

La Canícula Reigns (not Rains) from June-August 2017 Drought/Dry Conditions Hang Tough for Most of Valley; Temperatures Among Top Ten Hottest for Second Year in Row

For the second straight year, the balance of summer featured searing to near-record average heat and generally below average rainfall across the Rio Grande Valley. The pattern known as “La Canícula” began after the first week of June and held forth through the end of August on average – even as the Valley escaped impact from two tropical cyclones – Cindy in June and Harvey at the end of August. Average temperatures ranked among the Top 20 hottest across the Valley, with several locations (below) settling into the Top 5, not too far from other hot summers this century, including 2009, 2012, and 2016. La Canícula, which is coined after Sirius (Dog Star) during a six week period when Sirius rises with the hot summer sun (generally, July 3 through August 11), features a persistent atmospheric ridge across an area that extends from southern New Mexico through west, southwest, and Deep South Texas and into much of northern Mexico. This year, the pattern dominated a thirteen week period from early June through the end of August.

The ridge – which provides subsident air that favors dry air versus cloud/precipitation formation – did its job for the most part across the region. While a few pockets of the Rio Grande Plains and the Lower Valley saw helpful rains at a few points through the summer, the majority of the area ended up below average - even when average for the summer ranges from 6 to 7 inches Valley wide – to the tune of 10 to 50 percent of this value. The dry, hot summer maintained abnormally dry to moderate drought conditions across much of the agriculture and livestock-rich Rio Grande Valley and ranchlands; low soil moisture levels to close August meant that outside of persistent drenching rain, much of the soil would quickly soak in any future scattered thunderstorm rain and dry up quickly.

Maximum 92-Day Mean Avg Temperature for Brownsville Area, TX (ThreadEx)

Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	86.9	1998-08-31	0
2	86.4	1980-08-31	0
3	86.3	1982-08-31	0
4	86.1	2012-08-31	0
5	86.0	2005-08-31	0
6	86.0	2001-08-31	0
7	85.9	2016-08-31	0
-	85.9	1900-08-31	0
9	85.9	2010-08-31	0
10	85.8	2011-08-31	0
11	85.8	2009-08-31	0
12	85.7	1978-08-31	0
13	85.7	2004-08-31	0
14	85.5	2013-08-31	0
15	85.4	2014-08-31	0
16	85.3	1953-08-31	0
17	85.3	2017-08-31	0
18	85.3	1918-08-31	0
19	85.3	1969-08-31	0
20	85.2	1996-08-31	0

Period of record: 1878-01-01 to 2017-09-01

Maximum 92-Day Mean Avg Temperature for HARLINGEN, TX

Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	87.9	1998-09-01	4
2	87.1	2016-09-01	5
3	86.9	2017-09-01	8
4	86.8	2009-09-01	5
5	86.5	2005-09-01	0
6	86.5	2012-09-01	6
7	86.4	1958-09-01	0
8	86.4	1953-09-01	0
9	86.2	1945-09-01	0
10	86.1	2001-09-01	6

Period of record: 1912-02-07 to 2017-09-02

Maximum 92-Day Mean Avg Temperature for MCALLEN MILLER INTL AP, TX

Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	90.8	2009-08-31	0
2	90.1	2017-08-31	0
3	89.9	1998-08-31	2
4	89.6	2016-08-31	0
5	88.8	2012-08-31	0
6	88.5	2015-08-31	0
7	88.1	1980-08-31	1
8	88.0	2014-08-31	0
9	87.9	2011-08-31	0
10	87.5	2013-08-31	0

Period of record: 1961-01-14 to 2017-09-01

Maximum 92-Day Mean Avg Temperature for PORT MANSFIELD, TX

Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	85.2	2009-09-01	11
2	85.2	2005-09-01	6
3	84.8	2016-09-01	2
4	84.7	2017-09-01	3
5	84.5	2011-09-01	5
6	84.3	1958-09-01	7
7	84.2	1969-09-01	1
8	84.2	1998-09-01	8
9	84.1	2013-09-01	5
10	84.1	2010-09-01	2

Period of record: 1958-02-07 to 2017-09-02

Maximum 92-Day Mean Avg Temperature for RIO GRANDE CITY, TX

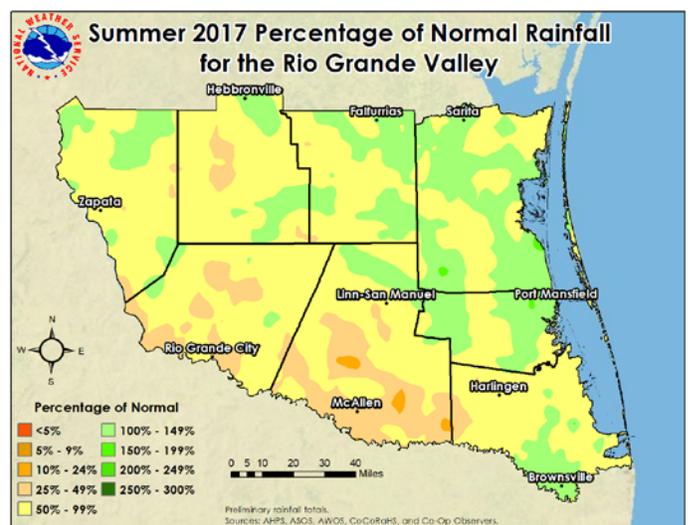
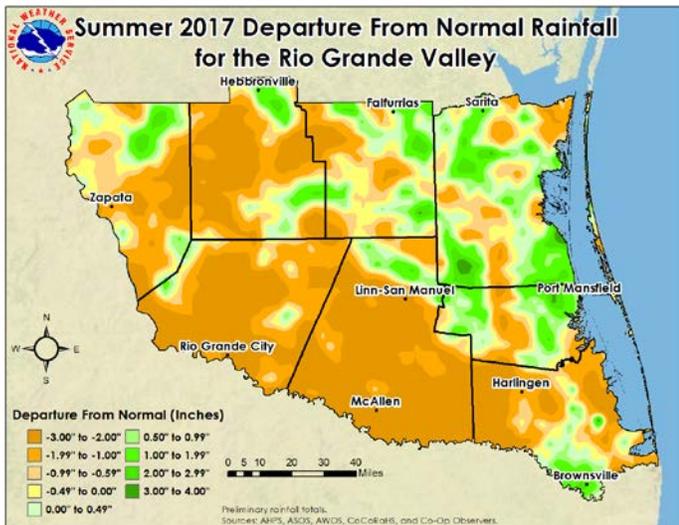
Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	91.5	1998-09-01	17
2	89.5	2009-09-01	2
3	89.2	1996-09-01	5
4	89.1	1901-09-01	0
5	89.1	1997-09-01	7
6	88.9	2012-09-01	26
7	88.8	1990-09-01	62
8	88.8	1999-09-01	5
9	88.8	1928-09-01	0
10	88.8	1950-09-01	61
11	88.7	2001-09-01	13
12	88.7	1902-09-01	2
13	88.6	2017-09-01	3
14	88.4	2000-09-01	5
15	88.4	1948-09-01	1
16	88.2	1947-09-01	1
17	88.2	1958-09-01	0
18	88.0	1946-09-01	0
19	88.0	1960-09-01	0
20	88.0	1953-09-01	0

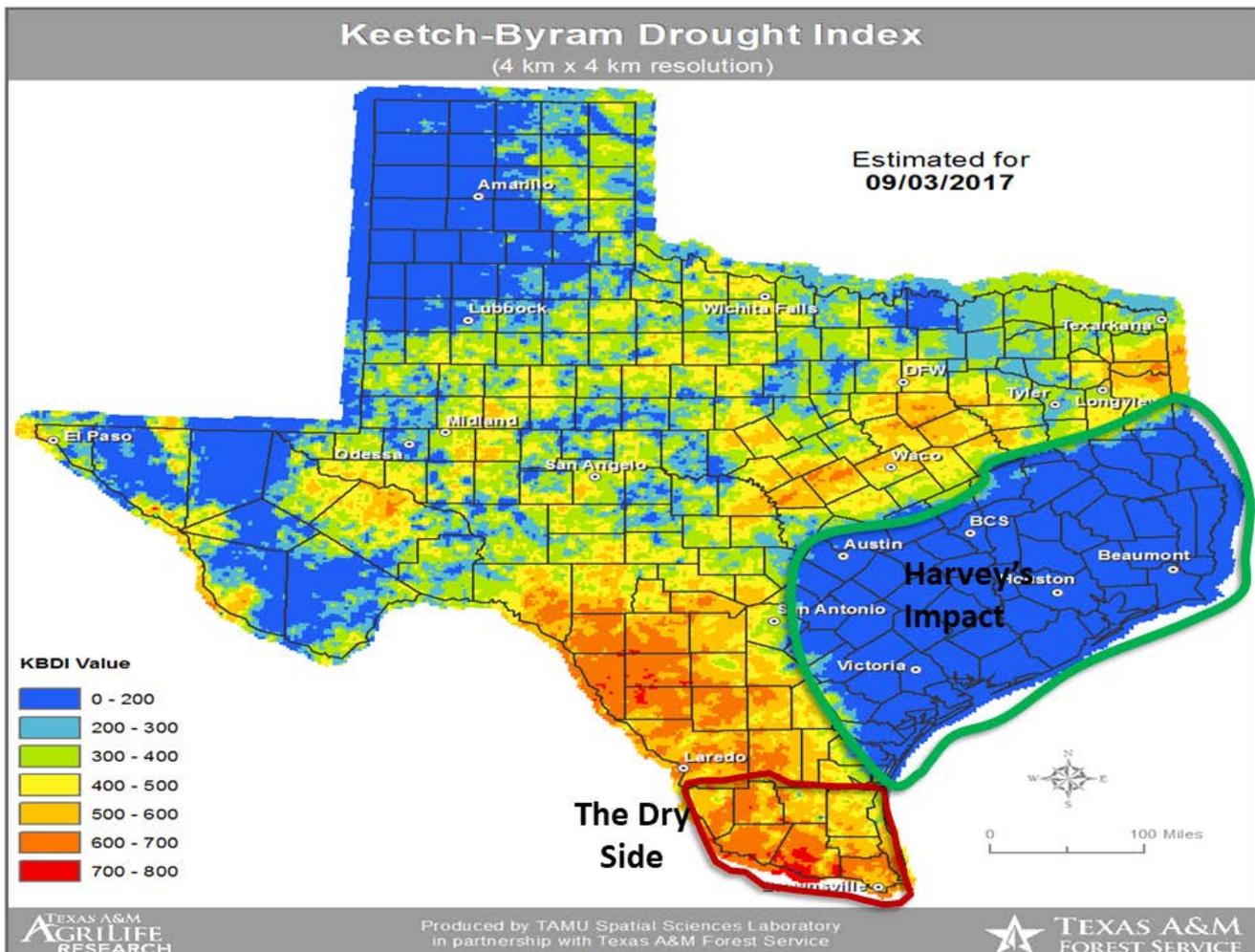
Period of record: 1897-01-01 to 2017-09-01

June-August Rankings 2017 highlighted

Another Summer of Heat



Above: Top-twenty ranked heat for summer 2017 (top) across the Rio Grande Valley matches closely with the lack of precipitation (bottom), that generally stretched from the Lower Valley west of Brownsville through the Upper Valley and part of the Rio Grande Plains ranchlands. Several locations in Hidalgo County received between 5 and 25 percent of average, placing them in jeopardy of reaching severe drought if rains didn't come in September.



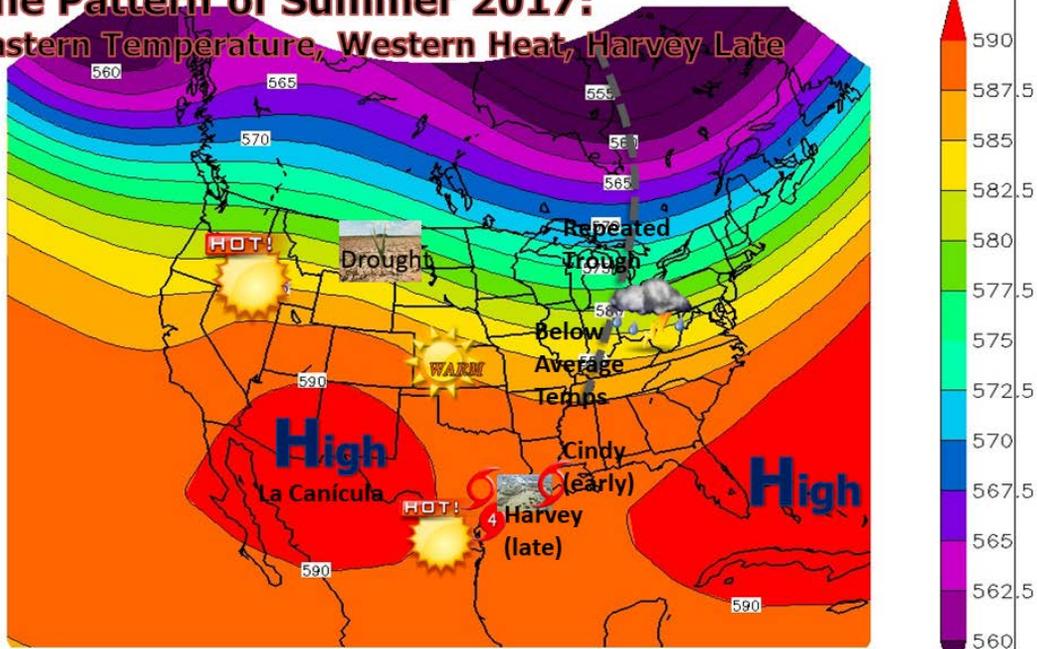
Above: The Keetch-Byram Drought Index (KBDI), which represents the moisture regime within zero to 8 inches of sub-surface soil, rose toward peak values (above 700 units) in agricultural and population rich Hidalgo County by the start of September 2017. The combination of below average rainfall – and lack of any rainfall consistency when it did rain – with the top twenty hottest temperatures led to the high values. Just 180 miles northeast, Harvey’s biblical rainfall brought values to near zero.

So Close, Yet So Far

As shown in the KBDI chart above, Harvey’s landfall just north of Corpus Christi late on August 25th, followed by nearly stalled movement for the next several days over southeast Texas, dropped several feet of rain in that region. Just 200 to 300 miles southwest, subsiding (downward moving) air aided by sources from the Southwest Texas and Southeast New Mexico deserts, combined with a downslope effect from westerly flow off of the Sierra Madre Oriental mountains just 100 to 150 miles west of the Valley, kept the heat intact; drying of the surface air (afternoon humidity in the 20s) kept unirrigated landscapes starving for water. Just two months prior, the movement of Tropical Storm Cindy from the west central Gulf to the *northwest* into the southwest corner of Louisiana brought a [spike of record to all-time record heat](#) to the Rio Grande Valley. For each case, a sliver of La Canícula pinched across the Valley. While Harvey [threaded the needle](#) to become the most memorable Texas hurricane of the modern era, that needle was in a tight gap between a westward advancing Atlantic ridge (part of the Bermuda High) and the tough-holding Canicula across southwest Texas and northern Mexico, and the Rio Grande Valley ended up on the dry side once again.

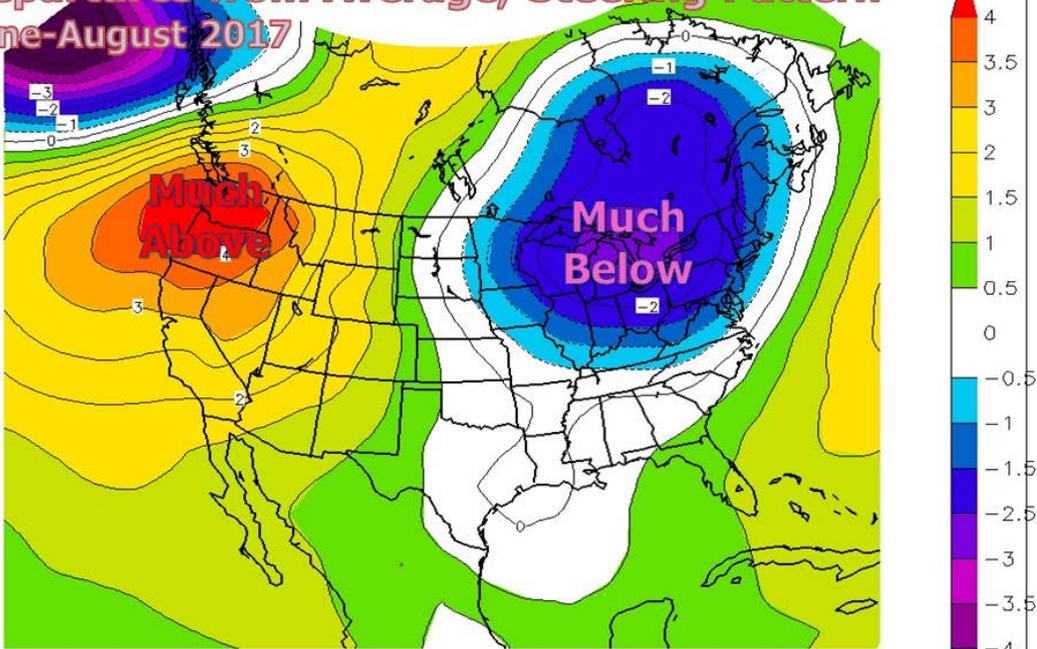
In Harvey’s case, no doubt a little bit of luck (serendipity) helped; just a slight nudge westward of all features, including the eastern edge of La Canícula, could have brought the amount of rain to change our dry summer into a wet one.

The Pattern of Summer 2017: Eastern Temperature, Western Heat, Harvey Late



500mb GEOPOTENTIAL HEIGHTS (dam) 92-DAY MEAN FOR:
Thu JUN 01 2017 - Thu AUG 31 2017
NCEP OPERATIONAL DATASET

Departures from Average, Steering Pattern June-August 2017



500mb GEOPOTENTIAL HEIGHTS (dam) 92-DAY ANOMALY FOR:
Thu JUN 01 2017 - Thu AUG 31 2017
NCEP OPERATIONAL DATASET

Above: Summer 2017 pattern matters. *Top* - the persistence of La Canicula (atmospheric ridge centered over west and southwest Texas, southern New Mexico, and northern Mexico often extending toward the Rio Grande Valley) dominated. *Bottom* - The Canicula ridge often expanded north and west into the Pacific Northwest and Great Basin, leading to a record to near record hot summer there as well - while a persistent trough from the U.S. Midwest through the Mid Atlantic and New England kept the fronts coming and led to a comfortable summer overall.