

The North Coast Observer

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Another NWS Eureka Open House Coming Soon!

by Scott Carroll

OPEN HOUSE



Saturday, September 29th, 10am-4pm

Following the success of last year's open house, the National Weather Service office in Eureka will be holding another open house on Saturday, September 29th, from 10 am until 4 pm. Come find out how your local National Weather Service serves your community. We will have guided tours every 30 minutes along with hands-on experiments for the kids and weather, water, earthquake, and tsunami information. Come meet the staff! We'll have more information on social media and NOAA Weather Radio leading up to the event. Hope to see you here!

Follow Us on Social Media!

| | |
|----------|---|
| Website | weather.gov/eureka |
| Facebook | facebook.com/nwseureka |
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| YouTube | youtube.com/NWSEureka |

Deadly Steep Beach – Big Lagoon

by Kathleen Lewis, Ryan Aylward, & Karleisa Rogacheski

Northwest California is known for its breathtaking natural beauty from the massive redwoods to the rocky, rugged coastline. We are fortunate to live in such a beautiful region of the country. Despite the natural beauty, powerful waves, frigid waters, and strong currents all make our local beaches a dangerous place to visit. Unfortunately, another life was lost at Big Lagoon beach this past spring.

The Water Safety Coalition of Northwestern California, which consists of members of the general public, private companies, and government agencies, came together in the wake of this tragedy to develop beach signs that warn people of deadly hazards on northwest California beaches. Big Lagoon, Dry Lagoon, Freshwater Lagoon, Agate Beach, and Black Sands Beach are particularly dangerous because of their steep beach slope. Fast moving ocean waves will impact these steep beaches with immense power and surge far up the beach face. If you are too close to the ocean, these waves can easily knock you down and pull you into the ocean where frigid water and strong currents make survival unlikely.



Conveying this message on a sign proved challenging but the diverse expertise and passion from the members of the Water Safety Coalition pushed this project to completion. Multiple signs (like the one pictured here) were installed at Big Lagoon County Park earlier this summer in the hopes of preventing future tragedies at Big Lagoon Beach, and more

will be coming. Many thanks to Green Diamond and local State Farm Insurance agents for funding these signs. Additional thanks to the concerned members of the public, the National Park Service, Humboldt County Public Works, and Humboldt State University for coming together with the National Weather Service to get this important message out!

If you are interested in joining the Water Safety Coalition of Northwestern California, please contact Ryan Aylward at ryan.aylward@noaa.gov. Meetings are held every 2 to 3 months or as needed.

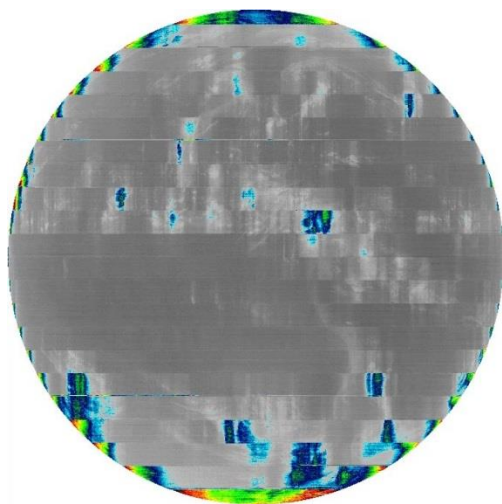
GOES-17 Performance Better Than First Thought

by William Iwasko

As many of you remember from the summer newsletter, the second in the series of new geostationary operational environmental satellites (GOES) was successfully launched on March 1st, 2018. As the on-orbit checkout procedures advanced, an issue with the onboard cooling system was uncovered that degraded observations from 13 of the 16 channels.

Scientists and engineers from NOAA, NASA, and the instrument developer have been working together for the past several months in an attempt to correct the instrument issues. Fortunately, this team has developed ways to mitigate the impacts of the degraded quality and this team is still working on ways to improve the instrument even more. As it stands now, during the instrument's cool season (near the Summer and winter solstice), all 16 channels will be available 24 hours a day with no loss of data quality. The issue is during the instrument's warm season (before and after the vernal and autumnal equinox). During this period, 7 channels will be available 24 hours a day with no loss in data quality while the remaining 9 channels will have image degradation from 2 to 6 hours each night. These estimates remain preliminary and will continue to be refined as more data is collected.

Additionally, the team of scientists and engineers will continue to examine different operating modes to try and reduce the amount of time that data is degraded as we go through the rest of this year. Experimental data began flowing in early September to our local forecast office so that we can begin to examine the impacts of data degradation within our area. GOES-17 remains on track to become fully operational by the end of this year.



An example of degraded imagery from ABI Band 16 on August 14, 2018, near the time of peak detector temperatures for that date.

Preparing for Cascadia with the U.S. Navy

by Ryan Aylward



The U.S. Navy visited Del Norte and Humboldt counties in early July to determine the best landing sites should a large natural disaster happen along the Redwood Coast. Of particular concern is the potential for a large tsunami generated along our coast by the Cascadia Subduction Zone. In the scenario where a 9.0 magnitude earthquake occurs along our coast, a large tsunami would impact our coastline, destroying bridges and making many roadways impassible. This will be in addition to roadway blockages caused by earthquake induced landslides across the interior. The infrastructure damage will make it very difficult to get emergency resources into the area.

The Navy plans to help our area by bringing resources into the region using marine landing craft. The visit allowed the Navy to discuss landing site possibilities with the counties' Offices of Emergency Services, California State Parks, and the National Weather Service. Our office helped by providing climatological information about the marine environment and suggesting the most ideal beach options based on beach slope. Though we hope to never have to rely on the Navy to provide emergency resources, it is great to know that they are planning ahead of time just in case.



| Upcoming Fall Events | |
|----------------------|--|
| Date | Event |
| Sep | National Preparedness Month |
| Sep 1 | Meteorological autumn begins |
| Sep 22 | Astronomical autumn begins at 6:54pm |
| Sep 29 | NWS Eureka Open House 10am-4pm |
| Oct 14-21 | Earthquake Awareness Week |
| Oct 18 | Great California ShakeOut at 10:18am |
| Oct 20-26 | Flood Preparedness Week |
| Nov 4 | Daylight Saving Time ends |
| Dec 1 | Meteorological winter begins |

Summer Weather Summary

June

High pressure was in place over the area for much of the month. This brought high temperatures up to 5°F above normal to the inland areas and near normal temperatures at the coast. Although high pressure was the dominant feature, a few low pressure troughs moved through the area. These brought increased cloud cover- especially at the coast- and some cooler temperatures. One of these troughs brought the only rainfall of the month on the 8th and 9th of June. This rain mainly fell along the coast, with the heaviest rain across the north and little to no rain over the interior.

July

High pressure continued to be situated over the west coast for July, bringing a persistent hot weather pattern to the inland areas. Inland areas saw high temperatures averaging about 6°F above the normal monthly highs. This is the fourth month in a row that the inland areas have seen above normal temperatures. Despite the hot weather, no record high temperatures were set during the month. At the coast, temperatures were generally near to slightly above normal as high pressure kept the coastal fog and stratus to a minimum. Rainfall was limited to a few thunderstorms over the interior areas and some drizzle at the coast. Some locally heavy rain fell with the thunderstorms, but not at the official reporting sites. July is normally the driest month of the year, so rainfall deficits were small.

August

Temperatures across much of the area were above normal once again. This made it the 5th month in a row with above normal temperatures. However, inland temperatures were much closer to normal than they were in July. This was due to an upper level trough over the west coast for portions of the month. This trough kept the marine layer generally persistent and fairly deep along the coast. The area remained mostly dry, with the exception being some periodic drizzle along the coast. August is normally one of the driest months of the year, so rainfall deficits continued to be small.

Summer Records

Only two records were recorded at the official recording sites of Northwest California this summer. The trace of rain recorded at Ukiah on July 13th was the first time any rainfall was recorded there on that date since records began in 1903!

| Summer Record Events | | | | |
|----------------------|----------|----------|-------|-----------------|
| Date | Location | Record | Value | Previous Record |
| Jul 3 | Eureka | Min Temp | 45 | 46 in 1901 |
| Jul 13 | Ukiah | Rainfall | Trace | 0.00" |

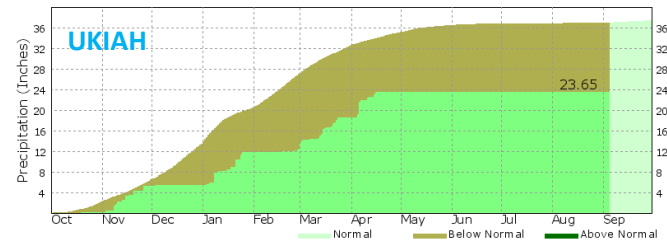
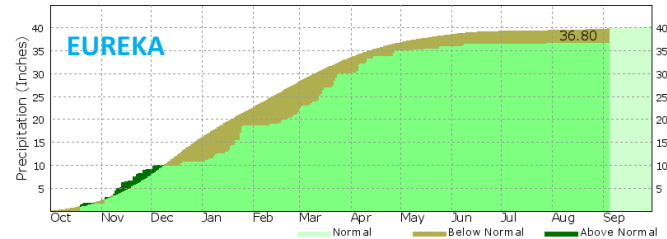
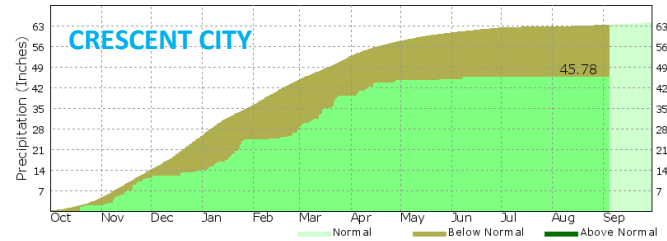
Summer 2018 Monthly Climate Comparison

| | Crescent City | | | Eureka | | | Ukiah | | |
|-----|---------------|--------|------------|--------|--------|------------|--------|--------|------------|
| | Ave Hi | Ave Lo | Total Rain | Ave Hi | Ave Lo | Total Rain | Ave Hi | Ave Lo | Total Rain |
| Jun | 60.8 | 48.6 | 0.70 | 61.7 | 50.1 | 0.70 | 88.5 | 52.6 | 0.00 |
| Jul | 62.9 | 52.4 | Trace | 62.9 | 51.9 | 0.03 | 97.8 | 57.6 | Trace |
| Aug | 62.4 | 53.8 | Trace | 63.1 | 53.9 | 0.05 | 92.5 | 54.5 | 0.00 |

temperatures in °F, rainfall in inches

Water Year-to-Date Precipitation Comparison

[click images for links](#)



data through September 3rd

Fall Outlook (September-November)

[click images for links](#)

The Climate Prediction Center's fall outlook for NW California is calling for better than even chances of above normal temperatures (figure 1 below). Even chances of below or above normal precipitation are expected south of Cape Mendocino with better than even chances of below normal precipitation north of the cape (figure 2 below).

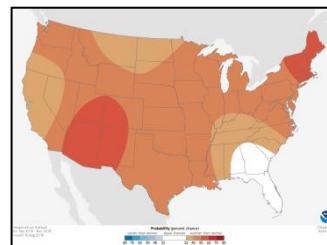


Figure 1 – Temperature Outlook

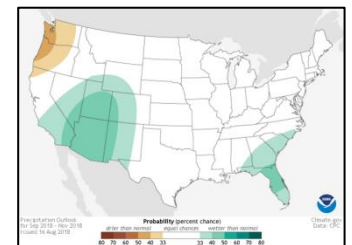


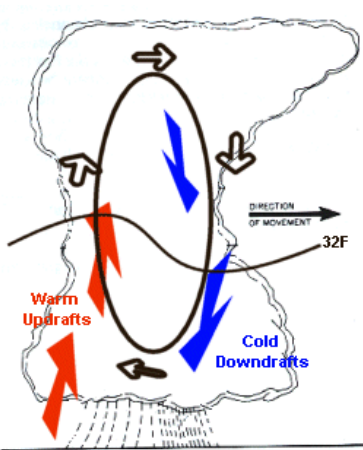
Figure 2 – Precipitation Outlook

Small Hail, Big Problems

by Matthew Kidwell

On the north coast of California, certain weather patterns in the winter time can produce small hail. This hail falls in areas below the snow level with surface temperatures above freezing. When this hail accumulates on the roads, it creates hazardous driving conditions.

The weather pattern typically associated with small hail is an upper level trough over the west coast in the late fall to early spring. Usually, this occurs behind a cold front after the heaviest rain and strongest wind have moved through the area and there are showers lingering over the area.



Hail is formed in the updraft of a shower or thundershower. Frozen precipitation falls down through the cloud and partially melts. Then, the updraft lifts the wet piece of ice back into the colder air where it refreezes (left graphic). This cycle will continue to occur until the hail becomes too heavy for the updraft to keep lifting it

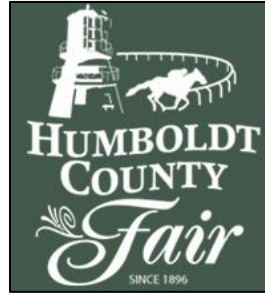
back up. The strength of this updraft will determine how large the hail can get before it falls to the ground. The hail that typically falls on the north coast is pea sized or smaller since the updraft is not very strong. However, when hail showers are slow-moving or continue moving over the same areas before melting can occur, even small hail can accumulate on roadways leading to dangerous driving conditions.

When conditions conducive to hail formation are expected, the National Weather Service in Eureka will put it in the forecast, mention it in the Hazardous Weather Outlook, post a weather story on our website (example shown below), and post about it on Facebook and Twitter. When hail is imminent or occurring, a Nowcast will be issued on our website and NOAA Weather Radio, and commercial radio stations may mention it in their broadcasts.



NWS Eureka at the Humboldt County Fair

by William Iwasko



The Humboldt County Fair took place in Ferndale from August 16th-26th this year. The Redwood Coast Tsunami Work Group organized the Earthquake and Tsunami Room to provide exhibits to visitors which enabled them to learn more about earthquakes and tsunamis.

This year's theme was the elephant in the room. Visitors were encouraged to talk about disaster preparedness (the elephant in the room) and, in particular, what stops them from preparing. The information provided by visitors will be tallied and used in a Humboldt State Geology class project as well as a future Times-Standard article by Lori Dengler. Visitors also learned about the recent earthquake swarm in Northeast Alaska as well as the volcanic activity and earthquakes on the Big Island of Hawaii. This year, six employees from the National Weather Service office in Eureka volunteered in the Tsunami Room. Over 4,000 people visited the Earthquake and Tsunami Room, and we hope to see even more of you there next year!



Meteorologists Josh Whisnant (left) and William Iwasko (right) along with Ellie the elephant in the Earthquake & Tsunami Room at the Humboldt County Fair.

Astronomy Corner

by Scott Carroll

Fall brings an increasing threat of rain and mountain snow to the area, along with cooler nighttime temperatures. However, the nighttime sky show doesn't ever quit.

Several meteor showers reach their peak in the fall. This year, the Orionids peak on October 21st around the time of the full moon, which will make observing them more difficult. However, the Leonids will peak in mid-November, around the same time as the first quarter moon. This will make for better viewing.

The crescent moon and Jupiter will appear close in the sky on September 13th, and the first quarter moon will appear even closer to Saturn on September 17th. These events will repeat themselves in October (on the 11th and 14th respectively) with a thinner moon. On October 18th and November 15th, the first quarter moon will appear very close to the red planet Mars. Make sure to check the forecast before heading out at weather.gov/eureka!

| Fall Moon Phases | | |
|--------------------|--------------------|--------------------|
| September | October | November |
| ☾ 2 nd | ☾ 2 nd | ● 7 th |
| ● 9 th | ● 8 th | ☾ 15 th |
| ☾ 16 th | ☾ 16 th | ● 22 nd |
| ● 24 th | ● 24 th | ☾ 29 th |
| | ☾ 31 st | |

| Fall Night Sky Calendar | |
|-------------------------|--------------------------------|
| Date | Event |
| Sep 7 | Neptune opposition |
| Sep 13 | Moon-Jupiter conjunction |
| Sep 17 | Moon-Saturn conjunction |
| Oct 11 | Moon-Jupiter conjunction |
| Oct 14 | Moon-Saturn conjunction |
| Oct 15 | Mercury-Venus conjunction |
| Oct 18 | Moon-Mars conjunction |
| Oct 21 | Orionid meteor shower maximum |
| Oct 23 | Uranus opposition |
| Oct 28 | Mercury-Jupiter conjunction |
| Nov 12 | N Taurid meteor shower maximum |
| Nov 15 | Moon-Mars conjunction |
| Nov 17 | Leonid meteor shower maximum |

moon phase and event information courtesy of NASA



Join Us
in the
World's Largest Earthquake Drill.
October 18, 2018
www.ShakeOut.org
click image above for more information

DEBRIS FLOW
Dangerous land and water flow caused by rainfall, terrain and loose-bare soil.
Flash flooding and debris flows are common in or near burn scars.

FLOOD SCIENCE
Debris Flows

Debris flows carry everything
A debris flow is a moving mass of loose mud, sand, soil, rock, water and air that travels down a slope under the influence of gravity. To be considered a debris flow, the moving material must be loose and capable of "flow," and at least 50% of the material must be sand-size particles or larger. In areas of very steep slopes they can reach speeds of over 100 mph.*

Burn scars are notorious for debris flows
Burned soil can be as water repellent as pavement. When vegetation is burned at high intensity, water repellent compounds are vaporized, and condense on the soil layers below, which prevents soil from absorbing water. As a result, much less rainfall is required to produce a debris flow.

Rainfall and gravity take over
As water runs downhill through burned areas it can create major erosion and pick up large amounts of ash, sand, silt, trees and boulders. The force of the rushing water and debris can damage or destroy culverts, bridges, roadways and buildings even miles away from the burned area.

The risk of debris flow could last years
Most burn areas will be prone to this activity for at least two years. Each wildfire burn area poses its own unique risk of flash flooding due to many factors including proximity to population centers, burn severity, steepness of terrain and size of the burned area.

* Source: USGS

WEATHER.GOV/FLOOD



Did You Know?

A trace of precipitation (rain or snow) is any amount that reaches the ground but does not accumulate to the lowest measuring increment (.01" for rain, .1" for snow). Since fog, dew, and frost are the result of condensation (not precipitation), moisture from them does not count toward precipitation totals.

Another Growing Season Coming to an End

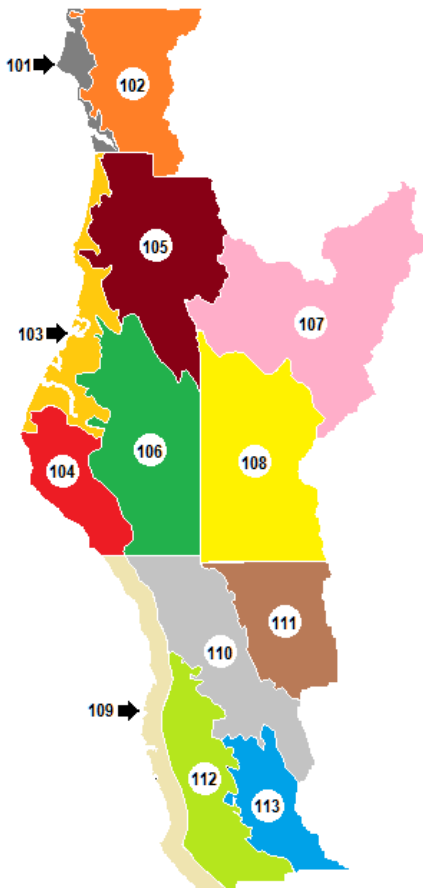
by Scott Carroll



The fall and winter seasons will soon be upon us once again, with the return of cold overnight temperatures and the potential for frost to develop. The National Weather

Service in Eureka issues Frost Advisories, Freeze Warnings, and Hard Freeze Warnings during locally defined growing seasons (see the chart below and associated zone map). These products are issued to alert you to the possibility of temperatures that can damage sensitive vegetation and be dangerous for animals left outdoors. Hard Freeze Warnings also indicate a more substantial threat to the freezing of exposed pipes.

To determine if a warning or advisory has been issued for your area, visit weather.gov/eureka, follow us on Facebook or Twitter, download the FEMA app, listen to NOAA Weather Radio, or sign up to receive alerts through a private company. When a Frost Advisory, Freeze Warning, or Hard Freeze Warning is issued, be prepared to cover or move sensitive vegetation and provide pets with adequate shelter.



| Zone | Growing Season | |
|------|----------------|-------|
| | Begins | Ends |
| 101 | 3/1 | 11/15 |
| 102 | 4/1 | 10/15 |
| 103 | 3/1 | 11/15 |
| 104 | 4/1 | 11/15 |
| 105 | 4/1 | 10/15 |
| 106 | 4/1 | 10/15 |
| 107 | 4/15 | 10/15 |
| 108 | 4/15 | 10/15 |
| 109 | 3/1 | 11/15 |
| 110 | 3/1 | 10/31 |
| 111 | 3/1 | 10/31 |
| 112 | 3/1 | 10/31 |
| 113 | 3/1 | 10/31 |

Rainy Season Preparations

by Scott Carroll

Late fall through early spring is typically the wettest time of the year across Northwest California. This makes early fall the perfect time to complete rainy season preparations for your home and yard.



Rainy Season Preparation Checklist

- ✓ Clean and repair gutters around your house. *Watch out for insects and other small animals!*
- ✓ Sweep up debris from around storm drains near your house.
- ✓ Locate and repair any roof damage. Water damage inside your house can be indicative of roof damage outside. Moss on the edges of shingles can allow rain and wind to get beneath the shingles during inclement weather. *Be careful up there!*
- ✓ Trim any branches that may make contact with your house.
- ✓ Look for water accumulation around the foundation of your home, and direct it away by re-grading or using trenches.



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