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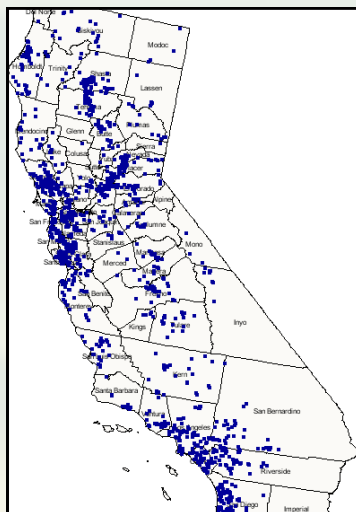
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California Cumulonimbus

Fall 2017

Welcome Message



Map of current California CoCoRaHS observers as of November 7th, 2017. (Source: CoCoRaHS)

Leaves are turning and days are shorter which means...it's time for another edition of the *California Cumulonimbus*! The *California Cumulonimbus* is a biannual newsletter for California CoCoRaHS observers that is issued twice a year; once in the spring and once in the fall.

This edition contains articles on a dedicated observer, the abundant precipitation of 2016-2017, the outlook for this winter, the effect of wildfires on flooding and the need for mountain observers.

If you're not a CoCoRaHS volunteer yet, it's not too late to join! CoCoRaHS, which stands for Community Collaborative Rain

Hail and Snow network is a group of volunteer observers who report precipitation daily. Not only is it fun, but your report gives vital information to organizations and individuals such as the National Weather Service, River Forecast Centers, farmers, and others.

Visit cocoahs.org to sign up, or e-mail Jimmy.Taeger@noaa.gov for additional information.

Enjoy the newsletter!



Observer Spotlight: Nancy Jones

Nancy Jones grew up on a small dairy farm in Live Oak, CA. For 29 years, she worked for Yuba County Water Agency. The Water Agency owned and operated Bullards Bar Reservoir and Dam, in addition to hydro plants. Part of Nancy's job was keeping water and generation records on the Yuba River.

Although she retired in 2003, she still enjoys keeping hydrologic records. As part of her retire-

ment activities, she added observing precipitation to her list of daily duties.

Since signing up for CoCoRaHS, she has submitted thousands of precipitation observations. Now that's impressive! Aside from observing precipitation and river records, Nancy enjoys gardening, golfing and spending time with her grandchildren.

Thanks for your daily dedication to CoCoRaHS, Nancy!



Nancy next to her rain gauge.

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Record-Setting Precipitation After Long Drought

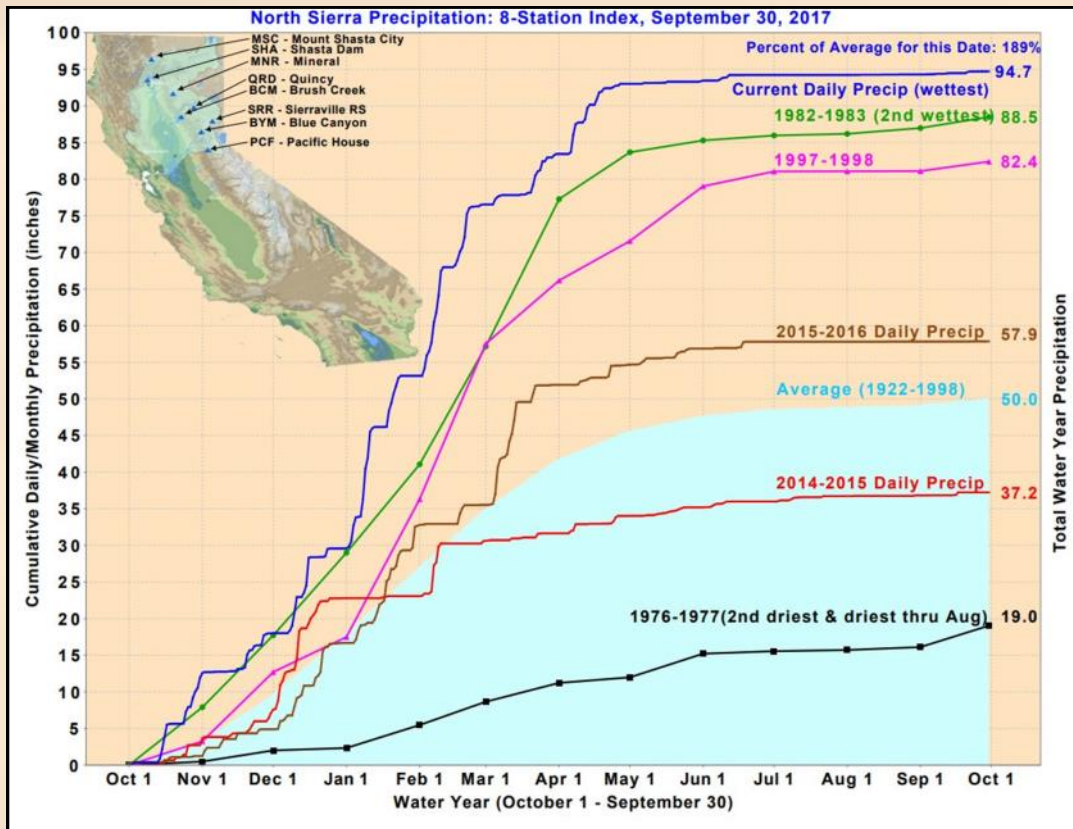


Figure 1) North Sierra index of precipitation from 8 different stations for various significant years. Note that the 2016-2017 water year was the wettest on record by more than 6 inches. (Source: CA Dept. of Water Resources)

The 2016-2017 water year ended up being one for the record books. After a 5-year drought, most of California observed above normal precipitation from numerous storms and associated atmospheric rivers from Fall 2016 to Spring 2017. Fig. 1 shows total water year (October 1—September 30) precipitation for the North Sierra 8-Station Index for noteworthy years. The average precipitation for these stations is 50.0 inches. The old record was set in the 1982-1983 water year with 88.5 inches. This past water year shattered the record by just over 6 inches!

Table 1 shows that many major cities observed above normal precipitation last water year. However, a good portion of the southern California deserts received below normal precipitation, and some areas of the state remained in the drought.

As we begin the wet season, the U.S. Drought Monitor has continued Abnormally Dry to Moderate Drought conditions for portions of southern and central California, with the rest of California still removed from drought.

| Precipitation (in.): 2015-2016 & 2016-2017 Water Years Compared to Normal | | | |
|---|-----------|-----------|----------------|
| City | 2015-2016 | 2016-2017 | 30-year Normal |
| Eureka | 48.08 | 63.84 | 40.33 |
| Los Angeles | 6.88 | 19.07 | 14.93 |
| Palm Springs | 3.55 | 8.96 | 5.74 |
| San Diego | 8.18 | 12.73 | 10.34 |
| San Francisco | 17.23 | 31.14 | 20.65 |
| Sacramento | 16.19 | 33.08 | 18.52 |
| Redding | 40.49 | 47.74 | 34.62 |

Table 1) Precipitation for various locations around California displaying amounts for 2015-2016 and 2016-2017 water years compared to the 30-year climate normal.

California Winter Outlook

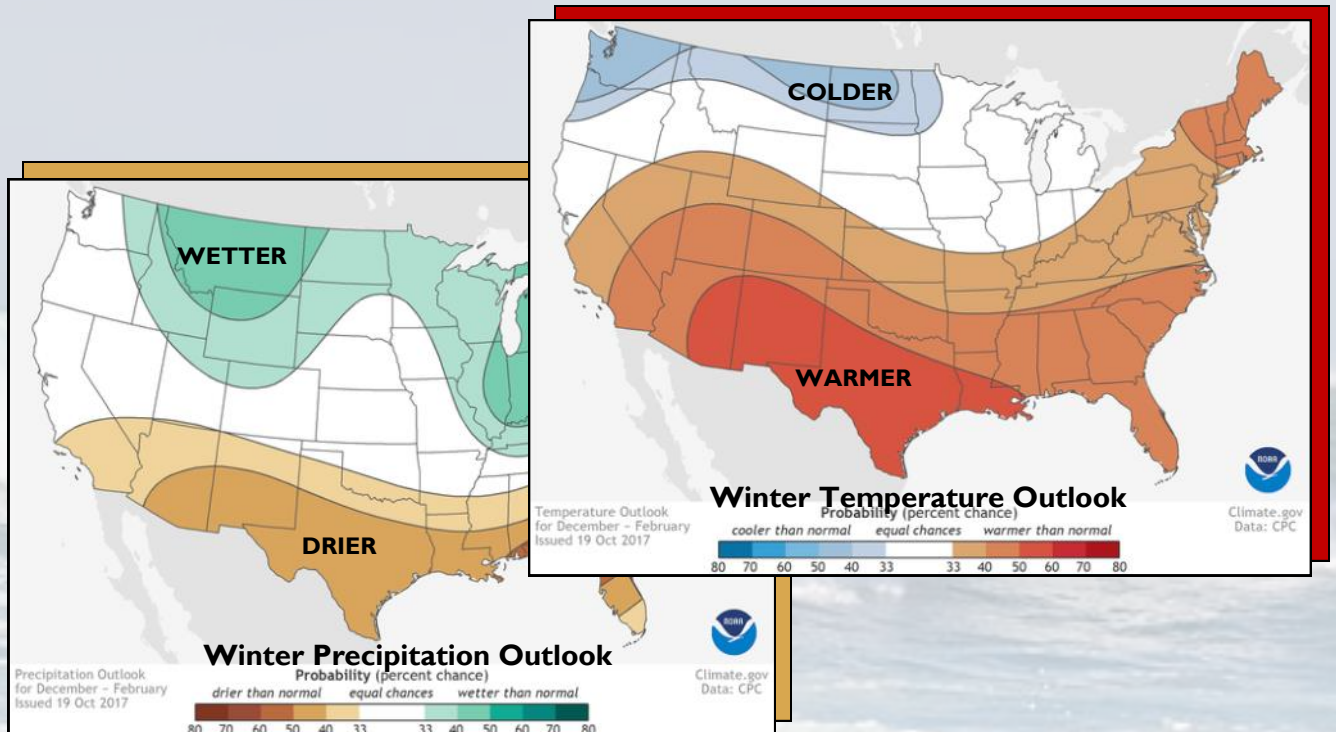


Figure 1) Winter 2017-2018 temperature and precipitation outlook for December through February from the Climate Prediction Center (made 19 Oct 2017). Two-thirds of California is favored for above normal temperatures and the southern half is favored for below normal precipitation through the period. (Sources: Climate Prediction Center and Climate.gov)

With La Niña on the horizon again for this winter, the National Oceanic Atmospheric Administration Climate Prediction Center (NOAA-CPC) is favoring below normal precipitation for almost all of the southern half of California, and above normal temperatures for most of central and southern California. If this forecast sounds similar to last year's forecast, you would be correct. La Niña was expected to develop over the winter, and the resultant weather pattern typically calls for what can be seen in Fig 1. La Niña ended up developing earlier than anticipated, and in addition to other climate influences, California in fact observed above normal precipitation. Will the same thing happen this year? It is not likely. We're getting close to La Niña-like ocean temperatures, but not there yet.

Although above normal precipitation is not expected this winter, strong storms are still common even during dry years. If you live in or travel to the mountains, be sure to have a winter preparedness kit in your vehicle for emergencies. Don't know what to pack in your kit? [Check out this site](#) from FEMA that has great information on preparing for winter storms. Flooding is also common with strong winter storms. Remember to never drive across flooded roads, even if they look passable. It only takes 6 inches of flowing water to knock you off of your feet, and 2 feet of flowing water to move a vehicle. Stay safe this winter season!

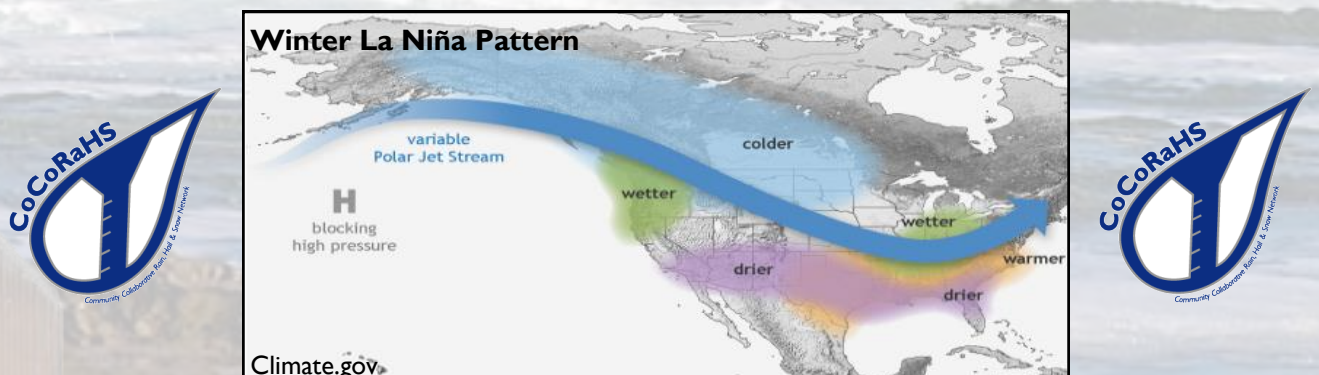


Figure 2) Winter jet stream pattern during La Niña (Source: Climate.gov)

How Precipitation Can Affect Burn Scars

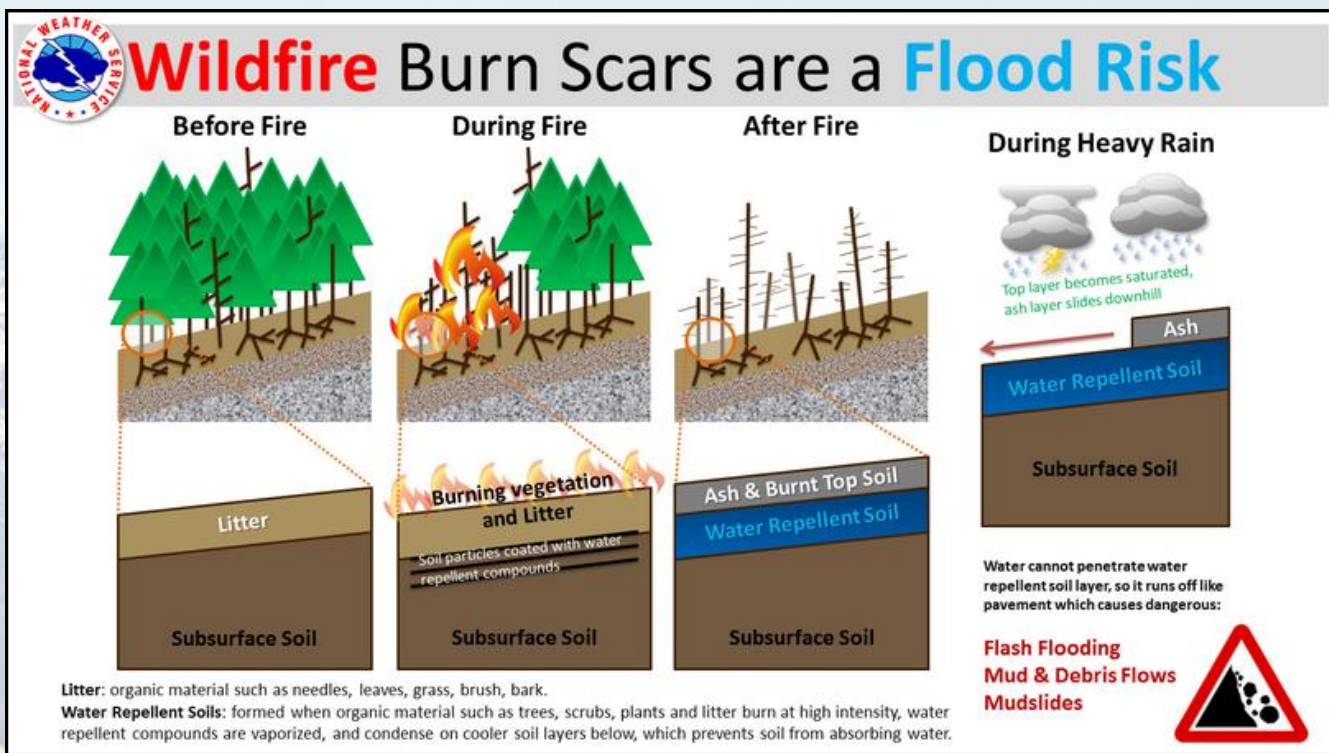


Figure 1) Graphic displaying how areas of terrain burned from a fire can pose a serious risk of flash flooding, mudslides and debris flows. (Source: National Weather Service Boise)

Abundant precipitation observed over California helped make beautiful, green landscapes across many areas of the state last Spring. As Summer approached and California moved into dry season, many new grasses and plants became dormant and dried out. These grasses became fuels, enhancing the wildfire season.

When fire burns an area it not only removes plants and grasses that help slow the movement of precipitation on the ground, the surface soil actually repels the water. This occurs because of oils and compounds that get released from plants when being burned, and then remain on the soil after the fire is out. Recently burned areas then become very dangerous when rain falls on it (see Fig. 1), especially if the terrain is steep.

2017 has been an active year for wildfires (see Fig. 2), and many areas near and below burn scars will enter the 2017-2018 wet season with an increased risk of flash flooding, debris flows and mudslides. If you live near a recent burn scar, be sure to keep a close eye on the forecast this winter and have a plan to protect your property or evacuate if required.

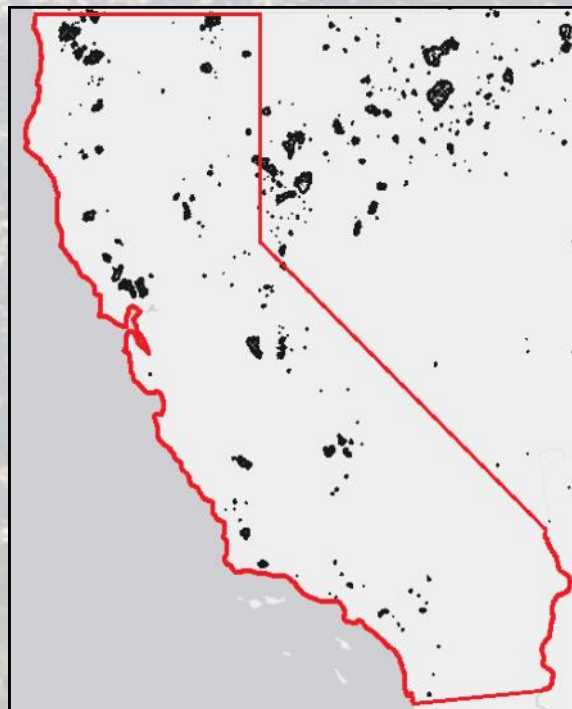


Figure 2) Burn scar perimeters from 2017 fires (as of early November). (Source: National Weather Service)

California CoCoRaHS



Marina Chetper



California Travel Guide



Walerian Walawski



Michael Melford

California Cumulonimbus

Additional Mountain Observations Needed

The amount of CoCoRaHS observations in California have grown over the years, however observations in the mountains remain sparse. The terrain of California plays a large role in affecting how much precipitation falls as storms move across the state. Often times, areas of the mountains receive double or

triple the precipitation than areas along the coast. Therefore, mountain observations are very important, and additional observations will help fill in gaps when assessing precipitation across California. If you know of anyone that lives in the mountains and who enjoys observing the weather, please encourage them to sign up for CoCoRaHS. Thank you!



Source: CoCoRaHS

FALL 2017 CALIFORNIA CUMULONIMBUS CONTRIBUTORS

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What is CoCoRaHS?

CoCoRaHS, which stands for Community Collaborative Rain Hail and Snow Network, is a non-profit group of volunteer precipitation observers. Anyone can join, and it's easy to report the information. All you need is a 4 inch rain gauge, the internet, and a few minutes each day. The website is easy to navigate and has different instructional materials for anyone to learn how to record an observation.

The site also has daily maps of observer's reports showing where precipitation fell the day before. It's fun to compare the different amounts of precipitation that can fall in an area from just one storm. Not only is the information interesting to look at, it is very valuable for organizations such as the National Weather Service, hydrologists, farmers and many others.

Visit cocoahs.org to sign up, or e-mail Jimmy.Taeger@noaa.gov for questions. Join CoCoRaHS, today!



Rain gauge required for the program.



cocoahs.org



[California CoCoRaHS State Webpage](http://CaliforniaCoCoRaHS.org)



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weather.gov