

Method for Determining Long-term Drought Status

The Monitoring Technical Committee uses percentile values for precipitation and streamflow to determine drought status in each of Arizona’s watersheds. Arizona’s long-term drought status map, updated quarterly, incorporates 24-, 36- and 48-month precipitation *and* streamflow percentiles from multiple gages in each of Arizona’s major watersheds. To arrive at these values, precipitation and/or streamflow totals for each period (24, 36, 48 months) are compared to the 30-year historical record. Therefore, only gages with a 30-year record of data are used.

The precipitation and streamflow percentiles are evaluated against the trigger levels shown in the table below to determine drought status for each watershed.

Trigger Levels (based on precipitation & streamflow percentiles)	Drought Status	Possible Impacts
>40.00	Normal Conditions	
25.01-40.00	Abnormally Dry	<ul style="list-style-type: none"> • Measurable reduction in precipitation • Stress to seasonal grasses • Stock pond storage somewhat reduced
15.01–25.00	Moderate Drought	<ul style="list-style-type: none"> • Noticeable reduction in precipitation • Some vegetation stress • Stock pond storage reduced • Reduced streamflows • Lower than average reservoir levels
5.01-15.00	Severe Drought	<ul style="list-style-type: none"> • Long-term reduction in precipitation • Low snowpack • Reduction in reservoir levels • Vegetation stress affecting trees and shrubs • Habitat and pasture degradation
<5.00	Extreme Drought	<ul style="list-style-type: none"> • Multi-year precipitation deficits (including snowpack) • Significant reduction in reservoir levels • Measurable reduction in groundwater levels • Near-record low streamflows • Substantial stress on trees and significant rangeland degradation • Diminished wildlife populations

For any given precipitation or streamflow total, and any given time period, a percentile value measures how “rare” that precipitation value is as compared with historical values. If

precipitation for the period of February - April, for example, is in the 16th percentile based on 30 years of record, then this means that only 16% of all precipitation totals for the period February – April over the last 30 years were lower than the current total (a moderate drought status).

Once the percentile values are determined, drought status is evaluated differently depending on whether the drought status is improving or worsening:

- To avoid premature changes in drought status, and to recognize that drought takes time to develop and to improve in Arizona, precipitation and streamflow percentiles must show improving conditions for at least four consecutive months before a watershed is changed to a less severe drought status.
- Precipitation and streamflow percentiles must show worsening conditions for two consecutive months before moving to a more severe drought status.

After the drought status maps are created, other data are evaluated to verify the calculated drought status. The Committee considers indicators such as vegetation health, reservoir levels, snowpack conditions, and other drought impact data from observers around the state. Based on these other indicators, the Committee may choose to adjust the status of one or more watersheds.

This method of determining drought status was adapted from the Georgia Drought Management Plan (2003). The method has been adapted to account for Arizona's varied topography and to take into account the considerable contribution of snow to Arizona's hydrology.