



# The Crater Chronicle

## Product Changes: Cold Weather Advisory & Extreme Cold Warning

Brad Schaaf, *Warning Coordination Meteorologist*

**B**eginning this winter (2024), NWS Medford will continue the next phase of its hazard simplification project and unveil two new products: the *Extreme Cold Warning* and the *Cold Weather Advisory*. These products are designed to help alert both our partners and the public of significantly cold weather. The motivation for this change stems from the idea that cold weather is dangerous, even if there is no wind. These cold weather products also develop new and consistent guidance based on southern Oregon and northern California climatology and impacts.

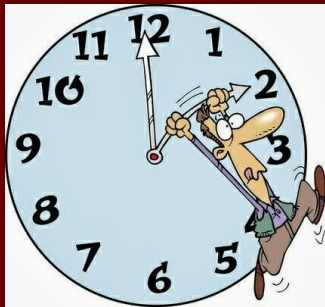
Since cold is cold, with or without wind, our new cold weather products will be based on apparent temperature and not wind chill. Effectively, this means that we will no longer be issuing Wind Chill Warnings for the area. While we have issued Wind

Chill Warnings in the past, these were rare events. Still, we do recognize the impact wind has on how we feel cold temperatures; and you may still see wind chills be discussed in the cold weather products themselves.

On the other hand, you may ask why we're issuing cold weather advisories and extreme cold warnings when we have frost advisories and freeze warnings. The difference here is that frost advisories and freeze warnings are generally focused on agricultural impacts, and we stop issuing them after the growing season ends. Meanwhile, our cold weather products are designed for the safety of people. While unlikely, it is possible to see both a Freeze Warning and Cold Weather Advisory or Extreme Cold Warning issued at the same time.

The new criteria are designed such that the Extreme Cold Warning is rare and hap-

Fall began September 22nd at 5:43 am PDT.



Daylight Savings Time ends November 2nd!

Remember to set your clocks back one hour!

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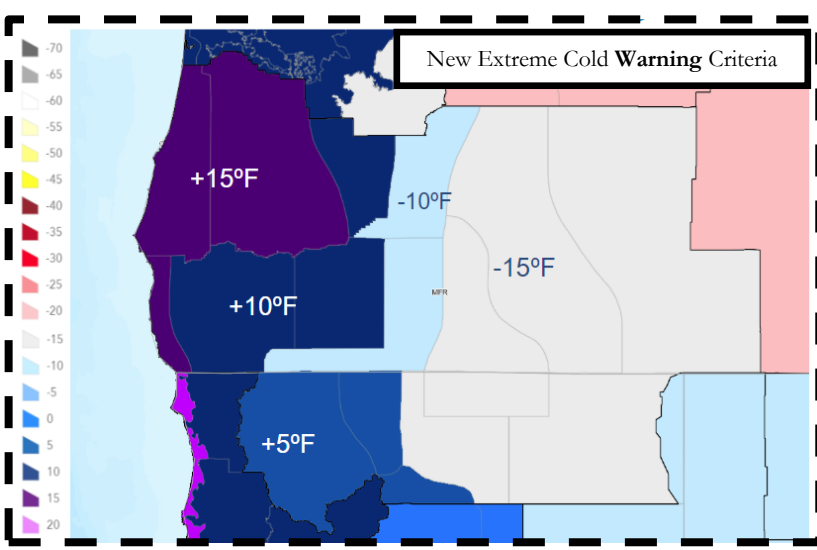
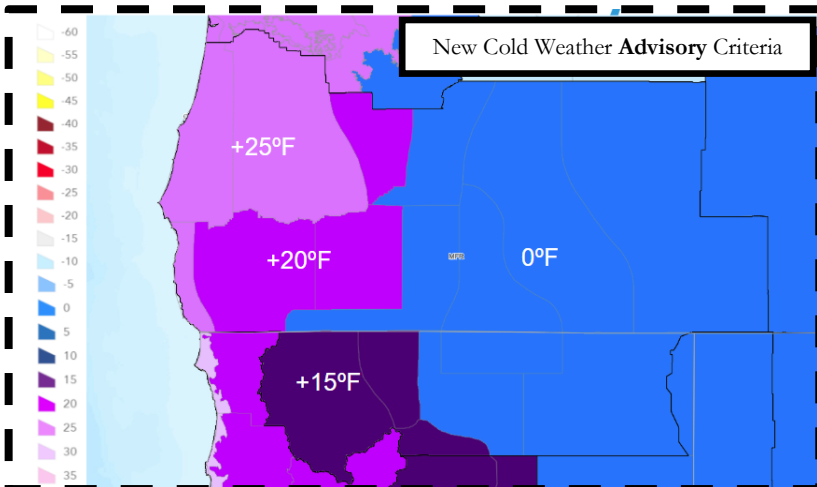
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pens once every few years while the Cold Weather Advisory criteria could happen up to a few times any given year. Better put, an Extreme Cold Warning is to be issued when dangerously cold air temperatures or wind chill values are expected or occurring while a Cold Weather Advisory is when seasonably cold air temperatures or wind chills are expected or occurring.

We are excited to announce these products as this is a tangible way we can better serve our partners and the public to stay alert to the cold and fulfill our mission of saving lives, protecting property, and enhancing commerce.



## Goodbye Medford, Hello Salt Lake City!

Miles Bliss, *Forecaster to Emergency Response Specialist*

In my pursuit of improving my communication skills, I undertook writing articles in this seasonal newsletter. It is with a bittersweet feeling that I announce that this will be my last article. I started a new job in August to support the Western Region of the National Weather Service and have moved to Salt Lake City, UT. To thank my coworkers and readers, I want to share some of my favorite photos from my time here.

The knowledge I've learned from my coworkers these last five years has been invaluable, but it was experiencing the region's weather firsthand that truly molded my forecasting knowledge and shaped me into a better person.

Lenticular cloud forming on Mt. Shasta. This is by far the best structured lenticular cloud I have ever seen in person. I'm looking forward to seeing more along the Wasatch range in Utah.



My coworkers and I out for an evening of axe throwing. Thanks for the great memories everyone!







Photo of a Fischer Porter rain gauge I went to that was in an old burn scar in Douglas County. I experienced the destruction a fire can wrought on a landscape, and how meteorological data plays a role in understanding the recovery process.

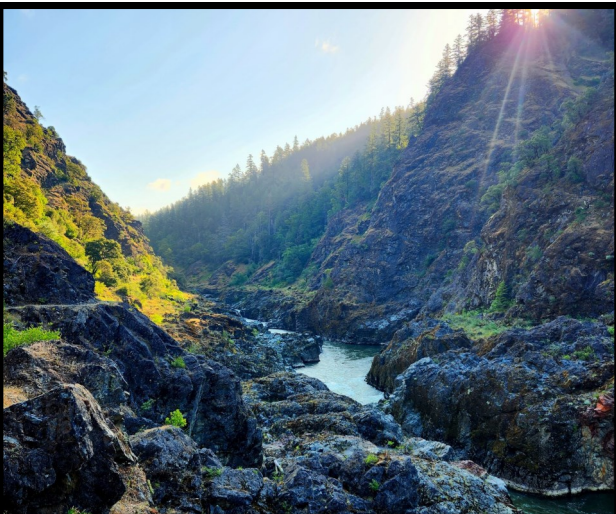
Me taking an observation when the smoke plume began to gain its most prominent vertical growth on a prescribed burn in Provolt, OR. The ability to shadow a prescribed burn reinforced my desire to work alongside the fire community and join the IMET program.



Connecting with our partners at the Mt. Shasta Avalanche center. Nick Meyers (featured) was kind enough to let me shadow him out in the field. We toured up Green Butte and peered into Avalanche Gulch, opting not to descend by that route because of the harshly wind-swept landscape.



Crack in the Ground. This gorgeous and fun playground of a geologic feature can be found near Christmas Valley in northern Lake County. Seeing it reminds me that even in remote places, there are things worth seeing that will draw people to them, and having a useful forecast available for all areas is very important!



Rogue River in the Rogue River Wilderness. I'm not sure this trip taught me anything about the weather. Instead it reinforced how beautiful this region is and how much I'll miss it!



Rime ice covered trees on Mt. Ashland. Not only was Mt. A my local ski haunt in the winter, but it allowed me to watch the snow level bounce and the precipitation type dance.



## Updates from the Electronics Shop

Scott Langley, *Electronics System Analyst*



Technicians relocating the Medford ASOS

### Significant Events:

Two new Electronics Technicians (April and Del) joined the team in September, bringing the ET shop to a “Fully Staffed” status! We are excited to have them on-board and look forward to their contributions to the mission.

There has been significant forward progress in the modernization of ASOS (Automated Surface Observing System) Communications. Historically, the ASOS platform utilized standard copper phone lines for communication purposes. Due to issues with those physical lines, cellular connectivity was installed; however, the connection from the cellular devices to the ASOS continued to rely on dial-up modems. With the COMS 1.5 upgrade, the days of dial-up are coming to a close! The Sexton ASOS was selected as one of the first sites to get the much-needed upgrade, followed by Medford.

### Regional Support:

During our time of minimal staffing in the ET shop, we had the pleasure of hosting RMS (Regional Maintenance Specialist) Lars (from the Pendleton, OR Forecast Office) multiple times. With his assistance, we were able to complete the ASOS relocation at the Medford Airport, complete ASOS Comms 1.5 digital upgrades at Sexton, and help catch-up on ASOS SLEP (Service Life Extension Program) work. He also made a trip down over a holiday weekend to help us get the Medford ASOS back online after the CPU Memory card failed. His willingness to step in when needed has made him a de-facto member of the Medford Electronics Team!

In addition to RMS support, we also had the opportunity to host members of the Regional SFD (Science and Forecast Division) IT team. Folks on this team brought their expertise to help guide us in laying a path forward with IT Inventory, future purchase needs, and applying standardization practices. In addition, they spent a lot of time ensuring our system configurations were up to par, educated staff on expectations, performed system imaging and ensured all systems were patched accordingly. Without the assistance of the WR SFD IT team, we would continue to be faced with significant delays in getting our systems updated and modernized.



Meteorologist in Charge, Christine Riley helping with radar maintenance

# Thunderstorm Hazards: Downbursts

Joe Guerrero, *Lead Meteorologist*

**T**hunderstorms are dangerous. We often hear about destructive tornadoes, large hail, and torrential rainfall due to large convective processes that lead to thunderstorms. Strong erratic wind gusts are also a common theme with thunderstorms, and the Pacific Northwest is known to experience 50+ mph wind gusts from convective processes that sometimes don't produce lightning. So, let's think about that for a second.

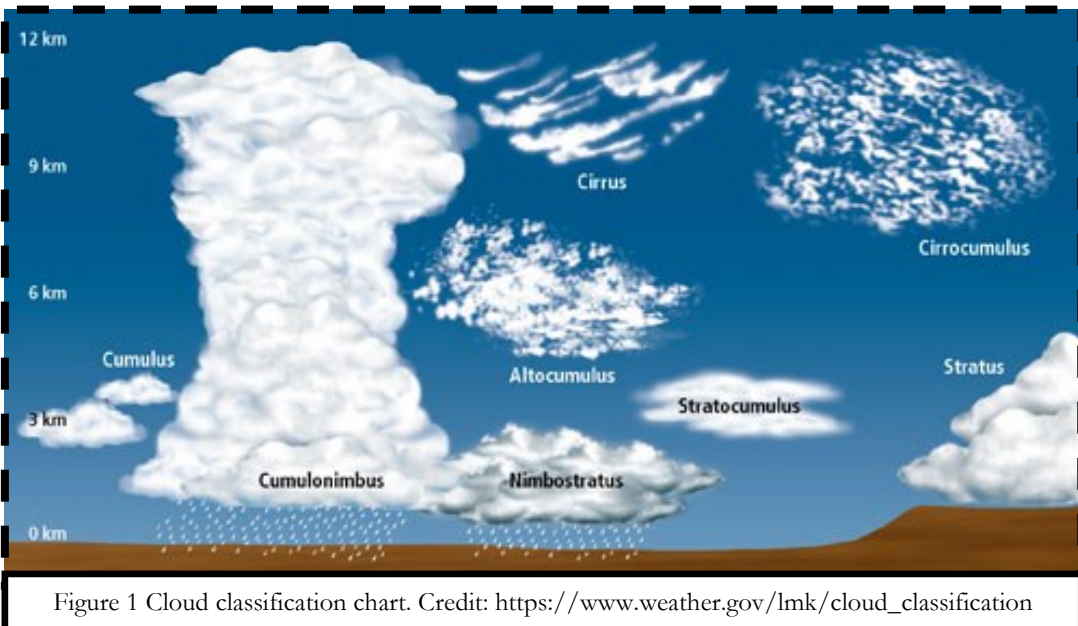


Figure 1 Cloud classification chart. Credit: [https://www.weather.gov/lmk/cloud\\_classification](https://www.weather.gov/lmk/cloud_classification)

We have these convective processes that develop large cumulonimbus clouds (Cb) that often lead to lightning and therefore called a thunderstorm. However, sometimes these large “Cb” (Figure 1) do not produce lightning, but we still need to be aware of the dangers associated with these towering cloud structures. These Cb are common in the summer months, and we all know how hot southern Oregon and northern California (NWS Medford coverage area) can get. Let's dive a little deeper into what happens during the life cycle of a towering Cb. These Cb start from a cumulus cloud (Figure 1), and convective processes lead to an “updraft” that eventually forms a cumulonimbus. These updrafts create cloud structures that resemble “cauliflower” and often have water molecules that are suspended or rising within the updraft. Eventually, those water droplets grow by colliding with other droplets

and forming larger droplets and sometimes hail if the temperatures are cold enough. Updrafts are very peculiar in the fact that they are not infinite and eventually those hydrometeors (rain, snow, hail, etc.) will overpower the updraft and fall towards the surface of the earth. The rain we see from Cb starts as frozen molecules, but falls through air that is warmer near the surface than aloft, so in the summer months we see these hydrometeors near the surface as liquid droplets. Here comes the nerdy science stuff about “downbursts” if you haven't had enough yet. Sometimes that dry air is several thousand feet deep—or high in the atmosphere—in the summer months. Think about a large vol-



Picture of a wet downburst. Credit: <https://www.weather.gov/spotterguide/downbursts>



ume of air with literally millions of water droplets falling through thousands of feet of dry air above the surface of the earth. Those droplets undergo an evaporative cooling process which leads to the air becoming colder and therefore more dense (heavy) as it evaporates. This volume of air is not only large but now becoming colder and denser as it falls towards the surface of the earth. It's now a compounding process of air becoming heavier as it falls. Once this large volume of air reaches the surface, it has nowhere to go but outward and displaces all the air around it which creates these strong wind speeds. This happened in July near Central Point when a non-thunderstorm cell (no lightning) produced strong outflow winds from a downburst that led to a fire (Figure 2) and damage (Figure 3) across the area. It's always a good idea to check the forecast and know when rain and/or thunderstorm chances are possible, and especially make sure to have a plan if you are going to be outdoors with these dangers mentioned above. Lightning alone is a big threat. The National Weather Service has a saying, "When Thunder Roars, Go Indoors!" But remember, it doesn't take a lightning producing "storm" to be dangerous. Strong winds are very dangerous, and falling or flying debris can seriously injure or kill someone. Please, be safe everyone and remember to check the forecast so you can protect yourself and your loved ones!



Figure 2: Strong outflow winds from a non-thunderstorm cell caused a downed powerline, setting fire to this property in Central Point, OR



Figure 3: Tree damage from strong outflow winds from a non-thunderstorm cell; the same cell that caused the fire in Figure 2.

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**When Thunder Roars,  
Go Indoors!**

**STOP** all outdoor activities

Seek shelter in a building or metal hard-topped vehicle

Wait 30 minutes after you last hear thunder to resume activities

NWS  
weather.gov/lightning

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## 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, hydro-meteorological technicians, and administrative assistants, under the direction of the Meteorologist-In-Charge, Christine Riley.

## 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.*

