

Articles in this Edition:

Welcome Message 1

New California CoCoRaHS Webpage 1

What May be in the Works for California this Winter 2

CoCoRaHS National Director Visits California 3

Status of the California Drought 4

Summer Gardening in Northern California 5

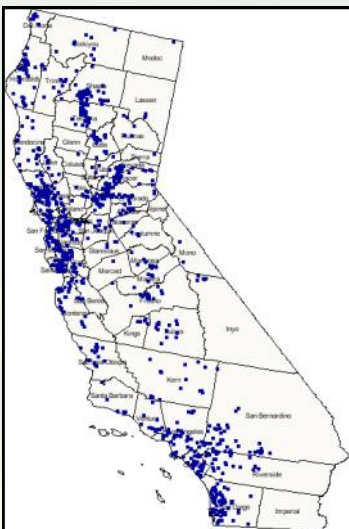
Observer Spotlight 5

California Cumulonimbus

Fall 2014

Welcome Message

by Jimmy Taeger



Map of current California CoCoRaHS observers as of Nov. 29th, 2014. (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 the new California CoCoRaHS webpage, the winter climate outlook, Nolan's visits to California, the drought, summer gardening in northern California, and an observer spotlight.

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

Enjoy the newsletter!



New California CoCoRaHS Webpage

by Jimmy Taeger

A new webpage is available for current and new California CoCoRaHS observers. The page is a one-stop-shop for CoCoRaHS resources, which includes training videos, instruction sheets, past *California Cumulonimbus* newsletters, a link to sign-up for CoCoRaHS, a link to report your drought impacts and a map of today's observations.

Check out the page when you get the chance, and feel free to share it with friends and family, and especially those interested in joining CoCoRaHS!

www.cocorahs.org/State.aspx?state=CA

New webpage for current and new California CoCoRaHS observers. (Source: CoCoRaHS.org/states.aspx?state=CA)

What May be in the Works for California this Winter

by Chris Stachelski

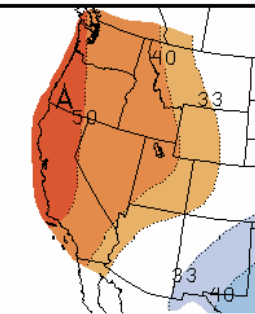
After three winters of lackluster precipitation and California dealing with a disastrous drought, all eyes are on this winter to provide some hope for the parched Golden State. Each winter, several signals are looked at to see what the long term weather outlook may yield, and this winter much of the focus has been on El Niño. Contrary to common belief, El Niño does not guarantee that California will have a wetter than normal winter, as this correlation typically shows up only in stronger El Niño episodes. The latest predictions for El Niño this winter continue to suggest the potential for a weak to moderate episode. Therefore, while wetter periods during this winter are possible, lengthy dry periods are not unreasonable, as well. Often most of the winter precipitation in California falls in several events, typically accompanied by a plume of subtropical moisture, also known as an Atmospheric River, tapped from the Pacific. Seeing only one or two of these bigger events affect all or part of the state compared to three to five can make a major difference in how wet this winter turns out.

The December-February outlook issued by the Climate Prediction Center (CPC) shows a 33% chance or greater for above normal precipitation across central California, and a 40% chance for above normal precipitation across southern California. This correlates to what is often seen during an El Niño when the main storm track gets shifted south. By contrast, there is an equal chance this winter could be above normal, near normal or below normal in northern California. The signals here do not really favor any one trend with precipitation over the others.

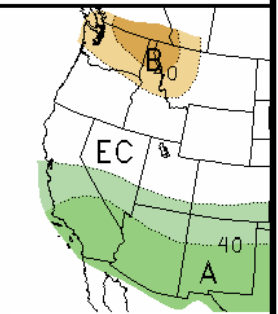
For temperatures, there is a 50% or greater chance for above normal temperatures across northern and central California according to the CPC outlook. The rest of the state has a 33 to 40% or greater chance of above normal temperatures. This could result in higher snow levels during storms, which would hurt snowpack supplies across the state critical to the water supply.

2014-2015 Winter Climate Probability Outlook

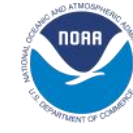
Temperature



Precipitation



Colder Warmer Drier Wetter



A = Above Normal Chances
N = Normal Chances
B = Below Normal Chances
EC = Equal Chances of A, N or B

Winter (December, January and February) climate temperature and precipitation probability outlook for the West Coast from the Climate Prediction Center as of November 20, 2014. (Source: Climate Prediction Center)

California's drought has taken three years to develop and will likely not be erased this winter altogether. However, the hope is that precipitation this winter will help improve the drought.

Normal December – February Weather

Location	Precipitation (in)	Minimum Temperature (°F)	Maximum Temperature (°F)
Fresno	5.99	39.2	57.1
Los Angeles	9.25	48.2	68.2
Palm Springs	2.91	46.2	69.5
San Diego	5.78	49.4	64.9
San Francisco	13.52	46.4	58.1
Sacramento	10.36	39.5	56.0

Normal precipitation, maximum temperature and minimum temperature for cities across California. (Source: National Climatic Data Center (NCDC))

California Cumulonimbus

CoCoRaHS National Director Visits California

SACRAMENTO

By: Eric Kurth

Nolan Doesken, founder of CoCoRaHS, came to Sacramento on May 14th. While Nolan was in town for the California Drought Workshop, he wanted to meet CoCoRaHS volunteers in the region. An informal dinner was set up about a week ahead of his visit at the Elephant Bar in Sacramento.

Though the event was done on short notice and in the middle of the week, a group of area observers were able to attend. Most of the attendees were willing to travel between 50-100 miles from their homes to be at this dinner. This shows their dedication and interest in meeting the man who created CoCoRaHS back in 1998. Several of these observers live in higher elevations, and frequently take snow observations, as well as rain and hail. In addition to meeting Nolan, it was a great opportunity to share and compare notes about the unique aspects of observing weather in northern California.

There was some discussion about expanding the number of CoCoRaHS observers in



CoCoRaHS National Director Nolan Doesken (middle) meeting with several interior northern California CoCoRaHS observers and Regional Coordinator Eric Kurth (black shirt). (Source: Eric Kurth)

the area, especially in rural and mountainous locations. CoCoRaHS observations in those locations are especially valuable for use by the National Weather Service Office in Sacramento.

Everyone who attended said they had a great time and were glad they came to the

dinner. Many other observers were not able to attend due to the short notice and week night timing. Perhaps a dinner like this should be an annual event? If you're an observer in the region and would like to have an annual dinner, please send an email to Eric.Kurth@noaa.gov.

SAN DIEGO

By: Jimmy Taeger

Some San Diego county observers were able to meet a precipitation observation celebrity back in June. Nolan Doesken, the



CoCoRaHS dinner in San Diego with special guest CoCoRaHS National Director, Nolan Doesken. (Source: Noel Isla)

National Director of CoCoRaHS, was in San Diego for the Western States Water Council's Workshop on Hydroclimate Monitoring Systems and Measurement Needs, which was held in downtown San Diego at the Doubletree Hotel. Nolan not only attended the conference, but he gave a presentation on a "Perspective on Precipitation", which touched on the importance of precipitation observations, especially from CoCoRaHS observers.

On Tuesday, June 24th, Noel Isla and Rand Allen (CA South Coast CoCoRaHS Coordinators) and Jimmy Taeger (CA State Co-Coordinator and South Coast CoCoRaHS Coordinator) put together a gathering for San Diego CoCoRaHS observers to meet Nolan. We met up for dinner at Gordon Biersch, in Mission Valley, and had a great turnout of 17 people. Everyone had a great time meeting Nolan, and getting to "talk precipitation" with other fellow CoCoRaHS observers.

Status of the California Drought

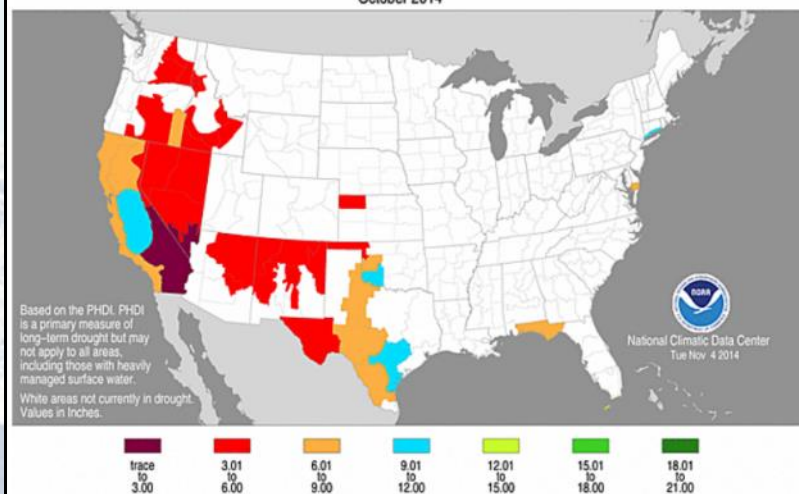
by Joe Sirard

The U.S. Drought Monitor for California, as of November 25th, 2014, shows that 55 percent of California was in the D4 Category (Exceptional Drought), which is the most extreme drought condition. 80 percent of the state was in either D3 (Extreme Drought) or D4.

Widespread heavy rain and mountain snow will be needed this winter to improve drought conditions. In fact, according to the National Climatic Data Center, it would take around 6 to 12 inches of rain in one month (October 2014) over much of the state to end the current drought conditions for that area (think "March Miracle"—March 1991 when very heavy rain and mountain snow effectively ended a significant drought across the state).

Will a similar event take place during the upcoming rainy season? No one really knows. However, from

Precipitation Required to End Current
Drought Conditions in One Month
October 2014



Map of precipitation needed to end the drought in one month for October 2014.
(Source: National Climatic Data Center)

a meteorological perspective, we can be cautiously optimistic as four dry seasons in a row would be somewhat unusual. Statistically and climatologically speaking, anomalous conditions such as extended dry periods usually even out with several wet periods, say, on a decadal time scale.



“Widespread heavy rain and mountain snow will be needed this winter to improve drought conditions.”

U.S. Drought Monitor California

November 25, 2014

(Released Wednesday November 26, 2014)
Valid 7 a.m. EST

Statistics type: ☒ Traditional (D0-D4, D1-D4, etc.) ☐ Categorical (D0, D1, etc.)
Drought Condition (Percent Area)

Week	Date	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	2014-11-25	0.00	100.00	99.72	94.42	79.69	55.08
Last Week	2014-11-18	0.00	100.00	99.72	94.42	79.69	55.08
3 Months Ago	2014-08-26	0.00	100.00	100.00	95.42	81.92	58.41
Start of Calendar Year	2013-12-31	2.61	97.39	94.25	87.53	27.59	0.00
Start of Water Year	2014-09-30	0.00	100.00	100.00	95.04	81.92	58.41
One Year Ago	2013-11-26	2.61	97.39	94.15	82.53	27.59	0.00

Population Affected by Drought: 37,241,336

[View More Statistics](#)

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(s):

Eric Luebbehusen, U.S. Department of Agriculture

Status of the California drought as of November, 25, 2014 from the U.S. Drought Monitor. Over half of California was in exceptional drought. (Source: U.S. Drought Monitor)



California Cumulonimbus

Summer Gardening in Northern California

by Debbie K. Clarkson

Residents near the North Bay finally received a bit of rain in mid-November. Where there isn't much old vegetation, new bright green grass was starting to grow.

Unfortunately, my CoCoRaHS gauge hasn't received more than an inch from one storm yet. So my very dirty, unwashed since April, dark blue SUV hasn't been washed yet. I made the decision to not wash it in order to save that water to help hand water my garden through the dry months.

One of things that helped my rose and vegetable garden survive the summer was a thick layer of mulch. Last year I was able to get a load of chipped branches to use as mulch. Over about a month, with the help of my grandson D'Andre, I was able to put down a layer approximately three inches thick in my rose and rhododendron gardens. Except for hot days, I only needed to water every five days or so. I did hand watering early in morning or at dusk to keep track of how much water I was using. Watering at those times also helps reduce the amount of water that evaporates before plants can absorb the water.

Since I grow my vegetables in pots, they

were a little more challenging to manage. I used about two inches of leaf/vegetable compost for mulch along with some water soluble expanding granules from my local garden store. This worked ok, but I still had to water every three days, and more often when it was hot. However, by mid summer the compost had worked into the soil a lot. So I put down some more. This time I put a layer of coco fiber mat that I bought at a local garden center over the mulch. This worked much better. If you know of a better way to keep

vegetable pots watered, please let me know (canorthbaycocoahs@att.net). One nice thing about not yet getting a hard frost or freeze is that I am still able to grow a few sungold and yellow mini pear tomatoes. I am also growing some zucchini and yellow squash.

Now it's time for winter pruning and leaf pickup/mulching. Enjoy your time in your gardens, with a higher appreciation of what rain and weather do for your garden.



New grass growth under some grape vines from recent rains at Windy Hill Estate Winery in Cotati, CA in mid-November 2014. (Source: Debbie K. Clarkson)

Observer Spotlight

by Jimmy Taeger



CoCoRaHS observer, Cindy Palmer, next to her rain gauge.

National Weather Service (NWS) meteorologist, Cindy Palmer, is not only passionate about forecasting the weather, she's an avid CoCoRaHS observer as well! Cindy was actually part of the team that helped bring CoCoRaHS to California in 2008, and with the exception of her move from the NWS office in Sacramento to San Diego in 2011, she's had a continuous record of observations.

Cindy was born and raised in southern California, and attended the University of California, Davis, for her undergraduate degree. She majored in Atmospheric Science, with a minor in math and English and an emphasis in geology. Her career in the federal government began in 2000 at the Joint Typhoon Warning Center as

she worked on her masters degree at the University of Hawaii. She earned a general forecaster position at the NWS in Pendleton in 2002, transferred to NWS Sacramento in 2006, and was promoted to lead forecaster at the NWS office in San Diego in 2011.

Palmer has always had an interest in the weather, even as a kid. She especially enjoyed watching the thunderstorms off in the distance at Lake Powell during the summers. Cindy enjoys gardening, reading, cooking, swimming and walking.

Thank you, Cindy, for being such a thorough and great CoCoRaHS observer!!



Marina Chetper



California Travel Guide



Walerian Walawski



Michael Melford

California Cumulonimbus

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General Forecaster - NWS Oxnard
- **Eric Kurth, California Northern Interior Co-Coordinator:** Author
General Forecaster - NWS Sacramento
- **Debbie K. Clarkson, Sonoma County Coordinator:** Author
- **Stefanie Sullivan, CoCoRaHS Observer:** Photographer of Background Pictures and Creator of Cumulonimbus Image
General Forecaster - NWS San Diego

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)



[California CoCoRaHS](https://www.facebook.com/CaliforniaCoCoRaHS)



weather.gov