

**COLORADO STATE UNIVERSITY FORECAST OF ATLANTIC HURRICANE
ACTIVITY FROM AUGUST 4–17, 2022**

We believe that the most likely category for Atlantic hurricane activity in the next two weeks is normal (50%), with below-normal (40%) and above-normal (10%) being less likely.

(as of 4 August 2022)

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In Memory of William M. Gray⁴

This discussion as well as past forecasts and verifications are available online at
<http://tropical.colostate.edu>

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1 Introduction

This is the 14th year that we have issued shorter-term forecasts of tropical cyclone (TC) activity starting in early August. These two-week forecasts are based on a combination of observational and modeling tools. The primary tools that are used for this forecast are as follows: 1) current storm activity, 2) National Hurricane Center Tropical Weather Outlooks, 3) forecast output from global models, 4) the current and projected state of the Madden-Julian Oscillation (MJO) and 5) the current seasonal forecast.

Our forecast definition of above-normal, normal, and below-normal Accumulated Cyclone Energy (ACE) periods is defined by ranking observed activity in the satellite era from 1966–2021 and defining above-normal, normal and below-normal two-week periods based on terciles. Since there are 56 years from 1966–2021, we include the 19 years with the most ACE from August 4–17 as the upper tercile, the 19 years with the least ACE as the bottom tercile, while the remaining 18 years are counted as the middle tercile.

Table 1: ACE forecast definition for TC activity for August 4–17, 2022.

Parameter	Definition	Probability in Each Category
Above-Normal	Upper Tercile (>5 ACE)	10%
Normal	Middle Tercile (2–5 ACE)	50%
Below-Normal	Lower Tercile (<2 ACE)	40%

2 Forecast

We believe that the next two weeks have the highest probability to be characterized by activity at normal levels (2–5 ACE). The National Hurricane Center is not monitoring any areas for tropical cyclone development over the next five days. The Madden-Julian Oscillation (MJO) is currently located in phase 5 but is forecast to potentially amplify into phases 1-2 in the next two weeks. These two phases are typically associated with enhanced Atlantic tropical cyclone (TC) activity.

Figure 1 displays the formation locations of tropical cyclones from August 4–17 for the years from 1966–2021, along with the maximum intensities that these storms reached. Figure 2 displays the August 4–17 forecast period with respect to climatology. This period typically marks the beginning of the ramp-up for Atlantic tropical cyclone activity. The primary threat formation area for major hurricanes in early- to mid-August is in the tropical Atlantic east of the Lesser Antilles.

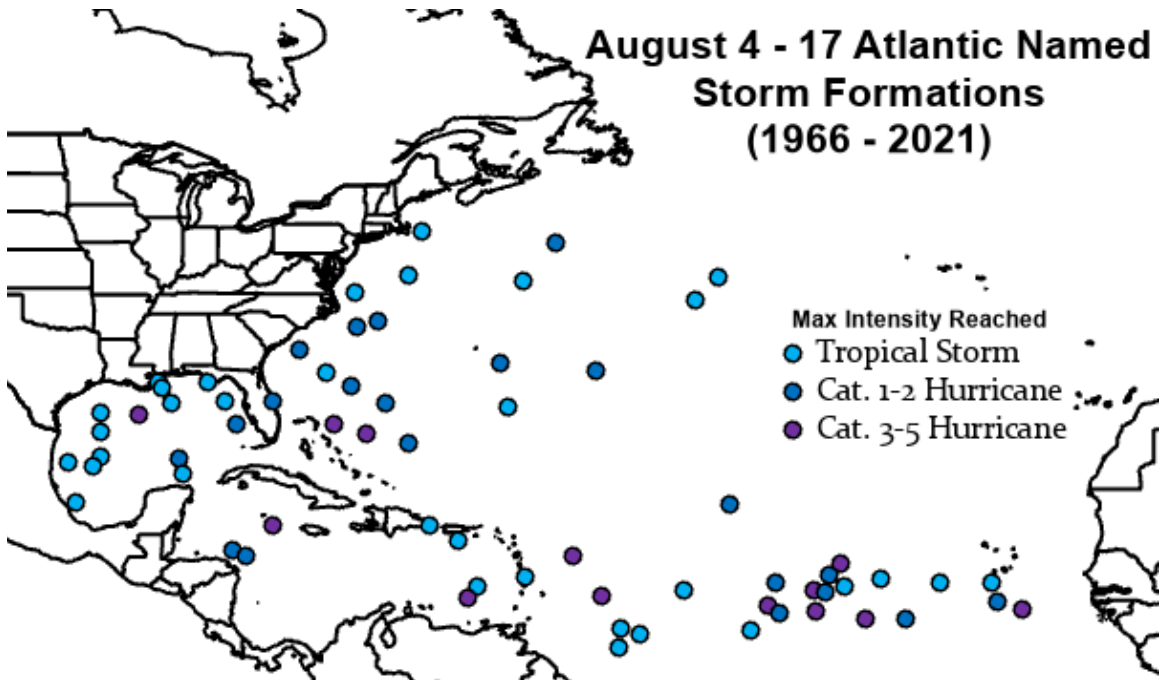


Figure 1: Atlantic named storm formations from August 4–17 during the years from 1966-2021 and the maximum intensity that these named storms reached.

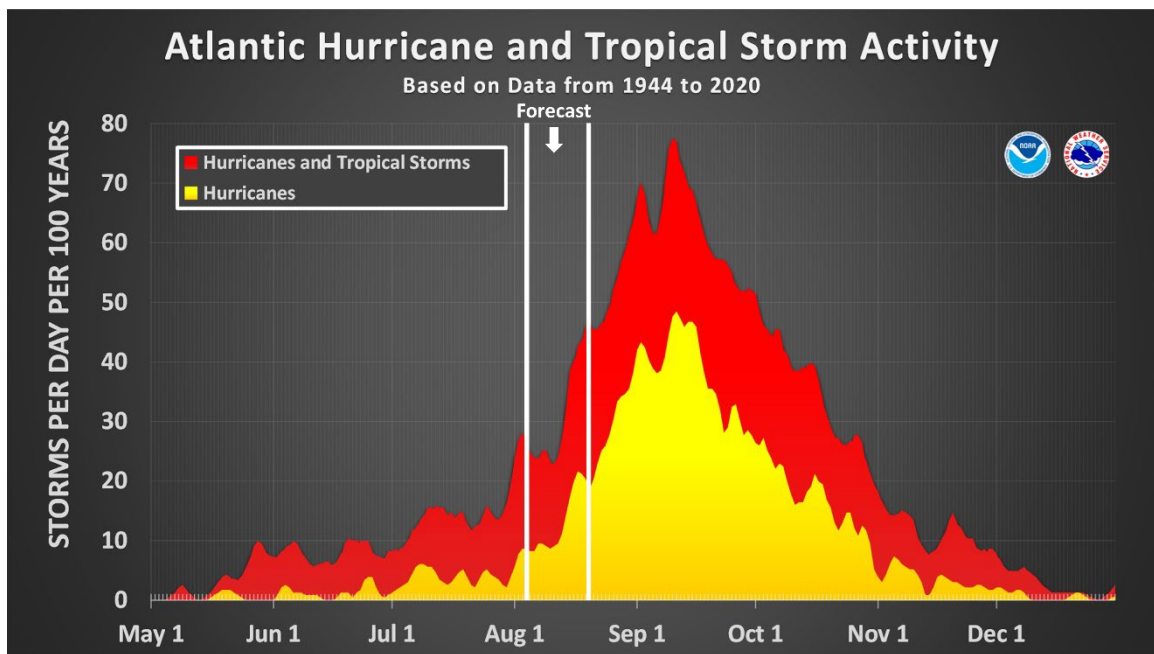


Figure 2: The current forecast period (August 4–17) with respect to climatology, delimited with white lines. Figure courtesy of NOAA.

We now examine how we believe each of the five factors discussed in the introduction will impact Atlantic TC activity for the period from August 4–17.

1) Current Storm Activity

There are currently no active TCs in the Atlantic.

2) National Hurricane Center Tropical Weather Outlook

The latest NHC Tropical Weather Outlook is not monitoring any areas for potential TC development in the next five days.

3) Global Model Analysis

Both the ECMWF (Figure 3) and GFS (Figure 4) ensembles have little TC development potential in the next week, but there are indications that a TC could potentially form in the central tropical Atlantic in about 10–14 days. There is also potential for TC development off of the US East Coast in week two.

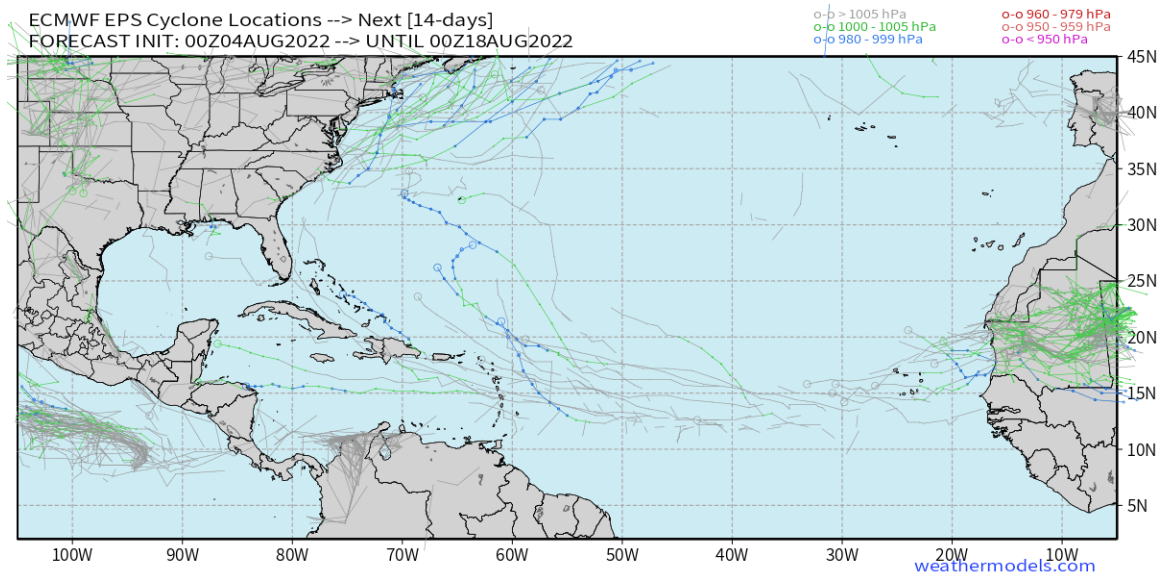


Figure 3: Cyclone locations from the ECMWF EPS ensemble for the next 14 days. Figure courtesy of weathermodels.com

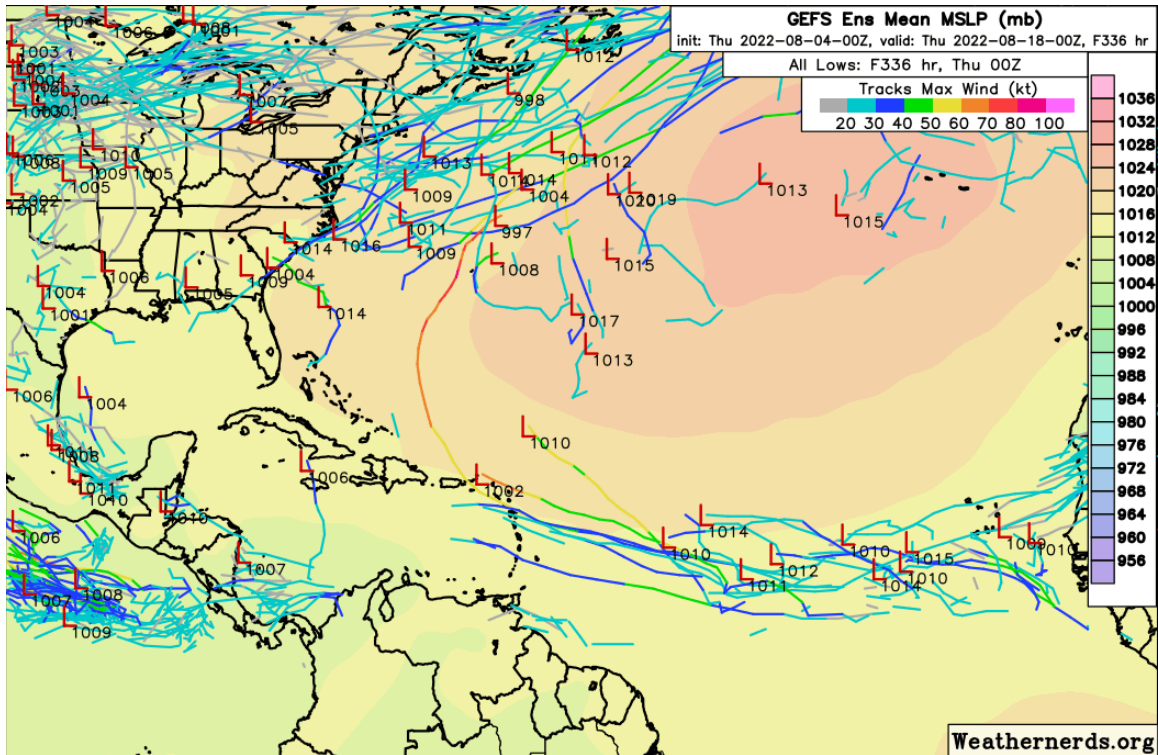


Figure 4: Track forecasts from the GFS ensemble for the next two weeks. Figure courtesy of weathernerds.org.

4) Madden-Julian Oscillation

The Madden-Julian oscillation (MJO), as measured by the Wheeler-Hendon index, is currently in phase 5 over the Maritime Continent. The MJO is forecast to potentially amplify into phases 1-2 in the next two weeks (Figure 5). Table 2 summarizes the typical MJO impacts on Atlantic TC activity. Phases 1-2 are typically associated with more active periods for Atlantic hurricane activity.

The Climate Forecast System (CFS) model is generally predicting above-normal vertical wind shear across the tropical Atlantic and Caribbean for the next two weeks (Figure 6). We do anticipate that there could be a reduction in vertical wind shear near the end of the two-week forecast period.

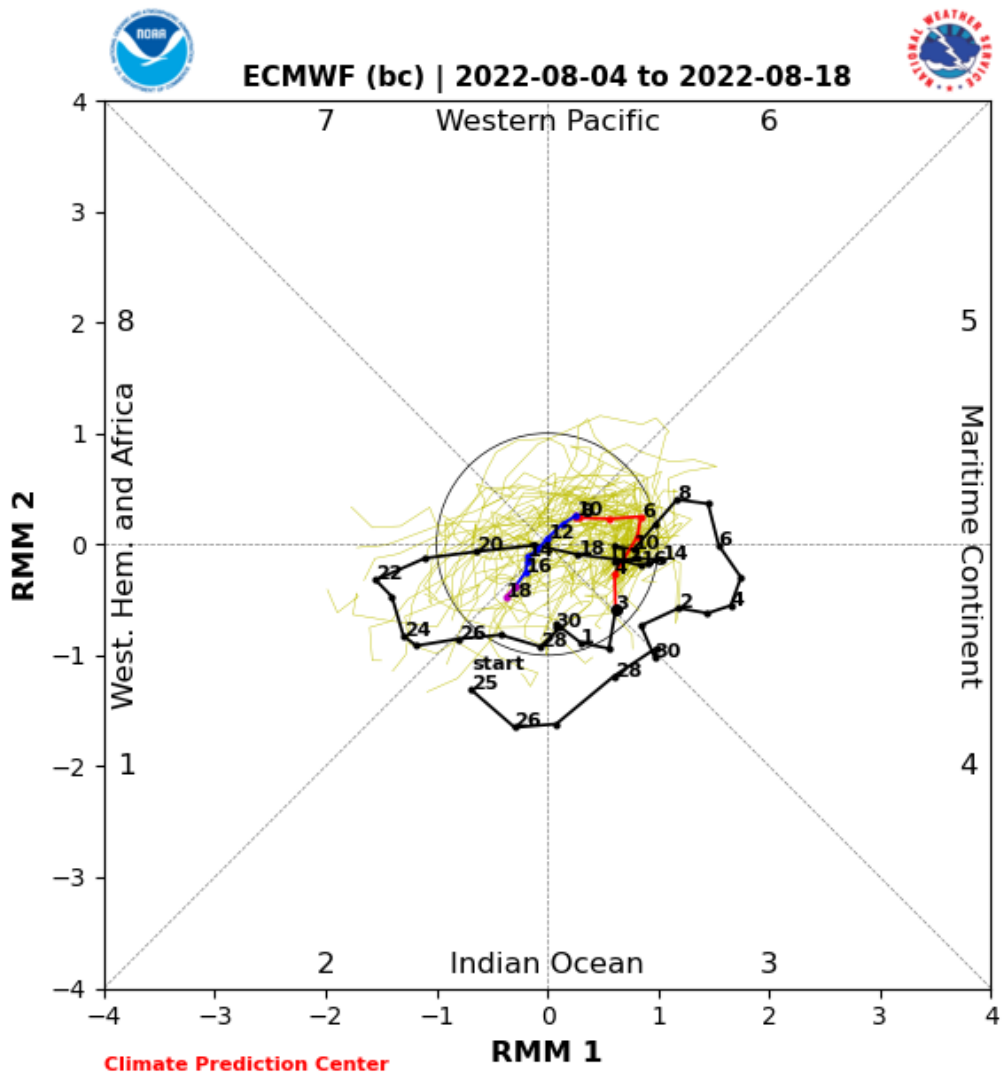


Figure 5: Predicted propagation of the MJO by the ECMWF model (bias-corrected). Figure courtesy of NOAA.

Table 2: Normalized values of named storms (NS), named storm days (NSD), hurricanes (H), hurricane days (HD), major hurricanes (MH), major hurricane days (MHD) and Accumulated Cyclone Energy (ACE) generated by all tropical cyclones forming in each phase of the MJO over the period from 1974-2007. Normalized values are calculated by dividing storm activity by the number of days spent in each phase and then multiplying by 100. This basically provides the level of TC activity that would be expected for 100 days given a particular MJO phase.

MJO Phase	NS	NSD	H	HD	MH	MHD	ACE
Phase 1	6.4	35.9	3.7	17.9	1.8	5.3	76.2
Phase 2	7.5	43.0	5.0	18.4	2.1	4.6	76.7
Phase 3	6.3	30.8	3.0	14.7	1.4	2.8	56.0
Phase 4	5.1	25.5	3.5	12.3	1.0	2.8	49.4
Phase 5	5.1	22.6	2.9	9.5	1.2	2.1	40.0
Phase 6	5.3	24.4	3.2	7.8	0.8	1.1	35.7
Phase 7	3.6	18.1	1.8	7.2	1.1	2.0	33.2
Phase 8	6.2	27.0	3.3	10.4	0.9	2.6	46.8
Phase 1-2	7.0	39.4	4.3	18.1	1.9	4.9	76.5
Phase 6-7	4.5	21.5	2.5	7.5	1.0	1.5	34.6
Phase 1-2 / Phase 6-7	1.6	1.8	1.7	2.4	2.0	3.2	2.2

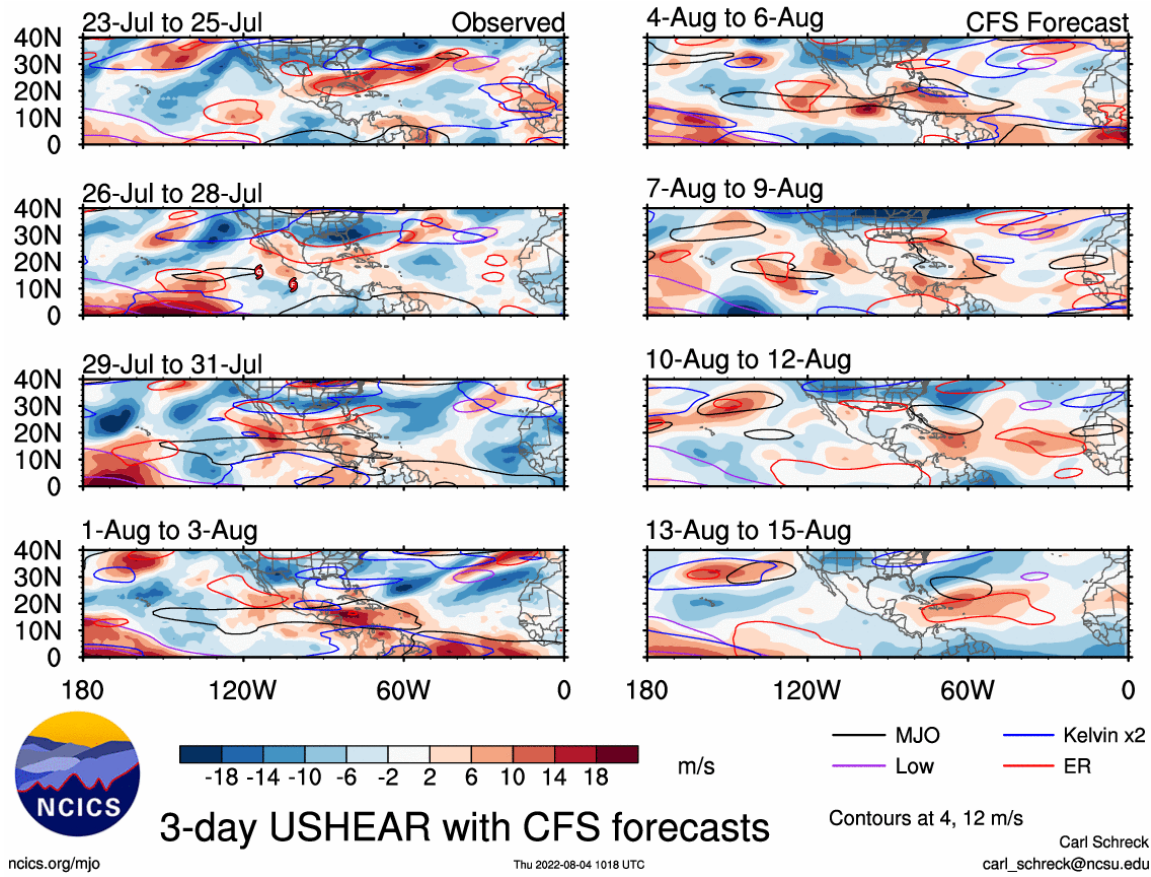


Figure 7: Observed and predicted anomalous 200 minus 850 hPa vertical wind shear from the Climate Forecast System through August 15. Figure courtesy of Carl Schreck.

5) Seasonal Forecast

The most recent seasonal forecast calls for an above-average season. We favor near-average ACE as the most likely outcome for the next two weeks.

3 Upcoming Forecasts

The next two-week forecast will be issued on August 18 for the August 18–31 period. Additional two-week forecasts will be issued on September 1, September 15, September 29, and October 13.