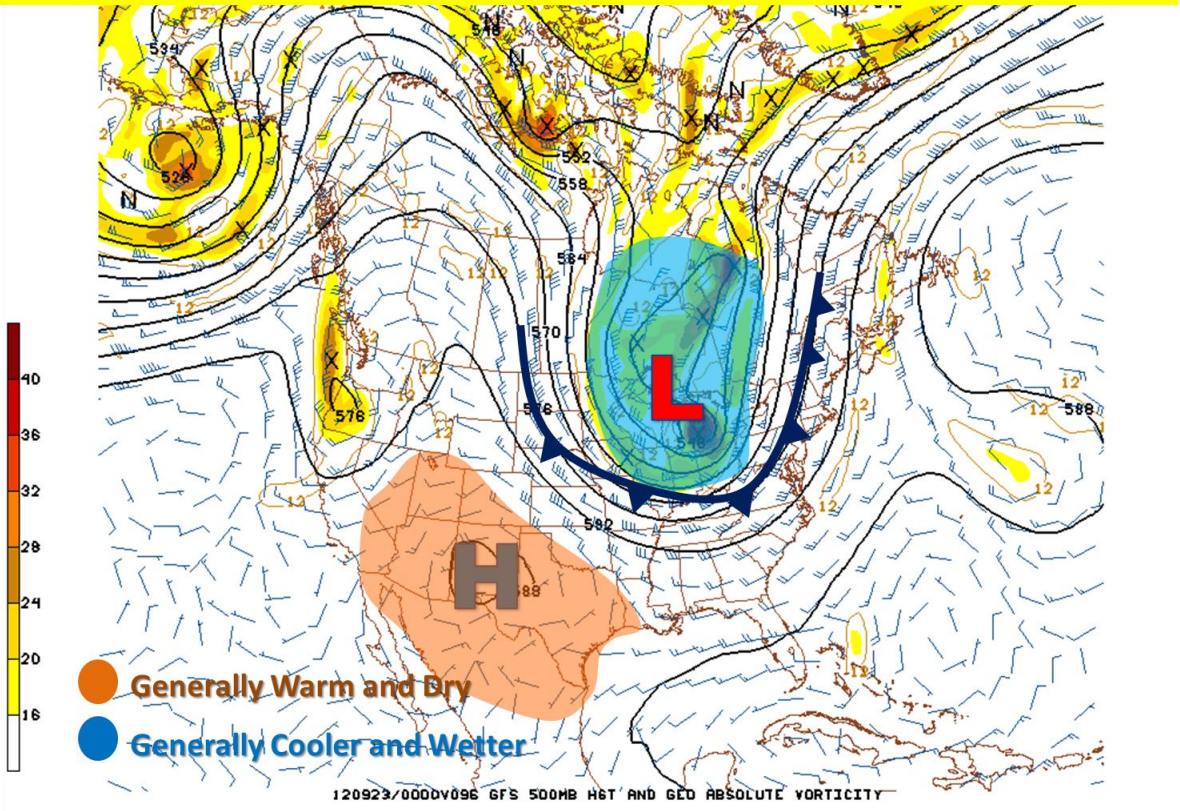
Pattern for the Rest of September?



What Now?

RGV's Hurricane Season Ending and Dry September Locking In

Summary

Another September, and the Rio Grande Valley Drought Continues.

The hope from forecast rains across the Rio Grande Plains and portions of the Rio Grande Valley during the weekend of September 15-17 was largely dashed by the reality of splotchy heavy rainfall across the Rio Grande basin during the period. Widespread heavier amounts expected in the heart of the Rio Grande Basin never materialized, and reservoir levels at Amistad International Reservoir near Del Rio, Texas, continued to fall slowly, nearing 50 percent of capacity on September 19th. Across the Valley, heaviest rains fell Friday evening, September 14th, in portions of Tamaulipas and Nuevo Leon. Thereafter, the heaviest rains fell over the Gulf waters and points well northeast of the Valley.

Generally dry weather returned to start the week of September 16th – a week which typically has some of the highest average daily rainfall across the Valley based on long term records. The general pattern (shown above) through the remainder of September indicates little, if any, significant rainfall for the Valley. There is an outside chance that some moisture may slide toward the Rio Grande to begin the final full week of September (23rd), but high pressure (above) may just as easily pinch the moisture off – and guarantee a second very dry September – Top 5 or 10 all time in some locations – in a row.

Water and Reservoir Impacts: Due to diminishing reservoir levels, drought conditions and lack of rainfall, the Texas Commission on Environmental Quality (TCEQ) has indicated that irrigation districts in the lower Rio Grande Valley could face water restrictions toward the end of the year. Several public water supply entities continue voluntary water conservation to avoid shortages or further restrictions, with a few entities requiring mild restrictions. One public water supply entity in Starr and another in Zapata County continue severe

restrictions. According to TCEQ, there are currently 3 public water supply entities in Cameron County, 8 in Hidalgo County, 5 in Starr County, 3 in Zapata County and 2 in Willacy County that continue water restrictions. Residents of the Rio Grande Valley are urged to conserve water.

The Falcon and Amistad International Reservoirs provide much of the water for the Rio Grande Valley. Recent lake levels at Amistad Reservoir have diminished steadily to 50 percent of normal conservation level, with little replenishing rainfall during the period September 14-17 reaching the pool. Due to releases from Amistad, storage at Falcon Reservoir Has risen to just over 20 percent of conservation. Levels Below 19 percent of capacity (315,000 acre-feet of storage) earlier this summer were the lowest in the reservoir since 1998. Extreme low reservoir levels continue to be a major concern for residents of Rio Grande Valley.

Texas' Hurricane Season: Out with a Whimper

Persistent high pressure high into the atmosphere, which oscillated from the Four Corners region to the southern Plains for most of the summer, not only brought frequent bouts of dry air into South Texas, but effectively shut the door to any northward motion of the few cyclones that developed in the western Caribbean. Even Isaac, which snuck through a gap between an Atlantic high pressure ridge and the persistent Plains/Southwest U.S. ridge, was blocked from gaining much westward longitude; instead, the cyclone drifted into the north central Gulf before making landfall in southeast Louisiana in late August. As the days turned toward October, a month where tropical activity in Texas drops sharply, westerly flow high in the atmosphere began to increase as stronger low pressure areas began to dive into the eastern third of the U.S. Weaker low pressure areas through the peak of the 2012 season, perhaps aided by the North Atlantic Oscillation, kept a number of cyclones at sea, including Tropical Storm Joyce and Hurricanes Kirk, Leslie, and Nadine.

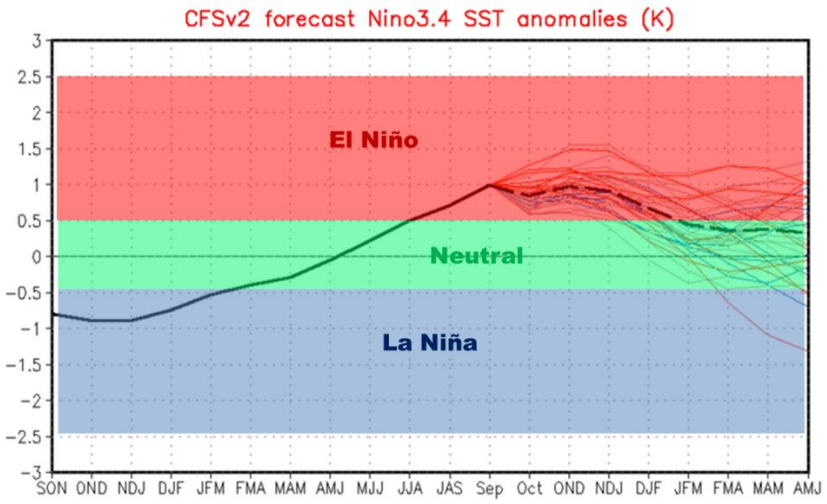
Without indirect or direct impacts from a tropical cyclone or tropical wave, September's rainfall, which generally ranges from 4 to 6 inches across the Rio Grande Valley, relies on local thunderstorms to get close to the long term average. Precious few thunderstorm days have left much of the region very dry. The table below shows how much rain is needed in the final ten days of the month to reach seasonal averages (1981 to 2010 30 year sample).

Location	Totals Through Sept. 19	Needed Rain for Monthly Avg.
Armstrong (Kenedy)	0.15	5.44
Brownsville (Cameron)	0.55	5.37
Raymondville (Willacy)	0.33	4.85
Harlingen/Cooperative (Cameron)	1.13	4.20
Port Isabel (Cameron)*	1.93*	4.10*
Rio Grande City (Starr)*	0.38*	3.92*
McAllen/Cooperative (Hidalgo)*	0*	3.67*
Port Mansfield (Willacy)	1.85	3.43
Falcon Dam (Starr)	0.79	3.24
Mission/La Joya (Hidalgo)	0.55	3.20
Sarita 7 E (Kenedy)	2.33	3.08
McAllen/Miller (Hidalgo)	1.55	2.86
Mercedes 6 SSE (Hidalgo)	3.23	2.05
Hebbronville (Jim Hogg)	1.76	1.53
Falfurrias (Brooks)	3.21	0.66

**Missing one or more days with possible rainfall.*

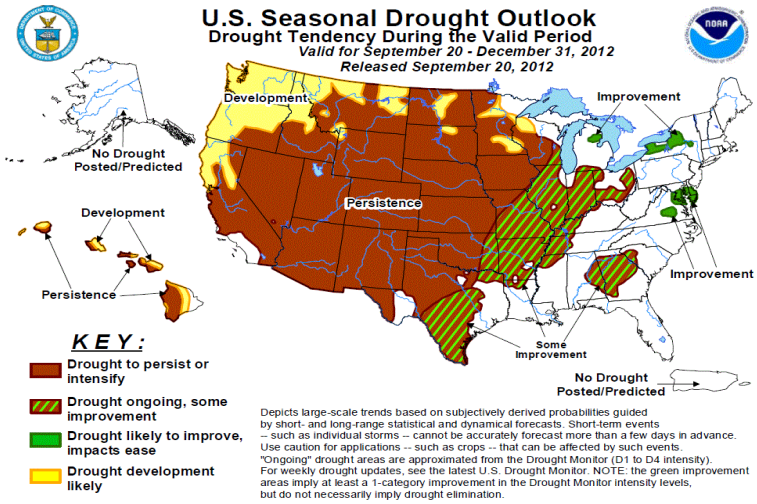
Looking Down the Road

Much discussion involves the future of the developing El Niño and potential for welcome winter rainfall. Many questions remained to be answered, including: 1) How strong will this El Niño be, and will it have any "bite" (longevity)? Recent forecasts suggest a weak El Niño which may not be able to last the entire winter (right). 2) How will the North Atlantic Oscillation or Arctic Oscillation aid, or hinder, the impact of El Niño? Between December 2009 and February 2010, the combination of a moderate El Niño with a strong negative phase of the Arctic and North Atlantic Oscillations may have aided several Gulf Lows (Texas "Nor'easters"), each which produced several inches of rain in south Texas which soaked into the soil with the low evaporation rates and frequent cloud cover. 3) How much rain will flow into the Rio Grande reservoirs, and will there be enough water for spring 2013's irrigation and ranching activities?



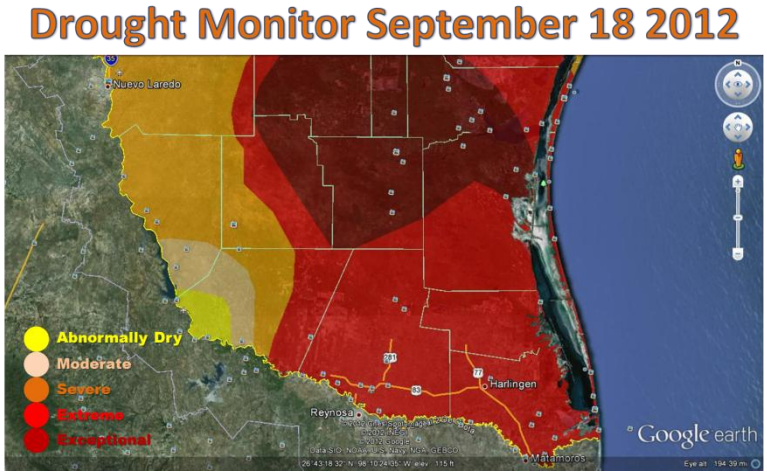
Climate Forecast System of El Nino/Southern Oscillation through Spring 2013. Weak El Niño (values between 0.5 and 1) is forecast into early winter 2013, with neutral conditions possibly returning by late winter.

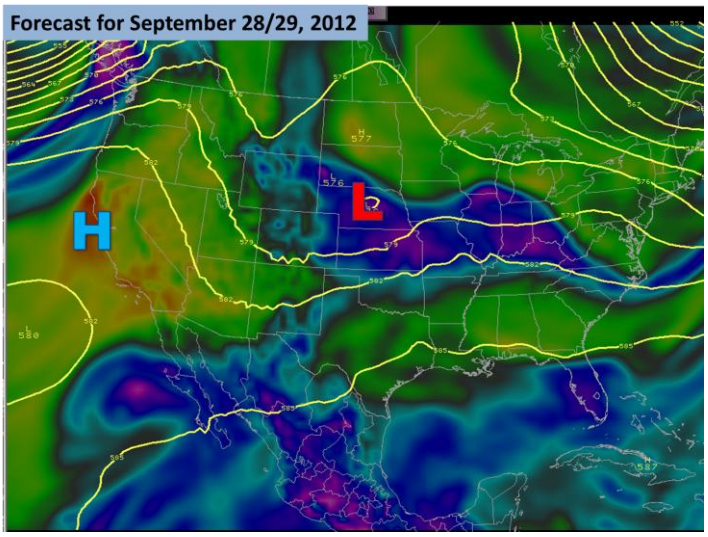
Droughtlook: A bit more uncertainty has crept into the long range "Droughtlook" for South Texas (right) through the end of 2012, not surprising based on the weaker than expected El Niño evolution and uncertainty as to the phase and strength of the North Atlantic and/or Arctic Oscillation as fall heads toward winter. Earlier outlooks indicated green shading – improvement and easing impacts. The hatched shading indicates that some level of drought will prevail across south Texas through the remainder of the year. How much improvement from the widespread Extreme to Exceptional conditions in late September (right, bottom) will be determined by how atmospheric patterns change, and how long these changes persist.

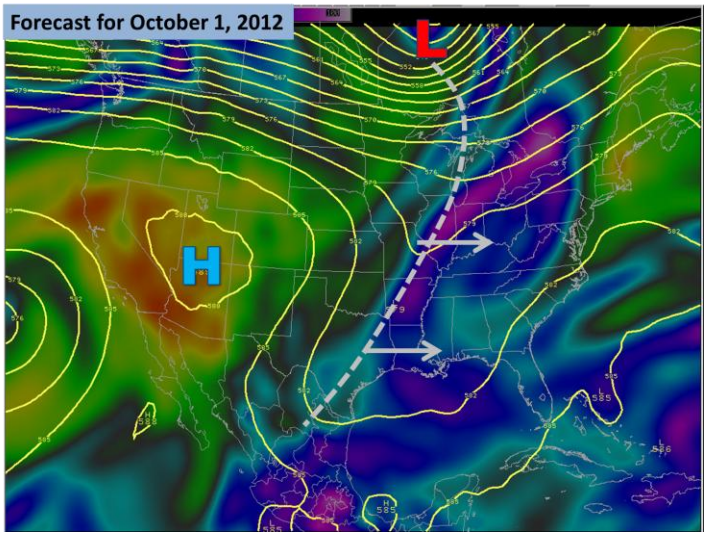


Late September/Early October Hope?

Is a change on the overall pattern afoot? Some models are suggesting a change, which *may* bring some unsettled weather into the Rio Grande Valley as September turns to October. Unfortunately, there is no sign – yet – on whether the change is temporary or a sign of a favorable unsettled pattern for more than just a few days. As the images below indicate, possible rain at the end of September through the first days of October could revert back to a dry pattern soon after. Answers will come as fall arrives.



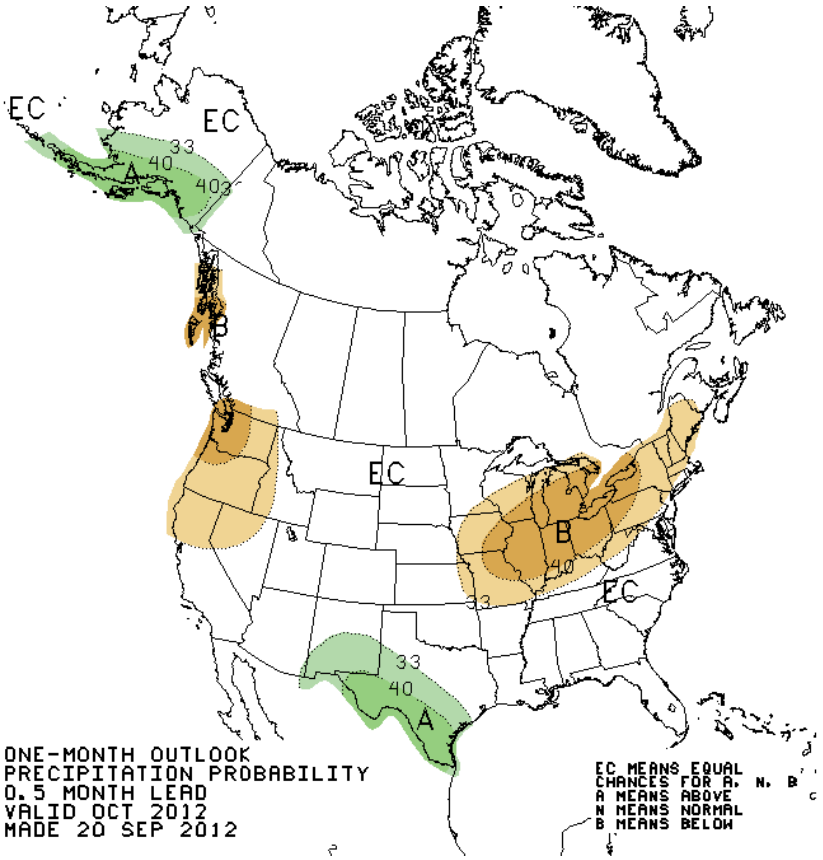




Change… …or Not?

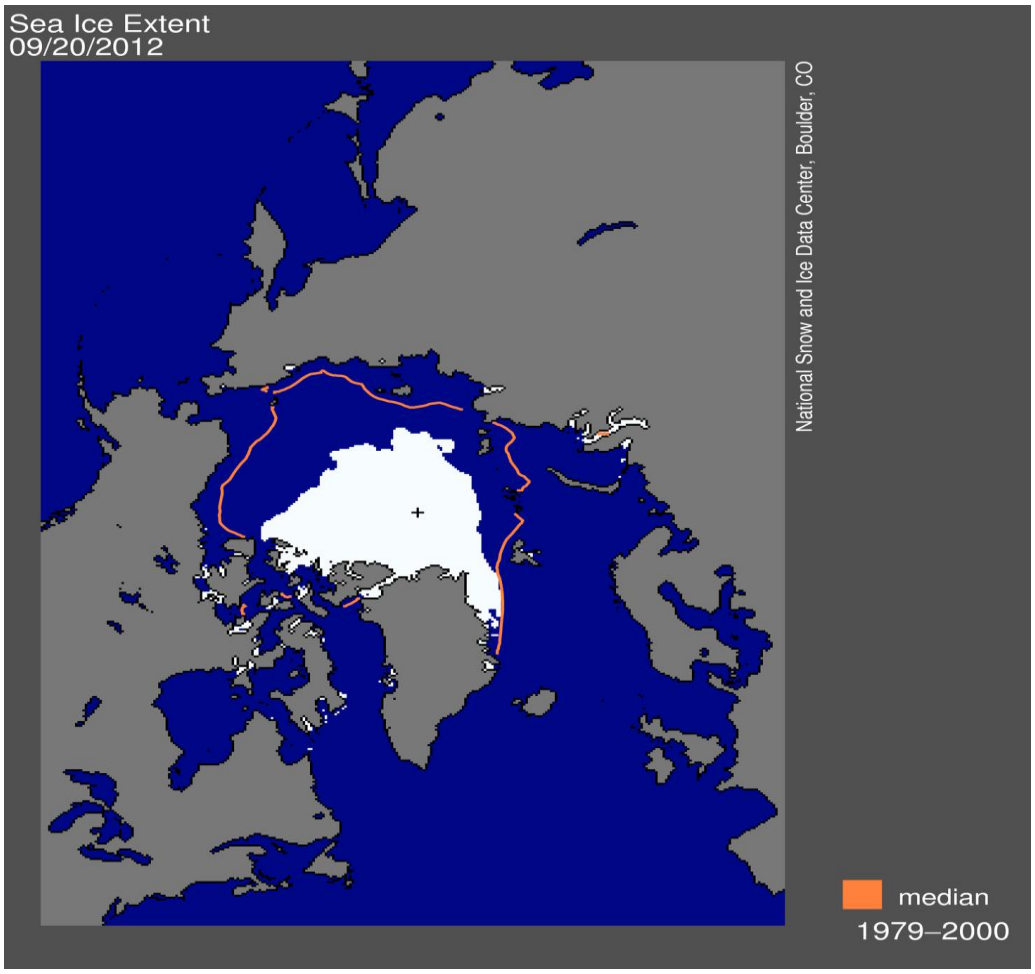
Possible weather pattern (flow at around 18,000 feet above the ground) to end September and start October 2012. ***Left:*** *End of September, indicating broad, weak low pressure in the nation's midsection with dry high pressure displaced to the Pacific Coast.* ***Right:*** *Reverting to form? High pressure settles back across the southwest U.S. as broad trough (gray dashed line) gradually pushes east.* ***Blue*** *and* ***Purple*** *shades indicate deep layer humidity (above 70%);* ***orange*** *and* ***red*** *shades indicate deep layer drying (below 30% humidity).*

The latest forecast for October, 2012, continues to indicate a >40 percent chance of above average precipitation (below). Average chances and below average chances are still notable (above 20 percent each); a continued pattern of drying high pressure across the southwest U.S. would ensure that rainfall would fall at or below average in October. Monthly rainfall averages <2 inches across the Rio Grande Plains to >3 inches in the Lower Rio Grande Valley.



Unknowns

In the late summer of 2012, arctic sea ice reached a record low level (below). How this may impact ocean-atmospheric relationships in the near and long-term could help to explain how the fall and winter weather evolve is unclear. Will the negative NAO continue, strengthen, or turn positive? Will storm systems become more or less intense? Research on the long term impact of the lessening ice pack and global, particularly northern hemisphere, weather patterns is nascent. Much more will be learned this year and in years to come.



Arctic sea ice extent, September 20th, 2012. Location centered on Greenland; ice covers northern Greenland and the Pole, but has disappeared across most of the Arctic Ocean. Alaska is shown at the left-center portion of the map.