

Significant Events for Mar-Apr-May 2021

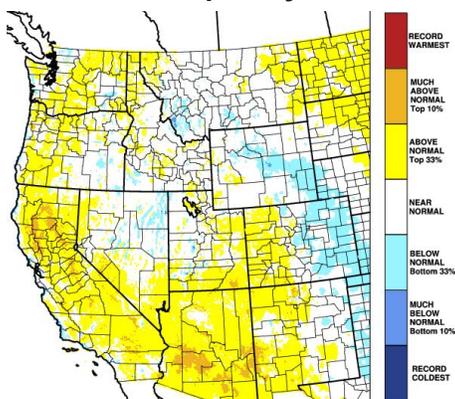
Mar-Apr-May Highlights



-  Portland, OR experienced its second driest April on record; Lewiston, ID tied its driest April.
-  Short-duration, high-intensity March rainfall in southern CA produced post-fire debris flows on the Bond Fire scar, causing minor damage.
-  Extreme to exceptional drought now covers 46% of the West and includes all Western States.
-  Wildfire season began in the Southwest with fires in AZ, CA, and NV.
-  Lake Mead's (NV) water surface elevation of 1073.5 feet is at one of its lowest levels since being filled.
-  March brought heavy snowfall and blizzard conditions to WY and CO.
-  Low flows and warm water due to extreme drought conditions in the Klamath River watershed (CA and OR) is producing unprecedented juvenile salmon mortality from infection of the disease *C. shasta*.

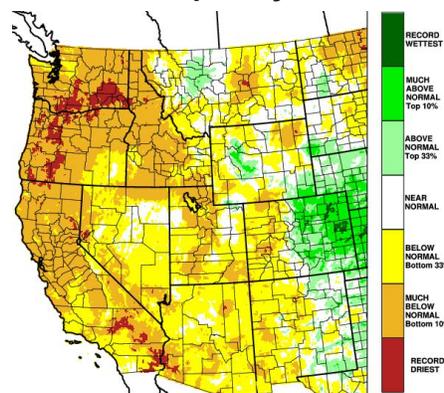
Regional Overview for Mar-Apr-May 2021

Mean Temperature Percentile
Mar-Apr-May 2021



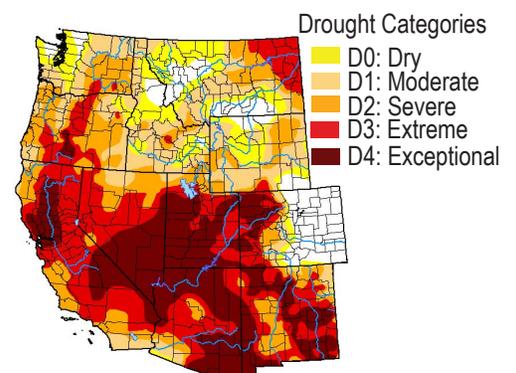
Temperatures were slightly above average in the Four Corners region and the throughout California, western Oregon, central Washington, and the Idaho Panhandle. Near-average to slightly below average temperatures occurred in the Intermountain West and Rocky Mountains.

Precipitation Percentile
Mar-Apr-May 2021



Below average precipitation was observed in the western two-thirds of the West. Near average to slightly above average precipitation occurred in western Montana, western Wyoming, eastern New Mexico, and east of the Colorado Rockies. A persistent ridge of high pressure prevented spring storms from making landfall in coastal regions, leading to dry conditions.

US Drought Monitor
June 1 2021



Over 91% of the western U.S. is in drought, with nearly 46% in extreme to exceptional drought. One year ago, 63% of the West was in drought and only 3% was in extreme to exceptional drought. Drought amelioration did not occur during the cool season as a result of above average temperatures, below average precipitation, and low mountain snowpack.

Regional Impacts for Mar-Apr-May 2021

Drought, Flooding and Water Resources

The lack of spring precipitation limited riverine flood impacts throughout the West.

As of June 1, reservoir storage in Montana and Wyoming is slightly above average (72-77% of useable contents). Utah, Idaho, and Washington are slightly below average (75-79%). Storage is well below average in Arizona, California, Colorado, Nevada, Oregon, and New Mexico (20-55%).

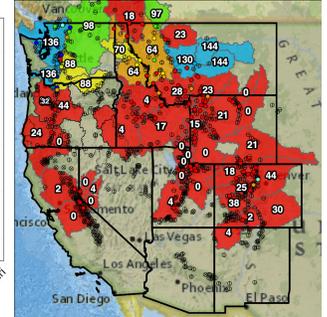
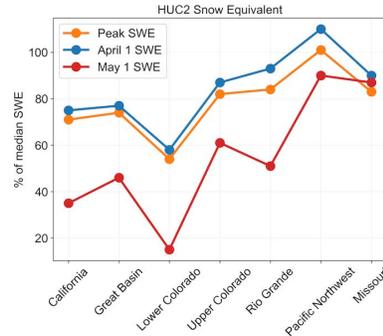
On the Colorado River, Lakes Mead and Powell ended May at 37% and 34% of capacity, respectively. With little snowpack remaining in the Upper Colorado, chances are low for increasing storage in the coming months.

Agriculture and Wildlife Impacts

Adverse rangeland conditions (very poor to poor ratings) exist West-wide, with the best conditions in Wyoming and Colorado.

In response to reduced or non-existent surface water deliveries, California and Arizona farmers are reducing acreage of water-intensive crops such as almonds, switching crops, fallowing fields, and increasing their reliance on groundwater.

Lack of Spring Miracle Maintains Otherwise Low Snow Year

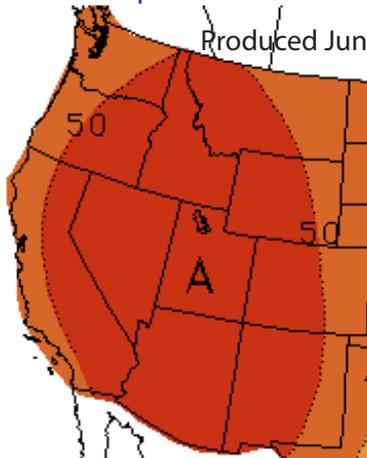


Images: USDA NRCS SNOTEL

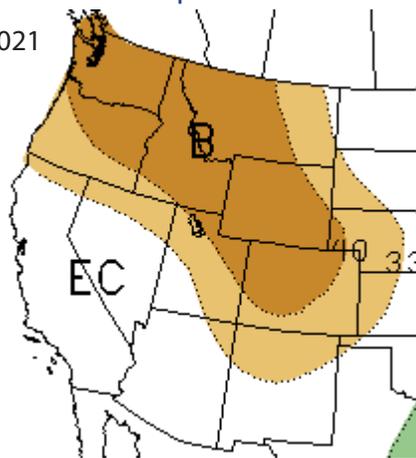
With the exception of the Pacific Northwest, the meager winter snowpack throughout the West remained below average from snowpack peak timing into the melt season (left figure). Spring Miracles can offset otherwise lackluster winters, but spring of 2021 remained dry. Compounding the below-average snowpack was a rapid melting event driven by an early April heatwave. Melt rates were likely amplified by snow-albedo feedbacks: less snowpack means more localized warming on exposed surfaces that in turn drives more snowmelt. By early June (right figure; percent of median), many areas had effectively no snow remaining. Early loss of snow promotes enhanced summer evaporation and decreased late season streamflows.

Regional Outlook for Jul-Aug-Sep 2021

CPC Temperature Outlook



CPC Precipitation Outlook



A = Above normal B = Below normal EC = Equal chances. Numbers indicate percent chance of temperatures in warmest/coolest one-third and precipitation in wettest/driest one-third.

The CPC outlook for mid-summer suggests an exacerbation of drought and drought impacts. High confidence for above-normal temperatures throughout the western U.S. will maintain atmospheric demand for moisture, increasing pressure on water resources and favoring wildfire. In addition, anomalously hot temperatures create high energy demand and pose heat-health impacts. Below-normal precipitation is projected for the Pacific Northwest and Intermountain West, implying further drought impacts on agriculture, ecosystems, and wildfire. Equal chances in the core North American monsoon region indicates some potential for rainfall.

Western Region Partners

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