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 **Welcome Back to the North Coast Observer!**  
*by Scott Carroll*

Welcome back to *The North Coast Observer*, the online newsletter of the National Weather Service (NWS) in Eureka, California! We proudly serve northwest California including the counties of Del Norte, Humboldt, Mendocino, and Trinity and the adjacent coastal waters out to 60 nautical miles.

This web-based newsletter will be posted on a seasonal basis (around the tenth of March, June, September, and December). Links to the newsletter will be available on our website as well as on Twitter and Facebook. As always, we welcome your input as to how we can serve you better... [let us hear from you!](#)

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YouTube	<a href="https://youtube.com/NWSEureka">youtube.com/NWSEureka</a>

 **Upcoming Events**

Date	Event
Mar 1	Growing season begins for zones 101, 103, 109, 110, 111, 112, and 113 Meteorological spring begins
Mar 12	Daylight Saving Time begins
Mar 20	Astronomical spring begins at 3:28am
Mar 27-31	CA Tsunami Preparedness Week
Mar 30	CoCoRaHS Training & Informational Session
Apr 1	Growing season begins for zones 102, 104, 105, and 106
Apr 15	Growing season begins for zones 107 & 108
Apr 22	Earth Day
May 22-26	CA Safe Boating Cold Water Awareness Week
Jun 1	Meteorological summer begins

**Features...**

- [Welcome Back to the North Coast Observer!](#)
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 **Weather Ready Nation**  
*by Karleisa Rogacheski*



The mission of the National Oceanic Atmospheric Administration (NOAA) and the National Weather Service (NWS) is to provide weather, water, and climate data, forecasts and warnings for the protection of life and property and the enhancement of the national economy. One way we are accomplishing this mission is to become a **Weather Ready Nation (WRN)** by building community resilience in the face of increasing vulnerability to extreme weather, water, and tsunami events. To help serve the communities of northwest California, we are working with organizations across Del Norte, Humboldt, Trinity, and Mendocino counties to become Weather Ready Nation Ambassadors.

In order to become WRN Ambassadors, organizations must be willing to be agents of change and leaders of their communities so that others will be inspired to be better prepared and informed when it comes to natural hazards. By doing this, communities will be able to mitigate, minimize, or even avoid disaster altogether! If you are interested in having your organization participate or know of an organization that would be a great candidate for the WRN program, please visit [weather.gov/com/weatherreadynation](http://weather.gov/com/weatherreadynation) or [email Ryan Aylward](#).



**Winter 2016-2017 Summary**

This winter was characterized by above normal rainfall and below normal temperatures as a series of systems moved across the area. There have been breaks between the system with chilly nights and sunny days. Some minor to moderate river flooding has occurred with these systems. Several records were broken during the winter...

Winter Record Events				
Date	Location	Record	Value	Previous Record
Dec 9	Crescent City	Rainfall	2.80"	2.12" in 2004
Dec 14	Crescent City	Rainfall	6.01"	3.57" in 2002
Dec 15	Ukiah	Rainfall	2.58"	2.00" in 1941
Dec 17	Crescent City	Low Temp	30°F	31°F in 2008
Dec 26	Eureka	Low Temp	29°F	30°F in 2015
Jan 10	Ukiah	Rainfall	2.87"	2.14" in 1927
Feb 9	Ukiah	Rainfall	2.04"	1.80" in 1919

**December**

Conditions were wet in December. However, on average, December has the highest normal rainfall of the year, and most areas ended up near normal. This was due in part to a dry spell at the end of the month. Temperatures averaged 2 to 3 degrees below normal along the coast, but remained nearly normal in the interior valleys.

**January**

In January, the temperatures across the north remained below normal while temperatures in the south were near normal. The month started off very wet with most of the rain falling by the 25<sup>th</sup> of the month and the final week experiencing mainly dry weather. The rainfall amounts were impressive, but not record-breaking. Most areas saw around twice their normal rainfall. However, Crescent City was only around 2 inches above normal.

**February**

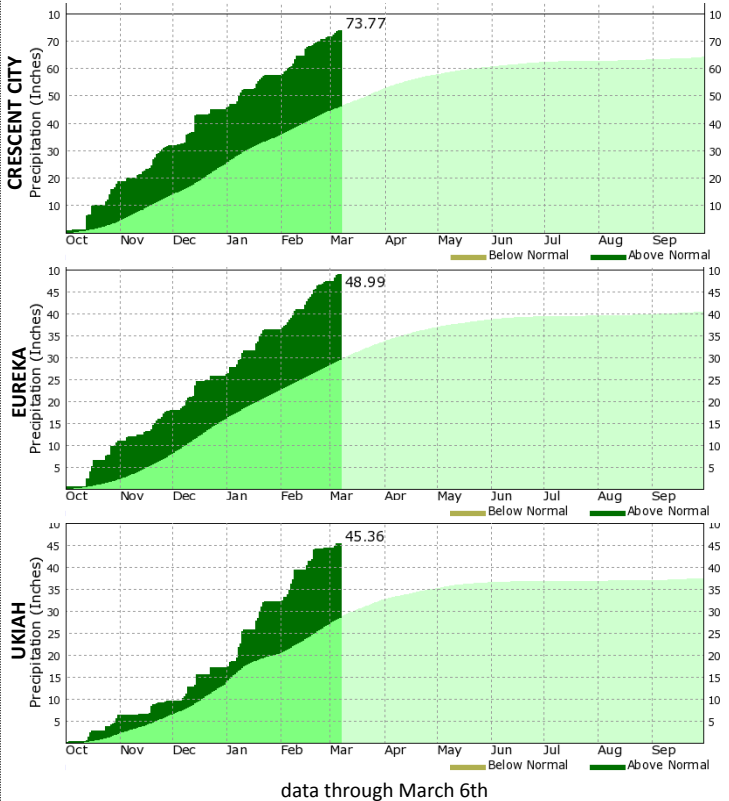
In February, the main story for the month was the rainfall. Crescent City, Eureka, and Ukiah received between 160% and 200% of normal rainfall. The biggest rainfall anomalies were in the southern portion of the area. A series of systems moved across the area and there was only one period longer than 2 days that was dry. The low temperatures were 1 to 4 degrees above normal due to the cloud cover. The high temperatures were closer to normal.

**Winter 2016-2017 Monthly Climate Comparison**

	Crescent City			Eureka			Ukiah		
	Ave Hi	Ave Lo	Total Rain	Ave Hi	Ave Lo	Total Rain	Ave Hi	Ave Lo	Total Rain
Dec	52.3	38.9	13.14	53.1	36.8	7.87	54.8	33.5	7.54
Jan	51.6	39.1	12.22	52.6	37.5	10.51	54.8	37.2	14.92
Feb	54.2	43.0	14.27	55.7	43.3	11.10	57.9	42.4	12.25

temperatures in °F, rainfall in inches

**Water Year-to-Date Comparison** [click images for links](#)



**Spring Outlook (March-May)** [click images for links](#)

The Climate Prediction Center's spring outlook for NW California is calling for nearly equal chances of above or below normal temperatures (fig. 1) and precipitation (fig. 2). See Reg Kennedy's [article](#) on the end of La Niña below for more information on the changing weather pattern.

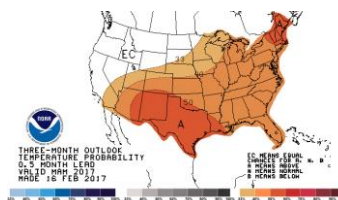


Figure 1



Figure 2



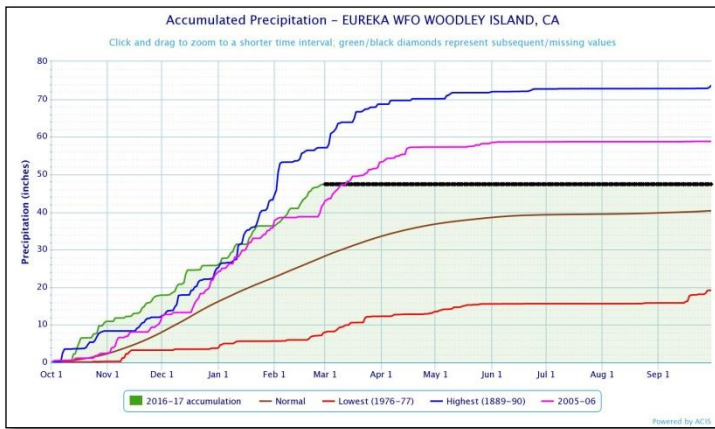


One of the Wettest Winters on Record

by Reg Kennedy

This winter has been one of the wettest winters on record for many locations in northwest California. Let's compare how the accumulated rainfall during the first 5 months of Water Year 2017 (WY2017), that is October 1, 2016, through February 28, 2017, compared to other water years for a few selected locations.

The total rainfall recorded at the NWS office on Woodley Island for the period October 1, 2016, through February 28, 2017, was 47.38 inches. The average precipitation for this 5-month time period is 28.10 inches and the annual rainfall average is 40.33 inches. For contrast, the record for the least amount of rainfall for this same 5-month period is 7.92 inches, which occurred in WY1977 during a drought. The record rainfall for this same 5-month period is 50.09 inches, which was recorded in WY1890. The first 5-month period of WY2017 is the second highest amount of rainfall on record. The graph below depicts this information. For comparison, included WY2006 was included, which was the most recent year with significant rainfall. Note that WY2017 started out as the record high for accumulated rainfall value. Then, about mid-January, it fell below the WY1890 value to become the second highest.



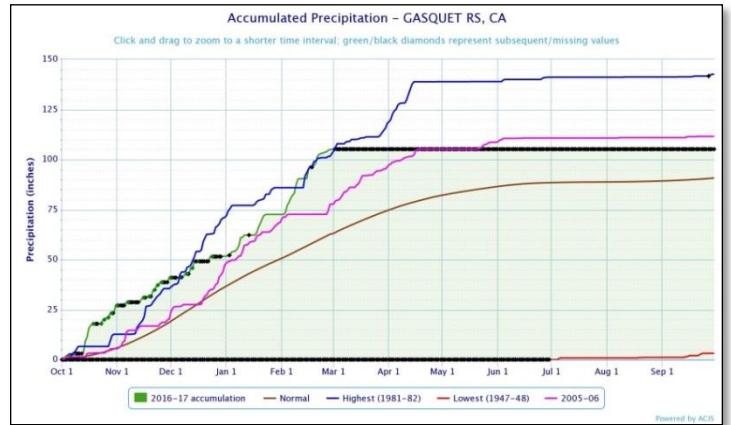
Above: Eureka Weather Forecast Office on Woodley Island.

Now let's look at graphs for other selected sites (right side of page). From these graphs, you can see the accumulated precipitation graph for the current water year is similar to the graphs of the highest water year, the winter of 2005-2006, or both. Note that in the winter 2005-2006, February 2006 was relatively dry and then the precipitation resumed in March and continued through mid-April before ending. So far we have not had a long dry period.

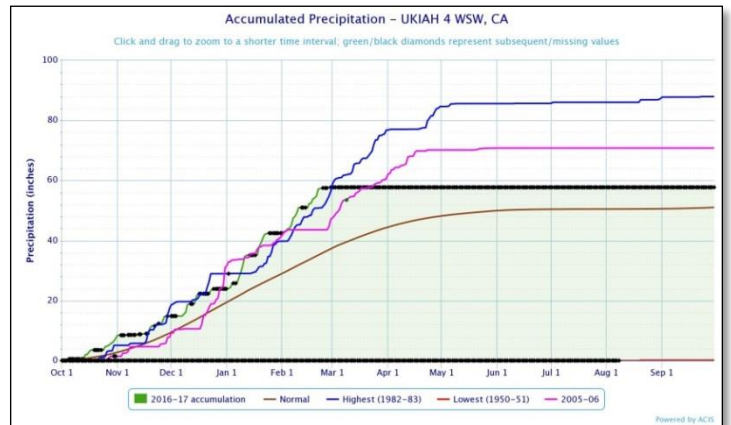


One of the Wettest Winters on Record (cont.)

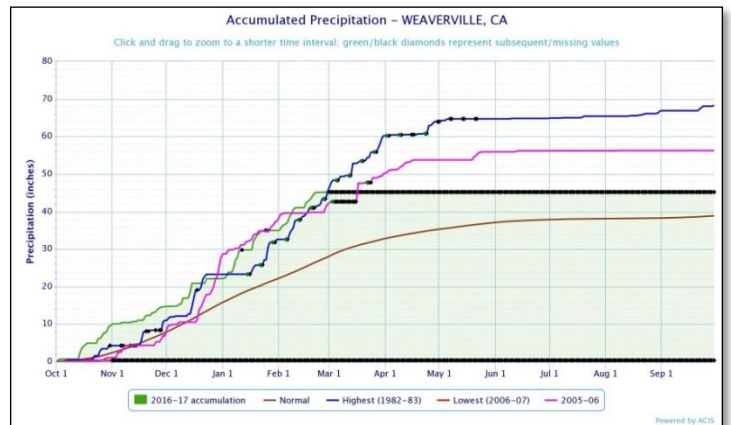
by Reg Kennedy



Above: Gasquet Ranger Station. The WY2017 graph from early December through mid-February was above WY1982, the maximum water year total.



Above: Ukiah 4 WSW. The current WT2017 precipitation accumulation was the highest on record through the end of February.



Above: Weaverville. The WY2017 precipitation accumulation through the end of February is close to the record water year (WY1983).

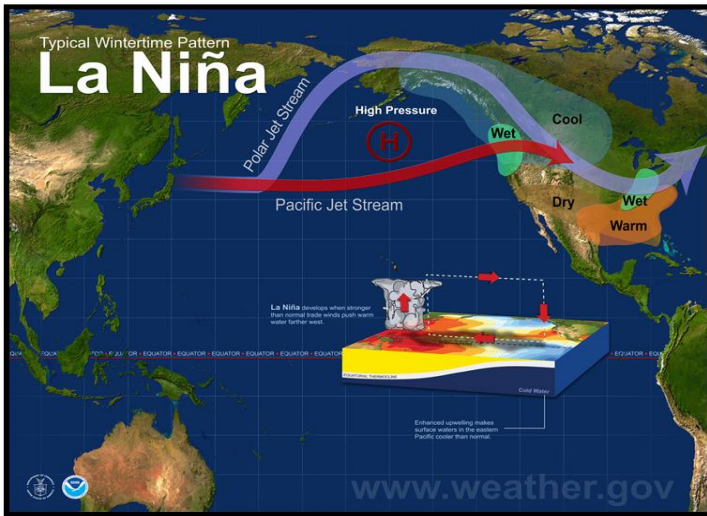


## La Niña Episode Ends

by Reg Kennedy

In their February 9, 2017 El Niño/Southern Oscillation (ENSO) Diagnostic Discussion, the NWS Climate Prediction Center stated the La Niña episode that started in early November 2016 has ended. La Niña conditions are no longer present in the eastern tropical Pacific Ocean. Consequently, ENSO-neutral conditions have returned. As a reminder, La Niña episodes represent periods of below average sea surface temperatures across the eastern tropical Pacific Ocean.

The impact La Niña on western US weather is for below normal precipitation in the southwestern US to include southern California and above normal precipitation in the Pacific Northwest, i.e. primarily Washington and Oregon. Thus, northern California is in the transition zone between these two impacts. Whether this weak La Niña episode had any impact on this past winter's rainfall event still remains to be determined. It may have contributed to the above normal precipitation from late September through October. As this event was weak and on the decline after October, any impact on the precipitation pattern after October remains to be evaluated and most likely was very minimal.



Typical La Niña Wintertime Pattern

The Climate Prediction Center went on to state that ENSO neutral conditions are favored to continue through at least the spring 2017. For the remainder of 2017, some models are calling for a return of El Niño conditions by the second half of 2017. However, there is still much uncertainty and the odds for El Niño conditions returning are currently 50%. For a less technical discussion on the ending of the latest La Niña episode, click [here](#).

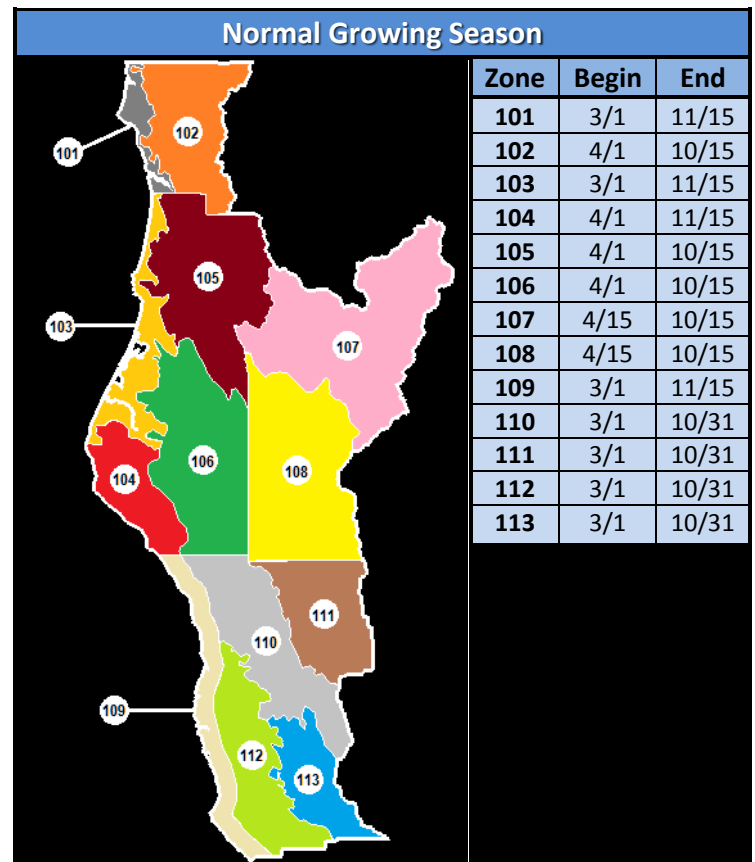


## Growing Season Beginning

by Scott Carroll



Meteorological spring has arrived in Northwest California! With the change of season, growing seasons are beginning once again across the area (see table below). This means area agricultural interests are once again becoming concerned about the threat of frost and freezing temperatures. NWS Eureka issues advisories for frost as well as watches and warnings for freezes (low temperatures at or below 32°F for at least 2 straight hours) and hard freezes (low temperatures at or below 29°F for at least 2 straight hours) during the growing season, with hard freeze warnings issued all year long in the coastal zones. These products are issued for elevations below 3,000 feet.





**Night Sky Corner**  
by Scott Carroll

As we move into spring, the nights are getting shorter, and temperatures are gradually getting warmer. In addition, more clear nights are expected as the frequency of storm systems affecting the area decreases and we transition into the dry season. The exceptions are coastal locations and interior valleys, where nighttime low clouds and fog periodically obscure spring skies. Cool nights and occasional cold snaps make it important to dress warmly when venturing outside at night. A good source of sky cover forecasts is our [graphical forecast](#). Sky cover and other forecast elements can also be displayed by selecting a point-and-click forecast from the area map on our [homepage](#), then clicking the **Hourly Weather Forecast** graph.

On Monday, August 21, 2017, a total solar eclipse will occur. While the path of totality will pass north of the local area (across northern Oregon), a partial eclipse will be visible from Northwest California during the mid to late morning. More climatological information for eclipse viewing will be provided in the summer edition of the North Coast Observer. For more technical information about the upcoming eclipse, visit the [NASA Eclipse Website](#) and the [Wikipedia page](#).

August 21 <sup>st</sup> Eclipse Specifics					
Location	Begins	Max	Ends	Duration	Obscur.
Crescent City	9:02 AM	10:15 AM	11:35 AM	2h 33m	91%
Eureka Area	9:01 AM	10:14 AM	11:35 AM	2h 34m	87%
Fort Bragg	9:01 AM	10:14 AM	11:35 AM	2h 34m	82%
Ukiah	9:01 AM	10:15 AM	11:36 AM	2h 35m	81%
Weaverville	9:02 AM	10:16 AM	11:37 AM	2h 35m	87%



Moon Phases					
March		April		May	
	5 <sup>th</sup>		3 <sup>rd</sup>		2 <sup>nd</sup>
	12 <sup>th</sup>		10 <sup>th</sup>		10 <sup>th</sup>
	20 <sup>th</sup>		19 <sup>th</sup>		18 <sup>th</sup>
	27 <sup>th</sup>		26 <sup>th</sup>		25 <sup>th</sup>

Night Sky Calendar	
Date	Event
Mar 25	Venus inferior conjunction
Apr 7	Jupiter opposition
Apr 13	Uranus conjunction
Apr 19	Mercury inferior conjunction
Apr 22	Lyrid meteor shower maximum
May 4	Eta Aquarid meteor shower maximum

moon phase and event information courtesy of NASA



**Coastal Flooding in Northern California**  
by Matthew Kidwell

Coastal flooding typically occurs in NW California when there are strong southerly winds over the ocean. This raises water levels above the normal tide levels and is called storm surge. The stronger and more persistent these southerly winds are, the higher the surge will be. This surge can be 1 to 2 feet above normal tide levels during strong southerly wind events. The impacts this will cause depends on how high the astronomical tides are at that time. If a storm hits during the perigean spring tides, when tides are at their highest due to the moon being at its closest point to earth, there is a high potential for coastal flooding.

Water levels inside Humboldt Bay are more sensitive to south winds than along the open coast, with higher and longer lasting surge. This causes the areas inside Humboldt Bay to be more frequently impacted by coastal flooding. King Salmon and the Arcata Bottoms along Jackson Road start to see street flooding when water levels at the North Spit tide gauge are above 8.8 feet.

On the Pacific coast, it typically takes a combination of high tides and high surf to get significant impacts from coastal flooding. One of the more vulnerable locations is South Beach near Crescent City where highway 101 nears the ocean. Water from the high surf and high tides can wash onto the highway in this location. In Mendocino County, Highway 1 at Seaside Beach north of Fort Bragg is vulnerable to waves washing over the road when there is high surf and tides. There are additional, less populated locations along the coast that can see flooding in these conditions.

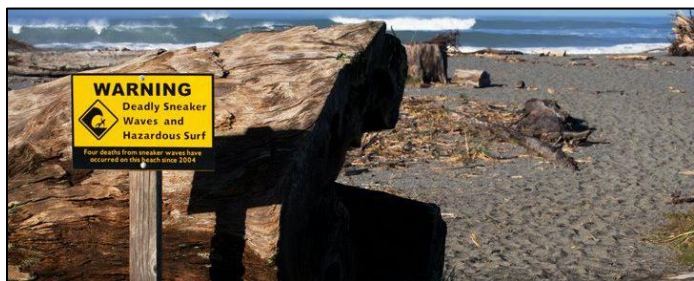
This winter, there have been a half dozen or more coastal flooding events including a couple of significant ones. January 21<sup>st</sup> was a notable event with large waves and high tides. This mainly impacted areas on the open coast, especially in Mendocino County. At Albion, moderate flooding occurred at the mouth of the Little River in the campground. In addition, minor flooding occurred at Seaside Beach, Van Damme State Park, and Arena Cove in Mendocino County. In Humboldt County, Centerville road southwest of Ferndale was inundated with water and sand. This event had waves of 25 to 30 feet at 18 second periods and water levels at Arena Cove were around 8.1 feet (1.3 feet above the astronomical high tide). One of the more significant coastal flood events on Humboldt Bay this winter occurred on February 9<sup>th</sup>. A long period of south winds brought nearly 1.6 feet of surge, bringing water levels to 9.6 feet at the North Spit tide gauge. Widespread flooding was reported at King Salmon and in the Arcata Bottoms on Jackson Ranch road near Liscom Slough.





## Sneaker Wave Safety

by Troy Nicolini



Sneaker waves are large waves that seem to come out of nowhere. Sneaker waves can catch you off guard and quickly pull you into the ocean where survival is unlikely because of strong currents, turbulent surf, and very cold water. **Don't be fooled by an ocean that looks calm. There can be 30 minutes of small waves right before a sneaker wave strikes.** Follow these guidelines to stay safe at the coast:

**Choose your beach well.** Steep beaches are particularly dangerous because the force of the ocean waves can reach much farther up the beach & pull you into the surf. Steep beaches also have coarse sand that washes out from under your feet, making it hard to resist being pulled into the water. Flatter beaches are much better choices.

**Avoid Rocks and Jetties.** Rocks & jetties can give a false sense of security, but sneaker waves can overtop them without warning.

**Closely supervise children at all times.** If the beach you are visiting is prone to sneaker waves (look for official warning signs that indicate sneaker waves are possible, and check the weather forecast), then keep children far back from the surf since there is no time to move them to safety once a sneaker wave strikes.

**Stay Back.** Stay much farther back from the water than you might think is necessary. Sneaker waves often reach well into the dry sand part of a beach. Remember that rising tides can cause sneaker waves to wash even farther up a beach, potentially cutting off access around headlands.

**Never turn your back on the ocean.** The most dangerous thing you can do is to be near the surf with your attention diverted, but some beach activities require you to do exactly this. If you participate in such an activity, such as surf fishing, consider wearing a life vest to give yourself a fighting chance of surviving if you do get pulled in.

**Don't go in after dogs.** Dogs that are pulled into the surf almost always get out on their own while their human rescuers usually do not, so stay on dry land and wait for them to swim back to shore.

**Call 911.** Don't go into the water after a person who gets pulled into the surf. Remember that you will likely also get in trouble so that when rescuers do arrive they will have to divide their time between multiple victims. It's much better to call 911 and be prepared to guide rescuers to the person in trouble. And, lastly...

**Share this message.** Share this water safety message with your family and friends!



## Online CoCoRaHS Training & Info Session

by Reg Kennedy



The CoCoRaHS staff will be conducting an **online** training session. This webinar (web-based seminar) is for brand new observers and seasoned observers alike. The training will go over some of the basics of measuring and reporting precipitation, but more of the time will be devoted to answering questions from the participants. The date will be Thursday, March 30th at 5:00 PM PDT. [Click here to register.](#)

**What is CoCoRaHS?** CoCoRaHS is an acronym for the Community Collaborative Rain, Hail, and Snow Network. CoCoRaHS is a unique, non-profit, community-based network of volunteers of all ages and backgrounds working together to measure and map precipitation (rain, hail, and snow). By using low-cost measurement tools, stressing training and education, and utilizing an interactive website, our aim is to provide the highest quality data for natural resource, education, and research applications. For additional CoCoRaHS information [click here.](#)



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