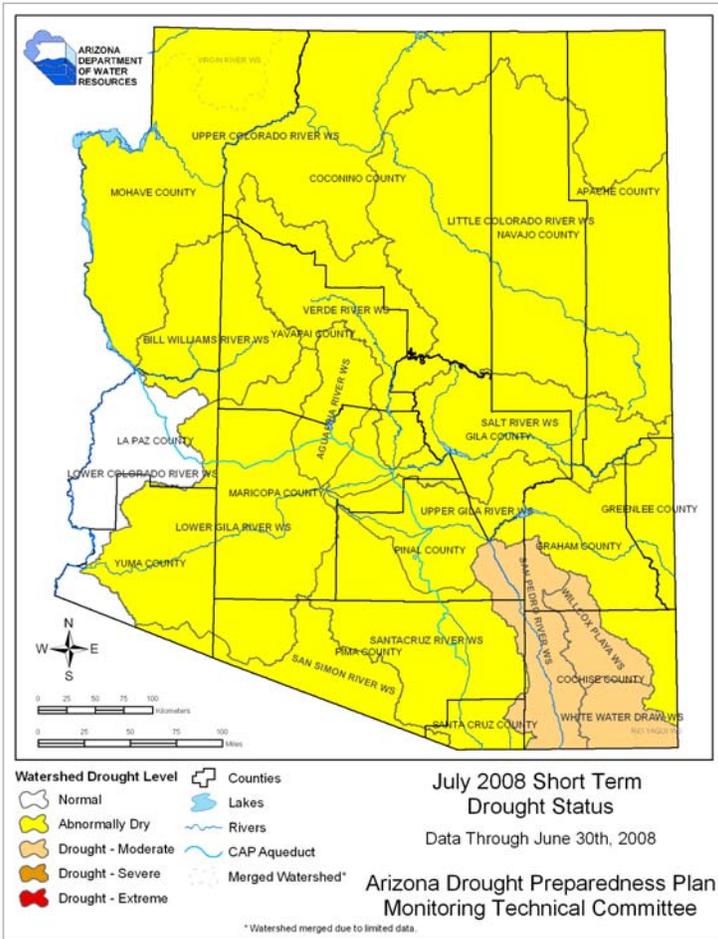


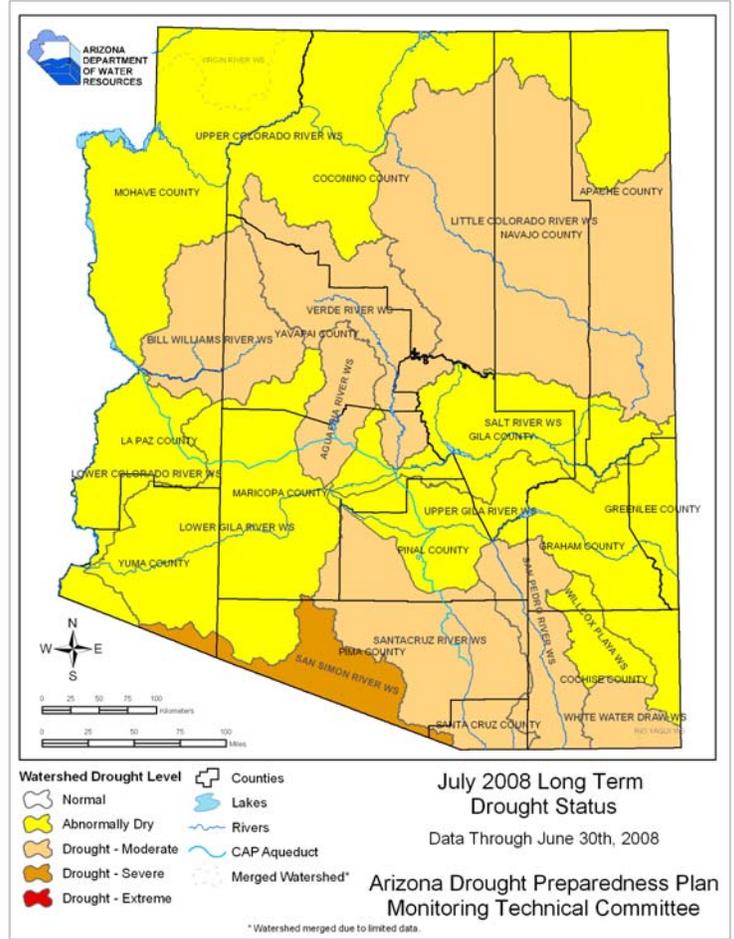
# Arizona Drought Monitor Report

## July 2008

### Short-term Drought Status



### Long-term Drought Status



#### Short-term Update

All the changes in the short-term are in the south and southeast. Last month the Willcox Playa and Whitewater Draw watersheds in Cochise and Graham counties improved with the unusually wet May. In June, the monsoon rain events bypassed those two watersheds, drying out the soil and rangeland vegetation. June is generally wet in southeast Arizona, as the monsoon slowly moves from northern Mexico into southeastern Arizona, so the drier than average June dropped the Willcox Playa and Whitewater Draw from abnormally dry to moderate drought. On the other hand, June was much wetter than normal in southern and southwestern Arizona, causing the Santa Cruz watershed to improve from moderate drought to abnormally dry. Improvement in the south and central watersheds is expected as we move into the heart of the monsoon in July and August.

#### Long-term Update

The previous 24-, 36- and 48-month periods used to produce the long-term map look virtually the same as they did in April, when the map was last updated. The 24- and 48-month periods were wetter than average over most of the state, while the 36-month period was much drier than average across central and southern Arizona. The only watershed that changed is the San Pedro, which dropped from abnormally dry to moderate drought. Currently, seven watersheds in northern and south central Arizona are abnormally dry; seven watersheds in north central and southeastern Arizona are in moderate drought; and the San Simon in southern Arizona is in severe drought. The next update for the long-term will occur in October and include the July-September wet summer season data. If the monsoon remains wetter than average, there may be long-term improvement in some watersheds.



# Reservoir Storage



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

# Vegetation Health



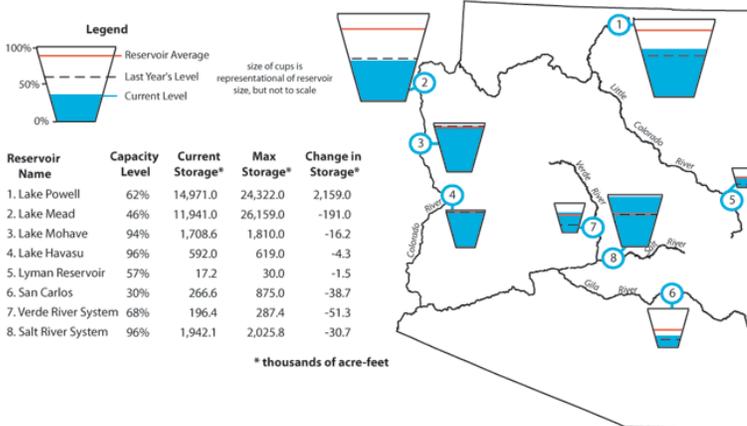
Jeff Severson

## Arizona Reservoir Status

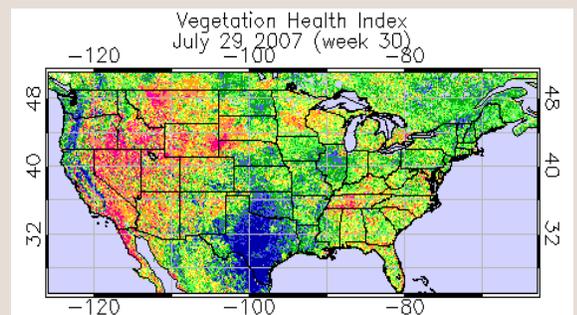
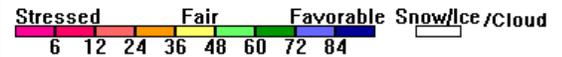
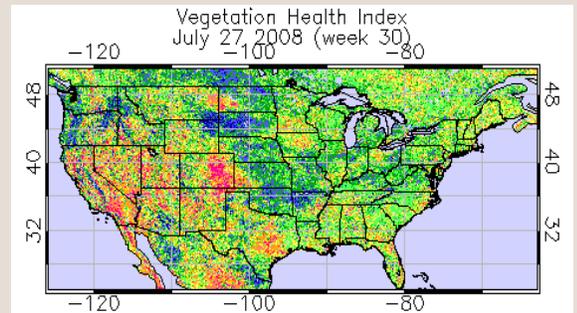
Reservoir storage in Lake Powell increased by more than 2.1 million acre-feet during the last month (see figure below). The July 6 elevation of Lake Powell was 3,632 feet above sea level, and the lake level is expected to peak at 3,635 feet in August. The most recent prediction of inflow to Lake Powell, for the period between April and July, is 8.8 million acre-feet (maf), equal to 111 percent of average. Since last month, storage in the San Carlos Reservoir, which reflects storage in the watersheds of the Salt, Verde, and Gila rivers, declined slightly but still remains substantially higher than one year ago.

In water news, the U.S. Army Corps of Engineers suspended its designation of two stretches of the Santa Cruz River (Pima and Santa Cruz Counties, Arizona) as a navigable stream (Arizona Daily Star, July 10). The change in designation may make it easier for builders and mining operations to discharge materials or alter the river or its tributaries.

Arizona reservoir levels for June 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.



Recent vegetation health index (VHI) data from the NOAA Center for Satellite Applications and Research (top figure) shows most of Arizona in fair-to-favorable conditions. In contrast to one year ago (bottom figure), the VHI shows excellent green-up in the southeastern quadrant of the state. The VHI imagery agrees well with low-to-moderate observed fire danger across most of the eastern half of the state (not shown), according to the Wildland Fire Assessment System of the National Interagency Fire Center. Note favorable VHI status across northern Sonora. These conditions reflect, in part, seasonal vegetation growth in response to above-average summer monsoon precipitation.

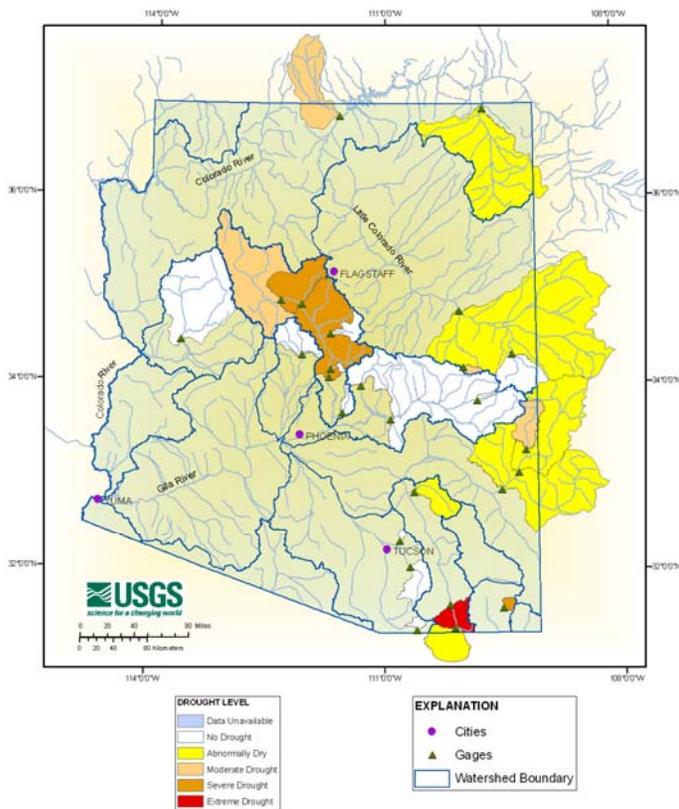


# Mountain Streamflow



## Drought Levels Based on Monthly Streamflow Discharge

June 2008



## June Streamflow

Although total acre-feet have continued to decrease, the percentage of median flow remains high. Because of a late monsoon, streamflow throughout the state continues to be dependent on baseflow.

Water body	June Runoff in Acre Feet	% of Median
Salt River near Roosevelt	15,441	88%
Tonto Creek above Gun Creek near Roosevelt	744	102%
Verde River at Horseshoe Dam	4,850	61%
Combined Inflow to Salt River Project (SRP) reservoir system	21,035	77%
Little Colorado River above Lyman Lake	833	301%
Gila River to San Carlos Reservoir	1,934	104%

*Streamflow Observed at USGS Gauging Stations*

## Mountain Precipitation

Monitoring stations show below normal precipitation occurring throughout most of the mountains of Arizona during June, ranging from 26% of average in the Upper Gila River Basin to 100% of average in the Salt River Basin. Cumulative precipitation for the water year (Oct. 1 to June 30) remains at or above average in all basins.

Watershed	Percent of 30-Year Average
	Precipitation Oct 1- June 30
Salt River Basin	125%
Verde River Basin	116%
Little Colorado River Basin	130%
San Francisco-Upper Gila River Basin	92%
<b>Other Points of Interest</b>	
Chuska Mountains	--
Central Mogollon Rim	92%
Grand Canyon	59%
San Francisco Peaks	76%
Arizona Statewide	--

# Temperature and Precipitation



June is normally dry statewide, unless the monsoon activity begins early. This year the rainfall began early in southern Arizona, with the lower Gila, Santa Cruz and San Simon watersheds all above the 80<sup>th</sup> percentile. The Aga Fria and Salt River watersheds were near average, but the rest of the watersheds were below average, between the 18<sup>th</sup> and 40<sup>th</sup> percentiles. Temperatures were up significantly since last month.

The 3-month period of April through June was drier than average in the northern half of the state, and near- or above-average in the southern half of the state. The notable dry exceptions in the southeast are the Willcox and Whitewater Draw watersheds. There is definite short-term improvement, as last month the three month interval was the driest of all the intervals. The three-month temperatures continue to be near- or slightly above-average.

The 6-month period precipitation, from January through June, was near average in the central watersheds, above average in the Salt and Upper Colorado watersheds, and below average in the southeast. Temperatures were near average in the northeast and Yavapai County, slightly above average along the lower Colorado River, and well above average in the southeast.

The 12-month period had above-average precipitation in five watersheds in the northeast and southwest parts of the state, near-average precipitation in six watersheds in central and southern

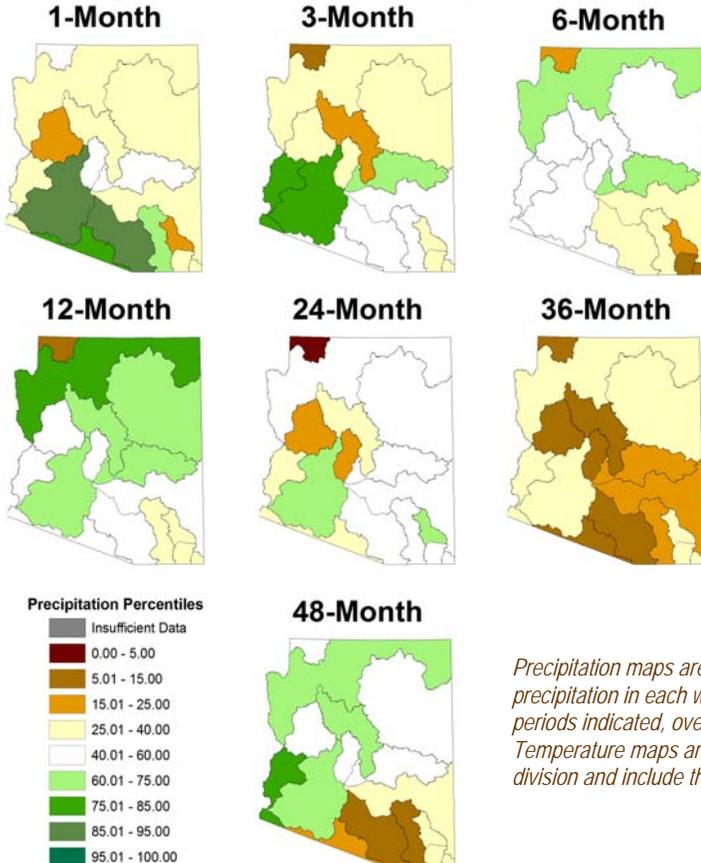
Arizona, and below average precipitation in four watersheds in the southeast and northwest corners of the state. Temperatures were above the 73<sup>rd</sup> percentile everywhere.

The 24-month period has six watersheds below average, with three between the 30<sup>th</sup> and 39<sup>th</sup> percentiles, and three below the 22<sup>nd</sup> percentile, all in the western half of Arizona. The 24-month interval shows much improvement as the dry months of 2006 are replaced by the wetter months of 2008. Temperatures for the 24-month period are between the 73<sup>rd</sup> and 95<sup>th</sup> percentiles.

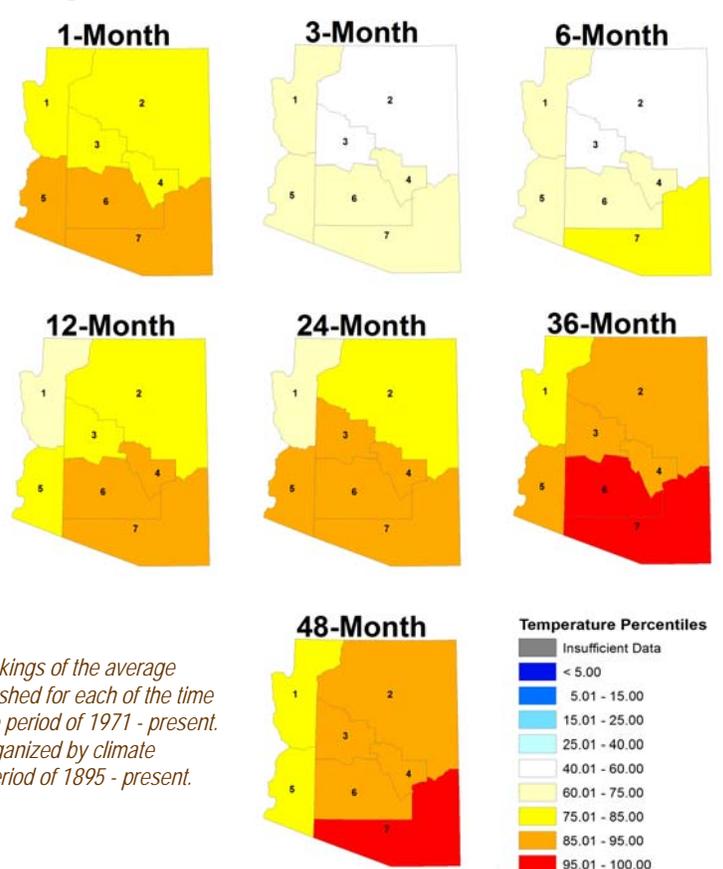
The 36-month period continues to be the driest long-term period, with five central and southern watersheds below the 12<sup>th</sup> percentile. All are below the 35<sup>th</sup> percentile. For temperature, the two southeast climate divisions remain above the 95<sup>th</sup> percentile while all the others are between the 76<sup>th</sup> and 93<sup>rd</sup> percentiles. Climate division 7 had the hottest 36-month period on record.

The 48-month period includes the wet winter of 2005 and is the wettest of the three long-term periods. However, a comparison of the 36- and 48-month maps shows that the precipitation distribution was not uniform. All climate divisions are above the 75<sup>th</sup> percentile for temperature. The hottest climate divisions match up with the driest watersheds, and the coolest areas match up with the wettest watersheds. The presence of cold fronts and cloudy conditions associated with precipitation tend to hold temperatures down.

## 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:  
Tony Haffer, National Weather Service

Nancy Selover, State Climatologist  
Arizona State University

Mike Crimmins, Extension Specialist,  
University of Arizona Cooperative  
Extension

Gregg Garfin, University of Arizona –  
Institute for the Study of Planet Earth

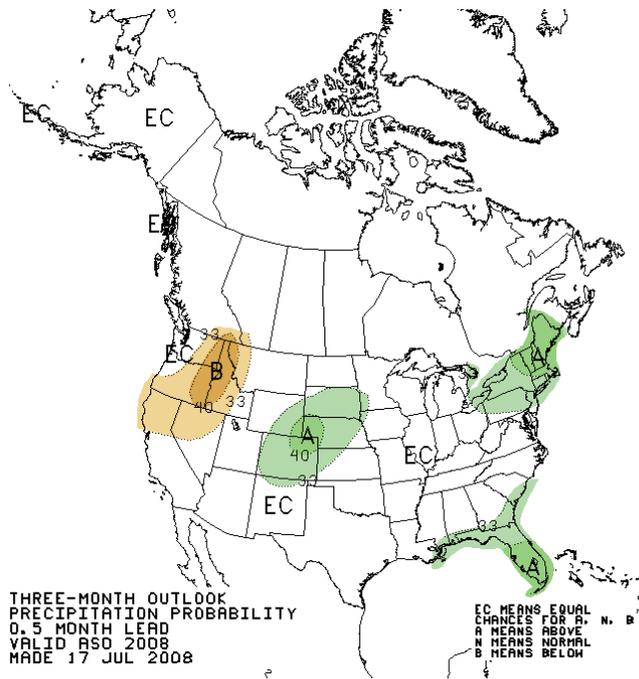
Dino DeSimone, Natural Resources  
Conservation Service

Charlie Ester, Salt River Project

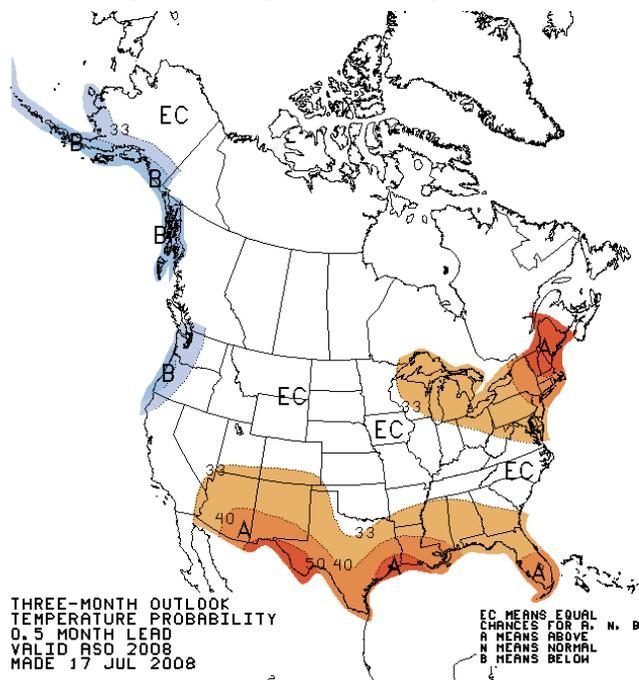
Ron Ridgway, Arizona Division of Emer-  
gency Management

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 (August through October). 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. On the bright side, the most recent update from CPC for precipitation during August indicates mild confidence the southeast half of the state will experience above-average rain during the next 30 days.*



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