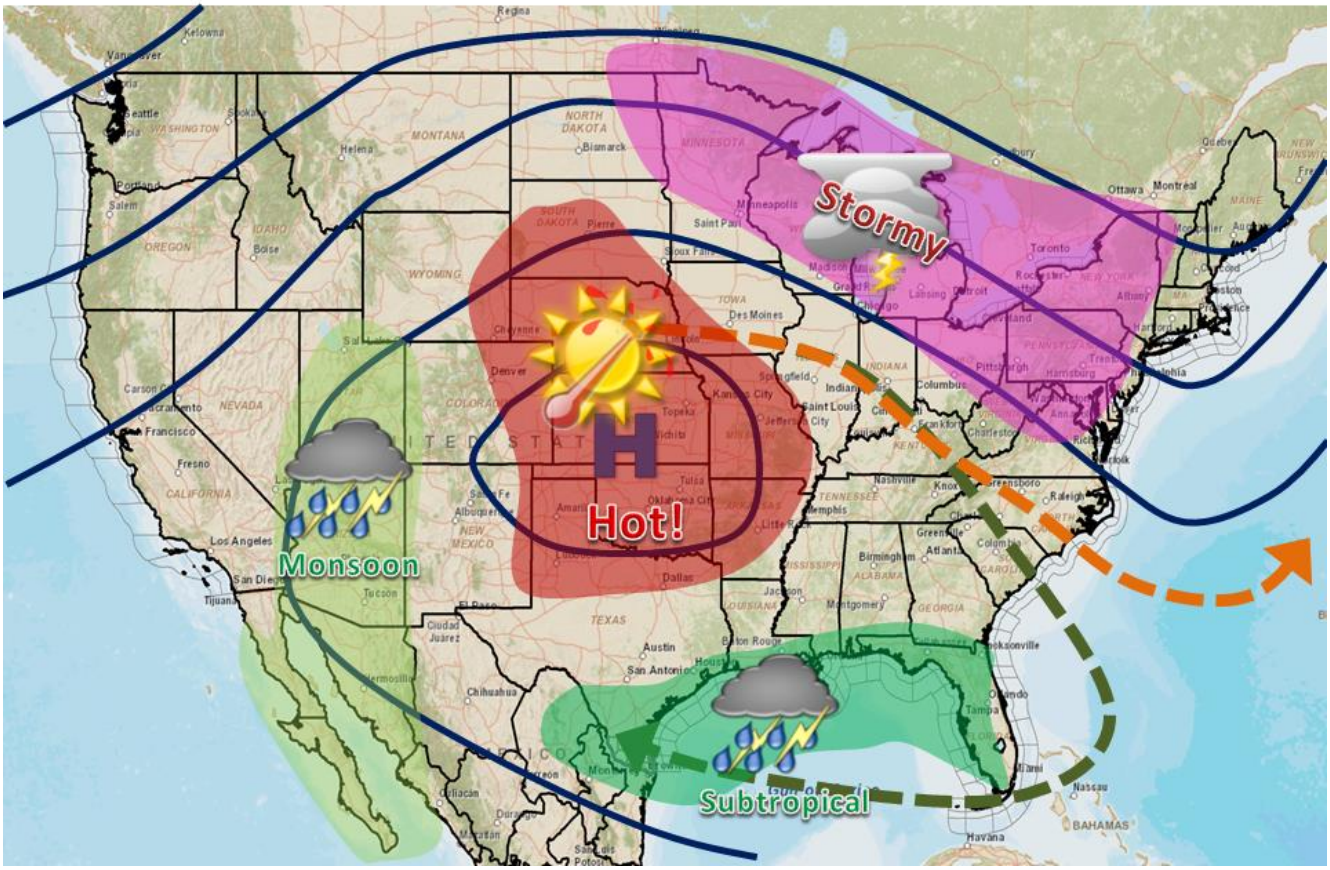
Weather Update: End of August 2013

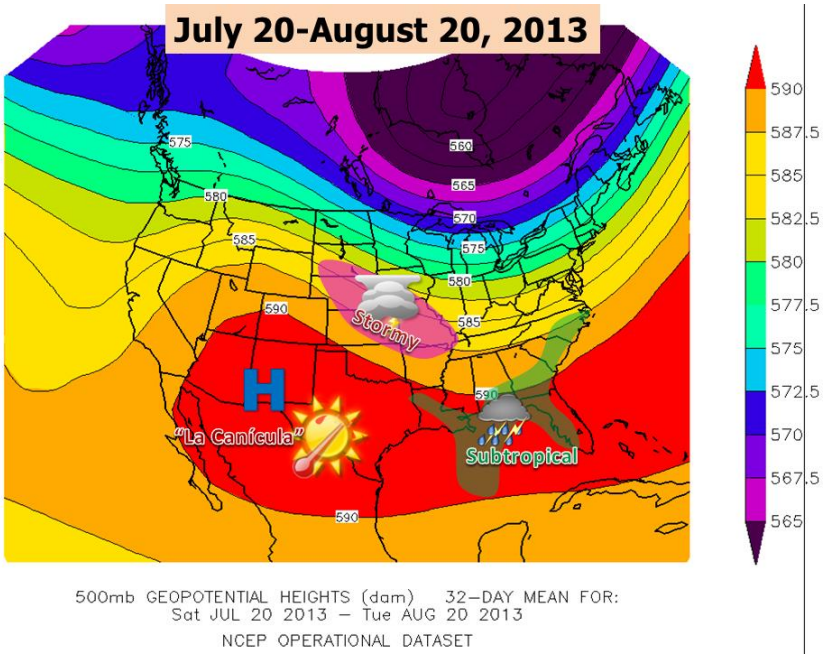
The Pattern to Finish August, 2013



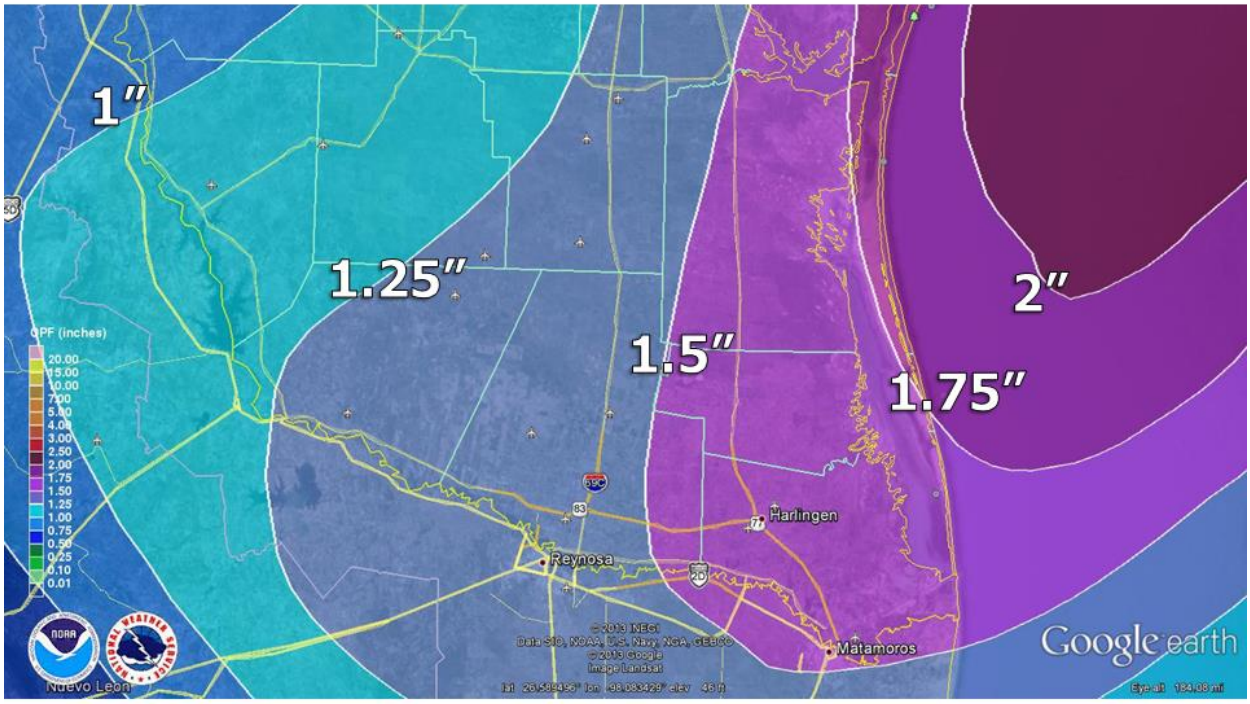
Green Lawns, Growing Gardens?

Daily sea breeze enhanced isolated to scattered showers and thunderstorms began on August 20th, and are expected to continue through the end of August across the Rio Grande Valley (below). Why? Note the pattern above. A northeastward shift of atmospheric high pressure (blue H), which had been parked in the "La Canícula" ("Dog Days") position between the southwest U.S. and northern Mexico (bottom right), is now bringing air from the Gulf Stream and the Gulf of Mexico (green arrow). The air mass is not optimal for drought denting rains as it fails to incorporate deep tropical moisture from the central/southern Caribbean and the Bay of Campeche, but *something is better than nothing*. Rain will not fall in every area on every day, and some locations may be completely "unlucky" and miss everything.

Chances and coverage of rainfall will wax and wane based on the amount of atmospheric moisture available, and any atmospheric disturbance to energize the moisture. Such a disturbance, in the form of an upper level trough, may enhance rainfall early the week of August 25th.

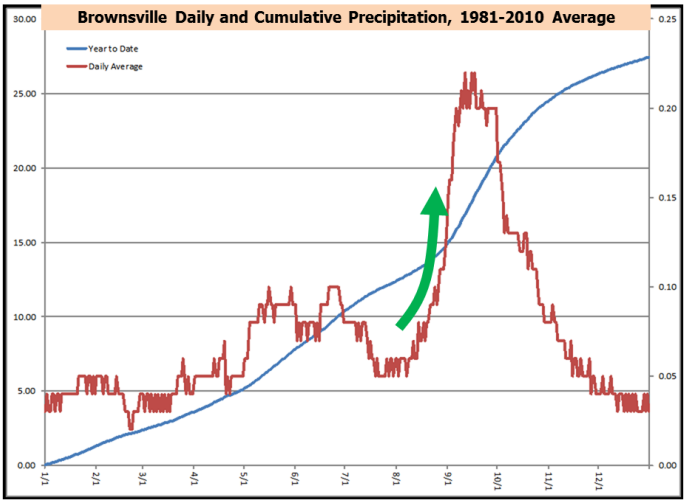


Could August 2013 Rain Be Above Normal?



Forecast Rain, August 23rd through August 30th 2013
Monthly Normals range from 1.5 to 2" Valley-wide

The rainfall will continue to be welcome for thirsty lawns and gardens, but cotton that hadn't been picked by the third week of August may be in jeopardy. In some sense, the rains are right on cue; long term averages clearly show a marked increase in daily rain totals as August heads into September (below right).



Left: The sky we seek? Expect more of this during the late morning near the coast, and into the afternoon toward the mid and upper Rio Grande Valley, through the end of August. **Right:** Green arrow shows dramatic increase in daily rainfall (nearly double) as August ends at Brownsville. On August 15th, average daily rainfall is .07 inch; by the 31st, the value is .13 inch.

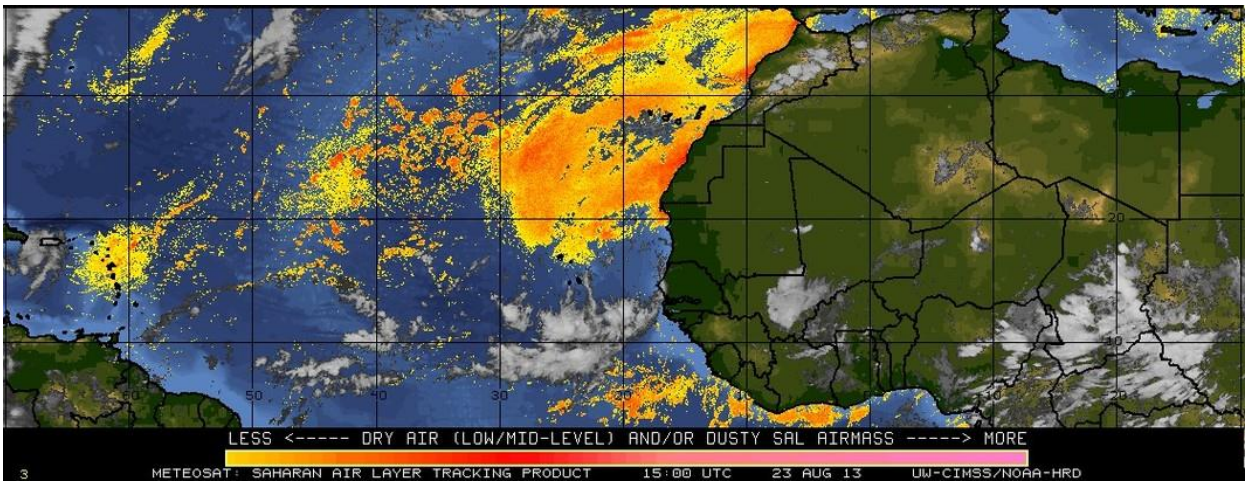
Eye on the Tropics

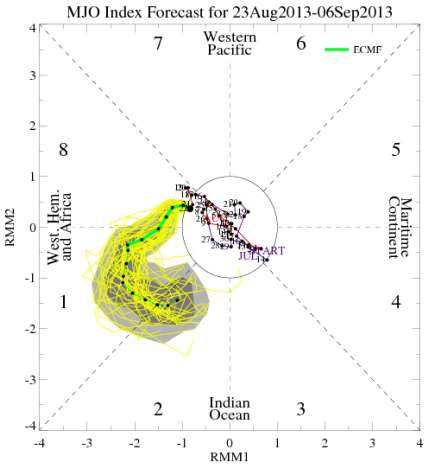
The season started as expected, and four storms had already been named by mid-July. August slowed dramatically; Erin formed in the eastern tropical Atlantic and was soon ripped apart by wind shear and dried out by Saharan Dust. As August headed toward conclusion, questions were being posed: "Is this season a bust?"

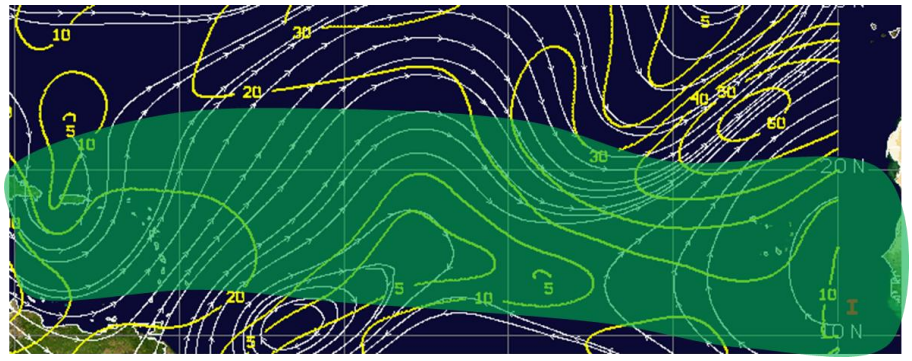
Not so fast.

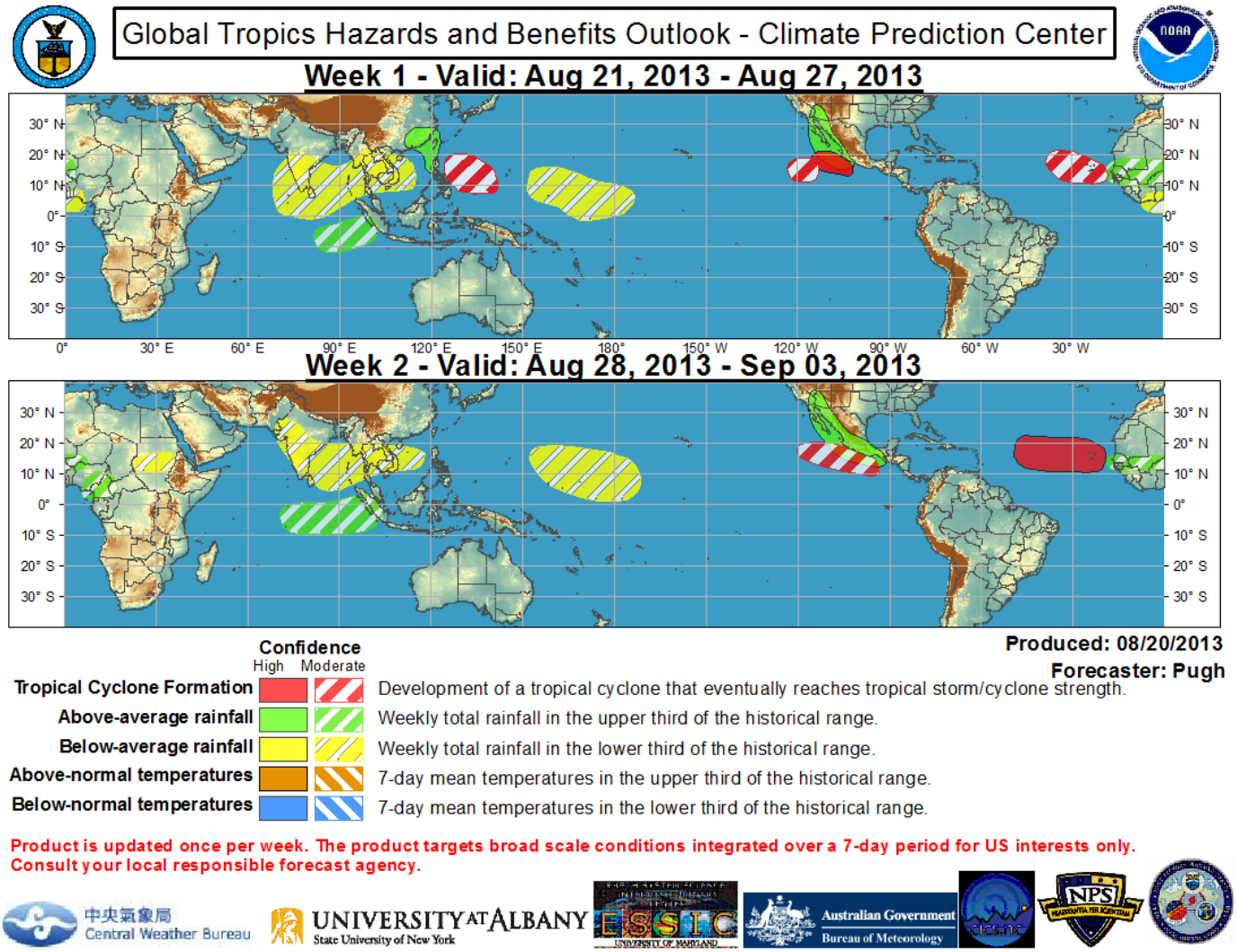
We always say the atmosphere is a big puzzle, and pieces always fit in ways to create the weather and short term patterns we observe. That puzzle, which has been unfavorable to tropical cyclone development in the main development region (MDR) from the central/eastern Caribbean eastward to the African coast, is on track to become much more favorable as the peak of the season (September 10th) approaches. The pieces appear to be falling into place:

- ***Saharan Dust on the wane (below).*** By August 23rd, the extent and intensity of the dust layer had decreased dramatically. This gets the driest of air – a storm killer – out of the way, for the time being. Click here for the most recent five day trends.
- ***Madden Julian Oscillation on the rise (bottom left).*** The area of concern is in "Phase 1" which includes the central and eastern tropical Atlantic. The arrival of the "energy" phase into this region should increase the ability of African waves to create the latent heat (condensation) deep in the atmosphere to allow a cyclone to develop and grow.
- ***Wind Shear (bottom right).*** Low values (5 to 15 knots) dominate the MDR (green area) between 10°N and 15°N latitude – but will the higher values just north of the MDR near the Cape Verde Islands drift south and continue to cause development problems in early September?







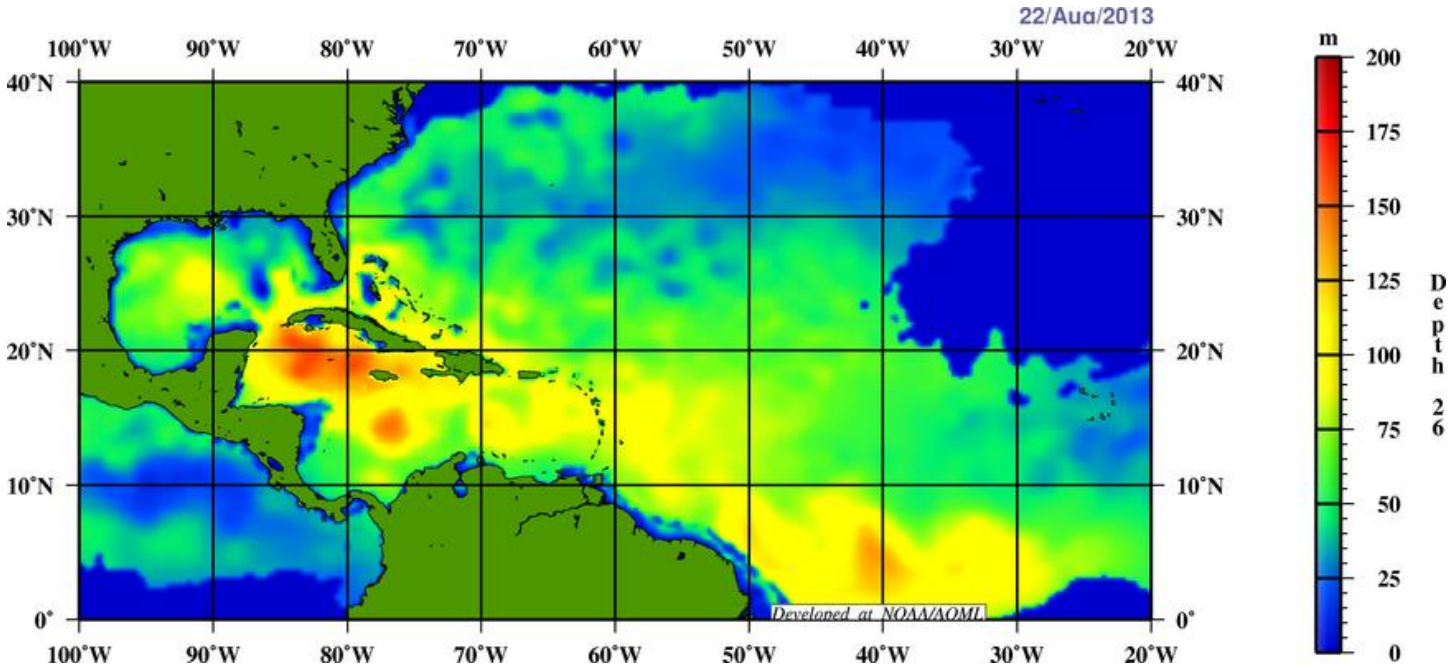


Above: Two week tropical cyclone and rainfall forecast (benefits) across the world. Note the "high" confidence for tropical cyclone formation in the eastern Atlantic (red "blob") between August 28 and September 3.

The puzzle pieces mentioned above add up to the high confidence of cyclone formation. Add "fuel" in the form of the warmest waters of the season, and increasing upper oceanic heat content toward the Leeward and Windward Islands, and a low latitude cyclone (i.e. forming west of Africa south of 12°N latitude) has a very good chance to become a formidable hurricane as the peak of the season (September 10) approaches.

Where Might They Go?

This is the $64 million question. The most important puzzle pieces of all are those that "track" cyclones. Two week teleconnections such as the North Atlantic Oscillation can help determine if the end of August 2013 pattern on the first page dominates, or "La Canícula" returns. Will the Gulf of Mexico open for business this year? We continue to believe that chances for a direct impact on the Valley will require a small crack in the "door" of dominant atmospheric high pressure patterns that have kept the door locked for the past two seasons. The expected pattern for the end of August and into September offers a possibility, especially for a low latitude cyclone that moves through the Caribbean from east to west. Warm water well below the surface could intensify a cyclone into a formidable hurricane across the western Caribbean (below).



Depth of the ~79°F temperature. Red colors indicate 150 to 175 meters (500 to 575 feet) depth, a measure of "fuel" needed to grow and sustain a hurricane.

Final Thoughts

- Upcoming rainfall will provide superficial relief to brown lands, but everyone won't see the same benefits due to the "hit or miss" nature of the events
- Even with a "normal" August rainfall, the 35 month drought will remain the worst on record for the Rio Grande Valley
- Rainfall from a slow moving tropical storm or hurricane is medicine that will dent, or end, the record drought
- Opportunity is a little better for a Gulf of Mexico hurricane for the peak of the 2013 season, but the western Gulf chances remain low, and it will take the long and short term puzzle pieces to fall together perfectly for a direct impact on the Valley
- Keep hurricane preparedness on the front burner, along with drought concerns. Hurricane Beulah, the "storm of record" for most residents, made landfall on September 20th, 1967. Beulah was the second named storm of a quiet Atlantic season overall (eight named cyclones, six hurricanes). 1967 was anything but quiet for the Valley!