Arizona Drought Monitor Report

August 2006

Produced by the Monitoring Technical Committee

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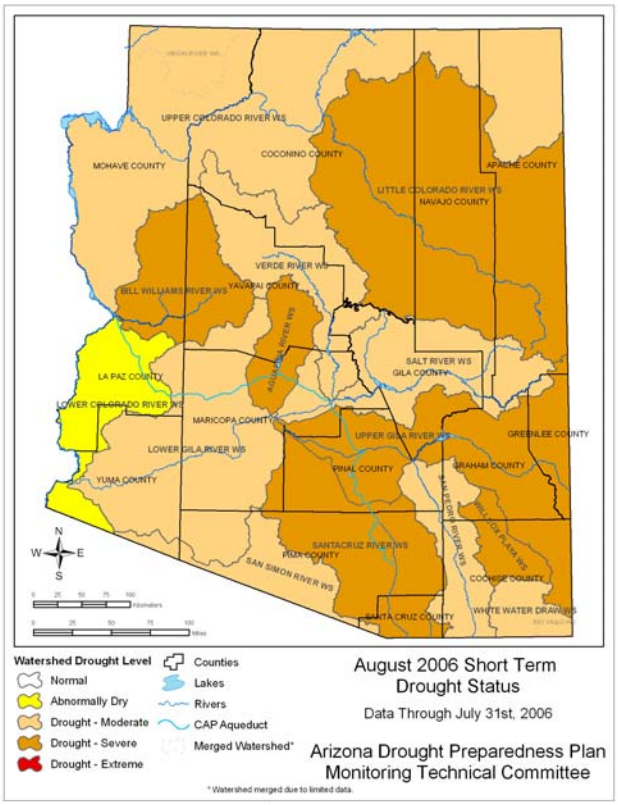
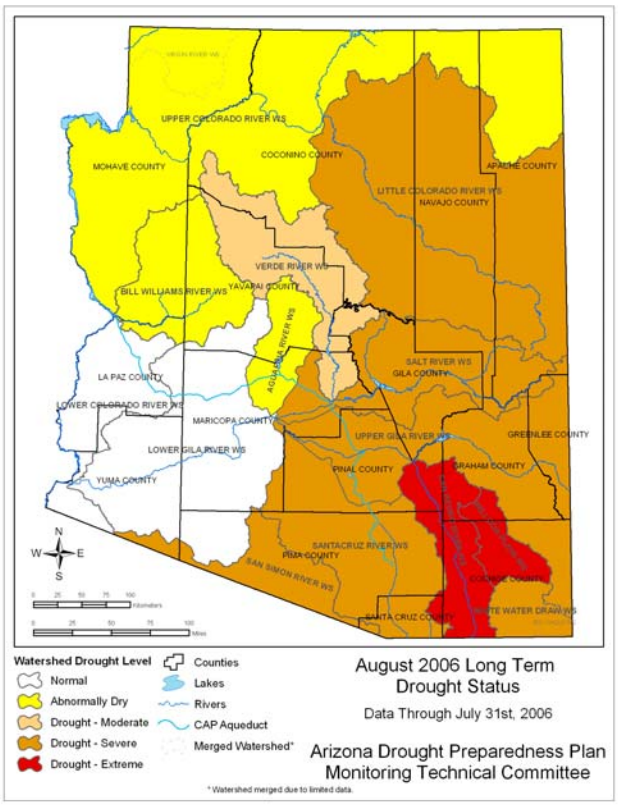
Arizona Department of Water Resources



Short-term Drought Status

Almost all areas of the state have seen a one category improvement in the short-term drought status due to the wetter than normal monsoon rainfall in most watersheds. The high runoff, caused in part by the numerous burn areas on the Santa Cruz, Salt, and Verde watersheds, has led to higher than normal streamflow for this time of year on the Salt, Little Colorado, and Gila River systems. Rangeland and forest vegetation health has also shown short-term improvement.



Long-term Drought Status

There is little change in long-term drought status across the state except in the Santa Cruz watershed, which improved one category from extreme to severe drought. The above-average summer precipitation in some areas of the state will not compensate for longer-term precipitation deficits accumulated over the past several years. Longer-term drought conditions are still evident in Arizona's largest reservoirs on the Colorado River. The current outlook is for another warmer than normal winter, which may lead to below-normal winter snow pack.

Reservoir Storage

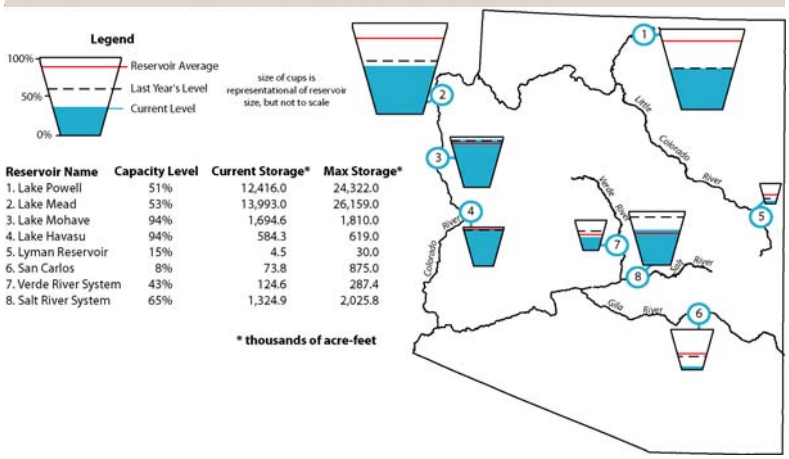
Arizona Reservoir Status

Although monsoon activity has produced above-average streamflows and even flood conditions in some watersheds, it has not been enough to increase reservoir levels:

- Storage in Arizona reservoirs changed only slightly since last month, with five of the eight reservoirs holding less than 60 percent of capacity.
- The total in-state storage (San Carlos, Salt River system, and Verde River system reservoirs) declined slightly from 50 to 48 percent.
- On the Colorado River the two largest reservoirs, Lakes Powell and Mead, each fell by one percent, while the smaller Lakes Havasu and Mohave rose slightly.
- The total storage on the four Colorado River reservoirs declined slightly from 55 to 54 percent of capacity.
- According to figures released by the National Weather Service's Colorado Basin River Forecast Center in Salt Lake City, UT, the total inflow into Lake Powell from the upper Colorado River from April through July was only 67 percent of average.
- Storage on the Colorado River is only slightly less than at this time last year, when it stood at 57 percent, but due to the almost complete lack of rain and snowpack over the past winter, the in-state storage has declined considerably since this time one year ago, when it stood at 72 percent of capacity.

(Data provided by USDA-NRCS)

Arizona reservoir levels for July 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)).*



Reservoir Name	Capacity Level	Current Storage*	Max Storage*
1. Lake Powell	51%	12,416.0	24,322.0
2. Lake Mead	53%	13,993.0	26,159.0
3. Lake Mohave	94%	1,694.6	1,810.0
4. Lake Havasu	94%	584.3	619.0
5. Lyman Reservoir	15%	4.5	30.0
6. San Carlos	8%	73.8	875.0
7. Verde River System	43%	124.6	287.4
8. Salt River System	65%	1,324.9	2,025.8

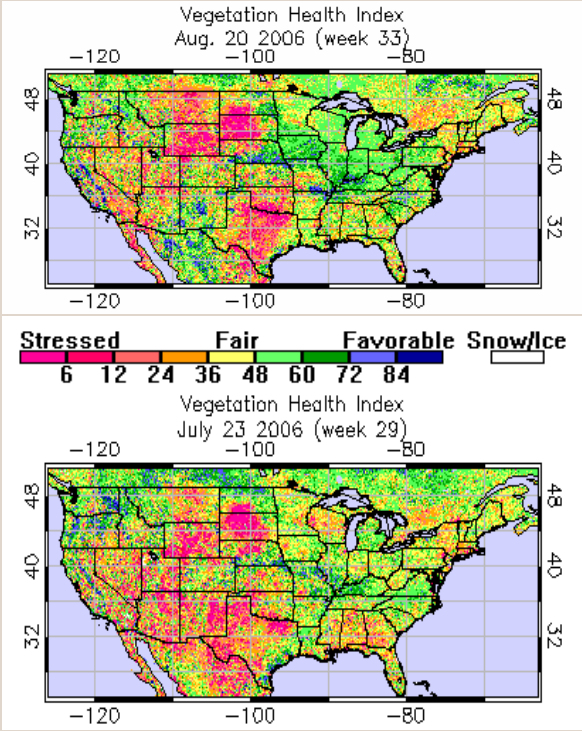
* thousands of acre-feet

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

Satellite-derived images from the NOAA National Environmental Satellite, Data and Information Service were taken on August 20, 2006 (top figure) and July 23, 2006 (bottom figure). Currently, portions of southwestern and northeastern Arizona show stressed vegetation as a result of record or near-record dryness this winter and modest monsoon precipitation so far this summer. Southeastern Arizona shows significant improvement in vegetation health since July due to above average monsoon precipitation in the region.

Since the relatively wet winter and spring 2004-2005, northwestern Arizona vegetation conditions have deteriorated, though southeastern Arizona vegetation health appears to have improved slightly. Precipitation through the remainder of the monsoon season could continue to improve vegetation conditions, but it remains to be seen if this can make up for severe precipitation deficits accumulated during the past year.

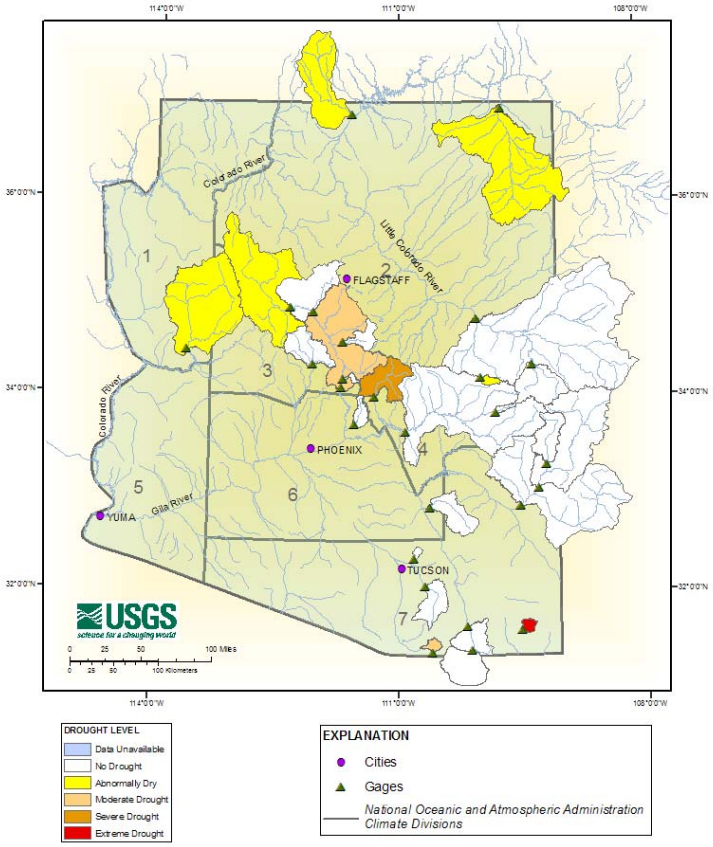


(Images taken by the National Oceanic and Atmospheric Administration's National Environmental Satellite, Data and Information Service (NESDIS))

Mountain Streamflow and Precipitation

Drought Levels Based on Monthly Streamflow Discharge

July 2006



July Streamflow

Monsoon thunderstorms in July have provided much needed moisture that was lacking from the snowpack earlier this year. The rainfall has been extreme in many areas of the state, escalating to flood conditions on some rivers and streams. As a result, stream flow volumes were generally above the 30-year median during July, although thunderstorm activity was not uniform over the state and some streams ran less water than normal for this time of year. Monsoon activity has not produced enough streamflow to increase reservoir levels.

July Streamflow Observed (compiled by NRCS from USGS data)

Water body	July Runoff in Acre Feet	% of Median
Salt River near Roosevelt	27,950	187%
Tonto Creek	112	9%
Verde River at Horseshoe Dam	8,490	84%
Combined Inflow to Salt River Project (SRP) reservoir system	36,552	139%
Little Colorado River above Lyman Lake	772	193%
Gila River to San Carlos Reservoir	20,263	810%
Colorado River inflow to Lake Powell	666,000	43% of the 30-yr. avg.

Mountain Precipitation

July Precipitation

Abundant mountain precipitation was recorded in July as the Arizona monsoon re-established itself after an earlier than normal start in late June. In that regard, rainfall recorded at SNOTEL sites show that precipitation for July was 131 percent of average over the Salt River basin, 140 percent of average over the Verde River basin, and 154 percent of average over the San Francisco-Upper Gila River basin. The Little Colorado River basin received 112 percent of average precipitation in July.

Water Year Precipitation by River Basin

For the water year, the river basins continue to see much below average precipitation totals ranging from 51 to 66 percent of average.

Watershed	Percent (%) of 30-Yr. Average Water Year Precipitation October 1 – July 31
Salt River Basin	56%
Verde River Basin	51%
Little Colorado River Basin	51%
San Francisco-Upper Gila River Basin	66%
Central Mogollon Rim	40%
Upper Colorado River Basin	94%

Temperature and Precipitation


Update

● The arrival of the above-average monsoon rainfall has brought relief from the recent dry conditions that have existed since March across most of the state. Although the 1-month rainfall does not end the drought, it improves the rangeland conditions and provides short-term relief. The rainfall brought slightly cooler temperatures, although all areas of the state were above the 75th percentile for temperature.

● Precipitation totals for the past 3- and 6-month periods were significantly improved by the wet July, particularly across the eastern and south central parts of the state. For the 6-month period, the north and northwest watersheds are still well below average, reflecting the dry spring in those watersheds. The warm winter and hot summer have had the greatest effect across the southern and western areas of the state.

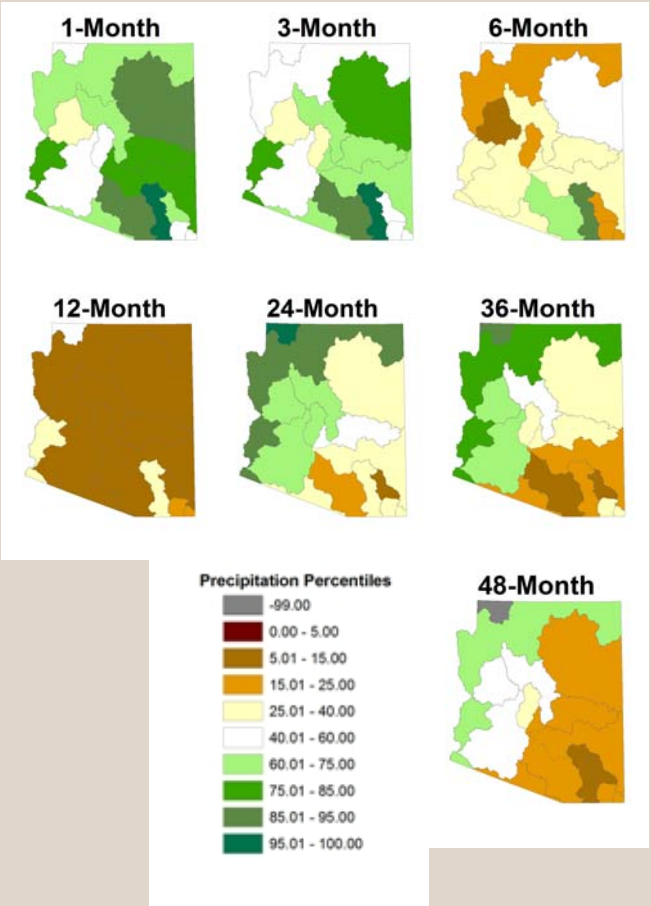
● The dryness over the past 12 months is evident with almost all watersheds below the 15th percentile for precipitation. The biggest change in the 12-month period is the San Pedro, which improved significantly with the wet July. The southeast has had temperatures above the 95th percentile for the 12-month period.

● The west, north and central watersheds have had near or above average precipitation for the past 24 months, while the eastern and southeast watersheds have seen slightly to well below average precipitation in this period. Temperatures along the western border have been slightly above normal, but southeast and south central Arizona have had temperatures above the 85th percentile.

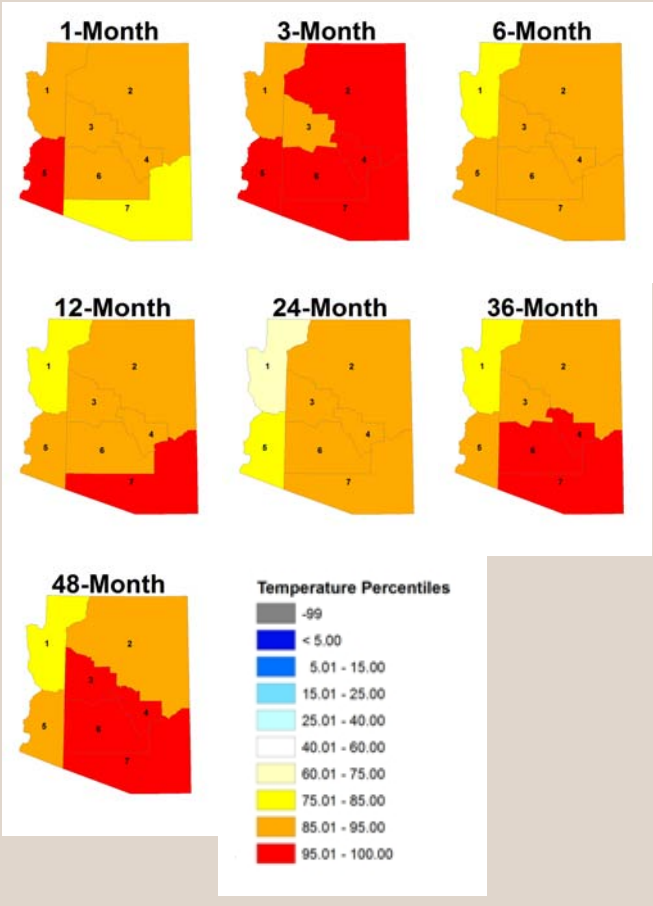
● The 36-month precipitation totals are still at or above average for the five western watersheds in Arizona. Eastern central Arizona has had near or slightly below average precipitation for the 36-month period. The southeast has had precipitation totals well below normal, accompanied by temperatures among the highest on record.

● The long-term problematic areas within the state remain the east-central and southeastern regions, where 4-year precipitation totals are between the 15th and 5th percentile. These dry conditions are exacerbated by temperatures above the 95th percentile across the southeast, above the 85th percentile in the southwest and northeast, and above the 75th percentile in the northwest.

Precipitation Percentiles by Watershed

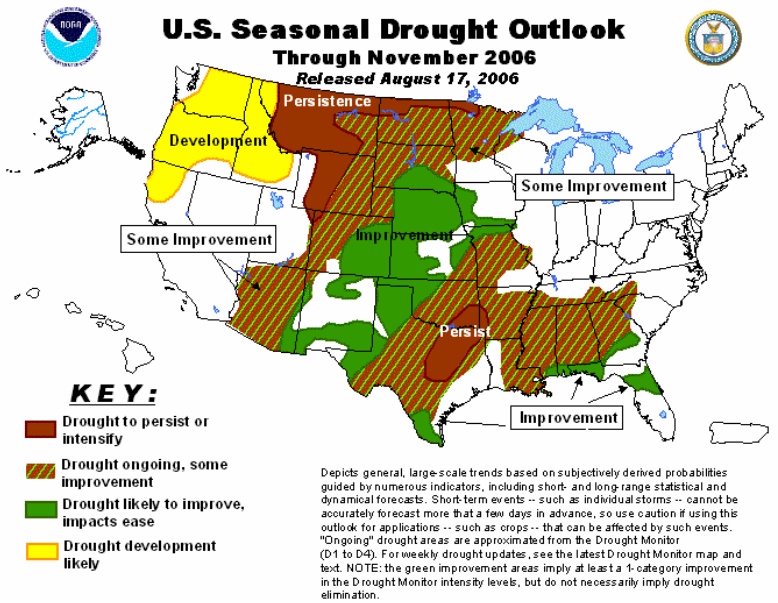


Temperature Percentiles by Climate Division



Weather Outlook





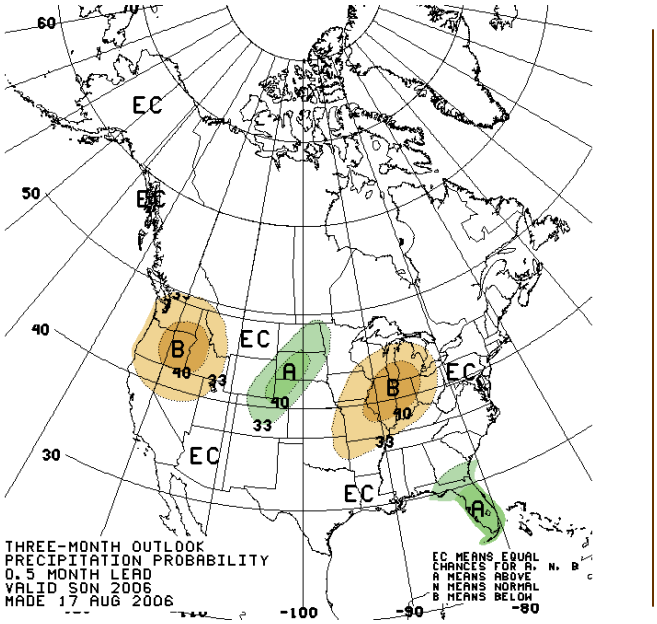
Drought Outlook

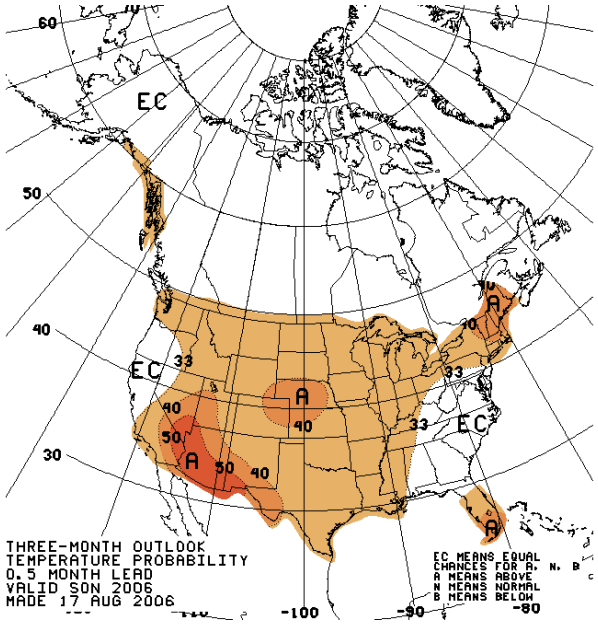
The CPC Seasonal Drought Outlook (left) indicates areas experiencing drought conditions in all but extreme east and southeast Arizona will see these conditions persist through November (at least) with *some* improvement. The extreme east and southeast portions of the state are expected to see improvement, lessening some of the drought impacts by November 2006. (NOAA Climate Prediction Center)

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

September to November 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.