# *KANSAS CLIMATE SUMMARY AND DROUGHT REPORT*
# *Current Conditions, Drought Impacts and Outlook*

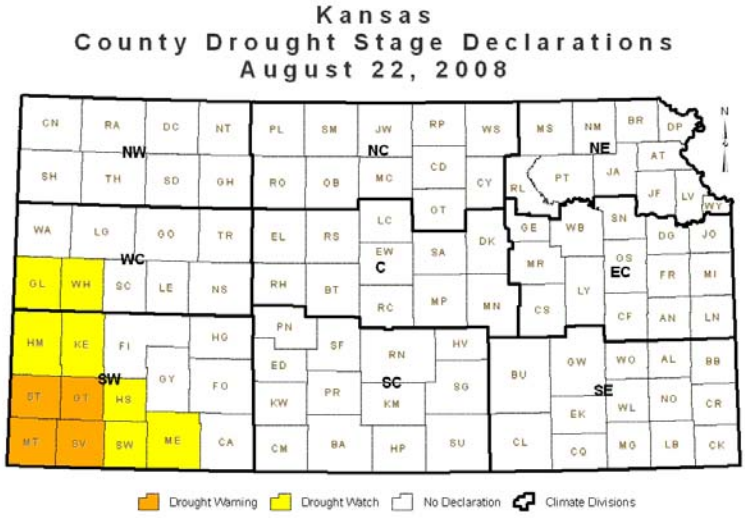
## *August 2008*

## Wet in Far West – Dry Northeast

The August rainfall pattern was in sharp contrast to recent months with heavy rains in the far west and much below normal rainfall in the northeast. While northwest Kansas received 175 percent of normal and the southwest 142 percent, northeast Kansas managed only 66 percent of normal precipitation in August. Alton (Osborne County) reported the most rain during the month with 9.36, while Dighton (Lane County) reported the least with 0.24 inches. Average temperatures across Kansas during August were below normal statewide.

### CURRENT COUNTY DROUGHT STAGES

On August 22nd, Governor Kathleen Sebelius declared a Drought Warning for Grant, Morton, Stanton and Stevens counties and a Drought Watch for seven additional counties. The following map illustrates these county drought stage declarations.



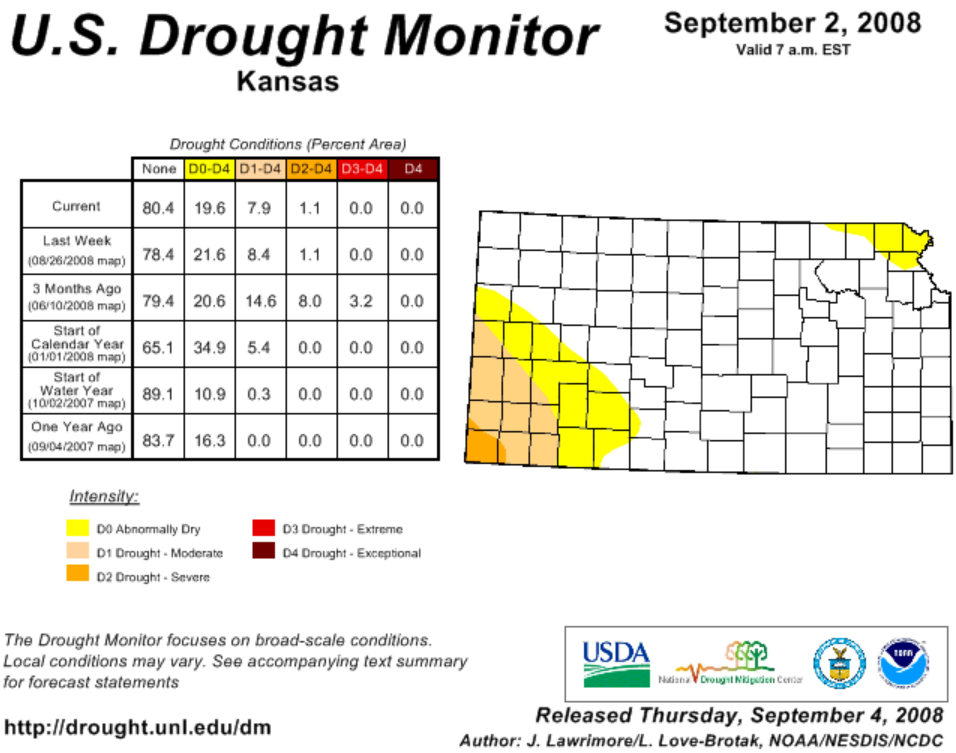

These declarations replace those made June 11th and will remain in effect until October 31st barring any unanticipated changes in conditions.

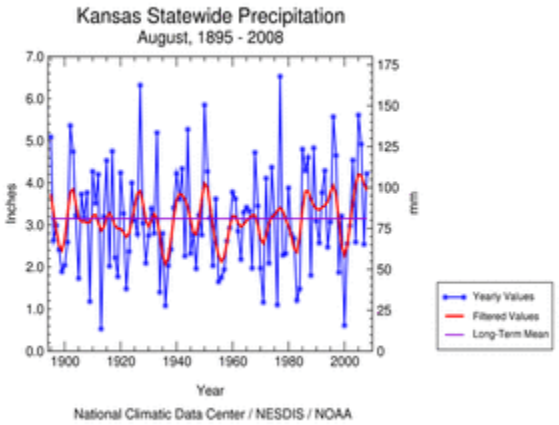
This table summarizes historic drought declarations made by the Governor from 2000 through 2007.

### DROUGHT MONITORING AND INDICES

The U.S. Drought Monitor is perhaps the most widely recognized drought monitoring tool in the nation. The Monitor (current map) is a composite of several observed weather variables and drought indices that is updated weekly. The September 2nd map (see below) indicates abnormally dry or moderate drought conditions across southwest Kansas, with severe drought limited to Morton County. This represents improvement from one month ago when extreme drought covered all or part of six counties. Recent dry weather in eastern Kansas has resulted in the introduction of abnormally dry conditions for a small area in the far-northeast. The table accompanying the map compares the percentage of the state currently affected by drought conditions with 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.



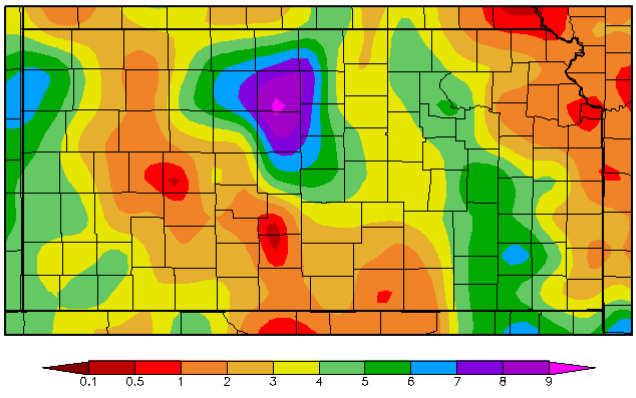

The Palmer Drought Severity Index - The Palmer Index (PDSI) is an indicator used in the U.S. Drought Monitor. The statewide average PDSI for the week ending August 30th was 2.84 (unusually moist), up sharply compared with the July 26th value of 1.41 (moist spell). End-of-month divisional PDSI values ranged from 4.94 (extremely moist) in southeast Kansas to 1.26 (moist spell) in the northwest division.

**August Conditions**

August 2008 ranks as the 27th wettest August on record (1895-2008) in Kansas with a statewide average total precipitation of 4.22 inches (see Table 1). This is 134 percent of normal. The graph at the left shows August precipitation in this long-term perspective. The monthly statewide moisture status graphs and rankings are available from the National Climatic Data Center.

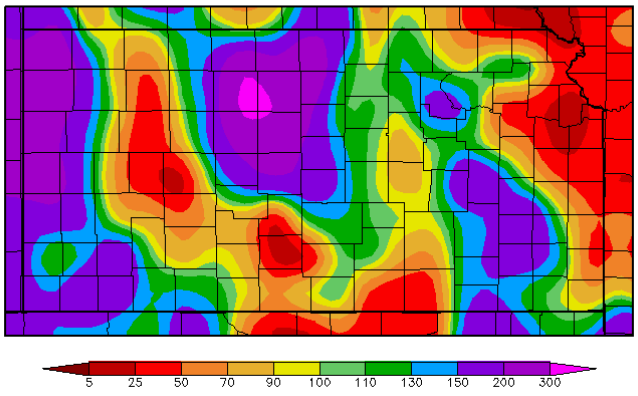
Based on preliminary reports from National Weather Service COOP network stations, total precipitation received in August varied form 0.47 inches at Garnett in Anderson County to 9.36 inches at Alton in Osborne County. Community Collaborative Rain, Hail and Snow Network (CoCoRaHS) August precipitation extremes were 0.24 inches at Dighton in Lane County and 9.21 inches near Russell in Russell County. The maps below show total precipitation received and the percent of normal across the state in August.

Precipitation (in)
8/1/2008 – 8/31/2008




Generated 9/2/2008 at HPRCC using provisional data. NOAA Regional Climate Centers

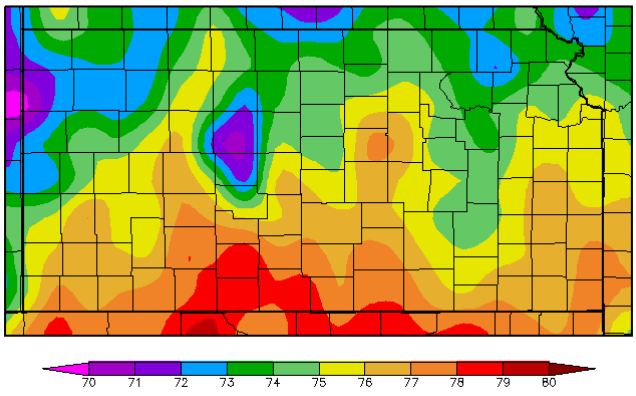
Percent of Normal Precipitation (%)
8/1/2008 – 8/31/2008




Generated 9/2/2008 at HPRCC using provisional data. NOAA Regional Climate Centers

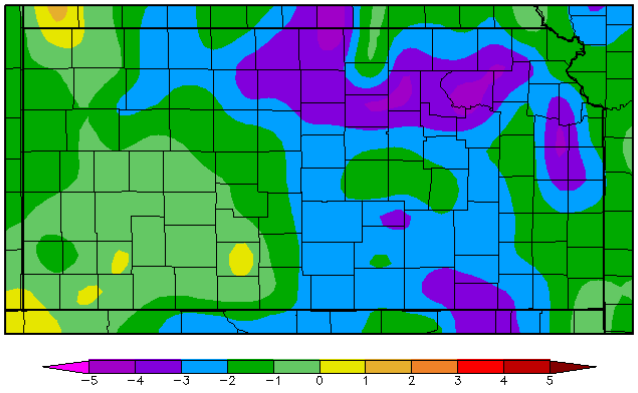
While average temperatures across Kansas during August were generally below normal, the month started-out on the hot side. Several daily record highs were set in the southwest on August 4th, including 108 at the Dodge City airport and 105 at the Garden City airport. Ashland and a station 16 miles southeast of Wilmore reached 109 degrees for the state high. Oberlin recorded the month's coolest temperature with a reading of 46$^0$F on August 29$^{th}$. The following maps show average monthly temperature and the departure from normal across Kansas during August.

Temperature (F)
8/1/2008 – 8/31/2008




Generated 9/2/2008 at HPRCC using provisional data. NOAA Regional Climate Centers

Departure from Normal Temperature (F)
8/1/2008 – 8/31/2008




Generated 9/2/2008 at HPRCC using provisional data. NOAA Regional Climate Centers

Table 1 summarizes August temperature and precipitation conditions by climate division while Appendix A provides an August summary for principal reporting locations within and adjacent to Kansas. Please note that the data used in compiling Tables 1 and 2 and Appendix A is preliminary and comes from different sources. This may result in slight differences in the average or extreme values presented.

**Table 1**
**August 2008 Kansas Precipitation and Temperature Summary**

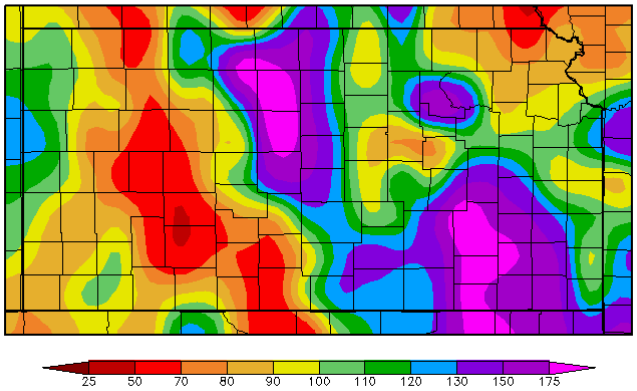
| | Precipitation (inches) | | | | | | Temperature ($^0$F) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | August | | | January-August 2008 | | | | | Monthly Extreme | |
| Division | Total | Dep.[1] | % Norm | Amount | Dep. | % Norm | Average | Dep.[1] | Highest | Lowest |
| Northwest | 3.97 | 1.70 | 175 | 17.18 | 1.14 | 107 | 72.6 | -1.9 | 107 | 46 |
| West Central | 2.98 | 0.59 | 125 | 13.88 | -1.56 | 90 | 73.7 | -1.5 | 108 | 52 |
| Southwest | 3.37 | 1.00 | 142 | 11.16 | -3.94 | 74 | 75.9 | -0.8 | 109 | 54 |
| | | | | | | | | | | |
| North Central | 5.98 | 2.76 | 186 | 25.44 | 5.30 | 126 | 74.2 | -2.2 | 105 | 51 |
| Central | 4.88 | 1.68 | 153 | 24.19 | 3.10 | 115 | 75.5 | -2.0 | 107 | 52 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| South Central | 2.63 | -0.51 | 84 | 26.25 | 5.76 | 128 | 76.4 | -2.1 | 109 | 57 |
| | | | | | | | | | | |
| Northeast | 2.66 | -1.37 | 66 | 26.08 | 1.22 | 105 | 74.1 | -1.5 | 107 | 49 |
| East Central | 3.26 | -0.55 | 86 | 30.03 | 4.34 | 117 | 74.8 | -1.6 | 105 | 54 |
| Southeast | 4.42 | 0.57 | 115 | 40.73 | 14.44 | 155 | 75.9 | -2.0 | 102 | 52 |
| | | | | | | | | | | |
| STATE | 3.80 | 0.68 | 122 | 23.91 | 3.46 | 117 | 74.8 | -1.7 | 109 | 46 |
| 1. Departure from 1971-2000 normal value<br>Source: KSU Weather Data Library | | | | | | | | | | |

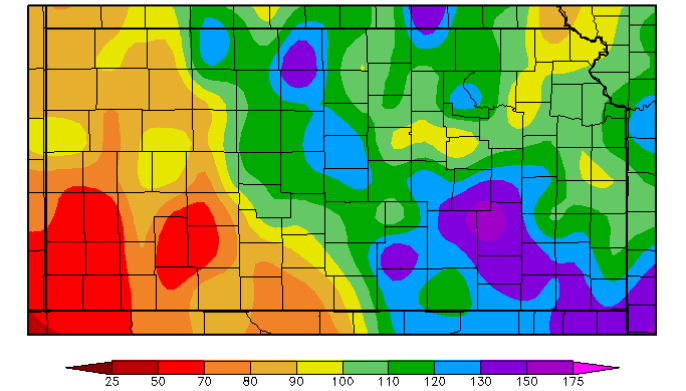
### Longer-Term Precipitation Trends

The following two maps show the percentage of normal precipitation received across Kansas during the past three months (June - August 2008) and during the past 12months (September 2007 – August 2008). Both maps show the sharp contrast between the much drier than normal conditions across most of western Kansas and the wet conditions experienced in the south central and southeast parts of the state. The three-month map also illustrates the dry weather this summer in the northeast which is now reflected in the U.S. Drought Monitor.

Percent of Normal Precipitation (%)
6/1/2008 – 8/31/2008




Percent of Normal Precipitation (%)
9/1/2007 – 8/31/2008




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 2 provides additional perspective on Kansas statewide temperature and precipitation trends over the past 12 months.

## DROUGHT IMPACTS AND RESPONSE

### Fire

The only major wildfires (300 acres or more) reported to the Kansas Forest Service in August was a 21,000 acre fire in Barber County on August 4th.

**Table 2**
**Kansas 12-Month Climate Summary**

| | Temperature (°F) | | Precipitation (inches) | |
|---|---|---|---|---|
| **Month** | **Monthly Average** | **Departure[1]** | **Monthly Total** | **Departure[1]** |
| September 2007 | 70.0 | 2.0 | 2.01 | -0.67 |
| October 2007 | 58.5 | 2.3 | 3.02 | 0.84 |
| November 2007 | 43.8 | 2.0 | 0.21 | -1.52 |
| December 2007 | 29.2 | -2.7 | 2.45 | 1.47 |

| | | | | |
|---|---|---|---|---|
| January 2008 | 29.9 | 1.1 | 0.43 | -0.34 |
| February 2008 | 32.0 | -2.5 | 1.48 | 0.57 |
| March 2008 | 42.8 | -1.0 | 1.56 | -0.69 |
| April 2008 | 50.1 | -3.5 | 2.71 | 0.12 |
| May 2008 | 62.7 | -0.6 | 5.53 | 1.35 |
| June 2008 | 73.7 | 0.3 | 5.00 | 1.12 |
| July 2008 | 78.4 | -0.4 | 3.70 | 0.09 |
| August 2008 | 75.0 | -1.9 | 4.22 | 1.06 |
| | | | | |
| Past 3 Months | | | 12.92 | 2.27 |
| Past 6 Months | | | 22.72 | 3.05 |
| Past Year | | | 32.32 | 3.40 |
| | | | | |
| 1. Departure from 1971-2000 normal value<br>Source: NOAA National Climatic Data Center | | | | |

The Wildland Fire Outlook released by the National Interagency Fire Center on September 2nd foresees a near normal significant fire potential in Kansas during September and during the following three months (October - December 2008. Significant fire potential is defined as the likelihood that a wildfire will require mobilization of additional resources from outside the area in which the fire originated.

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**

Natural disasters including on-going drought and floods in recent months have resulted in several actions by the President and by the U.S. Secretary of Agriculture to help affected farmers and ranchers.

As of August 15th, all Kansas counties except Leavenworth, Lyon and Wyandotte had been approved for emergency haying and grazing on USDA Farm Service Agency, Conservation Reserve Program (CRP) acreage. Some counties were approved under drought conditions, while all other counties were either primary or contiguous counties in a Presidential Disaster Declaration for flooding.

Emergency haying in counties approved under drought conditions is allowed through September 16, 2008. These counties are: Grant, Greeley, Hamilton, Kearny, Morton, Stanton, Seward and Stevens. All other counties are approved for emergency haying through September 30, 2008. Emergency grazing in approved counties is allowed through September 30, 2008.

At the request of Governor Kathleen Sebelius, U.S. Secretary of Agriculture Ed Schafer on July 31st designated Grant, Greeley, Hamilton, Morton and Stevens counties as primary natural disaster areas due to production losses resulting from ongoing drought and high winds. Lane and Stanton counties were designated on August 26th due to drought and high winds.

These disaster declarations make farmers and ranchers in the primary and contiguous counties eligible for low-interest loans, and any aid that may become available under the permanent disaster program in the recently passed farm bill.

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 September 2nd Report indicated that topsoil soil moisture for the week ending August 31st was shortest in the west central (67 percent short – very short), while subsoil moisture was shortest in the southwest (88 percent short-very short). Statewide, topsoil moisture is rated 27 percent short-very short; better than the 5-year average value for the week of 44 percent and the 10-year average of 57 percent.

Statewide range and pasture conditions were rated 17 percent poor-very poor, 28 percent fair and 55 percent good-excellent. Hay and forage supplies were rated 83 percent adequate and feed grain supplies were 88 percent adequate. Stock water supplies were estimated to be 85 percent adequate.

**Public Water Systems**

No drought-related public water system impacts are currently being reported, although some communities have imposed water-use restrictions that are typically in effect during the summer or year-round.

Several publications provide guidance regarding drought preparedness and response. The 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.

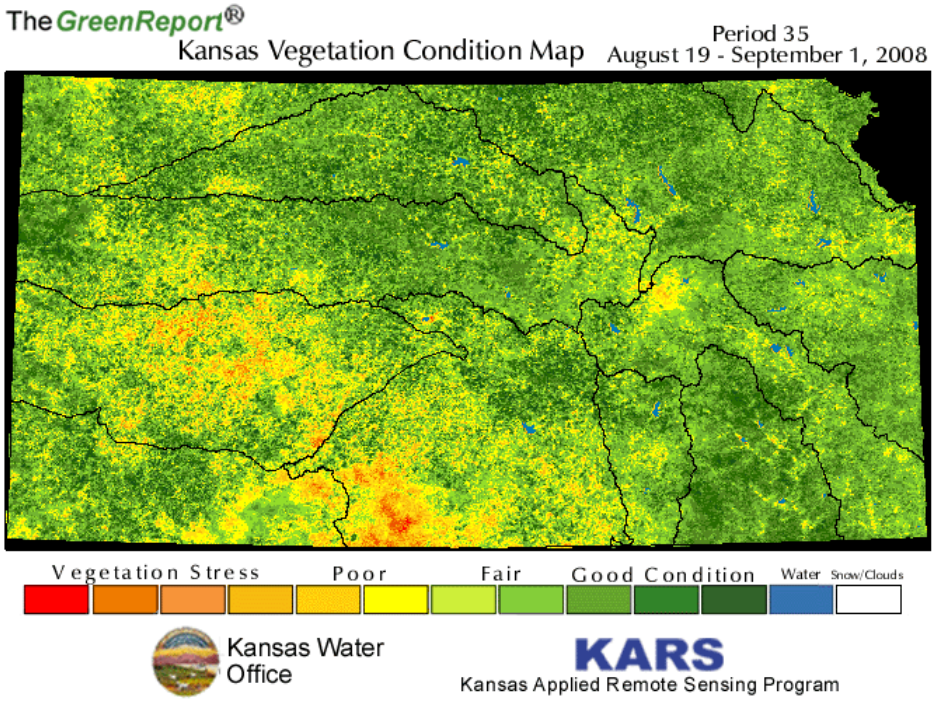
The Drought Vulnerability Assessment Report identifies those systems most likely to first be impacted by drought and the reason for their vulnerability. It was updated in 2007 to reflect system conditions as of 2006.

Responding to Drought: A Guide for City, County and Water System Officials provides an overview of Kansas county drought stage declarations, 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 map for the August 19-September 1 period (see below) indicates the most intense pocket of vegetative stress is now in south central Kansas. In general, vegetation conditions in western Kansas have improved over the past month in response to the recent rains.



**Streamflow and Reservoir Levels**

The U.S. Geological Survey Kansas Drought Watch provides information on 7-day average streamflow measured 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 5 percent of Kansas' long-term gaging stations on September 1st, identical to conditions one month ago. Normally about 25 percent of gages are below normal at any given time.

Moderate hydrologic drought (6-9th percentile 7-day average flow) was occurring on September 1st in a northern Rawlins County drainage (HUC 10250004) located in the Republican River Basin.

As of September 3, 2008, no streams were under minimum desirable streamflow (MDS) administration by the Kansas Department of Agriculture, Division of Water Resources. Flow in most streams is well above the MDS target level. Flows in the Little Arkansas River at Alta Mills fell below their MDS target on August 31st and continue to decline. Barring any improvement, MDS administration may begin the week of September 8th.

Table 3 summarizes federal reservoir pool elevations on September 1, 2008 in terms of departure from the top of the conservation/multipurpose pool and pool elevation change since August 1st. Most reservoirs were near the top of their conservation/multi-purpose pool with the exception of Norton, Lovewell, Cedar Bluff, Kirwin, and Webster reservoirs which are 4 to 16 feet down. Pool elevations in most Kansas reservoirs dropped during August. A notable exception was in reservoirs located in the Solomon River and Saline River drainages where Webster and Wilson reservoirs saw their pool levels rise by 3 feet in the past month.

**Table 3**
**Kansas Federal Reservoir Pool Elevation Summary**

| | | Pool Elevation (Feet MSL) | | 09/01/2008 | |
|---|---|---|---|---|---|
| Reservoir | Top MP/C Pool[1] | 08/01/08 | 09/01/08 | Departure from Top[2] | Change from 08/01/2008[2] |
| **Kansas River Basin** | | | | | |
| Norton | 2304.3 | 2294.3 | 2293.1 | -11.2 | -1.2 |
| Harlan County, NE | 1946.0 | 1946.1 | 1945.7 | -0.3 | -0.4 |
| Lovewell | 1582.6 | 1582.4 | 1578.3 | -4.3 | -4.1 |
| Milford | 1144.4 | 1144.7 | 1145.6 | 1.2 | 0.9 |
| Cedar Bluff | 2144.0 | 2128.2 | 2127.9 | -16.1 | -0.3 |
| Kanopolis | 1463.0 | 1468.1 | 1468.0 | 5.0 | -0.1 |
| Wilson | 1516.0 | 1515.3 | 1518.6 | 2.6 | 3.3 |
| Kirwin | 1729.3 | 1719.9 | 1720.9 | -8.4 | 1.0 |
| Webster | 1892.5 | 1880.8 | 1883.6 | -8.9 | 2.8 |
| Waconda | 1455.6 | 1456.1 | 1458.3 | 2.7 | 2.2 |
| Tuttle Creek | 1075.0 | 1076.1 | 1077.1 | 2.1 | 1.0 |
| Perry | 891.5 | 893.9 | 893.6 | 2.1 | -0.3 |
| Clinton | 875.5 | 875.2 | 874.6 | -0.9 | -0.6 |
| Pomona | 974.0 | 974.4 | 974.1 | 0.1 | -0.3 |
| Melvern | 1036.0 | 1036.4 | 1036.4 | 0.4 | 0.0 |
| Hillsdale | 917.0 | 917.6 | 917.0 | 0.0 | -0.6 |
| **Arkansas River Basin** | | | | | |
| Cheney | 1421.6 | 1421.6 | 1421.1 | -0.5 | -0.5 |
| El Dorado | 1339.0 | 1339.0 | 1338.9 | -0.1 | -0.1 |
| Toronto | 902.0 | 904.5 | 902.5 | 0.5 | -2.0 |

| | | | | | |
|---|---|---|---|---|---|
| Fall River | 949.0 | 950.9 | 949.8 | 0.8 | -1.1 |
| Elk City | 794.1 | 799.6 | 795.5 | 1.4 | -4.1 |
| Big Hill | 858.0 | 858.1 | 857.9 | -0.1 | -0.2 |
| Council Grove | 1274.0 | 1274.4 | 1274.1 | 0.1 | -0.3 |
| Marion | 1350.5 | 1350.2 | 1350.3 | -0.2 | 0.1 |
| J. Redmond | 1037.0 | 1040.9 | 1037.6 | 0.6 | -3.3 |

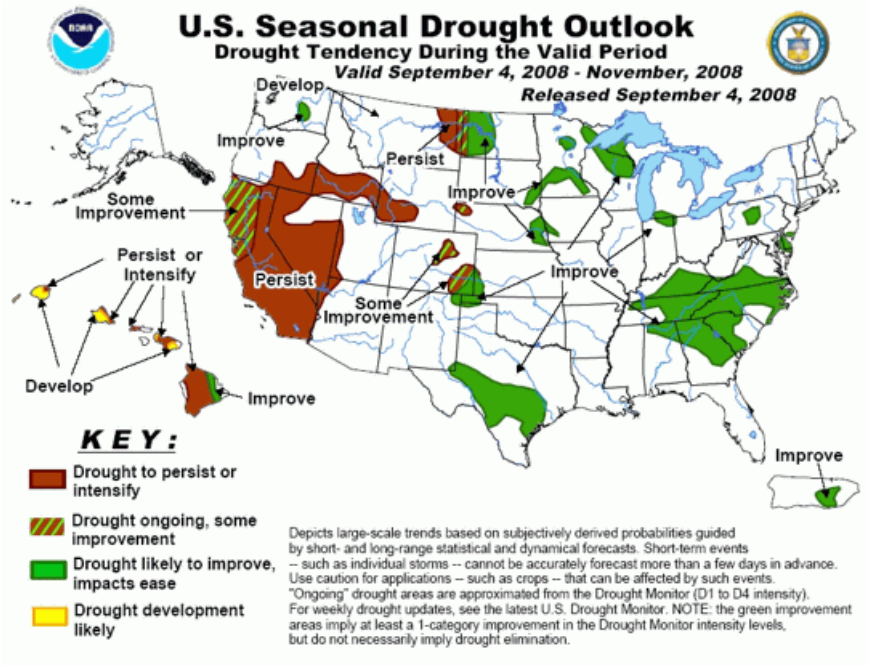
1. Seasonal pool operation at El Dorado, Toronto, Fall River, Elk City, Council Grove and John Redmond reservoirs.
2. All values are in feet. Negative departures or changes are shown in red.

Source: U.S. Army Corps of Engineers

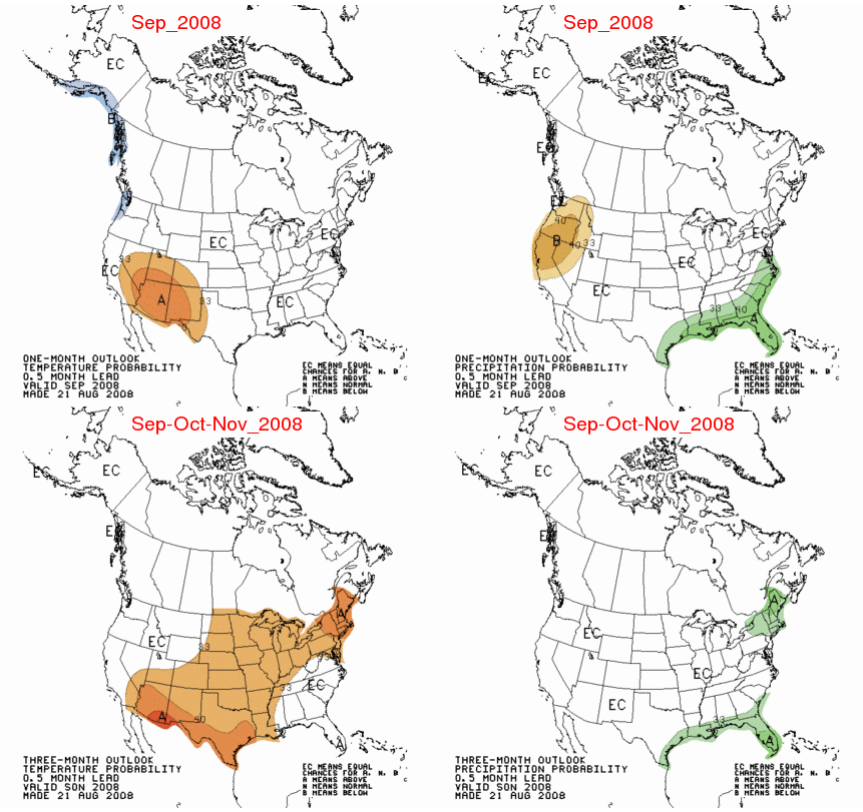
## LOOKING AHEAD

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 September 4th for the period through November 2008 (see below) shows the likelihood for improvement of current drought conditions in southwest Kansas. The Drought Outlook is updated on the first and third Thursday of each month.

Two additional NOAA CPC products, the One Month Outlook and the Three Month Outlook, assess the chances for above normal, normal or below normal precipitation and temperatures for the upcoming month and for the upcoming three-month period. Maps depicting these Outlooks are shown below. The Outlook for September 2008 does not favor any strong trends, but rather indicates equal chances for above, near or below normal temperatures and precipitation across Kansas. The Three-Month Outlook shows the likelihood for above normal temperatures across Kansas this autumn.



**September 2008 and September – November 2008 Precipitation and Temperature Outlooks**




**ADDITIONAL INFORMATION**

The Kansas Climate Summary and Drought Report is compiled by the Kansas Water Office from various federal, state, local and academic sources. The report summarizes conditions at the end of the month indicated. 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 Climate Summary and 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 tom.lowe@kwo.ks.gov, should you have any questions or suggestions.

| Appendix A<br>Kansas August 2008 Climate Summary | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Precipitation (inches) | | | Temperature ($^0$F) | | | |
| | | | | | | Extreme (Date) | |
| Station | Total | Departure[3] | Percent Normal | Mean | Departure[3] | Highest | Lowest |
| **(West)** | | | | | | | |
| Colby[2] | 2.58 | 0.11 | 104 | 72.4 | -0.8 | 101 (2) | 50 (29) |
| Dodge City[1] | 1.89 | -0.84 | 69 | 77.7 | -0.5 | 108 (4) | 58 (16) |
| Garden City[1] | 2.07 | -0.50 | 81 | 75.7 | -1.3 | 105 (4) | 59 (19) |
| Garden City[2] | 1.75 | -0.81 | 68 | 75.3 | -0.6 | 104 (4) | 54 (19) |
| Goodland[1] | 6.01 | 3.52 | 241 | 72.0 | -1.2 | 105 (1, 2) | 54 (14, 29) |
| Hill City[1] | 5.83 | 3.14 | 217 | 74.7 | -1.0 | 104 (2) | 53 (29) |
| Tribune[2] | 4.34 | 2.25 | 208 | 72.2 | -2.0 | 103 (1, 2) | 53 (19) |
| **(Central)** | | | | | | | |
| Concordia[1] | 2.99 | -0.25 | 92 | 73.5 | -3.5 | 100 (4) | 52 (30) |
| Hays[2] | 4.85 | 1.92 | 166 | 74.8 | -2.1 | 103 (2) | 54 (24) |
| Hesston[2] | 3.90 | 0.67 | 121 | 76.2 | -3.1 | 104 (4) | 60 (25, 26) |
| Hutchinson[2] | 2.32 | -0.65 | 78 | 76.7 | -1.5 | 103 (4) | 57 (26) |
| Medicine Lodge[1] | 1.79 | -1.27 | 58 | 78.4 | -0.7 | 105 (4) | 58 (26) |
| Russell[1] | 8.07 | 4.73 | 242 | 75.8 | -1.7 | 100 (4) | 58 (29) |
| Scandia[2] | 2.49 | -0.75 | 77 | 73.9 | -2.2 | 99 (2, 3) | 52 (30) |
| Smith Center[1] | --- | --- | --- | 75.3 | --- | 101 (2, 3) | 55 (29) |
| St. John[2] | 0.56 | -2.06 | 21 | 77.6 | -2.1 | 105 (4) | 59 (17) |
| Wichita (ICT)[1] | 3.00 | 0.06 | 102 | 77.8 | -2.0 | 103 (4) | 62 (15, 25) |
| **(East)** | | | | | | | |
| Chanute[1] | 7.27 | 3.31 | 184 | 76.7 | -1.3 | 98 (5) | 59 (18, 26) |
| Johnson Co. Exc. Apt.[1] | 0.89 | -2.67 | 25 | 75.7 | -1.5 | 96 (28) | 58 (30) |
| Manhattan[2] | 4.60 | 1.33 | 141 | 74.9 | -3.1 | 103 (4) | 52 (30) |
| Ottawa[2] | 3.85 | 0.15 | 104 | 76.5 | -2.2 | 99 (28) | 57 (18) |
| Parsons[2] | 1.63 | -1.79 | 48 | 76.5 | -1.5 | 100 (3, 4) | 59 (18, 25, 26) |
| Powhattan[2] | 0.22 | -3.81 | 5 | 73.7 | -0.4 | 99 (3, 4) | 54 (29, 30) |
| Rossville[2] | 1.97 | -1.93 | 51 | 75.1 | --- | 99 (27) | 52 (30) |
| Silver Lake[2] | 1.40 | -2.41 | 37 | 75.2 | -1.5 | 100 (4) | 52 (30) |
| Topeka (TOP)[1] | 1.48 | -2.33 | 39 | 76.2 | -0.5 | 101 (4) | 55 (30) |
| | | | | | | | |
| **(Neighbouring States)** | | | | | | | |
| Burlington, CO[1] | 7.96 | 5.68 | 349 | 71.0 | -1.1 | 103 (1) | 53 (29) |
| Lamar, CO[1] | 3.33 | --- | --- | 75.2 | --- | 109 (1) | 57 (21, 29) |
| Springfield, CO[1] | 4.85 | --- | --- | 73.2 | --- | 104 (1) | 55 (15, 18) |
| Falls City, NE[1] | 0.76 | -3.54 | 21 | 75.1 | -0.7 | 103 (3, 4) | 52 (30) |
| Hebron, NE[1] | 2.68 | -0.80 | 77 | 72.9 | -1.3 | 99 (2, 3) | 50 (29) |
| McCook, NE[1] | 4.84 | 2.04 | 173 | 73.0 | -1.6 | 109 (2) | 48 (29) |
| Bartlesville, OK[1] | 5.48 | 2.62 | 209 | 77.3 | -3.6 | 102 (3, 4) | 61 (17, 26) |
| Guymon, OK[1] | 5.23 | 3.17 | 254 | 76.6 | -1.1 | 104 (4) | 58 (18) |
| Ponca City, OK[1] | 1.41 | --- | --- | 79.2 | -2.7 | 103 (3, 4) | 57 (26) |
| Joplin, MO[1] | 4.01 | 0.19 | 105 | 77.4 | -1.1 | 98 (3, 4) | 59 (25, 26) |
| Kansas City (MCI), MO[1] | 1.19 | -2.35 | 34 | 75.4 | -1.2 | 97 (3, 4) | 58 (18, 25) |
| St. Joseph, MO[1] | 2.14 | -1.66 | 56 | 73.0 | -2.9 | 96 (4) | 51 (30) |
| | | | | | | | |

1. Airport Automated Observation Stations (NWS/FAA)
2. Kansas State University Experiment Station Network
3. Departure from 1971-2000 normal value

Source: : National Weather Service Daily and Monthly Climate Summaries and KSU Weather Data Library