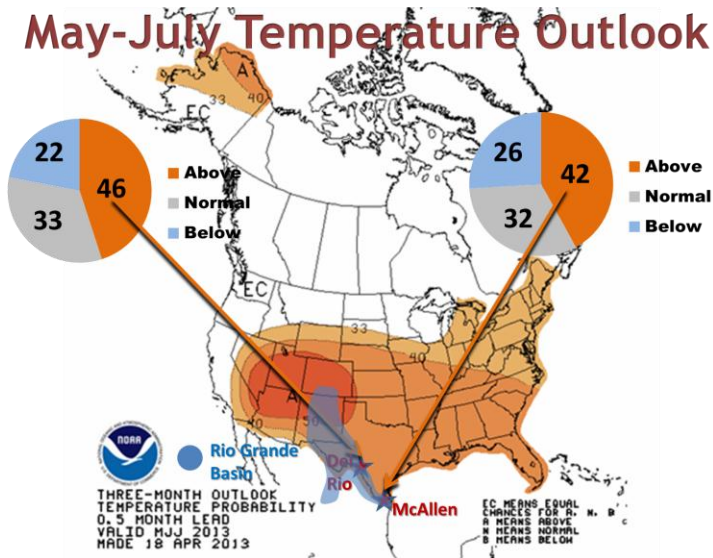
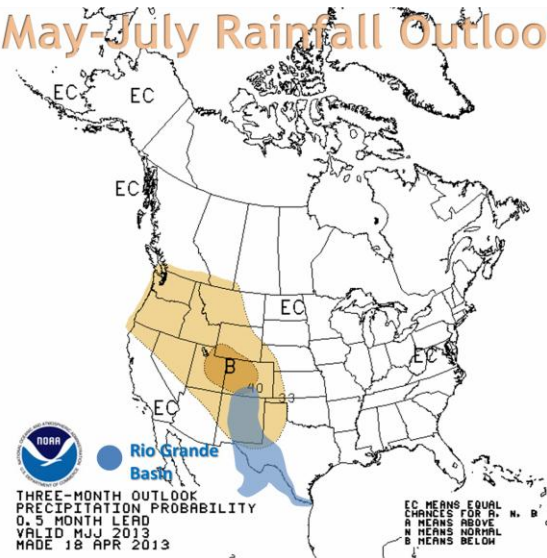


## May-July Temperature Outlook



## May-July Rainfall Outlook



**Above:** Left – Forecast Temperature Probabilities for May-July. Pie charts indicate chances for above average, average, and below average temperatures. Right – Forecast Precipitation Probabilities for May-July. “EC” means equal chances (33.3%) of above average, average, and below average rainfall.

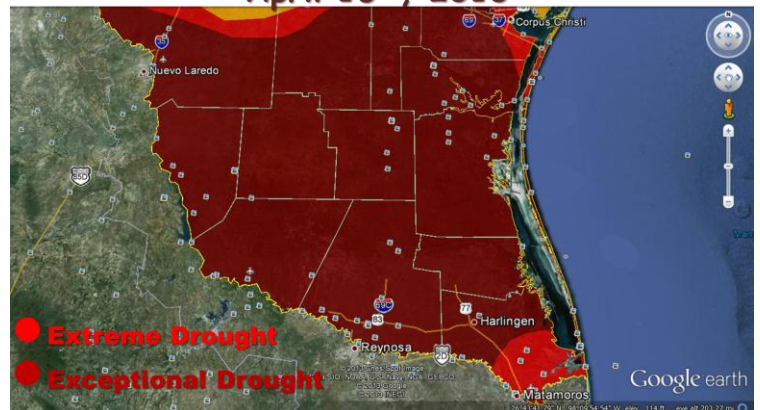
# Only a Tropical Cyclone Can End This Very Hot and Generally Dry Weather Expected into Mid-Summer

### Overview

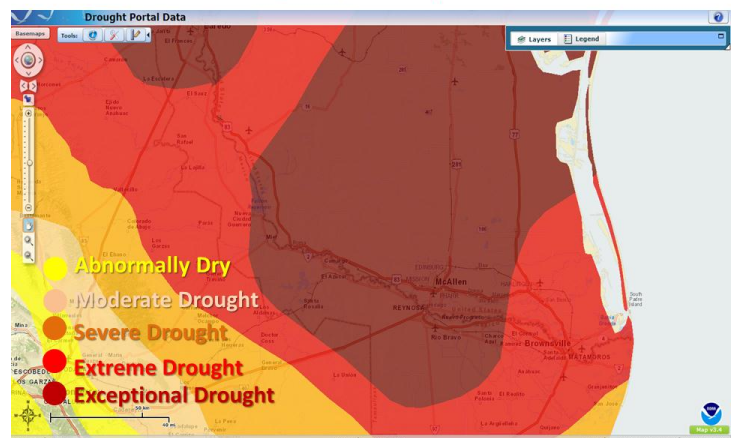
The Rio Grande Valley drought that began when the spigot shut off after a [record water year \(October 2009 to September 2010\)](#) in October 2010 has obliterated the prior 30 month record from October through March. Through April 23<sup>rd</sup>, rainfall continued to be scarce across the region. An expected chilly rain for the 24<sup>th</sup> and 25<sup>th</sup> would be insufficiently light, and 24- and 30-month record shattering dry periods would likely continue when the April data were added. The month was set to conclude with Exceptional Drought across the predominant population of the Rio Grande Valley – on both sides of the U.S./Mexico border. Note: The U.S. Drought Monitor is updated weekly; the North American Drought Monitor is updated monthly.

As April closed, the water crisis deepened further, with an increasing number of municipal water districts expected to run out of water before summer’s heat peaks in July. As of this writing, Brownsville was set to implement a voluntary water conservation effort on May 1<sup>st</sup>. McAllen had [implemented Stage 2](#) of its Drought Contingency Plan, and was no longer issuing warnings in lieu of direct citations for those violating the Plan. Twenty two municipalities were under voluntary or mandatory water restrictions as of late April, and this number was likely to grow into May.

### Rio Grande Valley Drought Monitor April 16<sup>th</sup>, 2013



### North American Drought Monitor End of March, 2013



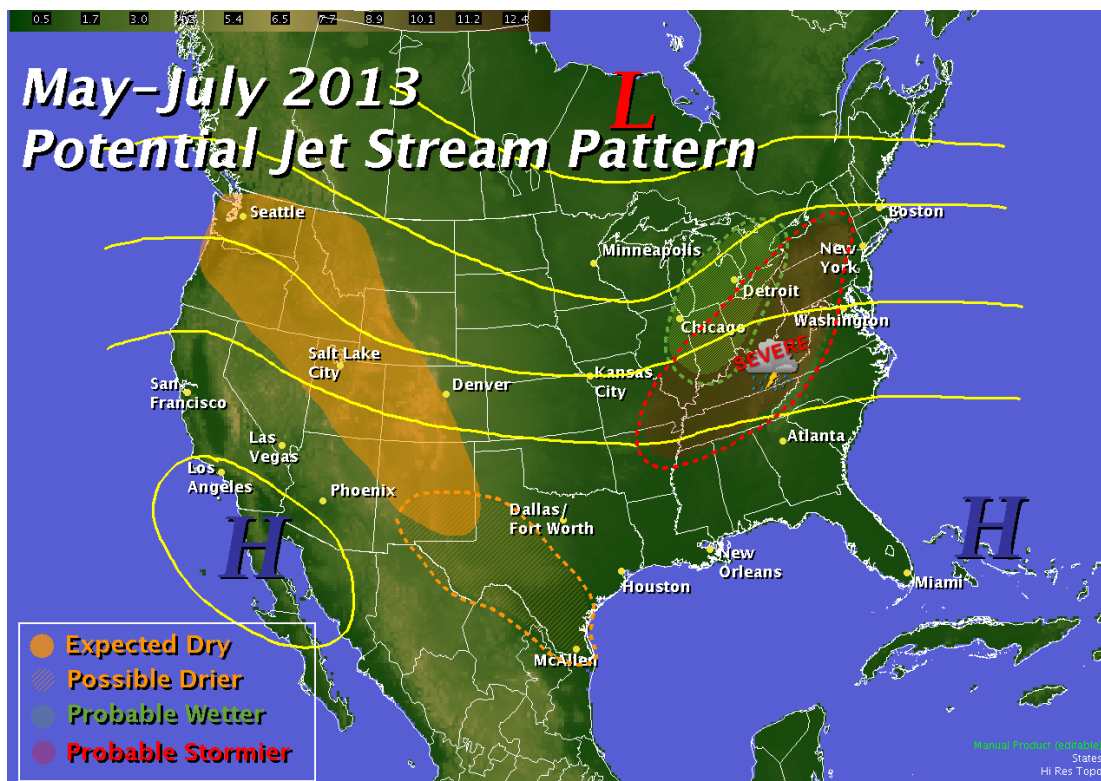
## Agricultural Disaster Underway

According to the U.S. Department of Agriculture and Texas Agrilife Extension Service agents, soil moisture levels were very short. Livestock, rangeland and pastures continued in poor condition, prompting livestock producers to continue selling off cattle. In Starr County, some onion producers continued harvesting. In Willacy County, planting of row crops was at a standstill. Many crops will not be planted there this year due to the severe drought. Crops that had been planted were generally stressed. Growers continued to irrigate where they had the capacity to do so. Water shortages were locking in a crisis for farmers and entire cities this year.

According to the Texas Commission on Environmental Quality, Cameron County Irrigation District #2, one of the valley's largest irrigation districts, notified users they are no longer taking orders for water deliveries. This will have catastrophic consequences to crop yields in this district and may result in total crop losses in some instances. The Valley's two other large Districts in Hidalgo County (Irrigation District #9 and Delta Lake Irrigation District) have announced without substantial new inflows into local reservoirs or substantial rainfall, they will likely stop taking orders for water deliveries during May. Due to the interconnected nature of the Valley's water distribution system, which is weighted toward agricultural use, cities and industrial users will have a difficult time acquiring water when irrigation water is exhausted. The crisis continues to worsen for residents of the Valley; all water users are strongly urged to conserve water this summer.

## The Late Spring and Early Summer Outlook

We can say this: It *will* rain again. The first chance may be with the start of May, as the pattern shifts a bit and potentially favors a period of some wetting showers. Other opportunities may come in mid to late June, as they have in 2011 and 2012. Unfortunately, the expected flow pattern described by a consensus of seasonal models and persistence of atmospheric teleconnections, or puzzle pieces, that favor a continuation of upper level high pressure across northwest Mexico probably extending into southern California. This pattern suggests the possibility of dry air extending from the Rockies and southwest U.S. into western and southern Texas (below). One possible ray of hope is the possibility of a weakness to develop between the southwestern U.S. ridge and a flat ridge expected to extend from the Atlantic Ocean west into the southeast U.S. and Florida. Such a weakness would allow the door to open for tropical/subtropical moisture to flow into south Texas and could bring welcome precipitation to the Valley. Still, "welcome" is far from relieving; only a series of tropical waves or a slow moving tropical cyclone can alleviate the acute drought.

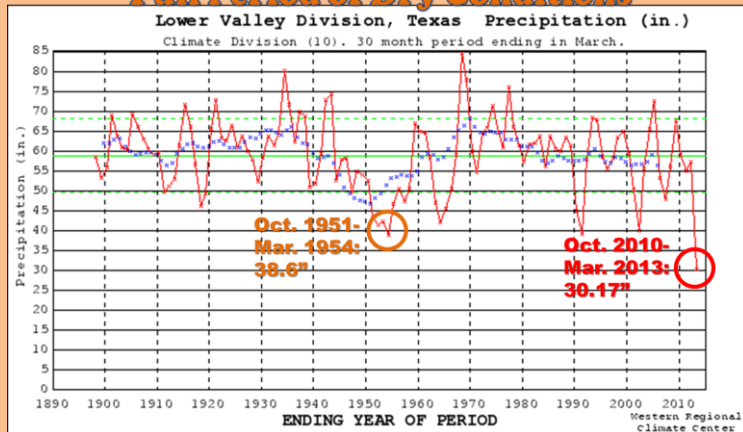


## Just How Dry Has It Been?

As mentioned near the top of the article, the 30 month drought period from October 2010 through March 2013 has been more than a record breaker. The chart below shows the total rainfall and the difference between the prior record set in the 1950s. More impressive is the difference between the **new and old record** is nearly one full standard deviation! The bell shaped curve below the chart tells this amazing tale: For the nearly 130 year sample of data (back to 1895), the chance for having a 30 month stretch of such paltry rainfall is 0.1 percent! In statistics, we call this the ultimate outlier; in the real world, we call this unprecedented drought.

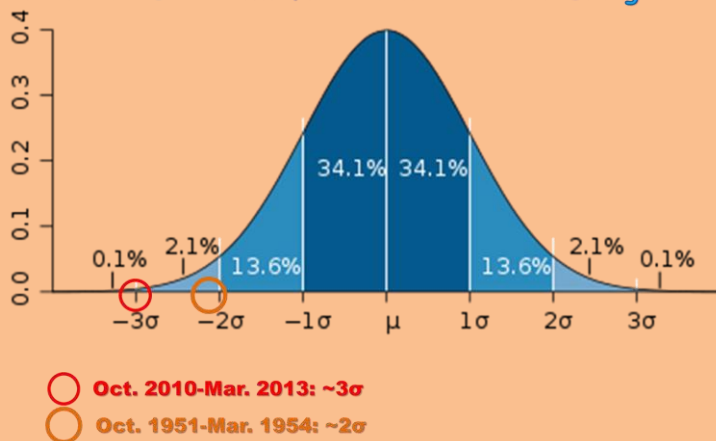
Indeed.

### October 2010-March 2013 Full Period of Dry Conditions



### Normal Distribution of Data

#### Standard Deviations for Recent and Prior Drought Record



## Resolving Crises Before They Begin

The best way to stop a crisis is to find a solution. The Rio Grande Valley's population continues to grow more rapidly than most areas of Texas, and is forecast to reach or exceed 6 million people on both sides of the border by the latter half of the century. At the same time, climate trends suggest this is not the last long term exceptional drought, nor are temperatures forecast to get any cooler.

A comprehensive water management plan is the key to ensuring water supplies can support a combination of residential and industrial (agriculture) even when conditions become dire. Consider these four "-ations":

- Conservation
- Reclamation
- Desalination
- Innovation!

Conservation is the most critical of the four; after all, if water is scarce, less needs to be used by everyone to ensure there is enough to go around. Reclamation is a method of returning cleansed wastewater back into the distribution chain for non-potable uses, such as irrigation of lawns, yards, and some crops. Desalination removes salt and other minerals from brackish water under the earth and across coastal estuaries, and allows use for agricultural and municipal interests. Innovation includes new ideas for smart irrigation and possible rotation of drought-tolerant cash crops into the Valley's growing agribusiness, modern conservation capabilities that build on rain barrel and cistern storage techniques, and smart-flow technology that can further lessen the use of water from every day appliances.

In the future, the National Weather Service hopes to partner with local, regional, state, and national business, educational, and environmental organizations to spread the message of the "four Ations" to ensure the Rio Grande Valley can be survive – and thrive – no matter how much or little water is available at a given time.

For conservation tips you can use now, check out our initial [spring outlook](#) (March to May) and scroll to the last section.