



NOAA and NASA Launch GOES-T

Mike Stavish, *Science Operations Officer*

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GOES-T, the 3rd of 4 in NOAA’s “GOES-R” series of Geostationary Operational Environmental Satellites, was successfully launched on March 1st from Cape Canaveral. Once the satellite reaches geostationary orbit toward the end of March 2022, it will be declared “GOES-18.”

Then for several months the satellite will undergo a period of testing, calibration and positioning procedures before it’s expected to become operational as the new “GOES-West” in January of 2023. During this spring and summer, forecasters will still be able to make use of the new GOES-18 data at times before the satellite becomes operational.



Liftoff of NOAA's GOES-T satellite from Cape Canaveral, Florida, on March 1, 2022. (United Launch Alliance)

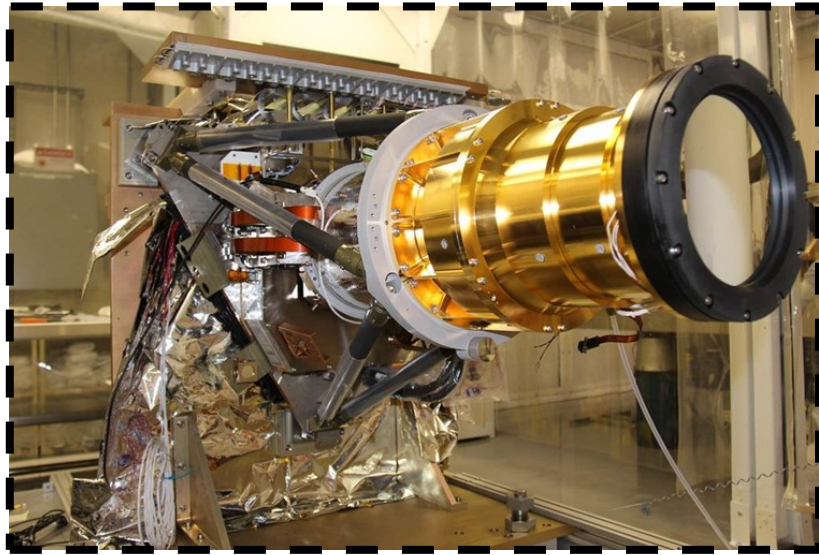
The weather enterprise has been operating with the advances provided by the new technology onboard the GOES-R series for several years already, so the data from this new satellite won’t necessarily be new. However, the existing GOES-West satellite, previously GOES-17 and launched in 2018 as GOES-S, encountered a malfunction of a cooling system of the Advanced Baseline Imager. That challenge required innovative scanning strategies and imagery alternatives during some overnight and early morning periods to afford meteorologists the best data possible. The new GOES-T satellite underwent some re-engineering of the “loop heat pipe” cooling system to ensure the initial problem is not repeated. GOES-T, soon to be called GOES-18, will replace the existing GOES-West over the equator above the Pacific Ocean.

The spring and summer months provide plenty of opportunities for the new satel-

**Spring Began on
March 20th at
8:33 am PDT.**

lite technologies to aid forecasters in critical decision-making regarding impactful weather phenomena. One such situation is during lightning events. The Geostationary Lightning Mapper, or GLM, is an instrument on board the

new satellite that measures lightning strikes. It is an *optical transient detector and imager* that detects and maps total lightning activity. Here are some benefits:



The GOES-R Series Geostationary Lightning Mapper.

- Aids in early identification of cloud electrification to support impact-based decision making with regard to lightning to impact those on the ground.
- Provides new imagery and feeds computer algorithms to improve forecaster guidance tools to aids in early warning of severe storms and tornadoes.
- Contributes to a long-term record tracking decadal changes in earth’s lightning activity.



Is This the Worst Drought Ever?

Ryan Sandler, *Warning Coordination Meteorologist*

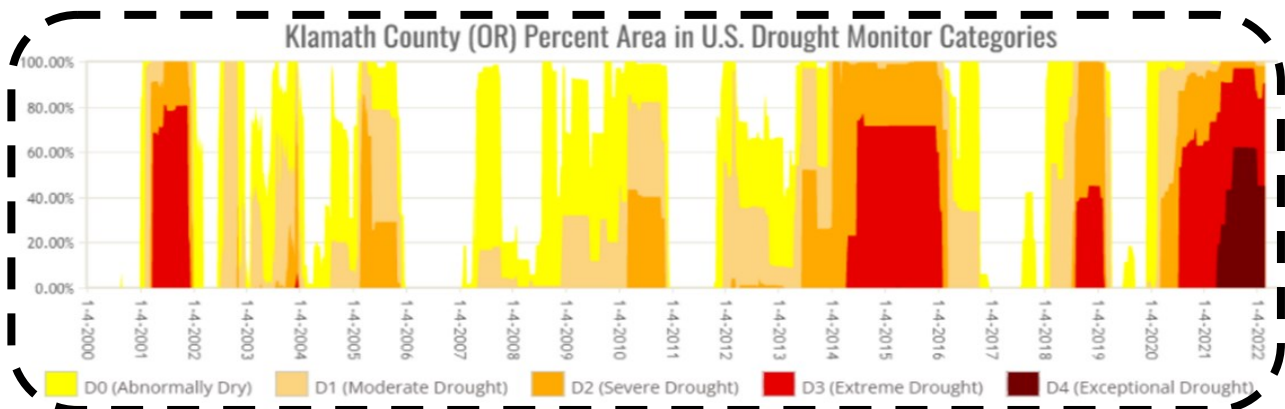
I moved to southern Oregon in 1998 which was right after a lot of flooding had occurred in the mid 1990s. I don’t recall hearing much about how bad droughts could be here, it just wasn’t something on most people’s minds at the time but it sure is now.

Many parts of southern Oregon and far northern California have seen continuous drought since March 2020 and the Klamath Basin is at the worst level called “Exceptional Drought.” The last 6 out of 9 years have seen various degrees of drought which are not always easy to define. When categorizing drought, some of the parameters we look at are both long and short term precipitation, temperatures, snowpack, reservoir levels, streamflows, soil moisture, groundwater, and impact reports from people in the area.

This drought is persisting despite having back-to-back La Niña

years. Typically, La Niñas bring cooler and wetter winters to southern Oregon. However, for far northern California there have been more La Niña dry years than wet years. No one really knows why stronger than normal high pressure has stagnated over the eastern Pacific Ocean during these La Niña years. Many wet winter storms (atmospheric rivers) have been directed toward Seattle and Portland but mostly blocked farther south.

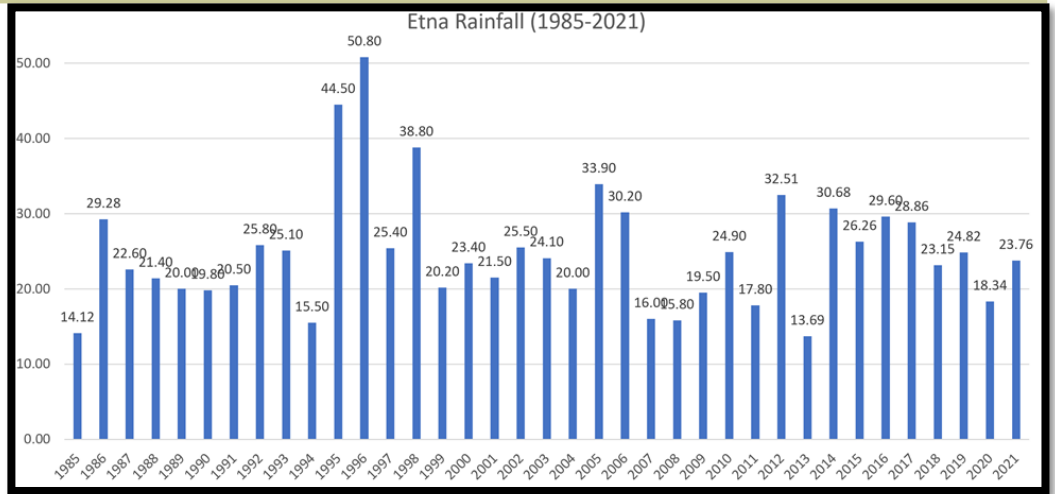
Is this the worst drought ever? The answer depends on where you are located. For the Rogue Valley, Klamath Basin, and parts of Siskiyou County, it is likely the worst drought ever, while for the coast it is not. The spring forecast offers only a glimmer of hope for inland areas but probably not nearly enough relief to get us out of drought. However, Coos, Curry, and far northwest Douglas counties could see enough rainfall for the drought to end.



A drought time series from 2000 to 2022 for Klamath County, Oregon. The official drought designation for the United States is updated weekly, every Thursday morning, and can be found at <https://droughtmonitor.unl.edu/CurrentMap.aspx>

Length of Service Award: 35 years of Precipitation Observations in Etna, CA

Tom Wright, *Observing Program Leader*



Pictured left to right: Tom Wright, NWS Medford Observing Program Leader, Jim Hendricks, NWS Medford Cooperative Observer, Christine Riley, & NWS Medford Meteorologist in Charge.

On February 9th, 2022, a thirty-five-year length of service award was presented to Mr. Jim Hendricks, in Etna, CA (left).

Mr. Hendricks became an official NWS Cooperative observer in July of 1985, and has provided an almost perfect record of precipitation observations since.

Mr. Hendricks has helped to maintain the equipment and on numerous occasions taken it upon himself to use his technical skills to make repairs.

Throughout his term as an observer, Mr. Hendricks' observations have helped to document climate variability ranging from the very wet years surrounding the 1997-1998 El Nino to bone dry years such as 2013 (above).

Tales from the Electronic Technicians (ETs)

Miles Bliss, *Forecaster*, with Matt Wymore, *Electronic Technician*

As meteorologists we typically experience the forecast area from satellite, radar, and surface observations. What we, as forecasters, experience through surface observations, the Electronics Technicians (ET) get to experience on-site while maintaining and repairing the critical instruments that provide this invaluable data. This allows them a unique perspective in the National Weather Service (NWS) because they see the progress towards building a weather ready nation in a more mobile fashion. This has left me with a few questions for James, Adam, and Matt, our three ETs, that I thought you would enjoy hearing the responses to.

MB: How do you describe your job to someone whom you just met?

MW: Our job is to keep electronic, electromechanical and general equipment operational for use by meteorologists and other staff.

MB: The observation equipment and NOAA weather radio transmitters don't move. That means you're traveling to the same places frequently. How do you keep entertained while traveling? Is there a conversation topic you discussed one time that really sticks in your memory?

MW: Food comes up a lot in conversation, as well as families and health. We all have specific areas of interest; I think we talk infrequently about work while traveling.

MB: Some of the locations you travel to can be fairly remote, while others are at regional airports near larger communities. When you've traveled to any of the more remote locations, do you ever have trouble with road conditions, wildlife or disruptions from other people and how do you resolve these issues?

MW: We have some remote equipment but fortunately not so remote that we have large issues with access or interferences with other people or wildlife. Our largest hurdle is getting to the radar on Mt. Ashland during the winter but we take steps to minimize any problems we might encounter.

MB: Despite the long days and common destinations, I can't help but get jealous of how often you all are able to go out and travel for your job. This leaves me wondering, what keeps you busy during the day if you are not going out to repair equipment on-site?

MW: There are lots of small projects, improvements and paperwork that gets done behind the scenes, before COVID, we assisted the ESA and Facility Technician but, like everyone else, we sometimes struggle to maintain a new normal while Teleworking.

MB: When I think of an ET's duties, it certainly gravitates towards hardware and the physical observation network it forms. Inside the hardware is software and the code that governs its functions. What role do ETs have in updating and maintaining the software and code? If it isn't the ETs that maintain this part of the technology, can you describe the nature of the relationship between the software folks and you?

MW: Most of our equipment is hardy but occasionally we need to make software or firmware changes to enhance operations or fix outdated security. The task of managing changes gets done at a national or regional level and gets disseminated to field offices with specific instructions.

MB: The NWS uses observations from equipment funded for and maintained by other Federal, State, and Private agencies. How would you characterize the quality of equipment and care employed by the NWS compared to these other agencies? Do you think there is more the NWS and NOAA can do to better work with these groups and maintain the equipment in a more unified effort?

MW: I think the NWS does a better than average job of working with other agencies. There is always room for improvement when a large organization collaborates across networks or similar equipment but it's nice when everyone works towards the same goal.

MB: A core memory for myself at the Medford WFO is going up to the radar on Mt. Ashland in winter and taking the snow cat to get there. The snow cat is stored in an area with Mt. Ashland Ski Area equipment. Can you describe the relationship between you and the Mt. Ashland Ski folks?

MW: We have a good working relationship with Mt. Ashland ski area, one that was built across many years and vocations.

MB: Do you think the NWS is succeeding in harnessing the latest cutting-edge technology to provide the best observations and what do you think can help in this pursuit?

MW: Service Life Extension Programs and efforts to infuse current technologies into existing equipment are working, the 88D is a perfect example. The rollout of current technology and software upgrades are making the RADAR more resilient and accurate. I look forward to future service life extension programs in other equipment, like ASOS, to make maintenance easier and the equipment more reliable.

MB: And finally, a weather related question. When doing maintenance, certain conditions must exist to do so. I can attest that you all stop in and get that information from us meteorologists directly. When you get on site and the weather is not what you were told, how do you react to this and what advice do you have for the public when a forecast is not accurate?

MW: I tend to not get bothered about a forecast that isn't accurate for a location that I am going to. I know our forecasters are dedicated and professional. They are making educated decisions using current technology but it can't be easy with our diverse terrain and quickly changing conditions.



NWS Electronics Technician climbs the observation equipment tower to free a stuck balloon from a botched balloon launch.

Lightning Climatology for Southern Oregon and Northern California

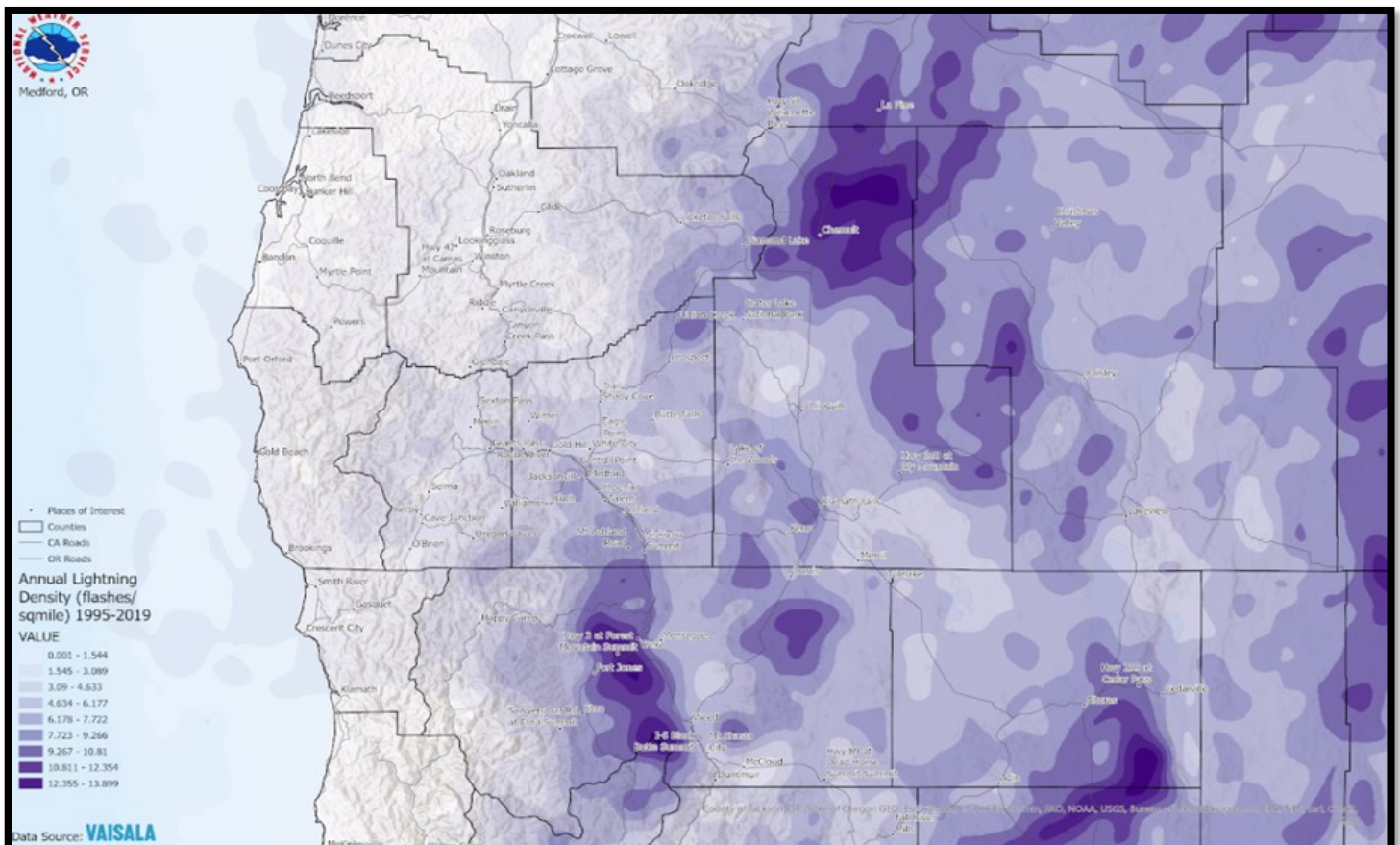
Shad Keene, *Lead Forecaster*

In recent years, we’ve done some more work to visualize where and when lightning is most/least common in our forecast area. Specifically, we’ve been putting effort into creating high-resolution lightning maps that match the detail of the lightning data, displaying cities and roadways alongside the lightning data. We chose to start the period of record for this lightning climatology in 1995 because that is when lightning observing networks across the country began to have the optimal lightning detection efficiency.

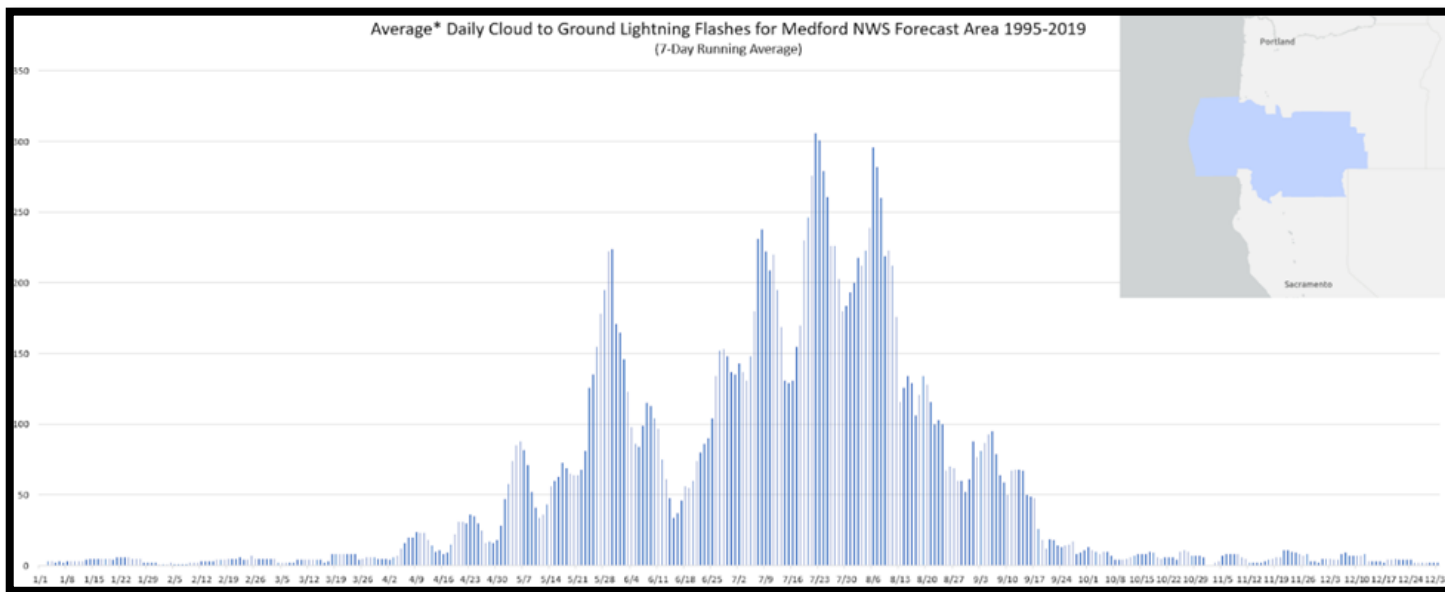
Some of the highlights in this imagery:

- Three “hot spots” show up for our 9- county forecast area in terms of cloud to ground lightning flashes per unit area, or flash density.
 - ⇒ Northern Lake County near the intersection of Highways 58 and 97, just north of Chemult. Typical warm season southwest winds converge/come together here at the north end of a valley, resulting in rising air and promoting thunderstorm development. Additionally, there is higher terrain east of Chemult that helps support storm development.
 - ⇒ Southeastern Modoc County in the Warner Mountains
 - ⇒ Central Siskiyou County, just south of the intersection of Highway 3 and Interstate 5, near Forest Mountain Summit on Highway 3.
- Some local maxima/minima are observed.
 - ⇒ Local maxima in northeastern Jackson County. It’s not a coincidence that this is the location for one of the only Tornado Warnings issued by NWS Medford in the past 10 years. Issued May 4, 2017.
 - ⇒ Local minima in Central Klamath County along Highway 62 between Chiloquin and Crater Lake National Park. In this area, the opposite occurs compared to the lightning maxima near Chemult. Here, southwest winds come down off the higher terrain to the south and west. These winds then spread out across a valley, supporting dry and stable conditions, limiting thunderstorm development.

What other interesting features do you note in this lightning density map for southern Oregon and northern California? *Cont. on next pg.*



Additionally, we’ve graphed average daily cloud to ground lightning flashes for our forecast area, and you can see the “spring spike” in late May/early June. This is followed by a relative minimum in lightning and then the most significant lightning of the year, in July and August. This is the more critical time period as well because vegetation is driest and fire starts from lightning become more likely.



The images in this article are low-resolution images from the website, but if you want to view the full resolution imagery, please check out the website here: https://weather.gov/medford/lightning_climatology.



Southern Oregon and Northern California Spring Planting Resources & Weather Outlook

Dan Weygand, *Forecaster*

Spring Weather Outlook:

The latest week 3-4 outlook for Sat March 26-Fri April 8 (issued March 11th) is similar to/supports the latest Mar-Apr-May seasonal outlook (issued February 17th).

Per the CPC, both outlooks indicate an upper level pattern that elongates a ridge across most of the CONUS and weakens and displaces eastward a trough over Alaska. While most of the guidance is in agreement about the ridge, guidance is mixed with respect to the position of the trough axis over/near Alaska. This pattern would focus the highest probability of precipitation into Washington and northern Oregon, but would result in a more active pattern than we have seen for most of 2022 so far. In the meantime, this pattern would suggest a dominant flow pattern varying between northwest and southwest. While the outlook is for a higher probability of below normal temperatures, the good news is that we do not receive our most extreme cold temperatures with westerly flow.

- ✓ For a more frequent, weekly update, you can view the 3-4 week outlook and discussion here: <https://www.cpc.ncep.noaa.gov/products/predictions/WK34/>
- ✓ Temperature and precipitation monthly outlooks from the NWS Climate Prediction Center are updated once a month and can be found at: https://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/churchill.php
- ✓ For a more detailed, daily forecast visit: www.weather.gov/mfr/

Cont. on next pg.



The arrival of spring is a great time for growing! Gardening is a fun way to get exercise, eat healthier, and save money. Not sure where to begin? Here are some helpful links!

California Garden Web Vegetable Growing Guide

The California Garden Web Vegetable Growing Guide from the University of California is an excellent resource: <https://cagardenweb.ucanr.edu/Vegetables/>

Oregon Monthly Garden Calendar

Are you wondering what activities are recommended for your garden at this time? View the monthly garden calendar from the Oregon State University Extension Service: <https://extension.oregonstate.edu/collection/monthly-garden-calendars>

Further, a reliable resource for all of your gardening questions is your local county cooperative extension service.

- ⇒ Coos County: <https://extension.oregonstate.edu/coos>
- ⇒ Curry County: <https://extension.oregonstate.edu/curry>
- ⇒ Douglas County: <https://extension.oregonstate.edu/douglas>
- ⇒ Jackson County: <https://extension.oregonstate.edu/sorec>
- ⇒ Josephine County: <https://extension.oregonstate.edu/josephine>
- ⇒ Klamath County: <https://extension.oregonstate.edu/klamath>
- ⇒ Lake County: <https://extension.oregonstate.edu/lake>
- ⇒ Siskiyou County: <https://cesiskiyou.ucanr.edu/>
- ⇒ Modoc County: <https://cemodoc.ucanr.edu/>

Drought Gardening Tips

Concerned about the ongoing drought? There are things you can do to still have a successful garden. Here are some tips from the University of California Division of Agriculture and Natural Resources:

Water-saving Edible Garden Tips:

- ✓ Plant an appropriate size garden for your household.
- ✓ Plant shorter season crops and drought resistant varieties.
- ✓ Know critical watering periods, for example transplanting and fruit development.
- ✓ Apply a 3" to 4" layer of mulch.
- ✓ Compost adds nutrients to soil and can produce higher yields.
- ✓ Remove weeds, which compete for water resources.
- ✓ Install a water efficient drip irrigation system.

Water-saving Lawn Tips:

- ✓ Select water efficient varieties suited for your local climate.
- ✓ Replace nonessential turf with ground covers, mulches, decks and walkways.
- ✓ Adjust irrigation schedule monthly - to reflect seasonal changes.
- ✓ Water at night, ideally between 9:00 p.m. and 6:00 a.m., this reduces evaporation and wind will not be strong enough to interfere with sprinkler patterns.
- ✓ Mow lawns higher during very warm weather which helps to: reduce growth rate, protect lawn from sunburn, promotes deeper root growth, shade soil and reduce weeds.

Tree Care

When water is limited, most people prioritize watering their fruit trees, landscape trees, and shrubs. Lawns, groundcovers, and bedding plants can be reestablished over a relatively short time, but trees and shrubs need years to mature and are less easily replaced.

Ornamental Trees:

One or two deep irrigations with a garden hose several weeks apart in spring and summer will often keep trees alive through summer, especially if roots are relatively deep

They will drop leaves or wilt under a severe water shortage, but with appropriate care will survive

Fruit and Nut Trees:

Early-season water applications will keep trees alive, but reduces fruit production

To produce a good harvest, deciduous fruit and nut trees need adequate water in their root zones continuously from bloom until harvest

Southern Oregon & Northern California Historical Frost Freeze Probabilities

For helpful information on when it's usually safe to plant frost sensitive vegetables, please visit this article on our home page:

https://www.weather.gov/mfr/frost_freeze_dates

NATIONAL WEATHER SERVICE - MEDFORD, OREGON



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



Phone: (541) 773-1067
Email: ryan.sandler@noaa.gov

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

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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, hydro-meteorological technicians, and administrative assistants.

