Mesonet
www.mesonet.org
connection
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The Mesonet on a Severe Weather Day

–by Stephanie Bowen

ON SEVERE WEATHER DAYS, things get very busy at the Storm Prediction Center, right across the hall from the Mesonet in the National Weather Center. Doug Speheger, National Weather Service Meteorologist, sat down to talk with us about how the Mesonet is used in his office on a severe weather day.

"There are quite a few ways," Speheger said. "One of the main things is to be able to look at high density weather observations and pinpoint where critical boundaries are, like the dryline or cold front. We also know where the moisture is that could help fuel thunderstorms."

To help get a feel for dryline placement, Speheger says they are able to look at the Mesonet to see where the wind shift and gradient is, as well as dewpoint observations.

"Back in the early days, before Mesonet was implemented, we might have a weather observation in Oklahoma City and another one in Lawton," Speheger said. "That is a really large area to try to specify where the dryline is located. The high density observations from the Mesonet of wind and dewpoint help us pin down where storms may develop."

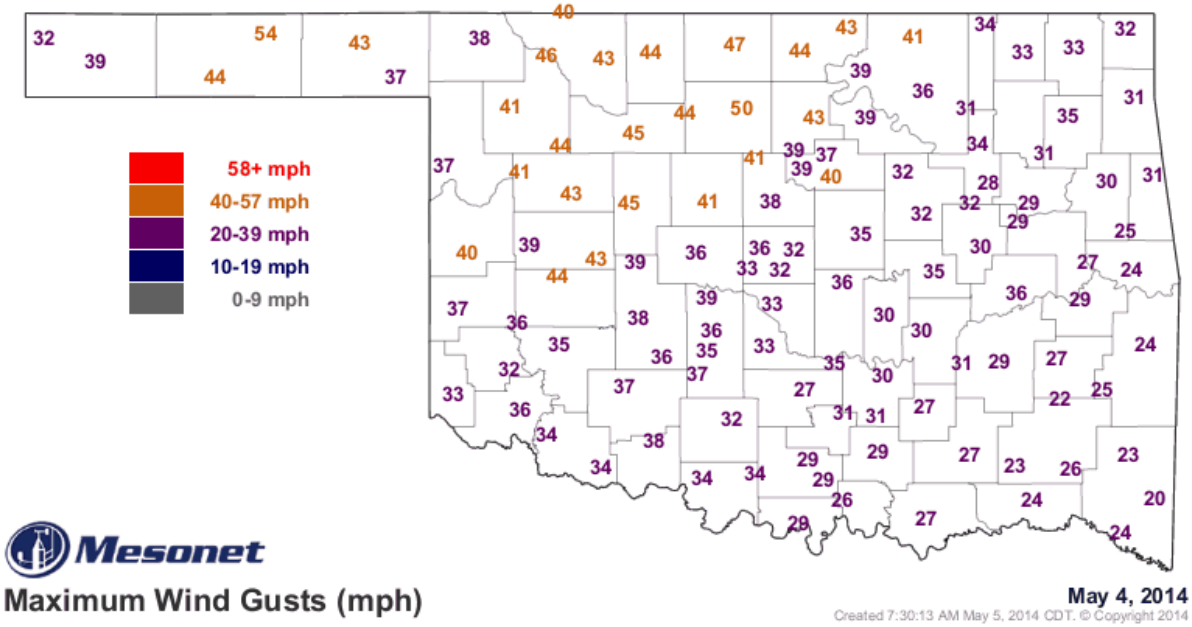
The NWS also uses the Mesonet during severe storms to verify wind reports. This helps with the confidence of what the storm is actually doing, and also helps warn people down stream of that storm what kind of wind to expect. After the storm, the severe wind gusts from the Mesonet are officially recorded into the official NWS Storm Data publication that documents severe storms.

A third way Speheger said the Mesonet is used is to help correlate rainfall estimates to what is actually occurring in a particular area.

"We get high density radar estimates, but it is just that - just an estimate," Speheger said. "Having the actual rainfall measurements to compare to the radar estimates can help us gauge how the radar estimates are doing and adjust them closer to reality. This helps gauge flooding potential with heavy rainfall from thunderstorms. We can make a direct comparison in a particular spot to see how the radar is biased. I think that is an under appreciated aspect of the Mesonet. It helps us to gauge flood potential."

Speheger says on a severe storm day, they have the Oklahoma Mesonet page open in their browsers, and have Mesonet data fed directly into their primary meteorological work stations.

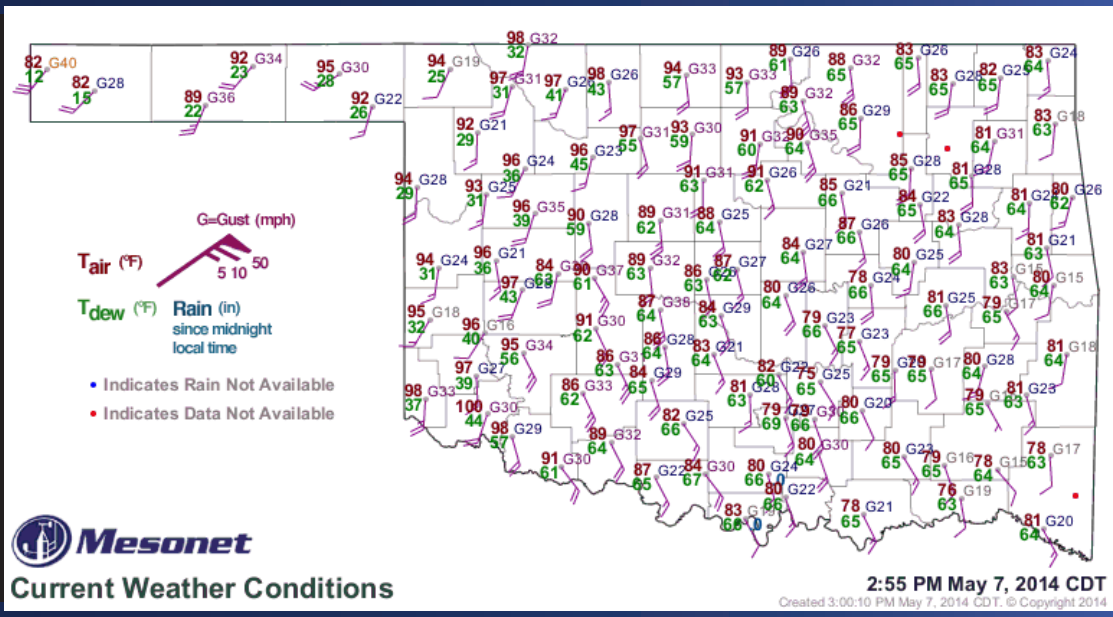
"We pull Mesonet data directly into that program to overlay with other data sources like radar," Speheger said. "That allows us to assimilate all these data sources onto one platform to get a better idea of the bigger picture. We are so fortunate to have a high quality, high density platform like the Mesonet in the state. It really helps make forecasting that much more precise."



MESONET IN PICTURES

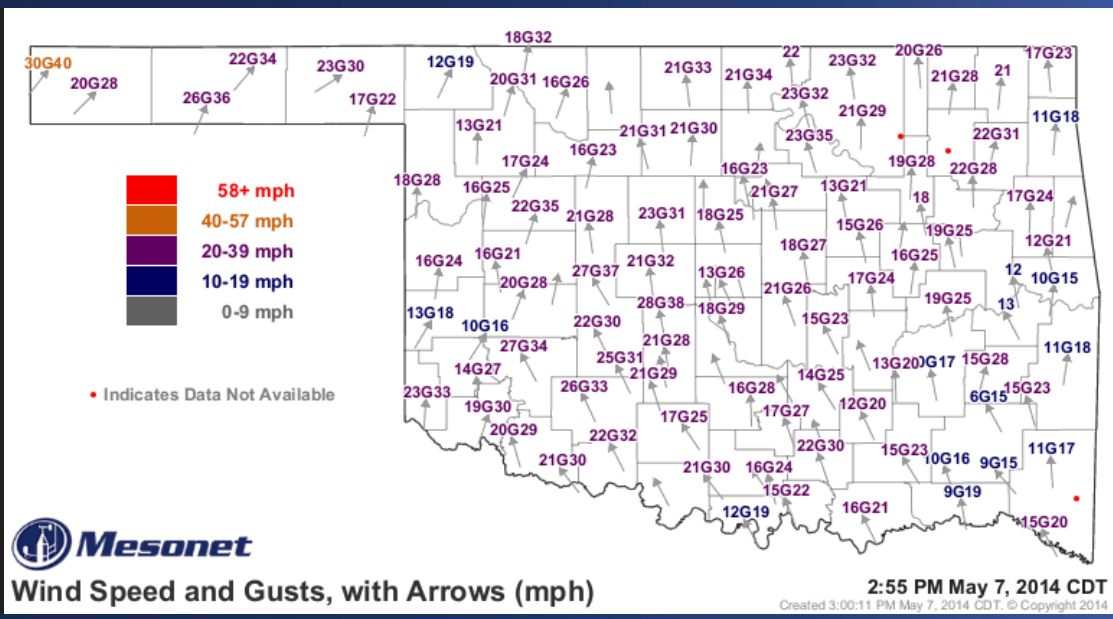
Current Weather Conditions Map

- The Current Weather Conditions map displays Current Air Temperature, Dew Point Temperature, Rainfall Since Midnight, Winds, and Wind Gust. This is one of the Mesonet maps used by the Storm Prediction Center on a severe weather day. To view this map, go to www.mesonet.org, and click on “Weather.” Then click on “Current Conditions” in the left side menu to select and view the “Current Conditions” map.



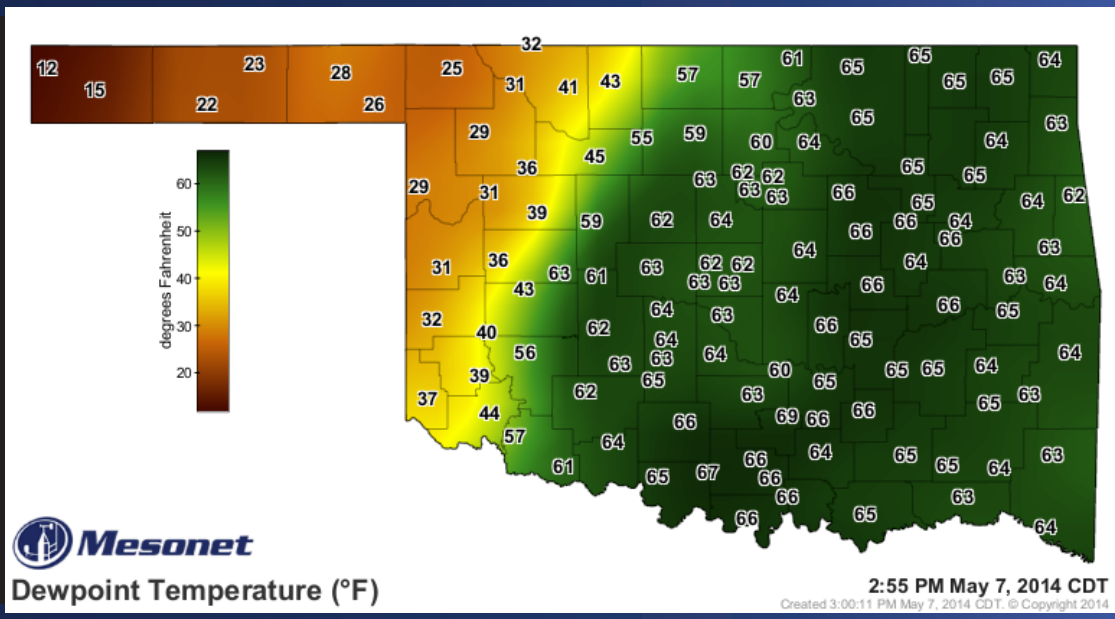
Wind Speed and Gusts, with Arrows (mph) Map

- The Wind Speed and Gusts, with Arrows map displays the current wind speeds (in mph) at each Mesonet site. Arrows indicate wind direction at each station. This is one of the Mesonet maps used by the Storm Prediction Center on a severe weather day. To view this map, go to www.mesonet.org, and click on “Weather.” Then click on “Wind” from the left side menu to select and view the “Wind Speed and Gusts, with Arrows map.



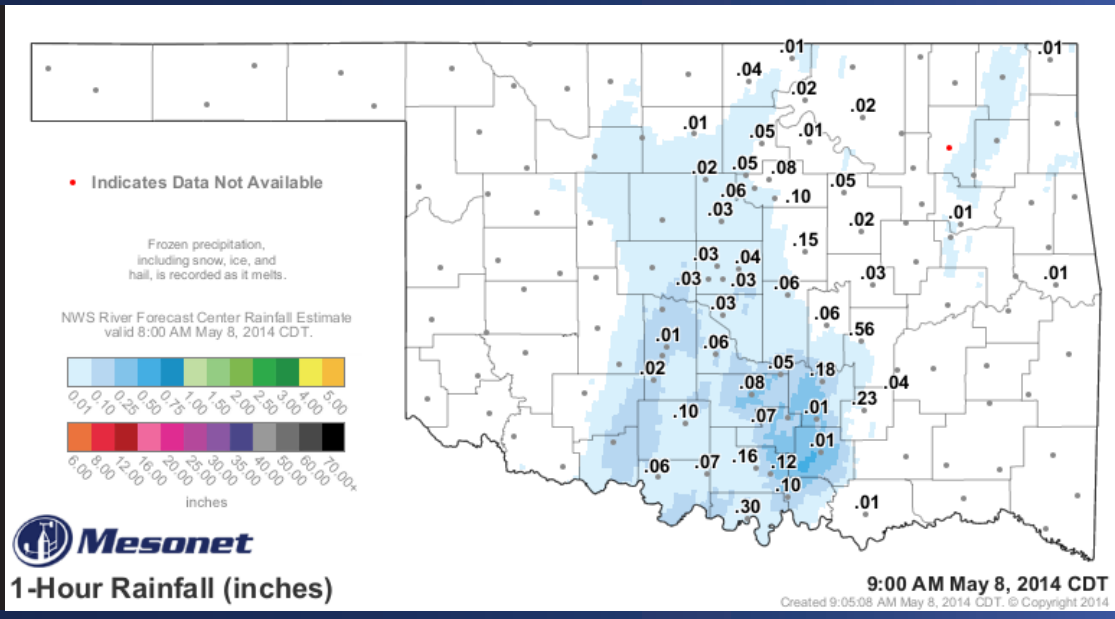
Dewpoint Temperature Map

- The Dewpoint Temperature map displays the current dewpoint temperature observed at each Mesonet site. Dewpoint is the temperature to which air must be cooled for saturation to occur (given constant pressure and water vapor content). This is one of the Mesonet maps used by the Storm Prediction Center on a severe weather day. To view this map, go to www.mesonet.org, and click on "Weather." Then click on "Dewpoint & Humidity" from the left side menu to select and view the "Dewpoint" map.



Rainfall Accumulation map

- The 1-hour Rainfall map displays accumulated rainfall observed at each Mesonet site in the last hour. This map also displays the NWS Arkansas-Red Basin River Forecast Center's rainfall estimates (in color) across Oklahoma based on radar. This is one of the Mesonet maps used by the Storm Prediction Center on a severe weather day. To view this map, go to www.mesonet.org, and click on "Weather." Then click on "Rainfall" from the left side menu to select and view the "1-Hour Rainfall" map.



Be Weather-Aware and Weather-Prepared

–by Danny Mattox

SPRING IS HERE! It's sunshine and outdoors until next winter! Good bye, snow and ice, you can't stop me now! *******weather radio goes off******* "The National Weather Service in Tulsa has issued a tornado warning for---" Ok, a little snow wouldn't be so bad…

Yes, it's that time of year again: severe weather season. While Oklahomans have experienced severe weather in every month, climatologically speaking, we are most likely to have severe weather in April, May and June. Let's review severe weather preparedness.

Know the difference between a Watch and a Warning. A Watch is issued a few hours before severe weather is expected. A Warning is issued when the threat is imminent—this means severe weather of some type has been observed or radar indicates a tornado may be occurring. You need to be ready and have a plan **before the Warning is issued!**

Know the forecast. Check the Storm Prediction Center, your local National Weather Service forecast office, or a trusted source for weather. Please don't rely on Uncle Jim's knee problems or Becky from Facebook who is "into this sort of thing". Be sure to have multiple sources to obtain weather information. TV, internet, social media, and smartphone apps are all great, however, the most reliable option is a battery-operated weather radio. When programming a weather radio, include counties surrounding yours. Since our storms usually come from the west, be sure to put in counties to the west, northwest and southwest of you. This may give you more time if a long-lived supercell has your house in its sights, or a nasty squall line is bearing down on you!

"If the thunder roars, go indoors!" Recent studies have shown that lightning can strike as far as 15 miles from the business end of a severe storm. The urge to run outside and point is in our genes in this state. Don't. Speaking of things to not do—DO NOT RELY ON THE TORNADO SIRENS TO ALERT YOU! All caps, so it must be important, right?

When taking shelter during a Tornado Warning remember: **get in, get down, cover up.** If you do not have a safe room or an underground shelter, go to the interior-most room of your house. Put as many walls between you and the outside as you can. Wear a bike helmet and protect your body from flying debris. Wear shoes to your shelter and bring some form of identification with your address on it.

These are basic precautions, and the list could be much longer! The best thing you can do is to be weather-aware and weather-prepared. You can survive over 97% of all tornadoes in your home if you take the proper precautions and shelter correctly. In the meantime, enjoy the spring! ■

Drought, Severe Weather Steal Headlines in April

By Gary McManus, State Climatologist

APRIL WRAP-UP

The proverbial April showers will not lead to May flowers this year as the month ended desperately dry across much of Oklahoma. Widespread rains never materialized, which allowed drought to once again make significant gains to the east from the hardest hit areas across western Oklahoma. Severe weather made a few brief appearances as well, although the month was still tame compared to some recent Aprils. The preliminary count from the National Weather Service of four tornadoes during April is actually well below the 1950-2013 average of 12, but one of those occurrences led to a fatality. An EF2 twister struck the small town of Quapaw on April 27, killing one person and injuring five others according to the Oklahoma Department of Emergency Management. Nearly 50 homes and businesses were damaged in the storm, including the town's fire station.

Preliminary data from the Oklahoma Mesonet indicate that the state experienced its 12th driest April since records began in 1895 with a statewide average of 1.64 inches, a deficit of 1.72 inches. The month was particularly dry across north central Oklahoma where an average of about a half-inch of moisture fell, marking this April as the second driest on record for that region. Most Mesonet sites across western and northern Oklahoma recorded less than an inch of rainfall, with several seeing less than a quarter-inch. Medford had the lowest total with a meager 0.15 inches, 3.1 inches below normal for that location. Of the 120 Mesonet stations, 36 recorded less than an inch of rainfall for the month. Dry weather has dominated headlines since the beginning of 2014. The January-April statewide average was 4.20 inches, nearly 5.5 inches below normal and the second driest such period on record. Medford has received a tally of an inch since January 1, a deficit of over 8 inches and a crippling blow to one of the state's most bountiful winter wheat producing areas. Only Goodwell and Kenton recorded less for that period with 0.9 and 0.7 inches, respectively. Wilburton led the state with 5.5 inches of rain.

The statewide average temperature finished close to normal during April at 58.8 degrees, 0.3 degrees below normal. The first four months of the year were exceedingly cool, however, at 44.3 degrees statewide, 2.5 degrees below normal and the 16th coolest January-April on record. April became the 13th month out of the last 15 to finish cooler than normal.

The state experienced a multitude of dry, windy days that saw massive dust storms in the Panhandle that often pushed east into the main body of Oklahoma. Those conditions also helped propel drought towards the northern and eastern side of the state. The latest U.S. Drought Monitor report valid for April 29 showed over 20 percent of the state to be in exceptional drought and 39 percent covered by at least extreme drought. Just over 79 percent of the state was considered to be in at least moderate drought. The Drought Monitor's intensity scale slides from moderate-severe-extreme-exceptional, with exceptional being the worst classification. A mere three months ago only two percent of the state was in exceptional drought, with 10 percent in at least extreme drought. Currently, approximately 14 percent of the state is considered abnormally dry, and seven percent completely free of any dry conditions. Most of those two categories reside across southeastern Oklahoma.

12th
DRIEST
April since records began in 1895

1.64"
average statewide precipitation for April

36
SITES
recorded less than an inch of rainfall for April.

58.8°F
average statewide temperature for April

CALENDAR

MAY

- 1st: Field Trip, Putnam City 5th Grade GT
- 1st: Severe Weather Preparedness Talk, Robin Hill PTA
- 8th: Grady County Outdoor Festival, Amber
- 9th: Field Trip, Putnam City 5th Grade GT
- 9th: Lexington Schools Ag Safety Day
- 5th: Field Trip, St. Charles Borromeo Catholic School
- 19th: Water Appreciation Day at the Capitol exhibit, OKC
- 19th-23rd: Large Wildland Fires Conference, Montana
- 30th: Mesonet Steering Committee Meeting, Norman

JUNE

- 3rd-5th: Oklahoma Mesonet at Inter-tribal Emergency Management Coalition Annual Summit, Shawnee
- 5th: Farm Foundation NWC Tour, Norman
- 20th: OSU STEM Teacher Institute
- 22nd-27th: Oklahoma Mesonet Weather Camp

Tweet of the Month

Jenipher Rowe - April 13 - Just checked the @okmesonet #Tulsa stats. Temp dropped from 79 at 5:05 to 62 at 5:25. 17 degree drop in 20 minutes. #coldfront #okwx #wow

Find us on

CONTACTS

Accessing recent (within the past 7 days) Mesonet data
Contact: Mesonet Operator

Instrumentation, telecommunications, or other technical specifications
Contact: Chris Fiebrich

Mesonet agricultural data and products
Contact: Al Sutherland

Mesonet meteorological data
Contact: OCS Data Requests

Earthstorm - K-12 educational outreach
Contact: Andrea Melvin

OK-First - Public safety outreach
Contact: James Hocker

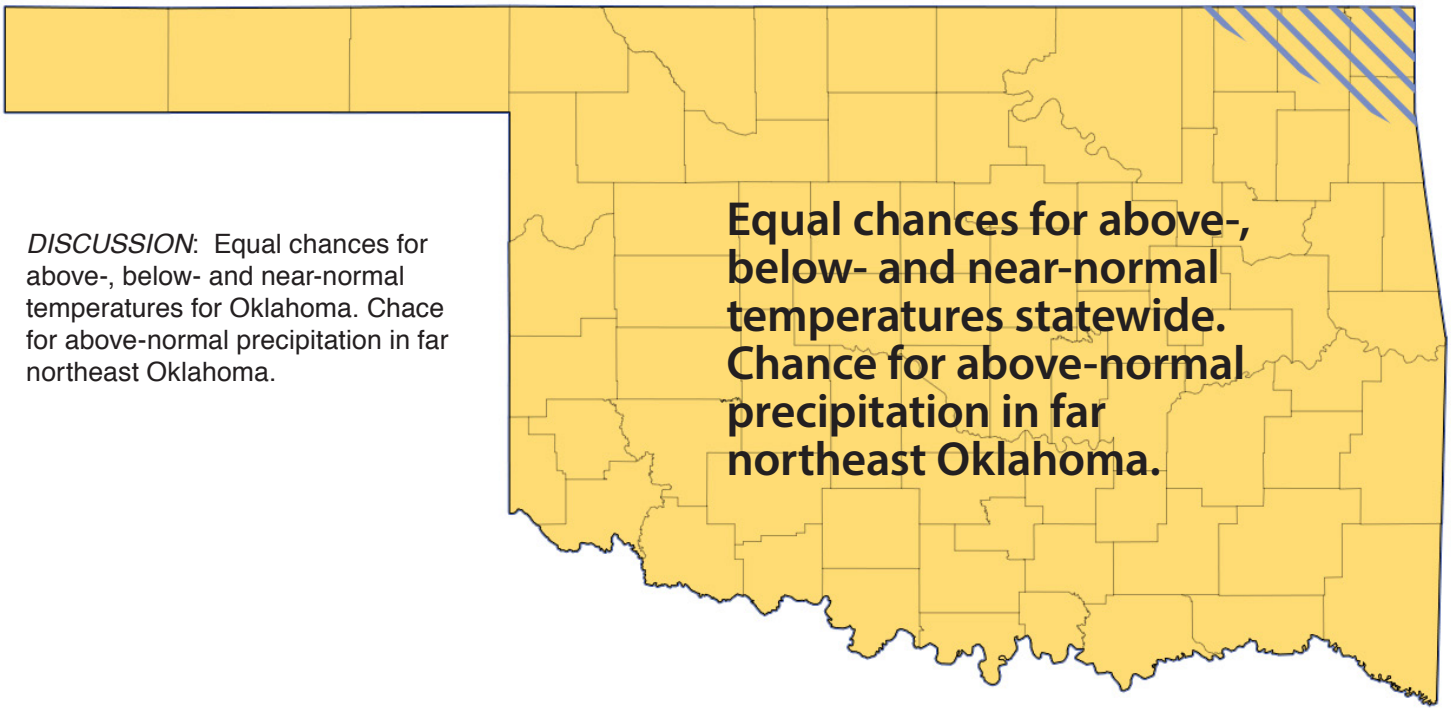
OK-FIRE - Fire management outreach
Contact: J.D. Carlson

Not sure?
Contact: 405-325-2541 or Chris Fiebrich.

FORECAST FOR MAY

Click here to view the original maps from the Climate Prediction Center.

DISCUSSION: Equal chances for above-, below- and near-normal temperatures for Oklahoma. Chace for above-normal precipitation in far northeast Oklahoma.



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