Rio Grande Valley Spring 2025 Review

Spring 2025 Weather Story for the Rio Grande Valley:
A State of Drought, Broken by the Occasional Devastating Flood

March 26-28 Historic Rains Follow on Heels of Flash Drought

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From Drought: Parched ranchland in Zapata County on March 19th, 2025, as Extreme (Level 3 of 4) Drought developed across the Rio Grande Plains and Brush Country.

To Flood: Record seasonal, and in some cases event (any time of year), rainfall across much of the populated RGV on March 27th left widespread urban and field flooding across the region – a little over a week after drought conditions had worsened to Moderate (level 1) to extreme (level 3) for most locations. Photo credit: Top left – Cameron County Precinct 2. Top right: Texas Department of Transportation. Bottom: NWS Brownsville/Rio Grande Valley.

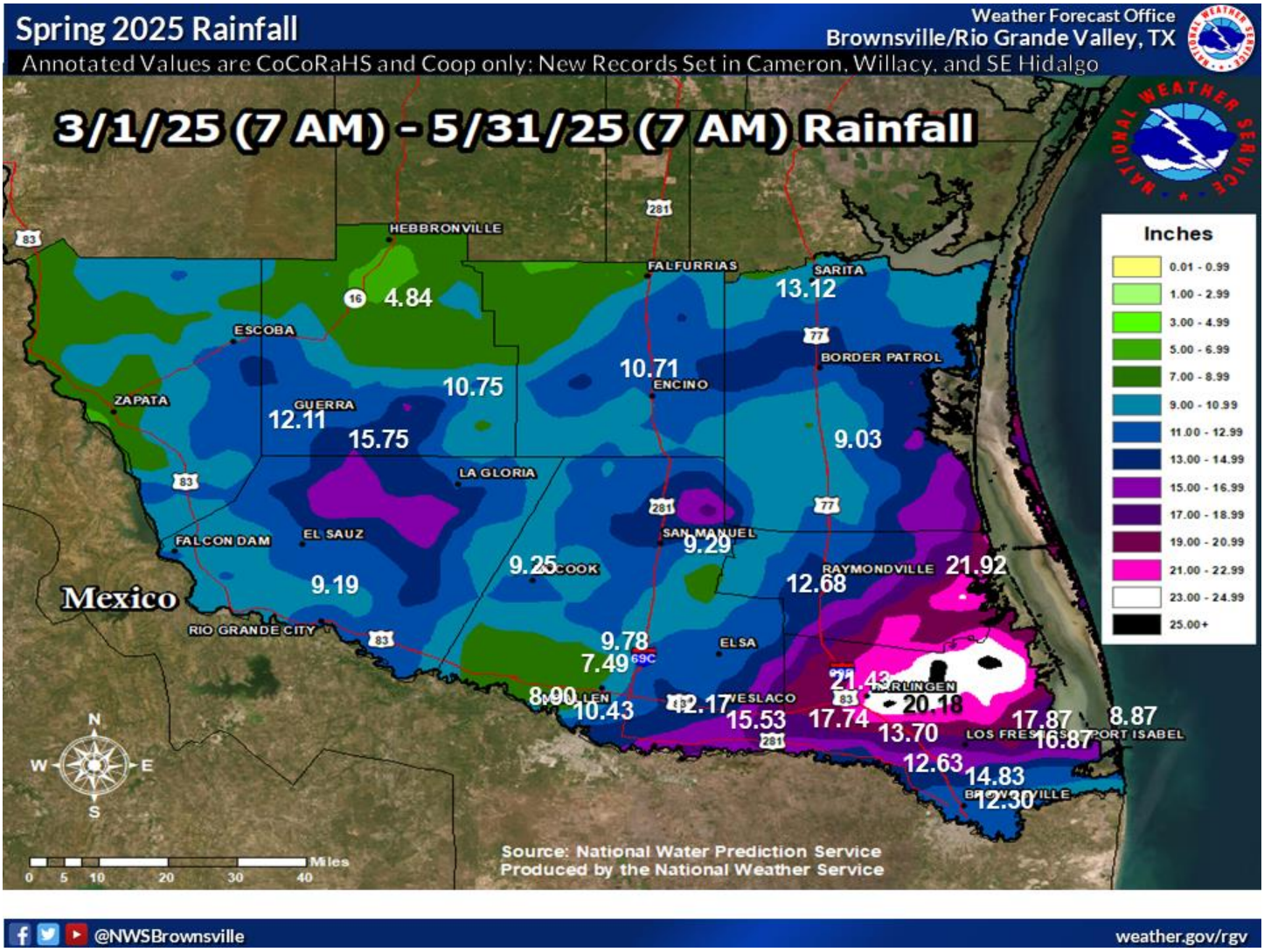


Figure 1. Annotated rainfall map for spring 2025 across the Lower Rio Grande Valley/Deep South Texas region. Annotated values (in inches) are from selected CoCoRaHS observers (with a few cooperative and mesonet to fill gaps) with sufficient and trusted values for the season.

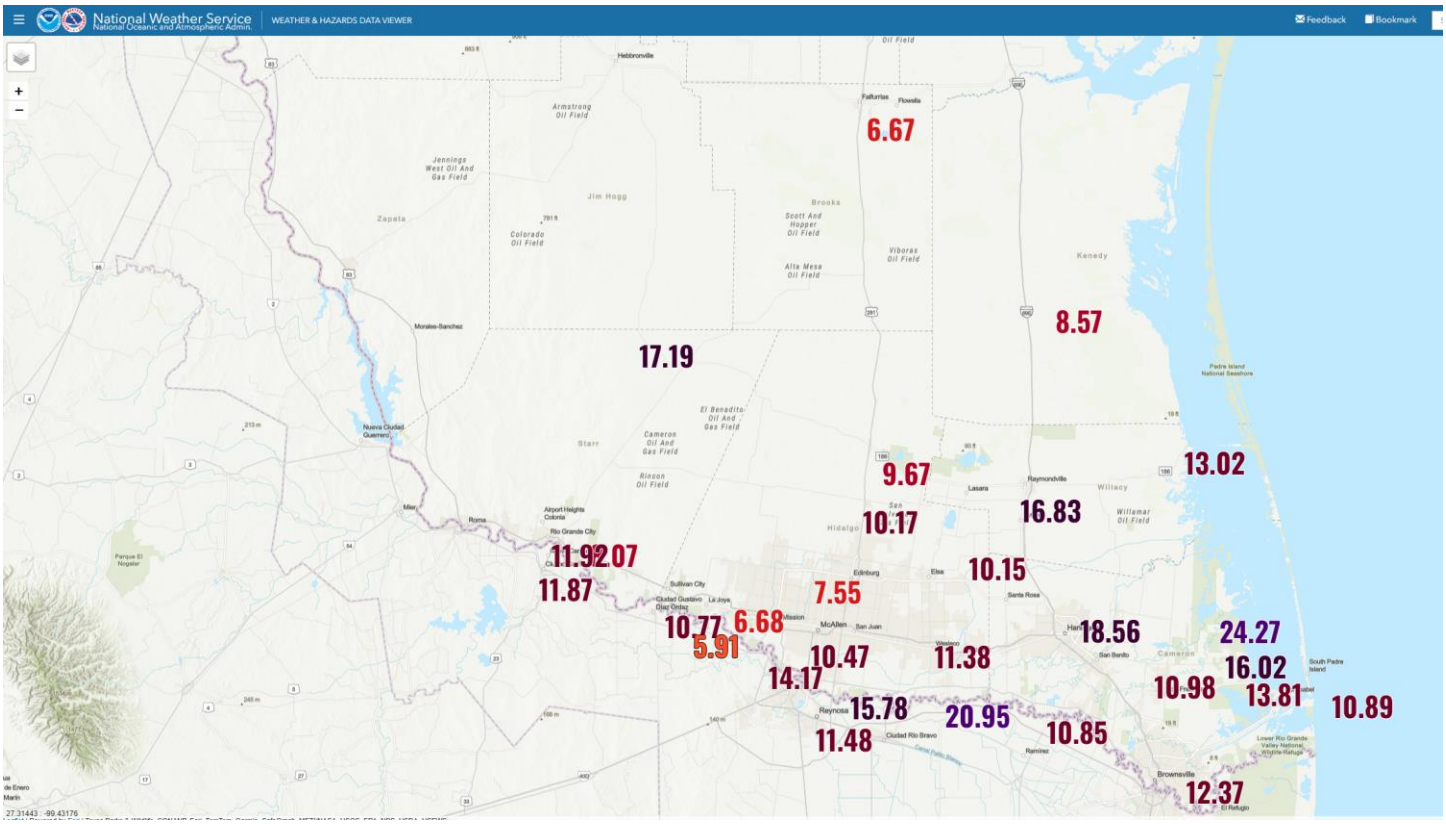


Figure 2: Spring (March-May) 2025 rainfall observations from multiple networks, including the ASOS, AWOS, HADS, the Texas Mesonet, and RAWS, among others.

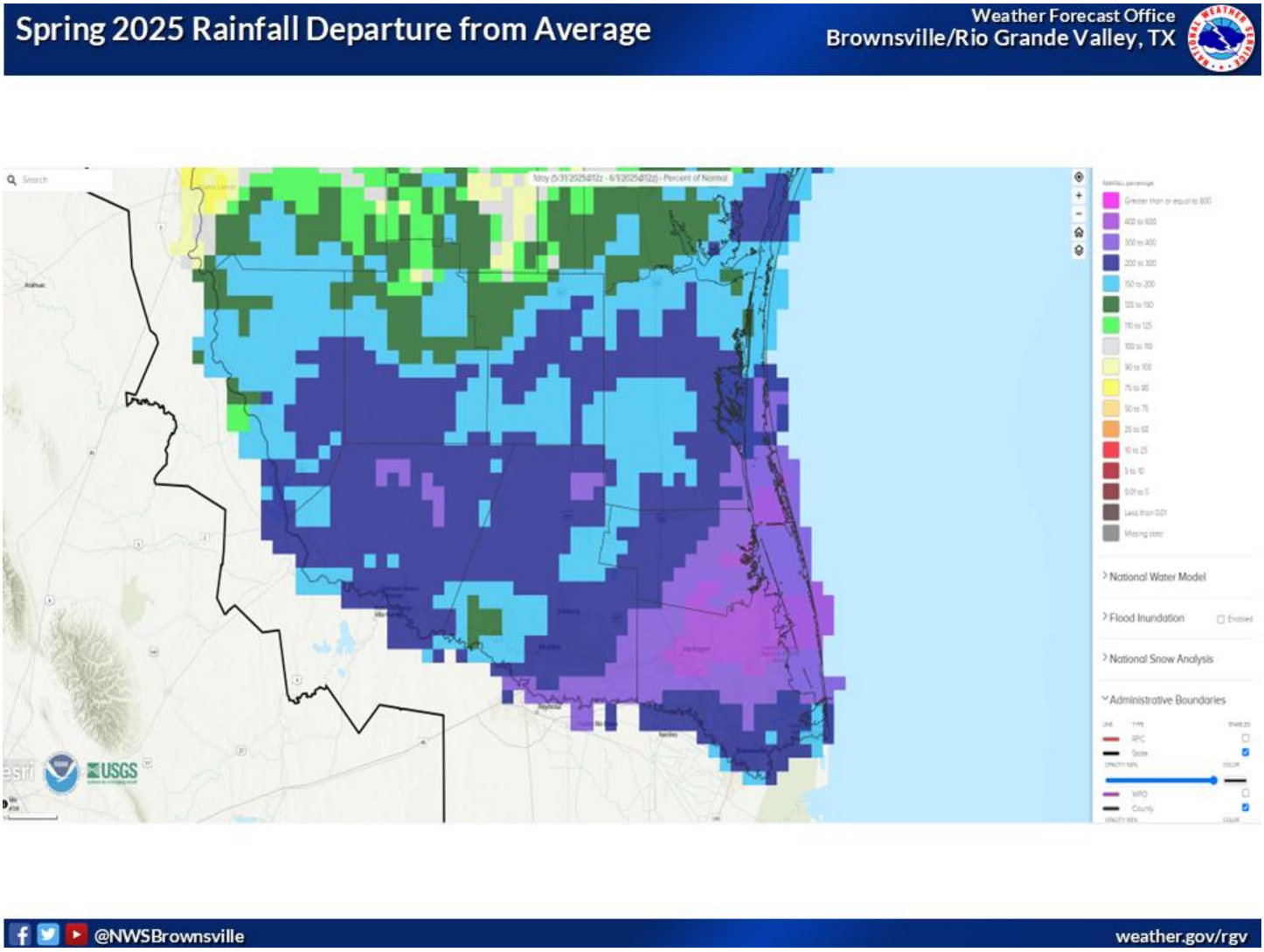
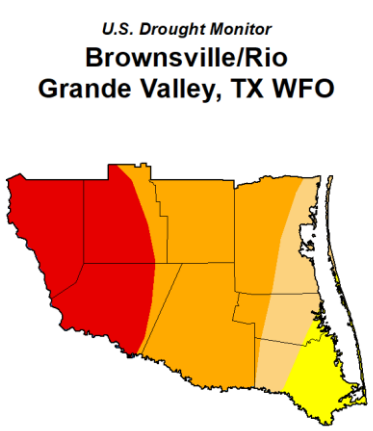
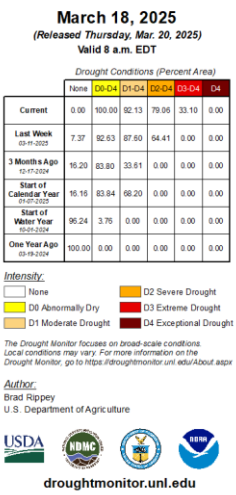
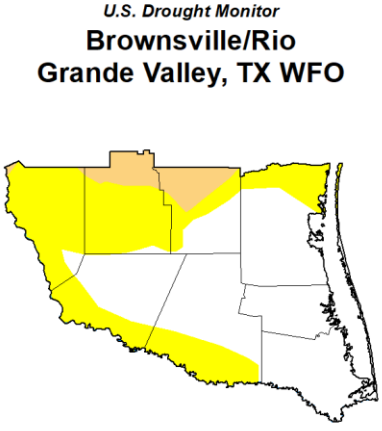


Figure 3. Rainfall percentage of average, March through May, 2025. Heavier rainfall once again favored the lower Valley (Cameron and eastern Willacy) where up to 600 percent of the seasonal average fell. Nearly all areas ended up at or above average, though closer to average in northern Zapata/Jim Hogg/Brooks, and a pocket of southwestern Hidalgo.







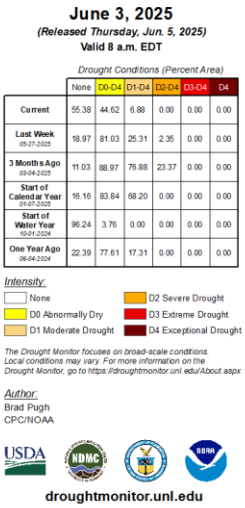
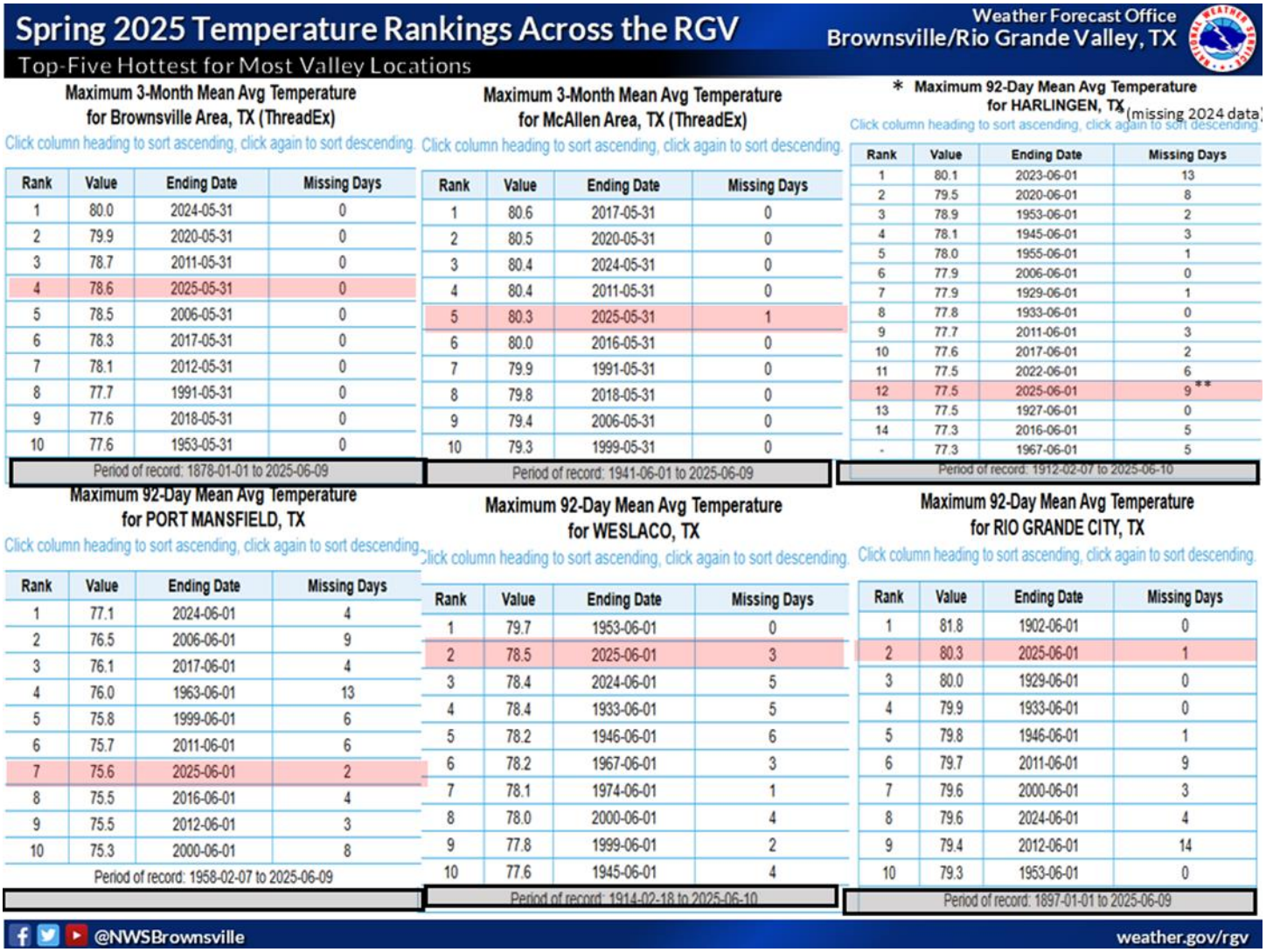


Figure 4. U.S. Drought Monitor improvements between March 18th and June 3rd, courtesy of the March 26-28 rainfall and additional scattered rain events in April and May.



Spring 2025 Temperature Rankings Across the RGV

Top-Five Hottest for Most Valley Locations

Weather Forecast Office
Brownsville/Rio Grande Valley, TX

Maximum 3-Month 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	80.0	2024-05-31	0
2	79.9	2020-05-31	0
3	78.7	2011-05-31	0
4	78.6	2025-05-31	0
5	78.5	2006-05-31	0
6	78.3	2017-05-31	0
7	78.1	2012-05-31	0
8	77.7	1991-05-31	0
9	77.6	2018-05-31	0
10	77.6	1953-05-31	0

Period of record: 1878-01-01 to 2025-06-09

Maximum 3-Month Mean Avg Temperature for McAllen Area, TX (ThreadEx)

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

Rank	Value	Ending Date	Missing Days
1	80.6	2017-05-31	0
2	80.5	2020-05-31	0
3	80.4	2024-05-31	0
4	80.4	2011-05-31	0
5	80.3	2025-05-31	1
6	80.0	2016-05-31	0
7	79.9	1991-05-31	0
8	79.8	2018-05-31	0
9	79.4	2006-05-31	0
10	79.3	1999-05-31	0

Period of record: 1941-06-01 to 2025-06-09

* Maximum 92-Day Mean Avg Temperature for HARLINGEN, TX (missing 2024 data)

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

Rank	Value	Ending Date	Missing Days
1	80.1	2023-06-01	13
2	79.5	2020-06-01	8
3	78.9	1953-06-01	2
4	78.1	1945-06-01	3
5	78.0	1955-06-01	1
6	77.9	2006-06-01	0
7	77.9	1929-06-01	1
8	77.8	1933-06-01	0
9	77.7	2011-06-01	3
10	77.6	2017-06-01	2
11	77.5	2022-06-01	6
12	77.5	2025-06-01	9 **
13	77.5	1927-06-01	0
14	77.3	2016-06-01	5
-	77.3	1967-06-01	5

Period of record: 1912-02-07 to 2025-06-10

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	77.1	2024-06-01	4
2	76.5	2006-06-01	9
3	76.1	2017-06-01	4
4	76.0	1963-06-01	13
5	75.8	1999-06-01	6
6	75.7	2011-06-01	6
7	75.6	2025-06-01	2
8	75.5	2016-06-01	4
9	75.5	2012-06-01	3
10	75.3	2000-06-01	8

Period of record: 1958-02-07 to 2025-06-09

Maximum 92-Day Mean Avg Temperature for WESLACO, TX

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

Rank	Value	Ending Date	Missing Days
1	79.7	1953-06-01	0
2	78.5	2025-06-01	3
3	78.4	2024-06-01	5
4	78.4	1933-06-01	5
5	78.2	1946-06-01	6
6	78.2	1967-06-01	3
7	78.1	1974-06-01	1
8	78.0	2000-06-01	4
9	77.8	1999-06-01	2
10	77.6	1945-06-01	4

Period of record: 1914-02-18 to 2025-06-10

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

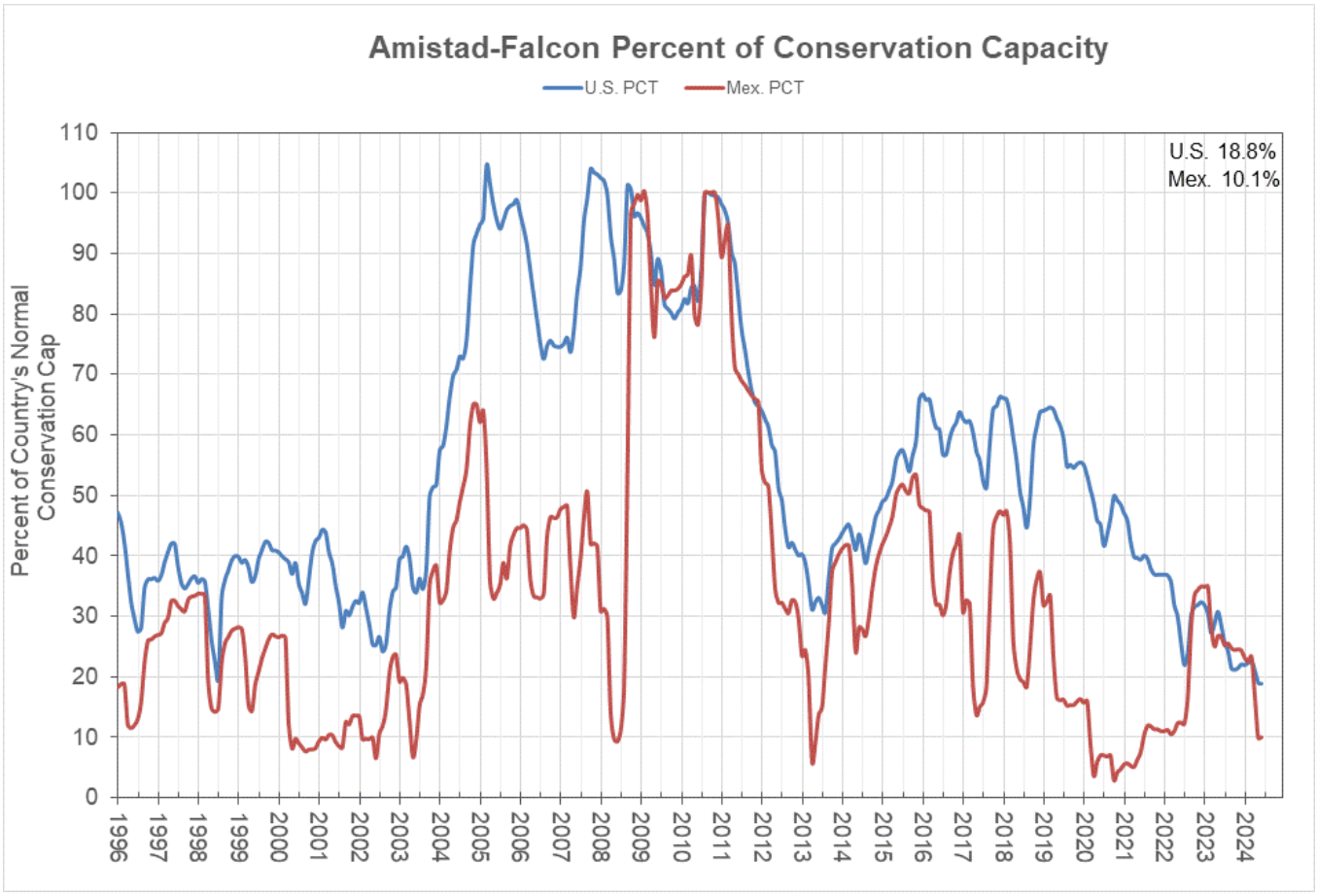
Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	81.8	1902-06-01	0
2	80.3	2025-06-01	1
3	80.0	1929-06-01	0
4	79.9	1933-06-01	0
5	79.8	1946-06-01	1
6	79.7	2011-06-01	9
7	79.6	2000-06-01	3
8	79.6	2024-06-01	4
9	79.4	2012-06-01	14
10	79.3	1953-06-01	0

Period of record: 1897-01-01 to 2025-06-09

@NWSBrownsville weather.gov/rgv

Figure 5. Top-ranked temperatures for most available long-term climate stations across the Rio Grande Valley. For a second year in a row, nearly all stations ranked among the top ten warmest, and most were among the top five. Weslaco and Rio Grande City finished above 2024, which featured all-time record-shattering heat in May.



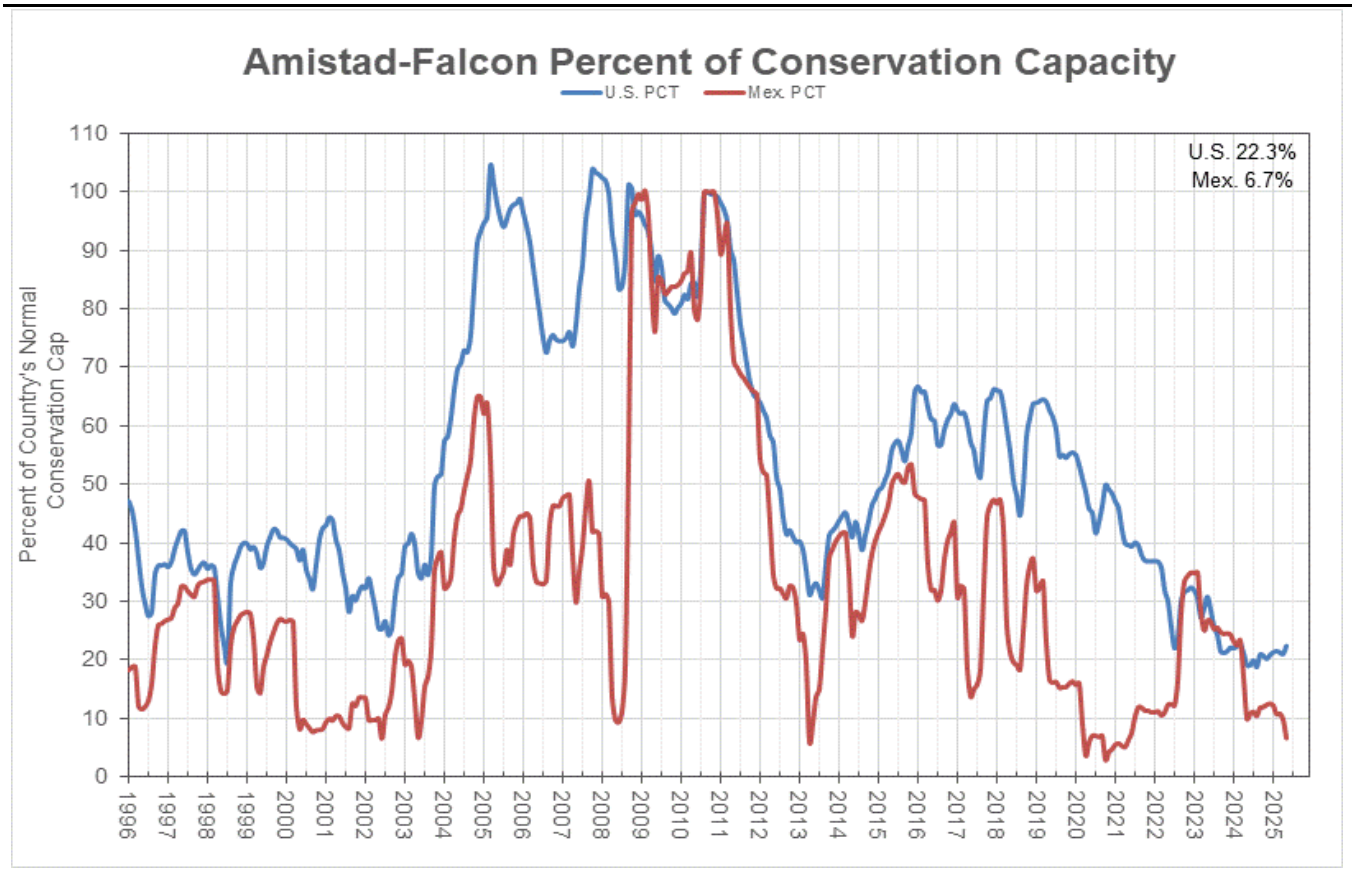


Figure 6. A comparison of U.S. International Boundary and Water Commission (IBWC) combined percentage of conservation capacity for Amistad and Falcon International Reservoirs between the start of June 2024 (top) and the start of June 2025 (bottom). Values were little changed between early June 2024 and early June 2025. The combined low values were among lowest on record since each dam was constituted (Falcon in 1954; Amistad in 1971).

Month-by-Month Summary

March 2025 was a month of record across the Lower Rio Grande Valley, bringing full truth to the old adage that "Texas is a State of perpetual drought broken by the occasional (devastating) flood". The month opened warm to hot by afternoon, but clear and pleasant – even cool at times – on many mornings following weak wind shifts from south to north. Ahead of the wind shifts, heat spikes with very low humidity occurred on the 8th and again on the 14th, where triple-digit temperatures arrived for the first time of the young year, mainly along and west of IH-69C/US-281 from Brooks/Hidalgo to Zapata. The combination of wind, heat, and very low humidity peaked during the period from March 8 to 17, when afternoon relative humidity fell below 20 percent daily across the upper Valley, Rio Grande Plains, and Brush Country – with mid-Valley locations seeing 5-7 days of similarly low humidity.

The combination of warm to hot temperatures and very low humidity created a flash drought event, especially from Brooks/Hidalgo to Zapata. The combination of these conditions with occasionally gusty winds from the northwest following wind shift lines, and flash-drying grasses and brush, aided the spread of nine separate wildfires, including eight in Hidalgo and one in Willacy County, between March 4th and 17th. Fortunately, early warning and messaging had local fire services on alert – and most of the wildfires remained below 100 acres. Two wildfires that exceeded 100 acres were the result of prescribed burns to multiply acreage during favorable weather that followed conditions that supported more rapid spread. The largest non-prescribed assisted burn (130 acres) was caused by unwarranted trash/debris burning on the Mexican side of the Rio Grande south of Donna.

By March 18th, all areas except a sliver of southeast Willacy and the eastern half of Cameron were in drought, with severe (level 2 of 4) drought extended into central Kenedy, western Willacy, and a sliver of western Cameron, including La Feria and Santa Rosa. Extreme (level 3 of 4) drought covered most of Jim Hogg, Starr, and all of Zapata. Cattle ranchers began culling herds and hauling water into dry zones, and early season crops, including new citrus and certain grains, showed signs of stress. These conditions continued until March 26th. And then…

Historic Rains Swamp the Valley

Between March 26 and 27, an unusually strong upper-level disturbance for our latitude and time of year moved from northwest Mexico toward central Texas. The disturbance slowed as it approached west-central Texas (Big Bend region) on the 27th, and brought impressive atmospheric lift above the Rio Grande Valley, while fairly deep southerly flow brought early summer-like tropical moisture into the system. Repeated small-scale energy impulses rotated around the slow-moving system from the evening of March 26th through the pre-dawn hours of March 28th, providing sufficient lift for multiple bands of torrential rain-producing thunderstorms – storms which also produced at least two tornadoes and several other wind damage reports as well.

But the story was devastating flooding. Late evening heavy rain-producing thunderstorms across the upper Valley/Rio Grande Plains on the 26th shifted into the lower Valley (Cameron/Willacy) during the pre-dawn of March 27th, priming the pump with local mainly nuisance flooding – but more than 3" of rain between Harlingen and Port Isabel. The real "show" began during the noon hour of the 27th, when the first slow-moving but intense squall line moved into eastern Starr County before plowing through Hidalgo County during the rest of the afternoon, reaching Cameron and Willacy County toward sunset. This band dropped an estimated 3 to 5" in Starr, 4 to 7" in Hidalgo, and 5 to 9"+ in Cameron/southern Willacy where it slowed and allowed additional cells to 'train' along the line. These cells would form into another band and drop another 3+ inches of rain from southeast Hidalgo through southern and eastern Willacy, before a final and fast-moving

squall line developed in Starr County before midnight and whipped across the rest of the Valley, exiting the coast just after 2 AM on the 28th.

Total measured and estimated rainfall across the heavily populated RGV ranged from 8" to more than 19", with the highest totals between Santa Rosa, Harlingen, and Rio Hondo (Cameron). For most of this region, the event was rated a 1/100 to 1/200 probability (annual return interval, or ARI) event, with a few areas estimated at 1/500 ARI. More than 5,000 structures were impacted, with more than 2,000 having major damage or destruction. The damage totals, unknown as of this writing, were likely to be well north of $100 million when the assessment is complete. Read the full report on this historic, epic event here.

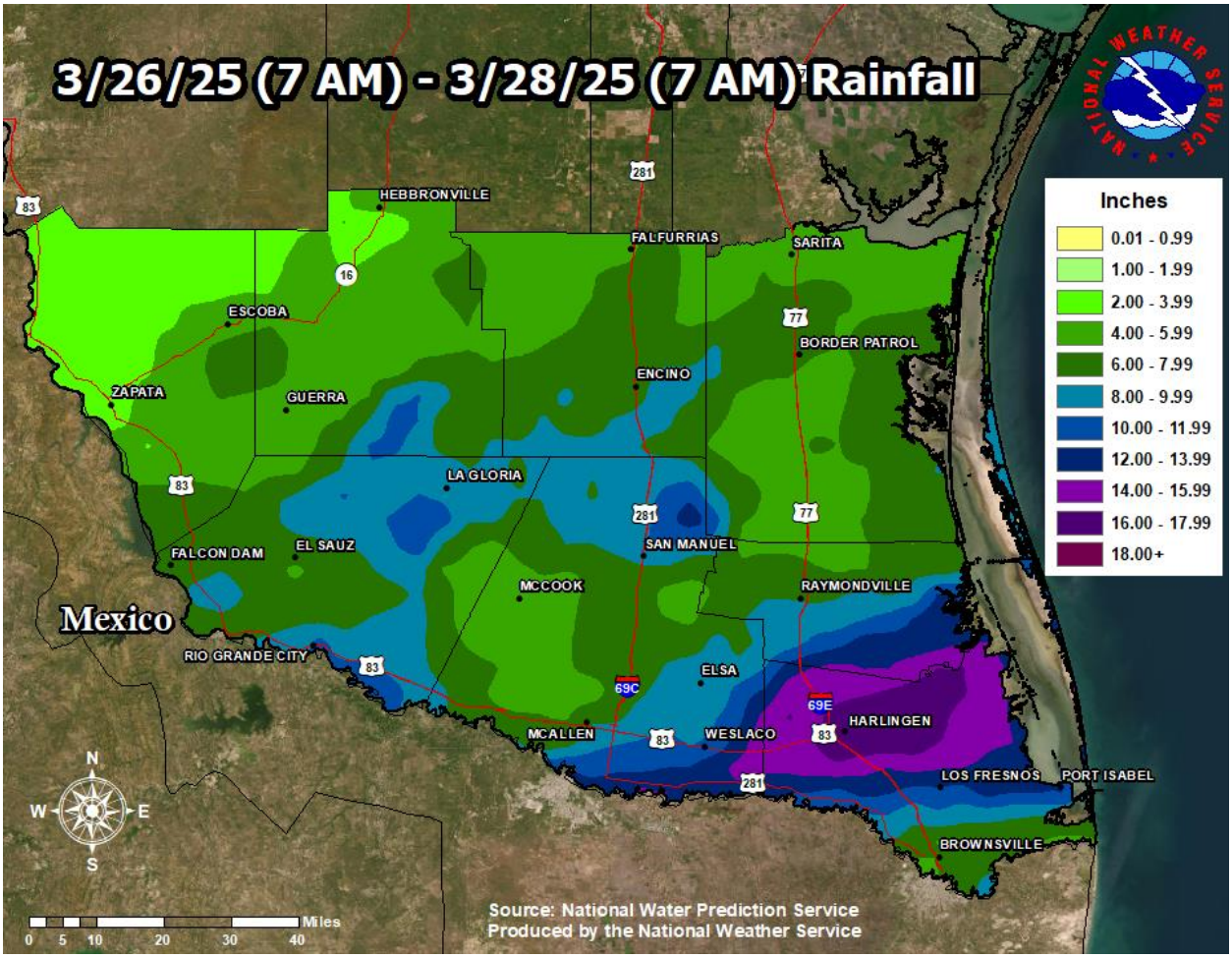


Figure 7. Measured and estimated rainfall for March 15th through early March 19th, 2024. Annotated values are a combination of CoCoRaHS, ASOS (NWS) and AWOS (FAA) four-day totals.

Table 1: Three-day rainfall, in inches, and rankings for March and the calendar year, at NWS maintained locations..

Location	County	Since	Event Rainfall	March Rank	Annual Rank	Prior Record (year)
Harlingen/Cooperative	Cameron	1912	15.18**	1	3	17.07 (1991)
Harlingen/Valley	Cameron	1953*	13.98#	1	1	N/A
Bayview/Cam Co Airport	Cameron	1999	13.10	1	1	N/A
Port Isabel	Cameron	1896***	11.18	1	8	19.43 (1984)
Raymondville	Willacy	1911	10.60	1	5	14.39 (1967)

McAllen	Hidalgo	1942	9.13	1	2	9.42 (1980)
Port Mansfield	Willacy	1958	9.02	1	13	14.9 (2007)
Weslaco 2 miles east	Hidalgo	1914	8.60	1	4	15 (1933)
Brownsville	Cameron	1878	6.74	1	67(t)	24.16 (1886)
McCook	Hidalgo	1942	4.30	1	N/A	14.09 (1967)

Notes:
*Harlingen/Valley only included data from 1953-1962 and 1997-present.
**Rainfall between 7 AM March 27 and 7 AM March 28 was rounded to 10 inches, and likely an estimate.
***Missing data between 1970-74 and 2015-2019.
#Lightning struck nearby and knocked the sensor offline before rains ended.

Table 2: Cameron County CoCoRaHS observations from March 26th (7 AM) through March 29th (7 AM). The 25.50 inch value at Harlingen 0.4N appears to be an outlier, though it aligns with radar-estimated rainfall totals in the Harlingen area of 21 inches.

Station Number	Station Name	Daily Precip Sum in.	Multi-Day Precip in.	Total Precip in.
TX-CMR-85	Harlingen 0.4 N	25.50		25.50
TX-CMR-117	Lozano 1.4 S	18.70		18.70
TX-CMR-93	Harlingen 4.4 W	18.50		18.50
TX-CMR-123	Harlingen 4.7 W	16.73		16.73
TX-CMR-120	Harlingen 1.1 NE	16.36		16.36
TX-CMR-78	Harlingen 3.8 W	16.11		16.11
TX-CMR-121	Harlingen 4.2 W	15.69		15.69
TX-CMR-100	Harlingen 6.2 WSW	14.79		14.79
TX-CMR-130	Laguna Vista 0.7 NW	11.07		11.07
TX-CMR-21	Los Fresnos 0.3 NE	10.65		10.65
TX-CMR-101	San Benito 0.9 SSE	10.54		10.54
TX-CMR-58	Laguna Vista 0.3 N	10.23		10.23
TX-CMR-129	Los Fresnos 3.0 W	9.70		9.70
TX-CMR-135	Brownsville 2.2 E	9.50		9.50
TX-CMR-132	South Padre Island 1.6 NNW	8.86		8.86
TX-CMR-1	Rancho Viejo 0.7 E	8.40		8.40
TX-CMR-17	Brownsville 4.1 E	6.08		6.08
TX-CMR-43	Brownsville 4.1 ENE	5.92		5.92
TX-CMR-136	Rancho Viejo 2.3 ESE	0.16	5.34	5.50
TX-CMR-8	Brownsville 6.4 SE	5.20		5.20
TX-CMR-23	Brownsville 1.9 ESE	4.54		4.54
TX-CMR-98	Brownsville 4.3 NW	4.30		4.30
TX-CMR-61	Brownsville 6.4 WNW	4.17		4.17
TX-CMR-51	Brownsville 0.1 SSE	4.09		4.09
TX-CMR-89	Brownsville 1.7 NNE	4.09		4.09
TX-CMR-94	Brownsville 12.6 E	3.43		3.43

Table 3. Same as Table 2 except for Hidalgo County.

Station Number	Station Name	Daily Precip Sum in.	Multi-Day Precip in.	Total Precip in.
TX-HDL-54	Mercedes 1.9 SW	13.46		13.46
TX-HDL-19	Mission 4.3 WSW	0.14	8.25	8.39
TX-HDL-39	Mission 3.9 WSW	8.11		8.11
TX-HDL-14	La Joya 0.6 W	7.10		7.10
TX-HDL-61	McAllen 6.3 N	6.78		6.78
TX-HDL-57	McAllen 4.4 N	6.11		6.11
TX-HDL-5	La Joya 11.1 N	5.73		5.73
TX-HDL-59	Mission 1.1 E	5.65		5.65
TX-HDL-9	Mission 1.9 ENE	5.35		5.35
TX-HDL-50	McAllen 3.5 N	5.19		5.19
TX-HDL-60	McAllen 4.7 NNW	5.15		5.15

Table 4. Same as Table 3 except for Starr County.

Station Number	Station Name	Daily Precip Sum in.	Multi-Day Precip in.	Total Precip in.
TX-ST-3	Rio Grande City 13.8 NNW	7.51		7.51
TX-ST-8	Rio Grande City 3.5 ENE	7.49		7.49

Table 5: Same as Table 4 except for Willacy County.

Station Number	Station Name	Daily Precip Sum in.	Multi-Day Precip in.	Total Precip in.
TX-WC-8	Port Mansfield 1.1 SE	9.02		9.02
TX-WC-5	Raymondville 2.0 SSW	6.70	0.14	6.84

April: The "Valley Wind Machine" (prevailing south to southeast flow) was a dominant feature in April – but it didn't necessarily come with persistent hazy and polluted weather as it sometimes does. That said, April began rather ugly - hazy, hot, and humid with moderate to unhealthy for sensitive groups air quality, and south to southeast winds that brought local gusts over 60 mph around Brownsville on the 2nd. The hazy, hot, humid conditions ended abruptly on the 5th, and were followed by the coolest and most pleasant days of the month on the 6th and 7th. This began a nine-day period of pure blue skies and full sunshine with low to moderate humidity, along with comfortable mornings – plenty sufficient to dry things out following the historic late March rainfall.

Humidity returned by the 18th, and somewhat sultry nights and warm to hot days would close out the month, with a brief exception on the 20th and 21st, when a weak front washed out over the upper Valley but had sufficient lift to produce scattered showers and thunderstorms on the 20th. A small but potent area of thunderstorms dumped nearly 7" (6.83" to be exact) at Port Mansfield during the mid to late morning of the 21st, with some minor street flooding.

The warm to hot start and final ten days bookended the period of pleasant weather between April 6-16 – but dry and still seasonably-hot afternoons during that period were enough to nudge temperatures to 0.5 to nearly 2 degrees above the 1991-2020 30-year average. Combined with the warmer than average March, the stage was set for another top five-to-ten warmest spring for most of the Rio Grande Valley.

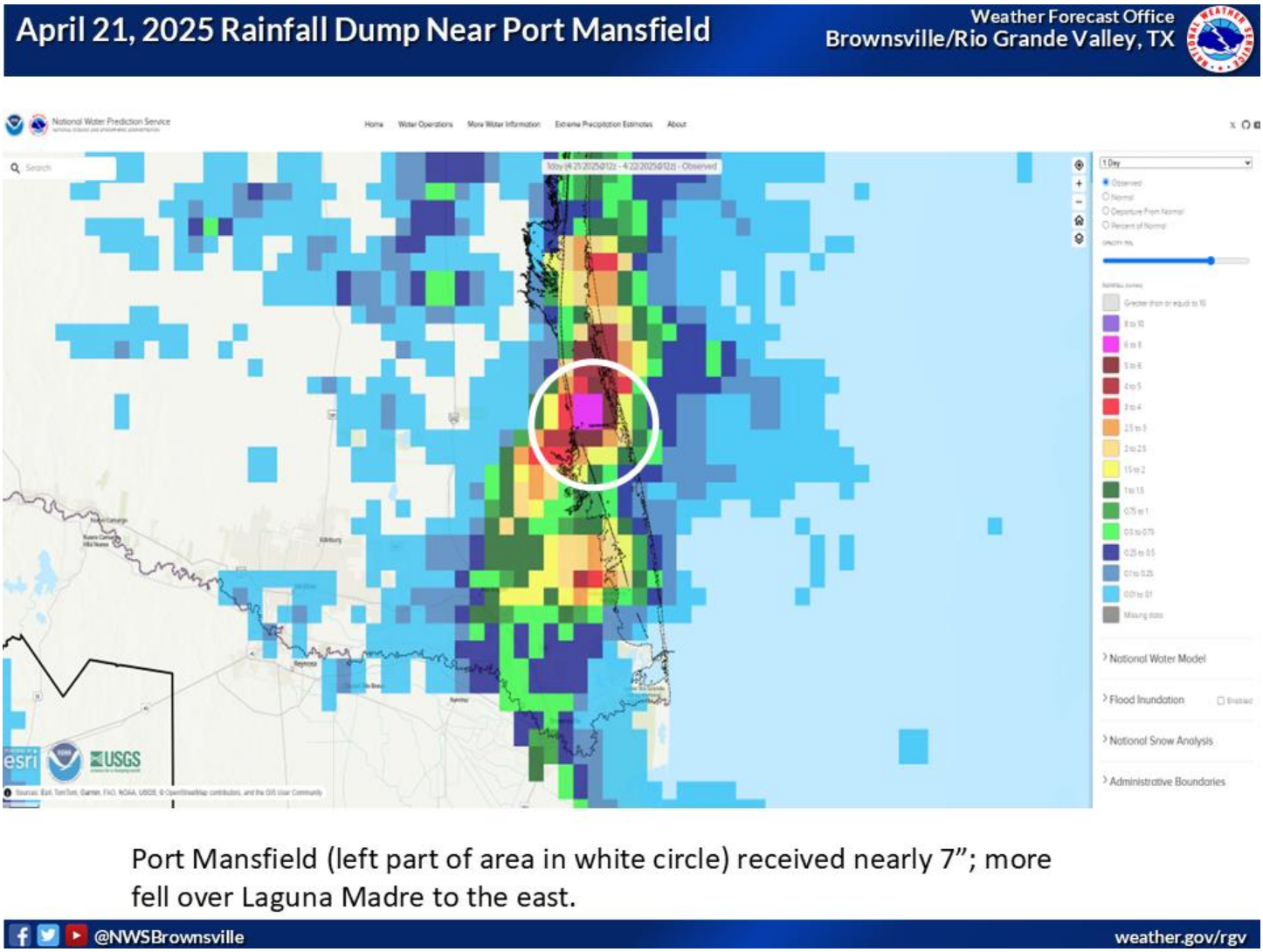


Figure 8. Bias-corrected rainfall from 7 AM CT April 21 through 7 AM CT April 22. The rainfall shown occurred during the mid to late morning of April 21.

May picked up where April left off – warm to hot and humid with scattered rain that kept any resurgence or worsening of drought out of the picture. A band of decent rainfall in Starr County on May 2nd was followed by a small pocket near the Cameron County coast on the 3rd. The month's "main event" occurred on May 7th and 8th, courtesy of an embedded upper-level disturbance in westerly flow aloft displaced farther south than typical for this time of year. A cluster of hail-producing thunderstorms sliced across the Brush Country and Coastal Plain during the pre-dawn hours of May 7th, dropping between 1-2" across Jim Hogg and Zapata. This was just an appetizer for the more pronounced and widespread events of May 8th. Early morning rains formed on old boundaries in Willacy and northern Cameron, with afternoon and early evening clusters impacting Brooks and Kenedy. The story of the day was a robust and large-hail producing supercell that formed in southern Webb and peaked in Jim Hogg and northern Starr. Hail up to baseball-sized (2.75") was reported by chasers in this area – though the ultimate size may have been even higher. The cell showed impressive longevity moving into Hidalgo County, producing hail between 1" and 1.75" while sliding into the populated

section of the county. A small but intense microburst pounded a 1x1 square mile area of north McAllen just before sunset with 80-85 mph wind. Measured rainfall from CoCoRaHS and other observers ranged from 0.5" to more than 3", with peak values of 3.82" in Port Mansfield, 3.25" in north-central Brooks, and 2.7" in southwest Jim Hogg.

Above: A storm chase team looking into the shelf cloud ahead of a high-precipitation (HP) supercell in Jim Hogg County, on the afternoon of May 8, 2025. Photo courtesy of Bill Turner, NWS Dodge City, KS.

The associated front brought a pleasant early May weekend with morning lows in the 60s and afternoon highs in the 80s to lower 90s, along with lower humidity. The break was short-lived, as hot, humid, breezy conditions returned in force by the 13th – with triple-digit afternoons west of IH-69C/US 281 and sultry mornings with wake-up temperatures near 80. The heat dominated most of the remainder of May – and while the month ended up falling well short of the all-time record-shattering heat of 2024, most areas ended up among their top-five to ten hottest on record. As for rain? The month wasn't quite done yet. One more multi-day round of localized rainfall occurred on May 28th, with an overnight mesoscale-convective system rolling out of the lee of the Sierra Madre and across the Brush Country/Rio Grande Plains before daybreak, continuing across most of the lower/mid Valley during the morning of the same day before exiting into the Gulf.

Total rainfall for the event ranged from 1 to 3" in Zapata, Jim Hogg, Brooks, Starr, northern Hidalgo, Willacy, and Cameron County. Some areas, including locations in southern Hidalgo, missed out on the heavier rains. Some higher totals included 2.65" in southwest Jim Hogg, 2.26" in north-central Starr, 2.30" just south of Raymondville (Willacy), and 2.5 to 3.1" just north and east of downtown Brownsville.

Despite the top-five to top-ten record heat in May, the periodic thunderstorms and occasional wind shifts (from southeast to east), as well as more infrequent trapping inversions set up by long-fetch southeast flow bringing pollutants from spring burning in eastern Mexico and the Yucatán helped keep the notoriously periodic unhealthy for sensitive groups or worse air quality at bay in May 2025. Moderate air quality was dominant, which is closer to the average for this time of year.

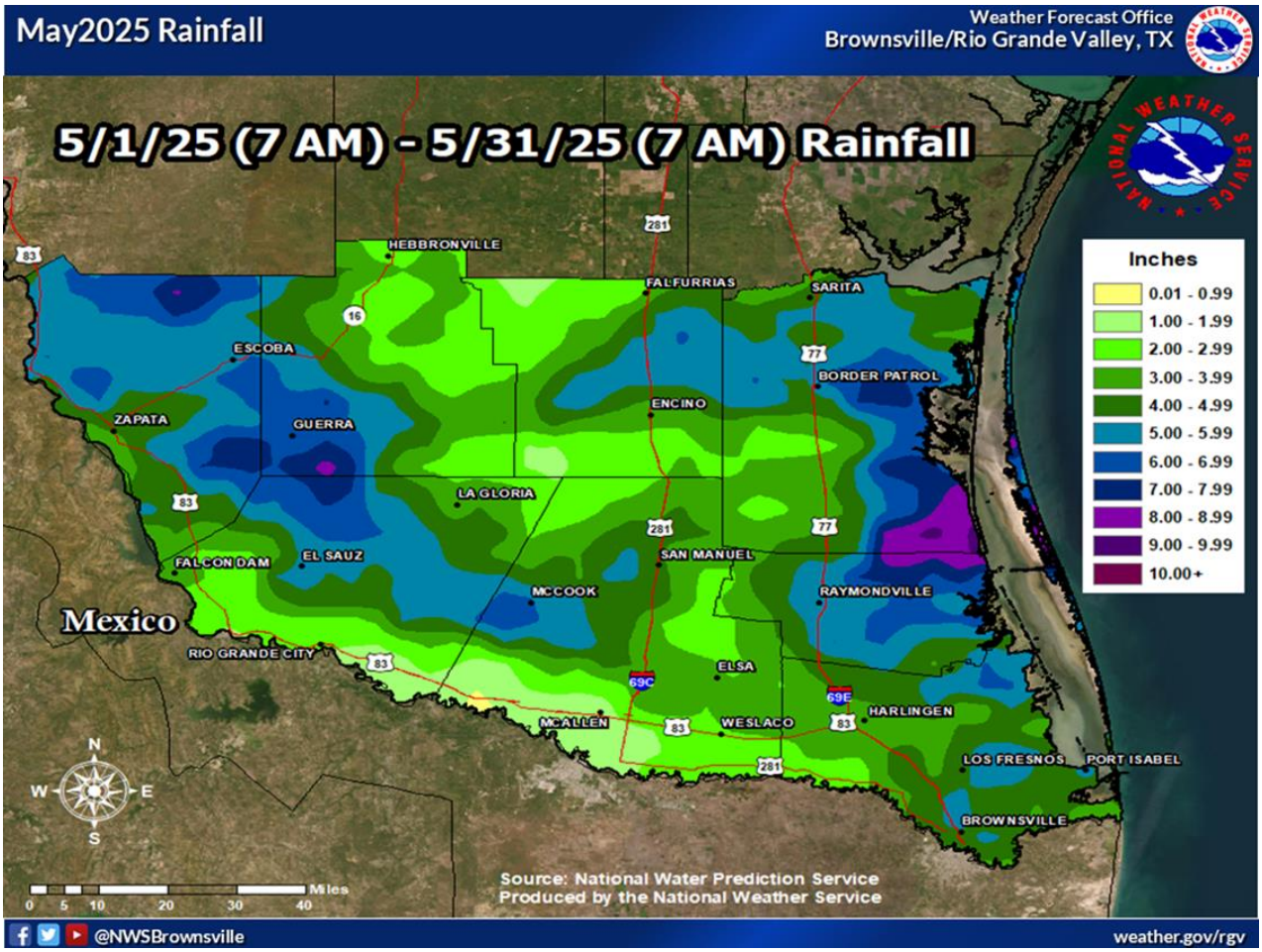


***Figure 9*:** Measured and estimated (bias-corrected) rainfall for May 2025 (not annotated). "Winners" included eastern Cameron, eastern Willacy, and eastern Kenedy, as well as a pocket from central hidalgo through northern Starr and much of Zapata. "Losers" included locations in southeast Starr and southern Hidalgo, along/south of IH2/US 83.

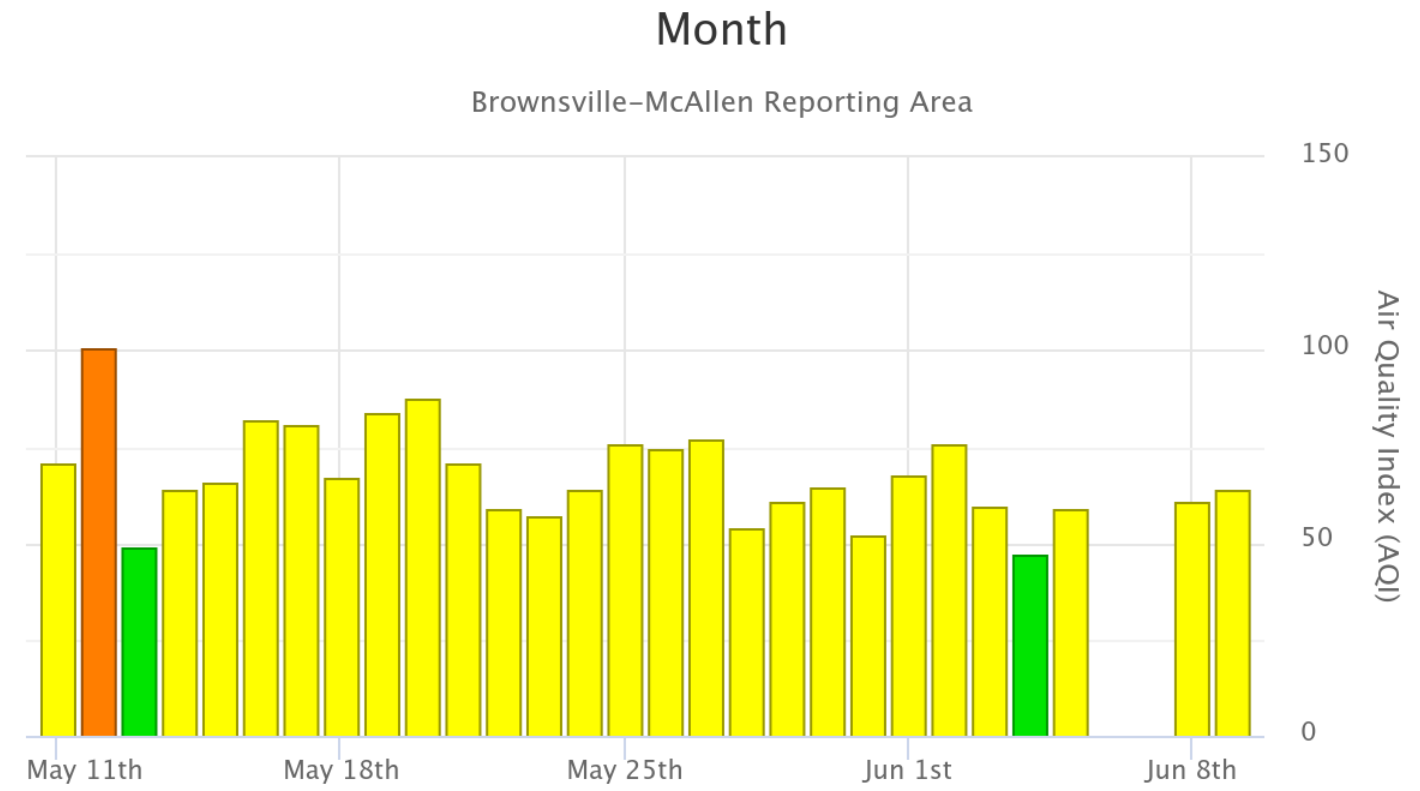


***Figure 10*:** Air quality trends from May 10 through June 9, 2025, for the Brownsville/McAllen reporting area. These values were more in line with what is expected for the month of May, when compared with the poorer air quality of May, 2024.

Spring 2025 will be remembered mostly for the rapid-onset severe to extreme drought, broken by a devastating late March flood whose impact was still being assessed in June, with assessments and total impacts to be completed later in 2025. The remainder of spring continued a two-year trend of top ten warmest temperatures – a trend that needs to be monitored over the coming years. Sprinkled within the warm to hot and rain-free periods were additional thunderstorm events, particularly in May, which kept any re-appearance of severe to extreme drought away while producing several instances of large hail and a few cases of damaging wind.

The combination of rain events allowed 2025 to rank among the top ten wettest springs, with totals rivaling some of the wettest August-October periods in Harlingen and Port Mansfield, and likely other locations – the peak of tropically-derived moisture and our known "rainy season". While the rains generally helped water supplies, especially for Cameron and Willacy, the situation of the rain, combined with the heat, did not. Some of the record March 26-28 rains ended up in runoff over parched soils, with another share could only be used temporarily by moisture-starved soils before a prolonged clear, warm to hot, and dry period ended much of the natural use by mid-April. Finally, most of the welcome rains missed the inflow regions of Amistad and Falcon International Reservoir, which remained at or near record seasonal lows – similar to this time in 2024. When water was delivered, it had to compete with above to much above average evaporation rates due to the hot and breezy conditions that dominated most of spring 2025.

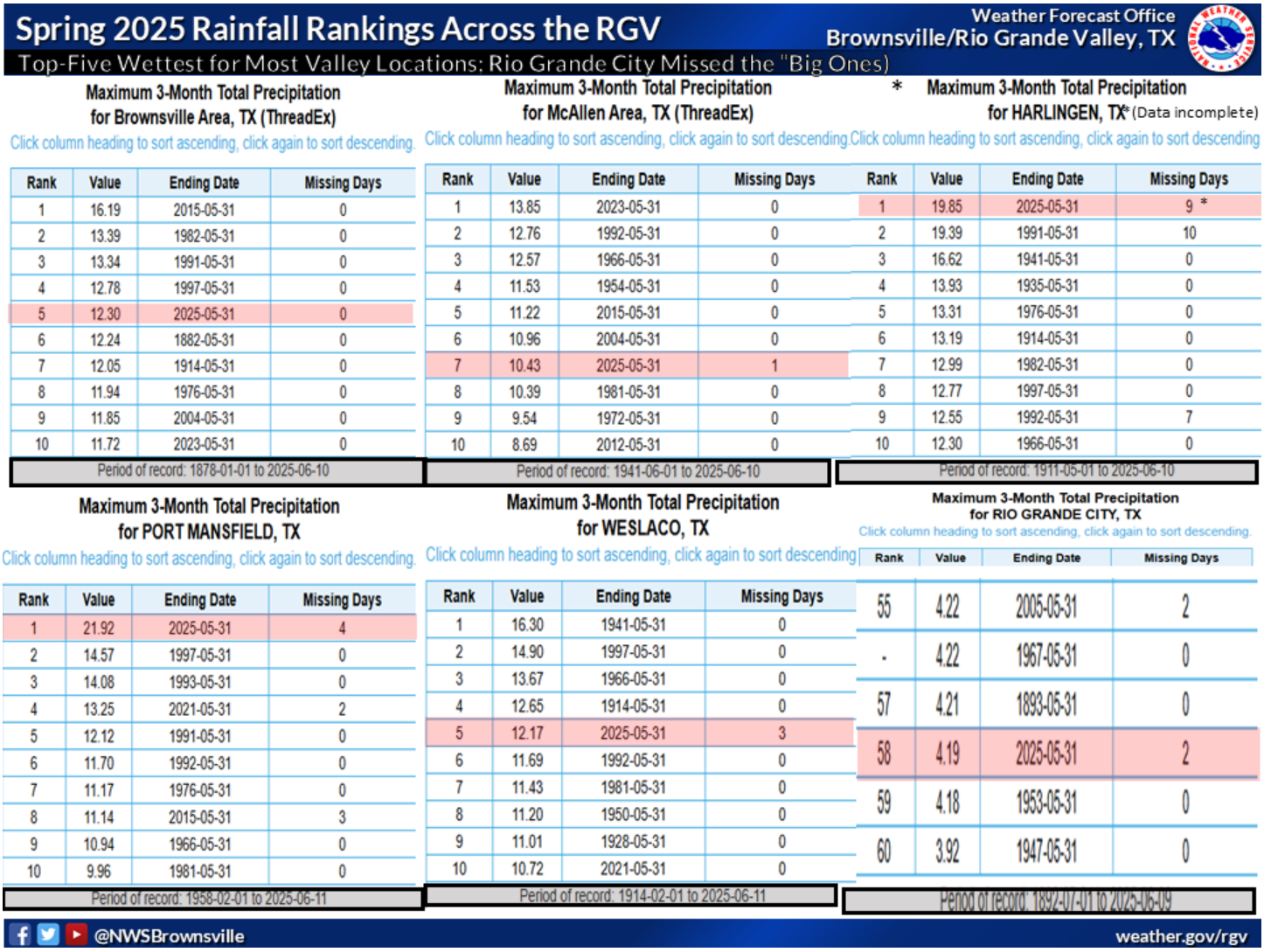


Figure 11. Rainfall rankings for selected Rio Grande Valley cities during spring 2025. Harlingen's total, which ranked #1, was likely well over 20", but reporting inconsistencies with the March 27th flood indicated incomplete data. Rio Grande City "missed" the heaviest rainfall on March 26-27 but also on later events in April and May, which explains its spring ranking in the middle of the period of record.