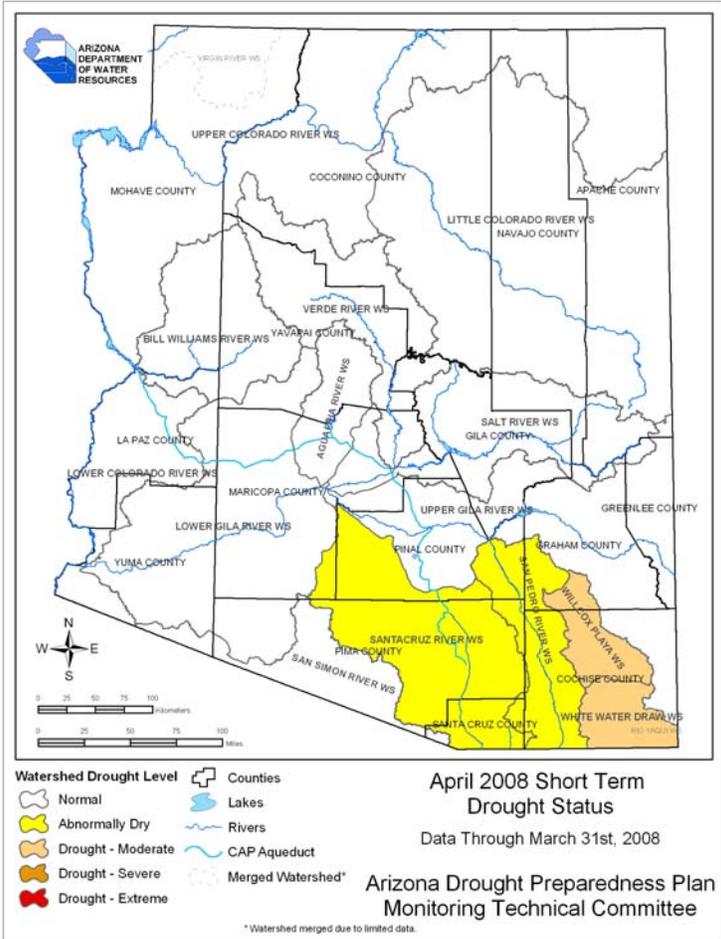


# Arizona Drought Monitor Report

## April 2008

### Short-term Drought Status

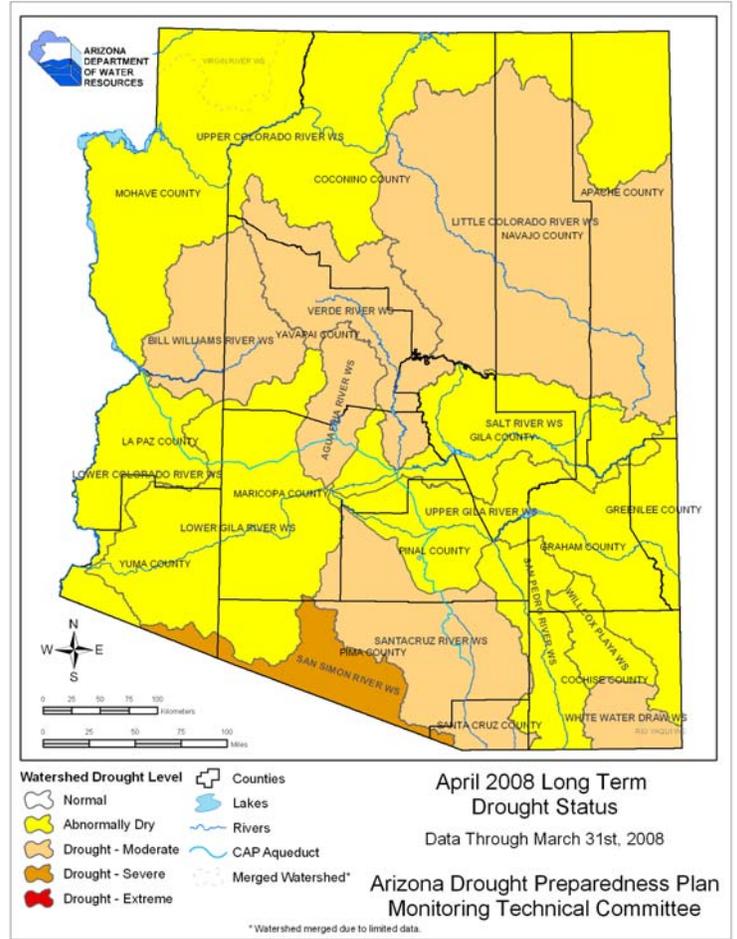


#### Short-term Update

The short-term drought situation is unchanged for most of Arizona from last month, with 11 of 15 watersheds showing no drought due to the very wet early winter, November through February. Last month, four watersheds in southeastern Arizona were abnormally dry, and this month two of them, Willcox Playa and Whitewater Draw, have been downgraded to moderate drought. Many locations in southeastern Arizona observed less than 50% of average precipitation over the past three months. The short-term map reflects precipitation in the previous 3-, 6-, and 12-month periods, which impacts range conditions, including reduced grassland productivity. Short-term drought conditions can change if precipitation in the previous 12 months is significantly wetter or drier than the 30+ year averages.



### Long-term Drought Status

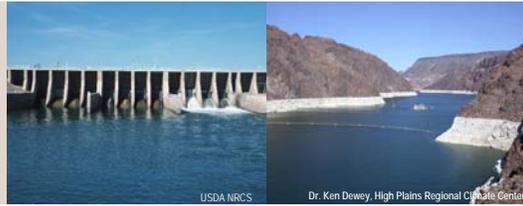


#### Long-term Update

Long-term drought conditions have also shown some improvement due to the wet winter across most of the state. In north central Arizona, the Verde, Agua Fria, and Little Colorado have all improved from severe to moderate drought, while the Salt, upper Gila, and San Pedro watersheds have improved from moderate drought to abnormally dry. Only Whitewater Draw in southeastern Arizona has degraded from abnormally dry to moderate drought. The long-term map reflects the previous 2-, 3-, and 4-year periods of precipitation and streamflow, which affects forest health and groundwater supplies. Although a single very wet year can improve the situation, it cannot completely offset multiple dry years, which is why the long-term situation continues to show some level of drought in all areas of the state. The next update to the long-term will be in July and will reflect the April-June precipitation and streamflow data.



# Reservoir Storage



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

# Vegetation Health



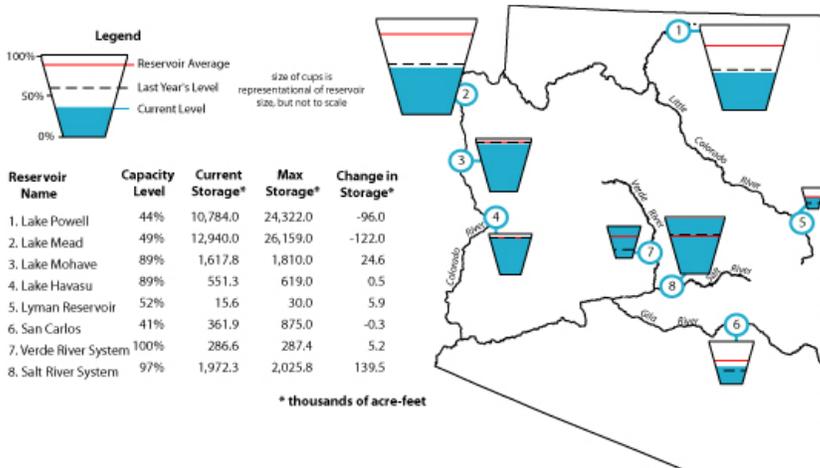
Jeff Severson

## Arizona Reservoir Status

Storage continued to increase in reservoirs within Arizona's borders. Storage in the Salt River reservoirs increased by more than 139,000 acre-feet during the last month (a 7.6% increase); current levels are more than 30% above average. Storage in Lake Mead and Lake Powell decreased during March; combined storage in these large reservoirs is still less than 50% of capacity. Lake Powell elevation is now at its seasonal low and is expected to increase during the spring snowmelt runoff season.

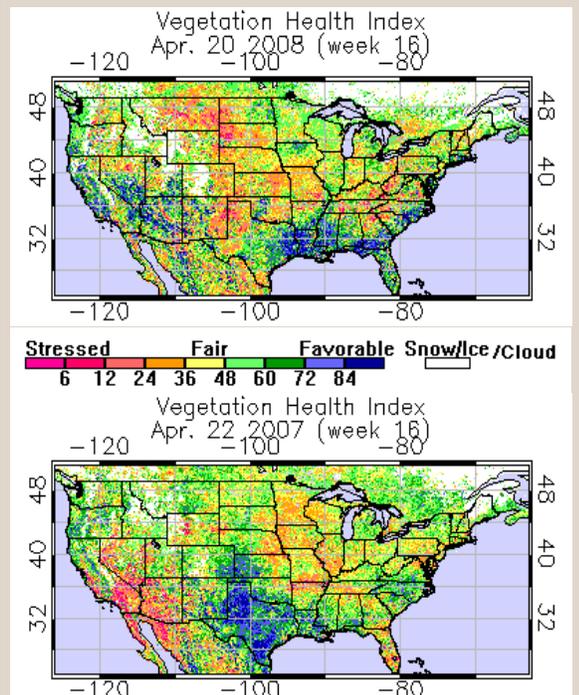
Following the flooding failure of a century-old irrigation canal in northern Nevada, federal water managers will examine other aging earthen embankments that carry water to farmers (Associated Press, April 7, 2008). The Bureau of Reclamation will focus initially on canals in urbanized areas, including a small section of the Salt River Project canal. Officials estimate that most of the earthen canals in Arizona are in good condition.

Arizona reservoir levels for March 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.



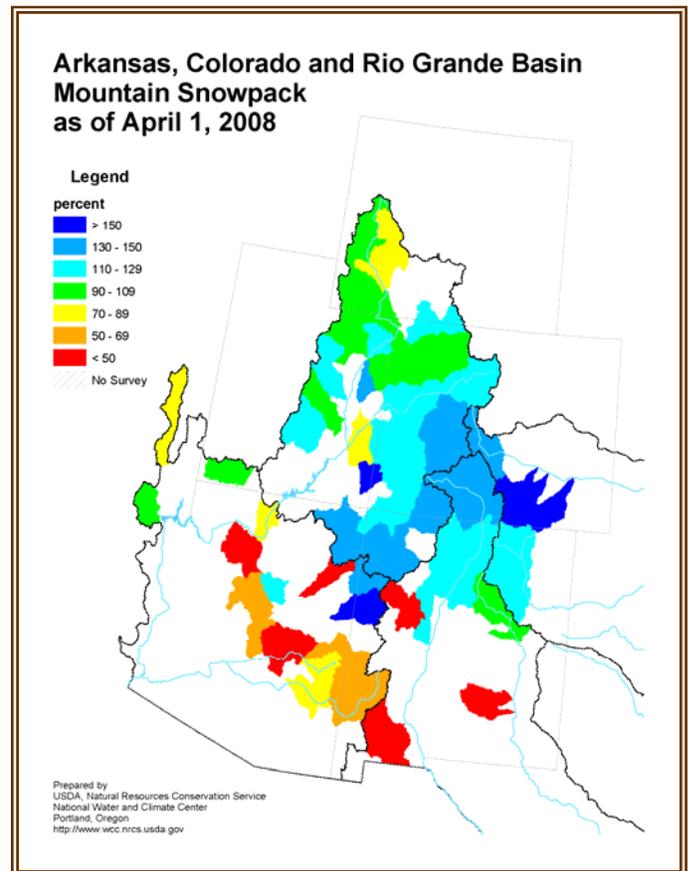
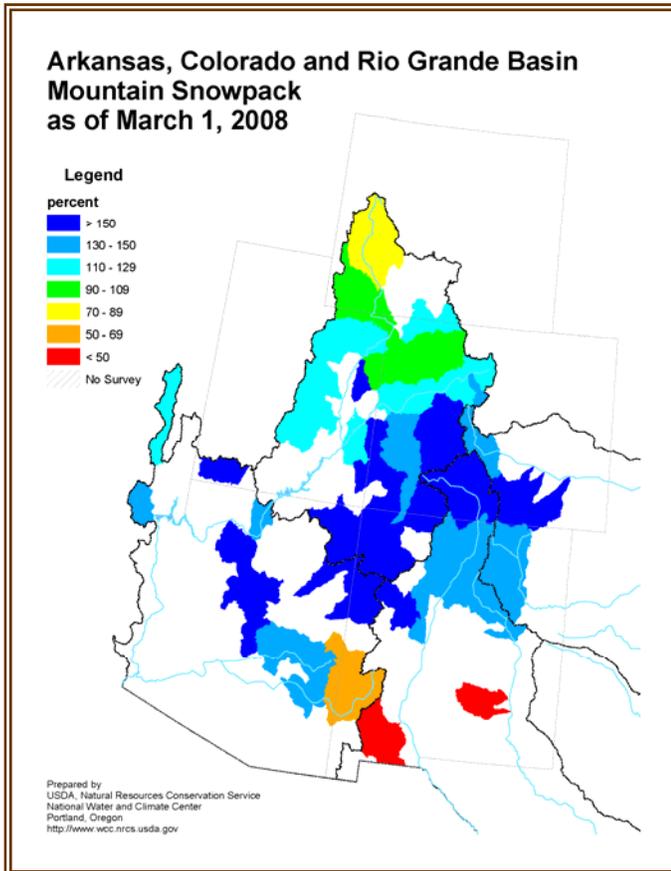
Photos by the National Park Service

Recent vegetation health index data from the NOAA Center for Satellite Applications and Research (top figure) continue to show improvement in contrast to one year ago (bottom figure), with a notable exception in southeastern Arizona. (White areas indicate substantial cloud cover.) The Southwest Coordination Center's April fire potential outlook suggests above normal significant fire potential across southeastern Arizona into southern and eastern New Mexico. Above normal significant fire potential is expected to expand westward into most of central and western Arizona during the next three months. They note abundant grass and fine fuel growth from the Mogollon Rim northwest to the Arizona-Nevada border; they estimate 50% of the fine fuel growth seen after the exceedingly wet winter of 2004-05. They advise fire managers to continue to be on alert for more sustained drying and more frequent and significant wind events during the spring.



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

# Mountain Precipitation



Monitoring stations showed very little precipitation during March, ranging from 7 to 11 percent of average. As of April 1, basin snowpack levels ranged from 47 percent to 68 percent of average, while statewide snowpack stood at 87 percent of average. The snowpack is rapidly melting and is virtually gone below 7,500 feet elevation.

## Mountain Snowpack

Watershed	Snowpack Levels (% of 30-Year Average)	
	Mar. 1	Apr. 1
Salt River Basin	144%	68%
Verde River Basin	172%	47%
Little Colorado River Basin	144%	47%
San Francisco-Upper Gila River Basin	115%	66%
<b>Other Points of Interest</b>		
Chuska Mountains	153%	135%
Central Mogollon Rim	145%	46%
Grand Canyon	138%	86%
San Francisco Peaks	188%	147%
Arizona Statewide	154%	87%

## Water Year Precipitation

Watershed	Precipitation Oct 1-Mar 31 (% of 30-Year Average)
Salt River Basin	126%
Verde River Basin	124%
Little Colorado River Basin	133%
San Francisco-Upper Gila River Basin	101%
<b>Other Points of Interest</b>	
Chuska Mountains	--
Central Mogollon Rim	--
Grand Canyon	94%
San Francisco Peaks	--
Arizona Statewide	--

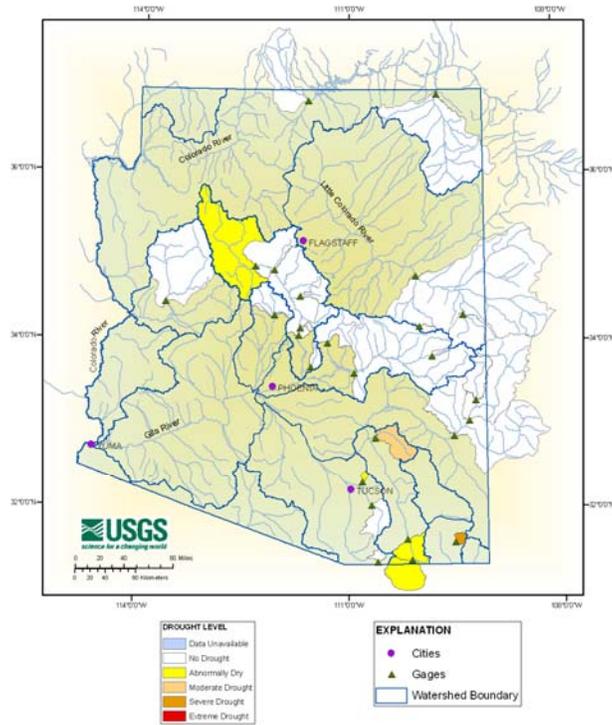
Source USDA-NRCS

# Mountain Streamflow



## Drought Levels Based on Monthly Streamflow Discharge

March 2008



## March Streamflow

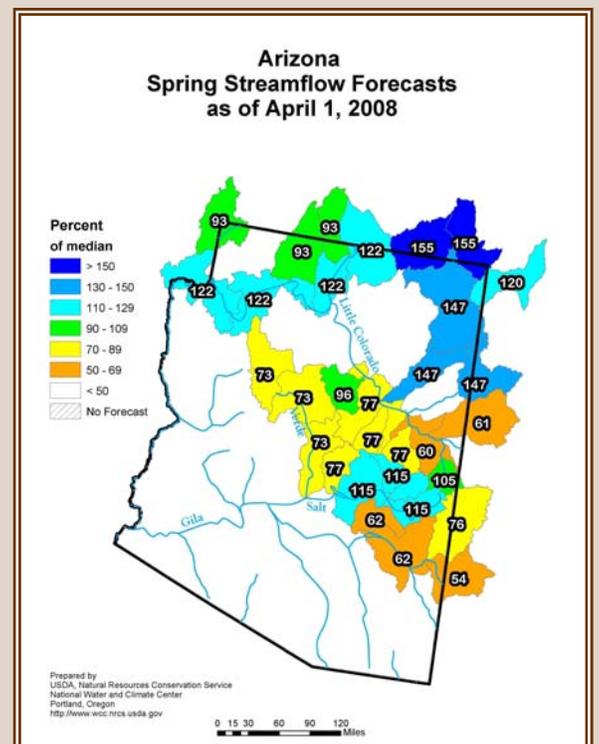
Water body	March Runoff in Acre Feet	% of Median
Salt River near Roosevelt	164,172	125%
Tonto Creek above Gun Creek near Roosevelt	12,298	73%
Verde River at Horseshoe Dam	81,164	163%
Combined Inflow to Salt River Project (SRP) reservoir system	257,634	131%
Little Colorado River above Lyman Lake	4,550	262%
Gila River to San Carlos Reservoir	30,252	102%

*Streamflow Observed at USGS Gauging Stations*

## Streamflow Forecasts

March runoff on major streams was above normal, while the forecast calls for normal to below normal runoff for April-May. The Salt and Verde River reservoirs are essentially full at 98 percent of capacity.

Water body	Forecasted Runoff (April-May unless noted) in Acre Feet	% of Median
Salt River near Roosevelt	165,000	115%
Tonto Creek	6,500	77%
Verde River at Horseshoe Dam	32,000	73%
San Francisco River at Clifton	14,000	76%
Gila River near Soloman	26,000	62%
San Carlos reservoir inflow	13,000	84%
Little Colorado River above Lyman Lake	Apr-June – 4,500	105%
Little Colorado River at Woodruff	500	60%
Colorado River inflow to Lake Powell	Apr-July – 9.7 million	122% of 30-yr. avg.
Virgin River at Littlefield	Apr-July – 67,000	91% of 30-yr. avg.



# Temperature and Precipitation



March was extremely dry across the entire state. Precipitation was below the 15<sup>th</sup> percentile for all watersheds except the upper Colorado, Virgin and lower Gila. Only one significant winter storm moved through the state. Temperatures were only slightly above average for the month across most of the state, except in the southwest corner, which was above the 85<sup>th</sup> percentile.

The 3-month winter period of January through March was wetter than average across the northwest two thirds of the state, and drier than average in the southeastern third of the state. Virtually all precipitation fell in January and February. Temperatures were variable across the state, but cooler temperatures in the higher elevations helped to maintain the snowpack this year.

The 6-month period precipitation, from October through March, was near- to slightly above-average in most watersheds. The northwest and southeast corners of the state saw few winter storms and received below average precipitation this winter. Temperature conditions across the state matched the Climate Prediction Center's forecast of a warmer than average winter.

The 12-month period had near- to above-average precipitation in 11 watersheds, and below-average precipitation in the Virgin, Santa Cruz, San Pedro and Willcox watersheds. Temperatures were above the 75<sup>th</sup> percentile for all climate divisions, with the highest temperatures in the south.

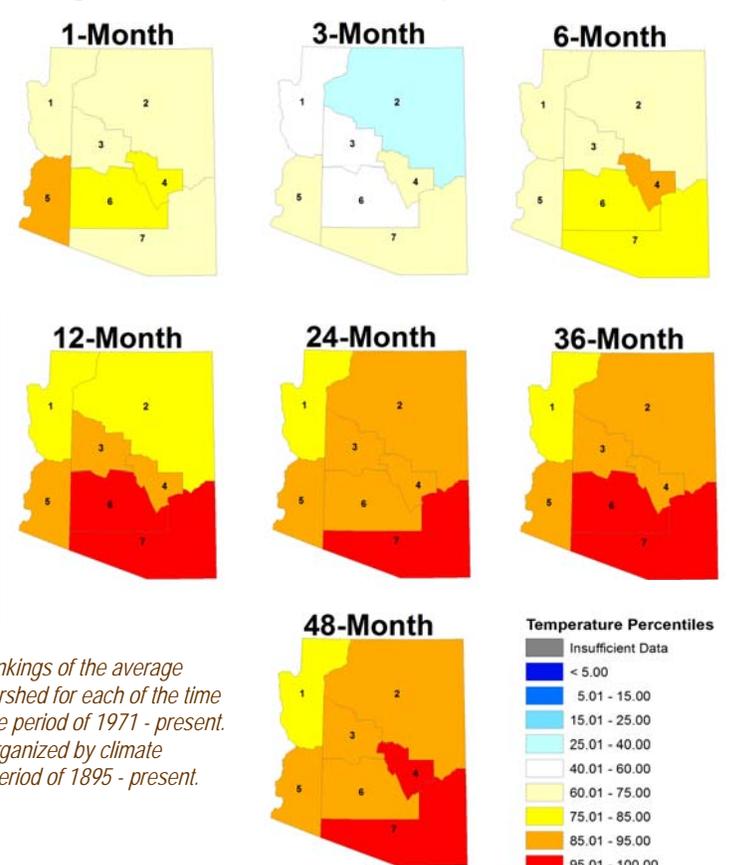
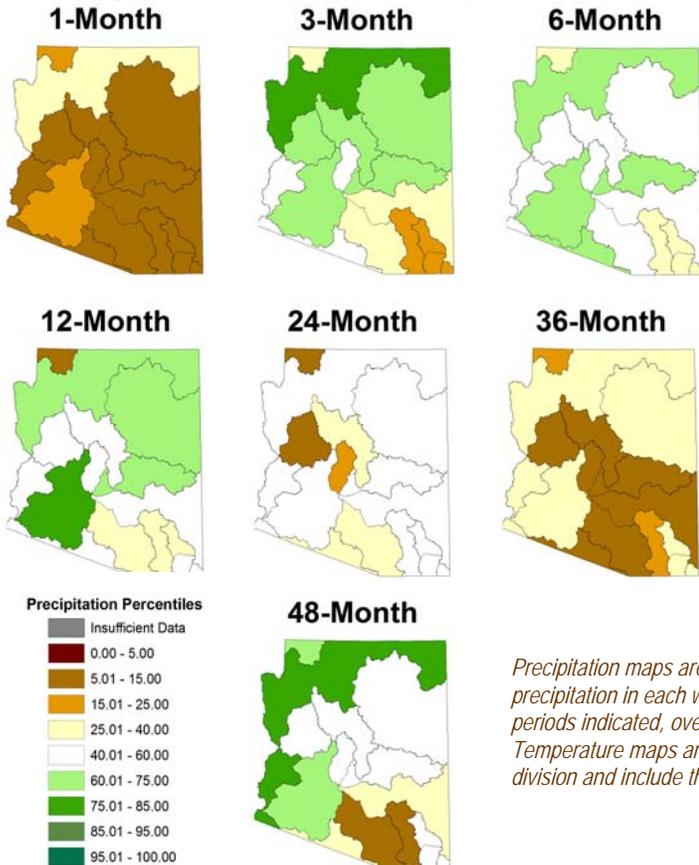
The 24-month period was much drier than it was last month, with no watersheds above the 59<sup>th</sup> percentile. Three watersheds are still at or below the 25<sup>th</sup> percentile, nine are between the 40<sup>th</sup> and 59<sup>th</sup> percentiles, while last month six watersheds were above the 60<sup>th</sup> percentile. Temperatures for the 24-month period warmed above the 86<sup>th</sup> percentile everywhere but the northwest, where they dropped slightly to the 78<sup>th</sup> percentile.

The 36-month period continues to be the driest period with all watersheds below the 35<sup>th</sup> percentile. Nine watersheds are below the 22<sup>nd</sup> percentile with seven below the 15<sup>th</sup> percentile. The Northwest climate division is above the 75<sup>th</sup> percentile and the other six climate divisions are above the 88<sup>th</sup> percentile. Division 7 had its warmest 4-year period since 1895.

The 48-month period continues to have above-average precipitation in the western watersheds, below-average precipitation in the southeastern watersheds, and near- average precipitation in the central watersheds. Santa Cruz and San Pedro continue to be the driest long-term watersheds, and this month the lower Gila dropped below the 40<sup>th</sup> percentile. The upper and lower Colorado are the wettest watersheds, at the 76<sup>th</sup> percentile. Only the northwest climate division of Mohave County remains below the 86<sup>th</sup> percentile for temperature, though 48-month temperatures have dropped slightly since last month.

## 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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Tony Haffer, National Weather Service

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Dino DeSimone, Natural Resources  
Conservation Service

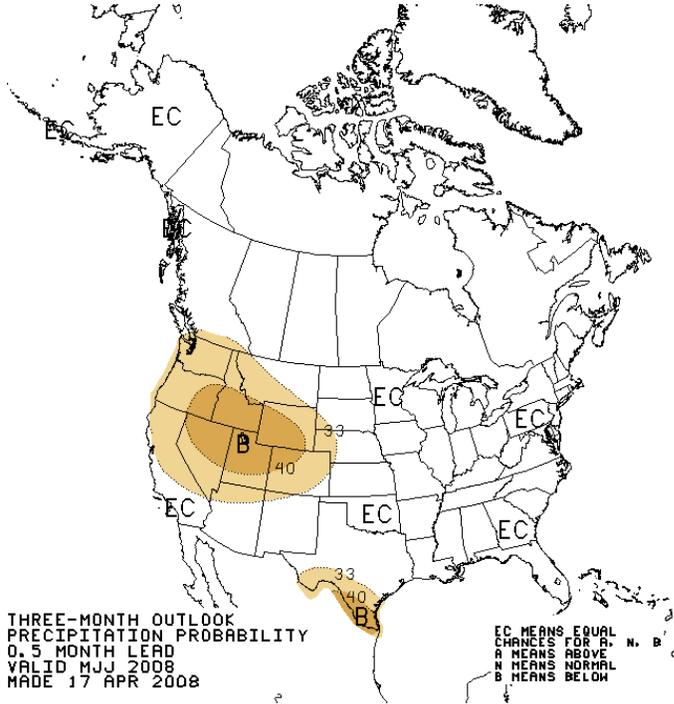
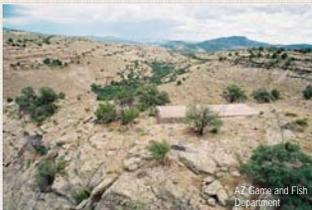
Charlie Ester, Salt River Project

Ron Ridgway, Arizona Division of Emer-  
gency Management

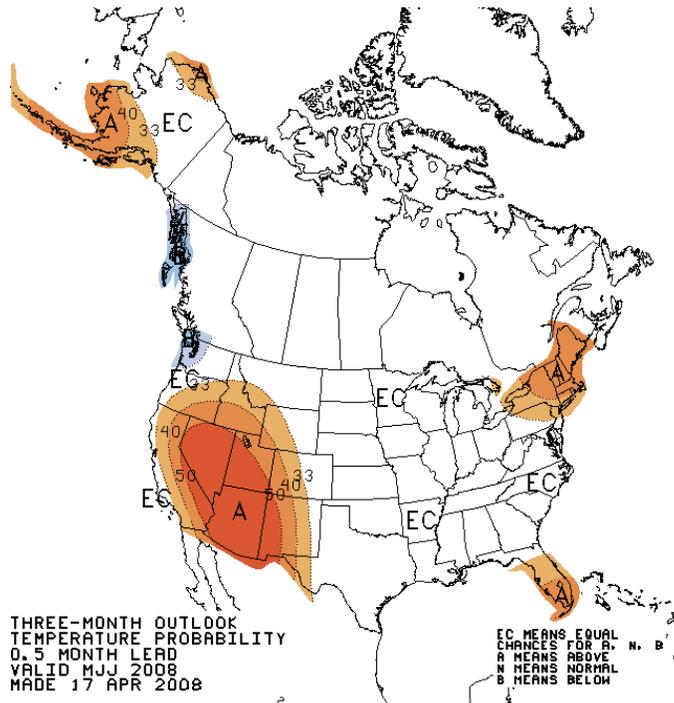
Nancy Selover, State Climatologist  
Arizona State University

Chris Smith, U.S. Geological Survey

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



*There is an equal likelihood of above-average, average, or below-average precipitation across the state during the 90-day period (May through July). Precipitation during this period is of a showery nature, so it is common for the amount of rain during the period to vary considerably even across relatively small regions of the state.*



*The temperature outlook indicates a high level of confidence temperatures will be above average across the entire state for the 90-day period (May through July).*