Item 6: 2022-2023 Winter Weather Update

Chris Coleman
Lead Meteorologist

Board of Directors Meeting

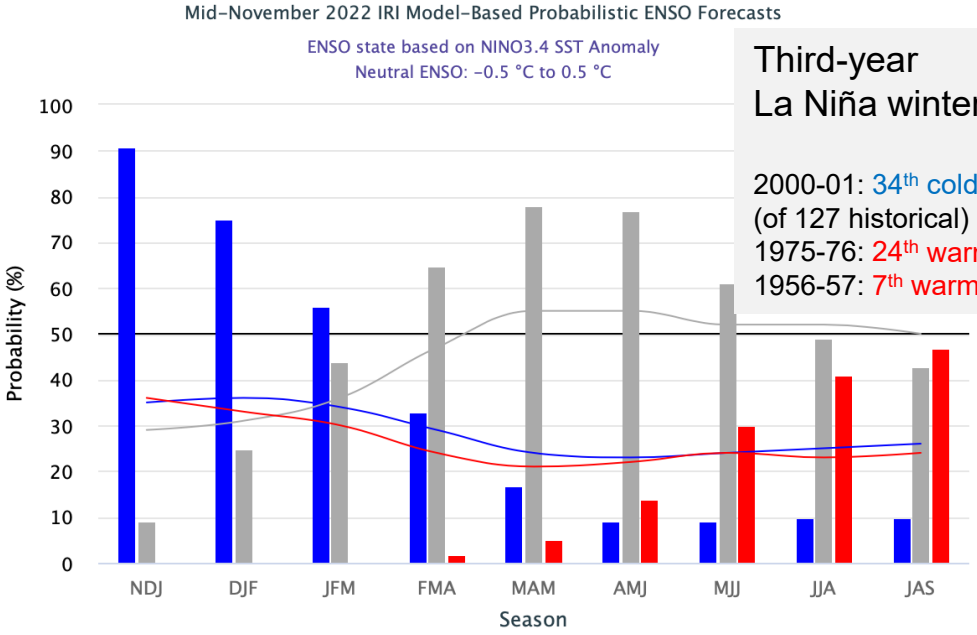
ERCOT Public
December 20, 2022

Agenda

1. La Niña
2. Year-to-date weather review
3. Last winter
4. Winter 2022-23 Temperature Outlook
5. Winter 2022-23 Precipitation Outlook (plus drought)

La Niña

- La Niña is expected to continue through the winter season
- This will be the third consecutive winter impacted by La Niña. Only three other times has a La Niña lasted into a third winter: 2000-01, 1975-76, and 1955-56 (the 1950s La Niña faded by mid-winter)
- While the forecasts currently predict the La Niña to end by spring, there's no historical precedence of such an event lasting beyond spring. The models may be trying to fade the La Niña because historically, that's what happened – but the history is very limited
- Historically, below normal, cold winters happen less than normal or above normal, mild winters during a La Niña



Third-year La Niña winters:

2000-01: 34th coldest (of 127 historical)
1975-76: 24th warmest
1956-57: 7th warmest

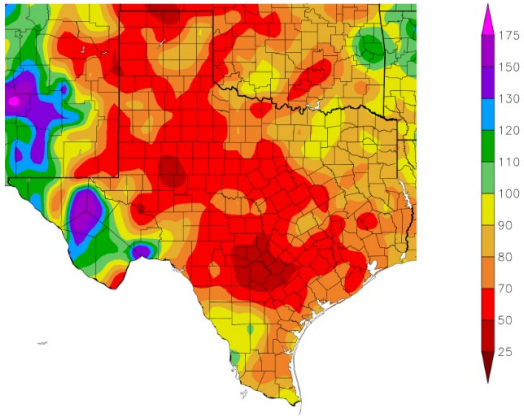
La Niña winters:

2021-22: 18th warmest
2020-21: 85th warmest
2017-18: 50th warmest
2016-17: 1st warmest
2011-12: 27th warmest
2010-11: 58th warmest
2008-09: 14th warmest
2007-08: 25th warmest
2005-06: 18th warmest
2000-01: 94th warmest
1999-00: 3rd warmest
1998-99: 4th warmest
1995-96: 31st warmest
1988-89: 50th warmest
1984-85: 91st warmest
1983-84: 25th warmest
1975-76: 23rd warmest
1974-75: 67th warmest
1973-74: 48th warmest
1971-72: 27th warmest
1970-71: 11th warmest
1964-65: 58th warmest
1956-57: 7th warmest
1955-56: 55th warmest
1954-55: 53rd warmest
1950-51: 65th warmest

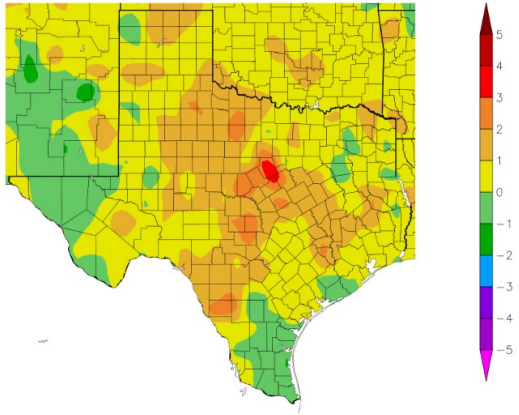
Of the 15 coldest winters since 1950, none have occurred during a La Niña

2022 Year-to-Date Review

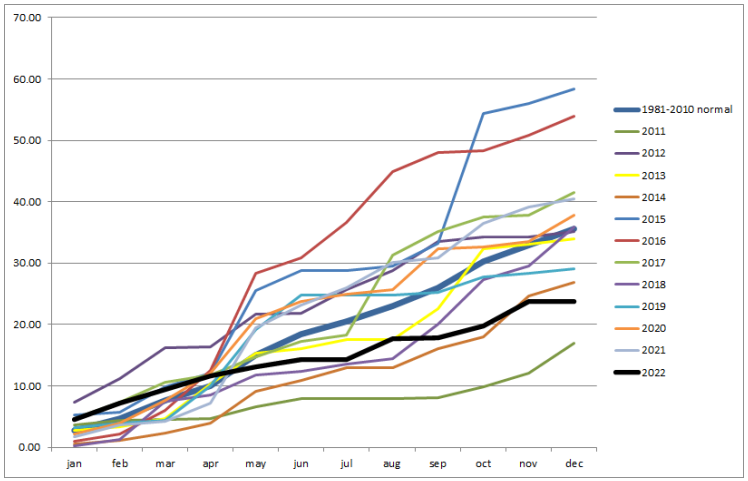
Percent of Normal Precipitation (%)
1/1/2022 – 12/6/2022



Departure from Normal Temperature (F)
1/1/2022 – 12/6/2022



Total YTD rainfall at Austin Bergstrom



Austin is currently Experiencing its Driest year since 2011.

23.82” thru 12/7, which is nearly 10 inches below normal year-to-date

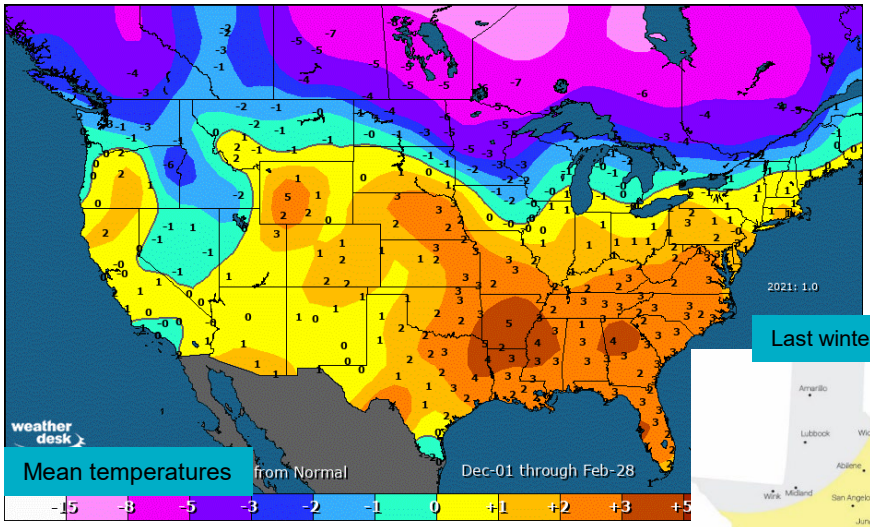
January through October 2022 ranked as the 10th warmest Jan-Oct period for Texas (since 1895)

List of years since 1895 warmer than 2022 (through October): 2011, 2000, 2012, 2017, 2006, 1998, 1911, 1954, 2016

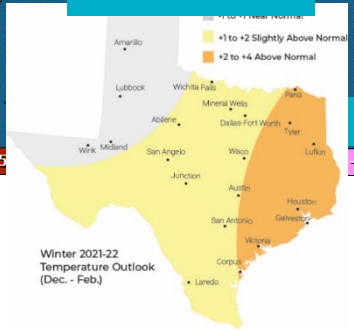
January through October 2022 also ranked as the 10th driest Jan-Oct period for Texas

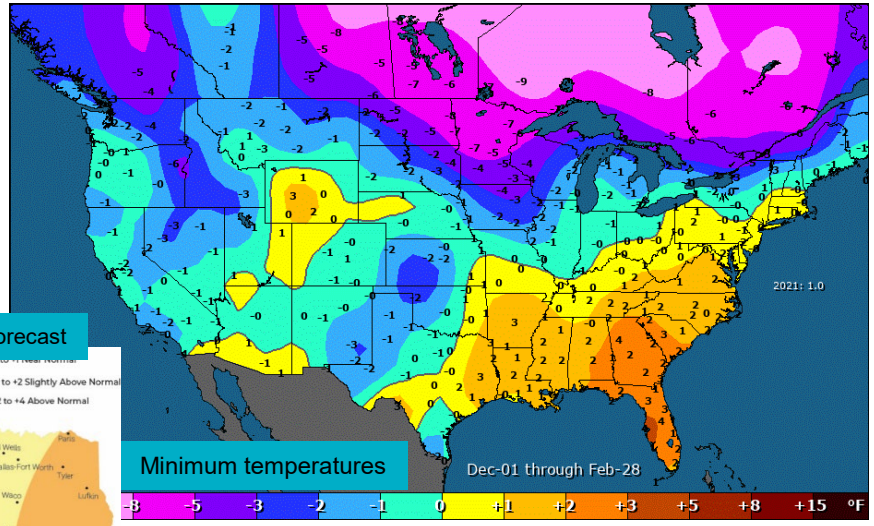
List of years since 1895 drier than 2022 (through October): 2011, 1956, 1917, 1910, 1963, 1909, 1954, 1952, 1901. In other words, this is the second driest Jan-Oct period in Texas in the past 59 years (since 1963)

Winter 2021-22 Review



Last winter's forecast





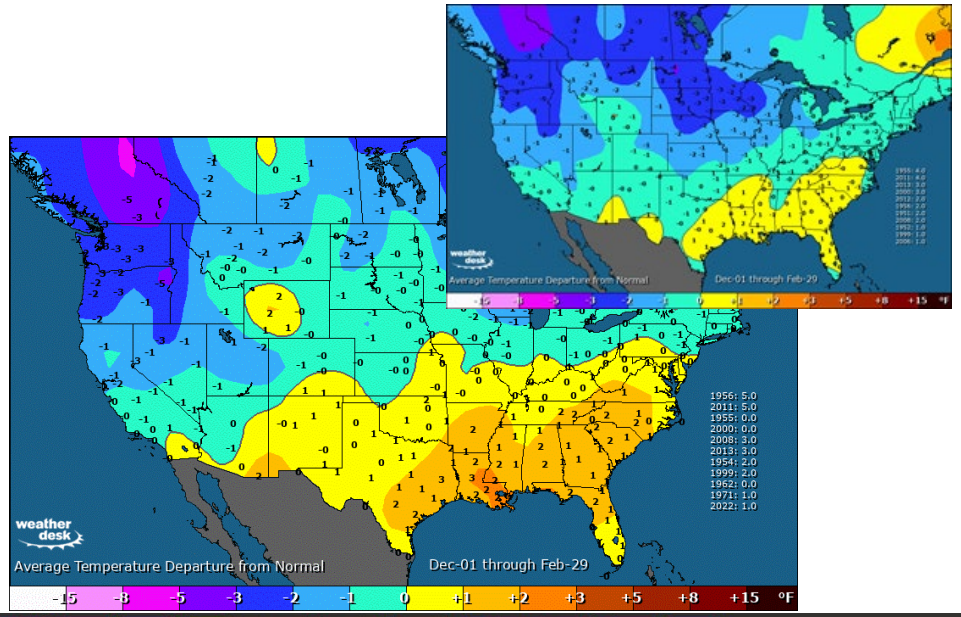
Last winter ranked **18th warmest** for the state of Texas, based on **mean** temperatures (5th warmest of the past 10 years)

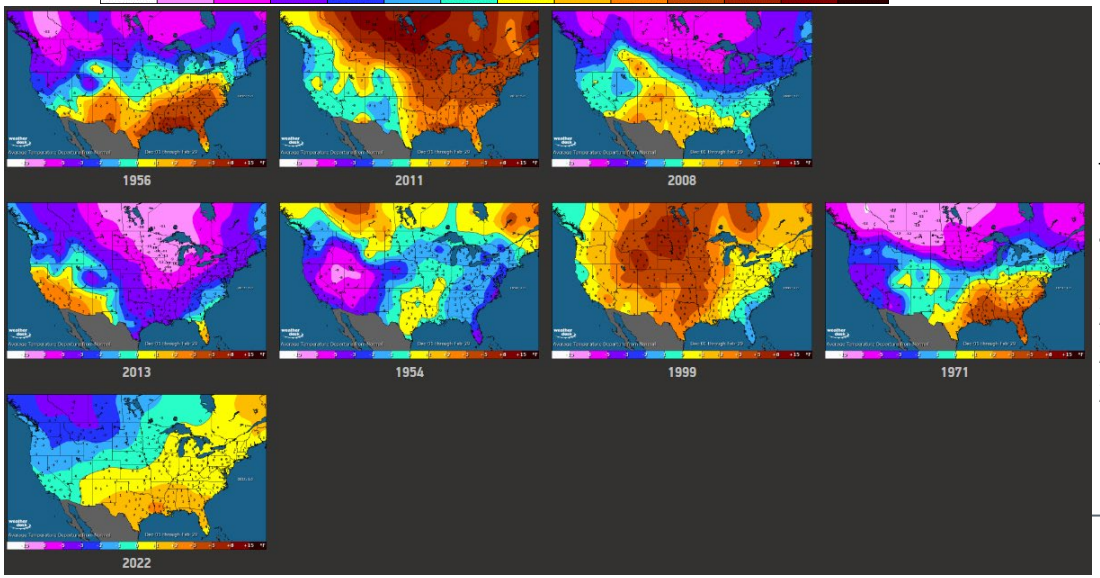
Based on **minimum** temperatures, last winter ranked 36th warmest (only the 7th warmest of the past 10 years)

(1895-2021, 127 years)

2022-23 Winter Historical Matches (Analogs)

OVERALL (as of 10/4/2022)	OVERALL (as of 12/6/2022)
1. 1955-56	1. 1956-57
2. 2011-12	2. 2011-12
3. 2013-14	3. (1955-56)
4. 2000-01	4. (2000-01)
5. 2012-13	5. 2008-09
6. 1956-57	6. 2013-14
7. 1951-52	7. 1954-55
8. 2008-09	8. 1999-00
9. 1952-53	9. (1962-63)
10. 1999-00	10. 1971-72
11. 2006-07	





What was the **coldest** temperature at **DFW** in each of those winters?
Note: the coldest lows don't always correlate to the coldest winters

1956-57: 16° (Jan) (7th warmest winter
2011-12: 22° (Dec) (26th warmest winter

~~1955-56: 14° (Jan) (54th)~~
~~2000-01: 19° (Jan) (93rd)~~

2008-09: 20° (Jan) (14th)
2013-14: 15° (Jan) (97th)

1954-55: 17° (Feb) (52nd)
1999-00: 23° (Jan) (3rd)

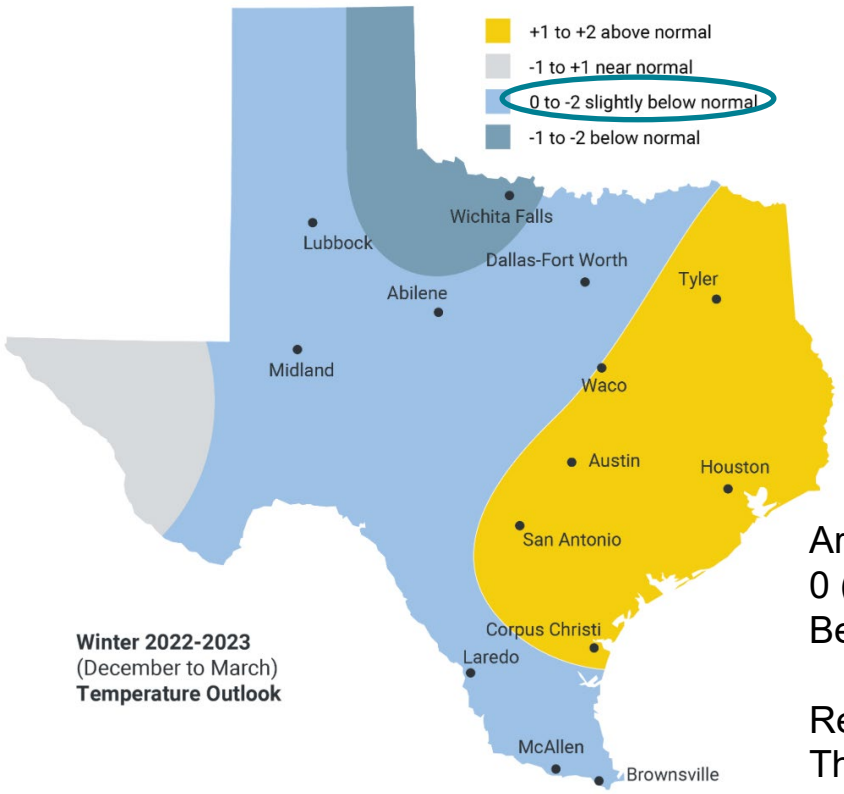
~~1962-63: 9° (Jan) (111th)~~
1971-72: 15° (Jan) (26th)
--
Recent winters of note:
2021-22: 19° (18th)
2020-21: -2° (84th)
2010-11: 13° (57th)

Notes:
- 2013-14 winter was the "polar vortex" winter, with frequent cold fronts in Texas
- Otherwise, the other analog years were mostly on the warm side of normal (warmer than the initial forecast)

2022-23 Winter Temperature Outlook

OVERALL (as of 12/6/2022)

1. 1956-57 (warm)
2. 2011-12 (warm)
3. (1955-56)
4. (2000-01)
5. 2008-09 (warm)
6. 2013-14 (cold)
7. 1954-55 (normal)
8. 1999-00 (warm)
9. (1962-63)
10. 1971-72 (warm)



Area in light blue is 0 (normal) to -2 (slightly Below normal).

Recent trends suggest This area will be less cold -0.5 to +1.5 for the season

Recent trends are warmer -- but that doesn't dismiss the potential for a period or two of very cold temperatures

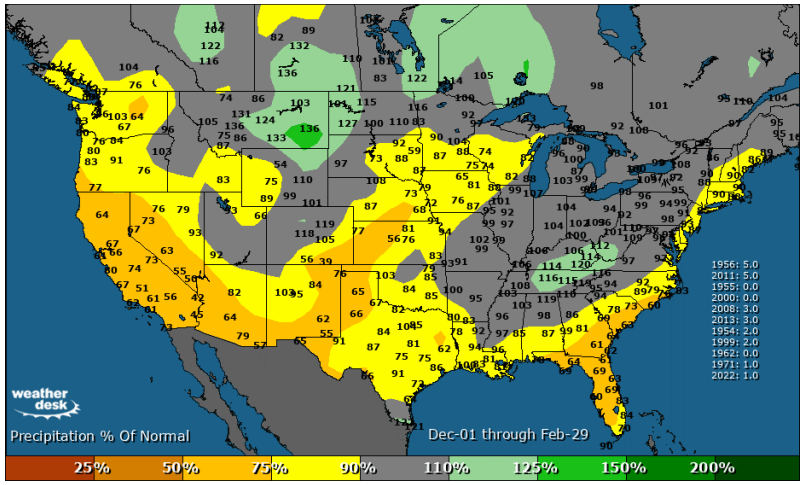
2022-23 Winter Historical Matches (Analogs)

OVERALL (as of 10/4/2022)

1. 1955-56
2. 2011-12
3. 2013-14
4. 2000-01
5. 2012-13
6. 1956-57
7. 1951-52
8. 2008-09
9. 1952-53
10. 1999-00
11. 2006-07

OVERALL (as of 12/6/2022)

1. 1956-57
2. 2011-12
3. (1955-56)
4. (2000-01)
5. 2008-09
6. 2013-14
7. 1954-55
8. 1999-00
9. (1962-63)
10. 1971-72

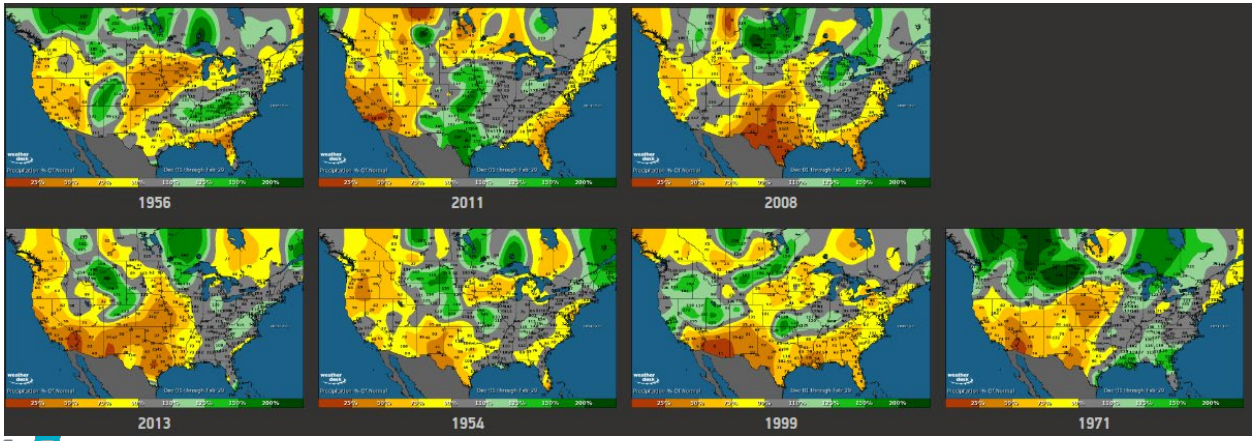


DFW snow accumulations:

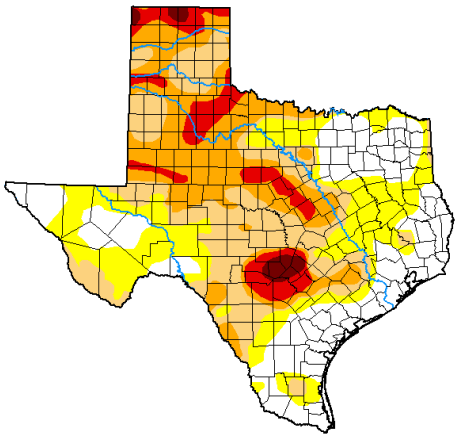
Better chance than not DFW will see some snow accumulations this winter, although history suggests small accumulations are most likely

1956-57: trace
2011-12: 0.3”
1955-56: 4.5”
2000-01: 1.5”
2008-09: 0.2”
2013-14: 2.9”
1954-55: trace
1999-00: trace
1962-63: 0.1”
1971-72: trace

Only 2011-12 was a wet winter



Winter 2022-22 Precipitation Outlook vs Drought



November 29, 2022
(Released Thursday, Dec. 1, 2022)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

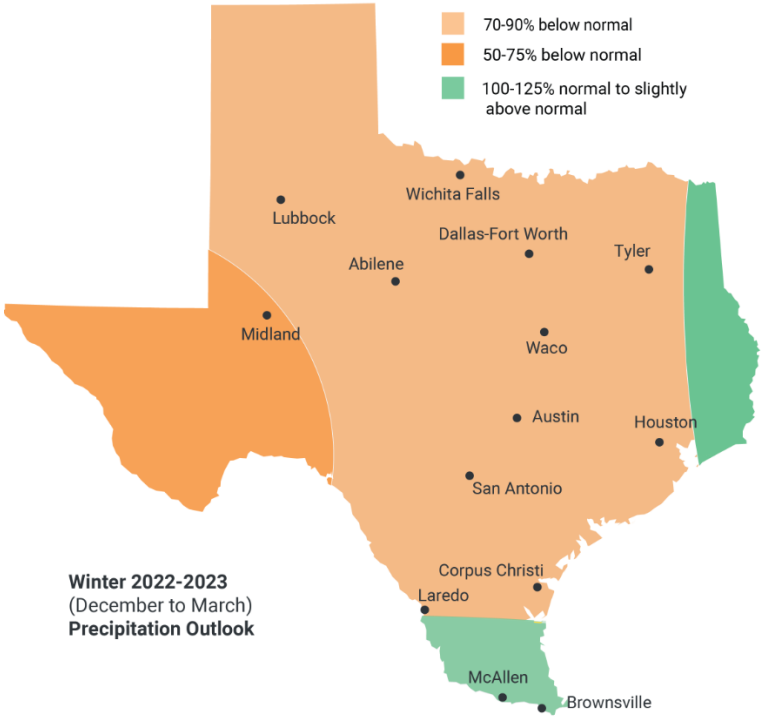
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	25.86	74.14	51.97	29.26	9.23	1.39
Last Week 11-22-2022	13.07	86.93	62.68	38.09	14.70	2.36
3 Months Ago 08-30-2022	9.53	90.47	76.03	52.48	26.38	5.28
Start of Calendar Year 01-04-2022	7.58	92.42	79.83	54.25	16.69	0.00
Start of Water Year 09-27-2022	14.96	85.04	61.36	31.61	8.82	1.06
One Year Ago 11-30-2021	28.64	71.36	49.01	17.09	0.00	0.00

Intensity:
None
D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:
David Simeral
Western Regional Climate Center

droughtmonitor.unl.edu



Current Drought (as of 11/29/2022):
52% of the state's area
with drought concerns

Last year at this time, 49%
Three months ago, 76%

The ongoing La Niña will continue to support below normal rainfall and increasing drought through the winter; the areas in green could also trend drier

Lake Travis was at 46% of capacity as of 12/6/22 – lowest since May 23, 2015 (just prior to the Memorial Day flood)

Summary

- This winter is unlikely to be colder-than-normal for the season as a whole; increasing trends toward a mild winter overall
- However, even mild winters have a history of periods of very cold temperatures – and should never be ruled out with a long-range forecast
- A seasonal forecast cannot capture short periods of extreme weather
- 2013-14 analog is the exception, so a colder winter (while unlikely) can't be totally ruled out
- There's a strong dry signal for this winter
- Drought is likely to continue and worsen in some regions