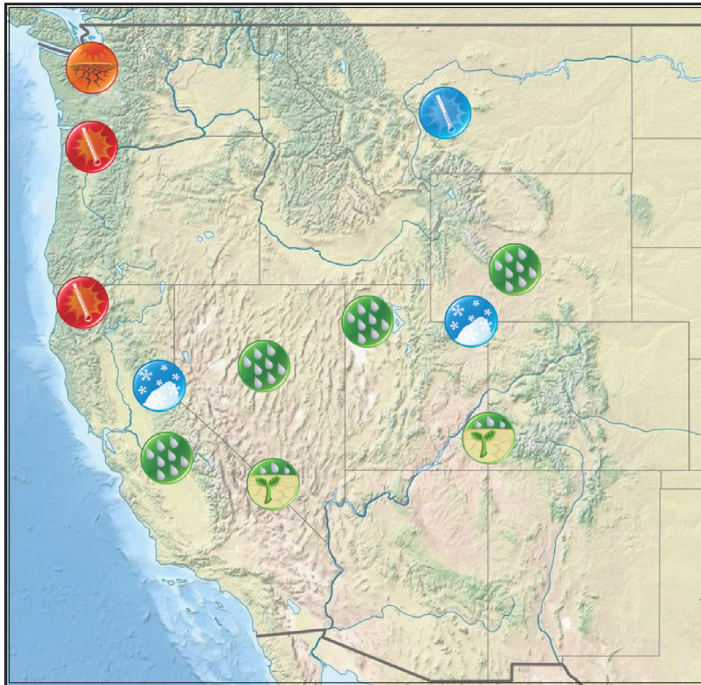




Significant Events for March-April-May 2019

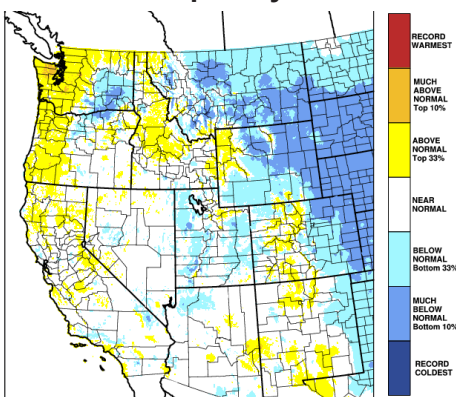
Mar-Apr-May Highlights



- Temperatures averaged to near normal across much of West; MT cooler than normal while slightly warmer than normal conditions in coastal areas
- Well above normal precipitation from CA northeast to WY; NV and UT 2nd wettest spring on record
- Generally near to drier than normal conditions along northern, southern tier of the West
- As of May 31, snowpack 75% of normal across Pacific Northwest basins and in excess of 400% of normal in the California, Great Basin, Upper Colorado, and Rio Grande Regions
- West-wide drought conditions reduced from 25% to 5% over course of spring; drought alleviated in most areas but expanded in western WA
- This spring, 15 atmospheric rivers made landfall on the US West Coast
- Weak El Niño conditions present and likely to persist through summer 2019

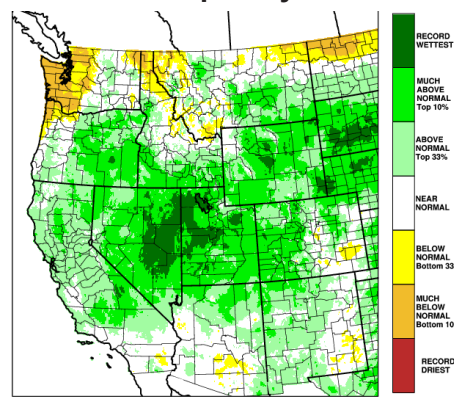
Regional Overview for March-April-May 2019

**Mean Temperature Percentile
Mar-Apr-May 2019**



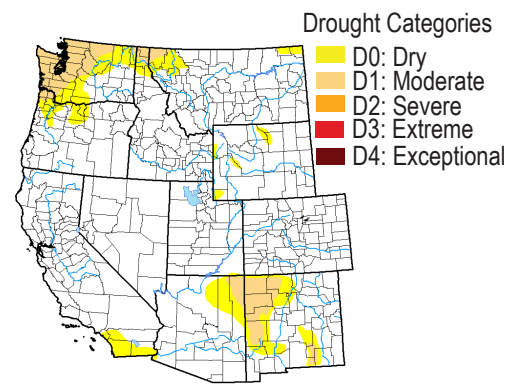
Spring temperatures were variable across the West. In the Southwest, cooler than normal March and May temperatures were balanced by above normal April temperatures, averaging to near normal. Cooler than normal March and May temperatures dominated in the Inland Northwest, while above normal April and May temperatures were present in the Pacific Northwest.

**Precipitation Percentile
Mar-Apr-May 2019**



The North Pacific storm track remained active through the spring season bringing above normal precipitation to much of the West. Several cutoff low pressure systems in April and May produced persistent cloudy conditions and thunderstorms across CA and the Intermountain West. Much of the activity stayed to the south, leaving the northern tier of the region drier than normal.

**US Drought Monitor
May 30 2019**



Above normal precipitation and moderate temperatures supported improvement in drought conditions across much of the West, decreasing from 25% to 5% over the course of the season. The Pacific Northwest was the only area to experience expansion of drought conditions. During the spring season, moderate drought conditions in WA expanded from 4% to 43% of the state's area.

Regional Impacts for Mar-Apr-May 2019

Drought, Flooding and Water Resources

As of Mar 12, all drought designation was removed from CA in the USDM for the first time since 2011. As of Mar 28, CO free of drought for first time since inception of USDM in 2000.

June estimate for April-July inflow to L. Powell is 144% of average, spring precipitation and mild temperatures increased inflow projections.

May snowfall boosted snowpack at Sierra Nevada ski resorts; some resorts anticipate remaining open through or past the July 4th holiday. Ski resorts in CA saw 17% increase in visitation from last year.

Much of Southwest emerged from drought, Rio Grande observed historic low flows in 2018 (18% of average), and April 2019 flow forecast is 142% of average.

March ice jams along the Bighorn River in southeast MT caused flooding and road damage on Interstate 90.

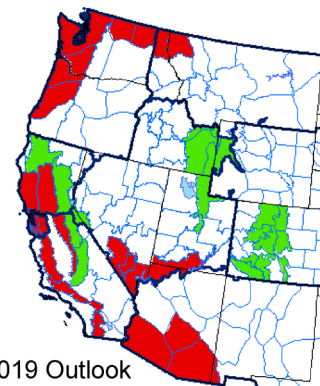
Agriculture and Wildlife

Wildflower superbloom in California attracted a large number of visitors, stressing the infrastructure of some communities and parks.

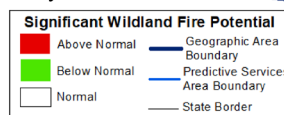
Potato and other planting in Northwest delayed due to late March snows which may impact total yields.

Developing Drought in Pacific Northwest

Above normal temperatures and below normal precipitation and snowpack during winter and spring have resulted in expansion of drought conditions in the Pacific Northwest. The WA governor declared a drought emergency for 27 river basins this spring. Dry conditions in western WA supported an early start to the fire season with 58 fires occurring between Jan and Mar. Warm, dry conditions led Predictive Services to advise that western WA and OR will experience above normal fire potential for the primary May-Aug fire season. The outlook for July is shown above, areas with above normal fire potential are in red. Low snowpack, early snowmelt, and low streamflows have resulted in low projected returns of Nooksack River chinook in northwest WA; limits have been placed on these fish.



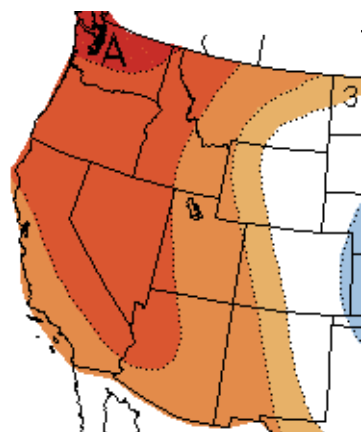
July 2019 Outlook



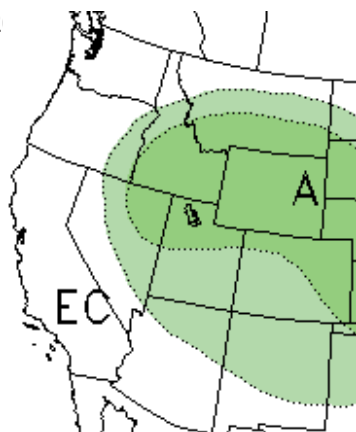
Regional Outlook for Jul-Aug-Sept 2019

CPC Temperature Outlook

CPC Precipitation Outlook



June 20 2



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 favors above normal summer temperatures across nearly all of the western US. The greatest likelihood (60-70% chance) is suggested for WA while a 50-60% chance of above normal temperatures is suggested elsewhere in the Pacific Northwest extending southeastward into the Great Basin. Equal chances of near, above, or below normal precipitation are given for coastal areas, where precipitation is typically minimal during this part of the year, as well as much of the core North American Monsoon region. Above normal precipitation is slightly favored across the eastern Great Basin and Rocky Mountain states (33-50% chance).

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.ncdc.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.wrh.noaa.gov/