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Welcome to the winter 2020-21 installment of The North Coast Observer! In this issue, there are articles on the set of new climatological normals coming out in 2021, a recap of the numerous fall temperature records that were tied or broken, and a summary of the November 9<sup>th</sup> cold snap. As always, a detailed summary of the previous season is included, along with an outlook for the coming spring. Also, make sure to check out our astronomy corner, with information about events such as the much-anticipated conjunction of Jupiter and Saturn late in December.

As Northwest California transitions into winter, the weather focus shifts to increasing rains and mountain snows. Stay tuned for the latest forecasts, watches, and warnings. If you haven't already, make sure you follow us on social media (links below). Also be sure to check us out on Instagram! And, above all, make sure you have a safe winter!

**Follow Us on Social Media!**

Website	<a href="http://weather.gov/eureka">weather.gov/eureka</a>
Facebook	<a href="https://facebook.com/NWSEureka">facebook.com/NWSEureka</a>
Twitter	<a href="https://twitter.com/NWSEureka">twitter.com/NWSEureka</a>
<b>NEW!</b> Instagram	<a href="https://instagram.com/NWSEureka">instagram.com/NWSEureka</a>

Upcoming Events	
Date	Event
Dec 1	Meteorological winter begins
Dec 21	Winter solstice at 2:02 AM
Feb 9	Birthday of the National Weather Service
Mar 1	Meteorological spring begins Growing season begins (zones 101, 103, 109-115)
Mar 20	Spring equinox at 2:37 AM
Mar 23	World Meteorological Day

*NWS Eureka is now on Instagram!*  
by Josh Whisnant



The Eureka National Weather Service forecast office has been chosen to participate in an agency-wide trial for the social media platform Instagram. The trial will run from now through June of 2021. As an office, we plan on using the platform for mostly the promotion of beach and weather safety, with some weather-related materials sprinkled in. Be sure to follow us on Instagram by searching for NWSEureka!





## New Climatological Normals Coming Soon

by Matthew Kidwell

When the National Weather Service talks about climate normal, they are referring to a three-decade average of climatological variables, including temperature and precipitation. NOAA's National Center for Environmental Information (NCEI) is the agency that calculates these normals. Climate normals are computed every ten years. Currently, the NWS is using the year 1981 to 2010 normals. These will be recalculated in the spring of 2021 to add the most recent decade. The basic normals will come out in May and will include the daily temperature and precipitation. Additional parameters will be computed over the summer. Also, a small subset of stations with hourly observations will have hourly normals computed.

The normals are not just a simple average of the climate data for the 30-year period. They take into account any missing data and any small station moves. The normal are also subjected to an extensive quality control check which includes comparing the data with nearby stations to determine any large shifts in the data not seen in the other stations. It is important to be cautious in comparing the "new" normals with the previous version of the normals and considering it to be climate change. There may be changes in the calculations, instrumentation, and more that may make it unrepresentative of how the climate is changing for a particular location. Rather than inferring climate change impacts from climate normals, we recommend users instead look at trends in the [U.S. Historical Climatology Network \(USHCN\) time series](#).

For a station to have climatological normal, it must have a relatively complete dataset for the last 30 years. In some cases, stations with shorter periods of record can have what are called quasi-normals. These take into account data from other stations in the area and must have at least ten years of data. For more information visit:

<https://www.ncdc.noaa.gov/data-access/land-based-station-data/land-based-datasets/climate-normals>



*Traveling across the mountains this season?*

**Make sure to check out our mountain pass forecast page before you leave at [weather.gov/eka/mountainPassForecast](https://weather.gov/eka/mountainPassForecast)**

## Numerous Fall Temperature Records Set

by Scott Carroll

### Fall Record Events

Date	Location	Record	Value	Previous Record
Sep 5	Ukiah	Max Temp	108	107 in 1904
Sep 6	Ukiah	Max Temp	113	108 in 1924
Sep 7	Eureka Ukiah	Max Temp	76 111	73 in 1979 108 in 1957
Sep 28	Crescent City Eureka	Max Temp	95 87+	89 in 1921 79 in 1945
Sep 30	Ukiah	Max Temp	102*	102 in 1952
Oct 16	Ukiah	Max Temp	99	97 in 1961
Oct 17	Ukiah	Max Temp	100	97 in 1974
Oct 18	Ukiah	Max Temp	95*	95 in 1974
Oct 20	Ukiah	Max Temp	94*	94 in 1964
Oct 26	Eureka	Min Temp	35	38 in 2011
Nov 5	Ukiah	Max Temp	87	85 in 2019
Nov 9	Eureka	Min Temp	30	33 in 2018
Nov 20	Eureka	Min Temp	33*	33 in 2004

temperatures in °F, rainfall in inches, \*record tied, †monthly & yearly record tied

## November 9<sup>th</sup> Cold Snap

by Matthew Kidwell

On the morning of November 9th, 2020, temperatures dropped into the teens and 20s and across much of the area. Four of the six sites in our area that have long term records set a daily low temperature record. For some locations, these were the coldest temperatures since the winter of 2017. This was the result of a cold and very dry airmass moving over the region. Typically, in these situations, the valleys see fog or low clouds which keep temperatures from dropping this low. In this case, it had been several days since any rainfall had occurred, and, as a result, little fog or low cloudiness formed during the night.

### Minimum Temperatures – November 9, 2020

Station	Low Temp	Previous Record	Coldest Since
Hayfork RAWS	12	-	1/6/2017 (11)
Ruth RAWS	18	-	10/30/2019 (18)
Soda Creek RAWS	18	-	2/23/2018 (18)
Willits CWOP	19	-	-
Eel River RAWS near Covelo	20	-	2/27/2018 (20)
Big Bar RAWS	22	-	1/2/2016 (22)
Laytonville RAWS	23	-	1/6/2017 (23)
Potter Valley Powerhouse	23	26 (2018)	11/29/2019 (23)
Big Valley near Kelseyville	24	-	-
Eel River Camp near Redway	26	-	10/30/2019 (26)
Ukiah Municipal AP	26	25 (1920)	1/1/2019 (26)
Hoopa RAWS	27	-	11/30/2015 (27)
Alder Point RAWS	28	-	2/4/2020 (27)
Boonville RAWS	28	-	2/4/2020 (27)
Fortuna (Rohnerville AP)	28	-	-
McKinleyville (Arcata-Eureka AP)	28	-	2/22/2020 (28)
Woodley Island (NWS Eureka)	30	33 (2018)	2/4/2020 (29)
Fort Bragg 5 N	31	34 (1998)	11/30/2019 (30)
Scotia	31	34 (1948)	2/4/2020 (30)
Crescent City (McNamara AP)	36	32 (1920)	4/1/2020 (36)



# \* Winter Weather Safety \*

CLICK IMAGES TO ENLARGE

**dense fog**

Fog can be hazardous to drivers, mariners, and aviators and contributes to thousands of travel accidents every year. Visibility often changes quickly in fog.

**safety tips**

- Slow down
- Use your low-beam headlights
- Leave plenty of distance between you and other vehicles

## "Sneaky" Winter Hazards

The winter season brings many weather events that can "sneak" up on you. These are weather hazards that cause big impacts and make travel difficult without making big news.

weather.gov

## WINTER DRIVING KNOW BEFORE YOU GO

**Check road conditions.**  
Call 511 or visit your state's DOT webpage to check on road conditions. Choose a different route or adjust your travel plans if road conditions are poor.

**Get the weather forecast.**  
Change your travel plans if hazardous weather is expected.

**Ready your vehicle.**  
Check your battery, wipers, coolant, and other systems affected by cold temperature. Make sure your tires have good tread. Clear snow, ice or dirt from your windows, lights and camera.

**Pack an emergency supply kit.**  
Stock your vehicle with a mobile phone, charger, batteries, blankets, flashlight, first-aid kit, high-calorie, non-perishable food, candle to melt snow for drinking water, sack of sand or cat litter for traction, shovel, scraper, and battery booster cables.

weather.gov

- ◆ Can form on any road, but also along curbs and drainage areas due to melting snow
- ◆ More prevalent at night, but can still be around in the morning
- ◆ Don't drive during freezing temperatures after rain or snowmelt

weather.gov

## AFTER A WILDFIRE FLASH FLOODS AND DEBRIS FLOWS

Floods and debris flows happen quickly - within minutes of rainfall. **Prepare now!**

- Be aware of your surroundings and stay informed by having multiple ways to receive watches and warnings
- Follow any evacuation or other instructions from local officials
- If you have to shelter in place, get to the highest point inside your home. **Go up, not out!**

NOAA

# \* Winter Info Graphics \*

CLICK IMAGES TO ENLARGE

# SNOW:RATIO

The percentage of water within a sample of snow is called "snow ratio". An old rule of thumb was that for every 10 inches of snow, there would be 1 inch of water (10:1).

However, snow ratios can vary dramatically around the country and from event to event.

*Variables that affect snow ratio*

**Depth of the "warm" layer on the surface into the snow-producing cloud.**

**Amount of ice in the snow-producing cloud.**

**If it's windy, snowflakes can fracture, losing their "lacy" structure.**

**Deep cold leads to higher snow ratios.**

weather.gov

## Winter Precipitation

**SNOW**

Snowflakes never melt.

**SLEET**

Droplets freeze and form ice before reaching the surface.

**FREEZING RAIN**

Rain freezes on contact with the surface.

**RAIN**

Rain never refreezes.

At or Below 32°F
Above 32°F

weather.gov

## Six Basic Steps for Properly MEASURING SNOW

Accurate and timely snowfall measurements are extremely important to your National Weather Service office, your community, local media, and many others. Here are the six steps you need to know for measuring snow:

- Supplies**  
Ruler or yard stick  
24" x 24" white board, flag
- Planning**  
Find an open area away from tall objects, but sheltered from wind
- Set-up**  
Set up before snow begins  
Put your board out and mark it with the flag
- Measuring Snow**  
Record new totals to the nearest tenth of an inch  
Wipe the board off after measuring  
Measure once daily at the same time, after measuring place the board on top of snow
- When Snow Stops**  
Measure as soon as the snow stops to avoid lower totals due to melting, settling and drifting
- Reporting**  
weather.gov social media  
SEND us your report!

weather.gov



## SEPTEMBER

The weather pattern in northwest California was dominated by a ridge of high pressure aloft. This kept temperatures above normal for much of the month. In particular, periods of moderate to strong offshore flow helped to warm the coast. On the 28<sup>th</sup>, a combination of strong high pressure, warm air aloft, and offshore flow brought record-setting high temperatures to the coast. Eureka set a daily record high and tied the all-time record high of 87°F. Only a few weak frontal boundaries were able to break down the ridge. Therefore, rainfall amounts were generally below normal across the area except for Eureka, where slightly above normal rainfall was recorded. Much of the month saw smoky conditions and poor air quality due to the wildfires. Temperatures were kept below normal in some of the inland areas due to the heavy smoke.

## OCTOBER

High pressure dominated the weather for the month of October on the west coast. One weather system moved through the area on the 10<sup>th</sup>, bringing about the only significant rain of the month to most of the area. Del Norte County got the closest to normal on rainfall with nearly 30 percent of normal, while areas farther south saw only zero to 20 percent of normal. High temperatures across the inland areas ended the month well above normal. Ukiah set or tied four high temperature records around the middle of the month. Temperatures closer to the coast ended up near normal due to a persistent marine layer. Interior low temperatures were close to normal due to some clear and dry nights. The coast saw some chilly nights as well during a stretch of clear days late in the month, with Eureka setting a low temperature record on the morning of the 26<sup>th</sup> with 35°F.

## NOVEMBER

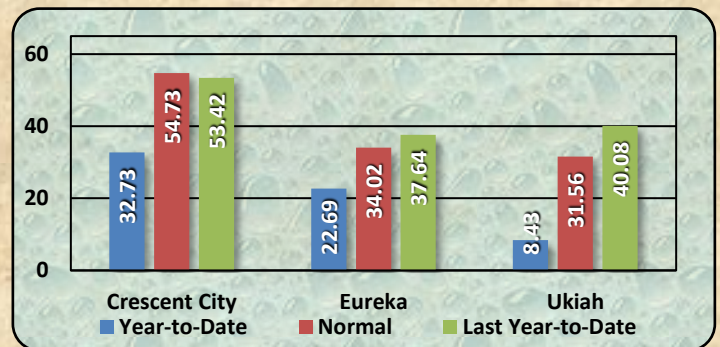
Unseasonably warm and dry weather early in November, particularly across interior northwest California, ended abruptly on the 6<sup>th</sup> as a strong cold front swept through. Rainfall amounts were not especially heavy, with minimal amounts across much of Mendocino and Lake counties. Dry air in the wake of the front brought clear skies and freezing temperatures to the region. Interior areas saw temperatures in the teens and 20s, while coastal areas saw temperatures drop to near freezing. Several stronger and wetter weather systems brought the first substantial rainfall of the season around the middle of the month. Another period of dry, clear, and chilly weather followed and continued for much of the remainder of the month with only a few weaker fronts and lighter rainfall. Most areas ended the month with 30 to 50 percent of normal rainfall. The clear skies and dry conditions allowed for high temperatures to be near or slightly above normal, with most areas seeing low temperatures below normal.

## Fall 2020 Monthly Climate Comparison

	Crescent City			Eureka			Ukiah		
	Ave Hi	Ave Lo	Total Precip	Ave Hi	Ave Lo	Total Precip	Ave Hi	Ave Lo	Total Precip
Sep	68.6	54.8	0.60	68.1	53.2	0.74	91.3	53.7	0.00
Oct	62.0	49.5	1.23	62.2	47.3	0.41	88.6	46.5	Trace
Nov	56.0	41.8	4.76	57.3	40.4	2.55	66.3	36.0	1.27

temperatures in °F, rainfall in inches

## Calendar Year-to-Date Precipitation Comparison



rainfall in inches, data through Dec 7<sup>th</sup>

## Winter Outlook (December-February)

[click images for links](#)

The Climate Prediction Center's winter outlook for northwest California is calling for nearly even chances of above or below normal temperatures (*figure 1 below*), although there is a slightly better than even chances of above normal temperatures across the southern portion of our area. There are also nearly even chances of above and below normal precipitation (*figure 2 below*), with a slightly better than even chance of below normal precipitation across the extreme southern portion of the area.

Nation-wide, there are better than even chances of cooler and wetter conditions across the northern tier of states, while better than even chances of warmer and drier conditions are anticipated across the south.

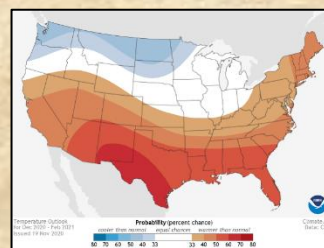


Figure 1 – Temperature Outlook

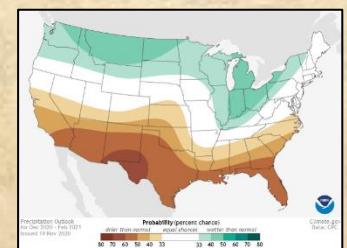
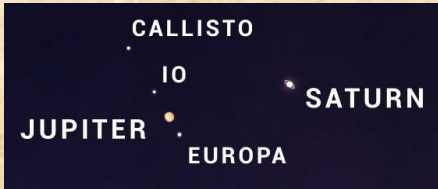


Figure 2 – Precipitation Outlook

More detailed outlook information can be found on the Climate Prediction Center's [website](#). For more detailed local climate information, visit NWS Eureka's [homepage](#), then click on the Climate and Past Weather menu.





Jupiter and Saturn have been getting closer and closer in the night sky for months, and this will come to a culmination on the night of

December 21-22, when the planets reach their closest apparent distance. In fact, the two planets will appear within the field of view of a pair of binoculars or a telescope, along with several of Jupiter's moons. If it is going to be cloudy that night, be sure to get outside in the days prior or following, as the planets will still appear relatively close.

Several meteor showers reach their peak in the winter. The **Geminid** shower peaks around December 13<sup>th</sup>. This is right around the time of the new moon, providing dark skies and ideal viewing conditions (as long as there are clear skies). The **Ursid** meteor shower will peak around December 22<sup>nd</sup>. This is around the time of the first quarter moon. However, the moon will be setting around midnight, leaving the optimal time for meteor view (after midnight) moon-free. The **Quadrantid** meteor shower peaks around January 3<sup>rd</sup>, which is between the dates of the full moon and last quarter moon. This will make viewing a bit more of a challenge. Meteor showers are named for the constellations (or former constellations) that they appear to radiate from. While the dates indicated are the typical maxima, the number of meteors typically increases a few days before the maximum date, then decreases for several days after the maximum. Once again, if clouds are in the forecast, try within a few days either side of the maximum. Click for information about the [Geminid](#), [Ursid](#), and [Quadrantid](#) meteor showers.



Moon Phases							
December	January	February	March				
☾ 7 <sup>th</sup>	☾ 6 <sup>th</sup>	☾ 4 <sup>th</sup>	☾	5 <sup>th</sup>			
● 14 <sup>th</sup>	● 12 <sup>th</sup>	● 11 <sup>th</sup>	●	13 <sup>th</sup>			
☾ 21 <sup>st</sup>	☾ 20 <sup>th</sup>	☾ 19 <sup>th</sup>	☾	21 <sup>st</sup>			
● 29 <sup>th</sup>	● 28 <sup>th</sup>	● 27 <sup>th</sup>	●	28 <sup>th</sup>			

Night Sky Calendar	
Date	Event
Dec 12	Moon-Venus conjunction
Dec 13	Geminid meteor shower maximum
Dec 16	Moon-Jupiter-Saturn conjunction
Dec 22	Jupiter-Saturn conjunction Ursid meteor shower maximum
Jan 3	Quadrantid meteor shower maximum
Jan 11	Moon-Venus conjunction
Feb 8	Mercury inferior conjunction
Feb 18	Moon-Mars conjunction
Feb 22	Mercury-Saturn conjunction
Mar 4	Mercury-Jupiter conjunction
Mar 9	Moon-Saturn conjunction
Mar 10	Moon-Jupiter-Mercury conjunction
Mar 19	Moon-Mars conjunction

Moon phases and event information courtesy of NASA



This fall, NWS Eureka partnered up with multiple emergency response agencies across northwest California to discuss flood preparedness at several preseason flood coordination meetings that were held virtually. This was an opportunity for various agencies that may not often collaborate on a

routine basis to come together to share crucial flood information like resource allocations, disaster declarations, and other critical details involving emergency response. A common theme that arose this year was debris flow threats on fresh burn scars, particularly in the upper reaches of the Mad River drainage south of Ruth. This area was heavily burned by the August Fire Complex and will have an enhanced risk of flooding this winter. NWS Hydrologist **Kathleen Zontos** and Warning Coordination Meteorologist **Ryan Aylward** provided a winter weather forecast to help give these partners some guidance on how to best prepare for the winter ahead. These discussions help our community become weather-ready for the next big storm event that comes our way.



Ready

## BUILD AN EMERGENCY CAR KIT

For more tips visit [www.ready.gov/car](http://www.ready.gov/car)



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