KANSAS CLIMATE
March 2022

Highlights

➢ At the end of the month, 70 percent of the state is covered by the Abnormally Dry drought conditions, compared to 100 percent at the end of February. A Severe Drought or worse classification has continued to cover around half the state, with now 46 percent of the state within a Severe Drought D2 or worse category.

➢ March precipitation events brought above average rain for the southeast portion of the state. The western third of the state received below average precipitation. Temperatures for March were near average for most of the state, with the northwest area of the state being below average.

➢ April outlook: drought conditions persisting through much of the state, precipitation forecasted to be near normal for most of the state and temperatures above normal for the entire state.

➢ 3-month outlook indicates above normal temperatures for the state, with below normal precipitation for the entire state. Further drought development likely for the eastern portions of the state.

General Drought Conditions

The condition at the end of the month is shown below in Figure 1. Change in drought classification over the month is also shown.

Figure 1. U.S. Drought Monitor Maps of Drought status

More information can be found on the U.S. Drought
Monitor web site [https://droughtmonitor.unl.edu/](https://droughtmonitor.unl.edu/).

**Climate Summary**

Figure 2 and Figure 3 below summarize observed precipitation and temperature, respectively, for the month using the PRISM dataset available at [http://www.prism.oregonstate.edu/6month/](http://www.prism.oregonstate.edu/6month/). Additional state maps are available through the KSU Weather Data Library at [http://climate.k-state.edu/maps/monthly/](http://climate.k-state.edu/maps/monthly/).

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**Figure 2. Monthly Precipitation maps**

**March 2022 Precipitation**

**30 yr Normal March Precipitation**

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**Figure 3. Monthly Temperature Maps**

**March 2022 Mean Temperature**

**30 yr Mean Normal Temperature**
Outlooks

**Figure 4. Drought Outlooks**

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

Valid for April 2023
Released March 15, 2023

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

Valid for April 1 - June 30, 2023
Released March 15, 2023

Describes large-scale trends based on subjectively derived probabilities versus pre-existing trends. Use caution for applications that use information on drought tendency forecasts. A detailed description of the drought outlook methodology is available at the Climate Prediction Center website. (For usability, look at the map for the period of interest.

**Figure 5. Next Month Precipitation and Temperature Outlooks**

**Monthly Temperature Outlook**

Valid: April 2023
Issued: March 31, 2023

**Monthly Precipitation Outlook**

Valid: April 2023
Issued: March 31, 2023

**Figure 6. Three Month Precipitation and Temperature Outlooks**

**Seasonal Temperature Outlook**

Valid: Apr-May-Jun 2023
Issued: March 17, 2023

**Seasonal Precipitation Outlook**

Valid: Apr-May-Jun 2023
Issued: March 17, 2023

http://nasa.gov/3e2Gd

http://nasa.gov/3e273
Reservoir Storage
Figure 7 provides the volume of the normal pool and flood pool filled in federal reservoirs in Kansas. The location and uses of the reservoirs are shown in Figure 8.
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. 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. This comparison aids in evaluating water resources conditions for a time period.
https://waterwatch.usgs.gov/index.php?id=mv01d&sid=w__maplm__mv01d_nwc&r=ks

Figure 9. Monthly streamflow compared to historical streamflow
March 2022

Minimum Desirable Streamflow: Low flows may be reflected at gage locations when the flow does not reach Minimum Desirable Streamflow (MDS). MDS requirements are in place to ensure base flows in certain streams to protect existing water rights and to meet in-stream water uses related to water quality, fish and wildlife and recreation. The Kansas Department of Agriculture, Division of Water Resources monitors 23 streams and rivers at 33 locations for minimum desirable streamflow. When flows drop below an established threshold, pumping restrictions are imposed on permits or water rights granted after the minimum desirable streamflow provision was made into law in 1984.

There are currently no streams under MDS in Kansas.
Vegetation, Soil Moisture and Crops

Vegetative Conditions
The Vegetative Condition map depicts vegetation stress. It is produced using satellite data by the National Drought Mitigation Center [https://vegdri.unl.edu/Home.aspx](https://vegdri.unl.edu/Home.aspx).

Soil Moisture and Rangeland

Within Kansas, soil moisture is now being measured through the Kansas Mesonet and Kansas State University the percent of soil saturation (representative of grassland vegetation). For current estimated statewide soil saturation visit: [http://mesonet.k-state.edu/agriculture/soilmoist/](http://mesonet.k-state.edu/agriculture/soilmoist/).

Fire
The National Weather Service issues Red Flag Warnings when conditions favoring wildfire are at an increased risk. These are issued daily when needed. A Significant Wildland Fire Potential Outlook is issued monthly for the United States. Figure 11 is the most recent outlook for possible wildfires for the next month. Additional forecasts can be found at [https://www.predictiveservices.nifc.gov/outlooks/outlooks.htm](https://www.predictiveservices.nifc.gov/outlooks/outlooks.htm).
The Kansas Weekly Climate Summary and Drought Report are compiled at least monthly, more frequently when conditions warrant, by the KWO. Some of the data is preliminary and subject to change once final data is available. The KWO website, [http://www.kwo.ks.gov/reports2/climate-and-drought-monitoring-response](http://www.kwo.ks.gov/reports2/climate-and-drought-monitoring-response), contains additional drought information including links to other agencies with drought information and past issues of the Kansas Climate Summary and Drought Report. Details of current conditions at such as precipitation, temperature, evapotranspiration (ET), soil moisture and more are available at [http://mesonet.k-state.edu/](http://mesonet.k-state.edu/).

**RESOURCES and REFERENCES**

Kansas climate data is provided by Kansas State University, Weather Data Library through the Kansas Mesonet. ([http://www.ksre.k-state.edu/wdl/](http://www.ksre.k-state.edu/wdl/)). Soil moisture data was added in 2018 ([http://mesonet.k-state.edu/agriculture/soilmoist](http://mesonet.k-state.edu/agriculture/soilmoist)).

The [U.S. Drought Monitor](https://www.droughtmonitor.unl.edu), 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 ([https://hpcrec.unl.edu/](https://hpcrec.unl.edu/)) has precipitation and temperature summary maps available for the state, region and nation.

The U.S. Geological Survey (USGS) [Drought Watch](http://water.usgs.gov/ga/gw/monitor/drought/index.html) 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. ([https://agriculture.ks.gov/divisions-programs/dwr/water-appropriation/minimum-desirable-streamflow](https://agriculture.ks.gov/divisions-programs/dwr/water-appropriation/minimum-desirable-streamflow)).

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.ks.gov](http://www.kwo.ks.gov).

The Kansas Applied Remote Sensing Program (KARS) at the University of Kansas produces a [Kansas Green Report](http://www.kars.ku.edu/products/greenreport/greenreport.shtml) each week during the growing season. For a full set of national and regional [GreenReport®](http://www.kars.ku.edu/products/greenreport/greenreport.shtml) maps, go to: [http://www.kars.ku.edu/products/greenreport/greenreport.shtml](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 National Drought Mitigation Center also produces VegDRI maps which may be found at [http://vegdri.unl.edu/](http://vegdri.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 Monthly and Seasonal Drought Outlooks, developed by the NOAA Climate Prediction Center, assess the likelihood for improvement, persistence or deterioration in drought conditions for areas currently experiencing drought as identified by the U.S. Drought Monitor. ([http://www.cpc.ncep.noaa.gov/](http://www.cpc.ncep.noaa.gov/)) Also see: [http://www.noaa.gov/](http://www.noaa.gov/).


USDA Drought Programs and Assistance website ([https://www.usda.gov/topics/disaster/drought/usda-drought-programs-and-assistance](https://www.usda.gov/topics/disaster/drought/usda-drought-programs-and-assistance)) listing the various USDA programs and agencies to assist with drought issues.

The National Interagency Coordination Center in Boise, Idaho, produces wildfire potential outlook maps monthly. ([https://www.predictiveservices.nifc.gov/outlooks/outlooks.htm](https://www.predictiveservices.nifc.gov/outlooks/outlooks.htm))

Please contact the Kansas Water Office (785) 296-3185 or [kwo-info@kwo.ks.gov](mailto:kwo-info@kwo.ks.gov) should you have any questions or suggestions.