



What is Drought?

DROUGHT HAS RETURNED this winter to Oklahoma. For a state used to tracking severe storms moment to moment, drought is a back seat weather event. But drought can wreak havoc, especially for farmers and ranchers! Our last major drought, in 2006, saw Oklahoma with its smallest wheat crop in 50 years. The direct loss in crops, hay and pasture to farmers and ranchers was estimated at over \$500 million.

Droughts don't fit the usual Oklahoma severe weather criteria. Droughts are long-term events that develop slowly. They have hazy start and end dates. A drought can be highly localized, like the 2009-2010 drought in Harper County, or range across several states.

What is drought? Seems like an obvious question with a simple answer. A drought exists when there isn't enough rain. We typically hear a lot about drought when water supplies are low, the soil is dry and crops are dying. Drought sets in when there is not enough rainfall to recharge soils, lakes and ponds. It is the moisture in the soil that provides the water to get plants from one rain event to the next. It is water in lakes that cities turn to for supply. It is the water in ponds that provides water for livestock.

Climatologists use rainfall, soil moisture and drought impacts to assess drought conditions. As of January 18, 2011, Oklahoma had three levels of drought in the state, D0, D1 and D2. These are official drought designations from the U.S. Drought Monitor used by the USDA Farm Service Agency to determine drought assistance eligibility.

One advantage the Oklahoma Mesonet offers is its soil moisture sensor network. With sensors statewide, soil moisture conditions can be monitored on a daily basis. The readings are reported in Fractional Water Index values. The index ranges from 0.0 when a soil is bone dry to 1.0 when the soil is saturated. This gives farmers and ranchers a heads up as drought develops and a measure of when drought is fading away.

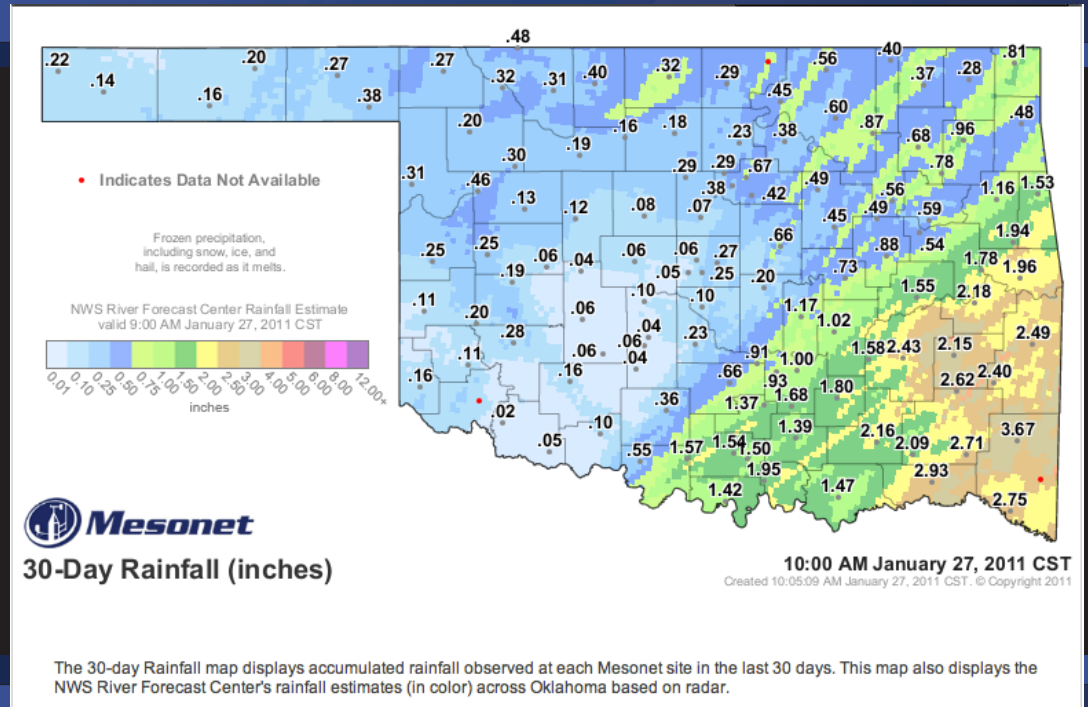
Category	Description	Likely Impacts
D0	Abnormally dry	Early drought stage; short term dryness. Coming out of drought; lingering water deficits
D1	Moderate drought	Some crop damage; streams, reservoirs low; voluntary water restrictions
D2	Severe drought	Crop and pasture losses likely; water shortages common; mandatory water restrictions
D3	Extreme drought	Major crop and pasure losses; widespread water shortages and/or water restrictions
D4	Exception drought	Exceptional and widespread crop and pastures losses; severe water shortages, creating water emergencies

Official drought designations from the U.S. Drought Monitor. See up-to-date monitor at <http://www.drought.unl.edu/dm/monitor.html>.

WHERE TO FIND

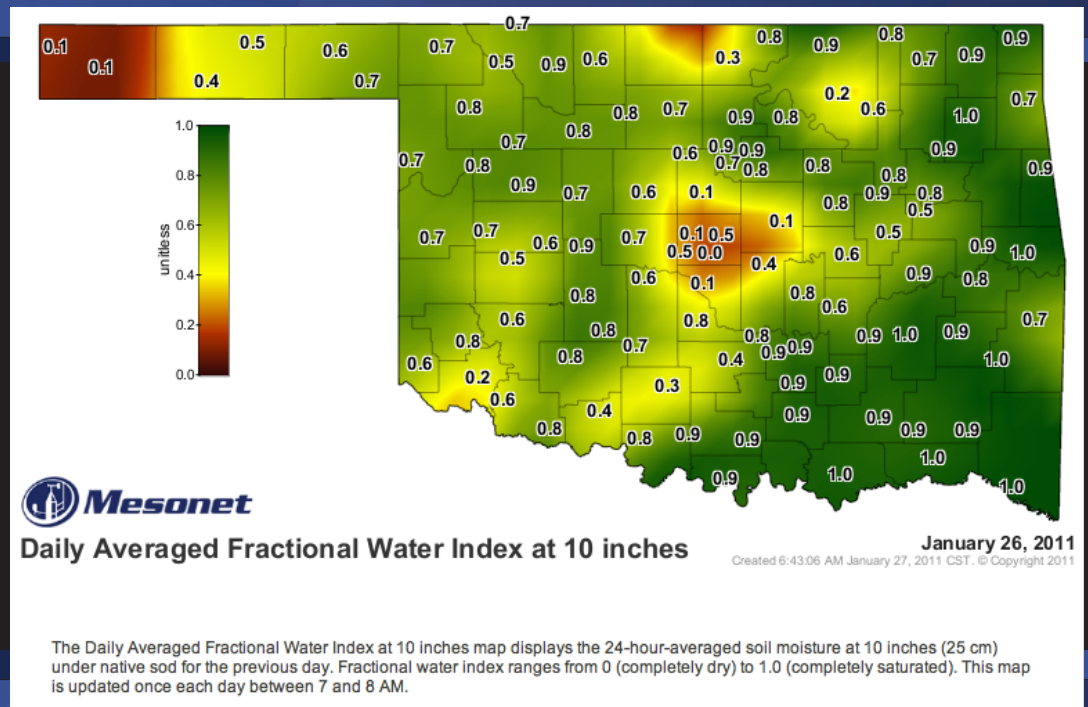
Rainfall

- From the home page at www.mesonet.org, choose the “Weather” category from the top horizontal menu.
- On the left-hand-side, select “Rainfall”. This section displays rainfall since midnight, rainfall accumulation maps and a rainfall table.
- Rainfall maps have been enhanced with radar estimated rainfall.



Soil Moisture

- From the home page at www.mesonet.org, choose the “Weather” category from the top horizontal menu.
- On the left-hand-side, select “Soil Moisture”. This section displays the daily averaged fractional water index for 2-inches, 10-inches and 24-inches.
- Fractional Water Index ranges from 0 (completely dry) to 1 (completely saturated).



WHERE TO FIND

Rainfall and Drought

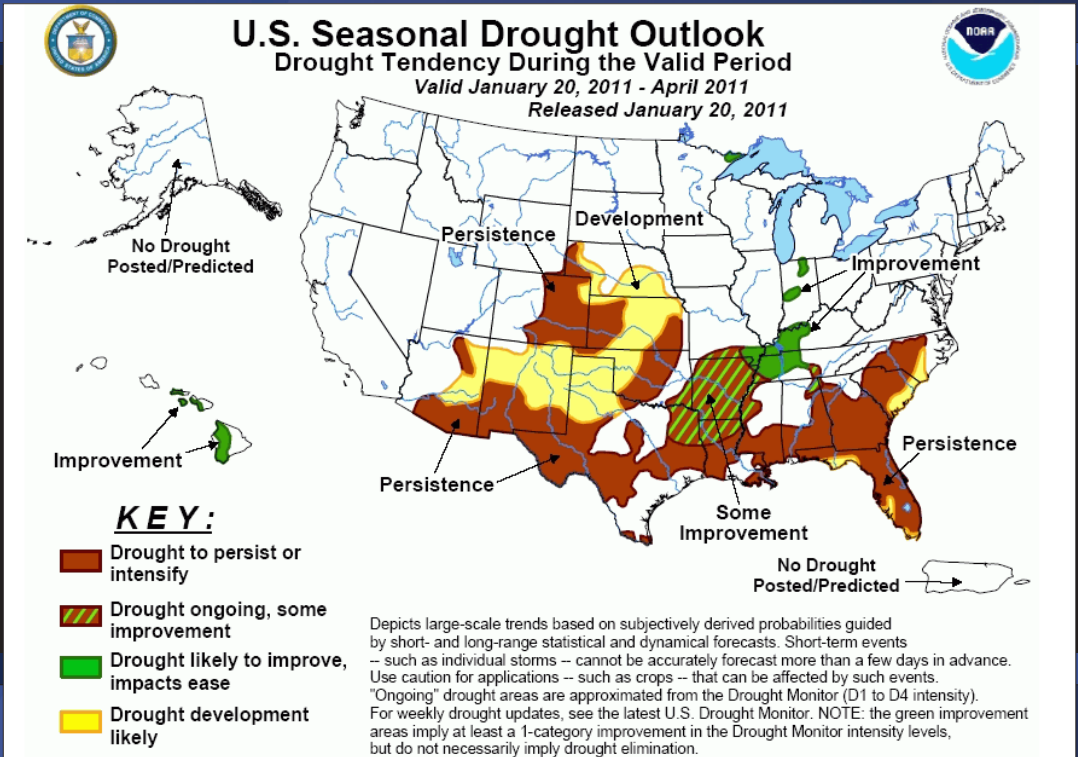
- From the home page at www.mesonet.org, choose "Climate" from the top menu. This will launch the Oklahoma Climatological Survey website in a new window. From the left-hand menu, select "Rainfall & Drought Update."
- Select your desired date range from the top menu. This table shows the Rainfall & Drought Update for Winter to Date.

Winter 2010-11: Dec 1, 2010 through Jan 30, 2011

Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Driest since	Wettest since	Rank since 1921 (88 periods)
Panhandle	0.50"	-0.70"	42%	2005-06 (0.36")	2007-08 (2.13")	24th driest
N. Central	0.44"	-1.76"	20%	1976-77 (0.42")	2007-08 (3.17")	4th driest
Northeast	0.78"	-3.01"	21%	—	2007-08 (4.55")	1st driest
W. Central	0.41"	-1.58"	21%	1985-86 (0.35")	2007-08 (2.57")	5th driest
Central	0.53"	-2.81"	16%	—	2007-08 (3.44")	1st driest
E. Central	1.74"	-3.30"	34%	1996-97 (1.16")	2007-08 (3.82")	5th driest
Southwest	0.19"	-2.22"	8%	—	2007-08 (2.46")	1st driest
S. Central	2.09"	-2.28"	48%	2005-06 (1.83")	2007-08 (2.51")	18th driest
Southeast	3.70"	-3.08"	55%	1996-97 (3.54")	2007-08 (5.23")	15th driest
Statewide	1.11"	-2.32"	32%	1955-56 (1.00")	2007-08 (3.31")	2nd driest

U.S. Drought Outlook

- From the home page at www.mesonet.org, choose "Climate" from the top menu. This will launch the Oklahoma Climatological Survey website in a new window. From the left-hand menu, select "Rainfall & Drought Update."
- In the far right bar, under Additional Tools and Resources, select "U.S. Drought Outlook."
- This product is created by the National Weather Service.





January: Dry and Cold

By Gary McManus, Associate State Climatologist

JANUARY WRAP-UP

The month was dry and cold, as Januaries are prone to be in Oklahoma, and its historical rankings reflect those traits. Drought conditions continued to spread thanks to a statewide average precipitation total of less than a quarter of an inch. That amounts to a deficit of more than an inch for the month and the sixth driest January on record since 1895. The statewide average temperature fell 1.3 degrees below normal to rank as the 33rd coldest January on record. Very little snow fell, although a couple of storms provided decent amounts for a few areas. Broken Bow and Ponca City both reported 5 inches of snow for the month. Very little in the way of traditional severe weather occurred, although high winds and low relative humidity combined at times to produce wildfires, especially late in the month when conditions were warmer.

The stingy skies during January continued a problem seen since early fall, and the December-January period looked equally bleak with a deficit of over 2 inches, the fifth driest such period on record. Northeastern- through central-Oklahoma were particularly dry over those two months, ranked as the second- and third-driest on record for those areas, respectively. The Mesonet station at Broken Bow led the state's precipitation totals with 1.47 inches for January. Many, many stations were relatively dry for the entire month, although Tipton won the actual prize with a total of 0.02 inches.

The lack of moisture during the month did not come with a similar lack of cold air. Several powerful cold fronts kept the state in an arctic deep freeze, interspersed with a few days of spring-like warmth. The highest temperature recorded by the Mesonet was 78 degrees at both Fairview and Butler on the 28th and Oilton on the 29th. Oklahoma City and Tulsa set tied record highs on the 29th with 76 degrees and McAlester did the same with 74 degrees that same day. The month's low temperature of -8 degrees occurred at Hooker on the eighth.

-8°F
REACHED

at Hooker, the coldest temperature in January

1.47
INCHES

of rain fell at the Broken Bow Mesonet station in January, the wettest for the month

78°F
REACHED

at Fairview and Butler, the warmest in January

0.02
INCHES

of rain fell at the Tipton Mesonet station in January, the driest for the month

Understanding La Niña

WINTER IN OKLAHOMA is usually dry, with January and February being the two driest months for our state. But this year things are especially dry, thanks in part to La Niña.

“By some accounts, this La Niña event is one of the strongest in the 50-plus years records have been kept, and its influence has been fairly typical worldwide,” said Gary McManus, associate state climatologist.

La Niña is a naturally occurring climate pattern where the Pacific Ocean near the equator gets colder than usual and affects weather around the world. La Niña, meaning “the girl” is the counterpart of El Niño, “the boy,” which is the warming of those waters.

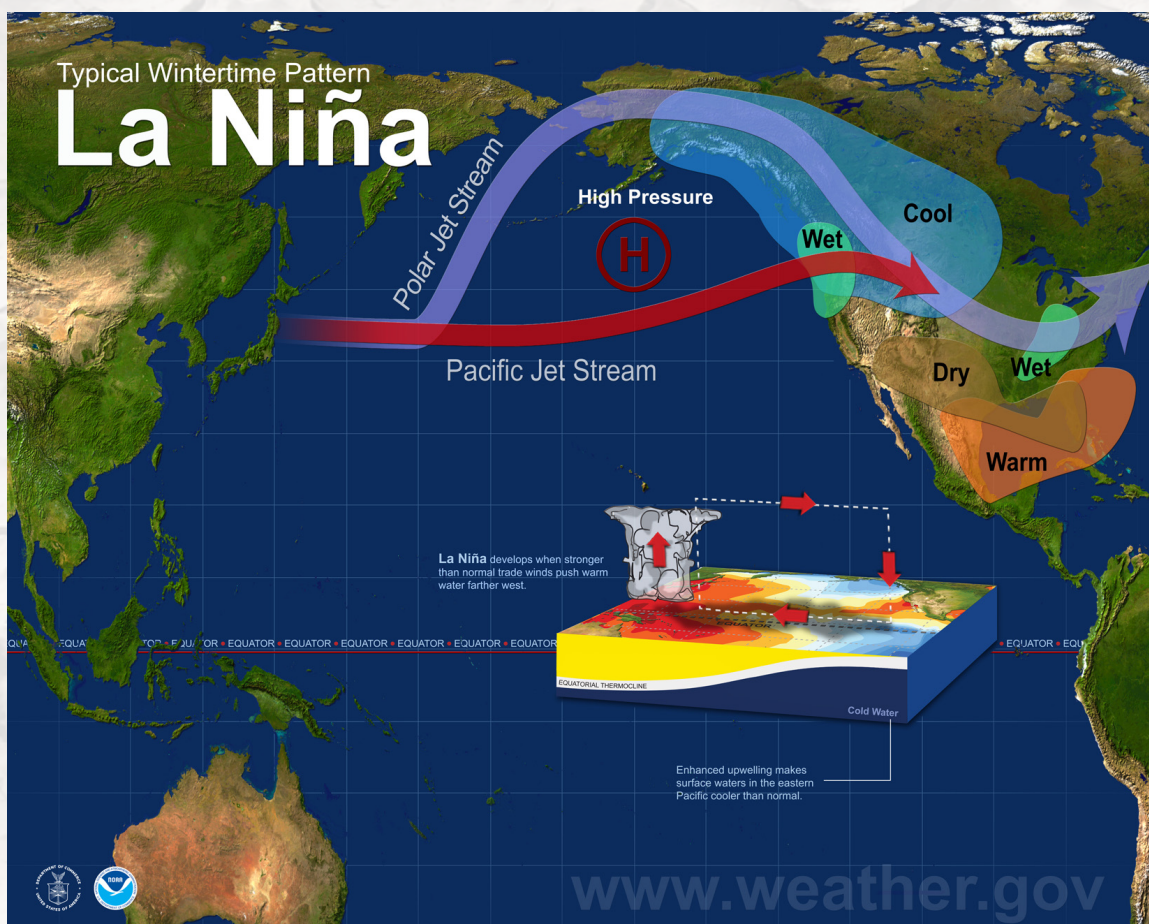
La Niña impacts are mainly confined to the cool months and include drier and warmer weather along the southern tier of the United States, with cooler and wetter weather in the Pacific Northwest. These impacts are generally

more significant to the south and especially southeast of Oklahoma, but the state can still experience effects. In fact, the effects of La Nina are reflected in the state’s temperature and rainfall statistics for the past few months.

In the United States, scientists at the National Weather Service’s Climate Prediction Center monitor ocean temperatures and upper-air patterns and provide weekly updates on possible oceanic impacts on weather in the United States.

La Niña conditions recur every few years and can persist for as long as two years. This La Niña event is expected to last through spring, but scientists are seeing some indications it might begin to fade over the next several months, McManus said.

Monitor conditions at www.mesonet.org and climate.ok.gov.



TYPICAL WINTER PATTERN of La Niña. Colder than usual water near the equator affects weather patterns in the United States. Graphic from the National Oceanic and Atmospheric Association.

CALENDAR

FEBRUARY

- ▶ 11th: OK-FIRE Beginner's Workshop, Norman, Okla.

MARCH

- ▶ 1st-2nd: OK-First Assistant Course, Norman, Okla.
- ▶ 9th: OK-First Recertification Training, McAlester, Okla.
- ▶ 15th: OK-First Recertification Training, Tulsa, Okla.
- ▶ 23rd: OK-First Recertification Training, Durant, Okla.
- ▶ 30th: OK-First Recertification Training, Weatherford, Okla.

APRIL

- ▶ 6th: OK-First Recertification Training, Norman, Okla.
- ▶ 12th: OK-First Recertification Training, Ponca City, Okla.
- ▶ 19th: OK-First Recertification Training, Oklahoma City, Okla.
- ▶ 21st: ScienceFest, Oklahoma City, Okla.

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](#)

K-12 educational outreach

Contact: [Andrea Melvin](#)

OK-First

Contact: [Nicole Giuliano](#)

OK-FIRE

Contact: [J.D. Carlson](#)

Not sure?

Contact: 405-325-2541 or [Chris Fiebrich](#).

FORECAST FOR FEBRUARY *Click here to view the original maps from the Climate Prediction Center.*

