

From Record Warmth to Near-Record Cold: Winter 2022 Rode a Temperature Roller-Coaster Across (Texas) and the Lower Rio Grande Valley

“Just-in-Time” Rainfall A Boon to the Lower Valley’s Agriculture Industry, But Drought Worsens Across the Ranches of the Brush Country and Rio Grande Plains

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Season Capsule

After December 2021’s April-like record warmth that culminated in one of the hottest New Year’s Days on record, winter showed its hand with a strong, dry cold front on the 2nd and the season’s first hard freeze across the ranchlands north and west of the populated Valley on January 3rd. Frequent cold fronts through January and February brought more than a half-dozen separate mornings with subfreezing temperatures in normally colder pockets of the Rio Grande Plains, Brush Country, and Brooks/Kenedy ranches. When the season ended, temperatures varied in the rankings, with Brownsville finishing on the warmer end of the period of record, with McAllen and Harlingen finishing slightly on the cooler end of the periods of record. For rainfall, the atmospheric pattern aligned to bring welcome, “just-in-time” rainfall to the “fruit/vegetable” basket of the Lower Rio Grande Valley, while just 50 to 100 miles west and northwest, moderate to severe drought developed across the Brush Country of Jim Hogg, western Starr, and especially Zapata County where rainfall was estimated to be just 10 to 25 percent of an already dry seasonal average.

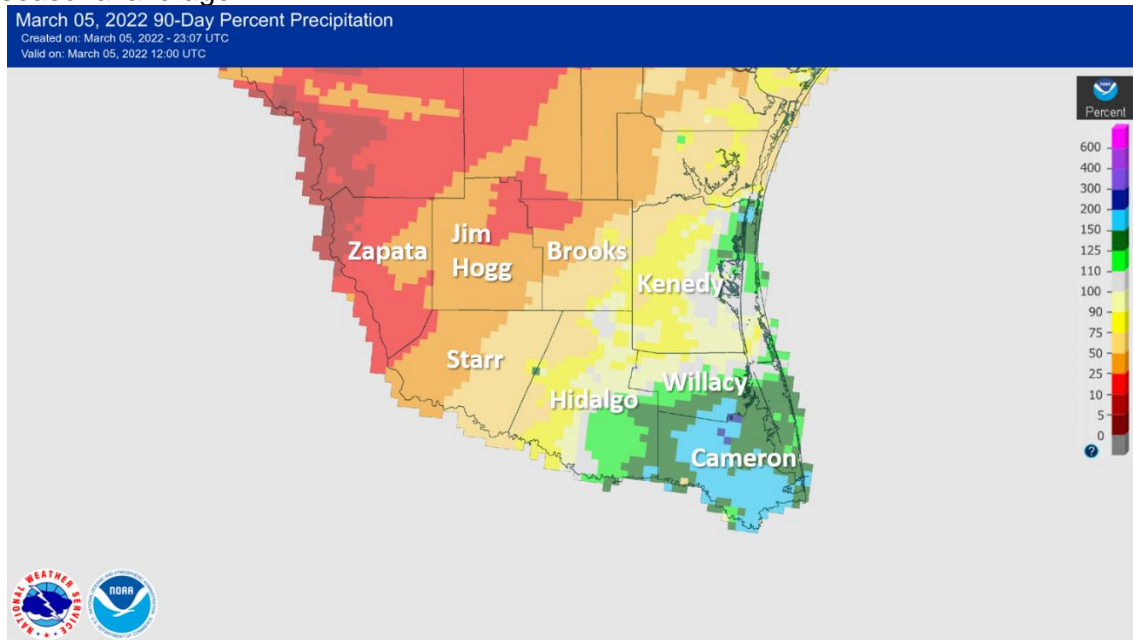


Figure 1. Percentage of average rainfall, December 6 2021 through March 5, 2022, approximating winter 2022 for the Rio Grande Valley and Deep S. Texas Brush and Ranch Country.

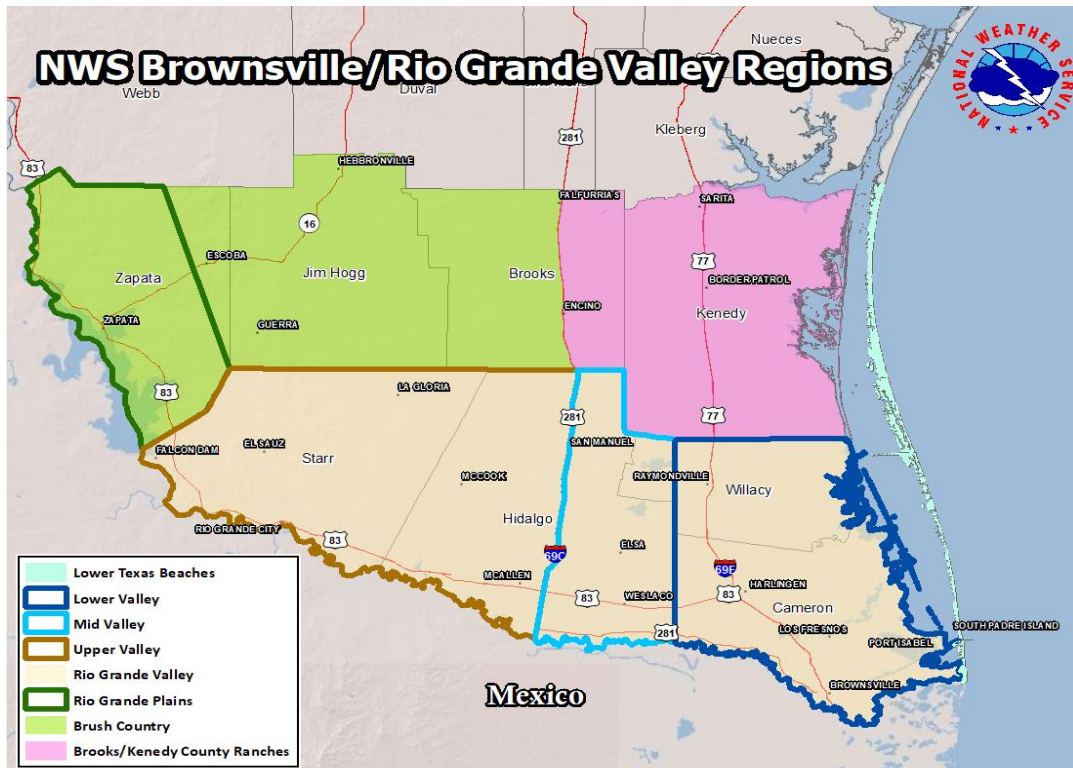


Figure 2. For reference: Naming conventions for the Rio Grande Valley/Deep South Texas sub-regions. Note that the Brush Country and Rio Grande Plains continue into Webb, Duval, and Jim Wells Counties.

Statistics that follow are provided for the three anchor cities of the Rio Grande Valley, with the most stable and long-period record in the region.

The Numbers

| Temperature | Brownsville (since 1878/79) | Rank | Record (year) | Harlingen (since 1912/13) | Rank | Record (year) | McAllen (since 1941/42) | Rank | Record (year) |
|---------------|-----------------------------------|------|------------------|---------------------------------|------|------------------|-------------------------------|------|------------------|
| December 2021 | 73.2 | 1W | 2021 | 72.8 | 1W | 2021 | 71.5 | 1W | 2021 |
| January 2022 | 61.8 | 53W | 69.2 (1890) | 58.6 | 40C | 51.2 (1977) | 59.0 | 34C | 1977 (52.2) |
| February 2022 | 59.4 | 14C | 52.9 (1905) | 56.9 | 5C | 53.1 (1978) | 57.9 | 4C | 56.1 (1978) |
| Winter 2022 | 65 | 14W | 69.7 (1890) | 62.9 | 51C | 54.4 (1977) | 63.0 | 41C | 56 (1977) |
| Precipitation | Brownsville | Rank | Record (year) | Harlingen | Rank | Record (year) | McAllen | Rank | Record (year) |
| December 2021 | 1.32 | 59W | 6.95(1940) | 1.90 | 30W | 9.11 (1940) | 0.97 | 33W | 4.99 (2009) |
| January 2022 | 2.54 | 25W | 5.11 (1945) | 2.23 | 21W | 5.22 (1931) | 1.56 | 18W | 7.56 (1958) |
| February 2022 | 1.88 | 21W | 10.25 (1958) | 1.63 | 20W | 12.10 (1923) | 1.00 | 21W | 5.25 (1983) |
| Winter 2022 | 5.74 | 23W | 15.50 (1958) | 5.76 | 15W | 12.58 (1958) | 3.53 | 20W | 13.54 (1958) |

Legend:

W=Warmest in Temperature Section

W=Wettest in Precipitation Section

C=Coldest in Temperature Section

Record (year): Year=year of February in the sample. For example, (1940) includes December 1939, and January-February 1940.

Color shades based on ranking relative to the period of record. Darker shades represent higher rankings; lighter shades represent lower rankings.

Winter 2022, Monthly Capsules

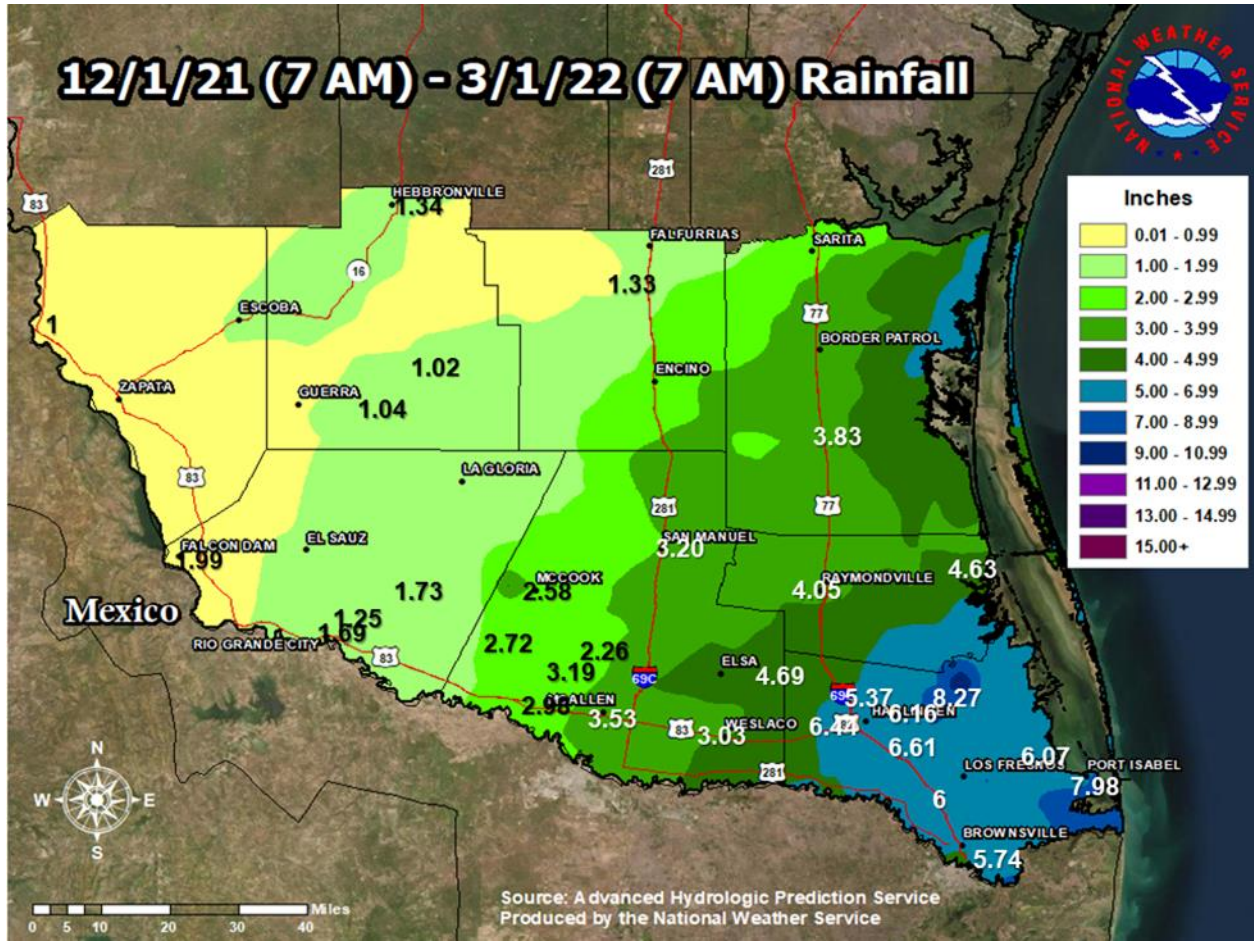


Figure 3. Annotated rainfall map for meteorological winter (Dec. 2021-Feb. 2022). Annotations include NWS, CoCoRaHS, and other mesonet data.

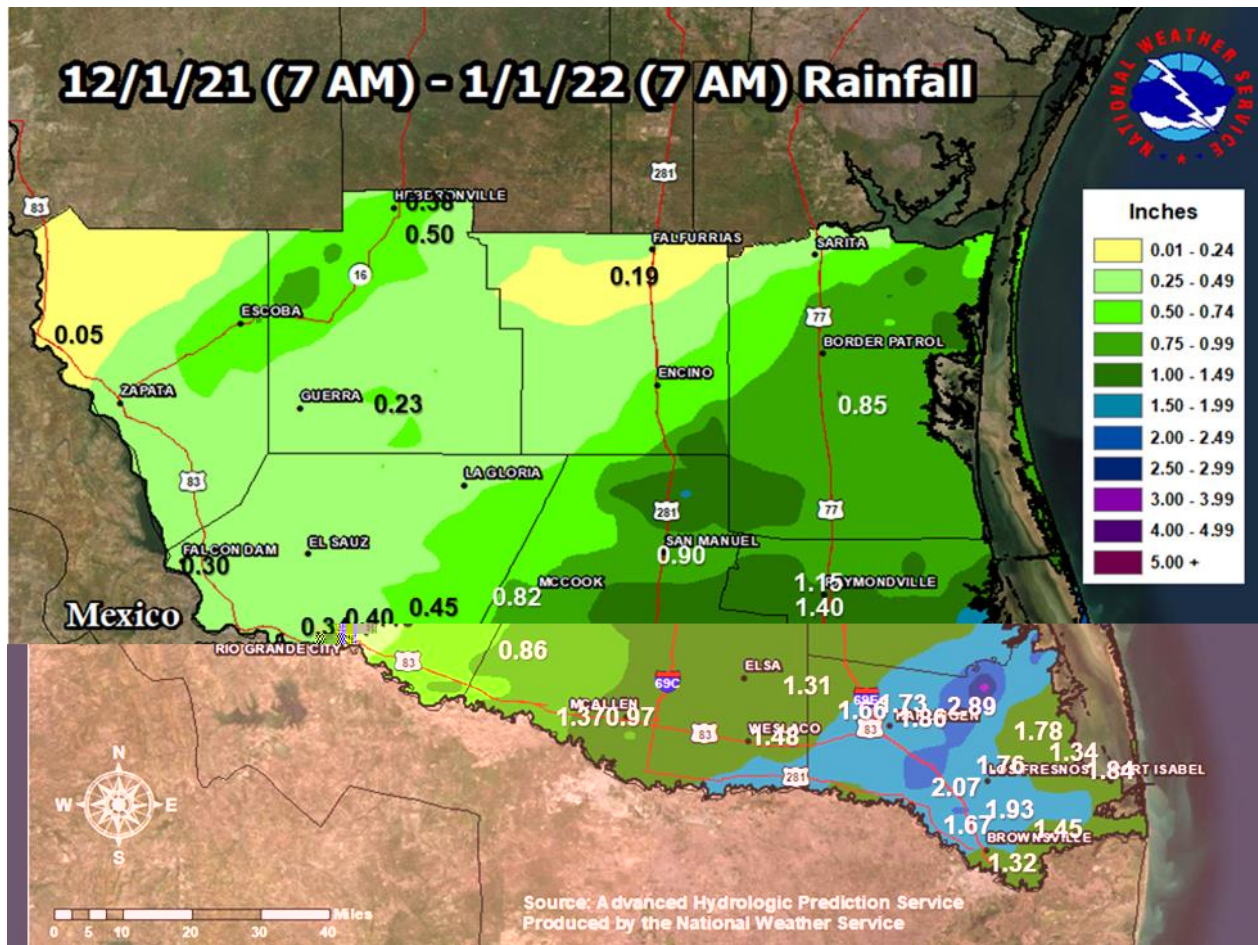


Figure 4. Annotated rainfall, December 2021, for the Rio Grande Valley/Deep S. Texas ranch and brush region. Annotations include NWS, CoCoRaHS, and other mesonet data.

December culminated the period of “months that end in -er” with record-shattering temperatures, as former records were broken by 2 to more than 4°F across the Rio Grande Valley. Average temperatures in the lower 70s (day/night combined) were similar to those in late March or early April than the first month of meteorological winter. Rainfall, as was the case for the entire season, favored the agricultural-rich lower and mid Rio Grande Valley, which also included the vast majority of the population. The only notable cool-down occurred between the 19th and 21st, when daytime temperatures fell into the 50s (ranchlands) and 60s (Valley) with morning lows in the upper 30s to lower 40s. A wave along this front brought nearly an inch of rain to locations near the coast on the 19th. The four-month close to 2021 ranked warmest to second warmest, and pushed the annual temperatures into the top fifteen warmest on record at the Valley’s anchor cities; Brownsville ended fifth warmest on the year. Details on 2021 for the Rio Grande Valley/Deep South Texas region can be found in this [summary](#).

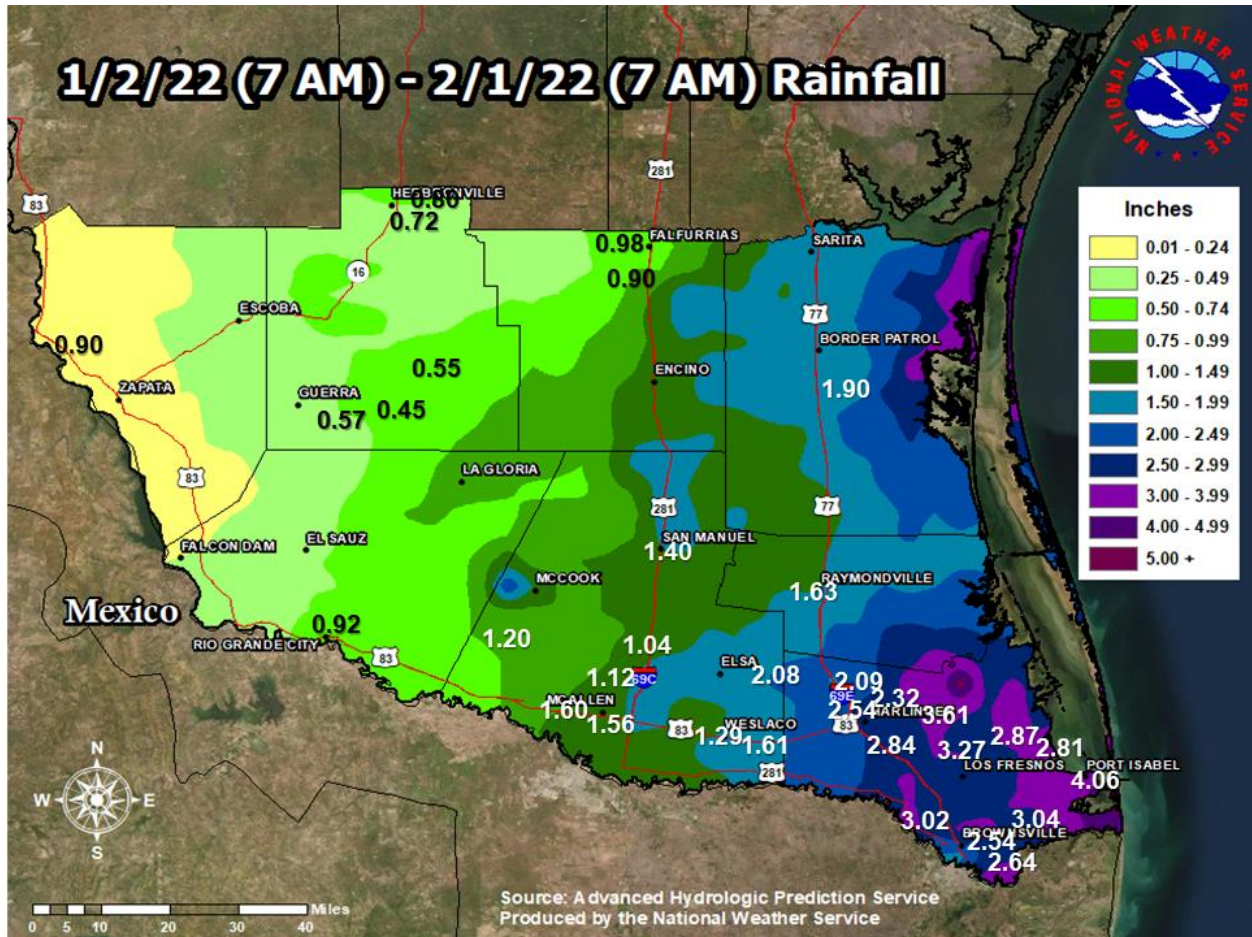


Figure 5. Annotated January 2022 rainfall for the Rio Grande Valley/Deep S. Texas ranch and brush country. Annotations include NWS, CoCoRaHS, and other mesonet data.

January picked up where December left off; New Year’s Day shattered more calendar day records with afternoon temperatures ranging through the 90s across the region, including 99°F (unofficially) at Falcon Lake (Mesowest/Remote Automated Weather Network). The two-day record for New Year’s celebrations (Dec. 31-Jan. 1) shattered records in Brownsville and McAllen. At the beach, surf temperatures in the upper 70s made the annual “Polar Bear Dip” polar in name only, as hundreds entered the surf for a fun holiday.

The “April in Winter” close to December and start to January ended on the 2nd, as true ‘winter’, Valley-style, arrived with the season’s strongest front to date. By January 3, temperatures which had been summer-like just two days earlier plummeted to the season’s first widespread freeze north of the populated IH-2 corridor. A hard freeze (temperatures at 27°F or lower for 2 or more hours) across nearly all of the Rio Grande Plains/Brush Country/Brooks-Kenedy ranches.

Preliminary Overnight Lows

Low Temperatures Sunday Night/Monday Morning

Weather Forecast Office
Brownsville/RGV, TX

Issued Jan 03, 2022 10:27 AM CST

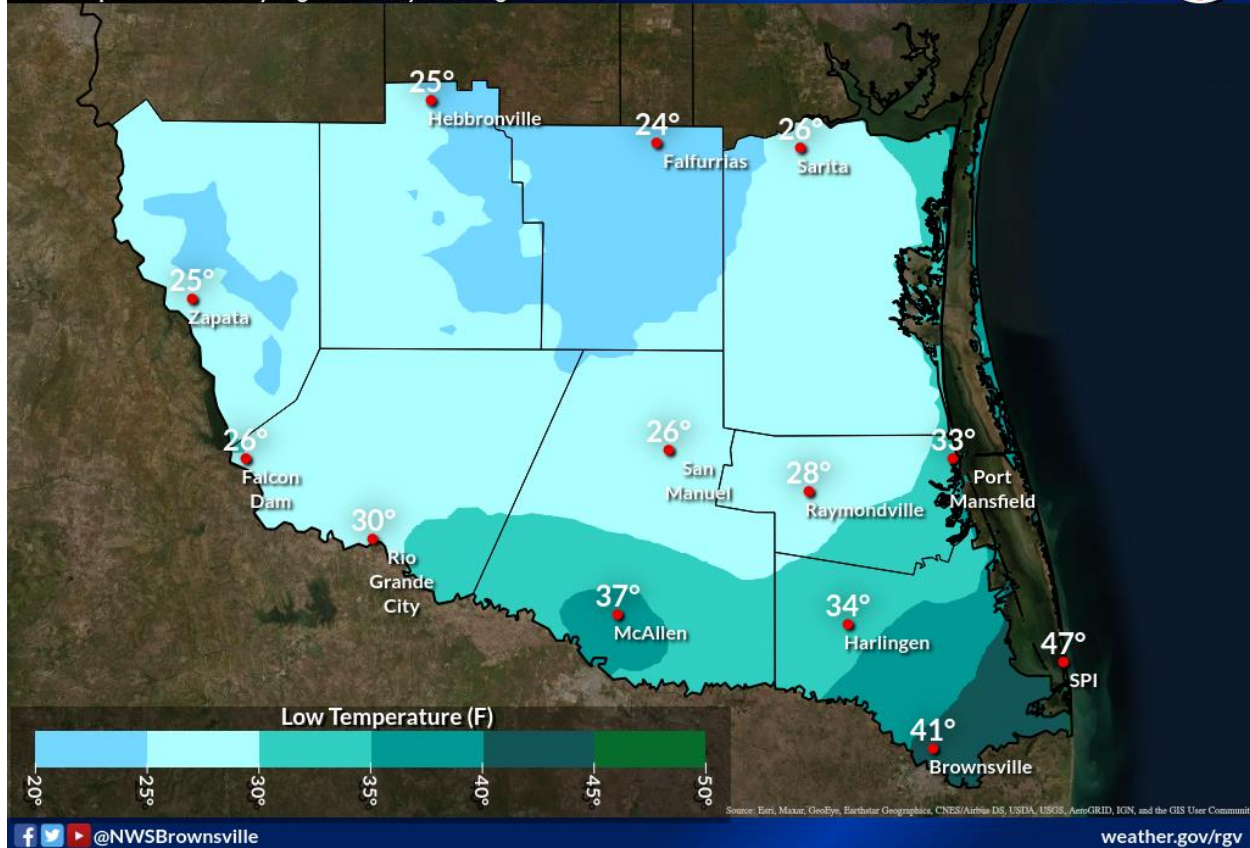


Figure 6. Preliminary minimum temperatures on January 3, 2022, from automated sensors and cooperative observation platforms. These were the coldest temperatures, region-wide, since February 20, 2021.

The freeze was a shock to many, including some tender vegetation. Fortunately, ornamentals in the populated Valley were only marginally impacted, but there may have been some minor damage to citrus fruit still on trees given low wet-bulb temperatures, which fell below the hard freeze threshold in locations such as Weslaco, Mercedes, and La Feria. The combination of cold and dry/very dry air allowed for “freeze curing” of grass and brush. The January 3 freeze was the first of many for the Brush/Ranch country during the next two months; additional freezes would “super-cure” these fuels in these areas and contribute to late-season large wildfires.

Several more cold fronts would suppress temperatures across the region, with departures shifting from more than 8°F above average in December to between 1 and 4° below average in January. Notable was another freeze across the Ranch/Brush Country on January 16th, which came (again) with low wet bulb temperatures, and a radiational freeze and hard freeze in the same areas on the 17th. A quick warm-up was followed by another sharp cool-down between the 19th and 20th, with afternoon “feels like” temperatures crashing nearly 50 degrees from day to day. The coldest calendar day temperatures for the populated Valley occurred on the 21st, with another post-frontal band of overrunning precipitation joining the party. Pockets of freezing temperatures (32°F) created conversational icing on trees, grasses, and roofs in the lower Valley but no known impacts to power or transportation. Unsettled, cool to chilly weather continued through the end of the month, with periods of rainfall – favoring locations along and

east of IH-69C and US 281 in Brooks and Hidalgo. Portions of Cameron, Willacy, and Kenedy County ended up with a 200+ percent surplus. Meanwhile, the Rio Grande Plains and Brush Country of Zapata County remained in [moderate drought](#).

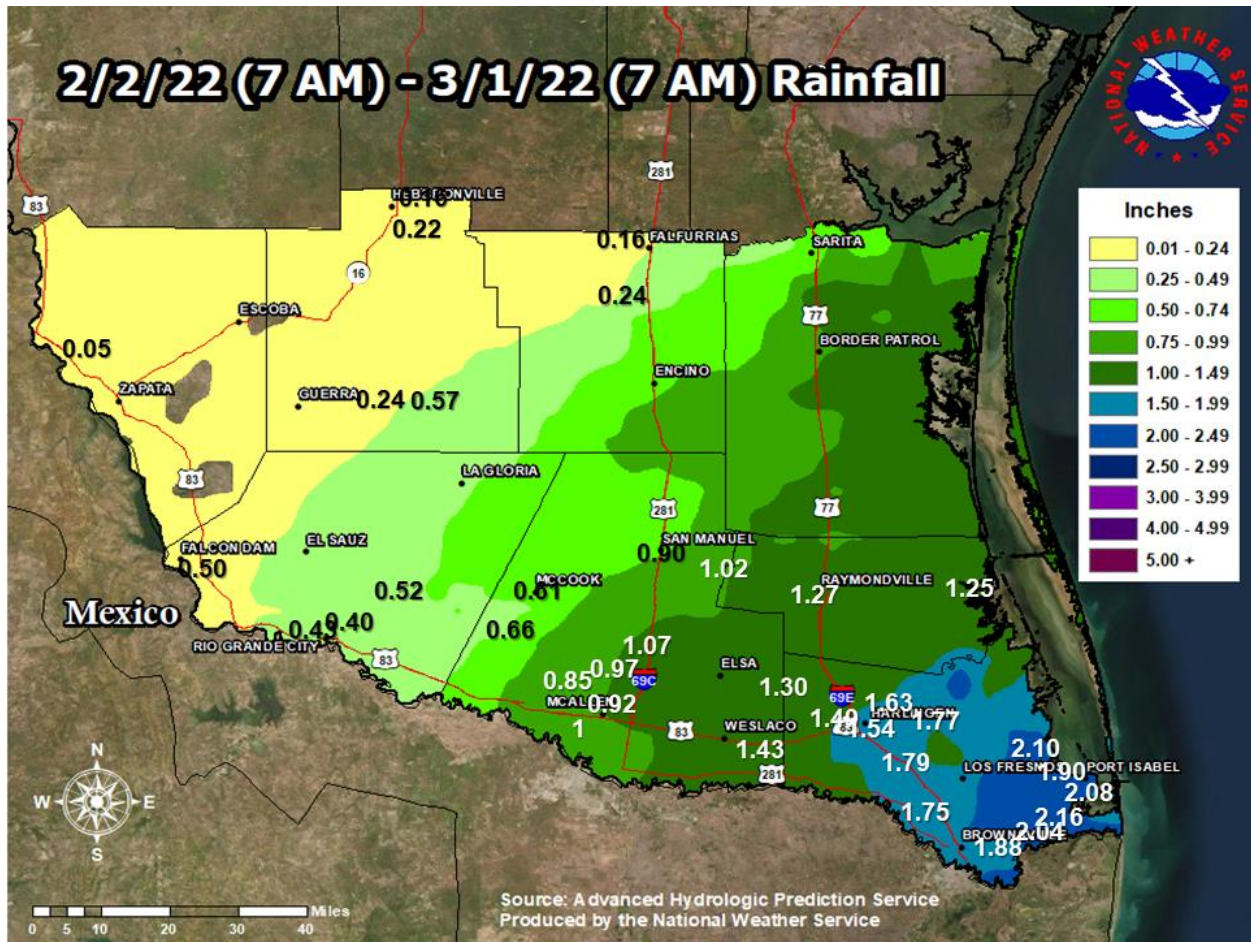


Figure 5. Annotated monthly rainfall for February 2022 across the Rio Grande Valley/Deep S. Texas Ranch/Brush Country region.

February followed January’s footsteps into a cold nadir, and by month’s end temperatures ranked among the top 20 coldest on record, with Harlingen (5th coldest, since 1913) and McAllen (4th coldest, since 1942) leading the way. The season’s cold bottomed out twice during the month: on the 3rd (afternoon) through 6th (morning), which included the gamut of conditions, from hard freezes across portions of the Ranch/Brush country of eastern Zapata through Kenedy County, to isolated but non-impactful sleet and freezing rain in the same areas on the 4th. For the Rio Grande Valley, most notable were the persistence of low wind chills from the afternoon of the 3rd through the early afternoon of the 5th, with low to mid 20s “feels like” values dominating.

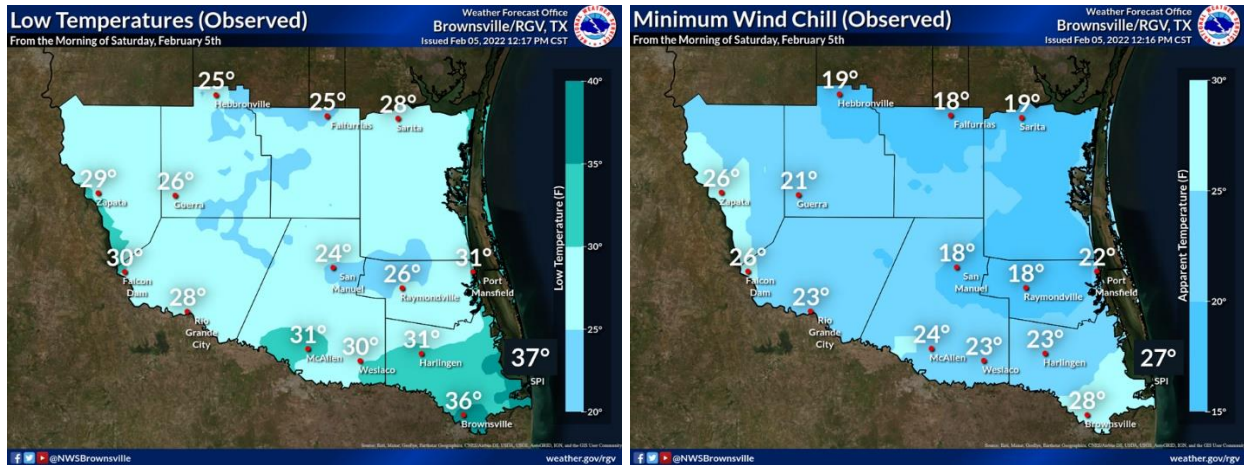


Figure 7a and 7b: Left – preliminary observed minimum temperatures for Saturday, February 5th 2022. Right – observed lowest wind chill temperatures for the same date.

An upper-level disturbance moved from west Texas into south and central Texas on the 6th and 7th, leading to the season’s largest two-day totals, once again in Cameron and southeast Willacy County where just under 2” fell. Despite little more than light rain and drizzle at other times in February, the two-day event early in the month ensured nearly 200 percent of average rainfall in these areas.

Between the 8th and 15th, warmups were modest, with temperatures still running several degrees below average, including around Valentine’s Day. The in-month roller coaster continued through the end of the month. Temperatures warmed into the 80s on the 16th and 17th before dropping back into the 60s and 70s for the next few days. Peak warming brought temperatures near or over 90 on the 21st through 23rd, before another sharp cold front sliced through the Valley that afternoon with temperatures plunging from the mid 80s in the early afternoon into the 40s just after sunset. The temperature tumble came with steel gray overcast, stiff north winds, and occasional light rain through the 27th, with temperatures ranging from the upper 30s to lower 40s across the ranchlands to the 40s and lower 50s across the Valley – about 25 degrees below the late month average.

Finally, the “super-cured” grasses in the Brooks and Kenedy Ranches provided more than ample fuel for rapid-growth large wildfires in February. The “Polo” Fire (3629 acres) near Armstrong on February 12-13 (Kenedy County) and the “755 Fire” (2000 acres) near Encino (Brooks County) on February 16-18 each were able to overcome fairly high relative humidity levels, and were driven by strong winds (post-cold front in Kenedy; “wind machine” southerlies in Brooks). Additional smaller fires occurred in Hidalgo County between the 14th and 16th during low humidity windows for an estimated total of 6,000 acres – a potential harbinger of things to come in an increasingly warm and dry spring with much above normal grass/brush loading. Remember: most wildfires are started by human activities and can be prevented. Follow [Smokey Bear’s](#) advice and be [Firewise!](#)



February, and the 2022 winter months, were perhaps best summarized by the photos above: Gray skies, chilly temperatures, and dormant grass and brush were most memorable. Left: steel gray sky with “virga” on February 4. Right: Slate-gray sky and unseasonable chill on February 25.