

# NOAA Climate Science and Services Monthly Climate Update

## **Karin Gleason**

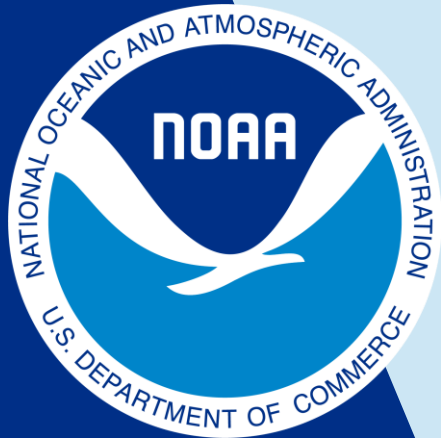
Monitoring Section Chief, NOAA National Centers for Environmental Information (NCEI)

## **Aaron Ward**

Science Operations Officer, NOAA National Weather Service Forecast Office, Amarillo, Texas

## **Anthony Artusa**

Meteorologist, NOAA Climate Prediction Center (CPC)



National Oceanic and  
Atmospheric Administration

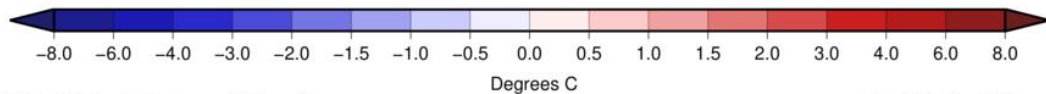
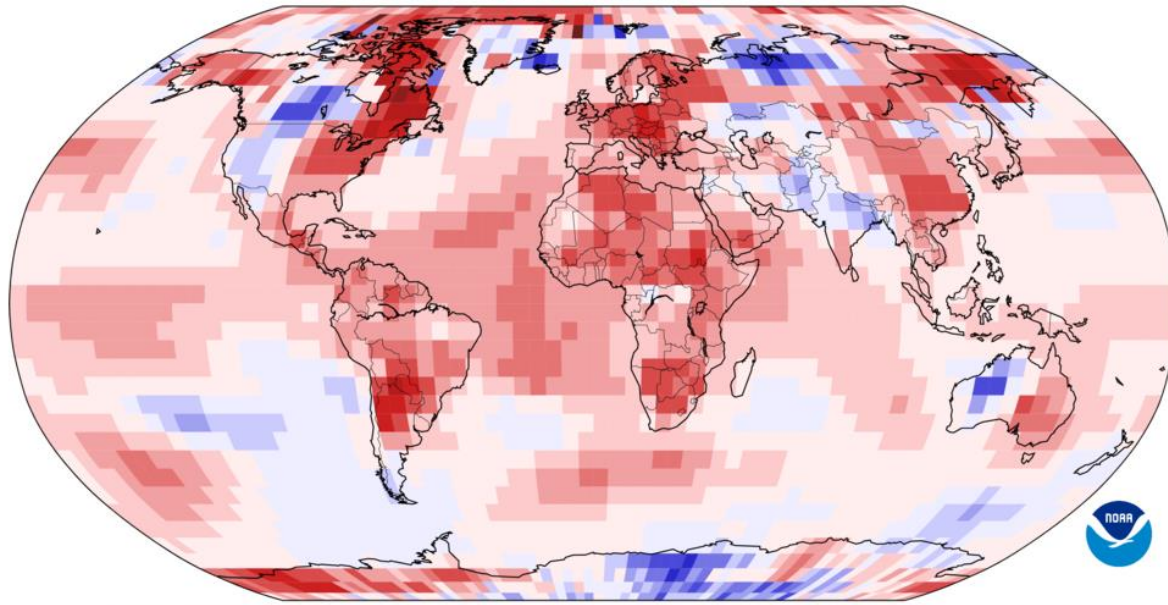
March 2024

# March 2024 Global Temperature

The global temperature record dates back to 1850 (175 years)

Land & Ocean Temperature Departure from Average Mar 2024  
(with respect to a 1991–2020 base period)

Data Source: NOAAGlobalTemp v6.0.0–20240408

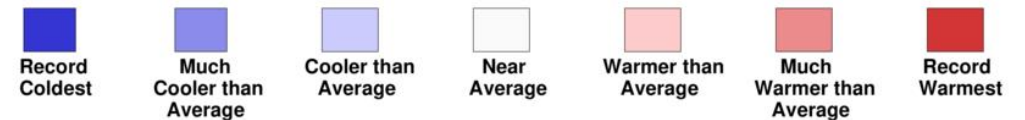
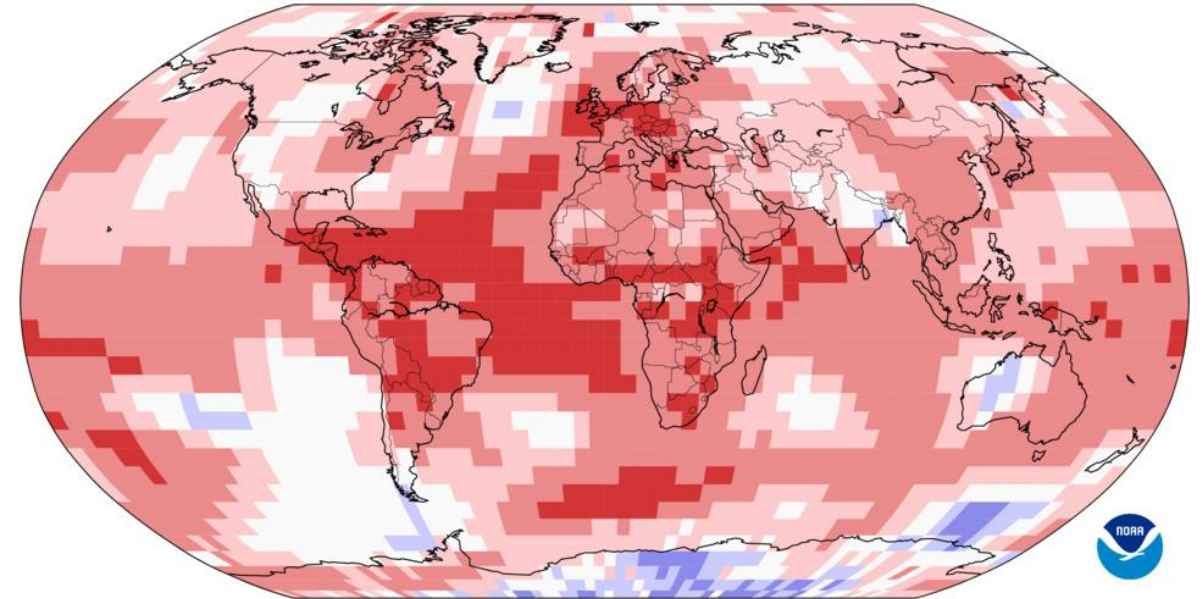


National Centers for Environmental Information

Map Projection: Robinson

Land & Ocean Temperature Percentiles Mar 2024  
NOAA's National Centers for Environmental Information

Data Source: NOAAGlobalTemp v6.0.0–20240408

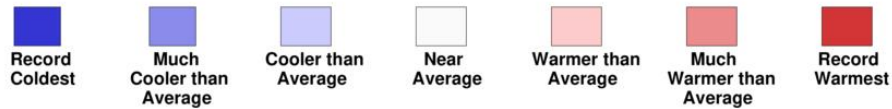
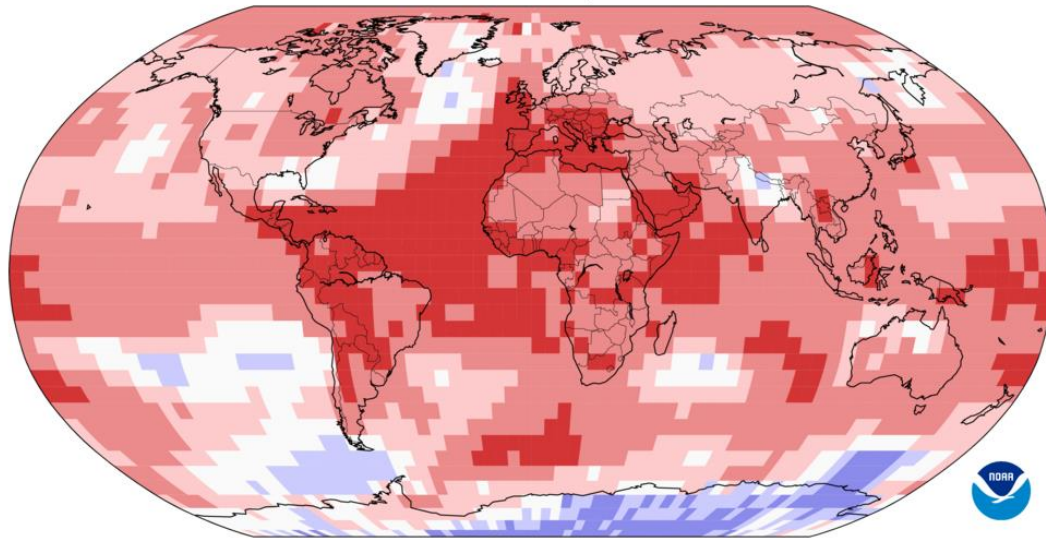


- **Global Land & Ocean: +1.35°C/+2.43°F; warmest for March on record**
- **Global Land-only: +2.09°C/+3.76°F; 4<sup>th</sup> warmest for March on record**
- **Global Ocean-only: +1.01°C/+1.82°F; warmest for March on record**

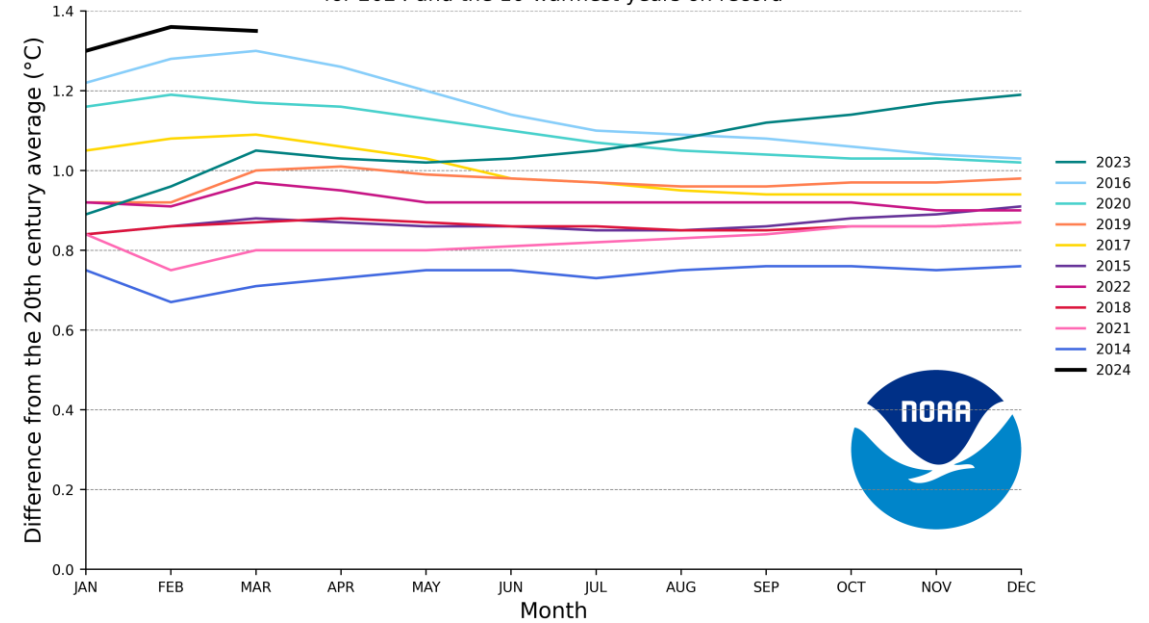
# January-March 2024 Global Temperature

The global temperature record dates back to 1850 (175 years)

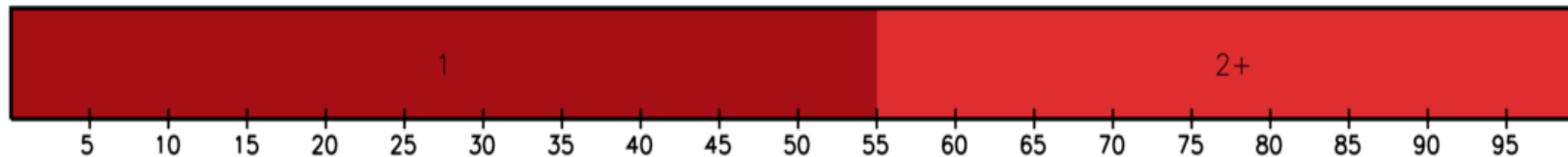
Land & Ocean Temperature Percentiles Jan-Mar 2024  
 NOAA's National Centers for Environmental Information  
 Data Source: NOAAGlobalTemp v6.0.0-20240408



Global Year-to-Date Temperature Anomalies  
 for 2024 and the 10-warmest years on record



**Global Land & Ocean: +1.35°C/+2.43°F; warmest for Jan-Mar on record**



**55% chance 2024 will be warmest year on record**

**99% chance 2024 will be a top 5 year**



# Contiguous U.S. March 2024

## The U.S. record dates back to 1895 (130 years)

Statewide Average Temperature Ranks  
March 2024

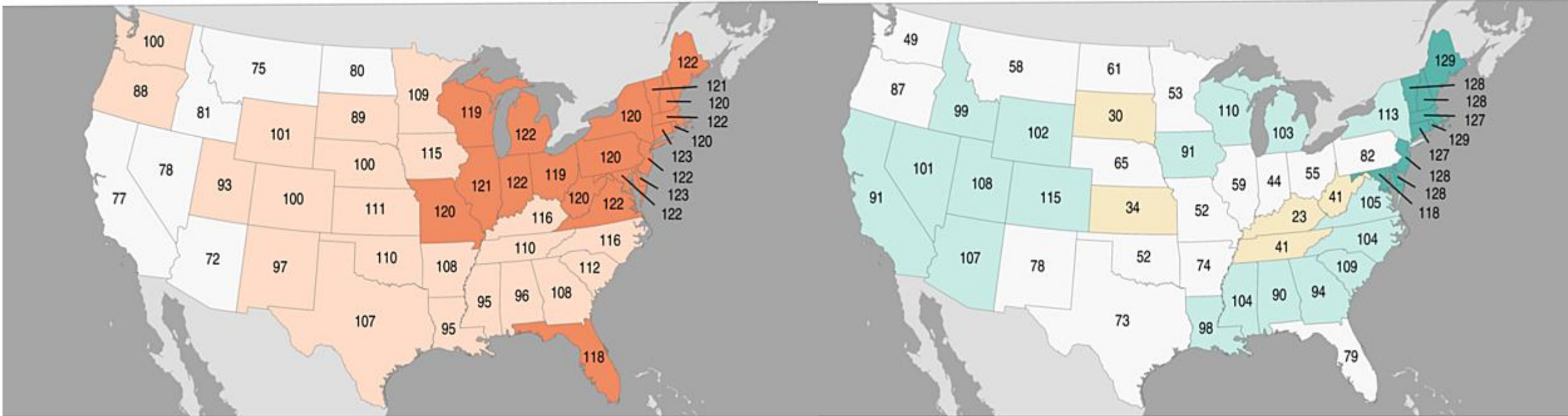
Ranking Period: 1895–2024

NOAA's National Centers for Environmental Information

Statewide Precipitation Ranks  
March 2024

Ranking Period: 1895–2024

NOAA's National Centers for Environmental Information



Created: Thu Apr 4 2024  
Source: nClimGrid - Monthly



Apr 4 2024  
Grid - Monthly



- **Temperature: 45.1°F/+3.6°F; 17<sup>th</sup> warmest**
- **Precipitation: 2.85 inches/+0.34 inch; above average**



# Contiguous U.S. January-March 2024

The U.S. record dates back to 1895 (130 years)

## Statewide Average Temperature Ranks

January – March 2024

Ranking Period: 1895–2024

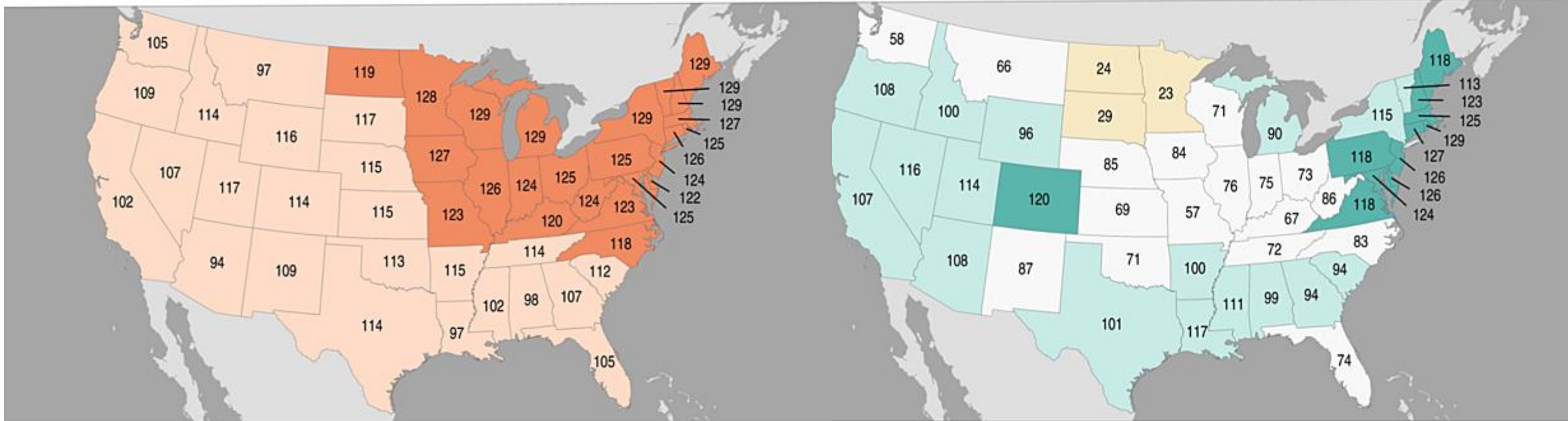
NOAA's National Centers for Environmental Information

## Statewide Precipitation Ranks

January – March 2024

Ranking Period: 1895–2024

NOAA's National Centers for Environmental Information



Record Coldest  
(1)

Much Below Average

Below Average

Near Average

Above Average

Much Above Average

Record Warmest  
(130)



2024  
Monthly

Record Driest  
(1)

Much Below Average

Below Average

Near Average

Above Average

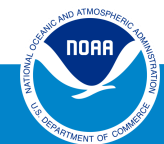
Much Above Average

Record Wettest  
(130)



Created: Thu Apr 4 2024  
Source: nClimGrid – Monthly

- **Temperature: 39.4°F/+4.2°F; 5<sup>th</sup> warmest**
- **Precipitation: 8.15 inches/+1.19 inches; 10<sup>th</sup> wettest**



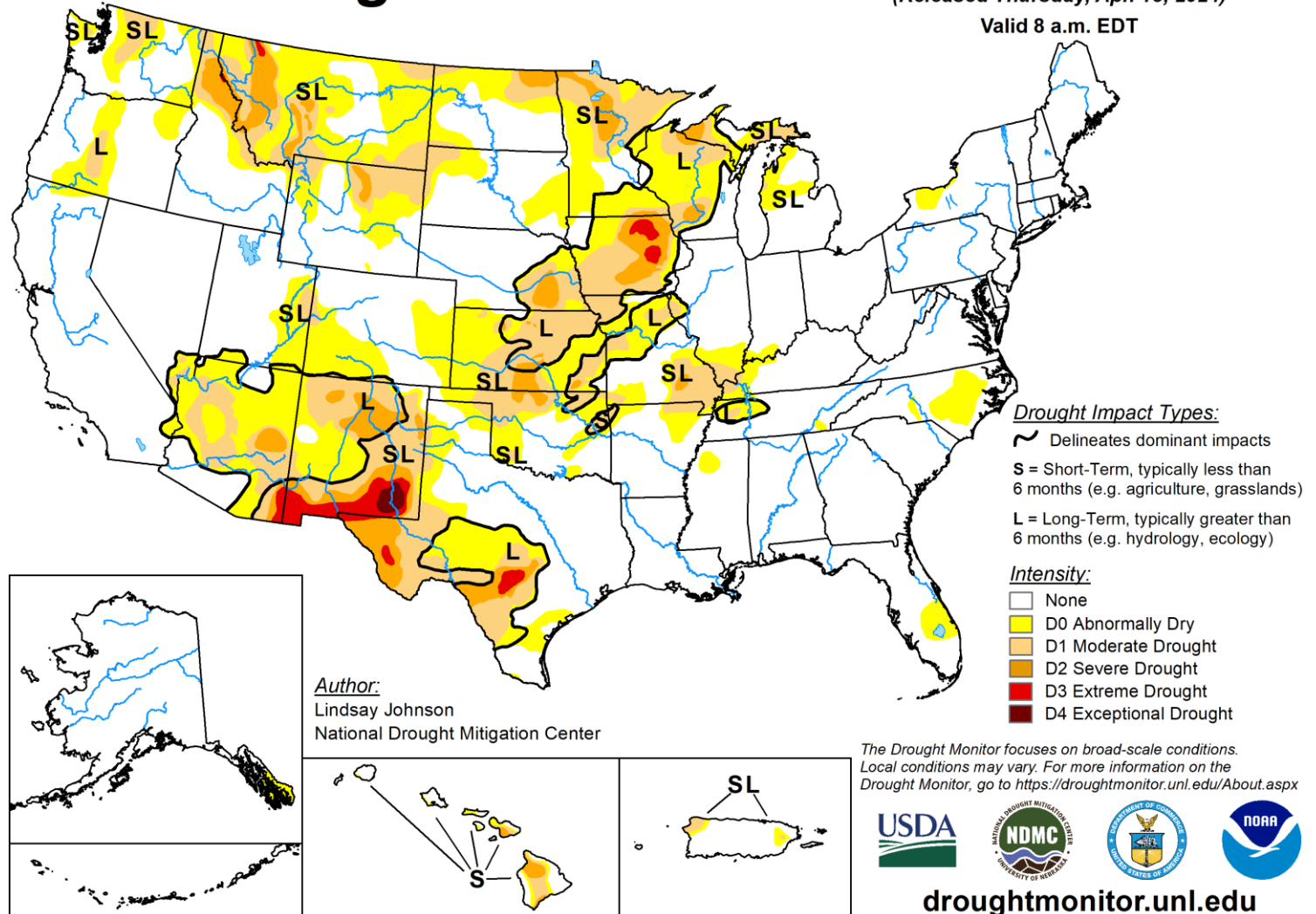
# Current U.S. Drought

**17.9%** of the contiguous U.S. is in drought (down nearly 4% since early March)

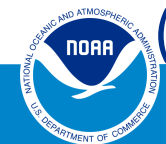
- **Drought conditions lessened/diminished:** lower MS Valley, Upper Midwest, Midwest, n Great Lakes, n Rockies, Southwest
- **Drought conditions expanded/intensified:** c Plains, sw Texas
- **Outside the contiguous U.S.:** Drought coverage lessened across Puerto Rico and expanded across portions of HI (Maui)

## U.S. Drought Monitor

April 16, 2024  
(Released Thursday, Apr. 18, 2024)  
Valid 8 a.m. EDT

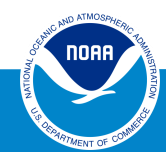
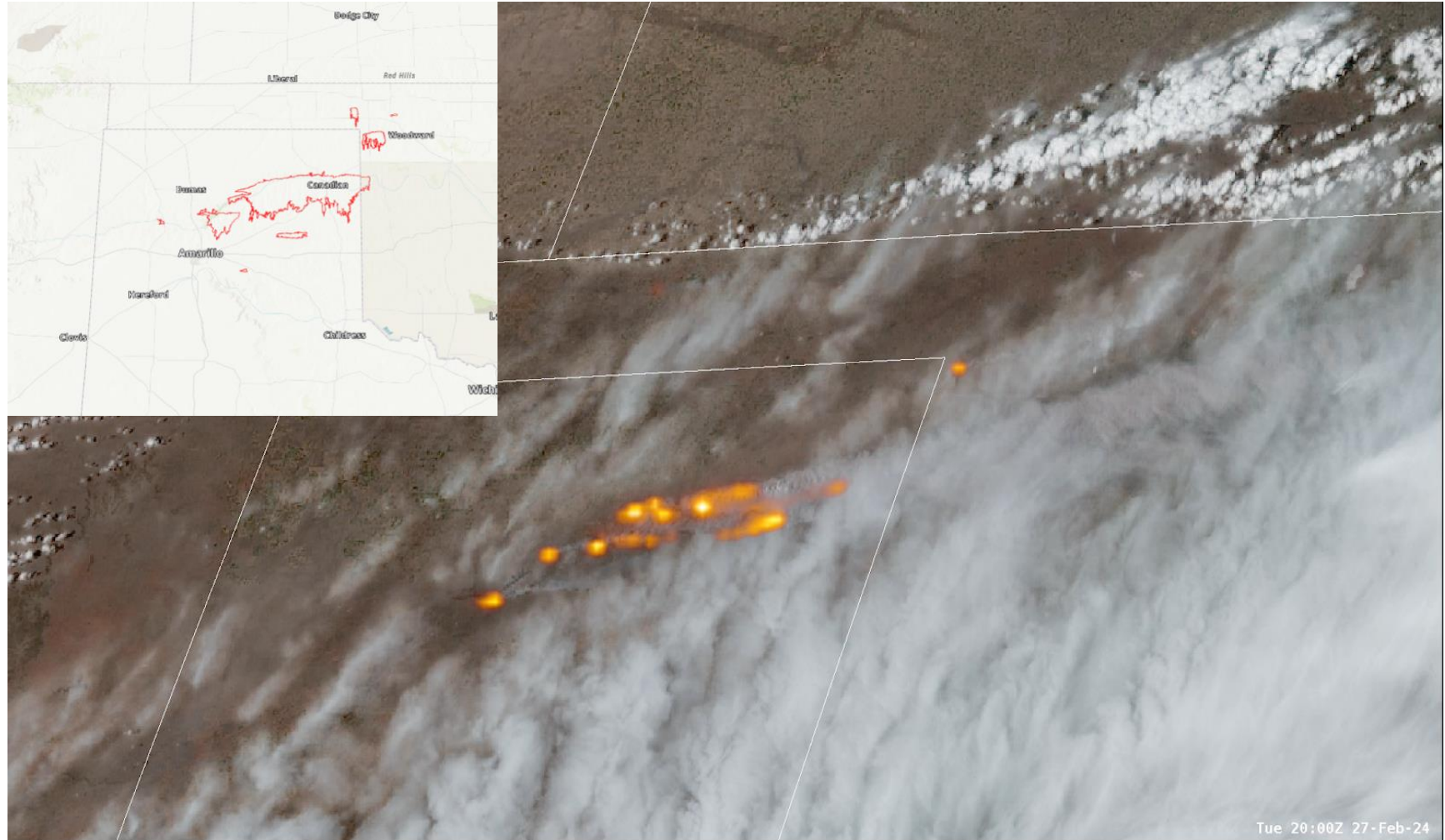


[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)



# Feb 26-27, 2024 Southern Great Plains Firestorm – Preliminary Information

- 41 Wildfires
  - Smokehouse Creek – 1,058,482 ac
  - Windy Duece – 144,045 ac
  - Catesby – 89,688 ac
  - Grape Vine Creek – 34,883 ac
  - Slapout – 26,020 ac
- Preliminary Total across TX and OK: 1,392,022 acres



# Feb 26-27, 2024 Southern Great Plains Firestorm – Preliminary Impacts

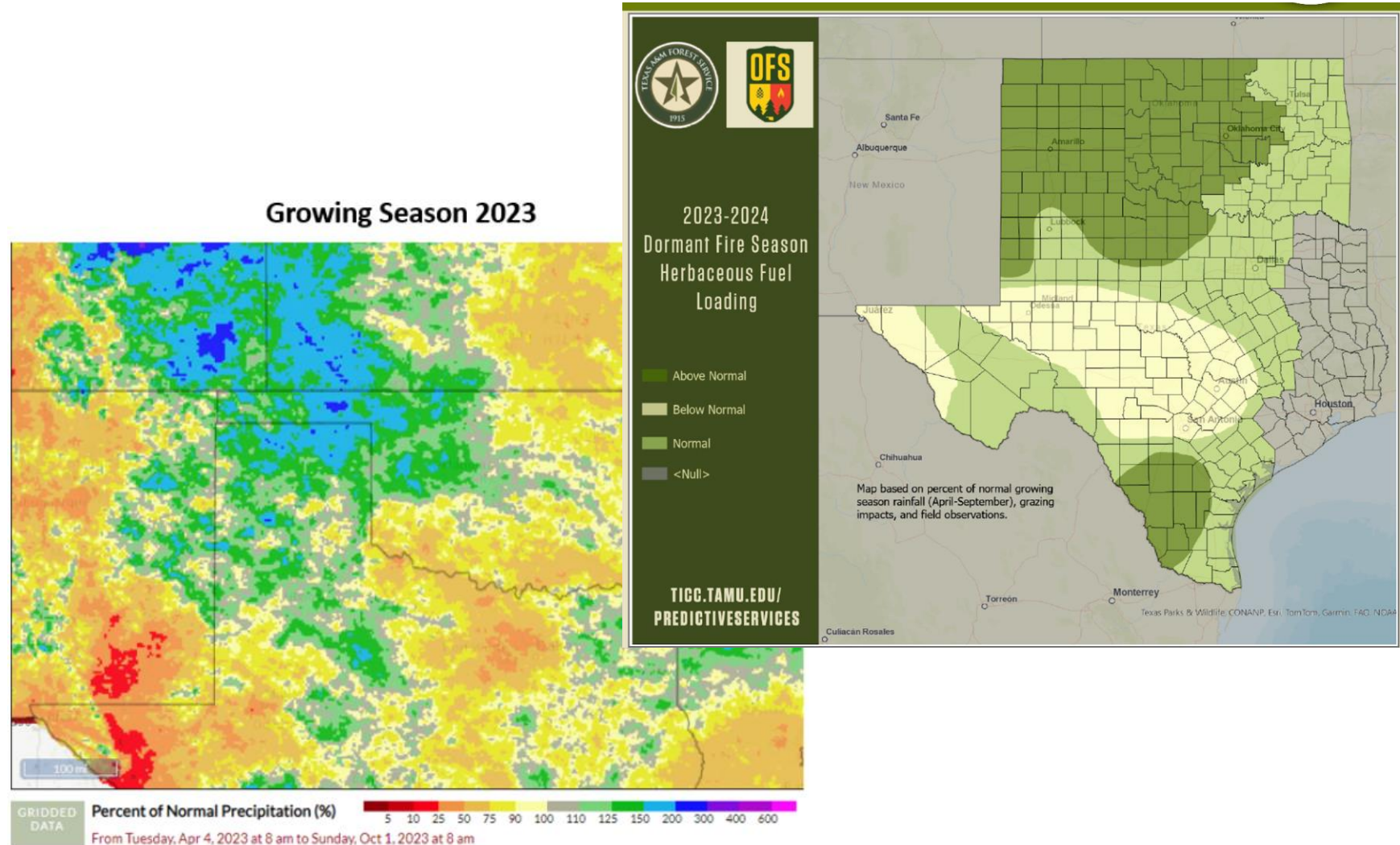
- 400+ structures destroyed
- 9 injuries
- 2 fatalities
- Thousands of livestock perished





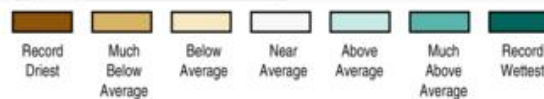
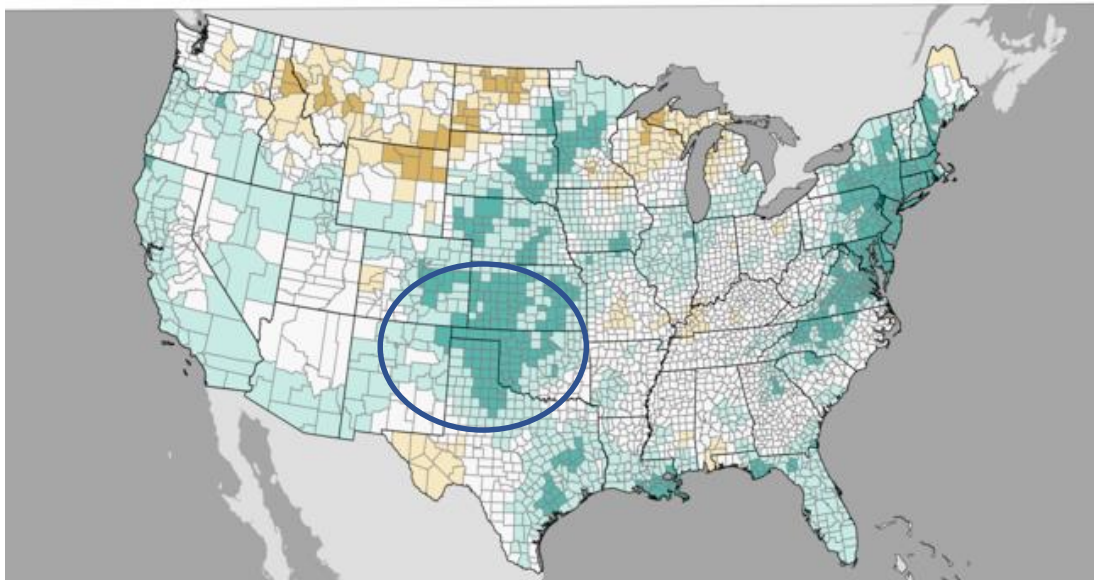
# Feb 26-27, 2024 Southern Great Plains Firestorm – Fuel Loading

- A very wet May and June led to above normal fuel loading
- Fine fuels (grasses) are dominant across the Texas Panhandle, but the Canadian River Valley includes Juniper, Mesquite, and Cottonwoods



# Feb 26-27, 2024 Southern Great Plains Firestorm – Winter Precipitation

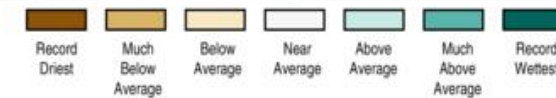
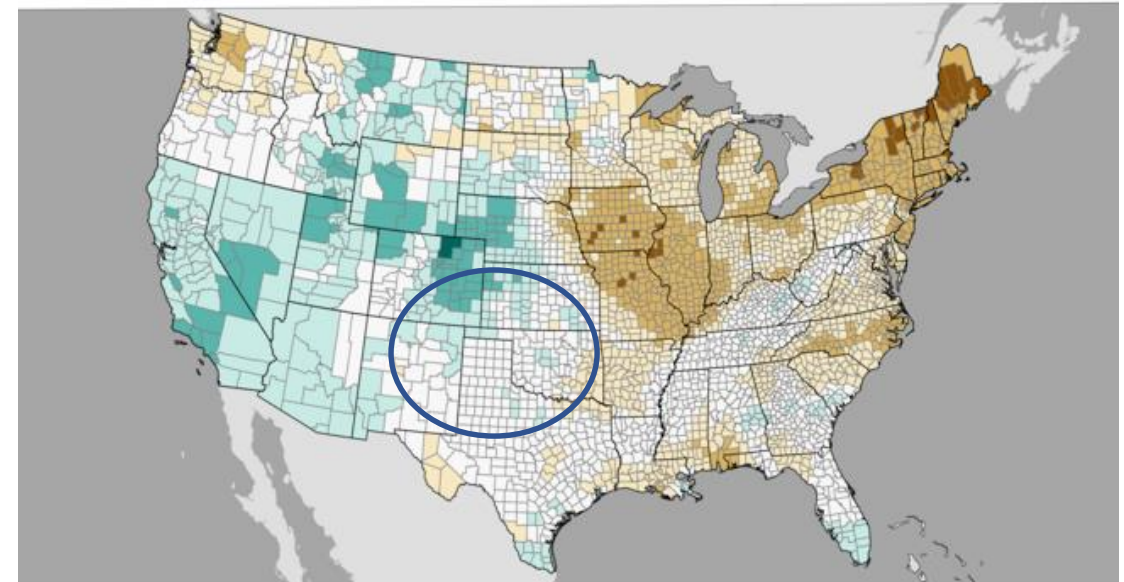
County Precipitation Ranks  
December 2023–February 2024  
Ranking Period: 1895–2024  
NOAA's National Centers for Environmental Information



Created: Wed Mar 06 2024  
Source: nClimGrid-Monthly



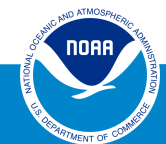
County Precipitation Ranks  
February 2024  
Ranking Period: 1895–2024  
NOAA's National Centers for Environmental Information



Created: Wed Mar 06 2024  
Source: nClimGrid-Monthly



Above normal precipitation was dominated by a widespread rain event in December. However, snow was observed as recently as Feb 11<sup>th</sup>, but amounts were light over the burn sites.

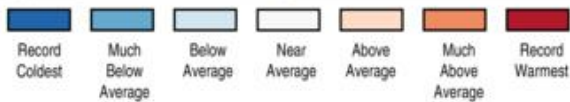
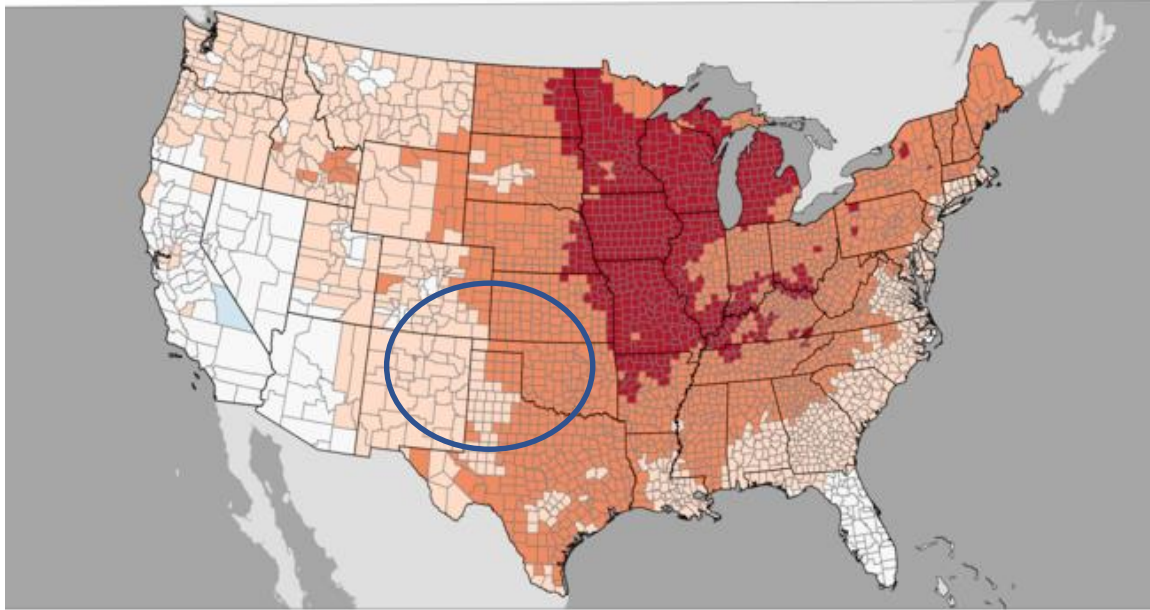


# Feb 26-27, 2024 Southern Great Plains Firestorm – Temperature Anomalies

County Maximum Temperature Ranks  
February 2024

Ranking Period: 1895–2024

NOAA's National Centers for Environmental Information



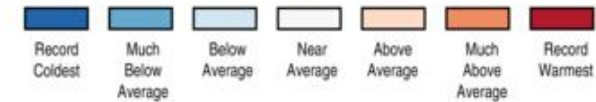
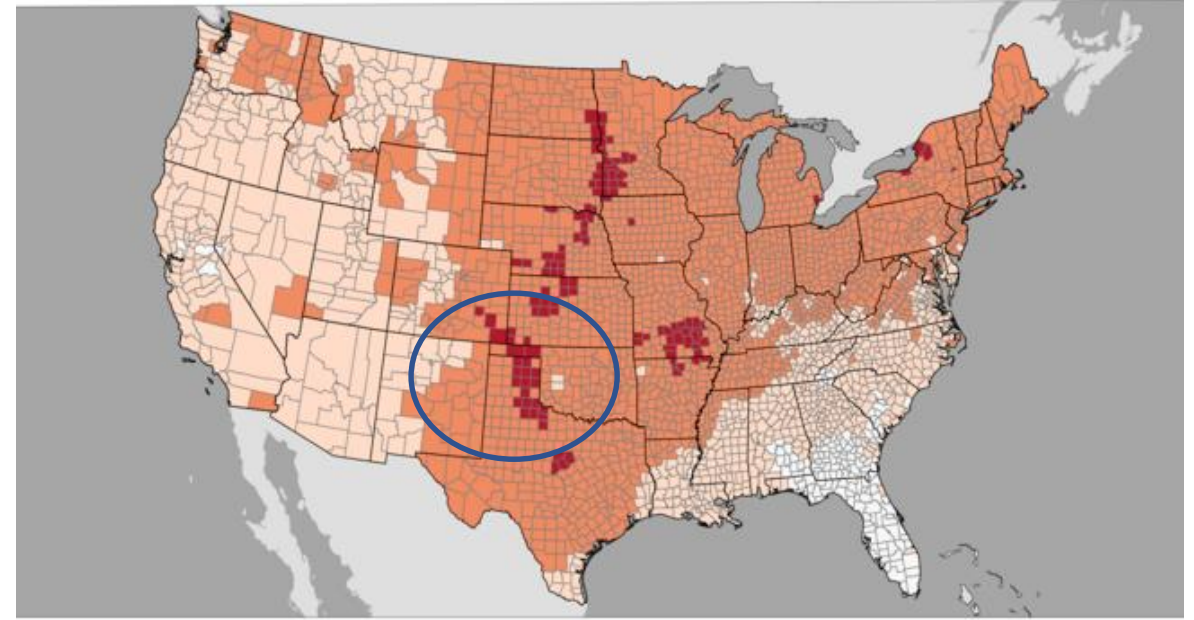
Created: Wed Mar 06 2024  
Source: nClimGrid-Monthly



County Minimum Temperature Ranks  
February 2024

Ranking Period: 1895–2024

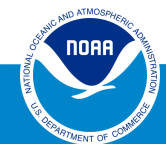
NOAA's National Centers for Environmental Information



Created: Wed Mar 06 2024  
Source: nClimGrid-Monthly

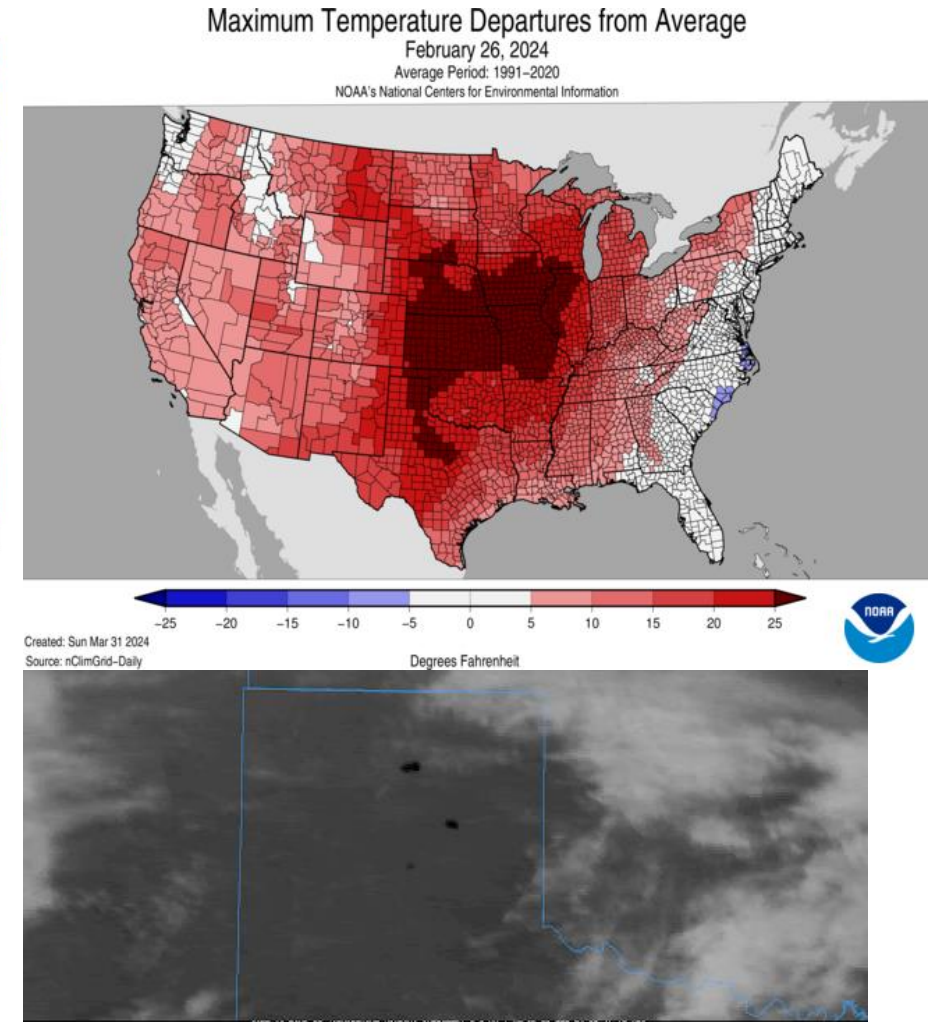
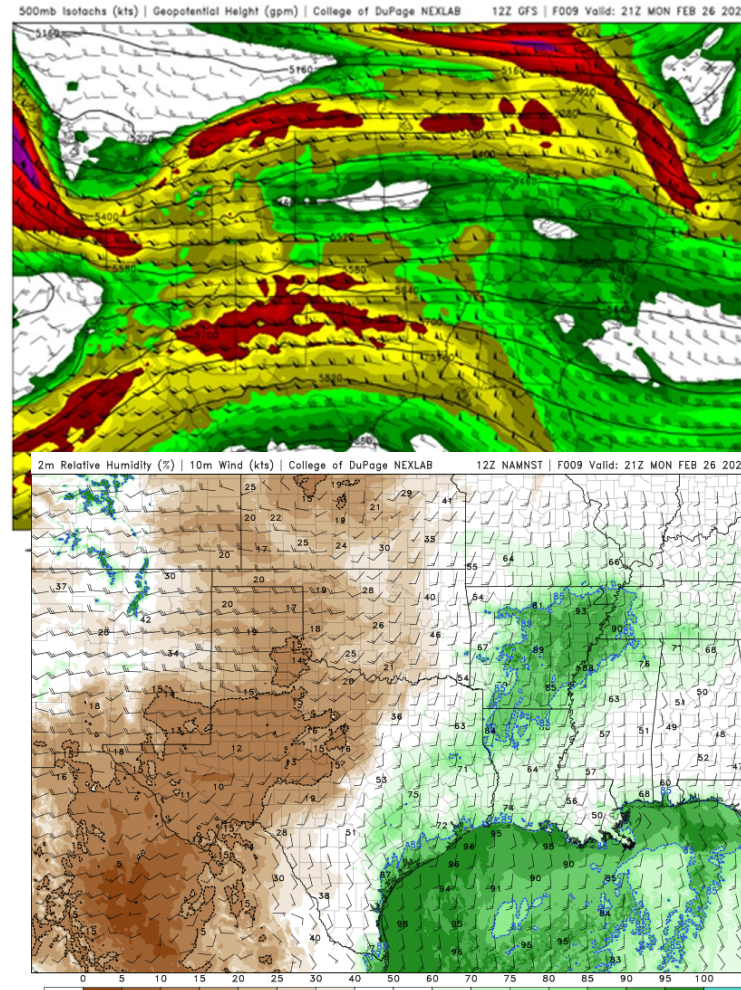


Above normal max temperatures and record warmest min temperatures promoted accelerated drying of fuels leading to Feb 26-27



# Feb 26-27, 2024 Southern Great Plains Firestorm – Meteorology

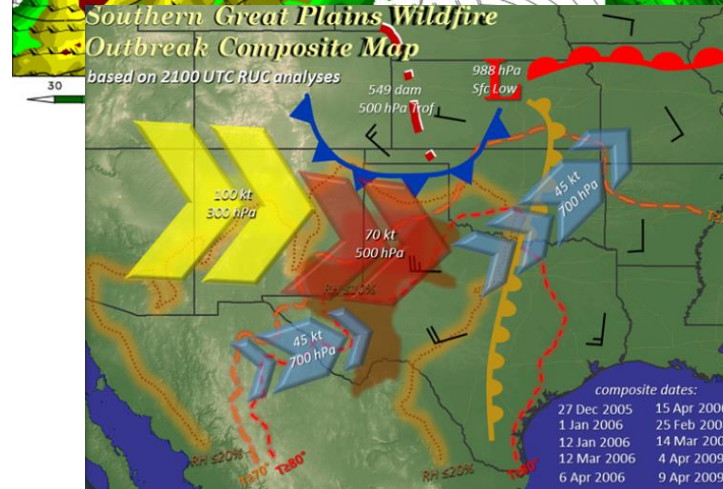
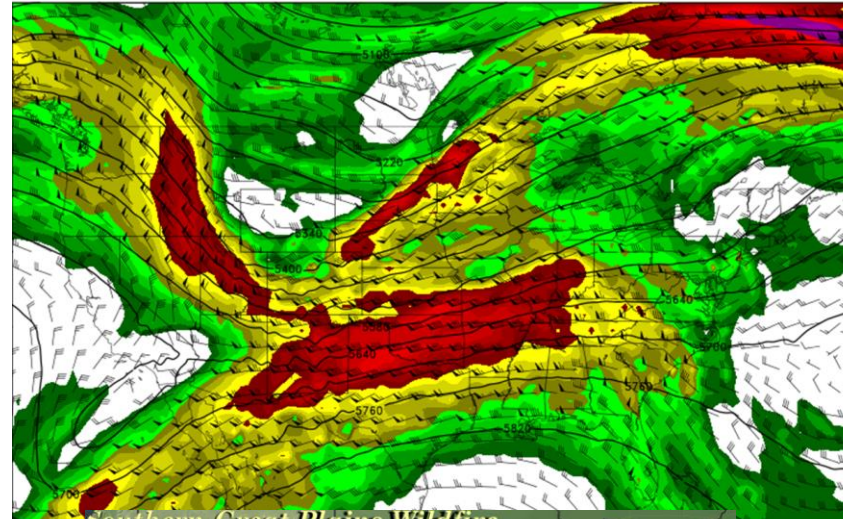
- While not a typical outbreak pattern, an ingredients-based approach suggested critical fire weather Feb 26<sup>th</sup>
  - 50-60 mph wind gusts
  - Relative humidity around 15%
  - Max temperatures 20-25 degrees F above normal
  - Clouds were not as extensive as expected



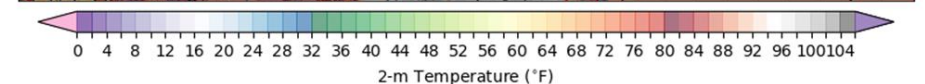
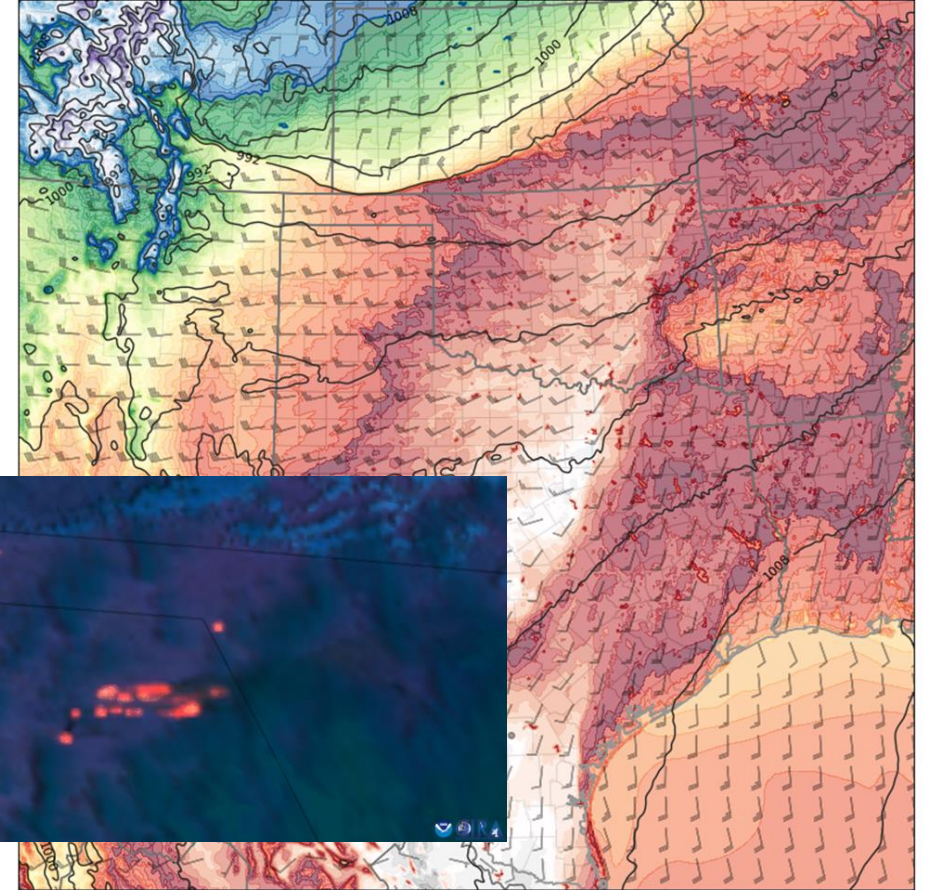
# Feb 26-27, 2024 Southern Great Plains Firestorm – Meteorology

- Feb 27<sup>th</sup> would see an increase in winds, but slightly cooler temperatures, yet overall pattern had more similarities to a classic outbreak scenario
  - 60-70 mph wind gusts
  - Relative humidity around 15%
  - Significant wind shift with cold front in the afternoon
  - Cloud cover was only potential failure mode, but did not materialize once again

500mb Isotachs (kts) | Geopotential Height (gpm) | College of DuPage NEXLAB 12Z GFS | F033 Valid: 21Z TUE FEB 27 2024

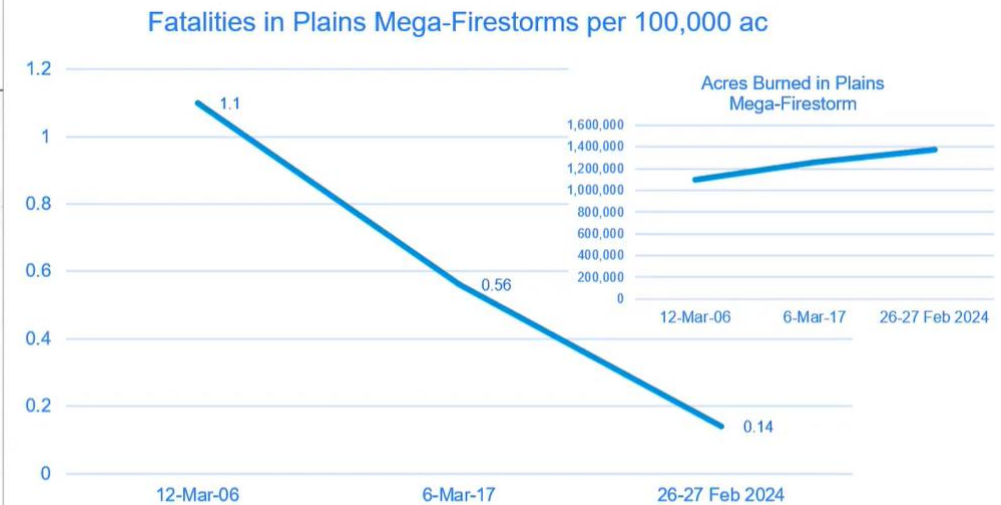
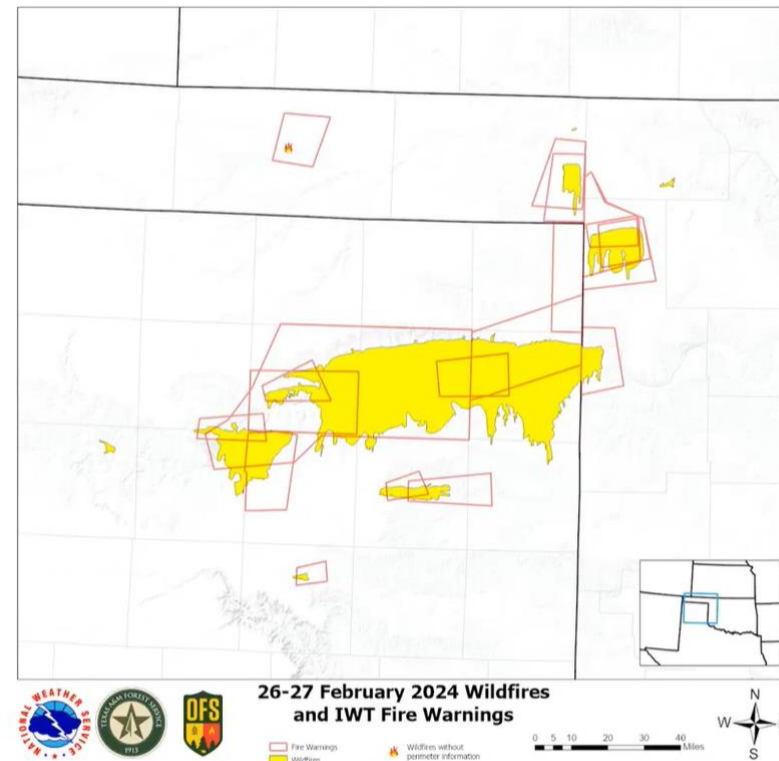


2-m Temperature (°F) | Sea Level Pressure (mb), 10m Wind (barbs) | Init: 2024-02-27, 1200 UTC | f09, Valid: 2024-02-27, 2100 UTC



# Feb 26-27, 2024 Southern Great Plains Firestorm – Integrated Team Fire Warnings

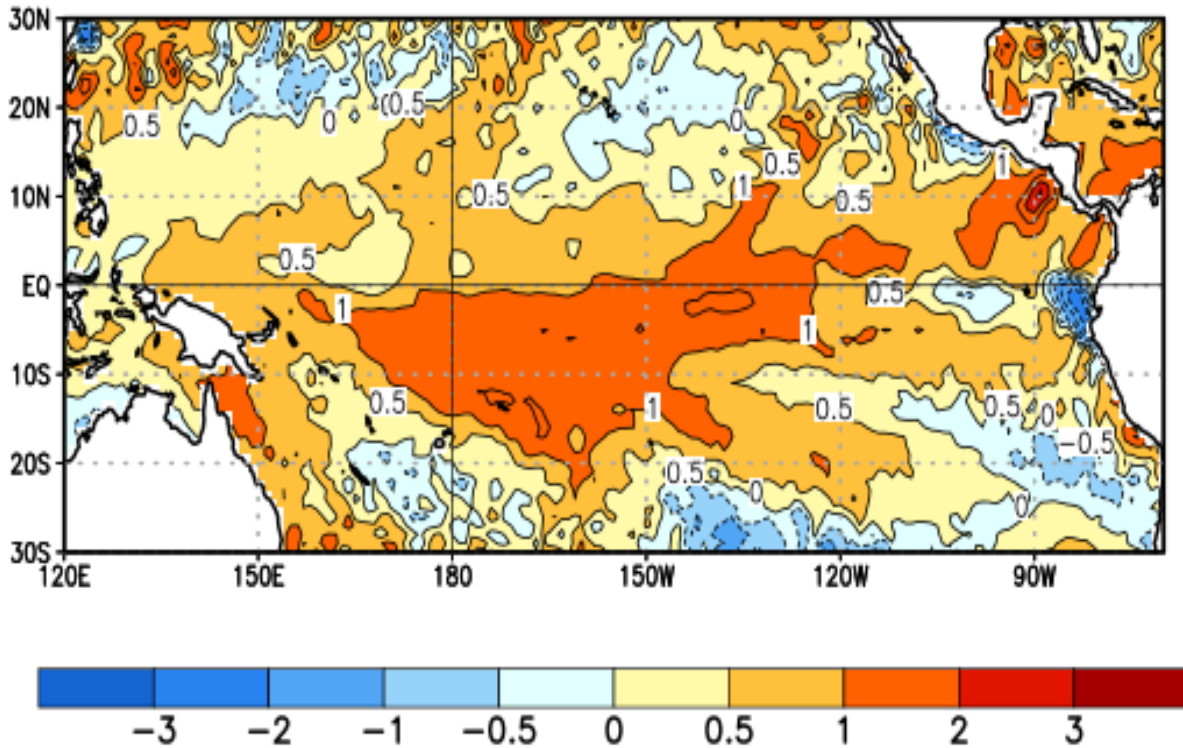
- An integrated warning team approach was used to issue fire warnings for the first time on this scale
- The increased communication lead to faster issuance of fire warnings and evacuation notices based on results from previous fires, undoubtably saved lives (>10x Reduction in fatality rate)



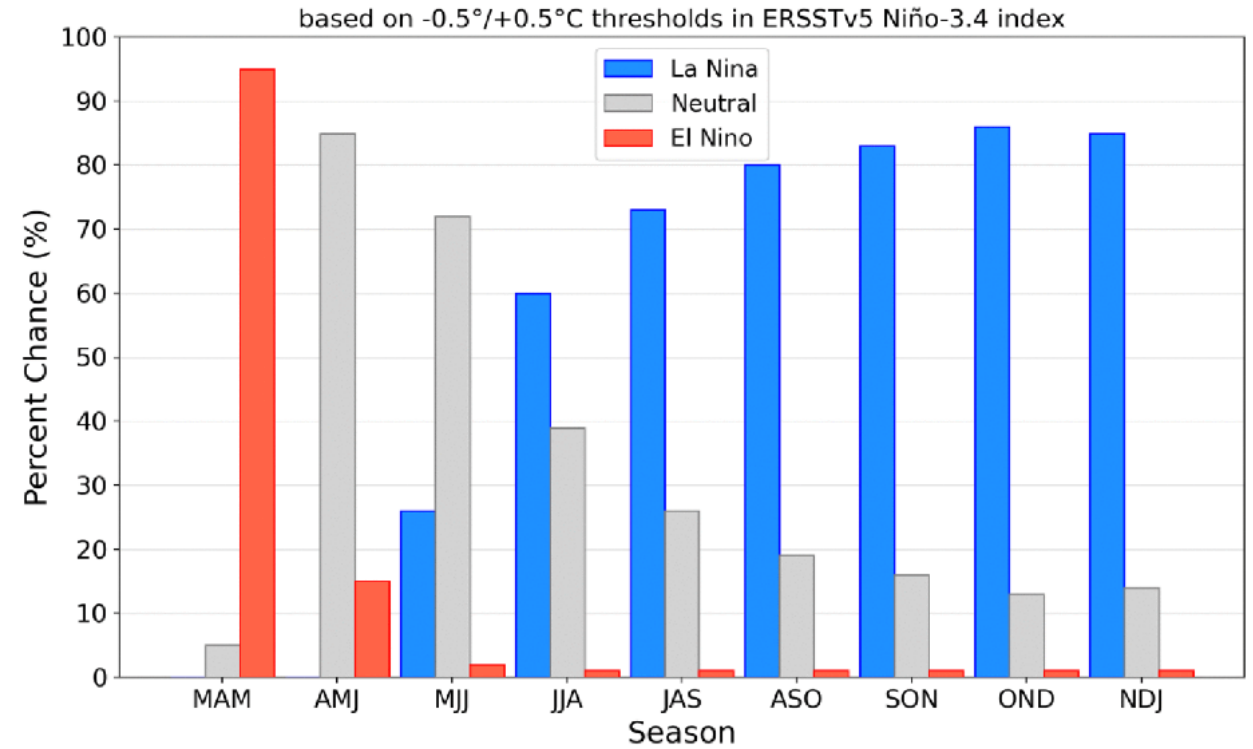
>10x Reduction

# Sea Surface Temperatures and ENSO

Average SST Anomalies  
17 MAR 2024 – 13 APR 2024



Official NOAA CPC ENSO Probabilities (issued Apr. 2024)



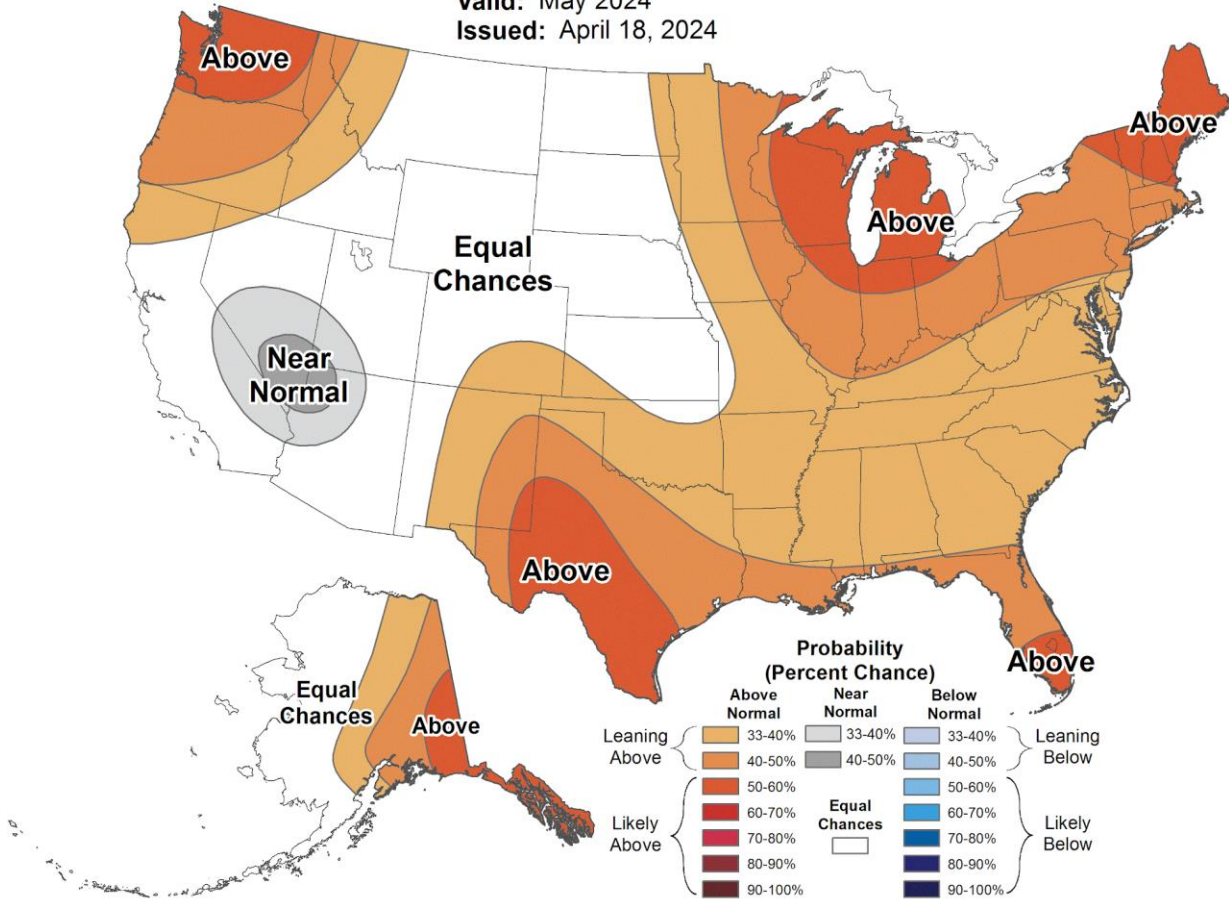
# Monthly Forecast (May)



## Monthly Temperature Outlook



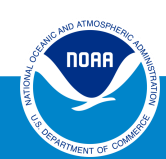
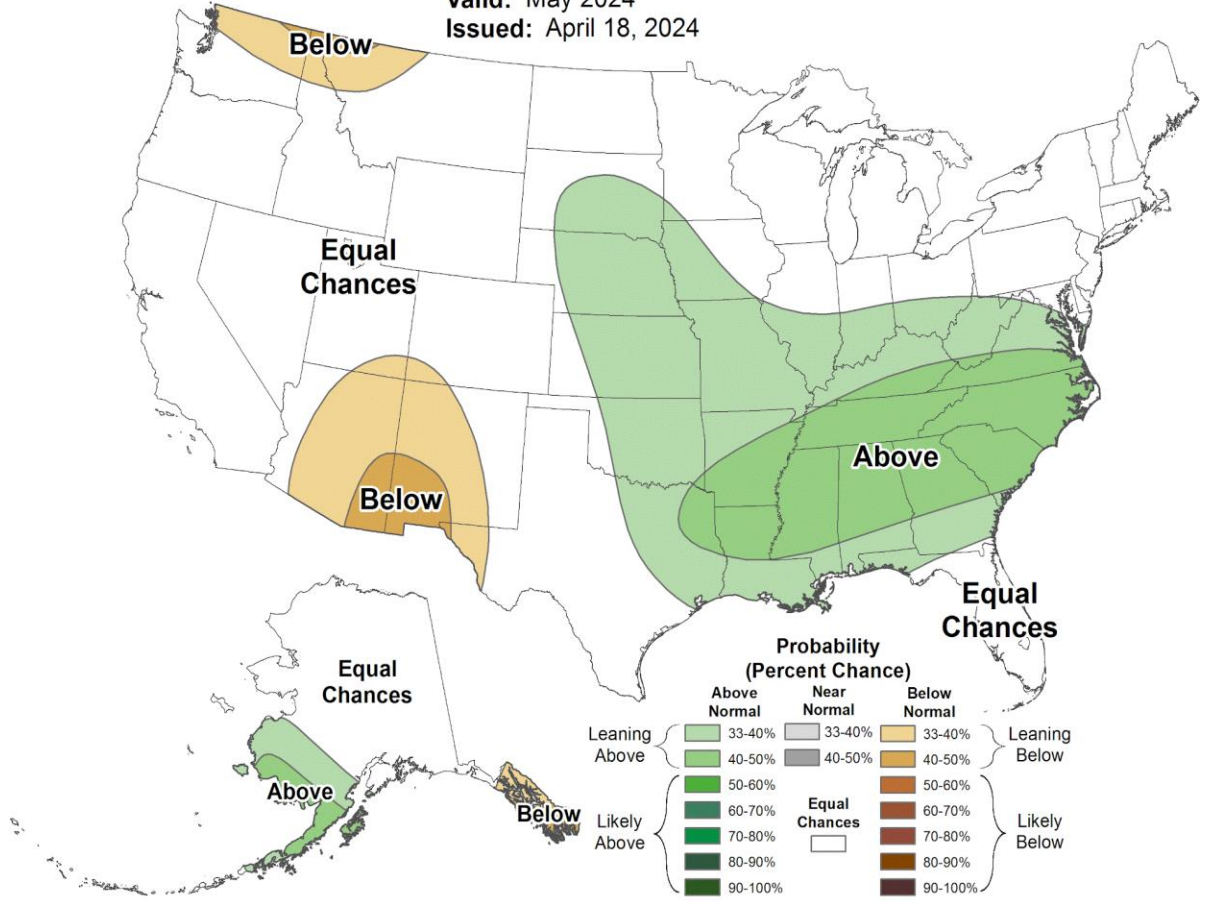
Valid: May 2024  
Issued: April 18, 2024



## Monthly Precipitation Outlook



Valid: May 2024  
Issued: April 18, 2024





# Three-Month Forecast (May, Jun, Jul)



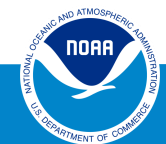
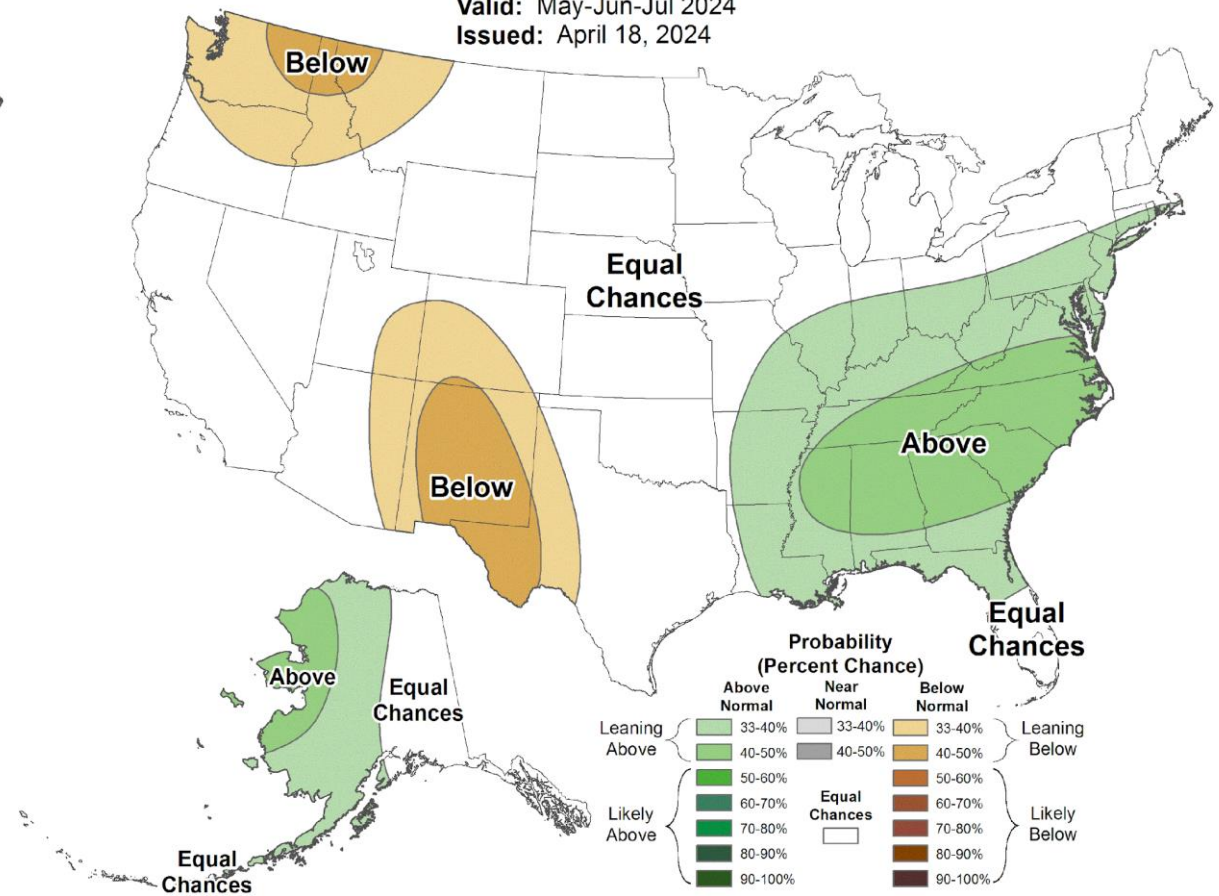
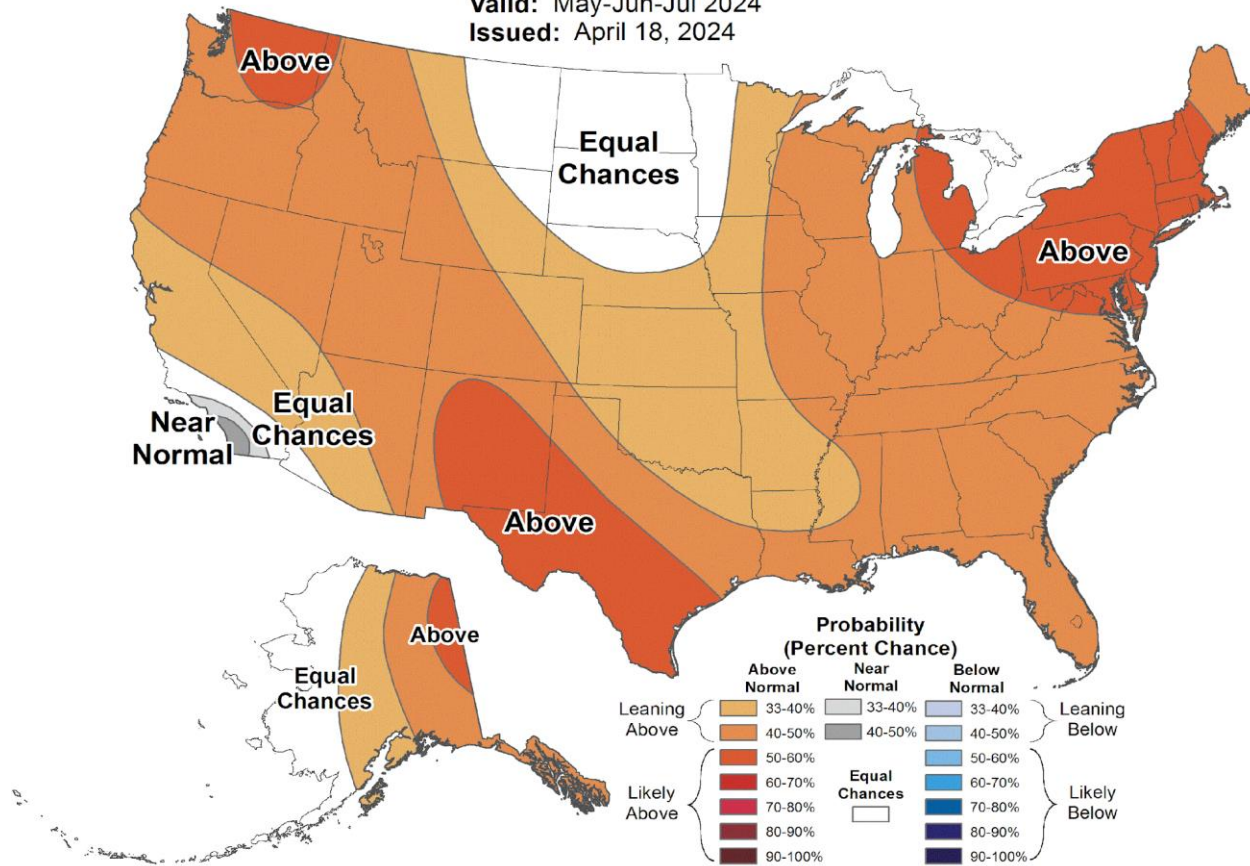
## Seasonal Temperature Outlook

Valid: May-Jun-Jul 2024  
Issued: April 18, 2024



## Seasonal Precipitation Outlook

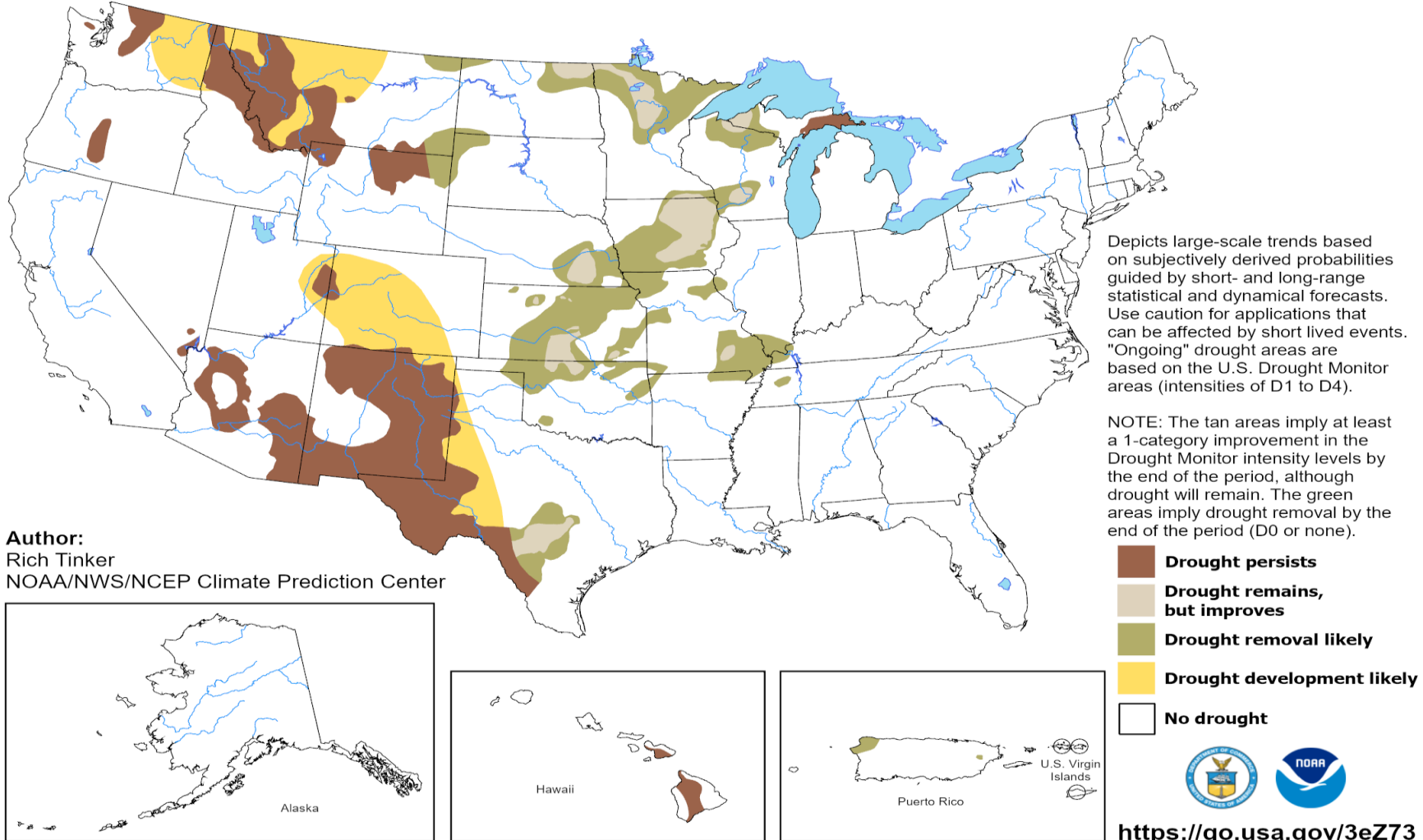
Valid: May-Jun-Jul 2024  
Issued: April 18, 2024



# Drought Outlook

## U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid for April 18 - July 31, 2024  
Released April 18, 2024



# For More Information



## Today's presentation:

- <https://www.ncei.noaa.gov/access/monitoring/monthly-report/briefings>

## NOAA's National Centers for Environmental Information: [www.ncei.noaa.gov/](http://www.ncei.noaa.gov/)

- Monthly climate reports (U.S. & Global): <https://www.ncei.noaa.gov/access/monitoring/monthly-report/>
- Dates for upcoming reports: <https://www.ncei.noaa.gov/access/monitoring/dyk/monthly-releases>

## NOAA's Climate Prediction Center: [www.cpc.ncep.noaa.gov](http://www.cpc.ncep.noaa.gov)

## U.S. Drought Monitor: [www.drought.gov](http://www.drought.gov)

## Climate portal: [www.climate.gov](http://www.climate.gov)

## NOAA media contacts: [john.jones-bateman@noaa.gov](mailto:john.jones-bateman@noaa.gov), 202-424-0929 (NOAA/NESDIS PAO)

