

## Looking Ahead to the 2023 Atlantic Basin Hurricane Season

From  
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### Outlook for 2023

Following a very active hurricane season in 2021, the initial outlook for 2022 appears to indicate that another busy tropical season is likely.

The two most commonly referenced sources of hurricane predictions are:

- Colorado State University
- The Weather Channel

Their 2023 forecasts and the actual versus predicted results for 2022 are as follows:

	2022 Predicted	2022 Actual	30 Year Average	2023 Predictions From Colorado State University	2023 Predictions From The Weather Channel
Total Named Storms	19.5	14	14	13	15
Hurricanes	8.5	8	7	6	7
Category 3 or Higher (Major Hurricanes)	3.5	2	3	2	3

As can be noted from the above recap, 2022 was originally forecast to be a very active year, well above the 30 year average for the number of storms. Ultimately, 2022 turned out to be a typical year, with activity basically right at the 30 year average.

2023 is currently forecast to be an average year, with the number of storms expected to be at the 30 year average.

## **Definitions of Storm Categories**

The following chart shows the wind speed associated with each Category of tropical event.

**Tropical Storm** Windspeed: 39-73 mph

<b>Hurricane Category</b>	<b>Wind Speed</b>
1	74 - 95 mph
2	96 - 110 mph
3	111 - 129 mph
4	130 - 156 mph
5	Over 156 mph

## **Hurricane Category Levels Under Review**

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

The size and scope of the storm surge is equally, if not more important. This view, while long known, came fully 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

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. The NHC is also now 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.

### **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.

### **2023 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:

<ul style="list-style-type: none"> <li>• Arlene</li> <li>• Bret</li> <li>• Cindy</li> <li>• Don</li> <li>• Emily</li> <li>• Franklin</li> <li>• Gert</li> </ul>	<ul style="list-style-type: none"> <li>• Harold</li> <li>• Idalia</li> <li>• Jose</li> <li>• Katia</li> <li>• Lee</li> <li>• Margot</li> <li>• Nigel</li> </ul>	<ul style="list-style-type: none"> <li>• Ophelia</li> <li>• Philippe</li> <li>• Rina</li> <li>• Sean</li> <li>• Tammy</li> <li>• Vince</li> <li>• Whitney</li> </ul>
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If there are more than 21 named storms this season, subsequent storms will take names from an auxiliary list of names. This use of Greek alphabet names was discontinued after the 2020 season brought to light multiple shortcomings with the use of the Greek alphabet.

## **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 Nino / La Nina Effect
- Sea Surface Temperatures

### **El Nino / La Nina Effects**

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

The occurrence of an El Nino event typically results in increased wind shear in the Atlantic. Such wind shear often limits or suppresses the formation of storms. Without that El Nino 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).

### **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.

Sea surface temperatures across the tropical Atlantic are currently near average, while subtropical Atlantic sea surface temperatures are warmer than normal.

### **Analysis From Colorado State University**

Colorado State University hurricane researchers are predicting a slightly below-average Atlantic hurricane season in 2023, citing the likely development of El Niño as a primary factor. Eastern and central tropical and subtropical Atlantic sea surface temperatures are much warmer than normal, while Caribbean sea surface temperatures are near their long-term averages.

The tropical Pacific currently has neutral El Niño – Southern Oscillation (ENSO) conditions, that is, water temperatures are near normal in the eastern and central tropical Pacific.

Current large-scale conditions and forecasts indicate that a transition to El Niño is relatively likely in the next several months. However, there is considerable uncertainty as to how strong El Niño would be if it does develop. El Niño tends to increase upper-level westerly winds across the Caribbean into the tropical Atlantic. The increased upper-level winds result in vertical wind shear which can tear apart hurricanes as they try to form.

When waters in the eastern and central tropical and subtropical Atlantic are warmer than normal, this tends to force a weaker subtropical high and associated weaker winds blowing across the tropical Atlantic. These conditions lead to warmer waters in the tropical Atlantic for the peak of the Atlantic hurricane season. The anomalously warm eastern and central tropical and subtropical Atlantic favor an above-normal season.

Given the conflicting signals between a potentially robust El Niño and an anomalously warm tropical and subtropical Atlantic, the team stresses that there is more uncertainty than normal with this outlook.

### **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 13 to 15 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.

Given the uncertainty of whether and where any storm might make a landfall is why residents of the coastal U.S. should prepare each year no matter the overall forecast.

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.

### **Signing Up to Receive Tropical Weather Update Emails**

During the hurricane season we will send a brief email each day when there are one or more active tropical systems in the Atlantic Basin.

You can sign up to receive these free tropical updates by clicking on:

[Sign Up For the Tropical Weather Update Emails](#)

*Note: If you received the email referencing this hurricane outlook, you are already registered to receive weather update emails and need not Sign Up again. If you are not certain, it is ok to sign up again. You will not receive duplicate reports during the season.*

You can view active 2023 tropical system tracks by clicking on:

[View 2023 Tropical Systems Tracks](#)

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## **Addendum: Discussion of El Nino and La Nina Climate Conditions**

### **El Nino**

During El Nino, trade winds weaken. Warm water is pushed back east, toward the west coast of the Americas.

El Nino means Little Boy, or Christ Child in Spanish. South American fishermen first noticed periods of unusually warm water in the Pacific Ocean in the 1600s.

The full name they used was El Nino de Navidad, because El Nino typically peaks around December.

El Nino can affect our weather significantly. The warmer waters cause the Pacific jet stream to move south of its neutral position. With this shift, areas in the northern U.S. and Canada are dryer and warmer than usual. But in the U.S. Gulf Coast and Southeast, these periods are wetter than usual and have increased flooding.

### **La Nina**

La Nina means Little Girl in Spanish.

La Nina is also sometimes called El Viejo, anti-El Nino, or simply "a cold event."

La Nina has the opposite effect of El Nino. During La Nina events, trade winds are even stronger than usual, pushing more warm water toward Asia. Off the west coast of the Americas, upwelling increases, bringing cold, nutrient-rich water to the surface.

These cold waters in the Pacific push the jet stream northward. This tends to lead to drought in the southern U.S. and heavy rains and flooding in the Pacific Northwest and Canada. During a La Nina year, winter temperatures are warmer

than normal in the South and cooler than normal in the North. La Nina can also lead to a more severe hurricane season.