system
located less than 100 miles east of the Turks and Caicos Islands has
developed a well-defined center and continues to produce a
concentrated area of showers and thunderstorms.  If the current
trends continue, advisories on a tropical depression or tropical
storm will likely be issued later this morning.  Interests in the
Turks and Caicos Islands, the southeastern Bahamas, and eastern
Cuba should closely monitor this system as tropical storm warnings
could be required later this morning.
* Formation chance through 48 hours...high...90 percent.
* Formation chance through 7 days...high...90 percent.
```

Free form discussion

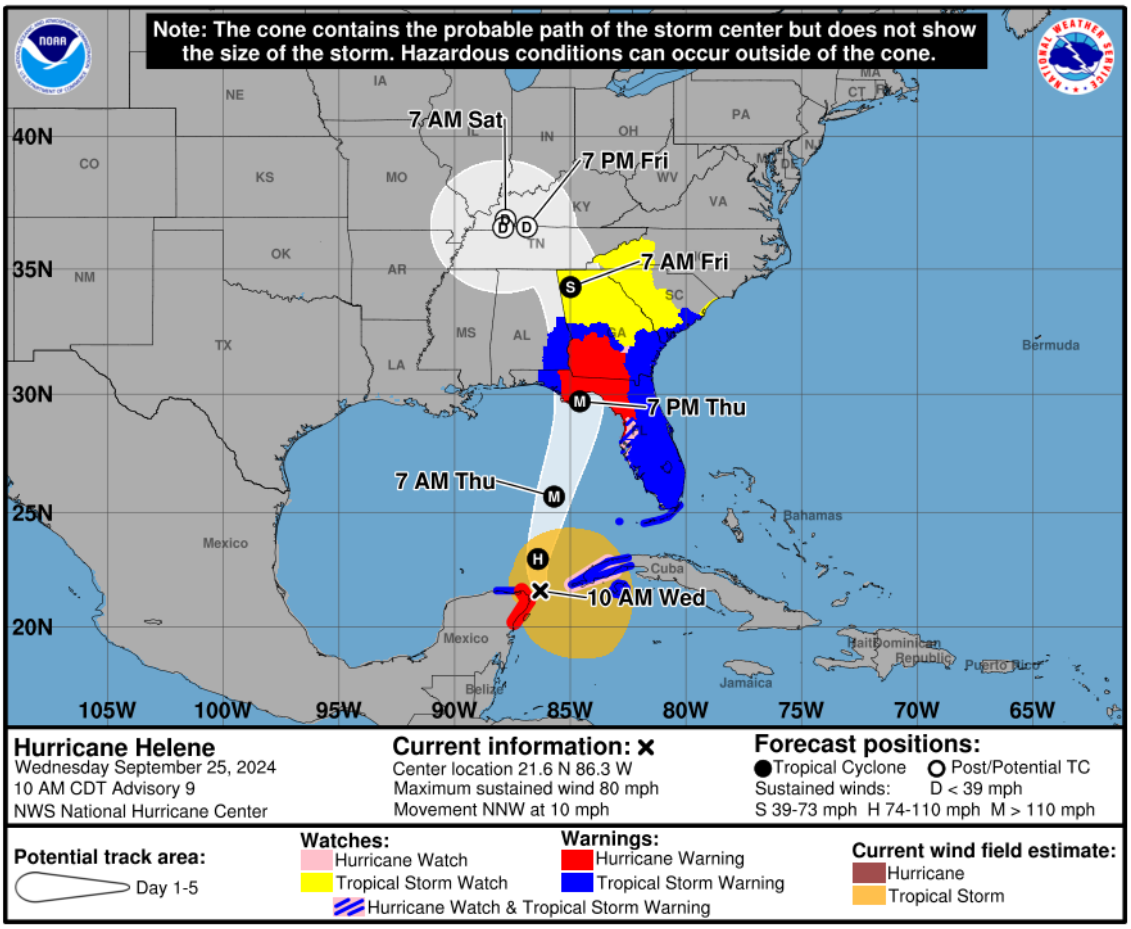
```
Public Advisories on Tropical Storm Nadine are issued under WMO
header WTNT35 KNHC and under AWIPS header MIATCPAT5.
Forecast/Advisories on Tropical Storm Nadine are issued under WMO
header WTNT25 KNHC and under AWIPS header MIATCMAT5.

Forecaster Papin/Cangialosi
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Product header information for active tropical cyclones that have formed within the past 24 h

NHC Graphical 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 and U.S. inland areas under a hurricane warning (red), hurricane watch (pink), tropical storm warning (blue), tropical storm watch (yellow), and a tropical storm warning with a hurricane watch (pink and blue hatching). The inland tropical storm and hurricane watches and warnings depicted are based on the National Tropical Cyclone Watch/Warning product (TCV) from NHC (except for Hawaii). 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, or (M)ajor hurricane. Systems forecast to be potential tropical cyclones or post-tropical are 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 75 mph 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, 48, 60, 72, 96, and 120 hours). 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 2026 for the Atlantic and the eastern and central North Pacific basins are given in the table below.

Radii of NHC forecast cone circles for 2026, based on error statistics from 2021–2025:

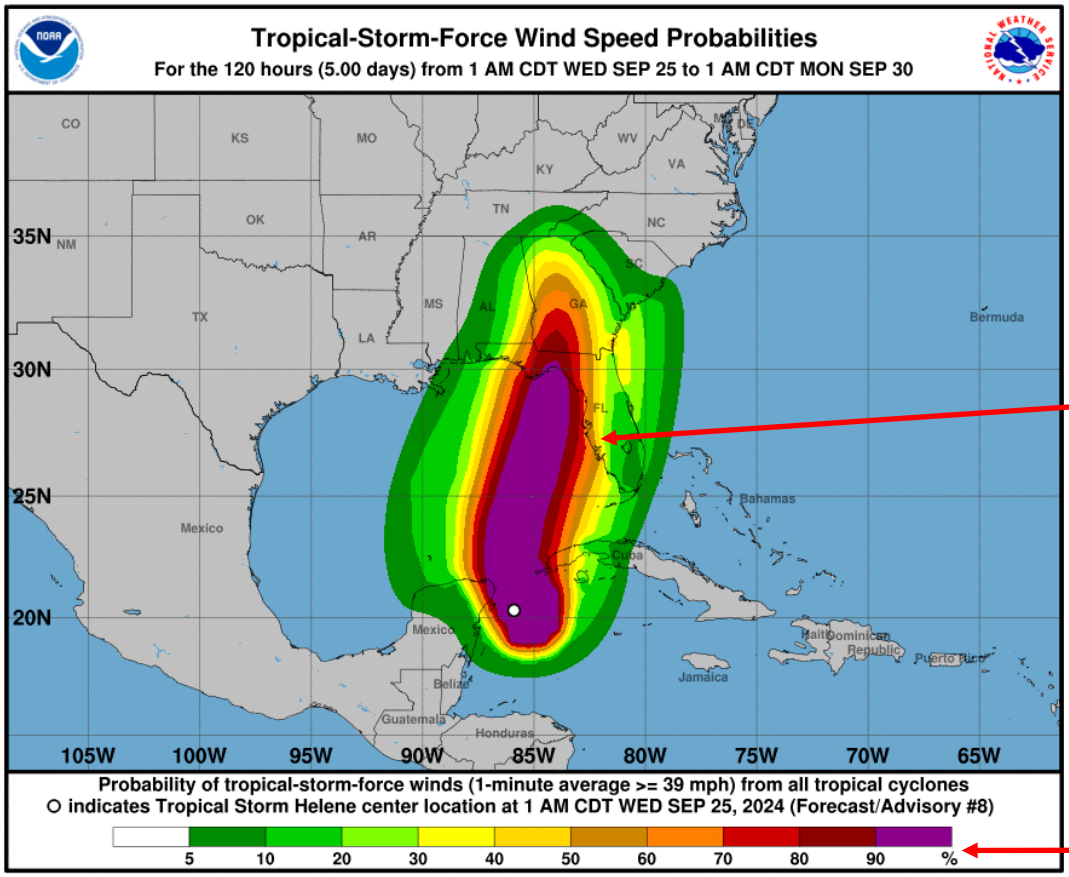
Forecast Period (hours)	2/3 Probability Circle, Atlantic Basin (nautical miles)	2/3 Probability Circle, Eastern and Central North Pacific Basin (nautical miles)
12	25	25
24	39	37
36	49	48
48	62	56
60	77	66
72	95	78
96	134	106
120	200	138

It is important to remember that tropical cyclones are not a point. Tropical cyclone 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 area shown enclosing the most likely track area of the center. 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-force 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 following table. When tropical wind watches or warnings are in effect, the graphic will be updated at three-hour intervals concurrent with the issuance of 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
Central North Pacific	0300, 0900, 1500, 2100		5 am, 11 am, 5 pm, 11 pm HST

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.

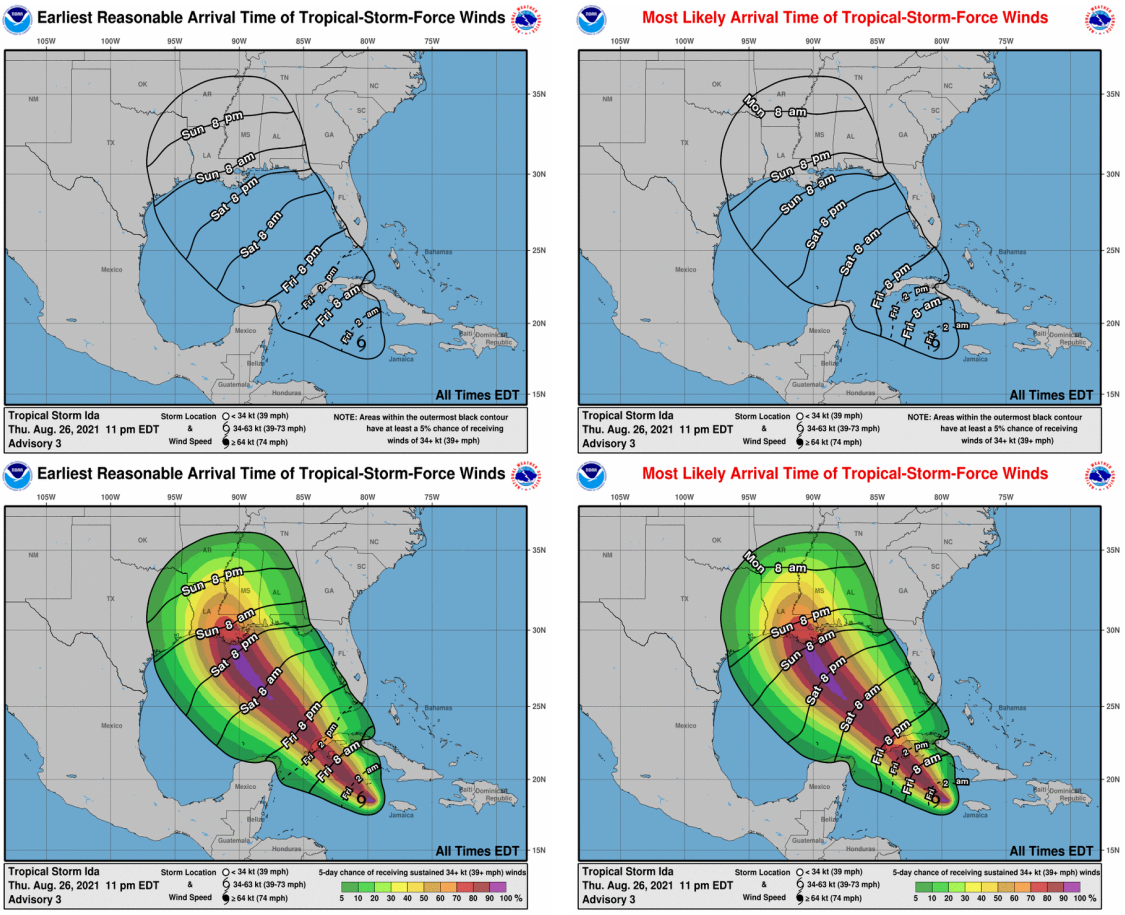
The graphic provides location-specific c*umulative occurrence probabilities* – these values tell you the probability the wind event will occur sometime during the specified cumulative forecast period (0-12, 0-24, 0-36 h, etc., out to 0-120 h) at each specific point.

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 following table. 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
Central North Pacific	0300, 0900, 1500, 2100		5 am, 11 am, 5 pm, 11 pm HST

Arrival Time of Tropical-Storm-Force Wind 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.

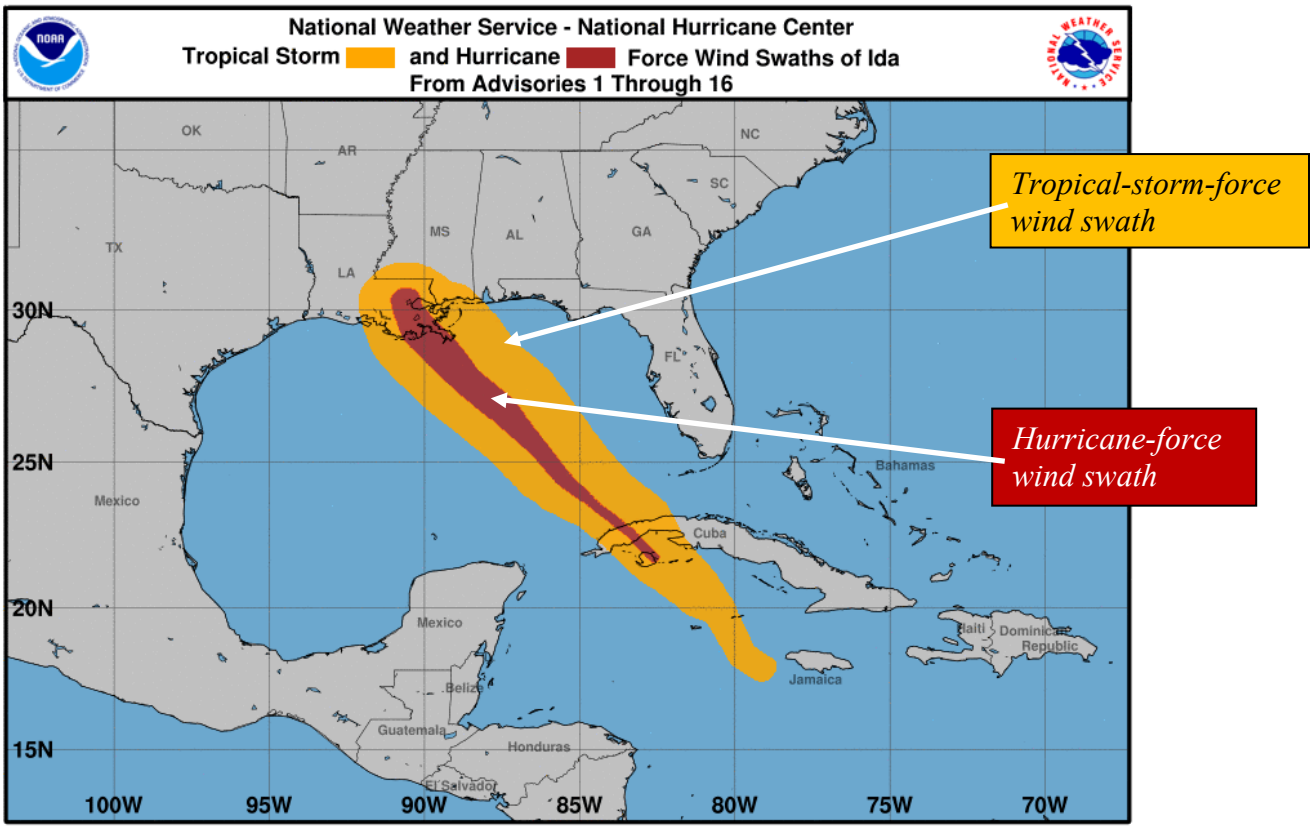
The earliest reasonable arrival time is based on the time at which the first 10% of the wind speed probability realizations bring sustained tropical-storm-force winds to a given location. The most likely time of arrival is the time at which the arrival of tropical-storm-force winds at a given location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

A second version of the graphics also includes the cumulative occurrence probabilities, expressed as a percentage, that sustained (1-min average) 34-kt winds 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 following table. 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
Central North Pacific	0300, 0900, 1500, 2100		5 am, 11 am, 5 pm, 11 pm HST

Tropical Cyclone Cumulative Wind History



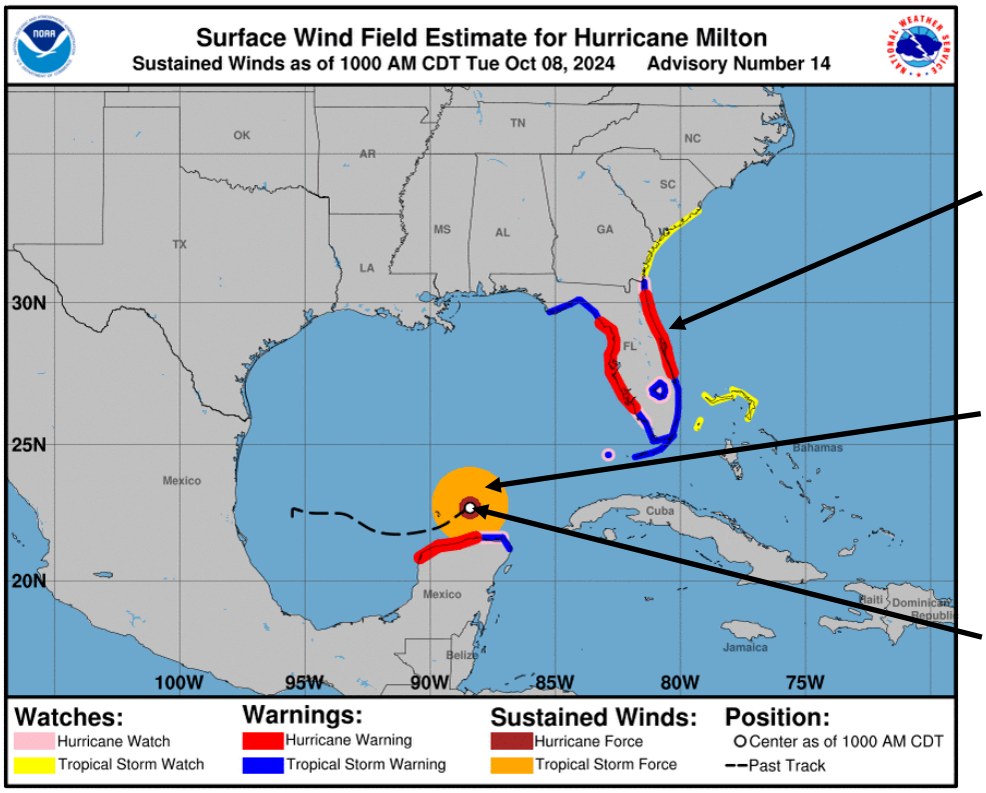
Product Description: This graphic shows how the size of the storm has changed, and the areas potentially affected so far by sustained winds of tropical storm force (in orange) and hurricane force (in red). The swaths are based on the wind radii contained in the set of Forecast/Advisories indicated at 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-force 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 following table. 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
Central North Pacific	0300, 0900, 1500, 2100		5 am, 11 am, 5 pm, 11 pm HST

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 (yellow).
- 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 a white dot while the past track is shown with a dashed line.

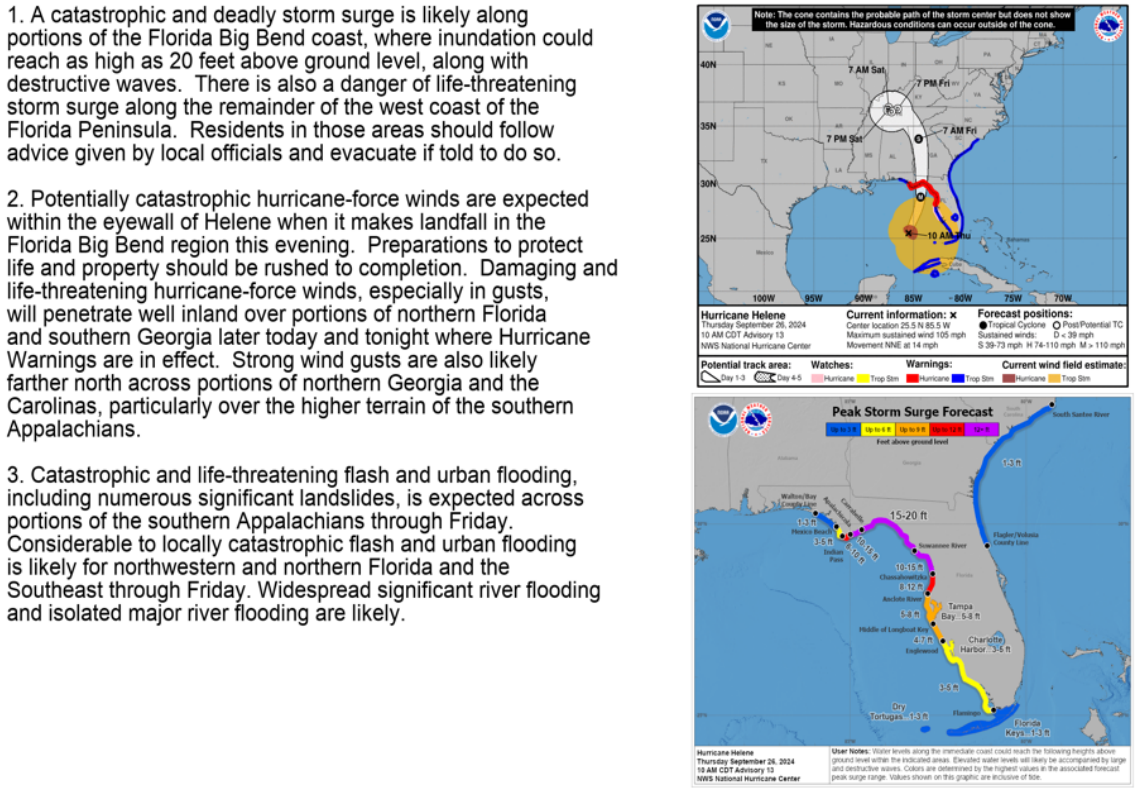
Product Description: This graphic shows the areas potentially being affected by the sustained (1-min average) winds of tropical storm force (in orange) and hurricane force (in red). The display is based on the wind radii contained in the latest Forecast/Advisory (indicated at the top of the figure). 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-force 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 (yellow). This graphic does not depict the inland tropical watches and warnings that are available on the cone graphic. 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 following table. 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
Central North Pacific	0300, 0900, 1500, 2100		5 am, 11 am, 5 pm, 11 pm HST

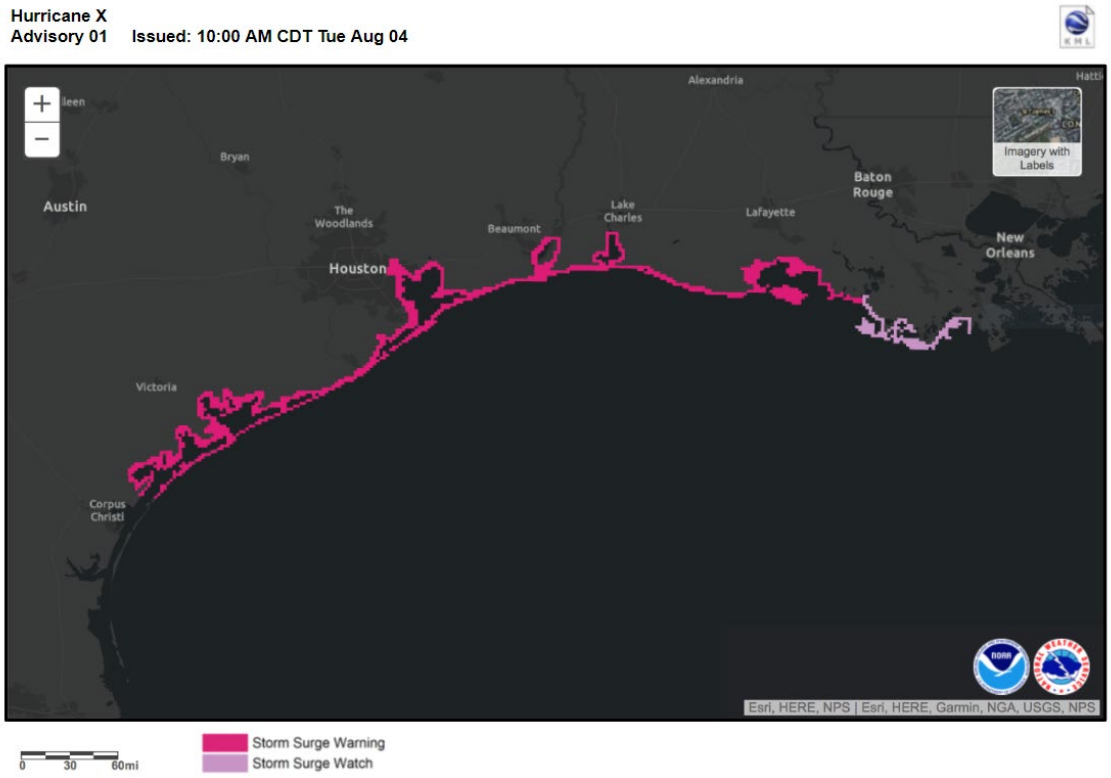
Key Messages Graphic



Product Description: The Key Messages Graphic highlights essential points about hazards and forecast uncertainty for select tropical cyclones. The graphic includes the text of the Key Messages from the Tropical Cyclone Discussion and relevant tropical cyclone graphics. These may include the cone graphic, the 34-kt cumulative wind speed probability graphic, arrival time of tropical-storm-force winds graphic, peak storm surge graphic, or a rainfall graphic provided by the Weather Prediction Center.

Availability: This graphic is part of a suite of products issued for select active tropical cyclones every six hours at 0300, 0900, 1500, and 2100 UTC, whenever Key Messages are included in the Tropical Cyclone Discussion text product.

Storm Surge Watch and Warning Graphic

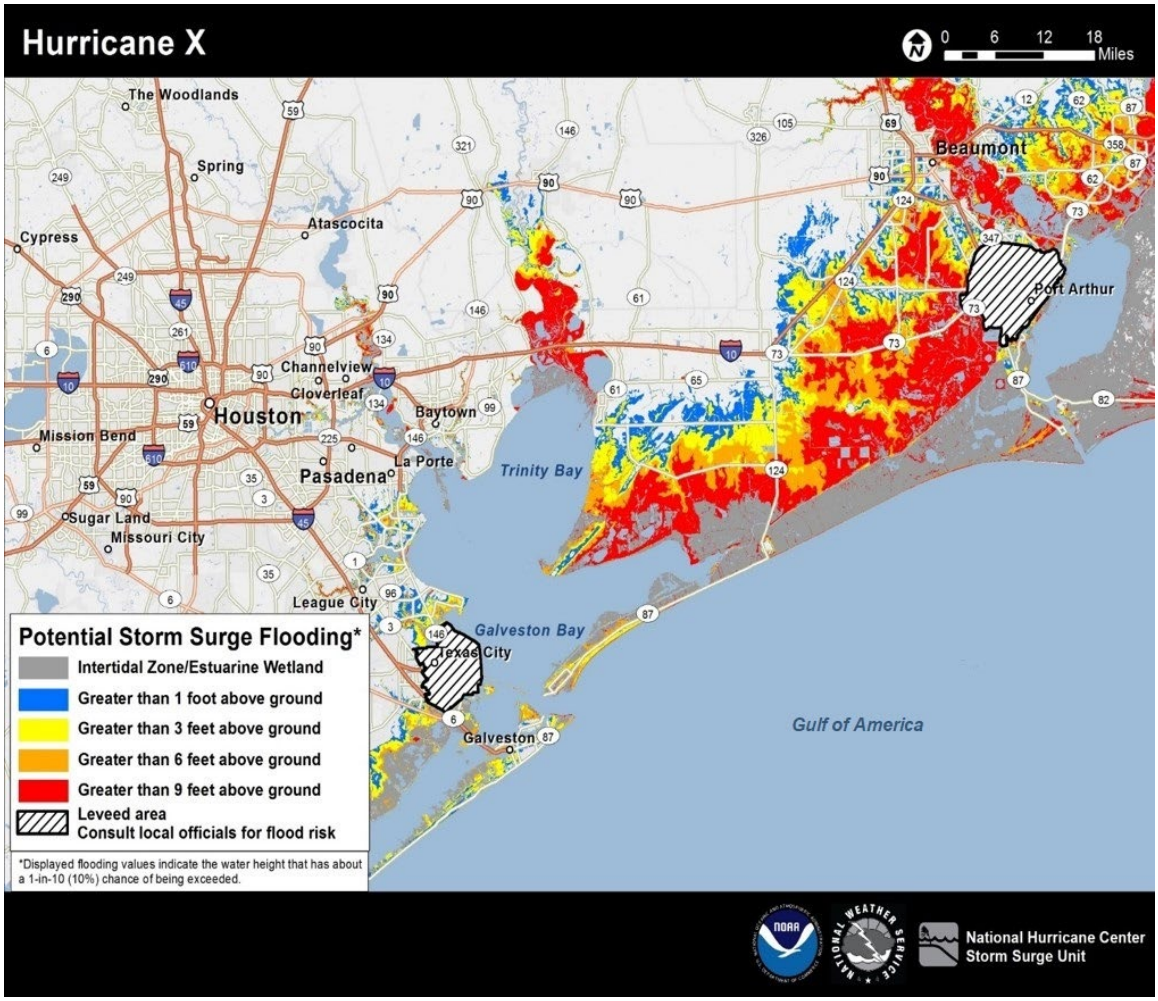


Product Description: Storm surge is rising water moving inland from the shoreline, pushed by the force of the wind. The Storm Surge Watch and Warning Graphic displays areas under a storm surge watch or warning. A storm surge warning means that there is a danger of life-threatening inundation from rising 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.

The graphic is intended to help users visualize areas most at risk from life-threatening surge, and serve as a call to action. 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. The graphic is the result of a collaborative process between the National Hurricane Center and local Weather Forecast Offices.

Availability: This graphic is part of a suite of products issued for active tropical 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 United States Gulf or Atlantic coasts, Puerto Rico, the U.S. Virgin Islands, or the main Hawaiian Islands. The graphic can be updated with any changes in the intermediate advisory package or with a special advisory. When active, the Storm Surge Watch and Warning Graphic will be available on the NHC website in a web map viewer.

Potential Storm Surge Flooding Map



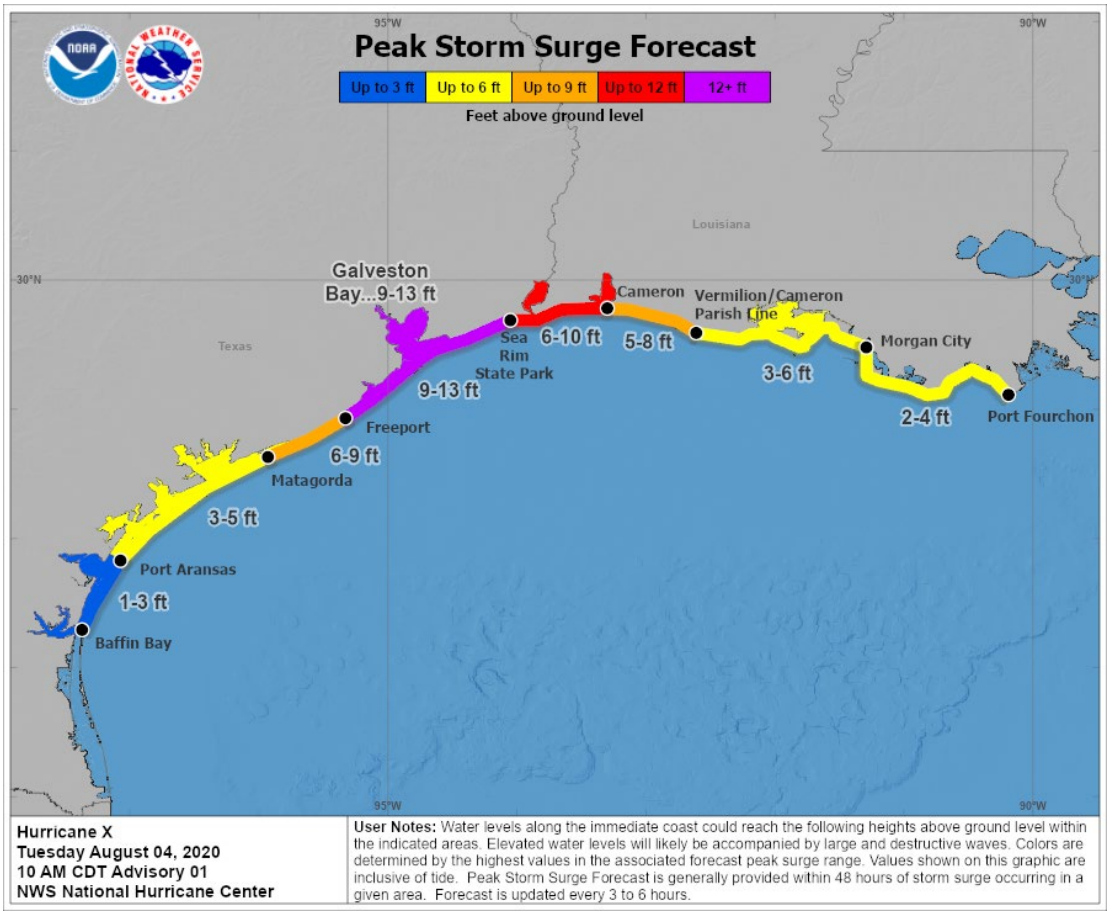
Product Description: The Potential Storm Surge Flooding Map shows geographical areas where inundation from storm surge could occur and how high above ground the water could reach in those areas. The map is based on the Probabilistic Tropical Cyclone Storm Surge and Tides (P-Surge) model that uses the latest NHC official forecast and historical forecast errors to create an ensemble of simulations that accounts for uncertainty related to the storm's landfall location and forward speed, intensity, and size. The shading on the Potential Storm Surge Flooding Map 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 map is subject to change every six hours in association with a new NHC full advisory package.

Availability: This graphic is part of a suite of products issued for active tropical cyclones every six hours at 0300, 0900, 1500, and 2100 UTC, whenever a storm surge watch or warning is in effect for any portion of the United States Gulf or Atlantic coasts, Puerto Rico, the U.S. Virgin Islands, or the main Hawaiian Islands. The graphic can be issued at other times as appropriate, including for hurricane or tropical storm wind watches or

warnings. The first map will usually be issued along with the first issuance of the storm surge watch, approximately 48 hours prior to hazardous weather conditions, but it can be issued as early as 72 hours in advance when confidence in the forecast and storm surge guidance is high. When active, the Potential Storm Surge Flooding Map will be available on the NHC website in a web map viewer, for GeoTIFF data download for viewing in local GIS, and as a map service on NOAA nowCOAST OGC Map Services (WMS).

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 website, or soon after the availability of the P-Surge products.

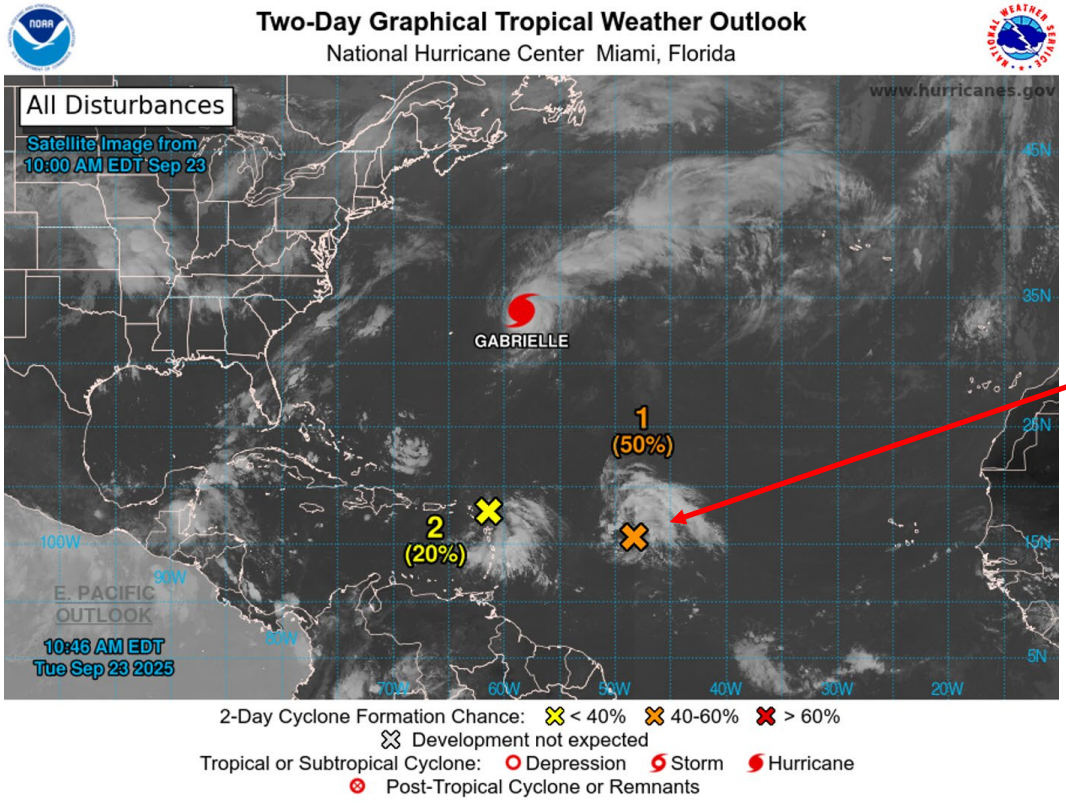
Peak Storm Surge Forecast Graphic



Product Description: The Peak Storm Surge Forecast Graphic shows the expected inundation along the immediate coast from storm surge and tides that are provided in the tropical cyclone public advisory (TCP). These values represent the height that water could reach above normally dry ground somewhere within the specified areas. A range of values is given to express forecast uncertainty and to account for varying coastal geography. Colors are based on the highest value in the associated forecast range, thus different forecast ranges can appear as the same color (e.g. 3–5 ft, 3–6 ft, and 2–4 ft all appear as yellow in the example graphic because the highest value in the range is 'Up to 6 ft'). The graphic is subject to change every three hours in association with a new NHC full or intermediate 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 storm surge watch or warning is in effect for any portion of the United States Gulf or Atlantic coasts, Puerto Rico, the U.S. Virgin Islands, or the main Hawaiian Islands. The graphic can be issued at other times as appropriate, including for hurricane or tropical storm wind watches or warnings. The graphic can be updated with changes in the intermediate advisory or with a special advisory. When active, the Peak Storm Surge Forecast Graphic will be available on the NHC website and for KML data download.

Two-Day 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.

```
ZCZC MIATWOAT ALL
TTAA00 KNHC DDHHMM

Tropical Weather Outlook
NWS National Hurricane Center Miami FL
800 AM EDT Tue Sep 23 2025

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

Active Systems:
The National Hurricane Center is issuing advisories on Hurricane
Gabrielle, located over the central subtropical Atlantic.

1. Central and Western Tropical Atlantic (AL93):
Shower and thunderstorm activity associated with a tropical wave
located a little less than 1000 miles east of the Lesser Antilles
continues to show signs of organization.  Environmental conditions
are forecast to be favorable for development over the next several
days, and a tropical depression is likely to form by the latter half
of this week while the system moves west-northwestward to
northwestward into the western tropical Atlantic.
* Formation chance through 48 hours...medium...50 percent.
* Formation chance through 7 days...high...90 percent.

2. East of the Leeward Islands (AL94):
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A tropical wave is producing a large area of disorganized showers
and thunderstorms, and gusty winds across much of the Windward and
Leeward Islands.  This wave is expected to move west-northwestward
at 15 to 20 mph, spreading heavy rainfall and gusty winds into
Puerto Rico and the Virgin Islands tonight and Wednesday.  The
system is then expected to slow down and turn northwestward when it
reaches the southwestern Atlantic near the Bahamas late this week,
and a tropical depression could form when the disturbance is in that
region.  Interests in the Virgin Islands, Puerto Rico, the Turks and
Caicos Islands, and the Bahamas should monitor the progress of this
system.
* Formation chance through 48 hours...low...20 percent.
* Formation chance through 7 days...medium...60 percent.


Forecaster Cangialosi/Papin
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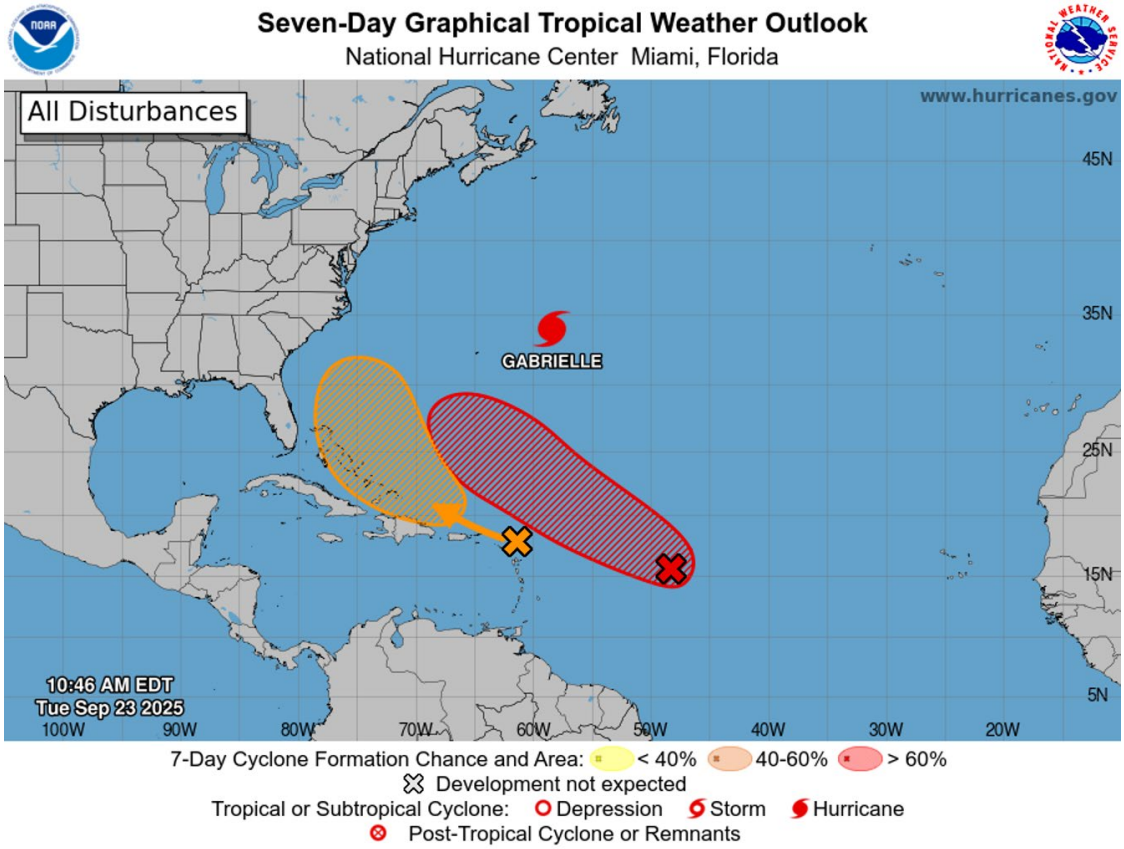
Product Description: The Two-Day Graphical Tropical Weather Outlook depicts significant areas of disturbed weather and their potential for development during the next 48 hours. The outlook also shows the locations of any active tropical cyclones and potential tropical cyclones for which NHC is issuing advisories. 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. Gray indicates that development is not expected over the entire 7-day period, yellow indicates a low probability of development (<40%), orange indicates a medium likelihood of development (40–60%), and red indicates a high likelihood of development (>60%). 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 below 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 at 0000, 0600, 1200, and 1800 UTC from 15 May–30 November for the Atlantic and the eastern North Pacific basins, and from 1 June–30 November for the central North Pacific basin. Local issuance times are shown in the following table. 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
Central North Pacific	0000, 0600, 1200, 1800		2 am, 8 am, 2 pm, 8 pm HST

Seven-Day Graphical Tropical Weather Outlook




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ZCZC MIATWOAT ALL
TTAA00 KNHC DDHHMM

Tropical Weather Outlook
NWS National Hurricane Center Miami FL
800 AM EDT Tue Sep 23 2025

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

Active Systems:
The National Hurricane Center is issuing advisories on Hurricane
Gabrielle, located over the central subtropical Atlantic.

1. Central and Western Tropical Atlantic (AL93):
Shower and thunderstorm activity associated with a tropical wave
located a little less than 1000 miles east of the Lesser Antilles
continues to show signs of organization.  Environmental conditions
are forecast to be favorable for development over the next several
days, and a tropical depression is likely to form by the latter half
of this week while the system moves west-northwestward to
northwestward into the western tropical Atlantic.
* Formation chance through 48 hours...medium...50 percent.
* Formation chance through 7 days...high...90 percent.
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2. East of the Leeward Islands (AL94):
A tropical wave is producing a large area of disorganized showers
and thunderstorms, and gusty winds across much of the Windward and
Leeward Islands.  This wave is expected to move west-northwestward
at 15 to 20 mph, spreading heavy rainfall and gusty winds into
Puerto Rico and the Virgin Islands tonight and Wednesday.  The
system is then expected to slow down and turn northwestward when it
reaches the southwestern Atlantic near the Bahamas late this week,
and a tropical depression could form when the disturbance is in that
region.  Interests in the Virgin Islands, Puerto Rico, the Turks and
Caicos Islands, and the Bahamas should monitor the progress of this
system.
* Formation chance through 48 hours...low...20 percent.
* Formation chance through 7 days...medium...60 percent.


Forecaster Cangialosi/Papin
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Product Description: The Seven-Day Graphical Tropical Weather Outlook provides formation potential for individual disturbances during the next 7 days. The outlook also shows the locations of any active tropical cyclones and potential tropical cyclones for which NHC is issuing advisories. The location of existing disturbances is indicated by an X. The area enclosed on the graphic represents the potential formation area during the forecast period. The areas are color-coded based on the potential for tropical cyclone formation during the next 7 days. Gray indicates that development is not expected (near 0%), yellow indicates a low probability of development (<40%), orange indicates a medium likelihood of development (40–60%), and red indicates a high likelihood of development (>60%). If the formation potential of an existing disturbance does not include the area in which the disturbance is currently located, an arrow will connect the current location of the disturbance to its area of potential formation. Areas without an X indicate that the disturbance does not currently exist, but is expected to develop during the 7-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 below the X. However, formation areas are not provided for potential tropical cyclones.

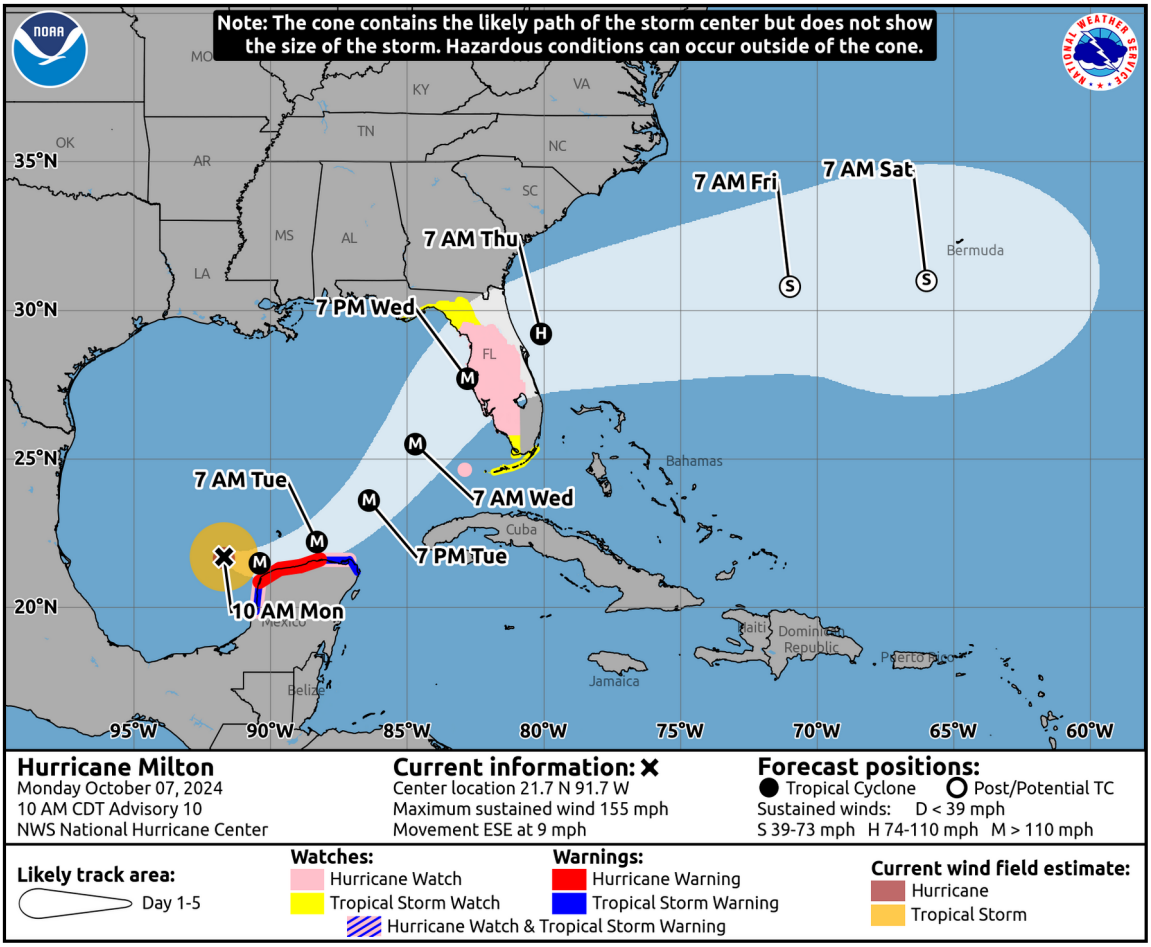
The graphic is interactive; users can mouse over disturbances in the graphic and pop-up windows will appear with the text outlook discussion for that disturbance. Clicking on a disturbance will take the user to a graphic that shows only that disturbance. Clicking on a tropical cyclone symbol or a potential 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 at 0000, 0600, 1200, and 1800 UTC from 15 May–30 November for the Atlantic and the eastern North Pacific basins, and from 1 June–30 November for the central North Pacific basin. Local issuance times are shown in the following table. 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
Central North Pacific	0000, 0600, 1200, 1800		2 am, 8 am, 2 pm, 8 pm HST

NHC Experimental Product Descriptions

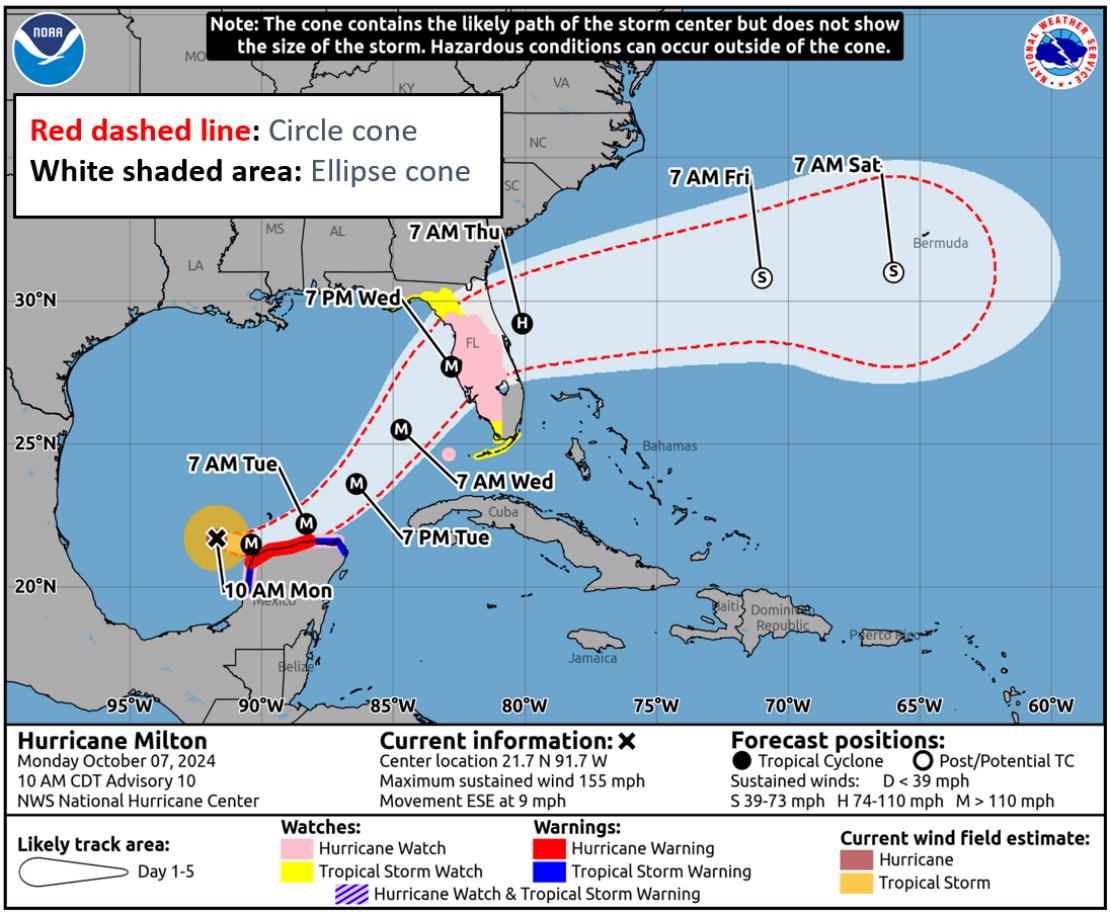
Experimental Tropical Cyclone Forecast Cone Graphic



Product Description: During the 2026 hurricane season, NHC will issue an experimental version of the cone graphic that uses a different methodology to create the error cone. Since 2007, the operational NHC Tropical Cyclone Cone Graphic has been formed by enclosing the area swept out by a set of circles anchored at each forecast point that are based on the 67th percentile of the NHC absolute track errors over the previous five years. The error cone in the 2026 experimental graphic will be constructed using ellipses instead of circles to account for both the speed (along-track) and directional (cross-track) error components of the forecast.

The along-track (speed) error is determined by calculating the distance that the tropical cyclone center is either ahead of or behind the NHC track forecast. The cross-track (directional) error is determined by calculating how far the tropical cyclone center deviates to the left or right of the NHC track forecast. To form the experimental cone, an ellipse is

anchored at each forecast point (12, 24, 36, 48, 60, 72, 96, and 120 hours), where the axes of each ellipse are based on the 90th percentile of the NHC along- and cross-track errors from the previous five years. The experimental cone is formed by smoothly connecting the area swept out by these ellipses. Since the center of a tropical cyclone would be expected to remain within each ellipse 90% of the time, the experimental cone represents the likely track area of the center of a tropical cyclone.

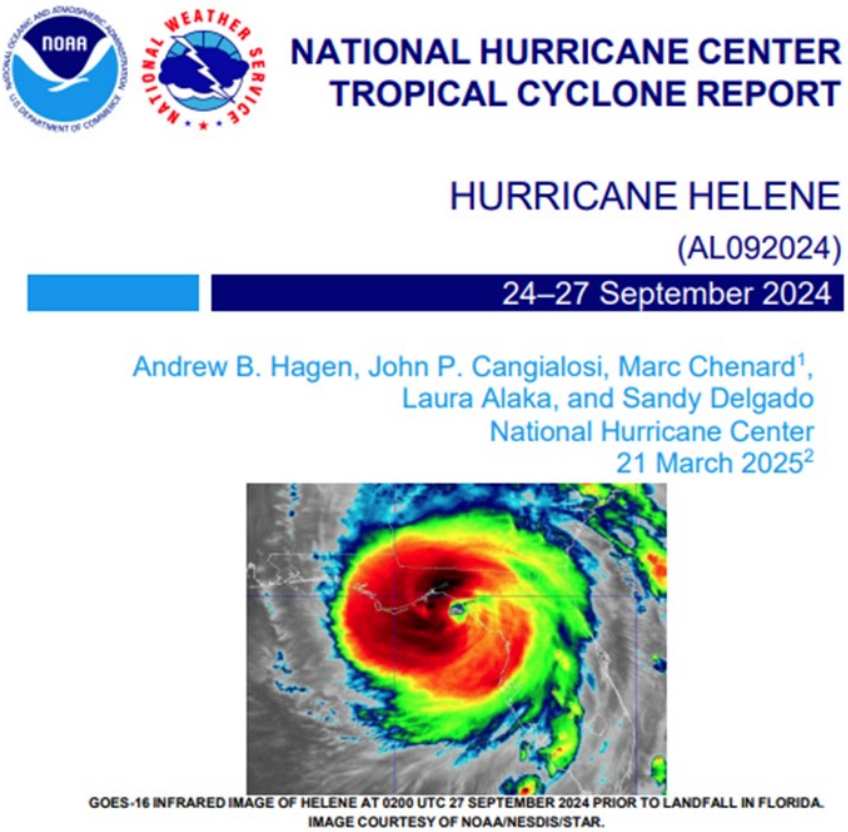


Availability: The experimental cone will be available on the NHC website for each full or special advisory. The experimental cone will be issued in addition to the operational cone. For more information, see the NWS Public Information Statement: https://www.weather.gov/media/notification/pdf_2026/pns26-22_proposedchanges_TC_conegraphics.pdf

Feedback: The NWS is soliciting comments on the addition of U.S. inland watches/warnings to the Tropical Cyclone Track and Error Cone Graphic through November 30, 2026. The NWS will evaluate the comments received and will determine any additional need for changes based on public feedback. Please provide feedback through the NWS survey at: https://www.surveymonkey.com/r/ProposedChangestotheTropicalCycloneConeGraphics_2026

NHC Non-Operational Product Descriptions

Tropical Cyclone Reports



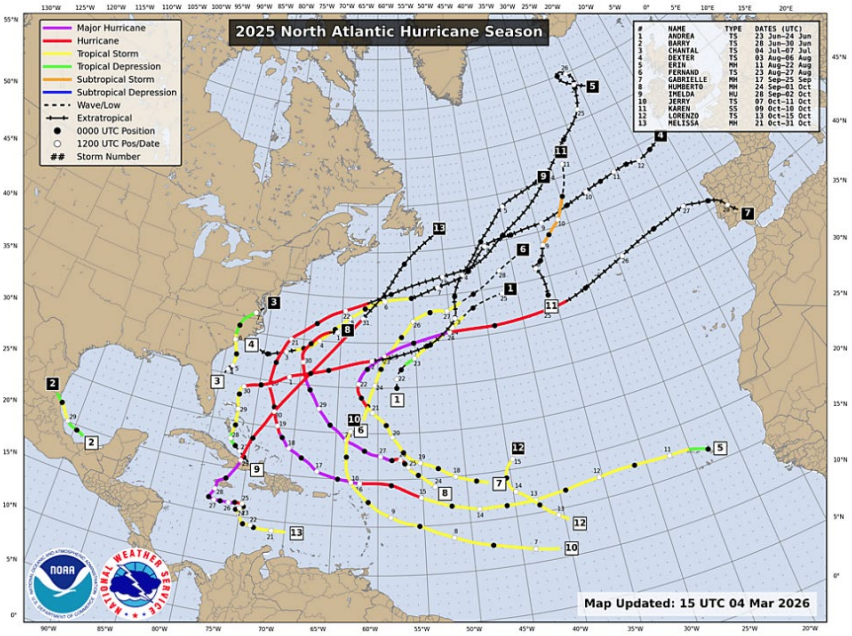
GOES-16 INFRARED IMAGE OF HELENE AT 0200 UTC 27 SEPTEMBER 2024 PRIOR TO LANDFALL IN FLORIDA. IMAGE COURTESY OF NOAA/NESDIS/STAR.

Product Description: The National Hurricane Center's Tropical Cyclone Reports (TCRs) contain information on all tropical, subtropical, and potential tropical cyclones that have occurred within the Atlantic, eastern Pacific, and central Pacific basins, including synoptic history, meteorological statistics, casualties and damages, and the post-analysis best track (six-hourly positions and intensities). Comprehensive versions of these reports are provided for all tropical cyclones in which coastal wind and/or storm surge watches or warnings were in effect or direct fatalities were reported, and for other select storms with significant public or research interest (e.g., storms investigated via research field campaigns). Otherwise, abbreviated TCRs will be produced that include a short description of the cyclone's origin, justification of the analyzed maximum winds and minimum pressure, noteworthy statistics, and the post-analysis best track.

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 Map

North Atlantic Tropical Weather Summary (2025)



Storm Number	Storm Name	Type[a]	Dates[b] (UTC)	Max. Winds (kt)	Min. Pressure (mb)	Accumulated Cyclone Energy[c] ($x10^4$ kt^2)	Direct Deaths[d]	U.S. Damage ($million)	Tropical Cyclone Report Status
1	Andrea	TS	23 Jun–24 Jun	35	1014	0.6	0	0	Final
2	Barry	TS	28 Jun–30 Jun	40	1006	0.4	8	0	Final
3	Chantal	TS	04 Jul–07 Jul	50	1002	1.0	6	500	Final
4	Dexter	TS	03 Aug–06 Aug	50	999	2.2	0	0	Final
5	Erin	MH	11 Aug–22 Aug	140	913	31.8	13	3	Final
6	Fernand	TS	23 Aug–27 Aug	50	999	2.7	0	0	Final
7	Gabrielle	MH	17 Sep–25 Sep	120	944	18.5	0	0	Final
8	Humberto	MH	24 Sep–01 Oct	140	918	26.5	0	0	Final
9	Imelda	HU	28 Sep–02 Oct	80	966	6.0	2	0	Final
10	Jerry	TS	07 Oct–11 Oct	55	1000	4.2	1	0	Final
11	Karen	SS	09 Oct–10 Oct	40	998	0.9	0	0	Final
12	Lorenzo	TS	13 Oct–15 Oct	50	1000	1.7	0	0	Final
13	Melissa	MH	21 Oct–31 Oct	165	892	34.3	95	0	Final

* Active TC

2025 North Atlantic Summary					
Named Storms (vs 1991-2020 Normal)	Hurricanes (vs 1991-2020 Normal)	Major Hurricanes (vs 1991-2020 Normal)	Total ACE ($x10^4$ kt^2) (% Difference of 1991-2020 Normal)	Total Direct Deaths	Total U.S. Damage ($million)
13 (-1)	5 (-2)	4 (+1)	130.8 (+7% –)	125	503

Product Description: The National Hurricane Center provides a seasonal summary table and seasonal track map for the Atlantic, eastern Pacific, and central Pacific basins. The table includes the dates of occurrence for all of the season's tropical cyclones and some basic meteorological statistics, such as the estimated peak intensity. Data for each tropical cyclone are considered preliminary until the TCR is issued.

Availability: The seasonal summary tables and track maps can be found on each basin's respective TCR webpage (https://www.nhc.noaa.gov/data/tcr/index.php). The seasonal summary tables and track maps are updated daily during the season. After the conclusion of the season, the seasonal summary tables and track maps are finalized once all of the TCRs for each basin are completed.