

The Oklahoma Drought of 2001-2002

Oklahoma Event Summary



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As a service to citizens and decision-makers within Oklahoma, the Oklahoma Climatological Survey produces a publication series of Event Summaries. These summaries describe the conditions associated with severe or extreme weather events, impacts of those events, and a comparison to other notable historical occurrences. The summaries are part of the OCS Mission to "conduct and report on studies of climate and weather phenomena of significant socioeconomic importance to the state." Summaries will be produced for any federally declared weather-related disaster in Oklahoma, or for other notable events that may not reach disaster proportions.

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Front Cover Photo Credits

Tornado, Andrew Reader; Ice storm, Chris Duvall; Wildfire, Courtesy of Oklahoma State University.

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The Oklahoma Drought of 2001-02

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Drought is typically defined as a period during which precipitation is insufficient to meet the established needs of a region. It is a natural and recurring feature of Oklahoma’s climate. Historically, the frequency and severity of episodes increase as one travels west within the state. Agricultural and water practices have adapted to accommodate short-term dry episodes; however, significant drought spanning one or more crop cycles can cause major economic damage. Oklahoma’s Drought of 2001-02 did such damage to a range of agricultural sectors.

Plagued by intermittent short-term and seasonal dry episodes since the mid 1990s, much of western Oklahoma was severely impacted by the 2001-02 event. The episode began in early summer 2001, shortly after the winter wheat harvest. It continued through mid-summer 2002, decimating winter wheat and several row crops in parts of the state, as well as pasture and winter forage for livestock operations. As a result, the U.S. Department of Agriculture declared an agricultural disaster for 30 counties, with relief also made available to 9 adjacent counties, in the western half of Oklahoma (Fig. 1).

Statistics reveal a period of devastating rainfall deficits for much of western Oklahoma. The Panhandle climate division experienced its second-driest June-through-July-of-the-following-year on record, recording just 59% of normal rainfall over the 14-month span. The only similar period for which the division observed less rain occurred during the Dust Bowl (June 1936-July 1937). The north central and west central climate divisions also suffered the effects of prolonged drought, respectively experiencing their sixth- and fifth-driest winter wheat cycle (June through May) on record. While rainfall deficits for southwest Oklahoma relaxed somewhat by summer 2002, the region felt the sting of drought into spring 2002. Northeastern Oklahoma suffered from drought impacts during the last seven months of 2001, and recovered during early 2002.

The timing, location and duration of the event made it most damaging to Oklahoma’s agricultural sector. The largest sectors to be adversely affected were winter wheat producers and those livestock operations that rely on wheat for winter forage. Row crops were injured by the lack of rainfall and associated heat wave during summer 2001. Hay operations also suffered greatly from the event.

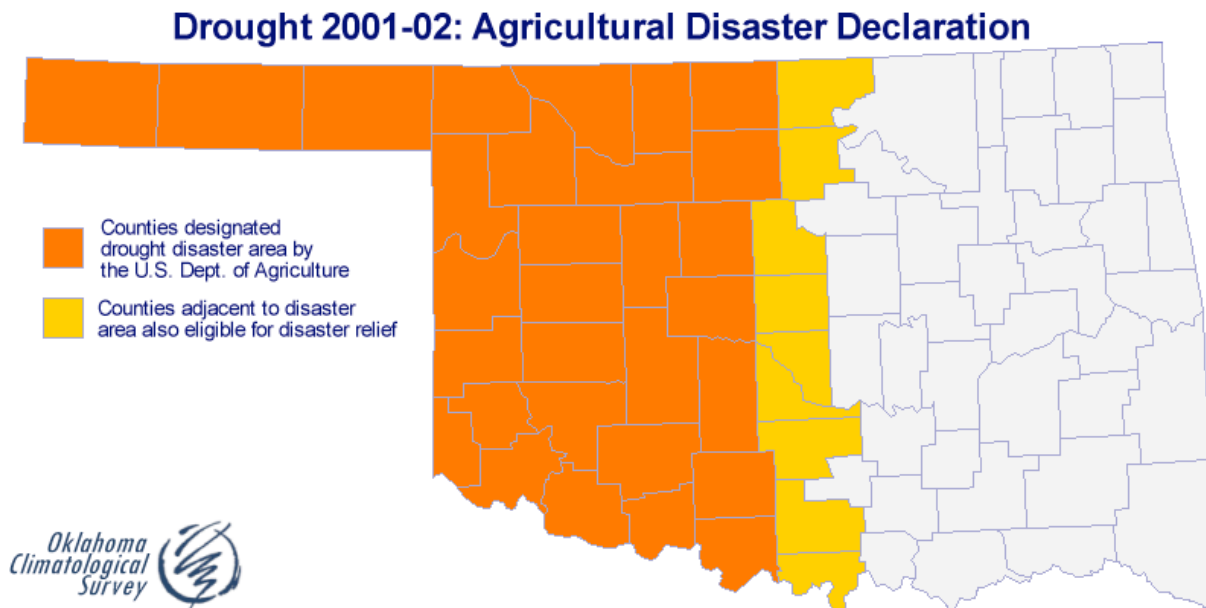


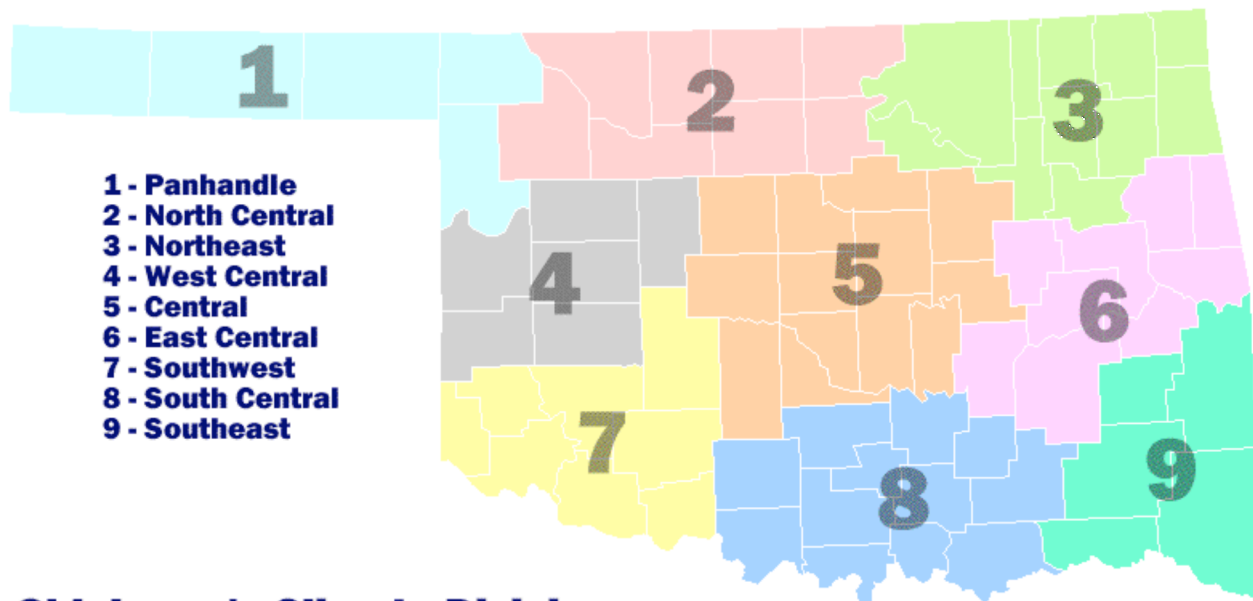
Fig. 1. Agricultural disaster areas associated with the Drought of 2001-02, as determined by the U.S. Department of Agriculture.

The 2001-02 Drought in Oklahoma

Background

Much of Oklahoma’s rainfall and temperature statistics are reported by climate division (Fig. 2). There are nine climate divisions (CDs) in Oklahoma; each corresponds to one of nine U.S. Department of Agriculture’s (USDA) crop reporting districts. Thus, CD4 is the west central climate division and the USDA west central crop reporting district. Rainfall and temperature data, unless otherwise noted, were reported by the National Weather Service Cooperative Observer network (the “coop network”). This data is ingested and archived by the Oklahoma Climatological Survey (OCS), where historical data by climate division date to 1895. Monthly rainfall and cumulative rainfall by month are given as Appendices I and II, respectively. Crop and topsoil conditions, unless otherwise noted, were reported to the Oklahoma Agricultural Statistics Service, a state statistical office of the USDA National Agricultural Statistics Service.

Real-time drought monitoring is facilitated by data from the Oklahoma Mesonet. Although the results from Mesonet data are eventually superseded by coop network (due to its historical precedent), the accuracy and promptness of Mesonet data allows for comprehensive precipitation monitoring across the state. Maps depicting Mesonet rainfall are retained in Appendix III.



Oklahoma's Climate Divisions

Fig 2. Oklahoma’s Climate divisions. Crop reporting districts share the same names and counties.

General Timespan and Progression of the Drought

The Drought of 2001-02 affected roughly the northwest two-thirds of the state, to varying degrees. For most areas, the onset of the drought occurred in late May or June of 2001. While nearly all of the state felt the effect of an intensely hot and dry summer of 2001, conditions worsened into autumn for roughly the northwestern two-thirds of the state. Central and northeastern Oklahoma emerged from stress in early 2002, but conditions persisted in the state's western half through spring 2002. During summer 2002, relief eroded drought conditions from east to west (generally) across the stricken areas. The Oklahoma Panhandle suffered the most severe effects of the drought, recording below-normal precipitation in 13 of 14 months from June 2001 through July 2002.

PRECIPITATION DATA: JUNE 2001 through JULY 2002 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	15.54	26.55	-11.01	59	106/107	1936	2000	14.66-1936	38.70-1950
N.Central	28.14	38.57	-10.43	73	89/107	1990	2000	22.58-1916	56.90-1986
Northeast	39.51	49.75	-10.24	79	87/107	1995	2000	28.65-1910	71.08-1941
W.Central	21.78	35.08	-13.30	62	102/107	1970	2000	18.14-1916	54.70-1986
Central	37.40	45.13	-7.73	83	74/107	1990	2000	24.45-1910	59.35-1992
E.Central	49.25	53.93	-4.68	91	63/107	1995	2000	34.72-1963	72.79-1926
Southwest	27.59	37.14	-9.55	74	86/107	1980	2000	20.14-1970	54.22-1986
S.Central	44.94	48.14	-3.20	93	49/107	1999	2000	26.55-1910	63.28-1989
Southeast	63.30	59.22	+4.08	107	27/107	1999	2000	38.11-1955	76.47-1926
Statewide	36.23	43.69	-7.46	83	79/107	1983	2000	26.78-1910	54.22-1992

* 1 = Wettest, 107 = Driest (records begin in 1895)

Chronological Development

Winter 2000-01 was quite wet throughout the state. Spring 2001 brought near-to-above normal precipitation to central and western Oklahoma, and slightly below-normal precipitation elsewhere. Soil moisture conditions were generally favorable entering summer 2001. In fact, 98% of the state reported adequate or better topsoil moisture during the last week of May.

Summer 2001

June 2001 was quite dry across the state, with all nine CDs reporting rainfall more than an inch below normal for the month. Western Oklahoma was particularly dry. Southwestern Oklahoma reported its fourth-driest June on record, and west central Oklahoma reported its seventh-driest. By the end of the month, 55% of the state reported adequate or better topsoil conditions. The dry June followed a dry late May in Oklahoma's winter wheat belt. The dry conditions actually helped accelerate the winter wheat harvest of 2001.

July 2001 was dry and very hot across the state. As in June, all nine CDs reported below normal rainfall. Only in southeastern Oklahoma did rainfall exceed half the normal. The panhandle CD's average temperature of 85.7F represented the hottest month in its modern climate history, dating to 1895. Statewide, the month was the fifth-hottest and fifth-driest July on record.

The June-July period was the driest on record for west central and southwest Oklahoma, and the second-driest for north-central Oklahoma. By the end of the July, the cumulative effect of two months of hot, dry weather began to take a toll on agriculture. Dryland row crops and pastures, in decline by early July, began to burn up by the end of the month. Topsoil conditions rated adequate or better in only 8% of the state. Grasshopper damage, which began to present a problem in late June, continued to expand during the month. By mid-July, spraying was necessary to combat grasshopper populations in many locations.

Isolated thunderstorms brought spotty relief in August, especially to southeastern Oklahoma. Still, below normal rainfall was observed in six climate divisions. By summer's end, poor conditions were entrenched across all of western Oklahoma, plus much of north-central and northeastern Oklahoma. Livestock herd reduction began in drier areas of northern and western Oklahoma as hay and pasture conditions continued to decline. Irrigated row crops showed stress by mid-August and grasshopper damage was characterized as severe in many locations. Summer rainfall (June through August) was less than 60% of normal for all but east-central and southeastern Oklahoma.

PRECIPITATION DATA: JUNE 2001 through AUGUST 2001 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	4.20	7.96	-3.76	53	104/107	1976	2000	2.66-1936	17.32-1950
N.Central	4.18	9.97	-5.79	42	104/107	1954	2000	3.73-1936	16.95-1995
Northeast	6.03	10.96	-4.93	55	101/107	1984	2000	2.97-1936	23.78-1948
W.Central	3.25	8.71	-5.46	37	104/107	1998	2000	2.79-1980	16.53-1995
Central	5.59	9.77	-4.18	57	97/107	1998	2000	1.97-1936	17.61-1992
E.Central	7.88	10.71	-2.83	74	83/107	1998	2000	1.54-1936	20.53-1958
Southwest	4.54	9.03	-4.49	50	100/107	1998	2000	2.15-1980	16.43-1996
S.Central	5.00	9.72	-4.72	51	97/107	1998	2000	2.58-1980	19.72-1950
Southeast	9.31	10.99	-1.68	85	74/107	1999	2000	3.50-1934	21.23-1945
Statewide	5.52	9.77	-4.25	56	100/107	1980	2000	2.79-1936	17.25-1950

* 1 = Wettest, 107 = Driest (records begin in 1895)

Autumn 2001

The decline in available moisture accelerated during autumn for most of the areas still suffering at summer's end. Winter wheat planting conditions were good in eastern Oklahoma, but generally deteriorated from east to west. Mid-September rainfall gave some hope to wheat growers in central Oklahoma, and helped hay fields to some extent. October was extremely dry (less than one-fourth the normal rainfall) in western Oklahoma. The wheat outlook was bleak at planting time, and many operators in the region resorted to "dusting in" their crop. Extreme dryness in northwest Oklahoma enhanced a killing frost in late October. By mid-November, the wheat situation was desperate in the region, and root systems appeared weak on many plants.

Cumulatively, the conditions of autumn 2001 reinforced existing drought stress in western and northern Oklahoma. By November's end, four CDs (panhandle, north central, northeast and west central) had observed six consecutive months of below-normal rainfall and about half of normal rainfall for the period. These four, plus the southwest CD, all recorded one of their ten driest June-November periods on record.

PRECIPITATION DATA: SEPTEMBER 2001 through NOVEMBER 2001 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	2.16	4.43	-2.27	49	94/107	1992	2000	0.70-1956	10.34-1941
N.Central	4.54	7.87	-3.33	58	80/107	1995	2000	0.97-1910	17.19-1986
Northeast	8.10	12.03	-3.93	67	73/107	1995	2000	2.60-1948	27.94-1941
W.Central	3.73	7.32	-3.59	51	85/107	1999	2000	1.01-1954	20.71-1986
Central	9.72	10.58	-0.86	92	46/107	1999	2000	2.11-1910	20.42-1923
E.Central	11.67	13.53	-1.86	86	47/107	1999	2000	2.40-1948	22.86-1923
Southwest	4.60	8.10	-3.50	57	83/107	1999	2000	0.95-1910	18.40-1986
S.Central	11.90	11.69	+0.21	102	34/107	1999	2000	2.18-1948	24.03-1923
Southeast	11.90	14.60	-2.70	82	48/107	1999	2000	3.11-1963	25.15-1984
Statewide	7.66	10.01	-2.35	77	61/107	1999	2000	2.44-1910	18.16-1923

* 1 = Wettest, 107 = Driest (records begin in 1895)

Winter 2001-02

December 2001 brought less than one-fifth of normal precipitation to the northwestern third of the state, and less than a third of normal to the southwest. For the panhandle, north central, northeast and west central CDs, January 2002 was the first month since May 2001 with above normal precipitation. Hidden in this positive mark are two negative issues: (1) January's normal precipitation is the least of the twelve months in Oklahoma and, (2) almost all of the precipitation in western Oklahoma fell as the product of a devastating ice storm. The storm left over a quarter-million people without power and caused over \$100 million in damages (see OCS event summary ES 2002-01). Even with heavy damage to trees and infrastructure, many winter wheat growers appreciated the ice, which can be valuable to the crop upon melt. However, western parts of the state received less than the two-plus inches that fell in much of central Oklahoma, and less than an inch of precipitation fell the following month, as February again brought precipitation deficits to the state.

The cumulative effect of the winter season was to further entrench drought conditions in the state's western half, plus the insult of severe ice damage to parts of central and western Oklahoma. The winter season also marked the end of the drought event for almost all of northeastern Oklahoma, although a few municipalities experienced lingering effects in the form of low reservoir levels. Central Oklahoma, which had felt less drought stress than western reaches of the state, also began to emerge from the worst of its drought experiences.

PRECIPITATION DATA: DECEMBER 2001 through FEBRUARY 2002 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	1.25	1.86	-0.61	67	69/107	1993	2000	0.10-1903	5.13-1959
N. Central	2.56	3.45	-0.89	74	65/107	1995	2000	0.55-1908	7.78-1984
Northeast	5.67	5.83	-0.16	97	49/107	1996	2000	1.94-1917	15.24-1984
W. Central	2.42	3.16	-0.74	77	59/107	1995	2000	0.21-1908	7.83-1959
Central	4.87	5.24	-0.37	93	37/107	1998	2000	0.38-1908	13.80-1984
E. Central	7.73	7.54	+0.19	103	44/107	1998	2000	1.97-1917	14.59-1937
Southwest	3.15	3.77	-0.62	84	54/107	1995	2000	0.14-1908	9.05-1984
S. Central	6.98	6.64	+0.34	105	34/107	1999	2000	0.53-1908	13.24-1937
Southeast	13.97	10.02	+3.95	139	14/107	1999	2000	3.13-1962	20.47-1931
Statewide	5.29	5.23	+0.06	101	40/107	1998	2000	1.24-1908	10.38-1984

* 1 = Wettest, 107 = Driest (records begin in 1895)

Spring 2002

March focused the contrast between the “haves” in the southeast half of the state and the “have-nots” in the north and west. Incredibly, the southeast CD observed its second-wettest March in history, while the panhandle recorded less than one-tenth of an inch of rain, 3% of its normal. The north central and west central CDs each logged just one-half inch of rain, less than one-fourth of normal. The north central’s 0.53 inches was the least March rain since 1972. The wheat crop in western Oklahoma, long abandoned by many, was damaged beyond repair for most remaining growers by mid spring. Late April and early May brought some relief to most of the state. While the rains were insufficient to eradicate drought conditions in western Oklahoma, they reduced the threat of wildfire that had been growing since February. Burn bans remained in force for Cimarron and Texas Counties.

May completed the first twelve months of the episode. The panhandle had suffered its second-driest June-through-May period on record, with only 10.32 inches. This total represented less than half its normal annual rainfall. The west central and north central CDs respectively logged their fifth- and sixth-driest such periods on record. Conditions in northeastern and central Oklahoma continued to improve during the spring.

PRECIPITATION DATA: MARCH 2002 through MAY 2002 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	2.71	6.85	-4.14	40	105/108	1966	2001	1.15-1966	13.27-1957
N.Central	7.69	10.36	-2.67	74	68/108	1996	2001	1.77-1895	21.31-1957
Northeast	12.24	13.15	-0.91	93	54/108	2001	2000	3.12-1895	25.15-1957
W.Central	6.34	9.90	-3.56	64	77/108	1996	2001	1.86-1971	19.30-1957
Central	9.83	12.40	-2.57	79	73/108	1996	2001	3.74-1932	22.89-1957
E.Central	14.76	14.31	+0.45	103	36/108	2001	1999	4.49-1936	30.36-1990
Southwest	8.24	9.90	-1.66	83	58/108	1998	2001	3.28-1971	20.48-1957
S.Central	13.41	12.91	+0.50	104	35/108	2001	1999	5.07-1896	27.30-1957
Southeast	20.19	15.33	+4.86	132	14/108	2001	1991	7.12-1936	30.18-1990
Statewide	10.49	11.68	-1.19	90	53/108	2001	2000	4.89-1895	22.74-1957

* 1 = Wettest, 108 = Driest (records begin in 1895)

Early Summer 2002

Several drought-stricken areas received heavy rainfall and began to emerge from drought conditions during summer 2002. Heavy rains in north central Oklahoma during early June hindered the harvest of what remained of the winter wheat crop. July rains brought relief to much of west central and southwest Oklahoma and the eastern panhandle. However, the central and western panhandle continued to suffer from drought and wildfire danger. On July 31, 2002, Texas County completed one year under a burn ban, easily the longest consecutive run in state history.

PRECIPITATION DATA: JUNE 2002 through JULY 2002 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	5.22	5.45	-0.23	96	64/108	2001	2000	1.42-1910	13.05-1950
N.Central	9.17	6.92	+2.25	133	21/108	2001	2000	1.90-1954	13.14-1908
Northeast	7.47	7.78	-0.31	96	57/108	2001	2000	1.50-1914	16.67-1948
W.Central	6.04	5.99	+0.05	101	49/108	2001	2000	1.63-2001	12.18-1962
Central	7.39	7.14	+0.25	104	48/108	2001	2000	1.24-1914	14.82-1908
E.Central	7.21	7.84	-0.63	92	56/108	2001	2000	0.99-1914	16.02-1945
Southwest	7.06	6.34	+0.72	111	37/108	2001	2000	0.95-2001	11.57-1962
S.Central	7.65	7.18	+0.47	107	36/108	2001	2000	1.30-1914	15.60-1945
Southeast	7.93	8.28	-0.35	96	49/108	2001	2000	0.37-1914	16.32-1945
Statewide	7.27	7.00	+0.27	104	45/108	2001	2000	2.25-1954	12.36-1950

* 1 = Wettest, 108 = Driest (records begin in 1895)

The Big Picture: Regional and National Drought

The U.S. Drought Monitor is a weekly assessment co-sponsored by several U.S. Department of Commerce agencies, the U.S. Department of Agriculture and the National Drought Mitigation Center at the University of Nebraska. In addition to climate data and indices, the Drought Monitor authors rely on input from local officials to assess conditions on a local scale. The Oklahoma Climatological Survey serves as the local expert for conditions across Oklahoma. The following regional and national assessment is largely based on data from archives of the U.S. Drought Monitor.

Drought plagued much of the United States between the summers of 2001 and 2002, a time span that was dominated by the prevalence of high pressure aloft over large portions of the country (Fig. 3). The 2001-02 drought in Oklahoma was part of a larger drought complex across the southwest United States. The southern Rocky Mountains, from central Colorado into New Mexico, received very little snowfall from autumn 2001 through spring 2002. Poor snowpack affects downstream areas that rely on snowmelt for warm season streamflow and water supply. The agricultural regions along the Pecos and Rio Grande Rivers were particularly impacted by the season's dismal snowpack. The Colorado River, delivered one-eighth the amount of water needed to supply Arizona, Nevada and California in summer 2002, leaving the three states to draw heavily on water stored in Lakes Mead and Powell (*Arizona Republic*, Sept. 9, 2002).

During summer 2001, mild drought conditions spread from west Texas into much of Oklahoma, north Texas and eastern New Mexico (Fig. 4). By late fall, the episode had worsened, particularly in a swath from the Big Bend region of west Texas into north-central Oklahoma. Through the winter months of 2001-02, the regional drought worsened and expanded westward. By late winter, this regional drought merged with persistent drought conditions in the northern Rockies to encompass much of the western United States in drought conditions. By late spring 2002, the areal extent remained fairly consistent, but the severity of the drought worsened considerably. Mid-summer 2002 brought continued severe drought in the southern and central Rockies and the central high plains. By this time, drought conditions in Oklahoma retreated to the western panhandle.

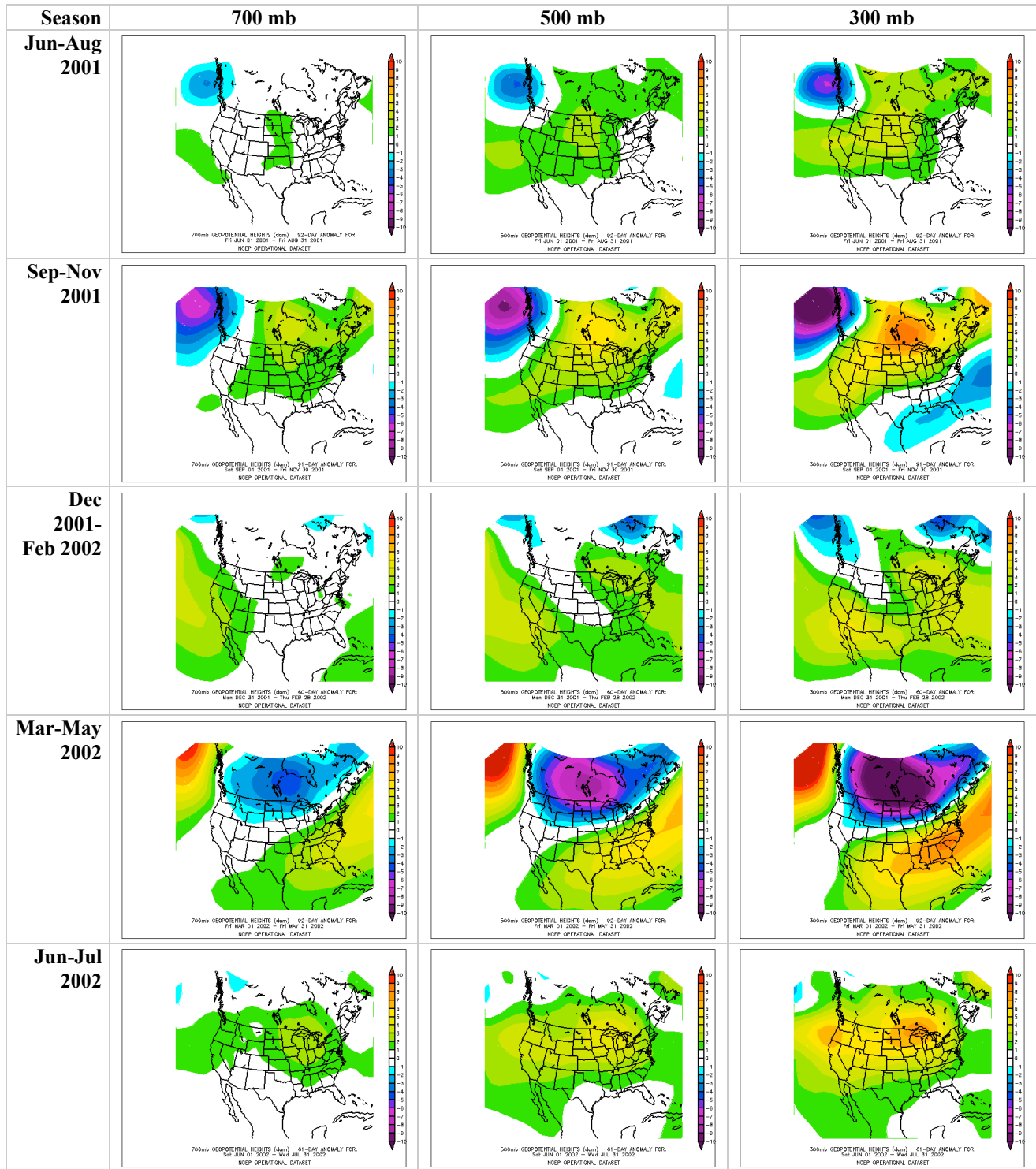


Fig. 3. Seasonally-averaged height anomaly, in millibars [mb] from climatological normals, during Oklahoma’s Drought of 2001-02. The scale is the same for all images: +10 mb (red) to -10 mb (dark purple). Larger height values are associated with clearer and drier conditions. Data courtesy of the Climate Diagnostics Center.

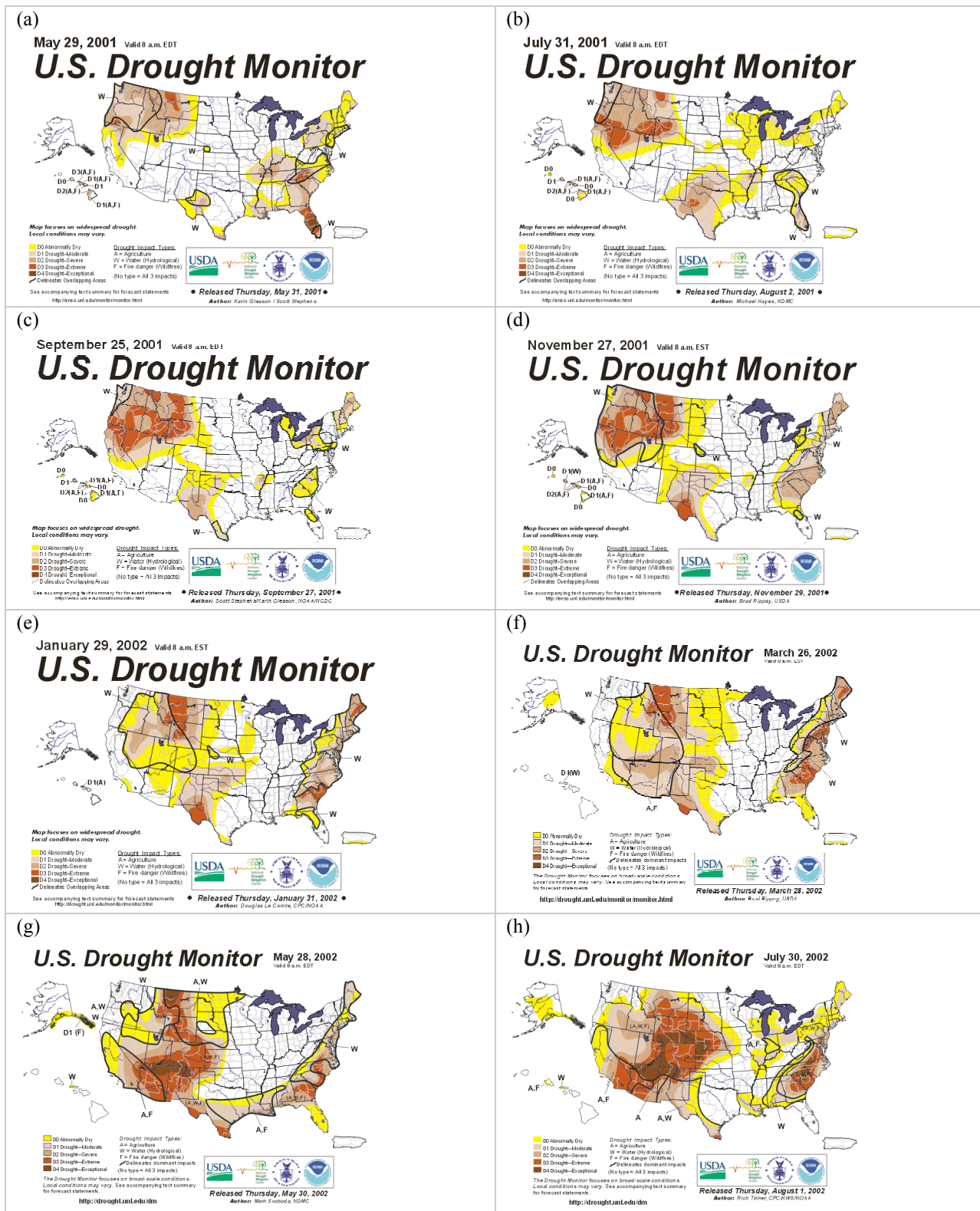


Fig 4. National drought assessment from the U.S. Drought Monitor for every other month from late spring 2001 through mid-summer 2002. Specifically: (a) May 29, 2001; (b) July 31, 2001; (c) September 25, 2001; (d) November 27, 2001; (e) January 29, 2002; (f) March 26, 2002; (g) May 28, 2002; and (h) July 30, 2002.

Impacts

Agriculture

Oklahoma's agricultural industry, which accounts for \$3-5 billion per year in product alone, was the primary victim of the drought of 2001-02. Winter wheat was particularly impacted because of the timing, duration and location of the episode. This injury to the wheat crop has a domino effect in the cattle industry. Several row crops were also adversely affected.

Winter wheat

The drought episode caused losses at several critical junctures during the winter wheat crop cycle. The first impacts of the episode were realized during late summer and autumn of 2001. The hot, dry summer of 2001 depleted soil moisture across much of the western two-thirds of Oklahoma to the point that seedbeds could not be prepared for a normal sowing of wheat. By early October, 55 percent of the state reported topsoil moisture as "very short" or "short". Planting dates were delayed in many locations, shortening the time between germination and winter's first freeze, thus increasing the prospects of a retarded crop. Many growers were forced to "dust in" their crop at locations that did not receive adequate moisture to work the soil to a suitable depth.

Of the approximately 6.0-6.5 million acres normally dedicated to winter wheat crops in Oklahoma, about 2.5 million acres did not produce a normal crop. An estimated 1.5 million acres of winter wheat were abandoned by spring 2002, and another 1.0 million acres produced less than 60% of the normal yield. The spring 2002 harvest amounted to an estimated 105 million bushels of wheat across Oklahoma, compared to 187 million bushels in 2001, and a normal statewide harvest of 140-160 million bushels. At a price of approximately \$3.30/bu, these shortages represented more than \$150 million in crop loss alone.

Livestock

Cattle operations represent the single largest sector of the agricultural industry in Oklahoma. The drought's impacts on the sector were mainly due to weight loss in calves, and interruptions to grazing practices dependent on winter wheat.

The impact from weight loss alone, estimated for two million calves, at a market rate of approximately \$36/head, contributed an injury of about \$72 million statewide.

Winter wheat is grown not only for sale as grain, but is also heavily used by cattlemen for winter forage. Therefore, in addition to the drought's direct stress on livestock, wheat losses also injured the cattle sector. The episode's impact on winter forage cost ranchers an estimated \$30 per acre across 60 million acres, for an additional injury of \$180 million from interruptions to grazing practices.

Alfalfa and Other Hay

Alfalfa is the dominant hay crop in western Oklahoma. The hot, dry summer of 2001 stunted the crop by approximately one-half ton per acre across 300,000 acres of alfalfa. This impact was worst in northwestern Oklahoma. The injury associated with this 150,000-ton loss was estimated at \$15 million. Other hay crops missed as many as two cuttings across the western two-thirds of Oklahoma. The impact was estimated at \$40-60 million dollars for the 2001 season. As of early 2002, much of northwestern Oklahoma was at near-zero grass production.

Soybeans

Soybean losses were estimated at \$50 per acre for a total of approximately \$15.5 million statewide.

Water Resources

The timing of the episode (early summer 2001 through early summer 2002) tended to minimize municipal water shortages across most of the state. The depletion of Hulah Reservoir to less than 20% conservation storage forced the City of Bartlesville to implement mandatory water rationing for several months during early 2002. However, rationing was not mandatory in other locations.

Reservoir levels dropped below 80% at Keystone Reservoir in northeast Oklahoma during the early months of the episode, but had recovered fully by late 2001. In southwestern Oklahoma, Lugert-Altus and Tom Steed Reservoirs dipped below 50% storage throughout much of the episode. These two reservoirs typically show summer depletion due to irrigation demand, but their lack of a typical cool season recovery was abnormal.

Fire Danger

Increased fire danger is a familiar symptom of Oklahoma drought episodes, and the 2001-02 event was no different. However, widespread wildfire events were not as commonplace as they were during the last overwinter drought (of 1995-96). Two prominent levels of action during wildfire danger are the Red Flag Fire Alert (RFFA) and the Gubernatorial Burn Ban. The Oklahoma Department of Agriculture, Food and Forestry (ODA) issues the RFFA to advise against activities which may ignite wildfire. The Burn Ban is issued by the Governor's office, and carries penalties for unsanctioned outdoor burning of any kind.

The Governor's office first issued burn bans for this episode during July 2001 for 18 counties in western Oklahoma (Fig. 5). By August, the ban expanded eastward to include 44 counties, including much of the Tulsa metropolitan area and western portions of the Oklahoma City metropolitan area. Much of the rest of the state was under RFFA advisement. Sporadic rains in late August and early September allowed the incremental removal of counties from the ban. By mid-September, the area under the Ban retreated to eleven counties in northwestern Oklahoma. By January, only Texas County remained under a burn ban.

Dry winter conditions expanded the wildfire threat during the first three months of 2002. During these months, RFFA advisories were implemented once or more for all but far eastern Oklahoma. By early April, eleven counties in northwestern and north-central Oklahoma were in burn ban status. Sporadic spring rains helped reduce the area under Ban to the state's two westernmost counties by June 2002. The ban for Texas County, implemented July 31, 2001, was lifted September 11, 2002. The 408 consecutive days under a burn ban more than doubled the longest such stretch on record.

Washington County officials also implemented a mandatory burn ban during the first four months of 2002. This ban was enforced not because of imminent fire danger, but because very low reservoir levels greatly diminished the capacity to fight wildfire.

While wildfire danger was prevalent during the Drought of 2001-02, wildfire outbreak was limited to several brief, intense episodes that occurred on several dry, windy days of March and April 2002. Overall, the number of wildfires and acres burned were less than during previous dry spells of the late 1990s. The ODA's Assistant Director of Forestry credited increased public awareness and compliance with the burn ban and RFFA actions for the reduction in wildfire episodes.

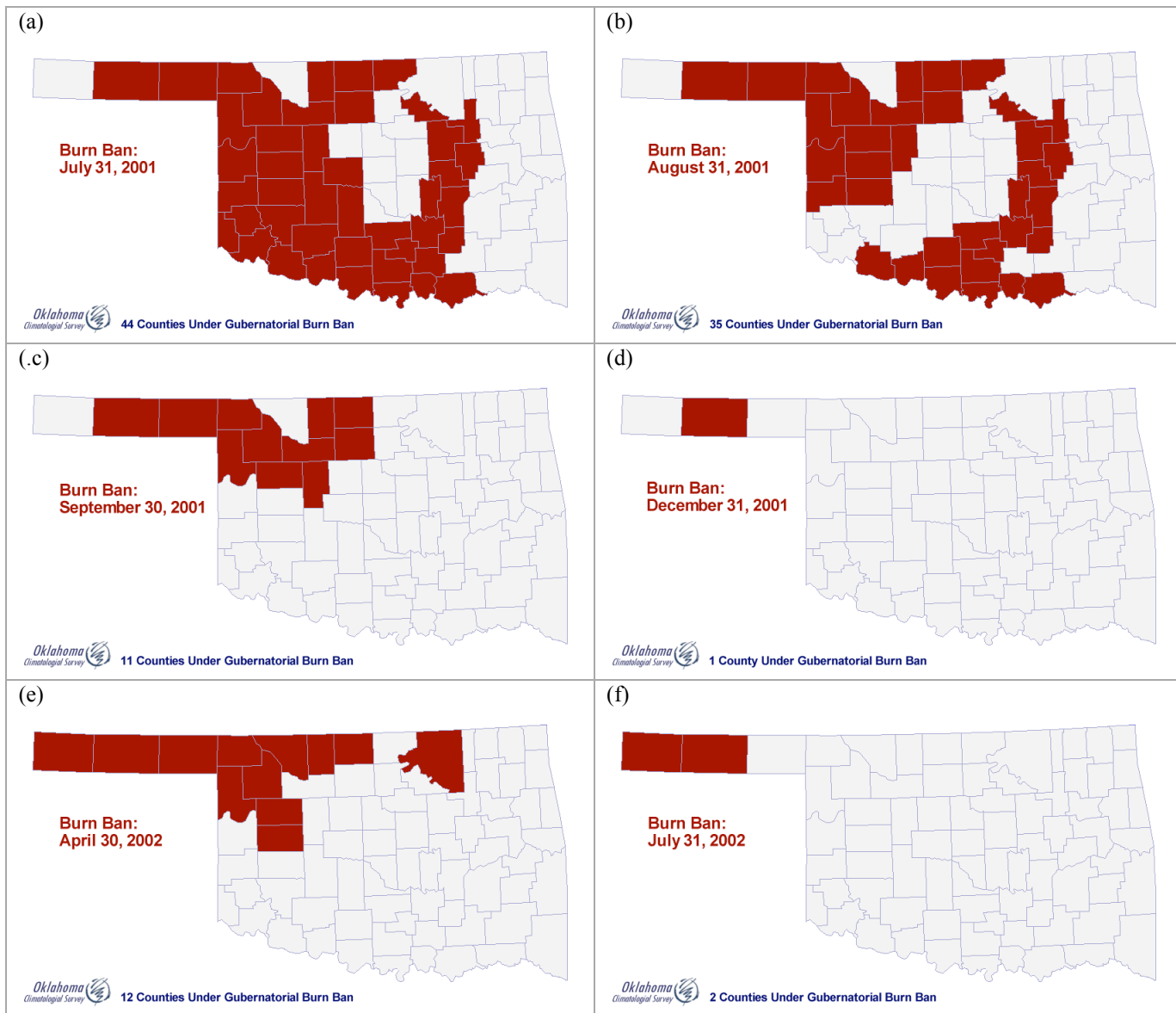


Fig. 5. Counties under Gubernatorial Burn Ban restrictions as of the final day of (a) July 2001; (b) August 2001; (c) September 2001; (d) December 2001; (e) April 2002; and (f) July 2002.

Historical Perspective

Recent Episodes

The drought of 2001-02 was the latest (and longest, at places) of a series of dry episodes dating to the winter of 1995-96 (Table A). The winter 1995-96 episode was similar in timing to the 2001-02 drought, albeit shorter in duration. Heavy rains broke the drought in spring 1996. A summer dry spell and heat wave encompassed the state from April through September 1998, causing water shortages in many municipalities. A severe but short-lived dry spell and heat wave occurred in late summer 2000. Ironically, until 2001, each of these years was wetter than the established normal on a statewide annual basis. The dry episodes were masked in the annual rainfall statistics by very wet periods in the interim months.

Recent Drought and Dry Episodes (summary tables provided as Appendix IV)					
Event	Approx. Dates	Primary Areas Affected	Notable Statistics (records date to 1895)	Primary Impacts	Notes
Winter 1995-96	Oct 1995 - May 1996	Statewide, particularly western two-thirds.	Driest Oct-May on record for west central and north central climate divisions (CDs), and statewide-averaged rainfall; 2 nd -driest Oct-May on record for northeast, central and southwest CDs; South central and panhandle CDs ranked 3 rd , 4 th , respectively.	Smallest wheat yield in state history; cattle sell-offs brought depressed prices; February 1996 wildfire disasters in several counties	Modern Oklahoma Drought Management Plan established in event's wake. Event began shortly after remnants of Tropical Storm Dean drenched the western half of the state in August 1995.
Summer 1998	Apr 1998 – Sep 1998	Southern two-thirds of state, particularly southwest quarter.	Driest Apr-Sep on record for west central, southwest and south central CDs. Southwest CD received one-third of normal rainfall.	Associated heat wave during Jun-Aug; summer crops decimated (esp. cotton, peanuts, watermelon); arson and wildfire prevalent; municipal water rationing.	Drought broke during Sep for east central and southeast CDs, early Oct for southwestern quarter of state. Northern third of state also somewhat dry and quite hot. "Operation Haymaker" initiated to transport hay from neighboring counties and states with adequate supply. Ironically, dry Apr-May allowed ideal curing conditions for spring 1998 winter wheat harvest (largest in state history).
Late Summer 2000	Aug 2000 – Sep 2000	Statewide.	All CDs received one-third or less of normal rainfall; driest Aug-Sep on record for panhandle, north central, northeast, west central and south central CDs, as well as statewide; west central CD observed 1% of normal rainfall, north central CD observed 6%;	Intense heat wave.	Short but intense episode followed a very wet Jun-Jul 2000.

Table A. Recent drought and dry spell episodes impacting Oklahoma.

Analog Periods

In addition to noting a climate episode by its historical rank (i.e., second-driest, 14th-warmest, etc.), the determination of analog periods is a useful tool for assessing its historical fit. This method employs least-square fitting to compare the test episode (in this case, June 2001 through July 2002) with all such periods in the climate record (i.e., all 14-month periods beginning in June) for a given location or area. Those periods that behave most like the test period on a month-by-month basis can be distilled from the dataset. Table B represents those June-through-following-year's-July periods whose data are most similar to Oklahoma's Drought of 2001-02.

Analog Periods to June 2001 through July 2002						
Climate Division	Precipitation			Temperature		
	1st	2nd	3rd	1st	2nd	3rd
Panhandle	1955-56	1919-20	1993-94	1980-81	1954-55	1901-02
North Central	1970-71	1990-91	1903-04	1946-47	1913-14	1964-65
Northeast	1990-91	1978-79	1966-67	1942-43	1999-2000	1964-65
West Central	1970-71	1925-26	1929-30	1901-02	1964-65	1946-47
Central	1967-68	1990-91	1925-26	1946-47	1922-23	1964-65
East Central	1990-91	1918-19	1976-77	1964-65	1946-47	1896-97
Southwest	1978-79	1917-18	1924-25	1946-47	1949-50	1981-82
South Central	1993-94	1999-2000	1969-70	1946-47	1964-65	1969-70
Southeast	1920-21	1976-77	1896-97	1964-65	1957-58	1946-47
Statewide	1990-91	1993-94	1943-44	1964-65	1946-47	1913-14

Table B. Analog periods to the Oklahoma Drought of 2001-02, for monthly precipitation and monthly temperature. The 1st through 3rd rankings indicate those 14-month periods beginning in June most similar to June 2001-July 2002.

Major Drought Events in Oklahoma History

Throughout its known history, Oklahoma has been susceptible to drought. Short-term events (1-2 months) are fairly common, and tend to occur somewhere within the state during most years. Increased fire danger and/or crop/lawn stress often accompany these episodes. Medium-term (up to a year) drought episodes can encompass a crop cycle, causing significant economic damage, or cause water supply/distribution problems for municipalities. Longer-term droughts (several years) add the issue of reservoir and aquifer depletion. Because these long-term events are often composed of intermittent episodes, their onset and conclusion are often difficult to identify until long after the event is over.

Since modern climate observation began in the 1890s, three such long-term episodes have severely impacted Oklahoma:

- The 1909-18 event consisted of two severe multi-year episodes, interrupted by 1915, one of the wettest years of the 20th Century. This event comprises the lowest ten-year statewide rainfall on record. 1910 was the smallest annual rainfall statewide and for four of Oklahoma's nine climate divisions.
- The Drought of 1930-40 in Oklahoma, the climate's contribution to the Dust Bowl, was not as statistically severe as those of the 1910s or 1950s, but it left the deepest scar on the state's economy and psyche. The Dust Bowl was at its worst in Oklahoma during the mid 1930s, when severe drought, intense heat, immature and/or inappropriate agricultural practices and overall economic conditions combined to cause the greatest exodus of citizens in state history. Reaction to the event revolutionized farm and conservation practices in much of the United States.
- The Drought of 1952-58 was accompanied by intense summer heat, insect invasions and crop failures. The state's "Wheat Belt", in central and north-central Oklahoma, was particularly injured by the event. The mid-50s years of 1952-1956 were easily the driest five consecutive years in state history. Ironically, 1957 was the wettest year on record, one year after 1956 became the second-driest year on record.

For More Information

Web sites, current as of September 2002, are subject to change.

The **Oklahoma Climatological Survey (OCS)** houses historical climate information dating to the late 1800s for locations in and near Oklahoma. The OCS supports the monitoring mission of the state's drought management task force through its operation of the Oklahoma Mesonet, which allows detailed daily updates of rainfall and moisture conditions for 115+ locations in Oklahoma. The OCS also processes and archives valuable data from the National Weather Service's cooperative observer program. For more information and publications, contact the OCS at: 100 East Boyd, Suite 1210, Norman, OK 73019-1012 or via the world wide web at <http://www.ocs.ou.edu/>. The Mesonet rainfall Update is available via <http://climate.ocs.ou.edu/>.

"Floods and Droughts: Oklahoma" provides background information, from a hydrological perspective, on drought events in Oklahoma. The article, written by Robert Tortorelli, Ellen Cooter, and James Scheuelein, is part of the U.S. Geological Survey's *National Water Summary 1988-89 Hydrologic Events and Floods and Droughts*, U.S. Geological Survey Water Supply Paper 2375, Denver: U.S. Government Printing Office, 1991.

The **Oklahoma Drought Management Plan** details the "appropriate response actions for districts, cities, counties, state agencies and the federal government should a serious drought occur in Oklahoma". The plan was adopted in 1997 to implement Oklahoma Executive Order 96-24. The lead response agency and official keeper of the plan is the Oklahoma Department of Civil Emergency Management: P.O. Box 53365, Oklahoma City, OK.

The **Oklahoma Water Resources Board (OWRB)** serves the state's drought team as the chair agency of the Water Availability and Outlook Committee. The primary instrument to communicate drought information to the public is the *Water Resources Bulletin*. For more information, contact the OWRB at 3800 Classen Blvd., Oklahoma City, OK 73118, or online at <http://www.owrb.state.ok.us/>.

The **Oklahoma Dept. of Agriculture, Food and Forestry (ODA)** monitors agricultural impacts of drought. Information on wildfire danger and management is available through the ODA's Forestry Services division. Impending danger is indicated through the Red Flag Fire Alert program, distributed through media outlets and online at: <http://www.oda.state.ok.us/redflag/forred.html>

The **Oklahoma Agricultural Statistics Service (OASS)** provides weekly updates on soil and crop conditions through the weekly publication of *Oklahoma Crop Weather* (monthly from December through February). The publication is available via e-mail by registering at the OASS web site: <http://www.nass.usda.gov/ok/>. The OASS can also be reached at P.O. Box 528804, Oklahoma City, OK 73152.

The **National Drought Mitigation Center (NDMC)** provides information on drought preparedness and mitigation to people and institutions interested in reducing societal vulnerability to drought. For more information, contact the NDMC at P.O. Box 830749, Lincoln, NE 68583-0749, or online at <http://drought.unl.edu/>.

The **U.S. Drought Monitor** provides perspective on emerging and existing drought conditions nationwide. It is published weekly, online at <http://drought.unl.edu/dm/index.html>

Appendix I: Monthly Rainfall during the Drought

*Rankings: as of August 1, 2002 (records begin in 1895)
 1 = Wettest
 107 or 108 = Driest
 (ex: 102/107 indicates the 102nd-wettest [6th-driest] of 107 such periods on record)

PRECIPITATION DATA: JUNE 2001 (inches)

Climate Division	Monthly Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	1.44	2.93	-1.49	49	88/108	1998	2000	0.01-1924	7.70-1962
N.Central	1.78	3.94	-2.16	45	95/108	1998	2000	0.43-1933	9.91-1908
Northeast	3.36	4.62	-1.26	73	76/108	1998	2000	0.08-1933	11.34-1948
W.Central	1.14	3.86	-2.72	30	102/108	1998	2000	0.32-1910	9.25-1989
Central	2.25	4.57	-2.32	49	82/108	1998	2000	0.00-1914	11.34-1908
E.Central	3.85	4.86	-1.01	79	67/108	1998	2000	0.00-1914	12.69-1935
Southwest	0.75	4.16	-3.41	18	105/108	1933	2000	0.56-1933	8.79-1962
S.Central	2.54	4.64	-2.10	55	82/108	1994	2000	0.00-1914	9.35-1945
Southeast	3.36	4.70	-1.34	71	70/108	1998	2000	0.00-1914	11.00-1945
Statewide	2.29	4.26	-1.97	54	87/108	1998	2000	0.46-1933	8.73-1908

PRECIPITATION DATA: JULY 2001 (inches)

Climate Division	Monthly Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	1.13	2.52	-1.39	45	97/108	1983	2000	0.37-1935	9.79-1950
N.Central	0.57	2.98	-2.41	19	102/108	1984	2000	0.13-1983	9.06-1950
Northeast	1.02	3.16	-2.14	32	86/108	1984	2000	0.00-1930	9.31-1959
W.Central	0.49	2.13	-1.64	23	100/108	1984	2000	0.05-1936	7.21-1950
Central	1.18	2.57	-1.39	46	92/108	1998	2000	0.16-1980	10.17-1950
E.Central	0.80	2.98	-2.18	27	97/108	1993	2000	0.17-1930	10.15-1950
Southwest	0.20	2.18	-1.98	9	105/108	1983	2000	0.03-1980	6.30-1975
S.Central	0.43	2.54	-2.11	17	102/108	1998	2000	0.09-1934	8.45-1950
Southeast	1.96	3.58	-1.62	55	74/108	1999	2000	0.00-1930	13.02-1950
Statewide	0.87	2.74	-1.87	32	100/108	1983	2000	0.41-1980	9.26-1950

PRECIPITATION DATA: AUGUST 2001 (inches)

Climate Division	Monthly Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	1.63	2.51	-0.88	65	85/107	2000	1999	0.47-1913	5.68-1977
N.Central	1.83	3.05	-1.22	60	73/107	2000	1999	0.09-1913	7.69-1974
Northeast	1.65	3.18	-1.53	52	83/107	2000	1997	0.02-2000	8.03-1964
W.Central	1.62	2.72	-1.10	60	75/107	2000	1999	0.02-2000	7.01-1995
Central	2.16	2.63	-0.47	82	63/107	2000	1997	0.02-2000	7.21-1906
E.Central	3.23	2.87	+0.36	113	43/107	2000	1997	0.00-2000	6.89-1915
Southwest	3.59	2.69	+0.90	133	21/107	2000	1997	0.00-1913	7.61-1996
S.Central	2.03	2.54	-0.51	80	57/107	2000	1997	0.00-2000	8.46-1915
Southeast	3.99	2.71	+1.28	147	32/107	2000	1996	0.05-2000	8.73-1915
Statewide	2.36	2.77	-0.41	85	65/107	2000	1997	0.12-2000	6.54-1906

PRECIPITATION DATA: SEPTEMBER 2001 (inches)

Climate Division	Monthly Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	1.33	1.88	-0.55	71	67/107	2000	1999	0.05-1956	4.57-1985
N.Central	2.52	3.13	-0.61	81	55/107	2000	1999	0.05-2000	7.08-1945
Northeast	2.36	4.78	-2.42	49	77/107	2000	1999	0.13-1948	12.42-1986
W.Central	2.35	3.03	-0.68	78	53/107	2000	1997	0.07-1939	8.64-1986
Central	5.36	4.11	+1.25	130	27/107	2000	1995	0.19-1956	10.68-1945
E.Central	5.00	4.96	+0.04	101	34/107	2000	1999	0.23-1948	10.40-1970
Southwest	1.72	3.39	-1.67	51	71/107	2000	1999	0.00-1898	8.68-1936
S.Central	7.17	4.34	+2.83	165	14/107	2000	1993	0.00-1909	9.98-1936
Southeast	4.57	4.57	+0.00	100	35/107	2000	1998	0.29-1948	11.75-1974
Statewide	3.69	3.81	-0.12	97	41/107	2000	1999	0.27-1956	7.86-1945

PRECIPITATION DATA: OCTOBER 2001 (inches)

Climate Division	Monthly Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	0.33	1.51	-1.18	22	95/107	1992	2000	0.03-1952	6.12-1941
N.Central	0.44	2.66	-2.22	17	97/107	1993	2000	0.00-1952	10.29-1998
Northeast	2.94	3.63	-0.69	81	56/107	1999	2000	0.05-1917	17.33-1941
W.Central	0.20	2.56	-2.36	8	104/107	1952	2000	0.00-1910	9.41-1986
Central	2.71	3.66	-0.95	74	49/107	1999	2000	0.00-1917	13.51-1941
E.Central	4.39	4.27	+0.12	103	41/107	1999	2000	0.19-1904	14.75-1941
Southwest	0.60	2.98	-2.38	20	96/107	1992	2000	0.00-1952	11.44-1983
S.Central	3.42	4.25	-0.83	80	51/107	1999	2000	0.00-1921	14.61-1981
Southeast	4.54	4.96	-0.42	92	41/107	2000	1998	0.10-1921	12.62-1984
Statewide	2.17	3.38	-1.21	64	67/107	1999	2000	0.14-1952	11.32-1941

PRECIPITATION DATA: NOVEMBER 2001 (inches)

Climate Division	Monthly Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	0.50	1.04	-0.54	48	65/107	2000	1998	0.00-1921	4.07-1909
N.Central	1.58	2.08	-0.50	76	51/107	1999	2000	0.00-1910	6.48-1964
Northeast	2.80	3.62	-0.82	77	45/107	2000	1998	0.00-1904	7.37-1994
W.Central	1.18	1.73	-0.55	68	53/107	2000	1998	0.00-1897	6.62-1964
Central	1.65	2.81	-1.16	59	62/107	1999	2000	0.00-1915	6.88-1931
E.Central	2.28	4.30	-2.02	53	68/107	1999	2000	0.20-1914	9.18-1946
Southwest	2.28	1.73	+0.55	132	29/107	1999	2000	0.00-1921	5.73-1992
S.Central	1.31	3.10	-1.79	42	77/107	1999	2000	0.00-1903	7.62-1902
Southeast	2.79	5.07	-2.28	55	66/107	1999	2000	0.00-1903	13.16-1946
Statewide	1.80	2.82	-1.02	64	57/107	1999	2000	0.14-1989	5.73-1909

PRECIPITATION DATA: DECEMBER 2001 (inches)

Climate Division	Monthly Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	0.09	0.70	-0.61	13	91/107	1988	2000	0.00-1922	2.55-1913
N.Central	0.23	1.30	-1.07	18	97/107	1977	2000	0.00-1922	4.55-1913
Northeast	1.92	2.28	-0.36	84	45/107	2000	1999	0.16-1950	6.72-1984
W.Central	0.12	1.14	-1.02	11	95/107	1976	2000	0.00-1922	4.03-1932
Central	1.32	2.01	-0.69	66	53/107	1996	2000	0.00-1908	6.67-1984
E.Central	3.93	2.98	+0.95	132	18/107	2000	1997	0.21-1908	8.95-1987
Southwest	0.40	1.38	-0.98	29	78/107	1996	2000	0.00-1917	4.94-1991
S.Central	3.53	2.53	+1.00	140	18/107	2000	1997	0.07-1950	7.01-1932
Southeast	7.00	4.07	+2.93	172	9/107	2000	1991	0.25-1917	12.76-1971
Statewide	1.99	2.02	-0.03	99	31/107	2000	1999	0.10-1950	4.98-1984

PRECIPITATION DATA: JANUARY 2002 (inches)

Climate Division	Monthly Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	0.79	0.52	+0.27	152	23/108	2000	2001	0.01-1938	1.70-2001
N.Central	1.74	0.93	+0.81	187	12/108	2001	1999	0.00-1986	4.43-1949
Northeast	2.97	1.57	+1.40	189	16/108	2001	1998	0.01-1986	6.01-1949
W.Central	1.55	0.88	+0.67	176	13/108	2001	1999	0.00-1976	4.08-1949
Central	2.65	1.37	+1.28	193	11/108	2001	1998	0.00-1976	6.18-1949
E.Central	2.27	2.13	+0.14	107	44/108	1999	2001	0.04-1986	7.99-1932
Southwest	1.83	1.06	+0.77	173	20/108	2000	2001	0.00-1986	4.89-1949
S.Central	1.96	1.90	+0.06	103	42/108	2000	2001	0.00-1909	6.85-1932
Southeast	4.27	2.81	+1.46	152	26/108	2001	1998	0.18-1943	11.08-1932
Statewide	2.22	1.45	+0.77	153	18/108	2001	1998	0.04-1986	5.23-1949

PRECIPITATION DATA: FEBRUARY 2002 (inches)

Climate Division	Monthly Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	0.37	0.64	-0.27	58	67/108	2000	2001	0.00-1904	2.94-1911
N.Central	0.59	1.22	-0.63	48	70/108	1998	2001	0.00-1916	4.10-1911
Northeast	0.78	1.98	-1.20	39	92/108	1998	2001	0.10-1963	5.80-1985
W.Central	0.75	1.14	-0.39	66	56/108	1999	2001	0.00-1904	3.40-1997
Central	0.90	1.86	-0.96	48	71/108	1996	2001	0.00-1904	5.08-1938
E.Central	1.53	2.43	-0.90	63	69/108	1996	2001	0.00-1895	9.15-1938
Southwest	0.92	1.33	-0.41	69	56/108	1999	2001	0.00-1926	3.86-1938
S.Central	1.49	2.21	-0.72	67	65/108	1999	2001	0.02-1902	7.66-1938
Southeast	2.70	3.14	-0.44	86	61/108	2000	2001	0.36-1895	10.12-1945
Statewide	1.08	1.76	-0.68	61	70/108	1999	2001	0.20-1996	4.66-1938

PRECIPITATION DATA: MARCH 2002 (inches)

Climate Division	Monthly Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	0.05	1.63	-1.58	3	96/108	1997	2001	0.00-1895	5.84-1973
N.Central	0.53	2.68	-2.15	20	93/108	1972	2001	0.00-1936	8.18-1973
Northeast	1.91	3.67	-1.76	52	72/108	2001	2000	0.00-1900	9.79-1973
W.Central	0.51	2.40	-1.89	21	87/108	1997	2001	0.00-1904	7.24-1973
Central	2.02	3.24	-1.22	62	54/108	2001	2000	0.00-1900	7.88-1990
E.Central	4.55	4.09	+0.46	111	30/108	2001	1999	0.46-1911	10.63-1945
Southwest	1.96	2.26	-0.30	87	41/108	2001	2000	0.00-1940	5.52-1973
S.Central	3.93	3.55	+0.38	111	28/108	2001	1999	0.20-1950	8.46-1945
Southeast	8.70	4.48	+4.22	194	2/108	2001	1945	1.01-1954	12.38-1945
Statewide	2.58	3.11	-0.53	83	47/108	2001	2000	0.38-1971	7.46-1973

PRECIPITATION DATA: APRIL 2002 (inches)

Climate Division	Monthly Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	0.95	1.85	-0.90	51	76/108	2001	2000	0.00-1909	5.28-1942
N.Central	3.05	2.96	+0.09	103	42/108	2001	1999	0.55-1989	7.20-1947
Northeast	4.29	4.00	+0.29	107	45/108	2001	1999	0.17-1989	9.67-1942
W.Central	3.02	2.60	+0.42	116	39/108	2001	2000	0.16-1996	9.05-1997
Central	4.26	3.53	+0.73	121	29/108	2001	1999	0.24-1989	9.49-1942
E.Central	5.48	4.33	+1.15	127	32/108	2001	1999	0.75-1989	11.82-1957
Southwest	4.43	2.67	+1.76	166	10/108	2001	1990	0.14-1989	7.18-1957
S.Central	6.71	3.76	+2.95	178	10/108	2001	1990	0.53-1989	11.43-1942
Southeast	6.45	4.49	+1.96	144	22/108	2001	1991	0.53-1987	12.79-1957
Statewide	4.27	3.36	+0.91	127	26/108	2001	1999	0.58-1989	8.50-1942

PRECIPITATION DATA: MAY 2002 (inches)

Climate Division	Monthly Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	1.71	3.37	-1.66	51	92/108	1974	2001	0.00-1927	6.37-1951
N.Central	4.11	4.72	-0.61	87	52/108	1998	2001	0.25-1924	11.70-1957
Northeast	6.04	5.48	+0.56	110	35/108	1998	2001	1.38-1917	19.10-1943
W.Central	2.81	4.90	-2.09	57	75/108	2000	2001	0.00-1924	12.40-1982
Central	3.55	5.63	-2.08	63	77/108	1998	2001	0.96-1988	12.53-1902
E.Central	4.73	5.89	-1.16	80	68/108	1998	2001	1.25-1941	14.72-1943
Southwest	1.85	4.97	-3.12	37	99/108	1998	2001	0.38-1984	11.96-1902
S.Central	2.77	5.60	-2.83	49	90/108	2000	2001	0.46-1988	12.66-1982
Southeast	5.04	6.36	-1.32	79	71/108	2000	2001	1.24-1963	14.36-1990
Statewide	3.64	5.21	-1.57	70	74/108	1998	2001	1.30-1988	10.68-1957

PRECIPITATION DATA: JUNE 2002 (inches)

Climate Division	Monthly Precipitation				*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
	Actual	Normal	Depart	Pct					
Panhandle	2.80	2.93	-0.13	96	47/108	2001	2000	0.01-1924	7.70-1962
N.Central	5.11	3.94	+1.17	130	26/108	2001	2000	0.43-1933	9.91-1908
Northeast	3.90	4.62	-0.72	84	66/108	2001	2000	0.08-1933	11.34-1948
W.Central	3.06	3.86	-0.80	79	62/108	2001	2000	0.32-1910	9.25-1989
Central	4.04	4.57	-0.53	88	48/108	2001	2000	0.00-1914	11.34-1908
E.Central	3.91	4.86	-0.95	80	64/108	2001	2000	0.00-1914	12.69-1935
Southwest	3.11	4.16	-1.05	75	64/108	2001	2000	0.56-1933	8.79-1962
S.Central	3.67	4.64	-0.97	79	59/108	2001	2000	0.00-1914	9.35-1945
Southeast	4.33	4.70	-0.37	92	47/108	2001	2000	0.00-1914	11.00-1945
Statewide	3.80	4.26	-0.46	89	56/108	2001	2000	0.46-1933	8.73-1908

PRECIPITATION DATA: JULY 2002 (inches)

Climate Division	Monthly Precipitation				*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
	Actual	Normal	Depart	Pct					
Panhandle	2.42	2.52	-0.10	96	62/108	2001	1998	0.37-1935	9.79-1950
N.Central	4.06	2.98	+1.08	136	28/108	2001	1998	0.13-1983	9.06-1950
Northeast	3.57	3.16	+0.41	113	48/108	2001	2000	0.00-1930	9.31-1959
W.Central	2.98	2.13	+0.85	140	33/108	2001	1996	0.05-1936	7.21-1950
Central	3.35	2.57	+0.78	130	35/108	2001	2000	0.16-1980	10.17-1950
E.Central	3.30	2.98	+0.32	111	45/108	2001	1996	0.17-1930	10.15-1950
Southwest	3.95	2.18	+1.77	181	18/108	2001	1996	0.03-1980	6.30-1975
S.Central	3.98	2.54	+1.44	157	22/108	2001	1996	0.09-1934	8.45-1950
Southeast	3.60	3.58	+0.02	101	51/108	2001	1996	0.00-1930	13.02-1950
Statewide	3.47	2.74	+0.73	127	34/108	2001	1996	0.41-1980	9.26-1950

Appendix II: Cumulative Rainfall (since June 1, 2001) by Month

*Rankings: as of August 1, 2002 (records begin in 1895)
 1 = Wettest
 107 or 108 = Driest
 (ex: 102/107 indicates the 102nd-wettest [6th-driest] of 107 such periods on record)

PRECIPITATION DATA: JUNE 2001 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	1.44	2.93	-1.49	49	88/108	1998	2000	0.01-1924	7.70-1962
N.Central	1.78	3.94	-2.16	45	95/108	1998	2000	0.43-1933	9.91-1908
Northeast	3.36	4.62	-1.26	73	76/108	1998	2000	0.08-1933	11.34-1948
W.Central	1.14	3.86	-2.72	30	102/108	1998	2000	0.32-1910	9.25-1989
Central	2.25	4.57	-2.32	49	82/108	1998	2000	0.00-1914	11.34-1908
E.Central	3.85	4.86	-1.01	79	67/108	1998	2000	0.00-1914	12.69-1935
Southwest	0.75	4.16	-3.41	18	105/108	1933	2000	0.56-1933	8.79-1962
S.Central	2.54	4.64	-2.10	55	82/108	1994	2000	0.00-1914	9.35-1945
Southeast	3.36	4.70	-1.34	71	70/108	1998	2000	0.00-1914	11.00-1945
Statewide	2.29	4.26	-1.97	54	87/108	1998	2000	0.46-1933	8.73-1908

PRECIPITATION DATA: JUNE 2001 through JULY 2001 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	2.57	5.45	-2.88	47	98/108	1980	2000	1.42-1910	13.05-1950
N.Central	2.35	6.92	-4.57	34	107/108	1954	2000	1.90-1954	13.14-1908
Northeast	4.38	7.78	-3.40	56	97/108	1984	2000	1.50-1914	16.67-1948
W.Central	1.63	5.99	-4.36	27	108/108	9999	2000	1.63-2001	12.18-1962
Central	3.43	7.14	-3.71	48	98/108	1998	2000	1.24-1914	14.82-1908
E.Central	4.65	7.84	-3.19	59	96/108	1990	2000	0.99-1914	16.02-1945
Southwest	0.95	6.34	-5.39	15	108/108	9999	2000	0.95-2001	11.57-1962
S.Central	2.97	7.18	-4.21	41	103/108	1980	2000	1.30-1914	15.60-1945
Southeast	5.32	8.28	-2.96	64	85/108	1998	2000	0.37-1914	16.32-1945
Statewide	3.16	7.00	-3.84	45	104/108	1954	2000	2.25-1954	12.36-1950

PRECIPITATION DATA: JUNE 2001 through AUGUST 2001 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	4.20	7.96	-3.76	53	104/107	1976	2000	2.66-1936	17.32-1950
N.Central	4.18	9.97	-5.79	42	104/107	1954	2000	3.73-1936	16.95-1995
Northeast	6.03	10.96	-4.93	55	101/107	1984	2000	2.97-1936	23.78-1948
W.Central	3.25	8.71	-5.46	37	104/107	1998	2000	2.79-1980	16.53-1995
Central	5.59	9.77	-4.18	57	97/107	1998	2000	1.97-1936	17.61-1992
E.Central	7.88	10.71	-2.83	74	83/107	1998	2000	1.54-1936	20.53-1958
Southwest	4.54	9.03	-4.49	50	100/107	1998	2000	2.15-1980	16.43-1996
S.Central	5.00	9.72	-4.72	51	97/107	1998	2000	2.58-1980	19.72-1950
Southeast	9.31	10.99	-1.68	85	74/107	1999	2000	3.50-1934	21.23-1945
Statewide	5.52	9.77	-4.25	56	100/107	1980	2000	2.79-1936	17.25-1950

PRECIPITATION DATA: JUNE 2001 through SEPTEMBER 2001 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	5.53	9.84	-4.31	56	104/107	1980	2000	4.54-1980	20.89-1950
N.Central	6.70	13.10	-6.40	51	103/107	1984	2000	4.45-1954	21.10-1915
Northeast	8.39	15.74	-7.35	53	100/107	1984	2000	6.89-1954	28.13-1961
W.Central	5.60	11.74	-6.14	48	99/107	1998	2000	3.17-1998	21.98-1995
Central	10.95	13.88	-2.93	79	78/107	1998	2000	4.59-1954	24.83-1945
E.Central	12.88	15.67	-2.79	82	76/107	1988	2000	5.38-1954	27.42-1945
Southwest	6.26	12.42	-6.16	50	96/107	1998	2000	2.73-1954	23.07-1995
S.Central	12.17	14.06	-1.89	87	59/107	2000	1996	4.18-1956	27.79-1945
Southeast	13.88	15.56	-1.68	89	61/107	2000	1996	6.40-1956	29.51-1945
Statewide	9.21	13.58	-4.37	68	90/107	1998	2000	5.12-1954	21.68-1945

PRECIPITATION DATA: JUNE 2001 through OCTOBER 2001 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	5.86	11.35	-5.49	52	104/107	1980	2000	4.94-1980	21.34-1950
N.Central	7.14	15.76	-8.62	45	104/107	1954	2000	5.89-1952	27.47-1986
Northeast	11.33	19.37	-8.04	58	99/107	1982	2000	8.44-1952	40.16-1941
W.Central	5.80	14.30	-8.50	41	104/107	1980	2000	3.54-1952	29.84-1986
Central	13.66	17.54	-3.88	78	78/107	1990	2000	6.46-1954	30.78-1941
E.Central	17.27	19.94	-2.67	87	70/107	1999	2000	8.84-1901	30.41-1941
Southwest	6.86	15.40	-8.54	45	102/107	1980	2000	3.92-1954	24.84-1986
S.Central	15.59	18.31	-2.72	85	60/107	1999	2000	5.74-1952	29.87-1945
Southeast	18.42	20.52	-2.10	90	54/107	2000	1998	7.82-1956	32.30-1945
Statewide	11.38	16.96	-5.58	67	94/107	1980	2000	6.83-1952	27.91-1941

PRECIPITATION DATA: JUNE 2001 through NOVEMBER 2001 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	6.36	12.39	-6.03	51	103/107	1980	2000	5.36-1980	21.46-1950
N.Central	8.72	17.84	-9.12	49	103/107	1954	2000	6.67-1954	30.39-1986
Northeast	14.13	22.99	-8.86	61	98/107	1980	2000	11.00-1901	41.95-1941
W.Central	6.98	16.03	-9.05	44	102/107	1980	2000	4.35-1954	32.50-1986
Central	15.31	20.35	-5.04	75	78/107	1990	2000	6.65-1954	32.39-1941
E.Central	19.55	24.24	-4.69	81	74/107	1999	2000	9.57-1954	36.13-1973
Southwest	9.14	17.13	-7.99	53	101/107	1980	2000	4.05-1954	27.82-1986
S.Central	16.90	21.41	-4.51	79	64/107	1999	2000	9.42-1910	33.44-1996
Southeast	21.21	25.59	-4.38	83	64/107	1999	2000	12.40-1956	41.54-1996
Statewide	13.18	19.78	-6.60	67	92/107	1980	2000	8.64-1954	29.22-1941

PRECIPITATION DATA: JUNE 2001 through DECEMBER 2001 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	6.45	13.09	-6.64	49	103/107	1980	2000	6.18-1980	21.50-1950
N. Central	8.95	19.14	-10.19	47	104/107	1954	2000	6.90-1954	31.45-1986
Northeast	16.05	25.27	-9.22	64	97/107	1980	2000	12.65-1952	43.57-1941
W. Central	7.10	17.17	-10.07	41	104/107	1954	2000	4.70-1954	33.16-1986
Central	16.63	22.36	-5.73	74	81/107	1990	2000	8.95-1954	33.84-1941
E. Central	23.48	27.22	-3.74	86	64/107	1999	2000	13.27-1901	42.34-1992
Southwest	9.54	18.51	-8.97	52	100/107	1980	2000	5.56-1954	28.75-1986
S. Central	20.43	23.94	-3.51	85	58/107	1999	2000	9.91-1910	35.87-1923
Southeast	28.21	29.66	-1.45	95	49/107	1999	2000	15.06-1956	43.32-1996
Statewide	15.17	21.80	-6.63	70	89/107	1980	2000	10.37-1910	30.65-1941

PRECIPITATION DATA: JUNE 2001 through JANUARY 2002 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	7.24	13.61	-6.37	53	102/107	1980	2000	6.26-1980	22.31-1950
N. Central	10.69	20.07	-9.38	53	104/107	1954	2000	7.54-1954	33.12-1986
Northeast	19.02	26.84	-7.82	71	92/107	1980	2000	13.85-1901	44.46-1941
W. Central	8.65	18.05	-9.40	48	102/107	1980	2000	5.34-1954	34.65-1986
Central	19.28	23.73	-4.45	81	71/107	1993	2000	9.15-1910	35.35-1992
E. Central	25.75	29.35	-3.60	88	65/107	1999	2000	13.95-1963	44.91-1992
Southwest	11.37	19.57	-8.20	58	98/107	1980	2000	6.34-1910	30.53-1986
S. Central	22.39	25.84	-3.45	87	58/107	1999	2000	9.91-1910	37.70-1991
Southeast	32.48	32.47	+0.01	100	41/107	1999	2000	16.56-1963	44.50-1996
Statewide	17.39	23.25	-5.86	75	84/107	1980	2000	10.59-1910	31.49-1992

PRECIPITATION DATA: JUNE 2001 through FEBRUARY 2002 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	7.61	14.25	-6.64	53	103/107	1980	2000	6.31-1980	23.20-1950
N. Central	11.28	21.29	-10.01	53	105/107	1954	2000	8.90-1954	36.57-1986
Northeast	19.80	28.82	-9.02	69	95/107	1980	2000	14.77-1901	46.37-1941
W. Central	9.40	19.19	-9.79	49	104/107	1980	2000	6.62-1954	37.17-1986
Central	20.18	25.59	-5.41	79	75/107	1990	2000	10.81-1901	38.84-1992
E. Central	27.28	31.78	-4.50	86	68/107	1999	2000	14.59-1901	49.44-1992
Southwest	12.29	20.90	-8.61	59	98/107	1980	2000	7.66-1980	34.13-1986
S. Central	23.88	28.05	-4.17	85	60/107	1999	2000	11.71-1901	39.70-1996
Southeast	35.18	35.61	-0.43	99	41/107	1999	2000	19.65-1963	52.23-1996
Statewide	18.47	25.01	-6.54	74	89/107	1980	2000	12.49-1901	34.54-1992

PRECIPITATION DATA: JUNE 2001 through MARCH 2002 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	7.66	15.88	-8.22	48	106/107	1976	2000	7.53-1976	23.98-1950
N. Central	11.81	23.97	-12.16	49	105/107	1954	2000	9.43-1954	40.09-1986
Northeast	21.71	32.49	-10.78	67	96/107	1980	2000	18.07-1910	47.35-1941
W. Central	9.91	21.59	-11.68	46	104/107	1954	2000	6.95-1954	39.66-1986
Central	22.20	28.83	-6.63	77	76/107	1990	2000	12.46-1910	41.45-1992
E. Central	31.83	35.87	-4.04	89	63/107	1999	2000	19.21-1966	52.14-1992
Southwest	14.25	23.16	-8.91	62	95/107	1980	2000	8.94-1910	36.02-1986
S. Central	27.81	31.60	-3.79	88	55/107	1999	2000	14.50-1910	41.70-1991
Southeast	43.88	40.09	+3.79	109	23/107	1999	2000	23.12-1939	56.32-1996
Statewide	21.05	28.12	-7.07	75	87/107	1980	2000	14.54-1910	37.39-1986

PRECIPITATION DATA: JUNE 2001 through APRIL 2002 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	8.61	17.73	-9.12	49	105/107	1955	2000	8.22-1955	28.71-1941
N. Central	14.86	26.93	-12.07	55	104/107	1954	2000	10.85-1954	40.93-1986
Northeast	26.00	36.49	-10.49	71	98/107	1980	2000	21.07-1910	57.02-1941
W. Central	12.93	24.19	-11.26	53	101/107	1980	2000	8.35-1954	39.98-1986
Central	26.46	32.36	-5.90	82	71/107	1990	2000	14.47-1910	46.19-1992
E. Central	37.31	40.20	-2.89	93	51/107	1999	2000	24.10-1955	58.93-1992
Southwest	18.68	25.83	-7.15	72	85/107	1980	2000	10.99-1954	36.17-1986
S. Central	34.52	35.36	-0.84	98	39/107	1999	2000	18.43-1910	49.26-1989
Southeast	50.33	44.58	+5.75	113	17/107	2000	1996	27.47-1903	62.26-1996
Statewide	25.32	31.48	-6.16	80	78/107	1980	2000	17.62-1910	42.55-1941

PRECIPITATION DATA: JUNE 2001 through MAY 2002 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	10.32	21.10	-10.78	49	106/107	1955	2000	10.22-1955	31.14-1950
N. Central	18.97	31.65	-12.68	60	102/107	1970	2000	15.47-1952	50.03-1986
Northeast	32.04	41.97	-9.93	76	89/107	1995	2000	22.81-1910	60.04-1942
W. Central	15.74	29.09	-13.35	54	103/107	1980	2000	12.61-1952	47.95-1986
Central	30.01	37.99	-7.98	79	77/107	1995	2000	17.65-1910	54.90-1992
E. Central	42.04	46.09	-4.05	91	62/107	1999	2000	29.13-1910	66.02-1992
Southwest	20.53	30.80	-10.27	67	94/107	1980	2000	14.45-1910	46.94-1986
S. Central	37.29	40.96	-3.67	91	52/107	1999	2000	20.83-1910	56.79-1989
Southeast	55.37	50.94	+4.43	109	21/107	1999	2000	33.01-1924	67.11-1989
Statewide	28.96	36.69	-7.73	79	85/107	1995	2000	20.24-1910	48.91-1992

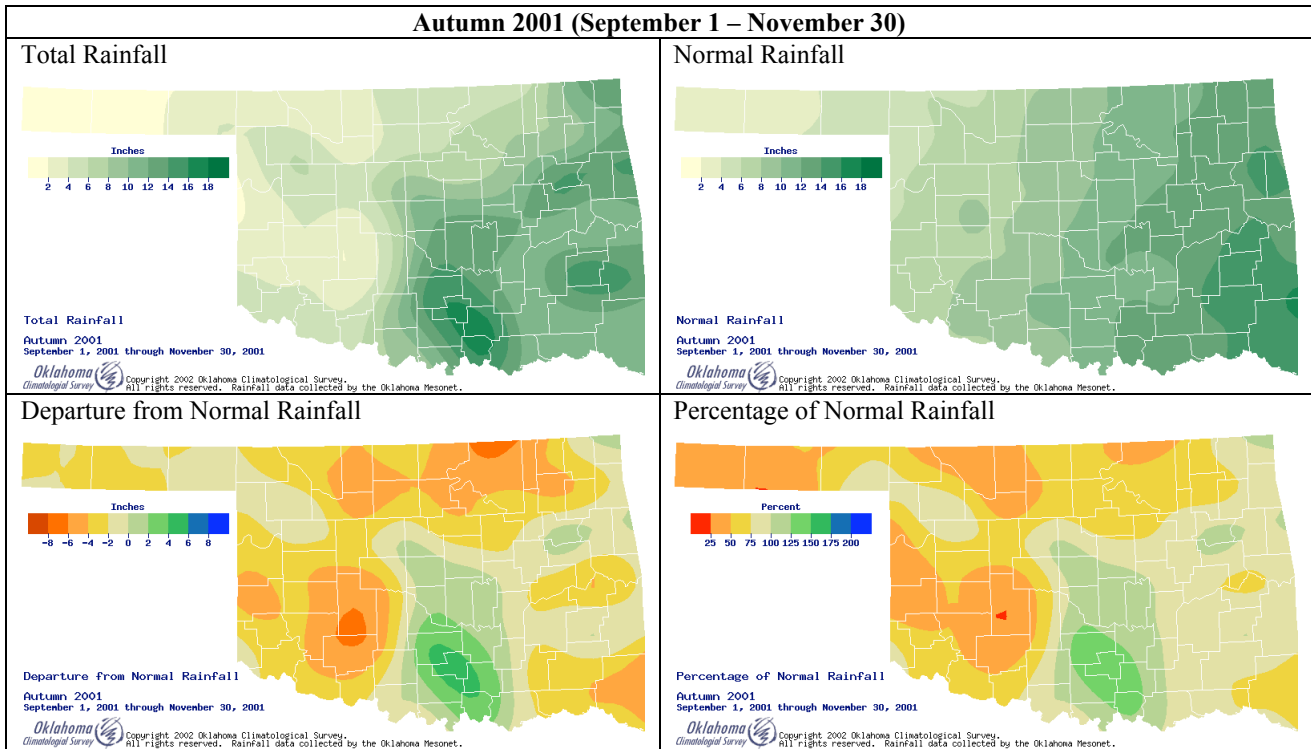
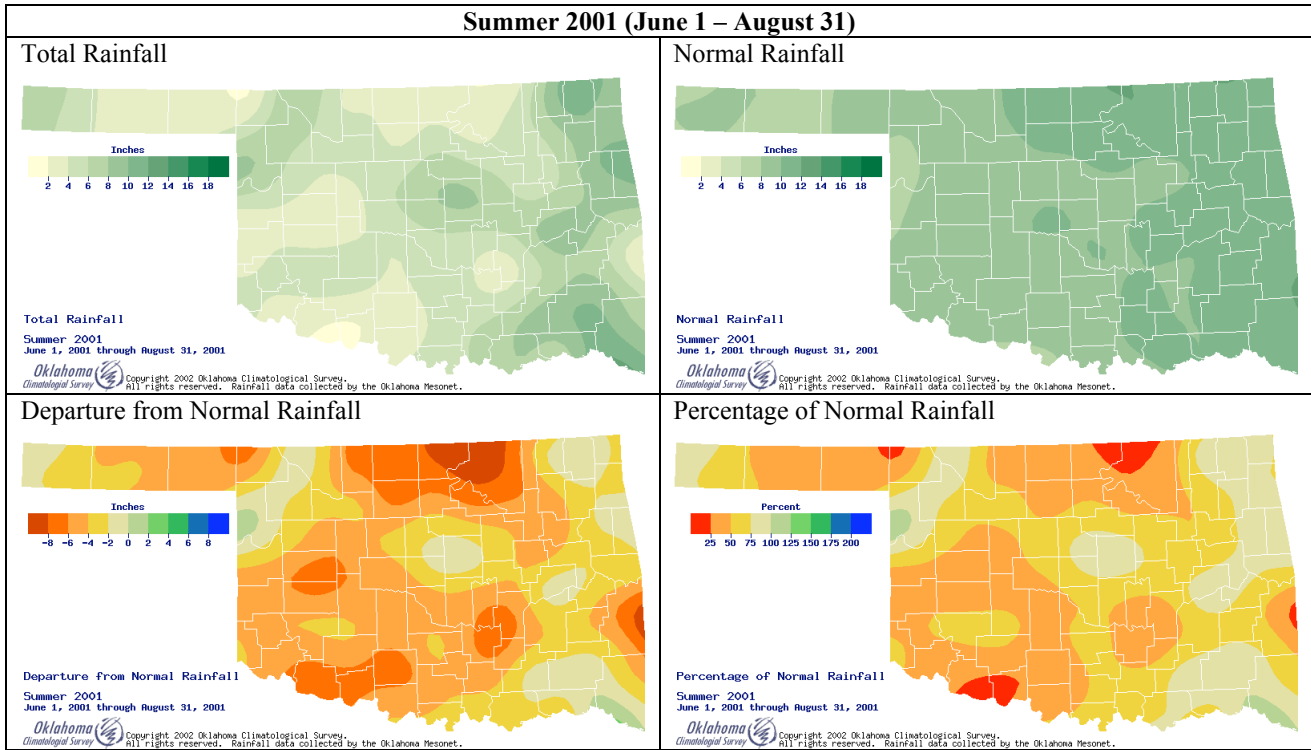
PRECIPITATION DATA: JUNE 2001 through JUNE 2002 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	13.12	24.03	-10.91	55	105/107	1955	2000	11.75-1952	36.00-1950
N. Central	24.08	35.59	-11.51	68	96/107	1980	2000	18.11-1952	54.13-1986
Northeast	35.94	46.59	-10.65	77	90/107	1995	2000	23.78-1910	69.38-1941
W. Central	18.80	32.95	-14.15	57	104/107	1952	2000	14.63-1952	52.17-1986
Central	34.05	42.56	-8.51	80	77/107	1995	2000	18.67-1910	58.06-1992
E. Central	45.95	50.95	-5.00	90	64/107	1995	2000	30.86-1910	70.39-1992
Southwest	23.64	34.96	-11.32	68	93/107	1980	2000	15.79-1910	52.03-1986
S. Central	40.96	45.60	-4.64	90	54/107	1999	2000	21.57-1910	59.38-1989
Southeast	59.70	55.64	+4.06	107	23/107	1999	2000	34.05-1910	70.63-1996
Statewide	32.76	40.95	-8.19	80	82/107	1995	2000	21.35-1910	52.52-1992

PRECIPITATION DATA: JUNE 2001 through JULY 2002 (inches)

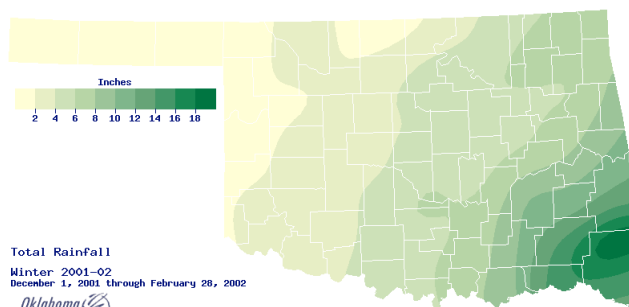
Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	15.54	26.55	-11.01	59	106/107	1936	2000	14.66-1936	38.70-1950
N. Central	28.14	38.57	-10.43	73	89/107	1990	2000	22.58-1916	56.90-1986
Northeast	39.51	49.75	-10.24	79	87/107	1995	2000	28.65-1910	71.08-1941
W. Central	21.78	35.08	-13.30	62	102/107	1970	2000	18.14-1916	54.70-1986
Central	37.40	45.13	-7.73	83	74/107	1990	2000	24.45-1910	59.35-1992
E. Central	49.25	53.93	-4.68	91	63/107	1995	2000	34.72-1963	72.79-1926
Southwest	27.59	37.14	-9.55	74	86/107	1980	2000	20.14-1970	54.22-1986
S. Central	44.94	48.14	-3.20	93	49/107	1999	2000	26.55-1910	63.28-1989
Southeast	63.30	59.22	+4.08	107	27/107	1999	2000	38.11-1955	76.47-1926
Statewide	36.23	43.69	-7.46	83	79/107	1983	2000	26.78-1910	54.22-1992

Appendix III: Drought 2001-02: Oklahoma Mesonet Rainfall Observations

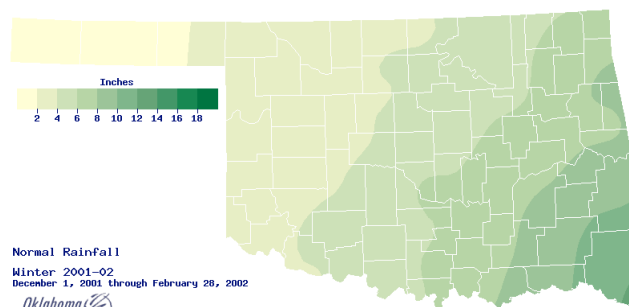


Winter 2001-02 (December 1 – February 28)

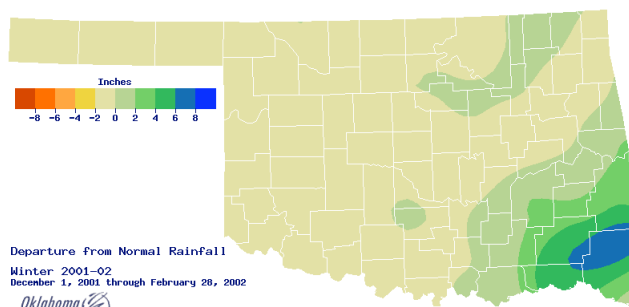
Total Rainfall



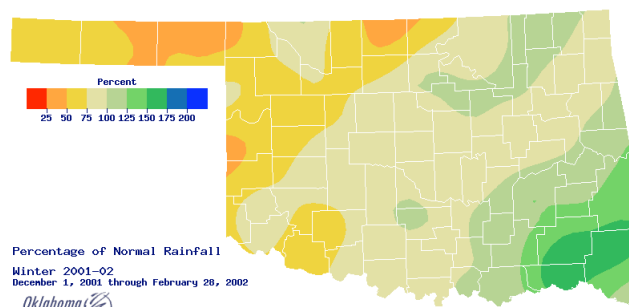
Normal Rainfall



Departure from Normal Rainfall

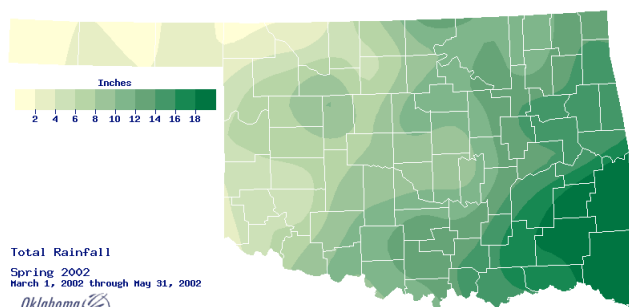


Percentage of Normal Rainfall

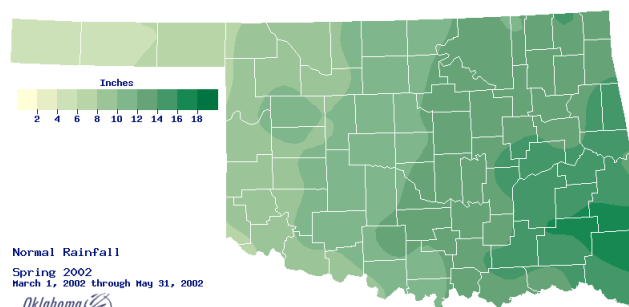


Spring 2002 (March 1 – May 31)

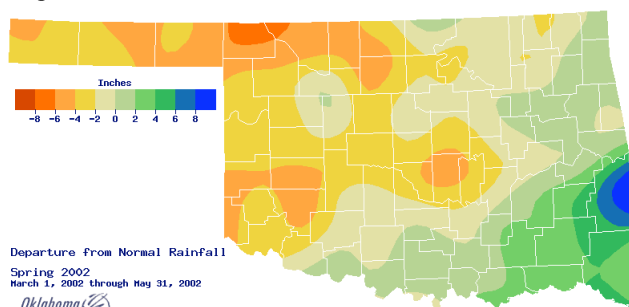
Total Rainfall



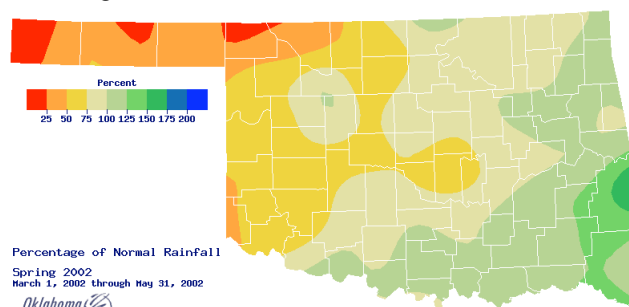
Normal Rainfall



Departure from Normal Rainfall

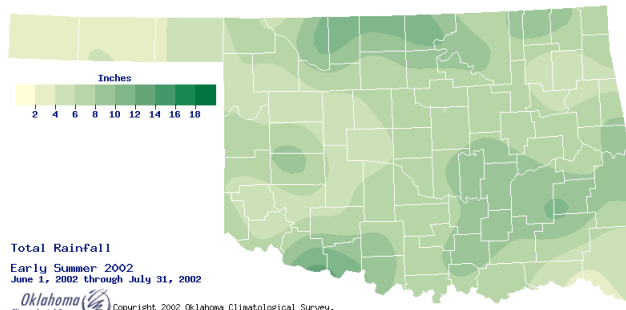


Percentage of Normal Rainfall

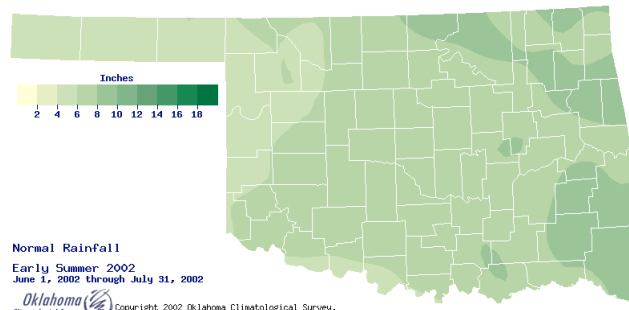


Early Summer 2002 (June 1 – July 31)

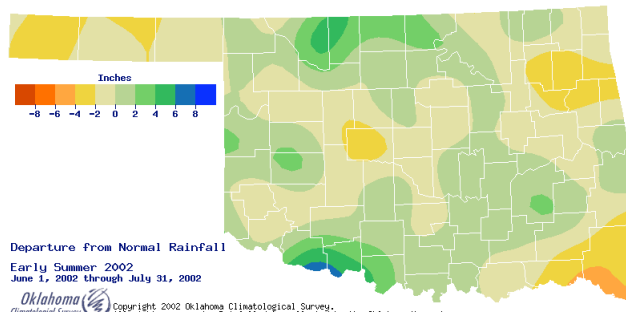
Total Rainfall



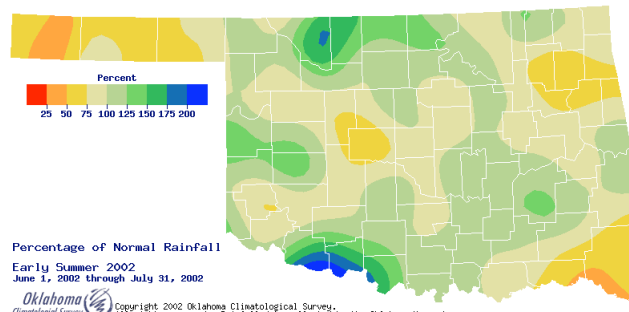
Normal Rainfall



Departure from Normal Rainfall

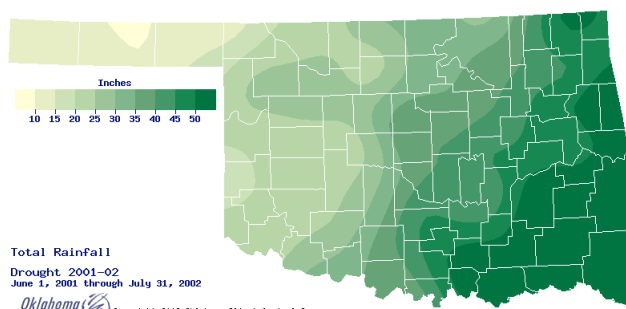


Percentage of Normal Rainfall

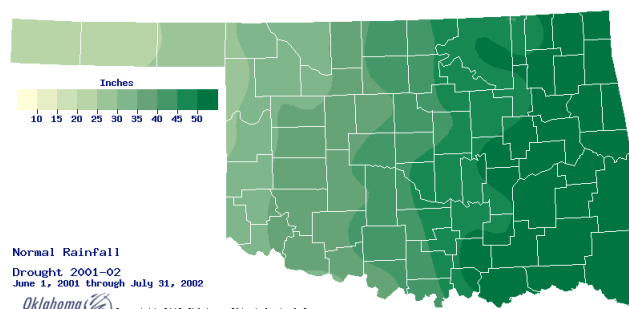


Drought 2001-02 (June 1, 2001 – July 31, 2002)

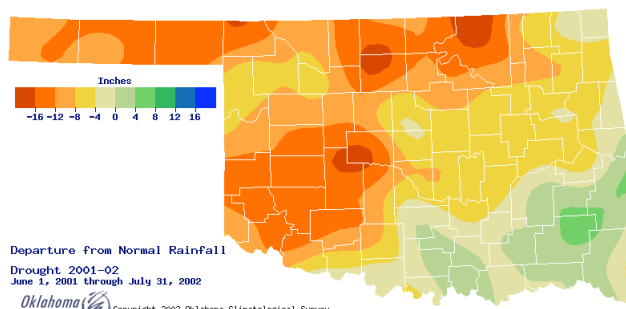
Total Rainfall



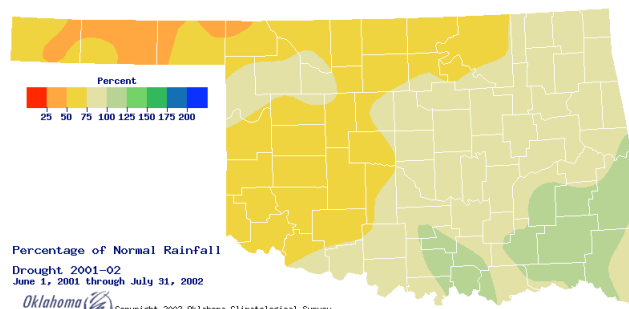
Normal Rainfall



Departure from Normal Rainfall



Percentage of Normal Rainfall



Appendix IV: Recent Oklahoma Drought and Dry Episodes

*Rankings: as of August 1, 2002 (records begin in 1895)
 1 = Wettest
 107 or 108 = Driest
 (ex: 102/107 indicates the 102nd-wettest [6th-driest] of 107 such periods on record)

Winter 1995-96:

PRECIPITATION DATA: OCTOBER 1995 through MAY 1996 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	5.38	11.26	-5.88	48	104/107	1966	1994	3.45-1955	19.40-1998
N.Central	6.03	18.55	-12.52	33	107/107	9999	1994	6.03-1995	35.62-1998
Northeast	11.45	26.23	-14.78	44	106/107	1910	1994	10.78-1910	39.95-1984
W.Central	5.33	17.35	-12.02	31	107/107	9999	1994	5.33-1995	27.52-1986
Central	9.95	24.11	-14.16	41	106/107	1910	1994	9.36-1910	35.10-1984
E.Central	20.17	30.42	-10.25	66	98/107	1962	1994	16.78-1910	43.05-1989
Southwest	6.88	18.38	-11.50	37	106/107	1970	1994	6.83-1970	29.99-1986
S.Central	13.21	26.90	-13.69	49	105/107	1955	1994	12.28-1955	39.92-1956
Southeast	23.42	35.38	-11.96	66	98/107	1958	1994	18.22-1917	47.95-1984
Statewide	11.12	23.11	-11.99	48	107/107	9999	1994	11.12-1995	31.86-1956

Summer 1998:

PRECIPITATION DATA: APRIL 1998 through SEPTEMBER 1998 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	12.02	15.06	-3.04	80	81/107	1991	1997	8.46-1910	24.28-1950
N.Central	16.83	20.78	-3.95	81	77/107	1990	1997	9.88-1956	34.88-1957
Northeast	21.46	25.22	-3.76	85	78/107	1984	1997	14.64-1901	40.64-1957
W.Central	7.58	19.24	-11.66	39	107/107	9999	1997	7.58-1998	32.47-1915
Central	13.87	23.04	-9.17	60	102/107	1956	1997	12.02-1956	37.87-1957
E.Central	18.81	25.89	-7.08	73	94/107	1988	1997	13.42-1936	42.85-1957
Southwest	6.11	20.06	-13.95	30	107/107	9999	1997	6.11-1998	32.85-1995
S.Central	10.20	23.42	-13.22	44	107/107	9999	1997	10.20-1998	39.35-1957
Southeast	18.91	26.41	-7.50	72	95/107	1988	1997	12.46-1896	45.09-1957
Statewide	14.15	22.15	-8.00	64	105/107	1984	1997	12.03-1956	34.63-1957

Late Summer 2000:

PRECIPITATION DATA: AUGUST 2000 through SEPTEMBER 2000 (inches)

Climate Division	Cumulative Actual	Precipitation Normal	Depart	Pct	*Rank in History	Driest Since	Wettest Since	Driest on Record	Wettest on Record
Panhandle	0.64	4.39	-3.75	15	107/107	9999	1999	0.64-2000	8.96-1996
N.Central	0.41	6.18	-5.77	7	107/107	9999	1999	0.41-2000	11.94-1986
Northeast	1.12	7.96	-6.84	14	107/107	9999	1999	1.12-2000	17.04-1986
W.Central	0.16	5.75	-5.59	3	107/107	9999	1999	0.16-2000	13.29-1986
Central	1.26	6.74	-5.48	19	106/107	1956	1999	1.04-1956	12.58-1926
E.Central	2.42	7.83	-5.41	31	104/107	1978	1999	0.93-1956	14.60-1974
Southwest	0.82	6.08	-5.26	13	106/107	1952	1999	0.68-1952	13.17-1995
S.Central	0.72	6.88	-6.16	10	107/107	9999	1999	0.72-2000	14.23-1974
Southeast	2.75	7.28	-4.53	38	105/107	1963	1999	2.42-1956	17.77-1974
Statewide	1.12	6.58	-5.46	17	107/107	9999	1999	1.12-2000	12.18-1974