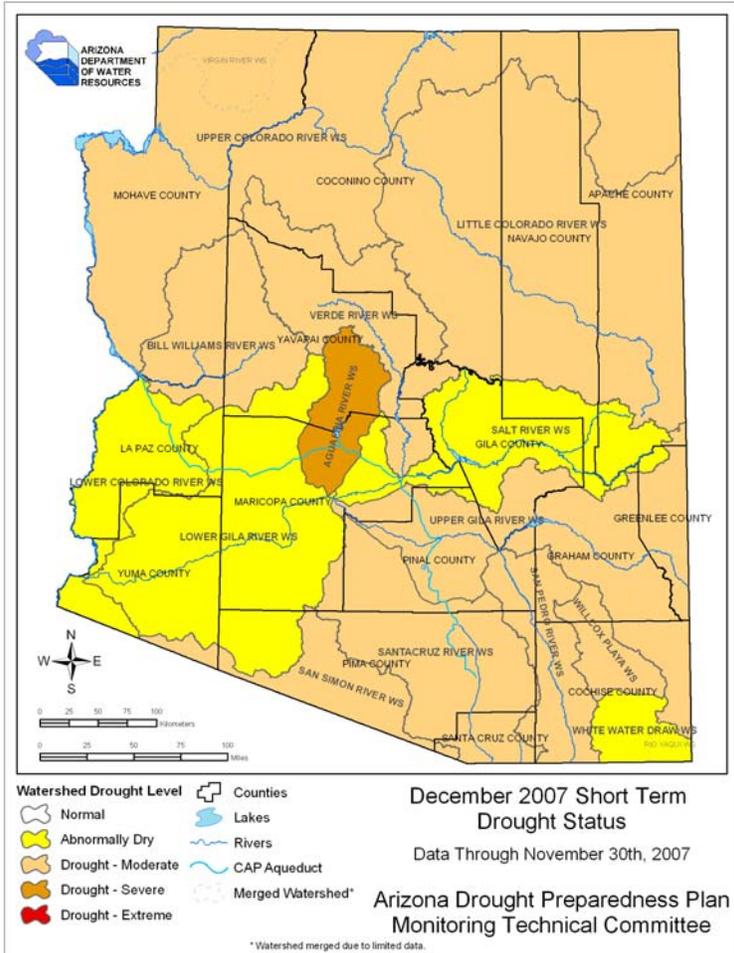
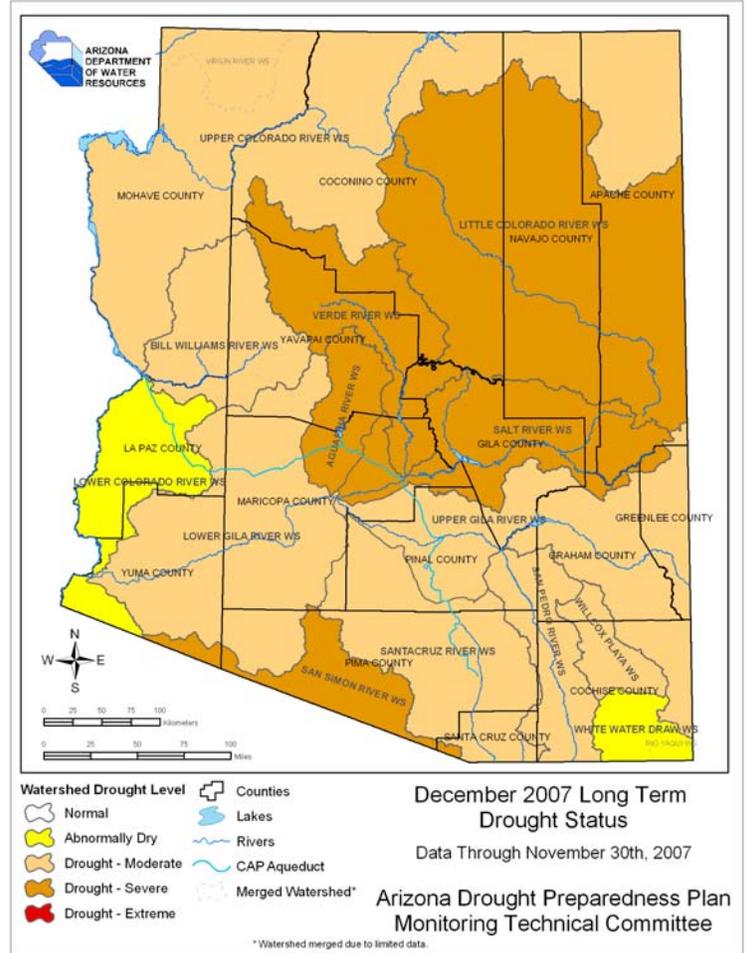


# Arizona Drought Monitor Report December 2007

## Short-term Drought Status



## Long-term Drought Status



### Short-term Update

The short-term drought status has improved in central and southwest Arizona on the Salt, lower Colorado, and San Simon watersheds. Short-term drought conditions have deteriorated in northern and southeastern Arizona on the Virgin, upper Colorado, upper Gila, and Willcox watersheds. Precipitation for the 3-month and 12-month periods through November were well below average everywhere except the southwest, while the 6-month precipitation, which includes the monsoon, was near or above average across most of the state.

### Long-term Update

The long-term drought status is unchanged. As the fall and early winter of 2003 drops out of the 48-month period and is replaced by the wetter fall and early winter of 2007, we anticipate some improvement when the long-term drought status is updated with December 2007 data. However, if the current moderate La Niña turns dry, as is forecast, and we have a drier than average winter, any improvement will not be sustainable.



# Reservoir Storage



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

# Vegetation Health



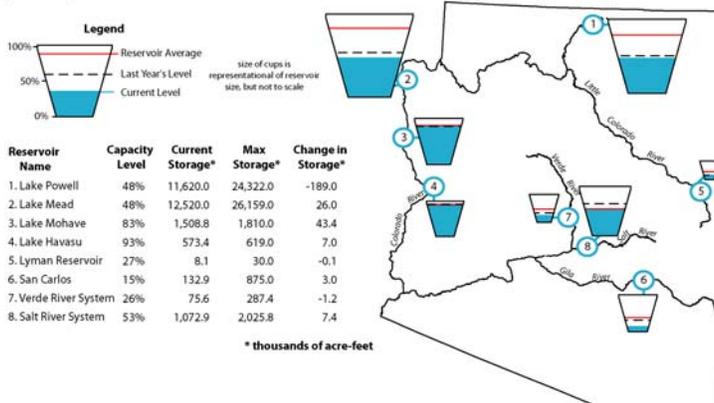
Jeff Sevoss

## Arizona Reservoir Status

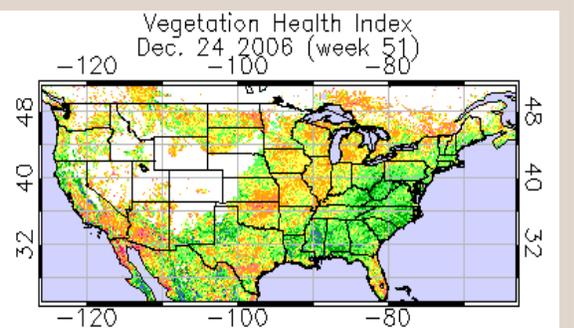
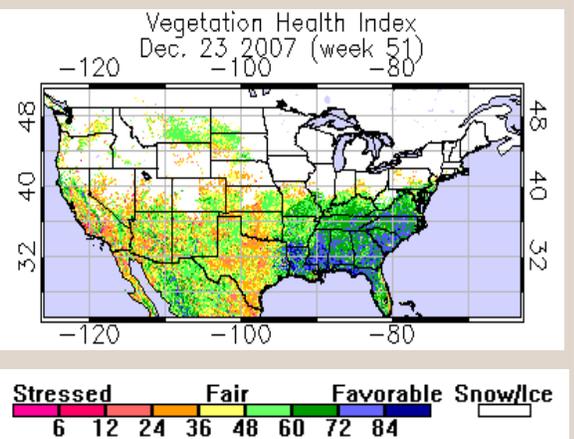
Storage increased in the majority of Arizona reservoirs during November. Despite small increases, storage in the Salt and Verde River reservoirs is below average, and well below capacity. (Note: daily reports from SRP indicate that storage in the Salt and Verde watershed reservoirs has increased substantially since the end of November). Storage in Lake Powell is expected to continue declining until the spring 2008 snowmelt runoff season. The November increases in the San Carlos and Salt River Basin reservoirs were probably due to precipitation from a major storm that visited the region, following a dry fall. Early December storms dumped copious precipitation and snow over much of the state.

On December 13, 2007, Interior Secretary Dirk Kempthorne signed an agreement for the Colorado River Basin states to share and conserve water during shortages on the river. The agreement specifies new rules for declaring shortages and for management of lakes Powell and Mead. Las Vegas will receive more Colorado River water in exchange for financing the construction of the Drop 2 Reservoir in California.

Arizona reservoir levels for November 2007 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 indices from the NOAA Center for Satellite Applications and Research continue to show widespread variability in vegetation health around the state. Conditions this year (top graphic) are roughly comparable to one year ago (lower graphic), with some improvement in surface conditions in Arizona's western deserts. Recent fall and early winter precipitation suggests that we can expect substantial improvements in vegetation health compared to the exceptionally dry winter and early spring in 2007.

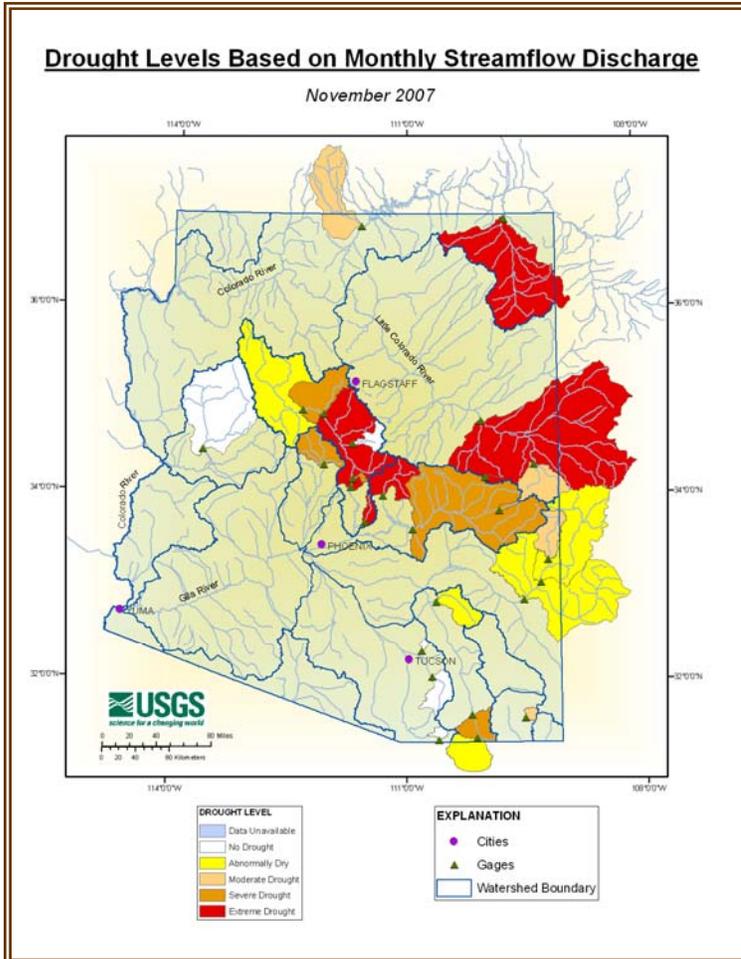


Images are obtained from the NOAA National Environmental Satellite, Data and Information Service (NESDIS).



Photos by the National Park Service

# Mountain Streamflow and Precipitation



## November Streamflow

Flows for key streams in Arizona were monitored by USGS at well below median levels for November (see table).

Water body	November Runoff in Acre Feet	% of Median
Salt River near Roosevelt	9,169	56%
Tonto Creek above Gun Ck. nr. Roosevelt	361	30%
Verde River at Horseshoe Dam	10,857	69%
Combined Inflow to Salt River Project (SRP) reservoir system	20,387	61%
Little Colorado River above Lyman Lake	141	47%
Gila River to San Carlos Reservoir	3,140	27%

*November Streamflow Observed at USGS Gauging Stations (NRCS from USGS data)*

## Mountain Precipitation

Data from snow telemetry (SNOTEL) sites and other mountain gauges show that total precipitation for November was 117 percent of average over the Salt River basin, 83 percent of average over the Verde River basin, and 125 percent of average over the San Francisco-Upper Gila River basin. The Little Colorado River basin received 94 percent of average precipitation in November.

Cumulative precipitation for the water year remains below average (see table at right).

Watershed	Percent (%) of 30-Yr. Average Water Year Precipitation October 1 – November 30
Salt River Basin	69%
Verde River Basin	49%
Little Colorado River Basin	55%
San Francisco-Upper Gila River Basin	66%
<b>Other Points of Interest</b>	
Central Mogollon Rim	61%

*2008 Water Year Precipitation (Source USDA-NRCS)*

# Temperature and Precipitation



November was dry in the northern half of the state and near or slightly above average for the southern half of the state. After 28 days of dry conditions, most of the state received two days of moderate, steady rainfall at the end of the month that prevented November from being one of the driest on record. Due to the consistent high pressure position over the western US, November was in the top 3% warmest since 1895, everywhere in the state.

The 3-month period of September through November was unusually dry everywhere in the state, but especially so across the northern half of the state on the Colorado Plateau. The southern half of the state benefited from the end of the monsoon in September, which brought a few storms to the southern watersheds. The clear skies and dry weather during the fall have pushed the temperatures above the 91<sup>st</sup> percentile everywhere in the state.

The 6-month period rainfall was near average for most of the state. The Virgin River in northwest Arizona, however, was very dry, below the 3<sup>rd</sup> percentile. Temperatures everywhere except the lower Colorado River were above the 95<sup>th</sup> percentile for the six month period.

The 12-month period continues to be extremely dry across the entire state. Four watersheds in the central part of the state, and one on the southern border, were below the 11<sup>th</sup> percentile. Statewide temperatures were above the 85<sup>th</sup> percentile during the previous 12

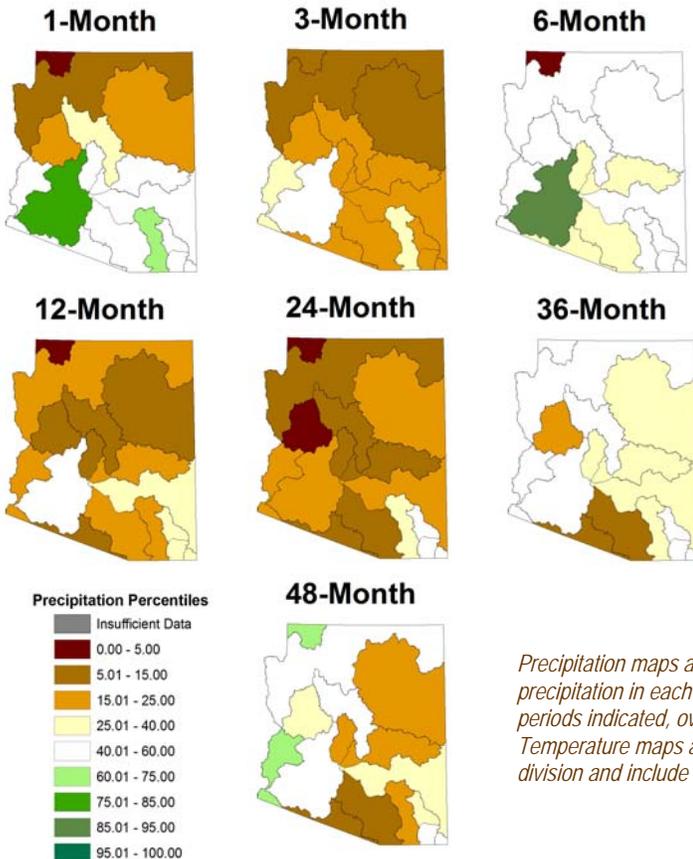
months, while the Colorado Plateau and southern Arizona were above the 96<sup>th</sup> percentile.

The 2-year period remains the driest interval, with 12 of 15 watersheds below the 20<sup>th</sup> percentile. Only the San Pedro, Willcox, and White Water Draw watersheds have had near normal precipitation over the two-year period. Most of the state has been above the 91<sup>st</sup> percentile for temperature.

The 3-year period is the closest to normal of all time periods. It combines two dry years (2004 and 2006) with one very wet year (2005). Eastern Arizona is below average at the 26<sup>th</sup> to 39<sup>th</sup> percentile, and southern Arizona is much below average at the 8<sup>th</sup> to 12<sup>th</sup> percentile. This shows that although a good wet year is helpful, it cannot erase the deficit. Temperatures over the three-year period are similar to the two-year period, with the northwest below the 79<sup>th</sup> percentile, and the others all above the 88<sup>th</sup> percentile.

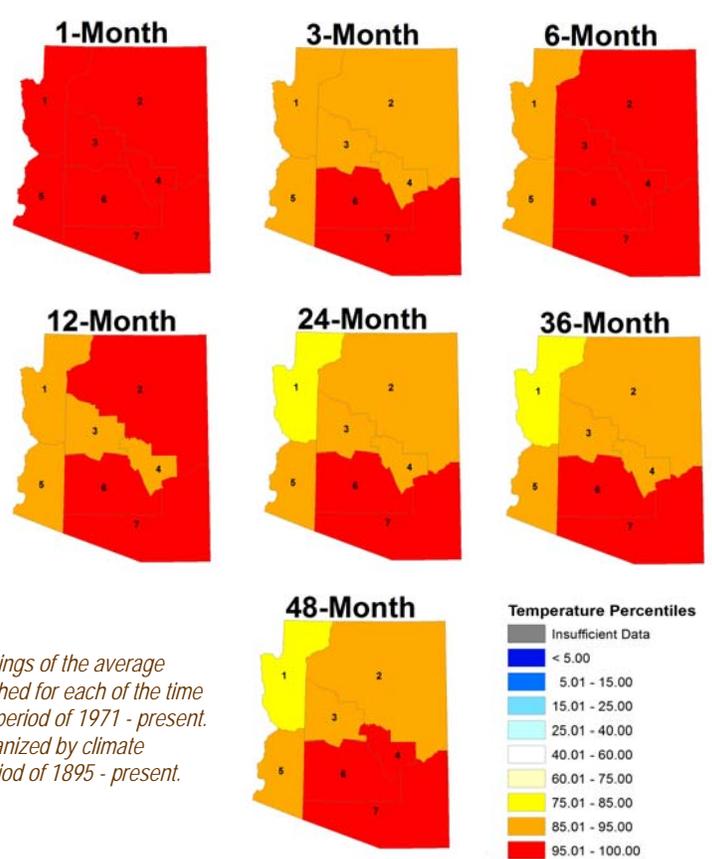
The 4-year period precipitation is also near average across the western part of the state, and well below-average in eastern and southern Arizona. Three climate divisions, all in the southern half of the state, were above the 96<sup>th</sup> percentile for temperature, and two were above the 99<sup>th</sup> percentile for the four-year period. The warm temperatures have added to the evaporative demand, enhancing the dry conditions.

## Precipitation Percentiles by Watershed



*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.*

## Temperature Percentiles by Climate Division



# Weather Outlook



*Arizona Drought Monitor Report* -  
Produced by the Arizona State Drought  
Monitoring Technical Committee

Co-chairs:  
Gregg Garfin, University of Arizona –  
Institute for the Study of Planet Earth  
Tony Haffer, National Weather Service

Mike Crimmins, Extension Specialist,  
University of Arizona Cooperative  
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Charlie Ester, Salt River Project

Larry Martinez, Natural Resources  
Conservation Service

Ron Ridgway, Arizona Division of Emer-  
gency Management

Nancy Selover, State Climatologist  
Arizona State University

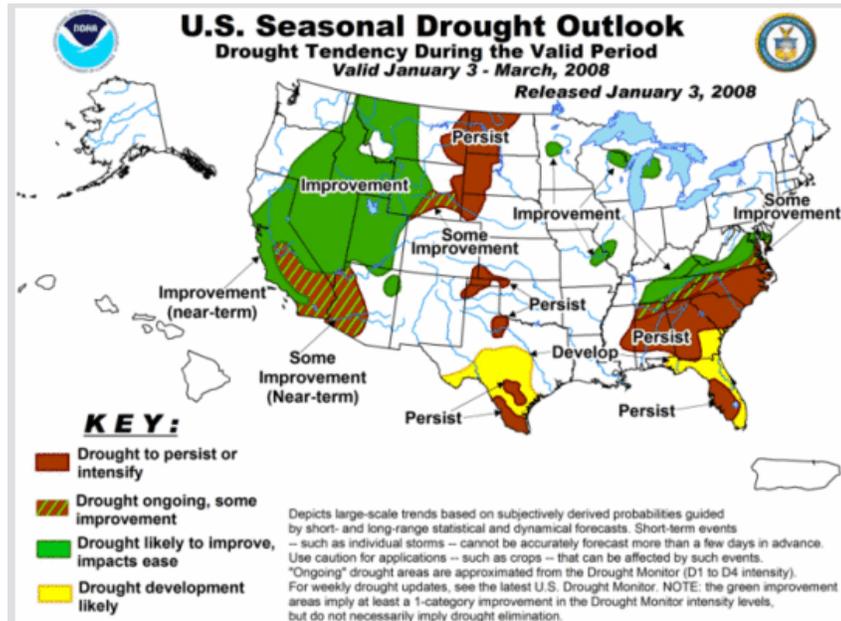
Chris Smith, U.S. Geological Survey

Coordinator: Susan Craig, Arizona  
Department of Water Resources  
Computer Support: Andy Fisher, Arizona  
Department of Water Resources



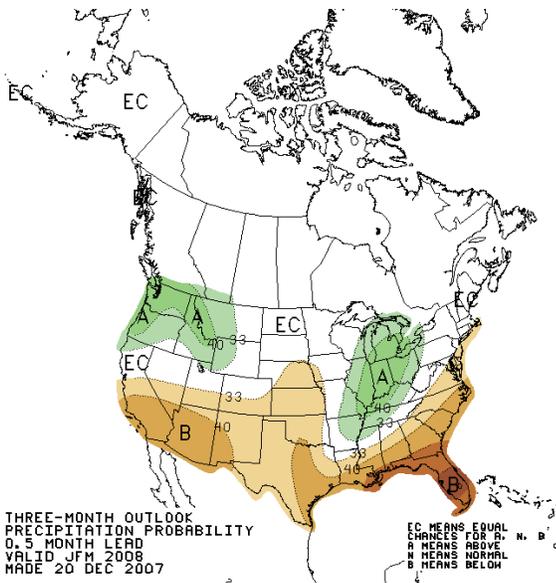
## Drought Outlook

The CPC Seasonal Drought Outlook indicates drought conditions across the western half of the state will experience some improvement by March 2008.



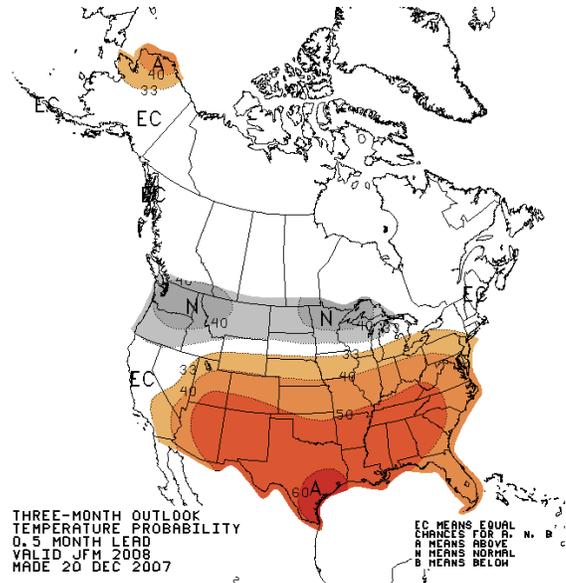
Also see the most current Southwest Climate Outlook - [www.ispe.arizona.edu/climas/forecasts/swoutlook.html](http://www.ispe.arizona.edu/climas/forecasts/swoutlook.html)  
For additional weather information from the Office of the State Climatologist for Arizona - <http://geography.asu.edu/azclimate>

## January to March Weather Outlooks



### Precipitation

Moderate level of confidence precipitation will be below average across the state during the 90-day period



### Temperature

Moderate to high level of confidence temperatures will be above average across the entire state