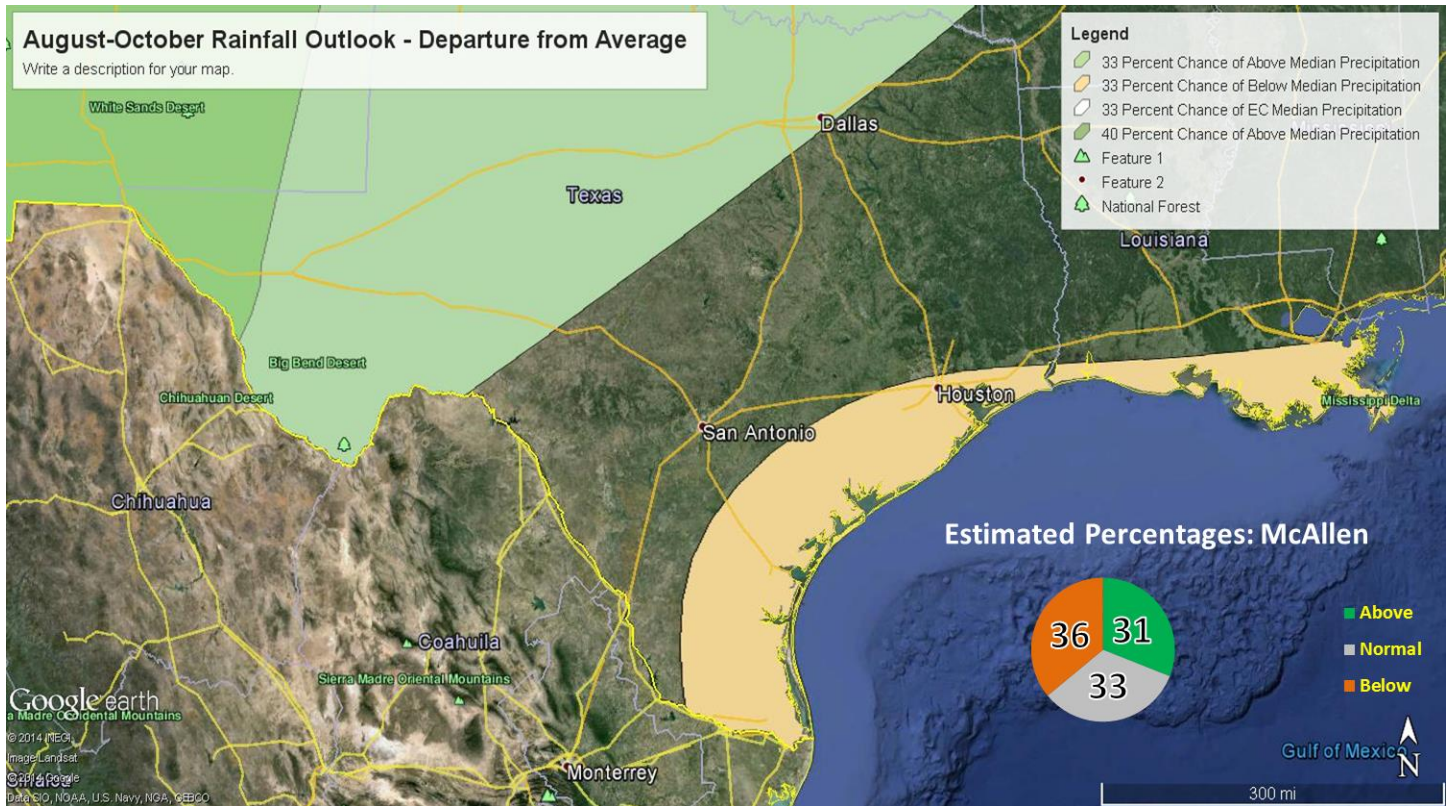
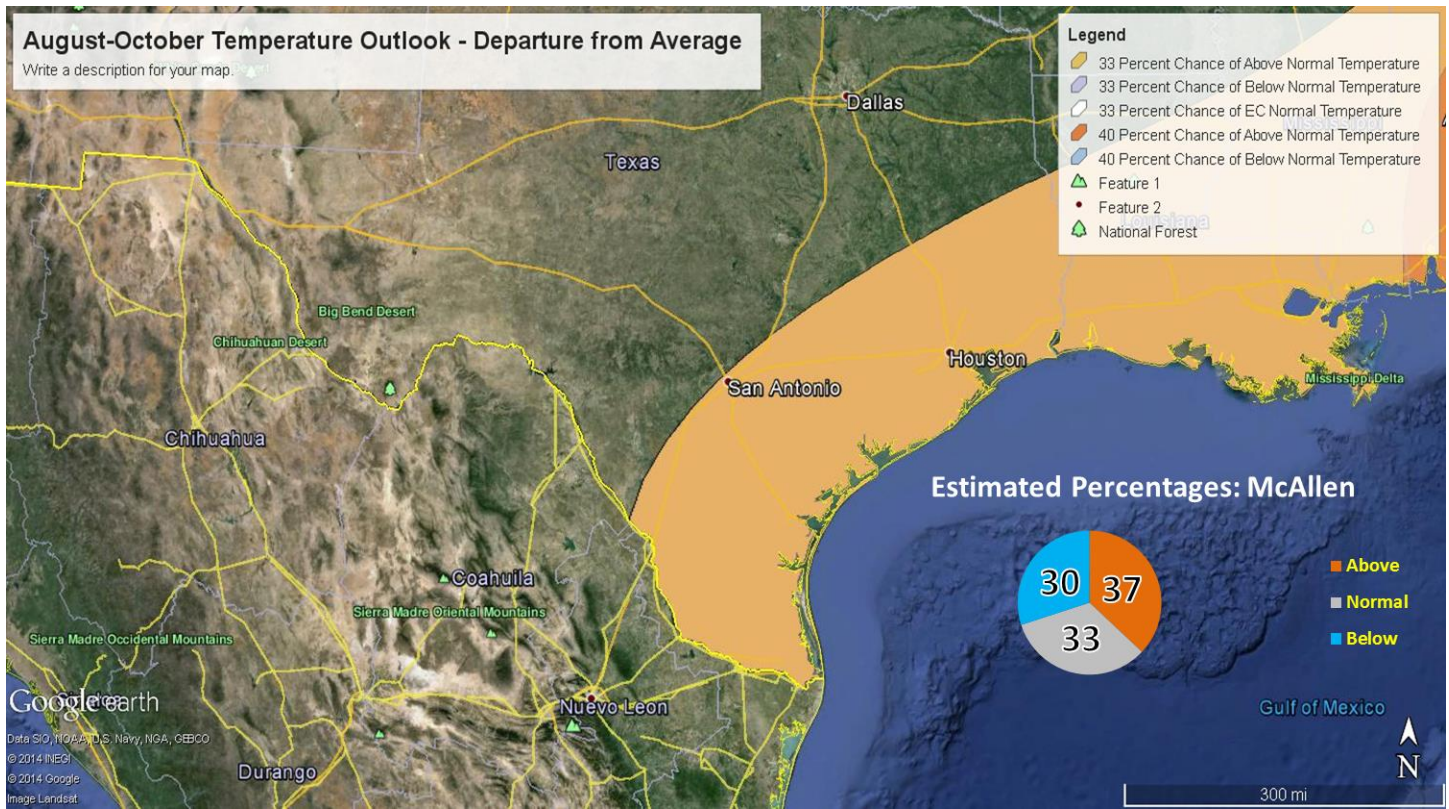


August-October 2014 Outlook



Above: Forecast Temperature (top) and Rainfall (bottom) departures from normal for August through October, 2014. Data courtesy of the [NOAA/NWS Climate Prediction Center](http://www.noaa.gov).

Hot and Dry, Right Through October?

Developing El Niño, August Trends Suggest As Much

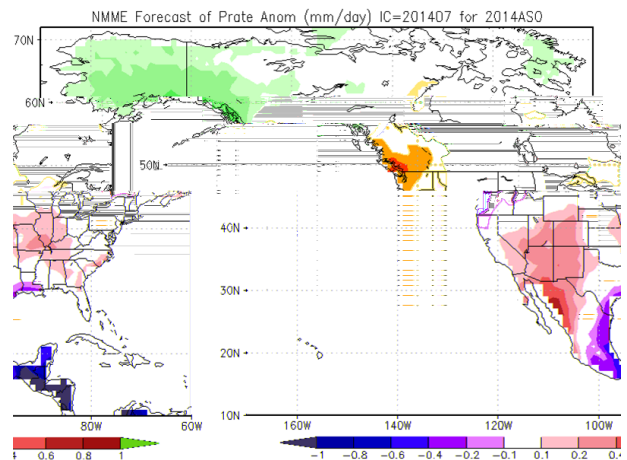
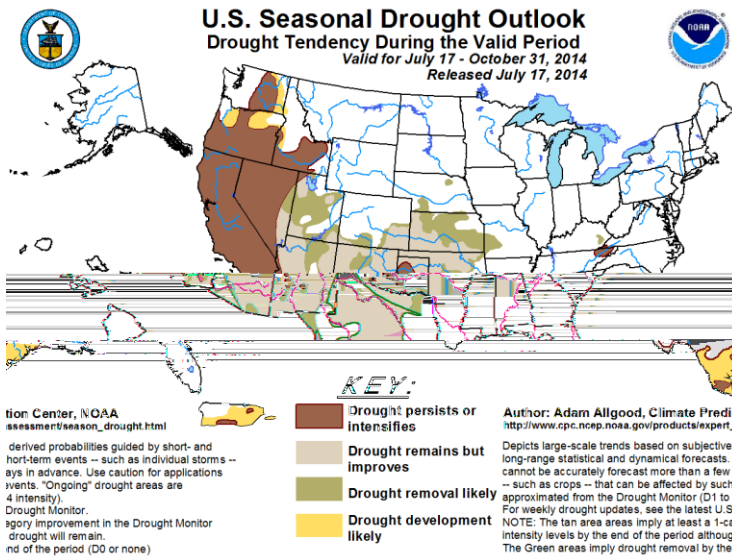
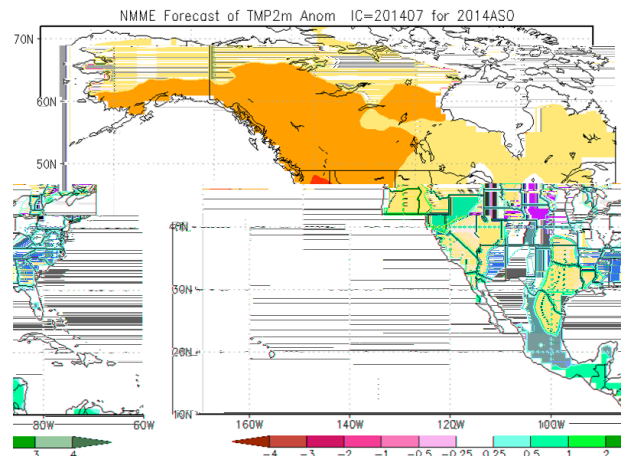
Tropics, Transition to Potentially Wetter Winter Are Wild Cards

Overview

The heat that ended July, and was [expected to roll well into August](#), just might continue into the first half of Autumn 2014. Such trends – a hot, dry summer and early autumn followed by wetter and somewhat cooler than average conditions from late autumn through early spring – are somewhat common when El Niño develops in late spring/summer and peaks during the following winter. As described in the [initial summer outlook for the Rio Grande Valley](#), analogue summers this century have generally been hotter and drier than average, generally followed by helpful rains during the cool season (October-March), especially during the winter (December-February) months.

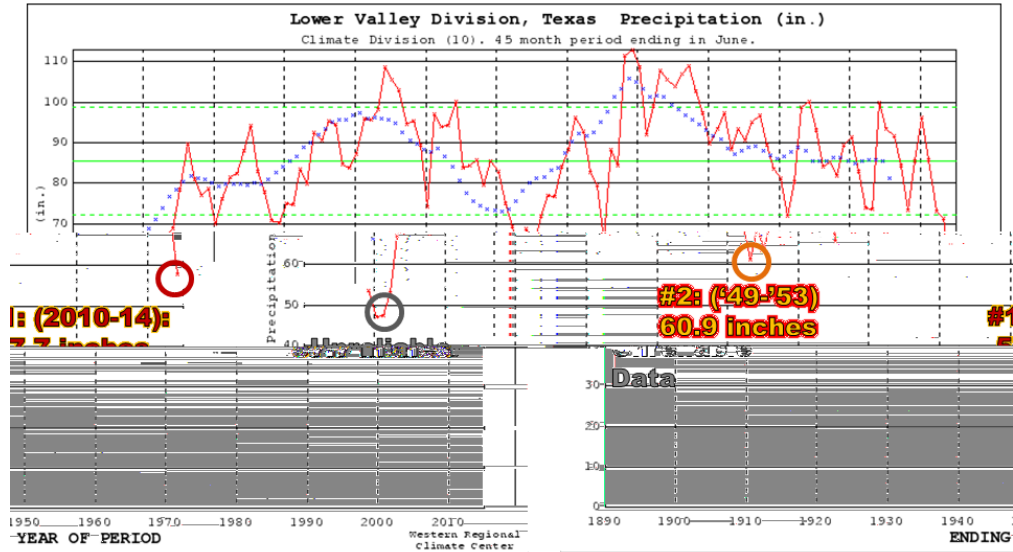
Potential Impact

Periodic rainfall across portions of the Valley had done just enough to keep worsening drought at bay; conditions in late July ranged from Abnormally Dry (Level 0) to Severe (Level 2). Unfortunately, long term dryness continued to lurk in the background, with 45-month Valley rainfall totals still at an all time driest record dating back more than 100 years with sufficient data points (top of third page). Based on the fairly reliable National Multi-Model Ensemble (right), along with a [suite of similar/related models](#), confidence is medium to high for deteriorating drought conditions to close summer and begin autumn, in both soil moisture and reservoir levels, each forecast to drop. Of course, the one thing these models do not account for is a significant tropical cyclone. Such a cyclone could find a temporary crack in the front (Atlantic) or back (eastern Pacific) door via an embedded week to two week favorable pattern, and change the calculus completely. See the box on the next page for early thoughts on the rest of the Atlantic tropical season.



Above: Left, US Seasonal “Droughtlook” through the end of October. Note the yellow (development likely) covering all of south Texas. Right, NMME seasonal outlook for August to October 2013, for temperature (top) and precipitation (bottom). The green area across the four corners suggests a combination of monsoon and Pacific tropical moisture; the yellow/red area suggests the continuation of dry conditions, perhaps related to El Niño’s development.

Since Dryness Began Oct 2010-Jun 2014



Deviation (σ): 13.329.

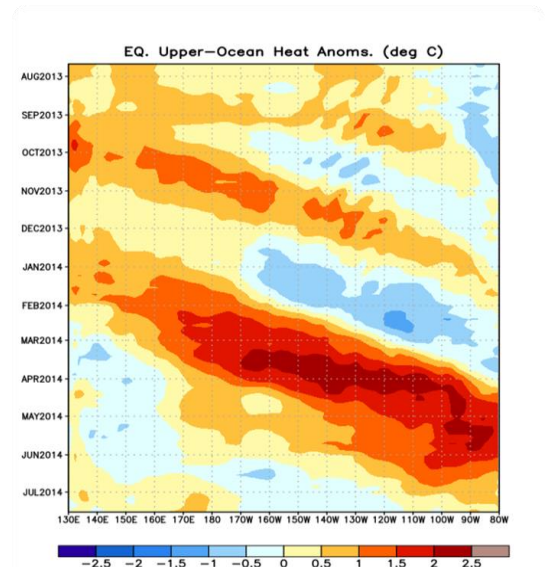
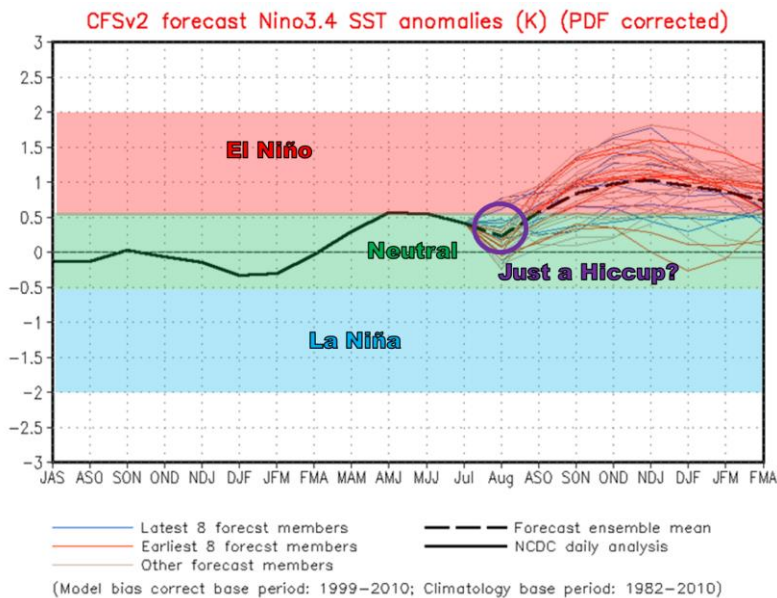
below the mean, or a ~2% chance of occurrence in

- Mean Rainfall: 85.399 Standard
- The 57.7 inches is more than 2σ the period.

El Niño...or Not?

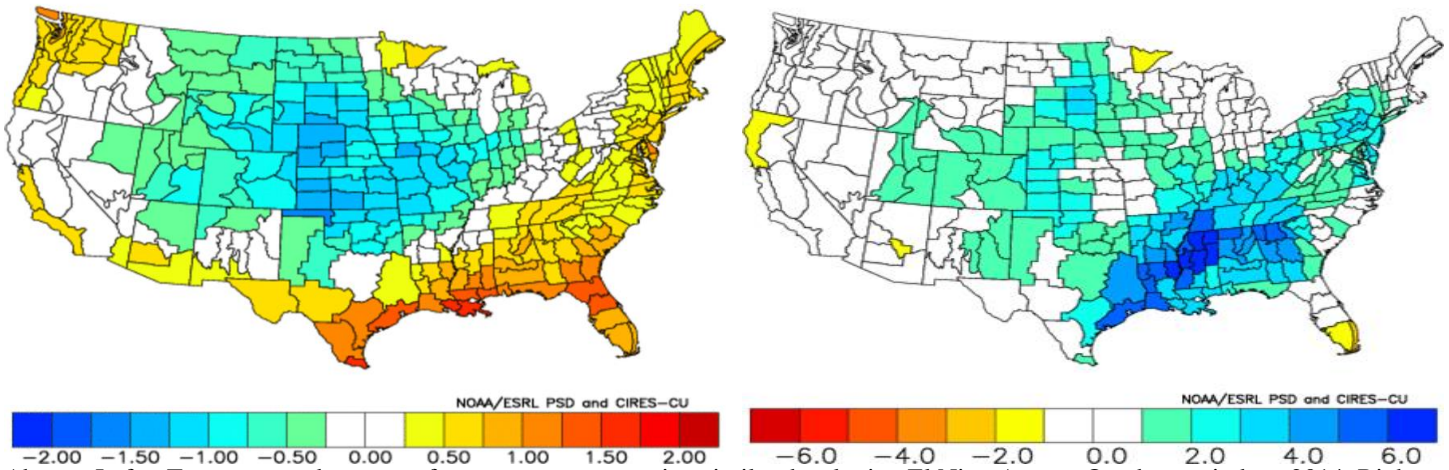
After a rip-roaring warmup in the eastern and central tropical Pacific in spring 2014, conditions took a break during July as water temperature dipped to or below average, temporarily putting the development of El Niño on hold (El Niño requires three consecutive months with an index of $+0.5^\circ$ or higher). One related reason for the sharp rise, and fairly quick dropoff between May and July, could be the [Kelvin Wave](#) Oscillation between a strong, downwelling (warming ocean) wave between January and April, and a weak, upwelling (cooling ocean) wave between May and July (right). At the bottom of the Kelvin Wave graphic, note a return to downwelling had begun by the end of July, perhaps suggesting the resurgence of El Niño conditions, as shown in the Climate Forecast System prediction at left.

Such a resurgence, should it remain persistent, would allow a full fledged El Niño to get underway sometime in the August-October 2014 time frame, which would increase confidence in the hot and relatively dry end to summer and start to autumn, followed by a relative wet and cooler late autumn 2014 and winter 2014/2015.



NOAA/NCDC Climate Division Composite Temperature Anomalies (F)
Aug to Oct 1997,2002,2004,2006,2009
Versus 1950–1995 Longterm Average

NOAA/NCDC Climate Division Composite Precipitation Anomalies (in)
Aug to Oct 1997,2002,2004,2006,2009
Versus 1950–1995 Longterm Average



Above: Left – Temperature departures from average, comparing similar developing El Niño August-October periods to 2014; Right, the same, but for precipitation. Based on El Niño only, confidence in a warm late summer/early fall (yellows and reds) is high, while confidence in wet or dry conditions is low (white to light green) across south Texas.

2014 Hurricane Season

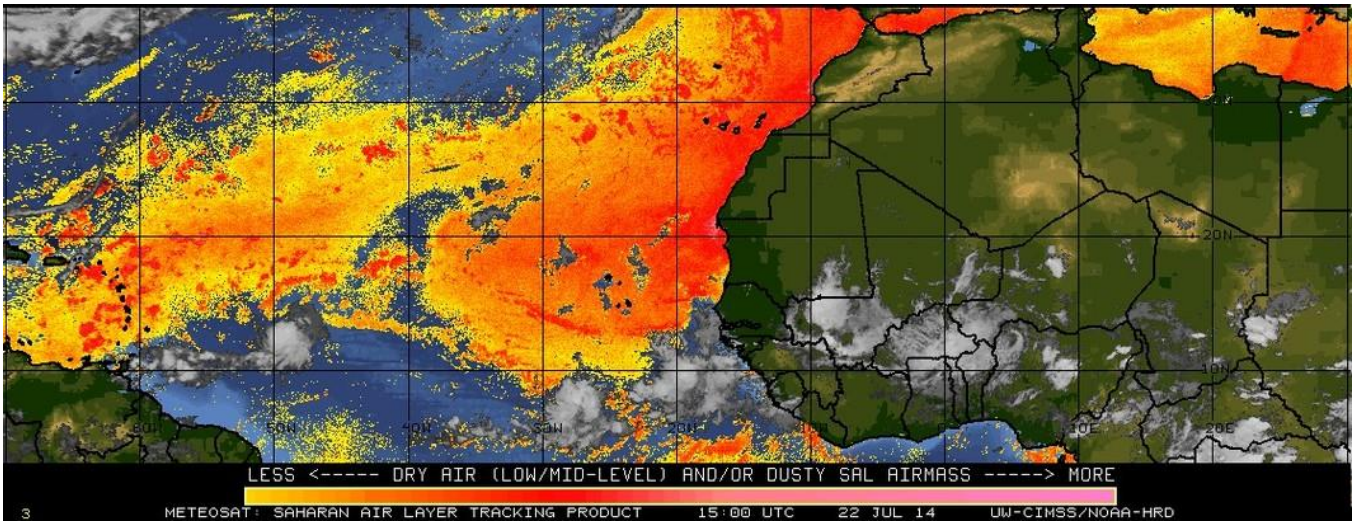
Whither the Atlantic Basin? Never Say Never, But Quiet May Rule Deep into August

Typically, the Atlantic Hurricane Season doesn't get cranking until mid to late August. On average between 1966 and 2009, there were only four named systems by August 23 and still one hurricane by then (this year, we've had our first hurricane, Arthur, just before July 4th). That said, plenty of indicators are suggesting a slow or "no" go well into August, with uncertainty for September that could clarify depending on how El Niño develops. These indicators include (see the next page for graphical examples):

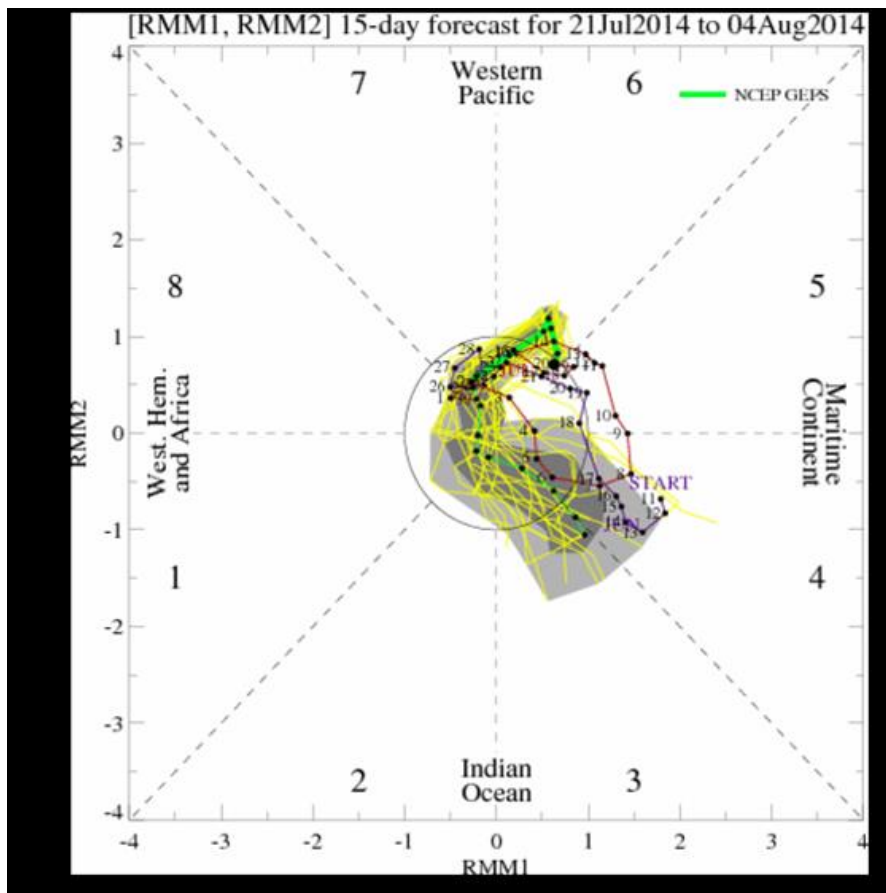
- **Dry Air.** Saharan dust and other sources continue to dominate the mid to late summer, and limited mainly diurnal thunderstorm clusters have been found in regions south of the Sahara in West Africa.
- **Wind Shear.** From the east (Cape Verde Islands/west African coast) and from the west (Caribbean/subtropical Atlantic), any tropical cyclone daring to come into these neighborhoods faces a near certain death.
- **Cool-ish waters** in the **Main Development Region (MDR)**. A chicken-and-egg scenario? If you consider the combination of dry air and wind shear favorable to "wicking" away heat and latent heat, it follows that Atlantic sea surface and deep water temperatures are near to below average, and would continue, deeper into summer
- **Anomalous atmospheric trough of low pressure** draped across eastern North America. The trough, which has provided springlike weather in July for locations between the Midwest and Mid-Atlantic, also contributes wind shear and a steering pattern that would deflect many Atlantic cyclones well east of the U.S. coast.
- **Weak [Madden-Julian Oscillation](#).** The 30 to 60 day cycle across the globe can produce strong anomalies of outgoing longwave radiation; when the cycle is weak, the resulting OLR trends are, also.

All this said, we remind everyone to take advantage of the lull to wrap up any mid-season preparedness! It only takes one tropical cyclone to make 2014 memorable in the Rio Grande Valley, and we only need to look back to 1967, a year with only six named storms, to recall late September's Hurricane Beulah and all her wrath. 1992's Hurricane Andrew occurred in a year with seven named storms and three hurricanes, but extreme south Florida will never forget the \$26 billion+ in damage and the thousands of human casualties.

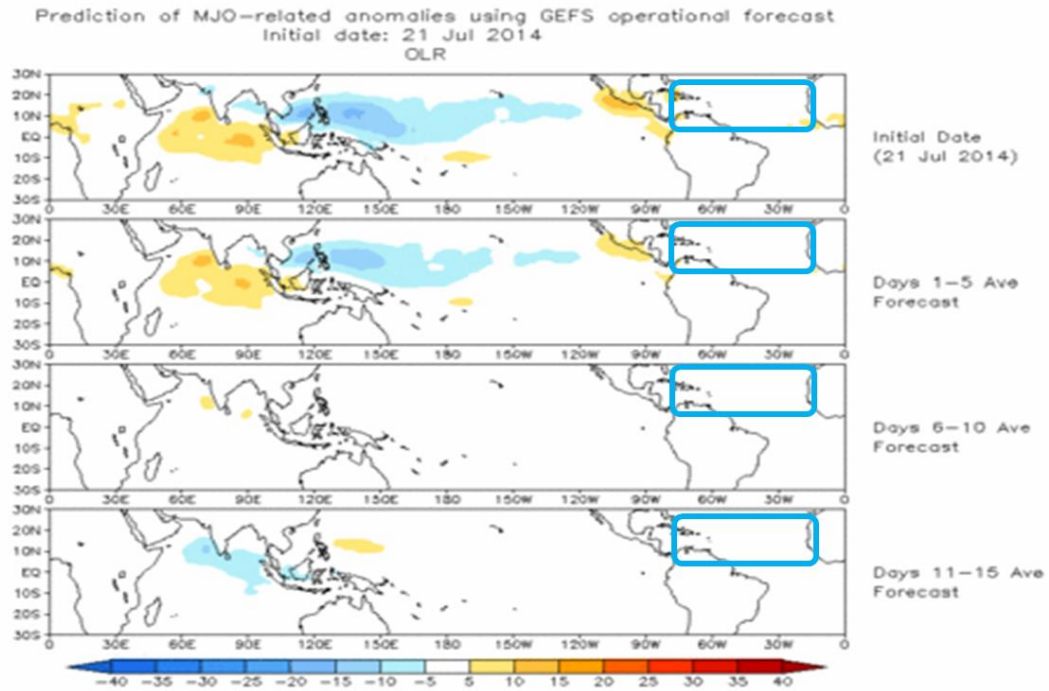
Remember September.



Saharan Air Layer (SAL) analysis, July 22, 2014. Note the persistent red/orange area indicating dust and/or dry air. Also, notice the lack of organized waves across west Africa; waves reaching the eastern Atlantic are running into some of the dry air (and wind shear).



Position of the Madden Julian Oscillation through mid August. Observed values are in red and purple; the ensemble mean (green) and member forecasts (yellow) through August 4, 2014, are shown. Some research has shown a connection to favored Atlantic tropical cyclone development when a stronger signal reaches zones 1 and 8, above. As the mid summer wave crosses these regions, the RMM value is near zero, which indicates limited “assistance” from the MJO through August 2014. Low RMM is common during moderate to strong El Niño or La Niña phases of ENSO.



Above: Outgoing Longwave Radiation (OLR) anomalies forecast through the MJO cycle, shown on the above page. In MJO phases when the RMM is significantly less than zero while traversing the “Western Atlantic to Africa” zone, OLR may become reduced sharply, indicating enhanced thunderstorm activity that can assist tropical cyclone development. The forecast into early August, 2014, shows little impact on OLR (white area within blue boxes).