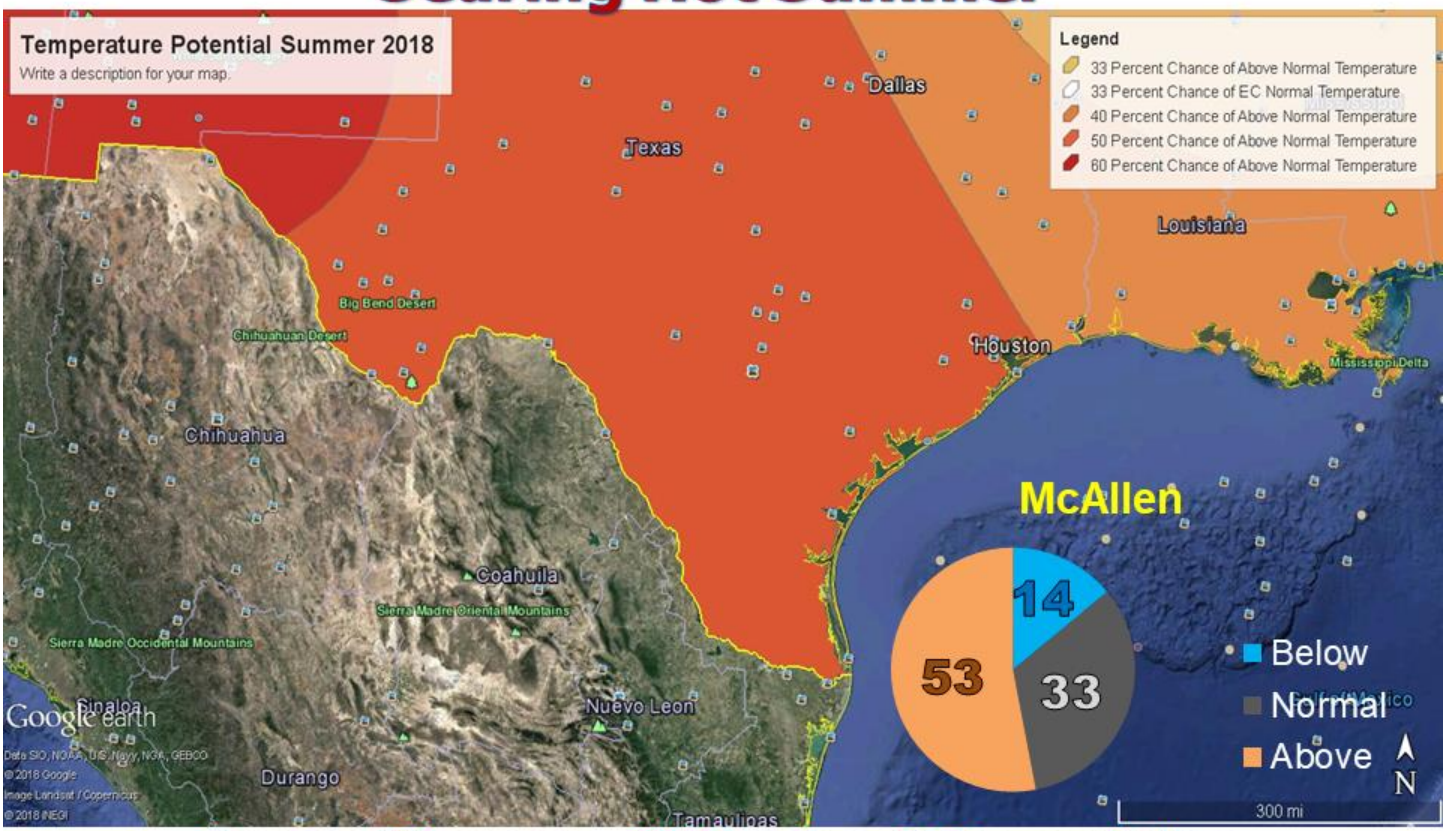
RGV Summer 2018 Outlook

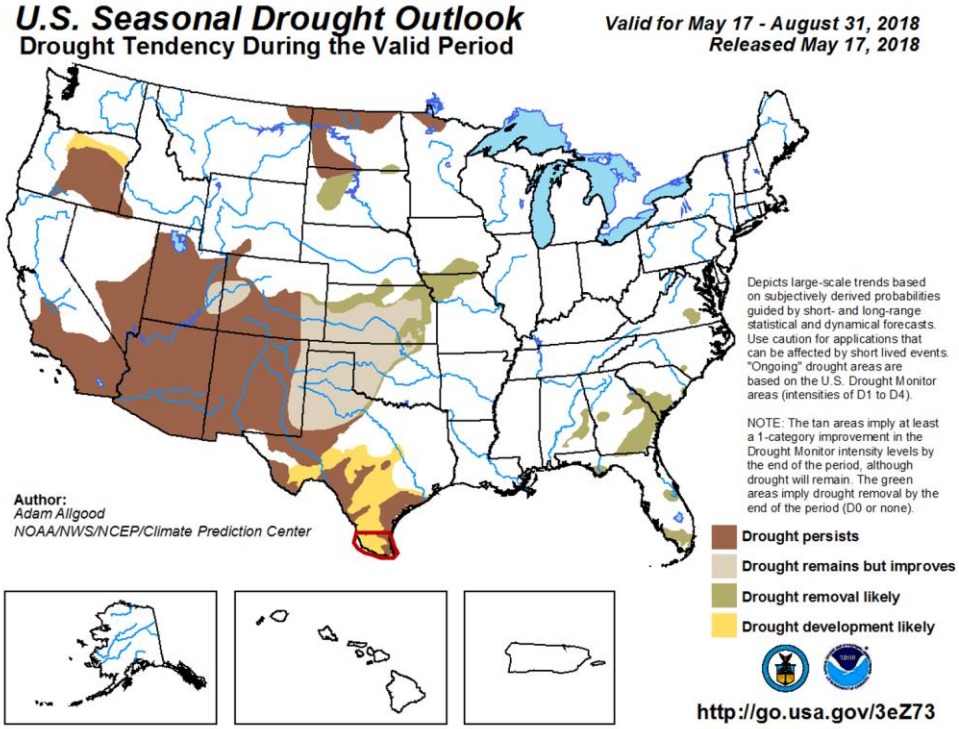
Searing Hot Summer



Average Afternoon: ~90° Beaches, 95° Lower Valley, 97-99° Mid-Upper Valley

Average Wake-Up: ~78° Beaches, 74-77 Elsewhere

Average All Hours: 85-87°



Summer: Feelin' Hot, Hot, **HOT!**

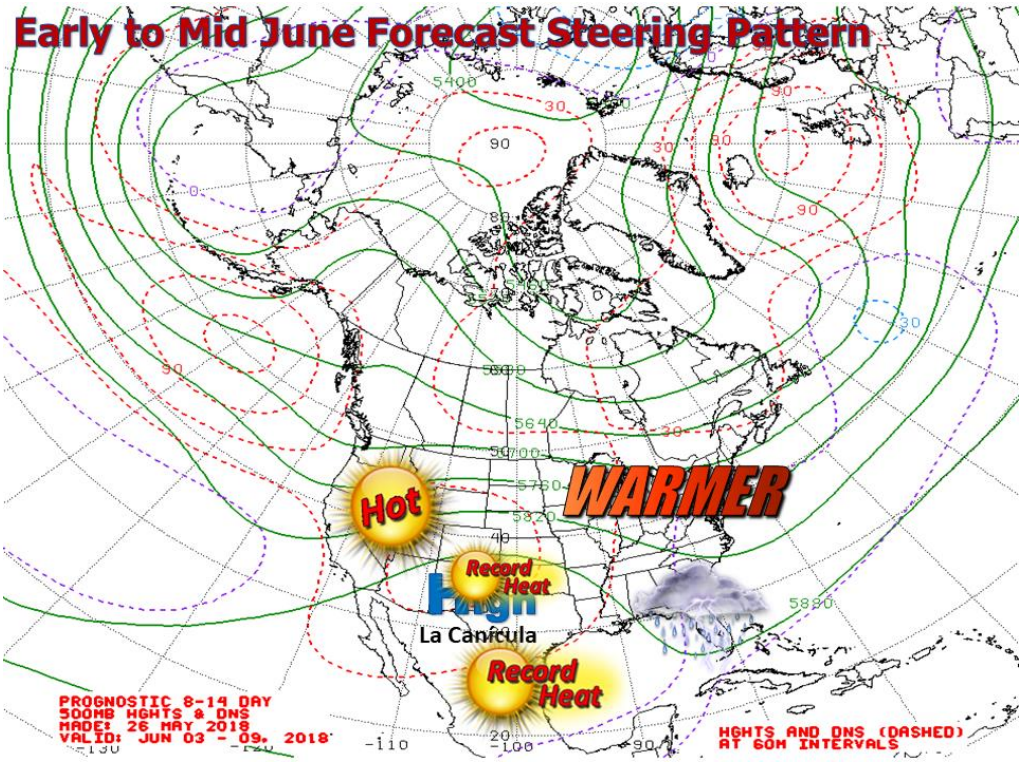
End of May/Early June Heat Wave A Harbinger of Summer

Overview

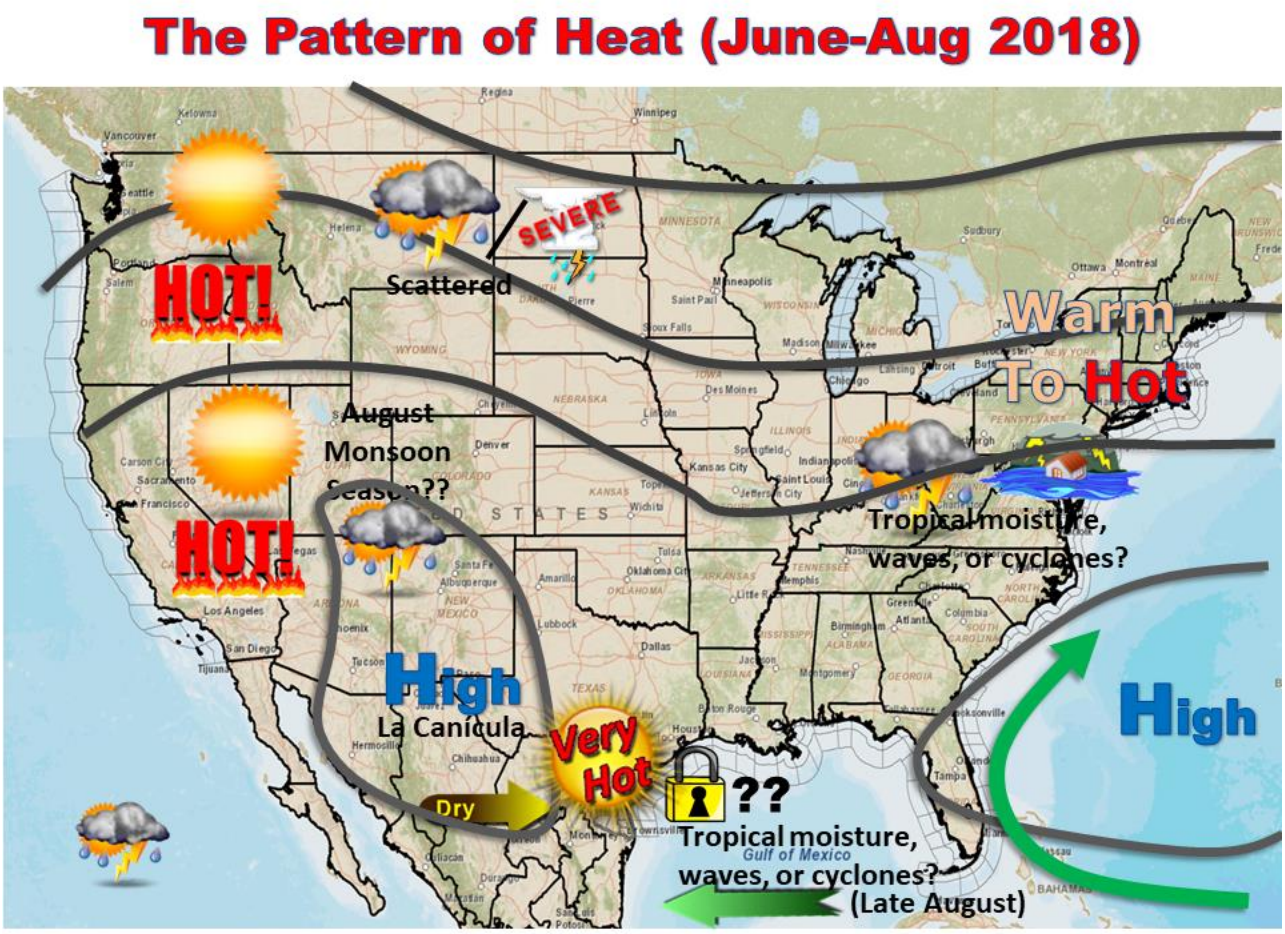
Spring (March) began on the expected much above average temperature track, with temperatures generally 4 to 6˚F above the 1981-2010 average and ranking among the top five to ten warmest on record and rainfall sparse. But April slid back to near normal in both temperature and rainfall, a welcome respite from what was expected to be a confidently warmer and drier spring overall (March to May). That confidence was realized when May took off like a heat rocket toward month's end; as of this writing, temperatures were headed for around 5˚F above average and easily in the top five to ten on record and perhaps pushing spring into the top ten for many sites, right in line with the pre-season forecast. Severe weather in the form of damaging wind and hail was few and far between, and largely spared the populated Rio Grande Valley with the few events, combined with a couple of localized flood cases, in the Upper Valley and Rio Grande Plains (Starr and Zapata).

As May finished and June was set to start, "La Canícula" was firmly in place – six weeks early (read more on La Canícula here). A record to near record two week (or longer) heat wave was underway as of this writing, with no signs of letup. Should the pattern (below) hold firm through the balance of summer, the June-August 2018 period will rival or even break record to near record hot summers in 1998, 2009, 2016, and 2017. The searing sunshine and likely limited rainfall is expected to worsen drought (above), and after many fits and starts with abnormally dry to moderate drought being kept in check by local "just in time" rainfall, confidence is high that severe to extreme drought will develop over parts of the Rio Grande Valley and Ranchlands by July and carry into August.

As for the tropics, the big question will continue: In a decade of "Veracruisers", will there be a small crack in the window for another Hurricane Harvey (or, drifting back to the searing drought of 1980, welcome Hurricane Allen) to "thread the needle"? The forecast average steering pattern is virtually certain to require a one week "break" in it to allow such an event. As we say at the start of any hurricane season, #ItOnlyTakesOne. Since June and July are near certain to be hot and dry, these are the months to prepare while beating the heat and staying hydrated.



Previous Page: The atmospheric pattern into early June shows La Canícula ascendant – in a position more typical of July and early August than early June. Record to near record heat, with temperatures rivaling monthly records, is possible.



Pattern Matters

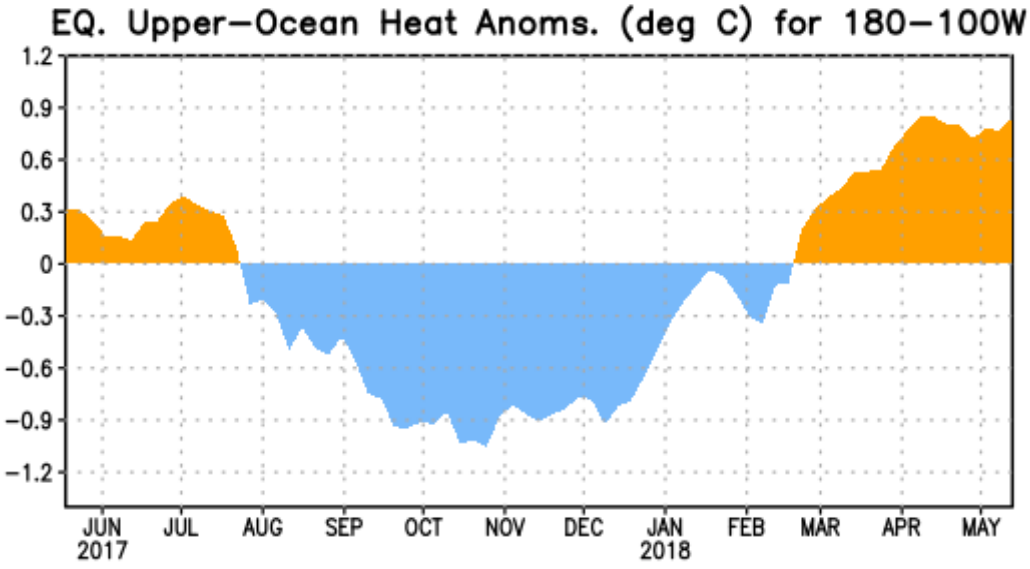
Warmer To Hotter and Drier than Average Near Certain for Summer

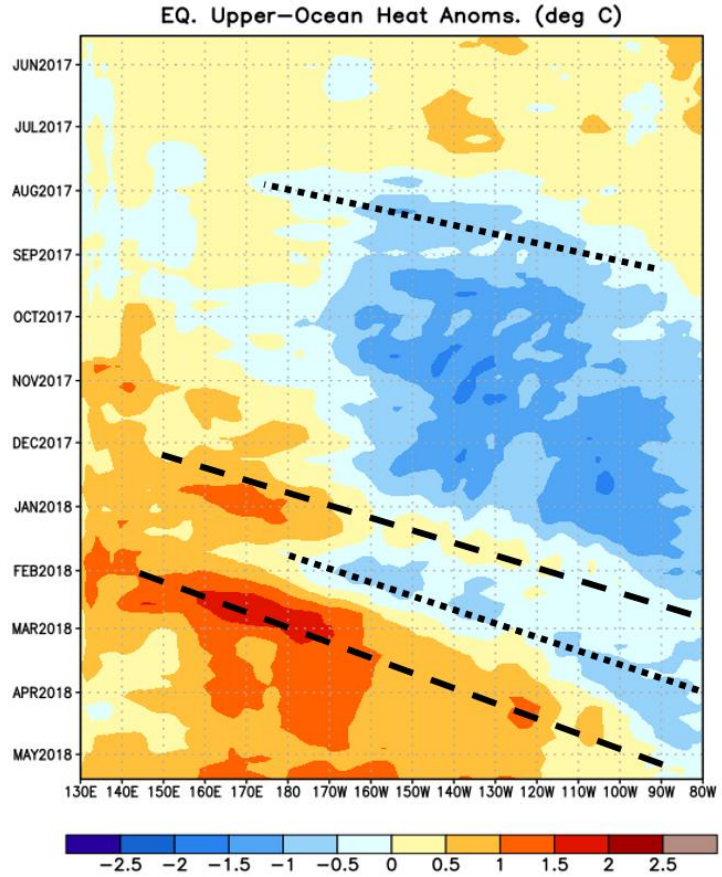
- Hot to very hot days and warm, muggy overnights will dominate June and July, and are likely to continue deep into August.
- Rainfall will be sparse through at least July. This does not mean it won't rain, only that the sense of the first sixty days will be much drier than much wetter than average.
- The combination of building heat, high sun angle, and lack of rainfall completes a positive feedback loop which enhances heat even more. McAllen/Miller Airport, which saw a record 90 100 degree afternoons in 2016 and fell just short of this (87) in 2017, is guaranteed to see at least 70, since by the end of May the location will be off and running at 9 days, and between 25 and 30 are now likely in June and July. If the pattern holds into September, the 2016 record of 90 will likely break.

Teleconnections: El Niño Showing Signs of Life

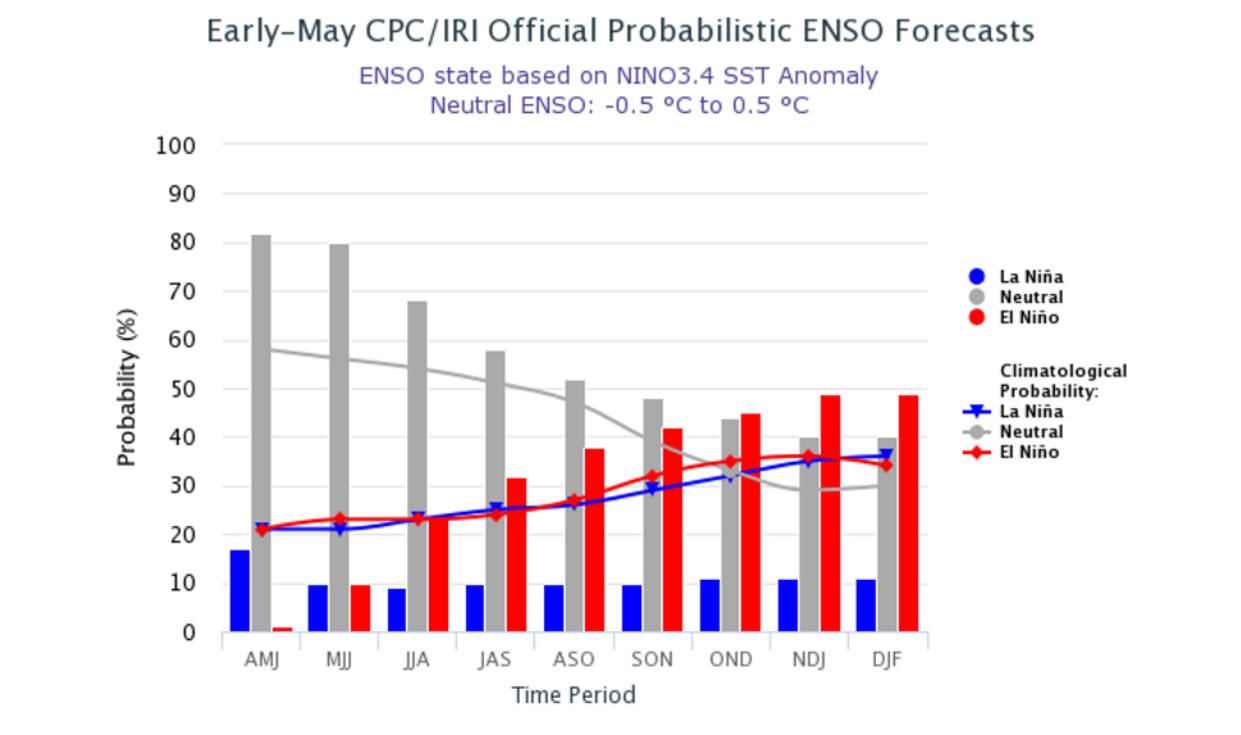
At the end of May, central tropical Pacific Ocean water temperatures near the equator (the Niño 4 region, key to future expectations of El Niño/Southern Oscillation trends) were warming steadily, with additional Kelvin waves (second graphic) indicating some robustness to the down-welling pattern signifying a warming of the region, likely headed toward the East-central tropical Pacific. This said, El Niño-type warming, or eastward "sloshing", has occurred in prior springs and neutral phase of the oscillation holds. There is a recent "lean" toward a weak El Niño by August and September, which could do two things: 1) Aid in wind shear in the western tropical Atlantic/Caribbean Sea, knocking down the potential number of tropical cyclones, and 2) combine with the persistent steering pattern to maintain the hot and drier than average weather through August

and beyond. A weak El Niño that developed in early summer 2009 may have assisted the searing heat, though the correlation becomes a bit less clear by late summer (August) and into September. Other summer teleconnections show weaker correlations when compared with autumn, winter, and spring, and are not discussed here.





Above: Top: Upper Oceanic heat anomalies in the ENSO 1 to 4 region, showing a continued rebound in positive departures from average through April and May 2018. **Bottom:** Strong down-welling Kelvin Wave(s) continue to spread slowly toward the eastern Tropical Pacific; should this continue through summer, a weak El Niño will likely develop.



Multi-model consensus forecasts now forecast neutral-leaning El Niño by the beginning of autumn (September), with a slight lean toward at least a weak El Niño by late autumn 2018 and winter 2018/19.

What to Watch For: Big Heat, Worsening Drought, Some Wildfire Spread Threat on Breezier Days
Overall, for summer 2018, the following situations are expected to predominate:

- *Hot to Very Hot with Limited Rainfall.* June and July could combine to end up 5˚F above the 1981-2010 average, and threaten prior June-July combination temperature records including 1980 and 1998 (Brownsville) and 1998, 2009, and 2016-2017 in McAllen, and similar years (including 1953 and 1945) in Harlingen. La Canícula is expected to continue deep into August, and should searing heat dominate, current summer records (typically including 1998, 2009, 2016-2017) could fall.

- *Drought.* Moderate drought across the Lower/Mid Valley to the King Ranch had been held in check through spring by "just in time" rainfall, but that time has run out. Severe drought is likely to replace moderate in early June, and conditions could reach extreme (also known as "D-3" level drought) later in summer. Locations farther west, where temperatures will be hotter, are likely to see drought develop as well, and moderate to severe is likely. Should this occur, by the end of July, most of the Deep South Texas region would be in severe to extreme drought.

- *Wildfire Danger.* The dry conditions across the Lower/Mid Valley and King Ranch this spring have likely suppressed fuel growth. However, fuel growth (grasses and brush) has been more proficient in Starr, southern Jim Hogg, and parts of Zapata County. The expectation of some of the hottest temperatures with lowest humidity (20s to lower 30s on many days) could make these fuels "tinder" and subject to rapid wildfire growth/spread. The key, however, will be wind, which tends to be less through summer (generally 15 to 20 mph or lower). In 2009, a few Red Flag Warnings were required – **in July** - due to the rare combination of low humidity and gusty southerly winds – this occurred on days when temperatures rose near 110˚F and humidity plummeted to 20 percent or less. The current forecast lends itself to a few such situations between June and August 2018.

- *Tropics?* #ItOnlyTakesOne. As Harvey showed in 2017, a "La Canícula" summer can see a one-week "crack" in the pattern to allow such a system to thread the needle and create devastation in Texas. Harvey

used very warm water temperatures as fuel for its open wave, which built a very robust engine from a pocket of very low wind shear along the Texas coast and deep tropical moisture that overspread the wave. A briefly weakened La Canícula that initially slid into the Baja region before fading allowed Harvey's weakened state to pump continuous deep tropical moisture from the southeast Gulf and Caribbean into southeast Texas, with record rainfall and eventually $100 billion in property damage from flooding alone. Will a window open for the Texas or northeast Mexican coast to do the same in 2018? Recall that in the months following Harvey, dry high pressure returned and southeast Texas returned to "abnormally dry" and moderate drought later in autumn 2017. Be prepared.

Outlook: Summer 2018

June and July: Hot to very hot and dry look dominant. Temperatures are likely to be between 4 and 5 degrees above average and threaten prior records, at least falling in the Top Five hottest in many areas. The lack of rain will require additional irrigation of dry-sensitive crops, sod, and gardens, less they "burn up" in the searing heat. As in years past, there will be minor breaks in the pattern to allow rain, most likely from sea breeze enhancement – but duration/persistent won't be enough to dent to drying nor reduce temperatures on most days.

August: With Canícula locked in for early August in all likelihood, the key for the Valley's outcome will lie in how long and strong it holds. In 2017, the "break" from bypassing Harvey was brief, and worse – westerly flow on the backside of the cyclone's circulation brought even more heat to close the month, locking in a Top ten hottest month for the primary Rio Grande Valley sites, including McAllen at #2, Harlingen at #7, and Brownsville at #6. Of course, any "thread the needle" system – storm or hurricane – that breaks the pattern in time (see Allen, August 8th 1980) would both remove the drought condition and knock down monthly temperature averages. Such a system is a true "wild card" that cannot be predicted in late May.

Preparedness, Awareness

The high confidence forecast for searing to near record heat and minimal rainfall makes the case for heat safety, drought, and wildfire growth potential as the three primary hazards. We add tropical as a precaution given the opportunity that exists every August, regardless of overall pattern

- ***Heat and Hydration.*** The close of May had the Valley under an oppressive heat wave that may well break seasonal records for heat in a two or more week period at that time of year. Any humidity added to June-August temperatures nearing or exceeding the century mark could push "feels like" temperatures between 110 and 120. Hydration is critical for people, pets, and plants right through summer – but more than what would be "typical" of an already hot region of the nation. For heat safety tips, check our local heat awareness page and the NWS national page. **Often!**

- ***Drought Severity.*** As mentioned above, confidence has increased that after many fits and starts, severe to extreme drought is expected to cover much of the region, from urban to agricultural zones, by mid to late summer. Water levels had decreased to 34.7% at Falcon Reservoir (Texas share), a combination of irrigation and other releases and increased evaporation. These levels are similar to those in 2017, before late September rains in the Rio Salado and other tributaries helped boost the levels to more than 50% by October 2017. Any additional irrigation or municipal releases this summer will add to the reduction rate, which would require sufficient replenishment from an Atlantic or remnant Pacific tropical cyclone.

Drought Severity Classification

			Ranges				
Category	Description	Possible Impacts	Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought: ▪ short-term dryness slowing planting, growth of crops or pastures Coming out of drought: ▪ some lingering water deficits ▪ pastures or crops not fully recovered	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	▪ Some damage to crops, pastures ▪ Streams, reservoirs, or wells low, some water shortages developing or imminent ▪ Voluntary water-use restrictions requested	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	▪ Crop or pasture losses likely ▪ Water shortages common ▪ Water restrictions imposed	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	▪ Major crop/pasture losses ▪ Widespread water shortages or restrictions	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	▪ Exceptional and widespread crop/pasture losses ▪ Shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

- ***Wildfire Danger.*** High values of the Keetch-Byram Drought Index (above 600) were seen across much of the agricultural-rich Lower and Mid Rio Grande Valley at the end of May, with 500+ values in all but a few pockets on Jim Hogg, Zapata, and Starr County. The current forecast of searing heat and limited rain into

mid June will push these values up, with some areas exceeding 700. Combine with expected severe to extreme drought, lower humidity (especially inland) and any stronger southerly winds, and the threat for rapid growth of any wildfire that begins is on the deck even during what tends to be the tail end of the Valley's wildfire weather season. Therefore, we urge all people, from farmers and ranchers operating equipment on grasslands/rangelands or near dry brush, to be cautious on many days, and refrain from operations on these surfaces during windy and dry days through the summer It is **vitally critical** be **Firewise**, this summer! Follow Smokey Bear's advice: **Only you can prevent wildfires**.

- ***All Things Tropical!*** Become hurricane ready in June and July! Harvey showed Texas that even during a prolonged period (almost 7 years) where "Veracruisers" dominated, one storm that cracks the code and opens the window can be a historic event for Texas. We prefer May for preparedness, of course. The "quiet" forecast allows you time to address your plans and make adjustments.

    - **Become HurricaneStrong Today!**
    - **Adjust Your Plans at http://hurricanes.gov/prepare**
    - **Are you insured? Start your coverage at http://twia.org**
    - **How about for floods? Floods can inundate *anyone*** in the Valley. Insurance is less expensive outside of a designated flood zone, but no less important. Learn more at http://floodsmart.gov
    - **Check out more with our hurricane guides, in English and Spanish.**