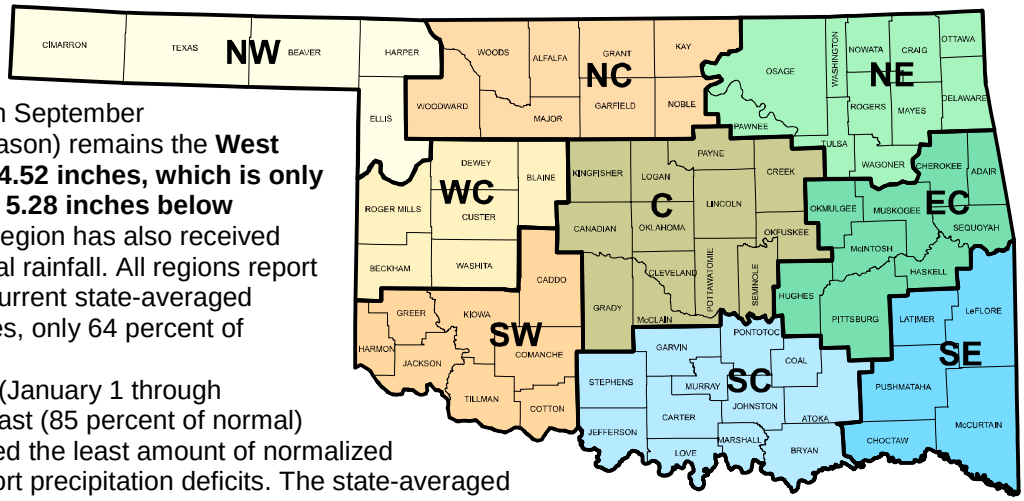
Oklahoma Water Resources Bulletin
& Summary of Current Conditions

SEPTEMBER 13, 2001 **OKLAHOMA WATER RESOURCES BOARD**

Statewide Precipitation & General Summary

Scattered rainfall continues to alleviate emerging dry conditions, although additional moisture is needed throughout much of Oklahoma.

According to preliminary Mesonet weather station data provided by the Oklahoma Climatological Survey and National Weather Service (see below), the area experiencing the lowest percent of normal rainfall from June 1 through September 12 (the current summer season) remains the **West Central climate division (4.52 inches, which is only 46 percent of normal and 5.28 inches below average**). The Southwest region has also received less than one-half its normal rainfall. All regions report precipitation deficits. The current state-averaged precipitation total is 7 inches, only 64 percent of normal for the period.



For the calendar year (January 1 through September 12), the Northeast (85 percent of normal) climate division has received the least amount of normalized rainfall. Seven regions report precipitation deficits. The state-averaged total is 95 percent of normal.

PRELIMINARY STATEWIDE PRECIPITATION BY CLIMATE DIVISION

DIVISION (#)	CALENDAR YEAR JANUARY 1 – SEPTEMBER 12, 2001			SUMMER 2001 JUNE 1 – SEPTEMBER 12, 2001			RAINFALL SINCE AUGUST 27
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	
Northwest (1)	14.45	-1.21	92	4.64	-4.08	53	0.38
North Central (2)	19.07	-1.92	91	5.47	-5.37	50	0.99
Northeast (3)	24.22	-4.15	85	7.13	-5.40	57	1.05
West Central (4)	19.57	-0.17	99	4.52	-5.28	46	0.93
Central (5)	23.14	-1.58	94	7.18	-3.71	66	1.50
East Central (6)	32.46	2.51	108	9.84	-1.73	85	2.63
Southwest (7)	18.62	-1.94	91	4.70	-4.88	49	0.98
South Central (8)	26.09	-0.88	97	8.00	-2.87	74	2.72
Southeast (9)	36.26	2.14	106	11.71	-0.97	92	3.79
STATE-AVERAGED	**23.56**	**-1.16**	**95**	**7.00**	**-3.97**	**64**	**1.63**

Information and data contained in this update of Oklahoma's water resource conditions are courtesy of the National Weather Service, Climate Prediction Center, Oklahoma Climatological Survey, State Department of Agriculture, Oklahoma Forestry Services, Agricultural Statistics Service, U.S. Army Corps of Engineers, U.S. Department of Agriculture/Forest Service, U.S. Geological Survey, Western Drought Coordination Council and National Drought Mitigation Center. This publication is issued weekly during times of specific concern regarding statewide or regional water situations and periodically -- biweekly or monthly -- the remainder of the year.
For more information, visit http://www.state.ok.us/~owrb/features/drought.html.

Drought Indices

According to the latest Palmer Drought Severity Index (September 8, below), drought conditions continue to improve somewhat throughout most of Oklahoma. **However, six regions remain in drought.** The Northeast, North Central and West Central climate divisions are in the "moderate drought" category; the Central, Southwest and South Central regions are in "mild drought." Only three of Oklahoma's nine climate divisions have undergone PDSI moisture decreases since August 25; the Northwest ("near normal") climate division experienced the greatest decrease during the period.

The latest monthly Standardized Precipitation Index (through August, below) indicates that much of Oklahoma is experiencing long-term dryness. Among the *selected* time periods (3-, 6-, 9- and 12-month SPI's), eight of nine climate divisions (all but the Southeast) report **moderately dry to very dry conditions** throughout the last 3 months; five regions indicate dryness during the past 6 months. The Northeast reports the most consistent dry period of any region throughout the past year.

The latest Keetch-Byram Drought Index (September 13, below), which measures the state of near-surface soil moisture (within the uppermost eight inches of soil) as well as the amount of fuel available for fires, indicates that drought-related fire conditions in Oklahoma have continued to improve within the last two weeks. Statewide, 19 stations are currently above 600, generally indicative of more severe drought conditions (33 stations had a reading above 600 on August 27); no stations are above 700. Buffalo, in Northwest Oklahoma, reports the highest KBDI value (699), followed by Cherokee (North Central; 682) and Breckinridge (North Central; 680). According to the Oklahoma Department of Agriculture (Forestry Services), Statewide Wildfire Preparedness remains at Level 3 (high fire danger). However, effective September 7, Governor Keating has removed eight southern and western counties from the previous Ban on Outdoor Burning; 19 counties, primarily in northwest and north central Oklahoma, remain under the ban. Counties removed from the ban are Beckham, Custer, Hughes, Okfuskee, Pontotoc, Roger Mills, Seminole and Washita. Counties remaining under the ban are Alfalfa, Beaver, Blaine, Coal, Creek, Dewey, Ellis, Garfield, Garvin, Grant, Harper, Kay, Major, Okmulgee, Pawnee, Stephens, Texas, Tulsa and Woodward. Outdoor charcoal or gas grilling is permitted in a grill; organized fireworks displays permitted by a municipality or the State Fire Marshall's office are also allowed. Small grain stubble burning is allowed under certain conditions.

PALMER DROUGHT SEVERITY INDEX

CLIMATE DIVISION (#)	CURRENT STATUS 9/8/2001	VALUE 9/8	VALUE 8/25	CHANGE IN VALUE
Northwest (1)	NEAR NORMAL	0.08	1.05	-0.97
North Central (2)	MODERATE DROUGHT	-2.66	-2.38	-0.28
Northeast (3)	MODERATE DROUGHT	-2.94	-2.90	-0.04
West Central (4)	MODERATE DROUGHT	-2.14	-2.32	0.18
Central (5)	MILD DROUGHT	-1.93	-2.46	0.53
East Central (6)	INCIPIENT DROUGHT	-0.75	-2.07	1.32
Southwest (7)	MILD DROUGHT	-1.59	-1.64	0.05
South Central (8)	MILD DROUGHT	-1.21	-2.89	1.68
Southeast (9)	NEAR NORMAL	-0.06	-1.97	1.91

STANDARDIZED PRECIPITATION INDEX
THROUGH AUGUST 2001

CLIMATE DIVISION (#)	3-MONTH	6-MONTH	9-MONTH	12-MONTH
Northwest (1)	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL	MODERATELY WET
North Central (2)	VERY DRY	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
Northeast (3)	MODERATELY DRY	VERY DRY	MODERATELY DRY	MODERATELY DRY
West Central (4)	VERY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Central (5)	MODERATELY DRY	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
East Central (6)	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southwest (7)	VERY DRY	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
South Central (8)	MODERATELY DRY	VERY DRY	NEAR NORMAL	NEAR NORMAL
Southeast (9)	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY WET

KEETCH-BYRAM DROUGHT FIRE INDEX

MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 9/13/2001
Buffalo	Harper	Northwest	699
Cherokee	Alfalfa	North Central	682
Breckinridge	Garfield	North Central	680

19 total stations above 600

ANTICIPATED IMPACT

600-800: often associated with more severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; live fuels also expected to burn actively.

400-600: lower litter and duff layers actively contribute to fire intensity and will burn actively; typical of late summer, early fall.

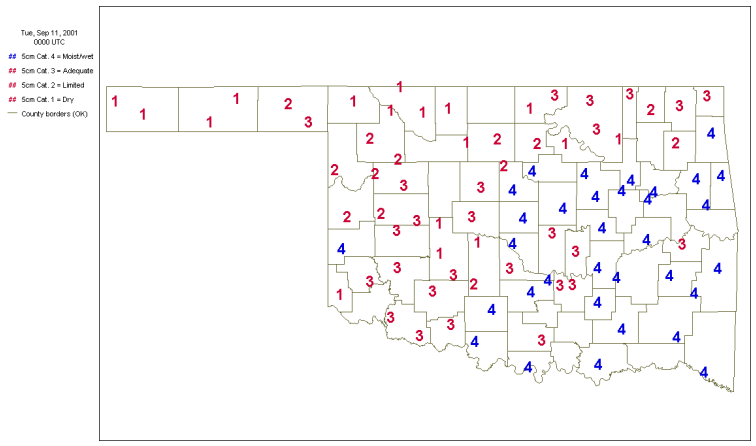
The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides a seasonal estimation of precipitation while the 6-month SPI can be very effective in showing precipitation over distinct seasons. The Keetch-Byram Drought Index provides a gauge of dead fuel currently available for potential fires.

Soil Moisture

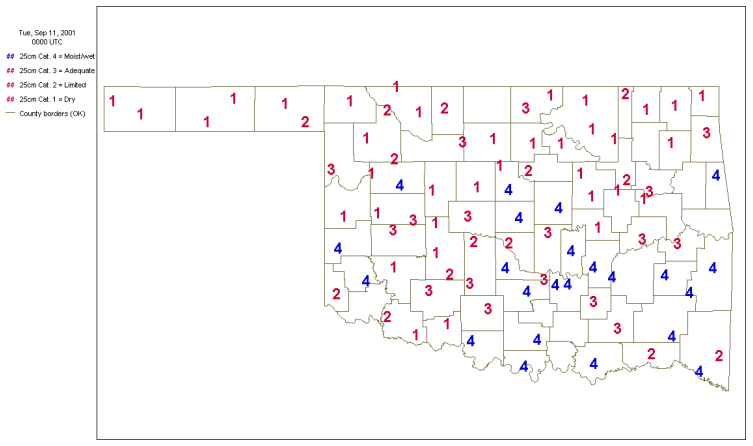
September 11, 2001

(courtesy Oklahoma Climatological Survey)

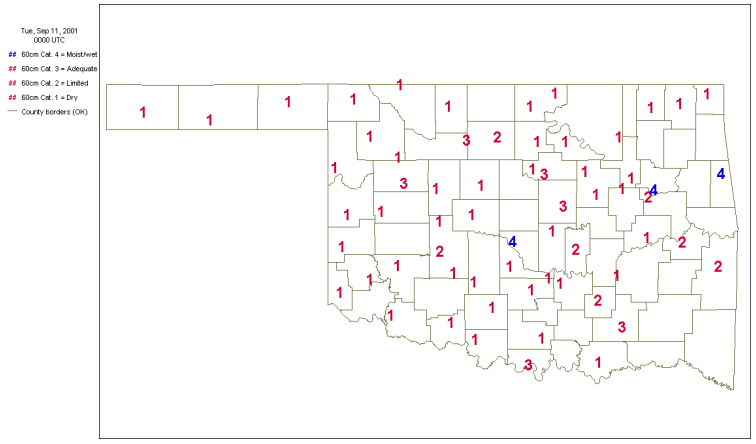
5 cm



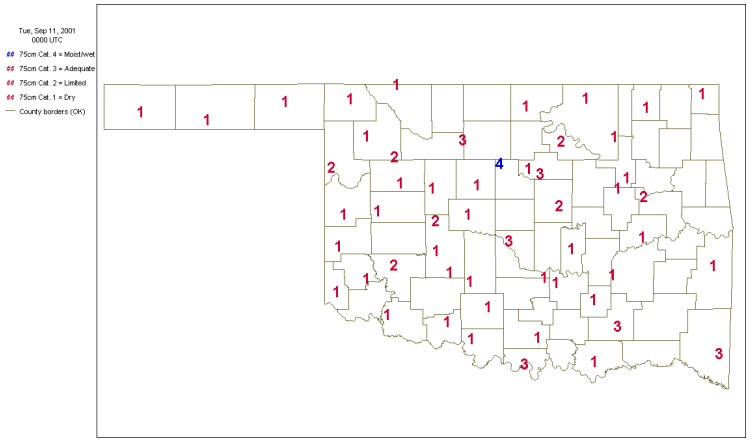
25 cm



60 cm



75 cm



Category Description		Depth -- Metric Conversion	
Category 4	Moist/wet	5 cm	2 inches
Category 3	Adequate	25 cm	9.8 inches
Category 2	Limited	60 cm	23.6 inches
Category 1	Dry	75 cm	29.5 inches

Streamflow Conditions

For the current water year (beginning October 1, 2000), flows in most state rivers and streams remain generally below or near average. Considering overall trends as well as current flows, the most recent data (August 27) from the six U.S. Geological Survey/OWRB stream gage sites selected to monitor the general condition of Oklahoma streams (daily streamflow since October 1, 2000 compared to long-term, normal/median daily discharges) indicate **much below average flow** in the *northwest* (Cimarron River Woods County); **below average flow** in *central* (Canadian River McClain County) Oklahoma; and **near average flow** in the *southwest* (North Fork/Red River Beckham County), *southeast* (Glover River McCurtain County), *northeast* (Baron Fork Cherokee County) and *south central* (Washita River Carter County) regions.

Weather Forecast

The National Weather Service 8- to 14-day outlook (September 20-26) calls for below normal precipitation and above normal temperatures for all of Oklahoma.

Current models indicate that positive (warmer than normal) sub-surface temperature (SST) anomalies in the equatorial Pacific have risen to their highest levels since the 1997-98 El Niño episode. This trend is expected to continue during the remainder of 2001 and into the first half of 2002. El Niños, warm water patterns that increase the chances for cooler, wetter conditions in the southern U.S. (including Oklahoma), generally return every two to seven years.

Crop Report

September 10 -- A series of rain showers and heavy thunderstorms across Oklahoma slowed sorghum and soybean harvest last week. Despite the slowdown, the harvest of corn, sorghum and soybeans remained significantly ahead of normal. The rains helped replenish serious moisture shortages that persisted throughout the state and helped to reduce stress to pastures and remaining crops. More precipitation is needed statewide as 65 percent of the state's topsoil moisture was still rated in short or very short condition. Farmers had 5.3 days suitable for fieldwork during the week.

The additional moisture will assist producers in making significant progress preparing land and sowing next season's small grain crops. However, high levels of armyworms will delay wheat planting in some areas. As of Sunday, 76 percent of the wheat ground had been prepared for seeding, ahead of the five-year average. Thirteen percent of the state's intended wheat acreage had been planted by week's end. Much of the remaining row crop acreage has benefited from the recent milder temperatures and rainfall. However, the precipitation will be too late to significantly improve many crops before they are harvested. Harvest activities were interrupted in many areas due to the wet weather. Corn harvest was able to make good progress and advanced to 54 percent complete, 28 percentage points ahead of the five-year average. Sorghum and soybeans were both at 23 percent harvested, well ahead of normal. As of Sunday, 36 percent of the sorghum acreage had reached maturity, well ahead of normal for this time of year. A wide range of yields continued to be reported for row crops already harvested. The state's soybean crop greatly needed the moisture as plants continue to fill pods in some areas. Cotton conditions were highly variable but the majority of the crop was rated in mostly fair or poor condition with 26 percent opening bolls. Twenty-one percent of the peanuts were mature with harvest yet to begin. Grasshopper problems were still being reported in some areas. The prospects for fall hay cuttings have been enhanced by recent rains. The precipitation was a welcome sight, as most hay supplies are short and producers desperately need a good hay cutting before winter arrives. Hay cutting and baling continued where possible. Both alfalfa and all other hay improved from the previous week and were rated in mostly fair or poor condition.

Some producers were still required to supplement their livestock, but the improvements to many pastures should reduce the quantities being fed. Livestock remained in mostly fair to good condition. Insect pressure on cattle was rated mostly moderate to light. Some pastures were already showing signs of improvement. Range and pasture conditions were rated mostly poor to fair with west central and north central Oklahoma being the most affected from lack of growth.

Reservoir Storage

Reservoir storage levels have begun to rebound somewhat in many areas of the state. As of September 12, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 89.7 percent full, a 1.3 percent increase from that recorded on August 28, according to information from the U.S. Army Corps of Engineers (Tulsa District). Nineteen reservoirs have experienced lake level decreases since that time. Twenty-five reservoirs are currently operating at less than full capacity (compared to 29 two weeks ago); five reservoirs (**Lugert-Altus, only 37.1 percent**; Keystone, 65.7 percent; Hulah, 68.6 percent; Great Salt Plains, 74.6 percent; and Canton, 76.4 percent) are below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs
as of September 12, 2001

Climate Division / *Lake or Reservoir*	*Conservation Storage* (acre-feet)	*Present Storage* (acre-feet)	*Percent of Storage* conservation	flood
NORTH CENTRAL				
Fort Supply	13,900	12,962	93.3	0.00
Great Salt Plains	31,420	23,451	74.6	0.00
Kaw*	383,005	378,960	98.9	0.00
Regional Totals/Averages	**428,325**	**415,373**	**97.0**	**0.00**
NORTHEAST				
Birch	19,225	15,390	80.1	0.00
Copan	43,400	36,183	83.4	0.00
Fort Gibson	365,200	365,013	99.9	0.00
Grand	1,672,000	1,512,059	90.4	0.00
Hudson	200,300	200,300	100.0	9.77
Hulah	31,160	21,362	68.6	0.00
Keystone	278,122	182,738	65.7	0.00
Oologah	552,210	543,149	98.4	0.00
Skiatook	322,700	291,181	90.2	0.00
Regional Totals/Averages	**3,484,317**	**3,167,375**	**90.9**	**1.09**
WEST CENTRAL				
Canton	111,310	85,057	76.4	0.00
Foss	165,480	153,422	92.7	0.00
Regional Totals/Averages	**276,790**	**238,479**	**86.2**	**0.00**
CENTRAL				
Arcadia	27,520	27,520	100.0	0.09
Heyburn	7,105	5,987	84.3	0.00
Thunderbird	119,600	113,194	94.6	0.00
Regional Totals/Averages	**154,225**	**146,701**	**95.1**	**0.03**
EAST CENTRAL				
Eufaula*	2,368,223	2,052,096	86.7	0.00
Tenkiller	654,100	570,720	87.3	0.00
Regional Totals/Averages	**3,022,323**	**2,622,816**	**86.8**	**0.00**
SOUTHWEST				
Fort Cobb	80,010	76,042	95.0	0.00
Lugert-Altus	132,830	49,278	37.1	0.00
Tom Steed	88,970	72,980	82.0	0.00
Regional Totals/Averages	**301,810**	**198,300**	**65.7**	**0.00**
SOUTH CENTRAL				
Arbuckle	72,400	68,438	94.5	0.00
McGee Creek	113,930	112,596	98.8	0.00
Texoma*	2,539,946	2,310,473	91.0	0.00
Waurika*	190,200	179,357	94.3	0.00
Regional Totals/Averages	**2,916,476**	**2,670,864**	**91.6**	**0.00**
SOUTHEAST				
Broken Bow*	958,180	833,341	87.0	0.00
Hugo*	158,617	158,617	100.0	0.15
Pine Creek*	61,570	61,570	100.0	1.12
Sardis	274,330	274,330	100.0	4.30
Wister	60,162	60,162	100.0	0.06
Regional Totals/Averages	**1,512,859**	**1,388,020**	**91.7**	**1.13**
STATE TOTALS	**12,097,125**	**10,847,928**	**89.7**	**0.50**

* indicates seasonal pool operation; actual storage figures/percentages may vary.