

**COLORADO STATE UNIVERSITY FORECAST OF ATLANTIC HURRICANE
ACTIVITY FROM AUGUST 6–19, 2024**

We believe that the most likely category for Atlantic hurricane activity in the next two weeks is above-normal (85%), with near-normal (14%) and below-normal (1%) much less likely.

(as of 6 August 2024)

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In Memory of William M. Gray⁶

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 16th 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 1966–2023 and defining above-normal, normal and below-normal two-week periods based on terciles. Since there are 58 years from 1966–2023, we include the 19 years with the most ACE from August 6–19 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 6–19, 2024.

Parameter	Definition	Probability in Each Category
Above-Normal	Upper Tercile (>6 ACE)	85%
Normal	Middle Tercile (2–6 ACE)	14%
Below-Normal	Lower Tercile (<2 ACE)	1%

2 Forecast

We are quite confident that the next two weeks will be characterized by activity at above-normal levels (>6 ACE). Tropical Storm Debby is likely to generate 2–3 ACE before dissipation, effectively guaranteeing the normal category. The National Hurricane Center is currently monitoring an area in the eastern Caribbean for tropical cyclone development in either the western Caribbean or Gulf later this week. The system currently has a 30% chance of tropical cyclone formation per the National Hurricane Center in the next seven days. Global models are also highlighting additional potential formations in the Main Development Region later in the forecast period. The Madden-Julian Oscillation (MJO) is forecast to amplify over the Indian Ocean during the two-week period, providing large-scale conditions that favor Atlantic hurricane activity.

Figure 1 displays the formation locations of tropical cyclones from August 6–19 for the years from 1966–2023, along with the maximum intensities that these storms reached. Figure 2 displays the August 6–19 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.

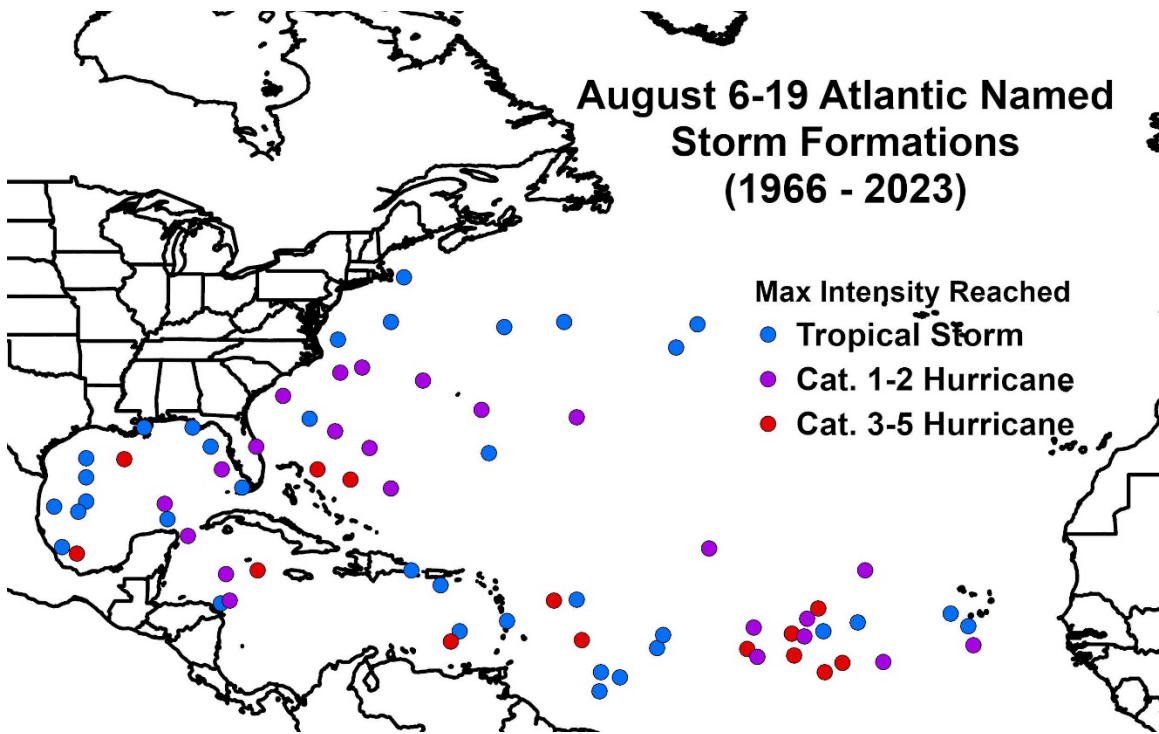


Figure 1: Atlantic named storm formations from August 6–19 from 1966–2023 and the maximum intensity that these named storms reached.

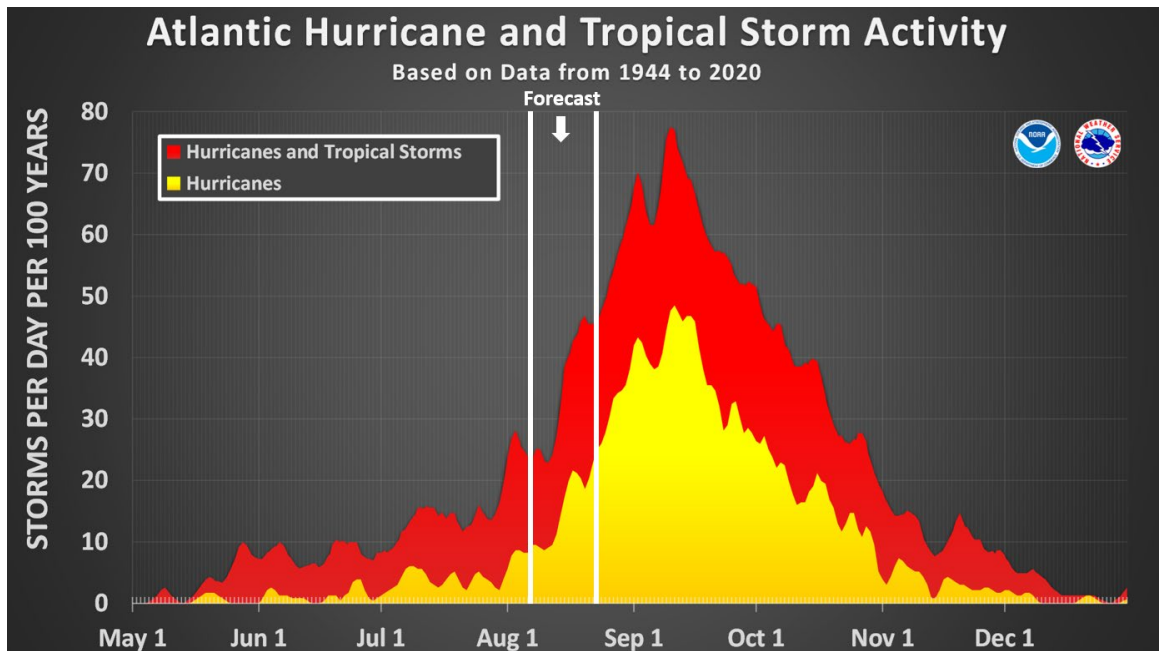


Figure 2: The current forecast period (August 6–19) with respect to climatology, delimited with white lines. Figure courtesy of NOAA.

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 6–19.

1) Current Storm Activity

Tropical Storm Debby is forecast to slowly drift eastward across coastal Georgia and then into the Atlantic before making landfall in South Carolina. The system looks to generate 2–3 ACE before dissipation (Figure 3).

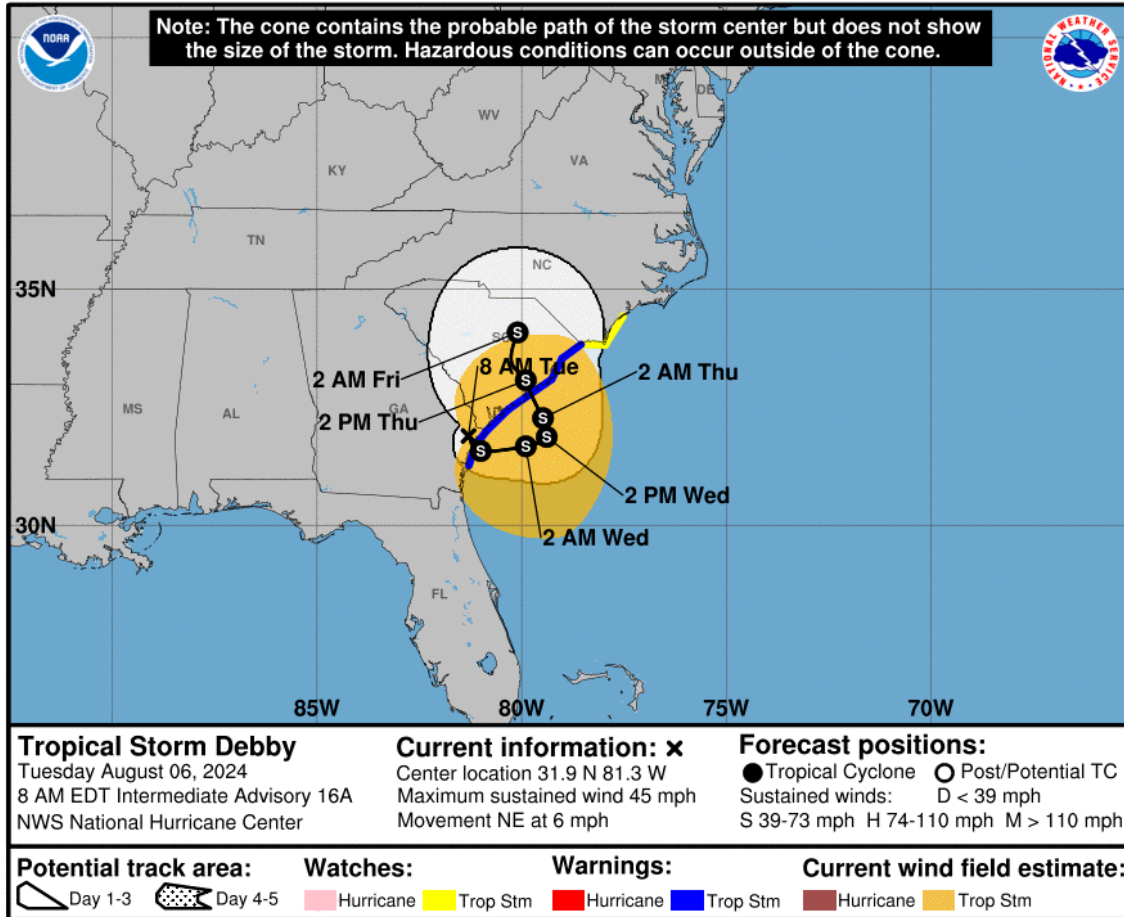


Figure 3: National Hurricane Center forecast for Tropical Storm Debby.

2) National Hurricane Center Tropical Weather Outlook

The latest NHC Tropical Weather Outlook is monitoring an area in the eastern Caribbean for potential tropical cyclone development later this week. The system has a 30% chance of formation in the next seven days (Figure 4). If it were to develop, it has the potential to generate several ACE units, especially if it were to track into the western Gulf. However, we do note that the models have somewhat backed off on this system’s development potential from what was being shown in the past few days.



Seven-Day Graphical Tropical Weather Outlook

National Hurricane Center Miami, Florida

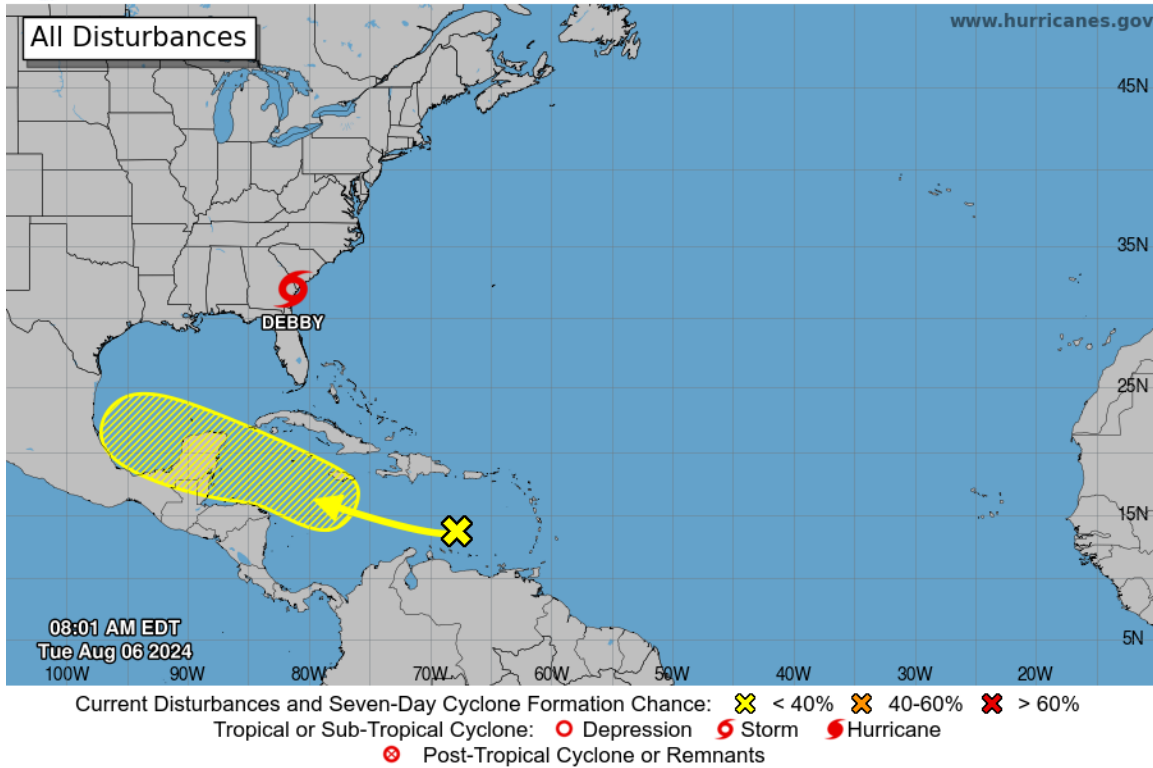


Figure 4: Current National Hurricane Center Atlantic Tropical Weather Outlook.

3) Global Model Analysis

The ECMWF EPS ensemble (Figure 5) and the GEFS ensemble (Figure 6) both have modest support for TC formation in the western Caribbean/Gulf from the current system that NHC is monitoring. Both the EPS and GEFS are also fairly aggressive at TC development north of Hispaniola in ~10–12 days.

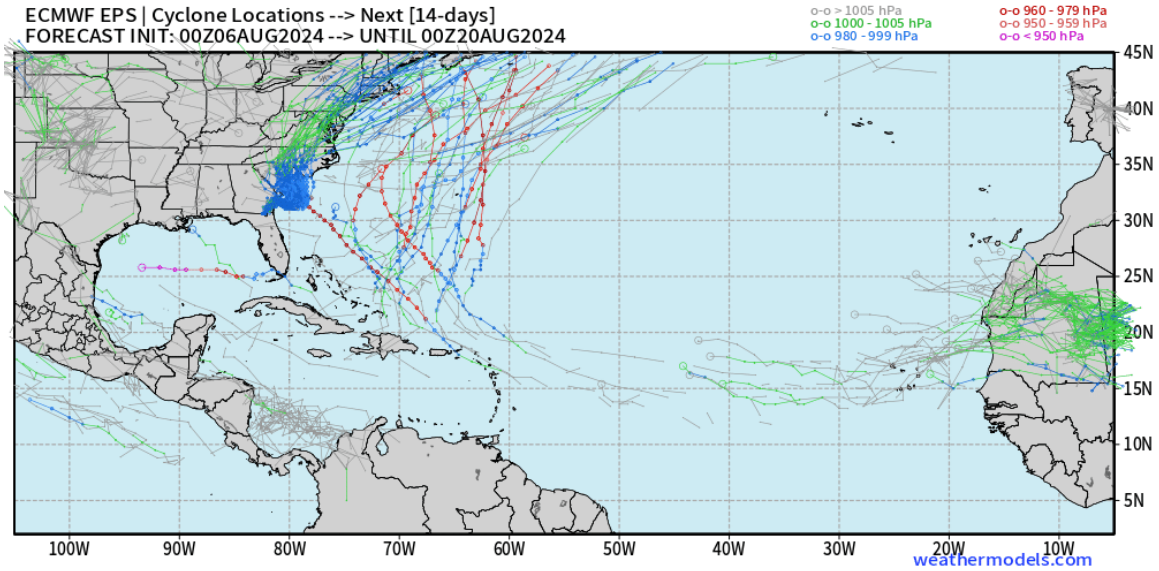


Figure 5: Cyclone locations from the ECMWF EPS ensemble for the next 14 days. Figure courtesy of weathermodels.com

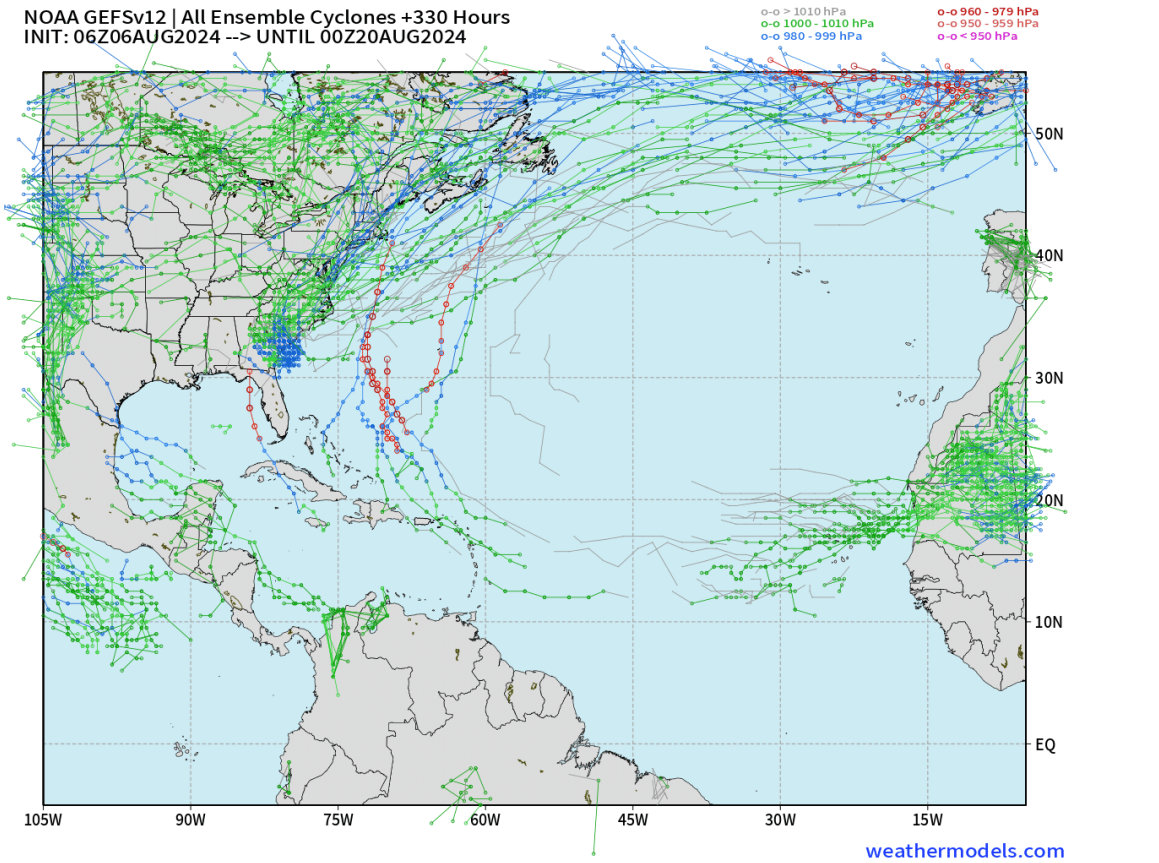


Figure 6: Cyclone locations from the GFS ensemble for the next 14 days. Figure courtesy of weathermodels.com

4) Madden-Julian Oscillation

The MJO, as measured by the Wheeler-Hendon index, is currently weak. An eastward-propagating convectively-coupled Kelvin wave may help reinvigorate the MJO, causing initiation of a more robust MJO that then propagates across the Indian Ocean over the next couple of weeks (Figure 7). When the MJO index is located in phases 2–4, as is likely over the next two weeks, Atlantic TC activity is typically favored due to reductions in vertical wind shear and increased rising motion over Africa.

As would be expected given the favorable seasonal signals of cool neutral ENSO conditions and an extremely warm Atlantic combined with TC-favorable MJO phases, the EPS is predicting below-normal vertical wind shear across the tropical Atlantic over the next two weeks (Figure 8). This reduction in shear should lead to an active period for Atlantic TCs over the next two weeks.

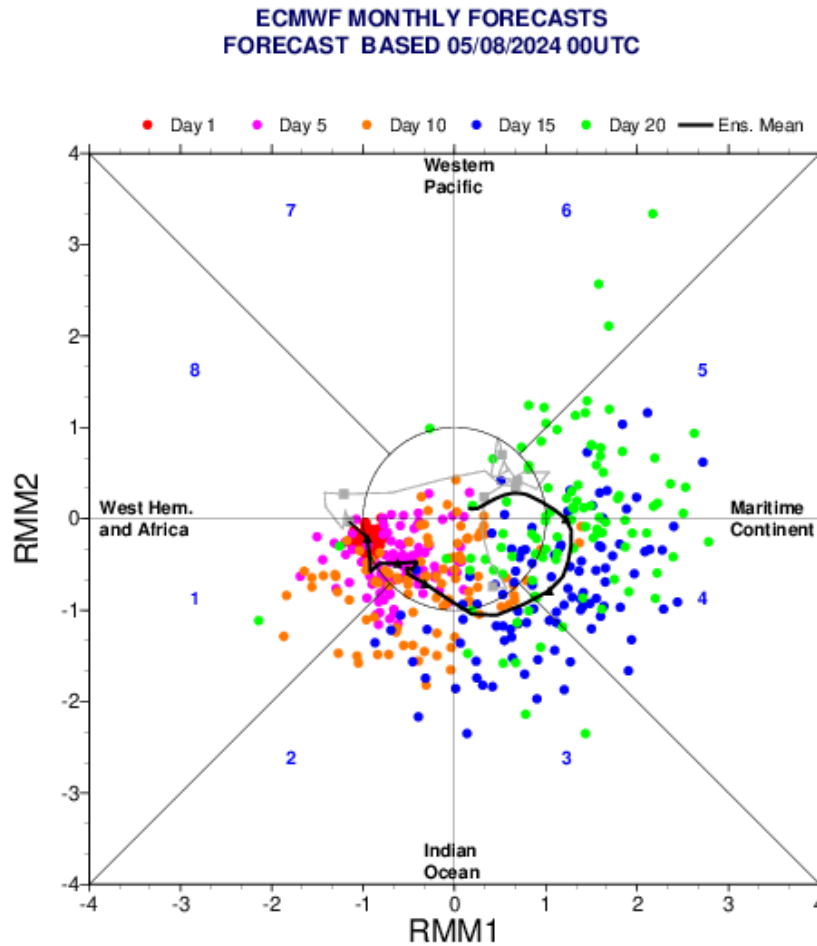


Figure 7: Predicted propagation of the MJO by the EPS. Figure courtesy of ECMWF.

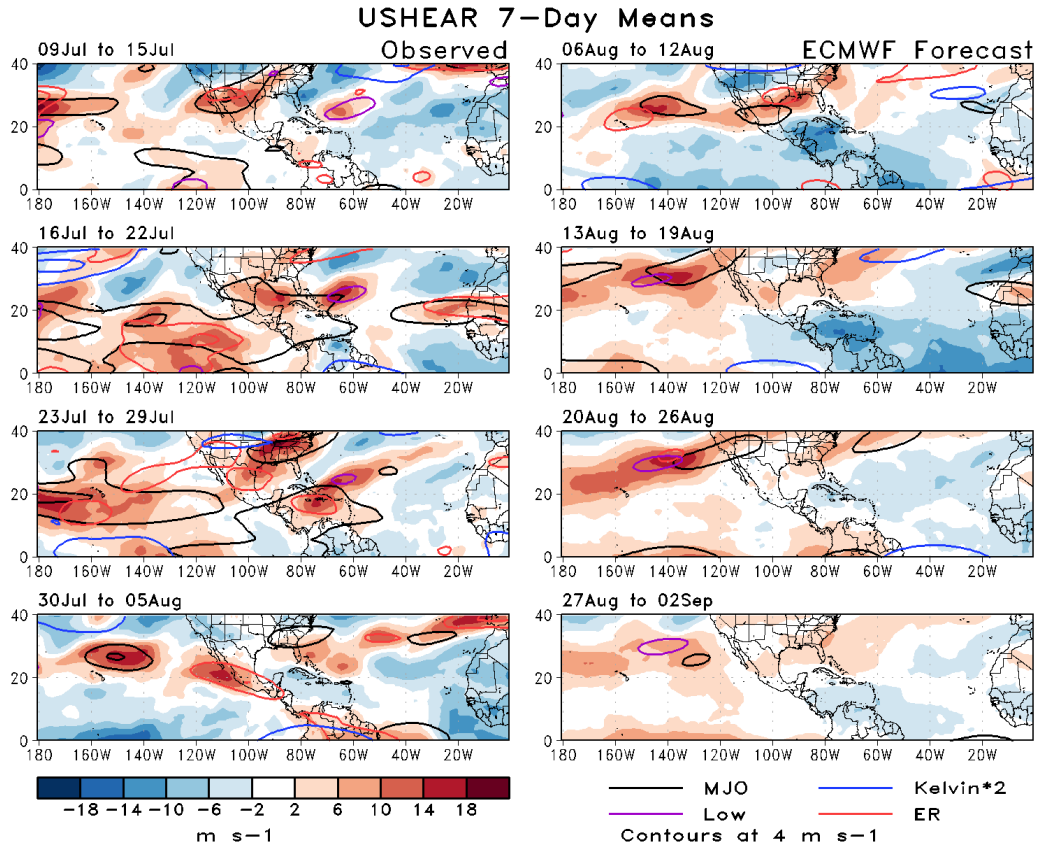


Figure 8: Observed and predicted zonal wind shear by the ECMWF ensemble for the next four weeks. Vertical wind shear is generally forecast to be below normal (e.g., easterly anomalies) across the Atlantic Main Development Region for the next four weeks.

5) Seasonal Forecast

The most recent seasonal forecast calls for a well above-average season. We believe that the next two weeks will be quite active for Atlantic hurricane activity.

3 Upcoming Forecasts

The next two-week forecast will be issued on August 20 for the August 20–September 2 period. Additional two-week forecasts will be issued on September 3, September 17, October 1, and October 15.