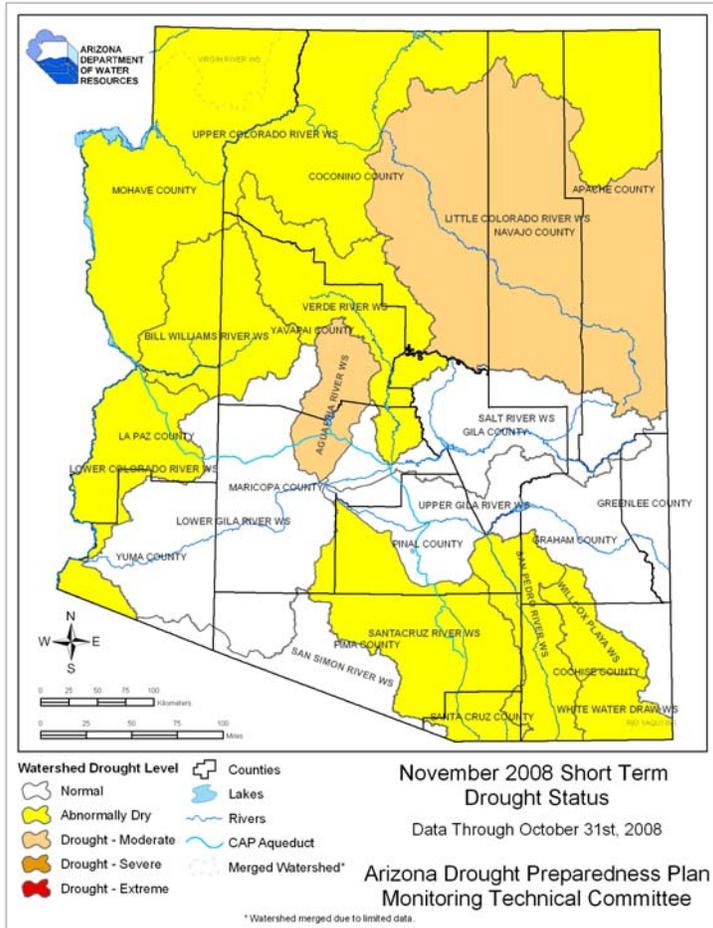


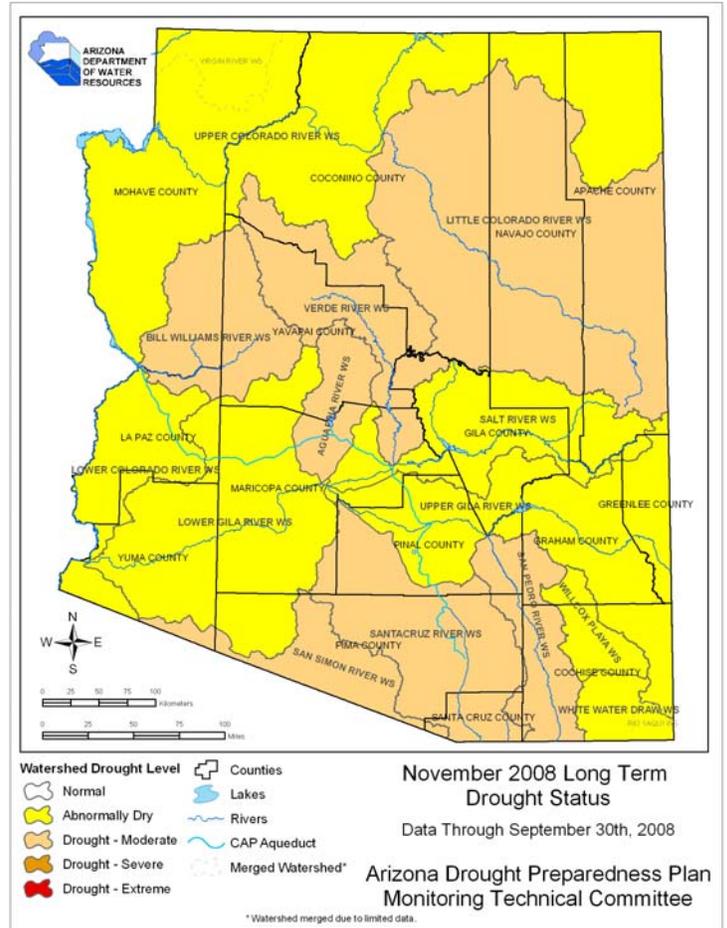
# Arizona Drought Monitor Report

## November 2008

### Short-term Drought Status



### Long-term Drought Status



#### Short-term Update

Drought conditions worsened in seven watersheds over the last month. The dry conditions for the past three months in northern Arizona caused the Little Colorado and Agua Fria watersheds to degrade from abnormally dry to moderate drought. Five watersheds in southern Arizona also degraded from no drought to abnormally dry. While August was slightly wetter than average in southern Arizona, September and October were drier than average. The high temperatures over the past several months have contributed to dry conditions in the southern half of the state.

#### Long-term Update

The long-term drought status will remain unchanged until the October through December data are analyzed in January. So far, October was much drier than average, and November was also very dry other than a storm system at Thanksgiving. If December is also dry, the long-term status is likely to degrade, much as the short term status has degraded.



# Reservoir Storage



USDA NRCS Dr. Ken Dewey, High Plains Regional Climate Center

# Vegetation Health



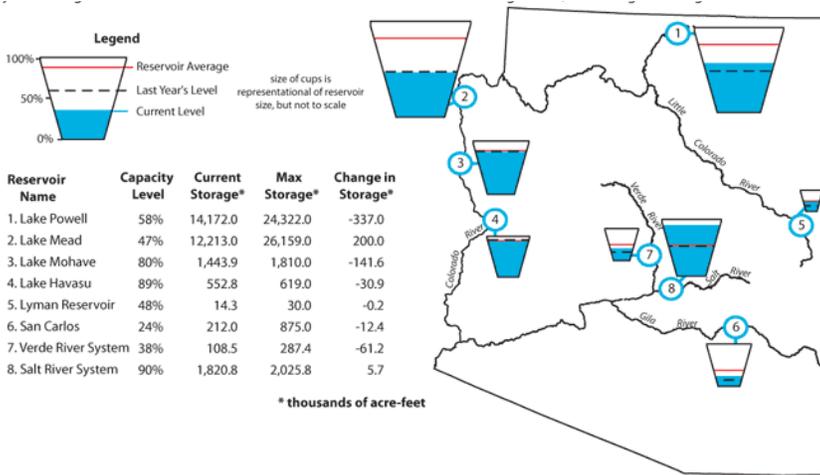
Jeff Severson

## Arizona Reservoir Status

Combined reservoir storage in Lakes Powell and Mead declined by 137,000 acre-feet during October. Nevertheless, compared with last year, combined levels have risen more than two million acre-feet. During October, storage in the Salt River watershed slightly increased, while storage in the Verde River watershed declined approximately 36 percent, or about 60,000 acre-feet; both watersheds currently have substantially more water than they had one year ago.

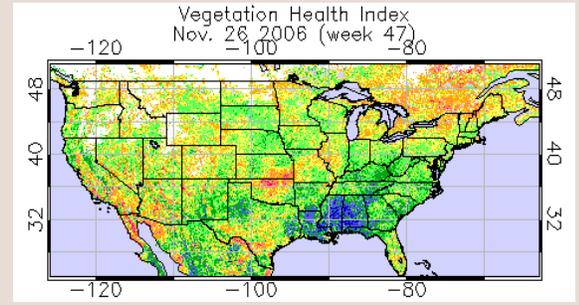
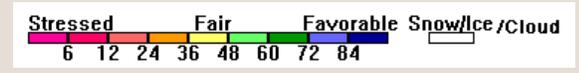
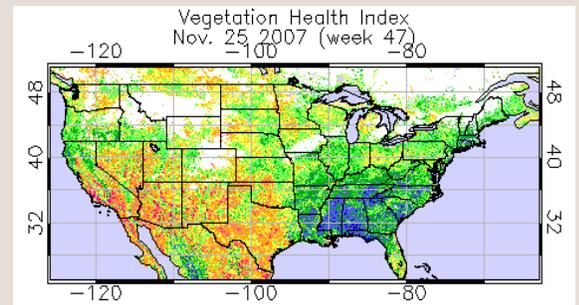
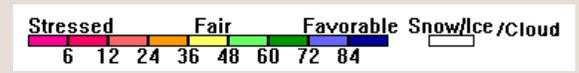
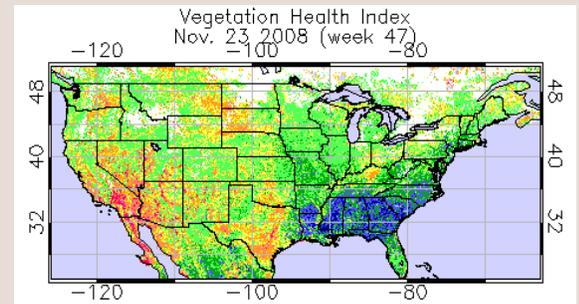
In Arizona water news, the San Pedro River, one of the last free-flowing rivers in Arizona, received additional environmental protection on November 12 when 122 acres just north of the U.S. border with Mexico were acquired by the Nature Conservancy, the Arizona Game and Fish Department, and the U.S. Fish and Wildlife Service. This acquisition is critical to protect aquatic and riparian habitat along the river, including several endangered and threatened species such as the southwestern willow flycatcher and Chiricahua leopard frog.

Arizona reservoir levels for October 2008 as a percent of capacity. The map depicts the average level and last year's storage for each reservoir, while the table also lists current and maximum storage levels.

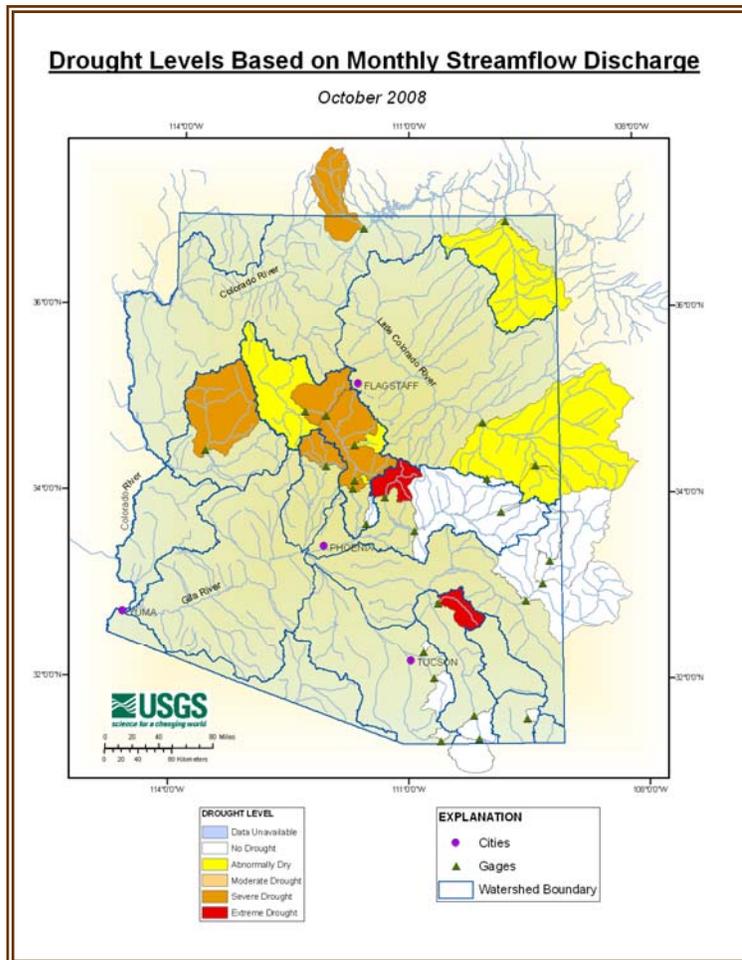


Vegetation health index (VHI) data from the NOAA Center for Satellite Applications and Research (top figure) shows favorable vegetation conditions in the central and southeastern parts of Arizona. Neighboring California and northern Baja California show high vegetation stress, associated with extreme drought during the last year and a half.

One year ago (middle figure), a dry hot autumn threatened more severe drought status. However, the current VHI shows more robust vegetation conditions in the central and southeastern part of the state. Two years ago (bottom figure), following an exceedingly wet monsoon, vegetation health was even more favorable.



# Mountain Streamflow



## October Streamflow

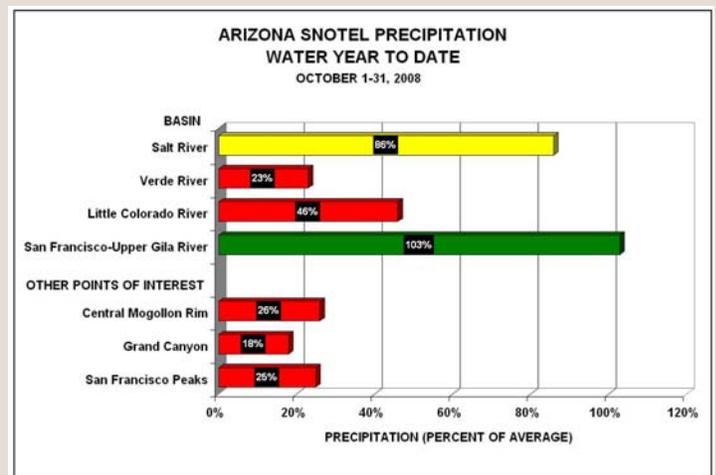
October streamflow in the central part of the state indicates increasing drought severity. In the east and southeast portions of the state drought has remained the same or decreased. Aravaipa Creek in the southeast is an exception to this as it has increased one drought category to extreme Drought. Streamflow in Tonto Creek northeast of Phoenix has also decreased since September resulting in runoff at less than 1% of the median.

Water body	October Runoff in Acre Feet	% of Median
Salt River near Roosevelt	17,155	118%
Tonto Creek above Gun Creek near Roosevelt	<1	<1%
Verde River at Horseshoe Dam	10,453	77%
Combined Inflow to Salt River Project (SRP) reservoir system	27,608	95%
Little Colorado River above Lyman Lake	135	49%
Gila River to San Carlos Reservoir	7,747	118%

Streamflow Observed at USGS Gauging Stations

## Mountain Precipitation

Monitoring stations show normal to well below normal precipitation amounts occurring in all river basins in the state during October, ranging from 23% of average in the Verde River Basin to 103% of average in the San Francisco-Upper Gila River Basin. October marks the first month of the 2009 Water Year, so cumulative precipitation is the same as monthly precipitation.



# Temperature and Precipitation



October was dry everywhere in Arizona. The western watersheds were below the 15<sup>th</sup> percentile, while all the eastern watersheds were at the 42<sup>nd</sup> percentile or below. Only two storm systems moved through the state in October, and the majority of rainfall fell in the southeast and eastern mountains. Temperatures were slightly above average, with the warmest temperatures in western Arizona.

The 3-month period was drier than average in all but three watersheds. The upper and lower Gila and San Simon River watersheds all had above-average precipitation for the August through October period. The dry conditions kept temperatures above average in the western and northern parts of the state.

The 6-month period precipitation, from May through October, was wetter than average in the southern half of the state, and average or drier than average in the northern half of the state. This year the monsoon was very active in southern Arizona, and weak in northern Arizona. Six month temperatures were much warmer than average.

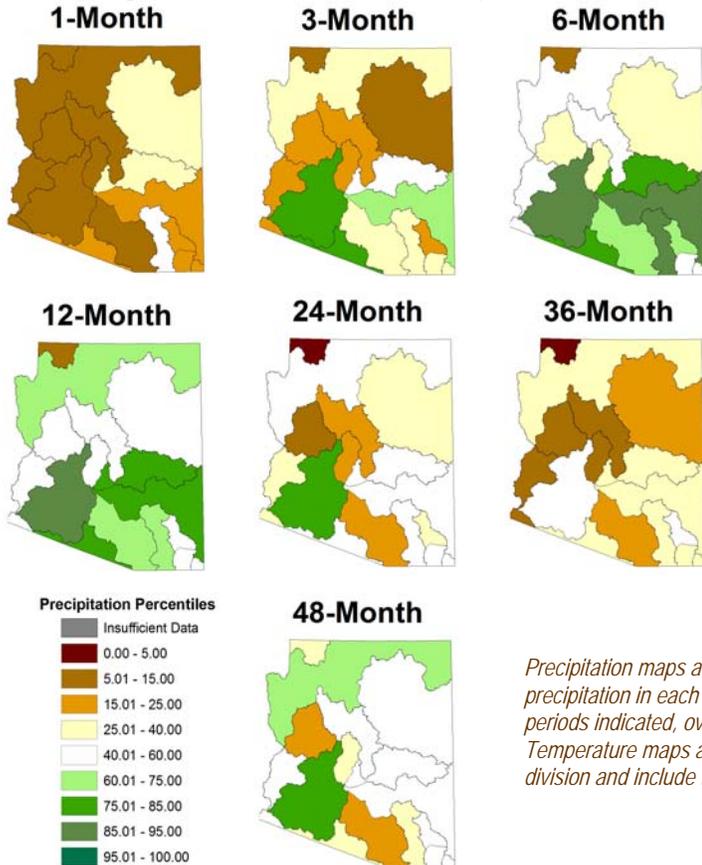
The 12-month period is the wettest interval with 14 watersheds above the 40<sup>th</sup> percentile, seven watersheds above the 67<sup>th</sup> percentile, and three watersheds above the 83<sup>rd</sup> percentile. The wettest watersheds were in southern Arizona. The Virgin watershed, in northwestern Arizona, was below the 9<sup>th</sup> percentile. Temperatures continued to be warmer than average across the state, with the warmest conditions in the south.

The 24-month period has a large variation of conditions in the watersheds. Two watersheds are below the 14<sup>th</sup> percentile, six are near the 50<sup>th</sup> percentile, and one watershed is above the 80<sup>th</sup> percentile. Temperatures for the 24-month period continue to be above the 75<sup>th</sup> percentile across the state, with the coolest temperatures in Gila and Mohave counties, and the warmest temperatures in Maricopa, Pinal, and the southeastern counties.

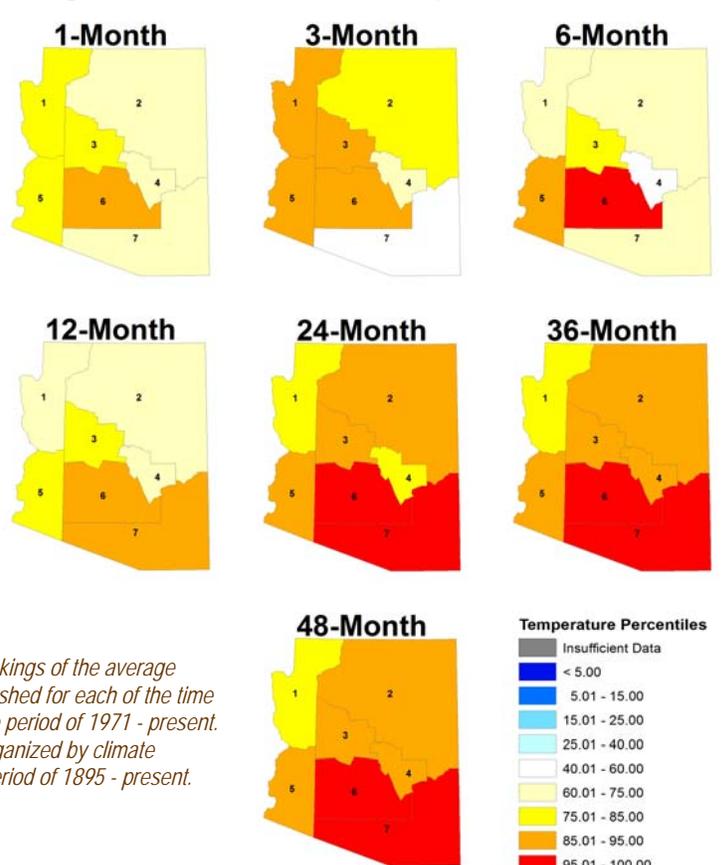
The 36-month period is the driest long term period statewide, with the driest watersheds in west central Arizona. All but two watersheds are below the 41<sup>st</sup> percentile, and seven watersheds are below the 23<sup>rd</sup> percentile. Temperatures for the three year period continue to be very warm, with six of the seven climate divisions above the 89<sup>th</sup> percentile, and two above the 98<sup>th</sup> percentile. The southeast climate division continues to have the warmest 3-year period in 112 years.

The 48-month period has two watersheds (lower Gila and upper Colorado) wetter than average, seven watersheds near average, and six watersheds drier than average. The driest watersheds are the Santa Cruz in southeastern Arizona, and the Bill Williams in west central Arizona, both below the 23<sup>rd</sup> percentile. The 48-month temperatures are still well above average in all climate divisions, with the southeastern division at the 100<sup>th</sup> percentile, the warmest 48-month period since 1895.

## Precipitation Percentiles by Watershed



## Temperature Percentiles by Climate Division



*Precipitation maps are rankings of the average precipitation in each watershed for each of the time periods indicated, over the period of 1971 - present. Temperature maps are organized by climate division and include the period of 1895 - present.*

# Weather Outlook



*Arizona Drought Monitor Report* -  
Produced by the Arizona State Drought  
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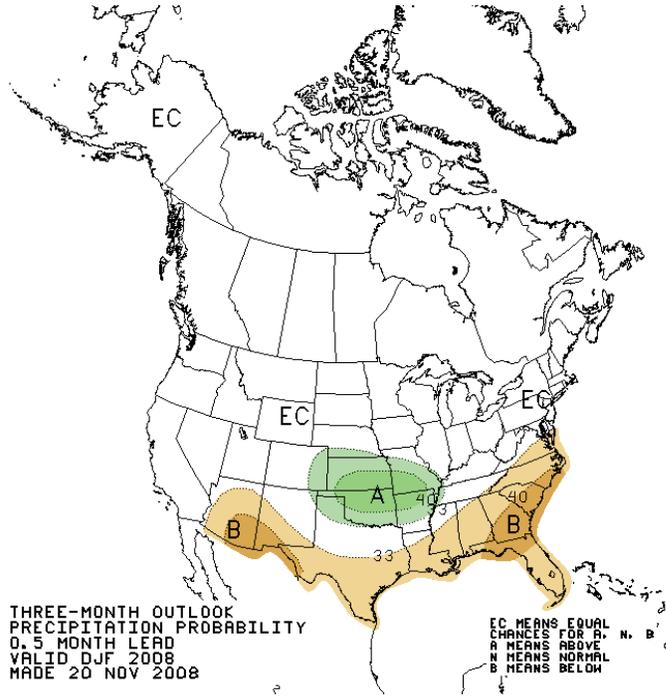
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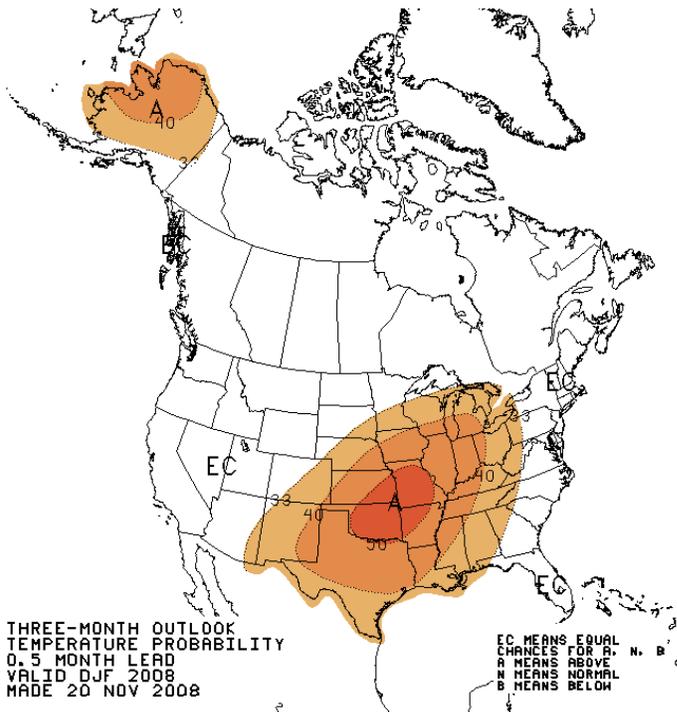
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Department of Water Resources



The CPC Precipitation Outlook for December through February 2009 indicates there is a modest level of confidence precipitation will be below-average across the southeast third of state, and some confidence precipitation will be below normal for the rest of the state during the 90-day period.



The CPC Temperature Outlook indicates there is an equal likelihood of above-average, average, or below-average temperatures across the state from December through February.