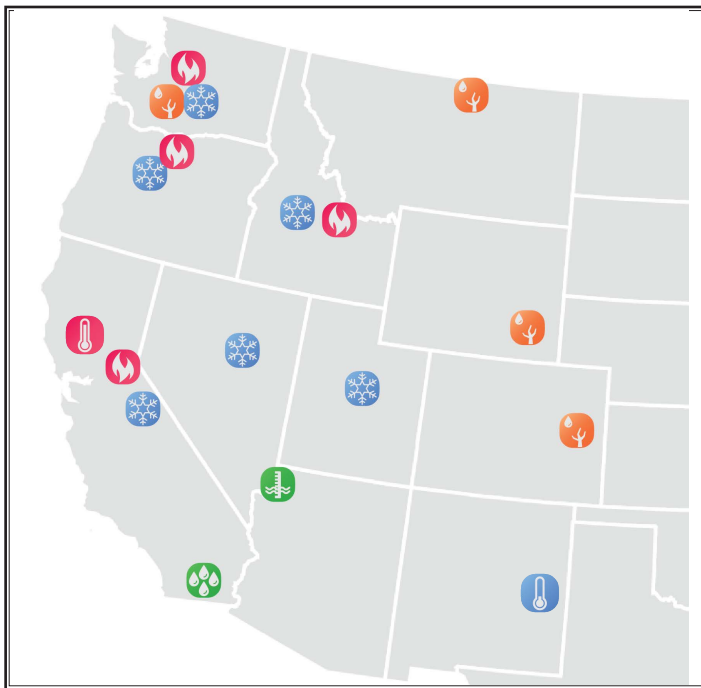


## Significant Events for Sep-Oct-Nov 2022

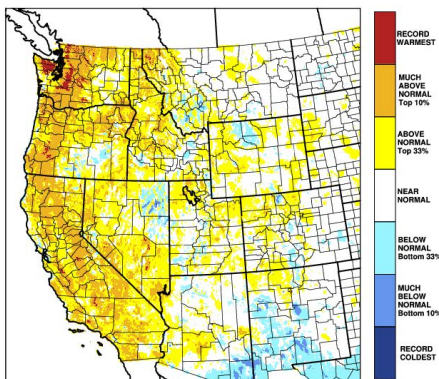


### Sep-Oct-Nov Highlights

- Both heat waves and cold spells occurred across the western U.S. during fall.
- Tropical Storm Kay caused heavy rainfall (up to 5 in) and flash flooding in southern CA.
- Cold storms brought early season snowfall throughout the west, leading to well-above normal snowpack at the end of November.
- Extreme to exceptional drought covers 14% of the West, down from 43% at this time in 2021.
- Lake Powell (UT) and Lake Mead (NV) remain at extremely low levels.
- Wildfires in WA, OR, and CA caused smoke to impact nearby urban areas such as Seattle, WA, Portland, OR, and Reno, NV.
- A third year of La Niña conditions in the tropical Pacific Ocean are forecast to continue through the winter of 2022/2023.

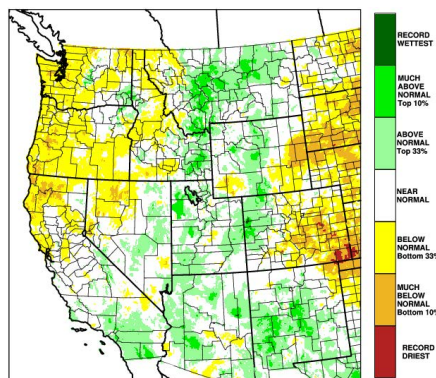
## Regional Overview for Sep-Oct-Nov 2022

### Mean Temperature Percentile Sep-Oct-Nov 2022



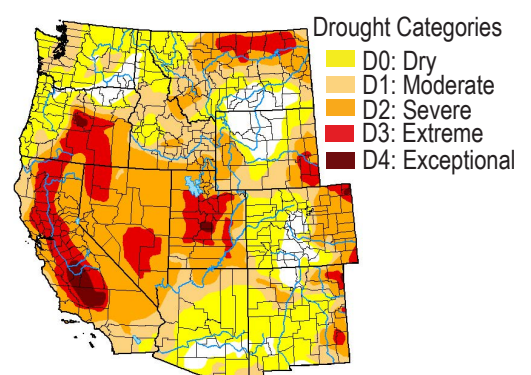
Temperatures were well-above average across the Pacific Northwest with warmer-than-normal conditions throughout CA, NV, ID, and western MT. Colder than normal temperatures were observed in far eastern Nevada, southern Arizona, and much of New Mexico. UT and WY were near to slightly warmer than normal.

### Precipitation Percentile Sep-Oct-Nov 2022



Dry conditions occurred in the Pacific Northwest, northern CA, and western ID. These conditions favored late season wildfires in the Pacific Northwest. Many regions throughout the interior western US experienced a wetter-than-normal fall, with southern CA and western AZ receiving rainfall from Tropical Storm Kay. Eastern WY and CO were dry.

### US Drought Monitor Dec 15 2022



While 91% of the western U.S. is in drought, only 14% is in extreme to exceptional drought. This indicates substantial improvement compared to one year ago. However, reservoirs remain low. Drought severity decreased by up to two DM categories west-wide. Drought intensified by up to two DM categories in WA, CO, WY, and MT.

## Regional Impacts for Sep-Oct-Nov 2022

### Drought and Water Resources

Lake Mead and Lake Powell remain at exceptionally low levels (28% and 24% of capacity, respectively). The latest USBR 24-month study indicates Lake Powell dropping below the level required to produce electricity in the minimum probable inflow scenario.

While not enough to break the drought, fall precipitation and snowpack accumulation were welcomed across many western states and a boon for winter recreation as the holidays approach.

### Agriculture

California vintners are expecting a high quality vintage for 2022, despite challenges induced by spring cold snaps and heat waves during August and September.

### Air Quality

Dry weather and easterly winds induced by strong high pressure allowed late season wildfires in the Pacific Northwest to cause air pollution episodes in rural communities like Oakridge, OR and large cities such as Portland, OR and Seattle, WA.

### September Heatwave Brings Record Temperatures to Western States

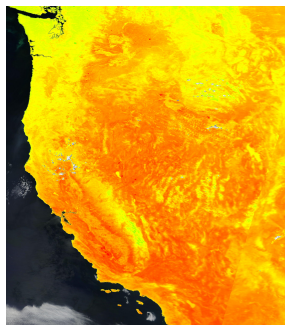


Image: Satellite-observed land surface temperature on 6 September 2022; the peak day of the multiday September heat wave that brought all-time and monthly heat records to many locations in the western US. Credit: NASA

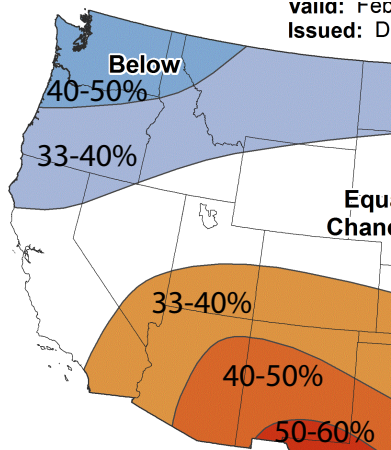
A prolonged extreme heat wave impacted the the western US in early September. Stations across California broke all-time records, with many stations that set records on the 5th breaking them on the 6th. Maximum observed temperatures ranged between 112-125°F. The multi-day heatwave caused fuels to rapidly dry out with several wildfires occurring in the days following. Increased demand for electricity and low hydropower generation potential—due to drought-induced low reservoir levels—nearly led to widespread blackouts. The long duration (over a week) of the heat severely impacted vulnerable populations.

## Regional Outlook for Sep-Oct-Nov 2022

## Western Region Partners

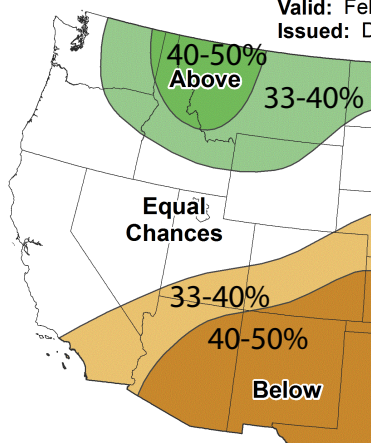
### CPC Temperature Outlook

valid: Feb  
Issued: D



### CPC Precipitation Outlook

Valid: Feb  
Issued: D



Numbers indicate percent chance of temperatures in warmest/coolest one-third and precipitation in wettest/driest one-third. Outlook produced December 15, 2022.

The CPC outlook for February-April is canonically La Niña for both temperature and precipitation. The outlook favors above normal temperatures across the southern tier through southern CA, UT, and CO with the greatest chances in AZ and especially southern NM. Cooler than normal conditions are likely across the northern tier, particularly in WA. Equal chances of above or below normal temperatures are expected in the central western US. The best chances for above normal precipitation are in eastern WA, northern ID, and MT. Below normal precipitation is forecast for the Pacific and Desert Southwestern regions, with the lowest chances in NM and AZ.

Western Regional Climate Center  
[wrcc.dri.edu](http://wrcc.dri.edu)  
National Integrated Drought Information System (NIDIS) - [drought.gov](http://drought.gov)  
Western Governors' Association  
[westgov.org](http://westgov.org)  
Western States Water Council  
[westgov.org/wswc](http://westgov.org/wswc)  
NOAA/ESRL Physical Sciences Division  
[esrl.noaa.gov/psd](http://esrl.noaa.gov/psd)  
NOAA Climate Prediction Center  
[www.cpc.ncep.noaa.gov](http://www.cpc.ncep.noaa.gov)  
National Centers for Envir. Info. (NCEI)  
[www.ncei.noaa.gov](http://www.ncei.noaa.gov)  
USDA/NRCS National Water and Climate Center - [www.wcc.nrcs.usda.gov](http://www.wcc.nrcs.usda.gov)  
National Interagency Fire Center  
[www.nifc.gov](http://www.nifc.gov)  
Western Water Assessment  
[wwa.colorado.edu](http://wwa.colorado.edu)  
Climate Assessment for the Southwest  
[climas.arizona.edu](http://climas.arizona.edu)  
California Nevada Applications Program  
[cnap.ucsd.edu](http://cnap.ucsd.edu)  
Climate Impacts Research Consortium  
[pnwclimate.org/resources](http://pnwclimate.org/resources)  
NWS Western Region Forecast Offices  
[www.wr.noaa.gov/](http://www.wr.noaa.gov/)