COLORADO STATE UNIVERSITY FORECAST OF ATLANTIC HURRICANE ACTIVITY FROM AUGUST 3–16, 2023

We believe that the most likely category for Atlantic hurricane activity in the next two weeks is normal (50%), with below-normal (30%) and above-normal (20%) being less likely.

(as of 3 August 2023)

By Philip J. Klotzbach[1], Michael M. Bell[2] and Alexander J. DesRosiers[3]

In Memory of William M. Gray[4]

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

Department of Atmospheric Science
Colorado State University
Fort Collins, CO 80523
Email: philk@atmos.colostate.edu

[1] Senior Research Scientist
[2] Professor
[3] Graduate Research Assistant
[4] Professor Emeritus

1 Introduction

This is the 15th 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 1966–2022 and defining above-normal, normal and below-normal two-week periods based on terciles. Since there are 57 years from 1966–2022, we include the 19 years with the most ACE from August 3–16 as the upper tercile, the 19 years with the least ACE as the bottom tercile, while the remaining 19 years are counted as the middle tercile.

Table 1: ACE forecast definition for TC activity for August 3–16, 2023.

Parameter	Definition	Probability in Each Category
Above-Normal	Upper Tercile (>5 ACE)	20%
Normal	Middle Tercile (2–5 ACE)	50%
Below-Normal	Lower Tercile (<2 ACE)	30%

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 seven days. The Madden-Julian Oscillation (MJO) is currently weak and is forecast to remain weak over the next two weeks.

Figure 1 displays the formation locations of tropical cyclones from August 3–16 for the years from 1966–2022, along with the maximum intensities that these storms reached. Figure 2 displays the August 3–16 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.

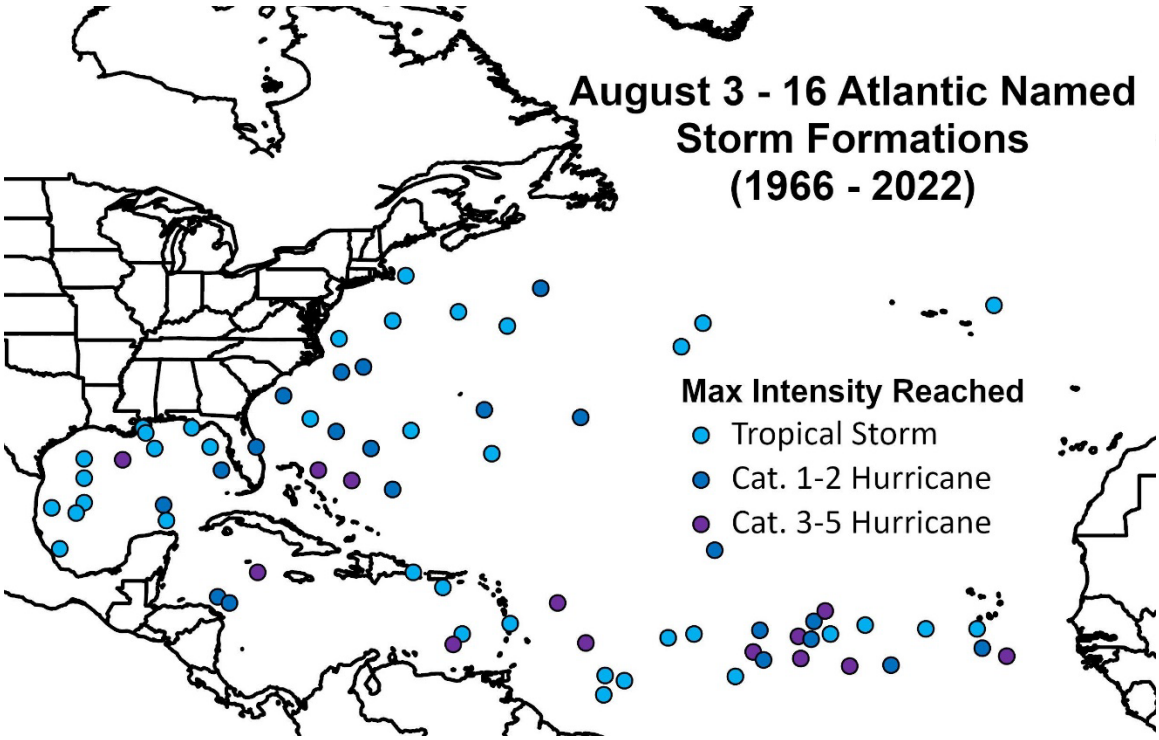

Figure 1: Atlantic named storm formations from August 3–16 during the years from 1966-2022 and the maximum intensity that these named storms reached.

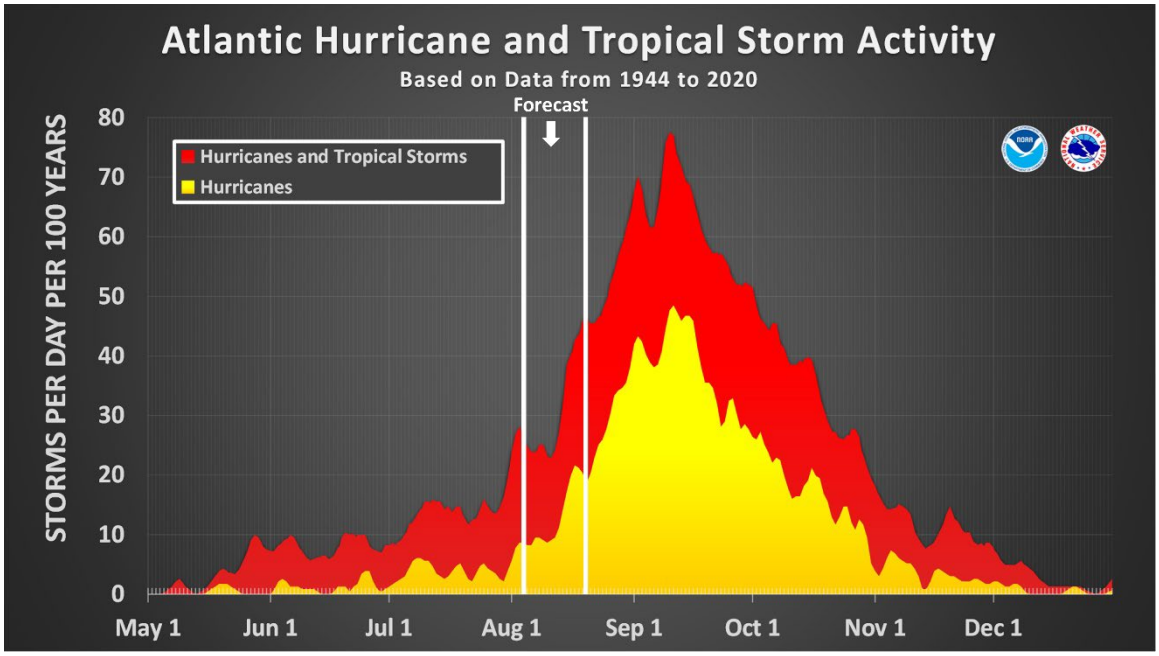

Figure 2: The current forecast period (August 3–16) with respect to climatology, delimited with white lines. Figure courtesy of NOAA.

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 3–16.

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 seven days.

3) Global Model Analysis

Both the ECMWF (Figure 3) and GFS (Figure 4) ensembles (EPS and GEFS, respectively) 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 ~7–10 days. There is also some model support for another tropical wave developing off the coast of Africa in ~12–14 days.

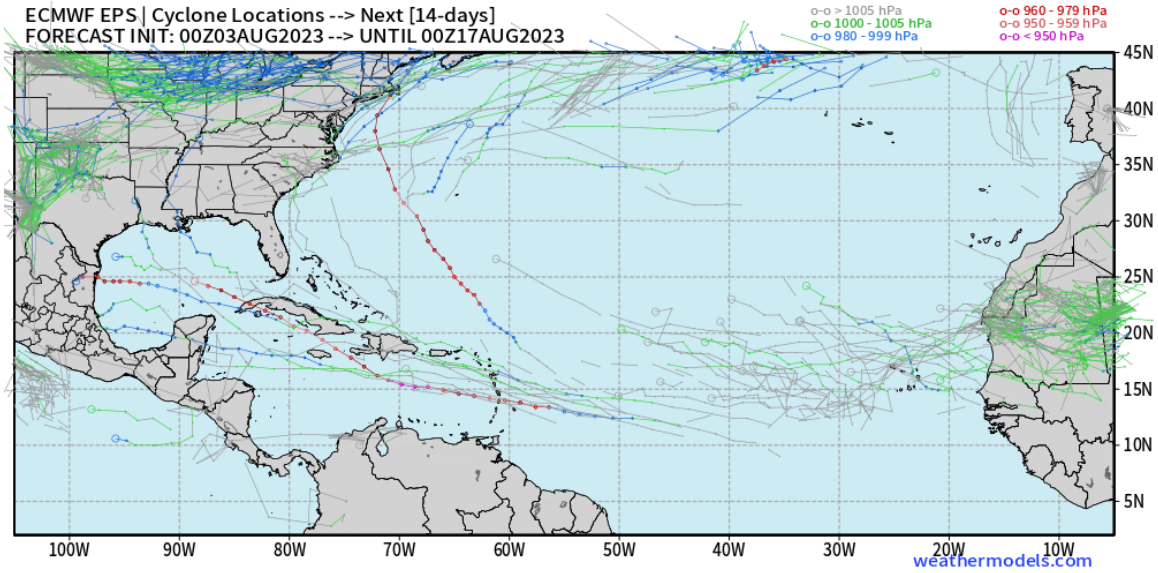

Figure 3: Cyclone locations from the ECMWF EPS ensemble for the next 14 days. Figure courtesy of weathermodels.com

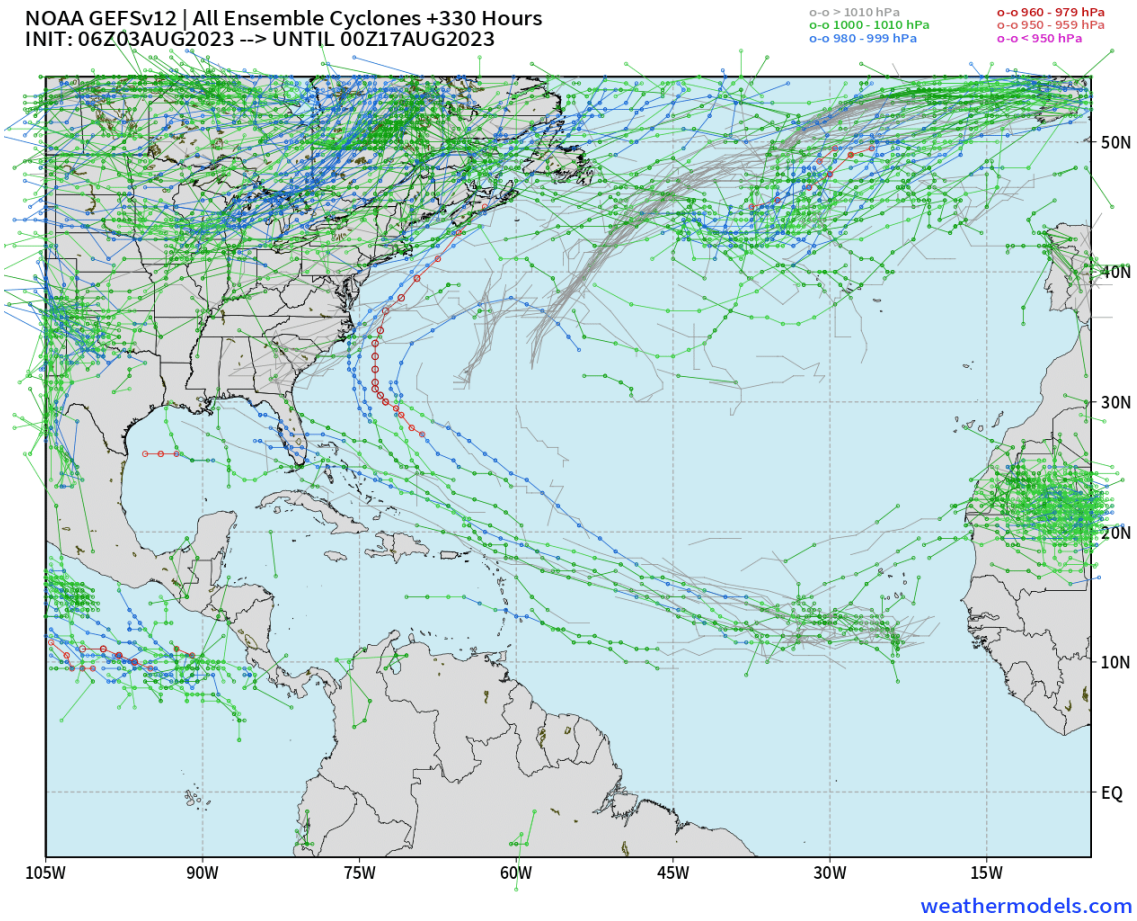

Figure 4: Cyclone locations from the GEFS ensemble for the next 14 days. Figure courtesy of weathermodels.com

4) Madden-Julian Oscillation

The Madden-Julian oscillation (MJO), as measured by the Wheeler-Hendon index, is currently weak. The MJO is forecast to remain weak over the next two weeks (Figure 5). When the MJO index is located within the unit circle, it typically does not play a significant role in modulating the global atmospheric circulation and TC activity.

The EPS is generally predicting slightly-above normal vertical wind shear across the tropical Atlantic over the next two weeks (Figure 6–8). This increased shear is likely one reason why TC development generally looks suppressed over the next two weeks.

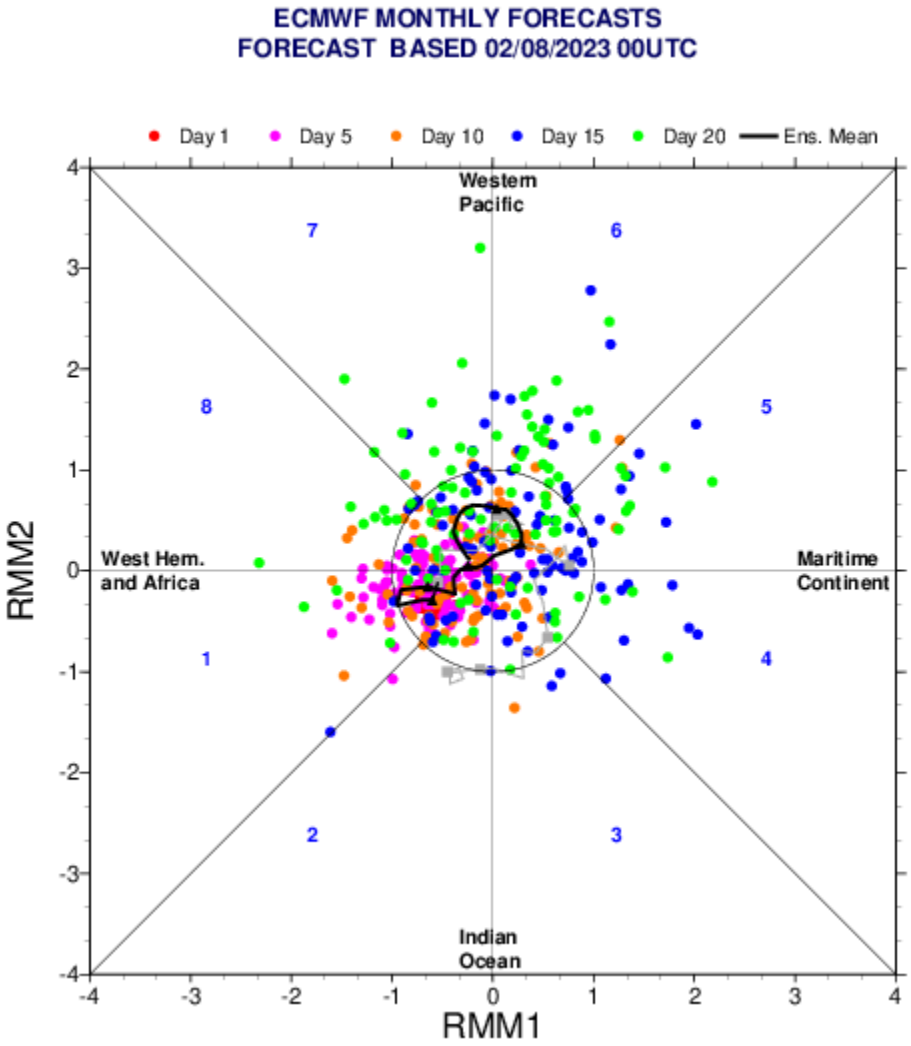

Figure 5: Predicted propagation of the MJO by the EPS. Figure courtesy of ECMWF.

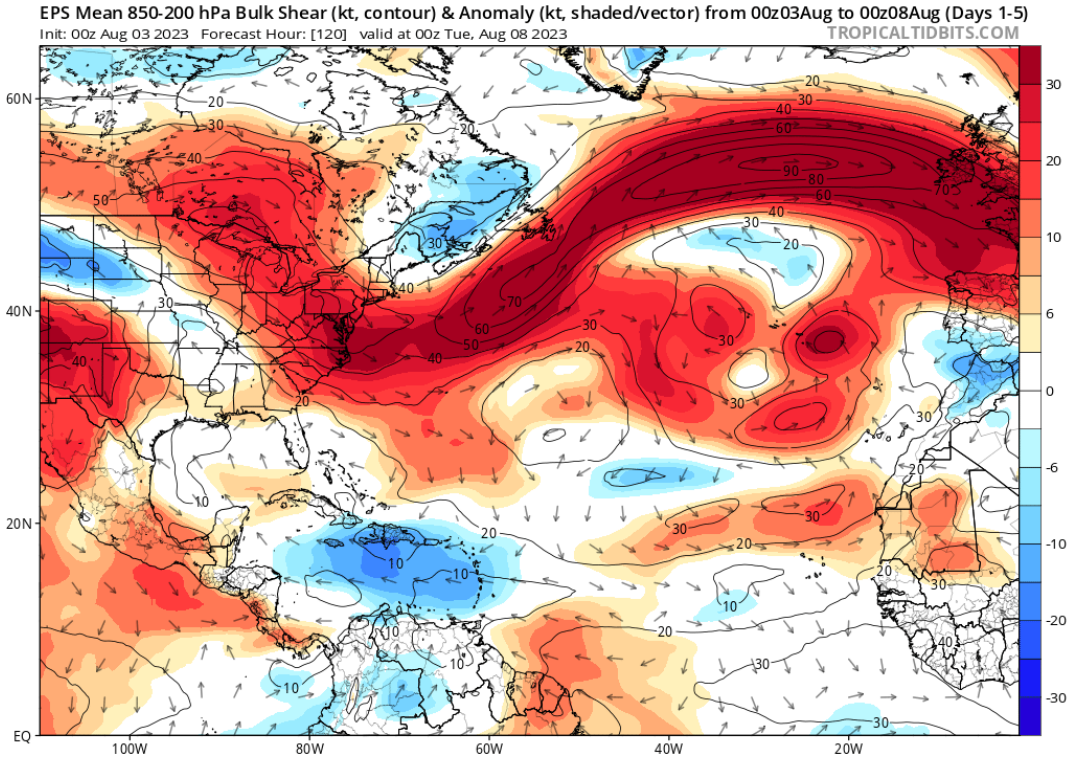

Figure 6: Forecast vertical wind shear anomalies for August 3–7 from EPS.

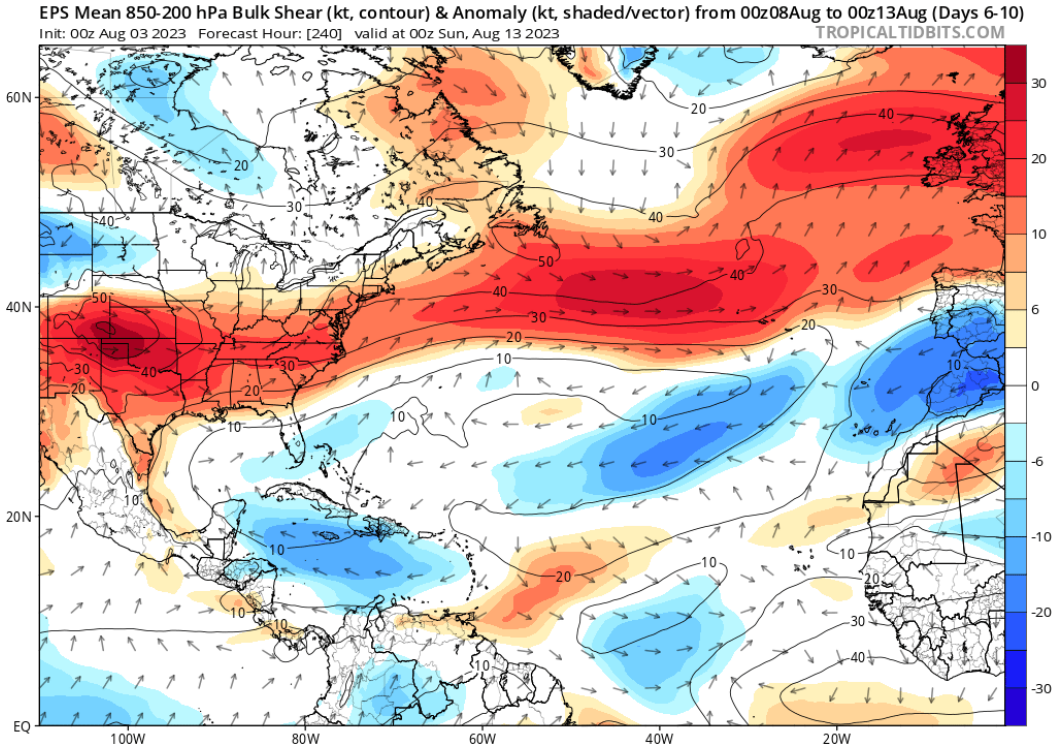

Figure 6: Forecast vertical wind shear anomalies for August 8–12 from EPS.

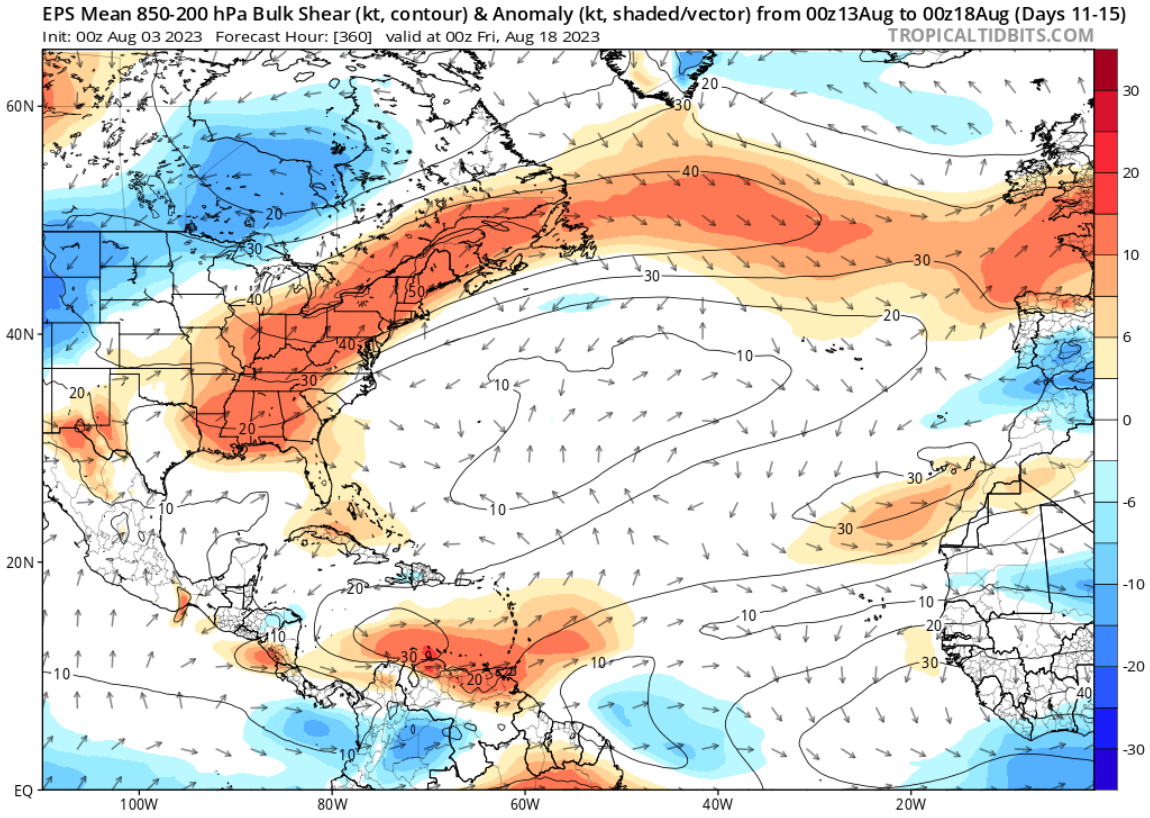

Figure 8: Forecast vertical wind shear anomalies for August 13–17 from EPS.

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 17 for the August 17–30 period. Additional two-week forecasts will be issued on August 31, September 14, September 28, and October 12.