



## **Item 6: 2024-25 Winter Weather Update**

*Chris Coleman*

ERCOT Supervisor of Operational Forecasting

Board of Directors Meeting

ERCOT Public

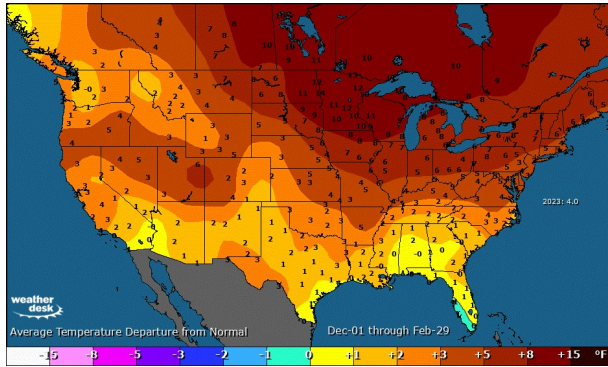
December 3, 2024

# Overview

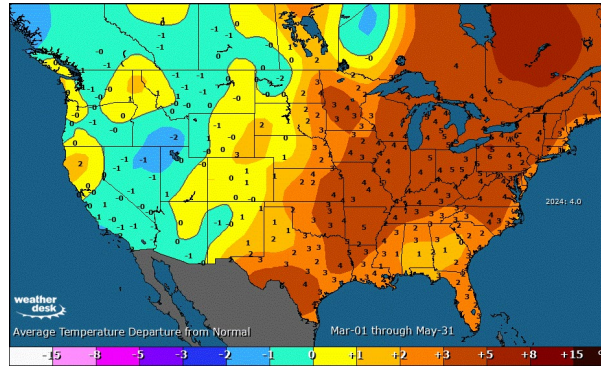
- Quick look at the 2024 weather year
- Review of last winter (and other recent winters)
- Expectations for the upcoming winter



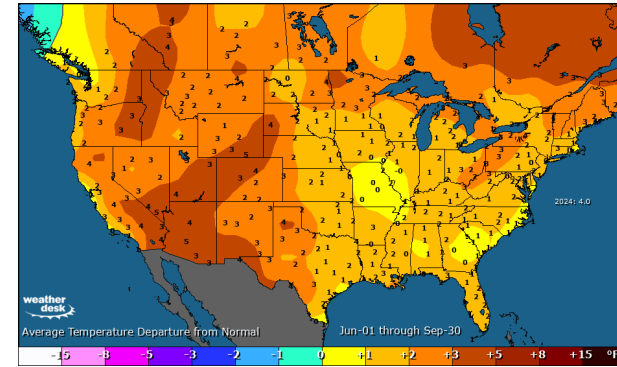
# Reviewing 2024 Weather



11<sup>th</sup> warmest winter



4<sup>th</sup> warmest spring



6<sup>th</sup> hottest summer

Rankings are from 1895-present, 130 historical years ... 1<sup>st</sup> warmest October ...

2024 has been a very warm year – for Texas and globally  
Abnormally warm ocean temperatures have driven a warm pattern across the planet

## Texas Average Temperature

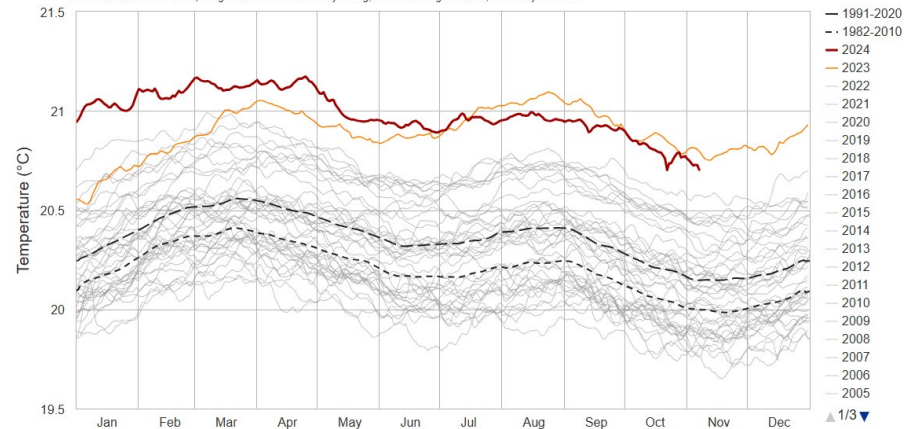
January-October

| Period               | Average Temperature |
|----------------------|---------------------|
| January-October 2023 | 70.9°F              |
| January-October 2024 | 70.7°F              |
| January-October 2011 | 70.5°F              |
| January-October 2000 | 70.4°F              |

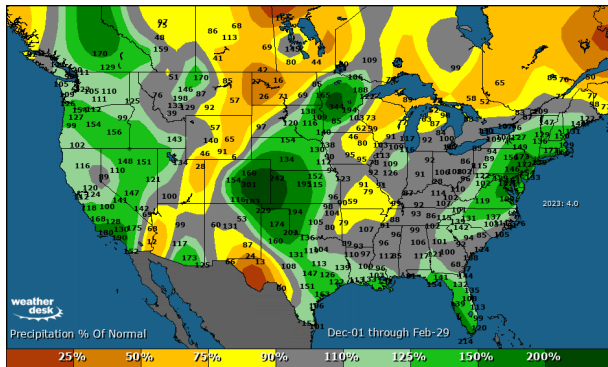
## Daily Sea Surface Temperature, World (60°S–60°N, 0–360°E)

Dataset: NOAA OISST V2.1 | Image Credit: ClimateReanalyzer.org, Climate Change Institute, University of Maine

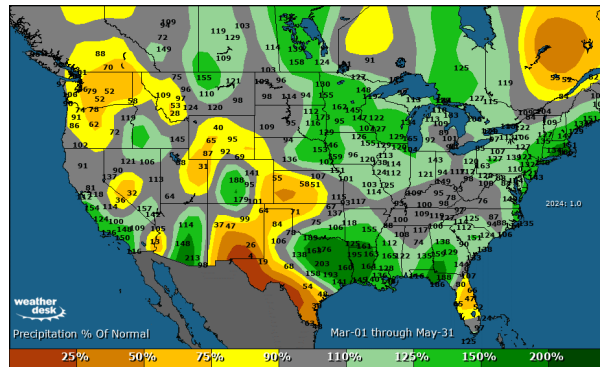
Export Chart



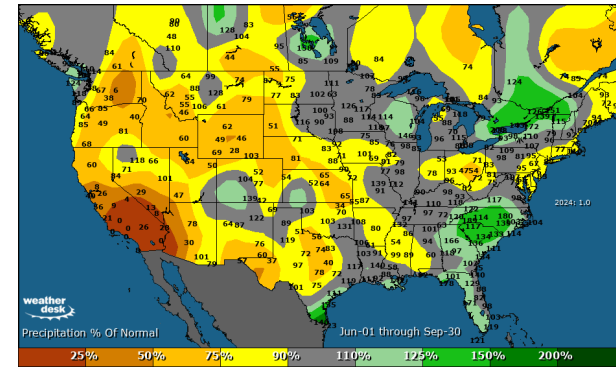
# Reviewing 2024 Weather



104<sup>th</sup> driest (26<sup>th</sup> wettest) winter



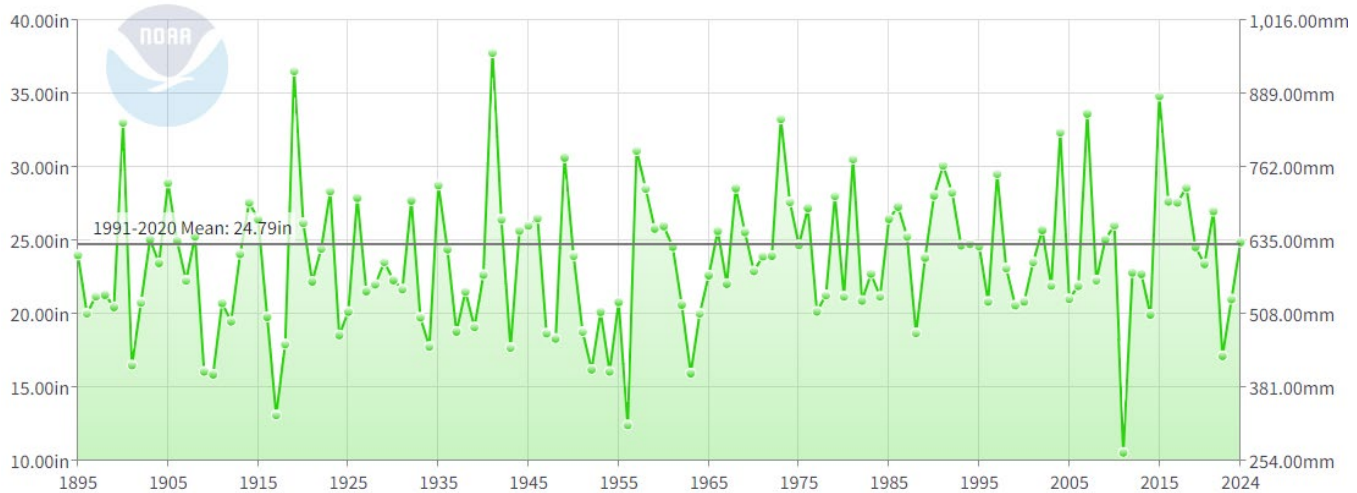
110<sup>th</sup> driest (21<sup>st</sup> wettest) spring



60<sup>th</sup> driest (71<sup>st</sup> wettest) summer

Rankings are from 1895-present, 130 historical years

## Texas Precipitation January-October

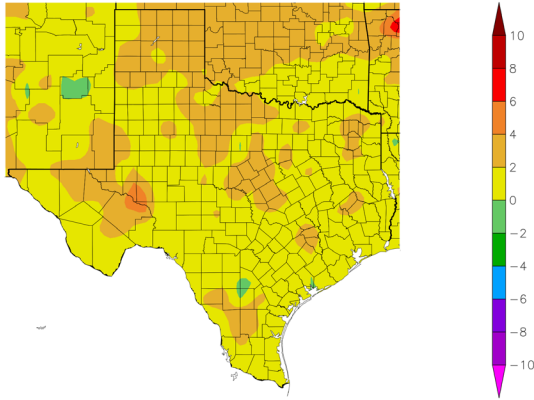


While this year has been much wetter than the previous two years, it's generally "normal" precipitation (October 2024 was the 2<sup>nd</sup> driest in history)



# Reviewing Last Winter

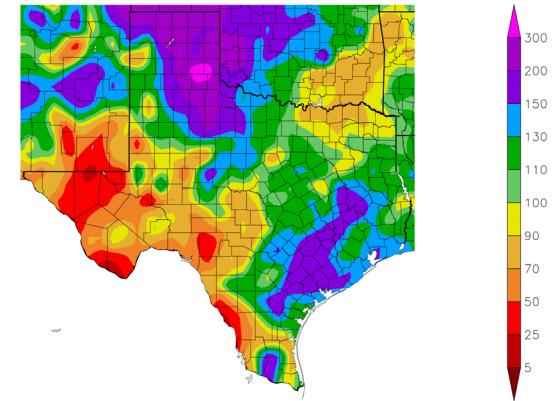
Departure from Normal Temperature (F)  
12/1/2023 – 2/29/2024



## ERCOT winter (Dec 1 – Feb 28/29)

- Last winter was the **11<sup>th</sup> warmest** on record (129 historical winters)
- However, it featured a period of extreme cold in mid-January (Winter Storm Heather)
- ERCOT's new winter peak record was set on 1/16/24. DFW fell to 12°, Houston was 18°, Austin was 17°, while San Antonio recorded a low of 19°. The LRGV saw lows in the upper 20s, while Lubbock dropped to 5°
- This emphasizes the point made annually – mild (above normal) winters can and do have periods of extreme cold
- Last winter was the 26<sup>th</sup> wettest on record (129 historical winters). It was the wettest winter since 2011-12, with El Niño likely playing a role

Percent of Normal Precipitation (%)  
12/1/2023 – 2/29/2024



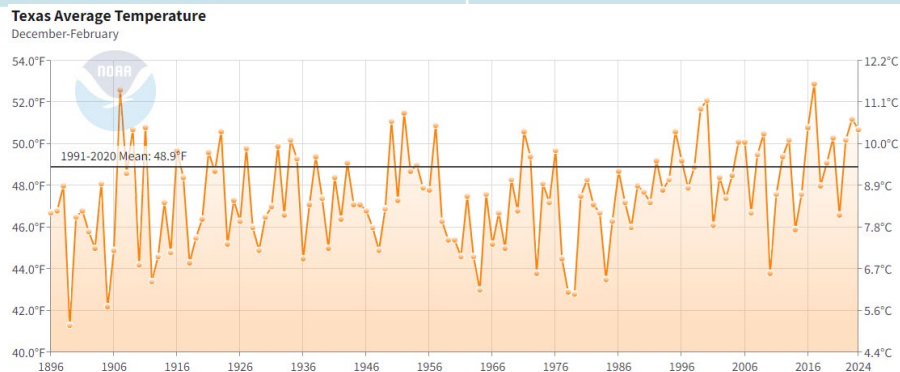
Temperature anomaly

Precipitation anomaly

# Mean Temperature Ranking of Recent Texas Winters (129 historical winters)

|                |  |
|----------------|--|
| <b>2023-24</b> | <b>118<sup>th</sup> coldest (12<sup>th</sup> warmest)</b>  |
| <b>2022-23</b> | <b>124<sup>th</sup></b>                                    |
| <b>2021-22</b> | <b>110<sup>th</sup></b>                                    |
| 2020-21        | 42 <sup>nd</sup>   |
| <b>2019-20</b> | <b>113<sup>th</sup></b>                                    |
| <b>2018-19</b> | <b>94<sup>th</sup></b>                                     |
| 2017-18        | 76 <sup>th</sup>   |
| <b>2016-17</b> | <b>129<sup>th</sup> coldest (warmest winter on record)</b> |
| <b>2015-16</b> | <b>120<sup>th</sup></b>                                    |
| 2014-15        | 68 <sup>th</sup>   |
| 2013-14        | 30 <sup>th</sup>   |
| <b>2012-13</b> | <b>110<sup>th</sup></b>                                    |
| <b>2011-12</b> | <b>99<sup>th</sup></b>                                     |

Since 2001, only 3 winters have ranked in the coldest third (1-43) of historical winters (2020-21, 2013-14, and 2009-10)



# Extreme Cold Occurrences

ENSO phase during winters with extreme cold:

|             | la nina | neutral | el nino |
|-------------|---------|---------|---------|
| since 1950  | 12      | 8       | 9       |
| since 83-84 | 9       | 4       | 2       |
| since 16-17 | 4       | 0       | 1       |

Extreme cold has impacted ERCOT **more frequently** in recent winters – even though the winters as a whole have been frequently mild

This winter should be approached with the potential for an extreme cold event; in fact, recent trends suggest a greater-than-average chance of occurrence

**It's not unusual for a period of extreme cold to occur in an otherwise mild-to-warm winter**

Since 1988-89, 10 of 14 winters with cold extremes have ranked in the warmest half of all winters

**5 of the last 8 winters have brought extreme cold to Texas**

- 2023-24 (11<sup>th</sup> warmest winter)**
- 2022-23 (6<sup>th</sup> warmest winter)**
- 2020-21 (87<sup>th</sup> warmest winter)**
- 2017-18 (52<sup>nd</sup> warmest winter)**
- 2016-17 (1<sup>st</sup> warmest winter)**

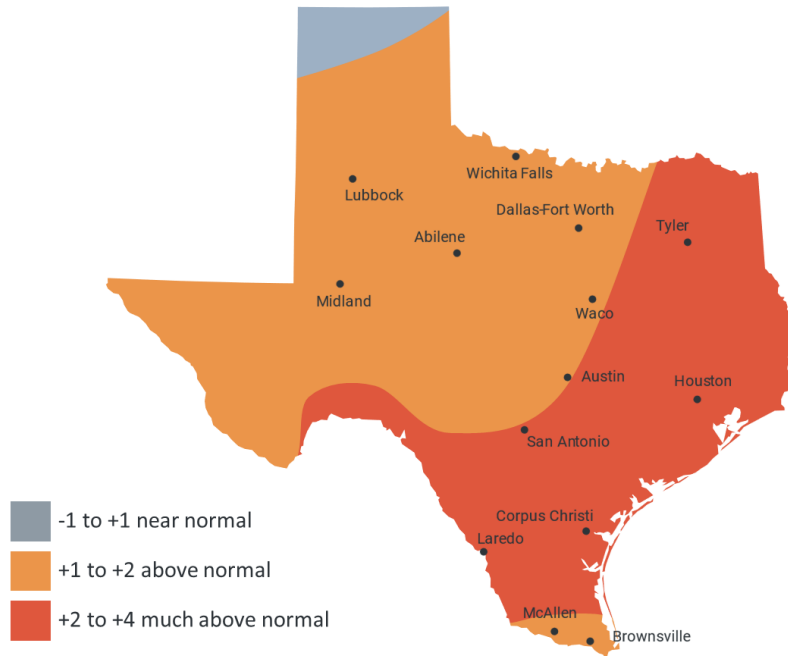
→ In those 5 winters, Dallas has recorded 14° or colder, Houston has recorded 21° or colder, and Austin has recorded 19° or colder

In the previous **25** winters (1991-92 through 2015-16), only **3** winters met that criteria for all three cities



# Winter 2024-25 Temperature Outlook

## ERCOT Temperature Outlook Preliminary Winter 2024-2025



The winter is forecasted to see above normal temperatures across most-to-all of Texas

This is an average across three months and doesn't dismiss the potential for a period of extreme cold

Recent winters have had similar patterns and drivers that yielded a significant polar outbreak impacting Texas



# Precipitation Ranking of Recent Texas Winters (129 historical winters)

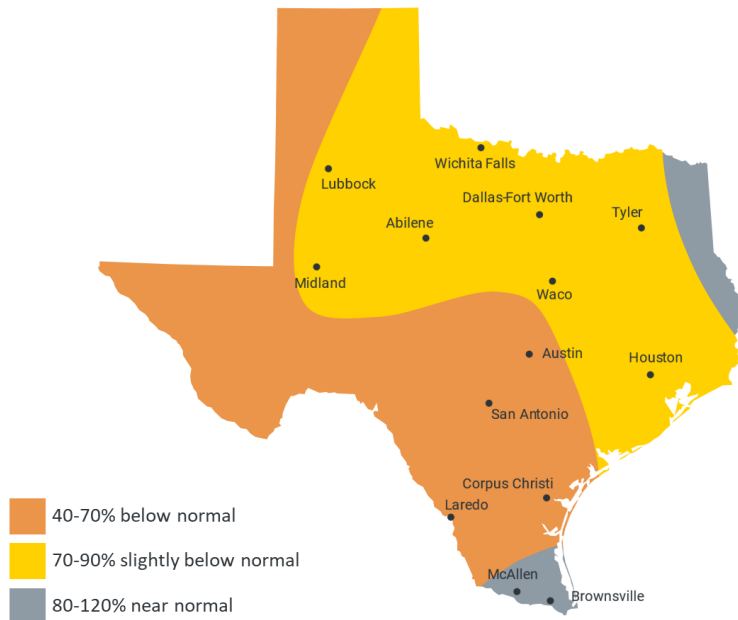
|                |                                    |
|----------------|------------------------------------|
| <b>2023-24</b> | <b>104<sup>th</sup> driest (E)</b> |
| 2022-23        | 45 <sup>th</sup> (L)               |
| <b>2021-22</b> | <b>10<sup>th</sup> (L)</b>         |
| 2020-21        | 58 <sup>th</sup> (L)               |
| 2019-20        | 66 <sup>th</sup> (E)               |
| 2018-19        | 91 <sup>st</sup> (E)               |
| 2017-18        | 75 <sup>th</sup> (L)               |
| <b>2016-17</b> | <b>98<sup>th</sup> (L)</b>         |
| 2015-16        | 59 <sup>th</sup> (E)               |
| 2014-15        | 74 <sup>th</sup> (E)               |
| 2013-14        | 12 <sup>th</sup> (N)               |
| 2012-13        | 63 <sup>rd</sup> (N)               |
| <b>2011-12</b> | <b>120<sup>th</sup> (L)</b>        |

Over the past 6 winters, La Niña has resulted in the 3 driest winters and El Niño in the 3 wettest (the upcoming winter will be a La Niña)

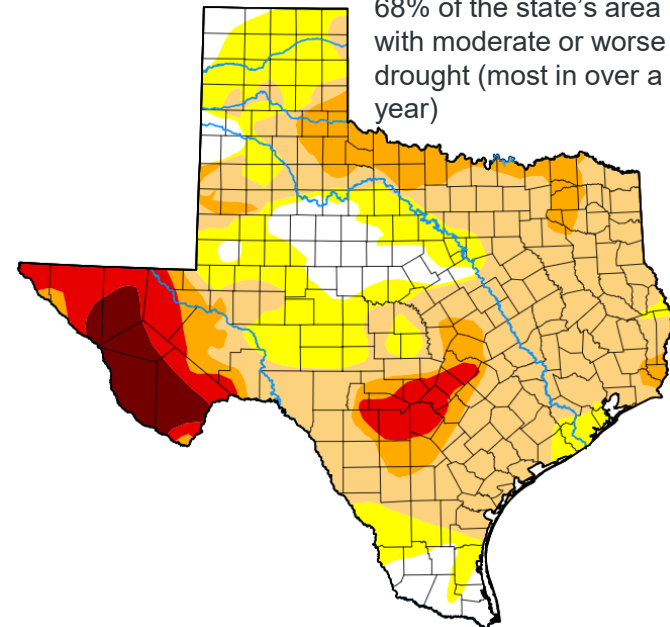
(E) = El Niño, (L) = La Niña, (N) = neutral

# Winter 2024-25 Precipitation Outlook vs Drought

## ERCOT Precipitation Outlook Preliminary Winter 2024-2025



Current Drought:  
68% of the state's area  
with moderate or worse  
drought (most in over a  
year)



The winter precipitation outlook suggests increasing drought