

OKLAHOMA MONTHLY CLIMATE SUMMARY

AUGUST 2003



Oklahoma Climatological Survey

Overview

The blistering heat of July continued uninterrupted into August with triple-digit temperatures common throughout the month. At over 2 degrees above normal, the statewide-averaged temperature finished as the 32nd warmest since record-keeping began in 1892. A drastic change in fortune occurred with the state's precipitation, however. Heavy rains during the first three days of the month brought immediate relief to drought-stricken parts of Oklahoma. Those bountiful rains were eclipsed by the deluge which covered much of the state over the month's final three days. The precipitation which fell as August waned helped boost parts of northeastern, north central and northwestern Oklahoma to well over 4 inches above normal for the month, contributing to the 17th wettest August on record for Oklahoma since 1892. For the northeast, it was the 3rd wettest August experienced since record-keeping began.

Precipitation

Although some areas fared better than others, practically the entire state received beneficial rainfall during the month. The exceptions were the western panhandle and along the Red River in far southern Oklahoma. These regions only received between 1 and 2 inches of rainfall. Despite the deficits in those areas, the statewide-averaged rainfall finished over 1.5 inches above the established normal. The northeast region led the pack with an average rainfall total of nearly 8 inches, just less than 5 inches above normal. Bixby and Catoosa each received over 10 inches of precipitation for the month. Central and east central Oklahoma, while slightly drier than the northeast, owned some staggering rainfall totals during August as well. The Oklahoma Mesonet site at Hectorville recorded over 11 inches of rainfall, approximately 8 inches above normal for that area of the state, while Okemah and Bowlegs had over 10 and 9 inches, respectively. The effect of August's precipitation surplus was to decrease the year-to-date deficit to just less than 4.5 inches, representing the 26th driest such period on record. The season's rainfall total rocketed nearly three-quarters of an inch back above normal, however, ranking as the 38th wettest summer on record.

Temperature

Twenty-two of August's 31 days saw a triple-digit temperature within Oklahoma's borders, and the state's highest temperature of the year thus far, 111 degrees, occurred on the 7th at Mangum. As the state's second warmest month, August temperatures above 100 degrees are expected. Strong autumn-like cold fronts like the one that entered the state in the month's final three days are somewhat unusual, however. The front dropped high temperatures in the northern parts of the state to nearly 20 degrees below normal. Highs in the northwest failed to reach 70 degrees on the final two days. The year- and season-to-date statewide-averaged temperatures remained from 1 degree to 2 degrees above normal.

August 2003 Statewide Extremes

Description	Extreme	Station	Date
High Temperature	111°F	Mangum	August 7th
Low Temperature	54°F	Boise City	August 13th
High Precipitation	11.76 in.	Hectorville	
Low Precipitation	1.07 in.	Boise City	

August Daily Highlights

August 1-3: The month started on a stormy note with strong to severe storms forming in western and east central Oklahoma along an outflow boundary. The storms were accompanied by 80 mph winds near Glenpool on the 1st, and rainfall amounts greater than 2 inches were common in the northeastern one-third of the state. Stuart collected over 4 inches of precipitation on the 3rd, with several totals exceeding 3 inches scattered nearby. Temperatures were not diminished with the precipitation, however, as temperatures soared into the mid-100s.

August 4-8: A cold front in northern Oklahoma created pleasant weather behind the front on the 4th, with highs in the lower 80s. Otherwise, the scorching temperatures remained throughout this period. As the front stalled, it became a focal-point for additional showers and thunderstorms. Dewey and Copan experienced wind gusts of over 72 mph associated with severe thunderstorms. The state's highest temperature of the year thus far, 111 degrees, occurred at Mangum on the 7th, with

several other locations reaching 110 degrees on the same day. Any rain that did fall during this period was generally less than one-half of an inch.

August 9-11: This was yet another period of hot, steamy weather interspersed with thunderstorms. Storms early on the 9th in western Oklahoma brought strong winds and dangerous lightning. A strike near Fox destroyed a storage tank battery and another caused power outages in Healdton. Rainfall totals of over 1 inch were common over western regions. The National Weather Service reported rainfall totals greater than 3 inches in Hammon and Cox City. The storms continued intermittently the next couple of days. Winds of up to 70 mph struck near Little Axe and Norman in central Oklahoma.

August 12-14: High pressure aloft over Colorado and an upper-level low over Louisiana sandwiched Oklahoma on the 12th, giving the state its most pleasant stretch of weather for the month. Highs remained in the upper 80s for the most part, only warming up into the low 90s for the next two days. More showers and thunderstorms formed as the upper-level low over Louisiana moved west across Texas. Severe storms with strong winds struck central Oklahoma on the 13th, with rainfall amounts exceeding 1 inch in that area.

August 15-21: High pressure aloft dominated the region throughout this period. Temperatures once again soared into the mid- to upper-100s, and precipitation was virtually non-existent. A bit of relief for western Oklahoma arrived on the 16th in the form of a cloud shield, courtesy of dissipating tropical storm Erika. The high temperature at Hinton on that day was a pleasant 75 degrees.

August 22-25: A dome of high pressure over the middle- and high-plains combined with a surface low over Oklahoma to pump abundant moisture northward into the state. Daytime heating and the surface boundary generated severe thunderstorms over the northeastern two-thirds of the state. Seventy mph winds occurred at Roland and Hominy on the 22nd and 23rd, respectively. Rainfall totals remained light, however, as the heat remained in full intensity.

August 26-28: Heavy rainfall returned to the state with over 1 inch of rain recorded at the Mesonet site in Buffalo on both the 26th and the 28th. The weather remained hot and muggy despite the rainfall, however. In areas not affected by the rain-cooled air, temperatures and heat indices rose once again into the mid- to upper-100s.

August 29-31: Oklahoma experienced one of the wettest three-day periods since October 2002 in the month's final stanza. Showers and thunderstorms formed early on the 29th along an outflow boundary. The storms, primarily in northeastern parts of the state, dumped from 2 to 4 inches of rainfall on the area. Vinita and Pryor had 5.06 and 4.06 inches of rainfall, respectively. High temperatures in the extreme northern boundaries of the state never escaped the 70s. An unusually

strong cold front for late August approached the state from the north on the 30th, once again triggering showers and thunderstorms. Medford received nearly 8 inches of rainfall in a 24-hour period, and the Mesonet site northwest of Alva recorded nearly 6 inches. NWS forecasters placed nearly the entire body of the state under a Flash Flood Watch. True to form, flooding occurred on the 30th, mostly in northeastern Oklahoma and near Medford in the north. The Panhandle and the far northern reaches of the state stayed below 70 degrees for the remainder of the month. To make matters worse, the cold front was joined from the south by remnants of tropical storm Grace, which brought additional heavy rainfall to southeast sections.

August 2003 Statewide Statistics			
Temperature			
	Average	Depart.	Rank (1892-2003)
Month (August)	82.6°F	2.2°F	32nd Warmest
Season-to-Date (Jun-Aug)	80.6°F	1.1°F	52nd Warmest
Year-to-Date (Jan-Aug)	63.6°F	1.70°F	34th Warmest
Precipitation			
	Total	Depart.	Rank (1892-2003)
Month (August)	4.47 in.	1.70 in.	17th Wettest
Season-to-Date (Jun-Aug)	10.51 in.	0.74 in.	38th Wettest
Year-to-Date (Jan-Aug)	20.17 in.	-4.49 in.	26th Driest
Depart. = Departure from 30-year normal			

August 2003 Severe Weather

Significant Tornadoes (F2 or greater)

No significant tornadoes reported in the state

Hail (2 inches in diameter or greater)

No significant hail reported in the state

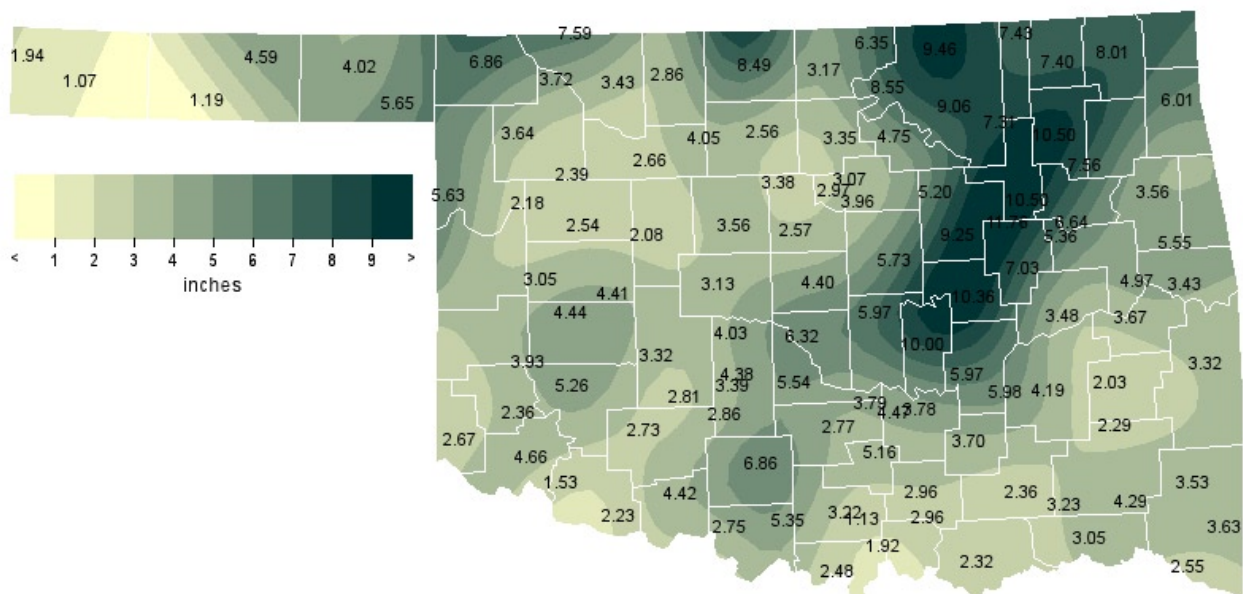
Wind Gusts (70 mph or greater)

Speed (mph)	Location	County	Date
80	3 E Glenpool	Tulsa	August 1
75	Dewey	Washington	August 5
72	2 ENE Copan	Washington	August 5
70	1 S Little Axe	Cleveland	August 10
70	Norman	Cleveland	August 10
70	6 NNW Piedmont	Canadian	August 27
70	Roland	Sequoyah	August 22
70	Hominy	Osage	August 23

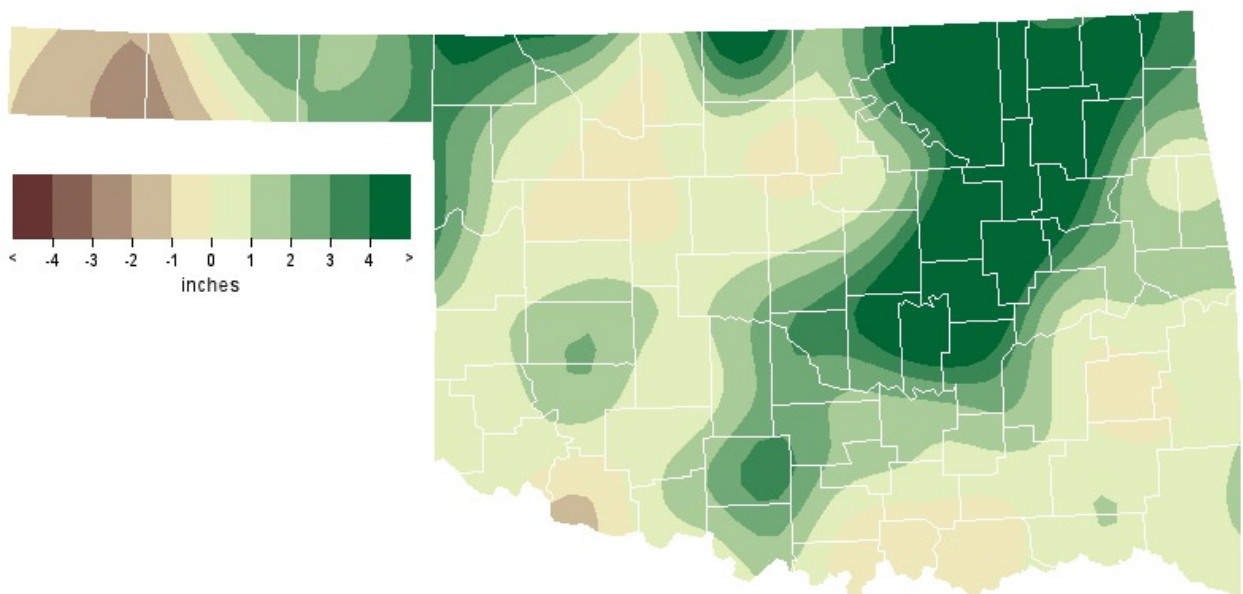
Flooding

Location	County	Date
2 NW Arpelar	Pittsburg	August 3
1 NE Medford	Grant	August 30
2 SW Medford	Grant	August 30
Jefferson	Grant	August 30
Davis	Murrah	August 30
Jenks	Tulsa	August 30
7 SW Bixby	Tulsa	August 30
Kiefer	Creek	August 30
Tulsa	Tulsa	August 30

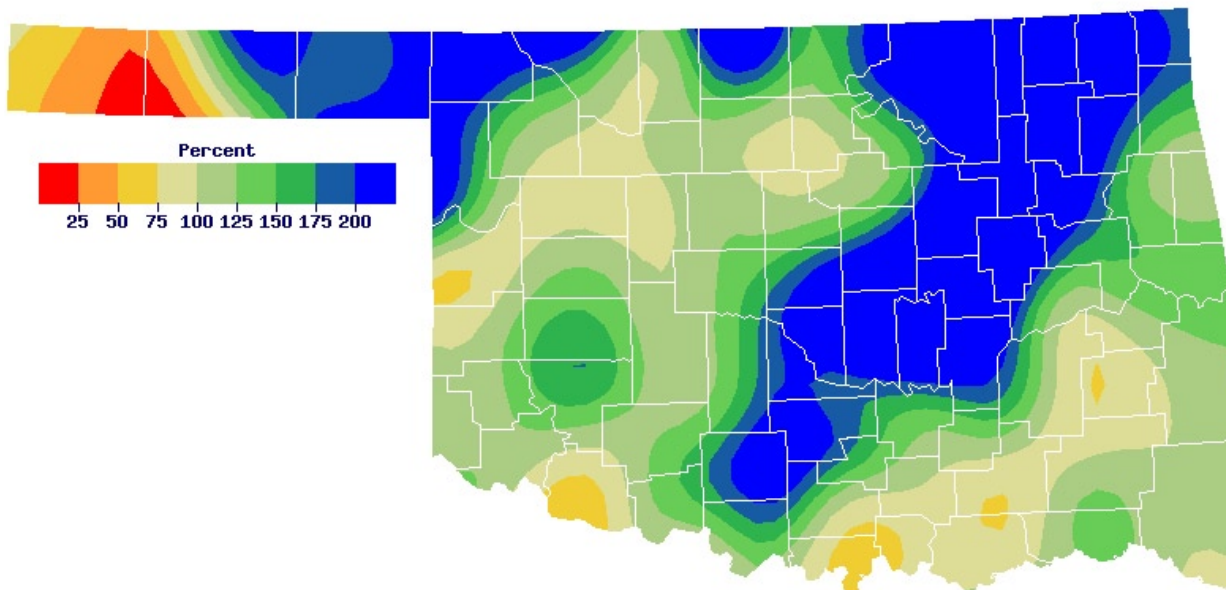
August 2003 Observed Precipitation



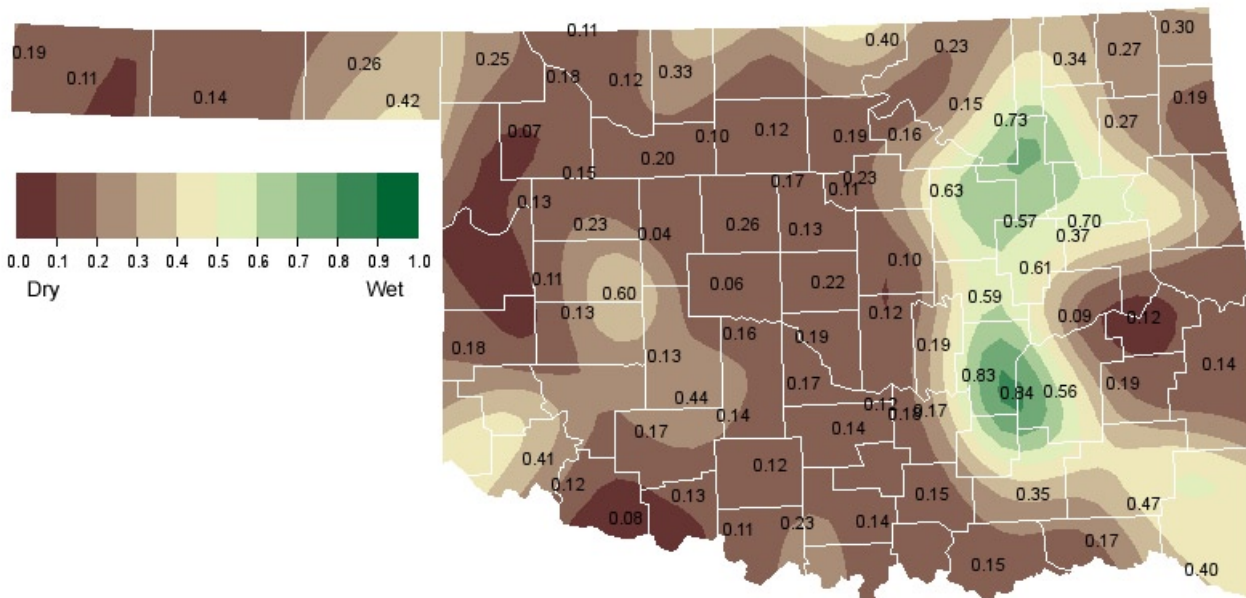
August 2003 Departure from Normal Precipitation



August 2003 Percent of Normal Precipitation



August 2003 Average Soil Moisture at 25cm



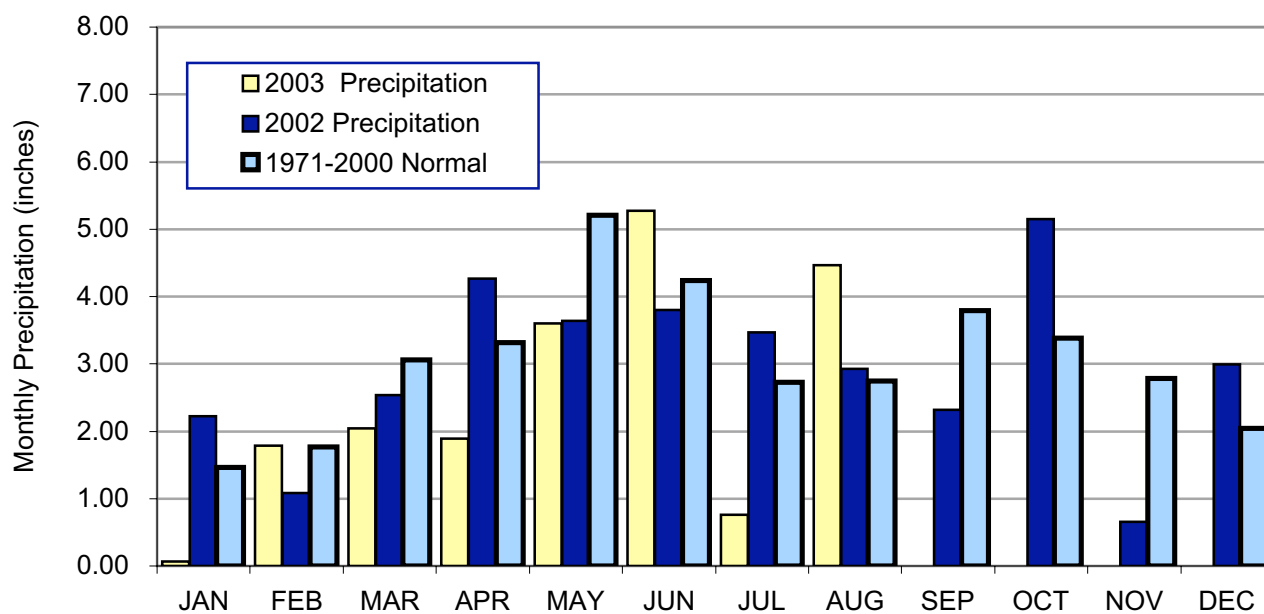
Mesonet Monthly Summary for August 2003

NAME	MEAN HIGH			LOW			TOT HIGH			NAME	MEAN HIGH			LOW			TOT HIGH				
	TEMP	TEMP	DAY	TEMP	DAY	HDD	CDD	PPT	24-HR		DAY	TEMP	TEMP	DAY	TEMP	DAY	HDD	CDD	PPT	24-HR	DAY
PANHANDLE																					
Arnett	80.4	104	7	60	31	1	479	5.63	2.15	29	Goodwell	79.0	103	7	55	13	5	438	1.19	.52	8
Beaver	81.3	108	7	58	13	4	510	4.02	1.82	30	Hooker	80.3	106	21	57	13	4	479	4.59	2.16	29
Boise City	76.9	103	7	54	13	8	377	1.07	.54	30	Kenton	77.2	101	7	56	31	7	386	1.94	.71	30
Buffalo	82.2	107	7	60	13	0	534	6.86	2.52	30	Slapout	80.8	107	7	59	31	2	491	5.65	4.06	30
NORTH CENTRAL																					
Blackwell	82.2	104	21	60	12	0	533	3.17	1.34	29	Medford	83.9	105	20	64	12	0	587	8.49	7.93	30
Breckenridge	83.9	104	21	62	12	0	587	2.56	1.22	29	Newkirk	81.0	101	23	62	12	0	495	6.35	1.98	30
Cherokee	83.8	105	21	64	13	0	583	2.86	.91	5	Red Rock	83.1	104	18	62	13	0	560	3.35	1.00	29
Fairview	84.5	108	4	63	13	0	603	2.66	1.42	27	Seiling	82.7	107	4	63	13	0	549	2.39	1.07	9
Freedom	83.0	105	5	63	31	0	558	3.72	2.42	30	Woodward	82.5	106	7	61	31	0	542	3.64	1.44	9
Lahoma	83.0	104	21	63	13	0	557	4.05	2.64	30	Alva	83.1	105	21	63	13	0	562	3.43	1.21	29
May Ranch	82.2	104	21	62	31	0	535	7.59	5.95	30											
NORTHEAST																					
Bixby	81.7	101	23	63	12	0	519	10.50	4.74	30	Pryor	81.4	103	23	60	12	0	508	.79	.35	2
Burbank	81.3	102	23	62	12	0	506	8.55	2.44	2	Skiatook	81.9	101	1	65	12	0	525	7.31	2.11	30
Copan	81.6	103	24	61	12	****	****	7.43	2.66	29	Vinita	81.4	104	22	60	12	0	507	8.01	5.06	29
Foraker	80.4	102	23	61	12	0	479	9.46	3.76	30	Wynona	81.7	102	22	63	12	0	519	9.06	2.35	29
Jay	81.5	103	24	60	12	0	512	6.01	2.84	29	Porter	82.4	101	24	64	12	0	540	6.64	2.14	30
Miami	81.0	102	17	60	12	0	495	****	****	***	Inola	82.1	104	23	63	12	0	529	7.56	2.43	30
Nowata	81.4	103	22	59	12	0	508	7.40	3.41	29	Claremore	83.2	104	24	63	12	0	564	10.50	4.10	30
Pawnee	83.1	104	23	63	13	0	560	4.75	2.00	29											
WEST CENTRAL																					
Bessie	84.0	108	7	64	14	0	588	4.44	1.90	30	Putnam	82.5	106	7	63	31	0	541	2.54	1.87	9
Butler	83.7	108	7	64	14	0	579	3.05	1.87	9	Retrop	84.1	109	7	65	14	0	593	3.93	2.52	30
Camargo	82.3	107	7	63	31	0	536	2.18	1.20	9	Watonga	83.4	105	4	63	13	0	569	2.08	1.08	9
Cheyenne	*****	***	***	***	***	****	****	****	****	***	Weatherford	83.6	106	4	65	31	0	577	4.41	1.52	30
Erick	82.4	108	7	61	14	0	540	****	****	***											
CENTRAL																					
Bowlegs	82.4	102	21	61	12	0	538	10.00	4.77	30	Oilton	81.7	103	1	62	12	0	518	5.20	2.05	3
Bristow	80.9	103	1	61	12	****	****	9.25	4.02	30	Okemah	82.0	103	1	64	12	0	526	10.36	3.47	3
Chandler	82.5	101	24	65	12	0	542	5.73	1.97	31	Perkins	83.8	104	23	65	13	****	****	3.96	1.27	30
Chickasha	83.3	105	6	63	14	0	567	4.38	1.94	31	Shawnee	83.7	103	5	64	12	0	580	5.97	2.33	30
El Reno	82.5	104	4	58	13	0	542	3.13	1.71	30	Spencer	84.3	103	5	64	14	****	****	4.40	2.75	30
Guthrie	84.4	104	22	64	12	0	602	2.57	1.16	29	Stillwater	83.1	103	21	62	12	****	****	3.07	1.22	31
Kingfisher	84.4	105	23	61	13	0	600	3.56	1.91	31	Washington	83.1	103	1	65	12	0	562	5.54	3.02	30
Marena	83.0	104	23	64	12	****	****	2.97	.93	29	Ninnekah	83.9	105	6	66	13	0	585	3.39	.88	31
Marshall	84.3	105	22	62	12	0	598	3.38	1.77	29	Acme	83.7	105	6	64	14	0	579	2.86	.85	9
Minco	83.1	104	1	64	13	0	560	4.03	.78	27	Norman	83.4	102	23	65	12	****	****	6.32	3.58	30
EAST CENTRAL																					
Calvin	82.2	103	1	63	12	****	****	5.97	2.50	3	Stigler	82.2	102	1	65	13	****	****	3.67	1.07	29
Cookson	80.1	100	23	59	12	0	469	5.55	1.66	29	Stuart	81.7	100	1	65	12	****	****	5.98	4.13	3
Eufaula	83.0	102	23	64	12	****	****	3.48	.77	30	Tahlequah	81.7	101	22	61	12	0	518	3.56	1.51	29
Haskell	82.0	102	23	63	12	0	527	5.36	2.18	30	Webbers Falls	83.5	104	23	64	12	****	****	4.60	2.23	29
McAlester	82.9	101	1	66	3	****	****	3.88	2.09	3	Westville	*****	***	***	***	***	****	****	*****	*****	***
Okmulgee	81.5	102	1	62	12	0	513	7.03	3.86	3	Hectorville	82.9	104	1	65	12	0	554	11.76	4.29	30
Sallisaw	82.2	101	19	63	12	0	533	3.43	.98	3											
SOUTHWEST																					
Altus	83.6	110	7	64	14	0	576	4.66	3.24	29	Medicine Park	84.1	107	5	65	14	0	593	2.73	1.39	9
Fort Cobb	82.2	105	5	64	14	0	534	3.32	1.27	9	Tipton	85.2	109	7	63	14	0	626	1.53	.95	29
Hinton	*****	***	***	***	***	****	****	****	****	***	Walters	85.3	108	6	64	14	0	628	4.42	1.36	30
Hobart	84.1	106	7	64	14	****	****	5.26	2.55	9	Apache	82.9	104	4	63	14	0	554	2.81	1.26	31
Hollis	83.8	110	7	63	14	0	583	2.67	1.62	30	Grandfield	85.8	110	7	63	13	0	644	2.23	.97	30
Mangum	83.5	111	7	62	14	0	575	2.36	1.03	29											
SOUTH CENTRAL																					
Ada	83.6	105	5	62	12	****	****	3.78	1.70	30	Pauls Valley	84.3	104	5	65	12	0	600	2.77	.67	31
Ardmore	84.4	105	6	65	14	0	601	1.13	.32	31	Ringling	84.6	107	6	65	14	0	608	5.35	3.17	31
Burneyville	84.1	107	6	64	12	0	593	2.48	.99	9	Sulphur	83.1	104	5	64	12	0	560	5.16	1.87	30
Byars	83.3	102	1	63	12	0	567	3.79	1.70	27	Tishomingo	82.8	102	1	65	12	0	552	2.96	.83	30
Centrahoma	*****	***	***	***	***	****	****	****	****	***	Waurika	85.1	108	7	65	13	0	623	2.75	1.09	31
Durant	83.9	101	1	66	12	0	584	2.32	.75	14	Vanoss	83.3	103	5	64	13	0	566	4.47	2.15	31
Ketchum Ranch	83.9	105	6	65	13	0	586	6.86	2.76	30	Bee	83.2	102	6	64	13	0	565	2.96	1.51	30
Lane	83.0	101	1	65	12	0	556	2.36	1.00	3	Newport	84.6	105	6	65	12	0	607	3.22	2.35	31
Madill	84.1	104	6	65	12	0	593	1.92	1.25	14											
SOUTHEAST																					
Antlers	81.9	102	1	62	12	****	****	3.23	1.21	3	Mt Herman	81.2	99	23	62	12	0	502	3.53	1.22	11
Clayton	83.2	102	17	62	12	0	563	2.29	.73	3	Talihina	*****	***	***	***	***	****	****	*****	*****	***
Cloudy	81.2	98	6	65	12	0	501	4.29	1.66	3	Wilburton	83.6	103	1	64	12	****	****	2.00	.45	11
Hugo	83.1	99	18	66	12	0	560	3.05	1.36	29	Wister	82.2	103	19	64	14	****	****	3.32	1.50	29
Idabel	82.5	100	21	66	12	0	543	2.55	.73	10	Broken Bow	81.6	101	6	64	12	0	514	3.63	1.72	11

August 2003 Mesonet Precipitation Comparison

Climate Division	Precipitation (inches)	Departure from Normal (inches)	Rank since 1895	Wettest on Record (Year)	Driest on Record (Year)	Jul-02 (inches)
Panhandle	3.87	1.36	17th Wettest	5.68 (1977)	0.47 (1913)	4.12
North Central	4.17	1.12	24th Wettest	7.69 (1974)	0.09 (1913)	3.97
Northeast	7.94	4.76	3rd Wettest	8.03 (1964)	0.02 (2000)	3.98
West Central	3.23	0.51	32nd Wettest	7.01 (1995)	0.05 (1913)	1.95
Central	5.00	2.37	12th Wettest	7.21 (1906)	0.03 (2000)	3.12
East Central	5.41	2.54	14th Wettest	6.89 (1915)	0.00 (2000)	3.14
Southwest	3.20	0.51	27th Wettest	8.01 (1996)	0.00 (1913)	1.01
South Central	3.41	0.87	27th Wettest	8.46 (1915)	0.01 (2000)	3.54
Southeast	3.10	0.39	54th Driest	8.73 (1915)	0.19 (1943)	2.52
Statewide	4.47	1.70	17th Wettest	6.54 (1906)	0.14 (2000)	3.13

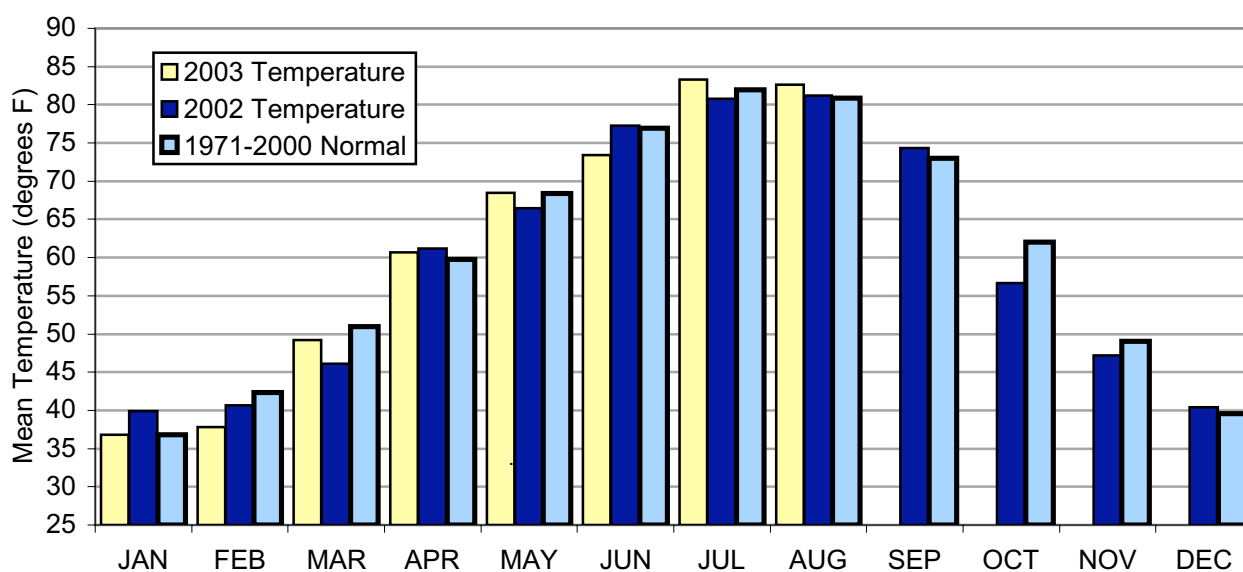
2002 and 2003 Statewide Precipitation Monthly Totals vs. Normal



August 2003 Mesonet Temperature Comparison

Climate Division	Average Temp (°F)	Departure from Normal (°F)	Rank since 1895	Hottest on Record (Year)	Coldest on Record (Year)	Aug-02 (°F)
Panhandle	79.8	2.0	24th Warmest	83.1 (1983)	71.3 (1915)	78.9
North Central	83.0	2.3	29th Warmest	88.9 (1936)	72.3 (1915)	80.6
Northeast	81.8	2.0	33rd Warmest	88.4 (1936)	71.7 (1915)	80.5
West Central	83.1	2.9	22nd Warmest	87.4 (1936)	72.9 (1915)	81.3
Central	83.3	2.30	29th Warmest	88.3 (1936)	73.1 (1915)	81.1
East Central	82.2	1.8	38th Warmest	88.0 (1936)	73.0 (1915)	81.6
Southwest	84.0	2.2	30th Warmest	88.1 (1952)	75.4 (1915)	83.3
South Central	83.7	1.9	33rd Warmest	87.6 (1934)	75.5 (1915)	81.7
Southeast	82.2	1.9	38th Warmest	87.3 (1943)	74.5 (1915)	80.4
Statewide	82.6	2.2	32nd Warmest	87.2 (1936)	73.2 (1915)	81.0

2002 and 2003 Statewide Temperature Monthly Averages vs. Normal



Mesonet Extremes for August 2003

Climate Division	High Temp			Low Temp			High Monthly Rainfall		High Daily Rainfall		
	(°F)	Day	Station	(°F)	Day	Station	(inches)	Station	(inches)	Day	Station
Panhandle	108	7th	Beaver	54	13th	Boise City	6.86	Buffalo	4.06	30th	Slapout
North Central	108	4th	Fairview	60	12th	Blackwell	8.49	Medford	7.93	30th	Medford
Northeast	104	24th	Claremore	59	12th	Nowata	10.5	Bixby	5.06	29th	Vinita
West Central	109	7th	Retrop	61	14th	Erick	4.44	Bessie	2.53	29th	Cheyenne
Central	105	22nd	Marshall	58	13th	El Reno	10.32	Okemah	4.77	30th	Bowlegs
East Central	104	1st	Hectorville	59	12th	Cookson	11.76	Hectorville	4.29	30th	Hectorville
Southwest	111	7th	Mangum	62	14th	Mangum	5.26	Hobart	3.24	29th	Altus
South Central	108	7th	Waurika	62	12th	Ada	6.86	Ketchum Ranch	3.17	31st	Ringling
Southeast	103	19th	Wister	62	12th	Antlers	3.94	Cloudy	1.72	11th	Broken Bow
Statewide	111	7th	Mangum	54	13th	Boise City	11.76	Hectorville	7.93	30th	Medford

September Climatological Outlook

Summer's heat fades as precipitation increases across most of Oklahoma during September. The statewide-averaged normal temperature for the month, 73.0 degrees, makes September the 4th warmest month of the year. As such, climatologists consider it to be the first month of the autumn transitional season. Monthly precipitation decreases in extreme northwestern portions of the state, even as the rest of the state enjoys a second rainy season. Normal monthly precipitation, averaged statewide, is 3.80 inches, an increase of more than one inch over either of the two previous months. An increasing frequency of fronts, bringing cooler air from the northern plains, leads to the lower temperatures, an effect that often isn't apparent before the middle of the month.

Temperature

Mean: 73.0 degrees
Hottest August: 1931, 80.6 degrees
Coolest August: 1974, 65.4 degrees
Hottest location: Waurika, 76.8 degrees
Coolest location: Boise City, 68.0 degrees
Hottest recorded: 120 deg., Alva, September 3, 1939
Alva, September 3, 1947
Coldest recorded: 24 deg., Boise City, September 30, 1985

Freezes are uncommon in September, but stations in the extreme northwest experience a freeze before the end of September in about 10 percent of years. The earliest reported freeze is September 15, in 1993 at Freedom (28 degrees), Gage (30 degrees), and Hammon (30 degrees), and in 1947 at Kenton (31 degrees). Hot weather is most evident in the southwest. Chattanooga averages 16 days in September with a high temperature of 90 degrees or more, including four days in which the temperature reaches 100 degrees or more. Conversely, Kansas and Stilwell each average only six September days with the high temperature in the 90s. Triple digit temperatures occur only about once every third year at Miami, Kenton, and Boise City.

Precipitation

Mean: 3.80 inches
Wettest year: 1936, 7.86 inches
Driest year: 1956, 0.27 inches
Wettest location: Kansas, 5.56 inches
Driest location: Regnier, 1.44 inches
Most recorded: 16.82 inches, Wyandotte, 1945

Statewide-averaged precipitation has varied between 0.27 inch in 1956 and 7.86 inches in 1945. Wyandotte recorded 16.82 inches in September 1945 to hold the monthly state record. The record daily precipitation at a regular reporting station is the 10.42 inches reported at Barnsdall on September 29, 1986. Snow is rare in September, but Boise City reported 4 inches for the month in 1984 and Kenton recorded 3 inches on September 17, 1971, the earliest snowfall in the state since at least 1910.

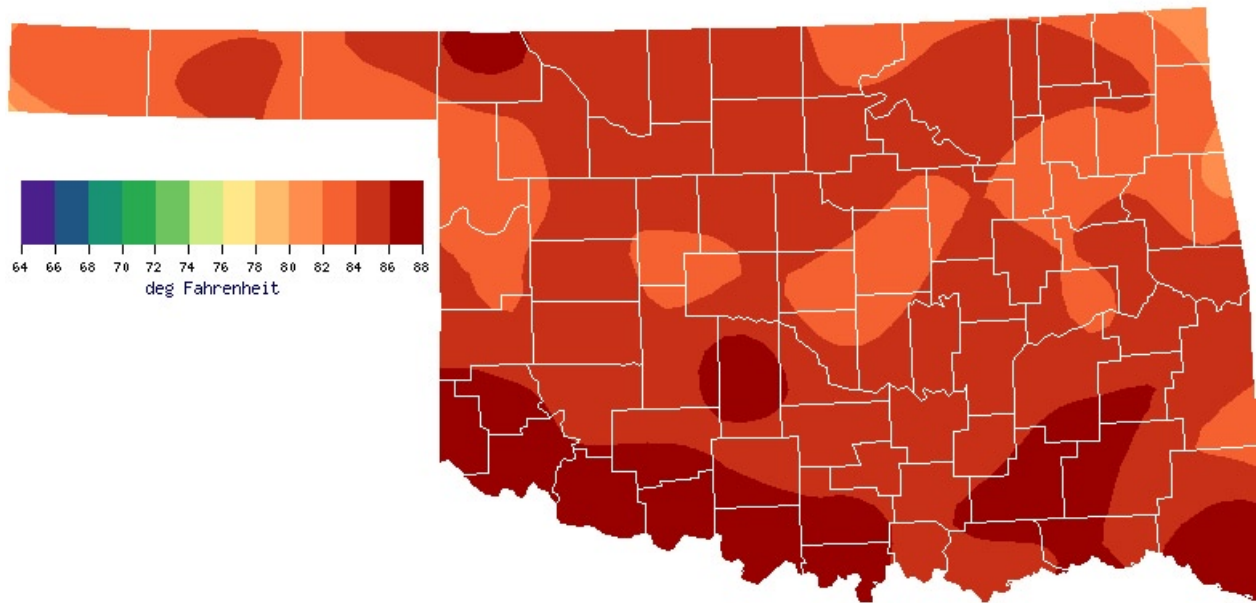
Tornadoes are slightly more frequent in September, averaging 2.1 each year, than they are during the previous two months. The most tornadoes reported in the state during September is 16 in 1992. No tornadoes were reported in the state during September in 18 of 52 years from 1950 through 2001 (the period of comprehensive records). Two people killed in Pottawattomie County on September 14, 1957 are the only tornado-related deaths recorded in September during that period.

Floods present a more common weather hazard than tornadoes in September. Residual moisture from tropical disturbances, usually from the Gulf of Mexico but occasionally from the Pacific Ocean, interacts with slow moving frontal systems in the state from time-to-time during the autumn months. Widespread heavy downpours are the typical result, frequently leading to flooding on larger rivers and streams. On other occasions, a frontal system will stall within the state and successive thunderstorms will form along the frontal boundary and follow each other along a narrow path, thereby producing intense rain over a limited area and causing dangerous flash flooding.

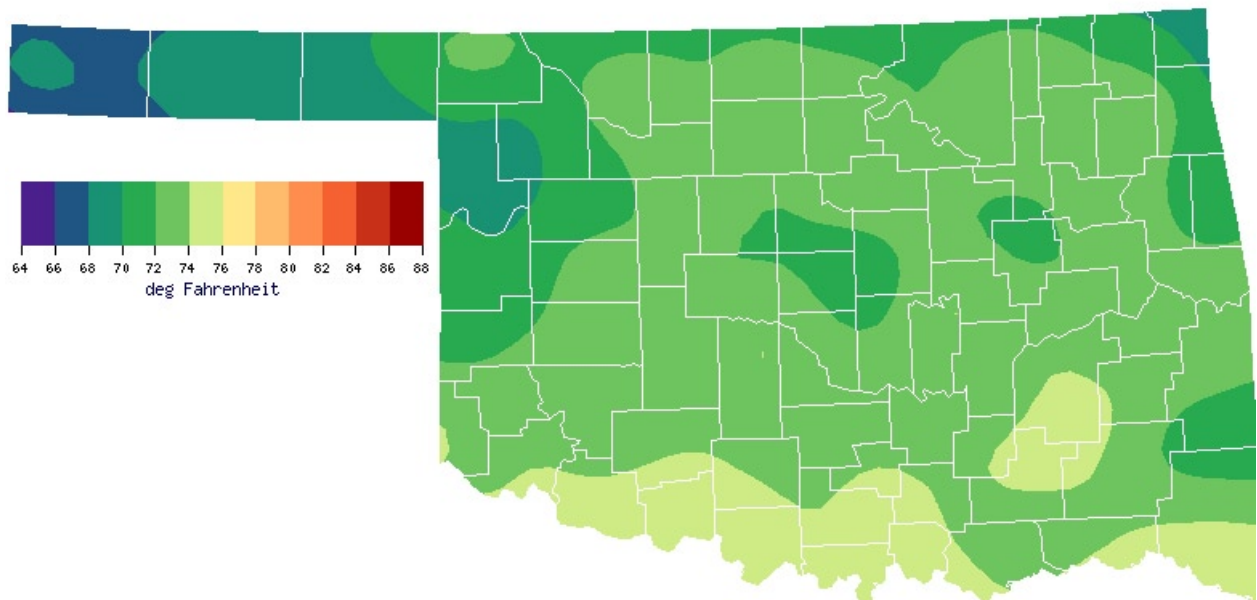
Tornadoes

Average September Tornadoes: 2
Most: 16 (1992)

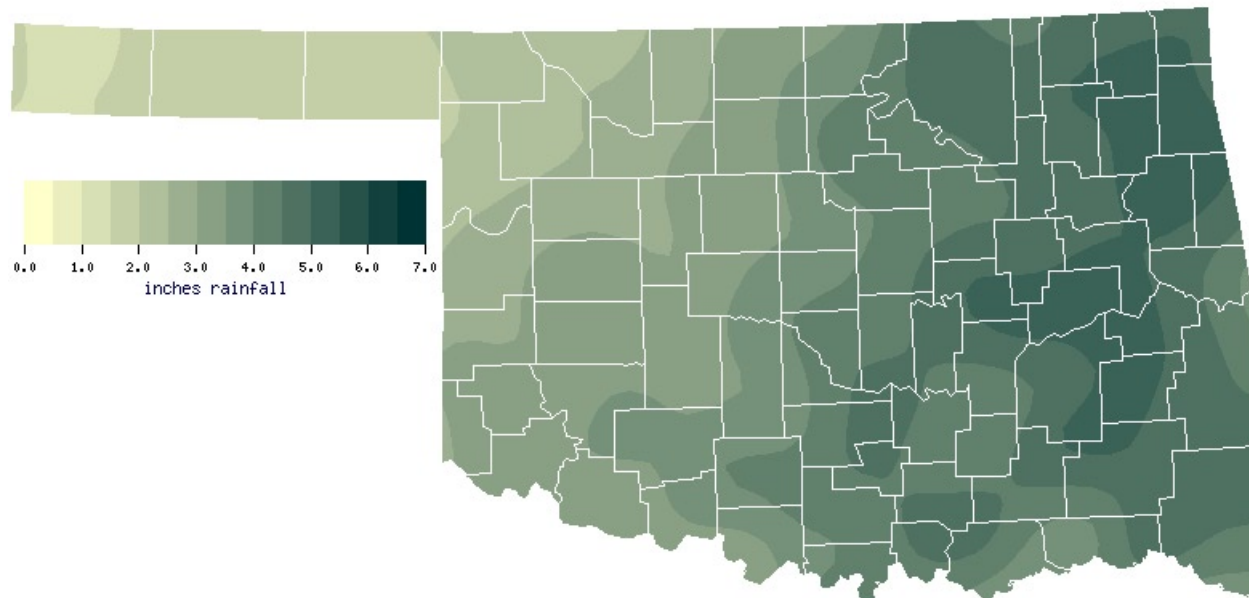
September Normal Monthly Maximum Temperature (1971-2000)



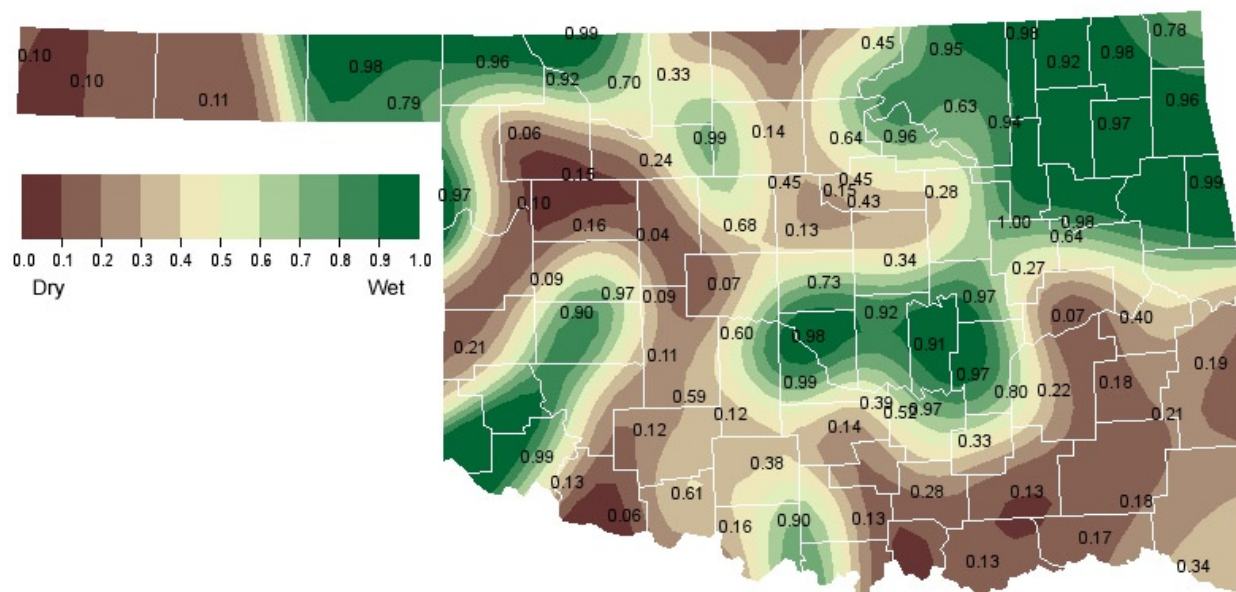
September Normal Monthly Minimum Temperature (1971-2000)



September Normal Precipitation (1971-2000)

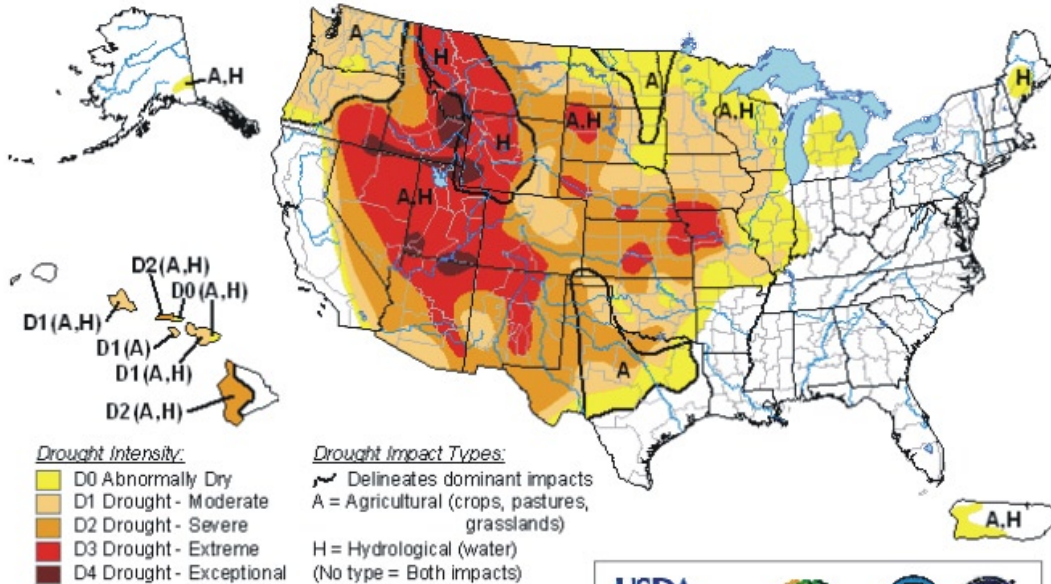


September 1, 2003 Soil Moisture Conditions at 25cm



U.S. Drought Monitor

August 26, 2003
Valid 8 a.m. EDT



Drought Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)
- (No type = Both impacts)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



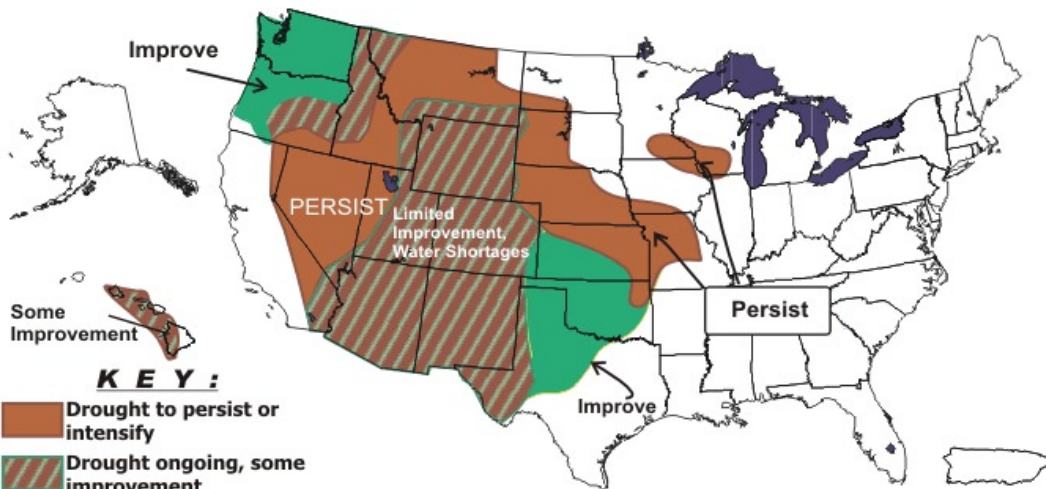
Released Thursday, August 28, 2003
Author: David Miskus, JAWF/CPC/NOAA

<http://drought.unl.edu/dm>



U. S. Seasonal Drought Outlook Through November 2003

Released August 21, 2003

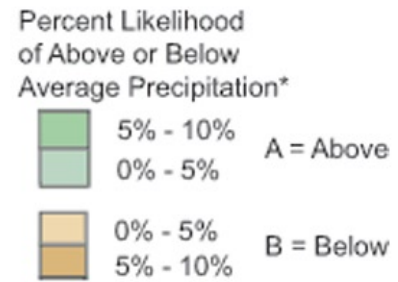
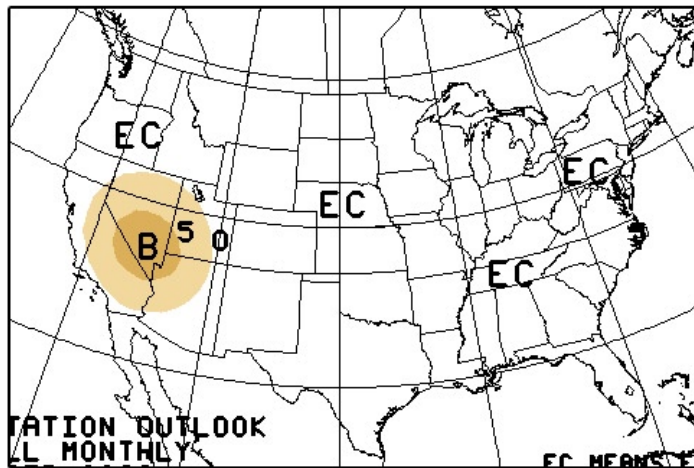


KEY:

- Drought to persist or intensify
- Drought ongoing, some improvement
- Drought likely to improve, impacts ease
- Drought development likely

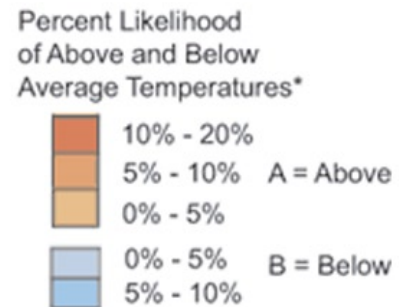
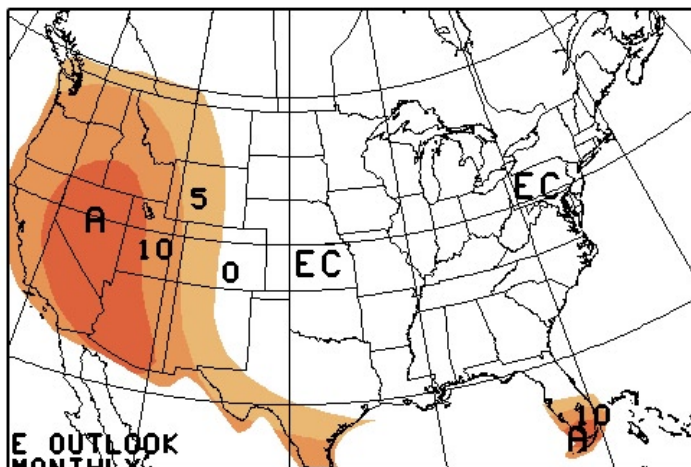
Depicts general, large-scale trends based on subjectively derived probabilities guided by numerous indicators, including short and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance, so use caution if using this outlook for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are schematically approximated from the Drought Monitor (D1 to D4). For weekly drought updates, see the latest Drought Monitor map and text.

September 2003 U.S. Precipitation Forecast



*EC indicates no forecasted anomalies due to lack of model skill.

September 2003 U.S. Temperature Forecast

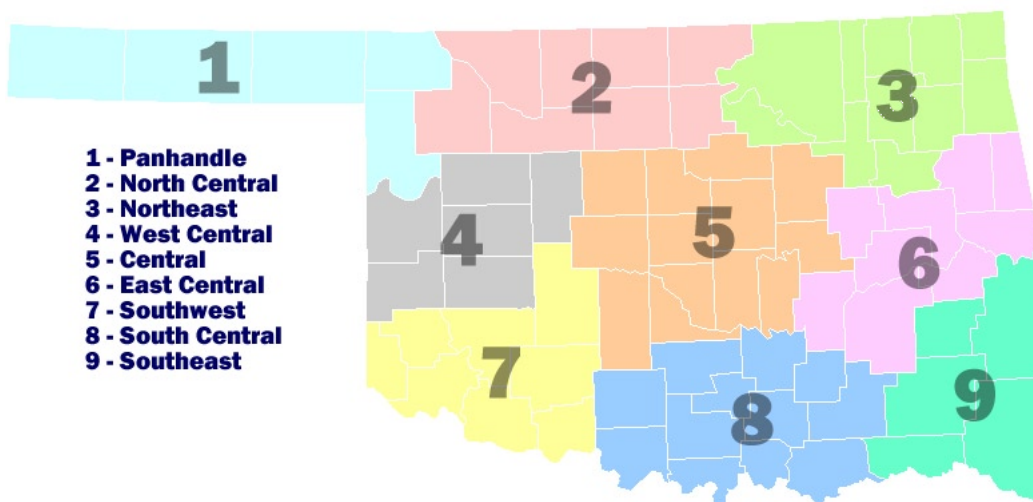


*EC indicates no forecasted anomalies due to lack of model skill.

September Climate Normals

Climate Division	Max. Temperature (°F)	Min. Temperature (°F)	Avg. Temperature (°F)	Precipitation (inches)
1	84.5	55.6	70.1	1.86
2	84.8	59.2	72	3.13
3	84.1	60.5	72.3	4.83
4	84.7	59.5	72.1	2.95
5	84.8	61	72.9	4.03
6	84.5	61.3	72.9	4.88
7	86.4	61	73.7	3.34
8	86.2	62.3	74.3	4.27
9	85.9	60.9	73.4	4.52
Statewide	85.1	60.3	72.7	3.9

Oklahoma Climate Divisions



Interpretation Information

Mean Daily Temperature: Calculated from an average of the daily maximum and minimum temperatures. Daily averages are summed for each day, and then divided by the number of valid data points – typically the number of days in the month. Although this may differ from the “true” daily average, it is consistent with historical methods of observation and comparable to the normals and extremes for stations and regions of the state.

Degree Days: Degree Days are calculated each day of the month for which there is a temperature report and the mean temperature for the day is less than (Heating Degree Days) or greater than (Cooling Degree Days) 65 degrees. Daily values are summed to arrive at a monthly total. HDD/CDD are qualitative measures of how much heating/cooling was required to maintain a comfortable indoor temperature. Missing observations may result in an artificially high or low value.

Severe Weather Reports: Only the most significant events are listed. Tornadoes of F2 or greater strength (on the 0-5 Fujita scale), hail of two inches diameter or greater, and wind speeds of 70 miles per hour or above are listed. National Weather Service defines storms as severe when they produce a tornado, hail of three-quarters inch or greater, or wind speeds above 57 miles per hour (50 knots). For additional reports, contact the Oklahoma Climatological Survey, Storm Prediction Center, or your local National Weather Service forecast office.

Soil Moisture: The soil moisture variable displayed is the Fractional Water Index (FWI), measured at a depth of 25 cm. This unitless value ranges from very dry soil having a value of 0, to saturated soils having a value of 1.

Additional Resources

Sunrise / Sunset tables

U.S. Naval Observatory: <http://aa.usno.navy.mil/data>

Severe Storm Reports

Storm Prediction Center: <http://spc.noaa.gov/climo/>

National Climatic Data Center (more than about 4-5 months old):

<http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms>

Seasonal Outlooks

Climate Prediction Center:

http://www.cpc.ncep.noaa.gov/products/OUTLOOKS_index.html

Climate Calendars and other local weather and climate information

Oklahoma Climatological Survey: <http://climate.ocs.ou.edu> or

<http://www.ocs.ou.edu/>

E-mail (ocs@ou.edu) or telephone (405/325-2541)



Oklahoma Climatological Survey

Oklahoma Climatological Survey is the State
Climate Office for Oklahoma

Dr. Ken C. Crawford, Director and State
Climatologist

Editor

Gary D. McManus, Climatologist

Contributors

Gary D. McManus

Mark A. Shafer, Climatologist

Derek S. Arndt, Climatologist

Howard Johnson, Associate State
Climatologist (Ret.)

Design

Stdrovia Blackburn, Visual Communications
Specialist

For more information, contact:

Oklahoma Climatological Survey

The University of Oklahoma

100 East Boyd Street, Suite 1210

Norman, OK 73019-1012

tel: 405-325-2541

fax: 405-325-2550

e-mail: ocs@ou.edu

<http://www.ocs.ou.edu>