

KANSAS DROUGHT REPORT

August 6, 2007

Compiled by the Kansas Water Office from various federal, state, local and academic sources

Abnormal Dryness Returns to Some Areas in July

July featured generally below normal rainfall and temperatures across Kansas. The southwest and far northeast were the driest, with these areas generally receiving less than 25 percent of their normal July precipitation. The U.S. Drought Monitor is now depicting abnormal dryness in far western and northeast Kansas.

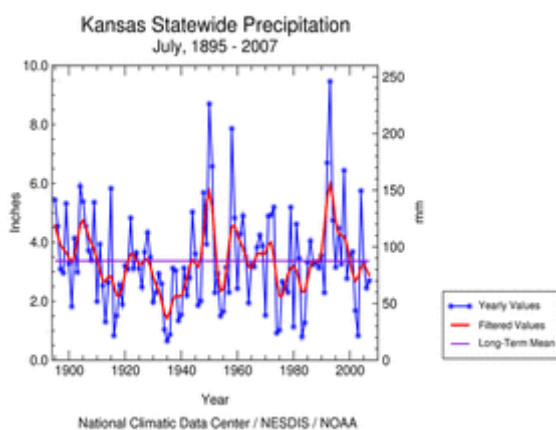
Monthly average temperatures were somewhat below normal at many principal reporting stations (those listed in Table 1), ranging from 76.7 at St. Joseph, MO and 76.8 at Goodland to 79.6 at Concordia and Garden City. There was a general lack of very hot or cool weather. Extreme temperatures for the month at principal stations ranged from 103 at Garden City on July 8th to 54 at Goodland (July 5th) and St. Joseph (July 11th).

Current County Drought Stages

There are currently no county drought stage declarations in effect in Kansas. This table summarizes [historic drought declarations](#) made by the Governor from 2000 through 2007.

Drought Monitoring and Indices

Precipitation



July 2007 ranks as the 41st driest July on record (1895-2007) in Kansas with a statewide average total precipitation of approximately 2.69 inches. This is 79 percent of normal. The graph at the left shows July precipitation in this long-term perspective.

Precipitation across seven of the state's nine climate reporting divisions was below normal in July. The northwest received only 33 percent of normal and the east central 52 percent. The south central and west central divisions reported 128 and 112 percent of normal, respectively. As shown in Table 1, July rainfall in Kansas City was only 22 percent of normal, while Wichita received 122 percent of its normal.

Looking at the last 60 days, rainfall has generally been well above normal southeast of I-35 with much of this area receiving twice its normal rainfall for this period. This above normal rainfall region extends into south central Kansas. Below normal rainfall during the June-July period is concentrated in southwest, far northwest and northeast Kansas. May through July rainfall has generally been below normal west of an Oberlin to Meade line. As a result of this precipitation pattern, the U.S. Drought Monitor now indicates abnormally dry conditions in far western and northeast Kansas as shown below.

Annual precipitation totals are running above normal in central Kansas and southeast of I-35, with below normal totals in the southwest and far northwest areas of the state. Other areas are generally near normal. So far, 2007 (January–July) ranks as the 14th wettest year on record, statewide. Monthly statewide [moisture status](#) graphs and rankings are available from the National Climatic Data Center.

Radar-based [precipitation estimate maps](#) covering multiple time periods are available from the National Weather Service. These maps are updated daily. Monthly and annual individual station and county average [precipitation data](#) is available from the Weather Data Library at Kansas State University.

Table 1 summarizes July and Year 2007 precipitation received at several major reporting stations in and adjacent to Kansas.

Table 1 Kansas Precipitation Summary						
Station	July 2007			Calendar Year 2007		
	Total (inches)	Departure (inches)	Percent of Normal	Total (inches)	Departure (inches)	Percent of Normal
Goodland	1.08	-2.46	31	8.52	-5.36	61
Hill City	3.44	0.15	105	13.03	-1.63	89
Garden City (Airport)	1.40	-1.91	42	11.02	-3.00	79
Dodge City	1.82	-1.35	57	11.73	-2.96	80
Russell	2.70	-0.90	75	17.97	0.71	104
Concordia	3.32	-0.88	79	16.29	-2.25	88
Medicine Lodge	3.04	0.01	100	24.15	6.22	135
Wichita (International Airport)	4.05	0.74	122	26.67	7.81	141
Topeka (Billard Airport)	1.99	-1.84	52	25.63	4.23	120
St. Joseph, MO	1.16	-2.73	30	18.67	-1.98	90
Kansas City (International Airport)	0.99	-3.43	22	19.27	-3.26	86
Olathe (New Century Air Center)	2.23	-1.80	55	28.95	5.24	122
Chanute	3.41	-0.83	80	37.38	12.32	149
Joplin, MO	0.85	-2.70	24	35.39	9.32	136

Source: National Weather Service Daily and Monthly Climate Summaries

U.S. Drought Monitor

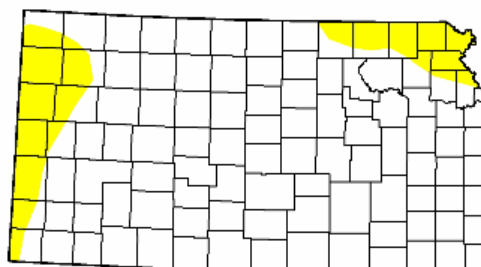
The Monitor ([current map](#)) is a composite of several observed weather variables and drought indices that is updated weekly. The July 31st map (see below) indicates abnormally dry conditions in far-western and northeast Kansas, as has been the case since mid-July. The table accompanying the map compares current conditions with those at several points during the past year

In the Kansas county drought stage scheme, a Drought Watch equates to moderate drought in the U.S. Drought Monitor, while a Drought Warning is the equivalent of severe drought. A Drought Emergency is reserved for extreme or exceptional drought.

U.S. Drought Monitor Kansas

July 31, 2007
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	87.7	12.3	0.0	0.0	0.0	0.0
Last Week (07/24/2007 map)	79.3	20.7	0.0	0.0	0.0	0.0
3 Months Ago (05/08/2007 map)	100.0	0.0	0.0	0.0	0.0	0.0
Start of Calendar Year (01/02/2007 map)	44.5	55.5	34.8	6.0	3.6	0.0
Start of Water Year (10/03/2006 map)	19.8	80.2	38.4	2.0	0.0	0.0
One Year Ago (08/01/2006 map)	0.0	100.0	51.8	7.2	0.0	0.0



Intensity:

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

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

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



Released Thursday, August 2, 2007

Author: Brian Fuchs, National Drought Mitigation Center

The Palmer Drought Severity Index

The [Palmer Index](#) (PDSI) is an indicator used in the U.S. Drought Monitor. The statewide average PDSI for the week ending July 28th was 2.09 (unusually moist), compared to 3.38 (very moist) on June 30th and -3.31 (severe drought) on July 29 2006. Current divisional PDSI values range from 4.28 (extremely moist) in the southwest to -0.75 (incipient drought) in the northeast.

Drought Impacts and Response

Fire

The National Weather Service began providing its full range of fire weather products and services in Kansas beginning in October 2006. Included are the Rangeland Fire Danger Index, Fire Weather Forecasts, Red Flag Watches/Warnings, and Spot Forecasts.

Each NWS office serving Kansas has these products available on its website. These websites may be accessed from this [county warning and forecast area](#) map. Clicking on one of these areas takes you to that NWS Office's home page. Look for "Fire Weather" in the menu on the left margin of the page.

Agriculture

The [Kansas Crop and Weather Report](#) is updated weekly during the growing season. Included is information about crop conditions and progress, soil moisture conditions, range and pasture conditions, hay and pasture supplies and stock water supplies.

The July 30th Report for the preceding week showed that topsoil moisture was rated 44 percent short – very short, 54 percent adequate and 2 percent surplus, statewide. This contrasts with the 80 percent short – very short reported for the same week in 2006, and a five-year average value of 67 percent. Subsoil moisture was rated 26 percent short, 71 percent adequate and 3 percent surplus, statewide, as compared to 81 percent short-very short last year at this time. Hay and forage supplies were rated 18 percent short-very short, 77 percent adequate and 5 percent surplus on July 30th. Statewide stock water supplies were rated 8 percent short, 90 percent adequate and 2 percent surplus.

Public Water Systems

Revised Municipal Water Conservation Plan Guidelines were approved by the Kansas Water Authority on June 15, 2007. The revised guidelines replace previous guidelines dating back to 1990. These guidelines cover drought response in addition to long-term water conservation.

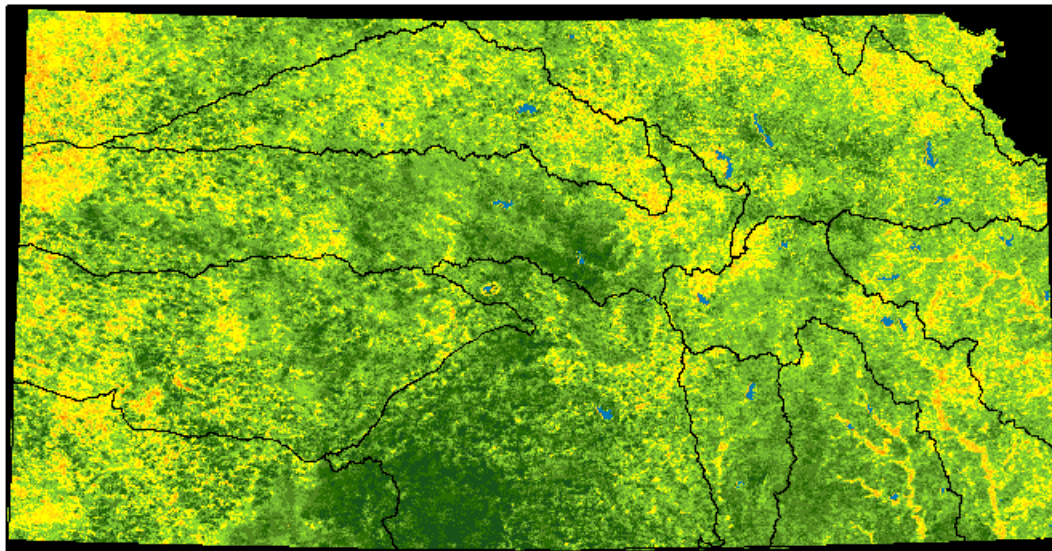
The Kansas Department of Health and Environment and the Kansas Water Office have updated the state's drought vulnerable public water systems list. This list identifies those systems most likely to first be impacted by drought and the reason for their vulnerability. The [Drought Vulnerability Assessment Report](#) includes the list and an explanation of the methodology used in the update.

In August 2006 the Governor's Drought Response Team released [Responding to Drought: A Guide for City, County and Water System Officials](#). This guidance provides an overview of Kansas county drought stages, local planning and coordination, disaster declarations, and available state and federal assistance.

Vegetation Conditions

The Kansas Applied Remote Sensing Program (KARS) at the University of Kansas produces a [Kansas Green Report](#) each week during the growing season. This report consists of a set of five interactive maps derived from satellite and historic data that illustrate vegetation conditions and crop progress across the state.

A Vegetation Condition Index Map, included in the Green Report, illustrates vegetation health and levels of plant stress based on current and historic vegetation greenness and surface temperatures. The most recent map (see below) covers the period July 17 through July 30.



Kansas Water Office

KARS

Kansas Applied Remote Sensing Program

Streamflow and Reservoir Conditions

The U.S. Geological Survey [Kansas Drought Watch](#) provides information on 7-day average streamflow conditions at long-term gaging stations and how they compare to normal flows. Most of these gages are located in central and eastern Kansas. A map (click on National Drought Map and then on Kansas) identifies river basins experiencing below normal flows and hydrologic drought.

Seven-day average streamflow was below normal at approximately 10 percent of Kansas' long-term gaging stations on August 1, 2007, as compared with 8 percent below normal on July 1st. Many streams in south central, east central and southeast Kansas were flowing at above normal levels (75th percentile or higher) on August 1st. Normally about 25 percent of gages are below normal at any given time. The percentage of gages with below normal flows has remained under 25 percent throughout the last 45 days..

The Kansas Department of Agriculture, Division of Water Resources is not presently conducting minimum desirable streamflow (MDS) administration anywhere in the state.

Table 2 summarizes federal reservoir pool elevations on August 2, 2007 in terms of departure from the top of the conservation/multipurpose pool and pool elevation change since July 5, 2007. All but five reservoirs exhibited pool-level declines as compared with one month ago. Large declines at reservoirs in the Marais des Cygnes and Verdigris river basins reflect release of flood control storage from excessive runoff from heavy rains during the last week in June. Pool levels at Norton, Cedar Bluff, Kirwin, and Webster reservoirs remain more than 10 feet below the top of the conservation/multipurpose pool. Webster Lake is currently 21.4 feet down.

U.S. Seasonal Drought Outlook

The [Seasonal Drought Outlook](#), developed by the NOAA Climate Prediction Center, assesses the likelihood for improvement, persistence or deterioration in drought conditions for areas currently experiencing drought as identified by the U.S. Drought Monitor. The Outlook released August 2nd for the period August through October 2007 does not foresee re-development of drought in Kansas even though some areas are now considered abnormally dry. The Drought Outlook is updated on the first and third Thursday of each month.

Table 2 Kansas Federal Reservoir Pool Elevation Summary					
Reservoir	Top MP/C Pool	Pool Elevation (Feet MSL)		08/02/07	
		07/05/07	08/02/07	Departure from Top	Change from 07/05/07
Kansas River Basin					
Norton	2304.3	2290.3	2289.0	-15.3	-1.3
Lovewell	1582.6	1584.6	1581.4	-1.2	-3.2
Milford	1144.4	1147.2	1147.2	2.8	0.0
Cedar Bluff	2144.0	2130.1	2129.8	-14.2	-0.3
Kanopolis	1463.0	1467.7	1470.6	7.6	2.9
Wilson	1516.0	1513.4	1513.6	-2.4	0.2
Kirwin	1729.3	1711.7	1709.7	-19.6	-2.0
Webster	1892.5	1871.4	1871.1	-21.4	-0.3
Waconda	1455.6	1447.4	1447.8	-7.8	0.4
Tuttle Creek	1075.0	1075.4	1075.0	0.0	-0.4
Perry	891.5	893.7	892.3	0.8	-1.4
Clinton	875.5	879.2	877.7	2.2	-1.5
Pomona	974.0	984.1	974.0	0.0	-10.1
Melvern	1036.0	1042.7	1036.3	0.3	-6.4
Hillsdale	917.0	924.4	917.8	0.8	-6.6
Arkansas River Basin					
Cheney	1421.6	1422.7	1422.7	1.1	0.0
El Dorado	1339.0	1344.6	1341.5	2.5	-3.1
Toronto	902.9	930.4	916.3	13.4	-14.1
Fall River	949.9	986.5	967.8	17.9	-18.7
Elk City	794.0	826.4	808.1	14.1	-18.3
Big Hill	858.0	860.9	858.1	0.1	-2.8
Council Grove	1274.0	1274.3	1274.1	0.1	-0.2
Marion	1350.5	1350.5	1350.1	-0.4	-0.4
J. Redmond	1037.0	1054.5	1048.3	11.3	-6.2
All values are in feet. Negative departures or changes are shown in red. Source: U.S. Army Corps of Engineers					

Additional Information

The Kansas Water Office web site, [KWO Drought](#), contains additional drought information including links to other agencies with drought information and past issues of the Kansas Drought Report. The Operations Plan for the Governor's Drought Response Team is also available here.

Please contact Tom Lowe at the KWO (785/296-0874) or tlowe@kwo.state.ks.us, should you have any questions.