



# TEXAS CoCoRaHS OBSERVER



## Winter 2021-2022

Vol. 7 - 4



### Welcome to The Texas CoCoRaHS Observer Newsletter

The purpose of this newsletter is to keep observers informed of the latest news, events, training, and happenings related to the CoCoRaHS program here in Texas, as well as news about the latest weather patterns affecting each region of Texas seasonally.

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## Texas Weather Summary Winter 2021-2022

*John Nielsen-Gammon, Texas State Climatologist*

### Total Precipitation - December 1, 2021 through February 28, 2022

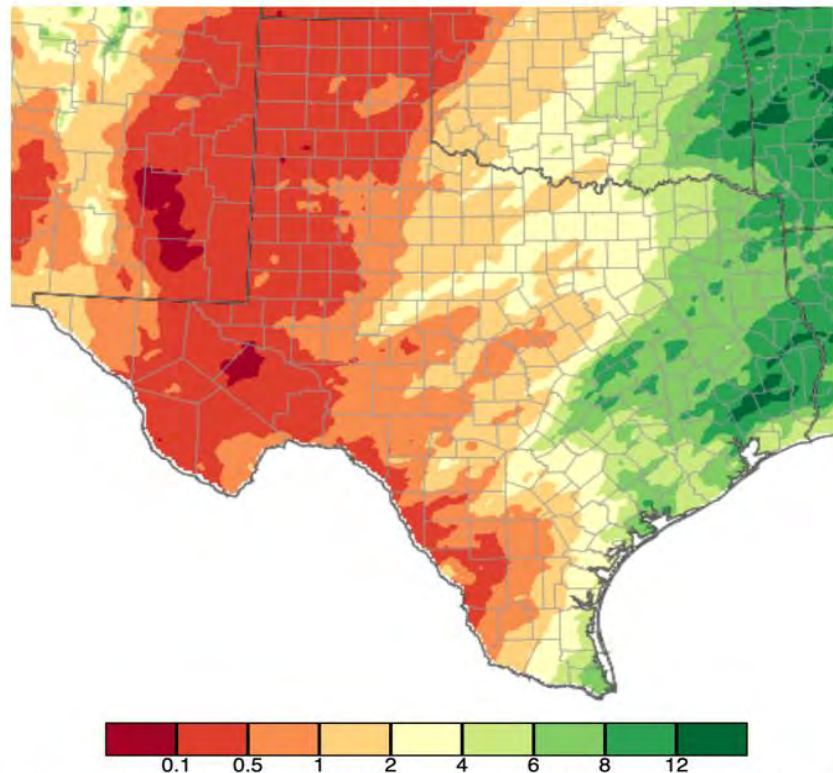


Image 1: Texas winter precipitation from the PRISM group, Oregon State University, generated using SC-ACIS

If you were hoping for above-normal precipitation this winter, you were probably disappointed. A greater portion of Texas had less than 10% of normal than had over 100% of normal. The Texas high plains had their fifth-driest winter (December-February) on record, while north-central Texas had their eighth-driest winter on record. Some spots in western Texas received less than a tenth of an inch for the entire three months. In contrast, Beaumont got soaked, with 3.94", but even that turned out to be their driest winter (by 0.78") in over 120 years of record-keeping. Continued on page 2 →

***"Because Every Drop Counts, As Do All Zeros"***

## Texas Winter Weather Summary (continued)

The dry weather is a real problem for farmers and ranchers heading into spring planting season. There's only a fairly narrow window for seeds to germinate and get established before the summer heat comes along. The latest seasonal odds favor continued warm and dry weather through the spring, and if it really does stay dry, we could be in for a hot summer. With dry soil going into summer, less of the sun's energy gets sidetracked into evaporating water and more of it goes into direct heat.

Maybe you remember summer 2011? The hottest summer on record, not just for Texas but for any state in the United States ever? It started with a dry fall, then a dry winter, then a dry spring, before cresting with a dry summer. Three of the ten warmest months in Texas history were in the summer of 2011, including the warmest June (by 0.2 °F), the warmest July (by 0.6 °F), and the warmest August (by 2.3 °F).

Which brings me to the really unusual part of this past winter: December. The average temperature in December was 59.0 °F. Admittedly, that would be mighty chilly if it happened in July. But 59.0 °F would have been warmer than normal in November, December, January, February, and even March. The long-term average temperature for December is 47.2 °F, so December 2021 was an amazing 12 °F warmer than average.

Not surprisingly, December 2021 was the warmest December on record. The previous warmest December was back in 1933, at 53.3 °F, followed by 1970 at 53.2 °F and 1984 at 52.8 °F. So December 2021 didn't just break the record, it annihilated it. The margin between 2021 and the second warmest December on record was about the same as the margin between the second warmest December and the long-term average.

You may have noticed that I keep using the words "on record". There's a reason for that. December 2021 was certainly not the warmest ever. Back around 66,000,000 BC, when Texas featured swamps and dinosaurs, I'm sure there were many Decembers warmer than December 2021...maybe even all of them were warmer. So record-breaking weather is only record-breaking with respect to the history of weather records, and statewide weather records go back only to 1895.

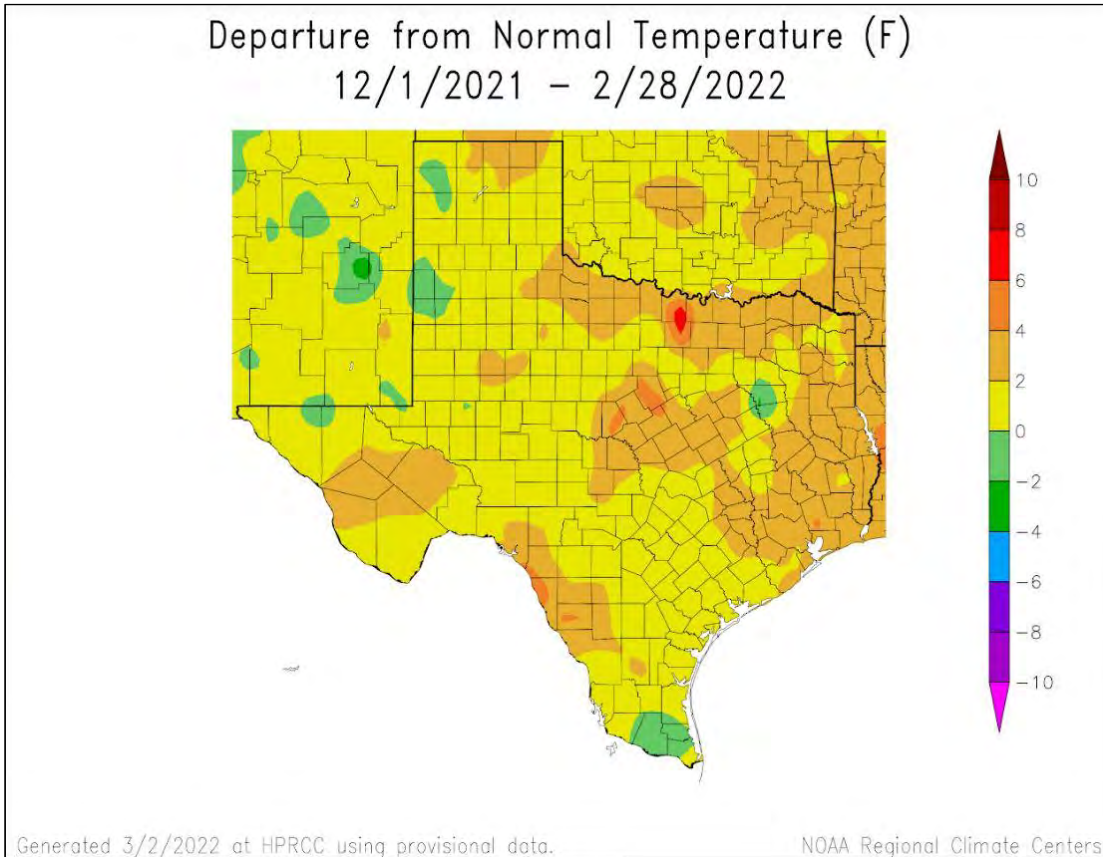
We do have a few individual weather stations with records earlier than 1895, but they aren't widespread enough to give us reliable statewide averages. Still, there's some interesting data to be found there. For example, San Antonio averaged 64.2 °F in December 2021, and 62.5 °F in December 1933. But those were only the second and third warmest Decembers on record for San Antonio. In San Antonio, the weather records go back to 1885, and in 1889 San Antonio recorded an average December temperature of 66.0 °F, almost two degrees warmer than December 2021!

I've done a comprehensive check of temperatures throughout the state, and it seems that 1889 and 2021 are in a virtual dead heat (no pun intended) for the warmest December since the mid 1880's. It just goes to show: you can get just about any kind of weather in Texas if you wait long enough, or if you look back far enough.

## Another La Niña Winter (Mostly) Meets Expectations

By Keith White – WFO Austin/San Antonio

Winters during the cold phase of the ENSO cycle, also known as La Niña, historically have a tendency to be warmer and drier than normal across South Central Texas. We got a good taste of that early in the season, as December 2021 was a very warm and dry month across our region, generally 10 or so degrees above normal. To put this warmth into perspective, both of Austin's climate sites as well as Del Rio had their warmest December on record, while San Antonio had its second warmest December after only December 1889. Numerous daily temperature records were set throughout the month.



**Figure 1: December-February Departure from Normal Temperature for the state of Texas from the High Plains Regional Climate Center.**

With the polar jet and storm track remaining well north of the region, precipitation through the month was below normal across all of South Central Texas. A strong cold front brought a line of showers and thunderstorms to areas east of I-35 on December 10th, with rainfall amounts of 0.5"-1" limited to Fayette and southern Bastrop counties. Another strong cold front moved into the region on December 18th, with most of the beneficial rain falling along and east of the I-35 corridor. Dry weather prevailed for most areas from December 19th through the end of the month.

Given the added evaporation from the warmth as well as a lack of precipitation, drought expansion accelerated through the month. But a pattern change came quickly. The beginning of 2022 was much cooler with temperatures running 1-2 degrees below average for the month of January across many South Central Texas stations. Only scattered, generally light precipitation events occurred for the majority of the month before many of our eastern areas picked up an entire month's worth of rainfall or more on the 31st. More on that in a moment.

A strong cold front arrived late on New Year's Day, but only brought light rainfall generally less than 0.25" to some locations along and east of I-35 and north of I-10. High pressure then settled in and kept conditions dry for several days with a bit of a warming trend. Another strong, but slow-moving cold front pushed through from late on the 5th until pre-sunrise on the 7th. After a very cool day, winds shifted to the south and brought warmer and moister gulf air back to the region on the night of the



## Austin/San Antonio Regional Summary (continued)

7th into the 8th. Another batch of light showers impacted areas generally along and east of US-81. Again amounts were less than 0.25" and less than 0.10" for many.

The next precipitation event came on the 11th as an upper level disturbance passed over central Texas. Dry air at lower levels allowed some very light sleet to reach the ground early in the day despite surface temperatures in the upper 40s! This event did bring some more appreciable rainfall amounts of up to 0.5" from Llano to Georgetown after lower levels saturated there, but the majority of the region stayed dry. A few days of relative warmth followed as the weather pattern stagnated across the region. A dry cold frontal passage on the night of the 14th brought no reprieve from ongoing dryness, and in fact led to some wildfire concerns on the 15th.

Aside from a few moderate showers southeast of Cuero to La Grange, the next cold front late on the 19th (the strongest of the month) also brought little in the way of measurable precipitation as low level dry air evaporated most hydrometeors before they reached the ground. It did, however, drop temperatures 40 degrees give or take between the seasonally hot afternoon of the 19th and a chilly 20<sup>th</sup>. Dry air behind the front also kept rain out of the forecast a few more days before a batch of somewhat more widespread showers developed the night of the 23rd into the morning of the 24th. Rainfall amounts of > 0.10" were again relegated to areas east of I-35.

A very slow moving upper level low moved across Texas to end the month, and after generally light to moderate showers exited the Hill Country early on the 31st, widespread moderate to at times heavy rain impacted areas from Georgetown to Kyle to Cuero through the day with 1-4" of rain and isolated totals exceeding 4.5" in Bastrop and Lavaca counties. As a result of this rain, the Drought Monitor valid Feb 1st showed most of these areas no longer under drought status.

Shortly after, on the evening of February 2nd, another round of showers and a few embedded storms featuring moderate to heavy rain set up along the I-35 corridor with 1-3" of additional rainfall from northern Bexar to eastern Williamson counties. This was in advance of a strong cold front that brought a change-over to sleet and freezing rain for the Hill Country, Austin Metro area and northern portions of San Antonio on the 3rd. Sleet accumulation up to three-quarters of an inch were observed in our northern counties, while up to a quarter inch of ice was reported as far south as northern Bexar County. Several very helpful reports were included in the remarks from the morning CoCoRaHS observations. This event did bring some widespread, much needed precipitation to much of the region, but the driest areas along the Rio Grande were once again unable to pick up on much in the way of beneficial rain with reports ranging from under 0.10" to about 0.35" in our western counties.

Hydrologically, the rest of February was much quieter across South Central Texas. Cold weather stuck around through the 6th, and a couple of seasonally warm days on the 21st and 22nd gave folks a taste of spring. However, another winter weather event came to northern portions of the region on February 23-24. Although there were some impacts from a light glaze of ice primarily on elevated roadways, precipitation amounts were negligible, generally a couple hundredths of an inch or less. One last light rain and drizzle event on the 25th and 26th again left the Rio Grande Plains high and dry, but some central areas received up to 0.10" in total, and most locations east of I-35/37 picked up amounts generally between 0.10" - 0.20".

February 2022, on the whole, was nearly as cold as February 2021, though the cold was a bit more spread out across the month this time around instead of concentrated across 8 days in the middle of the month. However, averaged over the full three months the La Niña winter projections of warmer than normal conditions verified well across the region (Figure 1) as the December warm anomalies were practically off the charts! And while the eastern part of the Austin Metro area finished the season with above average rainfall, most of South-Central Texas experienced below to well below normal precipitation dating back to the beginning of December (Figure 2 next page).

## Austin/San Antonio Regional Summary (continued)

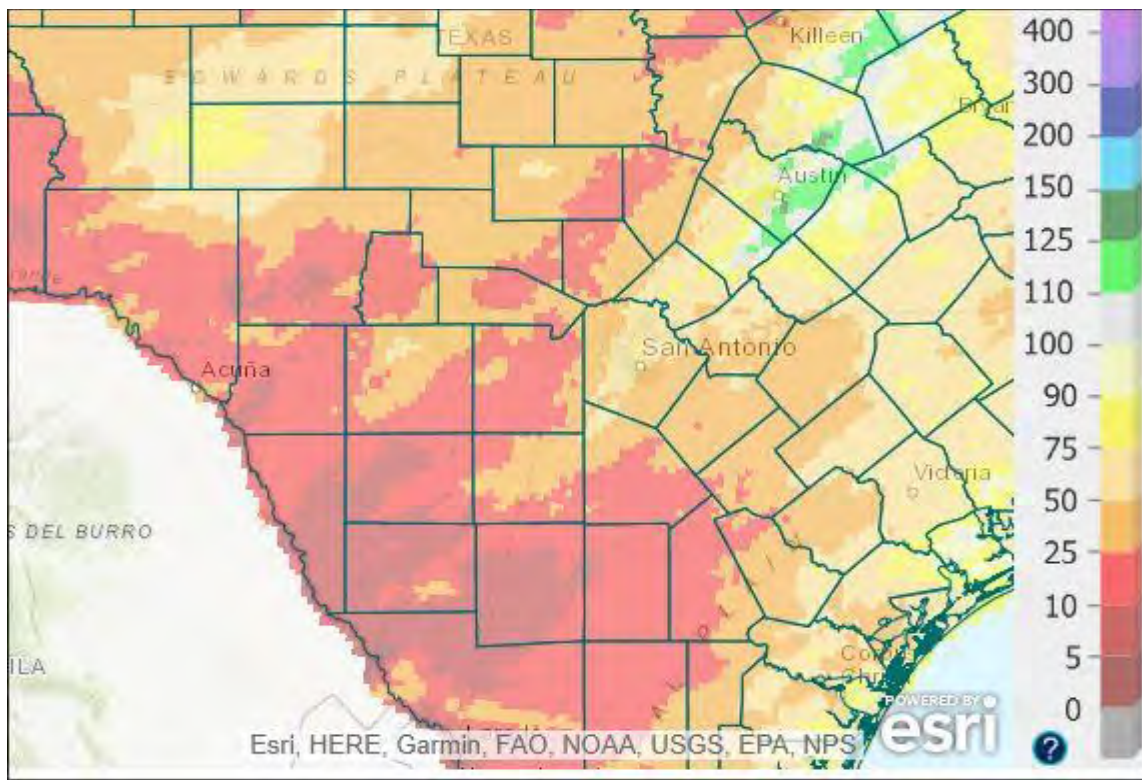


Figure 2: AHPS 90 Day Percent of normal Precipitation ending at 12Z on 3/1/2022

Several CoCoRaHS observers from near Del Rio to Crystal City reported rainfall amounts of only about a half inch or less through Meteorological Winter. As a result, Severe and Exceptional (D2 to D4) Drought status has expanded across much of the west half of our region (Figure 3). While heavy rains in late January and early February have allowed many of our eastern areas to stave off drought at the moment, projections continue to call for warm and dry weather to prevail this spring.

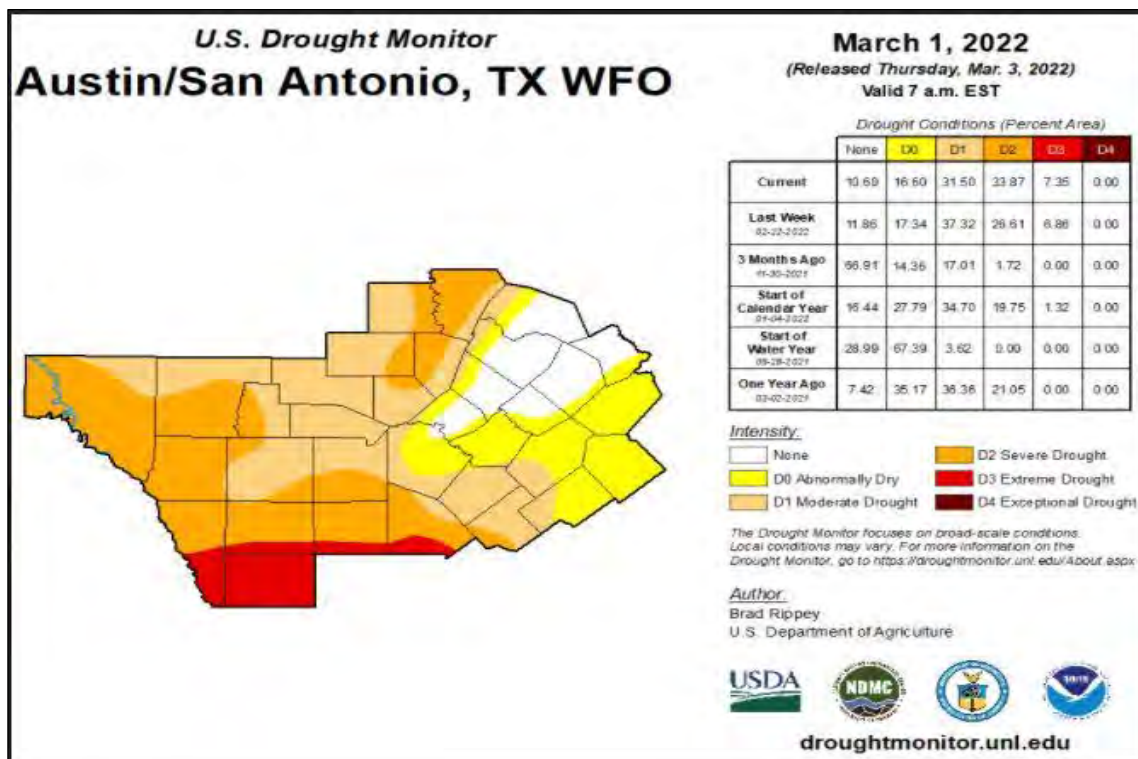


Figure 3: United States Drought Monitor valid 12Z on 3/1/2022

## West Texas/SE New Mexico Regional Summary

### Drought conditions Remain

By: James DeBerry, Meteorologist/Hydrology Program Manager, NWS Midland

#### December

The drought continued through December, with very little rainfall for West Texas and Southeast New Mexico. The one exception was an upper-level storm system that brought rain to the area on New Year's Eve, ending Midland International Air and Space Port's 90-day streak of no measurable precipitation. The 90-day streak was the 3<sup>rd</sup>-longest dry stretch on record. Guadalupe Mountains National Park received up to 2" of rainfall. Otherwise, no notable hydrologic activity was reported.

Monthly radar rainfall estimates ranged from nothing in the Presidio Valley and Marfa Plateau to up to 2" in the Guadalupe Mountains. Indeed, the highest observed rainfall was 1.74" at Dog Canyon in the park in Culberson County. The average of precipitation reported across West Texas and Southeast New Mexico was 0.16".

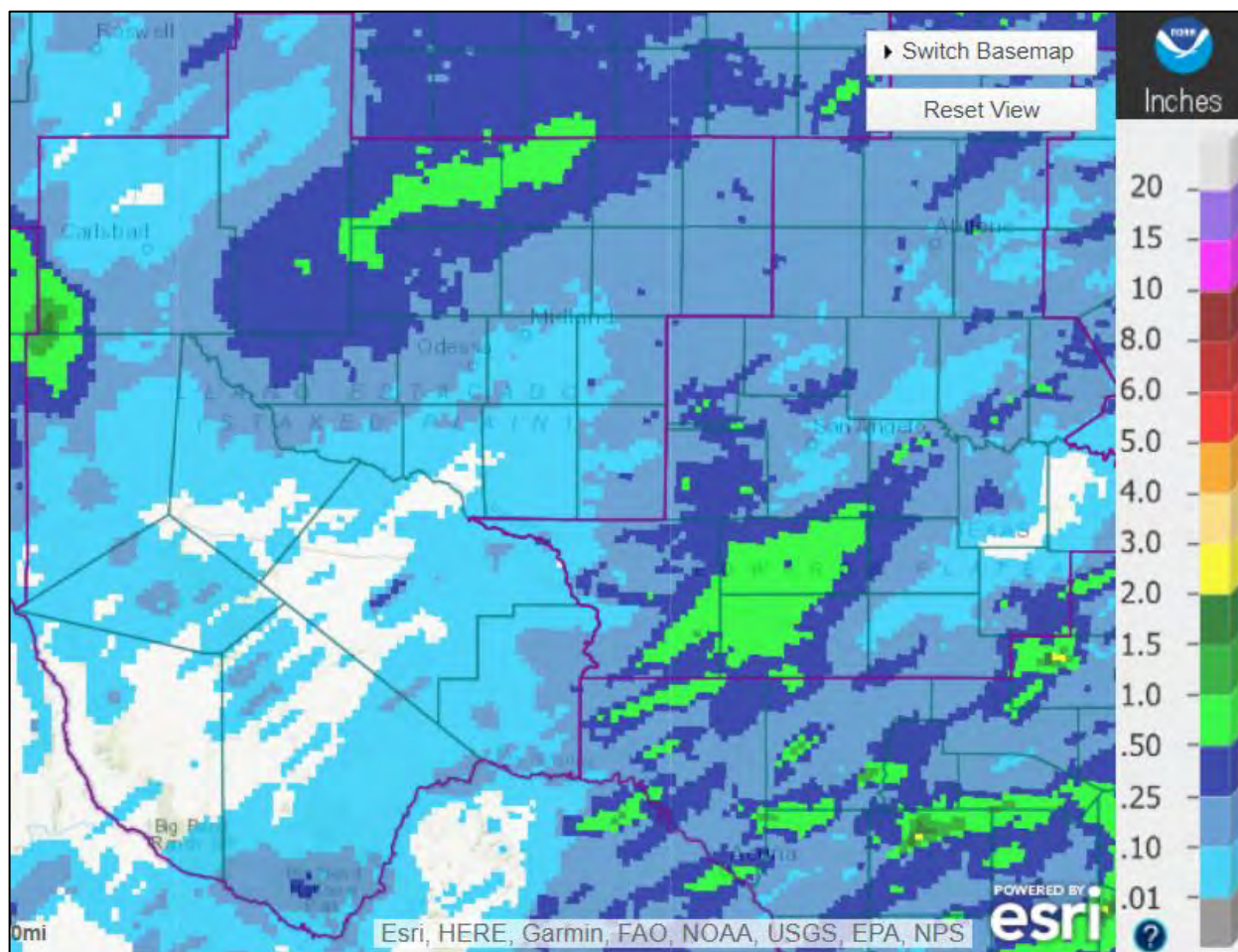


Figure 1: December Precipitation.

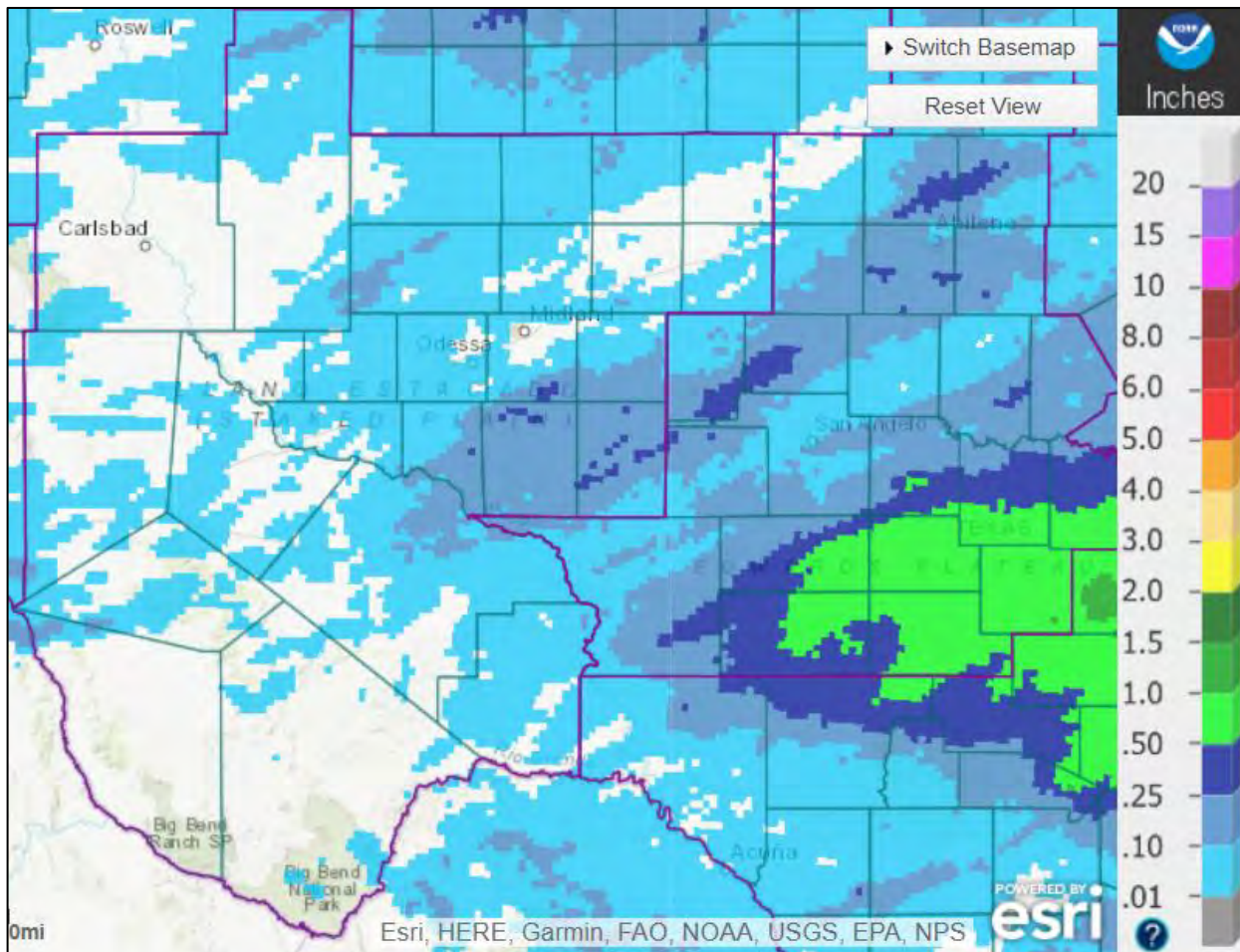


## West Texas/SE New Mexico Regional Summary (continued)

### January

The drought continued in January, setting a bad precedent for the year as La Nina continues, and is forecast to continue through at least May. Little to no hydrologic activity was noted for the month.

Monthly radar rainfall estimates ranged from nothing over the higher terrain to up 0.50" in the southeast Permian Basin. The highest observed rainfall was 0.33" in Tatum in Lea County. The average of rainfall reported across West Texas and Southeast New Mexico was 0.07".



**Figure 2: January Precipitation.**

### February

February saw an uptick in precipitation, although most of this was confined to the Diablo Plateau and eastern HSA. A couple of dryline events occurred, possibly signaling a busy spring severe season. No notable hydrologic events occurred.

Monthly radar rainfall estimates ranged from nothing over northern Eddy County and central Brewster County to up to 2" in eastern Regan County. However, the highest observed rainfall was 0.69" at Persimmon Gap in Brewster County. The average of rainfall reported across West Texas and Southeast New Mexico was 0.20"



## West Texas Regional Summary (continued)

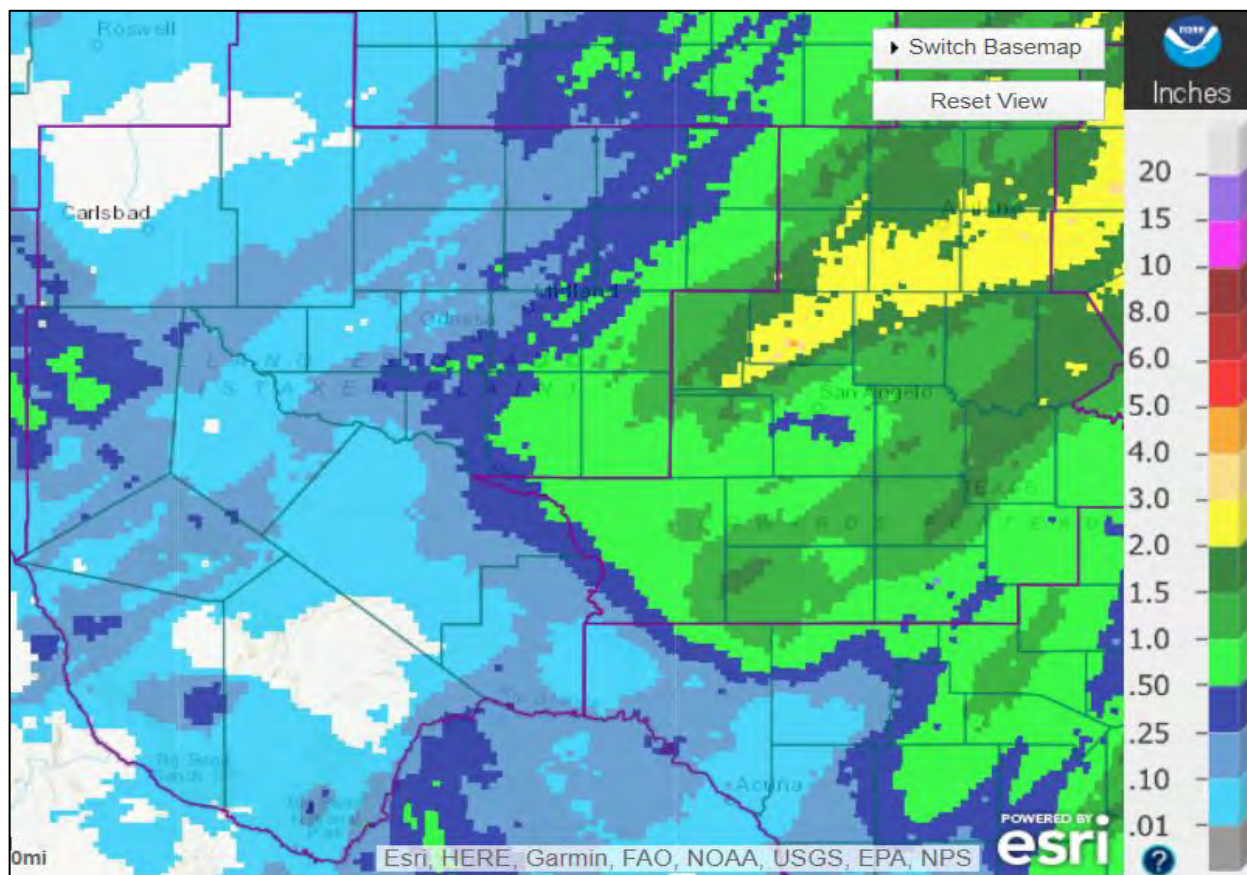


Figure 3: February Precipitation.

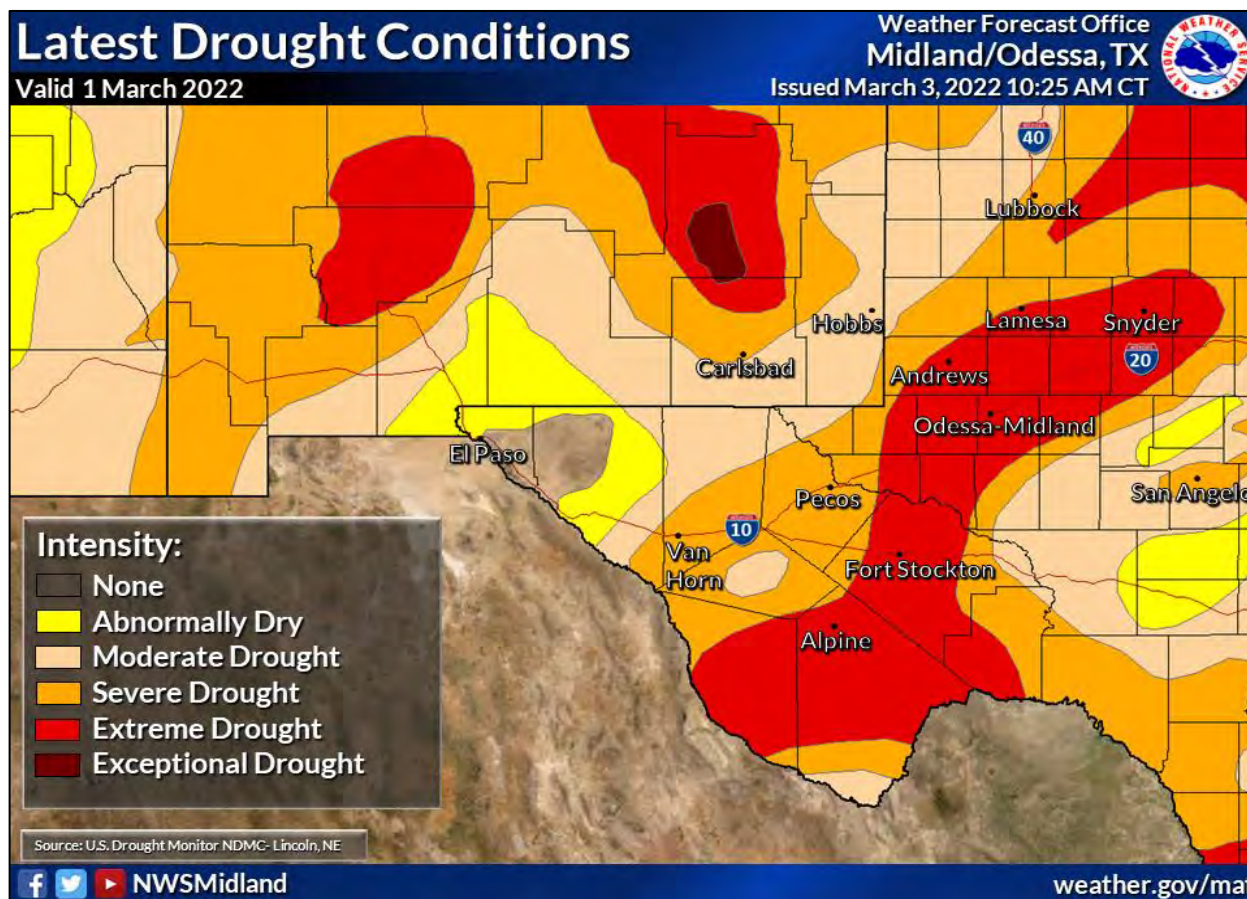


Figure 4: Drought conditions across El Paso region at the end of winter.



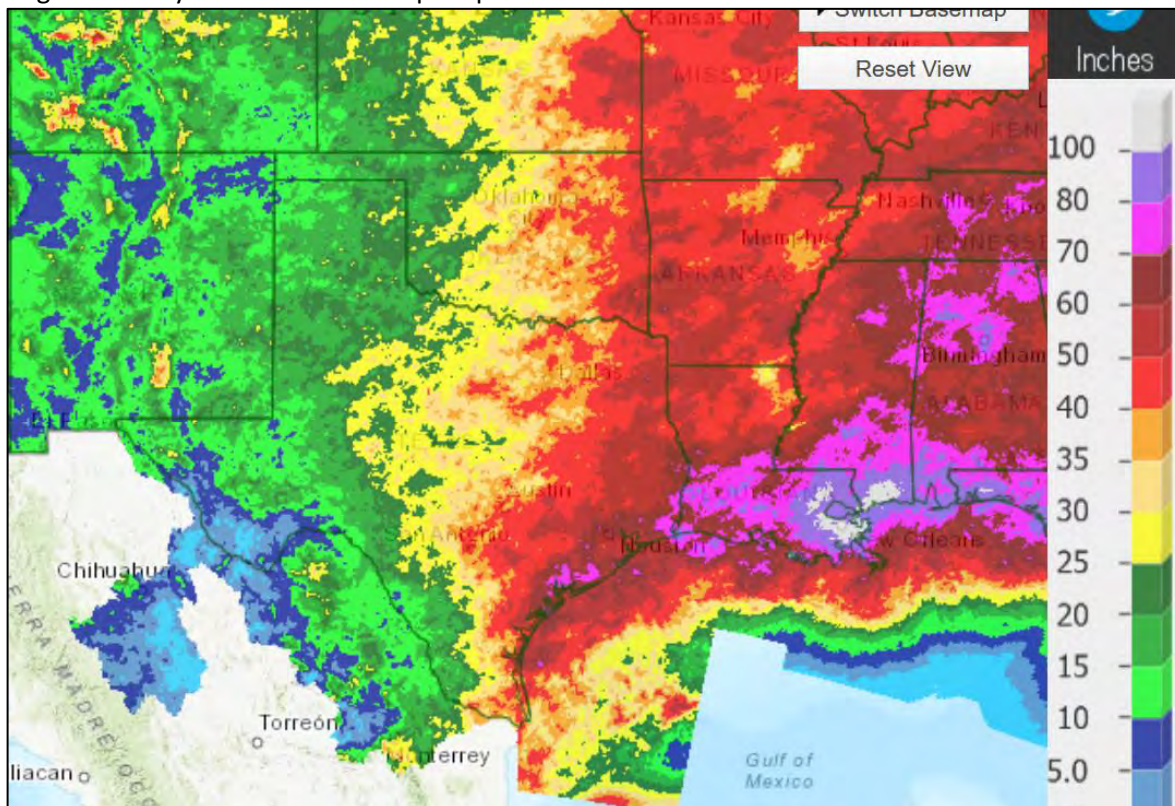
## North Texas Regional Summary

### North Texas sees Dry Winter, Drought Conditions Worsen

By: Greg Story, Dallas/ Fort Worth CoCoRaHS Regional Coordinator

Greetings from North Texas! I'm hoping the cold, snow and ice events are over for our region! After an autumn season where the weather was pretty tame in North Texas, the winter saw a trend toward abnormally dry weather. In fact, a good part of North Texas is observing a moderate to severe drought with dry soil moisture conditions as of March 3. It reminds me that your rainfall reports are as valuable as ever in determining areas of drought as well as floods. I am thankful to each and every one of you for reporting your rainfall via CoCoRaHS! Your reports continue to be invaluable to the National Weather Service (and other entities, such as the Texas State Climatologist and the National Drought Mitigation Center).

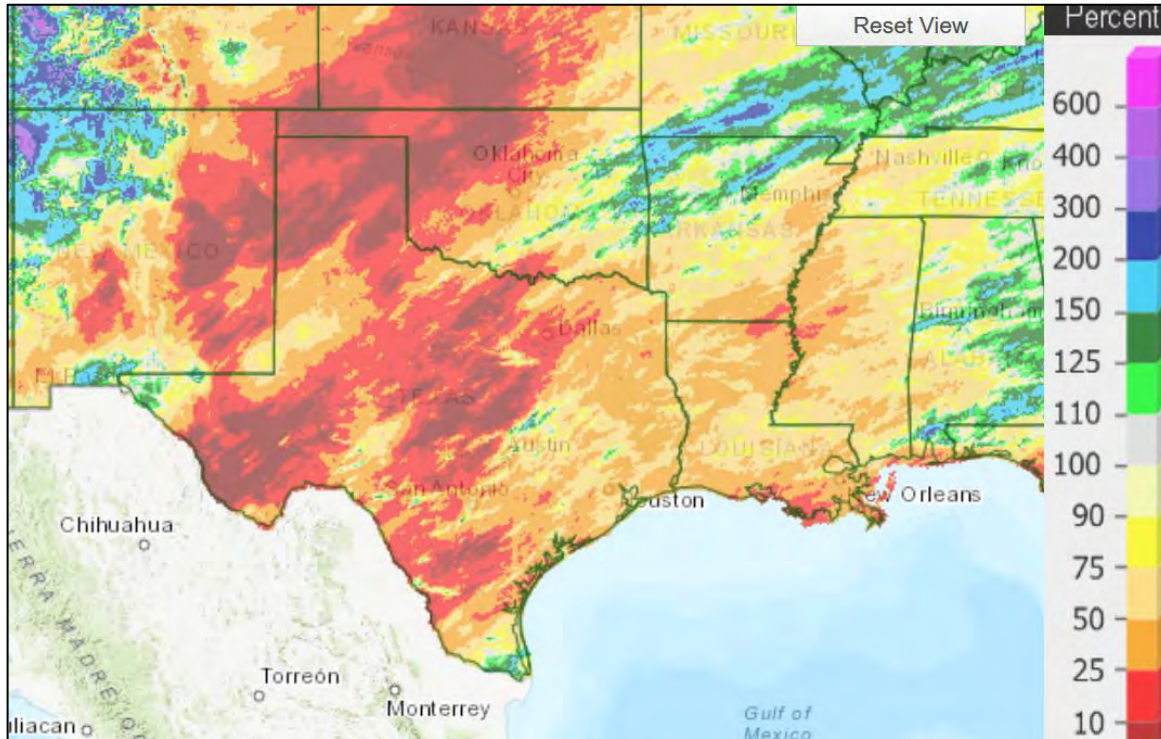
Over the past several months, in September it turned dry again across a good part of Texas. Rainfall was below normal especially over Northeast Texas and over West Texas. The only above normal rainfall was noted over the Texas Hill Country and along the immediate Texas Gulf coast. October continued to be quite dry. Below normal rainfall was again noted over much of Northeast Texas, but Southwest Texas had much below normal precipitation. Only the area east and southeast of San Antonio and along the lower Texas Gulf coast saw above normal rainfall. In November it was quite dry over the majority of the state, especially the northwest half of Texas where below normal precipitation occurred. Meanwhile, it was very wet with above normal precipitation over Deep South Texas. In December, it was dry over almost all of Texas, with very few locations receiving normal precipitation. The precipitation deficits were largest over northern and western Texas. January 2022 was also a dry month for most of Texas, however the regions along and near the Texas Gulf coast did see some near to above normal precipitation. But much of North Texas saw severe rainfall deficits. In February 2022 the precipitation deficits weren't nearly as bad, although much of the state did have near to below normal amounts. A small area of North Texas from northwest of Fort Worth down to northwest of San Angelo actually had above normal precipitation.



**Figure 1: Total precipitation for 2021.** Taking a final look at 2021, you can see it was quite wet along the entire Texas Gulf coast into southern Louisiana. But over the rest of Texas the precipitation was near to below normal.

## North Texas Regional Summary (continued)

For the year 2021 at DFW airport they ended up with 33.59" of precipitation. The normal amount for a year is 37.01" so they were -3.42" below normal for 2021. For 2021 at Waco, they received 32.67" of precipitation. The normal amount for a year is 36.40" so they were -3.73" below normal for 2021.



**Figure 2: Percent of normal precipitation map for December 2021.** The dark green, blue and purple colors indicate above normal precipitation; the beige, dark yellow and light green colors indicate near normal, while the orange and dark red colors indicate below normal precipitation. In December, it was dry over almost all of Texas, with very few locations receiving normal precipitation. The precipitation deficits were largest over northern and western Texas.

At DFW Airport in December 2021 (the warmest December of record temperature-wise) they received 0.43". The normal amount of precipitation in December is 2.84" so they were -2.41" below normal for the month.

In Waco for December 2021, they picked up only 0.04". The normal amount of precipitation in December is 2.87" so Waco was -2.83" below normal for the month.

For each month, I will highlight the more significant weather events. I know there is a lot of information given, and it is intended for you to pick your "favorite" storm or a particular day to see what happened. Which days did you report your heaviest precipitation amounts? You can read about them here and compare what you observed against the maximum amounts. There were about eight storm systems which affected our weather in December. Here are the highlights of the weather for the month.

### December 3 - 4:

A short wave trough moved across Texas which produced showers and isolated thundershowers. Initial rainfall amounts the early morning of the 3rd were less than 0.10". During the day on the 3rd the rainfall amounts were light and were less than 0.67". They were the heaviest in the Granbury and Glen Rose areas. Residual rainfall on the 4th was light as the short wave trough moved out of the region. The heaviest readings were around 0.67" in the Houston area.

### December 5 - 6:

A strong cold front moved into the region which produced showers and some thunderstorms late on the 5th into the 6th. The rainfall amounts on the 5th were less than 1", but they did get 0.87" northwest of Greenville. On the 6th the heaviest rainfall was over the Toledo Bend country with 1" to 1.50" noted.



## North Texas Regional Summary (continued)

December 10 - 11:

A strong cold front moved through Texas late on the 10th into the 11th. Temperatures ahead of the front were in the middle 80's. Showers and thunderstorms developed along and ahead of the front and a dryline, with rain mainly confined to east Texas. The rainfall in north Texas late on the 10th into the 11th was under 0.50", but further east Logansport, on the Texas/Louisiana border, got 1.31". Residual rainfall during the day on the 11th was under 0.40" over the middle Texas Gulf coast.

December 14 - 16:

A long wave trough formed on the 14th over the west coast of the U.S. Well out ahead of this low, moisture returning from the Gulf brought showers to east Texas early on the 14th. Initial rainfall amounts were less than 0.50" over Southeast Texas, while over north Texas amounts were around 0.25" southeast of Dallas. Later on the 14th into early on the 15th rainfall amounts were generally under 1", with the region south southeast of Mexia receiving 0.58". The upper level low progressed northeastward on the 15th and produced high winds over North Central and Northwest Texas. There wasn't much rain on the 15th, with amounts of 0.33" (east southeast of Tyler) or less. On the 16th a weak front was pushed into Texas. The rainfall associated with this front was generally less than 0.50" and was confined mainly to East and Southeast Texas.

December 17 - 18:

A second upper air disturbance pushed a strong cold front through Texas late on the 17th into the 18th. Showers and thunderstorms formed along and ahead of the cold front. Initial rainfall late on the 17th into the morning of the 18th was heaviest over Central Texas. South of Temple they received 3.00", east southeast of Georgetown they got 2.75", and 2.70" was measured east northeast of Kosse. Showers and thunderstorms continued on the 18th over eastern and southern Texas. The heaviest rain in the North Texas region was 3.54" west of Hearne. But heavier rain fell further south where south of Hutto they received 4.29".

December 19 – 20:

A minor short wave trough moved eastward out of Mexico. Ahead of this low moisture spread northward from the Gulf of Mexico and produced light precipitation across a good part of the state. The heaviest rain over North Texas late on the 19th into the morning of the 20th was 0.52" near Arlington. But over Deep South Texas around 1.75" occurred around Harlingen. The rainfall moved out of East Texas during the day on the 20th. Residual rainfall was the heaviest around Greenville with 0.34", with all other stations reporting less than that.

As a side note, it was 82 degrees on Christmas Day for a record high at DFW.

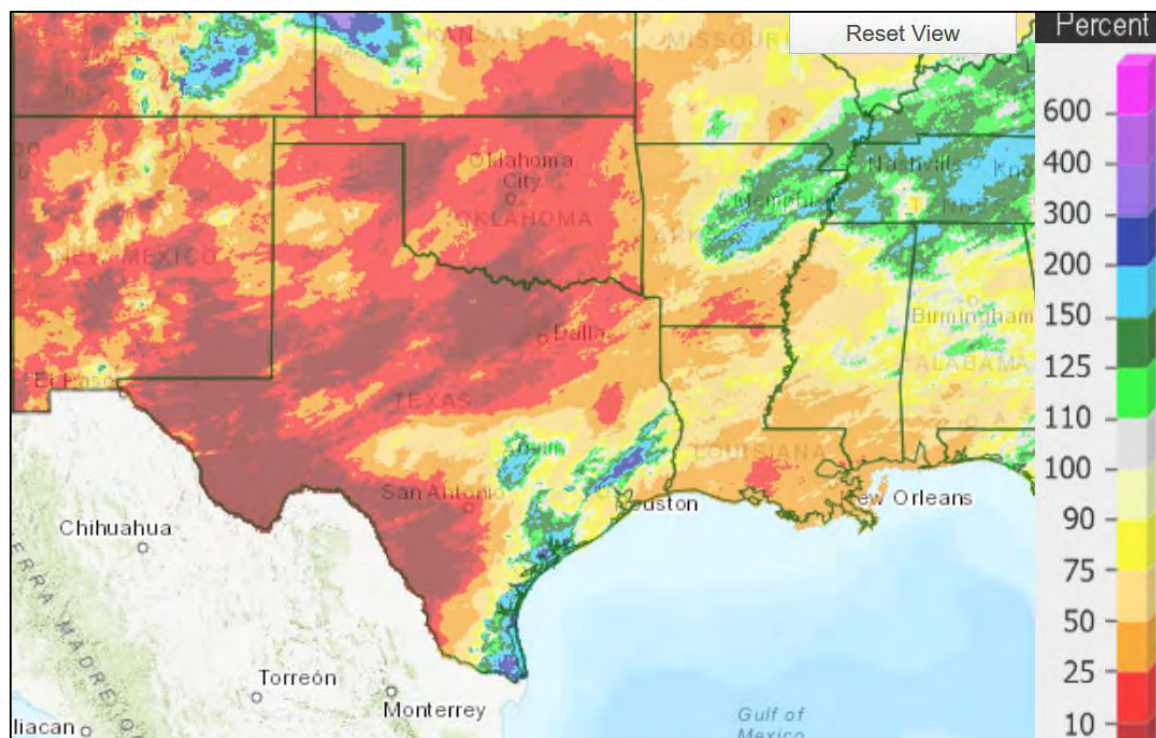
December 29 – 31:

A long wave trough formed along the west coast of the US. The first short wave trough out of the longer wave produced showers and thunderstorms starting early on the 29th. Initial rainfall amounts were less than 0.30" around the western parts of North Texas. Then during the day on the 29th the heaviest rain in North Texas was north northwest of Dodd City where 0.93" fell and Paris had 0.80". A few showers developed on the 30th from a second short wave trough. The rain on the 30th was less than 0.10" over North Texas, but over far West Texas they got almost 0.50" north of El Paso.

December 31 – January 1:

The long wave trough continued to move eastward. Light rain spread from west to east during the day on the 31<sup>st</sup> and persisted into 2022.

## North Texas Regional Summary (continued)



**Figure 3: January 2022 percent of normal precipitation map.** The dark green, blue and purple colors indicate above normal precipitation; the light yellow and light green colors indicate near normal, while the orange and dark red colors indicate below normal precipitation. January 2022 was also a dry month for most of Texas, however the regions along and near the Texas Gulf coast did see some near to above normal precipitation. But much of north Texas saw severe rainfall deficits.

At DFW Airport in January 2022 they received 0.08" of precipitation. This included a trace of snow. The normal amount in January is 2.53" so they were -2.45" below normal for the month.

In Waco for January 2022, they got 0.33" of precipitation. This included a trace of snow. The normal amount of precipitation in January is 2.59" so Waco was -2.26" below normal for the month.

There were about six storm systems which affected our weather in January. Here are the highlights of the weather for the month.

### January 1 - 2:

As a long wave trough progressed eastward from the west coast, an arctic cold front moved across Texas on the 1st. Well out ahead of the trough, showers and a few thunderstorms occurred on the 31st into the morning of the 1st. The heaviest rain was at the Denison - Red River Dam with 1.99" and just east northeast of Denison with 1.83". During the day on the 1st showers and a few thunderstorms continued across east and southeast Texas. Most of the rainfall was light with amounts generally less than 0.50". But they did get 0.88" northeast of Paris and 0.68" at Arthur City. Temperature-wise, with the passage of the strong cold front, many locations saw temperatures drop 50 degrees with several hours. A few sleet showers and snow flurries developed behind the arctic cold front early on the 2nd, mainly over Northeast Texas, but they moved out of Texas just after sunrise. Residual precipitation amounts were all very light...less than 0.10".

### January 8 - 9:

A couple short wave troughs moved across Texas. Most of the showers and thunderstorms with them occurred across east and Southeast Texas. Early on the 8th the heaviest rainfall was just under 0.50" near Victoria. Then during the day on the 8th, very heavy rainfall occurred over Southeast Texas. While the rainfall amounts over the eastern parts of North Texas were all under 1", they received 7.56" at Romayor on the Trinity River, 7.24" east northeast of Roman Forest, and 7.21" south of Woodville. The last short wave trough brought a strong cold front through Texas on the 9th. The rain from the frontal passage was very light over north Texas, but over Deep South Texas they received 2.04" east northeast of Brownsville.



## North Texas Summary (continued)

January 11:

A minor upper air disturbance passed across Central Texas on the 11th. Rainfall amounts from its passage were all light, with the area west southwest of Burnet receiving the most with 0.67".

January 14 - 15:

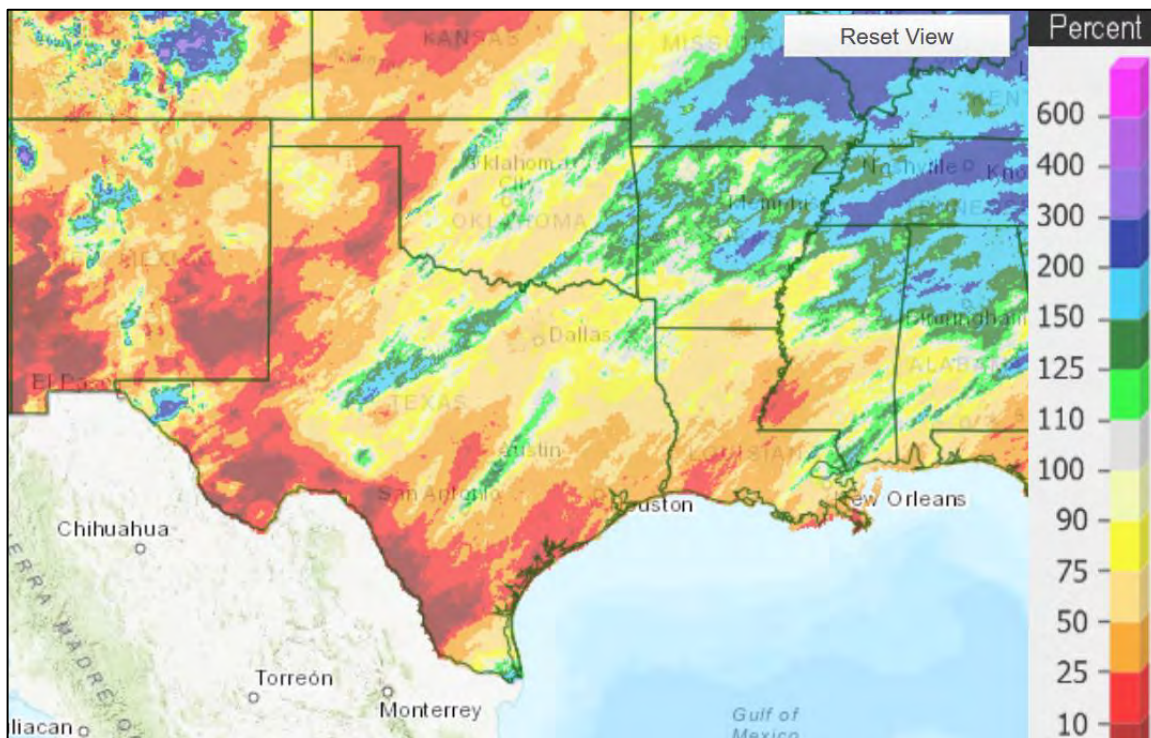
A strong cold front moved through Texas, starting over northwest Texas late on the 14th and across the remainder of the state on the 15th. A major low pressure system developed over Texas as well, but the majority of the heavier precipitation was east of the state. All the precipitation in Texas was extremely light, given the magnitude and strength of this storm. A few snow flurries did occur well behind the front over Northeast Texas, such as around Paris TX.

January 19 – 20:

A strong cold front moved across Texas. Showers formed along the front the morning of the 19th, then showers and thunderstorms developed over East Texas during the afternoon and evening. While rainfall amounts in North Texas were light, heavier rainfall occurred over Southeast Texas. They received 3.77" near San Felipe, 3.52" northeast of Kountze, and 3.08" at Richmond. Residual light precipitation occurred on the 20th well behind the cold front. The heaviest rainfall was over Deep South Texas where 1.00" to nearly 2.00" fell from Raymondville to South Padre Island.

January 31:

A small but potent upper air disturbance passed across southern Texas. While only the southern parts of North Texas received rain (around an inch near Belton and Temple), South Central and Southeast Texas received locally excessive rainfall. Palacios, near the Gulf coast, received 7.31" and they got 5.12" west of Port Lavaca.



**Figure 4: Percent of normal precipitation map for February 2022.** The dark green, blue and purple colors indicate above normal precipitation; the light yellow and light green colors indicate near normal, while the orange and dark red colors indicate below normal precipitation. In February 2022 the precipitation deficits weren't nearly as bad as the previous two months, although much of the state still experienced near to below normal amounts. A small area of north Texas from northwest of Fort Worth down to northwest of San Angelo actually had above normal precipitation.

At DFW Airport in February 2022 they received 2.03" of precipitation. This included 1.7" of snow. The normal amount in February is 2.76" so they were -0.73" below normal for the month.

## North Texas Summary (continued)

In Waco for February 2022, they got 1.71" of precipitation. This included 0.2" of snow. The normal amount of precipitation in February is 2.68" so Waco was -0.97" below normal for the month.

There were about five significant storm systems which affected our weather in February. Here are the highlights of the weather for the month.

### February 2 – 4:

A long wave trough approached Texas on the 2nd and moved across the state on the 3rd. In addition, an arctic cold front moved through Texas on the 2nd, and behind the front there was widespread precipitation. The precipitation began as rain on the morning of the 2nd. But as colder air moved in, a transition occurred from rain to freezing rain and sleet. The heaviest precipitation in North Texas on the 2nd was northeast of Eustace where they received 3.00" and west of Canton where they picked up 2.81". Further south, widespread amounts around 3.00" fell around Austin. A record rainfall of 1.10" was set at Dallas/Fort Worth airport February 2. This broke the old record of 0.51" set in 1943. On the 3rd, much of the precipitation became snow or sleet. The heaviest snow water equivalent amounts were at Corsicana with 0.92", while Friendswood near Houston got around 0.80" from rain showers. At DFW airport a daily total of 1.5" of snowfall was recorded. This broke the record for February 3 of 0.2" set in 1956 and 2011. The precipitation moved out of the state early in the morning of the 4th. The heaviest snowfall report in north Texas was south southwest of Eastland with 5.0".

### February 16 - 17:

A deep upper atmospheric low pressure system moved into southern California and continued moving east. A strong surface low passed across Oklahoma and pushed a strong cold front through the state on the 17th. Showers developed on the 16th well out ahead of the surface low. Then some thunderstorms developed late on the 16th into the morning of the 17th. Due to the speed of the storms, the rainfall amounts were not heavy. The maximum rainfall amounts were 0.91" at the Paris Texas airport and 0.77" east southeast of Kaufman. During the day on the 17th, the showers and thunderstorms moved quickly out of the state, with the heaviest rain (which was less than 1"), falling over East Texas. They had 0.90" at Jonesville TX and 0.75" southeast of Marshall.

### February 21 - 22:

A long wave trough began to move eastward from the U.S. west coast. Some light showers developed on the morning of the 21st over Southeast Texas, but initial rainfall amounts were light. Then, showers and thunderstorms developed along and ahead of the dry line. The thunderstorms moved east through the evening of the 21st into the morning of the 22nd. Rainfall amounts through the early morning of the 22nd were heaviest near the Red River where north of Gainesville they got 2.73", north of Gordonville they received around 2.25", while 2.10" fell south of Valley View. Most of the rain moved out of Texas during the day on the 22nd. The amounts over North Texas were light, but they did get 1.70" over Deep South Texas in Brownsville.

### February 23 – 24:

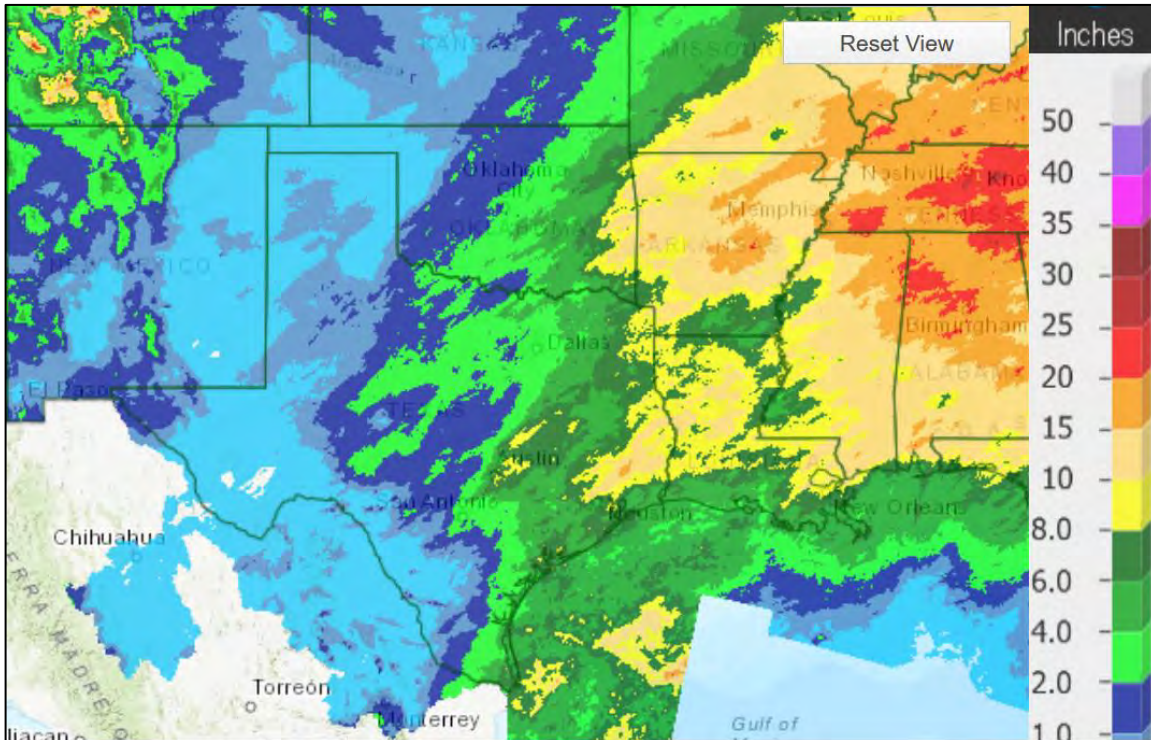
A new low pressure system formed over Nevada on the 22nd which moved east and brought a wintry mix of precipitation to especially north Texas starting on the morning of the 23rd. Initial amounts of freezing rain and sleet were light, with the northwestern parts of North Texas receiving the most. The area west southwest of Wichita Falls receiving 0.33". During the day on the 23rd into the early morning of the 24th, precipitation amounts were light, which is good as temperatures were in the 20's with freezing rain or drizzle observed. The heaviest amounts were over East Texas where 0.43" fell just east of Longview. The long wave trough opened up on the 24th and crossed the northern plains late in the day. Precipitation amounts from the residual freezing rain or drizzle remained light, with amounts of 0.35" or less across primarily southeast Texas.

### February 25 - 26:

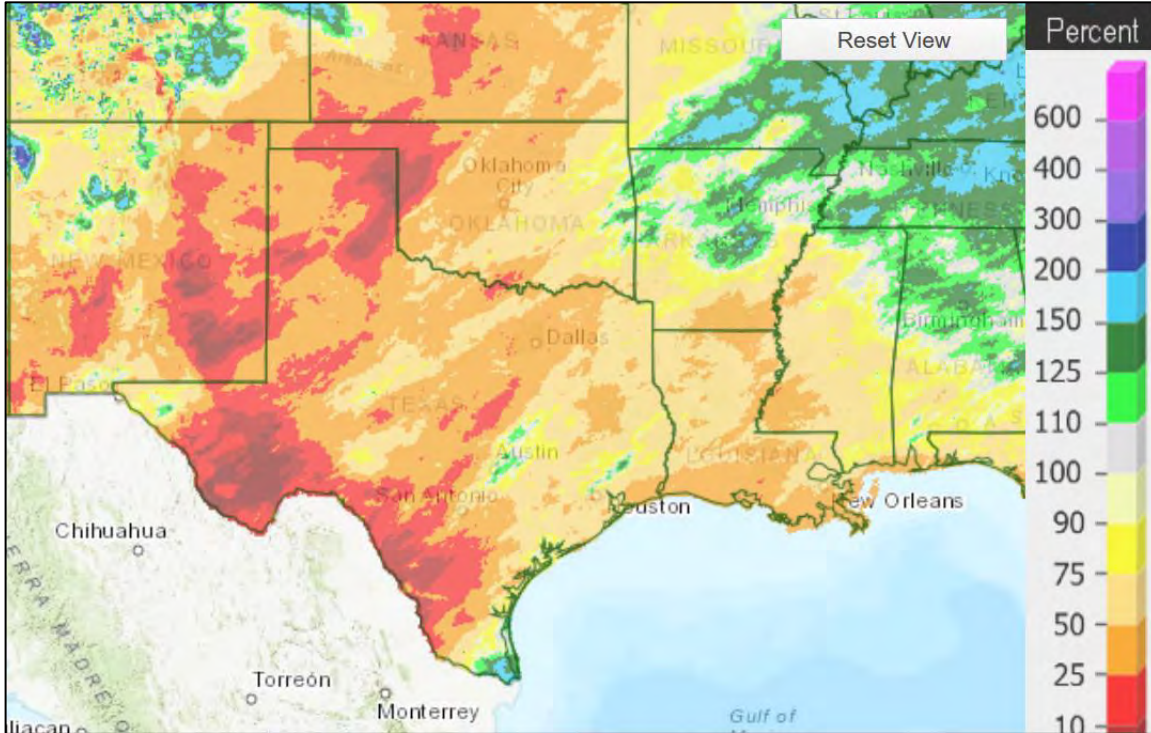
A minor short wave trough moved across Texas and produced some light rain late on the 25th into the 26th. Initial precipitation amounts early on the 26th were all less than 0.50", with the heaviest being at Carthage. The short wave trough left the region late on the 26th, and the rain exited the state. East Texas had the heaviest rainfall, with the area east and southeast of Marshall getting the most with 1.08".



## North Texas Summary (continued)



**Figure 5: Winter season precipitation for 2021-22.** The brown, orange and bright red colors indicate the largest precipitation totals, while the light green and blue colors show the lightest amounts.

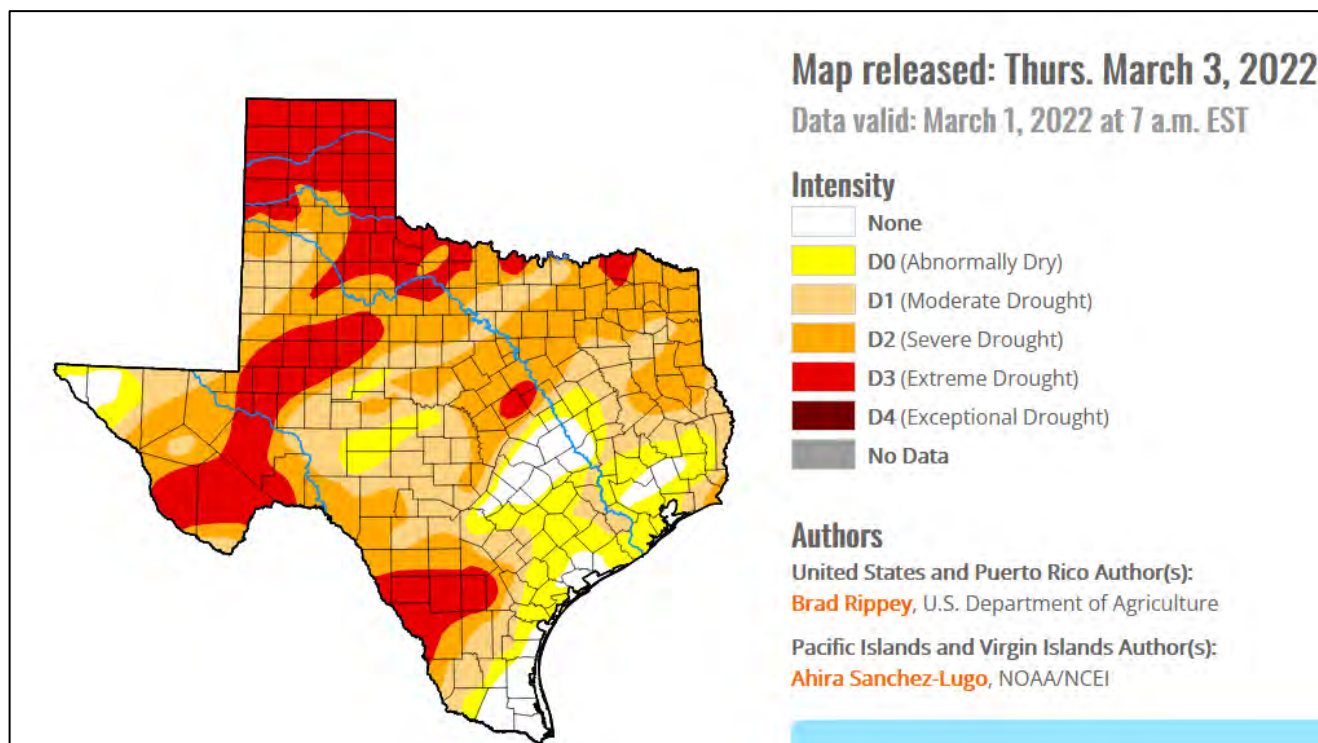


**Figure 6: Percent of Normal Precipitation for winter 2021-22.** The blue and dark green colors indicate above normal precipitation. The brown, beige and red colors indicate below normal amounts. As you can see, it was a drier than normal winter over most of Texas. There was some prolonged dryness over north Texas and much of west and southwest Texas. But also of note was the isolated spots east of Austin, northeast of Houston, and over Deep South Texas near Brownsville that received above normal amounts.

For the winter season at DFW airport they received 2.54" of precipitation. The normal amount for the winter months is 8.13" so they were -5.59" below normal for the season. The airport received 1.7" of snow this winter. The normal amount is 1.30".

## North Texas Summary (continued)

For the winter season in Waco, they received 2.08" of precipitation. The normal amount for the winter months is 8.14" so they were 6.06" below month for the season. Waco received 0.20" of snow this winter. The normal amount is 0.40".



**Figure 7: Current Drought Monitor for Texas as of March 3.** The dry weather of this past winter and previous months shows up well on this drought monitor. With the exception of the southeast portions of north Texas, everyone is experiencing moderate drought conditions or worse.

Thanks again for your dedication for taking all your weather observations! I know on the days where we received snow, sleet and ice many of us had to go back and review how to properly measure and record that data. It is not easy and takes extra effort. But, the amount of precipitation which fell at your station is extremely important and valuable information to the National Weather Service, especially to the West Gulf River Forecast Center in Fort Worth. And now that we are experiencing drought, we appreciate it if you report zero rainfall on dry days. Why? Because if you go a month without measurable rainfall, that tells us a lot, too!

Remember, on days you are not home or unable to report your 24-hour rainfall for any reason, you can make a multi-day accumulation report upon your return. This is important information as well. And that includes zero rainfall.

For those of you who are new to CoCoRaHS, welcome! You may wonder if anyone looks at your weather reports day in and day out. Rest assured; they are! Everyone, please consider inviting your neighbors, relatives and friends to join CoCoRaHS! The more rainfall observers we have, the better our chances are of determining the highest rainfall totals during rainfall events. If we can help you with your observations or reporting in any way, please let us know!

Have a great spring season, stay well, and happy observing!

Greg Story



## El Paso Regional Summary

### February Snowstorm Highlights Near Normal Winter Season in the West

By: Connor Dennhardt, Meteorologist - National Weather Service El Paso

Mostly dry weather stuck around in December, as far West Texas remained seasonably warm and the lack of any strong Pacific systems or Plains cold fronts failed to reach the area. El Paso tied the all-time record latest freeze of December 20th and the month finished as the 2nd-warmest December on record. No snowfall was recorded, with lower-than-normal amounts even over the high terrain of south-central New Mexico. A cold rainy day did finally arrive on New Year's Eve, bringing storm totals of **0.75"-1.25"** across the El Paso Metro. Rain showers continued through the first few days of early January as local CoCoRaHS observers were very helpful in daily estimates.

January was another exceptionally dry month, which is common for the U.S. Southwest. Very few precipitation opportunities occurred outside of the first few days of the year, with precipitation and snowfall being limited to mostly the mountainous terrain. Drought conditions worsened this month with these abnormally dry periods. Climate records show the average precipitation in far west Texas ranging near **0.25"-0.50"** in January and most El Paso County CoCoRaHS stations reached that mark by January 3rd. Precipitation totals the following four weeks were generally under **0.10"**.



Figure 1: Snow cover over the Franklin Mountains in El Paso, Texas after the winter storm on February 3rd

The highlight of the winter season occurred in February, when a stout winter storm system moved into the region and very cold temperatures allowed for widespread snow showers across the desert floor. Snow showers began the night of February 2nd, when a Pacific cold front clashed with polar-sourced air to the east. A brief period of heavy snow that evening even produced a report of thundersnow from the KELP ASOS due to the convective nature of the system.

CoCoRaHS snowfall reports varied quite a bit across the El Paso Metro, with the highest snow totals coming from northeast and central El Paso. Daily observations the morning of February 3rd ranged from **2.0-3.0"**. Locations further west and north into

## El Paso Regional Summary (continued)

New Mexico all recorded snow totals generally less than an inch. Bitterly cold temperatures followed this snowstorm, with overnight lows falling to single digits around a few west Texas stations.

El Paso Snowfall Reports - February 3rd, 2022			
(Data Source: El Paso International ASOS/KELP, NWSEI Paso, CoCoRaHS)			
West El Paso	2.1	Northeast El Paso	3.7
	0.9		3.0
	0.5		2.7
Central El Paso	3.5	Lower Valley	2.5
	3.0		2.5
	2.5		2.0

Figure 2: 24-hour snowfall measurements in El Paso County, Texas during the February 2022 winter storm

Season precipitation totals of **1.00"-2.00"** were fairly near normal for this time of year. El Paso International recorded a season total of **1.02"**, slightly below the climate average of **1.42"**. Another typical aspect of the winter season is that our precipitation came in batches, with several weeks of dry conditions in between. The February winter storm failed to break any records, but was still the highlight of the season. Drought conditions actually improved by the start of March, with much of El Paso and Hudspeth Counties entering the spring with no drought status, according to the U.S. Drought Monitor. This is welcome news as the region enters their windy and fire weather season.

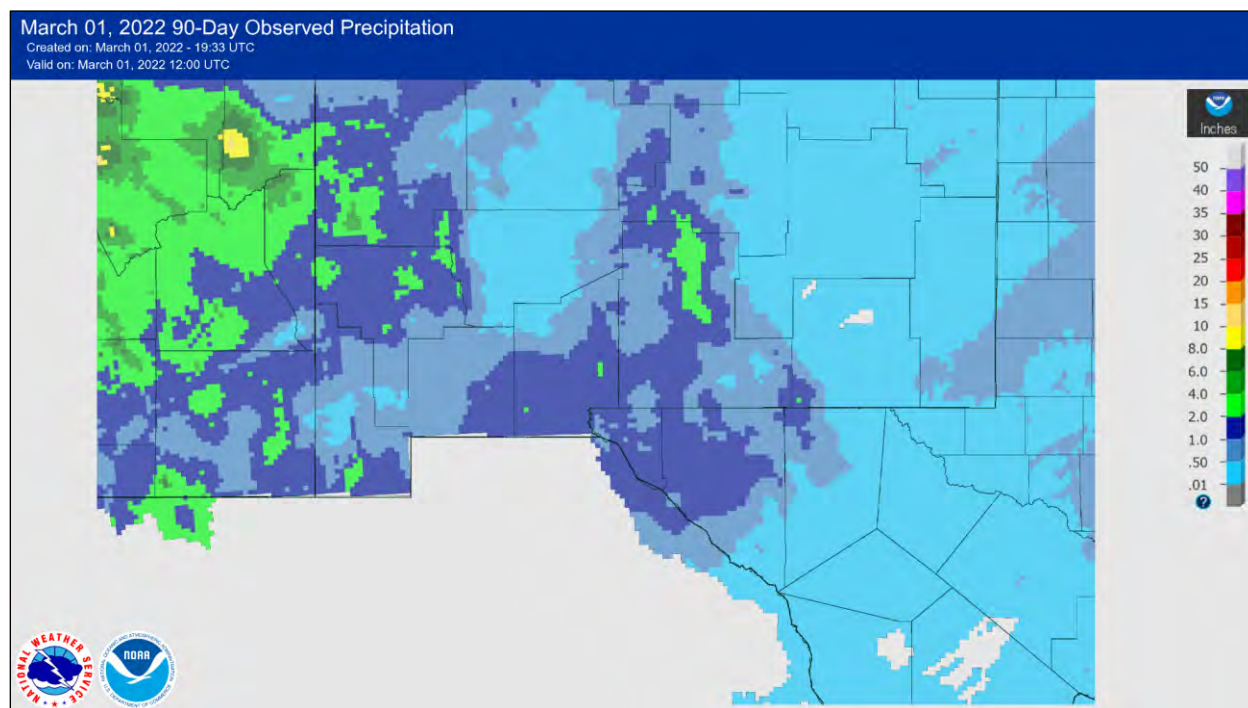


Figure 3: AHPS Precipitation Analysis for Dec-Feb in far west Texas

The winter season featured 31 active observers in El Paso County, and 2 in Hudspeth County. A total of 1,472 daily reports were submitted, along with 46 multiple-day reports. Only 131 daily reports had measurable precipitation, which means 91% of total reports were 0.00". No Significant Weather or Condition Monitoring reports were submitted this season. Thanks again to all our local observers who participated in the 2021-22 winter season!



## Wichita Falls Regional Summary

### Warm, Dry Winter Worsens Drought Conditions

By Charles Kuster, CoCoRaHS Wichita Falls Regional Coordinator

#### CIMMS/NSSL

The Wichita Falls area experienced a warm and dry winter that led to worsening drought conditions. December set the tone for the season with 29 dry days (all CoCoRaHS stations reported less than 0.05") and only 2 wet days (at least one CoCoRaHS station reported 0.05" or more). Record warm temperatures also occurred across north Texas and Oklahoma. Wichita Falls saw December temperatures over 11 degrees Fahrenheit above average, which was enough to set the record for warmest average December temperature ever recorded (Fig. 1). On Christmas Eve, Wichita Falls recorded a high temperature of 91 degrees Fahrenheit, which was the first time a temperature over 90 degrees Fahrenheit had been recorded in December.



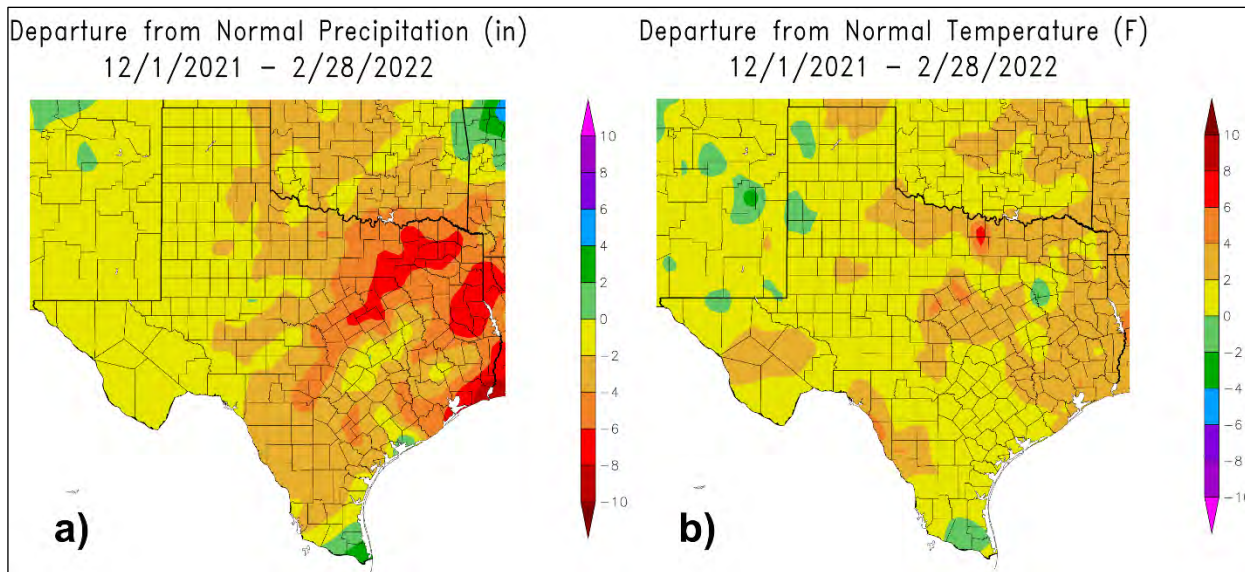
**Figure 1.** December temperature information for the Wichita Falls area and portions of Oklahoma. Graphic from the National Weather Service Norman, Oklahoma Forecast Office's Twitter feed (@NWSNorman).

Temperatures were closer to normal in January and February but dry conditions persisted for the rest of the season, which resulted in winter temperatures about 2–4 degrees Fahrenheit above normal and winter precipitation generally about 2–4" below normal (Fig. 2). In total, we experienced 80 dry days and 10 wet days this winter. For comparison, the region experienced 75 dry days and 15 wet days last winter. It is no surprise that drought increased in the past

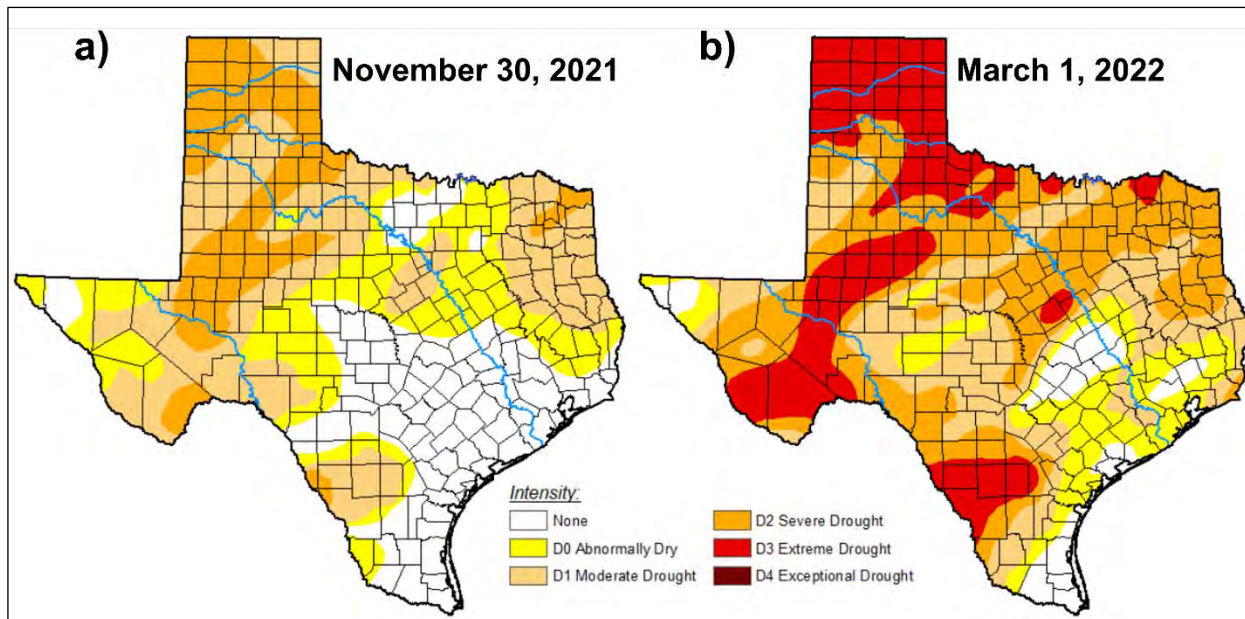


## Wichita Falls Regional Summary (continued)

three months, with most of our area now seeing extreme drought conditions according to the U.S. Drought Monitor (Fig. 3). Your reports of zero precipitation help monitor this drought, so thank you and keep up the good work!



**Figure 2.** Departure from normal a) precipitation and b) temperature for the beginning of December through the end of February. Warm colors indicate below normal precipitation (a) and above normal temperatures (b), while cool colors indicate above normal precipitation (a) and below normal temperatures (b).



**Figure 3.** Change in drought conditions as defined by the U.S. Drought Monitor between a) November 30, 2021, and b) March 1, 2022. More data and maps can be found at <https://droughtmonitor.unl.edu/>.

## Rio Grande Valley Regional Summary

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**

Barry S. Goldsmith

Warning Coordination Meteorologist, NWS Brownsville/Rio Grande Valley

### 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 2<sup>nd</sup> and the season’s first hard freeze across the ranchlands north and west of the populated Valley on January 3<sup>rd</sup>. 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.

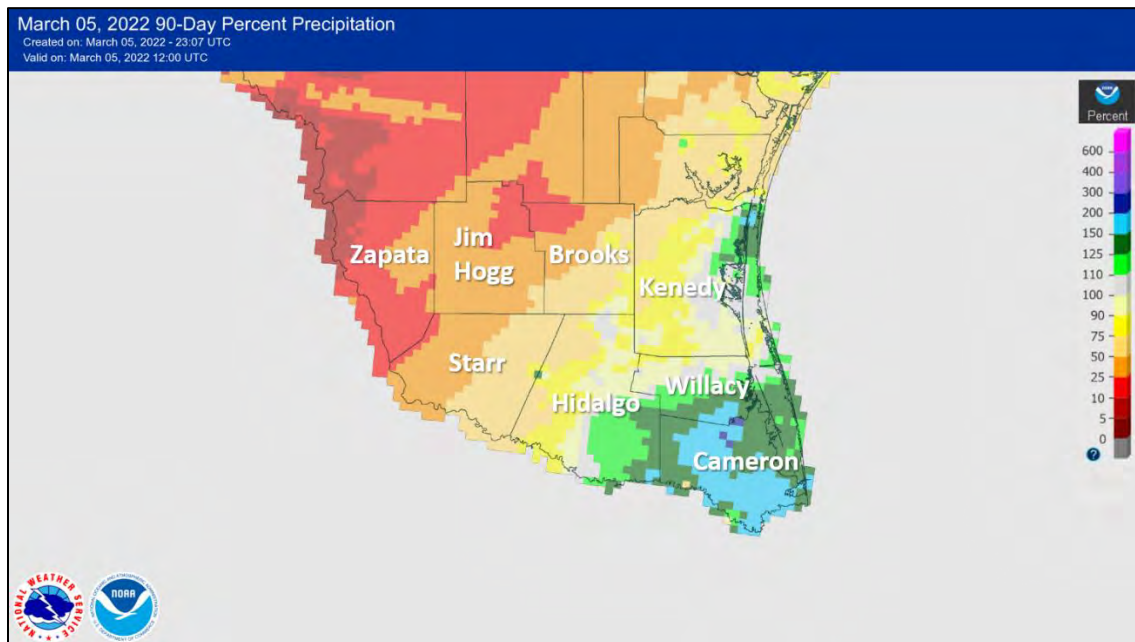


Figure 1. Percentage of average rainfall, December 6 2021 through March 5, 2022, approximating winter 2022 for the Rio Grande Valley and Deep S. Texas Brush and Ranch Country.



## Rio Grande Valley Regional Summary (continued)

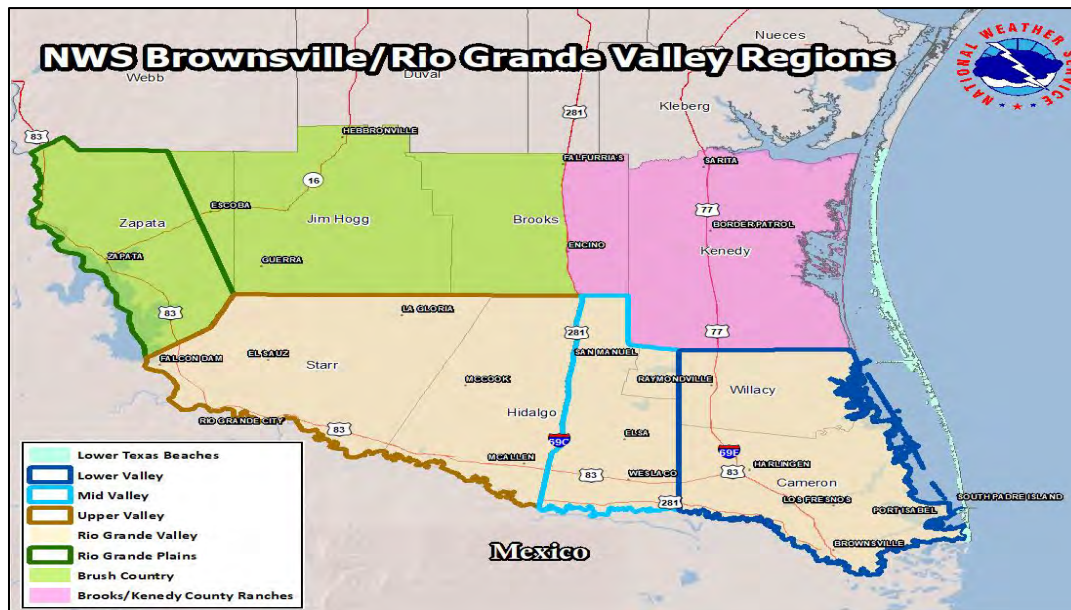


Figure 2. For reference: Naming conventions for the Rio Grande Valley/Deep South Texas sub-regions. Note that the Brush Country and Rio Grande Plains continue into Webb, Duval, and Jim Wells Counties.

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 ranking

## Rio Grande Valley Regional Summary (continued)

### Winter 2022, Monthly Capsules

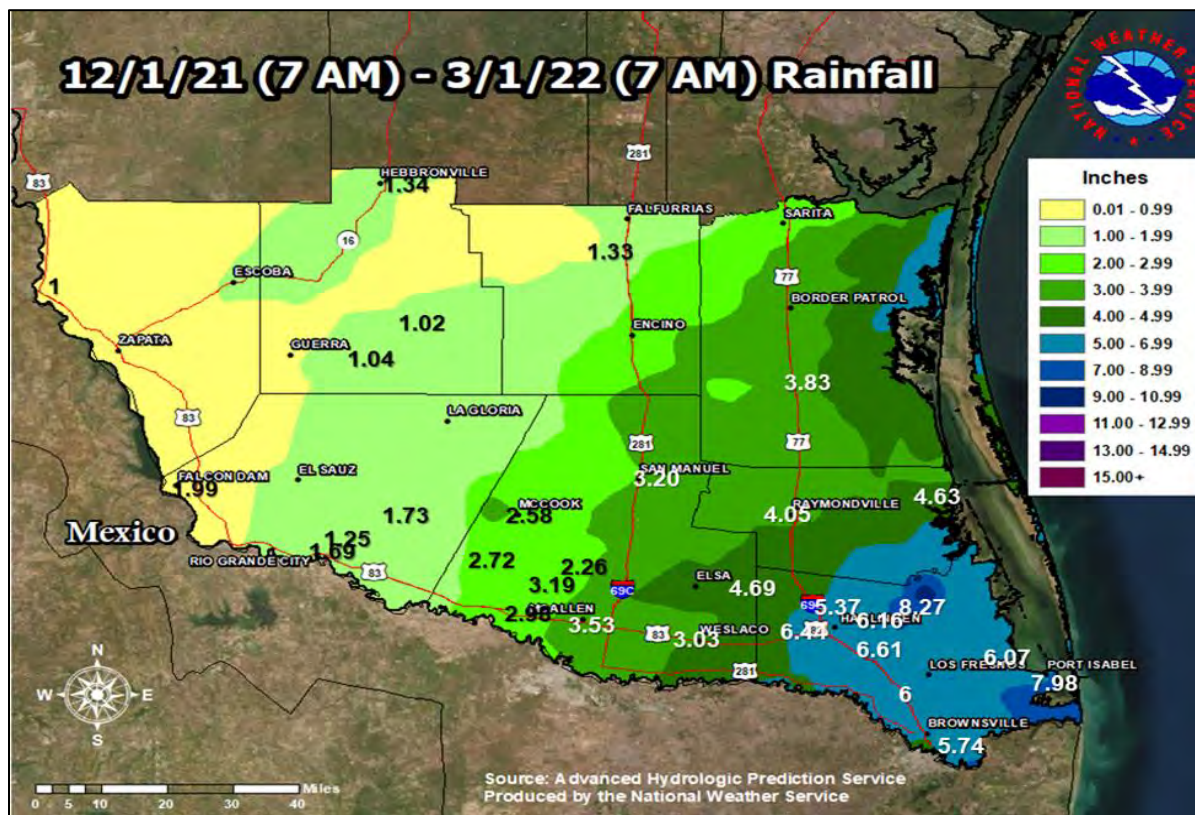


Figure 3. Annotated rainfall map for meteorological winter (Dec. 2021-Feb. 2022). Annotations include NWS, CoCoRaHS, and other mesonet data.

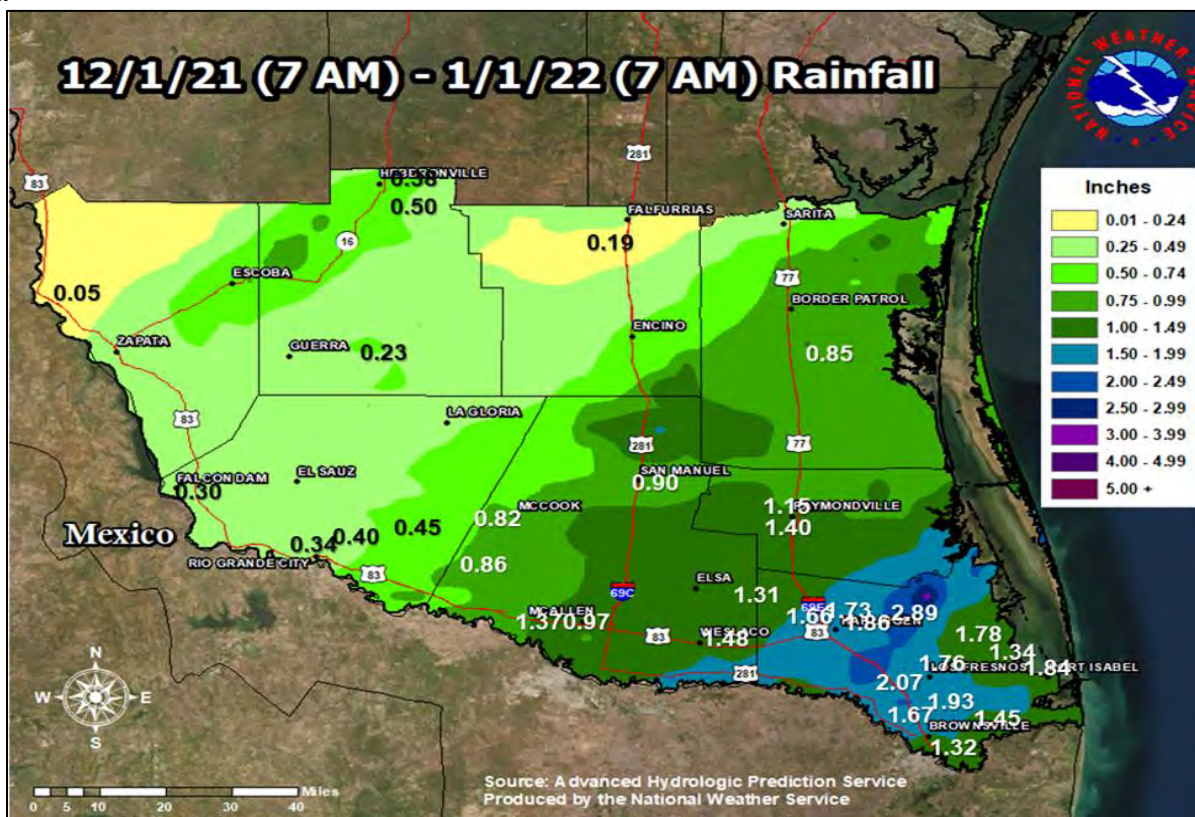


Figure 4. Annotated rainfall, December 2021, for the Rio Grande Valley/Deep S. Texas ranch and brush region. Annotations include NWS, CoCoRaHS, and other mesonet data.



## Rio Grande Valley Regional Summary (continued)

**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 19<sup>th</sup> and 21<sup>st</sup>, 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 19<sup>th</sup>. 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.

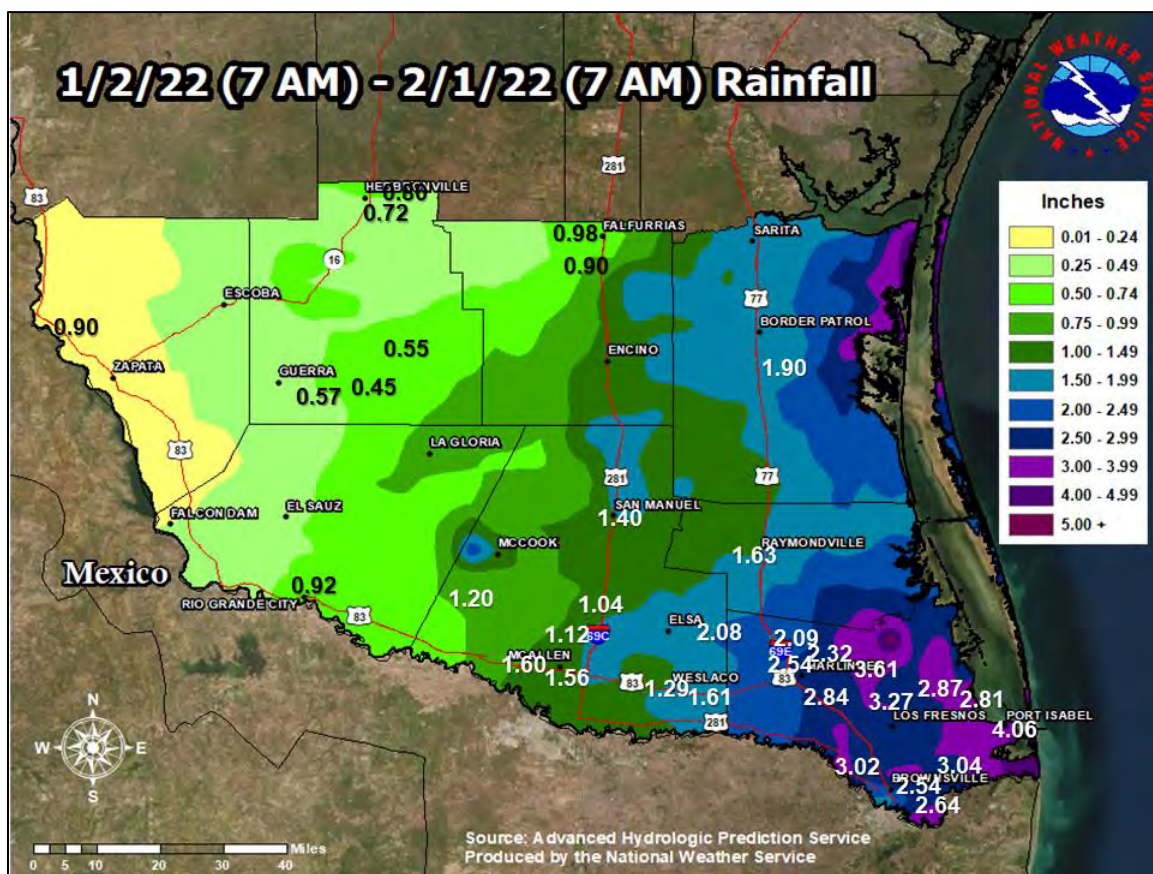


Figure 5. Annotated January 2022 rainfall for the Rio Grande Valley/Deep S. Texas ranch and brush country. Annotations include NWS, CoCoRaHS, and other mesonet data.

**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 2<sup>nd</sup>, 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.

## Rio Grande Valley Regional Summary (continued)

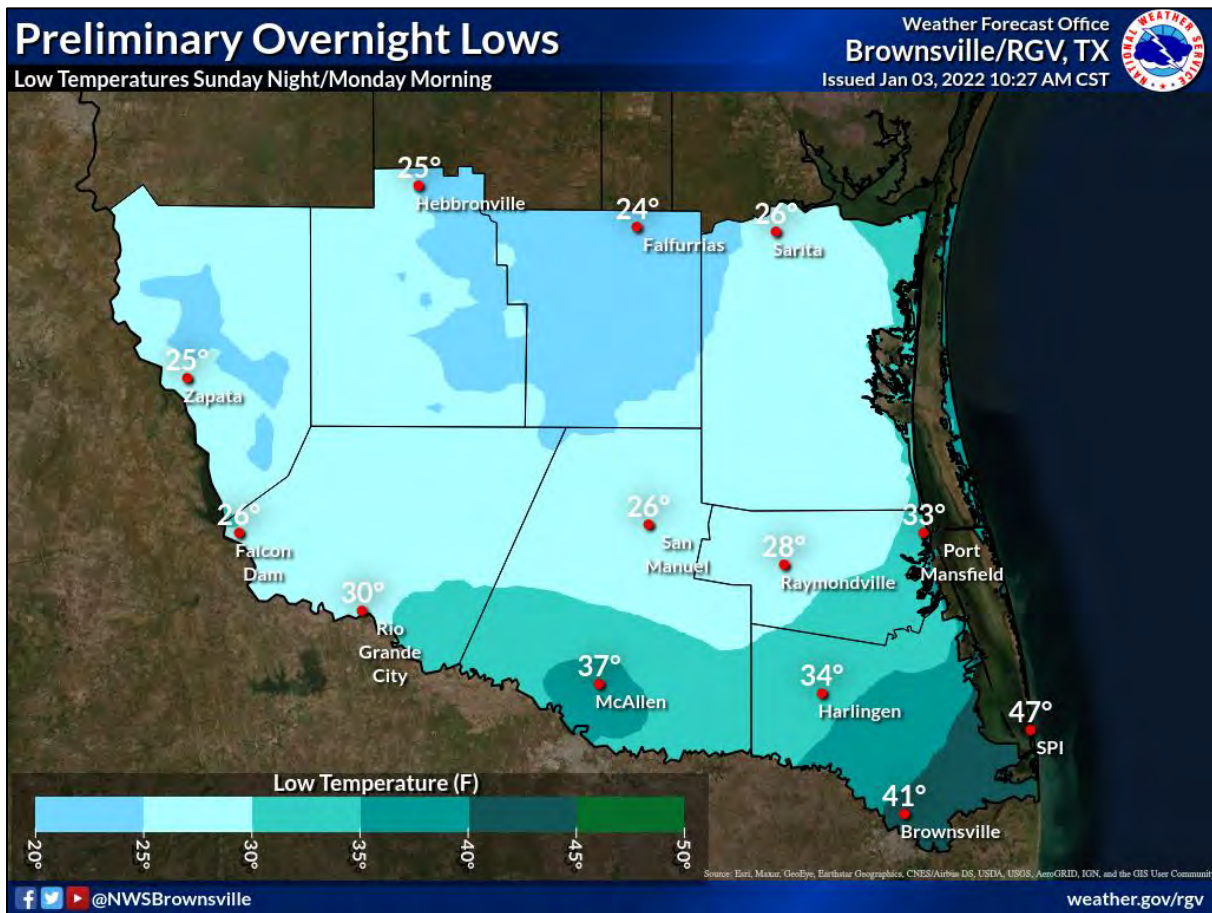


Figure 6. Preliminary minimum temperatures on January 3, 2022, from automated sensors and cooperative observation platforms. These were the coldest temperatures, region-wide, since February 20, 2021.

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 16<sup>th</sup>, which came (again) with low wet bulb temperatures, and a radiational freeze and hard freeze in the same areas on the 17<sup>th</sup>. A quick warm-up was followed by another sharp cool-down between the 19<sup>th</sup> and 20<sup>th</sup>, 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 21<sup>st</sup>, 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.



## Rio Grande Valley Regional Summary (continued)

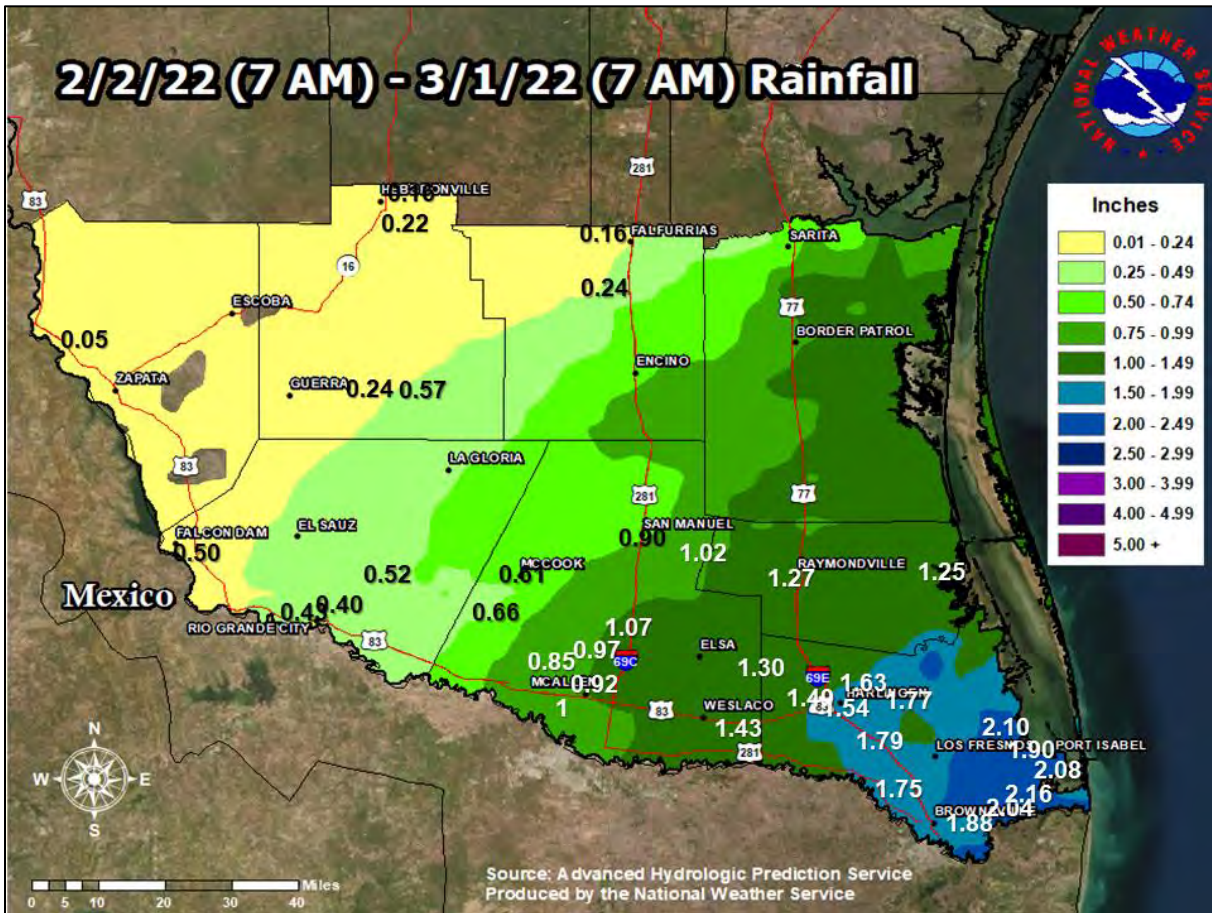


Figure 7. Annotated monthly rainfall for February 2022 across the Rio Grande Valley/Deep S. Texas Ranch/Brush Country region.

**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 (5<sup>th</sup> coldest, since 1913) and McAllen (4<sup>th</sup> coldest, since 1942) leading the way. The season's cold bottomed out twice during the month: on the 3<sup>rd</sup> (afternoon) through 6<sup>th</sup> (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 4<sup>th</sup>. For the Rio Grande Valley, most notable were the persistence of low wind chills from the afternoon of the 3<sup>rd</sup> through the early afternoon of the 5<sup>th</sup>, with low to mid 20s "feels like" values dominating.

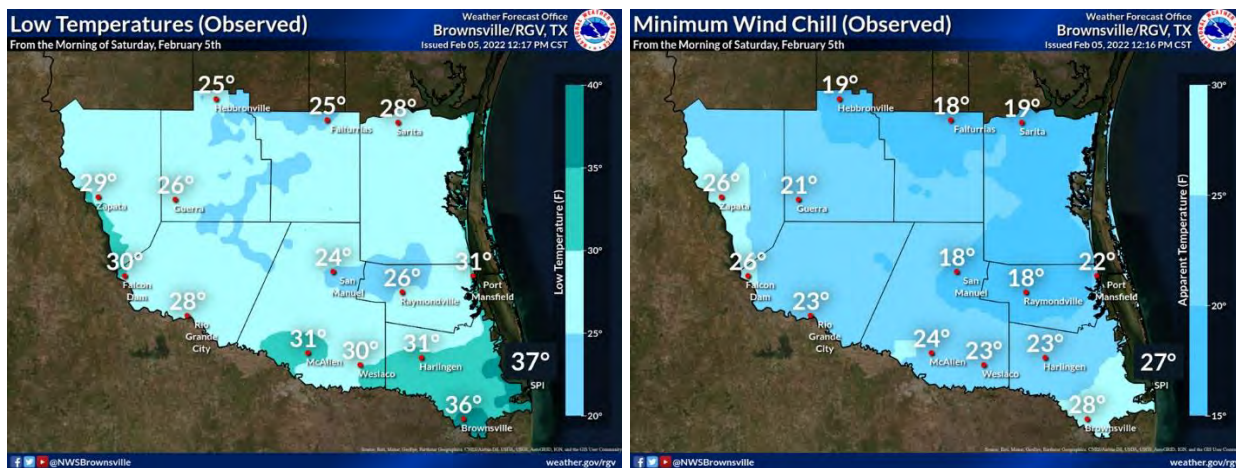


Figure 8a and 8b: Left – preliminary observed minimum temperatures for Saturday, February 5<sup>th</sup> 2022. Right – observed lowest wind chill temperatures for the same date.

## Rio Grande Valley Regional Summary (continued)

An upper-level disturbance moved from west Texas into south and central Texas on the 6<sup>th</sup> and 7<sup>th</sup>, 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 8<sup>th</sup> and 15<sup>th</sup>, 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 16<sup>th</sup> and 17<sup>th</sup> before dropping back into the 60s and 70s for the next few days. Peak warming brought temperatures near or over 90 on the 21<sup>st</sup> through 23<sup>rd</sup>, 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 27<sup>th</sup>, 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 14<sup>th</sup> and 16<sup>th</sup> 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 [Fire wise](#)!



Photos 1 & 2: 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.



## Rio Grande Valley Regional Summary (continued)

### A Sampling of CoCoRaHS Reports: Cameron and Hidalgo County

As described in the summary and visually with graphics, the lion's share of heavier rainfall occurred in Cameron, Willacy, and parts of Hidalgo County. Shown below are summary charts for Cameron and Hidalgo for winter (December-February) in total.

Station Number	Station Name	Daily Precip Sum in.	Multi-Day Precip in.	Total Precip in.▼
<a href="#">TX-CMR-96</a>	San Benito 6.3 ENE	6.47	1.80	8.27
<a href="#">TX-CMR-43</a>	Brownsville 4.1 ENE	7.75	0.18	7.93
<a href="#">TX-CMR-124</a>	Laguna Vista 1.2 WNW	3.27	4.52	7.79
<a href="#">TX-CMR-89</a>	Brownsville 1.7 NNE	7.57		7.57
<a href="#">TX-CMR-126</a>	Brownsville 3.9 NNW	2.31	5.09	7.40
<a href="#">TX-CMR-16</a>	Brownsville 3.5 N	3.53	3.60	7.13
<a href="#">TX-CMR-21</a>	Los Fresnos 0.3 NE	7.07		7.07
<a href="#">TX-CMR-90</a>	Brownsville 1.5 WNW	7.05		7.05
<a href="#">TX-CMR-105</a>	Los Fresnos 2.1 NNE	7.00		7.00
<a href="#">TX-CMR-51</a>	Brownsville 0.1 SSE	6.90		6.90
<a href="#">TX-CMR-61</a>	Brownsville 6.4 WNW	6.58	0.07	6.65
<a href="#">TX-CMR-101</a>	San Benito 0.9 SSE	6.61		6.61
<a href="#">TX-CMR-94</a>	Brownsville 12.6 E	6.58		6.58
<a href="#">TX-CMR-121</a>	Harlingen 4.2 W	6.49		6.49
<a href="#">TX-CMR-23</a>	Brownsville 1.9 ESE	4.02	2.43	6.45
<a href="#">TX-CMR-93</a>	Harlingen 4.4 W	6.44		6.44
<a href="#">TX-CMR-120</a>	Harlingen 1.1 NE	6.41		6.41
<a href="#">TX-CMR-17</a>	Brownsville 4.1 E	6.28		6.28
<a href="#">TX-CMR-58</a>	Laguna Vista 0.3 N	6.07		6.07
<a href="#">TX-CMR-127</a>	Laguna Vista 1.8 NW	6.05		6.05
<a href="#">TX-CMR-98</a>	Brownsville 4.3 NW	6.00		6.00
<a href="#">TX-CMR-78</a>	Harlingen 3.8 W	5.64	0.00	5.64
<a href="#">TX-CMR-28</a>	Brownsville 2.8 N	5.61	0.01	5.62
<a href="#">TX-CMR-100</a>	Harlingen 6.2 WSW	5.45		5.45
<a href="#">TX-CMR-85</a>	Harlingen 0.4 N	5.37		5.37

Station Number	Station Name	Daily Precip Sum in.	Multi-Day Precip in.	Total Precip in.▼
<a href="#">TX-HDL-59</a>	Mission 1.1 E	4.49		4.49
<a href="#">TX-HDL-21</a>	McAllen 2.4 NE	4.26		4.26
<a href="#">TX-HDL-39</a>	Mission 3.9 WSW	3.98	0.13	4.11
<a href="#">TX-HDL-9</a>	Mission 1.9 ENE	3.94		3.94
<a href="#">TX-HDL-46</a>	McAllen 2.7 NNE	3.41		3.41
<a href="#">TX-HDL-50</a>	McAllen 3.5 N	2.91	0.28	3.19
<a href="#">TX-HDL-54</a>	Mercedes 1.9 SW	3.04	0.05	3.09
<a href="#">TX-HDL-19</a>	Mission 4.3 WSW	2.98		2.98
<a href="#">TX-HDL-57</a>	McAllen 4.4 N	2.89		2.89
<a href="#">TX-HDL-5</a>	La Joya 11.1 N	2.72		2.72

Above: Selected observations for winter 2022 from CoCoRaHS observers in Cameron (CMR, left) and Hidalgo (HDL, right). Observers with few reports and or reports that are mismatched with others nearby were not shown. Some of the observations in the last rows of each table include multi-day reports.

## West Central Texas Regional Summary

### Winter across West Central Texas

By Joel Dunn  
WFO San Angelo

December 2021 was eventful, but not in the way most Decembers are eventful. Records were broken, but for heat, not cold or snowfall. December 2021 was the hottest December on record. A strong La Nina was in place keeping storm tracks and cold fronts north of West Central Texas. In fact, the northwest US was experiencing below normal temperatures and above normal precipitation, while in the south and southeast the opposite was true.

Rank	Average Temperature	Year
1	60.4	2021
2	59.6	1889
3	51.9	1933
4	51.5	1970
5	51.4	1965

Table 1 – Abilene Top 5 Hottest Decembers

Rank	Average Temperature	Year
1	60.4	2021
2	59.6	1889
3	51.9	1933
4	51.5	1970
5	51.4	1965

Table 2 - San Angelo's Hottest Decembers

Not only did the month as a whole rank the hottest on record, Christmas Day in both San Angelo and Abilene was the hottest Christmas on record. San Angelo reached a high temperature of 86°F, while Abilene recorded 81°F.

As far as rainfall, there was little to speak of. December is typically dry for the most part, yet this year it was noticeable so. Though neither San Angelo nor Abilene broke the Top 10 driest Decembers, they came close. San Angelo recorded the 13<sup>th</sup> driest with 0.03", and Abilene the 15<sup>th</sup> driest with 0.05". As can be seen from the image and table below, portions of the Northern Edward's Plateau received between half and inch to an inch, while the rest of West Central Texas saw little in the way of precipitation.

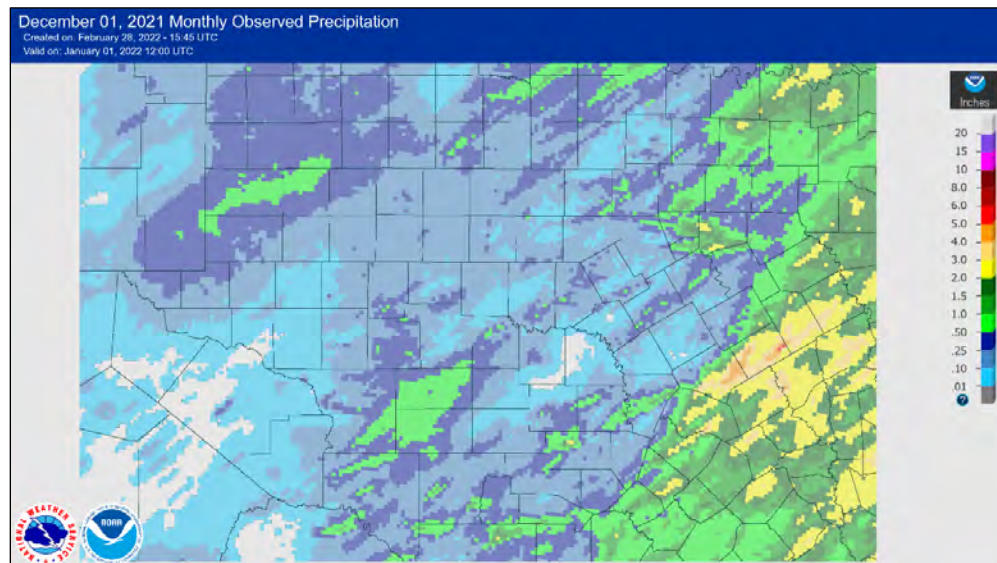


Image 1 - Observed Precipitation December 2020

City	Precipitation	Departure From Normal
Abilene	0.05"	-1.21"
Junction	0.13"	-0.90"
San Angelo	0.03"	-0.86"

Table 3 - Observed Precipitation and Departure from Normal



## West Central Texas Regional Summary (continued)

### January 2022

Winter finally arrived in West Central Texas during the month of January, with average temperatures nearly two degrees below normal. However, the rollercoaster of temperatures made for an interesting ride, where highs of 70s one day and 50s the next, became a regular occurrence. The biggest drop took place between the 19<sup>th</sup> and 20<sup>th</sup> of the month where the difference in high temperatures ranged from 25°F to as much as 42°F, leaving the residence in a state of shock and a desire to be off the rollercoaster entirely.

Station	January 19 <sup>th</sup> High	January 20 <sup>th</sup> High	Difference
Abilene	62°F	34°F	28°F
San Angelo	76°F	37°F	39°F
Junction	79°F	37°F	42°F

Table 4 - Temperature difference between January 19th and 20th

The swings in temperature were due mainly to the strong influence of La Niña. Not only did the residence of West Central Texas experience the ups and downs of temperature, but an overall lack of moisture. Winter is typically dry across the area, however, this January was particularly dry. As can be seen in the image below, which displays the percentage of normal, the entire West Central Texas area was below normal. A few sites, such as Abilene, reported nearly an inch deficit.

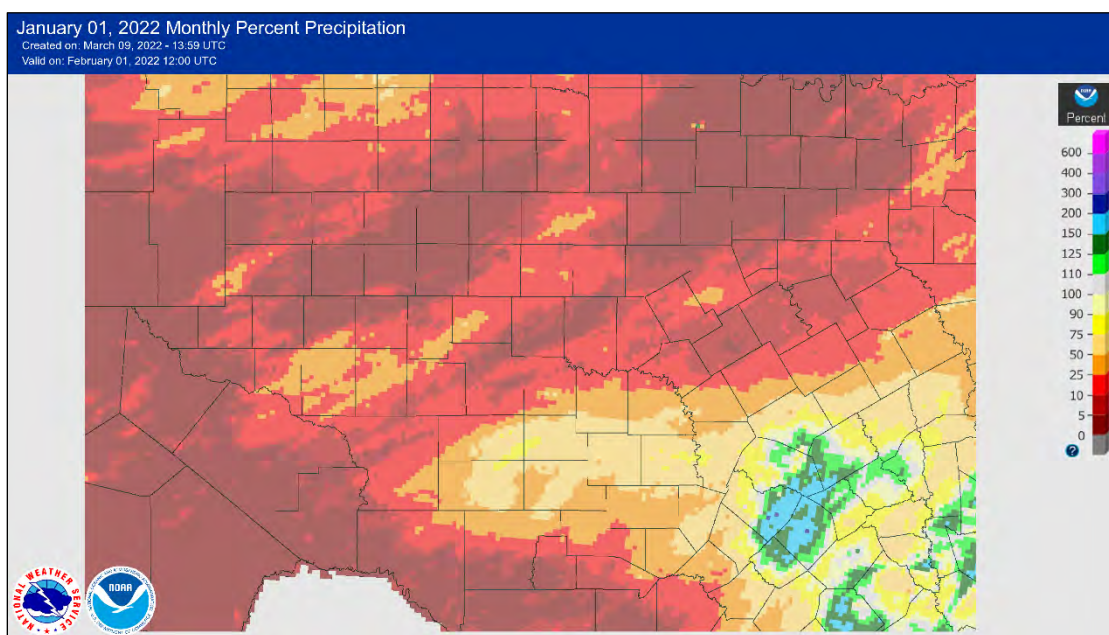


Image 2 - Percent of Normal January 2022

Station	Observed Rainfall	Normal Rainfall	Deficit
Abilene	0.20"	1.10"	-0.90"
San Angelo	0.11"	0.92"	-0.81"
Junction	0.53"	0.89"	-0.36"

Table 5 - Observed rainfall across LCD stations and corresponding normals and deficits

Despite the warm high temperatures winter weather still made an appearance this year, mainly across the Interstate 10 corridor. On the morning of January 20<sup>th</sup>, a swath of wintery precipitation moved east across the Northern Edwards Plateau, and the Northwest Hill Country. Most residents reported a dusting to a trace of snowfall.

## West Central Texas Regional Summary (continued)

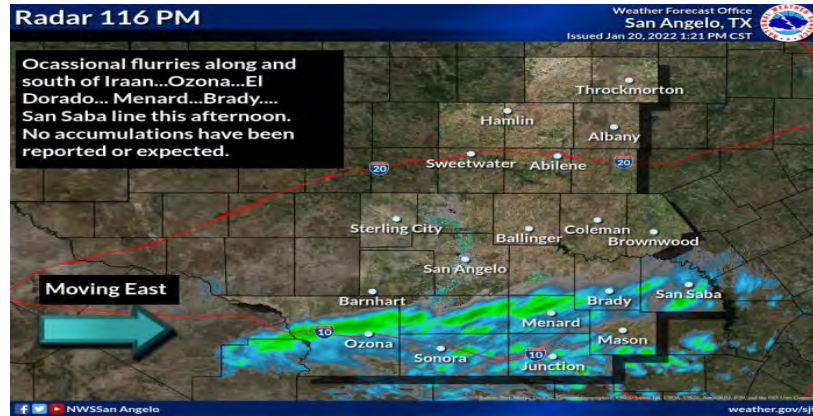


Image 3 - Social Media update from January 20th showing Radar data

### February 2022

The beginning of February saw the first good chance for area wide frozen precipitation. When winter weather comes to West Central Texas it typically takes several forms such as freezing rain/drizzle, sleet, and if the temperatures drop low enough, snow. This was the case on February 2<sup>nd</sup>. Many areas first reported freezing rain or sleet, finally transitioning to snow in the late evening, and early the next morning. When the event had finished the wintry precipitation moved off to the east. Snowfall reports began coming mainly around 2", with some areas in the Big Country hitting 4". Many roads, including portions of Interstate 20, remained closed, not due to the snow, but the layer of ice beneath it. Road conditions were only one of the dangers this event left in its wake. Wind Chill values in the single digits were expected during the overnight hours, and high temperatures the next barely above freezing.

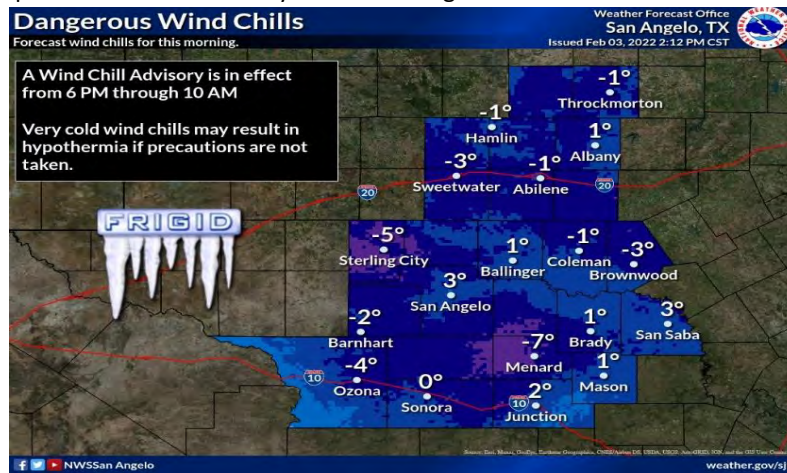


Image 4 - Wind Chill Social Media Post on February 3

The month of February was noticeably colder with the average temperature coming in several degrees below normal. Though frequent cold fronts, and winter precipitation made its way through West Central Texas, La Niña's influence was still dominate, leading to large swings in temperature. Thus, the rollercoaster of afternoon highs persisted, with several days in the 70s and even one day reaching the 80s, leaving the residents wondering when the ride was going to end.

Even the temperature swings into the 70s and 80s couldn't keep this February from the record books. Junction was the clear winner closing the month as the 3<sup>rd</sup> coldest February on record.

Station	Average Temperature	Departure From Normal	Rank of Coldest Februarys
Abilene	44.3	-5.8	18 <sup>th</sup>
San Angelo	45.1	-6.4	8 <sup>th</sup>
Junction	45.9	-6.4	3 <sup>rd</sup>

Table 6 - Average temperatures, departure from north and coldest ranking

The winter season of 2021 – 2022 was quite remarkable, though not for the amount of frozen precipitation, but rather for its temperatures, and lack of moisture. The strong La Niña was an enormous influence on the weather across West Central Texas leaving dry, cracked earth in its wake.



## East Texas Regional Summary

**By: Davyon Hill (Meteorologist-National Weather Service-Shreveport)**

Generally speaking, below normal precipitation continued as we moved into meteorological winter. There were a few exceptions across portions of extreme northeast Texas, where a few stations reported between 4" to 5" of rain for the month of December. Despite the overall lack of precipitation, there were reports of severe weather and heavy rainfall during the month. On the 11<sup>th</sup>, a cold front moved through the region, bringing hail across portions of Northeast Texas. Then on the 16<sup>th</sup>-18<sup>th</sup>, a stalled cool front settled over the region, resulting significant rainfall. Several CoCoRaHS sites reported over 2" of rainfall during this period, with a few isolated amounts near 4". The National Weather Service in Shreveport reported a daily record rainfall of 1.76" on the 18<sup>th</sup> at Tyler Pounds Airports, beating the previous record of 1.40".



**Fig.1: Hail in the town of Bogata, TX (Red River County) on Dec.11. Photo Credit: Matt Bates**

Below normal monthly rainfall continued into the New Year, with the overwhelming majority of CoCoRaHS sites reporting less than 2" for the month of January 2022. But despite the lack of rainfall, the weather was very active during the month. On the 2<sup>nd</sup>, a weak disturbance moved into the region in wake of a strong cold front, bringing a wintry mix to the region. However, only trace amounts were reported. Severe thunderstorms developed across Deep East Texas on the 8<sup>th</sup> producing large hail, and again on the 9<sup>th</sup>, producing damaging winds and heavy rain. Flash flooding was reported in some areas, as rainfall amounts ranged from 3" to 7" in portions of Angelina, San Augustine, and Sabine Counties. On the 15<sup>th</sup>, light to moderate snow developed across portions of East Texas, as an upper level low moved across the region on the heels of a strong cold front. Snowfall amounts ranged from a Trace along Interstate 20, to near an inch along and north of the Interstate 30 corridor. Severe thunderstorms developed again on the 19<sup>th</sup> ahead a cold front, producing large hail, mainly across Gregg and Harrison Counties. The hail covered the ground in places along a swath from Longview to Marshall. Hail up to tennis ball size was reported in the city of Marshall. Other than some widespread rainfall on the 24<sup>th</sup>-25<sup>th</sup> of the month ahead of a coastal surface trough, the weather remained quiet for the remainder of the month.

## East Texas Regional Summary (continued)



**Fig.2: Hail in the city of Nacogdoches on Jan.8.**  
**Photo Credit: Micah J. Wood**



**Fig.3: Snowfall in the town of Hooks, TX (Bowie County) Jan. 15.** **Photo Credit: Andrea Wyrick**



**Fig.4 & 5: Hail in Harrison County in the cities of Marshall (left) & Hallsville (right) on January 19.**  
**Photo Credit: Debbie Benson (Marshall)/ Edwin Christian (Hallsville)**

Precipitation increased a bit in some locations as the weather pattern became active again for the month of February. Widespread rain developed ahead of a slow-moving front during the late afternoon hours on the 2<sup>nd</sup> and continued into the 3<sup>rd</sup>. Sufficient rainfall totals were reported during this period, as most locations reported at least 1" of rainfall. For areas north of a line from Rusk to Waskom, rainfall totals ranged from 1.5" to 2.5" at most of our reporting CoCoRaHS sites. Behind this front, precipitation continued to fall. However, the airmass was very cold and shallow, resulting in the development of freezing rain. Most of the frozen precipitation was confined along and north of Interstate 20, with amounts generally under a quarter of an inch. Dry conditions set in across the region for several days afterwards, until a series of frontal boundaries brought widespread rain on the 12<sup>th</sup> and again on the 16<sup>th</sup>-17<sup>th</sup>. Some of the rain on the 12<sup>th</sup>, mixed in with snow in the Tyler/Longview area on the back edge of the precipitation. Old Man Winter made a big return in wake of a strong cold front by the 23<sup>rd</sup> of the month. Precipitation developed again over a shallow and cold airmass, resulting in light freezing rain generally north of a line from Tyler to Texarkana. The cool conditions continued across the region over the next few following days, with widespread precipitation returning on the 26<sup>th</sup>. However, no wintry precipitation was reported, as temperatures remained above freezing.



## East Texas Regional Summary (continued)

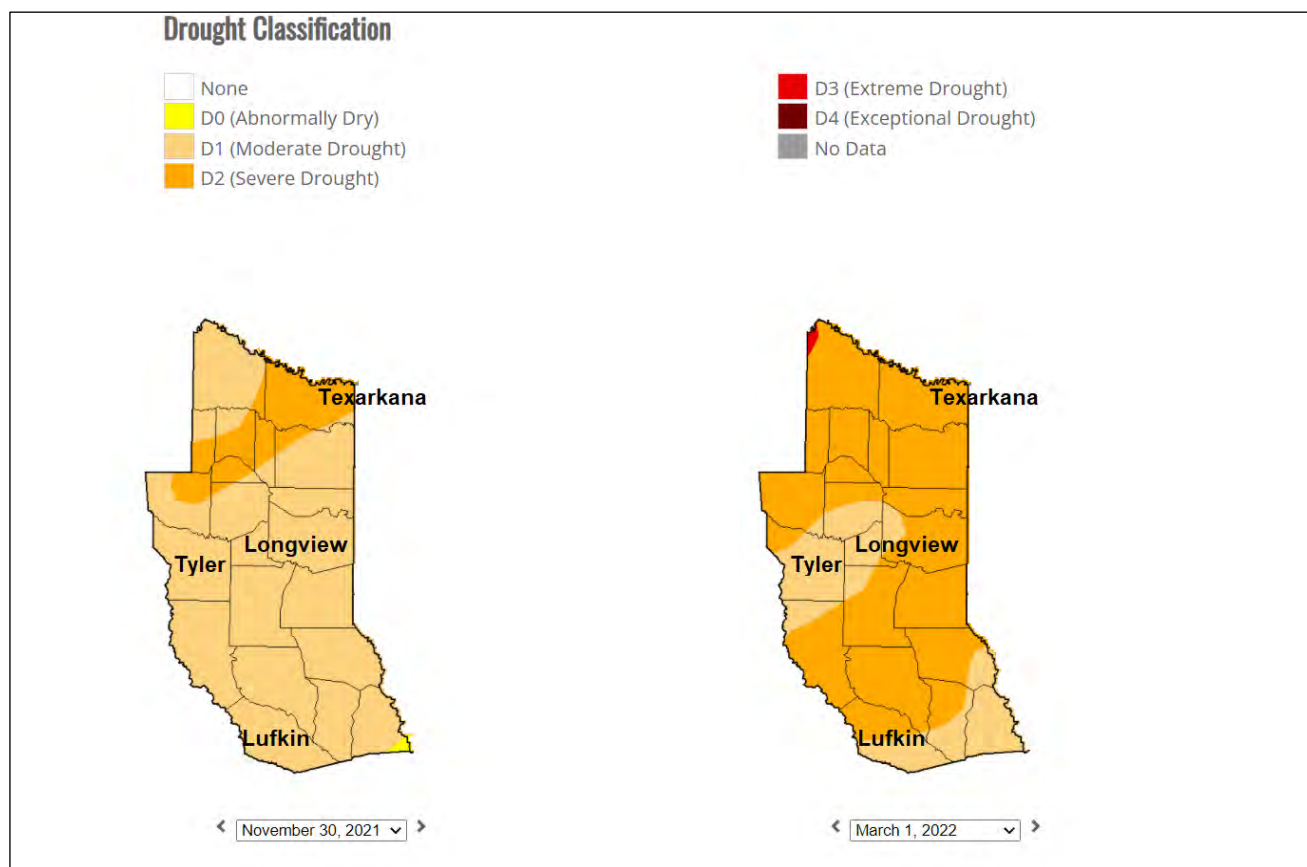


**Fig.6: Big snowflakes in the city of Tyler (Smith County) Feb. 12. Credit: Anissa Laudenslager-Commander**



**Fig.7: Freezing rain in the city of Tyler on (Smith County) Feb.23. Photo Credit: Davyon Hill**

Overall, despite the active weather pattern this winter, below normal monthly precipitation continued across East Texas. As a result, drought conditions increased over the region by the start of the Meteorological Spring.



**Fig.8: Drought Monitor**  
**Image Courtesy of NDMC/USDA/NOAA**

## Corpus Christi Regional Summary

### Drier Than Normal Winter across South Texas

By: Juan Carlos Pena Jr., Meteorologist – NWS Corpus Christi

The winter season got off to a dry start with rainfall accumulations below normal across South Texas. The majority of the area saw a deficit of at least one inch compared to normal rainfall accumulations for the month of December. The highest rainfall report received for the month was just over 1.25" while the lowest report came in at just over 0.05". As seen in figure 1 below, most of the rainfall occurred across the Victoria Crossroads with observers reporting between 0.50" to amounts just over 1.25". Across the rest of South Texas, rainfall was limited due to a lack of moisture and cold fronts. Except for an isolated area across the Rio Grande Plains, the remainder of South Texas remained below 0.50" of rain for December.

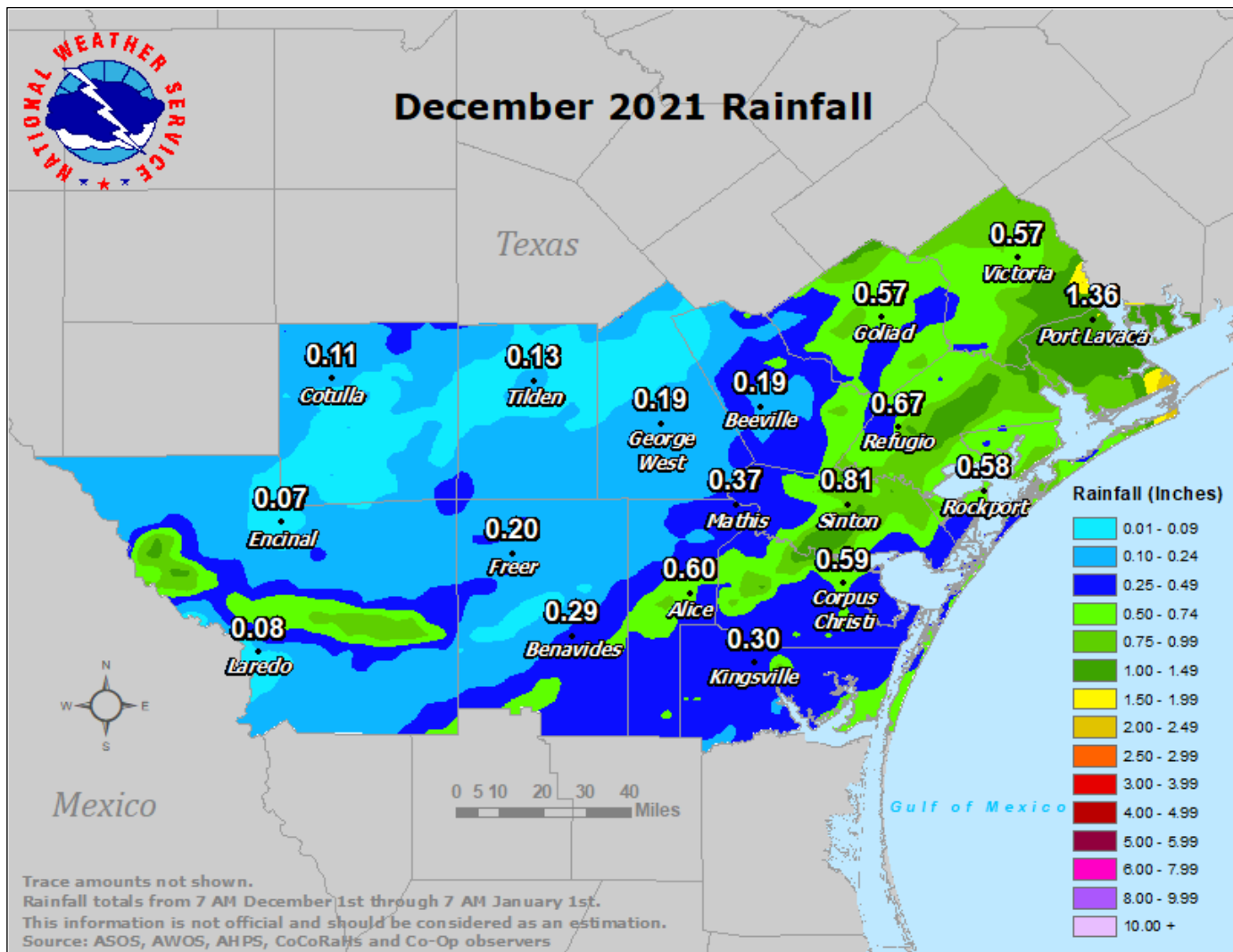


Figure 1: December 2021 Estimated Rainfall Totals



## Corpus Christi Regional Summary (continued)

January was a little more promising in terms of rainfall, with the Coastal Bend and Victoria Crossroads receiving average to just a tick above average rainfall. However, observers across the Brush Country and Rio Grande Plains continued their dry winter with another month of rainfall deficits of an inch or more. January was a little wetter, at least across the eastern portion of South Texas, thanks to a series of cold fronts throughout the month. The first significant cold front swept across the area January 9<sup>th</sup>-10<sup>th</sup> with a few observers reporting near 1.00" of rain, mainly near the southern Coastal Bend. The last significant cold front for the month of January was on the 24<sup>th</sup> with observers across the Coastal Bend and Victoria Crossroads reporting accumulations between 0.50" to 0.75". Despite all the rainfall across the eastern half of South Texas, areas further west were not so lucky. Observers across the Brush Country and Rio Grande Plains reported accumulations of 0.10" or less for the entire month of January.

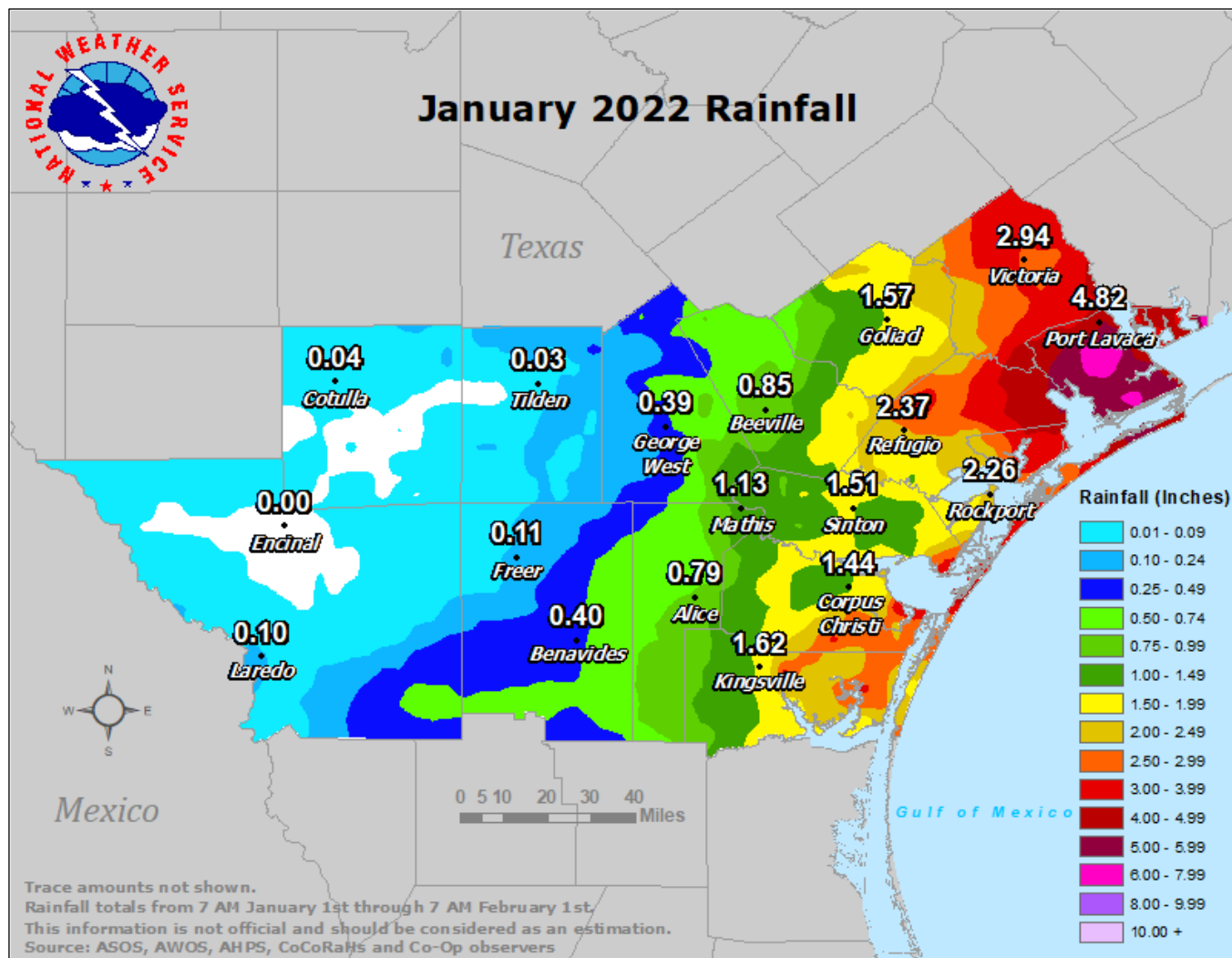


Figure 2: January 2022 Estimated Rainfall Totals

## Corpus Christi Regional Summary (continued)

Not to sound like a broken record, but February was yet again another dry month. Despite several cold fronts sweeping across South Texas, very little if any rainfall was observed with each front. Generally speaking, observers in areas that received rain only reported 0.25" at best with each front. In matter of fact, it was so dry that all of South Texas was 1.00" to 2.00" below normal rainfall for the month. Observers across the western half were the driest again, with observers reporting between 0.01" to 0.15" for the entire month. Observers across the eastern half that did receive rain didn't fare much better. Across areas that received rainfall, monthly totals ranged from 0.40" to 0.60" for the entire month.

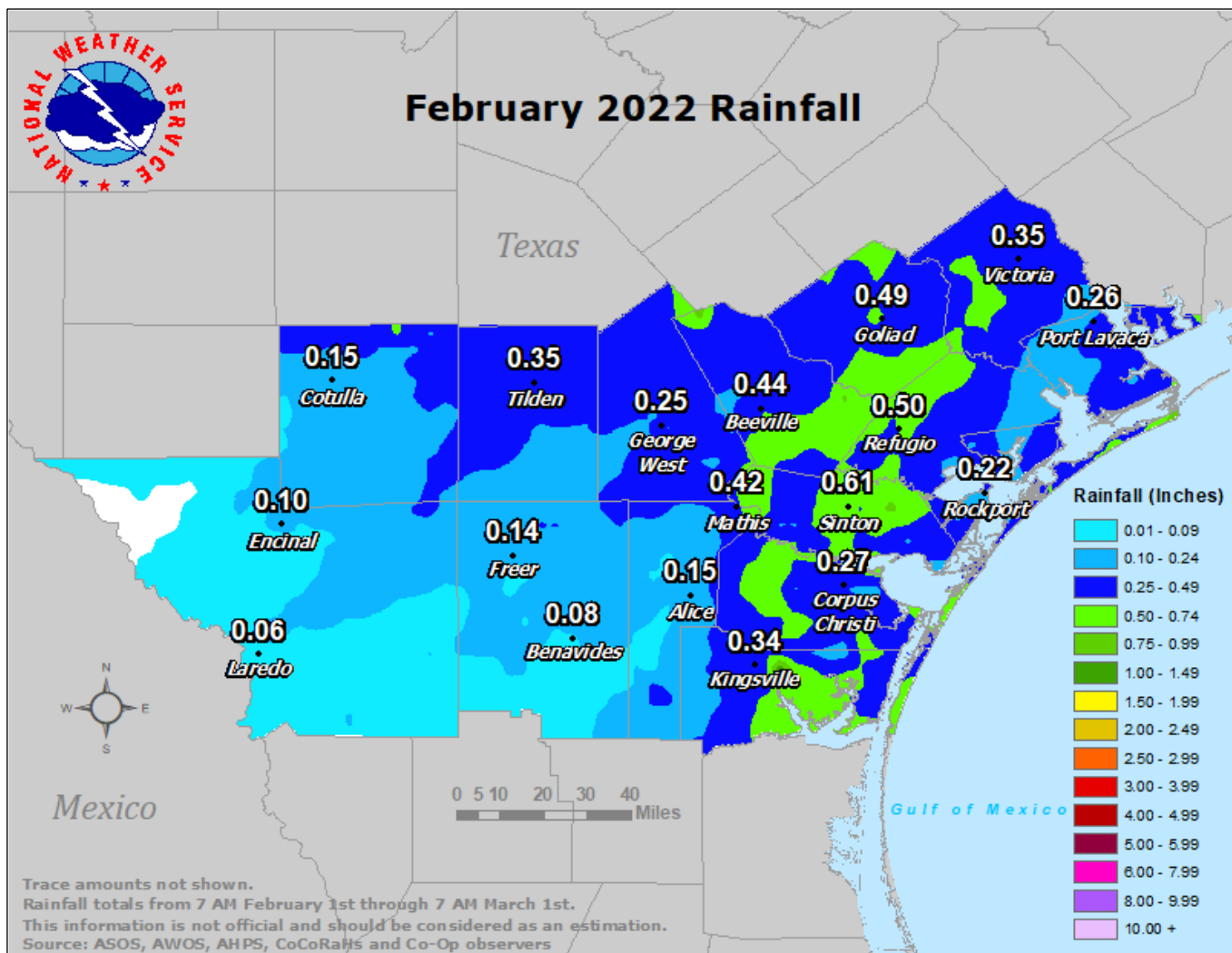


Figure 3: February 2022 Estimated Rainfall Totals



## Southeast Texas Regional Summary

### Dry Winter across SE Texas with Record Warm December

By: Ron Havran, SE Texas CoCoRaHS Regional Coordinator, HCFCO Hydrologic Operations

December was a record warm month across Southeast Texas. Temperature departures were from 10°F to 14°F above normal throughout Southeast Texas. Very little rainfall was recorded by CoCoRaHS observers in the region (Fig. 1). Most of the region had less than 50% of normal rainfall (Fig. 2). Observers recorded between 0.50" to 3.00" across the region. CoCoRaHS observers recorded a station average rainfall of 2.02" for the Houston/Galveston section while observers in the Golden triangle recorded a station average rainfall of 2.61".

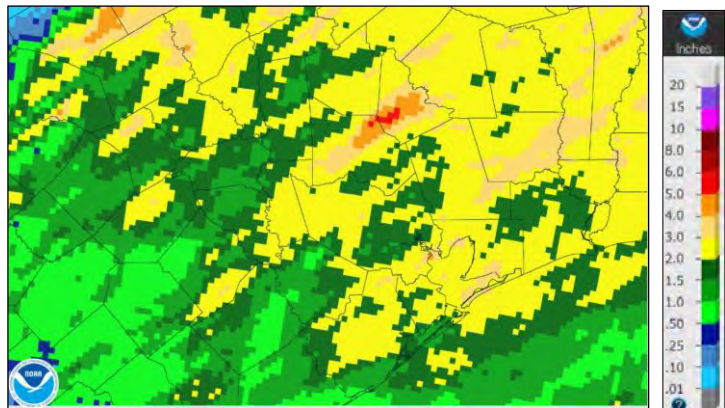


Figure 1: December 2021 Precipitation across SE Texas.

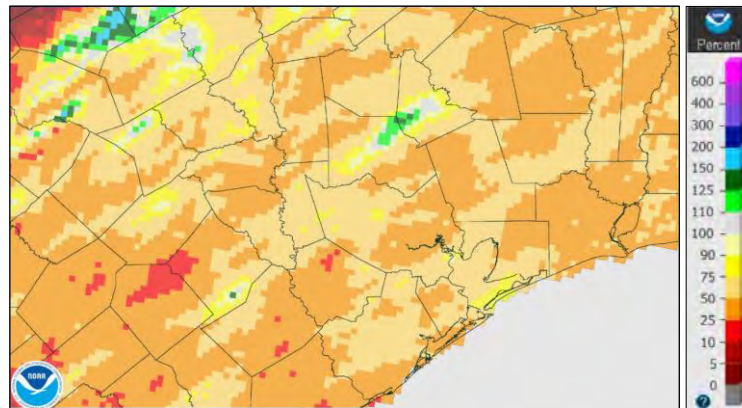


Figure 2: December 2021 Percent of Normal Precipitation.

Warm and dry conditions prevailed all month under the La Niña pattern. Figure 3 shows the mean temperature Max and Min values for the month of December across the U.S. The daily average of high temperatures were over 10°F above normal in SE Texas while nighttime lows were over 14°F above normal across Southeast Texas.

Texas had its warmest December on record and its 10<sup>th</sup> driest December on record.

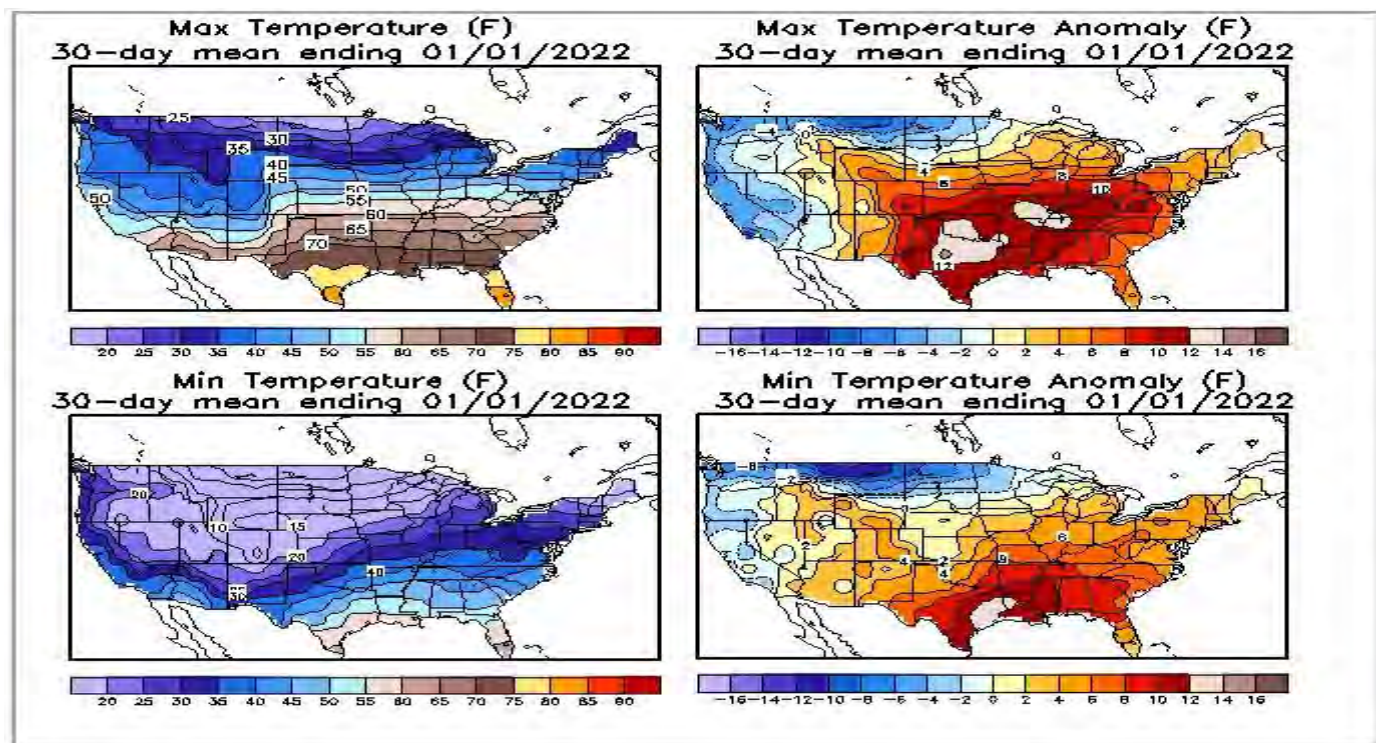


Figure 3: High and Low temperature averages across the U.S. in December 2021.



## Southeast Texas Regional Summary (continued)

January continued the dry pattern but there were a few systems that produced significant rains in some portions that ended with above normal rainfall for January (Fig. 4 & 5). Temperatures averaged about 2°F below normal for Southeast Texas as the first freezes of the winter occurred, a big change from December. CoCoRaHS observers in the Houston/Galveston section recorded a station average precipitation of 3.49" while the Golden triangle section had 4.10". A few CoCoRaHS stations did record some frozen precipitation in January. Texas had its 62nd coldest and 24th driest January on record.

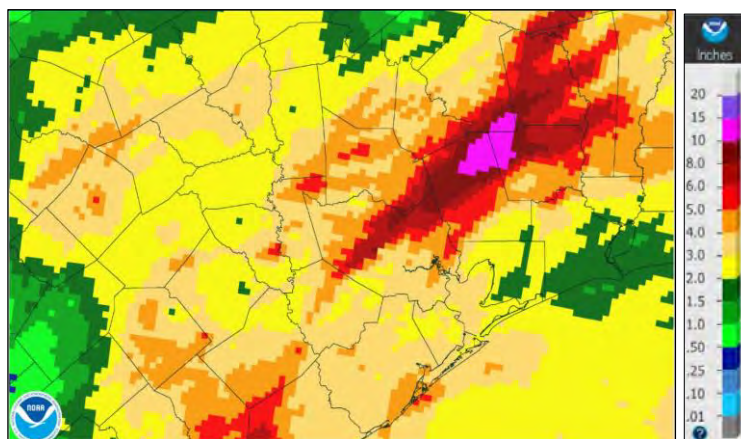


Figure 4: January 2022 Precipitation across SE Texas.

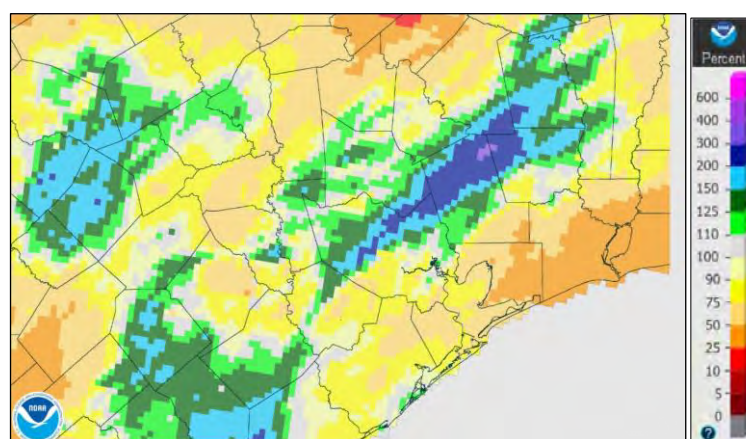


Figure 5: January 2022 Percent of Normal Precipitation.

Texas had its 22nd coldest and 30th driest February on record. Below normal temperatures continued into February for all of Southeast Texas. Most of Southeast Texas was 3°F to 5°F below normal. Morning lows bottomed out in the 20's for the month. Very dry conditions accompanied the cold temperatures and there was not much precipitation to talk about. CoCoRaHS observers recorded a station average precipitation in the Houston/Galveston section of 1.03" while the Golden triangle section had 1.88". Needless to say CoCoRaHS observers are ready to measure some significant spring rains to wash all the dust away.

A big thanks to all CoCoRaHS observers for taking some time every day to read your gauge and report on-line your data. Much appreciated. Your data goes into computer models that improve weather and river forecasting, drought monitoring, and so much more.

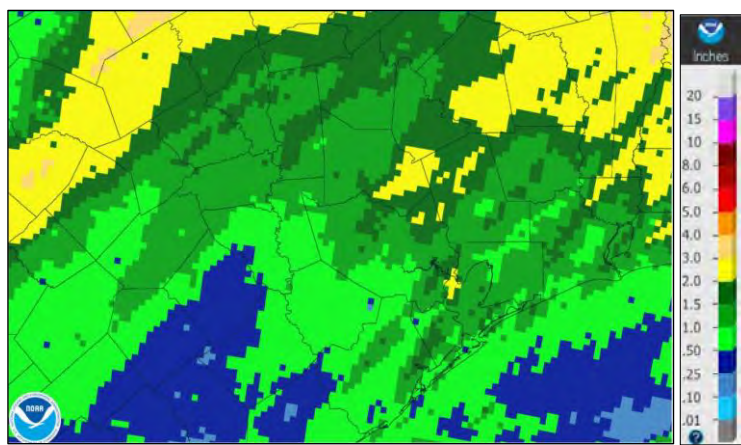


Figure 6: February 2022 Precipitation across SE Texas.

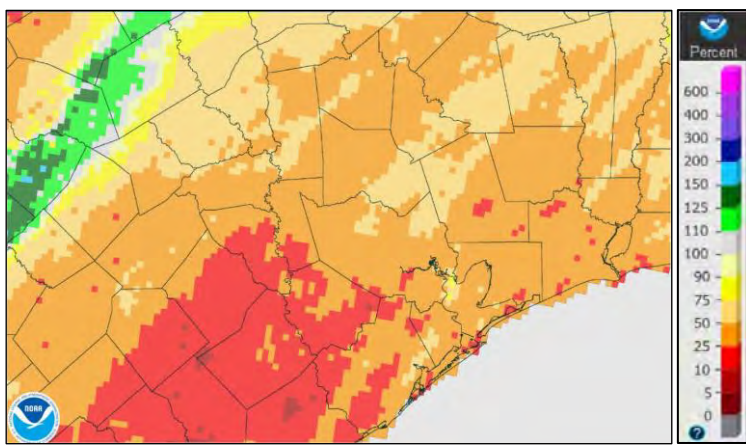


Figure 7: February 2022 Percent of Normal Precipitation.



## Southeast Texas Regional Summary (continued)

Data in the charts below from only CoCoRaHS observers in Southeast Texas. Many thanks to all the observers that submit precipitation data daily to the CoCoRaHS website database.

Winter 2021-22 CoCoRaHS SE Texas Stations Houston/Galveston Section Rainfall						
Actual Station Measured County Rainfall Averages in inches per month						
County	December	January	February	Winter Total		
	AVG.	AVG.	AVG.	Dec.- Feb.		
Austin	1.82	4.07	0.71	6.60		
Brazoria	1.98	2.31	0.85	5.14		
Chambers	2.74	3.76	1.06	7.56		
Colorado	1.01	3.41	0.75	5.17		
Fort Bend	1.65	3.64	0.66	5.95		
Galveston	2.29	2.65	1.20	6.14		
Harris	2.61	3.96	1.14	7.71		
Jackson	1.21	4.45	0.51	6.17		
Liberty	2.11	4.83	1.33	8.27		
Montgomery	2.15	3.10	1.38	6.63		
Polk	2.83	3.11	1.78	7.72		
San Jacinto	2.60	2.99	1.45	7.04		
Wharton	1.23	3.06	0.52	4.81		
Region Totals	2.02	3.49	1.03	6.53		

Highlights highest rain total for a county in a month  
 Highlights lowest rain total for a county in a month

Note: All data taken from the CoCoRaHS website in Total Precipitation Summary Report

Note: Counties without a significant number of observers reporting are not displayed on this chart

Chart 1: Houston/Galveston CoCoRaHS Observer county average rainfall for winter season 2021-2022.

Winter 2021-2022 CoCoRaHS SE Texas Stations Golden Triangle Section Rainfall						
Actual Station Measured County Rainfall Averages in inches per month						
County	December	January	February	Winter Total		
	AVG.	AVG.	AVG.	Dec.- Feb.		
Hardin	3.65	5.98	1.97	11.60		
Jasper	2.75	3.83	1.99	8.57		
Jefferson	1.94	2.61	1.16	5.71		
Newton	No data	No data	No data	No data		
Orange	2.45	2.36	1.74	6.55		
Tyler	2.24	5.74	2.54	10.52		
Region Totals	2.61	4.10	1.88	8.59		

Highlights highest average rain total for a county in a month  
 Highlights lowest average rain total for a county in a month

Note: All data taken from the CoCoRaHS website in Total Precipitation Summary Report

Note: Counties without a significant number of observers reporting are not displayed on this chart

Chart 2: Golden Triangle CoCoRaHS Observer county average rainfall for winter season 2021-2022.

## Southeast Texas Regional Summary (continued)

With dry conditions this winter across Southeast Texas, drought conditions have worsened to moderate to severe drought in places. All of Texas had a dry winter except a few locations around the southern coastal regions and a small part of Central Texas (Fig. 8). The latest drought condition for Southeast Texas are shown in figures 10 and 11. Figures 12 and 13 show precipitation totals and departures from 2021.

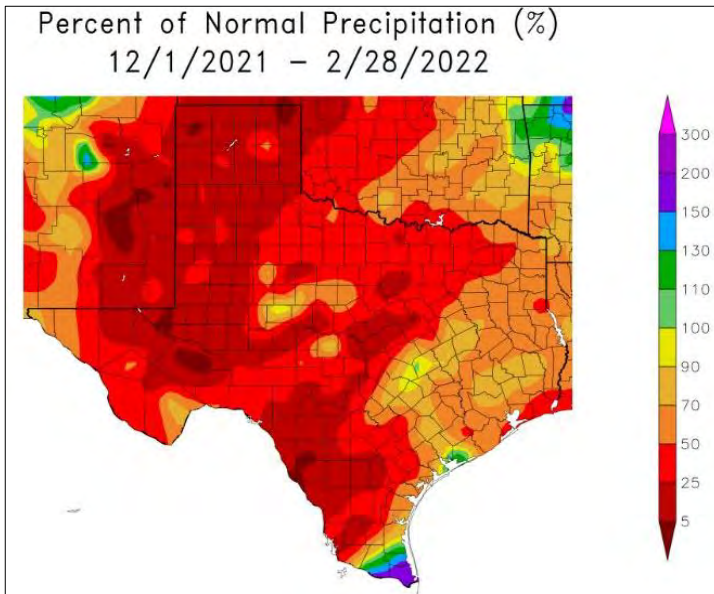


Figure 8: Texas Percent of Normal Precipitation Winter 2021-22.

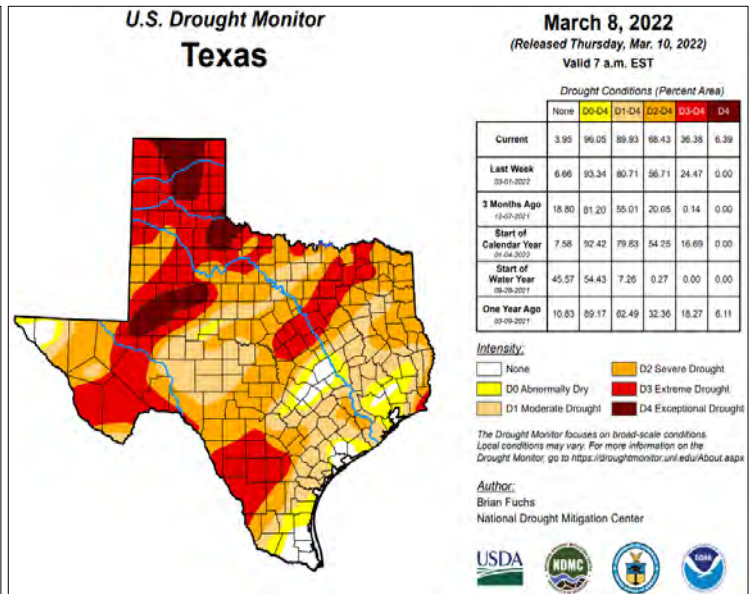


Figure 9: Drought conditions as of 3/8/2022 across Texas.

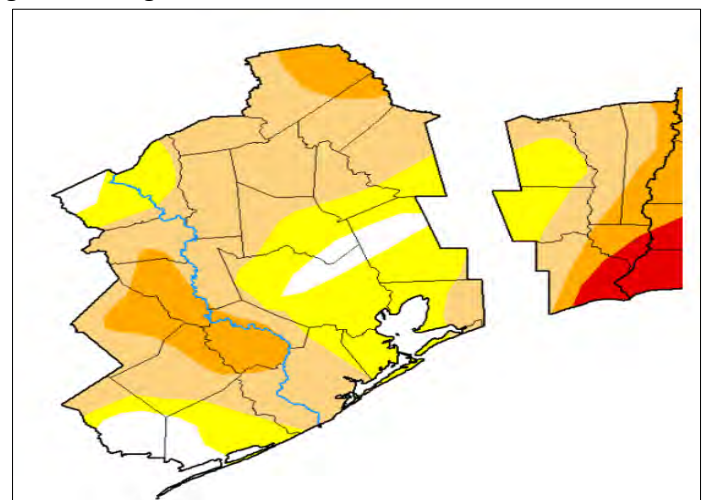
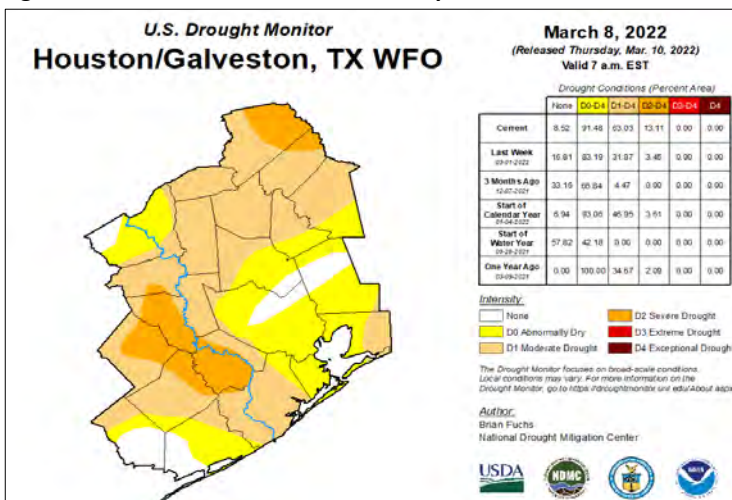


Figure 10 & 11: Drought Conditions across SE Texas for Houston/Galveston & Golden Triangle Sections in SE Texas.

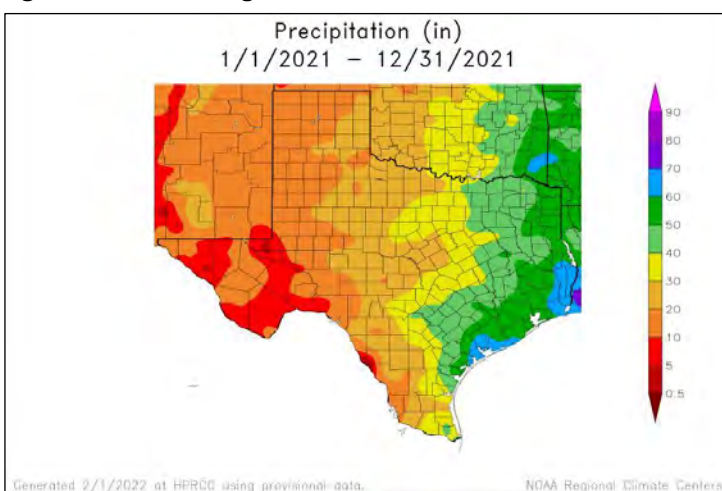


Figure 12: Texas Precipitation for year 2021.

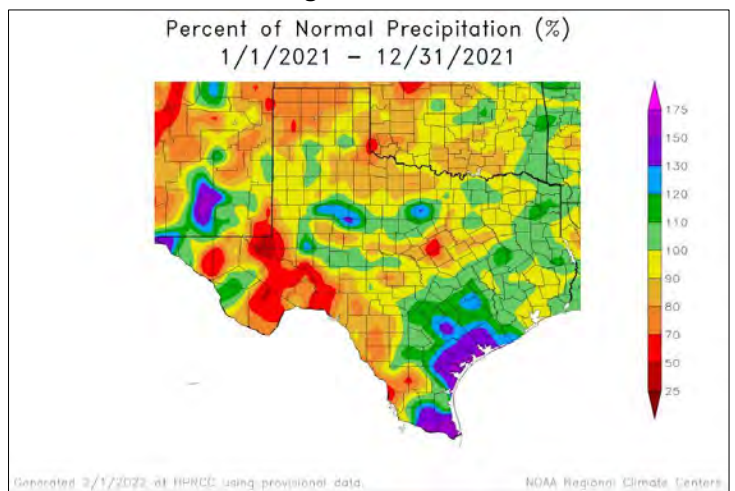


Figure 13: Texas Percent of Normal Precipitation for year 2021.



## Spring Weather Outlook for 2022

### A Warmer and Drier than Normal Spring Possible across Texas

**By: Bob Rose, Meteorologist, Lower Colorado River Authority**

Springtime in Texas is typically the transition period between our relatively short winters and the long, hot, brutal summers. Spring can often be one of the most pleasant times of the year, but in some years, it can quickly take on the taste and feel of early summer. Unfortunately, this year, forecasts are pointing toward one of those types of spring, with hot temperatures arriving early along with stringy amounts of rain.

One of the biggest influences on Texas weather since last fall has been from a weak to moderate La Niña in the central and eastern tropical Pacific. Since last fall, the atmospheric circulation from La Niña has helped steer most Pacific storm systems up toward the Pacific Northwest and western Canada, instead of allowing them to track east towards the West Coast and eventually Texas. This has resulted in few storm systems since last fall and well below normal rain for much of Texas. Parts of West Texas have barely recorded a quarter inch of rain since last September. With so little rain, the vast majority of Texas is now in some level of drought, with the most severe drought occurring conditions across the Panhandle, South Plains, and the Winter Garden.

Observations in early March indicated this winter's La Nina was past peak in intensity, but still a rather robust feature. It continues to have a strong influence on the position of the jet stream across North America. Forecasters with NOAA's Climate Prediction Center now indicate La Nina will hang on through the spring, then slowly decay sometime in early to mid-summer. Based on this outlook, an atmospheric circulation somewhat similar to what we saw last fall and winter is expected to continue through spring and early summer. In other words, the jet stream is forecast to stay to the north of Texas this spring, limiting the number of storm systems that can move across the state. The result will likely be below-normal rainfall to much below-normal rainfall for much of the state. Meanwhile, with the jet stream well up to the north, it will allow an early summer-like heat dome to build in, causing a pattern of warmer than-normal temperatures.

The lack of soil moisture from the dry fall and winter is expected to reinforce the drier and warmer than-normal pattern this spring, continuing through the summer months. And depending on how the pattern evolves, summer-like temperatures could arrive well before summer. Drier than-normal rainfall in the spring and warmer than-normal temperatures will cause drought conditions to only grow worse across the state.

## Spring Weather Outlook for 2022 (continued)

NOAA's seasonal forecast model, the "Climate Forecast System, or CFSv2" is painting a similar assessment of conditions this spring. The model's outlook for April-May-June is calling for much drier than-normal, and much warmer than-normal conditions across Texas and much of the southern U.S. The model seems to be painting an early arrival to summer-like weather.

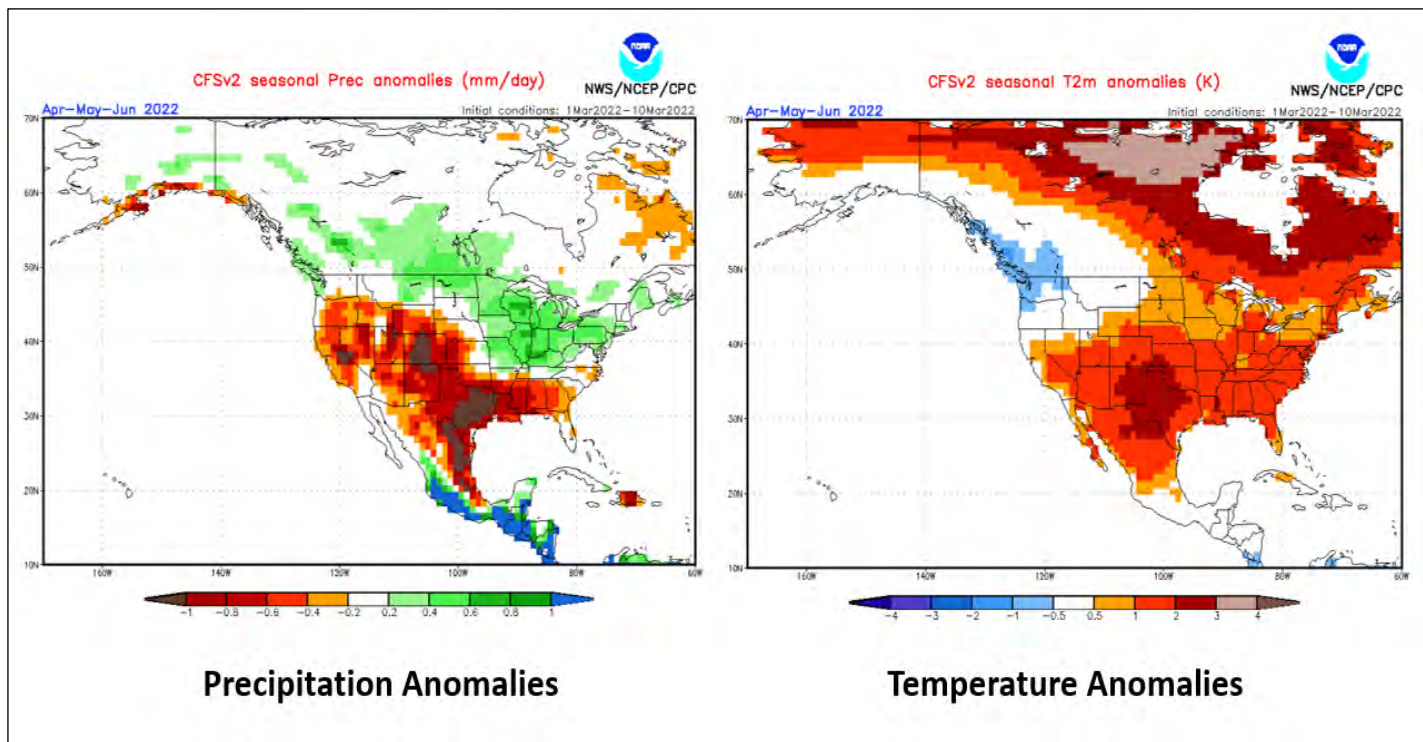


Figure 1: Precipitation and temperature forecast anomalies for the spring of 2022.

Keep in mind, this is an outlook for general conditions that can be expected through the spring. There will likely be periods of rain, storms and even some brief cooldowns from time to time. But prepare now for a warm and less rainy spring. Unlike last year, summer will be arriving early!

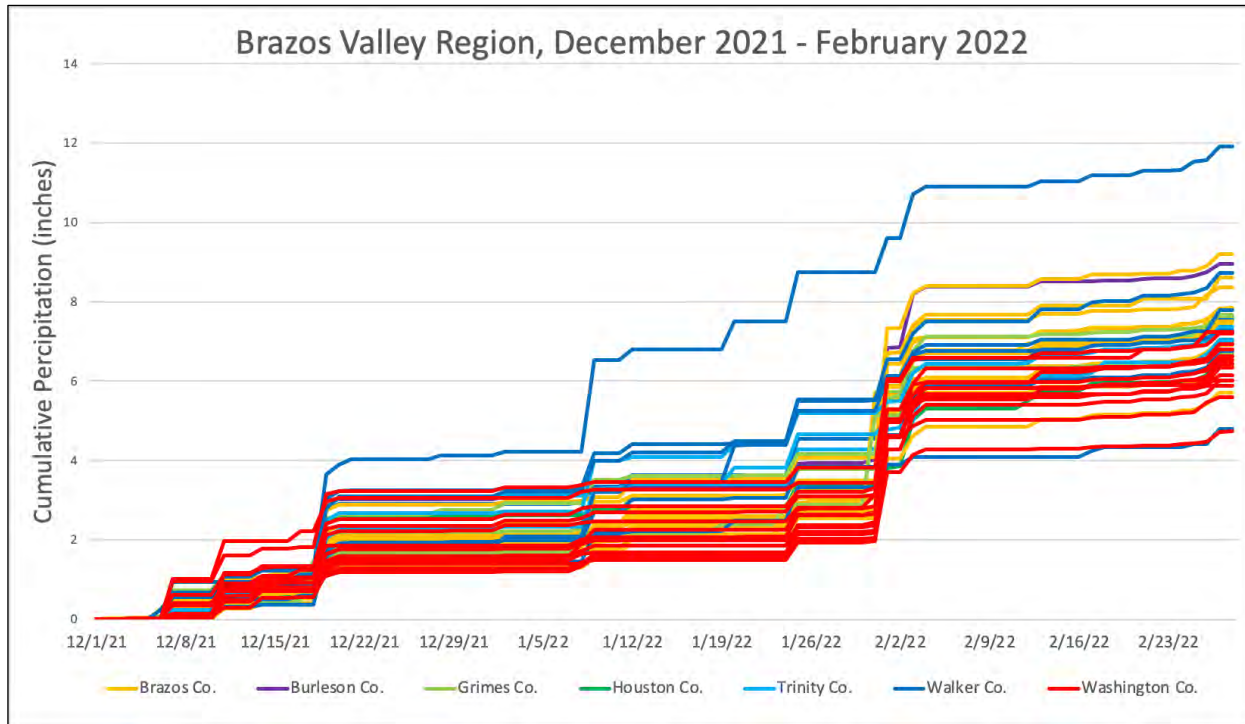


## Brazos Valley Regional Summary

### Winter 2022 Precipitation Summary

#### Bryan-College Station/Brazos Valley Region, Texas

Hayden Dove, Texas A&M University, Office of the State Climatologist of Texas



### Summary:

This season was close to what's expected out of a Texas winter. The first couple weeks of December saw less than 1.5" of precipitation for most observers. Around the middle of December, one significant rainfall event occurred spiking rainfall accumulations between 1.5"-3". The remainder of December and throughout January saw relatively dry conditions with most observers only gaining an additional 1-2" of precipitation. A projected winter storm at the beginning of this February not only brought some panic, but also brought an additional 2-3" of precipitation across the Brazos Valley. Lucky for us, this winter storm was far less severe than the one last February! Dry weather resumed after the winter storm, with an additional 1" of precipitation or less gained the remainder of February. This left seasonal accumulations between 5"-9" across most observers. Although the winter season is generally the driest season, rainfall was still 2"-4" below the normal seasonal precipitation in these counties. This means that conditions have remained drier than normal across the Brazos Valley the last three seasons.

### Observer Statistics:

We were thrilled to see an increase in observers this period from 50 to 53. Of these 53 observers, 33 were able to make observations almost every day, missing no more than 10 days.

In total we were able to use data from 42 observers across this period!

### Season Statistics:

*Wettest Day:* 3.64", February 2nd, Brazos County

*Wettest Seasonal Total:* 11.91", Walker County

*Driest Seasonal Total:* 4.74", Washington County

*Soggy Socks Award (longest spell of daily reports with measurable rain):* Washington County experienced seven consecutive days of measurable precipitation from December 14th through December 20th.

*Dusty Soles Award (longest spell of daily reports without measurable rain):* Washington County experienced nineteen consecutive days without measurable precipitation from December 20th through January 7th.

## Scheduled CoCoRaHS Webinars

### Upcoming WxTalk Webinars:

**Webinar #81** - May 12, 2022 -1PM EDT

**Air-Sea Interactions in the Coastal Zone**

Eric Skillingstad

Oregon State University Corvallis, OR



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**Webinar #82** - Summer 2022 -1PM EDT

**The Graphics Boom – How Not to Go Bust**

Todd Glickman, Craig Allen

WCBS Radio

New York, NY



The first TV weather graphics systems were introduced in the early 1980s. At the 14<sup>th</sup> AMS Conference on Weathercasting in Clearwater Beach, FL (June 1984), Todd Glickman gave a presentation that suggested best practices TV weathercasters could use to keep their audience engaged, primarily using radio weathercasting techniques. Now 35 years later, TV weathercasters show on-air sophisticated model presentations, high-resolution radar displays, and present forecasts farther into the future. But what has not changed is that they are challenged with telling a story that their viewers will understand, appreciate, and remember. In this presentation, we'll look at techniques to best connect with the viewer – and surprise! – in this regard, not much has changed.



### *Texas CoCoRaHS Observer*

The official newsletter of Texas CoCoRaHS

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