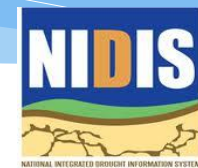


# California-Nevada Climate & Drought Status Update

California-Nevada Drought Early Warning System  
Drought & Climate Update Webinar  
September 25, 2017

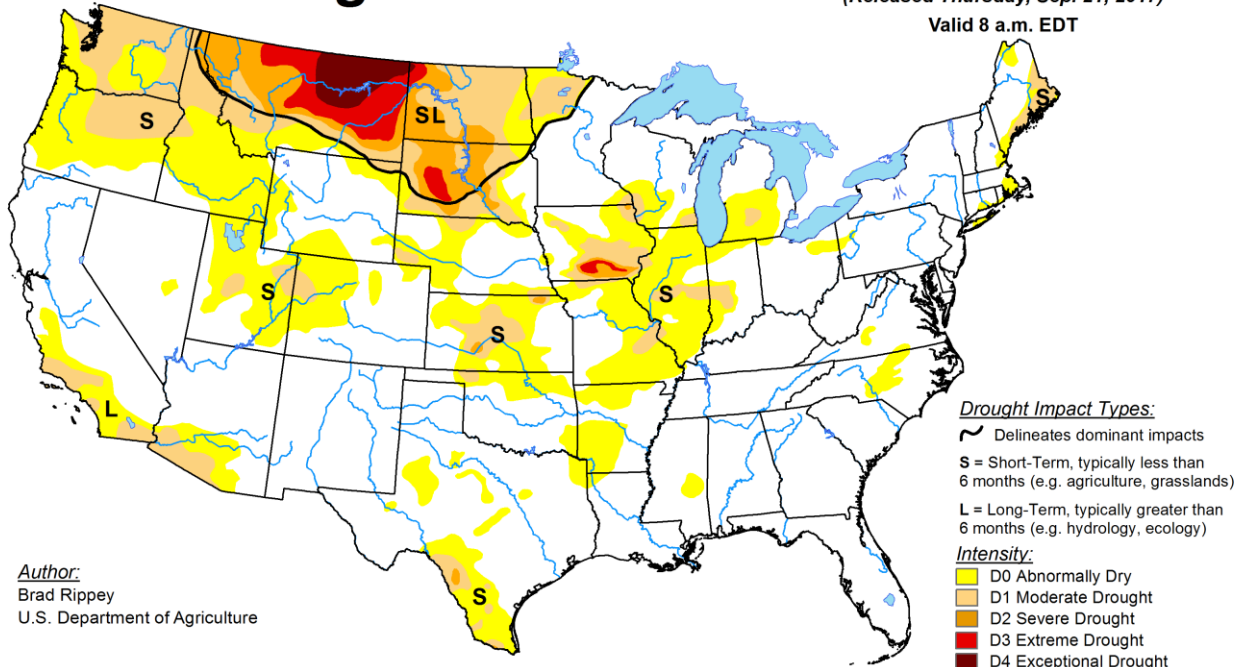
David B. Simeral  
Associate Research Scientist – Climatology  
U.S. Drought Monitor  
Desert Research Institute – Division of Atmospheric Sciences  
Western Regional Climate Center



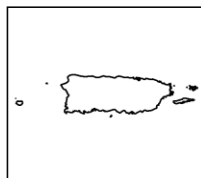
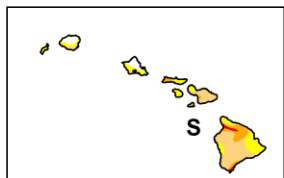
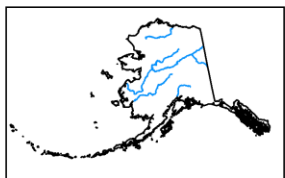
# Current Drought Status

## U.S. Drought Monitor

September 19, 2017  
(Released Thursday, Sep. 21, 2017)  
Valid 8 a.m. EDT



Author:  
Brad Rippey  
U.S. Department of Agriculture



<http://droughtmonitor.unl.edu/>

- **Western U.S.** – to date, 21% of the region is in drought as compared to a 32% a year ago and 58% two years ago
- **Montana & Northern Plains** – focal point of drought development this past spring and summer. MT experienced its 2<sup>nd</sup> driest summer on record
- **Arizona & New Mexico** – monsoonal rains in July helped to alleviate drought conditions in southern AZ and NM
- **California** - some lingering areas of long-term moderate drought in southern portions
- **Nevada** – drought-free

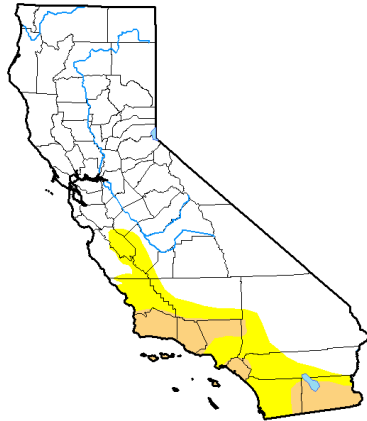
# Current Drought Status California & Nevada

8.21% in drought (D1-D4)

0% in drought (D1-D4)

U.S. Drought Monitor  
California

September 19, 2017  
(Released Thursday, Sep. 21, 2017)  
Valid 8 a.m. EDT



**Intensity:**  
 D0 Abnormally Dry  
 D1 Moderate Drought  
 D2 Severe Drought  
 D3 Extreme Drought  
 D4 Exceptional Drought

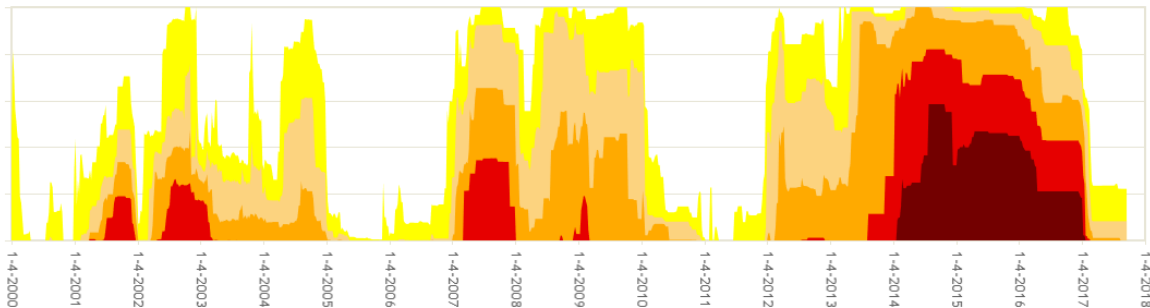
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

**Author:**  
Brad Rippey  
U.S. Department of Agriculture



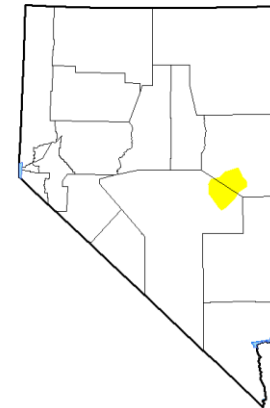
<http://droughtmonitor.unl.edu/>

California Percent Area



U.S. Drought Monitor  
Nevada

September 19, 2017  
(Released Thursday, Sep. 21, 2017)  
Valid 8 a.m. EDT



**Intensity:**  
 D0 Abnormally Dry  
 D1 Moderate Drought  
 D2 Severe Drought  
 D3 Extreme Drought  
 D4 Exceptional Drought

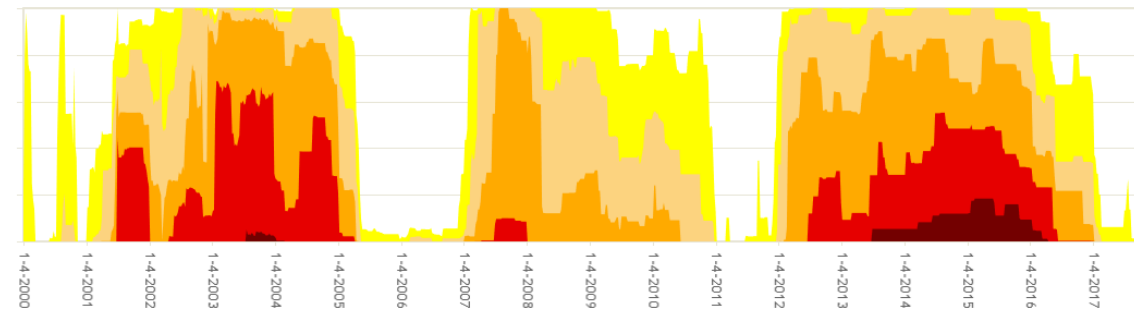
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

**Author:**  
Brad Rippey  
U.S. Department of Agriculture



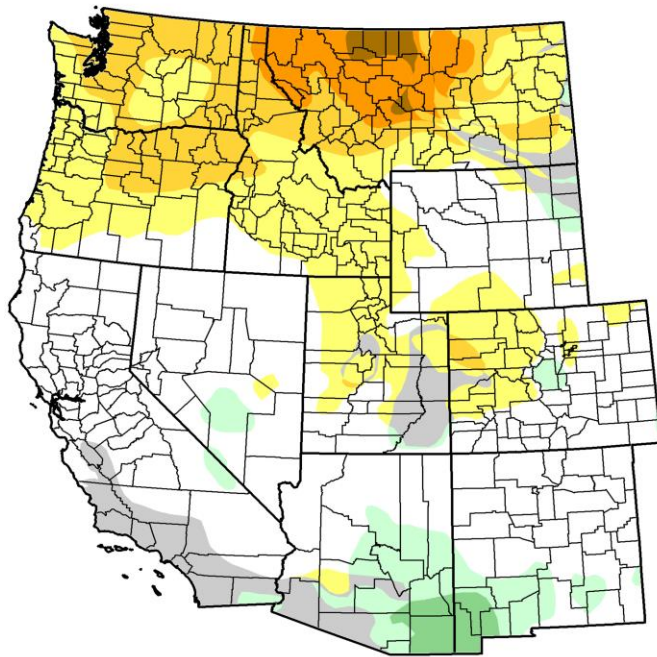
<http://droughtmonitor.unl.edu/>

Nevada Percent Area



# Drought Status – Change Map Past 3 Months

U.S. Drought Monitor Class Change - West  
3 Months



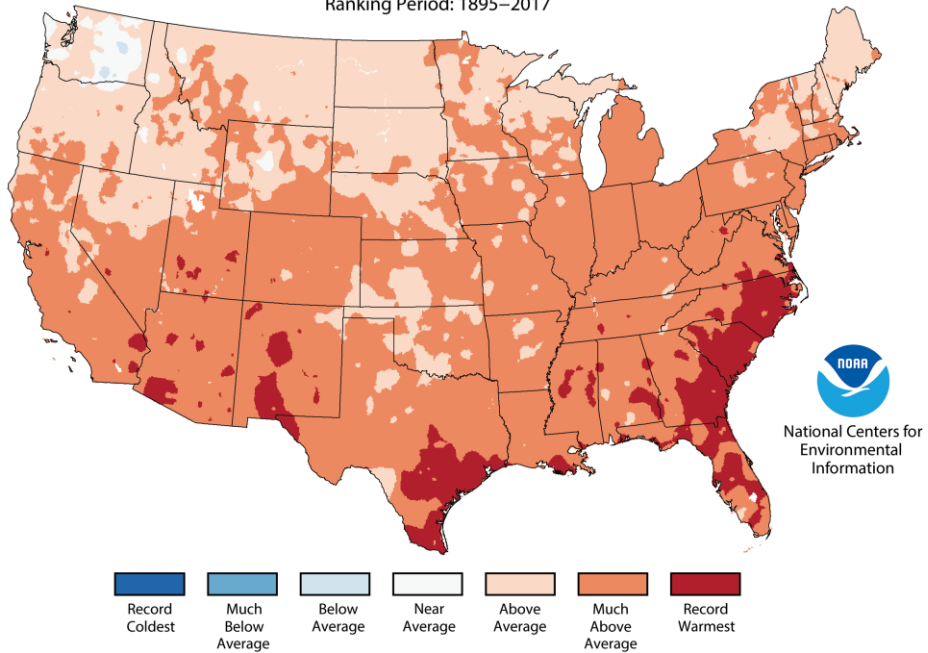
September 19, 2017  
compared to  
June 27, 2017

<http://droughtmonitor.unl.edu>

- No significant changes on the USDM map for CA and NV during the past 3 months
- Some lingering areas of drought in portions of the southern Coastal Plain (western Transverse Range) and Southern California – primarily longer-term hydrological drought (reservoirs levels, groundwater)

# Temperature & Precipitation January – August 2017

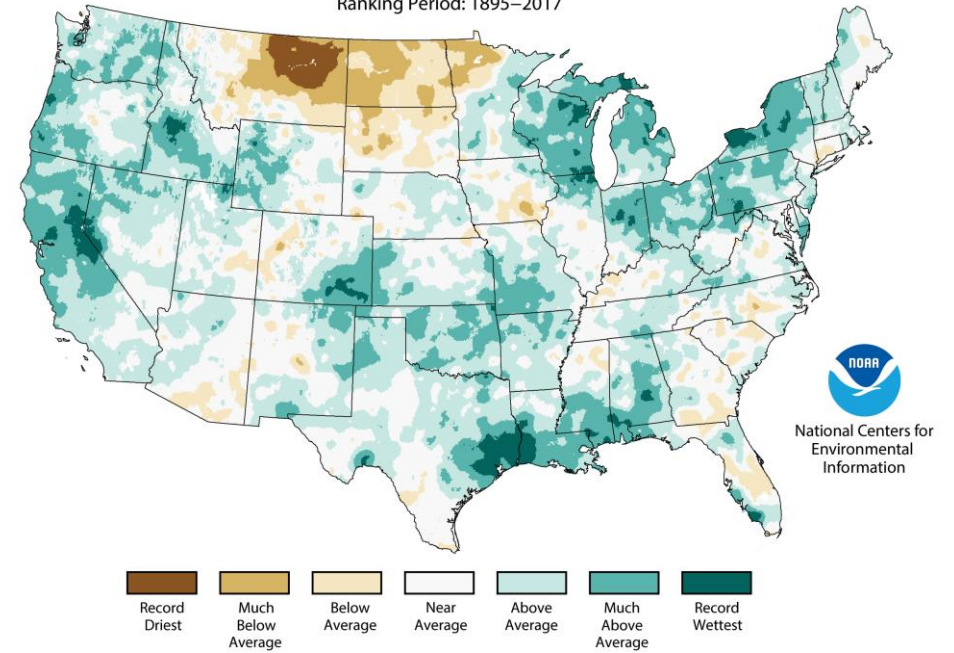
Mean Temperature Percentiles  
January–August 2017  
Ranking Period: 1895–2017



Created: Wed Sep 06 2017

Data Source: 5km Gridded Dataset (nClimGrid)

Total Precipitation Percentiles  
January–August 2017  
Ranking Period: 1895–2017



Created: Wed Sep 06 2017

Data Source: 5km Gridded Dataset (nClimGrid)

- Nationwide - 3<sup>rd</sup> warmest on record
- 2.8° F above the 20<sup>th</sup> century average

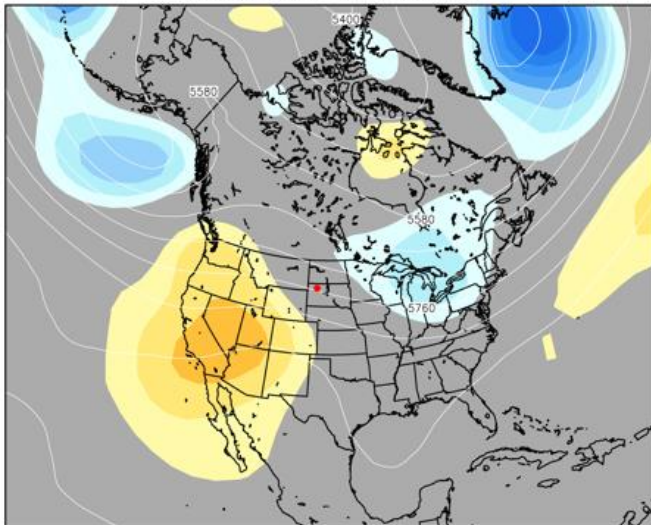
- Wettest on record



# Extreme Heat Summer 2017

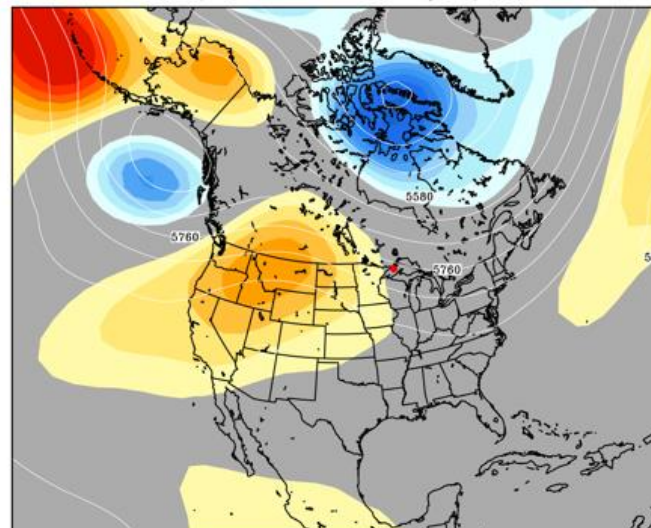
- Strong, persistent upper-level ridge dominated the weather in the Western U.S.
- Ridging brought above-normal temperatures to much of the Western U.S. as well as abnormally dry conditions to the Pacific Northwest and the northern Great Plains

500 Millibar Heights and Anomalies (in meters)  
(From NCEP Reanalysis)



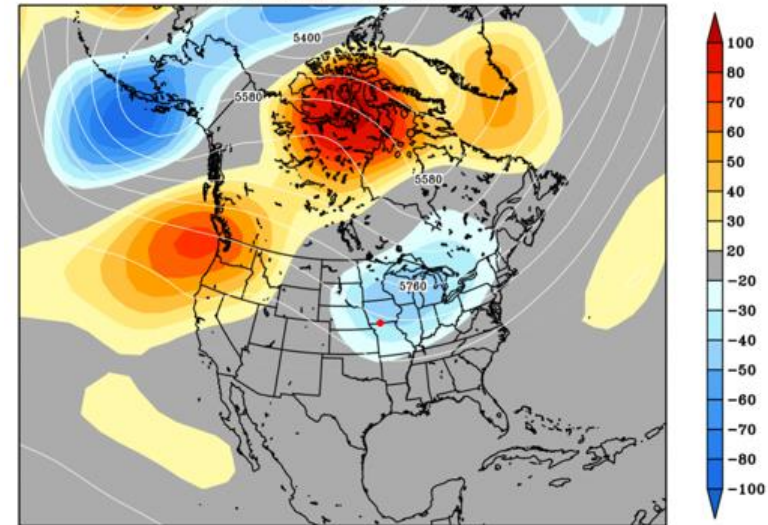
June 2017

500 Millibar Heights and Anomalies (in meters)  
(From NCEP Reanalysis)



July 2017

500 Millibar Heights and Anomalies (in meters)  
(From NCEP Reanalysis)



August 2017



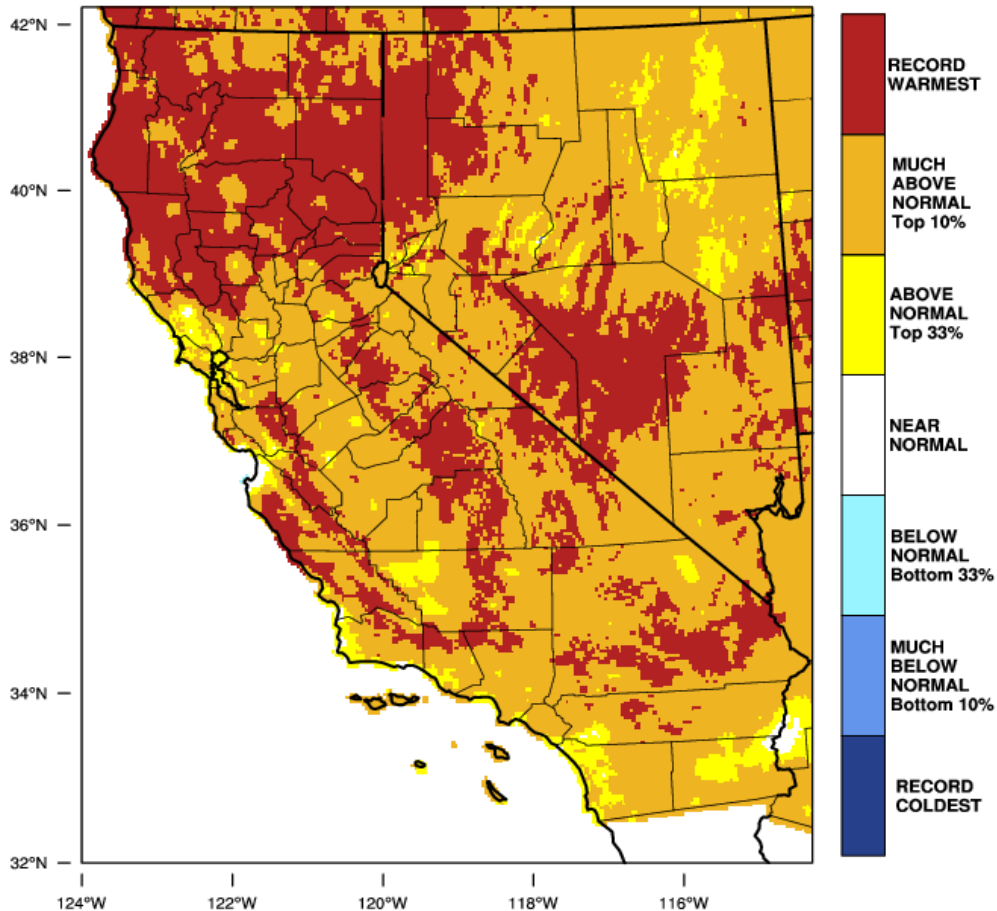
# Heatwaves

- **June 18-25** –Record high temps in Las Vegas, Reno, Fresno, Sacramento, and San Francisco.
- **July 30-Aug 4** – Heat wave in Pacific Northwest
- **Aug 31-Sept 4** – San Francisco AP hits 104° F (30° above normal high) two consecutive days
- Overall, numerous high temperature records broken for the total number of 90+ & 100+ degree days in a year in both California and Nevada
- On June 20<sup>th</sup>, Las Vegas, NV (117°F) and Needles, CA (125°F) break or tie all-time high temperature record. Death Valley hits 127°F
- San Francisco sets an all-time high temperature record at 106°F on Sept 1<sup>st</sup>

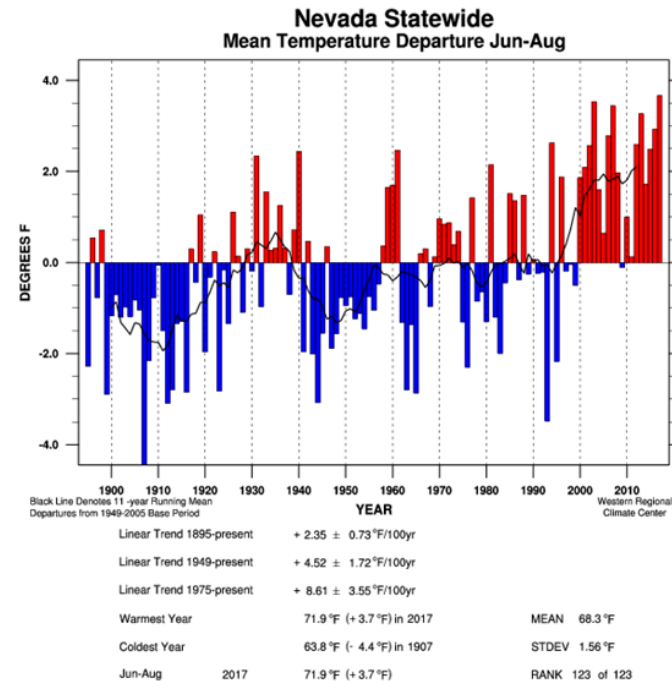
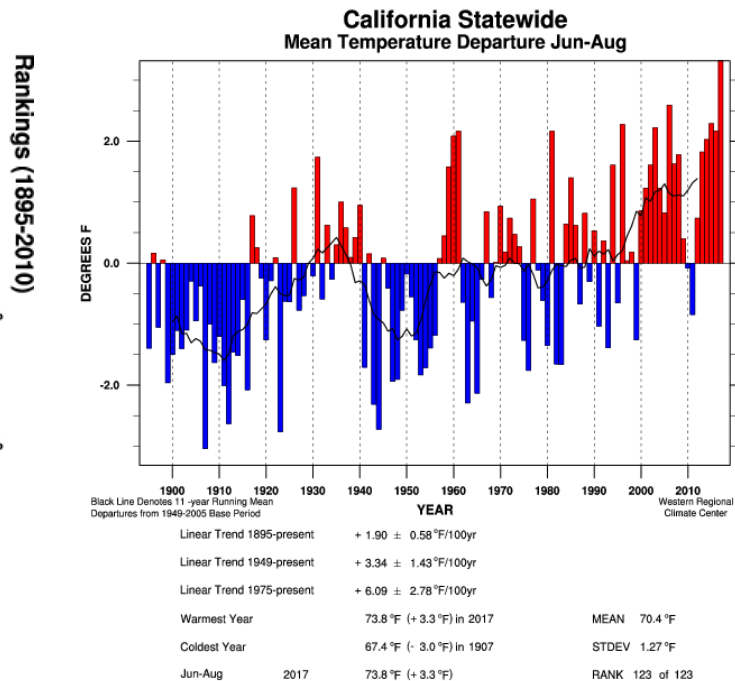


# Temperature Jun – Aug 2017

California - Mean Temperature  
June-August 2017 Percentile



- CA - mean temperature of 73.8°F (+3.3°F above normal)
- NV – mean temperature of 71.9°F (3.7°F above normal)



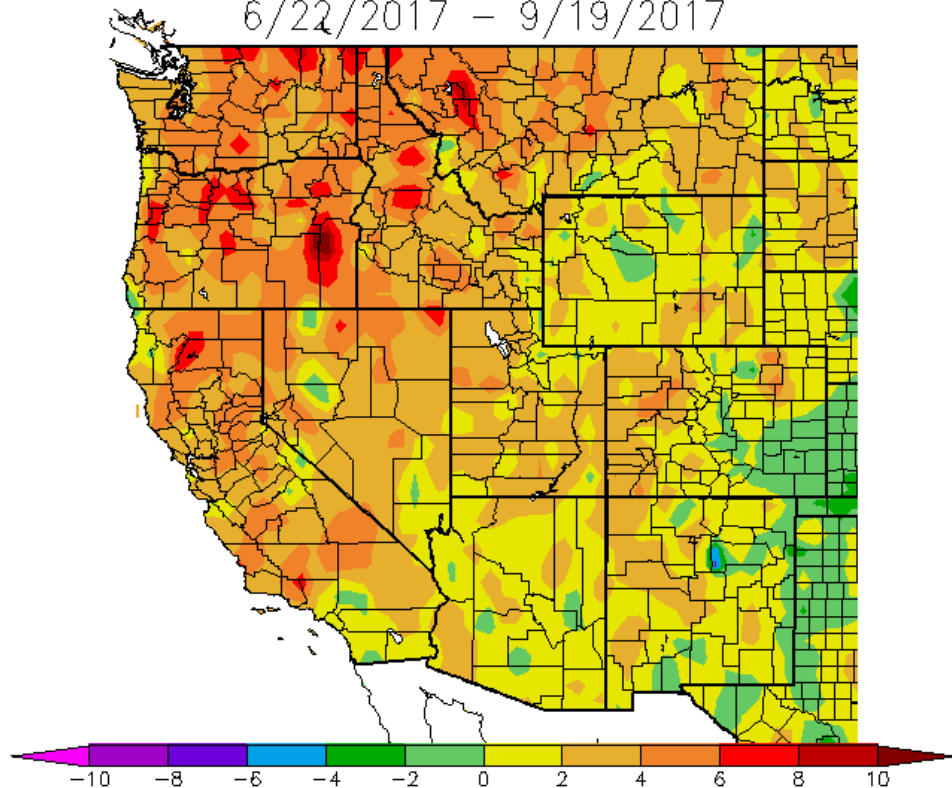
# Temperature Departures

## Average Max & Min

### 90-Day

**Max**

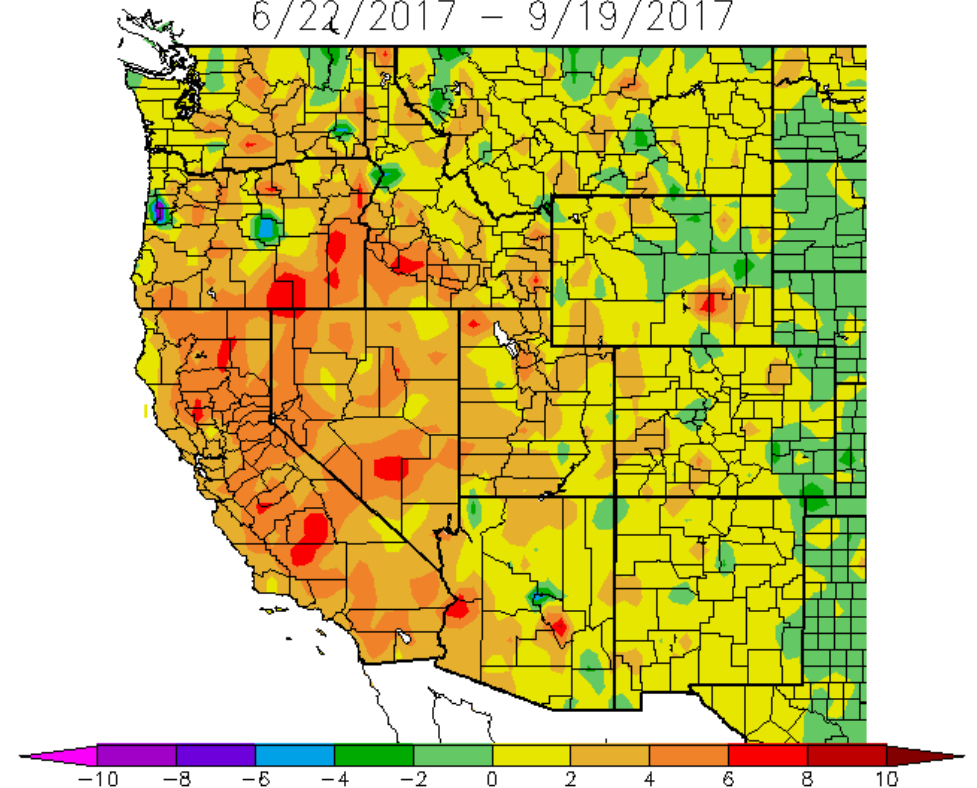
Av. Max. Temperature dep from Ave (deg F)  
6/22/2017 – 9/19/2017



Generated 9/20/2017 at WRCC using provisional data.  
NOAA Regional Climate Centers

**Min**

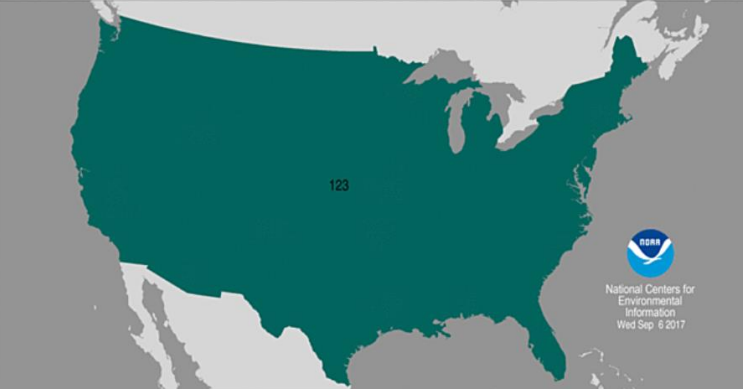
Av. Min. Temperature dep from Ave (deg. F)  
6/22/2017 – 9/19/2017



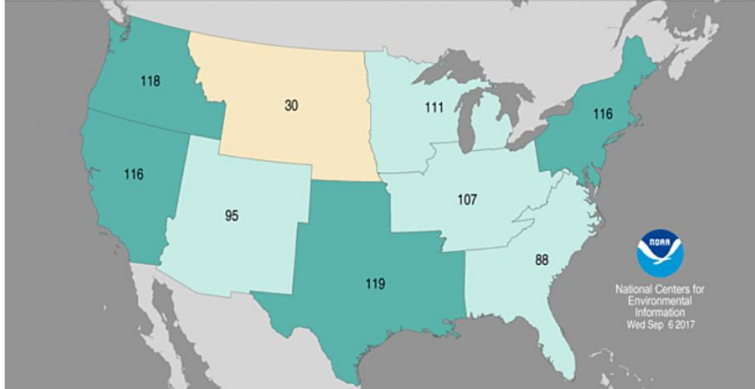
Generated 9/20/2017 at WRCC using provisional data.  
NOAA Regional Climate Centers

# Precipitation Rankings Jan – Aug 2017

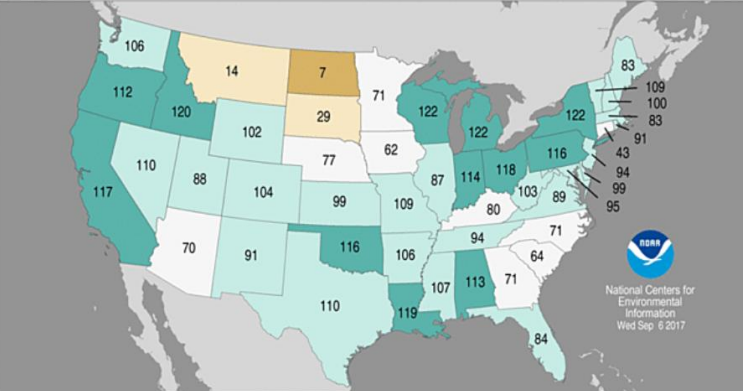
National Precipitation Rank  
January–August 2017  
Period: 1895–2017



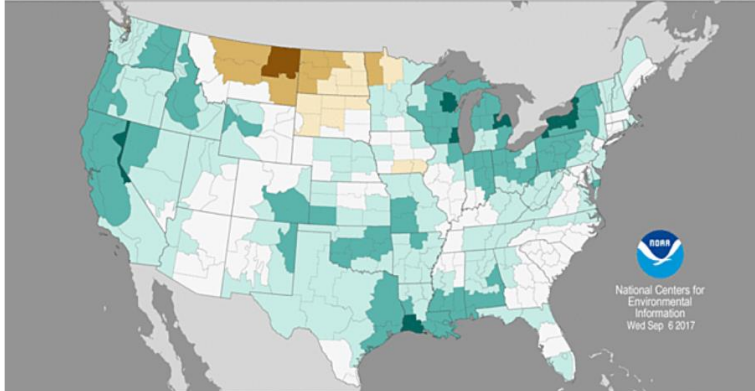
Regional Precipitation Ranks  
January–August 2017  
Period: 1895–2017



Statewide Precipitation Ranks  
January–August 2017  
Period: 1895–2017



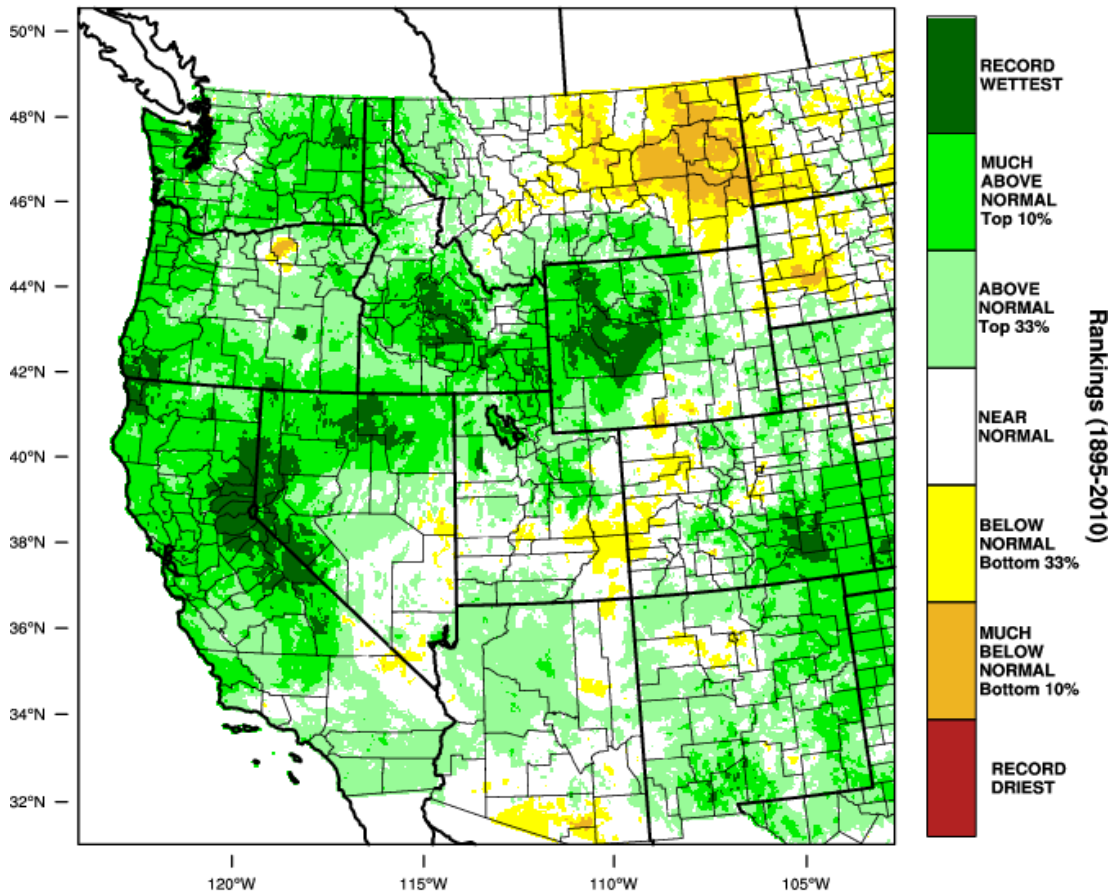
Divisional Precipitation Ranks  
January–August 2017  
Period: 1895–2017



- National – Record wettest
- Regional – 7<sup>th</sup> wettest
- Statewide
  - California – 6<sup>th</sup> wettest
  - Nevada – 13<sup>th</sup> wettest

# Precipitation Oct 1 – Present

Western United States - Precipitation  
October-August 2017 Percentile



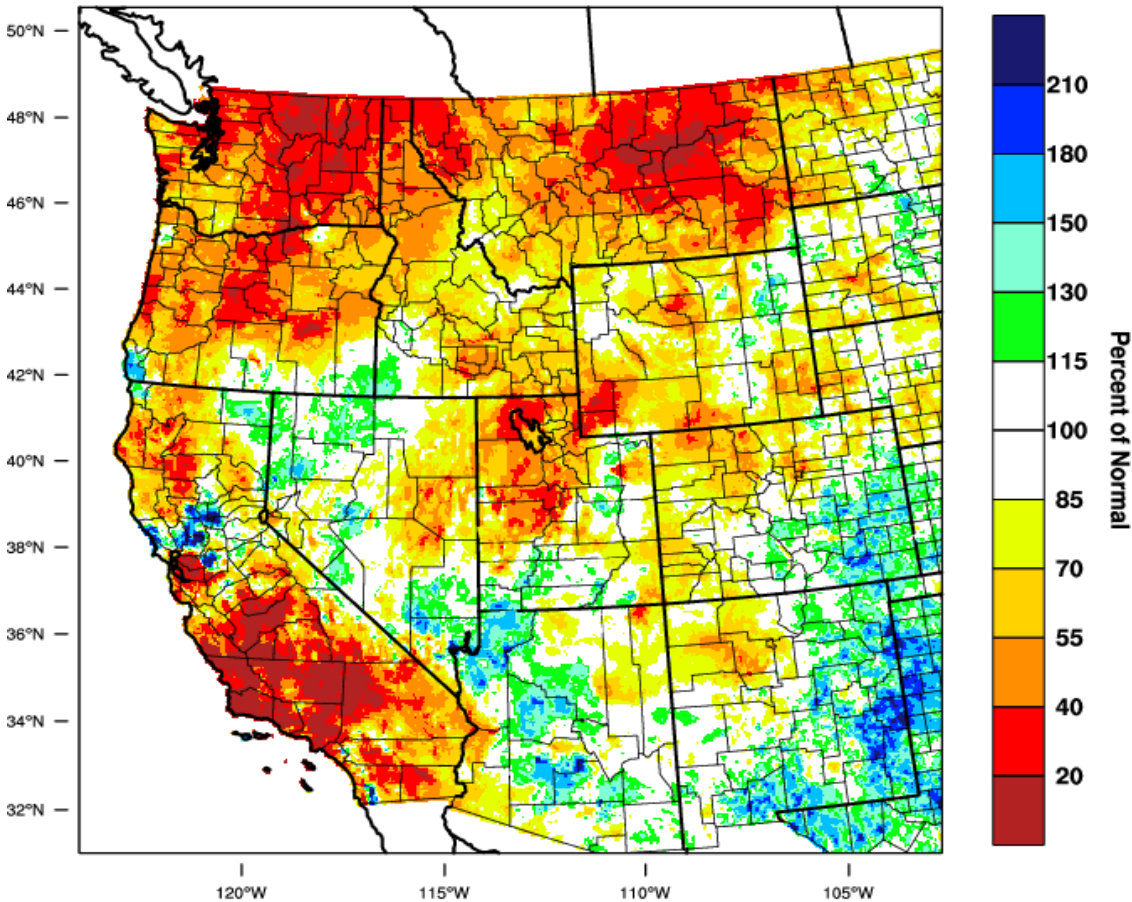
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 SEP 2017

- **California** – well above normal across most of the state. Record-breaking accumulations across much of the Sierra (8”- 20+” above normal) and northwestern CA
- **Nevada** – Record accumulations in western and northern portions (2-8+” above normal) while southern NV was near normal



# Precipitation Jun - Aug 2017

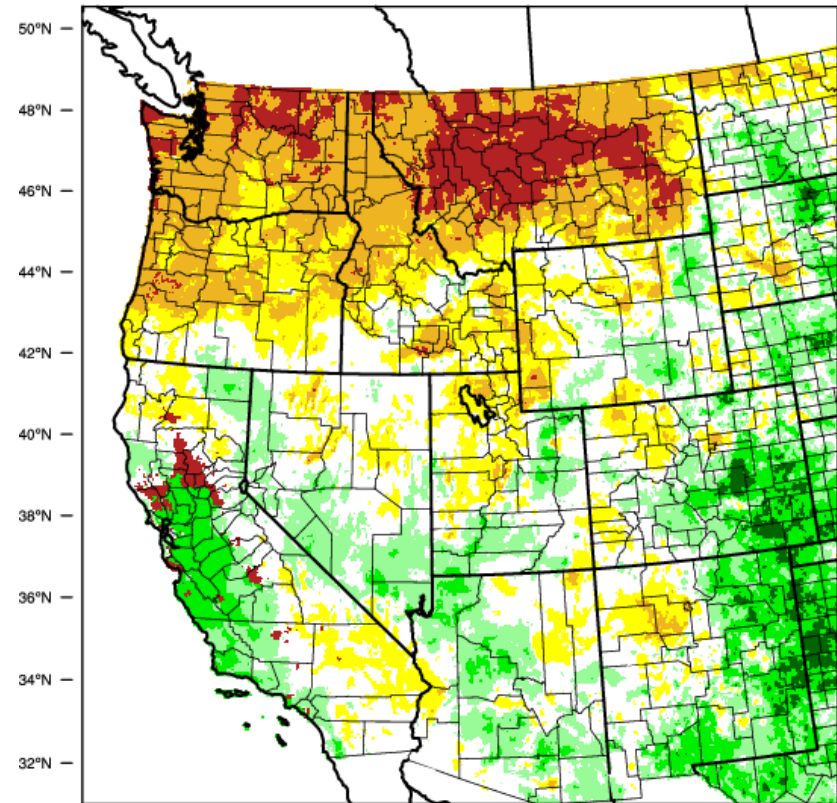
Western United States - Precipitation  
June-August 2017 Percent of 1981-2010 Normal



- **California** – overall, dry summer across most of the state with exception of isolated areas in northern CA
- **Nevada** – normal to slightly above normal in western and southern portions and below normal in northeastern NV

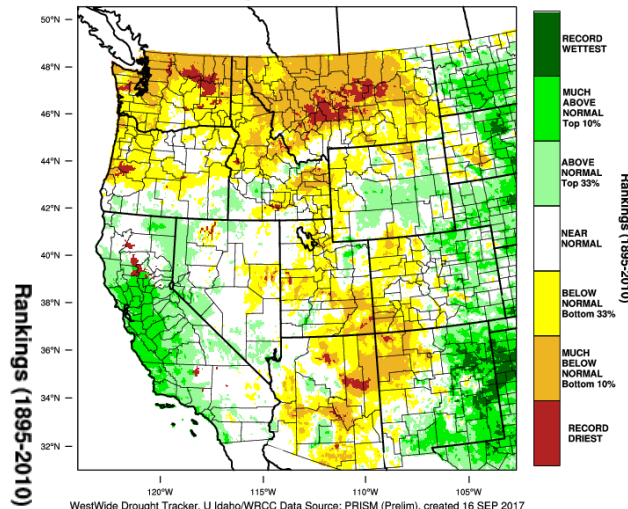
# North American Monsoon

Western United States - Precipitation  
July-August 2017 Percentile

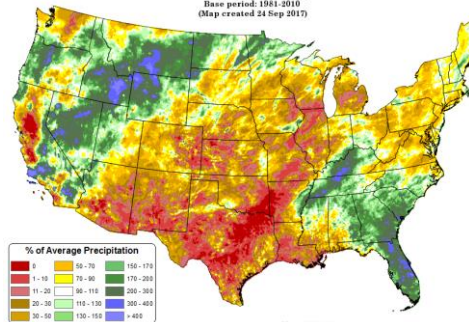


WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 16 SEP 2017

Western United States - Precipitation  
August 2017 Percentile



Total Precipitation Anomaly: 01 September 2017 - 23 September 2017  
Period ending 7 AM EST 23 Sep 2017  
Base period: 1981-2010  
(Map created 24 Sep 2017)



Copyright © 2017, PRISM Climate Group, Oregon State University

- **Core Region** - Above average precipitation in July in Arizona and eastern/southern NM. August saw a drier conditions in AZ while eastern NM was above normal
- **California** – somewhat weak monsoon along the western edge of the core region of the monsoon, but some areas (eastern Sierra) experienced near to slightly above normal precipitation
- **Nevada** – normal to slightly above normal in western and southern portions and normal to below normal in northeastern NV



# Unusual Weather Events



Photo credit: Jim Tang <https://twitter.com/wxmann?lang=en>

- Microburst with 80 mph winds (associated with remnants of Tropical Storm Lidia) in Santa Barbara (9/3)
- Thunderstorms along the Central Coast, SF, and western Nevada (9/11-12)
- Funnel cloud over Lake Tahoe (9/13)



Photo credit: Vernica Aguilar, Reno



## Tornado Warning

Valid Until  
4:45 PM PDT Wednesday  
September 13, 2017

**Hazard**


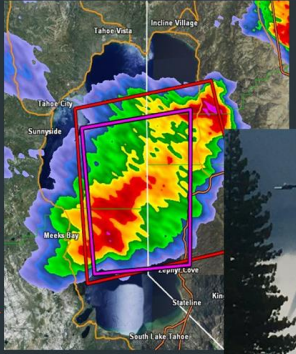
- Confirmed Funnel Cloud over Lake Tahoe
- HAIL  
Quarter Sized Possible

**Potential Exposure**

- Communities: Lake Tahoe

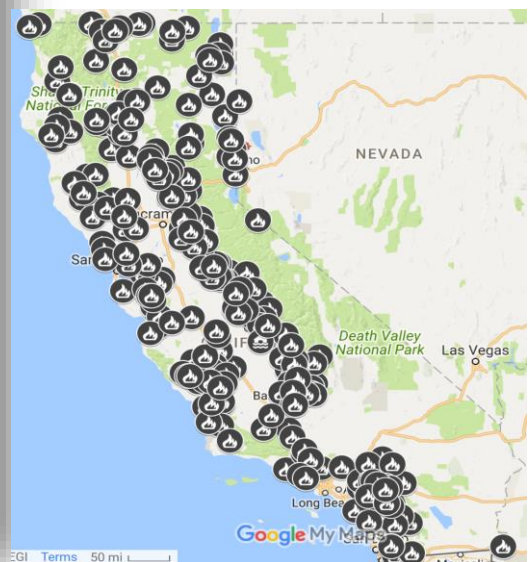
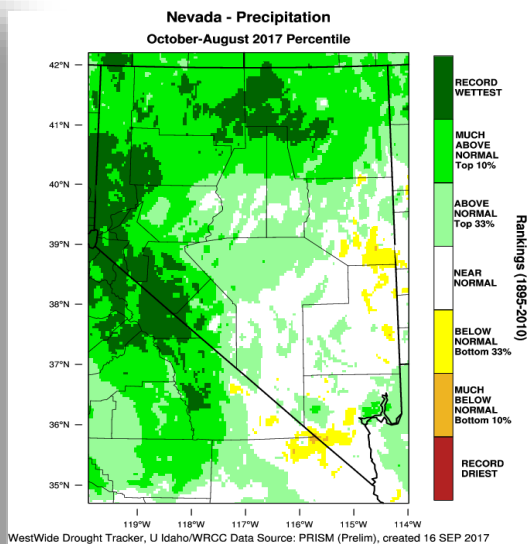
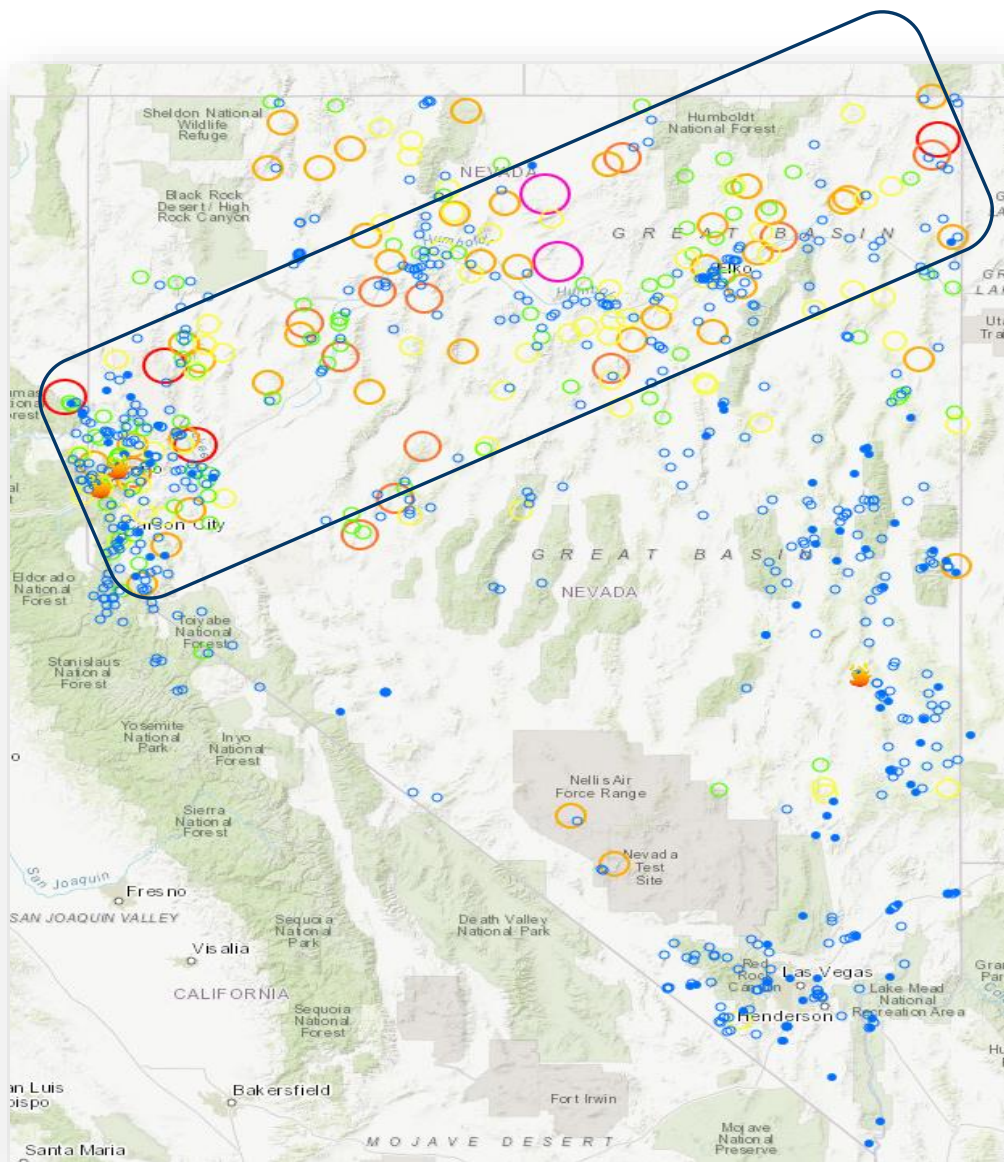
**Threat Information**

At 4:05 PM PDT, a severe thunderstorm produced a funnel cloud over Lake Tahoe. SEEK SHELTER IMMEDIATELY!





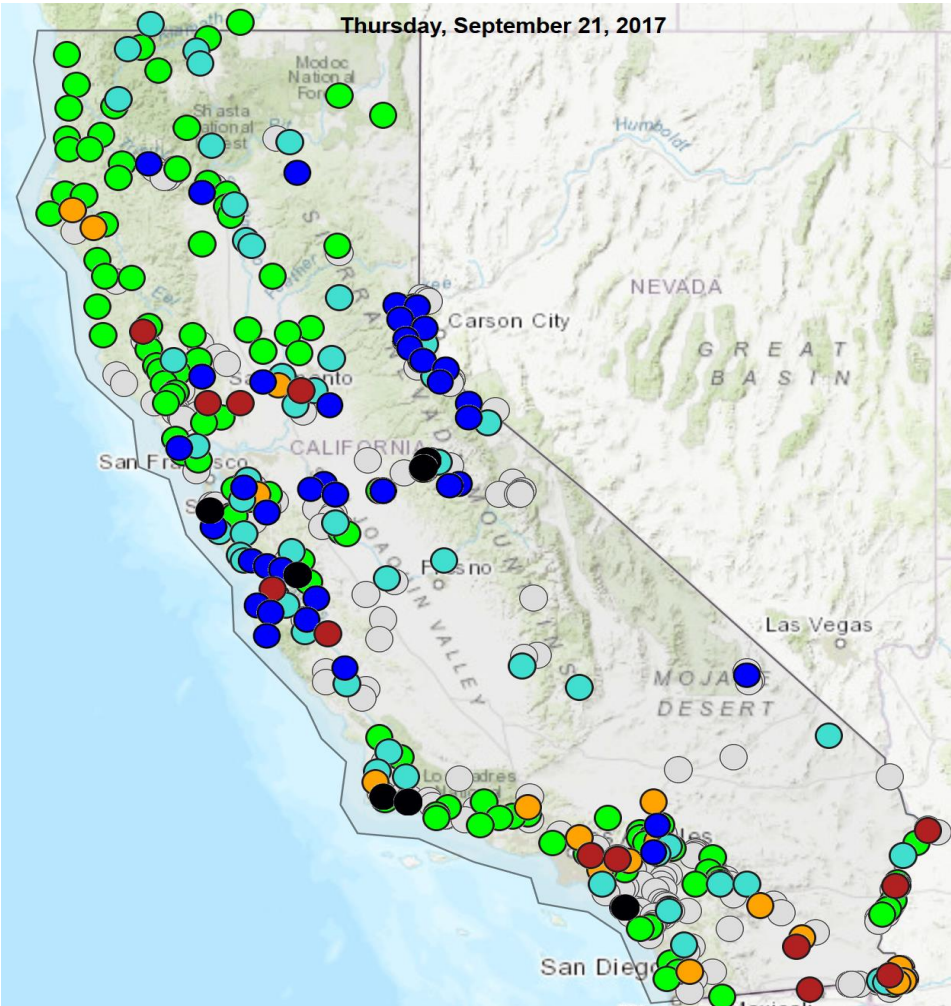
# Wildfires



- Active fire season
- California - according to CAL FIRE:
  - 2017 YTD - 7,109 fires, 742,918 acres burned
  - 5-year average (same interval) – 3,988 fires, 197,714 acres
- Nevada - according to NIFC:
  - 2017 YTD (Great Basin Area) – 3,964 fires, 1,986,190 acres burned



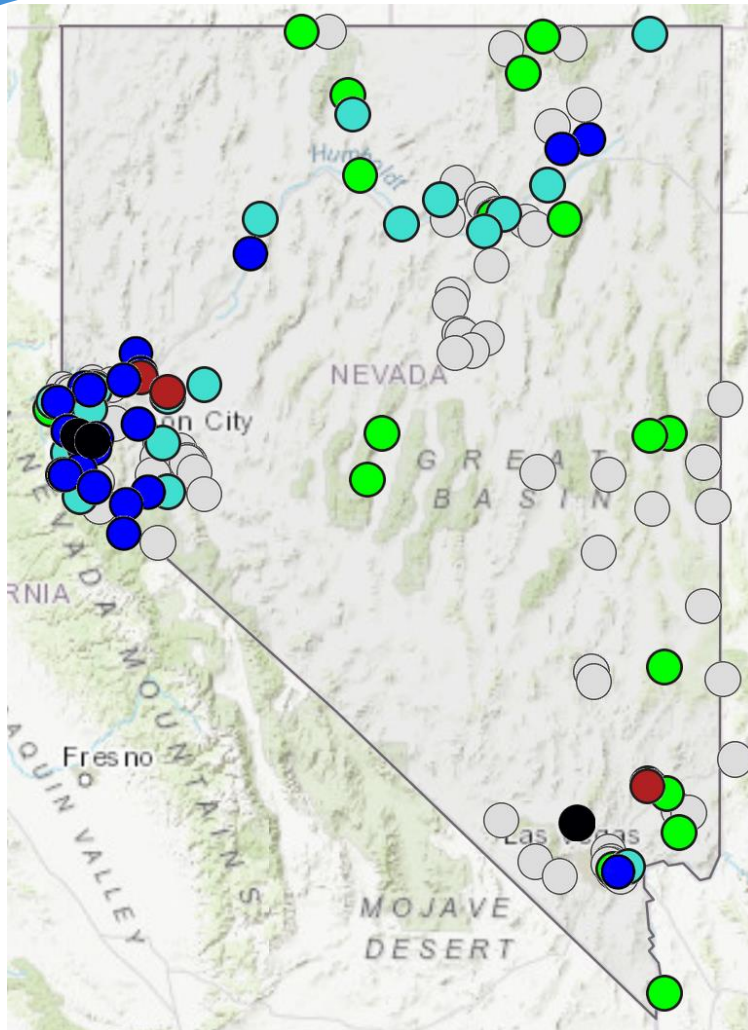
# Current Streamflow California



- Overall, streamflows are **normal to above normal** across most of the state

Explanation - Percentile classes							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

# Current Streamflow Nevada



- Streamflows are **above to well above normal** on the Carson, Humboldt, Truckee, and Walker

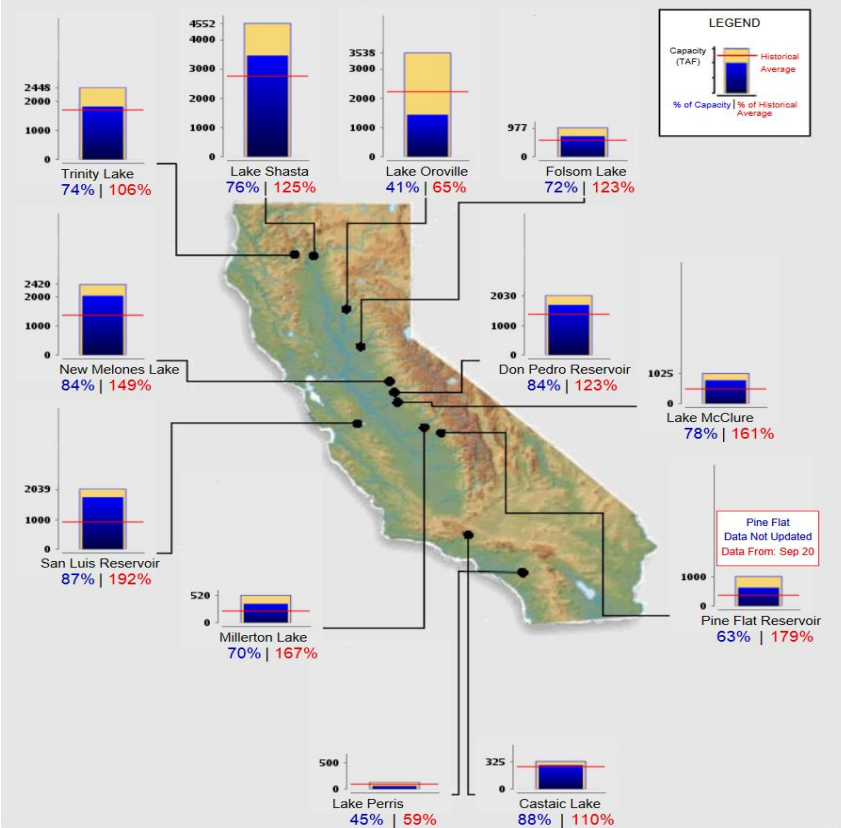
Explanation - Percentile classes							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

# Current Reservoir Storage

## Reservoir Conditions

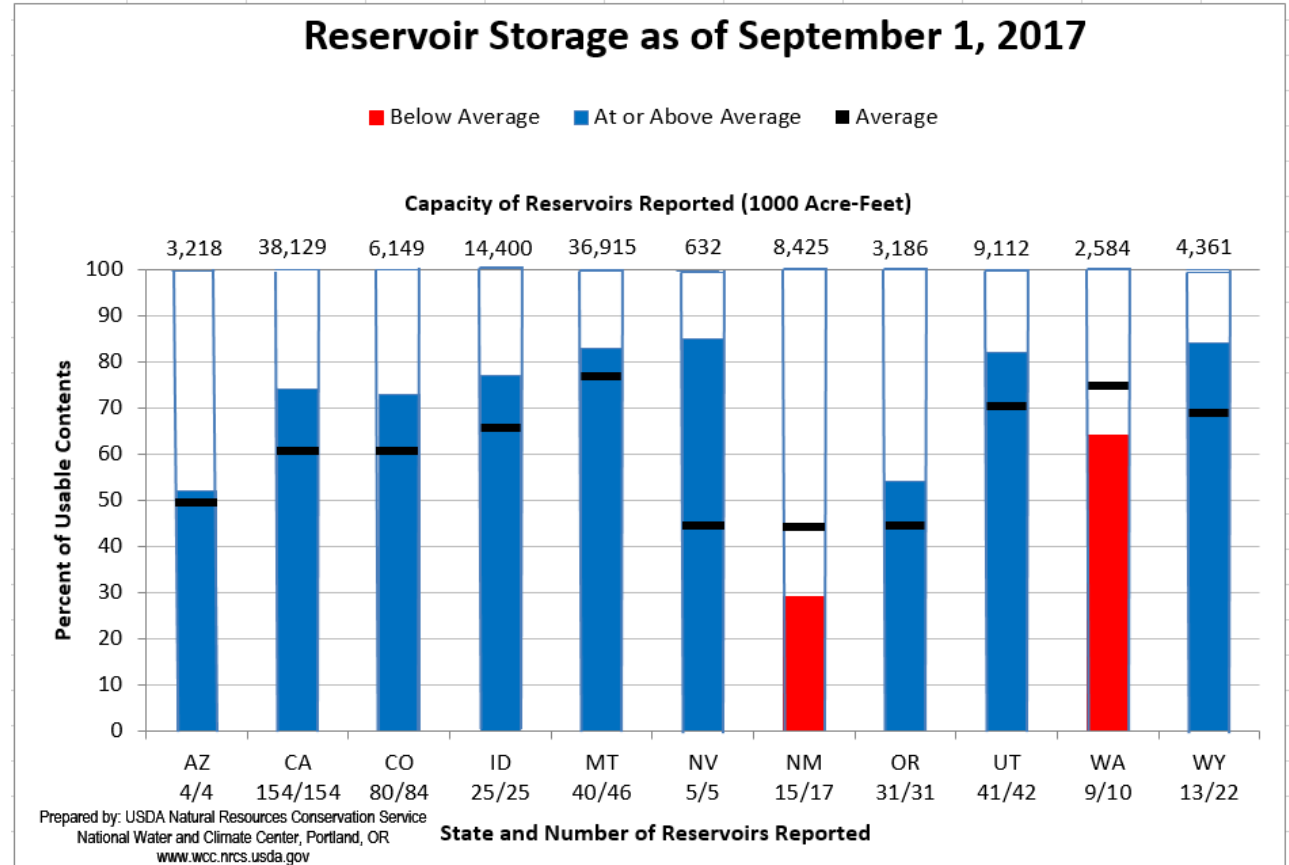
Ending At Midnight - September 21, 2017

### CURRENT RESERVOIR CONDITIONS



Graph Updated 09/22/2017 10:45 AM

## Reservoir Storage as of September 1, 2017



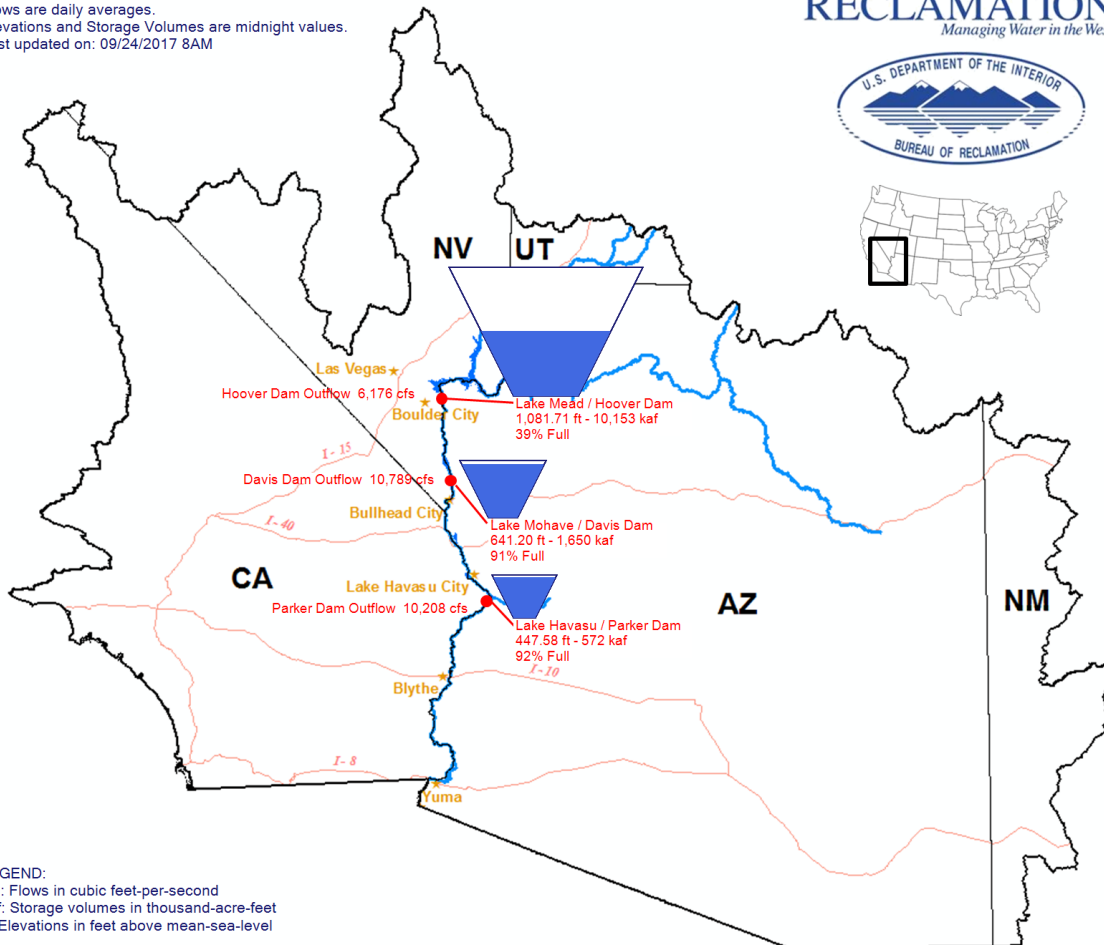
State and Number of Reservoirs Reported



# Lower Colorado River

Data for: 09/23/2017  
Flows are daily averages.  
Elevations and Storage Volumes are midnight values.  
Last updated on: 09/24/2017 8AM

**RECLAMATION**  
Managing Water in the West



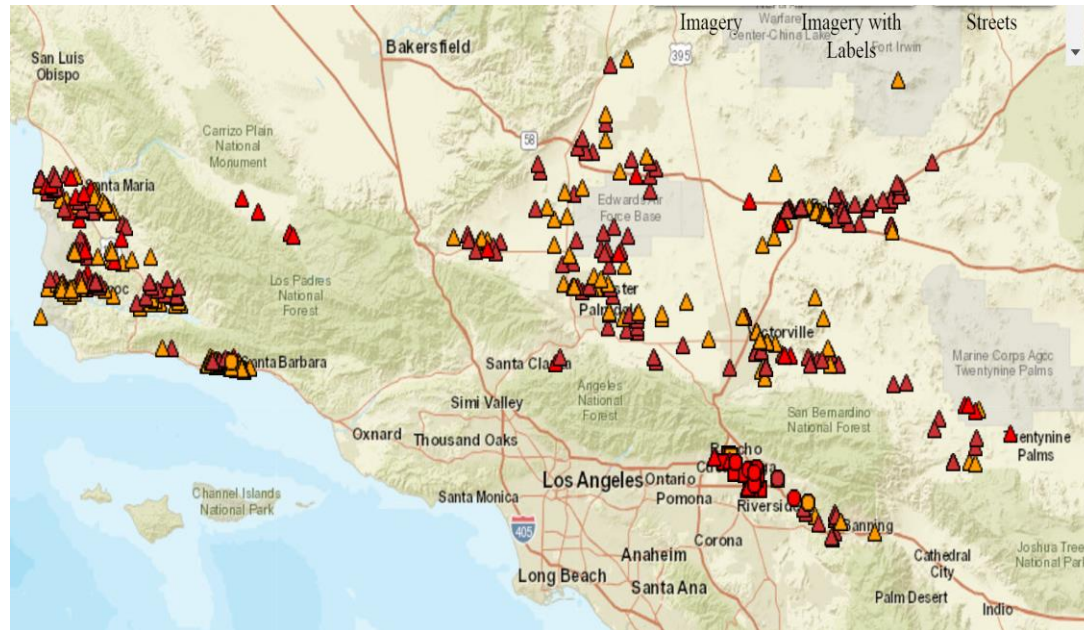
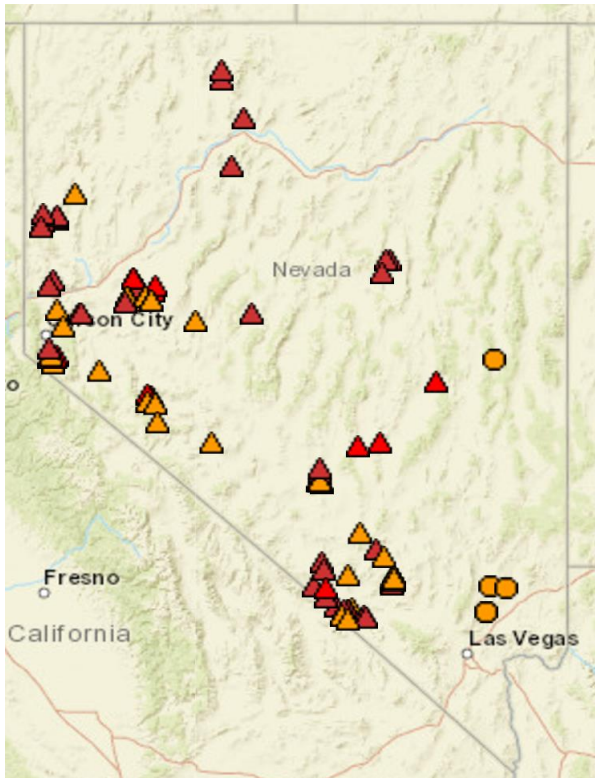
LEGEND:  
cfs: Flows in cubic feet-per-second  
kaf: Storage volumes in thousand-acre-feet  
ft: Elevations in feet above mean-sea-level

- **Upper Colorado Basin – WYTD Precipitation 109%**
- **Lake Mead – 39% full (slight increase over this time last year)**
- **Lake Powell – 61% full**





# Current Groundwater



- **Below normal** groundwater levels in portions of CA and NV
- **CA** - southern Coastal Plain, Inland Empire, Los Angeles Basin
- **NV** – Amargosa Valley, Carson Valley, Fallon

Explanation - Percentile classes (symbol color based on most recent measurement)								Wells		Springs	
●	●	●	●	●	●	●	●	○	□	■	■
Low	<10	10-24	25-75	76-90	>90	High	Not Ranked	Real-Time	Continuous	Periodic Measurements	
	Much Below Normal	Below Normal	Normal	Above Normal	Much Above Normal						



Thank you!

Questions or comments?

[dave.simeral@dri.edu](mailto:dave.simeral@dri.edu)