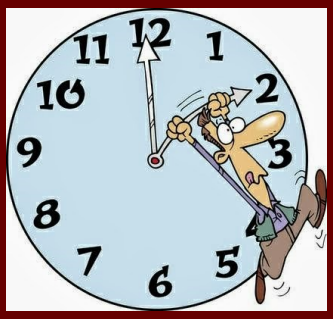
NATIONAL WEATHER SERVICE - MEDFORD, OREGON

Fall 2019
Volume 8, Issue 3

The Crater Chronicle

Fall Began September 23rd at 12:50 am PDT.



Daylight Savings Time Ends November 3rd! -

Remember to Set Your Clocks Back One Hour!

INSIDE THIS ISSUE

100 Years of Weather Observations at Crater Lake National Park

On October 7, 2019 WFO Medford, Oregon recognized Crater Lake National Park (N.P.) for 100 years of weather observing as a Cooperative Observer Program Weather Station.

Situated between 6,000 and 8,000 feet above sea level in the Cascades of Southern Oregon, Crater Lake N.P. provides extremely valuable, high quality, high elevation weather observations dating back to Oct 6, 1919. The official observing site has been relocated three times over the last century, but there is a nearly continuous set of observations from the current location at park headquarters since the station was relocated there in 1949.

The site collects hourly precipitation, and manual observations are taken daily by park personnel that include high and low temperatures, snowfall, snow depth, and invaluable plain language remarks describing the state of the atmosphere. These data help NWS forecasters in their mission to protect life and property, monitor the nation's climate, and verify forecasts. As one of the highest and most reliable snowfall observations in southern Oregon, Crater Lake N.P's observations are particularly important during severe winter storms.

Crater Lake averages over 500 inches (~42 feet) of snow annually, and has recorded a whopping total of 46,006 inches (~3,834 feet) of snow during its 100 year period of record.

Current weather observer Heidi Barker (center) holds "Honored Institution Award" for 100 years of weather observations collected from Crater Lake. Pictured with her are seasonal employees Gabriel Mapel (left) and Richard Strasser (right) who assist with collecting weather observations.

Other statistics from Crater Lake include:

- ◊ Most snow in one year: 832"/69.3' (1932-33)
- ◊ Most snow in one day: 37" (occurred 3 times)
- ◊ Deepest snow: 252"/21' (Apr 3, 1983)
- ◊ Record High Temperature: 90F
- ◊ Record Low Temperature: -21F

In addition to their impressive record of observation, Crater Lake N.P. is a Weather Ready Nation Ambassador. NWS Medford is proud of its partnership with Crater Lake N.P. and looks forward to another hundred years of cooperation.

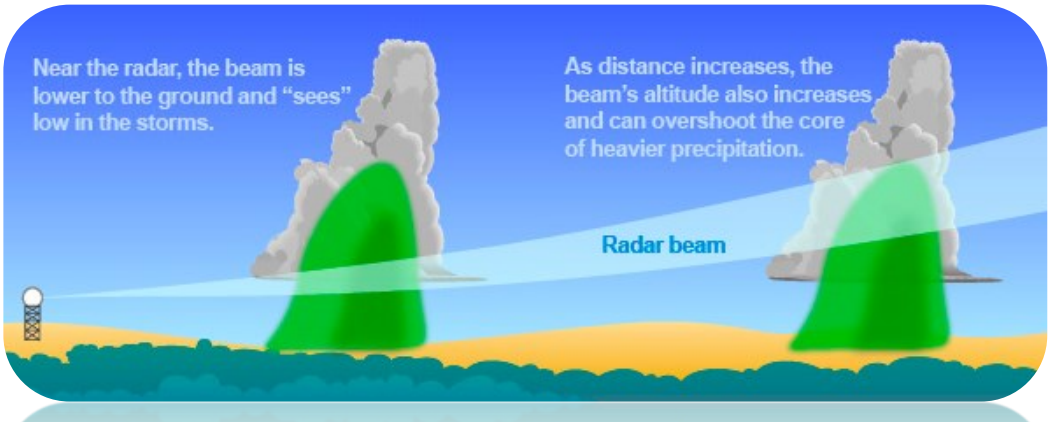
Crater Lake National Park 100 Year Award Presentation. From left to right: NWS MFR Meteorologists Misty Firmin, Tom Wright, WCM Ryan Sandler, Western Region Deputy Director Jeff Zimmerman, Crater Lake National Park Superintendent Craig Ackerman, NWS MFR SOO/ AMIC Mike Stavish, Service Hydrologist Spencer Higginson, Meteorologist, Brian Nieuwenhuis

New and Improved Doppler Radar - How Low Can You Go

Ryan Sandler, *Warning Coordination Meteorologist*

How do you make a good mountain top radar better? Have it do the limbo! Since 1996 our Doppler weather radar has been located on top of Mount Ashland right next to the Mount Ashland Ski Area. The "Big Round Thing", as it's known by some locals, is used to monitor rain, snow, hail, and wind.

The Doppler radar scans at many different elevation angles to see much of the atmosphere, and its lowest elevation angle has always been 0.5 degrees above the horizon. That's just a tiny bit higher than exactly horizontal however this tiny upward angle causes the beam to rise with increasing distance combined with the curvature of the earth.



Here I am inside The "Big Round Thing" while it's not spinning.

In the spring of 2018 we began experimenting with lower elevation angle scans of +0.2, 0.0, and -0.2 degrees. After lots of testing we decided the best angle is -0.2 degrees. This new angle is slightly ***below*** the horizon. Because the radar is located so high on a mountain top, we are able to go ever so slightly below the horizon and see lower areas of the atmosphere containing rain, snow, or hail. The big advantage is for areas far from the radar like the coast. With this new lowest scan angle we can better see precipitation over both the ocean and land.

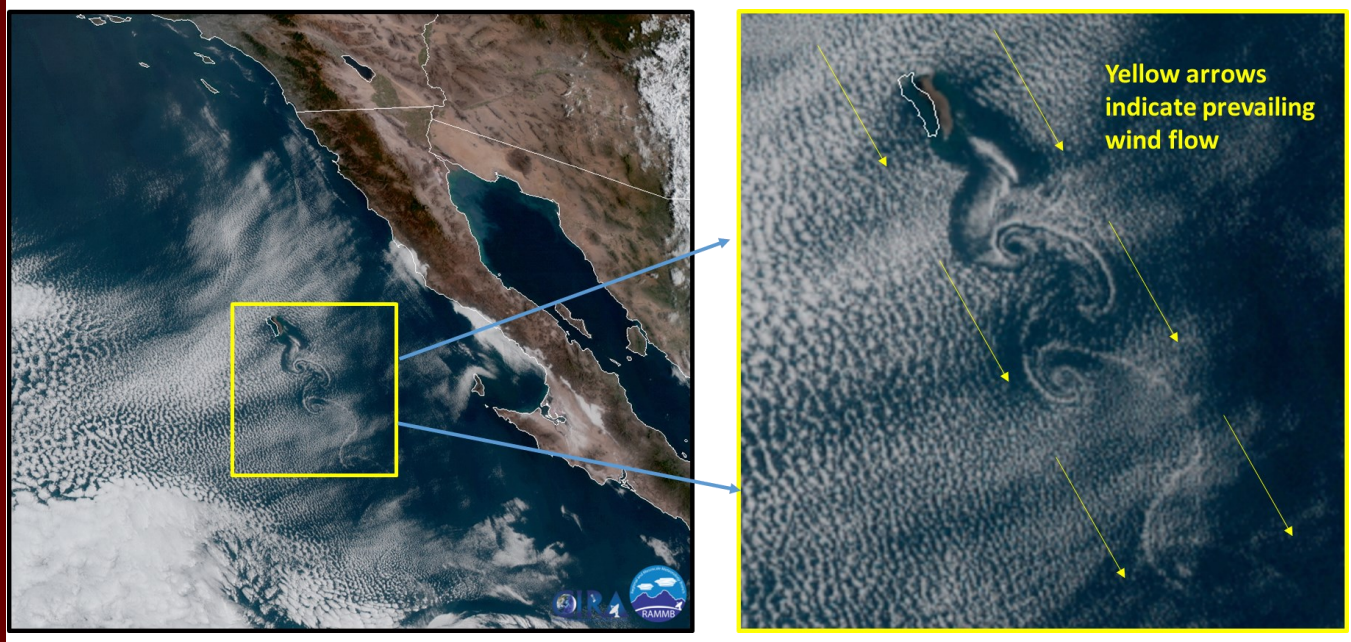
A good example of this improvement is the radar coverage for Brookings and Reedsport. With the elevation scan angle of +0.5 degrees, the center of this radar beam over Brookings is 14,800 feet above the ground. The new -0.2 degree elevation scan is now the same 14,800 feet above the ground over Reedsport, despite Reedsport being 51 miles farther from the radar than Brookings.

Seeing more radar-detected precipitation is valuable because it gives us a better snapshot of the current weather, as well as improved short term forecasts and warnings.

GOES-West Provides a Clearer Look at Common Weather Occurrences

Marc Spilde, *Meteorologist*

GOES-17, after its launch in spring 2018, has been operational as GOES-West since February. Viewing Earth in geosynchronous orbit at 22,200 miles up, the satellite has returned some truly amazing imagery in just its first year. One image caught my eye on the morning of October 4th, 2019. On the left is a wide view off the coast of Baja California, Mexico. Note the swirls to the south-southeast of Guadalupe Island, located about 150 miles offshore. The spiraling cloud pattern, known as a Von Kármán vortex, formed to the lee of the island. This phenomena is named for Theodore von Kármán, who was an expert in fluid dynamics and one of the founders of NASA's Jet Propulsion Laboratory near Pasadena, California. These low-level swirls occur as the prevailing flow is briefly diverted by an elevated obstruction, usually a mountain top, island or volcano (in this case Guadalupe Island), then continues downstream. The vortices appear more prominently when there is a low-level source of moisture, such as marine layer stratocumulus clouds. Here, in this Geocolor RGB (red-green-blue) image, produced by NOAA's CIRA



(Cooperative Institute for Research in the Atmosphere), these vortices are particularly remarkable. The multispectral daytime image utilizes 3 different channels (visible and near IR) from GOES-West to produce a vibrant almost true color image, where it is easy to distinguish land, clouds, water and even wildfire smoke.

⇒ For more information about Von Kármán vortices, see https://en.wikipedia.org/wiki/K%C3%A1rm%C3%A1n_vortex_street

⇒ For more information on NASA's Jet Propulsion Laboratory, see https://www.jpl.nasa.gov/

⇒ For more information about GOES-West (17), see https://www.goes-r.gov/multimedia/dataAndImageryImagesGoes-17.html

⇒ For more on CIRA's Geocolor RGB, see https://www.star.nesdis.noaa.gov/GOES/documents/QuickGuide_CIRA_Geocolor_20171019.pdf

Strong Storm Moved through Rogue Valley: September 18th, 2019

Photo captured of the strong storm that showed classic features of a mini-supercell. Photo credit: Matthew Newman.

On the evening of Wednesday, September 18, a thunderstorm developed in northwest Jackson County and moved southeast along Interstate-5 through Medford. . This thunderstorm strengthened quickly after passing over the Medford airport. Several reports of damage were received within the path of this cell. Significant amounts of small hail (less than half an inch) were reported, particularly in the vicinity of Providence Hospital, and several trees were downed in the area. All reports of hail and damage occurred in a rough rectangle bounded on the west by Interstate 5, the east along and just east of Crater Lake Avenue, the north by McAndrews Road, and the south by Main Street.

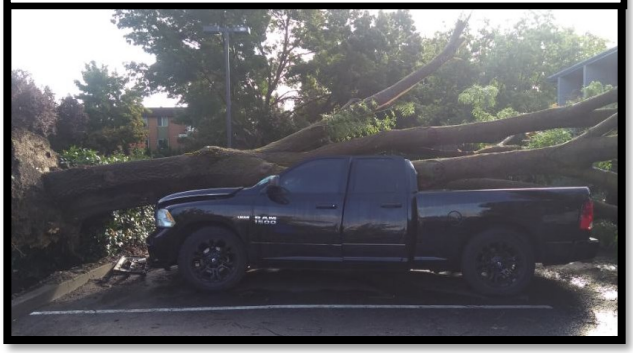
Hail

Significant amounts of small hail were reported around Providence Hospital. Hail appeared to occur along with very heavy rain, causing washes of hail to accumulate near storm drains, in low points in the terrain, in parking lots. Hail within the washes was mostly around a quarter of an inch or smaller, but some stones were measured to be just over half an inch. Witnesses in the area described near white-out conditions due to rain and small hail, with up to a foot of hail collecting in washes near storm drains. Hail was not reported to be larger than around half an inch. It should be noted that hail caused a not-insignificant amount of leaf damage in the area, with the ground covered in leaf and twig debris. No hail was believed to reach severe criteria (one inch diameter or greater), although there is no doubt that there were numerous travel impacts along local roads, sidewalks, and parking lots. *Cont. on next pg.*

Example of larger hailstones found in wash, around ½ an inch.

Hail left on the ground shortly after the storm moved out of the area. (*Photo Credit: Susan Martin.*)

Tree that crushed a truck on Superior Court. Note very small root ball for the size of tree, and lack of upwind roots past the curb.



Wind

Two downed trees were reported along Superior Court, both causing significant damage to vehicles. One of these was a Franz delivery truck parked along the road, which had its cab caved in by the trunk of a tree of roughly 2.5 foot diameter. The second was a pickup truck in the parking lot of an office park, which was crushed by a roughly 52 foot tall tree with a trunk diameter of around 2.5 feet. A third tree was downed to the south, along Queen Anne Avenue. This tree, just over 3 feet in diameter, fell across the edge of a home, causing damage to eaves and gutters, but not appearing to pierce the roof. All three trees fell almost directly to the south, indicating straight line north winds. It should be noted that all trees also possessed compromised and underdeveloped root systems, with parking lots or retaining walls preventing the growth of anchoring roots on their north sides. One of the trees was also diseased, and was rotting in the roots and in the core of the trunk. Therefore, it is doubtful that severe wind speeds (58 mph or greater) were necessary to fell these trees, especially given the moist soils and the wind load on their full leaf canopies.. There were several small branches downed in the area as well, but there were no indications of severe level winds.

Tree that struck Franz delivery truck. Note retaining wall on upwind side, and lack of roots.

Approximate area of damage reports.

Tree that fell on home at on Queen Anne. Note rotten base and lack of anchoring roots, especially on the upwind side of tree.

National Weather Service - Medford, Oregon

National Weather Service
Medford Weather Forecast Office
4003 Cirrus Drive
Medford, OR 97504-4198

Phone: (541) 773-1067 Fax: (541) 776-4344
ryan.sandler@noaa.gov

Newsletter Editor:
Misty Firmin, Meteorologist
misty.firmin@noaa.gov

Visit Our Website!

http://www.weather.gov/medford

Find us on Facebook

www.facebook.com/NWSMedford

twitter

www.twitter.com/NWSMedford

Our Vision

Professionals focusing on science, teamwork, and customer service to design and deliver the best decision-support information to our community.

Our Mission

Our team at the National Weather Service Office in Medford strives to deliver the best observational, forecast, and warning information through exceptional customer service, extensive training and education, maintaining quality electronic systems, and relying upon an outstanding team of weather spotters and cooperative observers. We do this within the overall mission of the NWS to build a Weather-Ready Nation:

To provide weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community.

Our Values

Trust, Integrity, Professionalism, Service, Teamwork, Ingenuity, Expertise, and Enthusiasm.

About Us

The Weather Forecast Office in Medford, Oregon, is one of more than 120 field offices of the National Weather Service, an agency under the National Oceanic and Atmospheric Administration and the United States Department of Commerce. The Weather Forecast Office in Medford serves 7 counties in southwestern Oregon and 2 counties in northern California, providing weather and water information to more than a half-million citizens. We are also responsible for the coastal waters of the Pacific Ocean from Florence, Oregon, to Point St. George, California, extending 60 miles offshore. The office is staffed 24 hours a day, 7 days a week, and 365 days a year by a team of 26 meteorologists, hydrologists, electronic technicians, hydrometeorological technicians, and administrative assistants, under the direction of the Meteorologist-In-Charge.