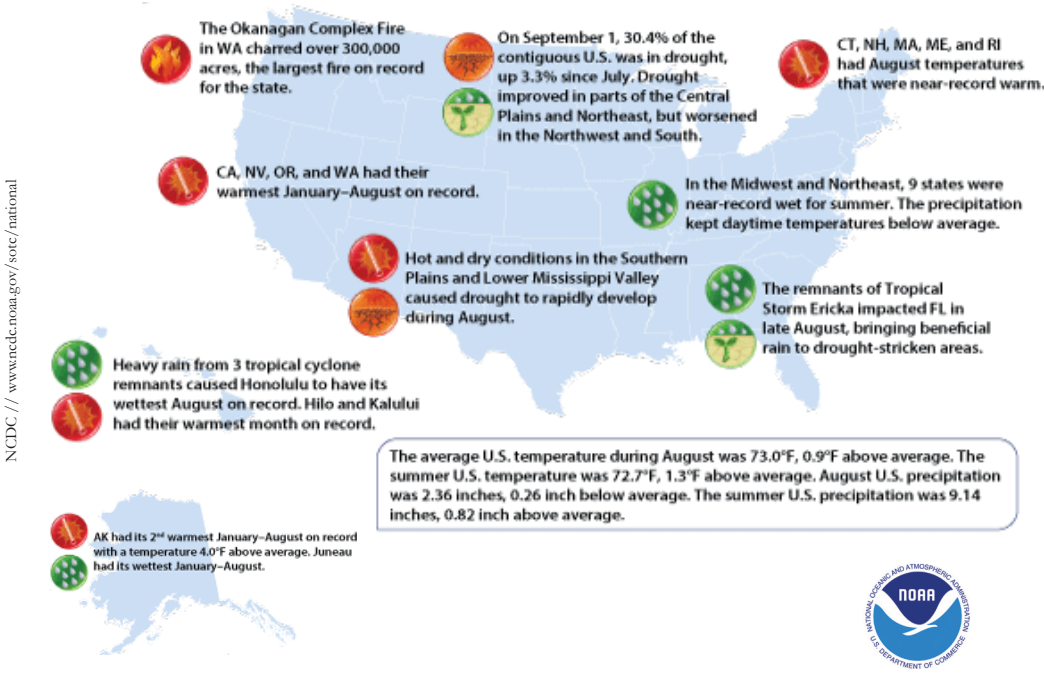


## Significant Events for June-August 2015



### Jun-Aug Highlights for the West

WA, OR, CA, ID, NV all had one of their top-10 warmest summers on record

Record/near record dry summer in parts of eastern WA, northern OR, and western MT

Drought continues in CA, NV; intensifies in Pacific Northwest

Many large fires in Pacific/Inland Northwest

Above normal precipitation in southern CA, western Great Basin, Four Corners region

Average Southwest Monsoon season

Unusual winter-like storm in late August in Northwest

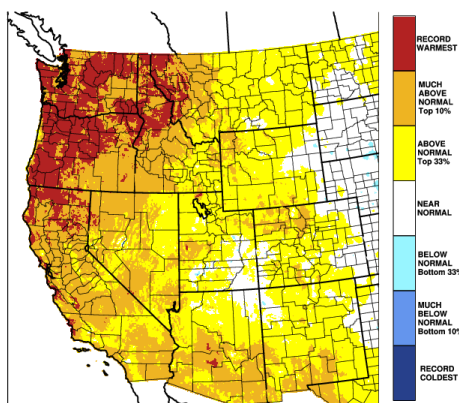
Anomalously warm sea surface temperatures persist along coast

El Niño conditions persisted through summer, likely to continue and strengthen in fall, winter

## Regional Overview for June-August 2015

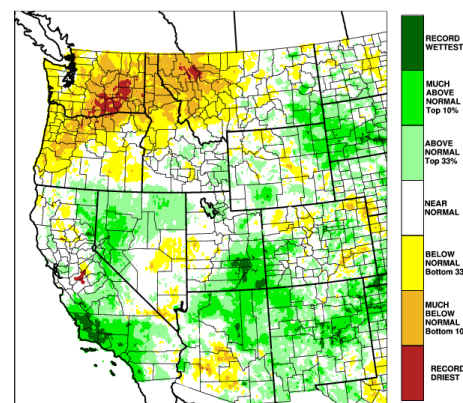
### Mean Temperature Percentile

Jun-Aug 2015



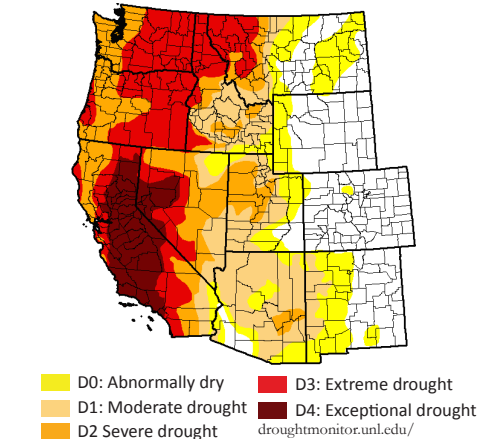
### Precipitation Percentile

Jun-Aug 2015



### U.S. Drought Monitor

Sept. 1, 2015



Summer temperatures were above normal West-wide. The greatest departures from normal were observed in the Pacific Northwest, where several locations observed their warmest summer on record. In Seattle, the summers of 2015, 2013, and 2014 are the top 3 in a 71-year record. Medford, OR had its warmest summer in a 105-year record and Spokane, WA had its warmest summer in a 135-year record. The Southwest was also warm; Phoenix, AZ tied 2013 for the warmest summer in an 83-year record.

Remnants of a tropical storm facilitated above normal precipitation in AZ and the Four Corners area in June. The remnants of Hurricane Dolores resulted well-above normal July precipitation in southern CA, though rainfall quantities were small and did little for drought amelioration. July thunderstorms brought above normal precipitation to the northern Great Basin and New Mexico. August low pressure systems provided above normal rainfall to coastal WA, OR, but overall summer conditions were very dry in the Pacific NW.

The West saw a 7% increase in area categorized as “extreme to exceptional drought,” most of which occurred in the Pacific Northwest. Above normal temperatures, below normal precipitation and low streamflows drove expansion of drought conditions in WA, ID, OR, and western MT this summer. Summer rains helped to ameliorate drought in the northern Great Basin, Four Corners, and along the AZ-NM border. This, combined with spring rains, has helped the Colorado River Basin avoid worsening drought.

# Regional Impacts for June-August 2015

## Drought, Flooding and Water Resources

CA water conservation exceeded mandatory 25% for both June and July

Above normal precipitation during spring, early summer boosted water resources in Colorado River Basin; drought conditions eased slightly for states along river

August flash flooding in Four Corners area resulted in road closures

Above average number of hurricanes in eastern Pacific facilitated summer rains in Southwest. A bridge collapsed on Interstate 10 in southern CA due to heavy rains associated with remnants of Hurricane Dolores

## Agriculture and Fisheries

Drought continues to affect CA agriculture with losses of \$2.7 billion and elimination of 21,000 jobs in 2015 alone

The harmful algal bloom along West Coast that appeared in spring continues, impacting fisheries from AK to CA

Large numbers of Chinook and sockeye salmon on the Columbia River perished during their up-river migration this summer due to above normal water temperatures

## Natural History

Low lake levels and fires in CA have exposed Native American artifacts, subjecting them to looting

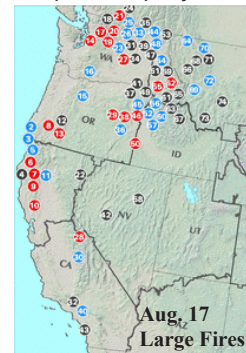
## Active Fire Season in Northwest



Image: Burned area following the Okanogan complex fire. Photo: Patrick Erikson KHQ

Below normal precipitation and above normal temperatures primed the Pacific and Inland Northwest for a very active fire season. Several low pressure systems moved across the West this summer producing dry lightning and high winds that favored large fire ignition and rapid growth. Before it was broken into two smaller fires for management reasons, the Okanogan Complex fire in north-central WA

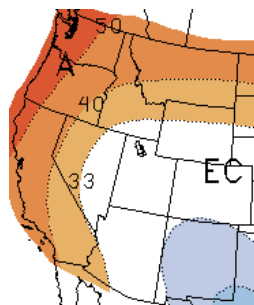
became the state's largest in history at over 300,000 acres. The Soda Fire in that burned in late August in southwest ID consumed nearly 280,000 acres, damaged grazing land, and displaced wildlife. The Rocky Rire in northern CA began July 29 and spread rapidly, consuming over 69,000 acres and destroying 43 residences. Smoke from these and other large fires impacted surrounding communities, reducing air quality. Smoke and haze from Northwest fires was reported as far east as eastern Colorado. Many of these fires caused the evacuation and/or closing of popular summer recreation areas. The image on the right shows the location of large fires (>100 acres of timber or 300 acres of grass/sage) on August 17. Colors represent management team assigned. The Southwest experienced very few large fires this summer.



USFS // <http://activetremaps.fs.fed.us>

# Regional Outlook for Oct-Nov-Dec 2015

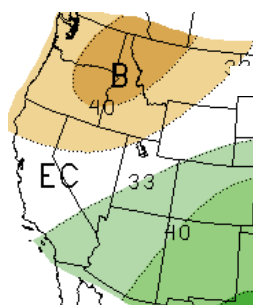
CPC // [www.cpc.ncep.noaa.gov/](http://www.cpc.ncep.noaa.gov/)



Oct-Nov-Dec temperature outlook produced by CPC Sept 17 2015

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 one-third and of precipitation in wettest one-third

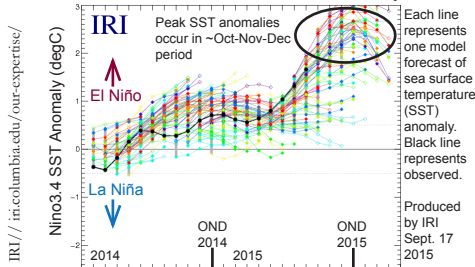


Oct-Nov-Dec precipitation outlook produced by CPC Sept 17 2015

## NOAA CPC Fall Seasonal Outlook

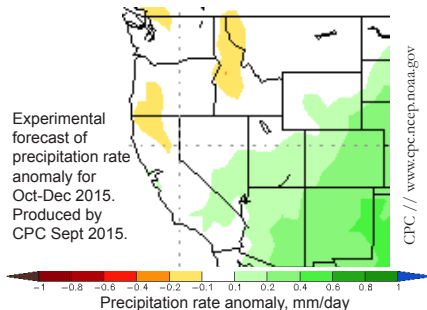
There is a 40-50% chance of well above normal temperatures in the coastal states and along the northern tier of the West this fall. The precipitation outlook displays an El Niño signal, with a chance for above normal precipitation across the Southwest and the Northwest leaning towards drier than normal conditions.

### Model ENSO Predictions Dec 2013-Sept 2015



## IRI ENSO Outlook

Models suggest a strong El Niño peaking in the late fall/early winter. Impacts of El Niño (such as above normal rainfall in the Southwest) are likely to be greater in late winter rather than early winter.



## NMME Precipitation Forecast

The National Multi-Model Ensemble combines 7 different climate research models. The NMME forecasts above normal fall rain in the Four Corners region, related to El Niño.

## Western Region Partners

- Western Regional Climate Center**  
[wrcc.dri.edu](http://wrcc.dri.edu)
- National Integrated Drought Information System (NIDIS) - 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.ncdc.noaa.gov](http://www.ncdc.noaa.gov)
- USDA/NRCS National Water and Climate Center - www.wcc.nrcs.usda.gov**
- National Interagency Fire Center**  
[www.nifc.gov](http://www.nifc.gov)
- NOAA's Western Regional Collaboration Team**  
[www.regions.noaa.gov/western/western\\_region\\_team.html](http://www.regions.noaa.gov/western/western_region_team.html)
- Western Water Assessment**  
[www.colorado.edu](http://www.colorado.edu)
- Climate Assessment for the Southwest**  
[climas.arizona.edu](http://climas.arizona.edu)
- California Nevada Applications Program**  
[meteora.ucsd.edu/cnap](http://meteora.ucsd.edu/cnap)
- Climate Impacts Research Consortium**  
[pnwclimate.org/resources](http://pnwclimate.org/resources)
- NWS River Forecast Centers**  
[water.weather.gov/ahps/rfc/rfc.php](http://water.weather.gov/ahps/rfc/rfc.php)
- NOAA Fisheries Service**  
[www.nmfs.noaa.gov/](http://www.nmfs.noaa.gov/)
- NWS Western Region Forecast Offices**  
[www.wrh.noaa.gov/](http://www.wrh.noaa.gov/)
- State Climatologists - stateclimate.org**