

**COLORADO STATE UNIVERSITY FORECAST OF ATLANTIC HURRICANE
ACTIVITY FROM AUGUST 30–SEPTEMBER 12, 2018**

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

(as of 30 August 2018)

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In Memory of William M. Gray³

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 tenth 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 has been changed to better fit, in our view, the observed historical distributions. Our ACE forecasts are now 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 30–September 12 are classified as the upper tercile, the 17 years with the least active ACE periods 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 30–September 12, 2018

Parameter	Definition
Above-Normal	Upper Tercile (≥ 26 ACE)
Normal	Middle Tercile (14–25 ACE)
Below-Normal	Lower Tercile (< 14 ACE)

2 Forecast

We believe that the next two weeks will be characterized by activity at near-normal levels (14–25 ACE). The National Hurricane Center has recently initiated advisories on Potential Tropical Cyclone Six. This system is likely to become a tropical storm and potentially a hurricane in the next few days. The global models indicate potential development in the Gulf of Mexico in 6-8 days, but if this storm does form, due its proximity to land, it would likely generate fairly little ACE. There is the potential for another easterly wave developing into a tropical cyclone in 7-10 days near the Cabo Verde Islands.

The Madden-Julian Oscillation (MJO) is forecast to be relatively weak in week one, and potentially amplify into phases 8-1 in week two. These phases tend to be associated with relatively active periods for Atlantic hurricane activity.

Figure 1 displays the formation locations of tropical cyclones from August 30–September 12 for the years from 1966–2017 (e.g., the satellite era), along with the maximum intensities that these storms reached. Figure 2 displays the August 30–

September 12 forecast period with respect to climatology. The hurricane season reaches its climatological peak around September 10. The primary threat formation area for major hurricanes in early September is in the tropical Atlantic east of the Leeward and Windward Islands.

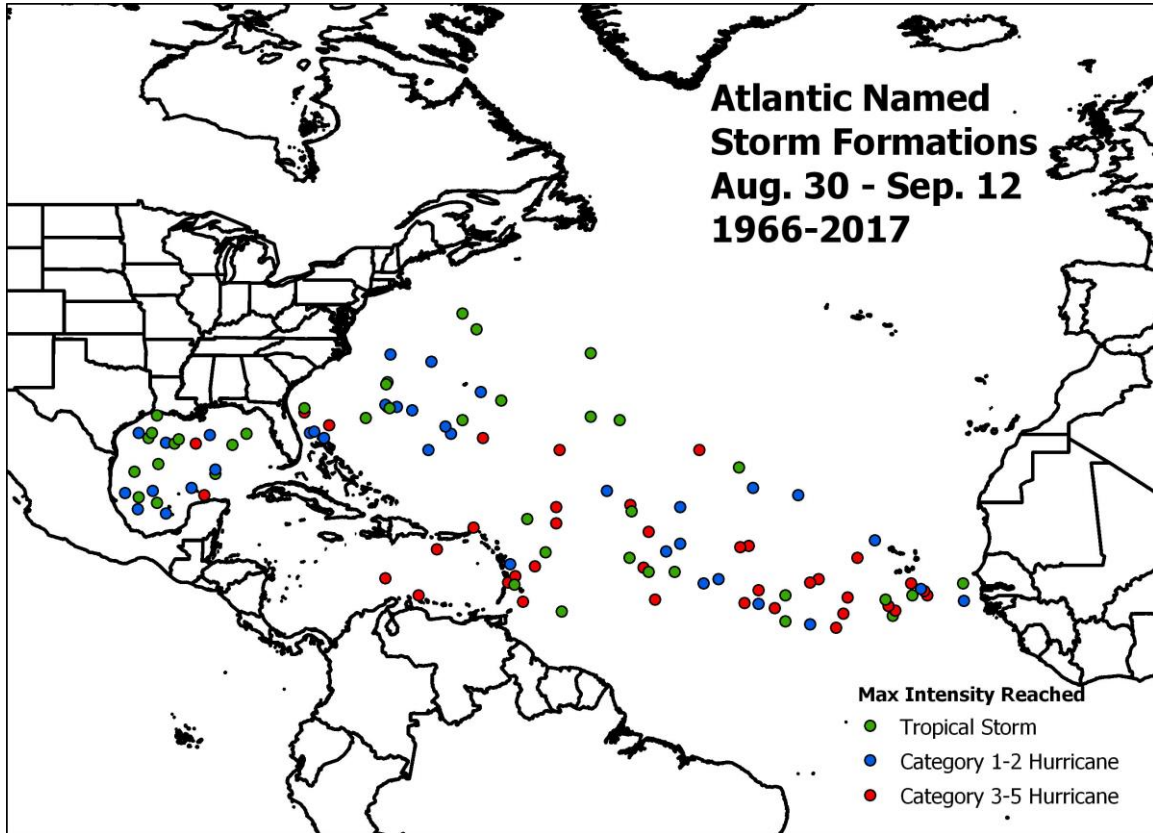


Figure 1: Atlantic named storm formations from August 30–September 12 from 1966-2017 and the maximum intensity that these named storms reached.

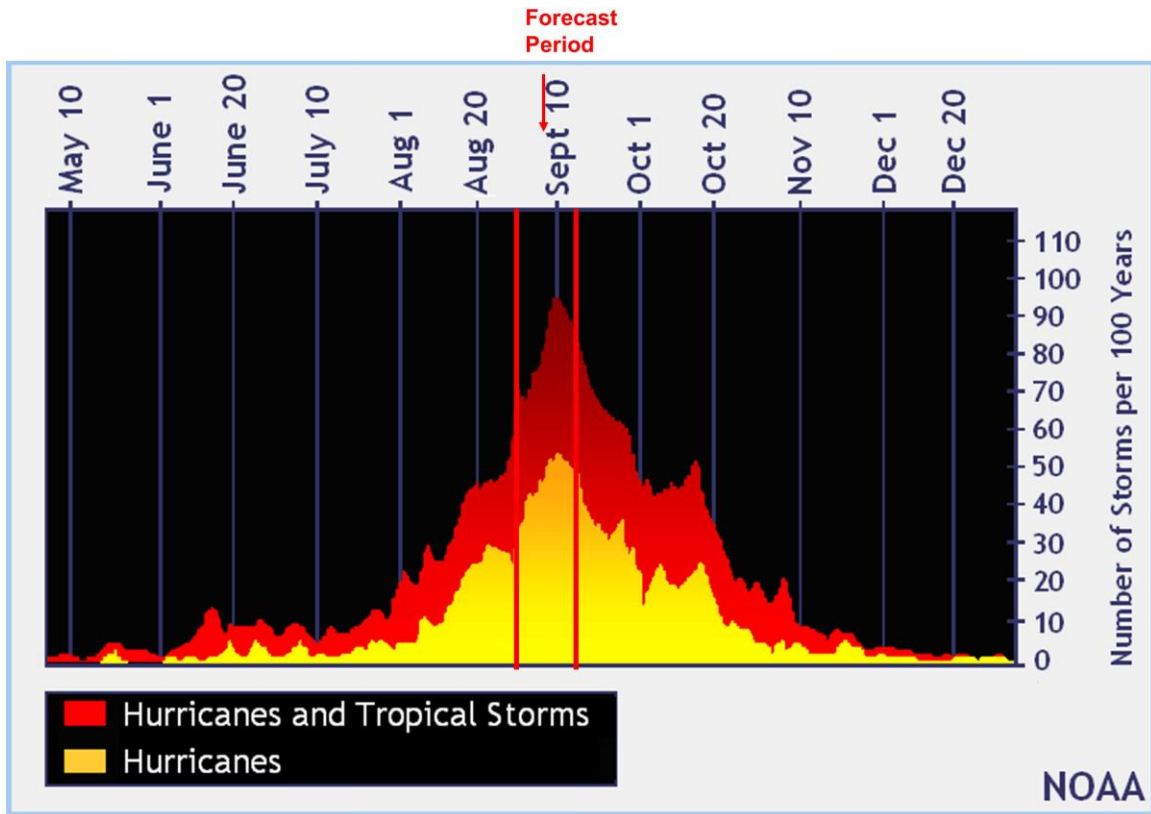


Figure 2: The current forecast period (August 30–September 12) with respect to climatology. Figure courtesy of NOAA.

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 30–September 12.

1) Current Storm Activity

Potential Tropical Cyclone Six has just formed south of the Cabo Verde Islands. It is forecast to reach hurricane strength and track northwestward across the Atlantic. We estimate that this storm will generate ~15 ACE as it moves across the basin.

2) National Hurricane Center Tropical Weather Outlook

No other areas are currently being monitored for TC formation in the next five days.

3) Global Model Analysis

Global models indicate the potential for a tropical cyclone forming in the northern Gulf of Mexico in 6-8 days. There is also the potential for another system forming off of the Cabo Verde Islands in 7-10 days.

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 weak during week one, but potentially amplify into phases 8-1 in week two (Figure 3). The sub-seasonal signal should be more conducive for Atlantic TC activity than it has been over the past two weeks.

In response to this more favorable MJO activity, the Climate Forecast System (CFS) model predicts below-normal vertical wind shear across portions of the tropical Atlantic in the next two weeks (Figure 4). However, Potential Tropical Cyclone Six is forecast to turn towards the north fairly far east in the tropical Atlantic and likely encounter stronger shear as it moves into the subtropical Atlantic.

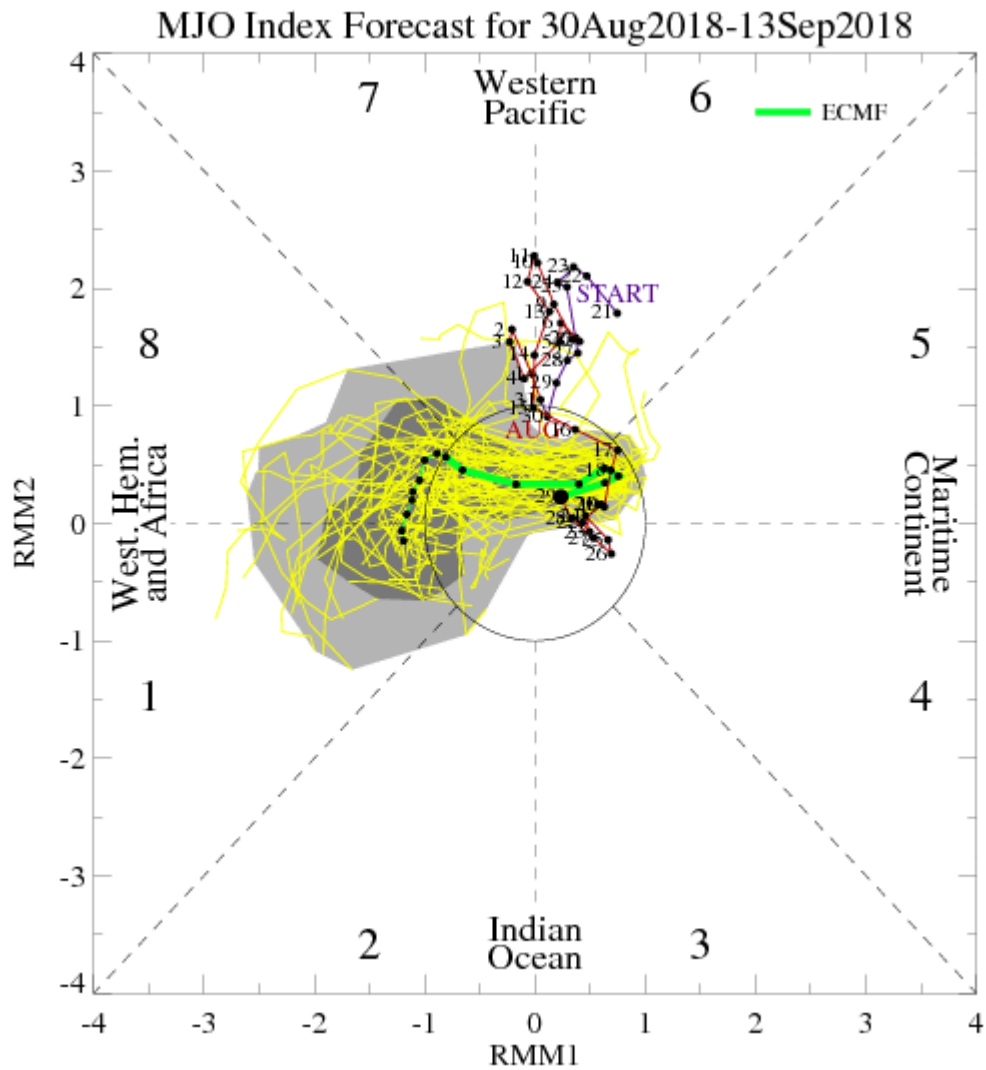


Figure 3: Predicted propagation of the MJO by the ECMWF model.

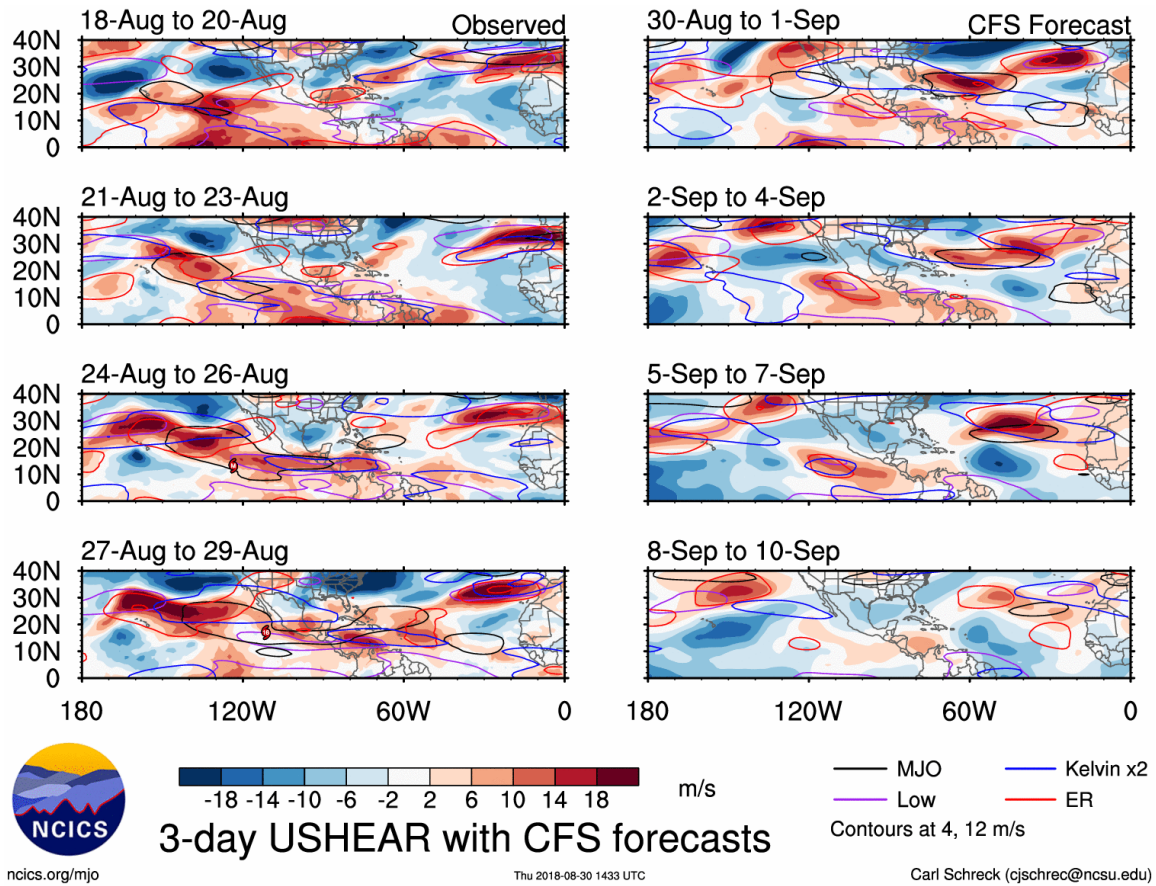


Figure 4: Observed and predicted anomalous 200 minus 850 hPa vertical wind shear from the Climate Forecast System through September 10. Figure courtesy of Carl Schreck.

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 below-average season. We believe that the next two weeks will be more active than the full seasonal average due to more conducive sub-seasonal conditions.

3 Upcoming Forecasts

The next two-week forecast will be issued on September 13 for the September 13–26 period. Additional two-week forecasts will be issued on September 27 and October 11.

VERIFICATION OF AUGUST 16–29, 2018 FORECAST

The two-week forecast of tropical cyclone activity from August 16–29, 2018 correctly verified in the below-normal category. Less than 6 ACE units were required to correctly verify in the below-normal category, and 1 ACE was observed. The ACE that was observed during the two-week period was generated by Ernesto.