

**COLORADO STATE UNIVERSITY FORECAST OF ATLANTIC HURRICANE
ACTIVITY FROM AUGUST 5 - 18, 2019**

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

(as of 5 August 2019)

By Philip J. Klotzbach¹, Michael M. Bell², and Jhordanne Jones³

In Memory of William M. Gray⁴

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 Research Scientist

² Associate Professor

³ Graduate Research Assistant

⁴ Professor Emeritus

1 Introduction

This is the 11th year that we have issued shorter-term forecasts of tropical cyclone 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 5 - 18 are classified as the upper tercile, the 17 years with the least active ACE periods from August 5 - 18 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 5 – 18, 2019.

Parameter	Definition
Above-Normal	Upper Tercile (≥ 8 ACE)
Normal	Middle Tercile (2-7 ACE)
Below-Normal	Lower Tercile (0-1 ACE)

2 Forecast

We believe that the next two weeks will be characterized by activity at below-normal levels (0-1 ACE). The National Hurricane Center does not foresee any tropical cyclone development over the next five days. None of the global models indicate significant tropical cyclone development in the next week. Vertical wind shear anomalies are also projected to increase in days 7-14, likely suppressing hurricane development in week two.

The Madden-Julian Oscillation (MJO) is forecast to be relatively weak in amplitude and in phases 4-5 over the next two weeks. These two phases favor enhanced convection over the Maritime Continent and are typically associated with relatively quiet periods for Atlantic hurricane activity.

Figure 1 displays the formation locations of tropical cyclones from August 5-18 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 5-18 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.

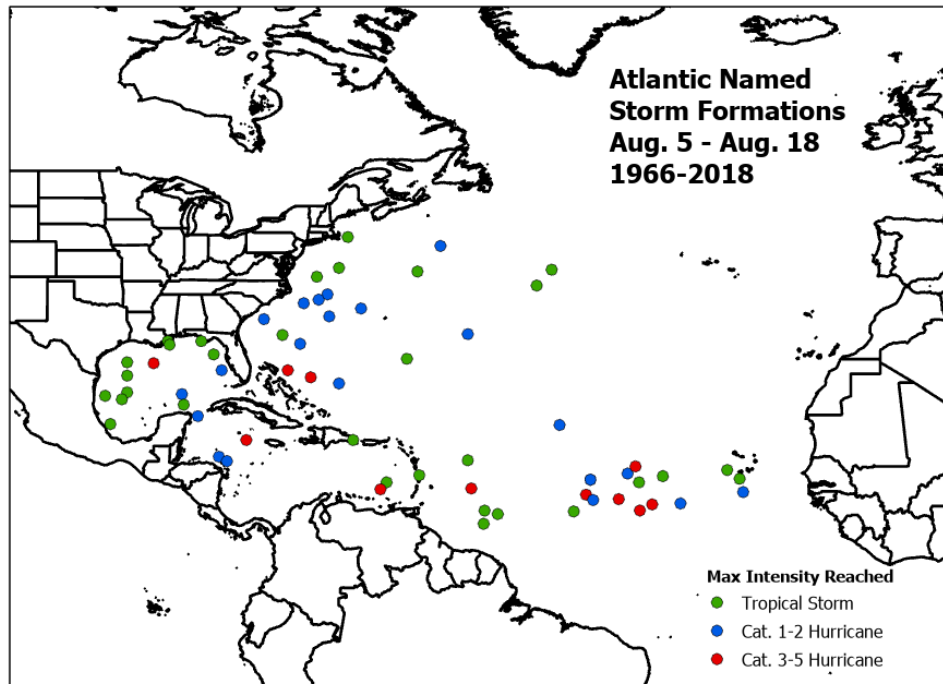


Figure 1: Atlantic named storm formations from August 5 – 18 during the years from 1966-2018 and the maximum intensity that these named storms reached.

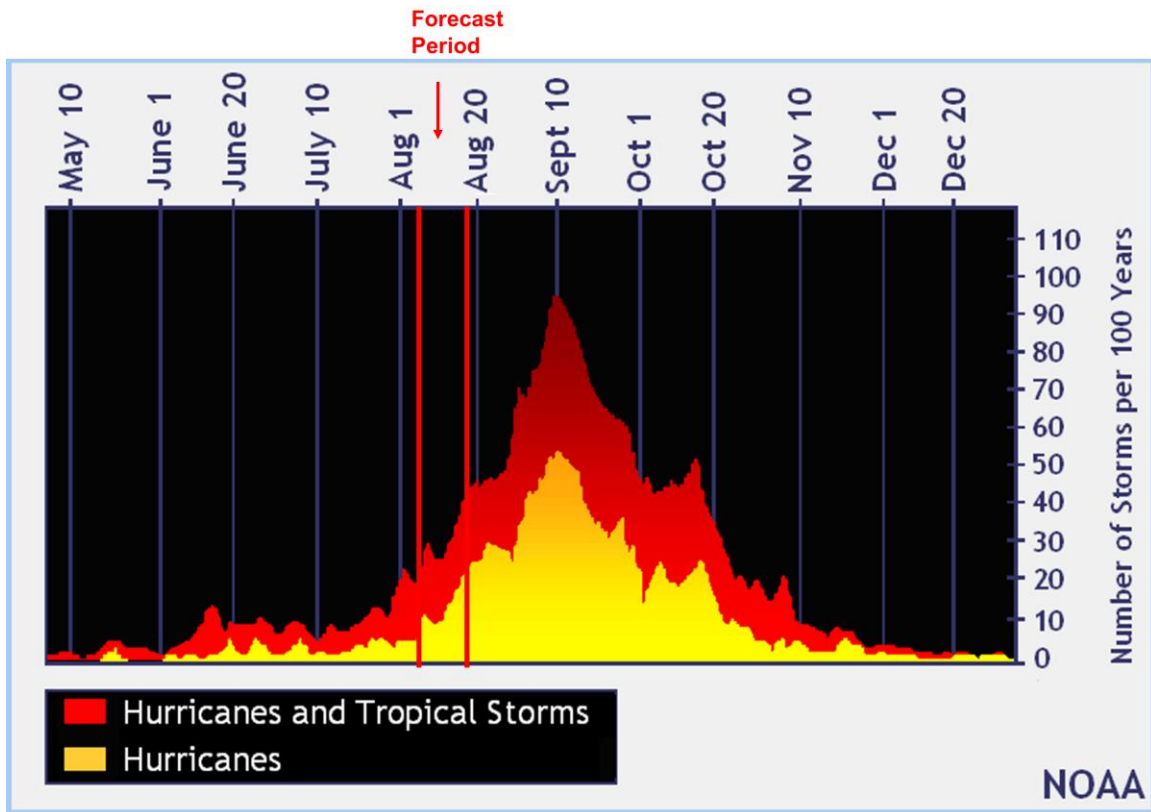


Figure 2: The current forecast period (August 5-18) with respect to climatology. Figure courtesy of NOAA.

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 5–18.

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 does not indicate any areas of TC formation in the next five days.

3) Global Model Analysis

None of the reliable global models indicate any significant TC development in the next week.

4) Madden-Julian Oscillation

The Madden-Julian Oscillation (MJO), as measured by the Wheeler-Hendon index, is currently of relatively weak magnitude. The MJO is forecast to remain relatively weak over the next two weeks (Figure 3). Any amplification of the MJO over the next two weeks should take place in phases 4-5, which are typically associated with relatively quiet periods for Atlantic hurricane activity (Table 2).

The Climate Forecast System (CFS) model is predicting near-normal vertical shear in week one, with increased vertical wind shear anomalies in week two (Figure 4). We believe that this should also suppress TC activity in week two, where dynamical model predictions of TC genesis tend to have less skill.

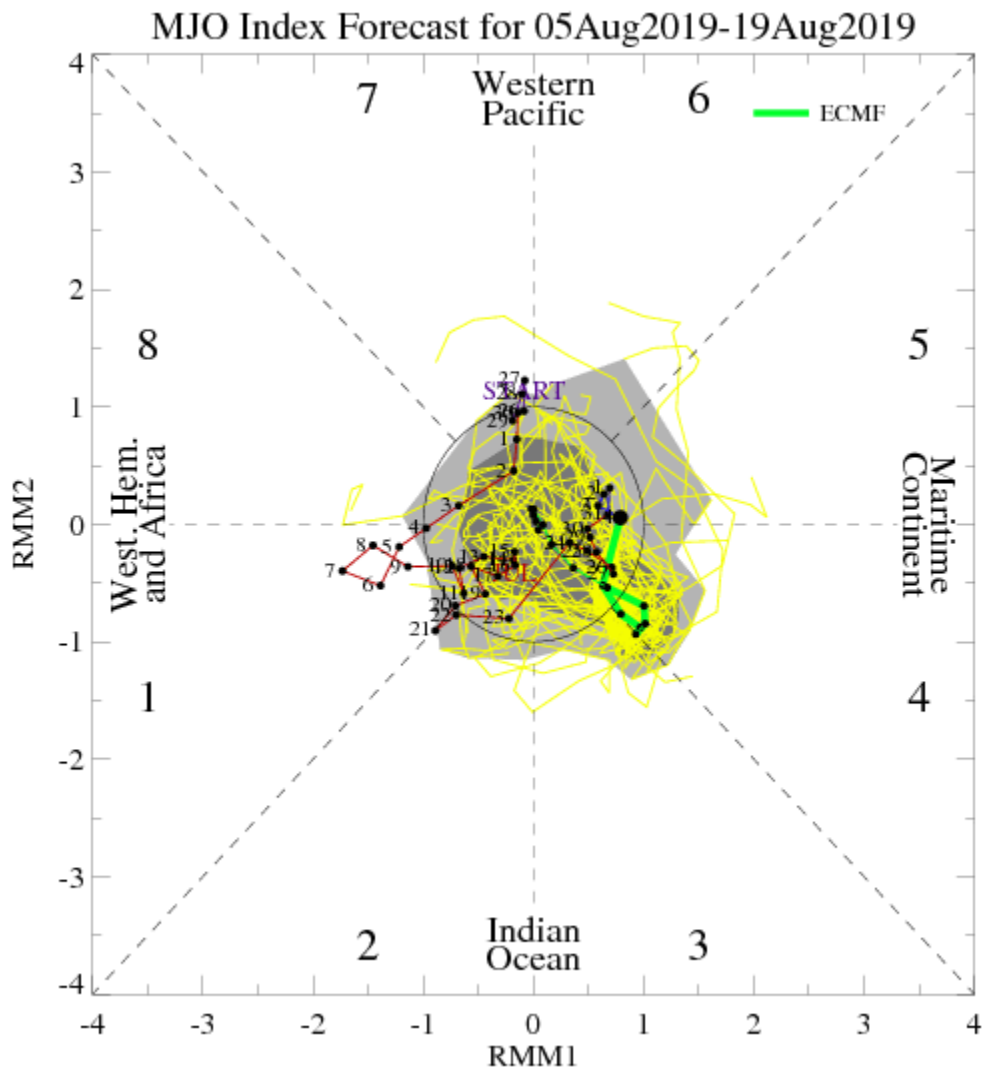


Figure 3: Predicted propagation of the MJO by the ECMWF model.

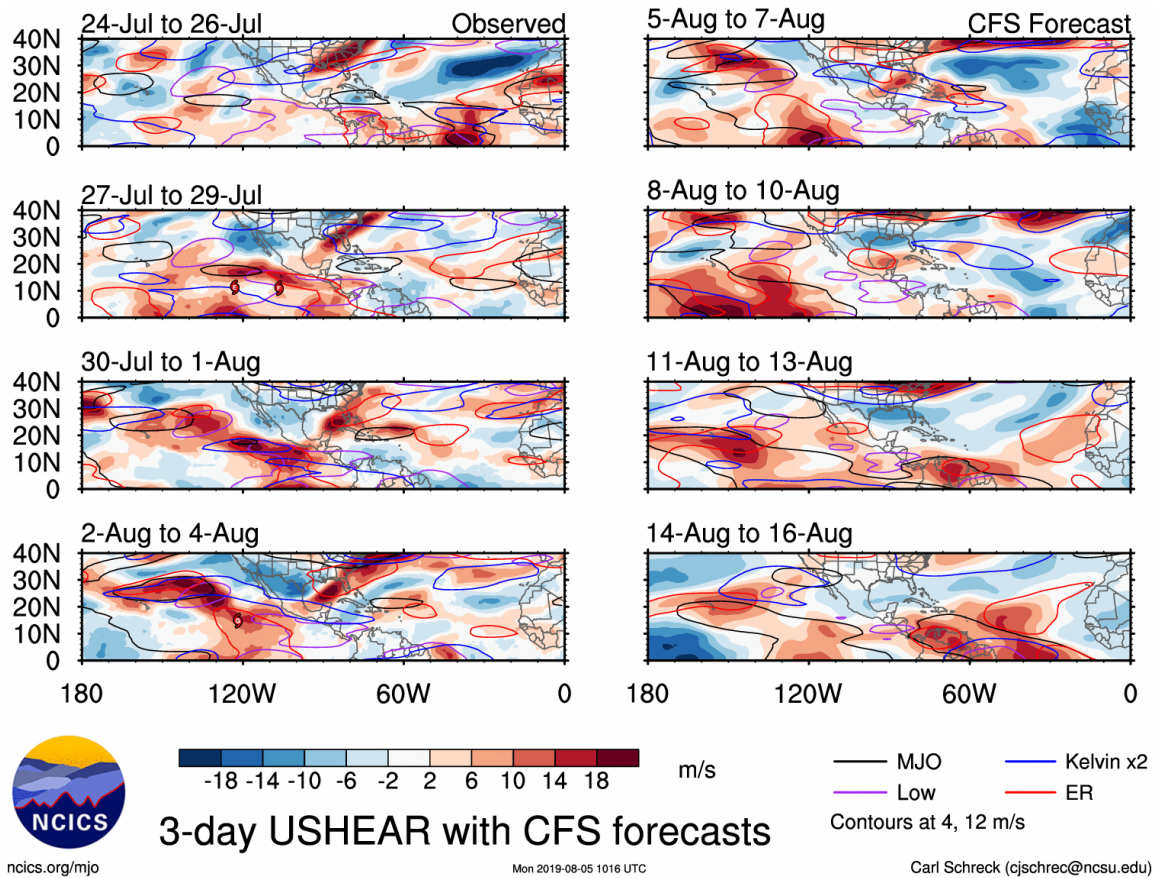


Figure 4: Observed and predicted anomalous 200 minus 850 hPa vertical wind shear from the Climate Forecast System through August 16. Figure courtesy of Carl Schreck.

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

5) Seasonal Forecast

The most recent seasonal forecast calls for a near-average season. The peak portion of the season looks to get off to a slow start, however.

3 Upcoming Forecasts

The next two-week forecast will be issued on August 19 for the August 19 – September 1 period. Additional two-week forecasts will be issued on September 2, September 16, September 30, and October 14.