

# Key Takeaways

#### **Global Conditions Relevant to Drought**

- A short duration La Niña event recently ended. La Niña events are related to belowaverage precipitation in Southern California during the wet season, which was observed in 2024-2025.
- Neutral El Niño-Southern Oscillation is forecast through at least the end of 2025.

#### Local and Regional Drought Conditions

- Drought continued in the Southwest U.S. and Southern California due to below-average precipitation and above-average temperatures during the 2024-2025 wet season.
- October 1, 2024–May 12, 2025 was the 4th driest and 10th warmest such period in southern California since 1951.
- Drought is forecast to persist in the Southwest U.S. and Southern California through at least August 2025.

#### Public Health Sector-Specific Drought Outlook

- Poor air quality in Southern California is expected during summer 2025 due to smoke from wildfires (high confidence).
- Anomalous extreme heat, especially in southeastern California, is expected during June-September (high confidence).

#### Agriculture Sector-Specific Drought Outlook

- Low forage production in Southern California is expected in spring 2025 due to the ongoing agricultural drought (high confidence).
- Anomalous extreme heat in summer 2025 will hinder the productivity of agricultural workers, particularly in southeastern California (high confidence).

#### Water Utilities Sector-Specific Drought Outlook

• Compared to April 2025, reservoir storage and groundwater levels are expected to be lower in October 2025 (high confidence) and lower in June 2026 (medium confidence).

# About the Outlook

This outlook disseminates sector-specific drought scenarios that are based on tailored monitoring and forecasting information, which will enable users to make proactive decisions ahead of drought. The focus sectors include water utilities, agriculture, and public health in Southern California.

The next outlook will be released on Thursday, June 26, 2025.

#### Lines of Evidence

Several perspectives are used to inform sector-specific drought scenarios.

- Observed Conditions: Current state of the region from observations as of May 22, 2025 at 10 a.m. PT unless indicated otherwise.
- Predictions: Expert interpretation of many types of forecasts to anticipate the future.

## **Interpreting Scenarios**

A confidence level for each scenario is provided based on guidance from the IPCC AR5:

- Low confidence indicates little agreement among several sources of evidence.
- Medium confidence indicates modest agreement among several robust sources of evidence.
- High confidence indicates close agreement among several robust sources of evidence.

## **Global Perspective**

- The El Niño-Southern Oscillation (ENSO), composed of El Niño, La Niña, and neutral phases, is related to weather anomalies that are used to predict conditions months to seasons in the future.
- La Niña increases the chances of below-average precipitation in Southern California and the Southwest United States during its October-April wet season.
- A weak La Niña ended as of May 2025. ENSO neutral conditions are expected through at least the end of calendar year 2025 (Figure 1).



Figure 1: Chances of El Niño, La Niña, and neutral El Niño-Southern Oscillation (ENSO) phases for three-month seasons spanning April-June (AMJ) 2025 to December 2025 - February (DJF) 2026 from the National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS) Climate Prediction Center (CPC) May 2025 ENSO Diagnostic Discussion.



## **Regional Drought Conditions**

- Moderate to Exceptional Drought (D1-D4) continues across the Southwest U.S. and Southern California, except in San Luis Obispo County, where Abnormal Dryness (D0) is present (Figure 2).
- October 1, 2024 May 12, 2025 was the 4th driest and 10th warmest such period in Southern California since 1951 (Figure 3).
- Snowpack is historically low because of <u>rapid snowmelt</u> during the last several weeks (Figure 4).





**Figure 2.** U.S. Drought Monitor as of May 20, 2025. Source: National Drought Mitigation Center.

**Figure 3.** Scatter relationship between daily maximum temperature (C) and precipitation (mm) in Southern California during October 1, 2024 to May 12, 2025. Source: NOAA Physical Sciences Laboratory using data from NOAA's NESDIS and NCEI.



**Figure 4.** Percent of median snow water equivalent on May 20, 2025 based on data from the USDA Natural Resources Conservation Service.

### Forecasts and Summertime Conditions Relevant to Drought

- Above-average temperatures are forecast through at least the end of 2025 according to the NOAA National Weather Service (NWS) Climate Prediction Center (Figure 5b).
- Drought is expected to persist through at least the end of August 2025 according to the NOAA/NWS Climate Prediction Center (Figure 6).
- Soil moisture will remain below drought thresholds throughout summer 2025 and will most likely remain below drought thresholds through December 2025 (Figure 7).



**Figure 5a.** Chances of above- (green), below-(brown), and near- (gray) average precipitation valid for June-August 2025. Issued on May 15, 2025 by the NOAA/NWS Climate Prediction Center.



**Figure 5b**. Chances of above- (red), below-(blue), and near- (gray) average temperature valid for June-August 2025. Issued on May 15, 2025 by the NOAA/NWS Climate Prediction Center.



**Figure 6.** Drought outlook for May 15-August 31, 2025, showing where drought is predicted to persist (brown) and develop (yellow). Issued on May 15, 2025 by the NOAA/NWS Climate Prediction Center.



**Figure 7.** The evolution of the top 1-m of soil moisture over the calendar year, shown as a percentile rank based on 1940-2024 (shading). The two timeseries show the evolution of soil moisture during the calendar year when soil moisture on May 1 was below the 30th percentile (a) after 1940 (black line) and (b) after 2000 (black line). Source: NOAA Physical Sciences Laboratory using data from ECMWF's ERA5.

### Public Health Sector-Specific Drought Outlook

Poor air quality in Southern California is expected during summer 2025 due to smoke from wildfires (high confidence). Anomalous extreme heat, especially in southeastern California, is expected during June-September (high confidence).

Supporting Evidence:

- Widespread low soil moisture throughout the Southwest U.S. and Southern California (Figure 8).
- Elevated risk of significant wildland fire potential in Southern California and the entire western United States in summer 2025 (Figure 9).
- Increase chances of above-average temperatures during summer 2025 (Figures 5 and 10).



### Soil Moisture Percentile on May 17, 2025

**Figure 8.** Estimate of observed soil moisture percentiles on May 17, 2025 from the <u>NOAA</u> <u>Climate Prediction Center</u> based on the North American Land Data Assimilation System (NLDAS) version 2 ensemble average.



**Figure 9a.** Wildland fire potential valid for June 2025 issued on May 1, 2025 by the National Interagency Fire Center.



**Figure 9b.** Wildland fire potential valid for August 2025 issued on May 1, 2025 by the National Interagency Fire Center.



**Figure 10.** (left) Average maximum temperature June-September 1951-2024. (center) Average maximum temperature during drought years in Figure 7a since 1951 displayed as a difference from the 1951-2024 average. (right) Average maximum temperature during drought years in Figure 7b since 200 displayed as a difference from the 1951-2024 average.

## **Agriculture Sector-Specific Drought Outlook**

Low forage production in Southern California is expected in spring 2025 due to the ongoing agricultural drought (high confidence). Anomalous extreme heat in summer 2025 will hinder the productivity of agricultural workers, particularly in southeastern California (high confidence).

Supporting Evidence:

- Below-average precipitation was observed in the 2024-2025 wet season (Figure 3).
- Soil moisture will remain below drought thresholds throughout summer 2025 (Figure 11).
- Increased chances of above-average number of days exceeding 38° Celsius (100.4° Fahrenheit) in summer 2025 (Figure 12).



**Figure 11.** Forecast soil moisture percentiles valid for May-October 2025 issued on May 10, 2024 by the NOAA/NWS Climate Prediction Center.



**Figure 12.** (left) Average number of days exceeding 38C during June-September 1951-2024. (center) Average number of days exceeding 38C during drought years in Figure 7a since 1951 displayed as a difference from the 1951-2024 average. (right) Average number of days exceeding 38° C (100.4° F) during drought years in Figure 7b since 2000 displayed as a difference from the 1951-2024 average.

## Water Utilities Sector-Specific Drought Outlook

Compared to April 2025, reservoir storage and groundwater levels are expected to be lower in October 2025 (high confidence) and lower in June 2026 (medium confidence).

Supporting Evidence:

- Steady reservoir storage over the last several months (Figure 13).
- Snowpack is historically low because of <u>rapid snowmelt</u> during the last several weeks (Figure 4).
- Bureau of Reclamation projections of the next two water years (Figure 14).



Figure 13. Reservoir storage in California as of May 21, 2025 from California Water Watch.



Figure 14. Projections of Lake Mead end-of-month pool elevations from the U.S. Bureau of Reclamation.