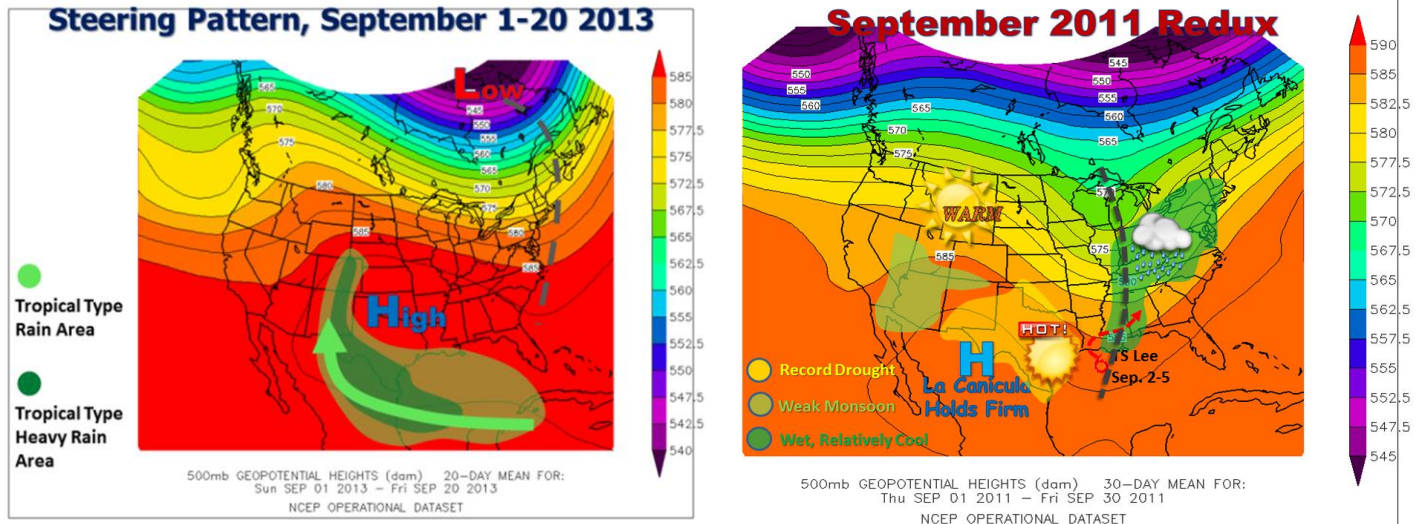


September-November 2014 Outlook



Above: Steering pattern for [September 2013](#) (left) and [September 2011](#) (right). The 2013 pattern put a dent in the long term drought, with Rio Grande Valley rainfall ranging from 6 to 12 inches, in general (feast). The 2011 pattern was significantly drier – and hot (famine). Rainfall ranged from a trace to 2 inches, or 5 to 25% of normal (4 to 6 inches). Parts of the Jim Hogg and Brooks County ranchlands were soaked on September 17th, 2011 – but that was about it for notable rain that year.

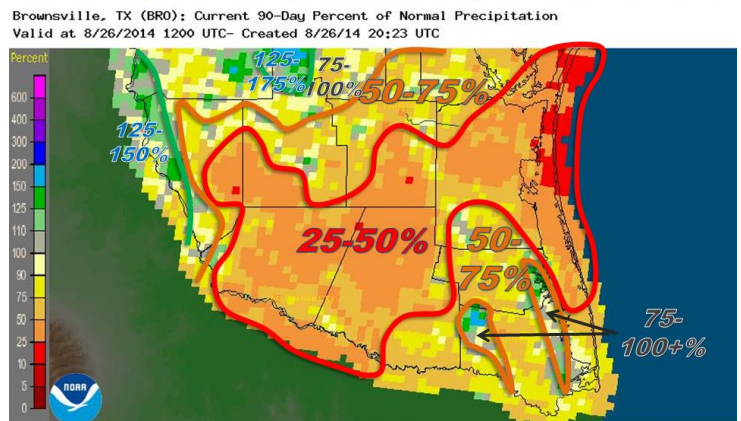
Autumn 2014 RGV Outlook: Feast...or (More) Famine? Uncertainty “Rains” for September; As September Goes, So Might Autumn

The term “Saved by September” would be a great description of a wet ninth month of calendar year 2014. But will it come to pass? Typically, the searing heat and relatively low rainfall of July and August is followed by September’s climatological combination of deep tropical moisture from the southwest Gulf and western Caribbean, direct or indirect rainy impacts from tropical cyclones or waves in the western Gulf, and the approach of the season’s first cool air masses into central and north Texas (which can induce linear thunderstorm development as far south as the Rio Grande Valley). In 2013 (top left), the deep tropical moisture returned in September after a third straight boreal summer (June-August) of generally well below average rainfall, especially from the mid/upper Valley through the ranchlands.

The vast majority of summer 2014 (right) was similar to the summers of 2011-2013. [September 2011](#) was bone dry, as high pressure well above the earth’s surface brought sinking, heated air; all time record heat was observed in the mid Valley, and the water year (October 2010-September 2011) was by far the driest on record. [September 2012](#) wasn’t quite as hot and dry, but enough to begin to threaten local water supplies and deep soil moisture necessary for a productive growing season as Falcon Reservoir dipped to concerning low levels, and upstream Amistad began its sharp fall toward levels not seen since the late 1990s.

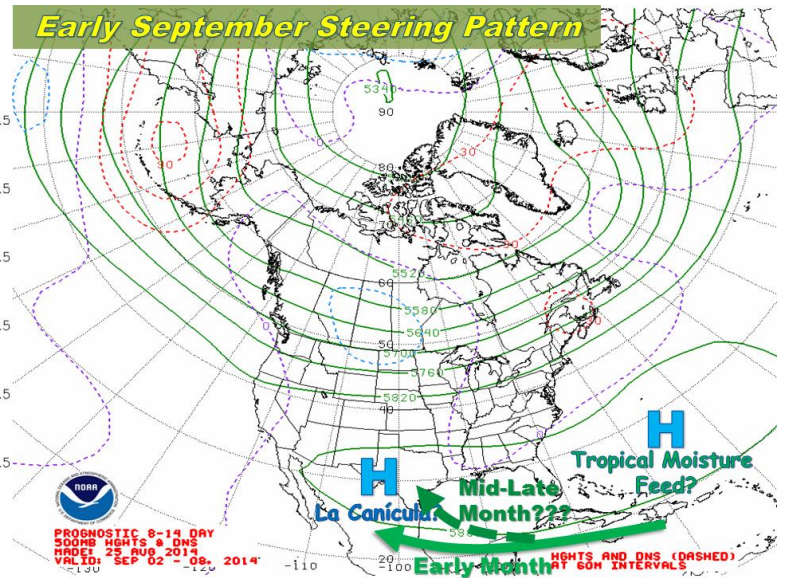
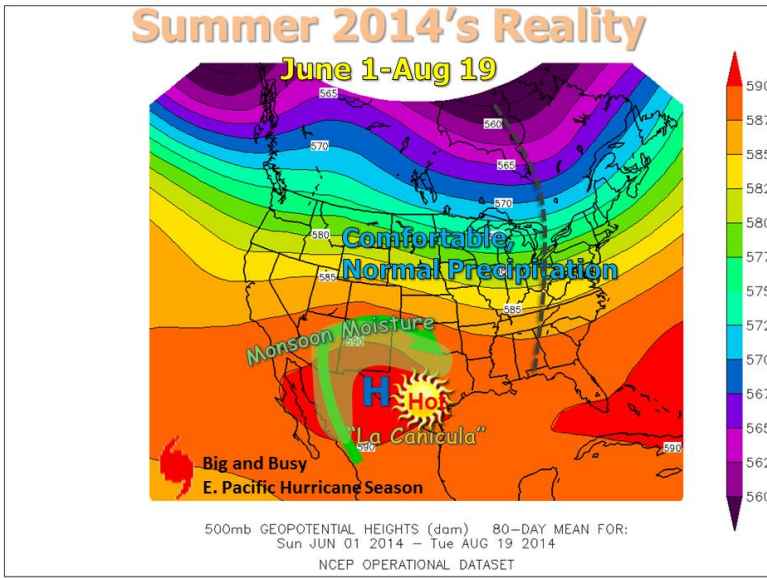
Will September 2014 follow last year’s lead, or revert back to the hot and dry 2011 and 2012 markers? What evolves in September will set the stage for short term drought evolution through the remainder of autumn (October-November). A repeat of 2013, combined with a potential El Niño episode during the winter of

Percentage of Average Rainfall May 27-Aug 26, 2014



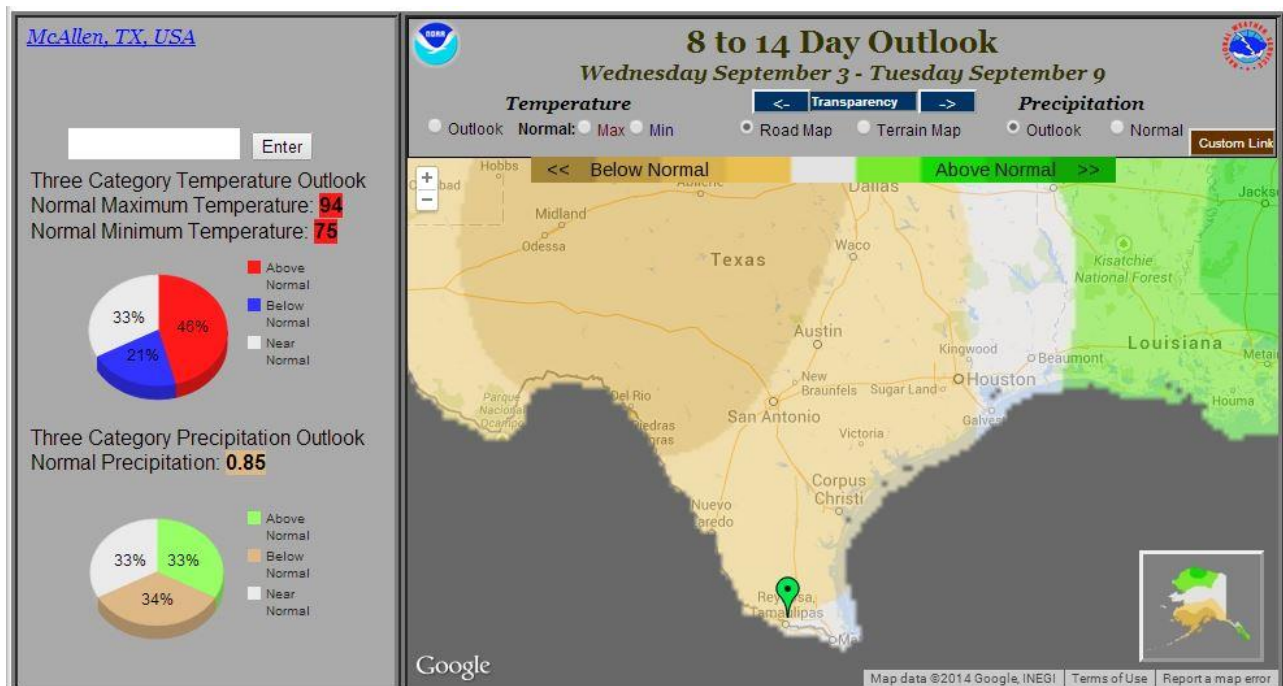
Average Rainfall for June-August (1981-2010) is **6 to 7 inches**

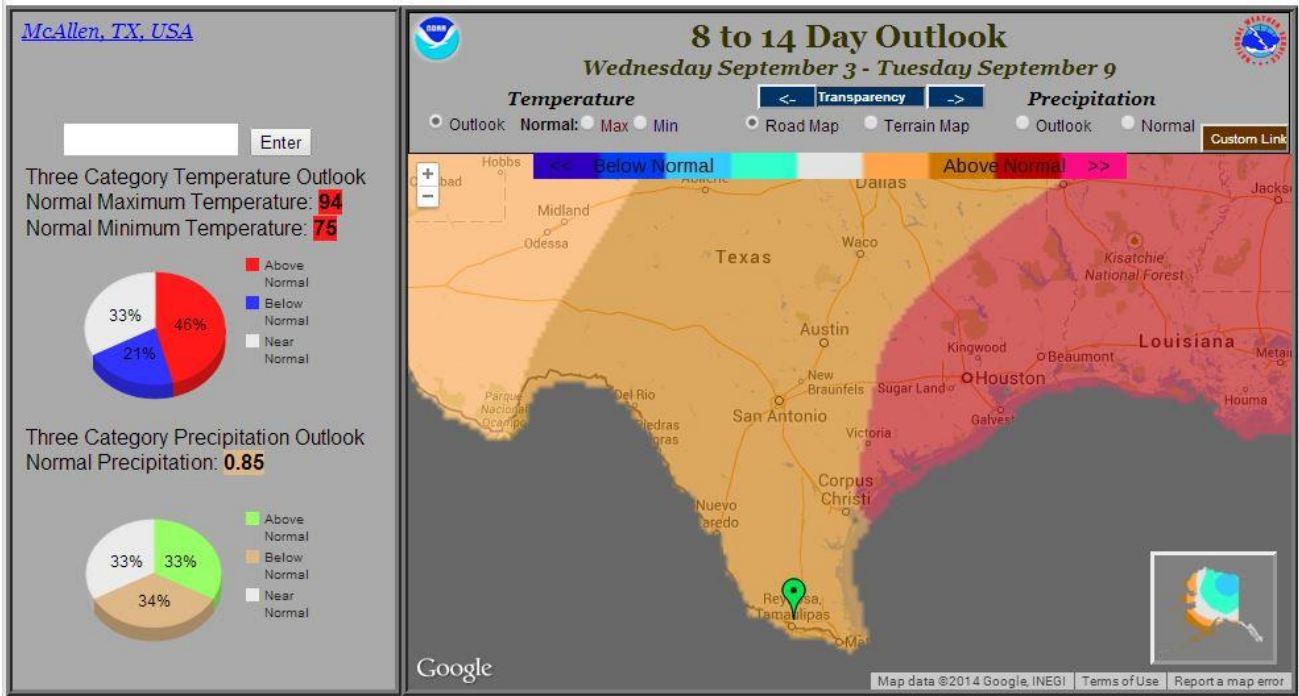
2014/15, would bring some relief to parched soil and sub-soil. On the other hand, a repeat of 2011-2012 would bring extreme drought back to portions of the Valley, and a winter El Niño may provide modest relief – if El Niño develops at all.



September Start: Pattern Change Coming? Or Just Teasing Us?

The [La Canicula Pattern](#), which has dominated the summer of 2014 with above average temperatures and below average precipitation (above left), is the key to September's outcome. There are signs (above right) that the subtropical ridge will finally become established across the western Atlantic Ocean, from Bermuda to the Florida and Georgia coast. The question remains: Will there be any 'perturbations' in the flow at the base of the ridge – disturbances which could lift welcome tropical moisture into the Rio Grande Valley (dashed green arrow) – or not (solid green arrow)? The subtle difference could make *all the difference*: substantial, drought-denting rainfall (dashed arrow) or continued heat with nothing more than "hit and run" showers or thunderstorms. The current "lean" of the two week forecast through September 9th for McAllen (below and top of next page) suggests hit and run precipitation and plenty more heat rather than a widespread soaking and with more clouds/lower temperatures, as deeper moisture rides a path into eastern Mexico. The margin is razor thin, confidence is low, and the potential remains for disturbances to buckle the ridge and curl toward the Rio Grande Valley for the latter half of the month.

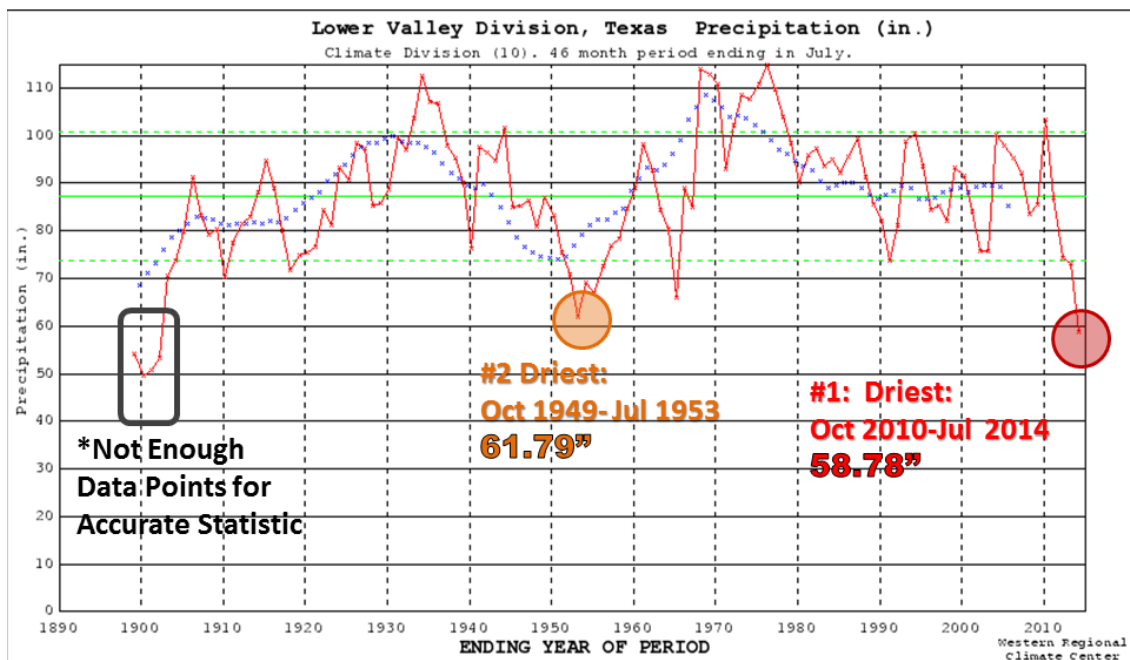




The Drought Hangs On

The end of August saw moderate to severe drought dominate Deep South Texas (click [here](#) for updates). Short term fluctuations will change conditions in September one way or the other given uncertainty described earlier. Something that won't change anytime soon is the continued record deficit since the current dry period began in October 2010. For the 46 months which followed, the Rio Grande Valley sector (Cameron, Hidalgo, and Willacy) remained at record low rainfall, still 3 inches below the prior record (October 1949-July 1953). Truthfully, only a slow moving tropical cyclone will be capable of eradicating the water deficit. Similar rainfall in the coming winter to that of [2013/2014](#) or [2009/2010](#) will put a short term dent into the drought, but do little to help deeper aquifers and other long term moisture and water sources.

Record Long-Term Dryness Continues



The 2010-2014 Period is **3.01 inches drier** than the prior record!

Beyond September

After much [fanfare earlier this summer](#), El Niño's development slowed down and stopped by late summer. The initial surge from April through early June may have aided the expected hot and dry summer and slow start to the peak of the Atlantic Hurricane Season (August-October) - three named storms (hurricanes), by late August (average is five named and two hurricanes by August 31st). A resumption of eastern/central Pacific sea surface temperature warming in August, combined with other signals (below), suggested a weak El Niño was still possible by October/November 2014. Confidence had slid, however, from more than 80 percent certainty to 65 percent at the end of August. Whether or not El Niño can become reality during the September-November time frame, correlation between developing El Niño in autumn and above average rainfall, particularly in October and November, is indeterminate. Combine this uncertainty with the [climatological sharp drop in monthly rainfall](#) from September to November and one can be assured that, short of a slow moving tropical cyclone or tropical wave across the Rio Grande Valley, soil moisture deficits and jurisdictional water conservation will continue until further notice.

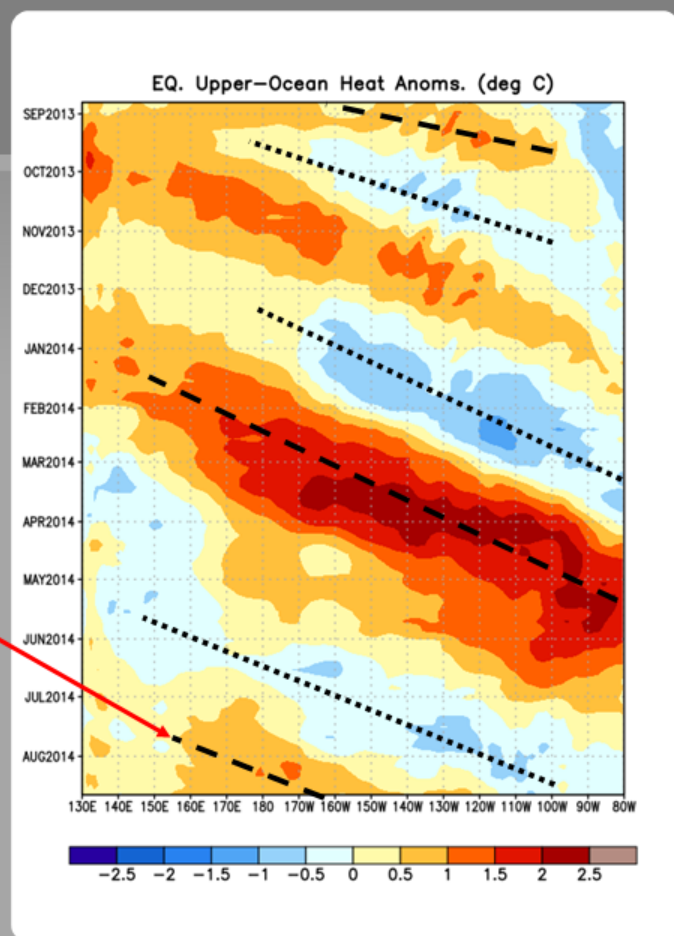
Weekly Heat Content Evolution in the Equatorial Pacific

During January - May 2014, the downwelling phase of a strong Kelvin wave crossed the Pacific.

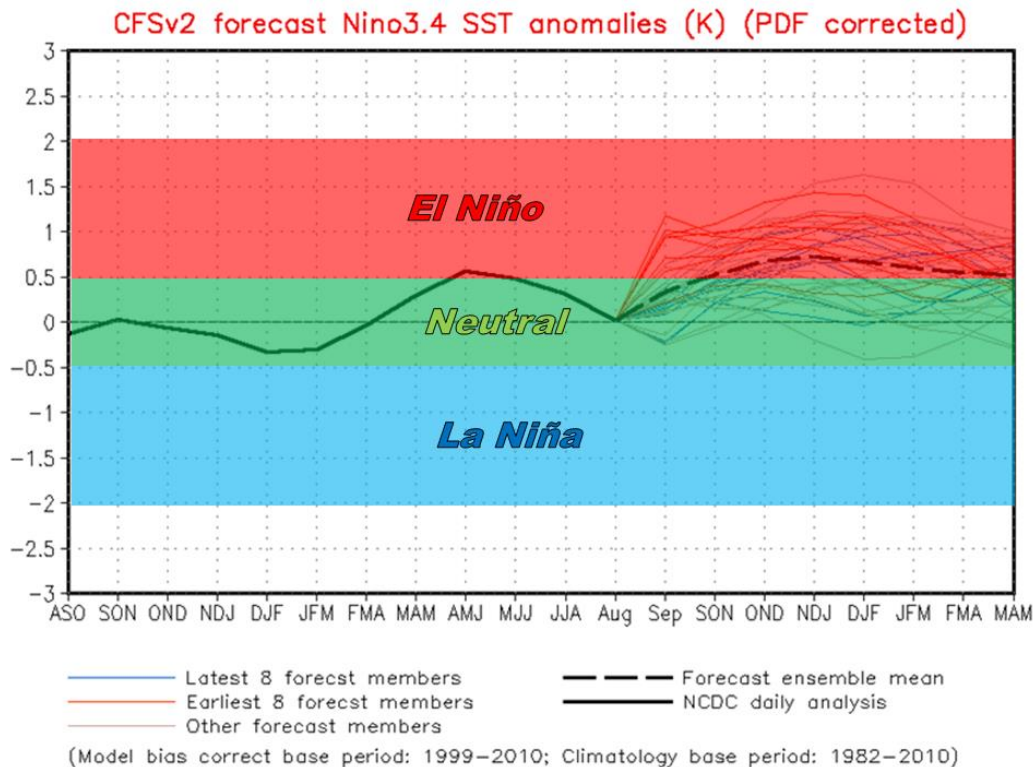
During May-July, positive temperature anomalies progressively disappeared from the equatorial Pacific in response to an upwelling Kelvin wave.

In late July and August, a downwelling Kelvin wave moved into the east-central equatorial Pacific.

Oceanic Kelvin waves have alternating warm and cold phases. The warm phase is indicated by dashed lines. Down-welling and warming occur in the leading portion of a Kelvin wave, and up-welling and cooling occur in the trailing portion.



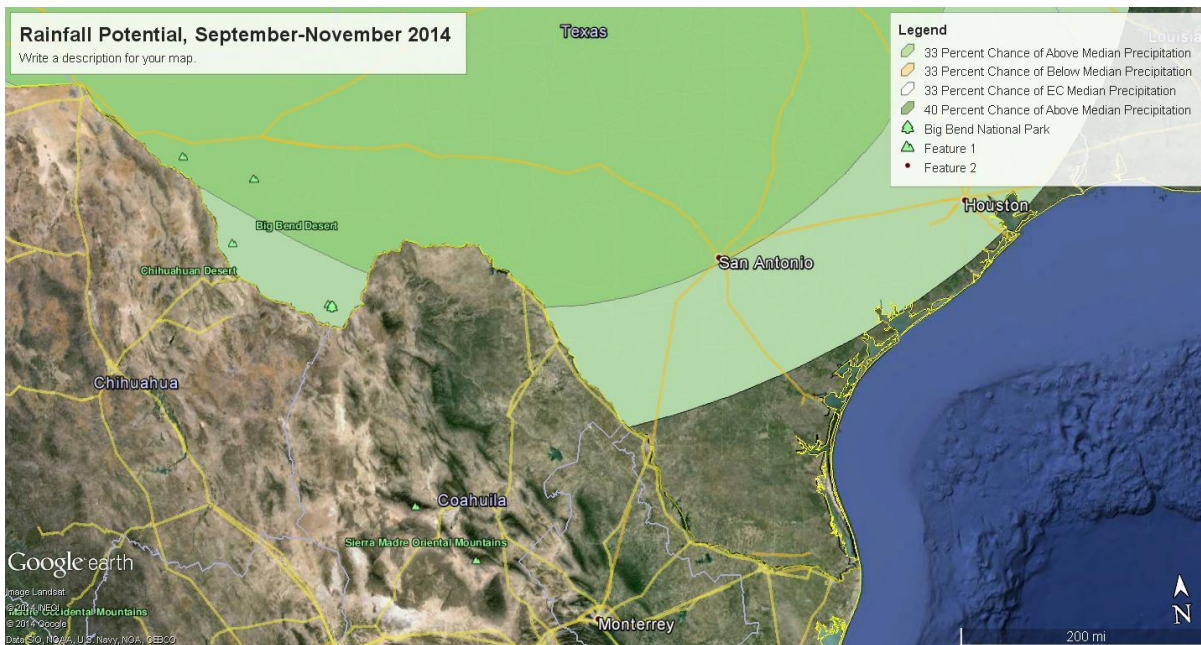
Above: The gradually intensifying Kelvin Wave (downwelling, red arrow) moving into the International Dateline region and farther east suggests a potential restart of eastern Pacific warming, the precursor to El Niño. How and when El Niño conditions develop could be determined by the ultimate strength of this wave, which is uncertain. Similar strength to the wave of January-early June 2014 (dark red/maroon) might be enough to bring El Niño conditions in time for the winter of 2014/15. Persistent, stable warming can lead to [wetter and cooler conditions](#) across Texas, including the Rio Grande Valley.



Above: Late August value of El Niño/Southern Oscillation (ENSO) Index (0.1°, end of solid black line), followed by forecast through next spring by the Climate Forecast System model ensemble. Model spread is sufficient to keep uncertainty on whether El Niño develops at all, or neutral “leaning” El Niño (0 to 0.5°) dominates winter and spring 2015.

Conservation is King

At the end of August, [several dozen irrigation districts and municipalities](#) remained under voluntary or mandatory water use restrictions – a condition that has changed little since early 2012. With an uncertain September and autumn rainfall forecast (below), residents should continue to conserve water anytime and anywhere – in the Valley and across the state. Download and print the following [guide](#) from the [Texas Water Development Board](#) for details!



Rainfall potential for autumn 2014 across Texas. Better opportunities exist for welcome rain across north and central Texas, where residual monsoon moisture from the Pacific (September-early October) is expected to hook up with an increasingly active subtropical jet stream (November). Uncertainty (no color) across South Texas dominates due to questions and low confidence on how much moisture and jet stream energy can reach the region before winter (December-February) begins.