

COLORADO STATE UNIVERSITY FORECAST OF ATLANTIC HURRICANE ACTIVITY FROM AUGUST 20–SEPTEMBER 2, 2025

We believe that the most likely category for Atlantic hurricane activity in the next two weeks is normal (85%), with above-normal (10%) and below-normal (5%) much less likely.

(as of 20 August 2025)

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In Memory of William M. Gray⁵

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 17th 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 1966–2024 and defining above-normal, normal and below-normal two-week periods based on terciles. Since there are 59 years from 1966–2024, we include the 20 years with the most ACE from August 20–September 2 as the upper tercile, the 19 years with the least ACE as the bottom tercile, while the remaining 20 years are counted as the middle tercile.

Table 1: ACE forecast definition and probabilistic forecast for TC activity for August 20–September 2, 2025.

Parameter	Definition	Probability in Each Category
Above-Normal	Upper Tercile (>22 ACE)	10%
Normal	Middle Tercile (6–22 ACE)	85%
Below-Normal	Lower Tercile (<6 ACE)	5%

2 Forecast

Following Hurricane Erin becoming post-tropical this weekend, we anticipate a quieter period for Atlantic hurricane activity relative to climatology. While the National Hurricane Center is monitoring two areas for potential TC formation, neither of these areas look to generate large levels of ACE if they are to form. Global model ensembles are pretty anemic for additional TC development in the next two weeks behind the two areas that the National Hurricane Center is currently monitoring. Large-scale environmental vertical wind shear conditions look somewhat less conducive than they have been over the past two weeks. The Madden-Julian Oscillation (MJO) is forecast to move towards the Maritime Continent and perhaps weaken over the two-week period. Historically, MJO events over the Maritime Continent are associated with near-average Atlantic hurricane activity.

Figure 1 displays the formation locations of tropical cyclones from August 20–September 2 for the years from 1966–2024, along with the maximum intensities that these storms reached. Figure 2 displays the August 20–September 2 forecast period with respect to climatology. This period historically marks the real ramp-up for Atlantic TC activity. The primary threat formation area for major hurricanes in late August is in the eastern and central tropical Atlantic.

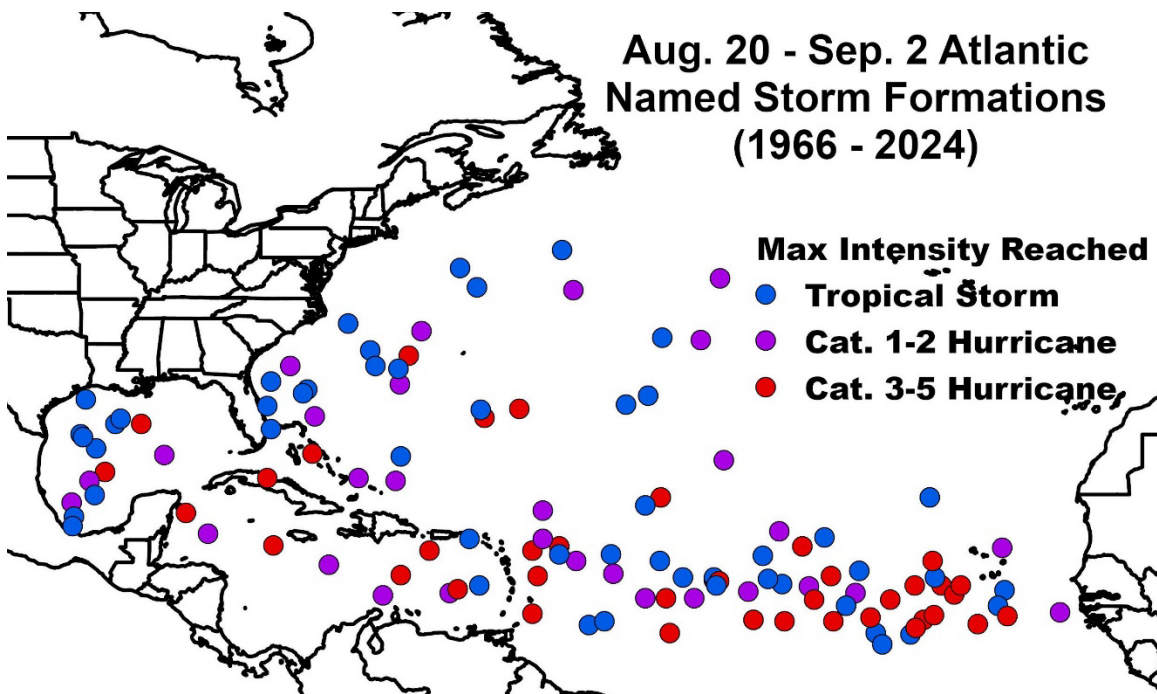


Figure 1: Atlantic named storm formations from August 20–September 2 from 1966–2024 and the maximum intensity that these named storms reached.

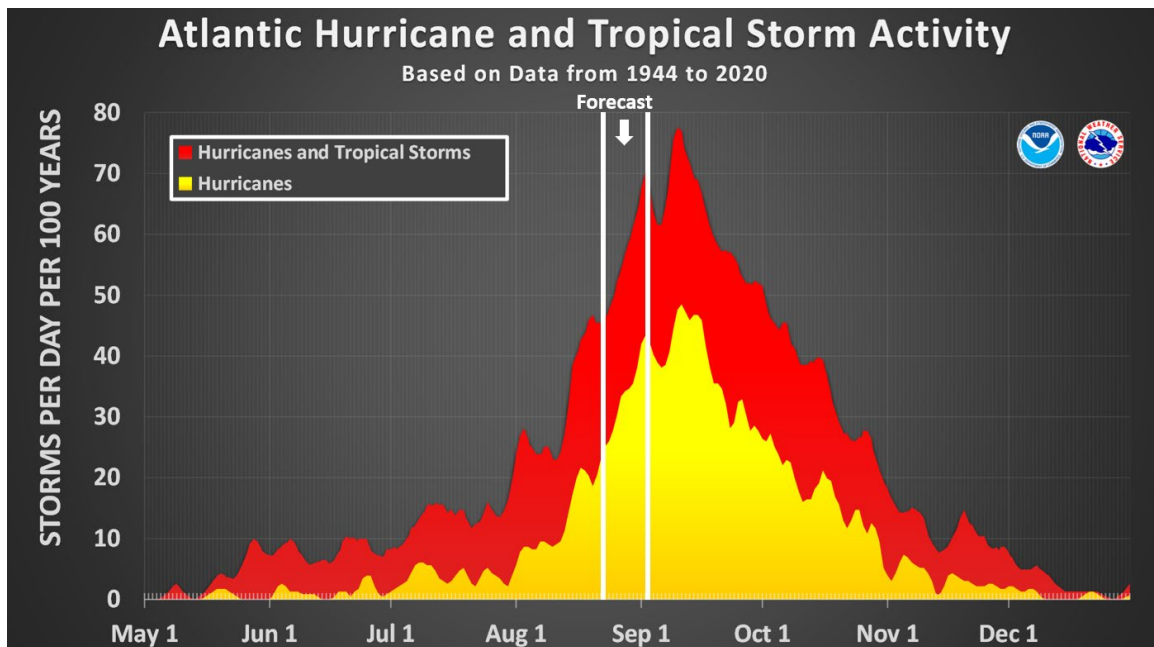


Figure 2: The current forecast period (August 20–September 2) with respect to climatology, delimited with white lines. Figure courtesy of NOAA.

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 20–September 2.

1) Current Storm Activity

Hurricane Erin is forecast to remain a hurricane for the next several days, likely generating 8–10 ACE before becoming post tropical.

2) National Hurricane Center Tropical Weather Outlook

The latest NHC Tropical Weather Outlook is monitoring two areas for potential tropical cyclone formation in the next seven days (Figure 3). The area in the central tropical Atlantic has the potential to generate several ACE if it were to form, while Invest 99L in the eastern tropical Atlantic looks to move into a much less conducive environment in a couple of days, limiting its chances for generating much ACE if it were to form.

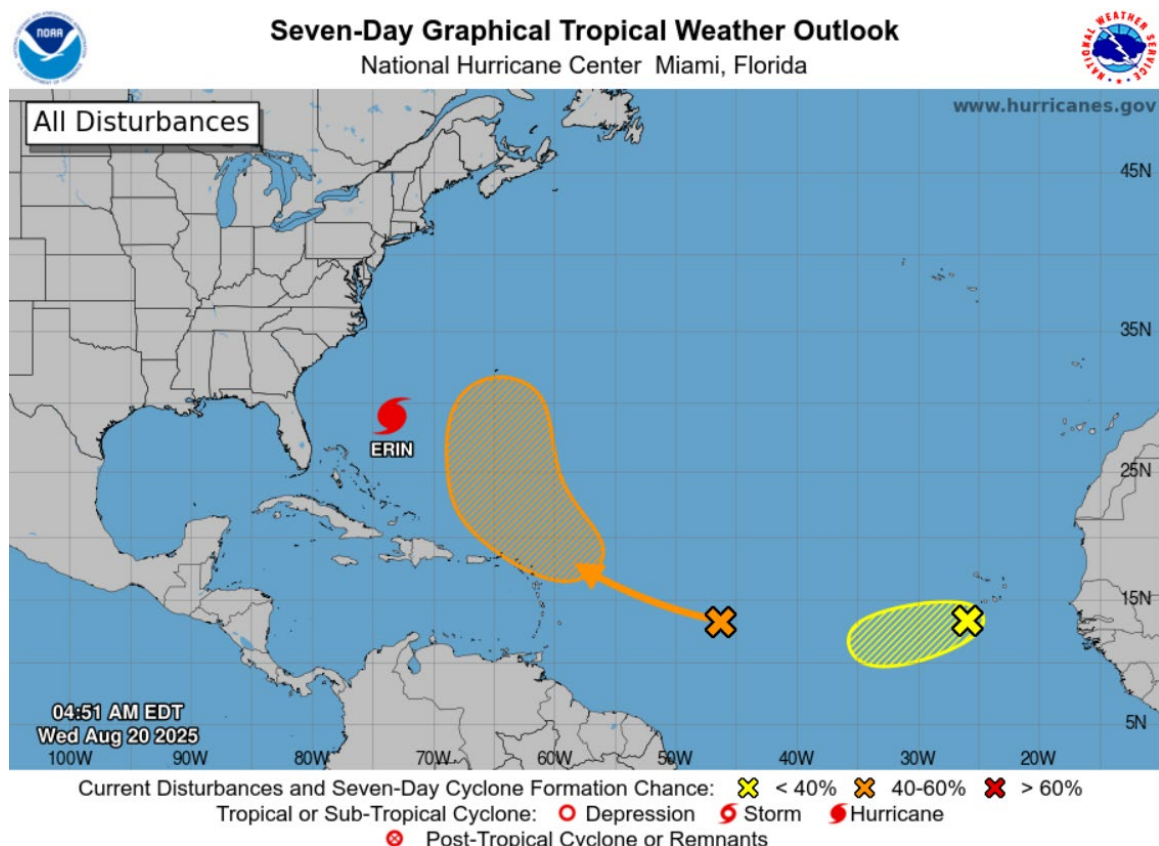


Figure 3: Current National Hurricane Center Atlantic Tropical Weather Outlook.

3) Global Model Analysis

The ECMWF EPS ensemble (Figure 4), the ECMWF AI ensemble (Figure 5), and the GEFS ensemble (Figure 6) are all highlighting the potential for tropical cyclone formation from the area that the National Hurricane Center is currently monitoring in the

central tropical Atlantic. Following that system, there is limited model support for any other TC development in the next two weeks. However, we are approaching the climatological peak of the season, and there is certainly potential for other TCs to form, especially given that the large-scale environment doesn't look especially harsh.

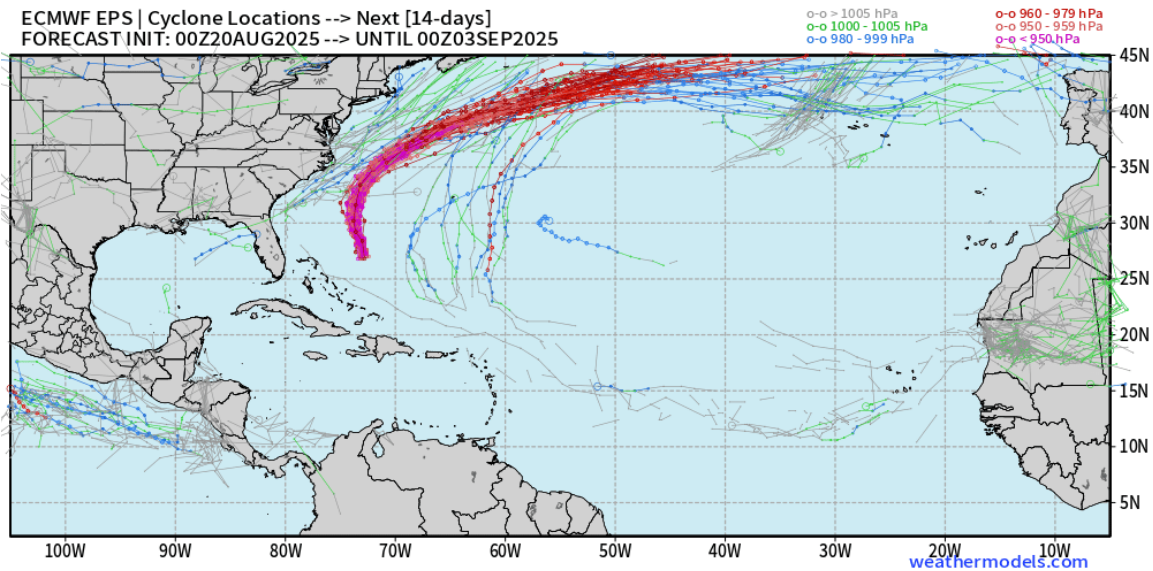


Figure 4: Cyclone locations from the ECMWF EPS ensemble for the next 14 days. Figure courtesy of weathermodels.com.

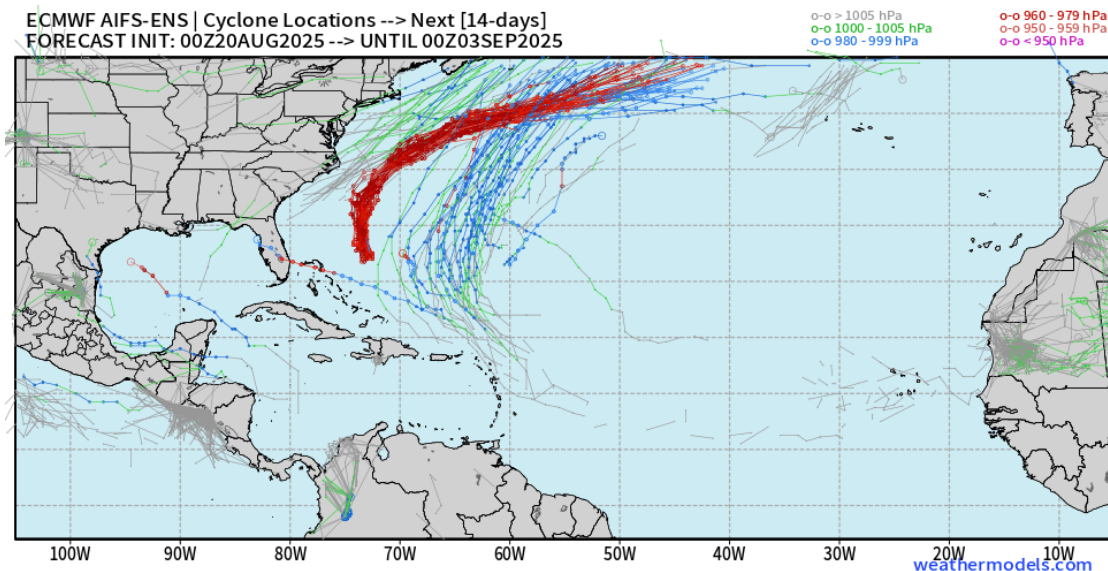


Figure 5: Cyclone locations from the ECMWF AI ensemble for the next 14 days. Figure courtesy of weathermodels.com.

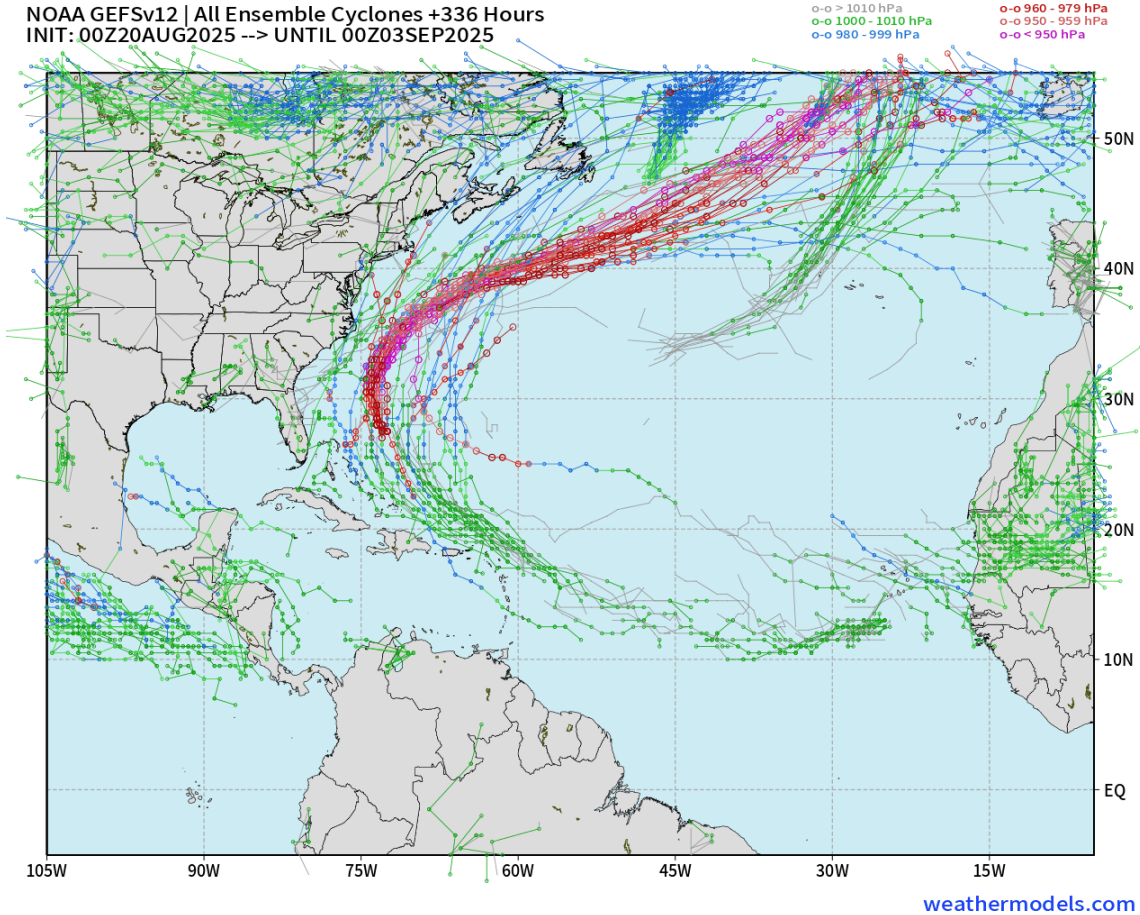


Figure 6: Cyclone locations from the GEFS ensemble for the next 14 days. Figure courtesy of weathermodels.com

4) Madden-Julian Oscillation

The Madden-Julian oscillation (MJO), as measured by the Wheeler-Hendon index, is currently enhancing convection over the Indian Ocean. The MJO is forecast to propagate eastward towards the Maritime Continent and then weaken over the next two weeks (Figure 7). When the MJO is enhancing convection across the Maritime Continent, Atlantic TC activity tends to be near average. However, vertical wind shear across portions of the tropical Atlantic are forecast to be slightly enhanced during the next two weeks (Figure 8).

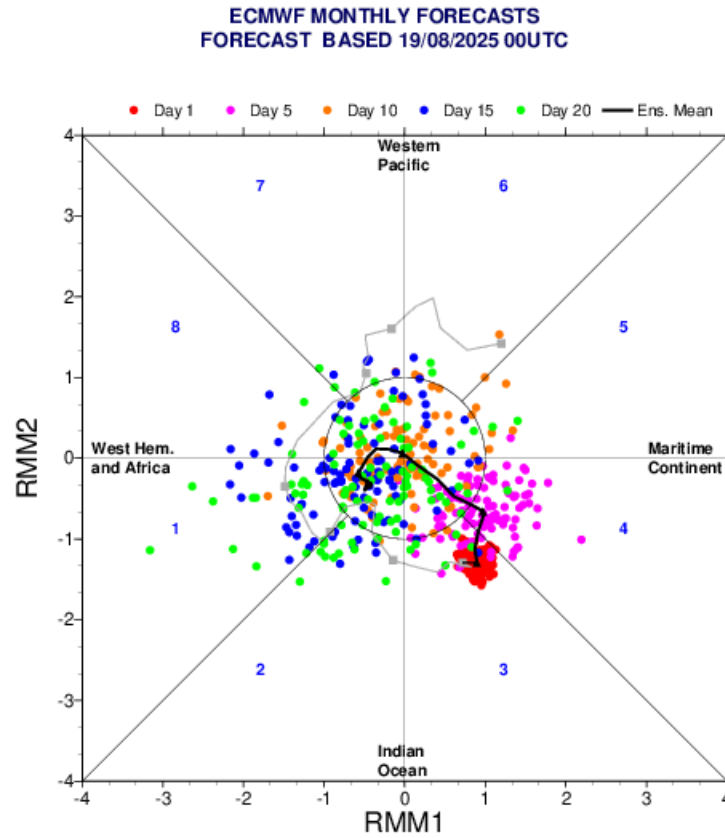


Figure 7: Predicted propagation of the MJO by the ECMWF ensemble. Figure courtesy of ECMWF.

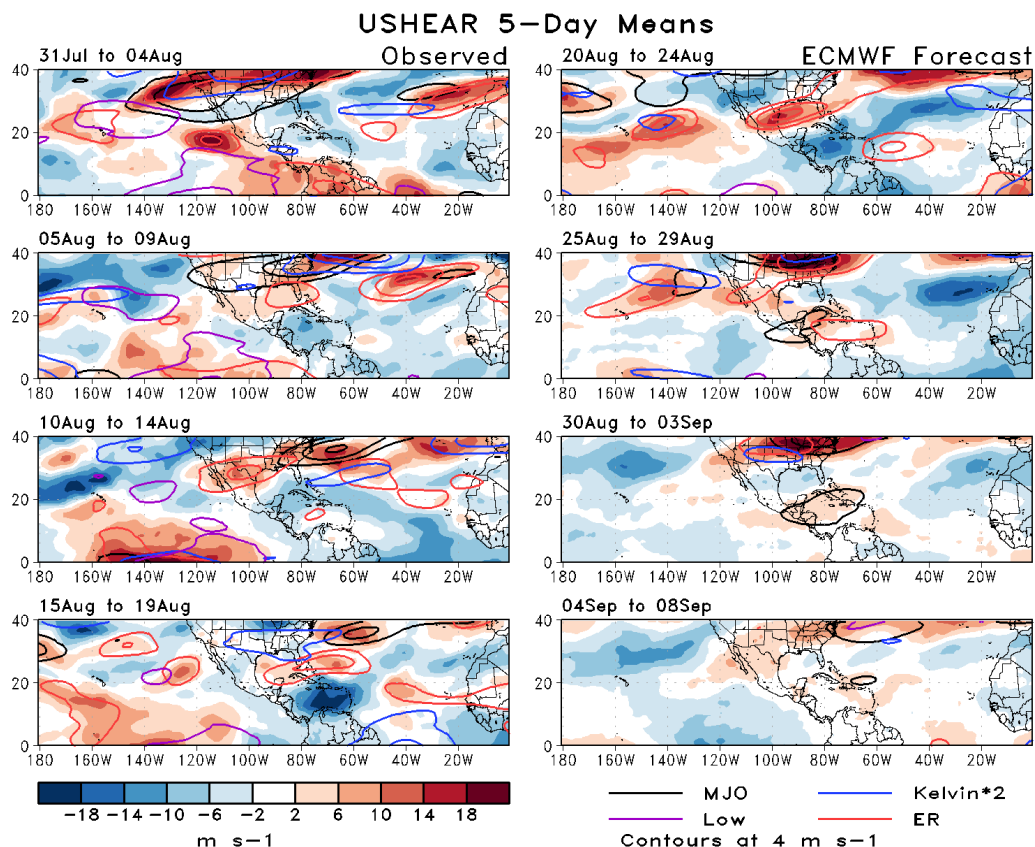


Figure 8: Observed and predicted zonal wind shear by the ECMWF ensemble for the twenty days. Vertical wind shear is forecast to be near to slightly above-normal across the Atlantic Main Development Region for the next couple of weeks. Figure courtesy of Nick Novella (NOAA/CPC).

5) Seasonal Forecast

The most recent seasonal forecast calls for an above-average season. We still believe that this forecast will verify, but we are anticipating a downturn activity relative to climatology during late August/early September.

3 Upcoming Forecasts

The next two-week forecast will be issued on September 3 for the September 3–16 period. Additional two-week forecasts will be issued on September 17, October 1 and October 15.

VERIFICATION OF AUGUST 6–19 FORECAST

Above-normal tropical cyclone activity occurred during the two-week period from August 6–19. We had assigned an 55% probability of above-normal activity, with a 35% chance of normal and a 10% chance of below-normal activity during the two-week period. Erin produced ~24 ACE, while Dexter generated 2 ACE.

Table 3 displays the percentage chance that we gave for each category being reached and observed ACE.

Table 3: ACE forecast for TC activity for August 6–19, the probability assigned for each category being reached and observed ACE.

ACE Category	Definition	Probability in each Category	Observed ACE
Above Normal	Upper Tercile (>6 ACE)	55%	26
Normal	Middle Tercile (2–6 ACE)	35%	
Below Normal	Lower Tercile (<2 ACE)	10%	