Drought

California has become increasingly dry over the past century. The most recent drought from 2012 to 2016 was the most extreme since instrumental records began.

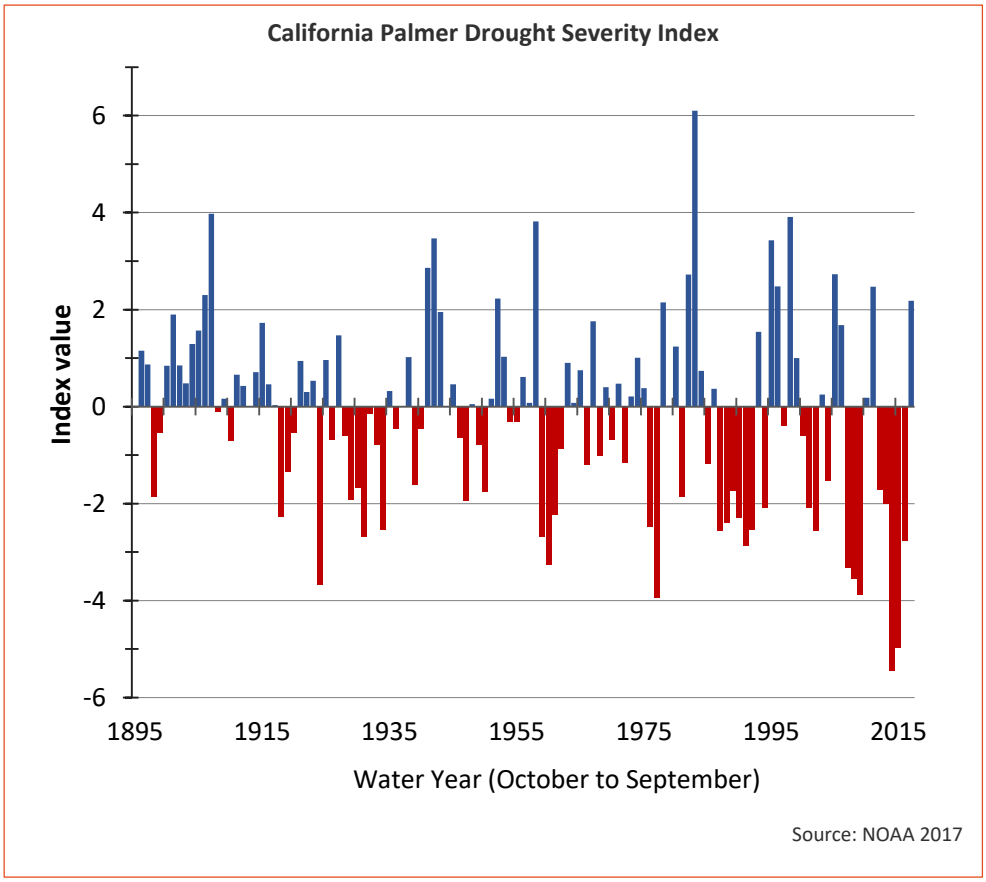
In recent decades, drought years have become more frequent and more severe in California. Droughts are periods of unusually dry weather that last long enough to cause a shortage of water. The state's highly variable precipitation is a main driver of drought. However, human-induced warming has made extreme droughts more likely.

Droughts can have widespread impacts on communities and ecosystems, often leading to significant economic costs. Water supplies for drinking, household use, agriculture, and power generation become scarce. Trees and other vegetation dry up, becoming more vulnerable to pests. Wildfire risks increase. Rivers and streams become less suitable for fish and other aquatic organisms.

What does the indicator show?

Yearly values for a commonly used indicator of drought, the Palmer Drought Severity Index, are shown in the graph below. The blue bars are "wet" years, and the red bars are "dry" years. Values below -3 represent severe to extreme drought. Five of the eight years when values fell below -3 occurred between 2007 and 2016, with unprecedented dry years in 2014 and 2015.

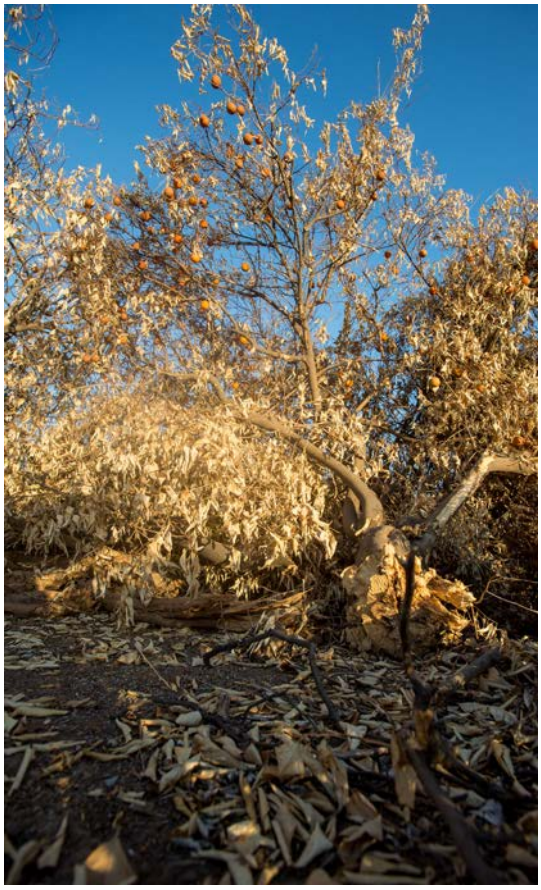
From 2012 to 2016, California experienced its most extreme drought on record, coinciding with years of record warmth and record low snowpack. This drought ended with extraordinarily high precipitation in 2017.



Why is this indicator important?

Drought can have major environmental, social, and economic repercussions arising from its many impacts, including:

- *Drinking water shortages*. Reduced water supplies primarily affect small drinking water systems that often depend on a single water source. By late 2015, more than 100 small water systems lacked water and more than 2,000 domestic wells went dry, particularly in the Central Valley and Sierra Nevada foothills.
- *Significant impacts on agriculture*. During the recent drought, orchards and vineyards were abandoned, more than 500,000 acres of farmland (6 percent of irrigated acreage) were left idle, and the livelihoods of over 10,000 seasonal farmworkers disappeared.
- *Increased tree mortality and wildfire risks.* The recent drought has been linked to the die-off of water-stressed forest trees left more vulnerable to insect infestations. Dry vegetation, along with drought conditions, increase the risk for destructive, rapidly spreading wildfires.
- *Threats to wildlife.* Record-low flows and poor water quality threaten salmon and other native fish. Water shortages in wildlife refuges in the Central Valley and Klamath Basin have forced birds to gather in smaller areas, making them more vulnerable to disease outbreaks and predation.



A dead orchard in the Central Valley (Lindsay, California), taken July 2015

Photo: California Department of Water Resources

- *Human health impacts.* Drought may affect human health by altering patterns of certain diseases like West Nile Virus and by increasing air pollution from wildfires and dust storms.
- *Land subsidence.* Reliance on groundwater increases during droughts. Over-pumping can cause the aquifer to become compacted, reducing its water-holding capacity and causing the land surface to sink. This lowering of the surface (known as land subsidence) can damage buildings, water conveyance systems, roads, railways, bridges and other infrastructure.

For more information about this and other climate change indicators, visit:
https://oehha.ca.gov/climate-change/report/2018-report-indicators-climate-change-california