

Drought Status & Drought Program Upcoming Activities

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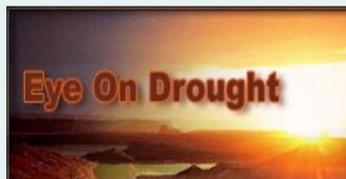
Credit: Dave Dilli Photography

Overview:

- 1. August Short-Term Drought Status Report**
- 2. April-June Long-Term Drought Status Report**
- 3. SPI & SPEI Experimental Long-term Drought Maps**
- 4. Arizona Drought Preparedness Annual Report**
- 5. ICG Meeting- Nov. 16th**



August Short-Term Drought Status Report



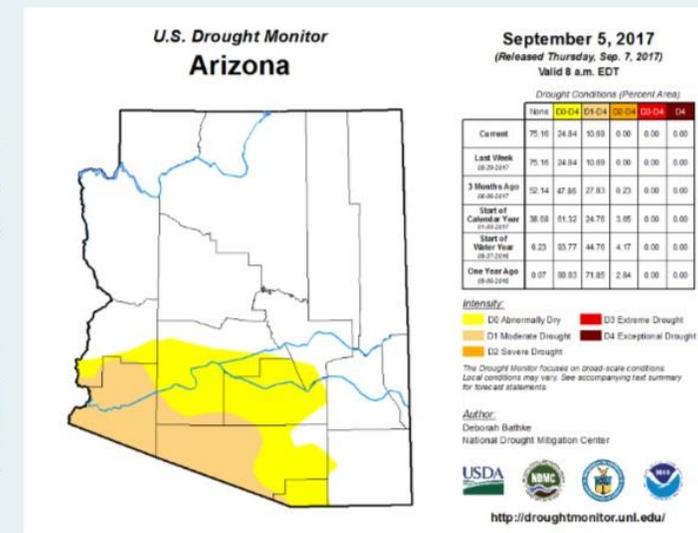
Short-term Drought Status Report

August 2017

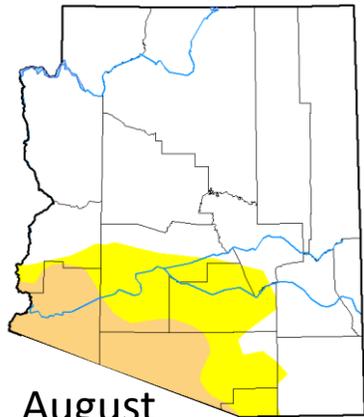
The monsoon has eliminated short-term drought conditions from northern Arizona, which is now free of drought as is central Arizona.

The rainfall was quite localized in the southern part of the state with thunderstorm activity concentrated in the southeast and higher elevations.

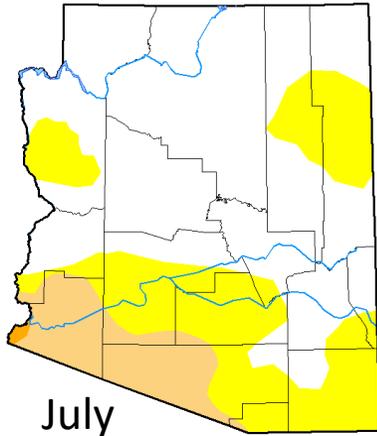
Lack of notable precipitation in the southwest left Yuma and western Pima counties drier than normal for the summer and a large area of moderate drought conditions (D1) persist in southwestern Arizona.



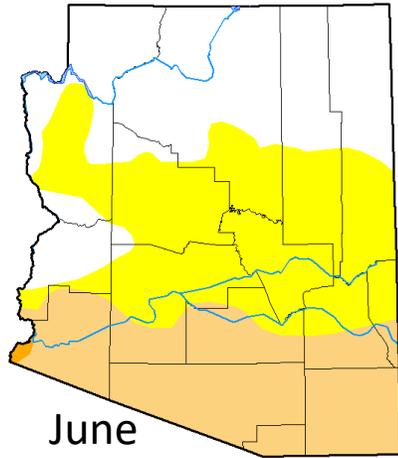
Short-Term Drought Status Maps



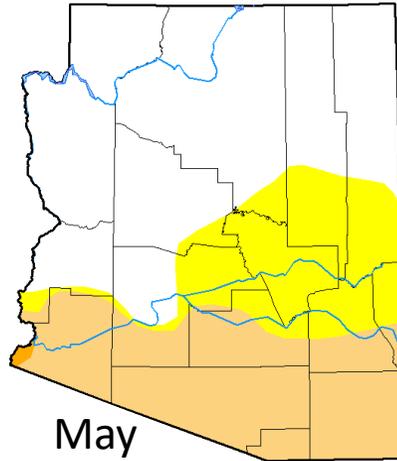
August



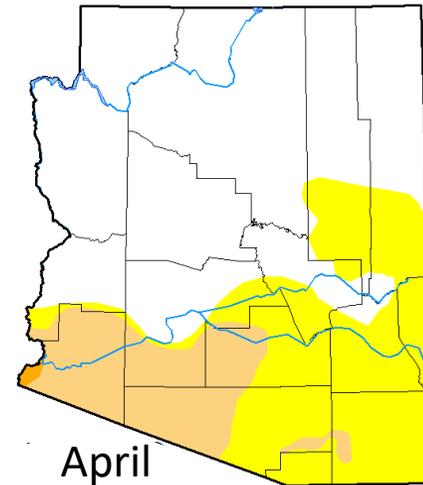
July



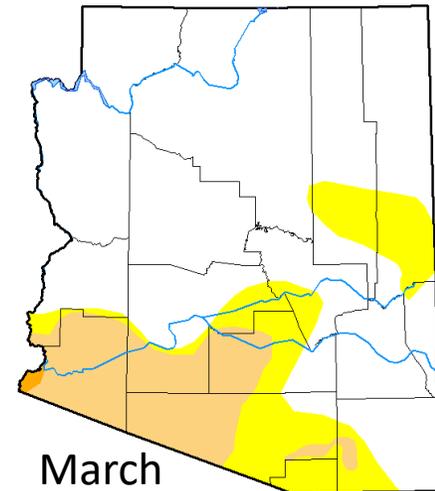
June



May



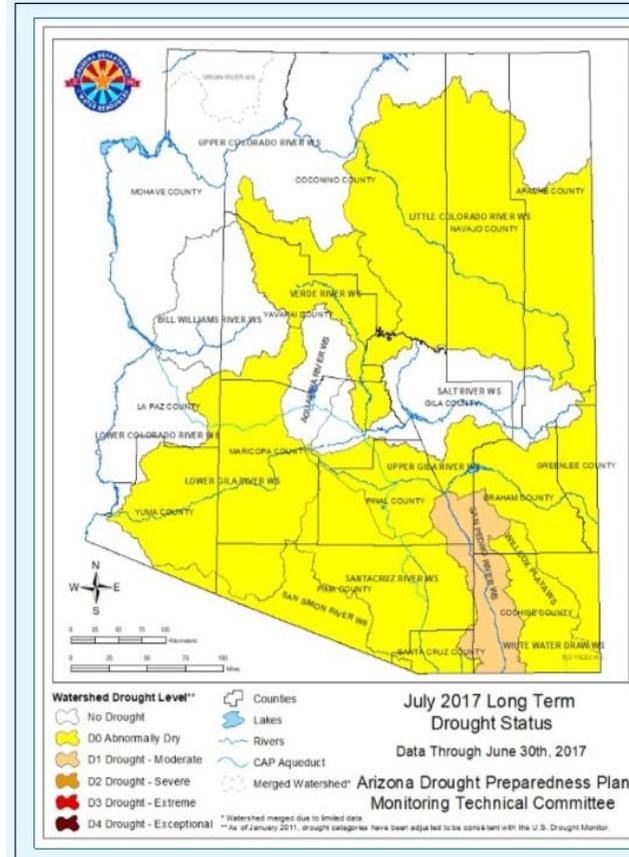
April



March

Past 6 Months

April-June Long-Term Drought Status Report

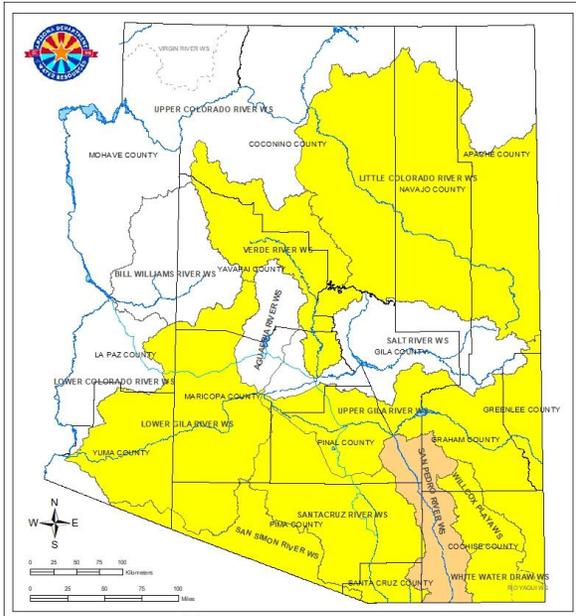


April–June 2017 Long-term Drought Status

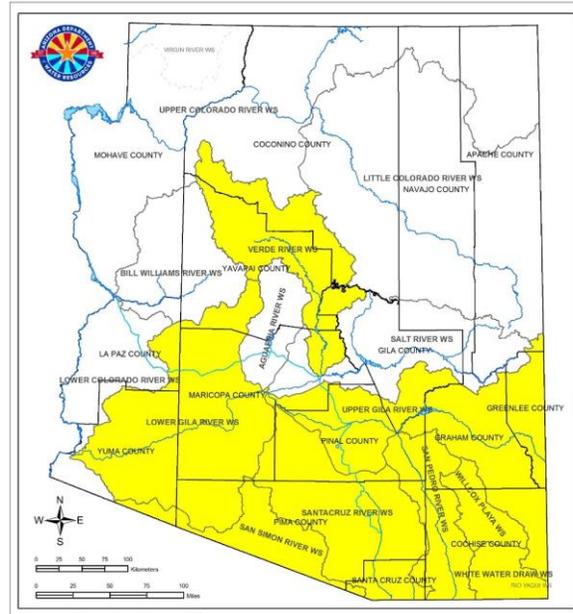
The long-term map shows that drought conditions deteriorated on the little Colorado River watershed from no drought to abnormally dry (D0) and on the San Pedro watershed from abnormally dry to moderate drought (D1). This is largely due to the continuous dry conditions in these areas since last year's monsoon.

It's likely that the San Pedro and some of the other neighboring watersheds may improve after this monsoon season as this is usually the wet time of year for the southern watersheds.

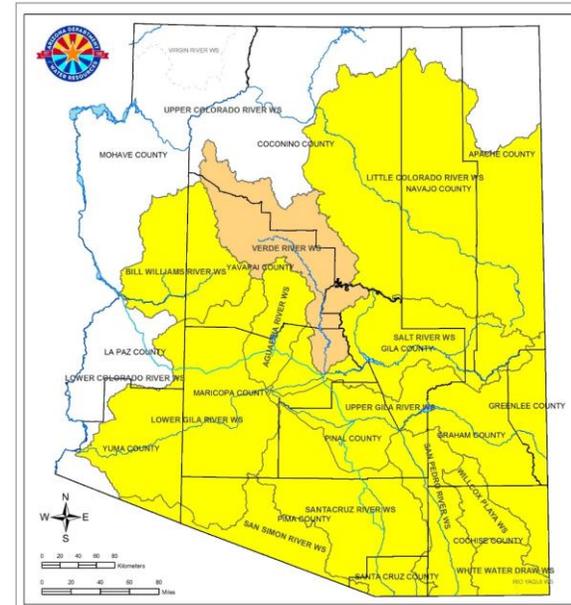
Long-Term Drought Status Maps



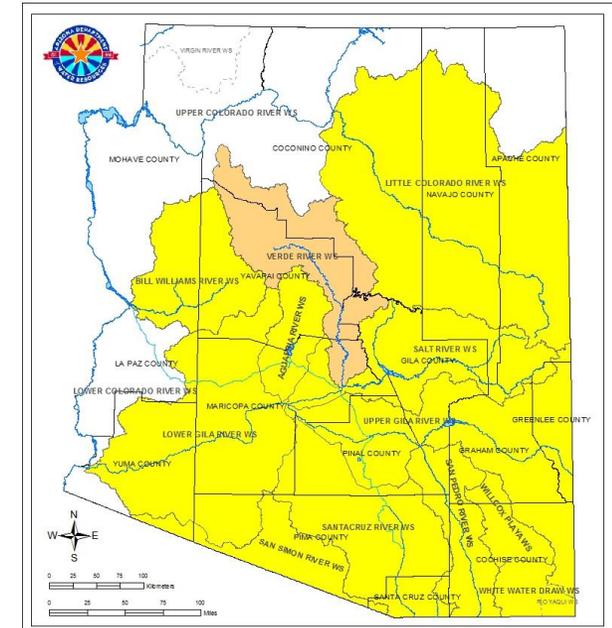
July 2017



April 2017



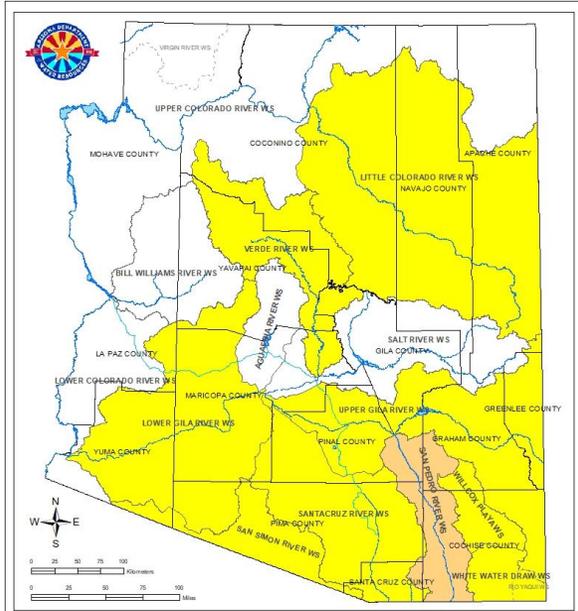
January 2017



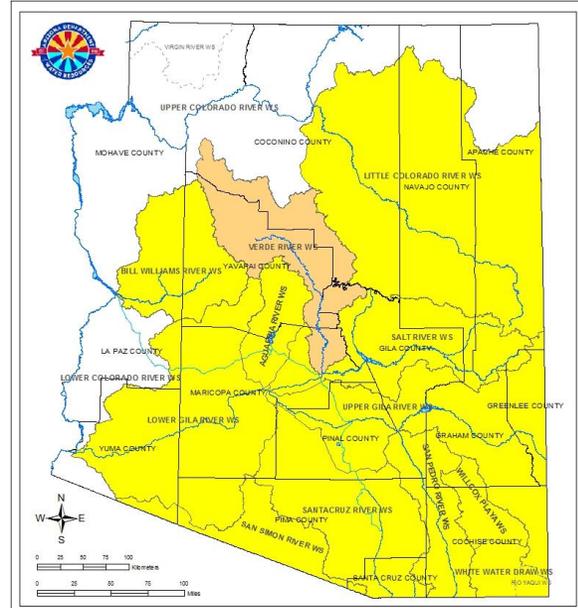
October 2016

Past Year

Long-Term Drought Status Maps



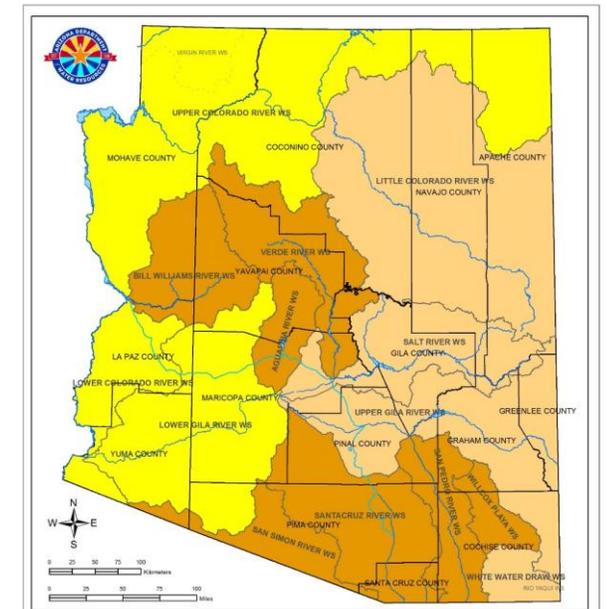
July 2017



July 2016



July 2015



July 2014

Past 4 Years

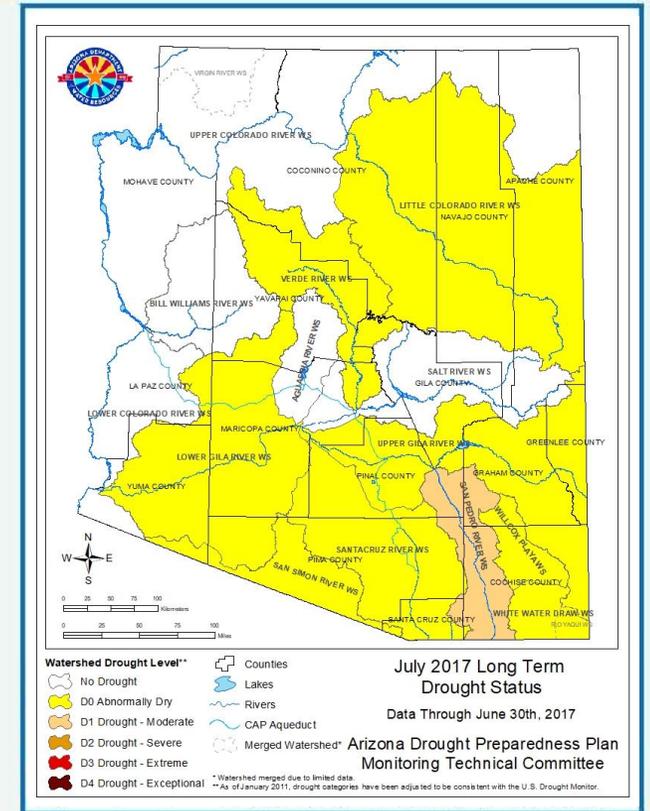
Experimenting with New Long-Term Drought Status Maps

Current Watershed-based Long-term Map:

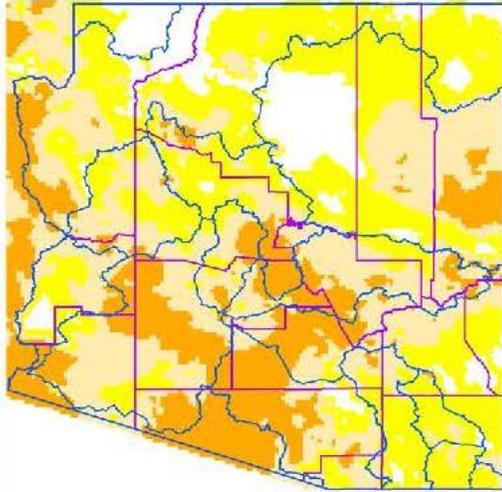
The original long-term map uses watershed-average precipitation from rain gauges within each watershed to calculate the Standardized Precipitation Index (SPI). These maps use data from 1971 through the most recent month, and the SPI is calculated for 24-, 36- and 48-month periods. These longer periods are used to represent hydrologic drought – essentially the effect on water resources, both surface and groundwater. The SPI ranks the most recent 24-, 36-, and 48-month periods with the historical records to determine which percentile the current period falls in. For example, an SPI value in the lowest 2% would correspond to Exceptional Drought, while values above the 30th percentile would correspond to No Drought.

Two drawbacks of this method are the spatial resolution & length of record:

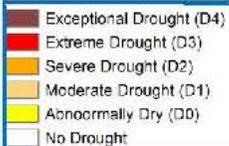
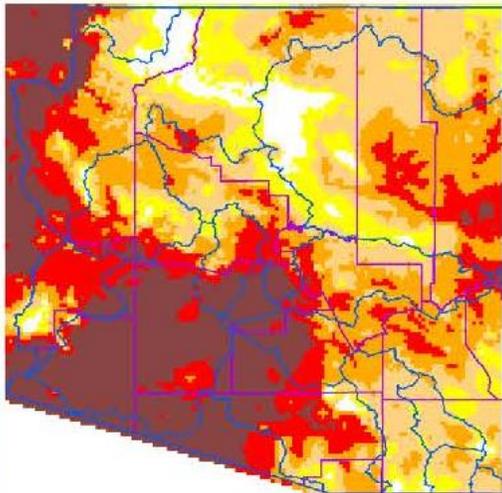
1. The lack of spatial resolution requires precipitation to be averaged and the entire watershed is represented in the same drought condition, which is often not the case.
2. The historical period used is quite short, at 46 years, and as Arizona enters its 23rd year of drought, dry years overwhelm the record, so the “normal” is represented as much drier than if considering a longer period.



Long-Term Drought - SPI - July 2017



Long-Term Drought - SPEI - July 2017



Experimental Gridded SPI & SPEI Long-term Maps:

To improve spatial resolution and length of record, the MTC is testing two new maps that use gridded data:

Gridded SPI Map:

Data used in this map is derived by the PRISM Group, Oregon State University, using algorithms that account for terrain, rain shadows and other complex processes in the climate system. While this interpolation may not be perfect, it provides a better representation of precipitation variability across the watersheds. In addition, the period of record for this data is available from 1895 through the most current month, providing 76 additional years of data.

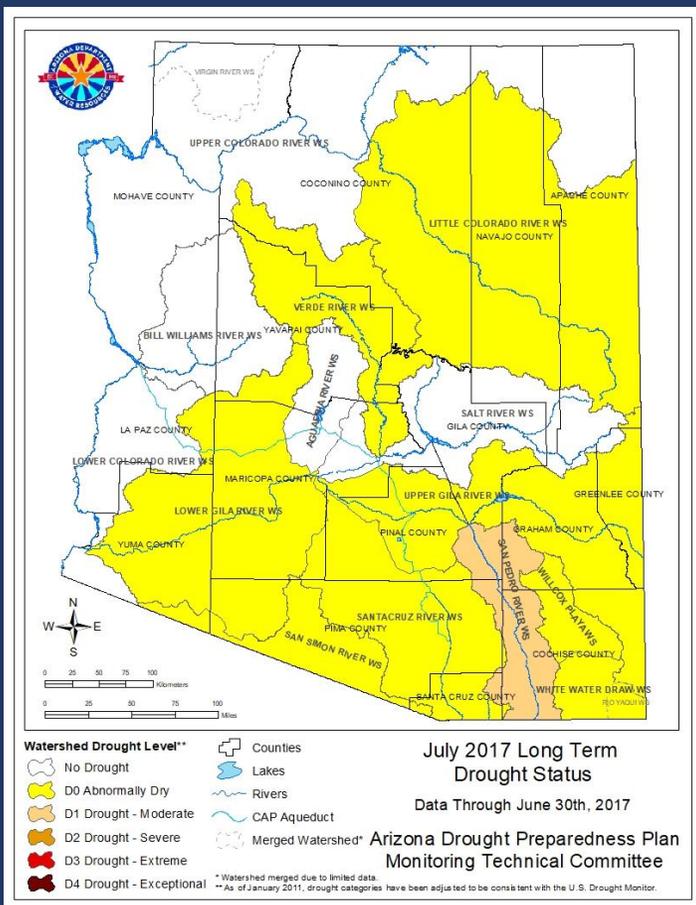
Gridded SPEI Map:

While the SPI map uses only precipitation data, the Standardized Precipitation Evapotranspiration Index (SPEI) map includes both precipitation and evapotranspiration data by incorporating temperatures, according to the Thornthwaite method. The addition of evapotranspiration data to the map can be useful, however in a desert environment where dry conditions are normal, this may overestimate the drought because once the soil and vegetation have dried out, additional high temperatures will not dry it further.

(more information on both gridded indices can be found here: <https://wrcc.dri.edu/wwdt/about.html>)

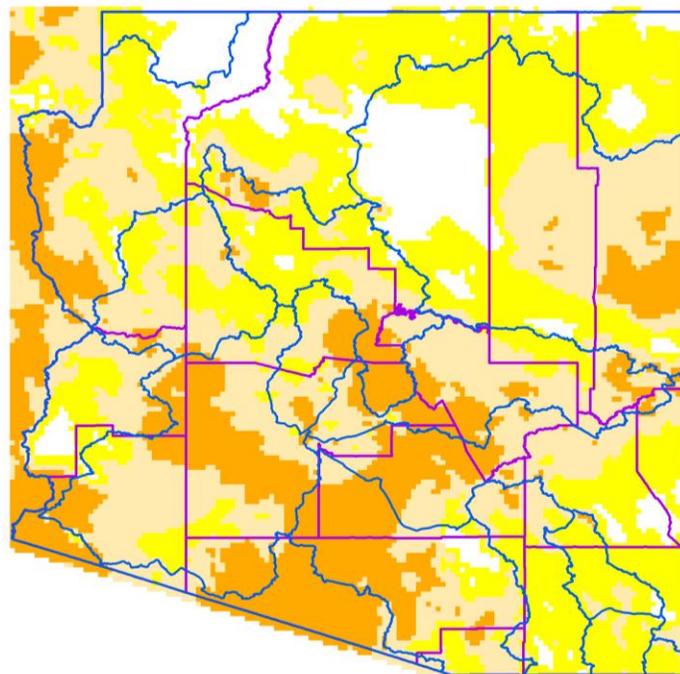
Because neither of these maps provide a perfect representation of reality, we ask for your feedback and comments regarding the drought depiction in these long-term maps to help us evaluate the accuracy of each. The best representation may be somewhere between the SPI and SPEI map.

Watershed



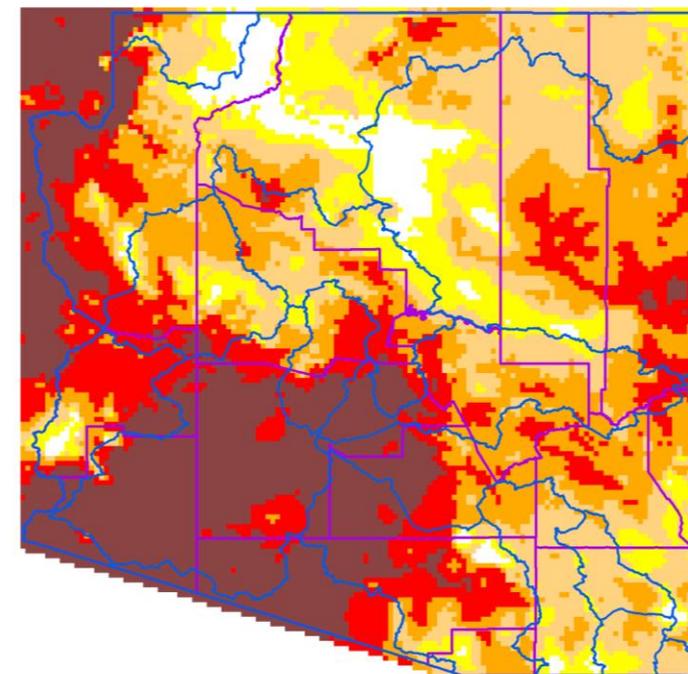
SPI

Long-Term Drought - SPI - July 2017

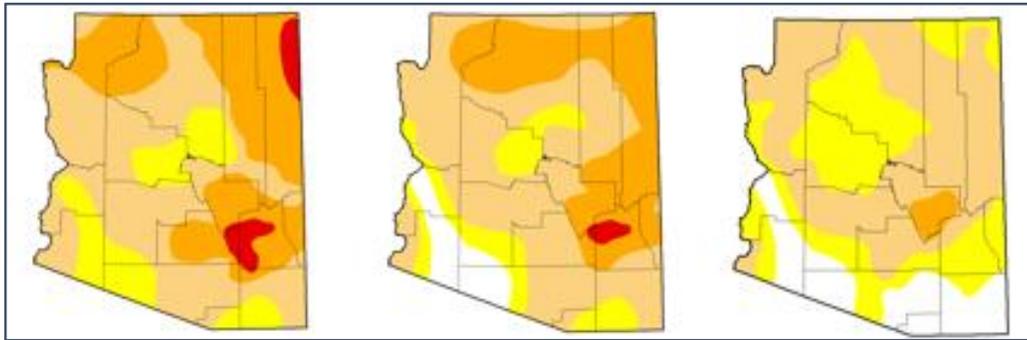


SPEI

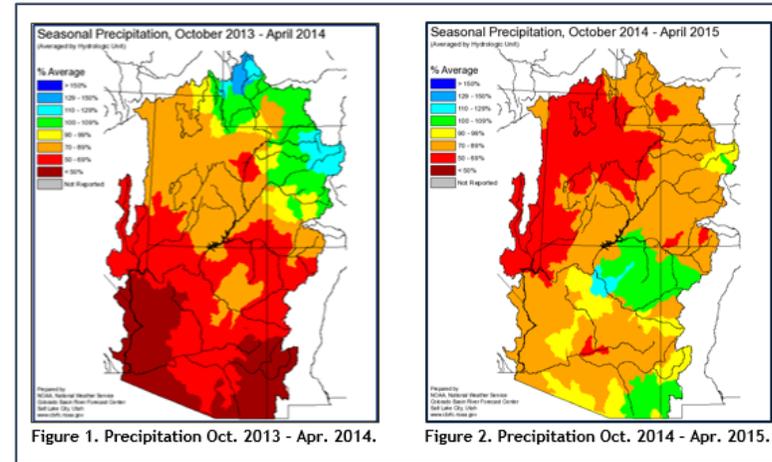
Long-Term Drought - SPEI - July 2017



Arizona Drought Preparedness Annual Report 2017 Update

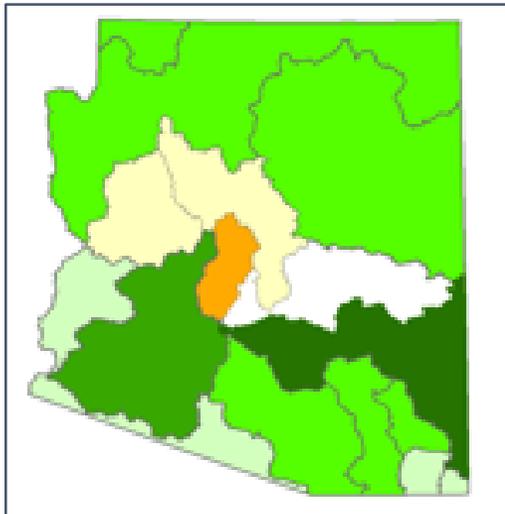


Drought
status
changes

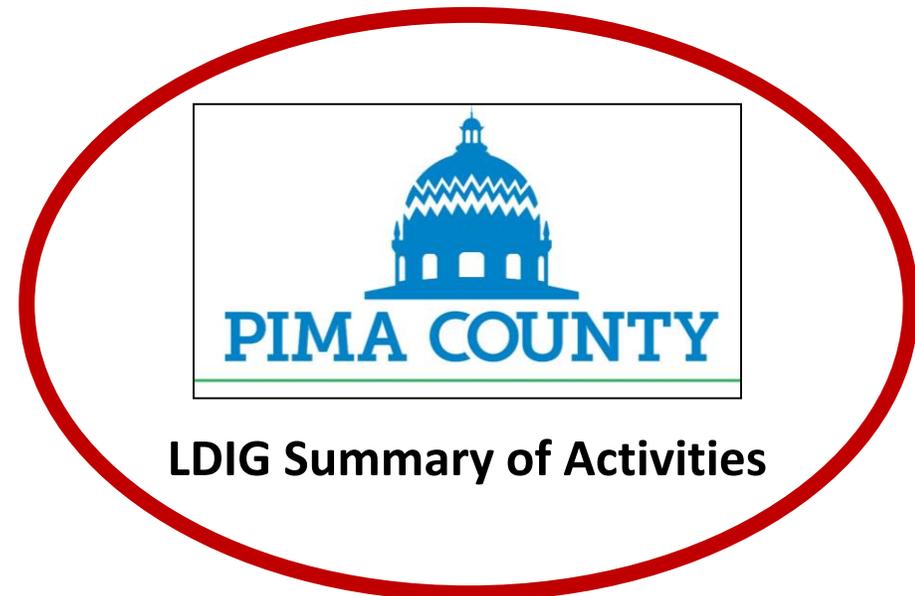
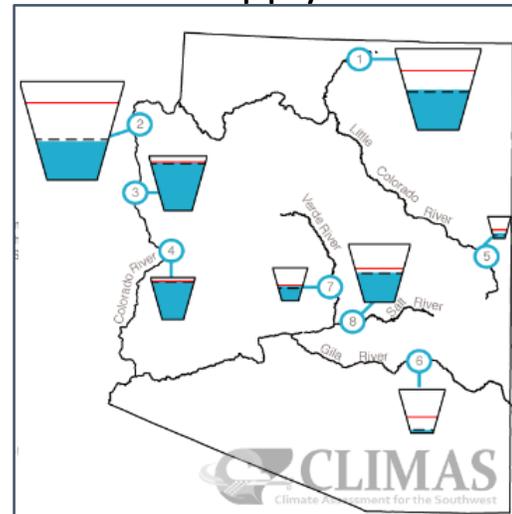


Drought
Status
Summary

Climate & Precipitation Data



Water Supply Status



Local Drought Impact Group Update



Updates on:

- Local Weather & Drought Conditions
- Local Drought Impacts (refer to Examples sheet)
 - Hydrological
 - Ecological
 - Agricultural
 - Societal & Community
 - Recreational & Tourism
- Local Drought Responses- examples from 2016
 - Water Resources Asset Management Plan
 - Strategic Plan for Use of Reclaimed Water
 - Conservation Effluent Pool
 - Long-term water storage
 - The Lower Santa Cruz Living River Project

Drought ICG

(Interagency Coordinating Group)

Fall Meeting

Thursday, Nov. 16th

10:00 am

Presentations:

- 2017 Drought Status & MTC Activities
- Winter 2017-18 Weather Outlook
- Colorado River Water Supply Update
- Salt & Verde Watersheds Water Supply Update
- 2017 Forest Health & Wildfires Update
- And much more!

Thank you!

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PROTECTING
ARIZONA'S WATER SUPPLIES
for ITS NEXT CENTURY