Looking Ahead to the 2025 Atlantic Basin Hurricane Season

From
Rex Ross Tropical Weather Updates
May 1, 2025

Outlook for 2025

The 2024 Hurricane season was reasonably busy, although the total number of named storms –18 – was somewhat fewer than the pre-season predicted number of 23.

However, the 2024 pre-season predicted numbers of hurricanes (11) and major hurricanes (5) were spot on.

The Colorado State University 2025 forecast is shown on the following table.

Also shown in the table is the actual versus predicted results for the CSU 2024 forecast.

The 2025 pre-season predictions suggest a slightly less active season than last year.

	2024 Predicted by Colorado State University	2024 Actual	30 Year Average	2025 Predictions From Colorado State University
Total Named Storms	23	18	14	17 (19*)
Hurricanes	11	11	7	9
Category 3 or Higher (Major Hurricanes)	5	5	3	4

- * 19 is The Weather Channel forecast for total named storms.

Overall, 2025 is currently forecast to be a bit more active than the 30 year average for the number of named storms, hurricanes and major hurricanes, but generally similar to 2024 activity.

ACE Index (*Accumulated Cyclonic Energy*)

The ACE index is a different way to measure how active a season is.

Short for Accumulated Cyclone Energy index, ACE takes into account not just the number of storms in a season, but also the intensity and longevity of storms and hurricanes.

ACE seems to provide a more balanced assessment as to the intensity of one hurricane season versus another.

However, it is certainly subjective as to whether a few extremely strong storms is better or worse than several medium strength storms.

CSU's ACE forecast for 2025 is 155 which is somewhat higher that the 30 year average of 123. The 2024 actual ACE index was 162.

When Does Hurricane Season Begin?

The official onset of Hurricane Season in the Atlantic Basin is June 1, with the official season ending November 30.

However, there are numerous examples of tropical events in the Atlantic basin occurring prior to June 1 and after November 30.

2025 Storm Names

Once a tropical system reaches tropical storm intensity (winds of 39 MPH or more), it will be assigned the next name from the following list

- Andrea
- Barry
- Chantal
- Dexter
- Erin
- Fernand
- Gabrielle
- Humberto
- Imelda
- Jerry
- Karen
- Lorenzo
- Melissa
- Nestor
- Olga
- Pablo
- Rebekah
- Sebastien
- Tanya
- Van
- Wendy

If there are more than 21 named storms this season, subsequent storms will take names from an auxiliary list. This use of Greek alphabet names was discontinued after the 2020 season brought to light multiple shortcomings with the use of the Greek alphabet.

Link to Our Tropical Weather Tracking Page

The link to our 2025 Storm Tracking Home Page follows:

http://www.rexross.com/StormTrack2025.html

You can bookmark and check that link anytime for the latest, up to date tropical activity.

Definitions of Storm Categories

The following chart shows the wind speed and typical storm surge associated with each Category of tropical event.

Storm Categories and Standard Parameters		
Hurricane Category	**Wind Speed**	**Typical Storm Surge**
Tropical Storm	39 - 73 mph	
1	74 - 95 mph	4 - 5 feet
2	96 - 110 mph	6 - 8 feet
3	111 - 129 mph	9 - 12 feet
4	130 - 156 mph	13 - 18 feet
5	Over 156 mph	19 feet of higher

Hurricane Category Levels Remain Under Review

It has become increasingly apparent in recent years that wind speed alone is not a definitive determinant of the destructive power of a tropical event.

The size of the storm surge is, in many cases, equally or even more important than wind speed. This view, while long known, came to the forefront as a result of hurricane Ike which struck the Galveston area in 2008. While the wind speed never got beyond a Category 2 event, the size of the storm's wind field produced an enormous storm surge more

commonly associated with a Category 4 hurricane. The storm surge statistics for Ike were:

- Highest storm surge recorded on Galveston Island since 1915
- 12-15 foot Ike storm surge along the Galveston / Houston coastal area
- 15-17 foot Ike storm surge across Bolivar Peninsula

Reliance only on the Category 2 wind speeds that occurred, would have indicated that a storm surge of only 6-8 feet might have been expected. Clearly that was not the case.

The National Hurricane Center is still working on how to better classify the potential effects of a storm beyond the simple wind speed-based Category designation. To that end, the NHC is now also publishing storm surge prediction maps as part of their forecast, but they remain a little hard to read and interpret for now.

The message here is to pay attention to all aspects of the forecast for a tropical event, not just the wind speed predictions.

What Large Scale Factors Affect the Number and Intensity of Storms?

Two significant factors which affect the number and intensity of storms that form are:

- The El Niño / La Niña Effect
- Sea Surface Temperatures

El Niño / La Niña Effects

El Niño and La Niña are climate patterns in the Pacific Ocean that can affect weather worldwide.

The occurrence of an El Niño event typically results in increased wind shear in the Atlantic. Such wind shear often limits or suppresses the formation of storms. Without that El Niño driven wind shear, storms are more likely to form and strengthen as they cross the Southern Atlantic without their tops being blown off (which tends to cause them to weaken and/or dissipate).

2025 El Niño /La Niño Forecast

La Niña is gone, but what's next: The phase of El Niño vs. La Niña is one of the strongest influences on hurricane season activity.

In general, La Niña Atlantic hurricane seasons have less wind shear that can otherwise rip storms apart, and more rising, unstable air that is more conducive for thunderstorms, the building blocks of tropical storms and hurricanes.

A strong hurricane-suppressing El Niño is not expected for this hurricane season. NOAA's latest forecast indicates neither La Niña nor El Niño may be a player. Instead, neutral conditions are the most probable outcome during the heart of hurricane season (August through October).

This situation may be expected to lead to more numerous and perhaps stronger tropical systems.

Sea Surface Temperatures

Warmer sea surface conditions in the Atlantic basin tend to provide energy to help form storms and increase the intensity of storms that do form.

2025 Sea Surface Temperature Forecast

Water still warm, but not like 2024: The Gulf and Caribbean are warmer than average but are cooler than they were this time last year. These regions, combined with the subtropical Atlantic, are where we look for early-season activity.

More significantly, water temperatures in the eastern Atlantic, including parts of the region known as the Main Development Region (MDR), are closer to average, if not slightly cooler, and substantially cooler than the record warmth we saw last year.

The MDR is the primary host location for hurricanes that threaten the U.S. and Caribbean during the peak of hurricane season. Should this lukewarm to cooler water stick around several months from now, it would be a major speed bump for tropical development in that region.

What Does This Mean for the United States?

There is no strong correlation between the number of storms or hurricanes and U.S. landfalls in any given season.

One or more of the 17 or so named storms predicted to develop this season could hit the U.S. or all may avoid land, remaining out to sea.

While probabilities of a strike along the lower east coast, the upper east coast and along the coast of the Gulf of Mexico are made each year, they are not very reliable and are not included here.

The uncertainty as to whether and where any storm might make a landfall is why residents of the coastal U.S. should prepare each year no matter what the overall forecast may be.

Remember:

- Regardless of the pre-season predictions, it only takes only one storm event impacting your area of interest to make the season an unpleasant one.

- So, it is important for all those with interests along the Atlantic, Gulf of Mexico or Caribbean coastal zones to pay close attention to any tropical systems which may possibly affect those locations and to have a storm preparation and evacuation plan in place.