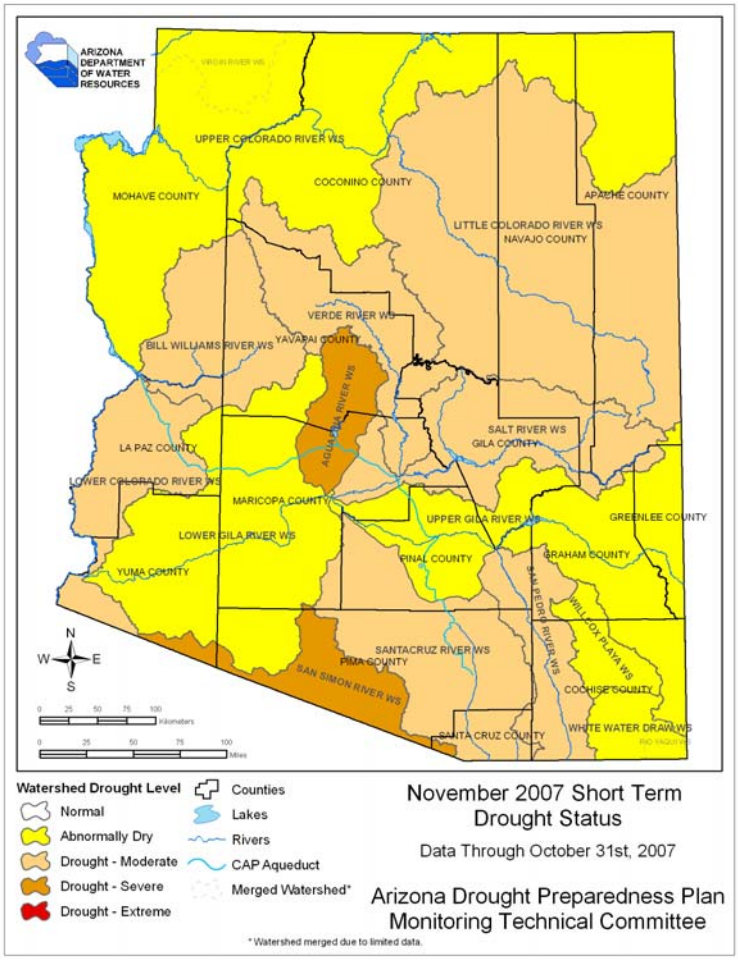
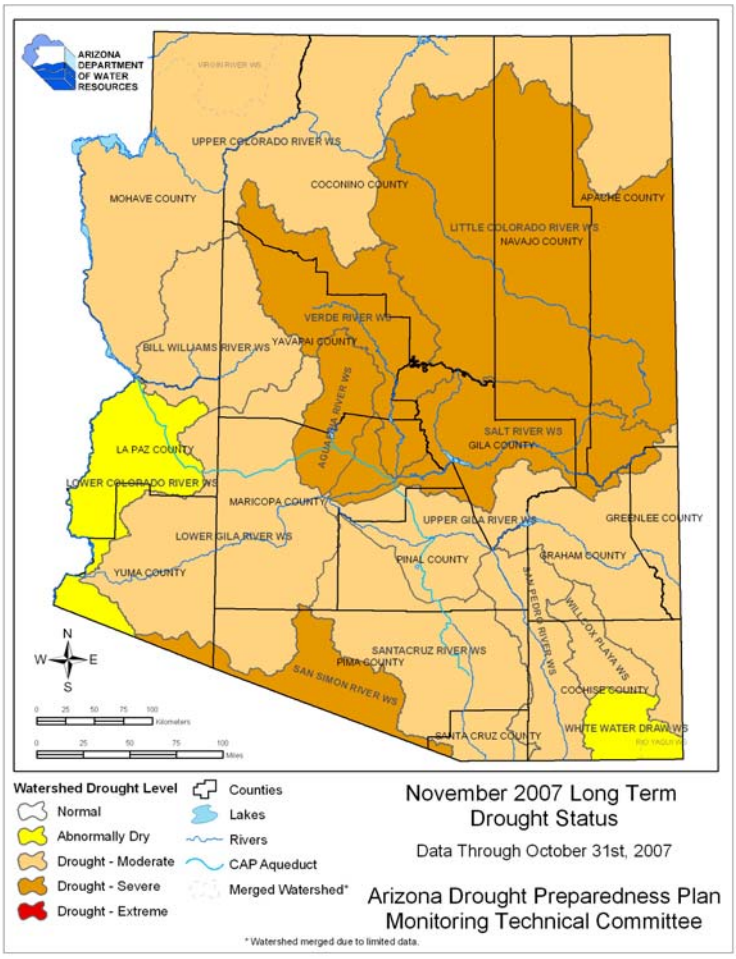
Arizona Drought Monitor Report

November 2007

Short-term Drought Status



Long-term Drought Status

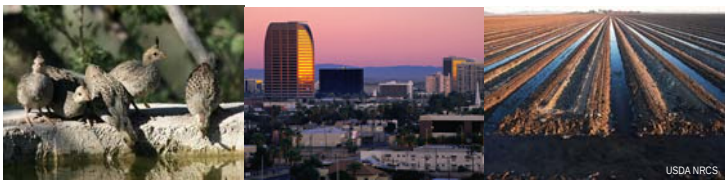


Short-term Update

The short-term drought status has deteriorated in October due to very dry conditions across the state. The October precipitation was well below average in all watersheds, and the 3-month precipitation was below average for all watersheds except the upper Colorado and the Willcox Playa and White Water Draw in the southeast. Only the lower Gila had above-average precipitation for the 6-month period that includes the monsoon. The recent rainfall at the end of November and early December should improve the short-term situation.

Long-term Update

The long-term drought status is unchanged. This year is still predicted to have below-average precipitation in the southwest and above-average temperatures, so even though we have had some recent rainfall in late November and early December, the long-term situation remains moderate to severe across most of the state.



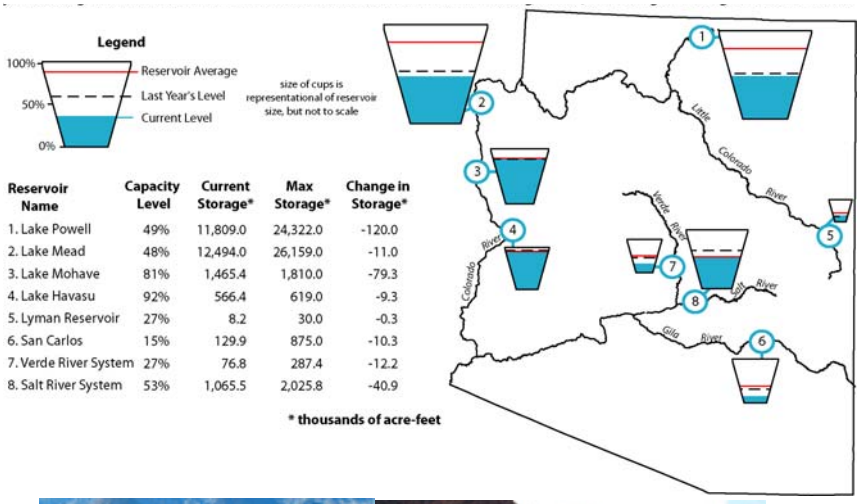
Reservoir Storage

Arizona Reservoir Status

Storage declined in all Arizona reservoirs during the last month (see figure below). Storage in lakes Powell and Mead is expected to continue declining through the spring 2008 snowmelt runoff season. Storage in the Salt and Verde River reservoirs declined by more than 50,000 acre-feet during the last month.

In water-related news, the Bureau of Reclamation released a final environmental impact statement on November 2 associated with shortage sharing agreements between the seven Colorado River Basin states: Arizona, New Mexico, California, Nevada, Utah, Colorado, and Wyoming. The proposed changes allow states to manage shortages with more flexibility than in the past, taking into account the needs of rapidly growing areas, such as southern Nevada. The full document is at http://www.usbr.gov/lc/region/programs/strategies/FEIS/index.html.

Arizona reservoir levels for October 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.



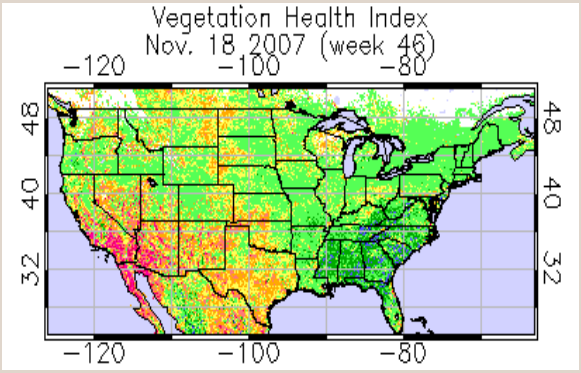
Reservoir Name	Capacity Level	Current Storage*	Max Storage*	Change in Storage*
1. Lake Powell	49%	11,809.0	24,322.0	-120.0
2. Lake Mead	48%	12,494.0	26,159.0	-11.0
3. Lake Mohave	81%	1,465.4	1,810.0	-79.3
4. Lake Havasu	92%	566.4	619.0	-9.3
5. Lyman Reservoir	27%	8.2	30.0	-0.3
6. San Carlos	15%	129.9	875.0	-10.3
7. Verde River System	27%	76.8	287.4	-12.2
8. Salt River System	53%	1,065.5	2,025.8	-40.9

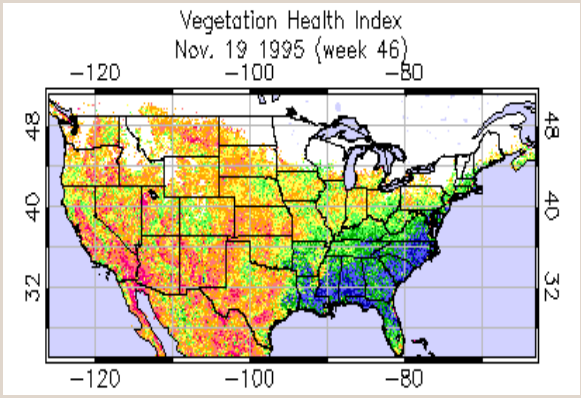
* thousands of acre-feet

Photos by the National Park Service

Vegetation Health

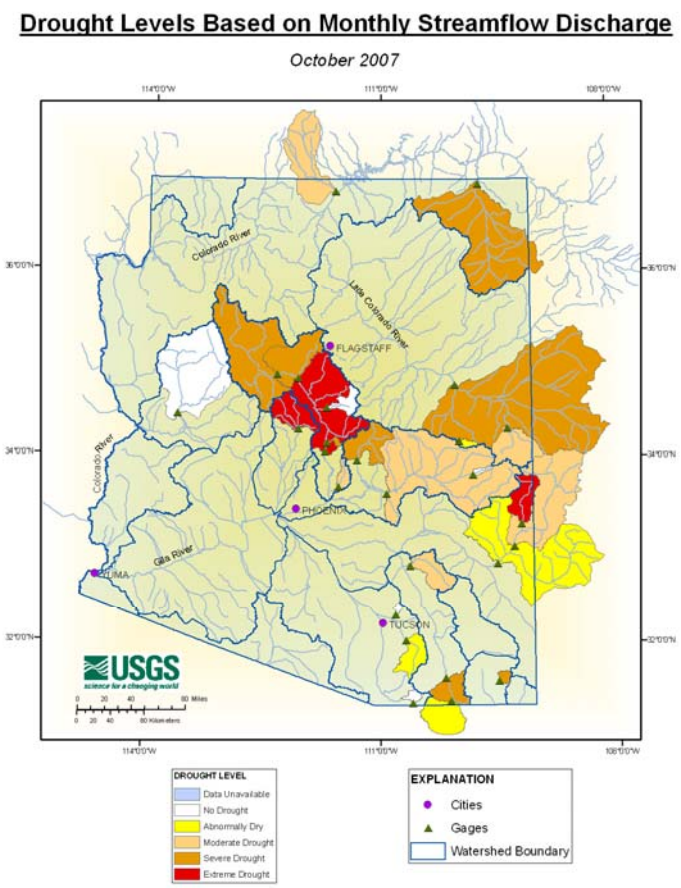
The satellite-derived vegetation health index (VHI) for November 18, 2007 (top) shows much of the state in fair-to-stressed condition, in comparison to a 20-year average. Southwestern Arizona and areas in the rain-shadow of the Mogollon Rim exhibit the greatest vegetation stress. Southern California and Northern Baja California, which have suffered fierce fires this fall, as well as northwestern Sonora are also exhibiting high vegetation stress. Current Arizona drought severity, as measured by the VHI, is similar to autumn 1995 (bottom), which was also during a developing La Niña episode.





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

Mountain Streamflow and Precipitation



October Streamflow

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

Water body	October Runoff in Acre Feet	% of Median
Salt River near Roosevelt	10,760	77%
Tonto Creek above Gun Ck. nr. Roosevelt	271	29%
Verde River at Horseshoe Dam	9,110	67%
Combined Inflow to Salt River Project (SRP) reservoir system	20,141	72%
Little Colorado River above Lyman Lake	182	61%
Gila River to San Carlos Reservoir	2,830	44%

October 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 October was 20 percent of average over the Salt River basin, 11 percent of average over the Verde River basin, and 19 percent of average over the San Francisco-Upper Gila River basin. The Little Colorado River basin received 14 percent of average precipitation in October.

Cumulative precipitation for the water year is off to a poor start with all basins reporting well below average precipitation (table at right).

Watershed	Percent (%) of 30-Yr. Average Water Year Precipitation October 1 – October 31
Salt River Basin	20%
Verde River Basin	11%
Little Colorado River Basin	14%
San Francisco-Upper Gila River Basin	19%
Other Points of Interest	
Central Mogollon Rim	6%

2007 Water Year Precipitation (Source USDA-NRCS)

Temperature and Precipitation


October was extremely dry, with nearly all watersheds below the 22nd percentile. The lack of fall rainfall will impact the spring run-off, as dry soil tends to absorb the snowmelt, reducing the flow into the reservoirs. For temperature, the warmest counties were those in the southeast, falling between the 76th and 85th percentile.

The 3-month period of August through October was below average throughout most of the state, because the tail end of the monsoon was fairly dry, and the fall has been dry as well. The clear skies and dry weather have pushed the temperatures above the 81st percentile everywhere in the state.

The 6-month period rainfall was near average for much of the state, and below average in the south central watersheds. Temperatures in the northern and western part of the state were around the 93rd percentile, and in the southeastern part of the state the temperatures were between the 95th and 98th percentile.

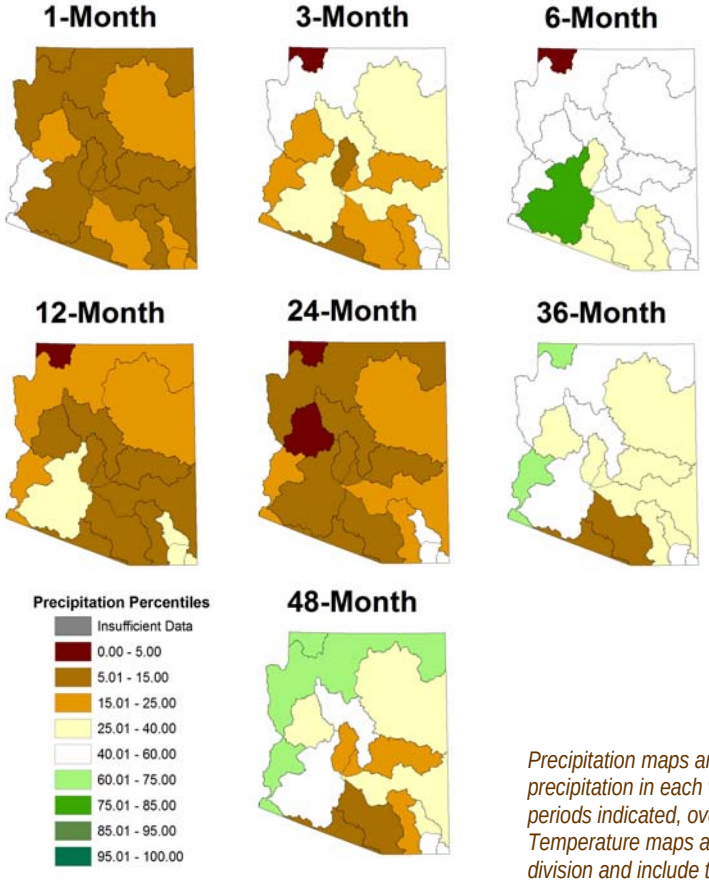
The 12-month period has been extremely dry in most of the state. Three watersheds in the southern part of the state were between the 8th and 14th percentile, and the other 12 watersheds were all below the 23rd percentile, putting this year on the dry side of the drought tally. The entire state continued to experience temperatures above the 85th percentile during the last 12 months. Many locations tied or broke daily records for both maximum and minimum temperatures.

The two year period continues to show the driest conditions of all periods. The Virgin, Bill Williams, Agua Fria, Salt, Santa Cruz, and San Simon watersheds are all below the 9th percentile for the 24-month period. Exceptions are WIllcox Playa and White Water Draw in the southeast, which have benefited from two moderately wet monsoons, bringing them above the 42nd percentile. Temperatures continue to be above the 81st percentile, with the southern and southeastern counties experiencing the hottest conditions.

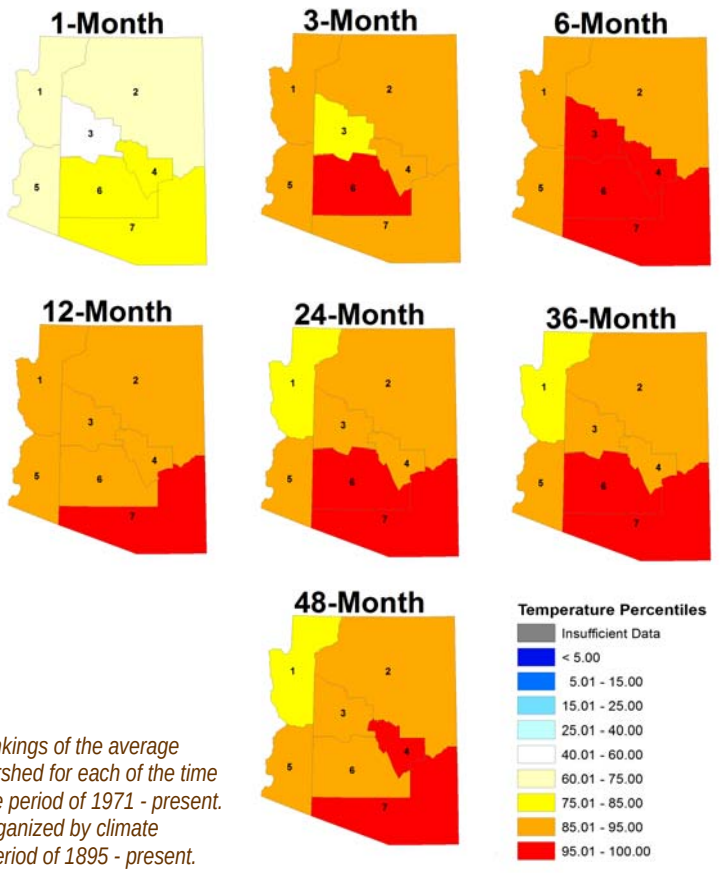
The 36-month precipitation period continues to show the results of the wet winter of 2004-05. However, the two more recent dry years are gradually bringing the 36-month percentiles down. Temperatures over the 3-year period range from the 77th percentile to the 100th percentile in the southeast. This pattern has not changed in nearly a year, showing that even the monsoon, which generally lowers temperatures for two months due to cloudiness and cooling, does not have much impact on a 36-month record.

The 48-month period precipitation is above average across the northern part of the state, but well below average in south central Arizona. The warm conditions continue with two of the southern climate divisions above the 96th percentile for temperature, and the southeast climate division at the 100th percentile again.

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:
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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 Emergency Management

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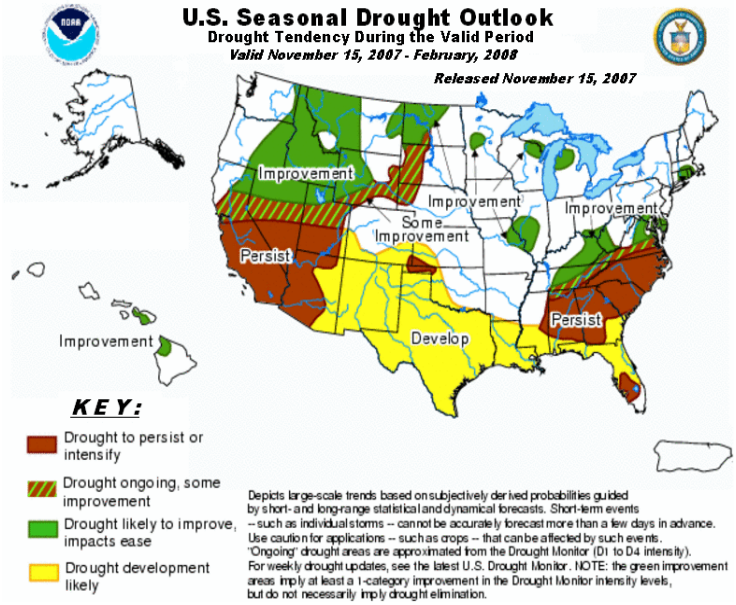
Computer Support: Andy Fisher, Arizona Department of Water Resources

ARIZONA DEPARTMENT OF WATER RESOURCES

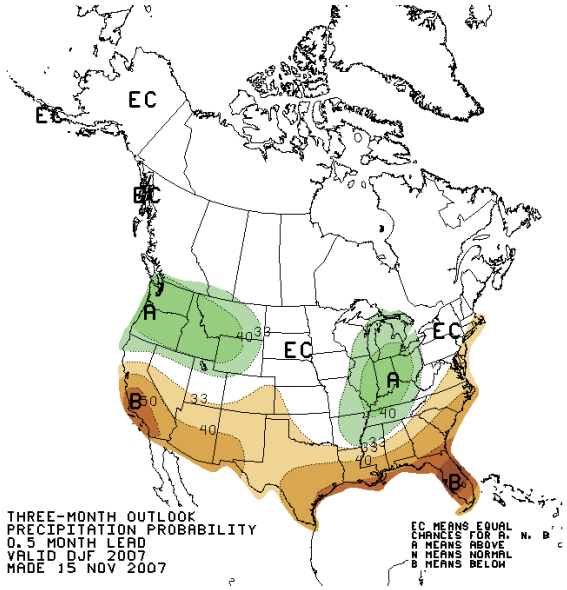
Drought Outlook

The CPC Seasonal Drought Outlook indicates drought conditions across the western two thirds of the state will persist through at least February 2008, and drought conditions are likely to develop in the eastern third of the state.



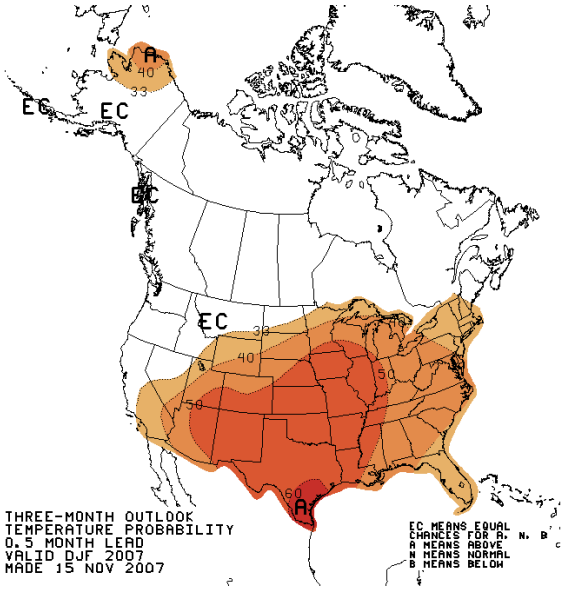
Also see the most current Southwest Climate Outlook - www.ispe.arizona.edu/climas/forecasts/swoutlook.html
For additional weather information from the Office of the State Climatologist for Arizona - http://geography.asu.edu/azclimate

December to February 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