

# KANSAS DROUGHT REPORT

## Current Conditions, Impacts and Outlook

February 8, 2008

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### Dry Conditions Statewide Highlight January

Following the fifth wettest December on record, January was a dry month statewide with total precipitation received averaging only about 50 percent of normal. Temperature exhibited their normal mid-winter variability, but average generally near normal in the north and a bit above normal across southern Kansas. The generally dry weather in western Kansas in recent months is reflected in the U.S. Drought Monitor, which continues to show abnormally dry to moderate drought conditions across 36 percent of the state. The latest U.S. Seasonal Drought Outlook indicates the likely persistence of moderate drought conditions into the spring in southwest Kansas.

January temperatures showed their usual roller-coaster pattern, with a lengthy warm period early in the month followed by alternating cold and warmth thereafter. Monthly average temperatures at principal reporting stations (those listed in Table 1) were generally near normal in northern Kansas and above normal in the south. These averages ranged from 23.8<sup>o</sup>F at Saint Joseph to 36.5<sup>o</sup>F at Joplin. Extreme temperatures for the month at principal stations ranged from a high of 77 degrees at Medicine Lodge on the 28<sup>th</sup> to a low of -12 degrees at Saint Joseph on the 19<sup>th</sup>. January temperature extremes from the 14-station Kansas State University Research & Extension network ranged from 74 degrees at St. John to -9 degrees at Scandia and Silver Lake.

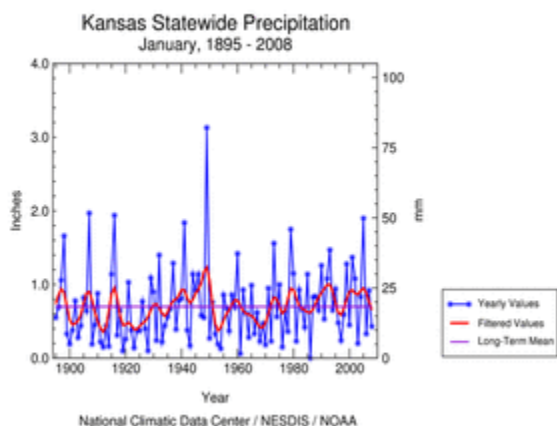
### CURRENT COUNTY DROUGHT STAGES

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

The [U.S. Drought Portal](#) was officially launched on November 1, 2007. It was created to provide comprehensive information about emerging and ongoing drought conditions and to enhance the nation's drought preparedness. The Drought Portal is part of the National Integrated Drought Information System (NIDIS) that was signed into law by President Bush in December 2006. Click here [NIDIS](#) to learn more about this new effort.

### Precipitation



January 2008 ranks as the 42<sup>nd</sup> driest January on record (1895-2008) in Kansas with a statewide average total precipitation of approximately 0.42 inches. This is 51 percent of normal. The graph at the left shows January precipitation in this long-term perspective.

January precipitation was below normal throughout Kansas. Climate division percentages of normal precipitation ranged from 11 in the west central to 84 in the southeast. Similarly, all stations shown in Table 1 were below normal, with Hill City receiving only 0.02 inches or 3 percent of its normal total. At the other extreme, St. Joseph received 98 percent of its normal total.

Looking at the last three months (November - January), total precipitation received averaged 3.07 inches statewide, which is 106 percent of normal. This is the 43<sup>rd</sup> wettest such period of record (1895-2008) in Kansas. Central Kansas was wetter than the west or the east during this period, receiving 127 percent of normal compared to 95 and 97 percent for the west and east, respectively.

Over the past six months (August - January), Kansas total precipitation received has averaged 10.95 inches which is 98 percent of normal. During this period the southwest received only 73 percent of normal and the southeast 81 percent, while the north central and northeast received 122 percent and 124 percent of normal, respectively.

The 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 January and Year 2008 precipitation received at several major reporting stations in and adjacent to Kansas.

Table 1 Kansas Precipitation Summary						
Station	January 2008			Calendar Year 2008		
	Total (inches)	Departure (inches)	Percent of Normal	Total (inches)	Departure (inches)	Percent of Normal
Goodland	0.12	-0.31	28			
Hill City	0.02	-0.57	3			
Garden City (Airport)	0.09	-0.31	23			
Dodge City	0.17	-0.45	27			
Russell	0.12	-0.56	18			
Concordia	0.34	-0.32	52			
Medicine Lodge	0.11	-0.61	15			
Wichita (International Airport)	0.35	-0.49	42			
Topeka (Billard Airport)	0.65	-0.30	68			
St. Joseph, MO	0.86	-0.02	98			
Kansas City (International Airport)	0.95	-0.20	83			
Olathe (New Century Air Center)	0.98	-0.28	78			
Chanute	0.83	-0.45	65			
Joplin, MO	1.07	-0.77	58			

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 January 29th map (see below) indicates abnormally dry conditions throughout most of western Kansas, extending into south central Kansas. Moderate drought is shown in far-southwest Kansas and along the Oklahoma border as far east as Comanche County. The table accompanying the map compares current conditions with those at several points during the past year. Little change occurred during January with 36 percent of the state now considered abnormally dry or in moderate drought as compared with 35 percent of the state on January 1st.

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.

## The Palmer Drought Severity Index

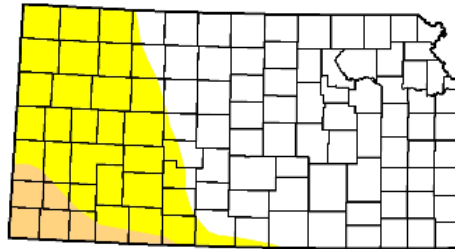
The [Palmer Index](#) (PDSI) is an indicator used in the U.S. Drought Monitor. The statewide average PDSI for the week ending January 26<sup>th</sup> was 1.84 (moist spell), down somewhat from the December 29<sup>th</sup> value of 2.21 (unusually moist). This compares with a statewide average PDSI of 2.10 (unusually moist) for the week ending January 27, 2007. Current divisional PDSI values range from 3.45 (very moist) in south central Kansas to -0.19 (near normal) in the northwest division.

# U.S. Drought Monitor

## Kansas

January 29, 2008  
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	64.1	35.9	5.4	0.0	0.0	0.0
Last Week (01/22/2008 map)	64.1	35.9	5.4	0.0	0.0	0.0
3 Months Ago (11/06/2007 map)	87.8	12.2	3.4	0.0	0.0	0.0
Start of Calendar Year (01/01/2008 map)	65.1	34.9	5.4	0.0	0.0	0.0
Start of Water Year (10/02/2007 map)	89.1	10.9	0.3	0.0	0.0	0.0
One Year Ago (01/30/2007 map)	54.9	45.1	21.8	1.1	0.0	0.0



*Intensity:*



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, January 31, 2008  
Author: David Miskus, JAWF/CPC/NOAA

## DROUGHT IMPACTS AND RESPONSE

### Fire

Fire danger is becoming a concern. In neighboring Oklahoma, Governor Brad Henry declared a statewide burn ban on January 29<sup>th</sup>. High winds, low humidity, and abundant fuel associated with downed tree limbs from recent ice storms and lush vegetative growth in 2007 have contributed to the increased fire danger.

The National Weather Service provides a full range of fire weather products and services for Kansas. 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.

[Fire weather](#) links are also available from the Weather Data Library at Kansas State University, as are prescribed burning guidance publications.

### 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 February 4<sup>th</sup> Report indicated that topsoil moisture was rated 3 percent very short, 12 percent short, 81 percent adequate and 4 percent surplus, statewide, at the end of January. Hay and forage supplies were rated 82 percent adequate and feed grain supplies 86 percent adequate. Winter wheat condition was rated as 25 percent poor-very poor, 33 percent fair, 36 percent good and 6 percent excellent.

### Public Water Systems

The Kansas Water Authority approved [2007 Municipal Water Conservation Plan 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 to reflect system conditions as of 2006. 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. Production of this weekly map will resume in March 2008.

### **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 14 percent of Kansas' long-term gaging stations on February 1, 2008; one month ago this value was about 12 percent. Normally about 25 percent of gages are below normal at any given time. The percentage of gages with below normal flows remained under 25 percent from March through October of 2007 and then increased to near 25 percent in response to a dry November. This value then declined to near 10 percent in mid-December and has remained in the 10-25 percent range since that time.

Seven-day average streamflow was near normal (25-75th percentile) in all Kansas river basins on February 1<sup>st</sup>.

No streams are currently (as of February 6, 2008) under minimum desirable streamflow (MDS) administration by the Kansas Department of Agriculture, Division of Water Resources. Ice presents problems with gage readings, which are not always accurate under such conditions. This situation has occurred on the Republican River at both Concordia and Clay Center, where MDS remains a concern. February 6<sup>th</sup> flows at both Concordia and Clay Center were well above February MDS triggers. Presently, it does not appear that criteria for initiating MDS administration above Clay Center will be met anytime soon.

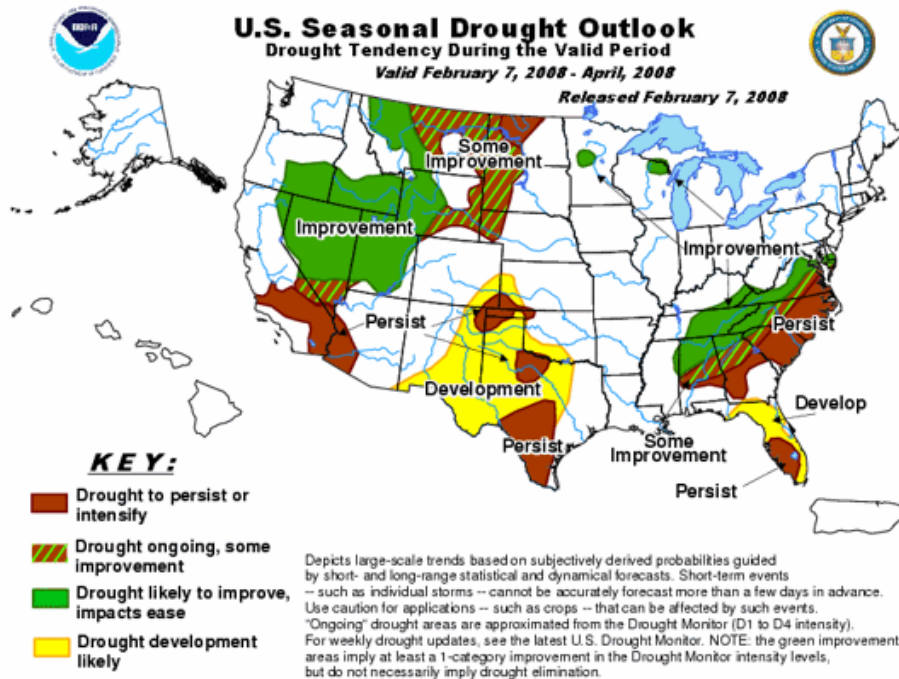
Table 2 summarizes federal reservoir pool elevations on February 1, 2008 in terms of departure from the top of the conservation/multipurpose pool and pool elevation change since January 7, 2008. Seventeen reservoirs experienced changes of +/- 0.5 feet or less with the extremes being +0.4 feet at Waconda and -2.6 feet at Melvern. Pool levels at Norton, Cedar Bluff, Kirwin, and Webster reservoirs remain more than 15 feet below the top of the conservation/multipurpose pool. Webster Lake is currently 22.0 feet down, while Kirwin Lake is 20.9 feet down.

Table 2 Kansas Federal Reservoir Pool Elevation Summary					
Reservoir	Top MP/C Pool <sup>1</sup>	Pool Elevation (Feet MSL)		02/01/08	
		01/07/08	02/01/08	Departure from Top <sup>2</sup>	Change from 01/07/08 <sup>2</sup>
<b>Kansas River Basin</b>					
Norton	2304.3	2288.2	2288.3	-16.0	0.1
Lovewell	1582.6	1581.1	1581.4	-1.2	0.3
Milford	1144.4	1144.5	1144.3	-0.1	-0.2
Cedar Bluff	2144.0	2128.2	2128.2	-15.8	0.0
Kanopolis	1463.0	1465.3	1465.4	2.4	0.1
Wilson	1516.0	1513.0	1513.1	-2.9	0.1
Kirwin	1729.3	1708.2	1708.4	-20.9	0.2
Webster	1892.5	1870.3	1870.5	-22.0	0.2
Waconda	1455.6	1448.6	1449.0	-6.6	0.4
Tuttle Creek	1075.0	1074.6	1074.1	-0.9	-0.5
Perry	891.5	891.2	889.6	-1.9	-1.6
Clinton	875.5	876.3	875.7	0.2	-0.6
Pomona	974.0	972.7	972.3	-1.7	-0.4
Melvern	1036.0	1036.8	1034.2	-1.8	-2.6
Hillsdale	917.0	917.9	917.4	0.4	-0.5
<b>Arkansas River Basin</b>					
Cheney	1421.6	1420.7	1420.9	0.7	0.2
El Dorado	1339.0	1339.0	1339.1	0.1	0.1
Toronto	899.5	900.2	899.5	0.0	-0.7
Fall River	946.5	948.4	946.5	0.0	-1.9
Elk City	793.8	796.5	796.0	2.2	-0.5
Big Hill	858.0	856.6	856.5	-1.5	-0.1
Council Grove	1272.5	1274.4	1272.6	0.1	-1.8
Marion	1350.5	1350.0	1350.0	-0.5	0.0
J. Redmond	1039.0	1041.2	1040.0	1.0	-1.2
1. Seasonal pool operation at Toronto, Fall River, Elk City, Council Grove and John Redmond reservoirs. 2. All values are in feet. Negative departures or changes are shown in red. Source: U.S. Army Corps of Engineers					

## LOOKING AHEAD

The [Seasonal Drought Outlook](#), developed by the NOAA Climate Prediction Center (NOAA CPC), 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 February 7<sup>th</sup> for the period through April 2008 indicates the likelihood of expanding drought across the southern Plains including persistence of the current moderate drought area in southwest Kansas and the likely development of drought in adjacent areas. The Drought Outlook is updated on the first and third Thursday of each month.

Another NOAA CPC product, the [Three Month Outlook](#), assesses the chances for above normal, normal or below normal precipitation and temperatures for the upcoming month and the upcoming three-month period. It is likely that both February 2008 and the February through April 2008 period will be warmer than normal in Kansas. Below normal precipitation is likely across all but extreme eastern Kansas in February and statewide during the overall three-month period. This outlook is consistent with the Seasonal Drought Outlook.



## ADDITIONAL INFORMATION

The Kansas Drought Report is compiled by the Kansas Water Office from various federal, state, local and academic sources. Some data used is preliminary and is subject to change when final data is available at a later date.

The Kansas Water Office web site, [KWO Drought](http://kwo.org), 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](mailto:tlowe@kwo.state.ks.us), should you have any questions.