National Hurricane Center Products and Services Update for 2025 Hurricane Season

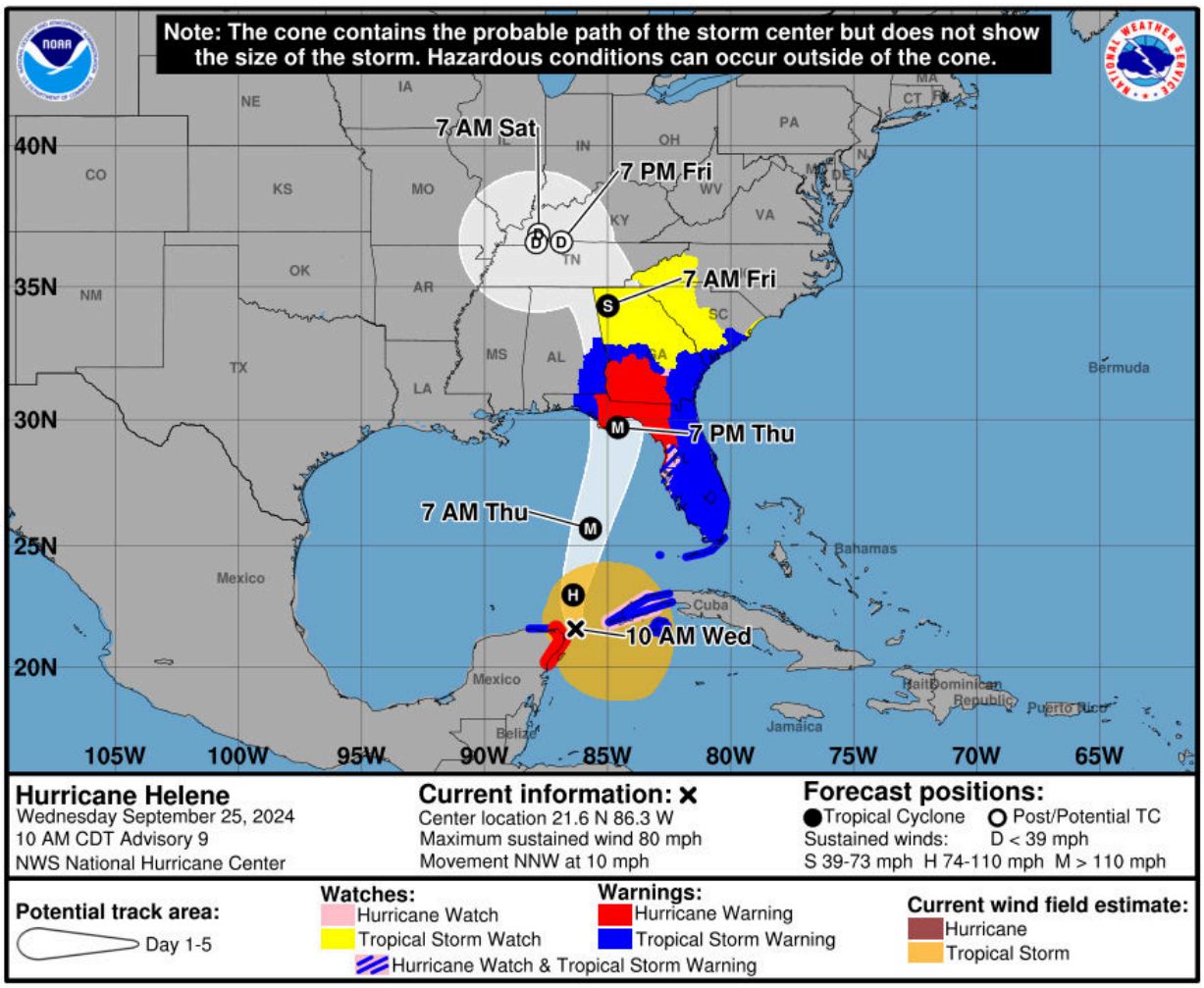
Updates to Products and Services in 2025:

1) Experimental Cone Graphic with a depiction of inland watches and warnings for the United States:

NHC will again issue an experimental version of the cone graphic that includes a depiction of inland tropical storm and hurricane watches and warnings in effect for the continental United States. Based on feedback received during the 2024 hurricane season, the experimental cone legend will now contain the symbology for areas where a hurricane watch and tropical storm warning are simultaneously in effect (diagonal pink and blue lines). The experimental cone graphic will be available on hurricanes.gov for full and intermediate advisories. The current operational cone graphic will continue to be available, and there will be no changes with respect to how watches and warnings are displayed on that graphic (i.e., only coastal watches/warnings will be depicted). Recommendations from social science research suggest that the addition of inland watches and warnings to the cone graphic will help communicate wind risk during tropical cyclone events while not overcomplicating the current version of the graphic with too many data layers.

The experimental graphic may not be available as soon as the current cone graphic due to the time needed to compile complete inland watch and warning information, but it should generally be available within 30 minutes of the advisory release. During the experimental phase, technical issues could affect the timeliness or availability of the graphic. There will be opportunity to provide comments and feedback during the product's experimental phase.

A prototype of the 2025 version of the experimental cone graphic with inland watches and warnings is shown on the next page:



Hurricane Helene
Wednesday September 25, 2024
10 AM CDT Advisory 9
NWS National Hurricane Center

Current information: ×
Center location 21.6 N 86.3 W
Maximum sustained wind 80 mph
Movement NNW at 10 mph

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

Potential track area:
Day 1-5

Watches:
Hurricane Watch
Tropical Storm Watch
Hurricane Watch & Tropical Storm Warning

Warnings:
Hurricane Warning
Tropical Storm Warning

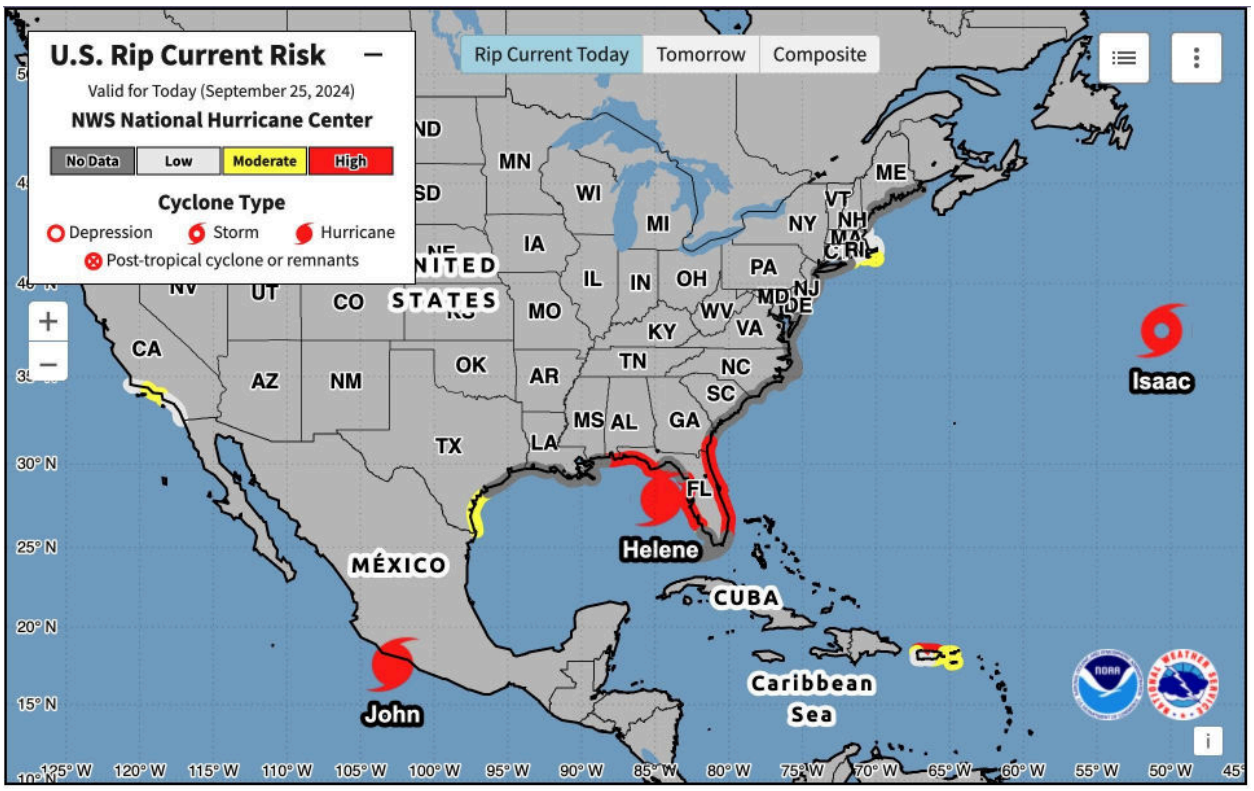
Current wind field estimate:
Hurricane
Tropical Storm

2) U.S. Rip Current Risk Map For Active Tropical Cyclones

During the past decade there has been an increase in surf and rip current fatalities in the United States. Many of these fatalities occur when swells from distant hurricanes cause dangerous surf and rip current conditions along the U.S. coastline. In order to better highlight the risk of these dangerous conditions, NHC will provide rip current risk information that originates from local National Weather Service (NWS) Weather Forecast Offices (WFOs) in a national rip current risk map when at least one active tropical system is present. This national risk map is designed for beach goers to easily view, on one webpage, rip current risk provided by WFOs and will be updated when new information is available from a WFO. The rip current risk will be provided for the current day, the next day, and as a composite showing the highest risk over both days for areas along the East and Gulf coasts of the United States, Puerto Rico and the U.S. Virgin Islands, and the coast of southern California. Note that this map will provide rip current risk information but will not provide specific information on height of the surf.

For more information on NWS surf zone forecasts, rip current risk categories, and rip current safety, please visit https://www.weather.gov/safety/ripcurrent-forecasts

A prototype of the U.S. rip current risk map/online viewer is shown below:



3) Updated Issuance Criteria for Potential Tropical Cyclone Advisory Products

The National Hurricane Center (NHC), the Central Pacific Hurricane Center (CPHC), and the National Weather Service (NWS) have updated the issuance criteria for tropical cyclone advisory products for Potential Tropical Cyclones. A Potential Tropical Cyclone (PTC) is a disturbance that is not yet a tropical cyclone but poses the threat of bringing tropical storm or hurricane conditions to land areas. With the change, the NHC and CPHC will have the ability to issue tropical cyclone advisory products up to 72 hours before the anticipated arrival of storm surge or tropical-storm-force winds on land regardless of the immediate need for land-based tropical storm, hurricane, or storm surge watches or warnings. Previously, NHC and CPHC could only begin issuing advisory products for PTCs that required land-based watches (issued 48 hours in advance of conditions beginning) or warnings (issued 36 hours in advance of conditions beginning). This change gives NHC and CPHC the option to issue these advisory products at longer lead times when confidence is high that there is a significant risk of wind and storm surge impacts to land areas.

Tropical cyclone advisory products for PTCs include all storm-specific text and graphical products routinely issued by NHC and CPHC each advisory cycle (i.e., 0300, 0900, 1500, and 2100 Coordinated Universal Time (UTC)), such as the Tropical Cyclone Public Advisory (TCP) and the Cone Graphic.

4) Updates to the Forecast/Advisory (TCM) product including the extension of hurricane-force (74 mph, 64 kt) wind radii forecasts to day 3:

NHC and CPHC are extending their sustained hurricane-force (74 mph; 64 kt) wind radii forecasts to day 3 (72 hours) in the Forecast/Advisory (TCM) in 2025. Previously, these forecasts were provided out to 2 days (48 hours). Tropical storm (39 mph, 34 kt) and 58 mph (50 kt) wind radii are provided out to 5 days (120 h). NHC and CPHC forecast the size of tropical cyclone wind fields via radii forecasts in each of the four quadrants (northeast, southeast, southwest, and northwest) of the tropical cyclone. These radii forecasts are available within the NHC/CPHC Forecast/Advisory (TCM) and represent the maximum extent (in nautical miles) of those winds within that quadrant of cyclone.

Previously, the TCM depicted the maximum extent of 12-foot seas in each quadrant surrounding the center of the tropical cyclone. Beginning in 2025, the maximum extent of seas will change to reflect the maximum extent of 4-meter seas in those quadrants. Responses from a recent public comment period indicated that users prefer wave information in High Seas products in units of meters. Additional information on the change to meters in NWS High Seas products can be found here.

An example of the Forecast/Advisory TCM with 3-day hurricane-force wind radii and the initial radius of 4 m seas can be found here: https://www.nhc.noaa.gov/tcm_example.shtml

The forecast wind radii from the TCM product are available in real-time in a geographic information system (GIS) friendly format at the following link: https://www.nhc.noaa.gov/gis/

5) Probabilistic Storm Surge for the Hawaiian Islands

Beginning in 2025, the NWS will provide probabilistic storm surge (P-Surge) guidance for communities of the Hawaiian Islands (i.e., Kauai, Maui, Oahu, and Big Island) in preparation for storm surge impacts from tropical cyclones. The P-Surge guidance suite will provide probability-based [storm surge] water level height information computed from hundreds of statistically distributed numerical model simulations that account for uncertainty in a hurricane forecast. The P-Surge model will be initiated by the NHC Storm Surge Unit (SSU) using forecast inputs specific to the hurricane forecast track, wind intensity, and wind radii. The probability-based storm surge results will be made available within 72 hours of hurricane impacts [when necessary].

The ensemble distribution resulting from perturbations in wind speed, track spread, and storm size are calculated based on 10-year running errors sampling historical storms occurring both in the Central and East Pacific basins. The P-Surge model does account for tide and wave setup, and the model data will be available publicly via the NCEP product inventory suite.

Probabilistic-based storm surge forecasts will be communicated by the SSU at NHC in collaboration with CPHC. GIS-related products utilizing the ensemble suite will not be available for the 2025 hurricane season. These GIS-related products (i.e., high-resolution inundation mapping, peak storm surge forecast graphic, and storm surge watch/warning) are anticipated to be available as early as the 2026 hurricane season.

6) Annual update to the track forecast error cone

The size of the tropical cyclone track forecast error cone for the Atlantic basin in 2025 will be about 3–5% smaller as compared to 2024. For the eastern North Pacific basin, it will also be about 5–10% smaller than the 2024 cone. 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 imaginary circles placed along the forecast track (at 12, 24, 36 hours, etc.). The size of each circle is set so that two-thirds of historical official forecast errors over the previous five years (2020-2024) fall within the circle. The circle radii defining the cones in 2025 for the Atlantic and eastern North Pacific basins are given in the table below. The changes from 2024 values (in parentheses) are expressed in both nautical miles (n mi) and percent.

A video showing how to properly interpret and use the cone graphic can be found at: www.nhc.noaa.gov/cone_usage.php

2025 Track Forecast Cone Two-Thirds Probability Circles (n mi)		
Forecast Period (h)	**Atlantic Basin**	**Eastern North Pacific Basin**
3	16 (0: 0%)	16 (0: 0%)
12	26 (0: 0%)	26 (0: 0%)
24	39 (-2: -5%)	38 (-1: -3%)
36	52 (-3: -5%)	50 (-3: -6%)
48	67 (-3: -4%)	59 (-6: -9%)
60	83 (-5: -6%)	71 (-5: -7%)
72	100 (-2: -2%)	83 (-9: -10%)
96	142 (-9: -6%)	113 (-6: -5%)
120	213 (-7: -3%)	146 (-6: -4%)

Reminders of Other Recent Changes to Products and Services

Issuance of U.S. watches and warnings on Intermediate advisories:

Beginning in 2024, NHC and the NWS introduced the ability to issue tropical storm, hurricane, and storm surge watches and warnings on Intermediate advisories. Previously, those watches and warnings could only be issued for the United States on full or special advisory packages. Full advisory packages are issued at 5 AM, 11 AM, 5 PM, and 11 PM EDT and Intermediate advisories are issued at 2 AM, 8 AM, 2 PM, and 8 PM EDT whenever coastal tropical watches and warnings are in effect. Changes to watches and warnings are reflected in the Tropical Cyclone Public Advisory (TCP) and coastal tropical wind watches and warnings will be reflected on the cone graphics issued with each regular or intermediate Public Advisory (TCP).

An example of the TCP product with tropical watches and warnings issued at the intermediate advisory can be found here:

https://www.nhc.noaa.gov/productexamples/Intermediate_Adivosry_w_US_WW_Issuance_Example.txt

Pronunciation of storm names

Pronunciation guides for storm names including the phonetic pronunciations of all Atlantic and eastern North Pacific storm names is found on the NHC website at:

Atlantic: www.nhc.noaa.gov/pdf/aboutnames_pronounce_atlc.pdf

Eastern North Pacific: www.nhc.noaa.gov/pdf/aboutnames_pronounce_epac.pdf

Alternate name lists (used when the 6-year list is exhausted):
Atlantic: https://www.nhc.noaa.gov/pdf/aboutnames_pronounce_atlc_alt.pdf

Eastern North Pacific:
https://www.nhc.noaa.gov/pdf/aboutnames_pronounce_epac_alt.pdf

Social Media

Live Stream

The National Hurricane Center is providing simultaneous live stream broadcasts via the **YouTube** and **Facebook** platforms whenever there is an area of interest in the tropics that may pose a threat to land. Live streams will be provided more frequently when the media pool is activated. The media pool is typically activated when a hurricane watch is issued for any portion of the U.S. contiguous coastline. NHC will generally provide these live stream broadcasts around 11:30 am EDT and 5:30 PM EDT.

Outreach

- The National Hurricane Center has a **Facebook** page. The "NOAA NWS National Hurricane Center" page provides updates about the NHC outreach and education campaign and other items that might be of interest to the public throughout the year.

- The National Hurricane Center maintains an **Instagram** account. The NHC Instagram page shares updates regarding the NHC's outreach and education initiatives, along with other relevant information.

Real-time Updates throughout the Hurricane Season

- The National Hurricane Center is on **X** – and has five accounts:

  Interactive Outreach **(@NWSNHC**) - The broadest in scope of NHC's X accounts, **@NWSNHC** is our primary mechanism for engaging the public and our partners in two way conversations. This account will cover general topics such as education and outreach, NWS products and policies concerning tropical cyclones, significant events, or just fun facts – from across all the branches that comprise NHC.

There are two operational X feeds, one for the Atlantic basin - **@NHC_Atlantic** (which includes the Gulf of America and Caribbean Sea) and one for the eastern North Pacific basin - **@NHC_Pacific.** Automated posts are sent via these accounts whenever NHC issues a public advisory regarding a tropical cyclone (TCP).

Each post contains a link to access the corresponding product on the NHC website. These two operational accounts will also be used to supplement and augment the formal tropical cyclone product suite, with occasional notices on such topics as reconnaissance aircraft status, announcements on NHC's intention to initiate advisories on a new tropical cyclone, highlights of key messages during active cyclones, etc. These accounts are also used to send notifications when NHC Tropical Cyclone Reports are posted on the NHC website.

The NHC storm surge group can be followed on X at **@NHC_Surge.**
This account enhances storm surge forecasts by providing real-time reports and observations during an event (resources permitting). The feed will enhance preparedness and outreach efforts throughout the year, and provide news and announcements on updates to the SLOSH modeling system and storm surge decision support tools.

The Tropical Analysis and Forecast Branch (TAFB) is on X at **@NHC_TAFB.** TAFB, an operational arm of the NHC, is responsible for issuing more than 100 marine products daily covering millions of square miles of the Atlantic and eastern Pacific Ocean. This account highlights significant weather events over the marine area as well as its outreach programs.

Find us on the Web:

National Hurricane Center: www.hurricanes.gov
Tropical Weather Outlook: www.nhc.noaa.gov/aboutnhcgraphics.shtml#GTWO
Definition of NHC Track Forecast Cone: www.nhc.noaa.gov/aboutcone.shtml
National Hurricane Preparedness www.nhc.noaa.gov/cone_usage.php
National Hurricane Preparedness Week: www.hurricanes.gov/prepare
National Hurricane Center Facebook page: www.facebook.com/NWSNHC
National Hurricane Center X page: https://www.nhc.noaa.gov/twitter.php

Contact: NHC Public Affairs: nhc.public.affairs@noaa.gov

Updated: March 7, 2025