

**COLORADO STATE UNIVERSITY FORECAST OF ATLANTIC HURRICANE
ACTIVITY FROM AUGUST 28 – SEPTEMBER 10, 2014**

We expect that the next two weeks will be characterized by below-average amounts (<70 percent) of activity relative to climatology.

(as of 28 August 2014)

By Philip J. Klotzbach¹ and William M. Gray²

This forecast as well as past forecasts and verifications are available online at
<http://hurricane.atmos.colostate.edu/Forecasts>

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

¹ Research Scientist

² Professor Emeritus of Atmospheric Science

1 Introduction

This is the sixth year that we have issued shorter-term forecasts of tropical cyclone activity starting in early August. We have decided to discontinue our individual monthly forecasts. 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.

The metric that we are trying to predict with these two-week forecasts is the Accumulated Cyclone Energy (ACE) index, which is defined to be all of the named storm's maximum wind speeds (in 10^4 knots²) for each 6-hour period of its existence over the two-week period. These forecasts are too short in length to show significant skill for individual event parameters such as named storms and hurricanes. We issue forecasts for ACE using three categories as defined in Table 1.

Table 1: ACE forecast definition.

Parameter	Definition
Above-Average	Greater than 130% of Average ACE
Average	70% - 130% of Average ACE
Below-Average	Less than 70% of Average ACE

2 Forecast

We believe that the next two weeks will be characterized by activity at below-average levels (less than 70 percent of climatology). The average ACE accrued during the period from 1981-2010 from August 28-September 10 was 24 units, and consequently, our forecast for the next two weeks is for 17 or fewer ACE units to be generated.

The below-average forecast is due to several factors. Hurricane Cristobal is estimated to generate 2-4 ACE units before undergoing extra-tropical transition in the next couple of days. Three areas are currently being watched for development in the next few days by the National Hurricane Center, but only one is given a moderate chance of development in the next five days. Long-range models do not indicate any other significant development chances in the 1-2 week timeframe.

The Madden-Julian Oscillation is forecast to continue propagating eastward into Phases 3-4. These phases are typically associated with approximately average periods for Atlantic basin tropical cyclone activity.

Figure 1 displays the tracks that tropical cyclones have taken during the period from August 28 - September 10 for the years from 1950-2008. Figure 2 displays the

August 28 – September 10 forecast period with respect to climatology. The August 28 - September 10 period is typically considered to be part of the most active part of the Atlantic hurricane season.

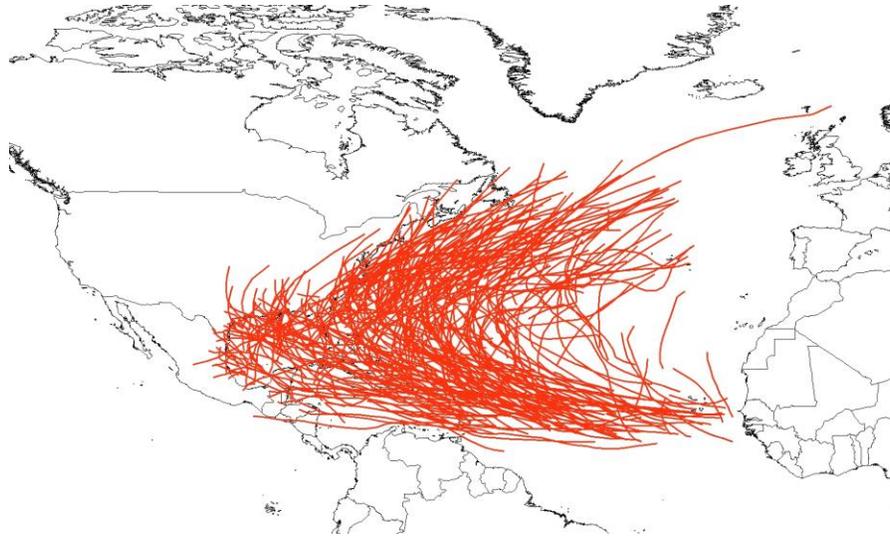


Figure 1: Tracks that named tropical cyclones have taken over the period from August 28 – September 10 for the years from 1950-2008.

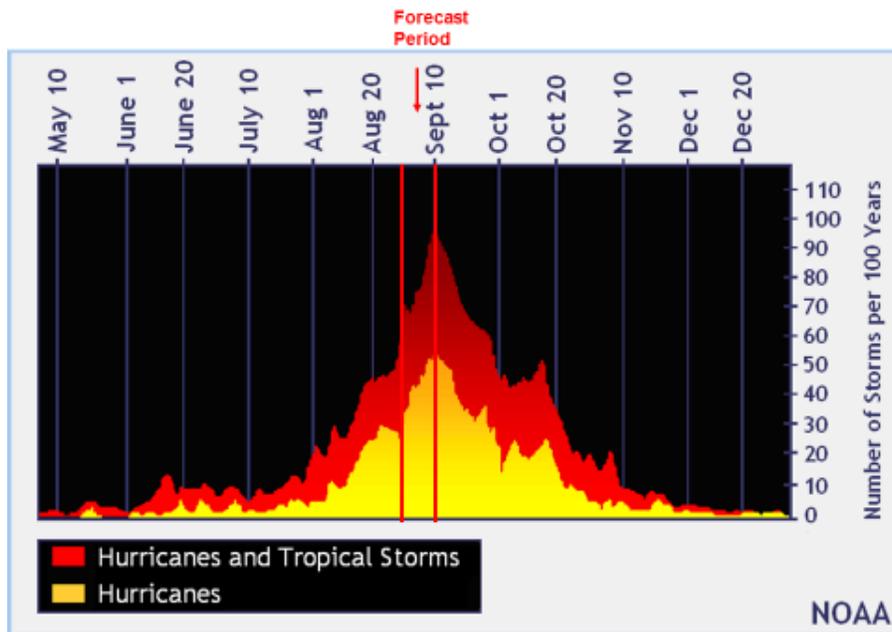


Figure 2: The current forecast period (August 28 – September 10) with respect to climatology. Figure courtesy of NOAA.

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 28 – September 10.

1) Current Storm Activity

Hurricane Cristobal will likely generate 2-4 additional ACE units before undergoing extra-tropical transition later this week.

2) National Hurricane Center Tropical Weather Outlook

The latest NHC Tropical Weather Outlook gives an area in the eastern Atlantic a medium chance of development in the next five days. Two other areas are being monitored by NHC, but each of these is only given a low chance of development in the next five days.

3) Global Model Analysis

Several of the global models develop the area of low pressure in the eastern tropical Atlantic in a few days, while a few models take the area of low pressure currently located near the Windward Islands into the Bay of Campeche and develop it there.

4) Madden-Julian Oscillation

The Madden-Julian Oscillation is currently in Phase 2, which is one of the most conducive phases for tropical Atlantic TC formation (Figure 3). Despite the favorable MJO phase, the background state for this year's hurricane season is quite unfavorable, and consequently, below-average TC activity has been observed over the past few weeks. Most of the global models indicate propagation of the MJO into less favorable phases for Atlantic TC activity over the next couple of weeks (Figure 4). Table 2 displays ACE generated in various MJO phases.

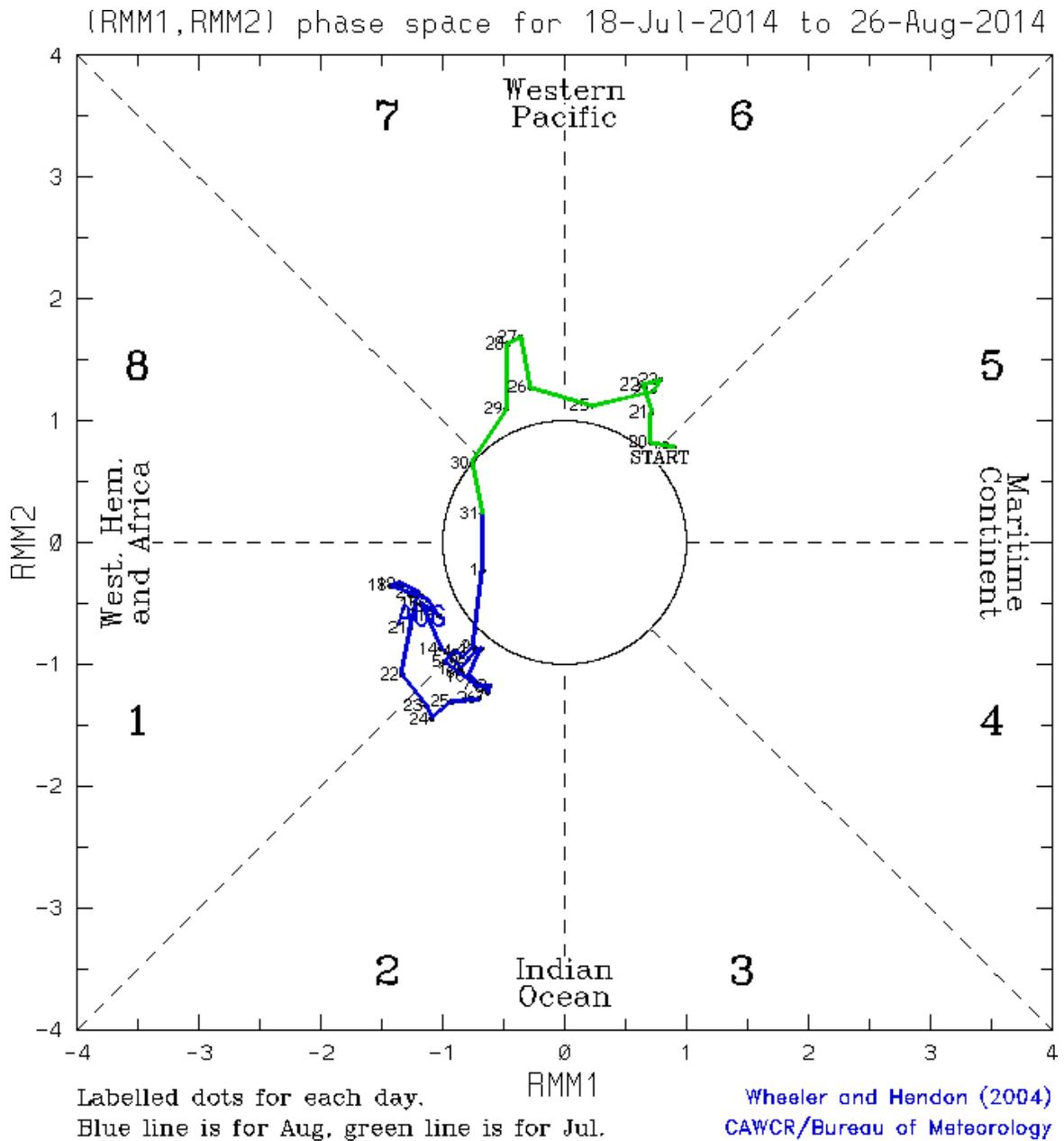


Figure 3: Estimated position of the MJO from July 18, 2014 through August 26, 2014.

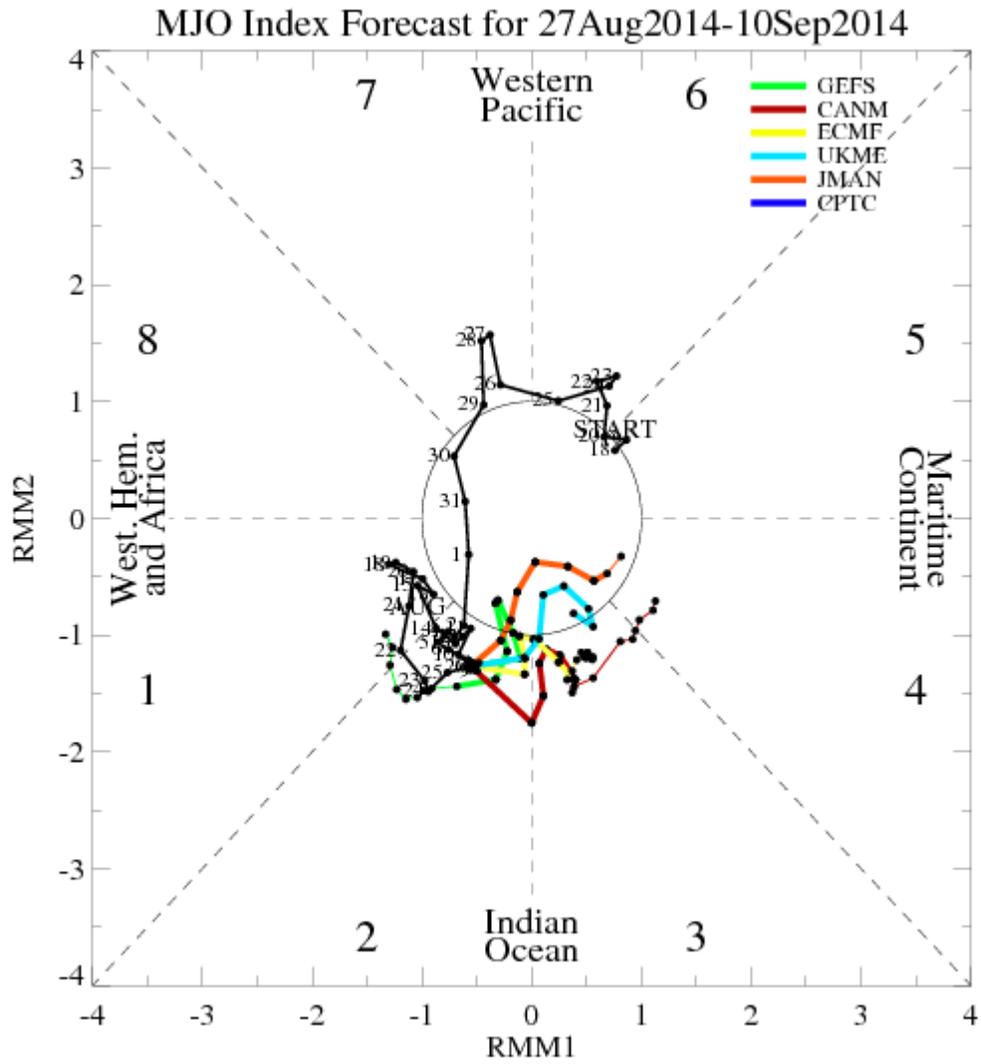


Figure 4: Model forecasts of the MJO from August 27, 2014 - September 10, 2014.

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 called for a below-average season. The unfavorable background state is one of the reasons why we are calling for a quieter-than-normal two week period.

3 Upcoming Forecasts

The next two-week forecast will be issued on September 11 for the September 11 - September 24 period. Additional two-week forecasts will be issued on September 25 and October 9.

VERIFICATION OF AUGUST 14 – AUGUST 27, 2014 FORECAST

The two-week forecast of tropical cyclone activity from August 14 – August 27 verified well. Activity at below-average levels was predicted (≤ 8 ACE units), and observed activity was at below-average levels (5 ACE units). Hurricane Cristobal generated all of the ACE that was accrued during the two-week period.