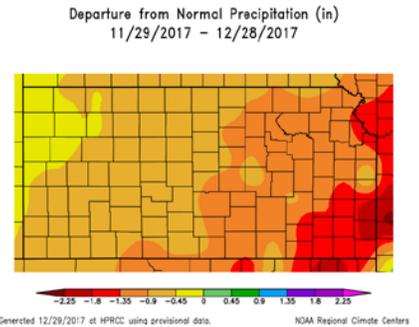


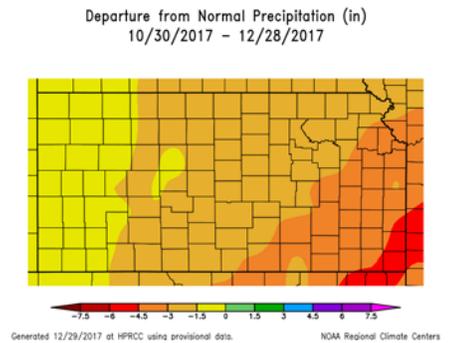
General

- **U.S. Drought Monitor:** Below normal precipitation during the past 30 days led to, an addition of severe drought (D2) and expansion of areas of moderate drought (D1) in south west and south central Kansas. Abnormally dry (D0) conditions expanded to include 100% of Kansas at the end of the month.

- Precipitation in December was below normal for the entire state, with the majority of the state receiving 25% or less of normal precipitation for the period. This amounts to departures from normal of up to 0.45 inches in the northwest to over 2.25 inches in south east Kansas.



- Precipitation for November-December was below normal for the entire state, with the state receiving 25% or less of normal precipitation in all but a few small areas that received 25-50% of normal precipitation for the period. This amounts to departures from normal of up to 1.5 inches in the west to up to 6 inches in south east Kansas.



- La Nina advisory issued by forecasters for winter 2017/18. La Nina affects temperature and precipitation across the U.S., generally favoring above normal temperatures and below median precipitation across southern U.S, and below average temperatures and above median precipitation across the northern tier of the United States. Reduced snowfall is usual over parts of the central-southern Plains.

Lakes and Streams

- Water Rights above the USGS gage on the Little Arkansas River at Alta Vista have been administrated under Minimum Desirable Streamflow (MDS) since August 10, 2017.

Disasters and Assistance

- Producers in 52 counties were eligible for USDA disaster programs due to agricultural disaster designations in 2017.

General Conditions

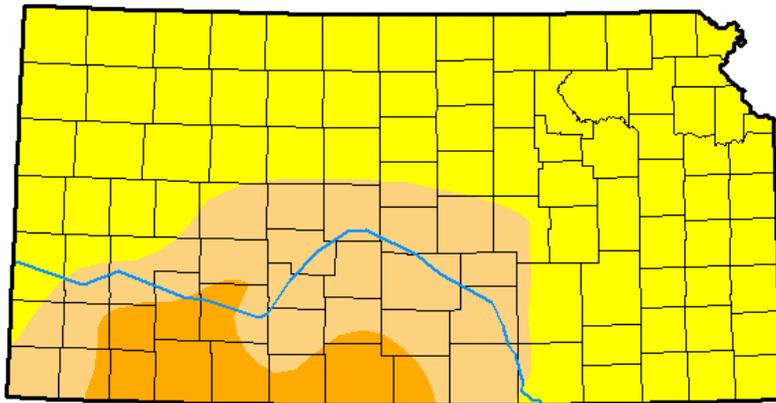
Much below normal precipitation, coupled with warmer than normal temperatures resulted in a steep increase in the drought conditions. U.S. Drought Monitor standards indicated dry conditions expanding across all of Kansas during December, while the moderate drought (D1) area has increased to cover 33 percent of the state. The month ended with expansion of severe drought (D2) conditions to nearly nine percent of the state, affecting all or portions of 13 counties in south central and south west Kansas.

**U.S. Drought Monitor
Kansas**

December 26, 2017
(Released Thursday, Dec. 28, 2017)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	32.70	8.63	0.00	0.00
Last Week <i>12-19-2017</i>	0.00	100.00	20.58	1.85	0.00	0.00
3 Months Ago <i>09-26-2017</i>	59.89	40.11	10.08	1.35	0.00	0.00
Start of Calendar Year <i>01-03-2017</i>	17.31	82.69	30.71	13.58	0.00	0.00
Start of Water Year <i>09-26-2017</i>	59.89	40.11	10.08	1.35	0.00	0.00
One Year Ago <i>12-27-2016</i>	17.31	82.69	30.71	13.58	0.00	0.00



Intensity:

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

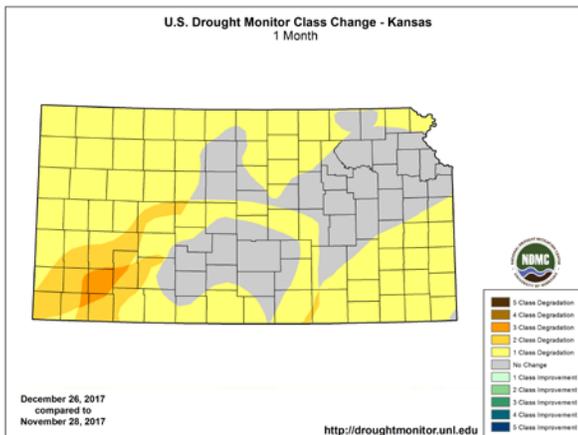
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

David Miskus
NOAA/NWS/NCEP/CPC

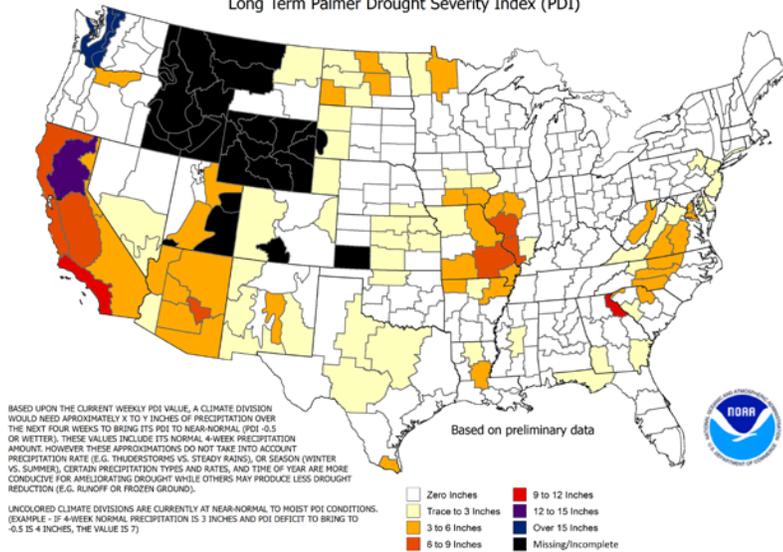


<http://droughtmonitor.unl.edu/>



More information on the U.S. Drought Monitor categories can be found at <http://droughtmonitor.unl.edu/AboutUs/ClassificationScheme.aspx>.

Additional Precip. Needed (In.) to bring PDI to -0.5
Weekly Value for Period Ending Dec 30, 2017
Long Term Palmer Drought Severity Index (PDI)



Palmer Drought Severity Index (PDSI) - The Palmer Drought Severity Index is an indicator of relative dryness or wetness and is one factor used the U.S. Drought Monitor. The additional precipitation map indicates the inches of precipitation needed to be out of drought.

More information on the PDSI can be found at http://www.cpc.ncep.noaa.gov/products/monitoring_and_data/drought.shtml

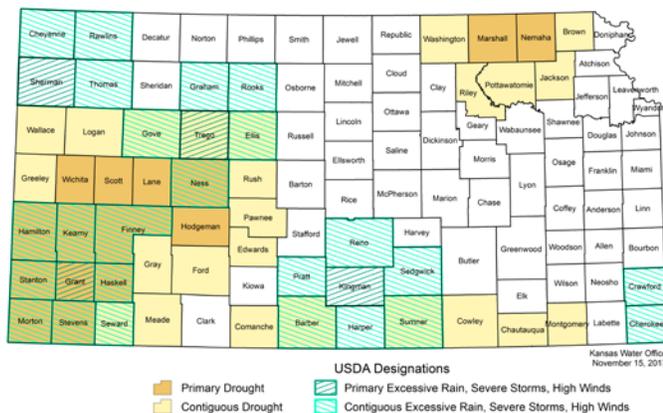
Precipitation needed to remove drought for weeks ending on Date					
Climate Division	Dec. 2	Dec. 9	Dec. 16	Dec. 23	Dec. 30
North Central	-	-	-	-	0.29
Northeast	2.77	2.80	2.91	2.89	2.98
Central	1.44	1.63	2.06	2.96	2.93
East Central	-	-	-	0.26	0.69
South Central	0.70	0.99	1.56	2.44	2.45

Federal Disaster Declarations 2017

USDA 2017 agricultural disaster designations have been made for 52 Kansas Counties: 18 primary and 28 contiguous for a variety of causes including drought and excessive rain. Some counties qualify for programs for both of these causes.

USDA designated natural disaster areas on Feb. 23, 2017, making all qualified farm operators in the designated areas of Kansas eligible for FSA's emergency (EM) loans, provided eligibility requirements are met. Farmers in eligible counties have eight months from the date of the declaration to apply for loans to help cover part of their actual losses. FSA will consider each loan application on its own merits, taking into account the extent of losses, security available and repayment ability. FSA has a variety of programs, in addition to the EM loan program, to help eligible farmers recover from adversity.

Federal Agricultural Disaster 2017



USDA designated 13 Kansas Counties as primary disaster areas due to losses and damages caused by **drought**. The counties are Finney, Grant, Hamilton, Haskell, Hodgeman, Kearny, Lane, Morton, Ness, Scott, Stanton, Stevens and Wichita.

An additional 19 counties qualify for natural disaster (drought) assistance as contiguous counties to primary counties in Kansas or Oklahoma. These are Barber, Chautauqua, Comanche, Cowley, Edwards, Ellis, Ford, Gove, Gray, Greeley, Logan, Meade, Montgomery, Pawnee, Rush, Seward, Sumner, Trego and Wallace counties.

July 12, 2017, Cherokee and Crawford counties became

eligible for USDA disaster programs being contiguous to Missouri counties declared primary disaster areas due to **excessive rainfall and flooding** April 24-May 11, 2017.

August 22, 2017, the USDA designated Grant, Kingman and Sherman counties in Kansas as primary natural disaster areas due to losses and damages caused by **high winds, hail, excessive rain and flash flooding** that occurred from May 11, 2017, through June 20, 2017. As contiguous counties; Barber, Cheyenne, Finney, Hamilton, Haskell, Harper, Kearny, Morton, Pratt, Rawlins, Reno, Sedgwick, Sumner, Seward, Stanton, Stevens, and Thomas are also already eligible.

November 12, 2017, U.S. Department of Agriculture (USDA) has designated three counties in Kansas as primary natural disaster areas due to losses and damages caused by multiple disasters that occurred during the 2017 crop year. Marshall and Nemaha counties designated due to **drought** during May 2017 and Trego County due to high winds, hail and lightning. Producers in counties contiguous to Marshall and Nemaha; Brown, Jackson, Pottawatomie, Riley, and Washington and contiguous to Trego; Ellis, Gove, Graham, Ness and Rooks counties are also eligible for assistance.

Presidential Federal Disasters

June 16, 2017, President Donald Trump has granted Gov. Sam Brownback's request through the Federal Emergency Management Agency for a federal disaster declaration for 27 Kansas counties affected by a severe winter storm, snowstorm, straight-line winds and flooding that struck the Kansas April 28-May 3. Counties named in the declaration are Cherokee, Cheyenne, Crawford, Decatur, Finney, Gove, Graham, Grant, Greeley, Hamilton, Haskell, Kearny, Lane, Logan, Morton, Neosho, Norton, Rawlins, Scott, Seward, Sheridan, Sherman, Stanton, Stevens, Thomas, Wallace, and Wichita.

November 7, 2017, Federal Presidential disaster was declared for severe storms, straight-line winds, and flooding from July 22 to July 27, 2017 in Johnson and Wyandotte counties.

The declaration allows county governments to apply for Public Assistance funds for emergency work and the repair or replacement of disaster-damaged facilities. It also activates the Hazard Mitigation Grant Program statewide for actions taken to prevent or reduce long term risk to life and property from natural hazards.

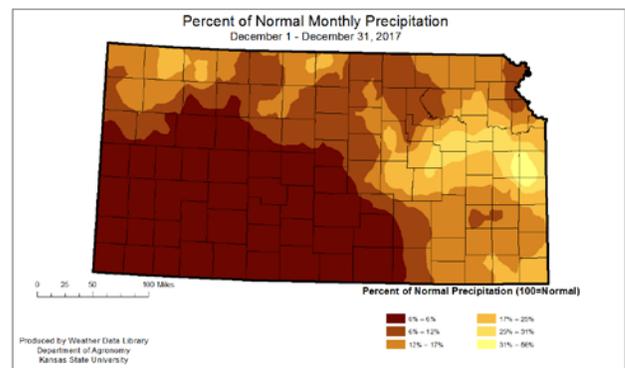
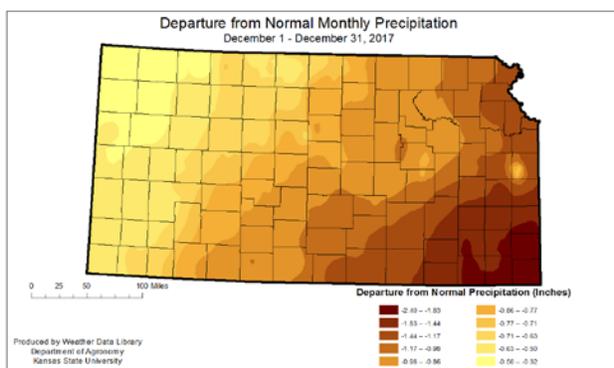
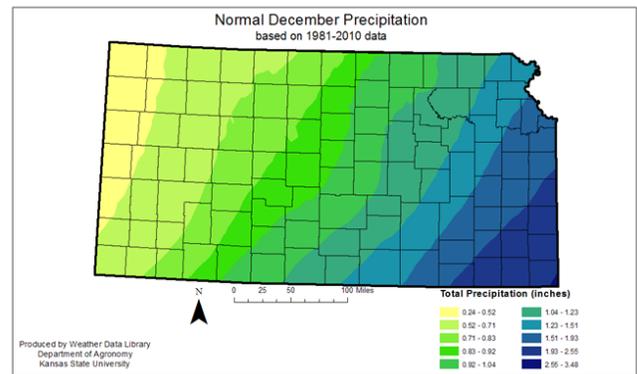
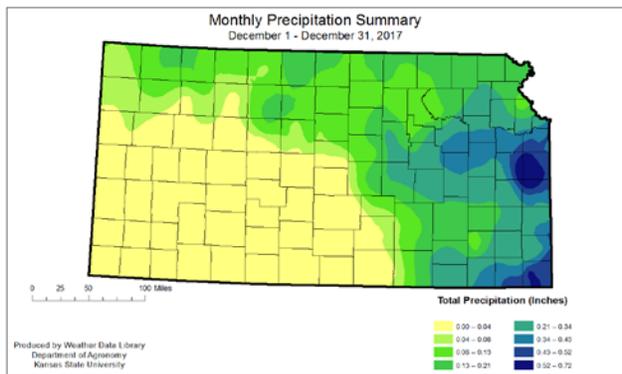
Climate Summary (Precipitation and Temperature)

Moisture was limited in December. The statewide average precipitation was just 0.08 inches. That places it as the 4th driest December since 1895. December 1976 was the driest, when statewide average precipitation was just 0.05 inches. The Southwest and West Central Climate Divisions tied for the driest division with average precipitation of zero. The South Central Division wasn't much better with an average of just 0.01 inches. The Southeastern Division was one of the wetter divisions with an average of 0.19 inches, but it had the greatest departure from normal at -1.63 inches. The greatest precipitation total for the month at a National Weather Service Cooperative (NWS) station was 0.57 inches at Lecompton, Douglas County. For the Community Collaborative Rain Hail and Snow network (CoCoRaHS) the greatest monthly total was 0.49 inches at Garland 2.7 SW, Bourbon County. The greatest 24-hour totals were 0.57 inches at Lecompton, Douglas County (NWS) and 0.49 inches at Garland 2.7 SW, Bourbon County (CoCoRaHS). Despite the dry weather, twelve stations still managed to set daily precipitation records during the month.

Not all of the precipitation came in the form of rainfall. Many locations in the northern half of the state recorded snowfall on the 24th and 26th of December. Eleven locations set daily records for snowfall. Multiple locations tied for the greatest daily snowfall at 2.5 inches on the 24th. The greatest snowfall report for the month was 4.3 inches at Norton Dam, Norton County.

Precipitation summary for the month is provided in the table and maps below from the KSU Weather Library. In addition, weekly maps of precipitation and temperature information can be accessed at <http://climate.k-state.edu/maps/weekly/>.

Kansas Climate Division Precipitation Summary (inches)												
Climate Division	December 1-31, 2017			January 1- December 31, 2017			April 1, 2016 – December 31, 2017			September 1, 2017– December 31, 2017		
	Actual	Depart Normal	Percent Normal	Actual	Depart Normal	Percent Normal	Actual	Depart Normal	Percent Normal	Actual	Depart Normal	Percent Normal
Northwest	0.02	-0.55	3	20.37	-0.99	94	17.43	-1.63	90	3.67	-0.80	78
West Central	0.00	-0.63	0	23.25	2.48	112	19.77	1.50	108	4.62	0.15	103
Southwest	0.00	-0.67	0	24.32	4.42	123	19.89	2.37	114	3.66	-0.80	84
North Central	0.07	-0.82	7	26.29	-1.75	93	22.30	-2.26	90	5.21	-1.52	76
Central	0.05	-0.88	4	25.99	-3.30	89	21.41	-3.93	85	4.83	-1.98	72
South Central	0.01	-1.11	1	31.18	-0.14	99	24.68	-2.02	92	5.63	-2.22	71
Northeast	0.11	-1.11	8	29.28	-5.72	83	24.33	-6.46	79	4.70	-4.64	51
East Central	0.28	-1.12	18	33.15	-4.77	86	28.55	-4.45	85	5.58	-4.73	52
Southeast	0.19	-1.63	10	41.37	-0.12	99	35.82	0.32	100	7.07	-5.02	58
STATE	0.08	-0.95	5	28.64	-0.75	98	23.99	-1.55	94	5.03	-2.36	72



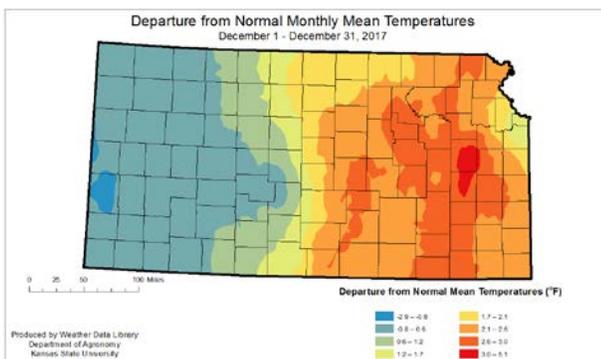
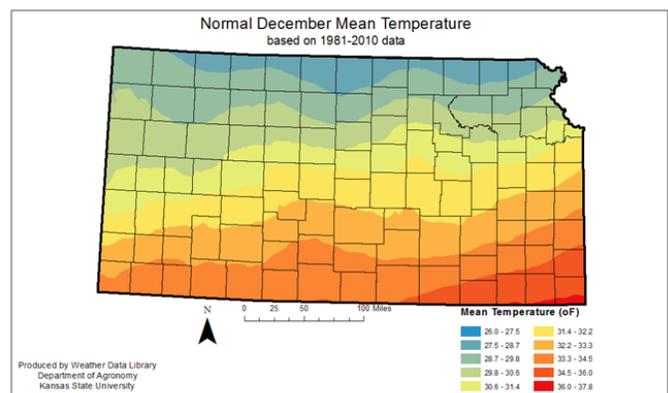
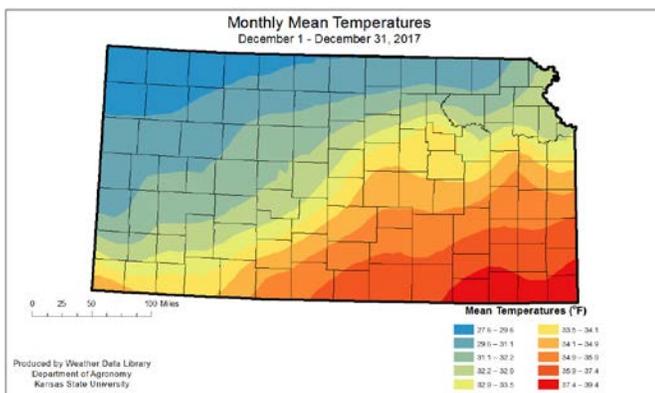
Precipitation maps are also available from the High Plains Regional Climate Center at various time intervals. <http://www.hprcc.unl.edu/maps.php?map=ACISClimateMaps>.

December started on a very warm note, but ended in the deep freeze. The statewide average temperature was 32.9 °F, or 1.5 degrees warmer than normal. The very cold end wasn't enough to outweigh the very warm start to the month. The first three weeks of the month all averaged above normal, while the week ending January 2nd averaged 12 degrees cooler than normal. The western divisions came closest to normal, with the West Central Climate Division averaging 30.8 °F, or 0.1 degrees warmer than normal. The eastern divisions had the greatest departures, with the Southeast Division averaging 36.8 °F, or 2.7 degrees warmer than normal. The warmest temperature reported for the month was 80 °F at Ashland, Clark County, on the 4th. The coldest reading was -11 °F at Baileyville, Nemaha County, on the 28th. Records were set on both the cold and warm end of the spectrum. On the cold side, there were 90 new record low maximum temperatures, but no new record low minimum temperatures. On the warm side, there were 33 new record high maximum temperatures and 31 new record high minimums.

There were no severe weather reports during the month. There were several days with extreme fire danger, and also several days with wind chill warnings.

Climate Division	Kansas Climate Division Temperature Summary (°F)							
	December 2017							
	Maximum	Minimum	Average	Departure	High	Date	Low	Date
Northwest	44.3	14.9	29.6	0.3	67	3	-4	24
West Central	46.5	15.0	30.8	0.1	69	4	-5	31
Southwest	49.4	17.5	33.4	0.7	80	4	-5	31
North Central	44.1	18.4	31.3	1.8	71	4	-10	28
Central	46.7	20.1	33.4	1.9	72	3	-7	28
South Central	48.4	22.0	35.2	1.9	76	4	-2	31
Northeast	43.3	19.8	31.6	1.6	70	4	-11	28
East Central	44.8	22.8	33.8	2.2	74	5	-8	27
Southeast	47.6	26.0	36.8	2.7	76	4	-2	28
STATE	46.1	19.6	32.9	1.5	80	4th	-11	28th

Data Source: KSU Weather Library



Temperature maps are also available from the High Plains Regional Climate Center at various time intervals. <http://www.hprcc.unl.edu/maps.php?map=ACISClimateMaps>

Future Outlook

The Monthly Drought Outlook indicates drought conditions to remain in south central and south west Kansas.

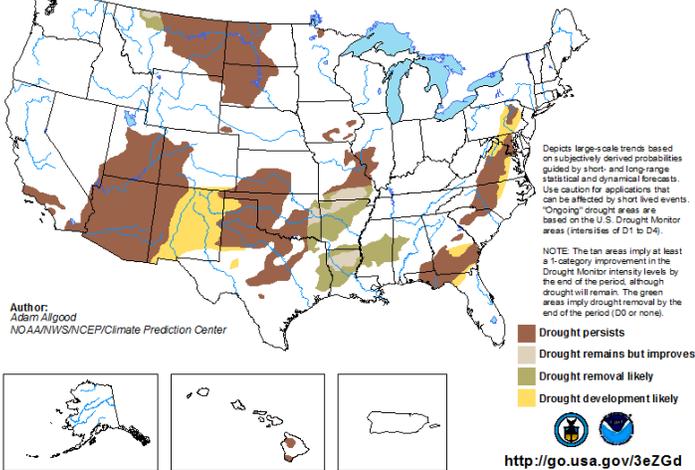
The January outlook has a slight chance for wetter than normal conditions in the eastern portion of the state, and equal chances for above or below normal precipitation in the rest of the state. Given the low amount of moisture that typically is seen in January, improvement in the current drought status is unlikely. With the wet summer and current dryness, increased fire danger is likely.

Season Outlook favors continued drought in south central Kansas with expansion of areas affected to include the entire southern border of Kansas. For the January-March time period probability favors below normal precipitation and above normal temperatures for almost the entire state.

The individual temperature and precipitation outlooks are provided below for the one and three month periods.

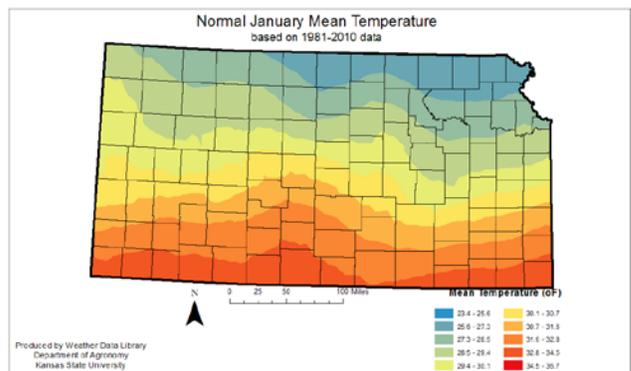
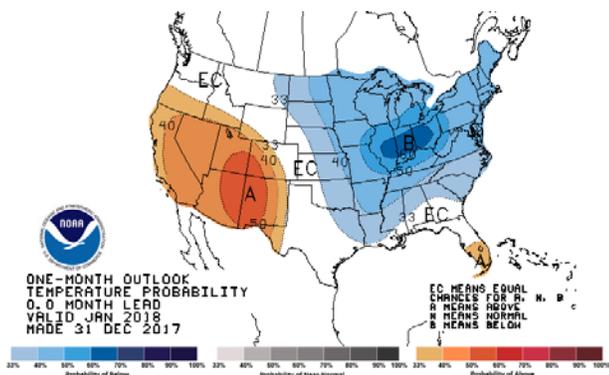
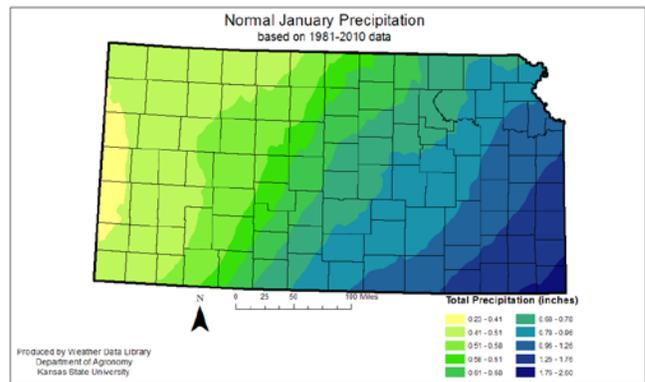
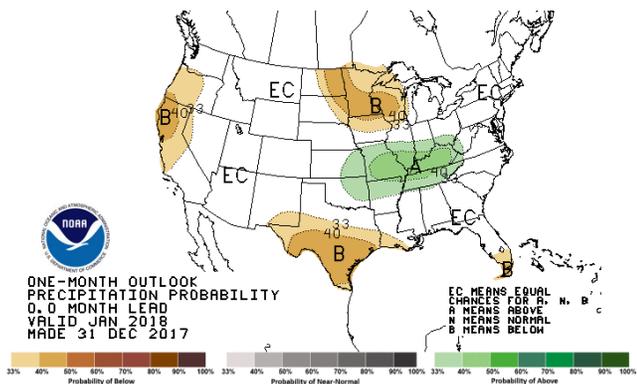
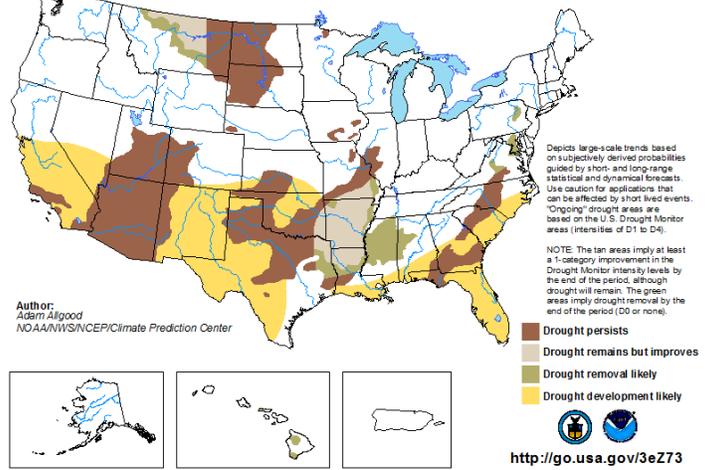
U.S. Monthly Drought Outlook Drought Tendency During the Valid Period

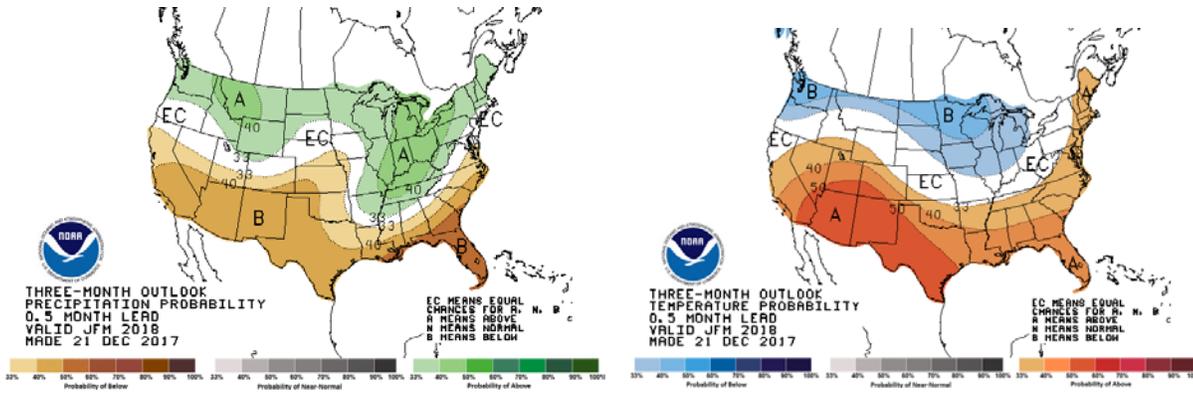
Valid for January 2018
Released December 31, 2017



U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid for December 21 - March 31, 2018
Released December 21, 2017





Additional outlooks for various timeframes are available from the national CPC for up to 13 months. (<http://www.cpc.ncep.noaa.gov/products/predictions/90day/>)

Water

Public Water Supply Conditions

Cities and rural water districts are encouraged to measure their current water supply as well as review and use their conservation and drought emergency plans as needed.

Known issues:

Stage II water restrictions, remain in place under Resolution 03-16 are in place for the **City of Russell**, Russell County water customers as of January 8, 2018 (www.russellcity.org/148/Current-Water-Status). The water restrictions include a prohibition on outdoor watering from 10:00 am to 7:00 pm. It also prohibits the waste of water.

Stage II water restrictions have been in place for the **City of Victoria**, Ellis County since June 2017. No lawn watering or filling of private swimming pools is allowed. Watering of trees, flowers and gardens allowed, but not between 10 am and 5 pm. (January 8, 2018, <http://victoriaks.com/utilities.htm>.)

Water Emergency currently in place for **Medicine Lodge**, Barber County. Citizens may water before 10 am and after 9 pm. (<https://medicinelodge.kansas.gov/> January 8, 2018)

Surface Water Supply Conditions

Kansas River basin: Inflow to Tuttle Creek, Perry, Milford, and Clinton reservoirs was below normal in December. Additional releases were made from Milford and Tuttle Creek to reach the lower winter pool elevation targets, however, the Tuttle Creek drawdown stopped one foot short of the winter target because it is expected to continue to decline. These releases were beneficial to the low flow conditions of the Kansas River, especially with the late month freezing conditions.

Marais des Cygnes basin: Melvern, Pomona, and Hillsdale reservoirs received very little inflow in December. Melvern declined over the month from lack of inflow and minimum releases. Pomona and Hillsdale declined primarily from releases to lower lake level, according to the seasonal plan. Flow in the Marais des Cygnes River declined from dry conditions for the first half of the month and then rose back to near median levels due to the releases from Pomona and Hillsdale reservoirs.

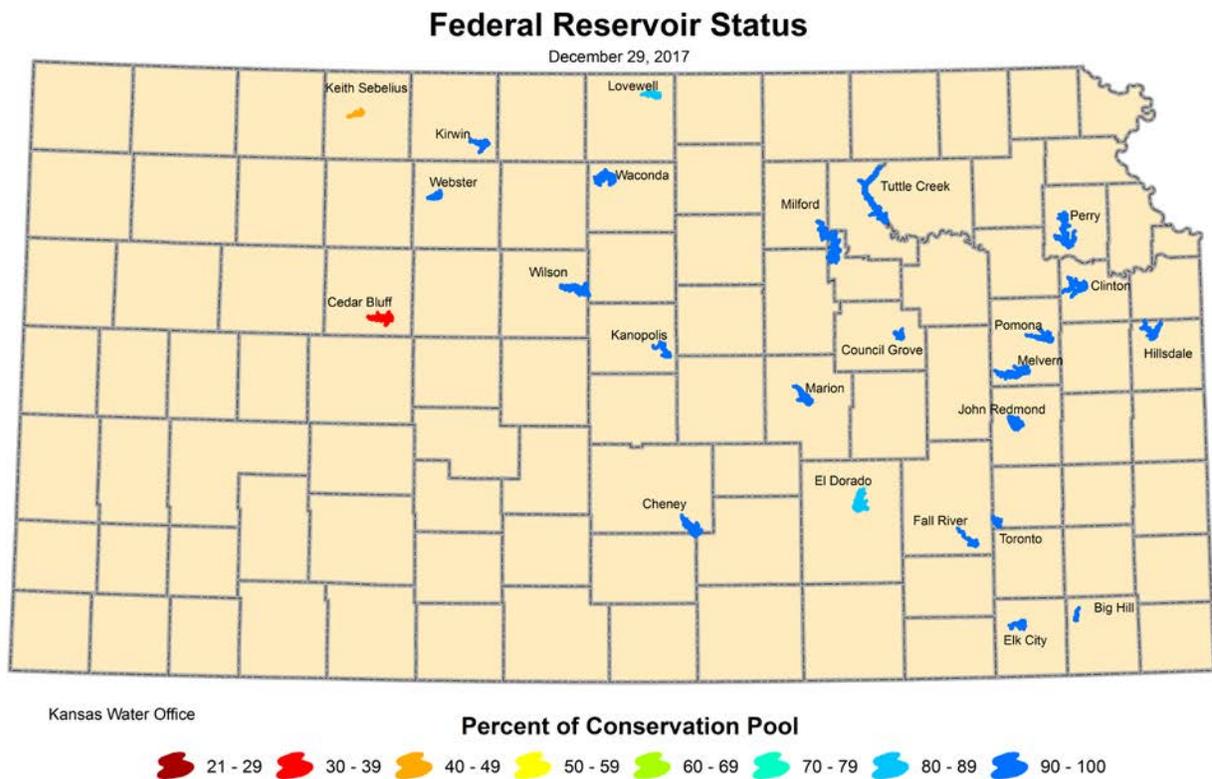
Cottonwood/Neosho basin: Inflows to Marion, Council Grove, and John Redmond reservoirs were generally low throughout the month of December and streamflow declined throughout the basin, especially the Upper Neosho. Conservation storage is full in John Redmond but steadily declined in Marion and Council Grove. Releases are necessary to maintain sufficient streamflow in the upper system.

Verdigris basin: Toronto, Fall River, Big Hill and Elk City reservoirs remained near conservation pool levels in December but reservoir releases were necessary to supplement low flow conditions of the Fall and Verdigris Rivers.

Saline basin: The elevation at Wilson Lake is being maintained above normal pool.

Smoky Hill basin: The middle Smoky Hill basin maintained median streamflow. Kanopolis Lake also declined throughout December and dropped below multipurpose elevation, primarily due to releases necessary to accommodate a periodic inspection of the outlet works.

General Reservoir Conditions



Kansas Federal Reservoir Conservation Pool Levels

Reservoir	Top of Multipurpose / Conservation Pool (Feet MSL)	Multipurpose/Conservation Pool Elevation (Feet MSL)	Change from Top of Pool (Feet)	Percent of Conservation Pool Full
Kansas River Basin		12/28/2017		
Norton ¹	2304.3	2291.54	-12.76	38.8
Harlan County, NE	1945.73	1938.34	-7.39	71.2
Lovewell ¹	1582.6	1581.16	-1.44	88.4
Milford ¹	1144.4	1145.26	0.86	100
Cedar Bluff	2144	2117.69	-26.31	29.9
Kanopolis ¹	1463	1463.25	0.25	100
Wilson ¹	1516	1516.23	0.23	100

Reservoir	Top of Multipurpose / Conservation Pool (Feet MSL)	Multipurpose/Conservation Pool Elevation (Feet MSL)	Change from Top of Pool (Feet)	Percent of Conservation Pool Full
Webster ¹	1892.5	1892.98	0.48	100
Kirwin ¹	1729.3	1728.22	-1.08	94.8
Waconda ¹	1455.6	1455.18	-0.42	97.6
Tuttle Creek ¹	1075	1073.15	-1.85	92.4
Perry ¹	891.5	893.45	1.95	100
Clinton ¹	875.5	876.6	1.1	100
Melvern ¹	1036	1035.14	-0.86	96
Pomona ¹	974	974.09	0.09	100
Hillsdale ¹	917	916.79	-0.21	98.7
Arkansas River Basin		12/29/2017		
Cheney	1421.6	1420.47	-1.13	94.0
El Dorado	1339	1335.55	-3.45	84.0
Toronto ¹	901.5	901.50	0.00	100.0
Fall River ¹	948.5	947.98	-0.52	93.0
Elk City ¹	796	796.36	0.36	100.0
Big Hill	858	857.64	-0.36	99.0
Council Grove ¹	1274	1272.45	-1.55	91.0
Marion ¹	1350.5	1348.70	0.10	100.0
John Redmond ¹	1039	1041.58	0.58	100.0

¹Lake level management plan in place Source: U.S. Army Corps of Engineers

Note: The conservation pool is the water storage for non-flood purposes of the reservoir, set by the elevation of the top of the pool.

Harmful Blue-Green Algal Blooms (lake water safety)

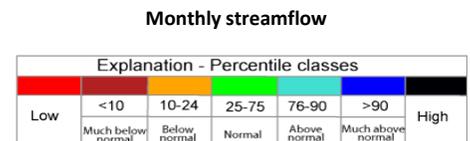
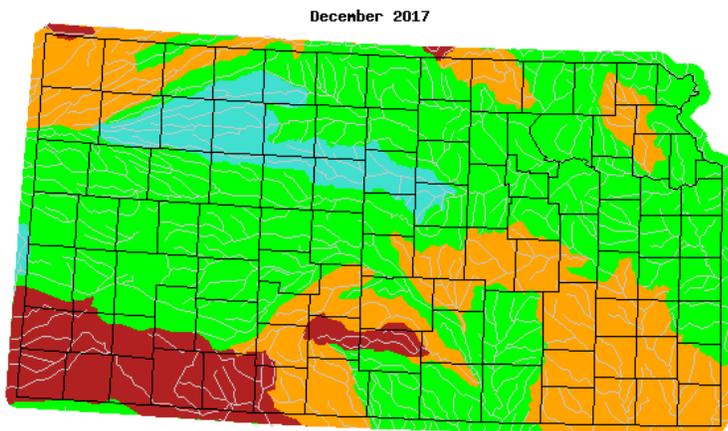
KDHE issues two levels of public health protection notifications for blue-green algae (BGA) Blooms: a Public Health Watch and Public Health Warning. Public Health Watch–Notifies public that a hazardous condition may exist, that the water may be unsafe for humans and animals and contact with the water is discouraged. Public Health Warning–Notifies public that conditions are unsafe, that contact with the water should not occur, and all conditions of Public Health Watch remain in effect. Warning that conditions are unsafe and water contact should not occur include that no swimming, wading, skiing or consumption of the water should occur. The following warnings and watches were in issued by KDHE and remain in effect until testing begins again in spring.

November 28, 2017: Public Health Watch for Central park Pond, Shawnee County and Hiawatha City Lake, Brown County.

Streamflow Conditions

WaterWatch summarizes streamflow conditions in a region (state or hydrologic unit) in terms of the long-term typical condition at stream gages in the region.

Monthly stream flow compared to historical is reflected in the map below.



In general, a streamflow which is greater than the 75 percentile is considered *above normal*, a streamflow which is between 25 and 75 percentiles is considered *normal* and a streamflow which is less than the 25 percentile is considered *below normal*. Color codes are for basins with streamflow averages less than 25 percent of historic values.

Water Right Administration/Minimum Desirable Streamflow (MDS)

Minimum Desirable Streamflow (MDS) is not being administered in Kansas. MDS administration requires water rights junior to MDS, usually with priority dates after April 12, 1984, to stop diverting water. Administration is ordered when streamflow drops below MDS for more than seven days.

MDS administration occurred during the month, with administration beginning August 10, 2017 on the Little Arkansas River at Alta Mills. The table below provides a snapshot of conditions for streams of interest to the Kansas Department of Agriculture, Division of Water Resources.

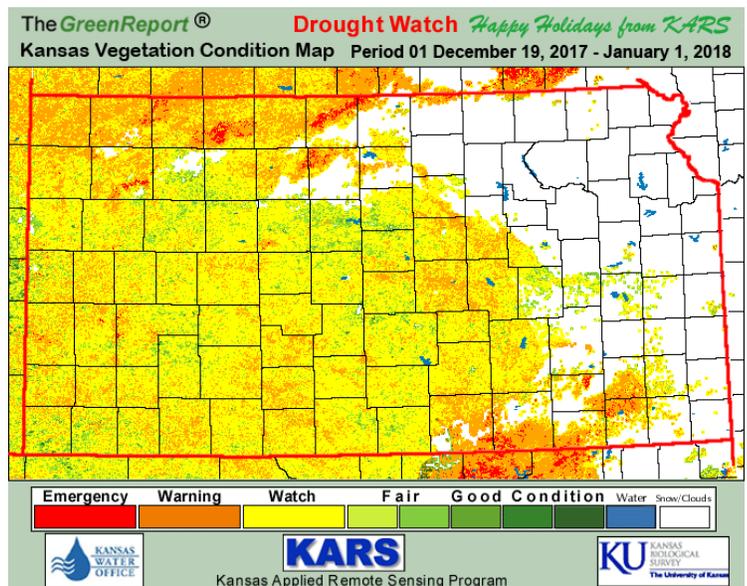
There are three other locations where flows are below MDS, but administration is not in effect since there are no junior diversion above each gage.

Streamflows as of December 27, 2017			
Gaging Station	Current Flow	Dec MDS	Comment
Republican River at Concordia	Ice	100	
Republican River at Clay Center	274	125	
Mill Creek near Paxico	11	8	
Delaware River near Muscotah	Ice	10	
Rattlesnake Creek near Macksville	Ice	5	No surface water diversions junior to MDS above gage
Rattlesnake Creek near Zenith	Ice	15	No surface water diversions junior to MDS above gage
Little Arkansas River at Alta Mills	4	8	MDS admin began Aug 10, 2017
South Fork Ninnescah River near Pratt	5	10	No surface water diversions junior to MDS above gage
Medicine Lodge River near Kiowa	41	50	Potentially going into 'Ice' conditions

Soil, Crop and Vegetation

Kansas Vegetative Conditions

The Kansas Vegetative Condition map (on right) is produced by Kansas Applied Remote Sensing Program using satellite data. Areas in yellow, orange and red indicate areas of vegetative stress. Snow covers the eastern part of the state. Central areas are in “watch” categories with some fair areas, where winter wheat is trying to hang on. North west in the “warning” category as lack of moisture and warm temperatures caused stress to vegetation including winter wheat.

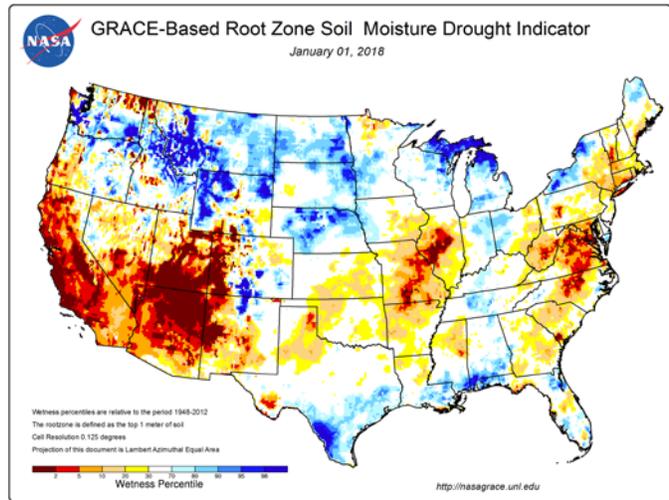
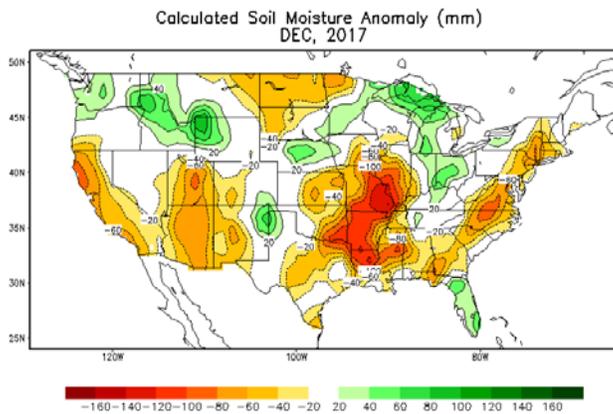


Soil Moisture

The Climate Prediction Center (CPC), also monitors soil moisture and predicts future soil moisture.

Anomalies are defined as deviations from the 1971-2000 monthly climatology. The monthly soil anomaly is provided below. http://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml

NASA generates soil moisture drought indicators each week using GRACE satellite data integrated with other observations. Indicators describe wet or dry conditions as a percentile of probability of occurrence within the period of record (1948-present).



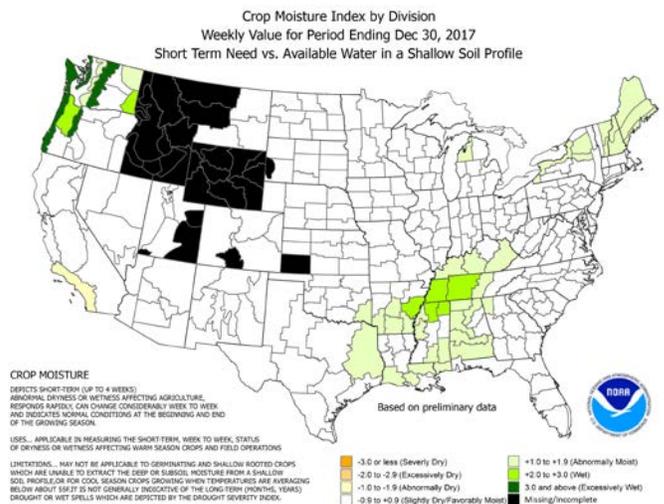
Soil erosion from winds is increased when vegetation is sparse and soils dry as in drought. K-State Research and Extension has publications on mitigating wind erosion which may be found at: <http://www.ksre.ksu.edu/p.aspx?tabid=255>.

USDA Crop Progress and Condition provide some indication of the climatic effects on soil, and livestock feed and water supplies. The Kansas report for the state as a whole for the month of December reported topsoil moisture rated 28 percent very short, 49 short, 23 adequate, and 0 surplus, according to the USDA’s National Agricultural Statistics Service. Subsoil moisture rated 16 percent very short, 48 short, 36 adequate, and 0 surplus.

Field Crops Report:

Winter wheat condition rated 4 percent very poor, 18 poor, 41 fair, 34 good, and 3 excellent.
Cotton harvested was 86 percent complete, behind 92 last year and 94 average.

Based on the Palmer Drought Index, the Crop Moisture Index (CMI) uses a meteorological approach to monitor week-to-week crop conditions. It was developed by Palmer (1968) from procedures within the calculation of the PDSI. The CMI was designed to evaluate short-term moisture conditions across major crop-producing regions. It is based on the mean temperature and total precipitation for each week within a climate division, as well as the CMI value from the previous week. The CMI responds rapidly to changing conditions, and it is weighted by location and time so that maps, which commonly display the weekly CMI across the United States, can be used to compare moisture conditions at different locations. Weekly maps of the CMI are available as part of the USDA/JAWF [Weekly Weather and Crop Bulletin](#).



Kansas Climate Summary

The Kansas Weekly Climate Summary and Drought Report are compiled at least monthly, more frequently when conditions warrant, by the KWO. Information from various federal, state, local and academic sources is used. Some of the data is preliminary and subject to change once final data is available. The KWO 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. Kansas State Climatologist, Mary Knapp, is the primary source of the narrative on weather. She works closely with meteorologists throughout the state and region. Details of current conditions at Evapotranspiration (ET) and Mesonet sites across Kansas are available at <http://www.ksre.k-state.edu/wdl/>.

RESOURCES and ACTIVITIES

The [U.S. Drought Monitor](#), from the National Drought Mitigation Center at the University of Nebraska-Lincoln, provides a “big picture” perspective of conditions across the nation. In the Kansas county drought stage scheme, a Drought Watch equates roughly 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. Palmer Drought Severity Index - The Palmer Index (PDSI) is one indicator used in the U.S. Drought Monitor.

The [High Plains Regional Climate Center](#) provides precipitation and temperature summary maps.

The U.S. Geological Survey (USGS) [Drought Watch](#) provides information average streamflow measured at long-term gaging stations and compares them to normal flows.

The Kansas Department of Agriculture-Division of Water Resources monitors stream flow using the USGS gages for determination of administrative needs. Administration may be needed due to [Minimum Desirable Streamflow \(MDS\)](#) requirements, impairments and reservoir release protection.

The water levels of the federal lakes fluctuate during a year according to the management plan. [Lake level Management](#) plans are posted on the Kansas Water Office web site www.kwo.org.

The Kansas Applied Remote Sensing Program (KARS) at the University of Kansas produces a [Kansas Green Report](#) each week during the growing season. For a full set of national and regional *GreenReport*® maps, go to: <http://www.kars.ku.edu/products/greenreport/greenreport.shtml>. This Kansas Vegetation Drought Response Index map is developed weekly by the Kansas Biological Survey using state drought triggers as its key. In addition the Vegetation Drought Response Index, by the National Drought Mitigation Center provides another a national perspective on vegetation conditions. VegDRI maps may be found at <http://veg dri.unl.edu/>

The National Weather Service (NWS) provides fire weather products and services for Kansas that include the Rangeland Fire Danger Index, Fire Weather Forecasts, Red Flag Watches/Warnings and Spot Forecasts. The five NWS offices that serve Kansas websites may be accessed from the [NWS Offices' page](#).

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. Also see: <http://www.ncdc.noaa.gov/oa/climate/research/dm/weekly-dm-animations.html>

[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. [The 2007 Municipal Water Conservation Plan Guidelines](#) and the Drought Vulnerability Assessment Report, both by KWO, provide guidance regarding drought preparedness and response.

[USDA has programs for agricultural](#) producers and businesses for drought affected areas. In some cases eligibility is dependent on a federal disaster declaration but other programs are triggered by specific conditions.

Please contact Diane Knowles at the Kansas Water Office (785) 296-3185 or diane.knowles@kwo.ks.gov should you have any questions or suggestions.

Appendix A

December 2017 Summary	Precipitation (inches)			Temperature °F				
	Station ¹	Total	Departure	Percent Normal	Mean	Departure	Extreme (Date)	
							Highest	Lowest
West								
Burlington, CO	0.04	-0.39	9%	29.9	1.0	66 (12,3)	-4 (24)	
Dodge City	T	-0.84	0%	33.2	0.4	78 (3)	-5 (31)	
Garden City	T	-0.52	0%	32.0	0.3	74 (3)	-1 (31)	
Goodland	0.09	-0.37	20%	30.1	0.2	65 (12)	-4 (24)	
Guymon, OK	0.03	-0.61	5%	36.1	0.9	79 (3)	8 (31,26)	
Hill City	0.03	-0.66	4%	30.7	0.3	68 (10)	1 (31)	
Lamar, CO	0.01	-0.39	3%	31.2	1.6	74 (3)	1 (31)	
McCook, NE	0.10	-0.54	16%	28.5	0.5	65 (10)	-2 (26)	
Springfield, CO	0.04	-0.47	8%	32.6	0.3	73 (3)	0 (31)	
Central								
Concordia	0.13	-0.72	15%	31.2	1.2	68 (3)	-7 (31,27)	
Hebron, NE				29.5	1.6	65 (3)	-14 (27)	
Medicine Lodge	0.00	-0.92	0%	35.6	0.9	69 (10)	2 (31)	
Ponca City, OK	0.03	-1.39	2%	38.7	2.1	74 (4)	7 (31)	
Salina	0.05	-0.89	5%	34.6	2.3	72 (3)	-2 (31)	
Wichita (ICT)	0.03	-1.17	3%	36.7	2.9	67 (11, 10)	4 (31)	
East								
Bartlesville, OK	0.29	-1.92	13%	38.3	1.8	78 (4)	6 (31)	
Chanute	0.24	-1.51	14%	37.0	2.3	74 (4)	2 (31)	
Fall City, NE	0.36	-0.62	37%	29.0	0.4	68 (4,3)	-12 (27)	
Johnson Co. Exec. Apt	0.37	-1.27	23%	32.8	0.4	70 (4)	-4 (31)	
Joplin, MO	1.37	-1.45	49%	37.6	0.4	73 (4,3)	5 (31)	
Kansas City (MCI), MO	0.19	-1.34	12%	32.1	0.6	72 (4)	-6 (31)	
St. Joseph, MO	0.14	-1.38	9%	39.7	0.2	69 (4)	-8 (31)	
Topeka (TOP)	0.31	-1.04	23%	33.3	1.3	70 (4)	-4 (31)	
1. Airport Automated Observation Stations (NWS/FAA) 2. Departure from 1981-2010 normal value T - Trace; M - Missing; --- no normal value from which to calculate departure or percent of normal Source: National Weather Service F-6 Climate Summaries								