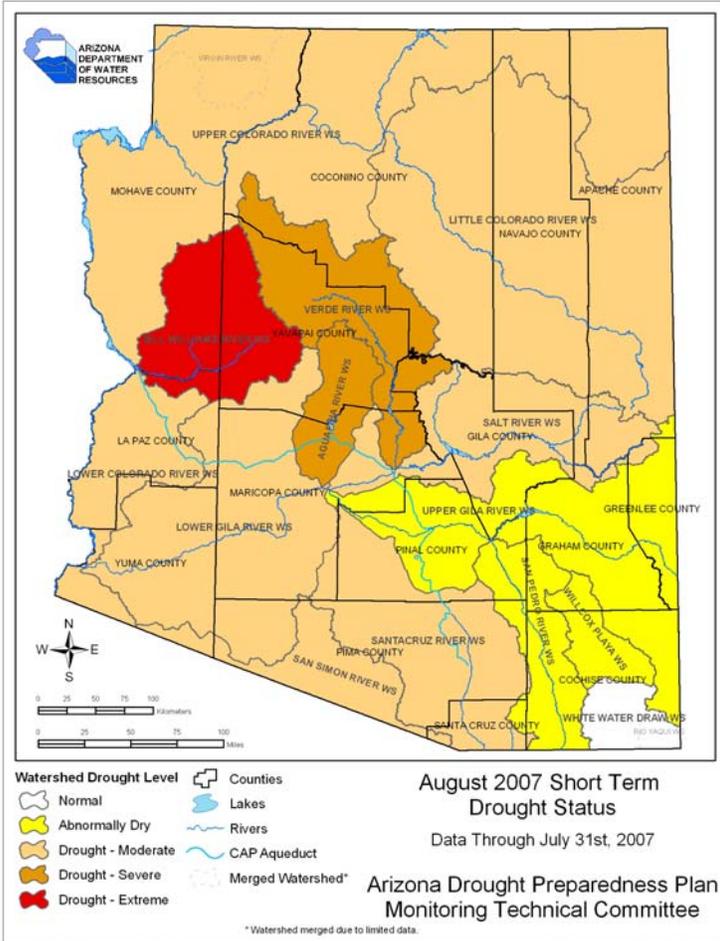
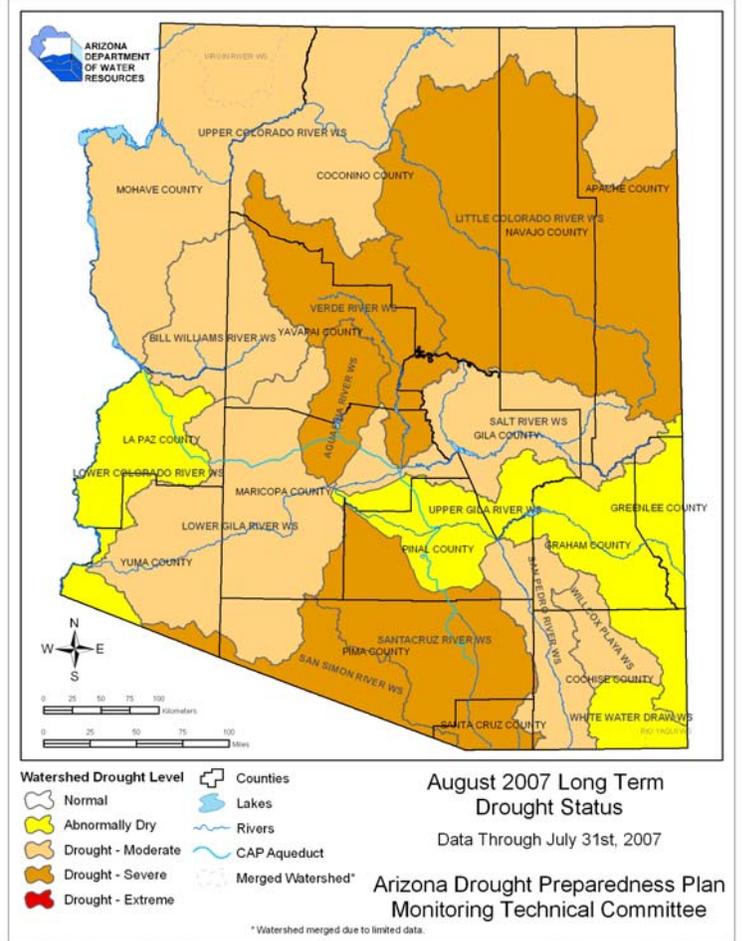


# Arizona Drought Monitor Report August 2007

## Short-term Drought Status



## Long-term Drought Status



### Short-term Update

The short-term drought status is unchanged for the state, although the Bill Williams, Agua Fria, Upper Gila, and Salt River watersheds have shown some improvement due to the shift from the early dry summer into the wetter monsoon period. This monsoon season has brought widespread thunderstorms throughout the state, producing locally heavy rainfall and both rural and urban flash flooding. However, unless wetter than average conditions persist for the next month, the improvements will be short lived.

### Long-term Update

The long-term drought status is unchanged from last month, although streamflow conditions have worsened somewhat in the past month in the Upper Gila and Salt watersheds. Multi-year precipitation has improved slightly in some basins, due to copious monsoon rainfall in 2006 and thus far in 2007. Drought impacts, including vegetation health and reservoir levels, have not significantly worsened or improved. If this continues, drought status should remain the same at least through the end of the monsoon season.



# Drought Reporter



## State Government Conservation

Governor Napolitano made drought preparedness and water conservation a top state priority beginning in 2004, creating a drought task force and developing a state drought and conservation plan. As part of this initiative, the Governor asked state government to lead by example. An Executive Order issued in 2004 directed state agencies to reduce their annual water use by 5%. Fourteen state agencies reported 640 million gallons of water saved in 2007, compared to 2004 consumption rates, representing a 16% reduction. These savings far exceeded the Governor's directive, a significant achievement considering sustained drought conditions throughout the state.

Metering water use, implementing rapid response repair methodology, educating employees on water conservation, using less water for irrigation, and installing waterless urinals are all examples of steps state agencies took to reduce their water consumption. Water savings should continue to increase through the implementation of water conservation programs to encourage best available water-efficient technologies. For example, agencies that provide food service can install and use more water-efficient equipment, such as air cooled ice machines, low water use spray valves and boilerless steamers.

This year, the Arizona Department of Water Resources will work with state agencies located in the capitol mall area to replace high water use spray valves used in cafeterias with lower water use, higher pressure valves to help them save thousands of gallons of water each day.



*A low water use, high pressure spray valve*

Through initiatives like this one, Arizona state government is working to create a culture of conservation for the state. Conserving water is the responsibility of all Arizonans. Water is scarce in arid areas like the southwest, and population growth continues to increase our demand for water. Everyone should become aware of their water use habits and determine where they can reasonably cut back. Wise water use has the added benefit of saving money.



*Low-water use landscaping can greatly reduce a homeowner's water use.*

## New Funding for Arizona's Drought Impacts Reporting System

The Natural Resources Conservation Service is providing funding to the Arizona Department of Water Resources to develop a web-based drought impacts reporting system in support of county-level drought monitoring efforts. ADWR will subcontract the work to the University of Arizona, which will contribute matching staff time and funding for this project. Local drought impact groups are critical to the development process and will provide input throughout the project.

When completed, this internet tool will allow drought impact reporters to customize their reporting to a specific location or individual expertise. They will also be able to generate reports showing the history of drought reports in a specific location or region. Overall, the new drought impacts reporting system will provide easier reporting and better data accessibility, allowing for improved data analysis by local drought impact groups, the State Drought Monitoring Technical Committee, and other users statewide.

## Yavapai County Impact Reports

Drought reporters note that the trees along the Verde River seem to be showing signs of stress, with many leaves turning yellow and falling. Once the rains started, some areas along the Verde started to green up, but reporters note some die-off among non-native trees such as ailanthus, even near the river. The rains have helped to disperse the wildlife since there are now more water sources, such as puddles in washes.

## Conservation Tips of the Month

- ◆ Plant low-water use and drought-tolerant grasses, ground covers, shrubs and trees.
- ◆ Group plants according to their water needs.
- ◆ Minimize turf/grass areas.

# Reservoir Storage



# Vegetation Health

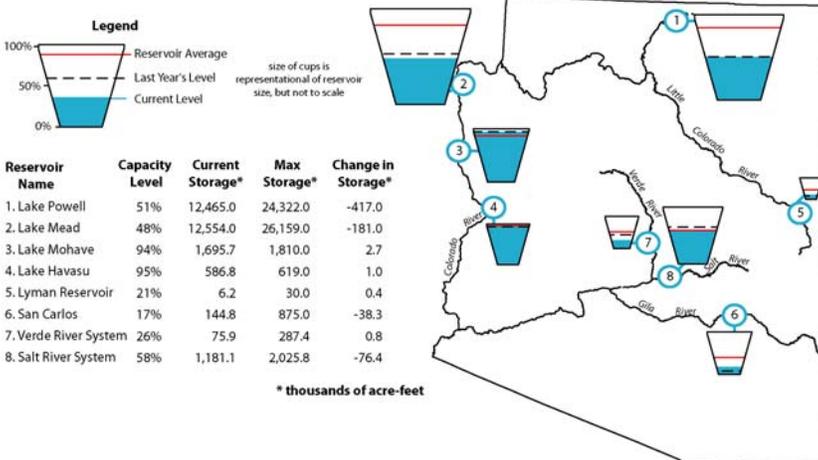


## Arizona Reservoir Status

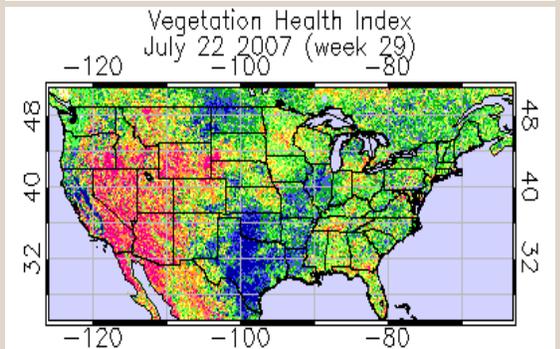
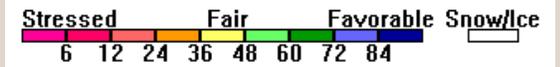
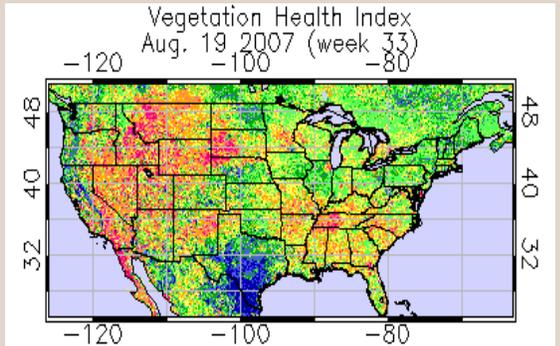
Storage in Arizona reservoirs continued to decrease, as is common during the summer and early fall months. As of August 1, 2007, the combined storage of the large Colorado River Basin reservoirs that provide water to Arizona is 52 percent of capacity (61 percent of average). Current storage is the lowest since spring 2005. Lake Powell storage is likely to decrease until March 2008, according to the U.S. Bureau of Reclamation.

Overall reservoir storage within Arizona's borders also continued to decline, with the exception of Lyman Reservoir, in which storage increased two percent during the last month. Storage in the Verde River reservoir system held approximately steady during the last month; however, Salt River reservoir system storage decreased by 4 percent to 1.18 million acre-feet, which is 99 percent of average storage. Storage in the Salt-Verde system is down 10 percent from one year ago, according to the latest report from the Salt River Project (accessed August 26, 2007).

Arizona reservoir levels for July 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.



The satellite-derived vegetation health index for August 19, 2007 (top) shows most of the state in fair-to-favorable conditions, in comparison to a 20-year average. Copious summer monsoon rainfall has revived vegetation throughout most of the state, in sharp contrast with one month ago (bottom). The Arizona Strip and parts of north-central Arizona still exhibit stressed conditions. Fire potential has diminished significantly, and is at normal levels for this time of year.

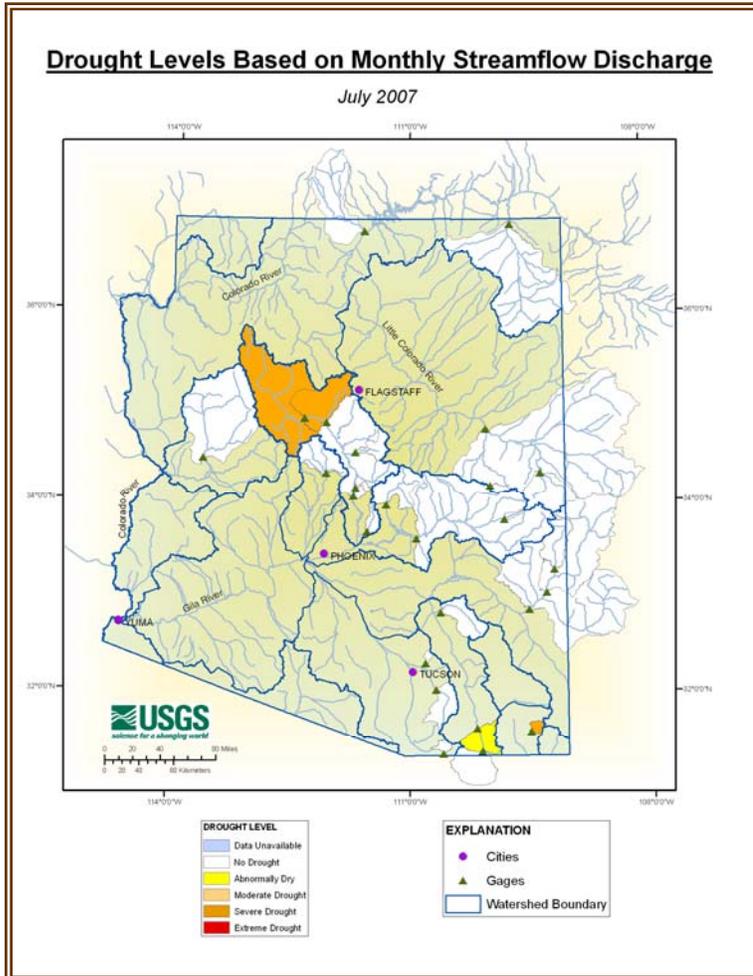


Images are obtained from the NOAA National Environmental Satellite, Data and Information Service (NESDIS).



Photos by the National Park Service

# Mountain Streamflow and Precipitation



## July Streamflow

The seasonal monsoon delivered considerable rainfall to the mountain watersheds in July. As a result, runoff volumes increased to near or to much above median levels on the Verde, Gila, and Little Colorado Rivers. Runoff for this period was below median on the Salt River and Tonto Creek.

Water body	July Runoff in Acre Feet	% of Median
Salt River near Roosevelt	12,580	84%
Tonto Creek	438	36%
Verde River at Horseshoe Dam	9,546	98%
Combined Inflow to Salt River Project (SRP) reservoir system	22,564	86%
Little Colorado River above Lyman Lake	530	132%
Gila River to San Carlos Reservoir	6,678	268%

## Mountain Precipitation

Data from high elevation snow telemetry (SNOTEL) sites show that total precipitation for July was 141 percent of average over the Salt River basin, 143 percent of average over the Verde River basin, and 117 percent of average over the San Francisco-Upper Gila River basin. The Little Colorado River basin received 169 percent of average precipitation in July.

Even though monsoon thunderstorms produced significant rainfall in July, cumulative precipitation for the water year (Oct. 1-July 31) remains below average in all basins, ranging from 57 percent to 82 percent of average (see table at right).

Watershed	Percent (%) of 30-Yr. Average Water Year Precipitation October 1 – July 31
Salt River Basin	75%
Verde River Basin	57%
Little Colorado River Basin	75%
San Francisco-Upper Gila River Basin	82%
<b>Other Points of Interest</b>	
Central Mogollon Rim	75%
Grand Canyon	82%

# Temperature and Precipitation



**July** was a wet month as is typical, except in the northwest corner of the state where rainfall was slightly below-average. The monsoon, so far, has been extremely wet across most of the state. Temperatures across the state were well above average, with only the lower Colorado River division below the 95<sup>th</sup> percentile.

**3-month period** – Precipitation was also well above average for most of the state. Only the Virgin River basin and the southeast watersheds were near or below their May-July averages. The wet conditions helped to decrease temperatures below the 95<sup>th</sup> percentile, where they had been through the drier months.

**6-month period** – This period spans the dry winter from February through the wet summer month of July, with most watersheds either slightly above or slightly below average precipitation. Temperatures were above the 85<sup>th</sup> percentile everywhere in the state.

**12-month period** – This includes the winter of 2006-07 and the end of the 2006 monsoon season. For all watersheds except White Water Draw and Willcox Playa in the southeast, the 12-month period was very dry. Three watersheds were below the 26<sup>th</sup> percentile. The twelve month period was relatively cooler than the other periods with no climate division above the 92<sup>nd</sup> percentile. However, with all climate divisions above the 79<sup>th</sup> percentile, it was still much warmer than the average.

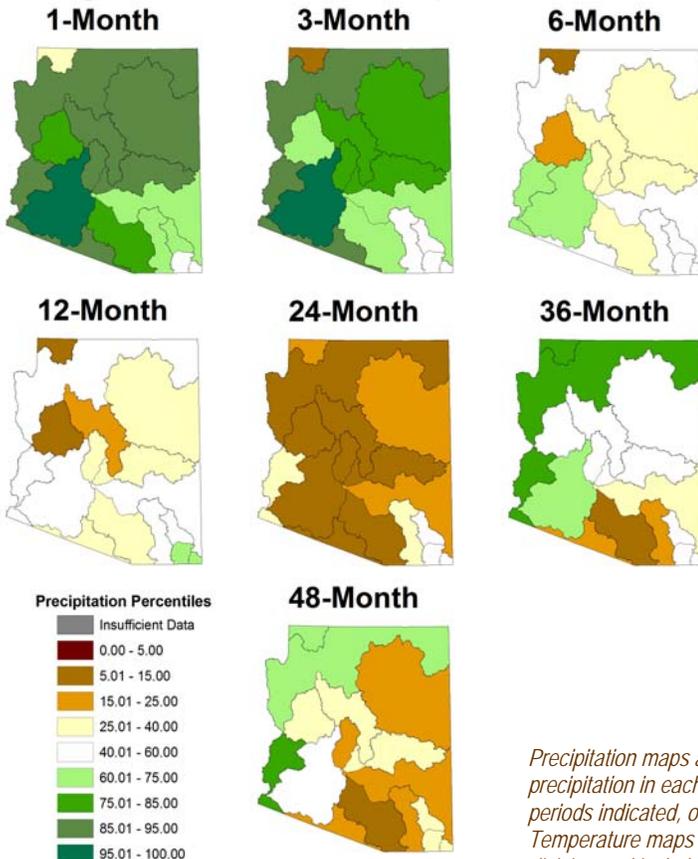
**2-year period** - Precipitation continues to be well below average for all watersheds except White Water Draw. Eleven watersheds are at or below the 20<sup>th</sup> percentile. This period includes two dry winters, one normal monsoon in 2006 and a dry monsoon in 2005. The entire state was very warm during the past 24 months, with a north-south temperature gradient.

**3-year period** - This period adds a wet winter to the two dry winters, and a second dry monsoon, resulting in a pattern of drier than average conditions in the southern half of the state, average precipitation in the central watersheds, and wetter than average conditions in the northern and western watersheds. The 36-month temperature pattern continues to show the southeast climate division as the hottest in 37 years and all but the northwestern climate division are above the 88<sup>th</sup> percentile.

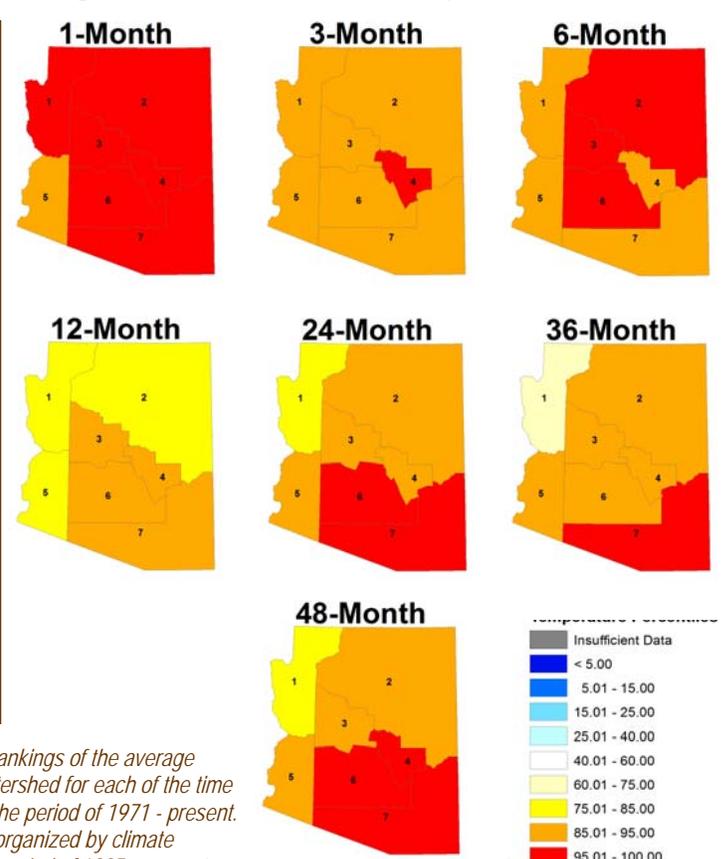
**4-year period** - The 48-month map continues to show much drier than average conditions everywhere except the northernmost and westernmost watersheds. Six of the eastern and central watersheds are below the 25<sup>th</sup> percentile. Temperatures in the southern climate divisions are above the 95<sup>th</sup> percentile, and the northern and western climate divisions are above the 77<sup>th</sup> percentile.

For more information, visit <http://www.public.asu.edu/~aunj/Update.html>.

## 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  
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  
Extension

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

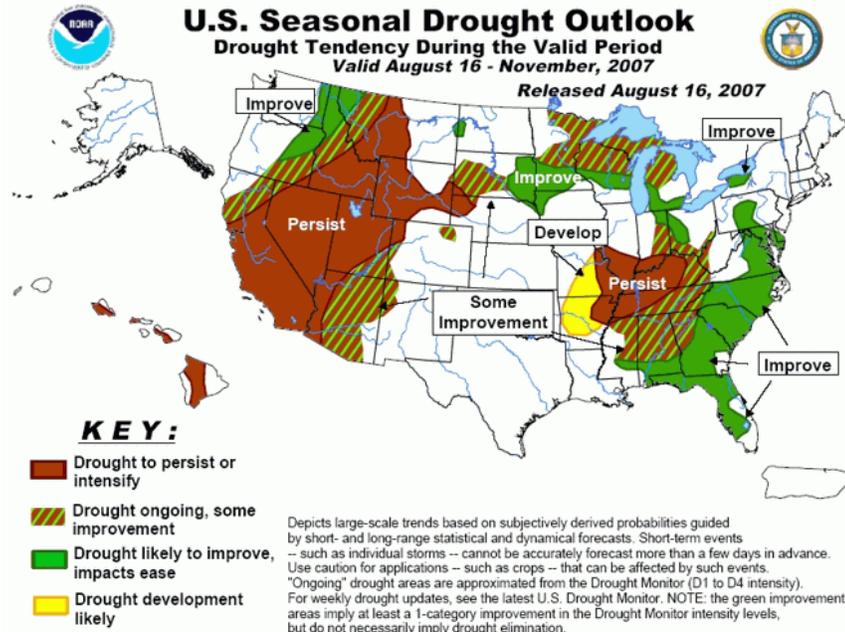
Chris Smith, U.S. Geological Survey

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



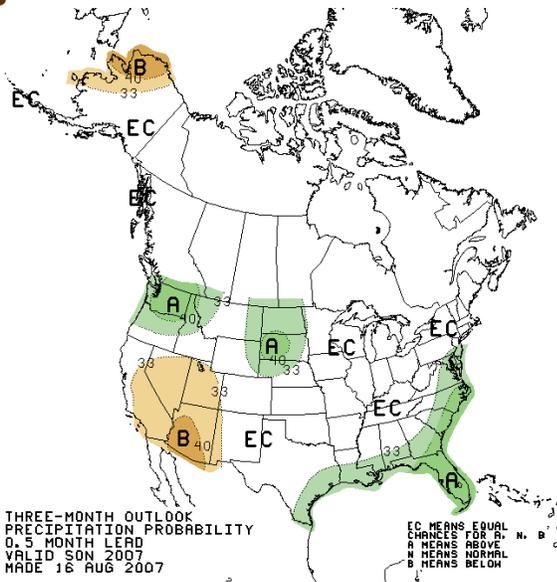
## Drought Outlook

The CPC Seasonal Drought Outlook indicates portions of the state may see some improvement in drought conditions resulting from rainfall in localized thunderstorms.



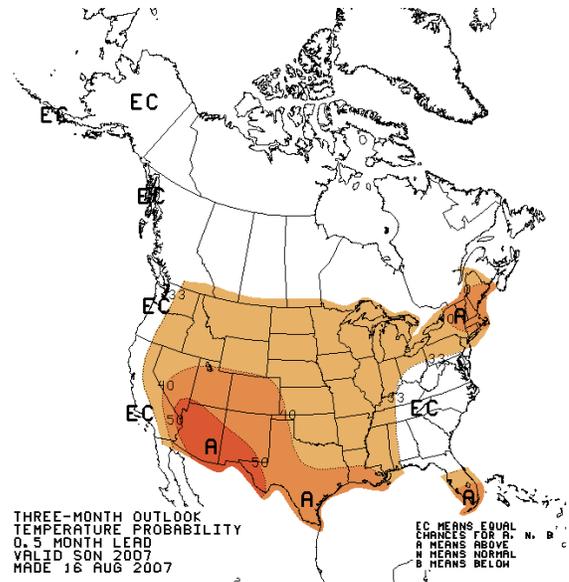
Also see the most current Southwest Climate Outlook - [www.ispe.arizona.edu/climas/forecasts/swoutlook.html](http://www.ispe.arizona.edu/climas/forecasts/swoutlook.html)  
For additional weather information from the Office of the State Climatologist for Arizona - <http://geography.asu.edu/azclimate>

## August to October Weather Outlooks



### Precipitation

Some confidence precipitation will be below normal across the state during the 90-day period



### Temperature

High level of confidence temperatures will be above average across the entire state