

**COLORADO STATE UNIVERSITY FORECAST OF ATLANTIC HURRICANE
ACTIVITY FROM AUGUST 19–SEPTEMBER 1, 2019**

We expect that the next two weeks will be characterized by below-normal amounts of hurricane activity.

(as of 19 August 2019)

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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 11th 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 ACE periods is defined by ranking observed activity in the satellite era from 1966-2016 and defining above-normal, normal and below-normal two-week periods based on terciles. Since there are 51 years from 1966-2016, each tercile is composed of 17 years. The 17 years with the most active ACE periods from August 19 – September 1 are classified as the upper tercile, the 17 years with the least active ACE periods from August 19 – September 1 are classified as the lower tercile, while the remaining 17 years are classified as the middle tercile.

Table 1: ACE forecast definition for TC activity for August 19–September 1, 2019

Parameter	Definition
Above-Normal	Upper Tercile (>22 ACE)
Normal	Middle Tercile (6–22 ACE)
Below-Normal	Lower Tercile (<6 ACE)

2 Forecast

We believe that the next two weeks will be characterized by activity at below-normal levels (<6 ACE). The National Hurricane Center has one area with a very low probability of development over the next 48 hours. The global models do not indicate significant tropical cyclone development in the next week. While vertical wind shear is predicted to be below-average in week one across most of the tropical Atlantic, the models do not predict TC formation to occur, likely due to continued subsidence. Longer-range models also hint at continued dryness in week two.

The Madden-Julian Oscillation (MJO) is forecast to be relatively weak throughout the period, with any potential amplification occurring in phases 4-5. These phases tend to be associated with near-average periods for Atlantic hurricane activity.

Figure 1 displays the formation locations of tropical cyclones from August 19–September 1 for the years from 1966–2018 (e.g., the satellite era), along with the maximum intensities that these storms reached. Figure 2 displays the August 19–September 1 forecast period with respect to climatology. The hurricane season begins to

really ramp up during this time. The primary threat formation area for major hurricanes in late August is in the tropical Atlantic east of the Lesser Antilles.

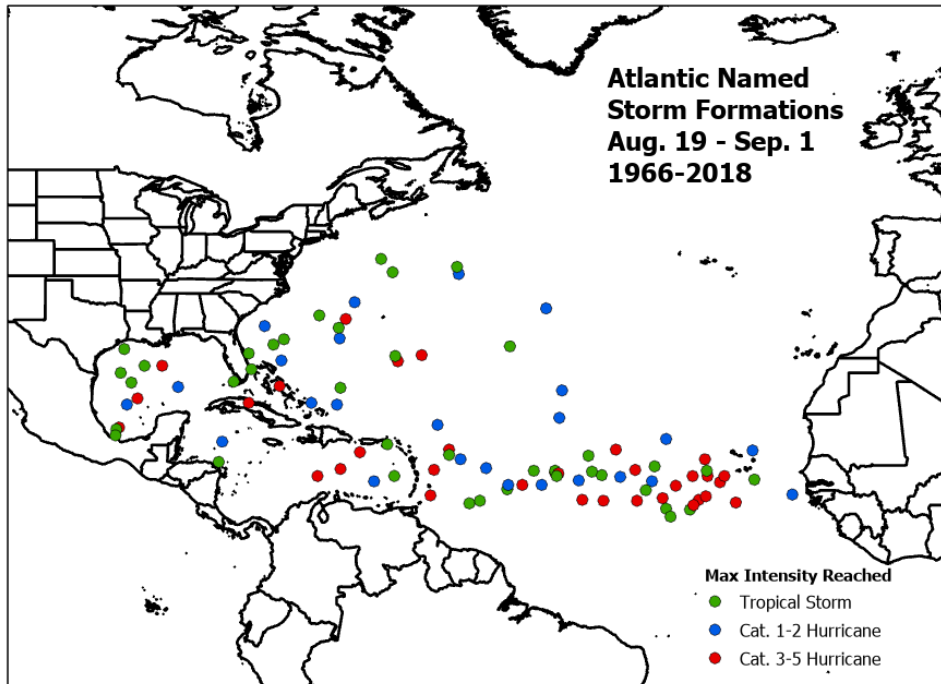


Figure 1: Atlantic named storm formations from August 19–September 1 during the years from 1966-2017 and the maximum intensity that these named storms reached.

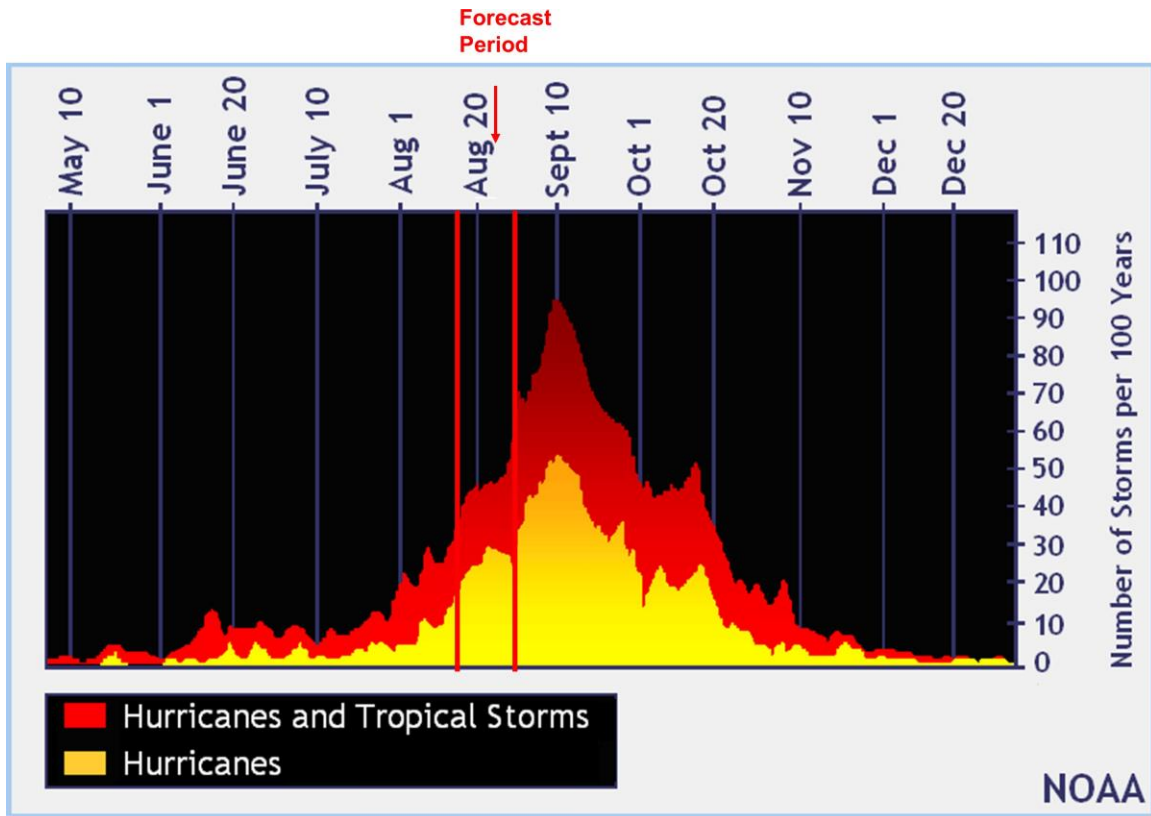


Figure 2: The current forecast period (August 19–September 1) with respect to climatology. Figure courtesy of NOAA.

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 19–September 1.

1) Current Storm Activity

There are currently no active tropical cyclones in the Atlantic.

2) National Hurricane Center Tropical Weather Outlook

The latest NHC Tropical Weather Outlook has one area with a very low chance of formation in the next 48 hours. Development of this system seems quite unlikely.

3) Global Model Analysis

None of the reliable global models indicate any other significant TC development in the next week. While vertical wind shear is forecast to be fairly low, the tropical Atlantic is forecast to remain drier than normal.

4) Madden-Julian Oscillation

The Madden-Julian Oscillation (MJO), as measured by the Wheeler-Hendon index, is currently very weak. The MJO is forecast to remain weak during week one, with the potential for some slight amplification in week two in phases 4-5 (Figure 3). Phases 4-5 are typically associated with near-average Atlantic hurricane activity (Table 2).

The Climate Forecast System is predicting below-average vertical wind shear across the tropical Atlantic for week one (Figure 4), but despite the relatively favorable shear conditions, most models are calling for very low levels of TC development, likely due to continued dry conditions (Figure 5).

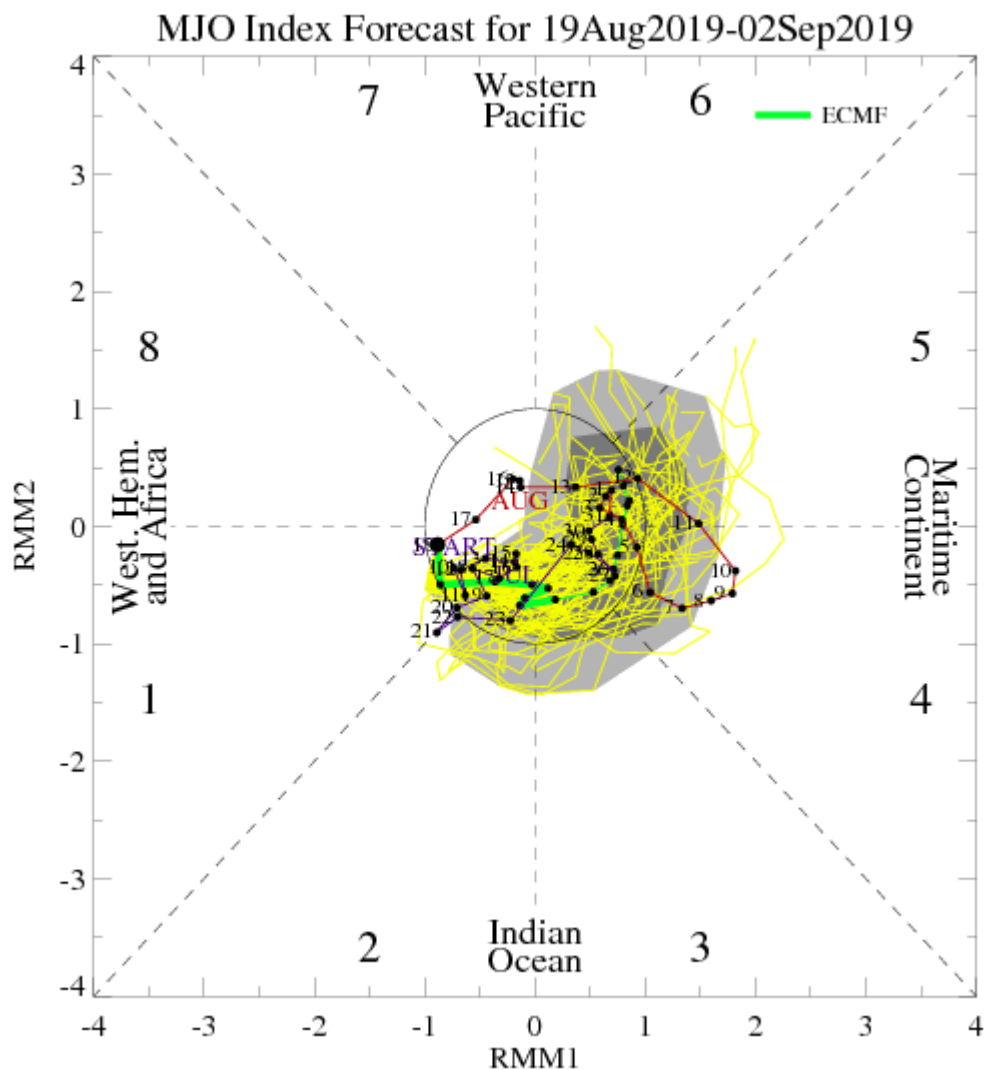


Figure 3: Predicted propagation of the MJO by the ECMWF model.

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

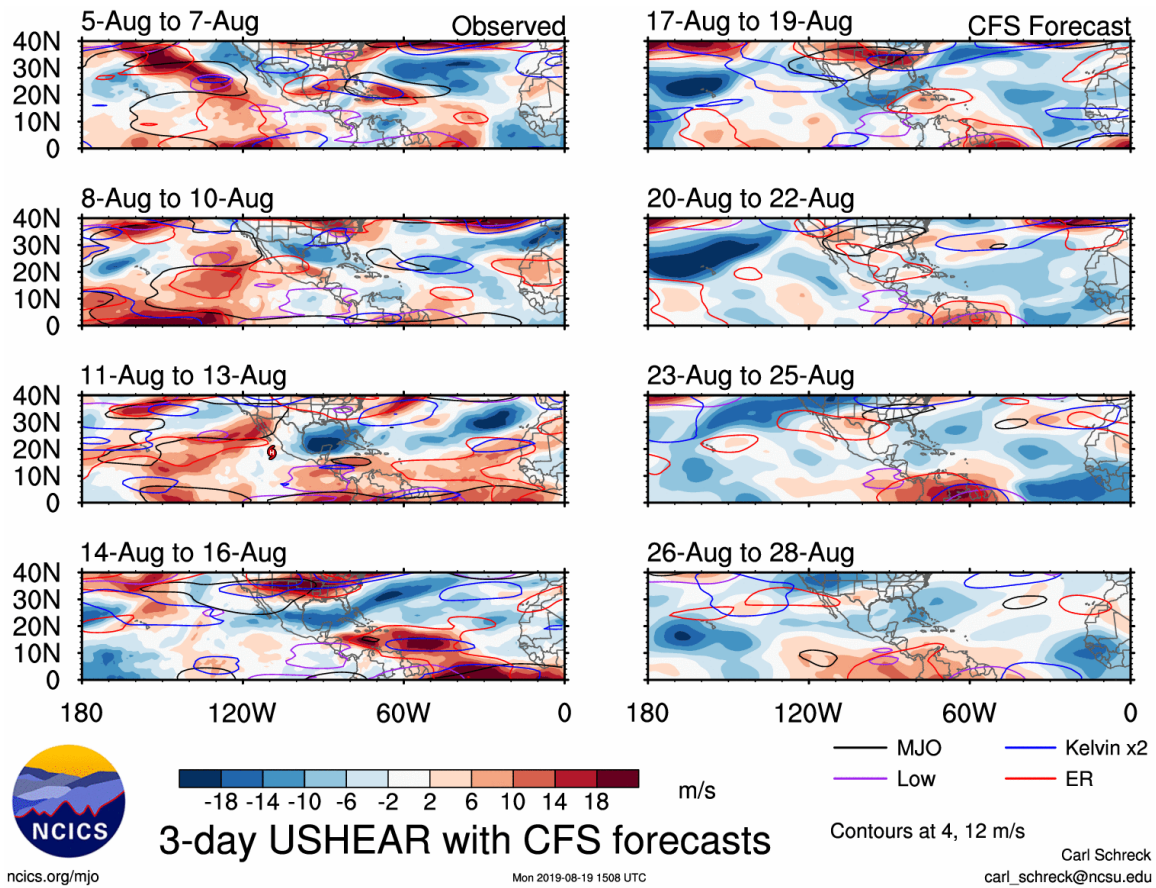


Figure 4: Observed and predicted anomalous 200 minus 850 hPa vertical wind shear from the Climate Forecast System through August 28. Figure courtesy of Carl Schreck.

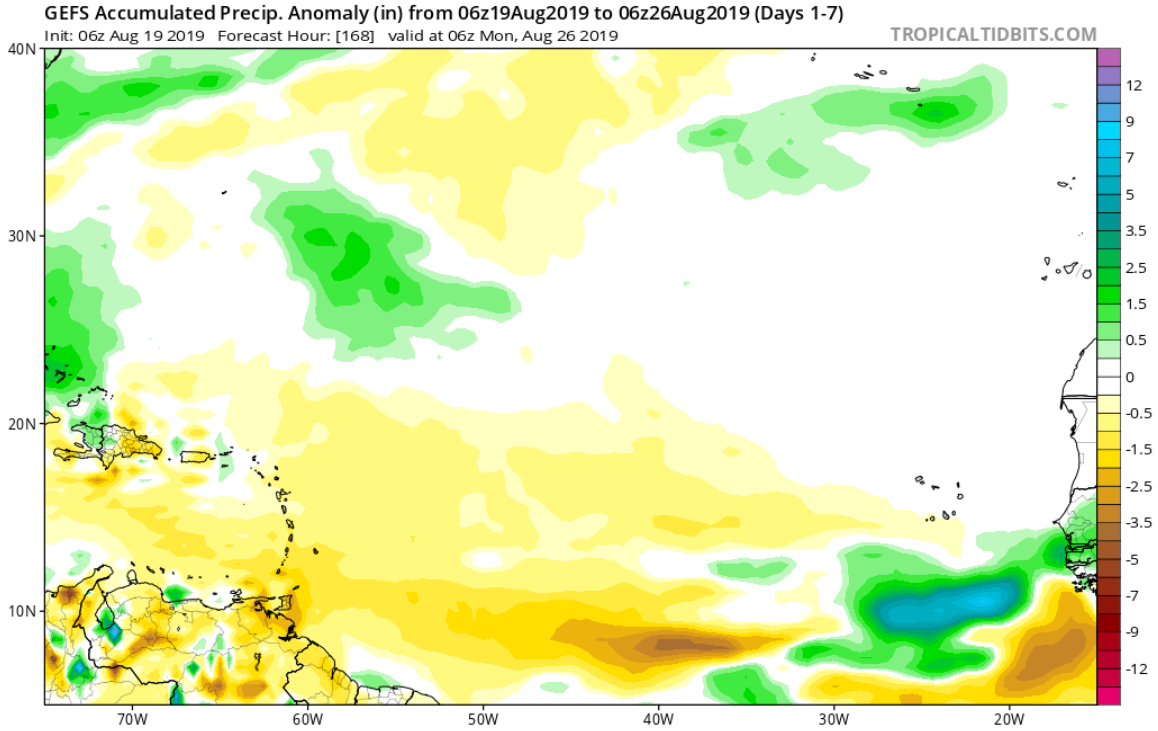


Figure 5: Predicted precipitation anomalies in the tropical Atlantic during the next seven days from the Global Ensemble Forecast System (GEFS).

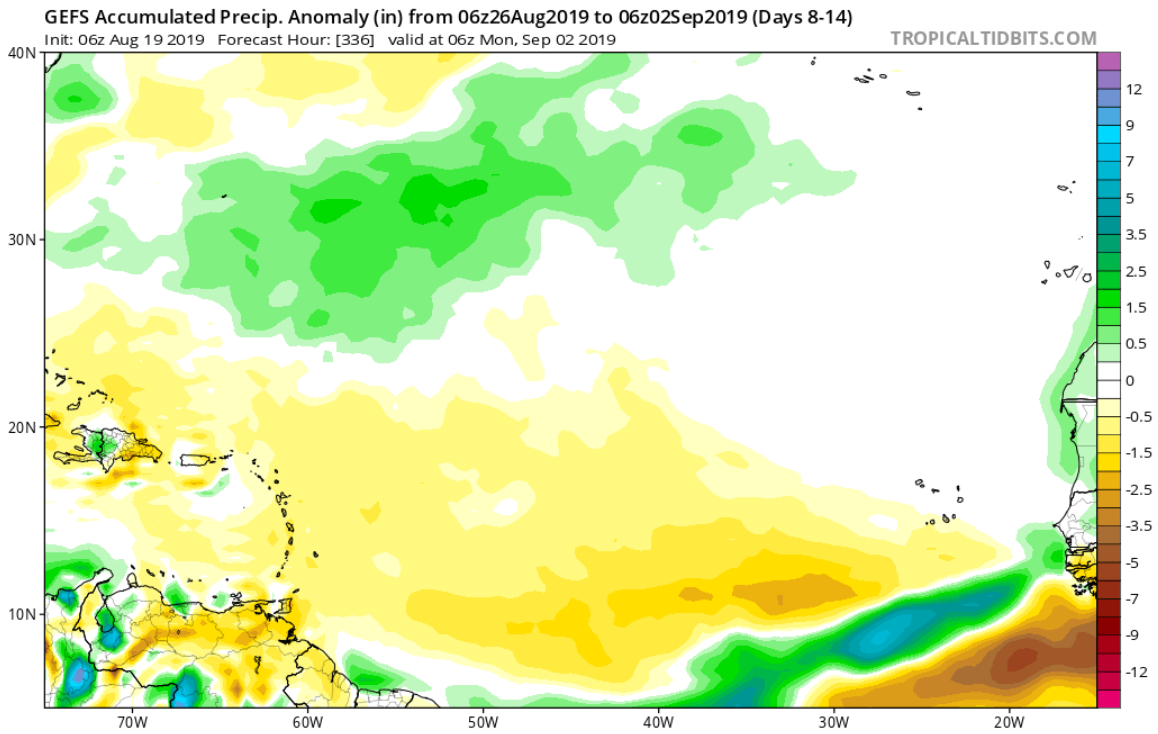


Figure 6: Predicted precipitation anomalies in the tropical Atlantic during days 8-14 from the Global Ensemble Forecast System (GEFS).

5) Seasonal Forecast

The most recent seasonal forecast calls for a near-average season. We believe that the next two weeks will have below-average activity, however.

3 Upcoming Forecasts

The next two-week forecast will be issued on September 2 for the September 2–15 period. Additional two-week forecasts will be issued on September 16, September 30, and October 14.

VERIFICATION OF AUGUST 5–18, 2019 FORECAST

The two-week forecast of tropical cyclone activity from August 5–18, 2019 correctly verified in the below-normal category. No TC activity occurred during the two-week period.