

# Eye On Drought

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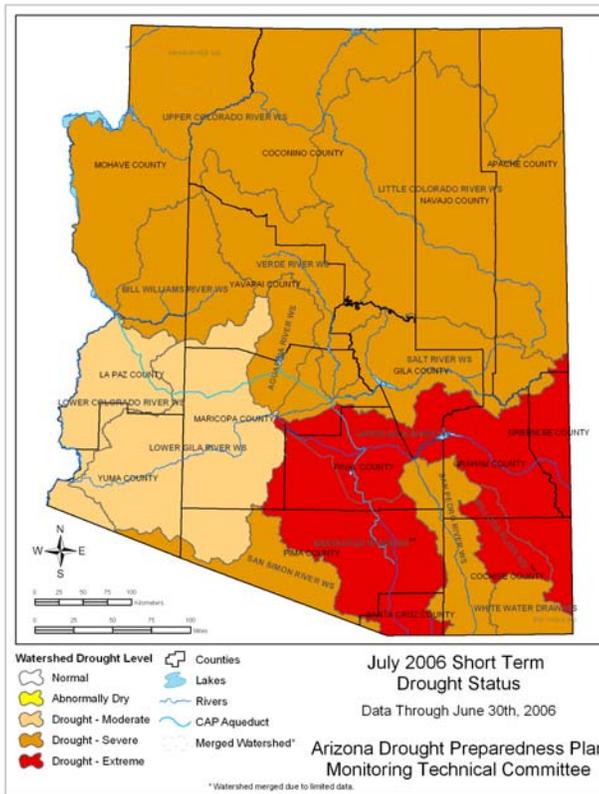
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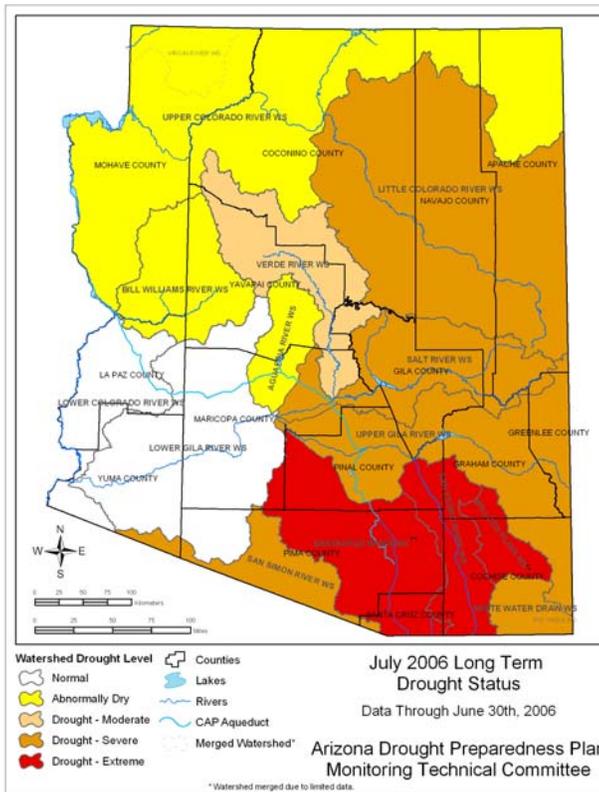
# Arizona Drought Monitor Report July 2006



## Short-term Drought Status

Short-term status has improved slightly in the southwestern and central portions of the state. The Lower Gila River watershed improved from severe to moderate, and the Hassayampa River basin from extreme to severe. The rest of the state remains at severe or extreme status this month.

\*\*There were insufficient precipitation data available in the Santa Cruz and Willcox Playa watersheds to calculate drought status for this month. These watersheds are depicted at extreme status as they appeared in the June Drought Monitor Report.



## Long-term Drought Status

Long-term status remains mostly unchanged since the June report. Only the Lower Gila River watershed has improved from abnormally dry to normal status.

\*\*There were insufficient precipitation data available in the Santa Cruz and Willcox Playa watersheds to calculate drought status for this month. These watersheds are depicted at extreme status as they appeared in the June Drought Monitor Report.

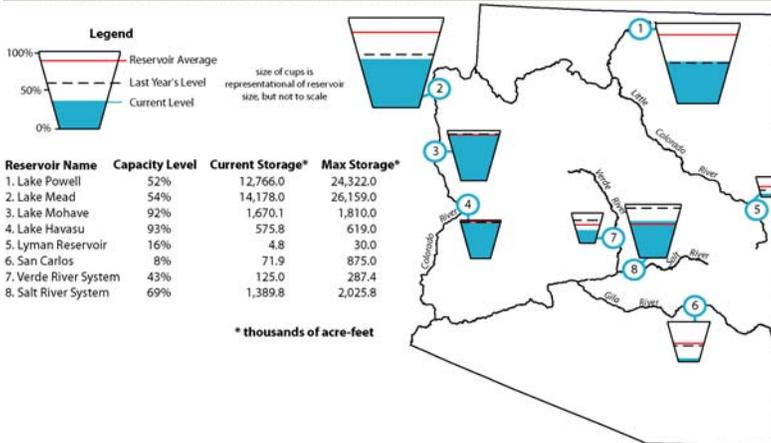
# Reservoir Storage



## Arizona Reservoir Status

- During the month of June, total reservoir storage in Arizona remained virtually constant, declining slightly by 0.2%.
- On the Gila River, the San Carlos Reservoir saw the biggest decline at 31%.
- Storage on the Colorado River (Lake Havasu, Lake Mead, Lake Mohave, and Lake Powell) increased by approximately 1%.
- From the previous year, total in-state storage has dropped by 7.5% due to record below average precipitation from October 2005 to March 2006.
- Current storage is 66% of average for July. (These statistics reflect changes relative to previous reservoir levels, not total reservoir capacity.)
- According to the U.S. Bureau of Reclamation, releases from Glen Canyon Dam on Lake Powell will average 13, 400 cubic feet per second (CFS), for a total of 822,000 acre-feet for the month of July. Releases are expected to be similar in August before scheduled decreases in September.
- Inflow projections to Lake Powell are less than previously expected to due drier than average conditions in the Colorado River Basin during April, May, and June.
- Since the water-year began October 1, 2005, inflow to Lake Powell has been approximately 77% of average.

Arizona reservoir levels for June 2006 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 (data provided by USDA-NRCS, graphic provided by University of Arizona - CLIMAS (Climate Assessment for the Southwest)).



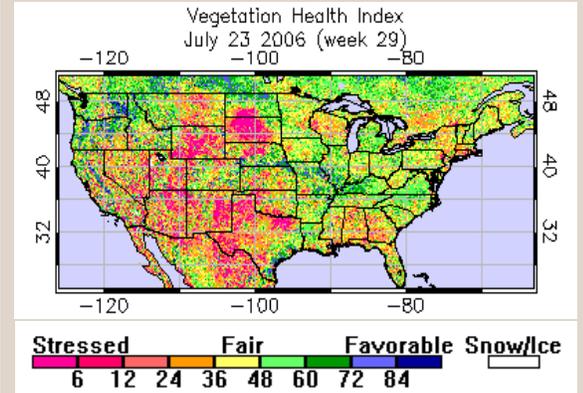
A new tree-ring reconstruction of Colorado River streamflow is now available on the NOAA Paleoclimatology Program website <http://www.ncdc.noaa.gov/paleo/pubs/woodhouse2006/woodhouse2006.html>

# Vegetation Health



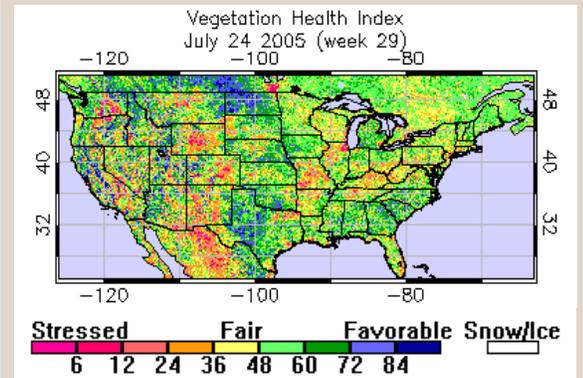
## Current Conditions

The satellite-derived image below was taken on July 23, 2006. Significant portions of Arizona show stressed vegetation as a result of record or near-record dryness this winter.



## July of 2005

Arizona has seen significant deterioration of vegetation health since the relatively wet winter and spring of 2004-2005 (bottom figure), consistent with deteriorating conditions throughout most of the Southwest. Precipitation from summer thunderstorms could improve vegetation conditions through the next month, but it remains to be seen if they can make up for severe precipitation deficits accumulated during the past year.



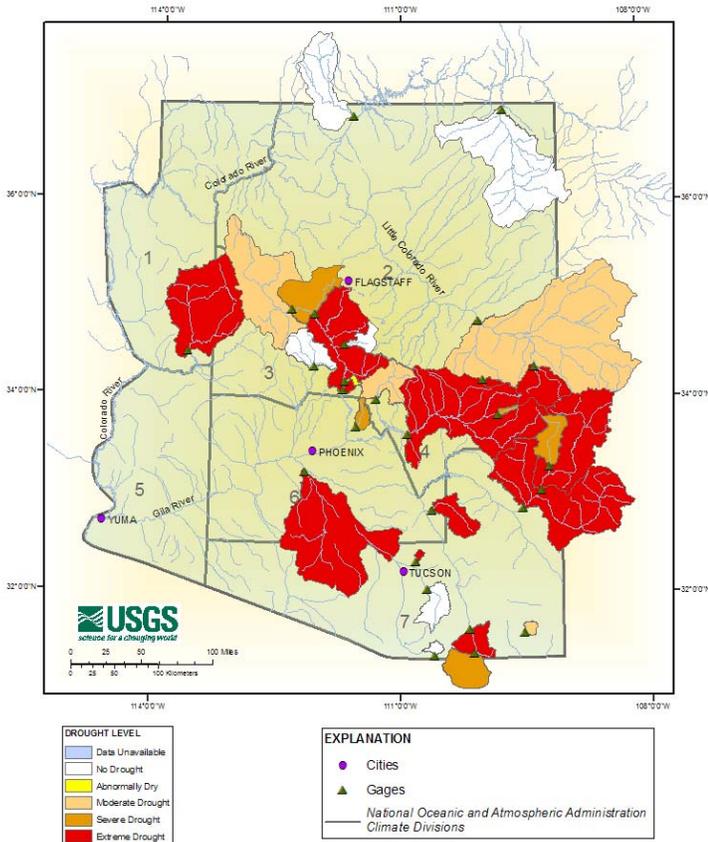
(Images taken by the National Oceanic and Atmospheric Administration's National Environmental Satellite, Data and Information Service (NESDIS))

# Mountain Streamflow and Precipitation



## Drought Levels Based on Monthly Streamflow Discharge

June 2006



## June Streamflow

Warm temperatures, deficient precipitation, dry soils, and record low snowpacks during winter have led to stream flow levels well below the seasonal median for June (see table). The odds are unfavorable that there will be any substantial runoff gained from the summer thunderstorm season, thus increasing the likelihood of significantly low water amounts for stream flow and reservoirs through the summer.

June Streamflow Observed (compiled by NRCS from USGS data)

Water body	June Streamflow in Acre Feet	% of Median
Salt River near Roosevelt	5,015	31%
Tonto Creek	105	14%
Verde River at Horseshoe Dam	4,875	57%
Combined Inflow to Salt River Project (SRP) reservoir system	9,995	39%
Little Colorado River above Lyman Lake	5	2%
Gila River to San Carlos Reservoir	1	0.1%
Colorado River inflow to Lake Powell	1,496,500	49% of the 30-yr. avg.

## Mountain Precipitation

### June Precipitation

Data from high elevation SNOTEL sites show that precipitation for June was 114 percent of average over the Salt River basin, 79 percent of average over the Verde River basin, and 144 percent of average over the San Francisco-Upper Gila River basin. The Little Colorado River basin received 85 percent of average precipitation in June. Because June is a typically dry month, even a small amount of rainfall can be enough to exceed long-term averages for June, but does little to improve drought status.

### Water Year Precipitation

Despite higher than average June rainfall totals, SNOTEL data shows that mountain precipitation is well below average in all basins for the water year, ranging from 39 to 47 percent of average (see table to the right).

### Water Year Precipitation by River Basin

Watershed	Percent (%) of 30-Yr. Average Water Year Precipitation October 1 – June 30
Salt River Basin	44%
Verde River Basin	39%
Little Colorado River Basin	42%
San Francisco-Upper Gila River Basin	47%
Central Mogollon Rim	37%
Upper Colorado River Basin	90%

# Temperature and Precipitation



## Update

The extremely dry conditions that plagued the state in May, were statistically alleviated in June when most of the state had above normal precipitation. However, this is not a significant change to the overall dry conditions as June is typically a month with very little precipitation. While the one-month picture shows no drought, the longer term picture is more accurate in showing statewide conditions from abnormally dry to moderate drought.

## Precipitation totals

### Previous 3- and 6 month periods –

For the 3-month period, conditions worsened for the eastern basins as the wet month of March was replaced by a slightly drier month of June. For the 6-month period, the seasonal shift from December through May to January through June, also shows some short term improvement across the northern and western portions of the state. Since the June rainfall was not exceptional, these short-term improvements to the overall drought situation are primarily statistical, due to the seasonal shift, rather than substantive improvements to the overall drought picture.

### Previous 12 months –

The 12-month situation has not changed throughout the state. Most of the state is still experiencing “severe” drought conditions based on precipitation, while the Lower Gila and Lower Colorado have “moderate” drought and “abnormally dry” conditions, respectively. The 12-month period reflects below normal precipitation for both last year’s monsoon and this year’s winter.

### Previous 2 years –

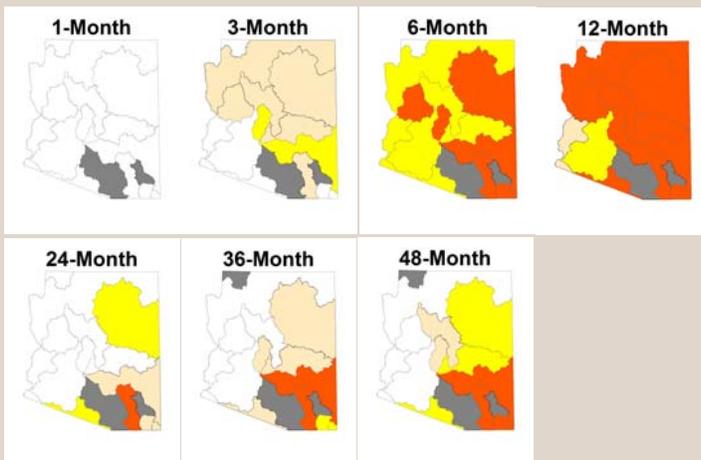
The west, north, and central areas of the state still show no drought conditions, due to the extremely wet year of 2005, while the south-central and southeast watersheds range from “abnormally dry” to “severe” drought.

### Previous 3 years –

The 36-month precipitation totals remain at or above average for the western and northern parts of Arizona. The change from last month is that the Little Colorado watershed improved from “moderate” drought to “abnormally dry” in terms of precipitation.

### Previous 4 years –

The longest-term situation remains unchanged from last month with “abnormally dry” to “severe” drought conditions in the eastern portions of the state, and no drought in the western watersheds.

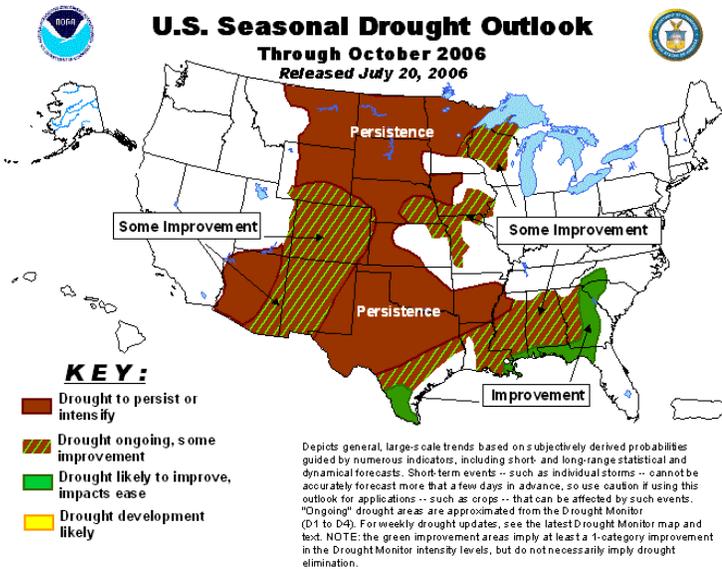


Drought Categories based on precipitation

Numerical Category	Description	Precipitation Percentile
0	no drought	40.01 – 100
1	abnormally dry	25.01 – 40.00
2	moderate drought	15.01 – 25.00
3	severe drought	5.01 – 15.00
4	extreme drought	0.00 – 5.00
5	insufficient data	

For a full assessment, see *State Climate Update for Arizona* – [www.public.asu.edu/~dellis/update.html](http://www.public.asu.edu/~dellis/update.html).

# Weather Outlook



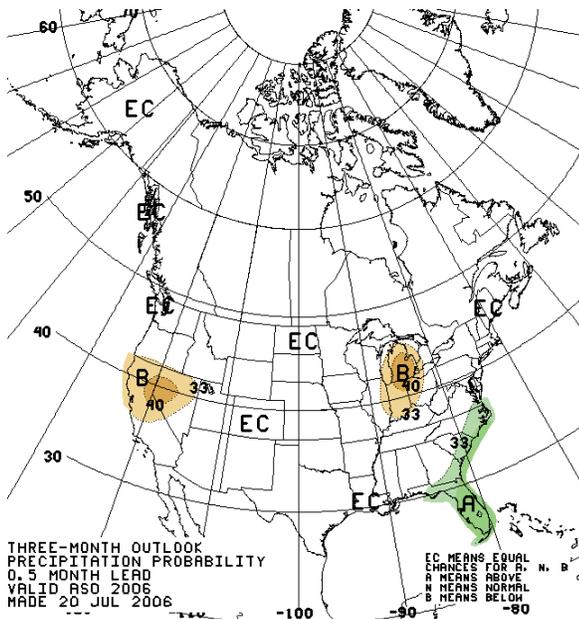
## Drought Outlook

The CPC Seasonal Drought Outlook indicates areas experiencing drought conditions in all but extreme east and south-east Arizona will see these conditions persist through October (at least), while *some* improvement in the extreme east and southeast of the state is possible by October 2006. (NOAA Climate Prediction Center).

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)

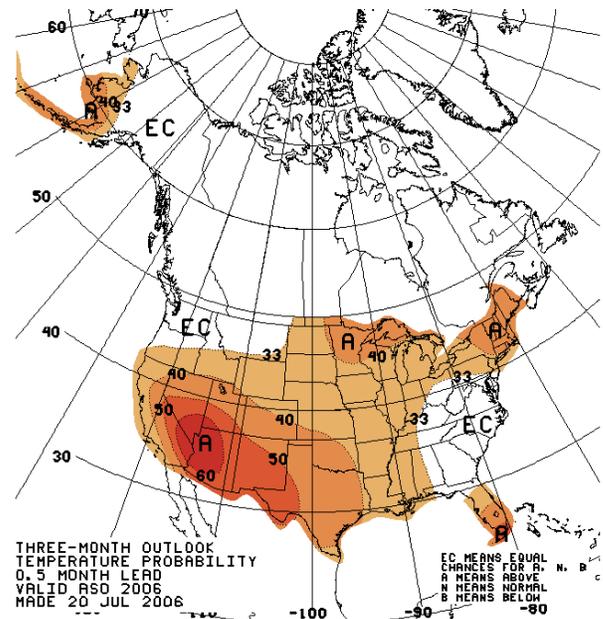
For additional weather information from the Office of the State Climatologist for Arizona - [www.public.asu.edu/~dellis/azscweather.html](http://www.public.asu.edu/~dellis/azscweather.html)

## August to October Weather Outlooks



### Precipitation

Equal chances for above average, average, and below average precipitation across the state.



### Temperature

High confidence level that temperatures will be above average.

NOAA's CPC Outlooks are 3-category forecasts. As a starting point, the 1971-2000 climate record is divided into 3 categories, each with a 33.3 percent chance of occurring (i.e., equal chances, EC). The forecast indicates the likelihood of one of the extremes—above-average (A) or below-average (B)—with a corresponding adjustment to the other extreme category: the "average" category is preserved at 33.3 likelihood, unless the forecast is very strong. Thus, using the NOAA-CPC temperature (precipitation) outlooks, areas with light brown (green) shading display a 33.3-39.9 percent chance of above-average, a 33.3 percent chance of average, and a 26.7-33.3 percent chance of below-average temperature (precipitation). A shade darker indicates a higher than 40.0 percent chance of above-average, a 33.3 percent chance of average, and a further reduced chance of below-average temperature, and so on. Equal Chances (EC) indicates areas with an equal likelihood of above-average, average, or below-average conditions; it is used by forecasters when the forecast tools do not indicate a strong "signal" that conditions during a given period will be in any one of the three categories.