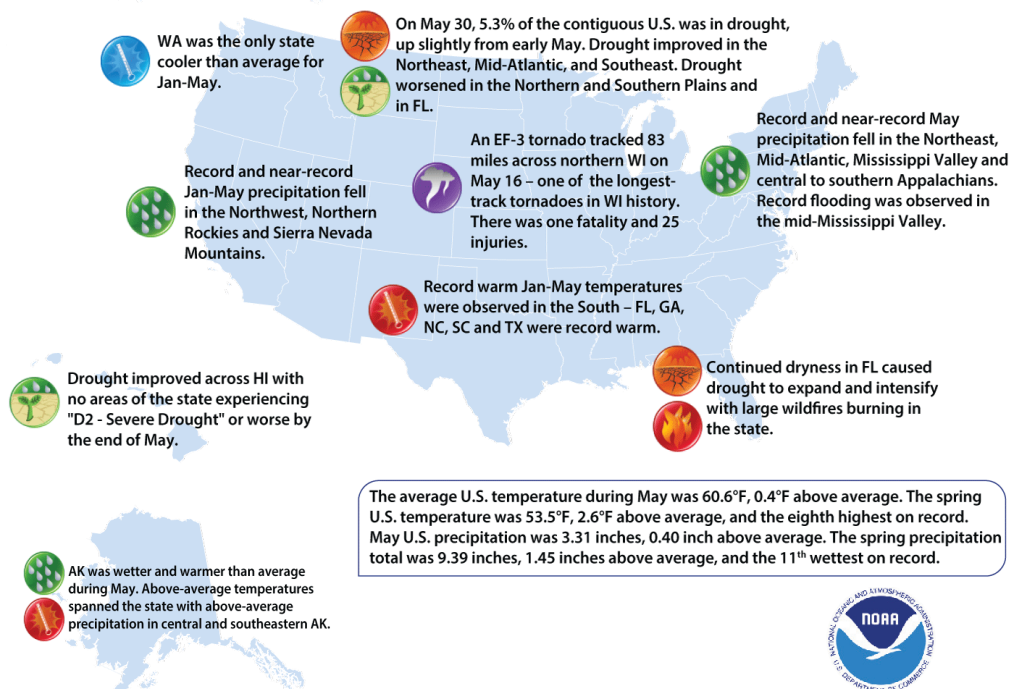


Significant Events for March 2017 - May 2017



Mar-May Highlights for the West

Wetter than normal spring in Pacific NW, Sierra Nevada; WA observed 2nd wettest spring on record

AZ, NM, CO, WY all had one of their top-10 warmest springs on record

Apr 1 snowpack well above normal in Sierra Nevada, Cascades, Great Basin Ranges, central Rockies; near normal for N/S Rockies

Snowmelt flooding impacted many snow-dominated watersheds; many locations forecast to hit record streamflow volumes in summer

Most of West remains drought-free; moderate to severe drought along US-Mexico border in AZ and CA

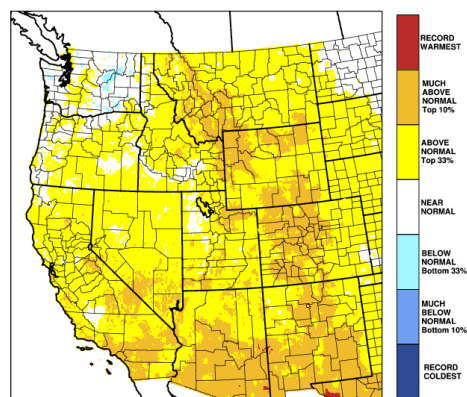
Near-normal sea surface temperatures along US West Coast

Tropical Pacific currently in ENSO-neutral state; models show increasing chances of El Niño in summer/fall

Regional Overview for March 2017 - May 2017

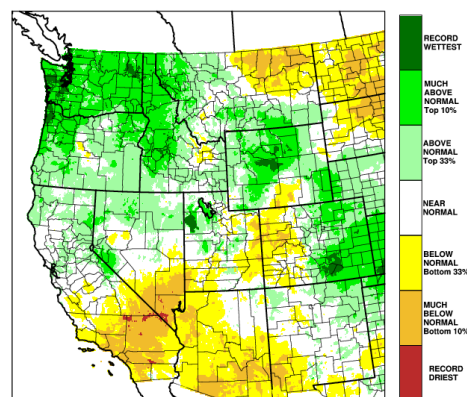
Mean Temperature Percentile

Mar-May 2017



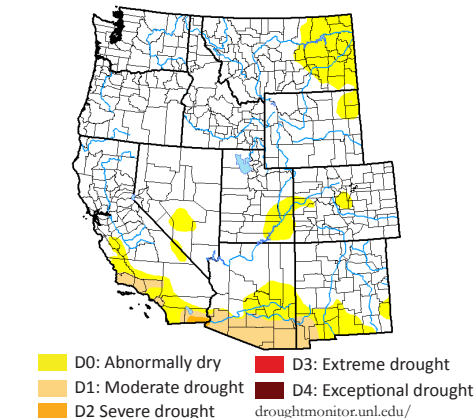
Precipitation Percentile

Mar-May 2017



U.S. Drought Monitor

May 30, 2017



Typical of spring, there were many shifts between well above and below normal temperatures in the West during the March-May period. Several late season storms brought cold air masses into the region, and temperatures increased significantly with strong high pressure between storm systems. Spring temperatures averaged to near normal in the Pacific Northwest and much warmer than normal throughout the Rocky Mountains and across the Desert Southwest. March was much warmer than normal in the West; CO and NM had their warmest March on record and UT, AZ, WY, NV, ID all had a top-10 warmest March.

During March and the first half of April, several atmospheric river storms impacted the Pacific Northwest, Inland Northwest, and northern California, producing above normal precipitation and further building an already above normal snowpack. As of April 13, the Northern Sierra 8-Station Index set a new record for Water Year (WY; Oct 1-Sep 30) precipitation, breaking the previous record of 88.5 in set in WY 1983. Despite a cutoff low pressure system in May that produced above normal precipitation for the month, the Desert Southwest observed below normal precipitation for the season. However, spring is typically dry in this area.

Only 4.5% of the West was designated as experiencing drought conditions at the end of the season, a reduction from 7% at the beginning of spring. A combination of above normal temperatures and below normal precipitation allowed drought conditions to persist through the spring season in a strip of southwestern CA and southern AZ. Drought conditions worsened along the southern AZ-NM border. Late season precipitation helped to alleviate drought in eastern CO. Eastern MT, eastern UT, and southern NM noted abnormally dry conditions at the end of the spring season and will be monitored for further degradation.

Regional Impacts for March 2017 - May 2017

Weather

Strong late season storm brought multiple feet of snow to central Rockies causing road closures, power outages
Severe May storm produced golf-ball sized hail, small tornado, and caused minor damage in Torrance County, NM

Drought, Flooding and Water Resources

CA State Water Project allotments 85%; Central Valley Project allotments 100%; last CVP 100% allocation was in 2006

CA Gov. Brown lifted several year drought emergency in April
Oakland, CA, landslide destroyed 3 homes; massive Big Sur landslide buried 1/4 mi stretch of Hwy 1

Landslides in Minidoka and Twin Falls, ID, damaged over 80 homes in March

Lake Powell Apr-Jul inflow forecast 116% of average

Agriculture and Fisheries

Wet winter brought wildflower "superbloom" to southern CA
Bans on nearly all sardine fishing off US West Coast for 3rd year in a row due to low fish populations

Harmful algal bloom in southern CA this spring resulted in animal strandings and shellfish advisories

Record low salmon run on Klamath R. spurred Tribal, commercial, and sport fisheries closures

Persistent cool, wet weather in Pacific NW delayed planting of oats, potatoes, onions, and dry peas in some areas

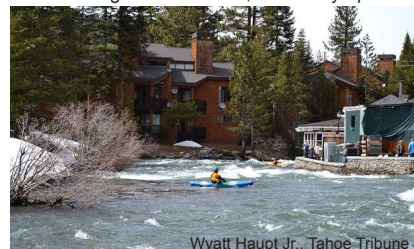
Widespread Snowmelt Flooding

Above normal snowpack combined with intermittent warm temperatures produced snowmelt flooding this spring in many snow-dominated watersheds in the West. In Idaho, notable snowmelt flooding occurred along the Boise, Payette, and Big Wood Rivers, prompting a State of Emergency declaration for Blaine County. The Spokane River in WA observed flooding in late May that damaged low-lying agricultural lands. This followed late March flooding on the river caused by a combination of heavy rains on snow and warm temperatures. Dozens of homes were inundated in the Spokane area. The Truckee, Carson, and Walker Rivers draining eastward out of the Sierra Nevada experienced minor to moderate flooding that resulted in minor damage in low-lying areas. For some areas, snowmelt flooding hazards still remain throughout the summer as large high-elevation snowpacks continue to melt with warming temperatures.



Kyle Green/ID Statesman

Flooding on Boise River, ID in early April

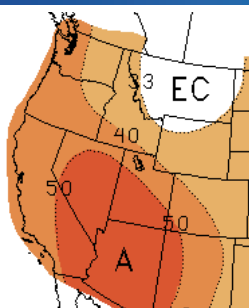


Wyatt Haupt Jr., Tahoe Tribune

High flows, minor flooding on Truckee R., CA/NV

Regional Outlook for Jul-Aug-Sep 2017

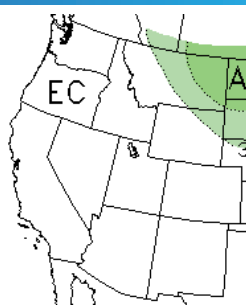
CPC//www.cpc.ncep.noaa.gov/



Jul-Aug-Sep temperature outlook
produced by CPC June 15 2017

A indicates above normal
B indicates below normal
N indicates normal
EC means equal chances for A, N or B

Numbers indicate percent chance of temperature in warmest/coolest one-third and of precipitation in wettest/driest one-third

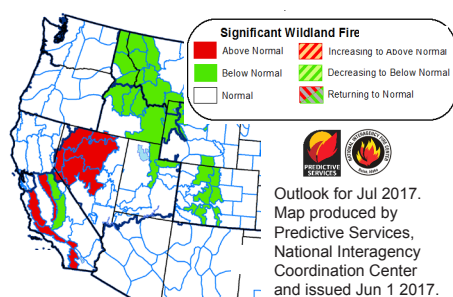


Jul-Aug-Sep precipitation outlook
produced by CPC June 15 2017

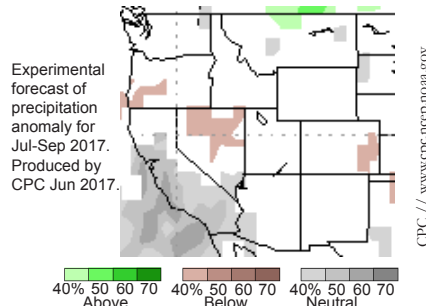
NOAA CPC Jul-Sep Seasonal Outlook

The temperature outlook favors above normal temperatures across nearly all of the West, with as much as a 50% chance in the Desert Southwest and southern Great Basin. With the exception of above normal precipitation favored in eastern MT, the rest of the region has equal chances of above, near, or below normal precipitation.

NIFC//www.predictiveservices.nifc.gov



Outlook for Jul 2017.
Map produced by
Predictive Services,
National Interagency
Coordination Center
and issued Jun 1 2017.



NMME Precipitation Forecast

The National Multi-Model Ensemble combines 7 climate research models. The NMME suggests near normal precipitation is most likely over CA and favors below normal in northern NV and southwest OR. Equal chances given elsewhere in West.

Wildland Fire Potential Outlook

In the northern Great Basin and CA coastal mountains, spring rains established abundant fine fuels, raising summer fire risk. Fire potential low in northern and central Rocky Mountains. Delayed fire season start expected at higher elevations.

Western Region Partners

Western Regional Climate Center
wrcc.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

NOAA's Western Regional Collaboration Team
www.regions.noaa.gov/western/western_region_team.html

Western Water Assessment
www.colorado.edu

Climate Assessment for the Southwest
climas.arizona.edu

California Nevada Applications Program
meteora.ucsd.edu/cnap

Climate Impacts Research Consortium
pnwclimate.org/resources

NWS River Forecast Centers
water.weather.gov/ahps/rfc/rfc.php

NOAA Fisheries Service
www.nmfs.noaa.gov/

NWS Western Region Forecast Offices
www.wr.noaa.gov/

State Climatologists - stateclimate.org