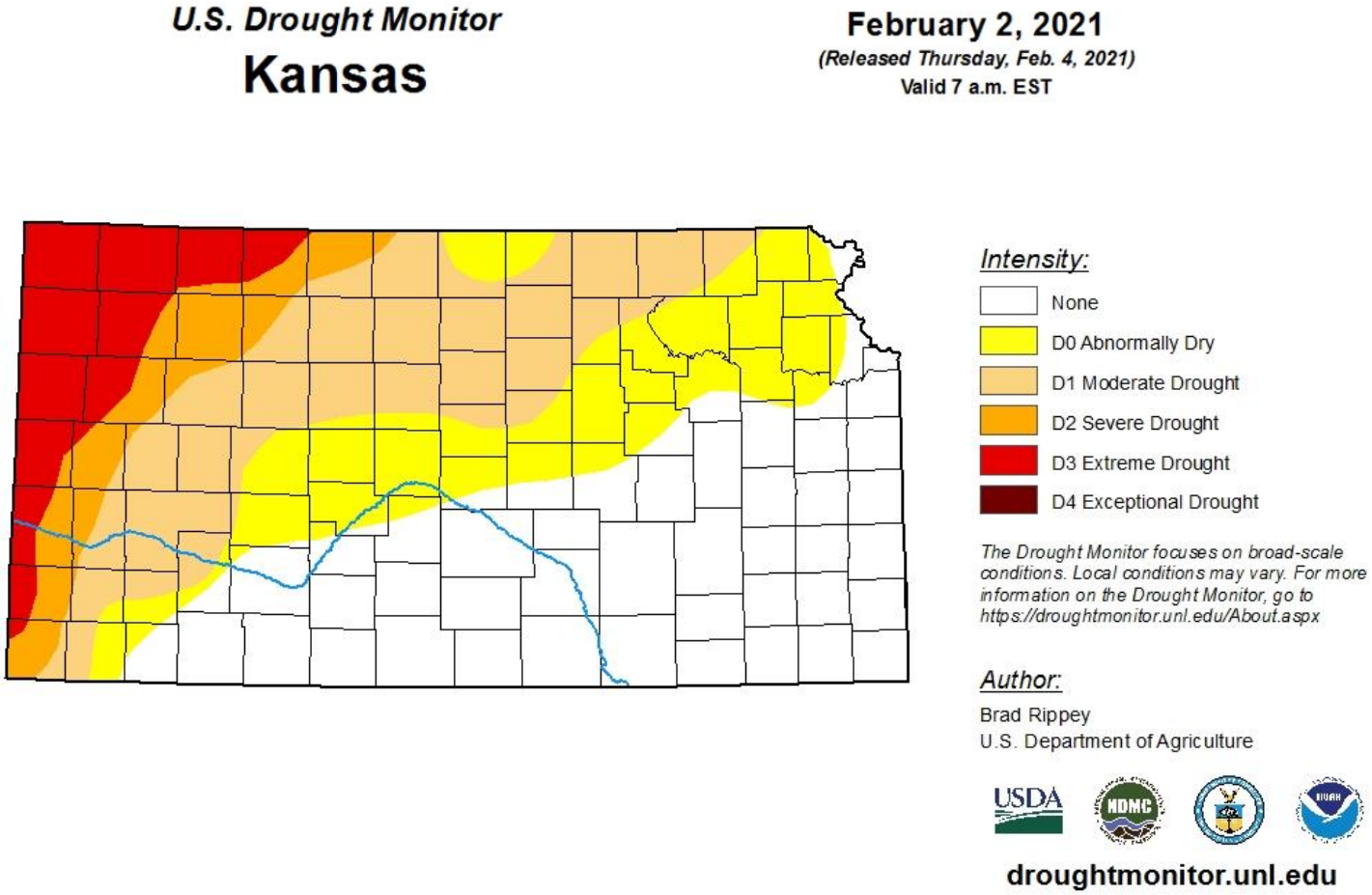
KANSAS CLIMATE
January 2021

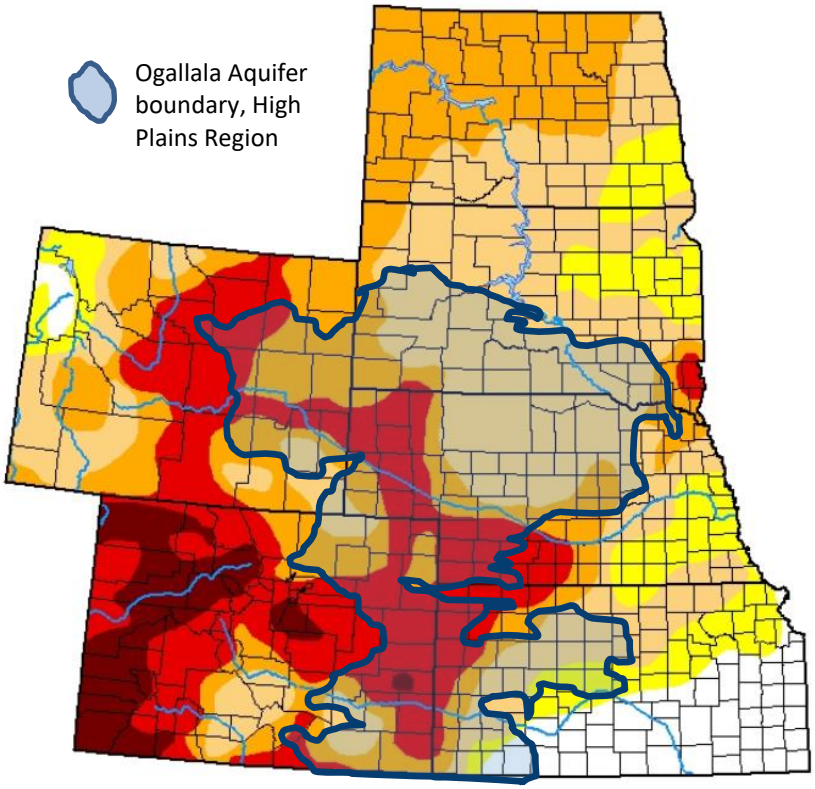
Highlights

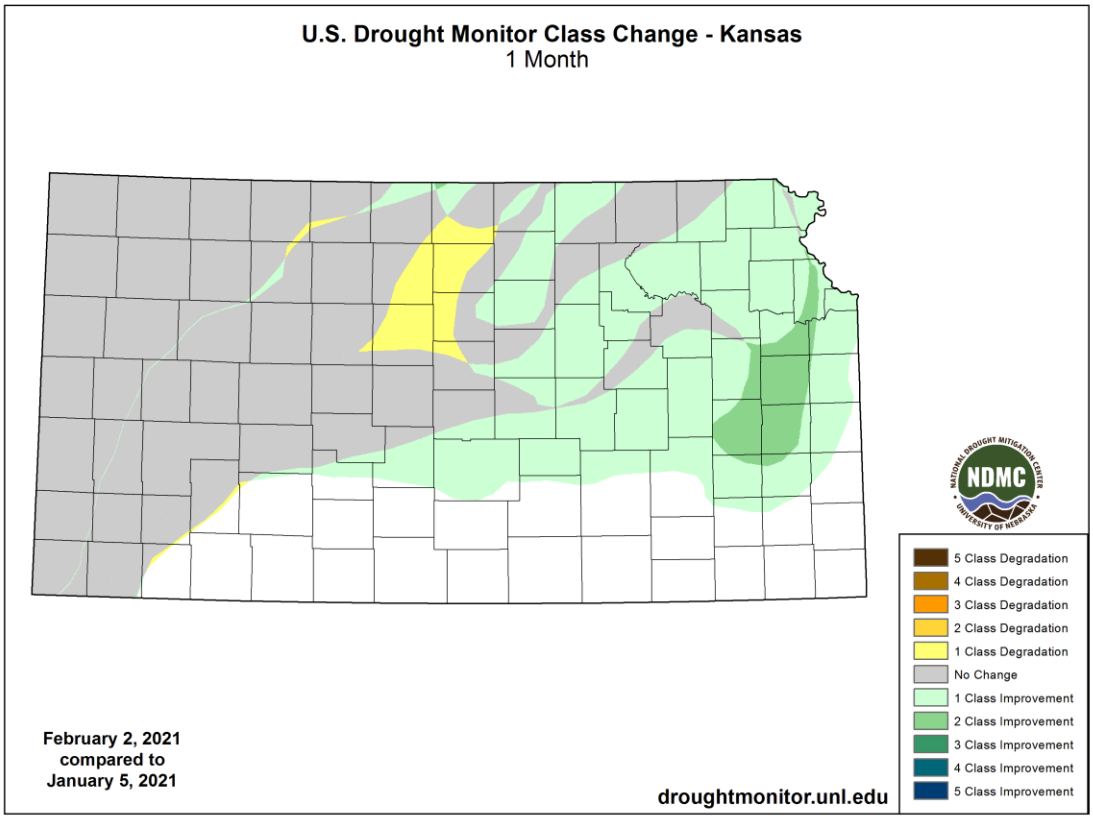
- January brought unproportionate moisture to Kansas. Western counties received roughly half of their January, 30-year average while Eastern counties received 150% to 400% of their normal totals.
- February outlook: La Nina pattern is creating uncertainty with precipitation forecasting, but a good chance for below normal temperatures in the east.
- 3-month outlook predicts warm and dry conditions for much of the State as La Nina pattern likely continues. Stroger probabilities of this scenario are for western Kansas.

General Drought Conditions

Drought continues to impact a significant portion of the state. Regional drought conditions are raising concerns for western Kansas water resources as we approach a forecasted dry spring and summer.



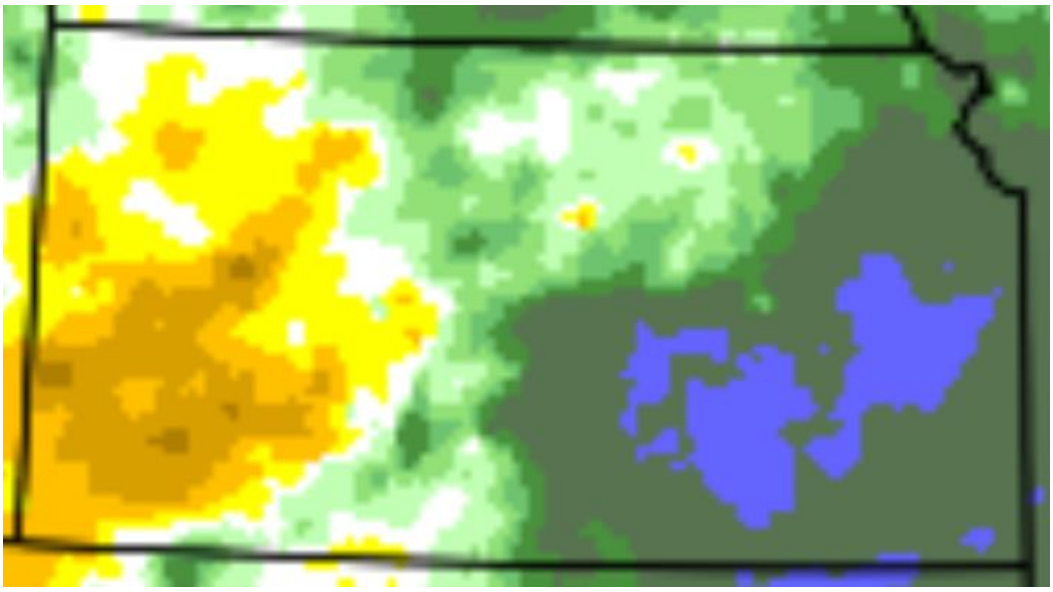

Ogallala Aquifer boundary, High Plains Region


U.S. Drought Monitor Class Change - Kansas
1 Month
February 2, 2021 compared to January 5, 2021
droughtmonitor.unl.edu
NDMC
5 Class Degradation
4 Class Degradation
3 Class Degradation
2 Class Degradation
1 Class Degradation
No Change
1 Class Improvement
2 Class Improvement
3 Class Improvement
4 Class Improvement
5 Class Improvement

Climate Summary

Total Precipitation Anomaly: January, 2021

Base Period: 1981-2010



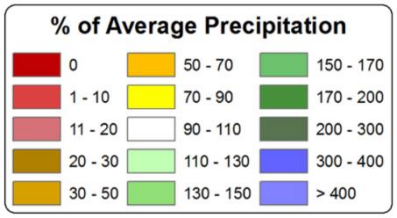
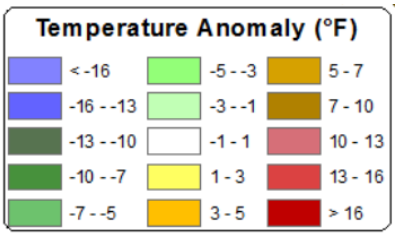


Figure 3 above summarizes observed precipitation anomaly. Figures 4, 5 below show temperature for the month. PRISM dataset available at http://www.prism.oregonstate.edu/6month/. Additional state maps are available through the KSU Weather Data Library at http://climate.k-state.edu/maps/monthly/.

Deviation from 30-year normal

Daily Mean Temperature Anomaly: January, 2021

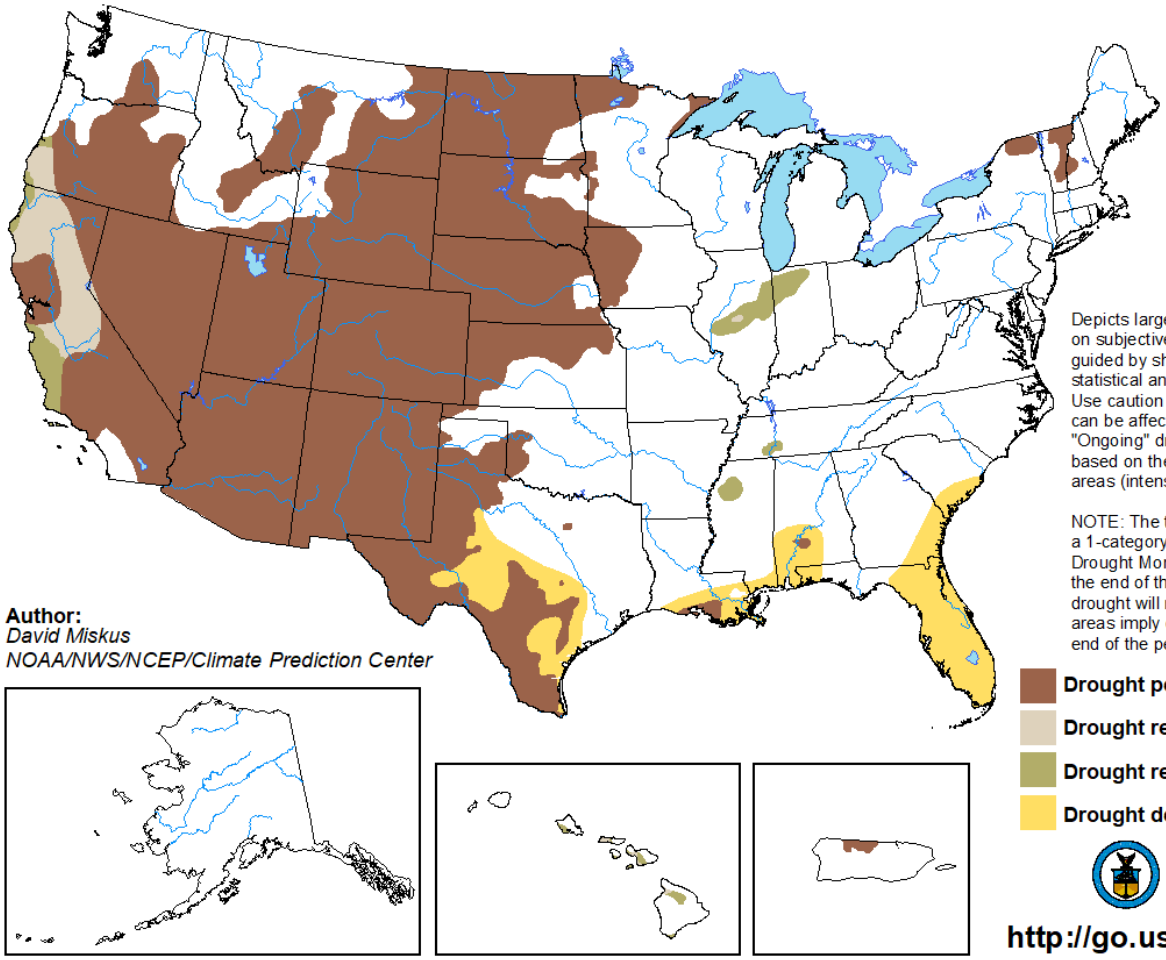
Base period:1981-2010



U.S. Monthly Drought Outlook

Drought Tendency During the Valid Period

Valid for February 2021
Released January 31, 2021



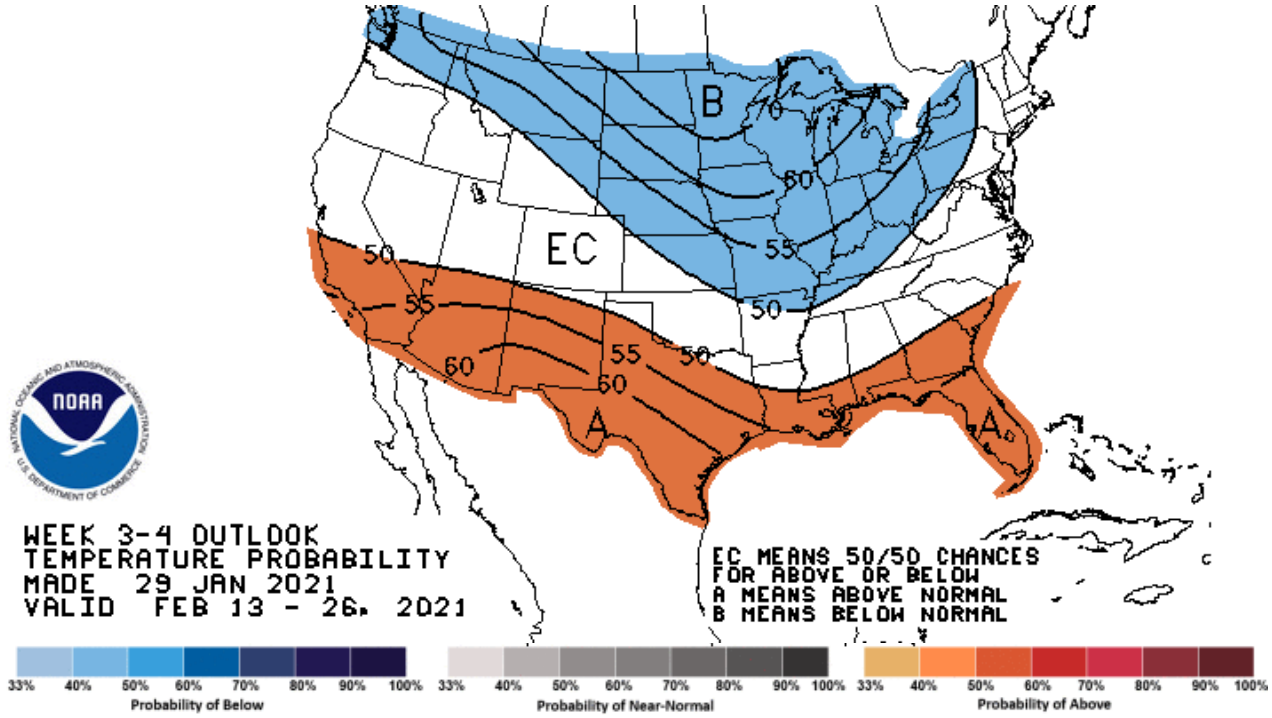
Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

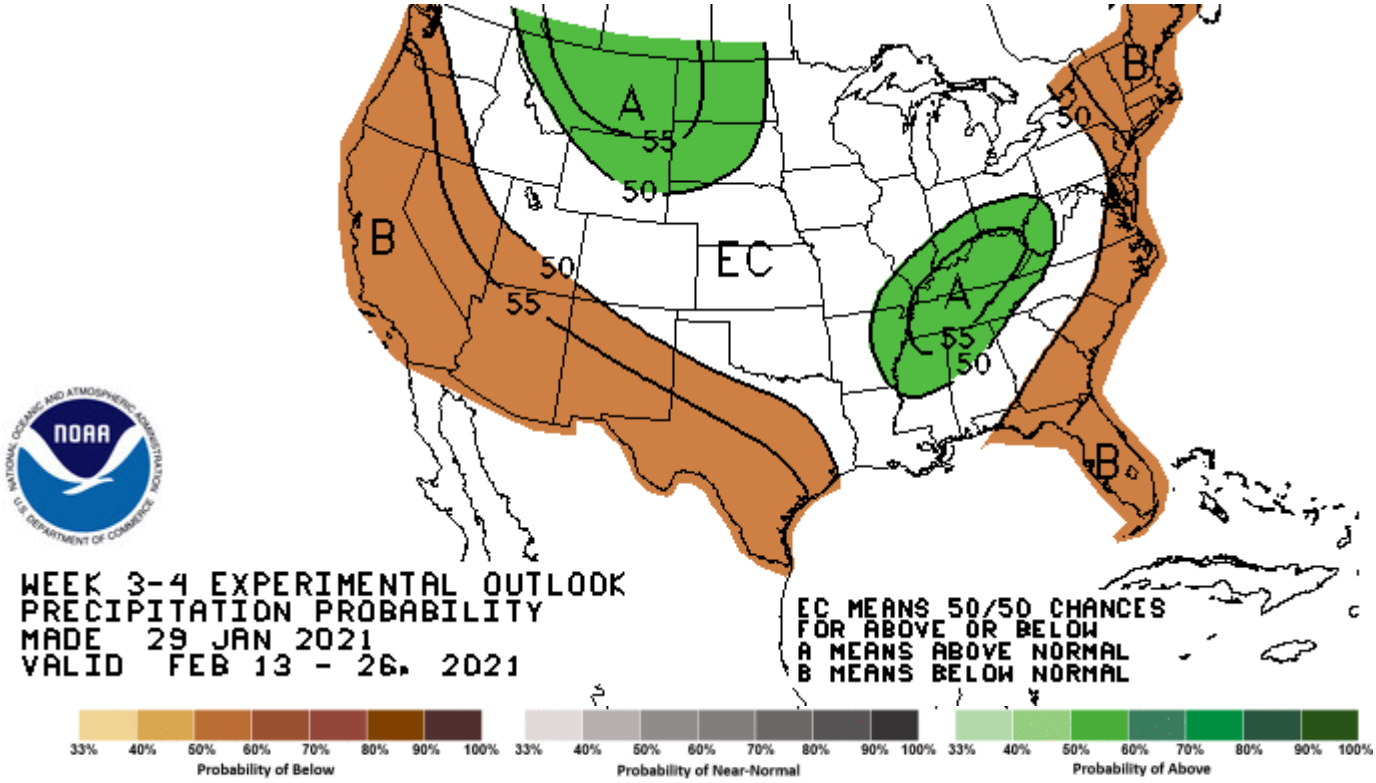
NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

Author:
David Miskus
NOAA/NWS/NCEP/Climate Prediction Center

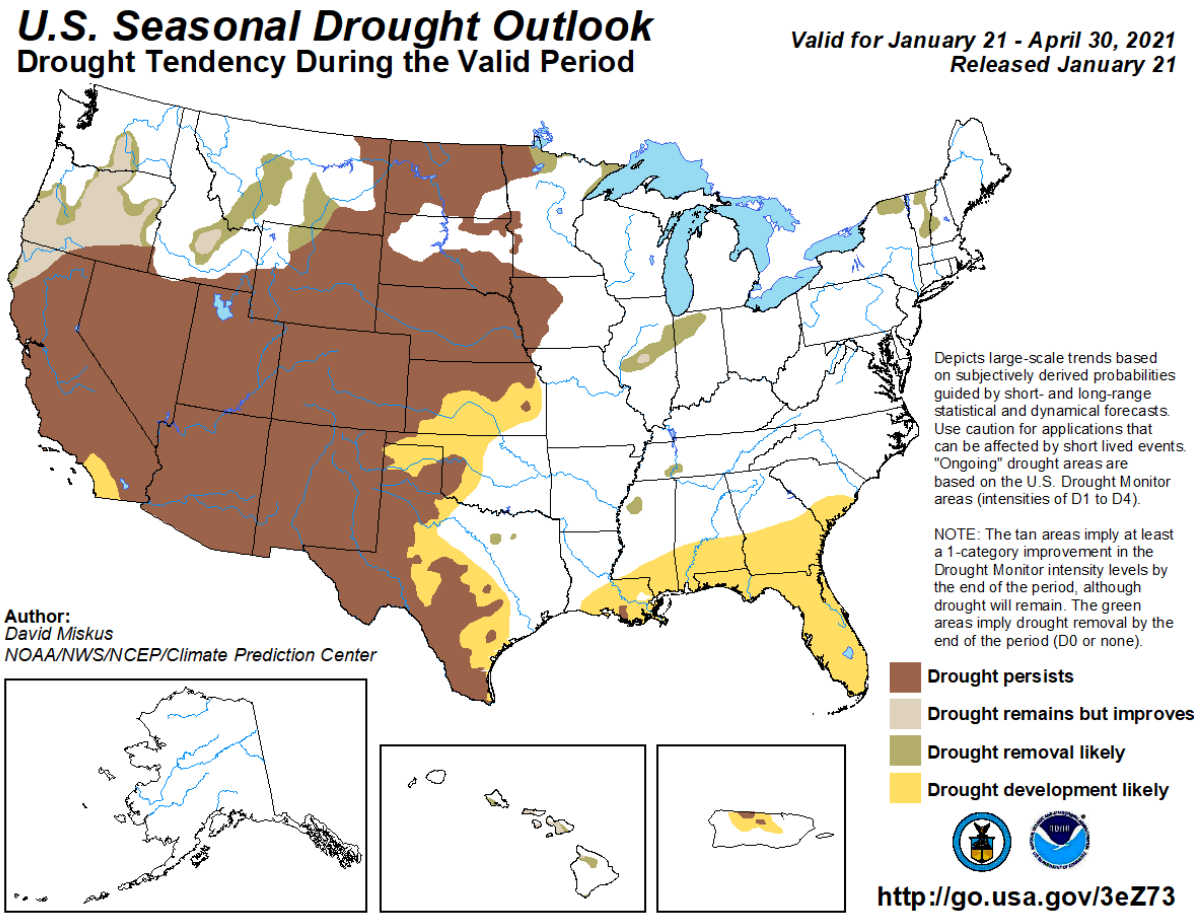
Drought persists
Drought remains but improves
Drought removal likely
Drought development likely

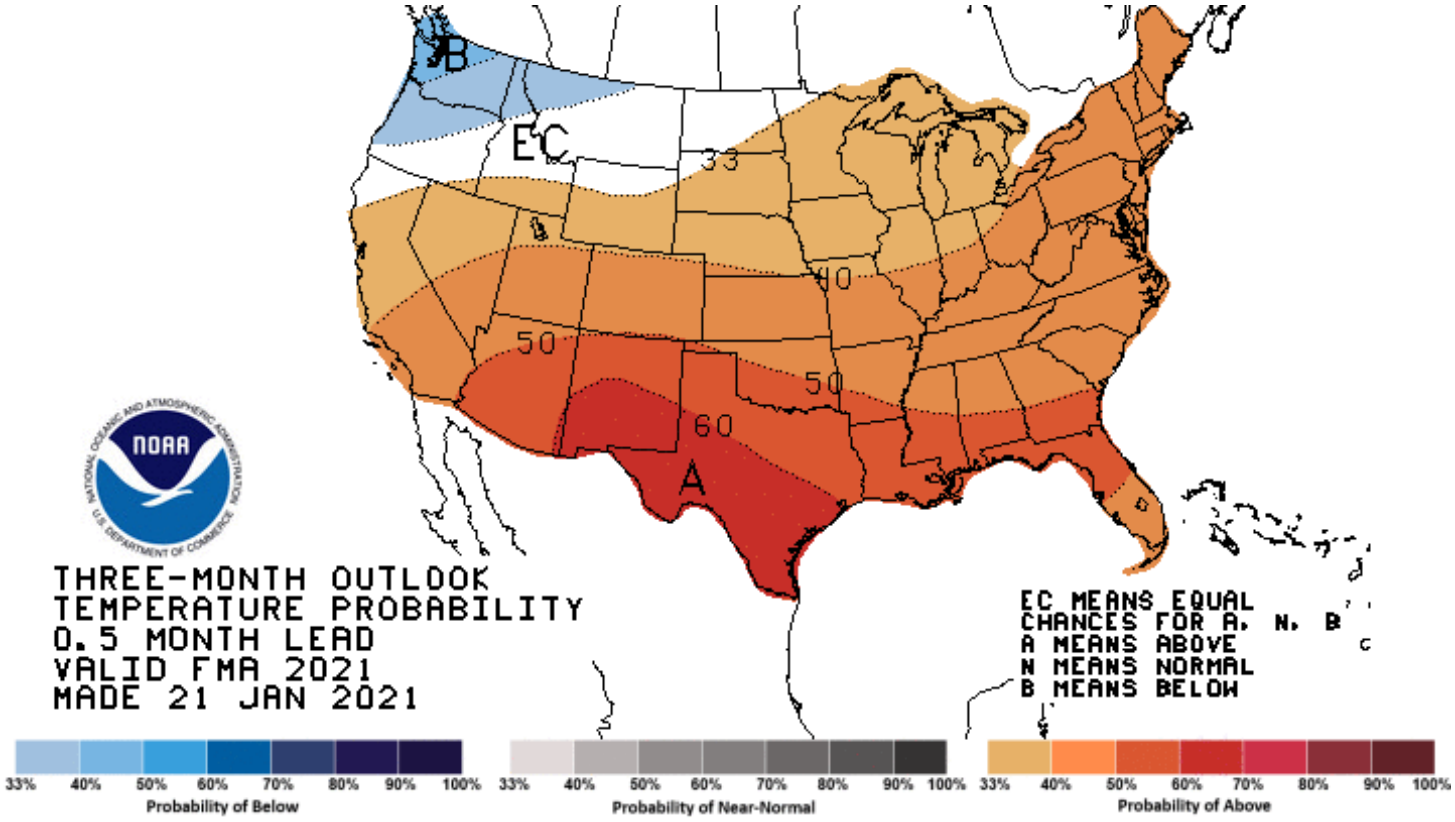
http://go.usa.gov/3eZGd

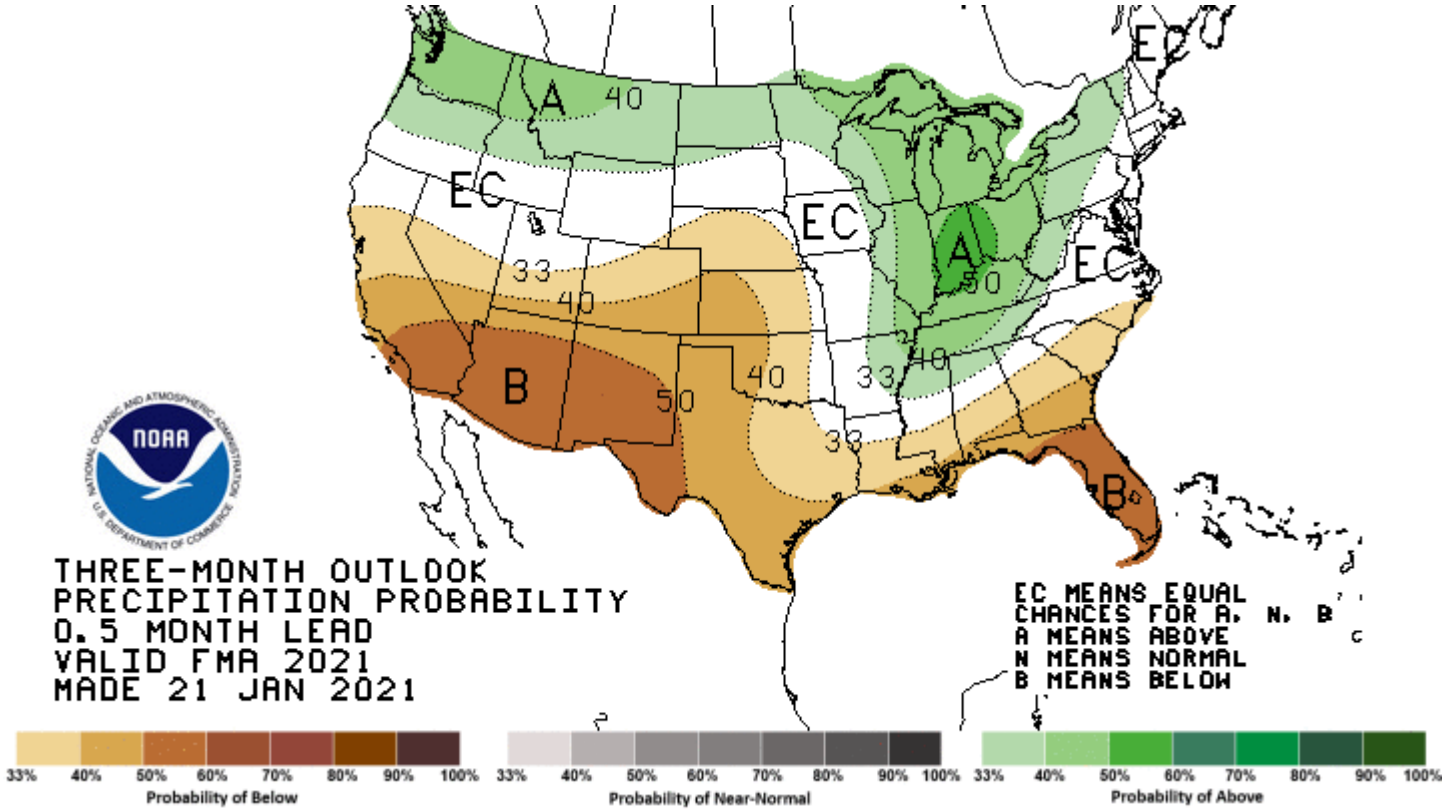




Seasonal Outlooks




B
EC
33
40
50
50
60
A
THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0.5 MONTH LEAD
VALID FMA 2021
MADE 21 JAN 2021
EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW
33% 40% 50% 60% 70% 80% 90% 100%
Probability of Below
33% 40% 50% 60% 70% 80% 90% 100%
Probability of Near-Normal
33% 40% 50% 60% 70% 80% 90% 100%
Probability of Above


A
40
EC
EC
A
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EC
33
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B
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33
40
33
B
THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
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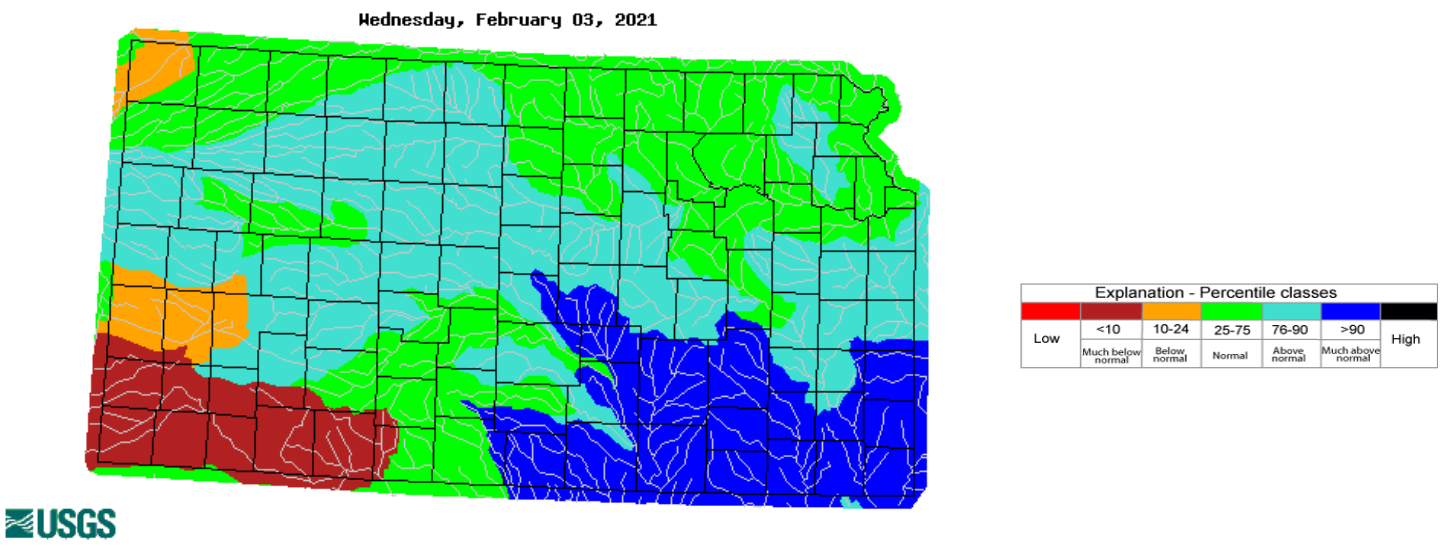
33% 40% 50% 60% 70% 80% 90% 100%
Probability of Above

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. A summary of flooding in is found later in this report. Figure 9 summarizes streamflow.

7-day streamflow compared to historical streamflow



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.

MDS is currently being administered on the following streams:

- Little Arkansas River above Alta Mills (September 28, 2020)

https://agriculture.ks.gov/divisions-programs/dwr/water-appropriation/minimum-desirable-streamflow

Vegetation, Soil Moisture and Crops

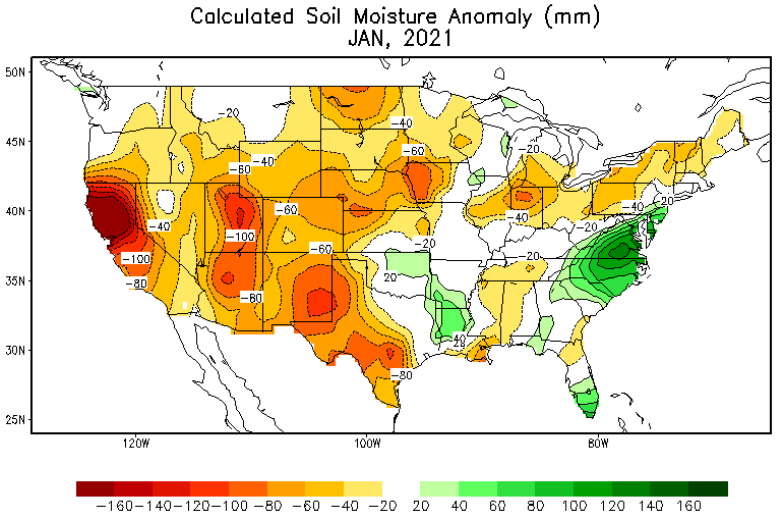
Vegetative Conditions

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 and often customized for Kansas by the Kansas Biological Survey in the GreenReport.

Soil Moisture and Rangeland

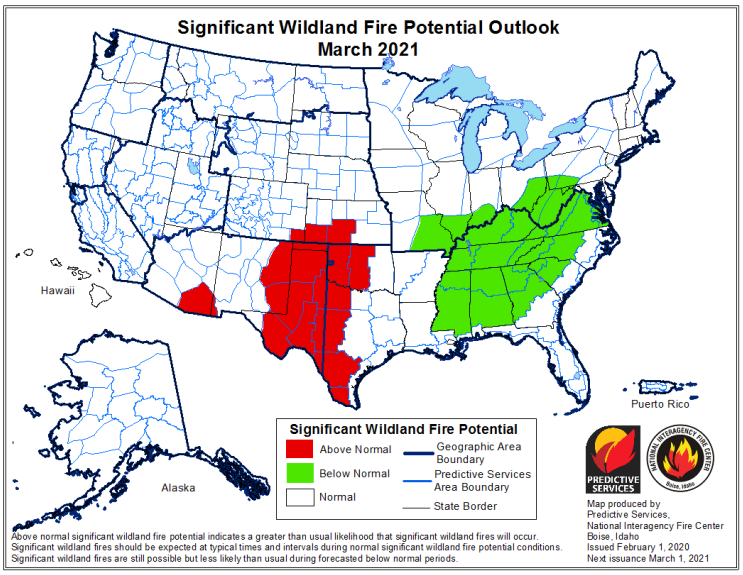
The Climate Prediction Center (CPC), monitors soil moisture and predicts future soil moisture. Anomalies are defined as deviations from the 1971-2000 monthly climatology. (http://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml).

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/.



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. Pictured to the right is the most recent outlook for possible wildfires tor the next month. Additional forecasts can be found at https://www.predictiveservices.nifc.gov/outlooks/outlooks.htm.



Kansas Climate Summary

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 web site, 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/.

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/). Soil moisture data was added in 2018 (http://mesonet.k-state.edu/agriculture/soilmoist)

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 (https://hprcc.unl.edu/) has precipitation and temperature summary maps available for the state, region and nation.

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. (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 .

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 National Drought Mitigation Center also produces VegDRI maps which may be found at 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/) Also see: http://www.noaa.gov/.

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. These are available at http://www.kwo.ks.gov/reports2/climate-and-drought-monitoring-response.

USDA Drought Programs and Assistance website (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)

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