

KANSAS DROUGHT REPORT

Current Conditions, Impacts and Outlook

January 7, 2008

Ice Storm Highlights Cold, Wet December

December featured cold, wet weather throughout Kansas, which was in sharp contrast to November. An ice storm on December 10-11 caused widespread power outages and other problems in central and eastern Kansas. Some 50,000 electric utility customers were without power for a period ranging from a few hours to two weeks. The continued dry weather in western Kansas is reflected in the U.S. Drought Monitor, which is now showing abnormally dry to moderate drought conditions across 35 percent of the state. The latest U.S. Seasonal Drought Outlook indicates the likely persistence of moderate drought conditions over the winter in southwest Kansas.

Monthly average temperatures were below normal at all principal reporting stations (those listed in Table 1) except Joplin, ranging from 26.0 at Concordia to 37.2 at Joplin. Extreme temperatures for the month at principal stations ranged from a low of 0 on December 29th at Goodland to a high of 75 on December 4th at Garden City. A few subzero temperatures were noted in areas with deep snow cover during the month. The cold broke a trend of warmer than normal temperatures that began in August and lasted until near Thanksgiving.

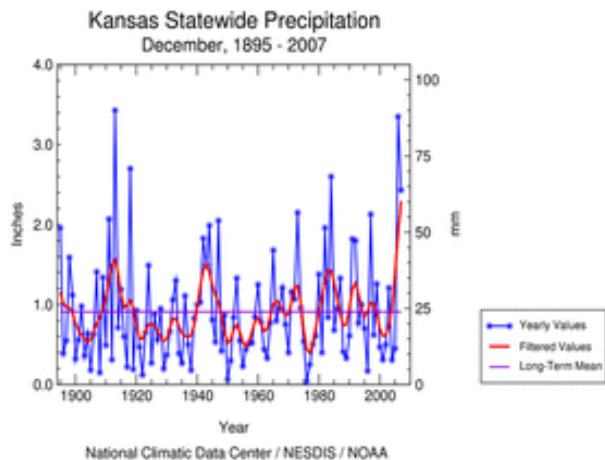
CURRENT COUNTY DROUGHT STAGES

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



December 2007 ranks as the 5th wettest December on record (1895-2007) in Kansas with a statewide average total precipitation of approximately 2.44 inches. This is 270 percent of normal. The graph at the left shows December precipitation in this long-term perspective.

December precipitation was more than twice normal throughout Kansas, except for the southeast. Climate division percentages of normal precipitation ranged from 161 in the southeast to 372 in the south central. All stations shown in Table 1 were above normal, although Chanute and Joplin were barely so at 106 and 112 percent, respectively.

Looking at the last three months (October - December), rainfall averaged 5.73 inches statewide, which is 126 percent of normal. This is the 29th wettest such period of record (1895-2007) in Kansas. Western Kansas was much drier than the central or the east during this period. The northwest, west central and southwest climate divisions received just 79, 69 and 85 percent of normal precipitation, respectively. This is reflected in the abnormally dry to moderate drought conditions shown across western Kansas by the U.S. Drought Monitor (see below).

Over the past six months (July-December), only north central, central and northeast Kansas received above normal precipitation, although all areas except the southwest received 94 percent of normal or more. The southwest received only 69 percent of normal during the latter half of 2007. Overall, 2007 ranks as the 9th wettest year on record. Statewide, total precipitation received for the year averaged 33.98 inches which is 119 percent of normal. 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 December and Year 2007 precipitation received at several major reporting stations in and adjacent to Kansas.

Table 1 Kansas Precipitation Summary						
Station	December 2007			Calendar Year 2007		
	Total (inches)	Departure (inches)	Percent of Normal	Total (inches)	Departure (inches)	Percent of Normal
Goodland	1.04	0.64	260	15.10	-4.66	76
Hill City	1.04	0.55	212	21.13	-1.45	94
Garden City (Airport)	1.12	0.67	249	17.31	-2.89	86
Dodge City	1.92	1.15	249	19.12	-3.23	86
Russell	1.77	0.91	206	23.88	-2.37	91
Concordia	2.29	1.43	266	29.63	1.20	104
Medicine Lodge	2.76	1.89	317	31.28	2.77	110
Wichita (International Airport)	2.62	1.27	194	37.97	7.59	125
Topeka (Billard Airport)	4.13	2.71	291	40.61	4.97	114
St. Joseph, MO	4.02	2.58	279	37.07	1.83	105
Kansas City (International Airport)	2.91	1.27	177	33.02	-4.96	87
Olathe (New Century Air Center)	2.37	0.61	135	44.85	4.68	112
Chanute	2.01	0.12	106	46.61	4.66	111
Joplin, MO	3.32	0.36	112	55.52	9.45	121

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 1st 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. Abnormally dry conditions have retracted somewhat in the south central during the past month, with 35 percent of the state now considered abnormally dry or in moderate drought as compared with 44 percent of the state on December 4th.

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

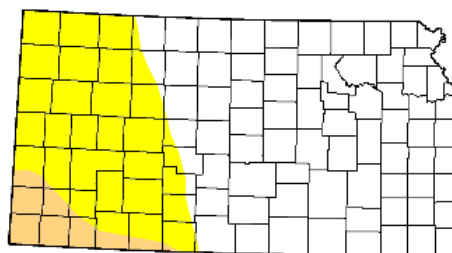
The [Palmer Index](#) (PDSI) is an indicator used in the U.S. Drought Monitor. The statewide average PDSI for the week ending December 29th was 2.21 (unusually moist), up significantly from the December 1st value of 0.56 (incipient moist spell). This compares with a statewide average PDSI of 1.57 (moist spell) for the week ending December 30, 2006. Current divisional PDSI values range from 3.90 (very moist) in south central Kansas to 0.27 (near normal) in the northwest division.

U.S. Drought Monitor

Kansas

January 1, 2008
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	65.1	34.9	5.4	0.0	0.0	0.0
Last Week (12/25/2007 map)	65.1	34.9	5.4	0.0	0.0	0.0
3 Months Ago (10/09/2007 map)	83.8	16.2	0.3	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 (01/02/2007 map)	44.5	55.5	34.8	6.0	3.6	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 3, 2008
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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 January 7th Report indicated that topsoil moisture was rated 5 percent very short, 9 percent short, 77 percent adequate and 9 percent surplus, statewide, at the end of December. Hay and forage supplies were rated 86 percent adequate and feed grain supplies 88 percent adequate. Winter wheat condition was rated as 23 percent poor-very poor, 30 percent fair, 43 percent good and 4 percent excellent.

Public Water Systems

In June 2007 the Kansas Water Authority approved [2007 Municipal Water Conservation Plan Guidelines](#). 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. 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 12 percent of Kansas' long-term gaging stations on January 6, 2008; one month ago this value was about 25 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 fairly constant in response to persistent above normal precipitation in December.

Seven-day average streamflow was below normal (10-24th percentile) in the Cimarron Basin on January 6th.

While the Kansas Department of Agriculture, Division of Water Resources is not presently conducting minimum desirable streamflow (MDS) administration anywhere in the state, MDS remains a concern at several locations including the Republican River at Concordia and Clay Center.

Table 2 summarizes federal reservoir pool elevations on January 7, 2008 in terms of departure from the top of the conservation/multipurpose pool and pool elevation change since December 5, 2007. Nine reservoirs experienced changes of +/- 0.5 feet or less with the extremes being +2.8 feet at Council Grove and -3.5 feet at Pomona. 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 22.2 feet down, while Kirwin Lake is 21.1 feet down.

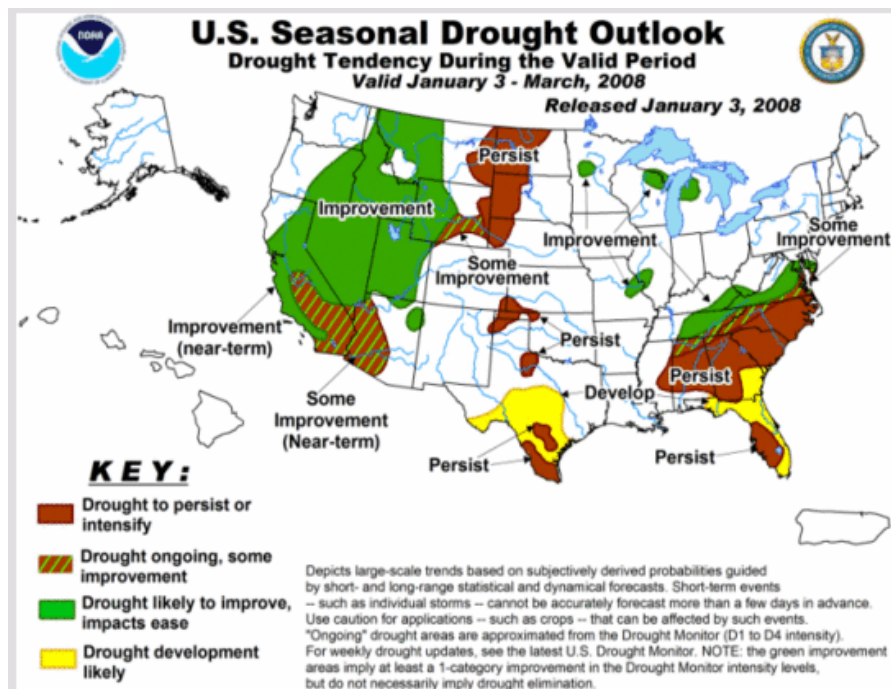
Table 2 Kansas Federal Reservoir Pool Elevation Summary					
Reservoir	Top MP/C Pool ¹	Pool Elevation (Feet MSL)		01/07/08	
		12/05/07	01/07/08	Departure from Top ²	Change from 12/05/07 ²
Kansas River Basin					
Norton	2304.3	2287.8	2288.2	-16.1	0.4
Lovewell	1582.6	1580.8	1581.1	-1.5	0.3
Milford	1144.4	1147.1	1144.5	0.1	-2.6
Cedar Bluff	2144.0	2128.2	2128.2	-15.8	-0.3
Kanopolis	1463.0	1464.7	1465.3	2.3	0.6
Wilson	1516.0	1512.7	1513.0	-3.0	0.3
Kirwin	1729.3	1707.9	1708.2	-21.1	0.3
Webster	1892.5	1870.1	1870.3	-22.2	0.2
Waconda	1455.6	1448.3	1448.6	-7.0	0.3
Tuttle Creek	1075.0	1075.2	1074.6	-0.4	-0.6
Perry	891.5	894.0	891.2	-0.3	-2.8

Table 2 Kansas Federal Reservoir Pool Elevation Summary					
Reservoir	Top MP/C Pool ¹	Pool Elevation (Feet MSL)		01/07/08	
		12/05/07	01/07/08	Departure from Top ²	Change from 12/05/07 ²
Clinton	875.5	877.1	876.3	0.8	-0.8
Pomona	974.0	976.2	972.7	-1.3	-3.5
Melvorn	1036.0	1035.8	1036.8	0.8	1.0
Hillsdale	917.0	917.6	917.9	0.9	0.3
0.3Arkansas River Basin					
Cheney	1421.6	1419.9	1420.7	-0.9	0.8
El Dorado	1339.0	1338.3	1339.0	0.0	0.7
Toronto	902.9	902.1	900.2	-2.7	-1.9
Fall River	949.9	949.2	948.4	-1.5	-0.8
Elk City	796.0	795.5	796.5	0.5	1.0
Big Hill	858.0	856.6	856.6	-1.4	-0.3
Council Grove	1273.7	1271.6	1274.4	0.7	2.8
Marion	1350.5	1348.9	1350.0	-0.5	1.1
J. Redmond	1041.0	1038.7	1041.2	0.2	2.5

1. Seasonal pool operation at Council Grove, Elk City 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 January 3rd for the period through March 2008 indicates the likelihood for persistence of the current moderate drought area in southwest Kansas, but does not indicate the likely development of drought in adjacent areas as was the case one month ago. 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 January 2008 and the January through March 2008 period will be warmer than normal in Kansas. No clear trend in precipitation is indicated for January, but below normal precipitation is likely across Kansas 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](#), 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.