2024 Pacific Northwest Fire Weather Annual Operating Plan

Sourdough Fire

AGENCY SIGNATURES and EFFECTIVE DATES OF THE 2024 ANNUAL OPERATING PLAN

This AOP shall be effective on the date of the last signature on this page and will remain in effect until the date the last signature is placed on this page the following year. Updates or amendments may be added in the interim upon agreement of all signatures. Usually, the effective dates are May 1 through May 1 of the following year.

Approved by:

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INTRODUCTION

The Pacific Northwest Fire Weather Annual Operating Plan (AOP) constitutes an agreement between the Pacific Northwest Wildfire Coordinating Group (PNWCG), which is composed of state, local government and Federal land management agencies charged with the protection of life, property and resources within the Pacific Northwest from threat of wildfire; and the National Weather Service (NWS), National Oceanic and Atmospheric Administration, U.S. Department of Commerce, charged with providing weather forecasts to the Nation for the protection of life and property.

The AOP provides specific procedural and policy information for the delivery of fire weather information to the fire management community in the Pacific Northwest. It is the objective of the NWS and PNWCG to ensure that quality of service is maintained through a mutual analysis of services provided. The NWS and PNWCG work closely in all phases of the fire weather forecast and warning program to resolve concerns and avoid potential inconsistencies in products and services prior to delivery to fire agency customers. The goal of all agencies is to maximize firefighter and public safety through a coordinated delivery of consistent services.

Fire weather services are a critical building block to fire management agencies in decision-making because human lives and valuable natural resources are at risk. It is the role of the NWS to provide fire weather services and products to fire managers. It is the role of the fire management agencies to analyze and interpret fire weather forecasts into fire danger and fire potential predictions when making decisions essential to the success of fire management actions.

It is to the mutual advantage of PNWCG and NWS and in the public interest and for firefighter safety to coordinate efforts for weather services for fire management activities in the Pacific Northwest to minimize duplication of efforts and improve efficiency and Effectiveness.

The general relationship between the NWS and the interagency fire management community is set forth in the following reference documents:

- Interagency Agreement for Meteorological Services Among the Bureau of Land Management, Bureau of Indian Affairs, U.S. Fish and Wildlife Service, and National Park Service of the U.S. Dept. of Interior, the Forest Service of the U.S. Dept. of Agriculture, and the National Weather Service of the U.S. Dept. of Commerce (National MOA or National Agreement)
- National Weather Service NWSI 10-4: Fire Weather Services
- 2023 Mobilization Guide
- Pacific Northwest Mobilization Guide

The PNWCG is comprised of the following Federal and State fire agencies: State of Oregon, Department of Forestry; State of Washington, Department of Natural Resources;
USDA Forest Service, Pacific Northwest Region; USDI, National Park Service, Pacific West Region; USDI, Fish and Wildlife Service, Pacific Region; USDI, Bureau of Indian Affairs, Portland Area Office; USDI, Bureau of Land Management, Oregon and Washington.

NWS SERVICES AND RESPONSIBILITIES

The National Weather Service will collaborate with the fire agencies when proposing alterations to the fire weather program and services provided in the Pacific Northwest. NWS-developed proposals are provided to PNWCG for review, assessment, and comment prior to adoption and implementation. NWS considers any concerns expressed by PNWCG, especially as related to performance integrity, in its assessment of change proposals in the fire weather program and other services provided.

Fire Weather Services

1. CORE GRIDS AND WEB-BASED FIRE WEATHER DECISION SUPPORT

National Digital Forecast Database (NDFD) grids are used to produce a wide variety of products and services for fire weather support. Operational status of NWS grid elements is available at the following website**:** https://vlab.noaa.gov/web/mdl/ndfd-information-links

NWS offices produce several web-based digital planning tools to assist fire weather customers. These include hourly weather graphs, point forecast matrices, activity planners, and meteograms. Please contact your local servicing NWS office with any questions or for more information.

NWS Fire Weather Grids for the Pacific Northwest are graphically displayed at: http://graphical.weather.gov/sectors/pacnorthwestFireDay.php#tabs.

A zoomable map can be found at: https://digital.weather.gov/

2. FIRE WEATHER WATCHES AND RED FLAG WARNINGS

Fire Weather Watches and Red Flag Warnings are issued when the **combination of dry fuels and weather conditions** support extreme fire danger and/or fire behavior. These statements alert land management agencies to the potential for widespread new ignitions which could overwhelm initial attack activities, or conditions which could cause control problems on existing fires, etc. Any of these outcomes could pose a threat to life and property.

Fire Weather Watch: A fire weather watch is issued when there is a high potential for the development of a red flag event. A watch is issued 18 to 96 hours in advance of the expected onset of criteria. The watch may be issued for all, or selected portions within a fire weather zone or region. The overall intent of a fire weather watch is to alert forecast users at least a day in advance for the purposes of resource allocation and firefighter safety.

Red Flag Warning: A red flag warning is used to warn of impending or occurring red flag conditions. Its issuance denotes a high degree of confidence that **weather *and* fuel** conditions consistent with local red flag event criteria will occur in 48 hours or less. Longer lead times are allowed when confidence is very high or the fire danger situation is critical. Forecasters can issue a warning for all or selected portions within a fire weather zone.

Prior to issuance, all red flag warnings are coordinated with affected agencies and neighboring fire weather offices, in order to assess fuel conditions and general fire danger. Each issuance, update or cancellation of a fire weather watch or red flag warning is also relayed by telephone to the dispatch office(s) affected by the watch/warning. Red flag warnings and fire weather watches will be issued using a bulleted format.

3. SPOT FORECASTS

Spot forecasts are site specific forecasts issued by the NWS in support of wildfire suppression and natural resource management. Spot forecasts may also be issued for hazardous materials incidents, search and rescue missions and other threats to public and responder safety. All spot forecast requests should be accompanied by a representative onsite weather observation.

Issuance Criteria: Spot forecasts are non-routine products issued at the request of the user. WFOs will provide spot forecast service upon request of any federal, state, tribal, or local official who represents the spot forecast is required to support a wildfire.

For non-wildfire purposes, resources permitting, WFOs will provide spot forecast service under the circumstances and conditions outlined in NWS Instruction 10-401: http://www.weather.gov/directives/sym/pd01004001curr.pdf. Spot forecasts will not be provided to private citizens or commercial entities not acting as an agent of a government agency.

Requesting a Spot Forecast: Spot forecast requests are normally made via the Internet through the NWS Spot Request Page. When web access is not available, spot forecasts may be requested and disseminated via fax - using the spot forecast request form D-1 (NWSI-401) in Appendix E. An electronic fillable pdf version of WS form D-1 can be found at: https://www.nws.noaa.gov/directives/010/401j/WS_FORM_D_SPOT.pdf

The requestor must provide information about the location (latitude/longitude), slope aspect, drainage name, fuel type(s), top and bottom elevations of fire or project, size of fire or project, ignition time, contact names, email, and telephone numbers of the responsible land management personnel.

It is critically important that each spot forecast request also include quality,

representative observations at, or near, the site. A detailed description of the observation location relative to the project (if not at the site) should be provided. The description should include, at a minimum, distance and direction from the project or fire site, station elevation and aspect.

An exception to the rule regarding on-site weather observations is as follows: a spot forecast request can be made without an observation if it is on an initial attack fire of less than two hours, there are red flag warnings or fire weather watches in effect, or the available fire weather forecasts are not representative of what is observed at the site. Even in this situation, a representative observation will result in a better forecast.

Fire agencies are strongly encouraged to call the WFO after submitting a spot request to ensure it was received properly. The WFO will attempt to notify field personnel and/or the dispatch office whenever there is a significant change in the expected weather.

For detailed instructions submitting a Spot Forecast Request, go to: https://www.wrh.noaa.gov/wrh/UsersSpotGuide2019_2.0.pdf

Updates to Spot Forecasts: Spot forecasts are considered one-time requests, and are not routinely updated. Spot forecasts may be updated when new representative observations are available to the forecaster or if the forecaster deems the current forecast does not adequately represent current or expected weather conditions. Land or emergency management personnel are encouraged to contact the appropriate WFO for a spot update if forecast conditions appear unrepresentative of the actual weather conditions. The spot forecast will be corrected when a typographical or format error is detected that could confuse the intended meaning. Updated and corrected spot forecasts will be delivered to users in the same manner as the original spot forecast when possible.

Spot Forecast Feedback: Good communication between fire managers and the NWS

is critical for quality spot forecast services. Land management personnel should provide feedback to the NWS forecasters about the quality and accuracy of the spot forecast. Responsibility for providing fire line observations for the verification of forecast accuracy rests with the land management agencies. Onsite observations taken during the operational period the forecast is valid for are to be provided back to the WFO via the feedback box online spot forecast form, or by phone, fax or email.

Hysplit Trajectory Output: Hysplit trajectory output is available when requesting a Spot Forecast. See Appendix F for details.

4. FIRE WEATHER PLANNING FORECASTS

The Fire Weather Planning Forecast is a zone-type product used by land management personnel primarily for input in decision-making related to pre suppression and other planning. The decisions impact firefighter safety, protection of the public and property, and resource allocation. Weather parameters represent average conditions across the given zone.

Headlines are included in the fire weather planning forecast (FWF) whenever a red flag warning or fire weather watch is in effect or to highlight other critical weather information. A brief, clear, non-technical discussion of weather patterns that will influence the forecast area will begin the forecast with the emphasis on the first two days of the forecast period. A discussion of latter periods will be included if significant weather is expected to impact safety or operations. Sky and weather, maximum and minimum temperature and relative humidity, wind speed and direction, Haines index, lightning activity level and chance of wetting rain are included in the FWF by all of the WFOs in the Pacific Northwest. However, the Haines index as well as the lightning activity level will be removed by 2025. Several offices also forecast mixing height and transport winds.

Two forecasts will be issued daily during fire season – a morning forecast between 5 AM and 9 AM and an afternoon forecast around 3 PM. Once-a-day forecasts will

continue through the spring and fall burning seasons at the request of the land managers with some offices continuing land management forecasts through the winter. Local start and stop dates shall be coordinated between the NWS offices and fire weather customers, including the geographic area Predictive Services Units.

5. NFDRS FORECASTS

The National Weather Service role in NFDRS is providing weather forecast input, which combined with fire agency input, allows the NFDRS software in WIMS to predict the next day's fire danger indices. These indices impact agency resource management decisions, firefighter safety, and protection of the public and property.

Numerical point forecasts for NFDRS stations are prepared and disseminated to WIMS by 1540 local time each afternoon from April or May through early October. The point forecasts are used to compute the expected NFDRS indices valid the following day. The number of NFDRS point forecasts made by the weather office depends only on the number of NFDRS observations input into WIMS by the fire agencies. If observations are not entered into WIMS by 1500 however, a forecast may not be produced for those stations. A weather forecaster may also not produce a forecast for sites with highly questionable observations.

The seven day NFDRS forecast remains operational for all NWS offices. The format remains unchanged with seven lines for each NFDRS site.

6. MORNING BRIEFINGS

All Pacific Northwest NWS Offices provide daily fire weather phone or recorded briefings each morning during fire season. Local Fire weather users are encouraged to participate in these briefings. The forecaster hosting the briefing will verbally highlight current and forecast fire weather conditions with the help of weather graphics on an internet web page or through a GoToMeeting® webinar. Briefing

times, conference call telephone numbers and passcodes can be obtained by contacting the local WFO. A link to the web briefings can be found on the local fire weather page.

7. FORECAST VERIFICATION

Routine verification is made on red flag warnings and NFDRS forecasts. Results of the verification will be published in the Fire Weather Annual Summary. Spot forecast turnaround time and other statistics are available from your local NWS office.

8. INCIDENT METEOROLOGIST SERVICES

Each WFO in the Pacific Northwest has one or more Incident Meteorologists (IMETs) on staff available for wildfire, prescribed burns, HAZMAT, Search and Rescue or other emergency dispatches. To request an IMET, contact the appropriate fire agency dispatch office. The ordering process for Incident Meteorologists (IMETs) and supporting equipment is detailed in Chapter 20 of the National Interagency Mobilization Guide. 2023 Mobilization Guide

IMET support for prescribed fire is primarily for high-complexity projects such as those that are larger in size, have potential to impact significant values, and may be longer in duration than the typical moderate or low complexity projects. In some cases, the servicing NWS office may suggest IMET support for those locations that have a history of inconsistent or challenging forecast accuracy.

9. SOCIAL MEDIA

Each NWS office in the Pacific Northwest has a Facebook page, Twitter account, and a YouTube channel. Current information about Fire Weather may be included in social media feeds as time allows, but such information is intended as supplemental information for the general public; NWS use of social media is not

intended to meet the specialized needs of the wildland firefighting community.

10. NON-FORECAST SERVICES:

Several duties fall into the non-forecast services including, but not limited to: teaching assignments, customer meetings, customer consultations, preparation of annual reports, preparation of annual operating plans, program management, research and in-house training of personnel.

Experienced fire weather forecasters will be available to help instruct the weather sections of standard fire behavior training courses offered by federal, state and local government fire agencies. These include S-190 through S-590 and other courses. In addition, a forecaster will be available for special speaking engagements and customer consultations. For scheduling purposes, requests for an instructor or speaker should be made at least three weeks in advance. Requests for NWS personnel to provide training should be accompanied by a separate reimbursement or advance of funds agreement, if overnight travel is necessary. Every effort should be made to acquire invitational travel orders for the NWS resource, provided by the requesting agency. Additional information can be found in the National Fire Weather Annual Operating Plan: http://www.weather.gov/fire under the Admin tab, or in Appendix C

WILDLAND FIRE AGENCY SERVICES AND RESPONSIBILITIES

Provide coordination and recommendations for interagency fire weather activities in Oregon and Washington through the PNWCG. Continually review standards of performance for applicability and adequacy.

Provide weather observations seven days a week during fire season and coordinate and cooperate with the NWS in fire weather forecasting. The agencies will seek the advice and counsel of the NWS regarding observational issues (e.g. moving remote automatic weather stations).

Recognize that other severe weather emergencies may require the services of the fire weather forecaster to assist in WFO operations.

USER AGENCY RESPONSIBILITIES:

There are several responsibilities of the user agencies including:

- Entering of 1300 LST NFDRS observations in WIMS
- Site observations for Spot Forecast requests
- Quality Control of RAWS observations
- Timely maintenance of RAWS sites

JOINT RESPONSIBILITIES

Work cooperatively as partners to maintain and improve fire weather services to assure full compliance with mutually established performance, reliability, priority, and time Standards.

Recognize that lands for which the States are responsible for wildland fire protection in Oregon and Washington, and the lands for which the respective Federal Agencies are responsible, are intermingled or adjacent in some areas, and wildland fires on these intermingled or adjacent lands may present a threat to the lands of the other. Recognize the primary role of the States in administering smoke management plans in their respective states.

Prepare an Annual Operating Plan (AOP – this document) that includes each WFO with fire weather areas of responsibility in Oregon and Washington as required in the National Fire Weather Agreement and fire and smoke management responsibilities (as appropriate) of DNR, ODF and NWCC Predictive Services. Fire weather zone and Predictive Service Area maps will be included in the AOP. The AOP will meet the guidelines specified in NWSI 10-404:
http://www.nws.noaa.gov/directives/sym/pd01004004curr.pdf

Annually review the performance of the NWS and NWCC Predictive Services in meeting the needs of the fire management community. This review will be used to help determine what program adjustments are needed and appropriate. PNWCG directed subject matter experts (SMEs) and the NWS MICs from Boise, Medford, Pendleton, Portland, Seattle and Spokane shall conduct the review. NWCC Predictive Service, the NWS, PNWCG SMEs and any interested members of the fire community shall meet annually around February or March. The meeting will evaluate the past season fire weather services and recommend changes for the next fire season. Proposed changes in fire weather services for the upcoming fire weather season will be discussed and if agreed upon reflected in the AOP. AOP sections from individual offices are expected to

be finalized no later than May 1st (drafts are requested at the February/March meeting) so that the compiled Pacific Northwest AOP can be submitted to the PNWCG and NWS signatories for final approval. Changes after May 1st should, if at all possible, be held off until after fire season. If extenuating circumstances require significant additional changes to be made for the current fire season, the AOP will need to be reapproved by the signing officials.

Respond to the other party's proposals within thirty (30) days, or advise the other party when the proposal will be addressed if the NWS or the PNWCG are unable to meet or discuss the proposal within their respective groups in that time frame. Except when necessary to meet emergency needs, significant proposals are expected to be discussed at the annual meetings.

Cooperate and coordinate plans for the weather-related training of fire personnel and fire weather forecasters to ensure that training needs are met.

Collaborate in fire weather research and development.

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Northwest Interagency Coordination Center Predictive Services 2024 Operating Plan

Changes for 2024

- Updated Staffing
- Updated Appendix from final 2023 analysis
- Minor updates throughout this document

Predictive Services Mission

The Predictive Services Program supports the incident coordination system and the larger wildland fire management community with decision support information. This includes a synthesis of fire danger, fire weather, fire intelligence, and fire management resource information. Information generated by the Northwest Interagency Coordination Center (NWCC) supports determination of regional preparedness level, incident prioritization, and positioning of shared fire management resources.

Predictive Services Goals and Responsibilities

Predictive Services provides decision support tools which enable proactive, safe, and cost-effective fire management. Predictive services actively partners with state and federal wildland fire agencies, cooperating agencies, research, academia, and the private sector to ensure the relevance of predictive services' products and programs.

Location

Northwest Interagency Coordination Center
150 SW Harrison St. Suite 400
Portland, OR 97201
Main Number: (503) 808-2720

Operating Hours

Fire Season (Flexible - June 16th, 2024, through early October, 2024)
0700-1700 PDT, 7 days a week

Non-Fire Season
0700-1500 PDT, Weekdays, excluding federal holidays

Internet Home Page

http://gacc.nifc.gov/nwcc/

Staff

As with all the NWCC, the Predictive Services program is an interagency unit with positions funded from the different federal and state land management agencies. It encompasses two Fire Weather Meteorologists, a Fire Management Analyst with assistants, two Intelligence Coordinators, and a Geographic Information System (GIS) Coordinator with assistants.

METEOROLOGY

John Saltenberger (FWS)	Program Manager	(503) 808-2737
Jon Bonk (BIA)	Meteorologist	(503) 808-2756
Various Detailers during fire season as needed		

INTELLIGENCE/FIRE MANAGEMENT

Chris Moore (NPS)	Fire Management Analyst	(503) 808-2733
Jon Grell (WA-DNR)	Intelligence Coordinator	(360) 481-4865
Vacant (BLM)	Intelligence Coordinator	(503) 808-2734
Various Detailers during fire season		(503) 808-2780

GIS

Desraye Aasali (USFS)	GIS Coordinator	(503) 808-2741
Justin Mund (USFS)	GIS Specialist	(503) 808-2741
Various detailers during fire season		(503) 808-2741

EMAIL

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Desraye Assali	desraye.assali@usda.gov
Justin Mund	justin.mund@usda.gov

Products and Services

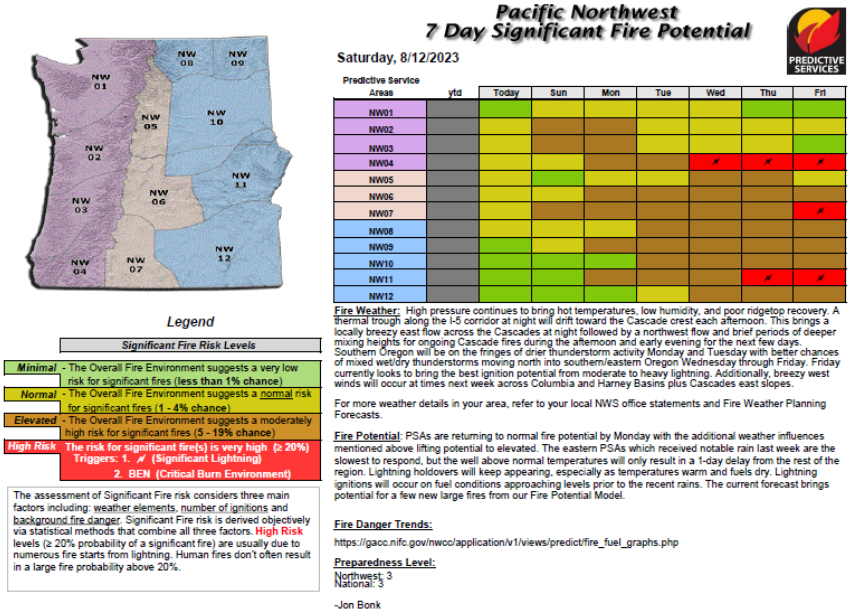
Predictive Services provides products and services mainly intended for use by national and geographic area fire management decision makers such as NWCC managers, National Interagency Coordination Center (NICC) coordinators, and Multi-Agency Coordination groups (GMAC, NMAC). Predictive Services analyzes current firefighting resource status, fuels conditions and fire danger, fire weather, and ignition potential to produce and disseminate fire potential decision support products. These products are designed so that regional and national fire managers can anticipate changes in fire management workload and make proactive fire management decisions regarding prioritization and distribution of firefighting resources.

A. Daily Fire Activity Forecast (FAF)

Updated daily during fire season, the Fire Activity Forecast (FAF) is an internal NWCC product that summarizes anticipated new fire workload over the next 10 days covering each Predictive Service Area (PSA). This is done by combining projections of:

- Fluctuations in fire danger indices in each PSA for the next 10 days
- The number of new ignitions expected in each PSA for the next 10 days
    - Human Ignitions
    - Lightning Ignitions
- The probability of *new significant fires* in each PSA for the next 10 days

B. 7-Day Significant Fire Potential Outlook



The 7-Day Significant Fire Potential is a simpler subset of the more detailed Fire Activity Forecast mentioned above. Both the 7-Day Outlook and Fire Activity Forecast attempt to anticipate conditions under which *initiation* of new significant fires is most likely. Growth of already established fires is not directly included. Risk of significant fire initiation is done objectively with a mathematical model that computes daily weighted contributions of the observed and forecasted elements below:

Weather Elements
Vapor pressure deficit
Relative Humidity
General Winds
Lapse Rates

NFDRSv4 indices
ERC, 1000hr,
Burning Index

Ignitions
Lightning or human

IA Firefighting Resource Availability

“Significant Fires” are defined in the NWCG glossary as those fires large and costly enough to warrant movement of firefighting resources from outside the area where the fire originates. In practice, NWCC designates the 95th percentile size of daily largest fires in each PSA as a “significant fire.” The Fire Program Analysis (FPA) fires database published by Karen Short (USFS) was used to help develop the fire size criteria for each PSA.

- See the **Appendix** for a PSA boundaries map, each PSA’s significant (95th percentile) fire sizes, and the fire danger/fire weather inputs used for fire potential rating.

A daily significant fire probability (in percent) is forecast each day for each PSA out to 10 days in the future. Significant fire probability is based on PSA-dependent combinations of the contributing factors identified in the appendix. Some factors are weighted more heavily than others.

Significant fire probabilities for each Predictive Service Area are denoted in products published by Predictive Services by varying colors based on their daily risk ranking.

The three most common daily risk rankings are green (low), yellow (moderate), and brown (elevated). All three of these categories occur regularly during fire season.

However, there are a few days during fire season when critical combinations of contributing factors are expected to push the risk of significant fires above 20%. Such days are called “high risk” and are denoted in red. These are the days when significant fire risk is expected to rise well above normal background levels due to optimum combinations of the contributing factors mentioned above.

NWCC’s daily 7-Day Significant Fire Potential product can be viewed at the following locations:
Northwest: https://gacc.nifc.gov/nwcc/content/products/fwx/guidance/DL.pdf
National: https://fsapps.nwcg.gov/psp/npsg/forecast#/outlooks?state=map

Interpreting the 7-Day Significant Fire Potential Product:
Because it covers broad geographic regions, the 7-Day Significant Fire Potential Forecast is not intended to be interpreted as a fire weather forecast or a fire behavior forecast. It is not intended to be used for gauging safety risks due to fire behavior. It does not necessarily reflect extreme conditions in different fuel types within any PSA. Rather, the 7-Day Significant Fire Potential Forecast simply depicts the daily risk for initiation of new 'significant' fires from ignitions within each specific PSA.

The Fire Activity Forecast and 7-Day Significant Fire Potential products were developed using objective data sources such as:

- Karen Short's FPA fire occurrence database.
- Fire Family Plus 5.1 for Version 4 of the National Fire Danger Rating System
- Meteorological data on two rectangular grids centered over the Pacific Northwest.
- Daily lightning strike archives for each PSA

Records of fire activity, lightning strikes, weather elements (both surface and aloft), and fire danger data dating were gathered back to the year 2000. Logistic regression was used to identify those elements most closely correlated with initiation of new significant fires under low ignition circumstances (i.e. without extra ignitions from lightning). Additional ignitions from lightning, if any, are then included to create a comprehensive assessment of daily significant fire potential in each PSA.

Notes on the National Fire Danger Rating System:
The legacy National Fire Danger Rating System used since 1978 was phased out and replaced by a newer and more sensitive version in 2022. The new version is called NFDRS version 4. NWCC Predictive Services will use NFDRSv4 to rate the fire danger component of significant fire risk. Fuel model "Y" (timber) will be employed regardless of PSA for the time being. Note: fuel model Y does not include a live fuel component as the prior fuel model G did. Thus, fire danger indices for model Y have higher fluctuation rates than G.

C. Fire Weather Meteorologist Coordination Meetings

During peak fire season, NWCC will host daily fire weather meteorologist coordination meetings with NWS Oregon and Washington Offices, the NOAA/NWS Storm Prediction Center, deployed Incident Meteorologists (IMETs) within NWCC's area of responsibility, government meteorologists from the states of Oregon and Washington, private sector utility meteorologists, and other invited parties. Please contact us for meeting information if you qualify under these positions. Meeting information will be distributed to program leaders and past participants at 1-2 weeks prior to the call initiating for the season.

Calls occur at 11:00 AM PDT and are expected to last 15-20 minutes total. The intent is to discuss the fire weather forecast beginning with the next day and for the following 7 days. Parties are encouraged to focus on stating differences from the summaries provided by NWCC and SPC plus any additional finer scale information relevant for the good of the order. Daily calls will be scaled back as seasonal conditions warrant.

D. Regional Preparedness Level Forecast

Preparedness Level for the Northwest Geographic Area, either current or forecast, is determined by the NWCC center manager and/or Operations Manager with guidance from NWCC Predictive Services.

That guidance is based on objective assessment of the current demand and forecasts for future need of fire management resources from NWCC's Fire Activity Forecast. Analysis of historical usage of fire management resources since 2004 was blended with numbers of reported ignitions and resulting large fires to model resource demand when similar conditions repeat themselves in the future.

E. Monthly and Seasonal Significant Fire Potential Outlooks

The National Monthly and Seasonal Significant Fire Potential Outlook is published the first day of each month by the NICC Predictive Services Unit in cooperation with the Regional Geographic Area Predictive Service units, including NWCC. The outlook identifies regions across the US where significant fire risk is anticipated to be **above-average**, **average**, or **below-average** during the following four months.

The NWCC Monthly and Seasonal Outlook is published to the NWCC website in several formats, including a narrated webcast.
https://gacc.nifc.gov/nwcc/predict/outlook.aspx

Monthly and Seasonal outlooks (maps and narratives) for the entire US are found at: https://www.nifc.gov/nicc/predictive-services/outlooks

F. Fire Behavior and Fuels Advisories

When fire behavior is known or anticipated to be severe over a large section of the region, Predictive Services assists in the issuance of any fuels/fire behavior advisories. Fire Behavior and Fuels advisories are found at:
https://www.nifc.gov/nicc/predictive-services/fuels-fire-danger

G. Fuels and Fire Danger Information

Links to Northwest regional fuels and fire danger (NFDRS version 4) information used to evaluate fire potential are located here.
https://gacc.nifc.gov/nwcc/predict/fire_fuel.aspx

H. Intelligence reports

During fire season, NWCC's Predictive Services intelligence unit publishes daily updates of fire activity, resource status, situation reports, and large fire maps at:
https://gacc.nifc.gov/nwcc/predict/intelligence.aspx

I. GIS

NWCC's Predictive Services Geographic Information Systems unit gathers, decodes archives, and plots a variety of fire and weather information daily during fire season. This includes:

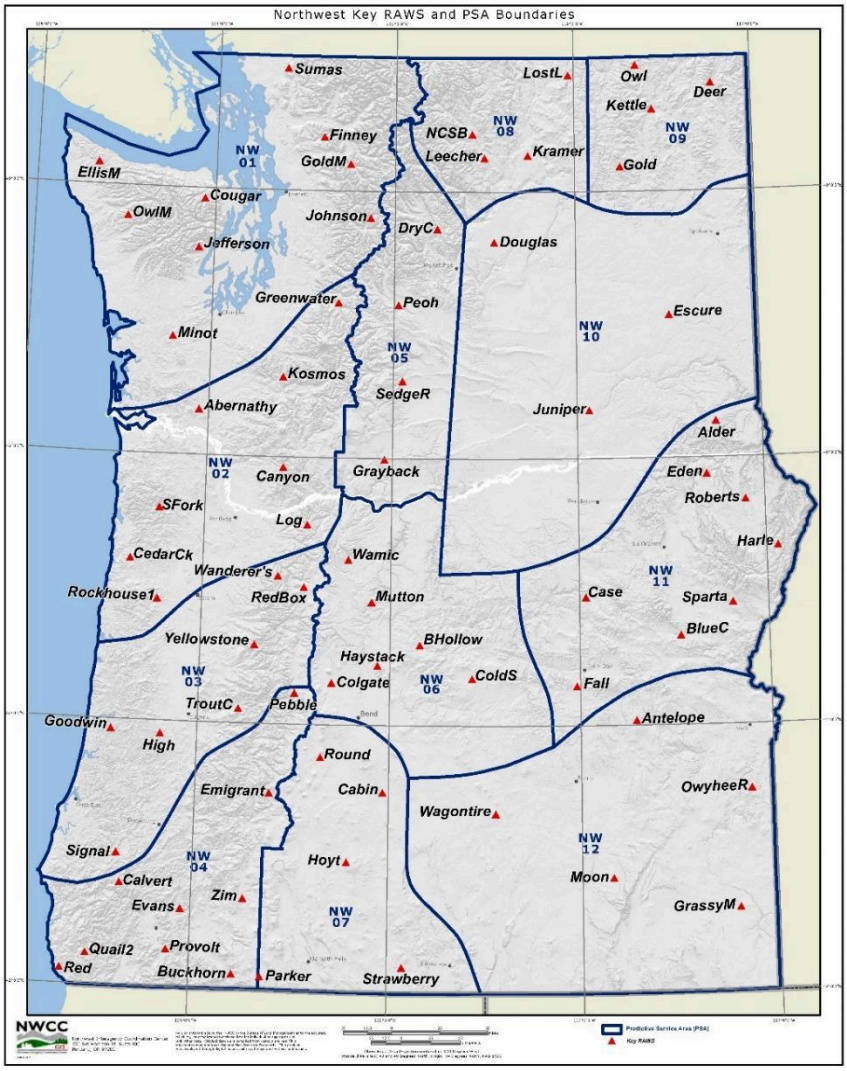
- Active fire mapping and fire perimeters in Google Earth
- NFDRS summary maps
- Daily lightning strikes
- Daily rainfall total maps

Further documentation of NWCC's GIS unit can be accessed at:
https://gacc.nifc.gov/nwcc/predict/gis.aspx

J. NWCC Predictive Services Fire Danger Rating Operating Plan and Supporting Documentation.

A detailed explanation of NWCC Predictive Services' fire potential system is at:
https://gacc.nifc.gov/nwcc/content/products/fwx/fdrop/FDROP.pdf

Predictive Service Areas (PSAs) and Key RAWS



Twelve Predictive Service Areas (PSAs) were designated from a climatological study of daily relative humidity fluctuations over a period of over a decade. To a high degree of repeatability, relative humidity at key RAWS in one PSA changes at a slightly different rate than key RAWS in neighboring PSAs during fluctuations in large-scale weather across the region.

Within each PSA, “key” NFDRS sites have been selected to contribute in daily evaluations of fire danger and surface fire weather averaged across each PSA. All key stations are given equal weighting as a Fire Family Plus NFDRS version 4 Special Interest Group (SIG) for fuel model Y in each PSA.

Note: The selection of these 72 stations as “key” does not imply other stations are of lesser quality.

Appendix

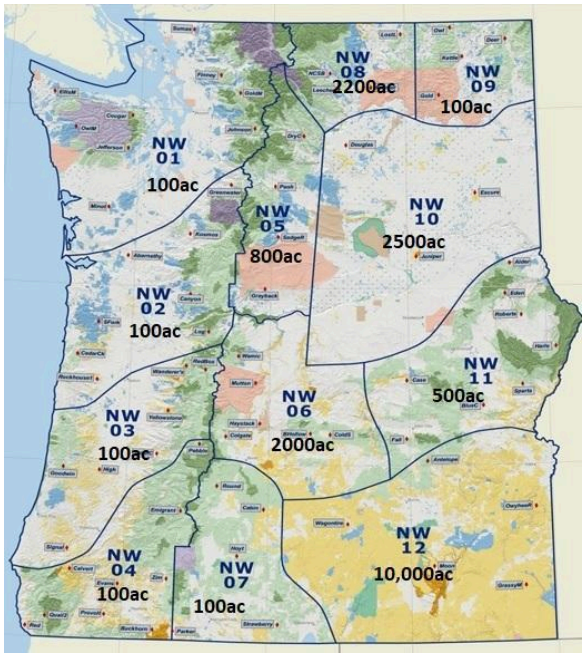
NWCC's Predictive Service fire potential products are based on weather, fire danger, and ignition factors averaged across each broad polygon called PSAs. Note: PSAs do not correspond to fire dispatch area perimeters, agency ownership, or political boundaries. They simply reflect consistent large scale daily weather and fire danger fluctuations. The following data is based on the June 1 to September 30 period covering the years 2000 to 2021.

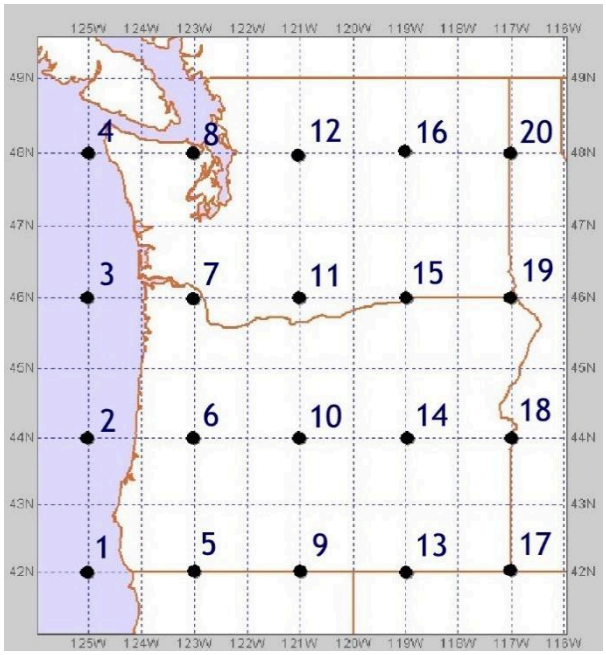
Significant fire sizes along with statistically correlated NFDRS indexes and weather elements were used to compute the daily risk of Significant Fire initiation. Note: some of the referenced millibar heights are below ground level. Nonetheless, model data is available at those grid points and has been shown to have a statistically significant contribution to Significant Fire initiation.

PSA	Significant Fire Size	NFDRS index	Primary contributing elements which may result in a new Significant Fire		
NW01	100 ac	ERC-Y	$(\text{ERC-Y})^2$	GP7 - 1000 mb WS	
NW02	100 ac	ERC-Y	ERC-Y	PG 3	
NW03	100 ac	ERC-Y	ERC-Y	GP6 - 1000 mb WS	Minimum RH
NW04	100 ac	ERC-Y	ERC-Y	GP6 - 1000 mb WS	GP5 - 850 mb RH
NW05	800 ac	ERC-Y	$(\text{ERC-Y})^2$	$(\text{GP12 - 1000 mb u-component WS})^2$	Minimum RH
NW06	2000 ac	ERC-Y	ERC-Y	PG 23	GP10 - 850 mb VPD
NW07	100 ac	1000 hr FM	1000 hr FM	GP 13 - 850 mb v-component WS	GP9 - 1000 mb VPD
NW08	2200 ac	ERC-Y	ERC-Y	$(\text{PG 21})^2$	
NW09	100 ac	BI-Y	BI-Y	$(\text{GP20 - 1000 mb v-component WS})^2$	Minimum RH
NW10	2500 ac	ERC-Y	ERC-Y	SWI	
NW11	500 ac	ERC-Y	ERC-Y	GP19 - 1000 mb VPD	
NW12	10000 ac	ERC-Y	ERC-Y	GP14 - 1000 mb WS	

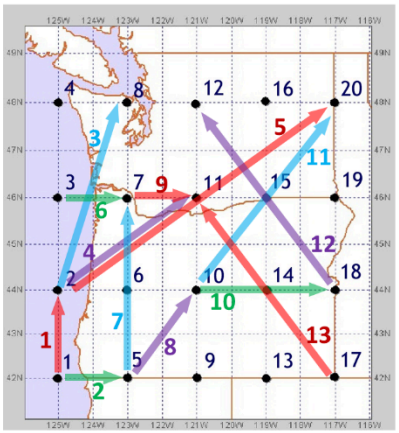
ERC: Energy Release Component, **BI:** Burning Index, **FM:** Fuel Moisture, **GP:** Grid Point, **PG:** Pressure Gradient, **mb:** Millibar, **RH:** Relative Humidity, **VPD:** Vapor Pressure Deficit, **WS:** Wind Speed, **SWI:** Synoptic Wind Index (A calculation for each PSA using various surface pressure gradients combined with upper-level winds. In some cases, this has shown to be a better measure of horizontal air transport across the broader landscape than surface wind or winds aloft alone.)

PSAs with Significant Fire Size, Model Grid Points Used, and Calculated Mean Sea Level Pressure Gradients

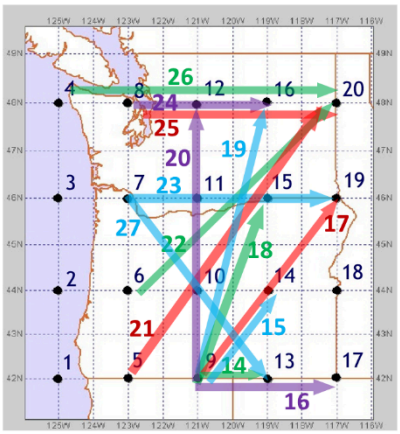




MSLP Pressure Gradients 1-13



MSLP Pressure Gradients 14-27



NATIONAL WEATHER SERVICE BOISE
2024 ANNUAL OPERATING PLAN

WHAT'S NEW

Chuck Redman no longer works at National Weather Service Boise. Spencer Tangen is the new Fire Weather Program Leader with Sophia Adams as the Assistant Fire Weather Program Leader.

Fire weather briefings historically used AWIPS as the format through which graphics were displayed. This year, DSS Builder will be the default for fire weather briefings instead of AWIPS.

Under extreme scenarios, enhanced wording will be used in Red Flag Warnings (RFWs) as a precursor to issuing Particularly Dangerous Situation (PDS) RFWs.

Partner feedback will be requested regarding using 20-foot winds in spots instead of eye-level winds which have been used historically, as well as content and frequency of fire weather briefings. Feedback will be used to inform potential changes later this year or next year.

Introduction to WFO email will be developed for incoming IMETs.

HOURS OF OPERATION

Once-a-day issuance of the Planning Forecast (FWF) will begin mid-May, but will be dependent on ongoing weather and fuel conditions. These forecasts will be issued Monday through Friday by 0730 PDT (0830 MDT).

Starting dates for the full complement of fire weather products, including NFDRS Forecasts and twice-daily Planning Forecasts, will depend on variables such as fuel dryness and customer needs. This typically occurs by early June.

Staff meteorologists are available anytime; 24 hours a day, 7 days a week. The fire weather desk is staffed from 0630 to 1430 PDT (0730 to 1530 MDT) during the "fire season" along with the shoulder seasons.

STAFF AND CONTACT INFORMATION

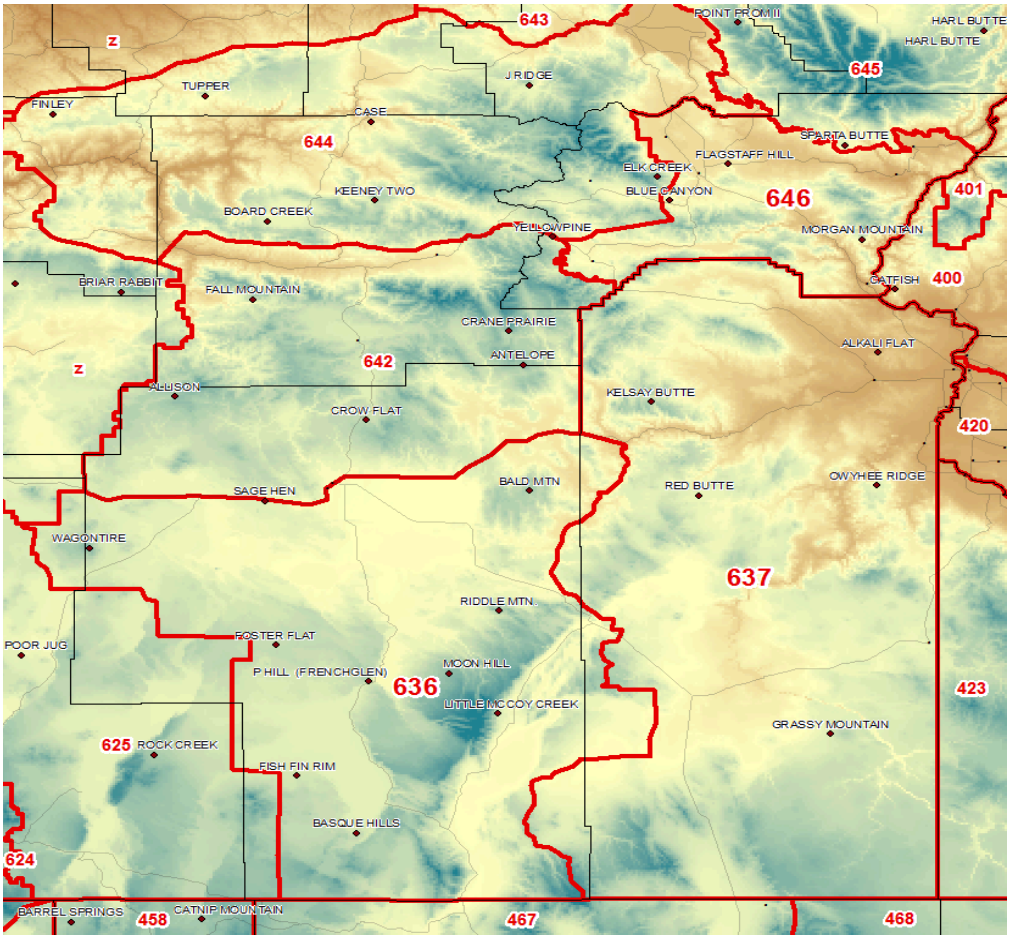
Boise Weather Forecast Office
NIFC – National Weather Service
3833 S. Development Ave., Bldg 3807
Boise, ID 83705-5354

Phone: (208) 334-9060 / Fax (208) 334-1660
Fire Weather Webpage: https://www.weather.gov/wrh/fire?wfo=boi
Facebook Page: https://www.facebook.com/US.NationalWeatherService.Boise.gov
X (formerly Twitter) Page: https://twitter.com/NWSBoise
X (formerly Twitter) Handle: @NWSBoise

Name	Position	E-Mail
Spencer Tangen	Fire Weather Program Leader/ IMET (t)	Spencer.Tangen@noaa.gov
Sophia Adams	Assistant Program Leader/ IMET (t)	Sophia.Adams@noaa.gov
Michael Cantin	Meteorologist-in-Charge	Michael.Cantin@noaa.gov

FIRE WEATHER SERVICES

Map of the Boise Fire Weather District within the NWCC, OR636, OR637, & OR646.



BASIC METEOROLOGICAL SERVICES

PRODUCT SCHEDULE:

Product:	**Issuance time: (MDT) / (PDT)**
Morning planning forecast	0830 / 0730
Internet briefing	0930 / 0830
Afternoon planning forecast	1530 / 1430
NFDRS point forecast	1530 / 1430
Fire Weather Watch / Red Flag Warnings	Event Driven
Spot forecasts	Upon Request

RED FLAG EVENTS: High to extreme fire danger and dry fuels (defined by agency input), in combination with the following weather conditions:

- Areal thunderstorm coverage of scattered or greater (>25%), implying LAL of 4 or greater (see below).

- High Haines index of 6 in combination with RH<15%. **(*Zone 646 only.*)**

- Strong winds and low humidity. (See matrix below for sustained criteria.) In addition to sustained strong winds from the matrix, wind gusts >35 mph, combined with relative humidity 10% or less, are considered Red Flag Criteria. Red Flag Criteria are considered to be met if conditions are observed at any three RAWS stations within a combined area of Fire Weather Zone 636 and 637 for >3 hours (not necessarily consecutive). Alternatively, if a RFW is issued separately for Fire Weather Zones 636 and 637, it is considered to verify if conditions are met at three RAWS stations in Zone 636 or two RAWS stations in Zone 637 and 646.

SUSTAINED 20 FT WIND (10-MINUTE AVERAGE in MPH)

	10 mph	15 mph	20 mph	25 mph	30 mph
20%					W
15%				W	W
10%			W	W	W

Under extreme scenarios (greater than 99th percentile of wind/RH combo), enhanced wording will be used in Red Flag Warnings (RFWs) as a precursor to issuing Particularly Dangerous Situation (PDS) RFWs. This will be used to help alert partner agencies as well as the public to the extreme fire weather threat.

LIGHTNING ACTIVITY LEVEL:

The chart listed below will be used to forecast Lightning Activity Level (LAL):

LAL = 1	**No Thunderstorms**
LAL = 2	**Isolated Thunderstorms**
LAL = 3	**Isolated Thunderstorms (Increased Confidence/Threat)**
LAL = 4	**Scattered Thunderstorms**
LAL = 5	**Numerous Thunderstorms**
LAL = 6	**Scattered (But Exclusively Dry) Thunderstorms**

Interagency Coordination: Before the issuance of a Fire Weather Watch or Red Flag Warning, there will be coordination with the affected agencies and neighboring NWS Forecast Offices in order to assess fuel conditions and general fire danger.

Dissemination of Fire Weather Watches and Red Flag Warnings: Each issuance, update, or cancellation of a Fire Weather Watch or Red Flag Warning will be relayed by telephone to the dispatch office(s) affected by the Watch/Warning.

SPOT FORECASTS:

http://www.weather.gov/spot/

To avoid any delays in receiving the Spot Forecast, please include all the appropriate information regarding the spot. This includes, both top and bottom elevations, aspect, size, etc. reference LAT/LON when requesting spot forecasts. Follow-up phone calls are always encouraged and feedback is extremely useful.

WEATHER BRIEFINGS:

A daily briefing will be conducted each day at 0930 MDT (0830 PDT) for all agencies via a GoToMeeting. During pre-fire season it will be held only on Mondays and Thursdays. The briefing will include a general discussion of weather conditions and forecasts for the current day, as well a brief discussion of the extended period. Model data, satellite loops, and other items of interest will be addressed for the forecast period. The briefing will usually be about 10-15 minutes, but may be longer during active fire periods.

2024

National Weather Service Medford Operating Plan

Photo by: Spencer Higginson

WHAT'S NEW: ***Highlighted in Bold, italics and underline in the body.***

- Staff and Certified Fire Weather Forecast Staff has been updated.
- An update on potentially dangerous situation (PDS) wording within red flag warnings (RFWs)
- Planning forecasts are now twice daily year round

Future potential changes:

- The Haines index and LALs are looking to be updated/replaced, and new criteria are being researched to be used for Dry and Unstable Red Flag Warning issuances (Haines).

HOURS OF OPERATION:

The Medford NWS Office will have at least one fully certified Fire Weather Meteorologist on duty 24 hours a day year-round to respond to any immediate needs. Under the provisions of the National Fire Weather Agreement, special service provided by the Medford Weather Forecast Office will be done on a reimbursable basis.

LOCATION:

National Weather Service Medford
4003 Cirrus Drive
Medford, Oregon 97504

CONTACT INFORMATION:

The public line to NWS Medford is 541-773-1067
The direct line to the Fire Weather line is 541-776-4332

NWS Medford Homepage: http:/weather.gov/mfr
Facebook Page: https://www.facebook.com/NWSMedford?ref=ts
X (Formerly Twitter): @NWSMedford
Slack Room for IMET Coordination
Slack Room for general Partner Coordination, including Fire Weather Partners

Use of SLACK
Aside from the GACC-lead conference calls, WFO Medford will use Slack for coordination. We will also use Slack to connect with our fire weather partners. Phone calls and the daily fire weather briefing should be priority methods of communication.

STAFF:

Management staff:

Christine Riley	Meteorologist-in-Charge
Ryan Sandler	Warning and Coordination Meteorologist
Michael Stavish	Science and Operations Officer

Certified Fire Weather Forecaster Staff:

Ken Sargeant	Internet Technical Officer
Tom Wright	Observation Program Leader, IMET
Sven Nelaimischkies	Lead Meteorologist
Connie Clarstrom	Lead Meteorologist
Bradley Schaff	Lead Meteorologist / Fire Wx Prog Member
Misty Firmin	Lead Meteorologist
Dan Weygand	***Lead Meteorologist***
Joseph Guerrero	Lead Meteorologist / ***IMET (Trainee)***
Mike Petrucelli	Meteorologist
Marc Spilde	Meteorologist / Fire Wx Prog Member
Brian Nieuwenhuis	Meteorologist / ***IMET (Trainee)***
Charles Smith	Meteorologist /Fire Wx Prog Co-Lead
Miles Bliss	Meteorologist / Fire Wx Prog Co-Lead

Fire Weather Forecast Staff In Training:

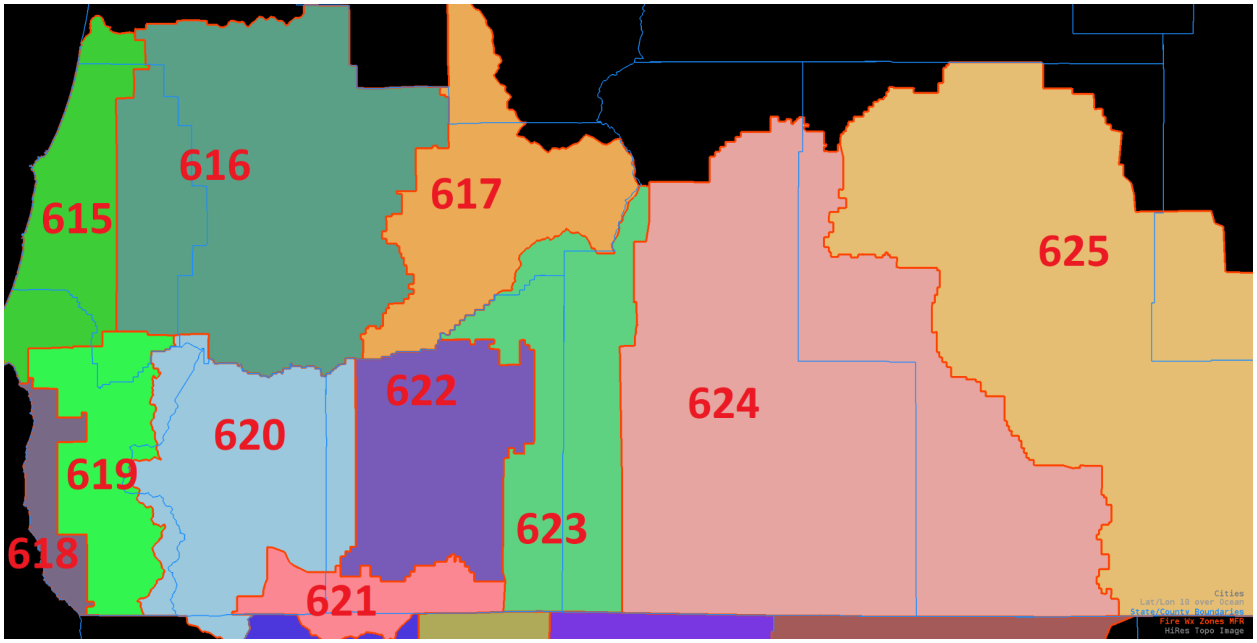
Alexis Hermansen	Meteorologist
Timothy Daldrup	Meteorologist
Chandler Price	Meteorologist

Medford's Daily Fire Weather Product Schedule (when in Fire Season):

Product:	**Issuance time (PDT):**
Spot Forecasts	Upon Request, 24/7
AM Fire Weather Planning Forecast	By 0700
AM ECCDA Forecast	By 0700
Daily Fire Weather Internet briefing	At 0930
PM Fire Weather Planning Forecast	By 1500
PM ECCDA Forecast	By 1530
NFDRS Point Forecasts (Days 1-7)	By 1545 (WIMS updates 1605)
Fire Weather Watch / Red Flag Warnings	As Needed/Event Driven, 24/7

FORECAST AREA

Southern Oregon, fire weather zones 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, and 625.



FIRE WEATHER SERVICES

Probabilistic Messaging: The Medford office will begin to focus on using more probabilistic messaging within our Fire Weather Webinar, RFWs, Fire Weather Watches and Spot Forecasts.

Fire Weather Planning and Land Management Forecast: This forecast is available on the webpage ***twice a day year round*** (0700 and 1500 PDT). The Fire Weather team will inquire with the user agencies as weather and fuel conditions warrant during the off season to determine when additional forecast elements and/or forecasts are needed.

NFDRS Trend Forecasts: NFDRS Trend Forecasts are generated everyday before 1500 PDT. These trend forecasts are sent to WIMS by 1545 PDT with forecast parameters typically available from WIMS by 1600 PDT.

Medford WFO Daily Fire Weather Briefing Webinar: The Medford NWS Office will continue to produce once per day recorded Daily Fire Weather Briefings via a GoToWebinar format during the declared fire season. These briefings will focus on important elements in the forecast as they relate to fire weather, both in the short term forecast and up to one month out, when pertinent. Smoke concentrations and movement will be discussed as it relates to fire containment operations, to include aviation. Additionally, these briefings may be done on an as needed basis prior to and after fire season has been declared if weather significant to fire operations is anticipated. The briefing is held at 930am. Registration information can be obtained by calling the Medford NWS. Registration information varies annually.

A recorded version of this daily webinar will be posted each day, usually by 1030am, at the following link: https://www.wrh.noaa.gov/mfr/fire/Briefing.mp4 . If you experience any difficulties registering or viewing, please contact the Medford NWS Office.

Spot Weather Forecasts: Spot Weather Forecasts can be requested at http://www.weather.gov/spot/request/

- *Spot forecasts for wildfire suppression or public safety take precedence over all office activities, except tornado, flood or thunderstorm warnings. All that is required for initial emergency spot requests is a Lat/Lon and the office can be called at 541-776-4332 to make such a request.*

- Please request prescribed burn spot requests at least 2 hours in advance or, preferably, the day prior to the burn, whenever possible. Please provide on- site observations whenever possible and/or note the nearest representative RAWS in the “REMARKS” section. Please call the Fire Weather line (541-776-4332) if you

have any questions submitting a request or if there are peculiarities with or sensitivities that cannot be detailed in the request.

Fire Weather Watches and Red Flag Warnings:
Fire Weather Watches and Red Flag Warnings will be issued when the following weather criteria are expected, in conjunction with receptive fuel situations.

- ***Update for 2024- <u>Particularly Dangerous Situation(PDS)</u>:***
  - ***<u>NWS Medford will be implementing a trial of a PDS Red Flag Warning (RFW) for the 2024 fire season in coordination with the NWS Portland Office. It's worth noting that offices serving California, Including the Medford Office, have implemented the PDS-RFW. The criteria for what constitutes the need for a PDS is still being discussed. For now, NWS Medford are using the wind speed listed for current RFW criteria plus an additional 20 mph or an imminent threat for a fire to experience uncontrollable growth. There would be no change for humidity criteria. The goal of this temporary criteria is to have a a PDS-RFW only used for events that occur every 5 to 10 years.</u>***

- **RFW:**
  - **Abundant Lightning:**
    - Abundant lightning (scattered thunderstorm coverage or greater) in conjunction with sufficiently dry fuels (fuels remain dry or critical during and immediately after a lightning event). Thunderstorms usually must have forecast areal coverage of at least 25%, but exceptions can be made for issuing based on isolated thunderstorm coverage (<25%) if fuels are exceptionally dry and lightning is expected to be dry lightning (little or no precipitation reaching the ground) and, therefore, very efficient.
    - The LAL for all lightning based Fire Weather Watches and Red Flag Warnings must be three (3) or greater, except two (2) is acceptable for isolated dry thunderstorm events when fuels are deemed to be exceptionally dry. Forecasters should have a high degree of confidence (~50% for watch, 70% for warning) that the Red Flag event will occur.

  - **Strong wind and low relative humidity associated with a marine push, dry cold front, or passage of an upper level trough:**

    - Zones 615, 618: Min RH < 30% AND 10-minute sustained wind 15+ mph ***<u>or</u>*** gusts 30+ mph lasting for 2 or more hours.

    - Zones 616, 617, 619, 620, 621, 622, 623: Min RH < 15% AND 10 minute sustained wind 10+ mph ***<u>or</u>*** peak winds to 20+ mph lasting for 2 or more hours.

- Zone 624: Min RH < 15% AND sustained wind 15+ mph ***or*** gusts 25+ mph lasting for 2 or more hours.

- Zone 625: Min RH < 10% AND sustained wind 20+ mph for 2 hours or more, OR Min RH < 10-14% AND sustained wind 25+ mph for 2 hours or more, OR Min RH < 15-19% AND sustained wind 30+ mph for 2 hours or more.

- **Poor relative humidity recovery with easterly winds:**
  - Zones 616, 617: Min RH < 30% AND sustained wind 10+ mph lasting 2+ hours.
  - Zones 618: RH recovery < 25% AND sustained wind 15+ mph and/or gusts 25+ mph lasting 2+ hours.
  - Zones 619 and 620: RH recovery < 30% AND sustained wind 15+ mph and/or gusts 25+ mph lasting 2+ hours.
  - Zones 621, 622, 623: RH recovery < 25% AND sustained wind 10+ mph lasting 2+ hours.
- **Haines 6 conditions = Very Dry and Unstable Airmass:**
  - Haines Index forecast of 6 in conjunction with an ongoing fire. The Medford Office will continue to issue watches and warnings for the areas expected to experience watch or warning conditions rather than by the entire fire weather zone. Thus, if only a portion of a fire weather zone will be affected, the watch or warning will only be valid for that portion of the fire weather zone. All attempts will be made to coordinate a Fire Weather Watch or Red Flag Warning with the affected agencies, IMETS and neighboring fire weather offices prior to issuance. In the event a Red Flag Warning must be issued before the coordination process can be completed, we will contact the affected agencies and neighboring forecast offices shortly afterward. Updates or cancellations of a Fire Weather Watch or Red Flag Warning will also be relayed by telephone to the dispatch office(s) affected by the watch/warning.
  - The NWS is exploring new criteria to replace the Haines Index that will capture the dryness and instability aspects of Haines 6 that is more scientifically sound and applicable to both Maritime and Continental climates.

FIRE WEATHER ZONES:

- **AREA 1...COAST (Zones 615 and 618):** This area extends from the Pacific Ocean to the foothills of the Coast Range, which rises to a crest of 2500 feet, about 10 to 20 miles inland.
    - Zone 615: South-Central Oregon coast. This zone extends from southern border of the Siuslaw National Forest in southern Lane county through Coos County to Humbug Mtn State Park in northern Curry County…and inland from the coast to about 10 to 20 miles inland. Elevations range from near sea level to 2500 feet.
    - Zone 618: Southern Oregon coast. This zone extends from Humbug Mtn State Park along the coast to the California state line, and inland for 10 miles. Elevations range from near sea level to 2800 feet.

- **AREA 2...UMPQUA BASIN AND UMPQUA NF (Zones 616 and 617):** This is the area between the Coast Range of south-central Oregon in Coos and Douglas counties and the crest of the Cascade Mountain. The western portion of the area, mainly Zone 616 Umpqua Basin, extends from the Coast Range through the Umpqua valley to the foothills of the Cascade Mountain just east of Interstate 5, and varies in elevation with zone 616 ranging between 150 near Roseburg to almost 4000 feet in the Cascade foothills. The eastern portion, zone 617 which encompasses all of the Umpqua NF, rises from 1500 feet to 6000 feet with peaks reaching as high as 7400 feet in the Cascade Range.

- **AREA 3...SOUTHWEST INTERIOR INCLUDING THE CASCADE AND THE SISKIYOU MOUNTAINS (Zones 619-623):** This area has complex terrain. The western boundary begins with the Coast Range, and includes the Kalmiopsis Wilderness Area where elevations range from 3000 to 5000 feet. The northern boundary is the Umpqua Divide which separates the Rogue Valley from the Umpqua Valley. The area's eastern boundary includes the Cascade Mountains, where elevations can reach 6500 feet with a few peaks over 8000 feet high. Crater Lake is in the very northeast corner of this area. The southern part of the area is bounded by the Siskiyou Mountains, where elevations can reach 7000 feet. Mount Ashland is in the southern portion of this area.

    - Zone 619: Southern Oregon coastal mountains. Elevations range from 200 feet in coastal valleys to 4600 feet.

    - Zone 620: Western Rogue Basin including the Illinois Valley. Elevations range from 650 feet in western Rogue Valley to 5700 feet in the Siskiyou Mountain in southern Josephine County.

    - Zone 621: Siskiyou Mountains, including the Siskiyou Fire Zone of the Rogue River Siskiyou NF. Elevation ranges from 1800 feet to 7000 feet.

- Zone 622: Eastern Rogue Basin. Elevations range from 1200 feet in the valley to 5200 feet in the Cascade and Siskiyou Mountains.

- Zone 623: Southern Oregon Cascades including Crater Lake NP, the High Cascades Fire Zone of the Rogue River-Siskiyou NF and the Klamath District of the Fremont-Winema NF. Elevation ranges from 2400 feet to 8500 feet.

- **AREA 4...EAST OF THE CASCADE MOUNTAIN (Zones 624 and 625):**This area extends from the eastern foothills of the Cascade Mountains, eastward through the Klamath Basin and the Fremont-Winema NF, to the south-central Oregon desert. The eastern part of the area closely follows the border between Lake County and Harney County, is representative of high plateaus with desert-like climate and includes the Warner Valley which is the northwestern rim of the Great Basin.

    - Zone 624: Klamath Basin and the Fremont-Winema National Forest. Elevation ranges from around 4000 feet in the Klamath Basin to the higher peaks of 8200 feet.

    - Zone 625: South Central Oregon Desert including the Klamath-Lake District of the BLM and the Lakeview Unit of the State Forestry. Elevation ranges from 4200 feet to 7600 feet

RAWS Stations:

Station	Network	Elev	WIMS ID	Lat	Lon	ZONE	FULLID
ACORN WOMAN PEAK	RAWS	4964 ft	**353213**	**42.06972**	**-123.01167**	**621**	SQFO3
AGNESS2	RAWS	247 ft	**352916**	**42.55222**	**-124.05778**	619	AGFO3
BALD KNOB	RAWS	3630 ft	**352813**	**42.69361**	**-124.03944**	619	BKFO3
BUCKEYE	RAWS	2264 ft	**353040**	**43.036389**	**-122.655361**	617	PKFO3
BUCKHORN SPRINGS	RAWS	2780 ft	**353230**	**42.12061**	**-122.56394**	622	BUCO3
BURNT RIDGE	RAWS	2955 ft	**353044**	**43.20278**	**-123.7175**	616	BNFO3
CALIMUS	RAWS	6629 ft	**353307**	**42.63139**	**-121.55972**	624	CLFO3
CALVERT PEAK	RAWS	3822 ft	**352919**	**42.77908**	**-123.73464**	620	CVFO3
CHARLOTTE RIDGE	RAWS	1220 ft	**353046**	**43.67006**	**-123.94217**	616	CHRO3
CHILOQUIN	RAWS	4420 ft	**353310**	**42.57708**	**-121.89369**	624	CQFO3
CINNAMON	RAWS	4834 ft	**353031**	**43.320833**	**-122.106667**	617	CIFO3
COFFEE POT FLAT	RAWS	5206 ft	**353422**	**42.55678**	**-120.60219**	624	PTFO3
CRAZY PEAK	RAWS	3970 ft	**40106**	**41.97639**	**-123.61222**	620	CRZC1
EVANS CREEK	RAWS	3257 ft	**353228**	**42.59772**	**-123.10503**	622	EVFO3
FLYNN PRAIRIE	RAWS	1543 ft	**352922**	**42.39556**	**-124.37861**	618	FPRO3
FORT ROCK	RAWS	4413 ft	**353406**	**43.43197**	**-120.83842**	625	FKFO3
GERBER RESERVOIR	RAWS	4950 ft	**353328**	**42.20597**	**-121.13806**	624	GRBO3

GRANDAD	RAWS	2900 ft	**353036**	**43.415833**	**-122.577222**	617	GDFO3
HOYT CREEK	RAWS	5445 ft	**353343**	**42.976389**	**-121.421944**	624	OYFO3
ILLINOIS VALLEY	RAWS	1389 ft	**353115**	**42.10375**	**-123.68508**	620	SBFO3
KLAMATH MARSH	RAWS	4531 ft	**353346**	**42.95333**	**-121.58194**	624	KMRO3
LAKEVIEW BLM FUE	RAWS	4468 ft	-	**42.48817**	**-119.83182**	625	TTIO3
LONG PRAIRIE	RAWS	1093 ft	**352819**	**42.95333**	**-124.22333**	615	LGPO3
MERLIN	RAWS	1144 ft	**353122**	**42.49975**	**-123.369167**	620	MLFO3
MOUNT STELLA	RAWS	4700 ft	**353209**	**42.93611**	**-122.43472**	623	MSFO3
MT. YONCALLA	RAWS	1822 ft	**353043**	**43.63831**	**-123.32694**	616	YNFO3
NORTH BANK	RAWS	1913 ft	**353048**	**43.35553**	**-123.19156**	616	NBKO3
ONION MOUNTAIN L	RAWS	4429 ft	**353114**	**42.45408**	**-123.61613**	620	OMFO3
PARKER MOUNTAIN	RAWS	5280 ft	**353344**	**42.105**	**-122.27897**	623	ARFO3
PROVOLT SEED ORC	RAWS	1180 ft	**353120**	**42.29019**	**-123.23339**	620	PRFO3
RED MOUND	RAWS	1753 ft	**352920**	**42.12333**	**-124.30028**	618	RMFO3
ROCK CREEK	RAWS	5650 ft	**353424**	**42.547111**	**-119.657833**	625	RCRO3
SELDOM CREEK	RAWS	4875 ft	**353339**	**42.4075**	**-122.19139**	623	SDFO3
SEVEN MILE CREEK	RAWS	438 ft	**352820**	**43.21**	**-124.3175**	615	SMCO3
SIGNAL TREE	RAWS	3294 ft	**352816**	**43.00167**	**-123.77861**	616	TRFO3
SILVER BUTTE	RAWS	3973 ft	**353041**	**42.85881**	**-123.37844**	616	SVFO3
STRAWBERRY	RAWS	5590 ft	**353423**	**42.189167**	**-120.847222**	624	STFO3
SUGARLOAF	RAWS	4328 ft	**352546**	**43.663611**	**-122.629167**	617	SGFO3
SUMMER LAKE	RAWS	5085 ft	**353429**	**42.721944**	**-120.752778**	624	SLKO3
SUMMIT	RAWS	6113 ft	**353421**	**42.198889**	**-120.246944**	624	SMFO3
TIMOTHY	RAWS	6099 ft	**353337**	**43.242778**	**-121.353056**	624	TMFO3
TOKETEE	RAWS	3360 ft	**353038**	**43.218556**	**-122.412583**	617	TOFO3
ZIM	RAWS	4089 ft	**353227**	**42.685**	**-122.39028**	623	BBFO3

2024

Pendleton Fire Weather

Operating Plan

Tunnel 5 Fire: Columbia River Gorge July 2023

National Weather Service Pendleton

LOCATION:

National Weather Service Office

2001 NW 56th Dr.

Pendleton, OR 97801

Office Homepage: https://www.weather.gov/pdt/

Fire Weather Webpage: https://www.weather.gov/wrh/fire?wfo=pdt

Facebook Page: https://www.facebook.com/US.NationalWeatherService.Pendleton.gov

Twitter Page: https://twitter.com/NWSPendleton

Twitter Handle: @NWSPendleton

> Each NWS office in the Pacific Northwest has a Facebook page, Twitter account, and a YouTube channel. Current information about Fire Weather may be included in social media feeds as time allows, but such information is intended as supplemental information for the general public; NWS use of social media is not intended to meet the specialized needs of the wildland firefighting community.

OFFICE PHONE NUMBERS (all available 24-hours):

General	(541) 276-4493
Fire Weather Line (non-public)	(541) 276-8134
Fax	(541) 276-8253

CHANGES FOR 2024:

- Christel Bennese will be a new IMET trainee this year
- Thomas Schuldt has left the Pendleton office for the Portland office
- Fire weather zone changes will be implemented in September for next fire season
- Adding an IMET page for easier access to products specific for the PDT region
- New chat room for fire weather partners

FORECAST DISTRICT:

The Pendleton Fire Weather District covers the east slopes of the Cascade Mountain range from the Deschutes National Forest north to the Wenatchee National Forest in Kittitas County, Central Oregon, the northeast quadrant of Oregon (including Wallowa county, portions of Baker county, and Harney county north of highway 20), and Southeast Washington (Benton, Franklin, Klickitat, Yakima, Kittitas, Walla Walla, Columbia, Garfield, and Asotin counties).

Dates:

The Pendleton Fire Weather Program is committed to a program with staff trained to respond to incident needs 24 hours per day, 7 days a week. The dates are flexible to meet conditions and the needs of the community:

Spring / Fall Burning Seasons:

May 1st – May 31th and October 1nd – October 31st

Summer Peak Wildfire Season:

June 1st – September 30th

STAFF:

Name	Position	email Address
Mike Vescio	Meteorologist-in-Charge	michael.vescio@noaa.gov
Edward Townsend	Science and Operations Officer	edward.townsend@noaa.gov
Katy Branham	Warning Coordination Meteorologist	katy.branham@noaa.gov
Mary Wister	Fire Weather Program Leader/IMET	mary.wister@noaa.gov
Christel Bennese	Co-Fire Weather Program Leader/IMET trainee	christel.bennese@noaa.gov
Matt Callihan	IMET	matthew.callihan@noaa.gov

There will be always be a forecaster on shift certified to issue spot forecasts and will remain annually proficient.

WEATHER BRIEFINGS:

NWS Pendleton will continue to provide a weekly outlook for fire weather every Sunday by 1500 PDT beginning April 15 through the end of October (or longer if necessary) again this season. A series of slides will demonstrate the impacts through the week.

In addition, forecasters will provide a routine webinar from Monday through Friday at 0930 PDT via GoToWebinar. The starting date for the webinar will be announced as weather and fuels become drier (typically mid-May). Copies of the presentation slides will be provided shortly after the webinar.

On Saturdays and holidays, an email will be provided before 1500 PDT that will discuss fire concerns in the next 3-5 days that meet the "yellow" or higher criteria seen below.

Fire Weather Impact Level Table

Situation	Fire Weather Watch or Red Flag Warning	Impact Level
Impactful fire weather not expected	No	1
Elevated fire danger (highlight the impact as a headline in RFW)	No	2
Low-end Red Flag Event (High Fire Danger)	Yes	3
Abundant Lightning with LAL 3 or higher and not accompanied by significant rainfall (> than 0.25").	Yes	3
Wind and Low RH	Yes	3
Dry and Unstable Air Mass	Yes	3
Moderate- or high-end Red Flag event (Extreme fire danger with large ongoing fires)	Yes	4
Red Flag Event with extreme wildfire conditions with large ongoing fires (e.g., Labor Day 2020)	Yes	5

As always, please contact the office at (541) 276-4493 for any concerns or questions you have. Weather consultation is available 24 hours per day, year round, by calling the fire weather desk.

FIRE WEATHER CHAT ROOM:

NWSChat has a new version that offers better collaboration with our fire weather partners. A private channel is available for our core partners wfo-pendleton-or-firewx. For registration information, contact katy.branham@noaa.gov.

FORECAST SERVICES:

Forecast Grids/Graphics:

Fire Weather Planning Forecasts:

Fire Weather Planning Forecasts are available twice a day 7 days a week no later than 0700 PDT and 1500 PDT.

The Pendleton Fire Weather forecast area of responsibility is sectioned by Fire Weather Zones. OR641/WA691, OR643/WA692, and OR645/WA693 will typically be combined into single zone forecasts unless conditions warrant separating them. This usually results in 11 separate zone forecasts. These zones are based on terrain, elevation, weather characteristics, and political boundaries. Please see the district map on the following page for specific outlines of the Fire Weather Zones.

The zone names are as follows:

OR610 – East slopes of the central Oregon Cascades

OR611 – Deschutes National Forest

OR639 – East slopes of the northern Oregon Cascades

OR640 – Central Oregon Mountains

OR641 – Columbia Basin of Oregon

OR642 – Southern Blue and Strawberry Mountains

OR643 – Northern Blue Mountains of Oregon

OR644 – Central Blue Mountains

OR645 – Wallowa District

WA690 – Kittitas Valley

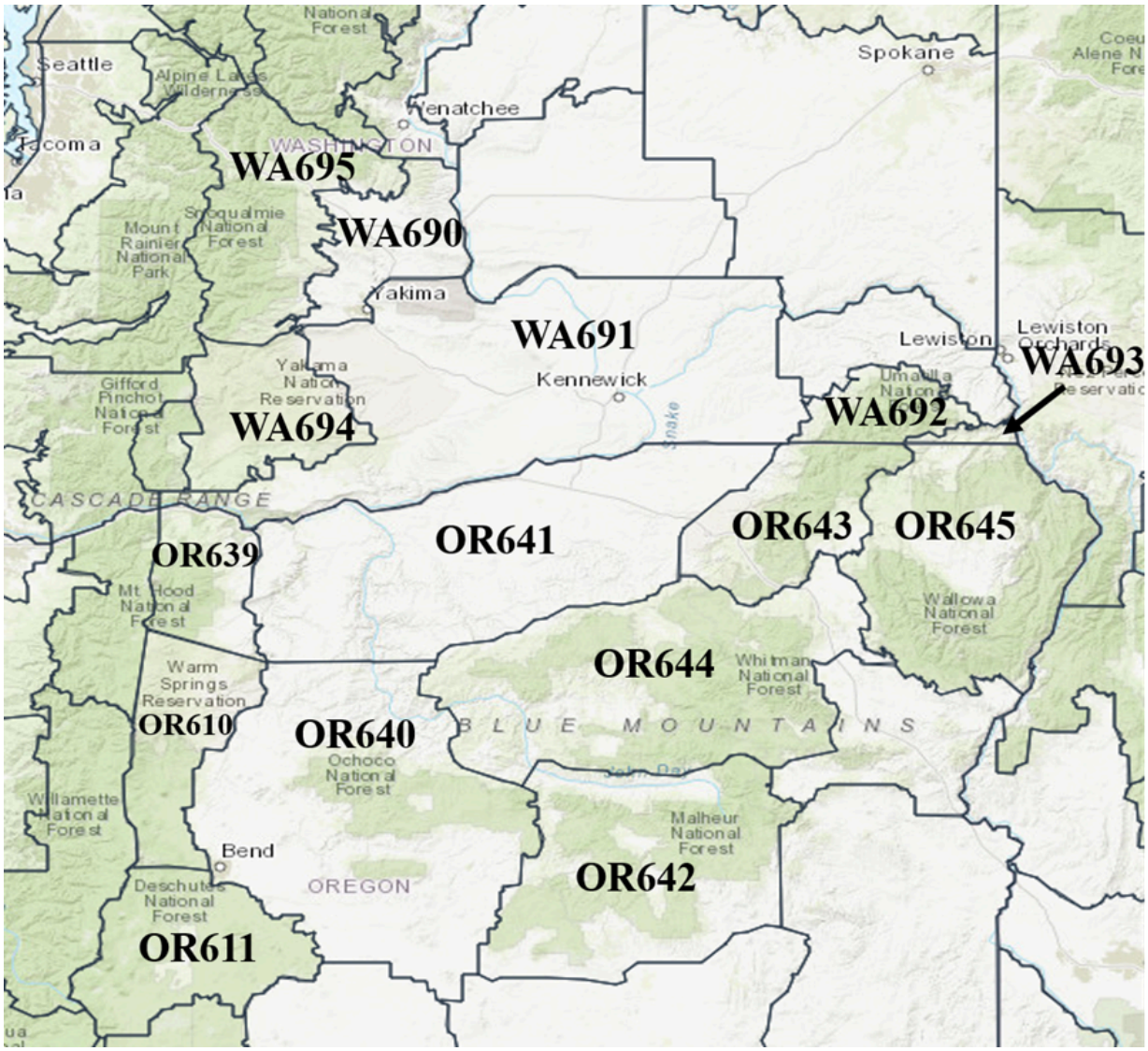
WA691 – Lower Columbia Basin of Washington

WA692 – Blue Mountains of Washington

WA693 – Southeast Washington Grande Ronde Valley

WA694 – Yakama Alpine District

WA695 – East Slopes of the South Central Washington Cascades



Fire Weather Watch and Red Flag Warnings:

Specific Red Flag criteria differ for each situation and district. The following are criteria that would warrant the issuance of a Fire Weather Watch or Red Flag Warning in the Pendleton Fire Weather area of responsibility.

Underlying conditions:Fire Weather Watches or Red Flag Warnings are issued when the fuels will readily burn and weather conditions will promote extreme burning. The three steps below are forecaster guidelines for determining the need for a watch/warning.

1. Refer to GACC “Overall Fire Environment” for probability of large fires. Levels should not be Green (less than 1% chance).
2. The forecaster is required to check with fire/land management agencies to ensure fuels are considered critically dry enough to carry or spread fire. Usually, the fire weather program manager will have already done this and declare when a zone is eligible for RFWs for the remainder of the season. However, if a forecaster strongly feels that a RFW is needed but a zone has not yet been declared eligible, the forecaster can check with the fire/land management agencies themselves via the morning briefing call or with individual phone.
3. Forecasters should have a high degree of confidence (60% for watch, 80% warning) that the Red Flag weather event will occur.

Red Flag Warning Criteria:

Any single event, or a combination, of the following events combined with critically dry fuels is criteria for the issuance of a Fire Weather Watch or a Red Flag Warning depending on the lead time:

- **LIGHTNING: Please see page 12 for further information regarding LAL** Abundant lightning in conjunction with sufficiently dry fuels (fuels remain dry or critical during and after a lightning event). Warnings are not typically issued for isolated coverage events. Warnings not typically issued for events that will be accompanied by significant rain (greater than 0.25 inches). However, if a lightning event will occur with significant rain, but is then followed by very hot and dry conditions, a warning may be issued if holdover/sleeper fires are a concern.

  Resulting Impact of the Event: Numerous fire starts can spread fire resources too thin resulting in a greater likelihood of a start becoming a large and potentially costly wildfire.

- **DRY & UNSTABLE AIRMASS: Please see page 12 for further information regarding Haines.** High elevation Haines Index of 6 in combination with RH of 15% or less over half or more of a zone. Warnings may also be issued for a Haines 5 in situations where large fires may be impacted. Ground truth indicates that there is very little to no difference in fire activity between Haines 5 and Haines 6 days.

  Resulting Impact of the Event: Very dry and very unstable conditions create a high likelihood that a fire start will exhibit extreme burning conditions. Extreme fire behavior is possible including rotating smoke columns and fire whirls (a.k.a. fire tornados) along with an increased threat to fire fighter safety. Note: this event does not start fires but can have a significant impact to ongoing fires.

- **WIND & LOW HUMIDITY:** Significant sustained winds combined with low relative humidity (this includes significant dry cold frontal passages) that meets the criteria as defined below at **TWO** or more RAWS locations simultaneously for two consecutive hours. Other supplementary locations (converted to RAWS 20 foot/10 minute average wind standards) may also be used if they are deemed representative of burning conditions at the time.

Zone OR639: Relative Humidity at 20% or less **AND** sustained wind speed 10 mph or greater.

Zone OR610: Relative Humidity at 15% or less **AND** sustained wind speed 10 mph or greater. Haystack RAWS (located in zone OR640) will be included for verification purposes in this zone as well.

Zone OR611: Relative Humidity at 15% or less **AND** sustained wind speed 10 mph or greater. Timothy RAWS (located in zone OR624) will be included for verification purposes in this zone as well.

Zone WA690: Relative humidity of 20% or less **AND** wind speed 15 mph.

Zone WA695: Relative humidity of 25% or less **AND** wind speed 15 mph.

Zones OR640, OR/WA641, OR642, OR/WA643, OR644, OR/WA645, WA675, & WA681: Refer to the following tables:

Columbia Basin - Zones OR641/WA691		Sustained Wind (MPH) Over Widespread Area				
		10	15	20	25	30+
RH	35%					W
	30%				W	W
	25%			W	W	W
	20%		W	W	W	W
	15%		W	W	W	W
	10%		W	W	W	W

The Central and Northeast Oregon Mountains / Yakama Alpine - Zones OR640, OR642, OR643, OR644, OR645, WA692, WA693 and WA694

		Sustained Wind (MPH) Over Widespread Area				
		10	15	20	25	30+
RH	30%					W
	25%				W	W
	20%			W	W	W
	15%		W	W	W	W
	10%		W	W	W	W

Red Flag Warning Dissemination:

A Red Flag Warning dissemination call list has been established in order to rapidly disseminate Fire Weather Watches, Red Flag Warnings, or other rapidly changing weather conditions that do not necessarily meet Red Flag criteria, but will affect fire control or pose a safety threat. **NWS Pendleton will contact the affected dispatch centers who will then contact other affected land management agencies in those zones per the following Table**:

Red Flag Warning dissemination call list to Dispatch Centers

NWS PDT

↓

Zone WA = Washington OR = Oregon	ORBMC 541-963-7171	ORCOC 541-316-7772	ORJDC 541-575-1321	WACCC 360-891-5140	WACWC 509-884-3473	WAHNC 509-373-3221	ORWSC 541-553-2413	WAYAC 509-865-6653
OR 639				▲				
OR 610		▲					▲	
OR 611		▲						
OR 640		▲						
WA691	▲			▲	▲	▲		▲
OR 641	▲	▲						
OR 642	▲	▲	▲					
WA692 OR 643	▲							
OR 644	▲							
WA693 OR 645	▲							
WA690					▲			▲
WA695					▲			

▲ Indicates to call Dispatch Center(s) based on which zone(s) warning(s) issued for.

ORBMC = Blue Mountain Interagency Dispatch

ORJDC=John Day Dispatch

ORCOC = Central Oregon Dispatch

WACWC=Central Washington Dispatch

WAHNC = Hanford Fire

WACCC = Columbia Cascade Dispatch

WAYAC=Yakama BIA Dispatch

ORWSC=Warm Spring BIA

IMET Support:

Forecasters at National Weather Service Pendleton will provide 24-hour forecast support to IMETs that may be dispatched in the local area. Forecasters will communicate either through direct phone calls, video conferencing, Google chat,, or the use of NWSChat..

NON-FORECAST SERVICES:

All requests for teaching assignments, customer meetings, and customer consultations will be honored provided they are scheduled more than three weeks ahead of time. Every effort will be made to honor requests made within a period of less than three weeks depending on schedule availability. Please contact Mary Wister or Christel Bennese at NWS Pendleton (541) 276-4493, or by e-mail (mary.wister@noaa.gov and christel.bennese@noaa.gov) to schedule these services.

Pendleton NFDRS Fire Weather Station Index

Zone	Name	NFDRS	Type	Agency	Lat	Long	Elev	Slope/Aspect
OR639	Middle Mtn	350812	RAWS	ODF	45.5794	121.5970	2500	N-S Ridge
OR639	Pollywog	350912	RAWS	USFS	45.4586	121.4464	3320	Lwr slope-S
OR639	Wamic Mill	350913	RAWS	USFS	45.2333	121.4500	3320	Upr slope-S
OR639	Wasco Butte	350919	RAWS	ODF	45.6167	121.3353	2345	Butte top
OR610	Sidwalter	350909	Manual	BIA	44.925	121.5347	3600	Butte top-NW
OR610	Mt Wilson	350916	RAWS	BIA	45.0397	121.6736	3780	Midslope-SW
OR610	Mutton Mtn	350917	RAWS	BIA	44.9255	121.1978	4100	S-N Ridge
OR610	He He 1	350920	RAWS	BIA	44.9559	121.4992	2689	Flat
OR610	Shitike Butte	352102	Manual	BIA	44.7449	121.6106	5000	Butte top
OR610	Eagle Butte	352106	Manual	BIA	44.8399	121.2338	3100	Butte top

OR610	**Warm Springs**	**352108**	**RAWS**	**BIA**	**44.7750**	**121.2541**	**1632**	**Valley**
OR610	**Metolius Arm**	**352110**	**RAWS**	**BIA**	**44.6275**	**121.6147**	**3440**	**Butte-SW**
OR610	**Colgate**	**352620**	**RAWS**	**USFS**	**44.3156**	**121.6022**	**3280**	**Flat**
OR611	**Round Mtn**	**352605**	**RAWS**	**USFS**	**43.7575**	**121.7102**	**5900**	**Butte top**
OR611	**Lava Butte**	**352618**	**RAWS**	**USFS**	**43.9253**	**121.3429**	**4655**	**Butte top-S**
OR611	**Tepee Draw**	**352622**	**RAWS**	**USFS**	**43.8322**	**121.0842**	**4740**	**Lwr slope-E**
OR611	**Black Rock**	**353342**	**RAWS**	**USFS**	**43.527**	**121.8090**	**4880**	**Lwr slope-S**
OR611	**Cabin Lake**	**353402**	**RAWS**	**USFS**	**43.4956**	**121.0597**	**4545**	**Flat**
OR611	**Tumalo Ridge**	**352621**	**RAWS**	**ODF**	**44.0493**	**121.4001**	**4000**	**Ridge-NW**
OR640	**Haystack**	**352107**	**RAWS**	**USFS**	**44.4494**	**121.1297**	**3240**	**Flat**
OR640	**Brown's Well**	**353428**	**RAWS**	**BLM**	**43.5628**	**121.2360**	**4500**	**Flat knob-SW**

OR640	**Cold Springs**	**352701**	**RAWS**	**USFS**	**44.3550**	**120.1335**	**4695**	**Flat**
OR640	**Salt Creek**	**352712**	**RAWS**	**BLM**	**44.0467**	**120.6694**	**4200**	**Flat**
OR640	**Badger Creek**	**352711**	**RAWS**	**USFS**	**44.0311**	**120.4083**	**5680**	**Midslope-flat**
OR640	**Slide Mountain**	**352207**	**RAWS**	**USFS**	**44.4622**	**120.2945**	**5700**	**Upr slope-NE**
OR640	**Brer Rabbit**	**352208**	**RAWS**	**USFS**	**44.333**	**119.770**	**5900**	**Valley-S**
OR640	**Board Hollow**	**352109**	**RAWS**	**ODF**	**44.6038**	**120.6847**	**4200**	**Ridge-flat**
WA691	**Juniper Dunes**	**453201**	**RAWS**	**BLM**	**46.3575**	**118.8683**	**950**	**Flat**
WA691	**Goldendale**	**452408**	**RAWS**	**DNR**	**45.881**	**120.634**	**1690**	**Flat knob-S**
WA691	**The Dalles**	**452406**	**ASOS**	**FAA**	**45.6190**	**121.1657**	**210**	**W-E valley**
WA691	**Saddle Mtn**	**452701**	**RAWS**	**USFWL**	**46.6944**	**119.6936**	**650**	**Flat**
OR641	**Patjens**	**351001**	**RAWS**	**BLM**	**45.3219**	**120.9292**	**2230**	**Ridge-SW**

OR641	**North Pole Rdg**	**350915**	**RAWS**	**BLM**	**45.0329**	**120.5357**	**3500**	**Ridge-W**
OR641	**Umatilla NWR**	**351316**	**RAWS**	**USFWL**	**45.9180**	**119.5675**	**270**	**Flat**
OR642	**Crow Flat**	**353515**	**RAWS**	**USFS**	**43.8413**	**118.9521**	**5130**	**Valley-S**
OR642	**Allison**	**353501**	**RAWS**	**USFS**	**43.9214**	**119.5964**	**5320**	**Valley-S**
OR642	**Fall Mountain**	**352327**	**RAWS**	**USFS**	**44.2970**	**119.0370**	**5949**	**SW-NE Ridge**
OR642	**Antelope**	**353524**	**RAWS**	**BLM**	**44.0384**	**118.4163**	**6460**	**N-S Ridge**
OR642	**Crane Prairie**	**352305**	**RAWS**	**USFS**	**44.1601**	**118.4704**	**5373**	**Valley-S**
OR642	**Yellowpine**	**352124**	**RAWS**	**USFS**	**44.5263**	**118.3230**	**4200**	**Lwr slope-E**
WA692	**Alder Ridge**	**453803**	**RAWS**	**USFS**	**46.2685**	**117.4983**	**4550**	**Ridge-S**
OR643	**Eden**	**351518**	**RAWS**	**USFS**	**45.8763**	**117.6160**	**3500**	**Upr slope-S**
OR643	**Black Mtn Rdg**	**351319**	**RAWS**	**USFS**	**45.5738**	**118.2385**	**4965**	**Ridge-Sw**

OR643	**LaGrande 1**	**351417**	**RAWS**	**ODF**	**45.5508**	**118.0133**	**3079**	**Lwr slope-E**
OR644	**Case**	**352329**	**RAWS**	**USFS**	**44.9711**	**118.9297**	**3800**	**Ridge-flat**
OR644	**Tupper**	**351202**	**RAWS**	**USFS**	**45.0667**	**119.4925**	**4200**	**Lwr slope-S**
OR644	**Board Creek**	**352330**	**RAWS**	**BLM**	**44.5930**	**119.2770**	**5000**	**Ridge**
OR644	**Keeney 2**	**352332**	**RAWS**	**USFS**	**44.6661**	**118.9219**	**5120**	**Ridge**
OR644	**J Ridge**	**351414**	**RAWS**	**USFS**	**45.1135**	**118.4051**	**5180**	**Upr slope-SE**
OR644	**Elk Creek**	**352126**	**RAWS**	**USFS**	**44.7577**	**117.9711**	**6576**	**Upr Slope**
OR645	**Point Prom 2**	**351419**	**RAWS**	**USFS**	**45.3547**	**117.7044**	**6600**	**N-S Ridge**
OR645	**Roberts Butte**	**351520**	**RAWS**	**USFS**	**45.6811**	**117.2067**	**4300**	**N-S Ridge**
OR645	**Harl Butte**	**351502**	**RAWS**	**USFS**	**45.3282**	**116.8774**	**6071**	**Butte top-S**
OR645	**Sparta Butte**	**352418**	**RAWS**	**USFS**	**44.8850**	**117.3383**	**4300**	**Midslope-SW**

WA690	**Ellensburg**	**452203**	**ASOS**	**FAA**	**47.03**	**120.54**	**1560**	**NW-SE valley**
WA694	**Signal Peak**	**452307**	**RAWS**	**BIA**	**46.2269**	**121.1375**	**5052**	**Ridge-S**
WA694	**Mill Creek**	**452304**	**RAWS**	**BIA**	**46.2625**	**120.8622**	**2928**	**Midslope-flat**
WA694	**Teepee Creek**	**452317**	**RAWS**	**BIA**	**46.1642**	**121.0331**	**2980**	**Midslope-flat**
WA694	**Grayback**	**452404**	**RAWS**	**DNR**	**45.9908**	**121.0838**	**3766**	**Ridge**
WA694	**High Bridge**	**452318**	**RAWS**	**BIA**	**46.0811**	**120.5440**	**2106**	**Midslope-N**
WA695	**Sedge Ridge**	**452306**	**RAWS**	**DNR**	**46.58**	**120.90**	**4300**	**Ridge**
WA695	**Sawmill Flats**	**452221**	**RAWS**	**USFS**	**46.98**	**121.08**	**3500**	**Midslope-S**
WA695	**Peoh Point**	**452206**	**RAWS**	**DNR**	**47.15**	**120.95**	**4020**	**Midslope-NE**
WA695	**Swauk**	**452219**	**RAWS**	**USFS**	**47.25**	**120.67**	**3773**	**Upr slope-N**

2024

Portland Fire Weather Operating Plan

Bedrock Fire – July 27, 2024 - USFS

PORTLAND FIRE WEATHER

Changes for 2024:

- New Fire Weather Zones
- Introduction of the Particularly Dangerous Situation (PDS) Red Flag Warning for Wind/RH criteria
- New Fire Weather Program Leader and team members
- Change in night time Red Flag Criteria and verification

Future potential changes:

- Evaluation of the new criteria that will be used for Dry and Unstable Red Flag Warning issuances

LOCATION

National Weather Service Forecast Office
5241 NE 122nd Avenue
Portland, OR 97230-1089

HOURS

The National Weather Service Office is open 24 hours a day, 7 days a week. While there is no specific fire weather forecaster on duty, there will be a meteorologist working specifically on the fire weather forecast and all components. There is a specific fire weather phone line that can be used by all fire personnel. Spot forecasts are also 24 hours a day, 7 days a week.

STAFF

- Tanja Fransen — Meteorologist in Charge
- Treena Jensen — Warning Coordination Meteorologist
- Colby Neuman — Science Operations Officer

- Rebecca Muessle — Fire Weather Program Manager, IMET
- Thomas Schuldt — Fire Weather Team, IMET (t)
- David Bishop — Fire Weather Team, IMET (t)

CONTACT

Telephone

- Fire Weather Desk — 503-326-2420
- Lead Forecaster (24 hrs) — 503-326-3720
- FAX — 503-326-2598

- Internet — http://www.wrh.noaa.gov/fire2/?wfo=pqr
- Facebook page — http://www.facebook.com/NWSPortland
- X (formally Twitter) — https://www.twitter.com/NWSPortland | @NWSPortland

Email

Fire Weather Focal Point: Rebecca.muessle@noaa.gov
Fire Weather Team: pqr.fire.team@noaa.gov

FORECAST DISTRICT

Oregon zones: 680-690, 636
Washington zones: 630-636

**Fire weather zone 636 covers both Oregon AND Washington.*

Geographically, these zones represent Northwest Oregon and Southwest Washington, North Oregon Cascades including the Columbia River Gorge (to about Viento). South Washington Cascades and adjacent lowlands of Clark County. See Appendix for maps showing the names of each zone and the RAWS stations that are included.

AGENCIES SERVED

- U.S. Forest Service (USFS)
- U.S. Bureau of Land Management (BLM)
- Oregon Department of Forestry (ODF)
- Washington Department of Natural Resources (WDNR)
- Various urban, rural, local, and tribal fire districts

FORECAST SERVICES

- General Forecast Information: Fire Weather forecast grids from the Portland Fire Weather Office can be found at: http://digital.weather.gov
- Point and click Fire Weather forecast information can be accessed at: https://www.weather.gov/wrh/fire?wfo=pqr

SPOT FORECASTS

Detailed weather information beyond what is presented in the general forecast may be obtained with a spot forecast request 24/7. Spot forecasts may be requested by a telephone call to the fire weather forecaster or through the spot forecast request web page available on the Portland fire weather web page at: NWS Spot Request Page

Click on the above link to get to the spot request form. To monitor existing spots and to check the status of spot requests, click on the ***"Monitor"*** box at the top of the page. Contact the Portland Fire Desk for any questions or guidance using the new spot page.

Spot forecasts are only available for government based entities. If you are a private entity working on a prescribed burn, please ask your government representative to request the spot forecast.

FIRE WEATHER FORECAST (FWF)

All fire season time frames are coordinated with local fire agencies to meet their needs. Gusts will be included when the 10-minute wind speed is 10 mph or greater. Below are the general time frames for reference.

Off Season: Regularly scheduled FWFs are issued once per day by 0600. These are fully automated and are not reviewed by a forecaster.
Fire Season: Regularly scheduled FWFs are issued twice per day by a weather forecaster around 0600 and by 1500 PDT.
Prescribed Burning Season: Regularly scheduled FWF are issued by a weather forecaster Monday through Friday around 0600 and 1500 PDT.

The following fire specific features are forecast by NWS Portland:

- Chance of Wetting Rain. A wetting rain is defined as one quarter inch or more of rain in 12 hours or less.
- Mid Level Haines and High Level Haines
- Mixing heights
- Transport winds

NFDRS TREND FORECASTS

Seven-day numerical point forecasts for NFDRS stations are prepared and disseminated to WIMS by 1530 each afternoon. The point forecasts are used to compute the expected NFDRS indices valid the following day. The number of NFDRS point forecasts made by the weather office depends only on the number of NFDRS observations input into WIMS by the fire agencies. If observations are not entered into WIMS by 1500 however, a forecast will not be produced for that station. During the *offseason*, the day one output, which is produced by the NWS in Portland, is automated. During the *prescribed burning season*, the day one output will be quality controlled and edited if needed by a weather forecaster. Days 2-7 will not be edited.

FUELS STATUS DETERMINATION

NWCC issues a 7-day Significant Fire Potential forecast. This forecast includes dryness level inputs, but also incorporates stability, wind, and forecast lightning amounts. Thus, another objective to determine fuel availability had to be determined.

The Portland Forecast Office will continue to use zone-average ERC percentiles. The ERC values for all RAWS sites within the Portland Fire weather area will be evaluated daily, and then an overall zone color-code assigned as follows. These values will be supplemented with observations from fire managers in the field.

For a YELLOW or RED zone designation, one-half or more RAWS within a zone must have an individual ERC value at or above the 71st percentile.

70th PERCENTILE VALUE or less = GREEN

71st – 79th PERCENTILE VALUE = YELLOW

80th PERCENTILE or greater = RED

RED FLAG WARNING/FIRE WEATHER WATCH

A Red Flag Warning (RFW) or Fire Weather Watch (FWW) will be issued when there is a combination of critically dry fuels and weather conditions forecast that would promote rapid fire spread. Evaluations of fuel conditions will be made in accordance with current NFDRS Energy Release Component (ERC) values obtained by the Northwest Coordination Center, RAWS, and in consultation with local, state, tribal, and federal fire managers.

Assuming the above fuel conditions are met, Fire Weather Watches and Red Flag Warnings are issued for the following events:

A. **COMBINATION OF WIND AND LOW HUMIDITY**
   a. Daytime: RH 25% or less **AND** 10-minute wind speeds for 4 hours or more of:
      i. At a RAWS station: 10 mph AND/OR frequent gusts to 20 mph
      ii. At an ASOS (airport): 15 mph AND/OR frequent gusts to 25 mph

**Nighttime Wind and Low Humidity criteria have been removed, thus the criteria for both day and night will be the same.*

B. **DRY AND UNSTABLE AIR MASS**
   a. Mid and/or High level Haines 6, RH 25% or less, AND critical fuel conditions.

      Zones 634, 688, 689, and 690: Issued ONLY when a large fire exists. Large fire defined as an incident with a Type 1 or Type 2 IMT.

C. **LIGHTNING**
   a. Scattered thunderstorm coverage, critical fuels **AND** no appreciable change in fuel conditions after the event.

Starting in the 2024 season, the NWS Portland will start incorporating extreme wording in Red Flag Warnings highlighting "Particularly Dangerous Situations" (PDS). These PDSs are not an individual product but rather highlighted wording within the current Red Flag Warnings noting the extreme nature of the weather conditions that are climatologically anomalous. These will generally be issued for wind that meets the 99.999th percentile for highest winds. PDSs should not be issued more than once in a 3-5 year period. These scenarios will also be emphasized in the Area Forecast Discussions, briefings, and via emails.

RED FLAG VERIFICATION

Red Flag warnings will be verified using the following criteria:

A. COMBINATION OF WIND AND LOW HUMIDITY

a. At least two stations within a zone must report 25% humidity or less **AND** wind-speed of 10 mph or more OR gusts to 20 mph or more for at least four hours in an 8-hour block.

b. These conditions occur typically during east wind (offshore flow), but can occur in the Coast Range and central/south Willamette Valley with north to northeast wind. Can also occur in the Central Cascades and foothills with shallow marine surges (west to northwest wind).

B. **CRITICALLY DRY AND UNSTABLE AIR MASS**

a. The 12Z or 00Z weather balloon launch at McNarry Field (Salem Airport - KSLE) must calculate to a value of Haines 5 or Haines 6, which must coincide with a day of fire growth, or other fire related instability features (ie fire whirls, extreme column growth, pyrocumulus, etc).

C. **LIGHTNING IN COMBINATION WITH DRY FUELS**

a. Dry thunderstorm: Abundant lightning in conjunction with sufficiently dry fuels.

b. Abundant Lightning:

i. Number of lightning strikes that are climatologically significant, or…
ii. Areal coverage of lightning such as “Scattered” or $\geq$ 25%

c. Sufficiently Dry Fuels:

i. No appreciable change in fuel conditions the day of and the day following a thunderstorm event, or
ii. ERC or BI values meeting climatologically significant percentiles, or
iii. Land management declaration

**This is a very rare event which, climatologically, has the highest likelihood of occurrence in the south half of the Willamette N.F.*

Fuel Conditions **SHOULD** be in the 80th percentile (red) or higher, and expected lightning frequency such that multiple starts (5-7) are expected. Under unusual or extreme conditions, a Red Flag Warning can also be issued when fuel conditions are in the 70th percentile (yellow). Basically, “scattered” thunderstorms that do not produce enough precipitation to appreciably change the overall fuel conditions from “red” or high-end “yellow”.

USER BRIEFINGS

User Briefings (held at 9:40 AM): Portland fire weather conducts fire weather briefings at 0940 PDT via GoTo Meeting. These briefings will be hosted in the following way:

1. *Pre-season (end of May until fuels are dry)*: Live briefings will be held on Sundays at 0940 and a recording will be made available on our website at www.weather.gov/pqr/FireWxRecording
2. *During the season (fuels are dry and burnable)*: Live briefings will be conducted Monday, Wednesday and Friday when fuels in the majority of fire weather zones become Red Flag eligible. A recording will be made available on our website at www.weather.gov/pqr/FireWxRecording
3. *Daily briefings:* These briefings will be "ramped up" or "ramped down" based on the progress of the season. They will be scheduled when a critical fire weather pattern is expected, when there is a wildfire on the landscape with an Incident Meteorologist (IMET), and/or when the regional planning level is 4 or 5. If a transition to daily briefings occurs, it will be communicated in the previous day's briefing and via email.

Fire weather users are encouraged to participate. During live briefings, the forecaster will verbally highlight current and forecast fire weather conditions with the help of an internet web page. The fire weather briefing page contains the forecast model graphics and several NDFD graphics. In all instances, the briefing will be recorded and posted to the fire weather web page. The URL for the briefing graphics is: Fire Weather Briefing Graphics Graphics will be available by 0700 PDT.

User Needed telephone briefings: Verbal weather briefings can also be obtained at any time by contacting the forecast office.

INCIDENT METEOROLOGIST SERVICES

Portland has one certified Incident Meteorologist (IMET) and two IMET Trainees on staff available for wildfire, HAZMAT, or other emergency dispatches. To request an IMET, contact the appropriate fire agency dispatch office or the National Fire Weather Operations Coordinator (NFWOC) in Boise, ID.

OTHER SERVICES

FIRE WEATHER TRAINING AND OUTREACH

An experienced fire weather forecaster will be available to help instruct the weather sections of standard fire behavior training courses offered by federal, state and local government fire agencies. This includes S-190 through S-590, and other courses including those in the RT series. In addition, a forecaster may also be available for special speaking engagements, public

outreach, and preparedness exercises. For scheduling purposes, requests for an instructor or speaker should be made at least four weeks in advance.

To request an instructor contact Tanja Fransen at tanja.fransen@noaa.gov. For outreach, tours, or exercises, please contact Treena Jensen at treena.jensen@noaa.gov and Rebecca Muessle at rebecca.muessle@noaa.gov.

Fire Weather Zones

Starting in March of 2024, the fire weather zones have been changed in both Oregon and Washington. The new zone configuration was designed to better align with the FDRAs and to better accommodate warnings within more detailed areas. The new zones are as follows:

In Washington:

Zone 630 - Southern Washington Coast & Willapa Hills
Encompasses the west slopes of the southern Washington Coast Range including the beaches. Cities and counties included are: Pacific and Wahkiakum Counties, Ocean Park, and Raymond. A small western portion of Lewis County is also included.

Zone 631 - Cowlitz River Lowlands & Eastern Willapa Hills
Encompasses the eastern slopes of the southern Washington Coast Range, and generally west of Interstate-5. Cities and counties included are: Cowlitz County, Ryderwood, Castle Rock and Longview.

Zone 632 - Cowlitz County Foothills
Encompasses Cowlitz County, portions of the eastern slopes of the Coast Range and the southwest Washington Cascade foothills. Cities and landmarks include: the Toutle Range, Kalama, Turtle River and the city of Ariel.

Zone 633 - Clark County Lowlands & Swift River Reservoir Region
Encompasses southern portions of Clark County northeastward along the Lewis River. Landmarks include: Lake Merwin, Yale Lake and Swift Reservoir. Cities include: Battle Ground, Vancouver and areas west of the ridgeline that divides Camas and Washougal. Notable fires include: Black Hole, Nakia Creek (2022)

Zone 634 - Southern Gifford Pinchot National Forest
Encompasses the Gifford Pinchot National Forest from Skamania County south. Notable areas are: East Fork Lewis River, Siouxon Creek, the Crazy Hills, Mt St Helens, and areas south of East Canyon Ridge. Notable fires include: Snagtooth/Cowlitz Complex (2023); Big Hollow (2020)

Zone 635 - Mt Adams Ranger District of the Gifford Pinchot National Forest
Encompasses eastern Skamania County, the Monte Cristo Range, and portions of the White Salmon River. This zone spills into portions of Klickitat and Yakima Counties. Landmarks include: Trout Lake. Notable fires include: Cougar Creek (2015)

Zone 636 - Western Columbia River Gorge in Oregon & Washington
Encompasses the western Columbia River Gorge from Camas, WA and Troutdale, OR eastward to Viento State Park and south of East Fork Lewis River. This zone is unique as it covers **both** Oregon and Washington, though it is labeled as a Washington zone. Notable fires include: Eagle Creek (2017)

Note, that there is an Oregon zone 636 in southeast Oregon. These two are **not the same zone.*

In Oregon:

Zone 680 - Northern Oregon Coast
Encompasses the west slopes of the northern Oregon Coast Range to the coastline from Highway 18 northward. Counties include: Clatsop and Tillamook. Cities include: Astoria, Cannon Beach, Tillamook, Neskowin, and Big Creek. Notable fires include: Echo Mt (2020)

Zone 681 - Central Oregon Coast
Encompasses the west slopes of the central Oregon Coast Range to the coastline in Lincoln and Lane Counties. This zone encompasses a small portion of Douglas County from Reedsport north. Cities and notable landmarks include: Siuslaw National Forest, Newport, Lincoln City, and Florence. Notable fires include: Echo Mt (2020)

Zone 682 - Northern Oregon Coast Range
Encompasses the northern Oregon Coast Range from Yamhill County north. This zone includes portions of the Siuslaw National Forest in Yamhill County, and the boundary is just north of the Grand Ronde Community. Counties include: Clatsop, Columbia, Tillamook, Washington and Yamhill. Cities and landmarks include: St Helens, Vernonia, and Barney Reservoir.

Zone 683 - Central Oregon Coast Range
Encompasses the central Oregon Coast Range to the coastline from Grand Ronde through Lane County north of Highway 38. The eastern boundary is marked by elevations above 500 ft west of Finley National Wildlife Refuge. Counties included are: Yamhill, Tillamook,Polk, Lincoln, Benton and Lane. Cities and landmarks include: Alsea, Siuslaw National Forest, Oxbow Burn, Cottage Grove, Philomath, and Falls City.

Zone 684 - Northern & Central Willamette Valley
Encompasses the Willamette Valley from the city of Jefferson northward along the Marion county border. Counties included are: Multnomah, Washington, Clackamas, Yamhill, Marion, and Polk. Cities and landmarks included in this zone are: Hillsboro, Forest Grove, Portland,

Woodburn, Salem, Eola Hills, and the Ankeny National Wildlife Refuge. Notable fires include: Vitae Springs Rd (2022); Dewley Rd (2020)

Zone 685 - Southern Willamette Valley
Encompasses the Willamette Valley from Jefferson southward including the lowlands around Eugene and Creswell. Counties included are: Lane, Linn, and portions of Benton. Cities and landmarks include: Albany, Junction City, Eugene, Lowell, and Scio.

Zone 686 - Northern Oregon Cascade Foothills
Encompasses the foothills of the north Oregon Cascades from Highway 22 northward. Notable cities and landmarks include: Silver Falls State Park, Santiam State Forest, Mill City, Molalla, Estacada, Sandy and the western Bull Run Watershed. Notable fires include: Riverside, Beachie Creek (2020)

Zone 687 - Central Oregon Cascade Foothills
Encompasses the foothills of the central Oregon Cascades from Highway 22 southward. Notable cities and landmarks include: Sweet Home, Green Peter Lake, Coburg Hills, and Culp Creek. Notable fires include: Holiday Farm, Beachie Creek (2020)

Zone 688 - Mt Hood National Forest Region
Encompasses the Mt Hood National Forest from Nick Eaton Ridge southward. Notable features include: Wooley Horn Ridge, Bull Run Watershed, Mt Hood, Hunchback Mountain, and Timothy Lake. Counties include: Multnomah and Clackamas Counties. Notable fires include: Camp Creek (2023); Bull Complex (2021); Riverside, Lionshead (2020); Eagle Creek (2017)

Zone 689 - Northern Willamette National Forest
Encompasses the Willamette National Forest from generally North Fork/Middle Fork northward. Southern boundary tracks the ridgeline just north of Christy Flats. Counties include: Lane, and Marion. Cities and notable landmarks are: North Santiam River, Highway 20, Blue River Lake, McKenzie River and South Fork McKenzie River. Notable fires include: Lookout, Petes Lake (2023); Lionshead, Beachie Creek, Holiday Farm (2020); Terwilliger (2018); Whitewater, Separation, Rebel, Olallie Lookout, Avenue (2017)

Zone 690 - Southern Willamette National Forest
Encompasses the Willamette National Forest from generally North Fork/Middle Fork southward. Southern boundary near Calapooya Mountains. Generally only in Lane county but there is a small portion of Douglas County. Cities and notable landmarks are: Oakridge, Willamette Highway, Waldo Lake, and Fall Creek . Notable fires include: Bedrock (2023); Cedar Creek (2022); Middle Fork Complex (2021); Jones (2017)

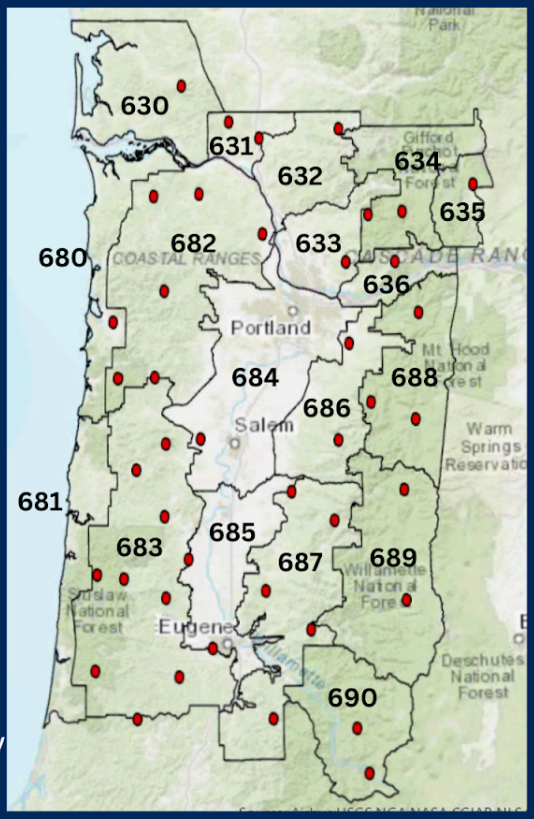
APPENDIX

NWS PORTLAND FIRE WEATHER ZONES

IN WASHINGTON:

630: Southern Washington Coast & Willapa Hills
631: Cowlitz River Lowlands and Eastern Willapa Hills
632: Cowlitz County Foothills
633: Clark County Lowlands & Swift Reservoir Region
634: Southern Gifford Pinchot National Forest
635: Mt. Adams Ranger District of the Gifford Pinchot National Forest
636: Western Columbia River Gorge in Oregon & Washington

NOTE: WAZ636
This zone covers both Washington & Oregon sides of the Western Columbia River Gorge. It will always be labeled WA as to not confuse it with the Oregon FWZ636 within Boise's forecast area.

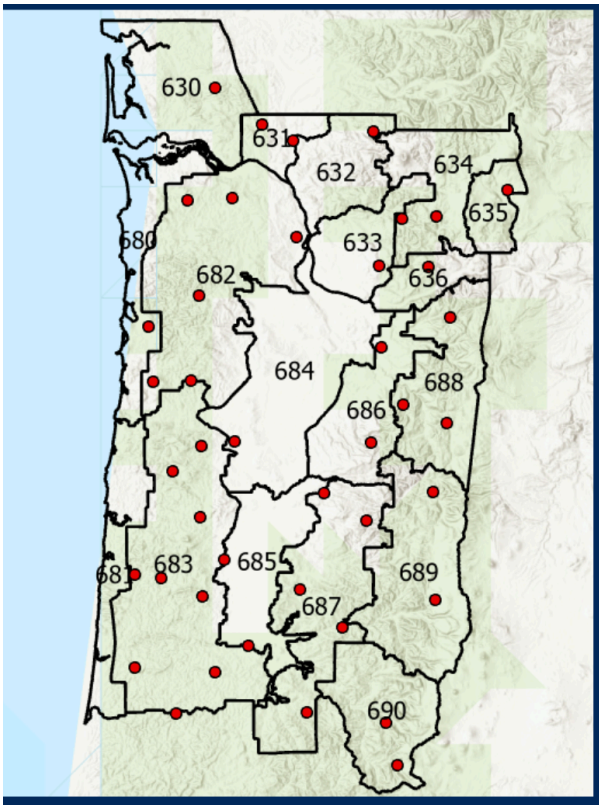


IN OREGON:

680: Northern Oregon Coast
681: Central Oregon Coast
682: Northern Oregon Coast Range
683: Central Oregon Coast Range
684: Northern & Central Willamette Valley
685: Southern Willamette Valley
686: Northern Oregon Cascade Foothills
687: Central Oregon Cascade Foothills
688: Mt. Hood National Forest Region
689: Northern Willamette National Forest
690: Southern Willamette National Forest

NOTE: ORZ690
Is only within Oregon. There is a WAZ690 that is within the Spokane's forecast area.

NWS Portland Fire Weather Zones



IN WASHINGTON:

630
Huckleberry Ridge

631
Abernathy Mt
Castle Rock

632
Elk Rock

633
Larch Mountain

634
Canyon Creek
Dry Creek

635
Buck Creek

636
3 Corner Rock

IN OREGON:

680
Tillamook

682
Cedar
Columbia Co. FG
Miller
Rye Mt
Southfork
Tide Water

683
Cannibal
Chandler
Corvallis/Finley
Devil's Graveyard
Gellatly
Goodwin Peak
High Point
Rockhouse 1
Village Creek
Wilkinson Ridge

684
West Zone Portable

685
Willow Creek

686
Eagle Creek
Horse Creek

687
Brush Creek
Green Mt
Jordan
Trout Creek
Yellowstone Mt

688
Log Creek
Red Box
Wanderers Peak

689
Boulder Creek
Pebble

690
Emigrant
Fields


Huckleberry Ridge
Castle Rock
Abernathy Mt
Elk Rock
Tidewater
Miller
Canyon Creek
Buck Ck
Columbia Co FG
Dry Ck
COASTAL RANGES
CASCADE RANGE
Larch Mt
3 Corner Rock
South fork
Tillamook
Portland
Log Creek
Rye Mt
Eagle Ck
Cedar
Wanderers Peak
West Zone
Portable
Red Box
Rockhouse
Horse Ck
Chandler
Jordan
Boulder Ck
Cannibal
Gellatly
Yellowstone Mt
Corvallis
Wilkinson
Ridge
Brush Ck
Pebble
Village Ck
Trout Ck
Willow Ck
Goodwin Peak
High Point
Fields
Devil's
Graveyard
Green Mt
Emigrant
Bend
Source: Airbus,USGS,NGA,NASA,CGIAR,NLS,OS,NMA,

Zone	Number	Name	Lat	Long	Agency	Elevation	Aspect
630	450407	Huckleberry Ridge	46.50	-123.38	DNR	2500	S on mid-slope
631	451209	Abernathy Mountain	46.34	-123.08	DNR	2000	Ridgetop
631	451207	Castle Rock	46.27	-122.89	DNR	213	S in valley
632	451208	Elk Rock	46.31	-122.39	USFS	2500	Ridgetop
633	451301	Larch Mountain	45.72	-122.35	DNR	1150	Ridgetop
634	451921	Canyon Creek	45.93	-122.20	USFS	2500	W on ridge
634	451924	Dry Creek	45.94	-121.99	USFS	2549	SE on ridge
635	451917	Buck Creek	46.06	-121.54	USFS	2690	Meadow
636	451929	3 Corner Rock	45.72	-122.04	DNR	3000	Ridgetop
680	350208	Tillamook	45.46	-123.80	ODF	22	Flat
682	350215	Cedar Creek	45.21	-123.77	USFS	2240	Ridgetop
682		Columbia Co Fairgrounds	45.85	-122.87	BLM	263	Flat
682	350308	Miller	46.02	-123.27	ODF	1090	S in valley
682	350505	Rye Mountain	45.22	-123.54	BLM	1960	S on ridge
682	350216	South Fork	45.60	-123.48	ODF	2120	S on Ridge
682	350113	Tidewater	46.01	-123.56	ODF	2035	Ridgetop
682	350310	Vernonia	45.85	-123.19	ODF	674	Flat
683	351604	Cannibal	44.35	-123.89	USFS	1946	Ridgetop
683	351711	Chandler	44.81	-123.65	ODF	1697	W on ridge
683	351813	Corvallis (Finley)	44.42	-123.33	USFWS	330	Valley
683	353047	Devils Graveyard	43.72	-123.63	BLM	1550	NW near ridge
683	351814	Gellatly	44.61	-123.48	ODF	860	NW lower slope

Zone	Number	Name	Lat	Long	Agency	Elevation	Aspect
683	352545	Goodwin Peak	43.93	-123.89	USFS	1826	Ridgetop
683	352550	High Point	43.91	-123.38	BLM	1935	N on ridge
683	351710	Rockhouse 1	44.93	-123.47	ODF	2000	Midslope
683	352547	Village Creek	44.25	-123.46	BLM	1500	SE on ridge
683	351811	Wilkinson Ridge	44.33	-123.72	USFS	1370	W on ridge
684		West Portable	44.95	-123.26	BLM	227	Flat
685	352561	Willow Creek	44.03	-123.17	BLM	456	Valley
686	350728	Eagle Creek	45.37	-122.33	ODF	744	SW mid slope
686	350727	Horse Creek	44.94	-122.40	BLM	2000	Ridgetop
687	352553	Brush Creek	44.28	-122.85	BLM	2300	N on ridge
687	352562	Green Mountain	43.73	-122.81	BLM	3064	Ridgetop
687	352025	Jordan	44.72	-122.69	ODF	778	In Valley
687	352552	Trout Creek	44.11	-122.58	BLM	2400	SW on ridge
687	352024	Yellowstone Mt	44.59	-122.43	BLM	3080	NE In valley
688	350604	Log Creek	45.50	-121.90	USFS	2500	W on midslope
688	350718	Red Box	45.03	-121.92	USFS	3250	SW on midslope
688	350726	Wanderers Pk	45.11	-122.20	USFS	4350	S on ridge
689	351909	Boulder Creek	44.72	-122.00	USFS	3570	Flat in valley
689	352554	Pebble	44.24	-122.00	USFS	3560	SW on midslope
690	352558	Emigrant	43.48	-122.23	USFS	3840	S on ridge
690	352557	Fields	43.68	-122.30	USFS	3360	Flat on ridge

2024

Seattle Fire Weather Operating Plan

Bolt Creek Fire. September 10, 2022. Credit: Path Least Taken YouTube

Changes for 2024:

- Added Anna Lindeman to local fire weather team..

LOCATION

The National Weather Service Forecast Office in Seattle is located at the NOAA Western Regional Center in northeast Seattle. The address is:

NOAA - National Weather Service
7600 Sand Point Way NE
Seattle, WA 98115-0070

HOURS OF OPERATION

The National Weather Service (NWS) in Seattle operates 24 hours a day, 7 days a week, every day of the year. During wildfire season, a forecaster is dedicated to Fire Weather-related Decision Support from 7:00 a.m. to 5:00 p.m. These are the best hours to submit Spot Forecast requests. However, all NWS Seattle forecasters are trained in Fire Weather and can handle your requests anytime 24/7.

A heightened pre-season level of service will begin on the first Monday in May, with Fire Weather Planning forecasts issued twice Monday through Friday. In-season levels of service, twice daily Fire Weather Planning Forecasts and a once daily 7-day FWM product will begin on May 31st and end following the first Friday in October. For 2021, those dates are:

June 3:	Monday through Friday service begins
June 23:	Seven-day (**In-Season Levels**) service begins
October 14:	**Last day** of in-season service levels, unless otherwise needed

In-season service levels can be extended further into October if environmental conditions warrant.

STAFF

Name	Position	E-mail
Logan Johnson	Meteorologist-in-Charge	logan.johnson@noaa.gov
Steve Reedy	Fire Weather Program Co-Leader	steve.reedy@noaa.gov
Madelyn Kristell	Fire Weather Program Co-Leader / IMET(t)	madelyn.kristell@noaa.gov
Suzanna Lindeman	Fire Weather Program Co-Leader	suzanna.lindeman@noaa.gov
Brent Bower	Senior Service Hydrologist / IMET	brent.bower@noaa.gov
Reid Wolcott	Warning Coordination Meteorologist	reid.wolcott@noaa.gov
Kirby Cook	Science and Operations Officer	kirby.cook@noaa.gov

All of NWS Seattle's forecasters are trained to provide Fire Weather-related Decision Support Services and will rotate through that service position during fire season.

PHONE NUMBERS

Public Line: (206) 526-6087
Fax: (206) 526-6094

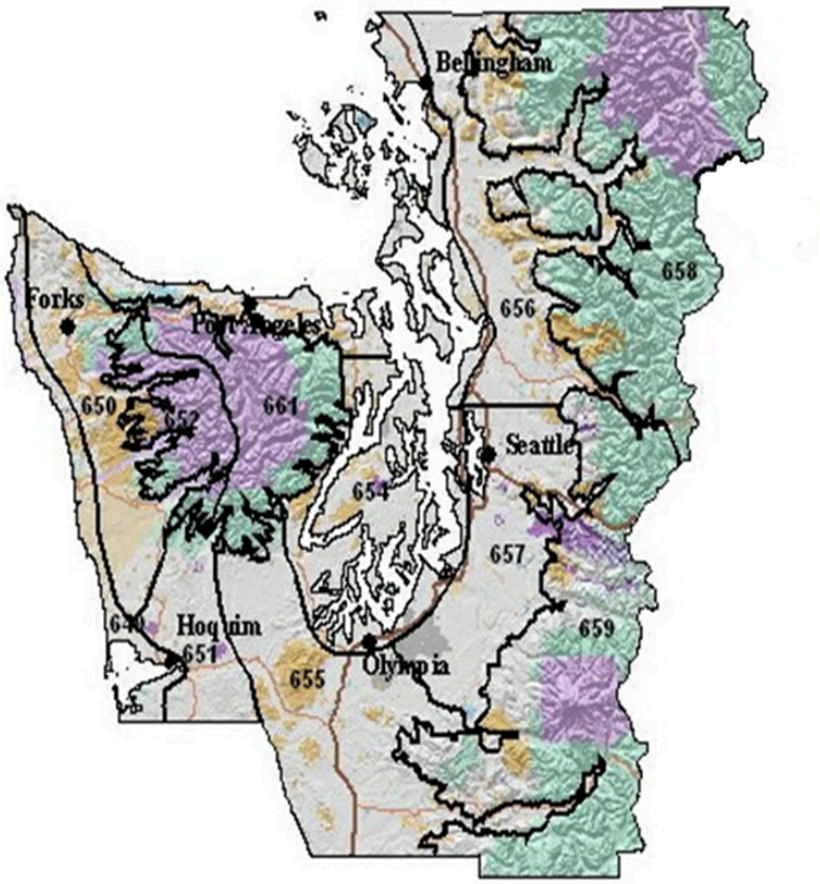
INTERNET

NWS Seattle Homepage: http://www.weather.gov/seattle
NWS Seattle Fire Weather page: https://www.weather.gov/wrh/fire?wfo=sew
Facebook page: https://www.facebook.com/US.NationalWeatherService.Seattle.gov
Twitter page: https://twitter.com/NWSSeattle
Twitter handle: @NWSSeattle

FORECAST DISTRICT

NWS Seattle has Fire Weather forecast responsibility for western Washington from the Cascade Crest to the Pacific Coast, and from the Canadian Border south through Lewis and Grays Harbor Counties. Responsibility also includes the Cowlitz Valley Ranger District on the Gifford-Pinchot National Forest. NWS Seattle's Fire Weather area of responsibility is divided into 12 Fire Weather Zones that exhibit similar weather changes.

Seattle Fire Weather Zones



FORECAST PRODUCTS

1. FIRE WEATHER WATCHES AND RED FLAG WARNINGS

Fire Weather Watches and Red Flag Warnings will be issued when the **combination of dry fuels *and* weather conditions** support extreme fire danger and/or fire behavior. Further overview of the Fire Weather Watch and Red Flag Warning programs is found on page 4 of this document.

- **PARTICULARLY DANGEROUS SITUATION (PDS)**

  The National Weather Service has begun to recognize the need to highlight conditions and situations that pose an extreme danger to life and property. Over the span of 2024, NWS Seattle will conduct research and collect feedback from local fire weather partners in an effort to establish criteria for such a warning with the intent of having these types of warnings available for the 2025 fire season. These PDS Red Flag Warnings will be designed for use in rare extreme weather events and the current expectation is that these products will only be issued in collaboration with either fire weather partners or other NWS offices and forecasters.

A. LOCAL CRITERIA FOR FUEL DRYNESS

Fire Weather Watches and Red Flag Warnings will be considered in the Seattle Fire Weather District when the Energy Release Component (ERC), as described by the National Fire Danger Rating System (NFDRS), is equal to or greater than the 90th percentile value in the frequency distribution of historical ERCs.

Forecast zone-average ERCs must meet or exceed the values listed below to meet the prerequisite dryness for consideration of a Fire Weather Watch or Red Flag Warning.

Zone 649:	17
Zones 650, 651, 653, 656, 657:	25
Zones 652, 654, 655, 658, 659:	31
Zone 661:	34

B. LOCAL CRITERIA FOR WEATHER

"Moderate Breeze and Low Humidity"

Location and Time of Day	Duration	Wind Speed		Relative Humidity
		RAWS	ASOS	
West of the Cascade Crest				
Daytime (9 am to midnight)	4+ hours in an 8-hour block	> 10 mph	> 12 mph	<= 30%
Nighttime (midnight to 9 am)	5+ consecutive hours	>= 10 mph	>= 12 mph	<= 35%

Note: Wind and RH conditions must occur concurrently to meet Red Flag criteria

"Moderate Breeze and Low Humidity" events should be fairly widespread in both time and space across a Fire Weather Zone, in contrast to an isolated occurrence that affects a small area or lasts a short time. Verifying stations for Wind/RH episodes are described in Appendix 3.

Lightning

Weather Criteria for lightning is defined as "abundant lightning, either wet or dry, within a Fire Weather Zone". The thunderstorm activity should be at least scattered (25+% aerial coverage) or greater within a particular zone; the forecast LAL will usually be 3 or higher. Forecasters are given discretion to issue with LAL 2 when fuels are extremely dry, e.g. exceed 97th percentile ERC.

Forecasters are given discretion to view it as a negative consideration if excessive rainfall amounts are expected, e.g. greater than ~ ¾".

By the same token, forecasters are given discretion to view it as a positive consideration if lightning will be followed the next day by warm, dry weather.

Very Dry and Unstable Air Mass

Zones	Haines Index		RH	Opaque Sky Cover
	Mid-Level	High-Level		
Westside: 649-661				
Below 2000 feet	6		<= 20%	< 50%
Above 2000 feet	6		<= 25%	< 50%

Criteria must be met concurrently to meet Red Flag criteria

1. SPOT FORECASTS

An overview of the Spot Forecast program is found in the NWS section of this document.

2. FIRE WEATHER PLANNING FORECASTS (FWF)

The following table shows NWS Seattle's anticipated dates, times, and format of Fire Weather Planning Forecasts (FWFs) in 2024:

Dates (2020)	FWFs on Weekends and Federal Holidays?	# of FWFs per day	Issuance Deadline (Local Time)	Format / Parameters Available
January 1 - June 2	No	1	0830	Off-Season
June 3 – June 22	No	2	0830 1530	Pre-Season
June 23 – October 14	Yes	2	0830 1530	In-Season
October 15 - December 31	No	1	0900	Off-Season

These dates can be adjusted based on user needs and environmental conditions.

3. INTERNET-BASED BRIEFING CALLS

Statewide, Internet-based, Fire Weather briefing calls will be conducted each day at 9:00 AM PDT during peak fire season, and as needed near the beginning and end of the season. These calls are co-hosted by NWS offices in Spokane and Seattle. Contact this office for the appropriate telephone number and conference ID to participate. A recorded version of this call will be available under the Admin tab of the NWS Seattle's Fire Weather webpage within 15-60 minutes of the briefing's conclusion.

4. AREA FORECAST DISCUSSION

The Fire Weather Forecaster will write a Fire Weather section in the Area Forecast Discussion (AFD) when Fire Weather Watches or Red Flag Warnings are in effect, or when conditions are otherwise deemed critical or of interest.

FEDERAL AND STATE AGENCIES SERVED

U.S. Forest Service - Olympic National Forest, Mt. Baker-Snoqualmie National Forest, Gifford-Pinchot National Forest and Okanogan-Wenatchee National Forest

National Park Service - North Cascades National Park Complex, Olympic National Park, Mount Rainier National Park and San Juan Islands National Historical Park

Bureau of Indian Affairs - Olympic Peninsula Agency and Puget Sound Agency

Washington Department of Natural Resources -
Resource Protection Division, as well as the Northwest, Olympic, South Puget, and Pacific Cascade Regions

Department of Defense – Joint Base Lewis-McChord Forestry Program

Appendix 1: Fire Weather Zone Boundary Descriptions

Appendix 2: NFDRS Fire Weather Station List

Appendix 3: Methodology for Verification of a Red Flag Warning issued for Wind and Low Humidity

Appendix 1
FIRE WEATHER ZONE BOUNDARY DESCRIPTIONS

Zone 649 – The North and Central Coastal Strip:
Zone 649 contains land from the Pacific Coastline (including the eastern shores of Grays Harbor) to 5 miles inland, within Clallam, Jefferson and Grays Harbor Counties.

Zone 650 – The North Coastal Lowlands:
Zone 650 contains land from 5 miles inland of the coast to an elevation of 1,500 feet on the west side of the Olympic Mountains. The area includes the Calawah, Bogachiel, Hoh, Clearwater, Queets, Quinault, and the Humptulips River drainages. The southern boundary follows the Humtulips River. The northern boundary reaches the Strait of Juan de Fuca from Neah Bay to west of Sekiu.

Zone 651 – The Central Coastal Lowlands:
The western boundary of Zone 651 follows the Humptulips River and the eastern boundary of Zone 649 in Grays Harbor County. The 1,500-foot contour interval on the south side of the Olympic Mountains forms the northern border of Zone 651. The Grays Harbor - Pacific county line forms the southern boundary. The eastern border follows the West Fork of the Satsop River south across US Highway 12 near the town of Satsop, continuing south along the west side of the Lower Chehalis State Forest.

Zone 652 – The West Portion of the Olympic Mountains:
Zone 652 includes land at or above 1,500 feet on the west-southwest facing side of the Olympic Mountains in Clallam and Jefferson counties, and the far northeast corner of Grays Harbor County. The area includes the Pacific Ranger District of the Olympic National Forest. Zone 652 represents the wetter, west side of the Olympic Mountains with a greater influence of marine air. The area includes all lands at or above 1,500 feet drained by the Calawah, Sitkum, Bogachiel, Hoh, Clearwater, Queets, Quinault, and Humptulips rivers in Clallam, Jefferson, and Grays Harbor counties.

Zone 661 – The East Portion of the Olympic Mountains: Zone 661 includes land at or above 1,500 feet on the east side of the Olympic Mountains. Zone 661 represents the drier side of the Olympic Mountains, experiencing less rainfall, less influence of marine air, and a higher occurrence of lightning activity. The area includes land drained by the Wynoochee, Satsop, North and South Fork Skokomish, Hamma Hamma, Duckabush, Dosewallips, Quilcene, Dungeness, Elwha, and upper portions of the Sol Duc Rivers.

Zone 653 – The Strait of Juan de Fuca, the San Juan Islands and the Northwest Interior Lowlands: Zone 653 includes all land below 1,500 feet on the north side of the Olympic Peninsula from Sekiu on the west to Port Ludlow on the east. Zone 653 also includes land along and west of I-5 in Snohomish, Skagit and Whatcom Counties, as well Whidbey Island, Camano Island, and all of the San Juan Islands.

Zone 654 – The Central and South Puget Sound Lowlands:
Zone 654 represents land near Puget Sound and Hood Canal in Jefferson, Mason, Thurston, Pierce, King and Kitsap Counties. Zone 654 includes the entire Kitsap Peninsula. The western border follows the 1,500-foot contour on the west side of Hood Canal. The eastern and southern borders are near I-5 in King, Pierce, and Thurston Counties to Olympia. The southwest boundary runs northwest along U.S. Highway 101 from Olympia through Shelton to the southeast corner of Olympic National Forest.

Zone 655 – The Black Hills and the Southwest Interior Lowlands:
The western border of Zone 655 follows the West Fork of the Satsop River south across US Highway 12 near the town of Satsop, continuing south along the west side of the Lower Chehalis State Forest. The boundary continues southeast through Pe El to Vader in Lewis County. The boundary then turns east along the Lewis-Cowlitz County line to the 1,500-foot contour along the west slopes of the Cascades. The boundary turns north, wrapping around the Cowlitz River Valley, then north along the 1,500-foot contour to the location where Pierce, Thurston, and Lewis Counties meet near Alder Lake. It then follows the Pierce-Thurston County line northwest to I-5, then west along I-5 and US Highway 101 through Olympia, Shelton, and on to the southeast corner of Olympic National Forest. Zone 655 includes Capitol and Lower Chehalis State Forests, as well as the I-5 corridor south of Olympia through Lewis County.

Zone 656 – Northeast Puget Sound Lowlands Generally Below 1500 Feet:
Zone 656 includes land in Whatcom, Skagit, and Snohomish Counties east of I-5 below an elevation of 1,500 feet. This includes the following river drainages: Nooksack, Skagit, Sauk, Stillaguamish, and the Skykomish east to the town of Skykomish.

Zone 657 – Southeast Puget Sound Lowlands Generally Below 1500 Feet:
Zone 657 includes land below 1,500 feet east of I-5 in King and Pierce Counties. It includes the following river drainages: North, Middle and South Forks of the Snoqualmie, Green, White, Puyallup, and the Nisqually from Elbe to Ashford.

Zone 658 –West Slopes of the North Cascades Generally Above 1500 Feet:
Zone 658 includes land at or above 1,500 feet in Whatcom, Skagit, Snohomish, and the northeast corner of King County in the Skykomish River drainage. The area includes the North Cascades National Park and the Ross Lake National Recreational Area; and the Mt. Baker, Darrington, and Skykomish Ranger Districts of the Mt. Baker-Snoqualmie National Forest. The eastern boundary is the Cascade crest.

Zone 659 –West Slopes of the Central Cascades Generally Above 1500 Feet:
Zone 659 includes land at or above 1,500 feet in King, Pierce, and Lewis Counties, and the extreme northern portion of Skamania County. This includes the North Bend and White River Ranger Districts of the Mt. Baker-Snoqualmie National Forest, Mt. Rainier National Park, and the Cowlitz Valley Ranger District of the Gifford Pinchot National Forest. The eastern boundary is the Cascade crest.

Appendix 2
2020 NWS Seattle NFDRS Station Index

ZONE	NAME	TYPE	WIMS NUMBER	OWNER	*LAT*	*LON*	*ELEV*
649	Quillayute	Metar	450120	DNR	47.938	-124.555	194
	Hoquiam	Metar	450314	DNR	46.971	-123.933	18
650	Ellis Mtn.	RAWS	450130	DNR	48.129	-124.305	2671
	Forks	RAWS	450105	DNR	47.955	-124.385	303
	Black Knob	RAWS	450321	BIA	47.414	-124.103	650
651	Minot Peak	RAWS	450306	DNR	46.892	-123.417	1768
652	Toms Creek	RAWS	450121	USFS	48.022	-123.959	2400
	Owl Mtn.	RAWS	450211	DNR	47.766	-123.965	3398
	Humptulips	RAWS	450312	USFS	47.367	-123.758	2400
661	Hurricane Ridge	RAWS	450124	NPS	47.970	-123.499	5262
	Cougar	RAWS	450117	USFS	47.923	-123.108	3000
	Jefferson	RAWS	450911	USFS	47.554	-123.215	2200
	Buck Knoll	RAWS	450131	DNR	48.028	-123.311	1630
653	Bellingham	Metar	451411	DNR	48.799	-122.539	157
	Everett	Metar	451614	DNR	47.923	-122.283	604
	Whidbey Island	Metar	450701	DNR	48.349	122.651	46
654	Bremerton	Metar	450801	DNR	47.490	-122.765	440
	Quilcene	RAWS	450207	USFS	47.823	-122.883	62
	Sea-Tac	Metar	451716	DNR	47.445	-122.314	427
	Tacoma (McChord Field)	Metar	451808	DNR	47.138	-122.476	322
655	Olympia	Metar	451001	DNR	46.973	-122.903	203
	Chehalis	RAWS	451103	DNR	46.610	-122.908	262
656	Jim Creek	RAWS	451507	DNR	48.179	-122.029	786
	Marblemount	RAWS	451504	NPS	48.539	-121.446	357
657	Enumclaw	RAWS	451702	DNR	47.220	-121.964	756
	Ashford	RAWS	451809	DNR	46.755	-122.110	1421
658	Kidney Creek	RAWS	451409	USFS	48.920	-121.943	3485
	Hozomeen	RAWS	451412	NPS	48.981	-121.078	1700
	Sumas Mtn.	RAWS	451415	DNR	48.908	-122.223	3200
	Finney Creek	RAWS	451509	USFS	48.392	-121.818	2160
	Gold Hill	RAWS	451613	USFS	48.243	-121.546	3350
	Johnson Ridge	RAWS	451611	USFS	47.801	-121.286	2048
659	Fire Trng Academy	RAWS	451721	USFS	47.457	-121.665	1580
	Stampede Pass	Metar	451711	DNR	47.277	-121.337	3960
	Lester	RAWS	451705	USFS	47.210	-121.489	1637
	Greenwater	RAWS	451718	DNR	47.116	-121.596	2405
	Ohanapecosh	RAWS	451119	NPS	46.731	-121.571	1950
	Kosmos	RAWS	451105	DNR	46.524	-122.190	2100
	Hager Creek	RAWS	451115	USFS	46.564	-121.628	3600
	Orr Creek	RAWS	451919	USFS	46.354	-121.604	3000

Appendix 3

Methodology for Verification of a Red Flag Warning issued for Moderate Breeze and Low Humidity

For Wind and Low RH episodes, Red Flag events will be considered to have occurred when Red Flag criteria are achieved at the following combination of stations:

Zone 649:	Any *two* stations within the zone, usually Hoquiam and Quillayute
Zone 650:	Any *single* station within the zone – **or -** Quillayute ASOS
Zone 651:	At Minot Peak RAWS **– or –** both Shelton and Hoquiam ASOSs
Zone 652:	Any *one* station within the zone *and* the Ellis Mtn RAWS
Zone 653:	Any *two* stations within the zone
Zone 654:	Any *two* stations within the zone (including Olympia ASOS)
Zone 655:	Any *one* station within the zone (including Olympia ASOS) **– or –** any *two* of the following sites: Shelton ASOS, Minot Peak RAWS and Hoquiam ASOS
Zone 656:	Any *two* stations under 1500 feet within Skagit, Snohomish or Whatcom Counties (including Abbottsford, BC)
Zone 657:	Any *two* stations under 1500 feet within King or Pierce County, and east of Puget Sound
Zone 658:	Any NFDRS station within the zone **– and –** *one* of the following sites: Mt. Baker avalanche site, Marblemount, Fire Training Academy, or SMP
Zone 659:	Any two NFDRS stations within the zone
Zone 661:	Any NFDRS station within the zone (not followed within 12 hours by the start of a wetting rain)

2024

Spokane Fire Weather Operating Plan

Gray Fire - August 18, 2024 NWS Employee

National Weather Service, Spokane Fire Weather Operating Plan 2024

NEW For 2024:

- **1)** Staff changes
  - · Andrew Brown (Promotion to Meteorologist in Charge)
  - · Several vacancies from transfers/retirement
- **2)** Fire weather chat room available for fire partners
- **3)** Potential use of "Extreme" fire weather conditions during live briefings

LOCATION:

National Weather Service Office

2601 North Rambo Road

Spokane, WA 99224-9164

HOURS:

Office hours at NWS Spokane for Fire Weather will be as follows:

Daily with 24 hour forecast and briefing coverage

PHONE NUMBERS and E-Mail:

Fire Weather	(509) 244-0537
Public	(509) 244-6395
FAX	(509) 244-0554

andrew.brown@noaa.gov

stephen.bodnar@noaa.gov

STAFF:

Andrew Brown	Meteorologist in Charge
vacant	Science and Operations Officer
vacant	Warning Coordination Meteorologist
Todd Carter	ITO/IMET
Steve Bodnar	Senior Forecaster/Fire Weather Program Leader/IMET
Jeremy Wolf	Senior Forecaster
Greg Koch	Senior Forecaster
Char Dewey	Senior Forecaster
Jon Fox	Forecaster/IMET
Miranda Solveig Cote	Forecaster
Robin Fox	Hydrologist/BAER Team/Forecaster
Laurie Nisbet	Forecaster
Rocco Pelatti	Forecaster
Steven Van Horn	Forecaster/IMET
Joey Clevenger	Forecaster
Ken Daniel	Forecaster
Valerie Thaler	Forecaster
Krista Carrothers	Forecaster/IMET Trainee

COMMUNICATIONS:

All forecasts are available on WIMS, and Spokane's home page. Customers who do not have access to WIMS, or Internet can still have forecasts faxed to them.

Internet Address:

http://www.wrh.noaa.gov/otx

http://www.weather.gov/spokane

https://www.weather.gov/wrh/fire?wfo=otx

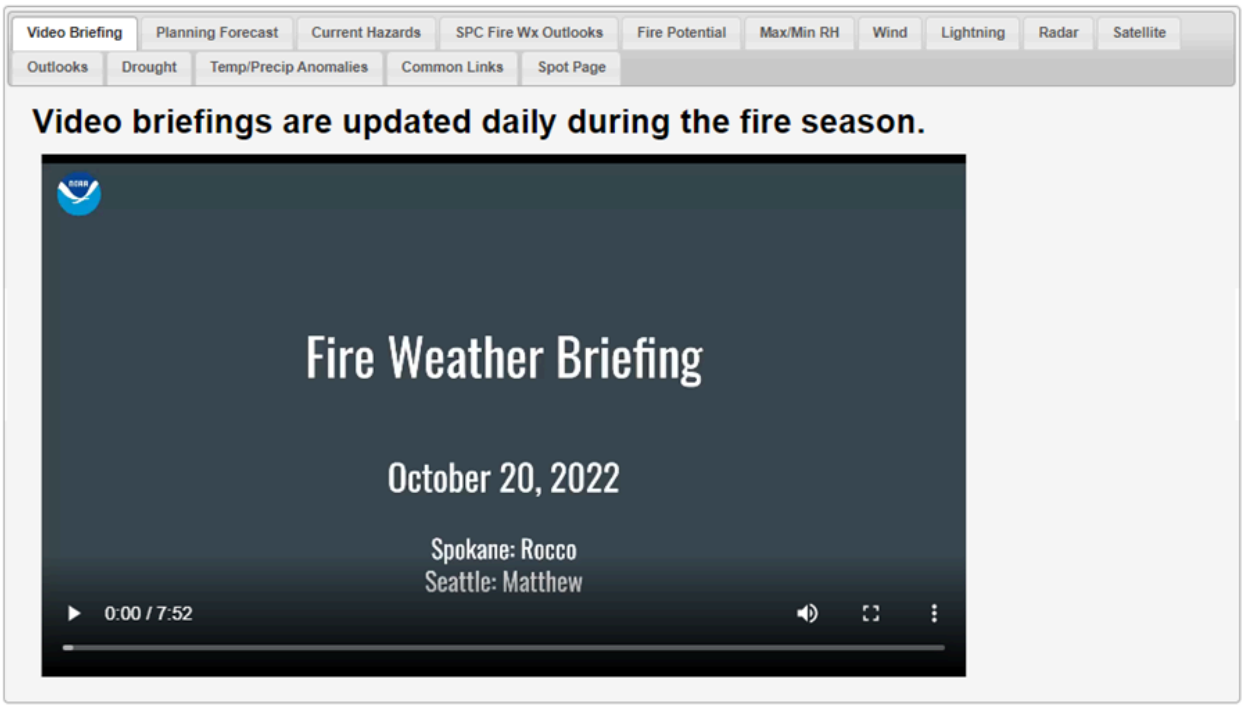
FIRE WEATHER CHAT ROOM:

NWSChat, powered by Slack, is used by NWS operational personnel to deliver Impact-based Decision Support Services (IDSS) and exchange hydrometeorological or other hazards information with our Core Partners. This information aids in the efficacy of local, state, regional and national emergency response and recovery efforts, thereby aligning with the agency's mission of protecting life and property. The private channel

#otx-fire will be utilized for exchanging fire weather and other related information to IMETs and fire partners. For registration information, please contact valerie.thaler@noaa.gov.

SPOKANE FIRE WEATHER DASHBOARD:

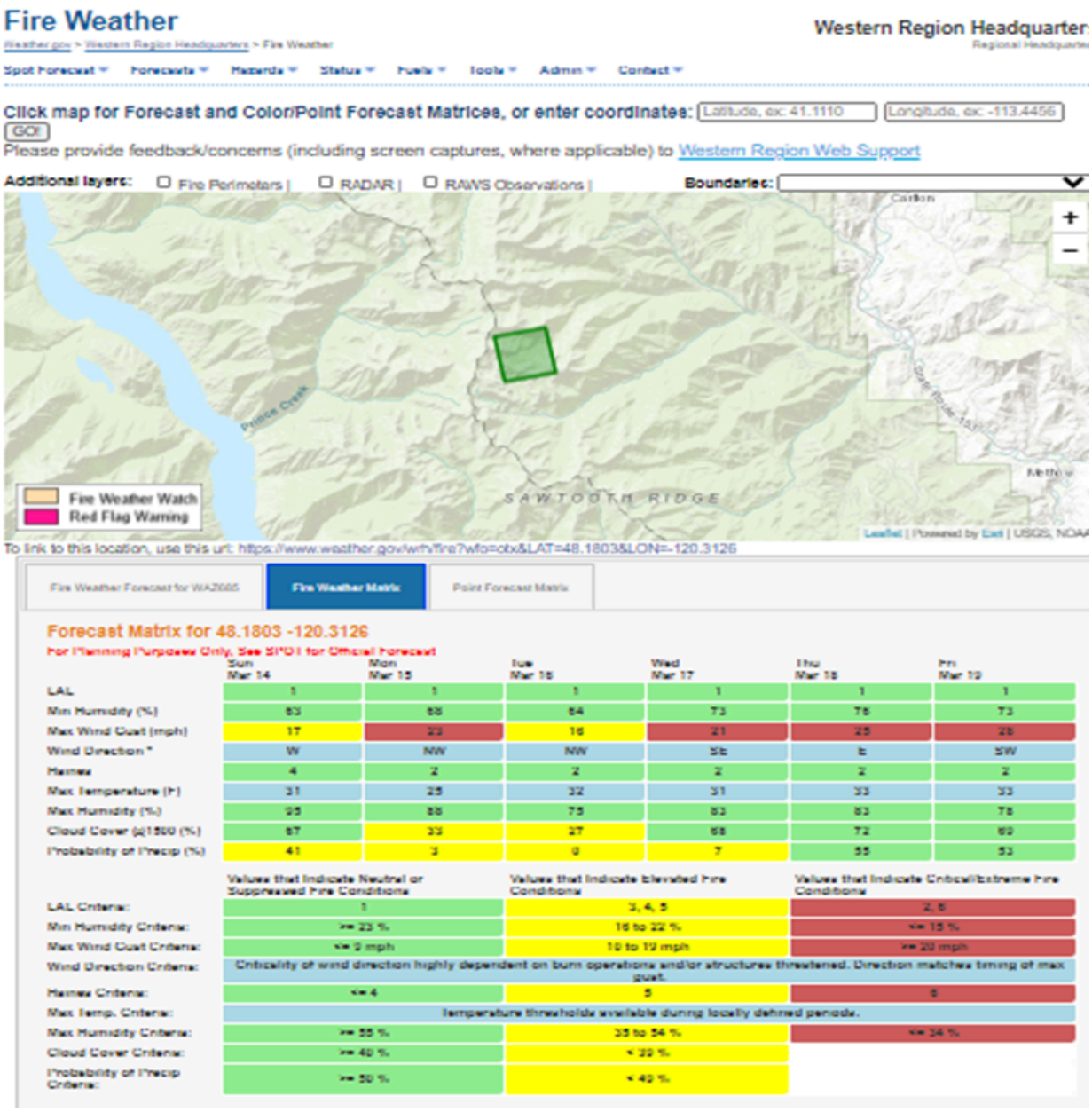
https://www.weather.gov/otx/firedashboard



A fire weather dashboard is available. The dashboard houses resources related to fire weather from the Spokane National Weather Service, regional coordination centers, Storm Prediction Center, and more. Graphs including temperature and precipitation anomalies as well as the latest drought status can be found on the resource. Any suggestions for additional products, please email stephen.bodnar@noaa.gov

FIRE WEATHER WEBPAGE

https://www.weather.gov/wrh/fire?wfo=otx&layer=fwx



Three tabs found on the bottom of the map for a selected gridpoint. Gridpoint is defined as a 2.5km by 2.5km forecast point (ie, the green box illustrated on map)

Tab 1: Fire Weather Zone Forecast for the specified gridpoint

Tab 2: Color coded Fire Weather Matrix for the specified gridpoint.

Tab 3: Point Forecast Matrix for the specified gridpoint. (elevation listed)

TRAINING PROVIDED

Spokane Fire Weather Forecasters are available for training courses, workshops, seminars and other meetings requiring meteorological expertise. Training includes local and regional courses such as S-290 and S-390, as well as pre-season refreshers for Hotshot crews, Smokejumpers, burn bosses, general firefighters, lookout personnel, etc. Please give as much advance notification as possible to ensure the availability of a forecaster. Please send all training requests to stephen.bodnar@noaa.gov.

WEATHER BRIEFINGS

Internet based weather briefings are available from the Spokane office as needed. During peak fire season, normally mid June-early October briefings will be daily at 0900 PDT. These briefings will be recorded and posted online by 1000 PDT.

New for 2024, forecasters will have the ability to brief our customers of potentially extreme fire weather conditions. This descriptor will only be utilized in the fire weather briefing on the weather matrix and problem of the week graphics. Below is a break-down for the color scale used:

- Elevated – Fire weather conditions are critical or near critical but fuels have not been declared ready for fire weather highlights. Elevated could also be used when fuels are ready but weather conditions are marginal. In the event of lightning events with dry fuels, elevated could imply moderate to high uncertainty in a zone or isolated coverage.

- Critical – Fire weather conditions are critical and fuels have been declared ready. Fire weather watches or red flag warnings have been issued or are anticipated.

- Extreme – Reserved for critical fire weather events that are extremely rare and have a combination of historic winds, humidity levels, and fuel dryness. Previous events for reference include 1991 Fire Storm, 2015 Okanogan Wind Storm, 2020 Labor Day Storm, and 2023 August Fires of Spokane County.

During Land Management season briefings are available by customer request and are usually once to twice per week for planning purposes. To register for the webinars, please contact stephen.bodnar@noaa.gov to be added to the seasonal list or call 509-244-5031 to inquiry about registering. Phone briefings are available 24 hours per day by calling 509-244-5031.

SOCIAL MEDIA

NWS Spokane has a Facebook page, Twitter account, and a YouTube channel. Information about current Fire Weather may be included in these social media feeds, but such information is intended as supplemental information for the general public; it is not intended to meet the specialized needs of the wildland firefighting community.

www.twitter.com/NWSSpokane,

https://www.facebook.com/NWSSpokane/

https://www.youtube.com/user/nwsspokane

FORECAST DISTRICT:

NWS Spokane has fire weather forecast responsibility for a large portion of protected lands in eastern Washington. Exceptions are the Blue Mountains, the Yakama Indian Nation lands, the DOE Hanford Site, and portions of the Southeast Department of Natural Resources (DNR) land. These protected lands are the forecast responsibility of the National Weather Service Office Pendleton Fire Weather program.

WFO Spokane's eastern Washington fire weather area is divided into five districts. In addition, these forecast districts are subdivided into fifteen fire weather zones. See the map for general locations of districts and zones for eastern Washington. The fire weather zones are comprised of fire danger stations with similar weather and similar trends in weather changes. In 2022, new fire weather zones were established in Eastern Washington. These zones are in better alignment with fire danger rating areas.

NWS Spokane has forecast responsibility for the Central and Northern Idaho Panhandle. This district has one zone (101) covering the Idaho Panhandle National Forests, Idaho State Lands, and Coeur d'Alene Indian Agency lands.

Agencies Served:

Land management agencies served by the Spokane Fire Weather Office include:

USFS....	Colville NF
	Okanogan-Wenatchee NF
	Idaho Panhandle NF
BLM....	Spokane District
	Coeur d'Alene District
BIA....	Confederated Tribes of the Colville Reservation
	Spokane Tribe of Indians
	Coeur d'Alene Tribe of Indians
	Kalispel Tribe of Indians
NWR...	Turnbull National Wildlife Refuge
	Columbia National Wildlife Refuge
	Kootenai National Wildlife Refuge
	Lake Pend Oreille Wildlife Refuge
	Sinlahekin Wildlife Refuge
Washington DNR...	Northeast Area Resource Protection Division
	Southeast Area Resource Protection Division

Idaho...	Department of State Lands
NPS...	Lake Roosevelt National Recreation Area
	Lake Chelan National Recreation Area

FORECAST SERVICES:

Fire Weather Watches and Red Flag Warnings

Red Flag criteria for eastern Washington and Northern Idaho are as follows:

- **"Dry Thunderstorm" Red Flag criteria is defined as follows:**

  Abundant lightning in conjunction with sufficiently dry fuels.

  "Abundant" and "Sufficient" are locally defined and verified by NWS offices and their fire agency customers using the following GACC AOP-wide guidelines:

  Abundant Lightning:

  1) Number of lightning strikes that meet climatologically significant criteria, or

  2) Areal coverage of lightning such as "Scattered" or ≥ 25%

  Sufficiently Dry Fuels:

  1) ERC or BI values meeting climatologically significant percentiles or

  2) Land management declaration

- **Dry and Windy:**

  Sustained surface winds exceeding a 10 minute average of 15 mph combined with relative humidity less than:

  - 15% in the Columbia Basin (zone 706 and 707)
  - 20% in the lower valley zones (zone 703, 704, 705, 708 and 709)
  - 25% in the mountainous areas (696, 697, 698, 699, 700, 701, 702, 101)

  This is typically (but not always) associated with a dry cold front passage.

These conditions must be verified by at least 2 observation sites (RAWS, METAR, DOT, Agrimet etc) for 2 consecutive hours. **For Idaho Zone 101 the criteria will be at least 2 observation sites for any 3 hours in an 8 hour period.** When using observation sites other than RAWS sites wind speeds will be converted to 10 minute averages.

Special consideration will be given whenever very hot temperatures are combined with very low relative humidity.

- **Hot, Dry, Unstable:**
  High Haines Index of 6 combined with low relative humidity, typically 15% or below.

- **Strong winds:**
  Winds that will overcome the environment no matter what the relative humidity.

- **An Unusually Unstable Atmosphere:**
  This would be associated with a strong thermal trough which typically forms along the east slopes of the Washington Cascades in conjunction with 850-700 vertical temperature change greater than 15°C. This Watch or Warning criteria is only good for PSA C1 which is the Central Cascade zones 696, 697, 698, and Cascade valley zones 704, 705.

The issuance of Red Flag Warnings will take into account fuel conditions, and will be coordinated with land management agencies and other applicable fire weather offices. Typically when 1000 hour fuels are at or below 11%, 100 hour fuels are at or below 8% and Live Fuels at or below 120%.

SPOT FORECASTS

Detailed instructions for completing the Spot Request Form and access links are available on our Fire Weather Web page in the upper left hand corner or at:

https://www.wrh.noaa.gov/wrh/UsersSpotGuide2019_2.0.pdf

Valid times for spot forecasts will be twelve hours from forecast issuance.

The spot forecast request web page available on the Spokane fire weather web page at:

https://www.weather.gov/spot/request/

GEOGRAPHICAL AREA DESCRIPTIONS

The National Weather Service Office in Spokane has fire weather forecast responsibility for protected lands in the northern and central part of eastern Washington and the northern and central Idaho Panhandle. Exceptions are the Blue Mountains area, the Yakama Indian Reservation, and portion of the Southeast Department of Natural Resources (DNR) protected lands. Forecasts for these areas are handled out of the National Weather Service office in Pendleton (see zone descriptions below).

WFO Spokane's eastern Washington fire weather area is divided into five districts. In addition, these forecast districts are subdivided into fifteen fire weather zones. See the map for general locations of districts and zones for eastern Washington.

Central District:

This district has three zones. Zone 696, Zone 697, and Zone 705. This district extends from Mission Ridge north to Sawtooth Ridge, and from the Cascade crest east to the Columbia River. It includes the northern part of the Wenatchee NF and Lake Chelan National Recreation Area. Lightning frequency averages around 10-15 storm-days per season. The Cascade rain shadow is very pronounced across this district with annual rainfall totals near 100 inches along the crest to 10 inches or less along the Columbia River. Winds tend to be stronger and more persistent with more pronounced day to day weather changes. These zones are typically impacted by marine pushes. This district contains some of the highest fire hazard areas in the Pacific Northwest.

Northern District:

This district has five zones. Zone 698 is the higher elevations of the North Cascades. Zones 699 and 702 make up the Okanogan Highlands and zones 703 and 704 are lower elevations zones within the Okanogan and Methow Valleys. This district extends across the north part of eastern Washington from the Cascade crest to the Columbia River on the east. It includes the Okanogan NF and three ranger districts from the Colville NF (Tonasket, Republic, and Three-Rivers). The district also contains land under the protection of Northeast Department of Natural Resources and Confederated Tribe of the Colville Indians. The marine influence is minimal in this district compared to the central districts due to its more continental location. Winds are generally lighter than central districts due to the complex topography. The exception is the Okanogan River Valley and Methow Valley. These valleys experience more pronounced diurnal wind cycles. Frontal systems will also channel strong winds through these valleys when aligned. Lightning activity is greater, averaging about 15 storm-days per season. Annual rainfall varies from over 60 inches along the Cascade crest to less than 15 inches in the Okanogan Valley.

Northeast District:

This district has two zones: 700 and 701. The northeast district extends from the Columbia River to the Idaho border, and south to the Spokane and Little Spokane rivers. It covers the remainder of the Colville NF (Three Rivers and Newport-Sullivan districts) and The Spokane Tribes of Indians, as well as lands under the jurisdiction of Northeast DNR. This district is normally wetter than the other districts since it extends into the western foothills of the Rocky Mountains. The southern portion closer to the Spokane River and in the vicinity of Deer Park is slightly drier and typically windier with receptive fuels earlier in the fire season. Lightning frequency is the greatest of any of the districts averaging 15-20 storm-days per season. Annual rainfall varies from over 60 inches per year near the Canadian Border to less than 20 inches on the south boundary.

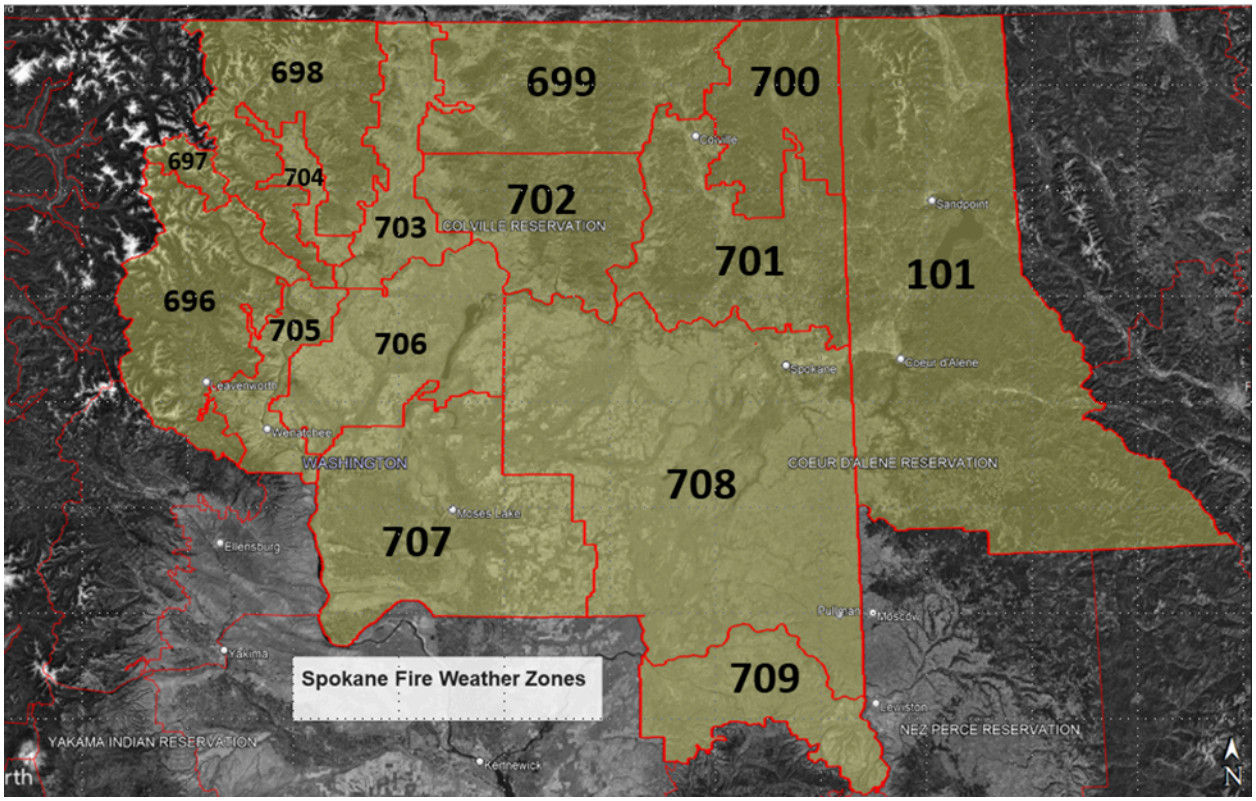
Northern Columbia Basin District:

This district has four zones: 706, 707, 708, and 709. Pendleton weather office has responsibility for a large portion of Washington State DNR Southeast Region lands, Yakama IA, and DOE Hanford. The southern boundary follows county lines west to east across Grant and Adams Counties then bends south into the foothills of the Blue Mountains including eastern portions of Columbia County and finally through northern Garfield and Asotin Counties. The western part of the district boundary is the Columbia River following the Grant and Douglas County lines then wraps around Douglas County and traces back east along the Columbia River to the Spokane and Little Spokane Rivers to Idaho state line. Fuels in this district consist of mainly grass and sage with areas of mixed conifer developing for the northeast portion of zone 708 around Spokane and Davenport. Zone 706 mainly consists of the Waterville Plateau and extends east into northern Grant County including Banks Lake. This zone contains low ridges and coulees along with dry land farming. Zone 707 is also a mix of grass and sage along with a heavy concentration of irrigated farming. Zone 708 spans from dry grass and sage in the heart of the Columbia Basin to the onset of timber around Davenport, Spokane, and Mica Peak. This zone also includes the Washington Palouse to the south. Dry land farming is common throughout this zone. Zone 709 stretches west to east from Columbia County to Asotin County with the northern boundary following along the Snake River and southern boundary north of the Blue Mountains. The zone is primarily made up of grass with a heavy concentration of graze land and dry land farming. Most of the district is at fairly low elevations between 900 and 2,000 ft. The terrain rises near 3,000 ft or higher in eastern Zone 708 and southern 709. The highest point at Mica Peak is over 5000 feet. Higher elevations also exist on the Waterville Plateau. For example, Badger Mountain near Waterville is at 4,221 feet. Annual rainfall ranges from less than 10 inches in zone 707 to over 20 inches in eastern portions of 708. These are the some of the warmest and driest districts. Winds in some areas can be very strong. Lightning activity is the least of the districts, averaging about 6 storm-days per season.

Northern and Central Idaho Panhandle District:

This District is part of Region 1 and has one zone. Northern and Central Idaho Panhandle Zone 101 - Northern and Central Idaho Panhandle. This zone includes...Idaho Panhandle National Forests, Coeur d'Alene Tribes of Indians, and Idaho State protected lands in the following counties: Boundary, Bonner, Kootenai, Benewah, Shoshone, and the northern part of Latah County where a part of the St. Joe District resides. Zone 101 is broken into three (3) separate zones the Northern zone, Central zone and Southern zone. The valleys receive over 20 inches of annual rainfall while over 60 inches can fall on the peaks. This area averages 12-15 thunderstorm days per season.

Spokane Fire Weather Forecast Zones



ZONE #	ZONE NAME
696	East Washington Central Cascades
697	East Portion of North Cascades National Park/Lake Chelan National Recreation Area
698	East Washington North Cascades
699	Okanogan Highlands & Kettle Mountains
700	Selkirk Mountains of Northeast Washington
701	Foothills of Northeast Washington
702	Colville Reservation
703	Okanogan Valley
704	Methow Valley
705	Foothills of Central Washington Cascades
706	Waterville Plateau
707	Western Columbia Basin
708	Eastern Columbia Basin - Palouse - Spokane Area
709	Lower Palouse - Snake River

NWS Spokane NFDRS Station Index

ZONE	NAME	TYPE	WIMS ID	OWNER	LAT	LON	ELEV
696	Viewpoint	R	452128	USFS	47.85	-120.87	3760
696	Camp 4	R	452132	USFS	48.02	-120.23	3773
696	Dry Creek	R	452134	USFS	47.73	-120.54	3661
697	Stehekin	R	452121	NPS	48.34	-120.72	1230
698	Leecher	R	452020	USFS	48.25	-120	5019
698	First Butte	R	452006	USFS	48.62	-120.11	5500
698	Douglas Ingram Rdg	R	452035	USFS	48.12	-120.1	3460
699	Iron Mountain	R	452512	USFS	48.56	-118.62	4325
699	Lost Lake	R	452029	USFS	48.87	-119.06	3760
699	Peony	R	452038	USFS	48.59	-119.21	3600
699	Brown Mountain Ochd	R	452514	USFS	48.54	-118.69	3210

699	Owl Mountain	R	452513	USFS	48.94	-118.3	4400
699	Lane Creek	R	452511	USFS	48.61	-118.28	4500
700	Pal Moore Orchard	R	452915	USFS	48.39	-117.43	3120
700	Tacoma Creek	R	453413	USFS	48.49	-117.43	3300
700	Little Pend Oreille	R	453416	FWS	48.27	-117.43	2020
700	Deer Mountain	R	453412	USFS	48.8	-117.45	3300
700	Flowery Trail	R	453145	USFS	48.3	-117.41	2680
700	Teepee Seed Orchard	R	453414	USFS	48.66	-117.48	3280
701	Kettle Falls	R	452916	NPS	48.61	-118.12	1310
701	Wellpinit	R	452918	BIA	47.88	-118.1	2240
701	Big Blue	R	452919	BLM	48.01	-118.02	3400
701	Arcadia Orchards	R	453507	BLM	47.91	-117.39	2050
702	Nespelem	R	452009	BIA	48.21	-119.02	1782
702	Gold Mountain	R	452510	BIA	48.18	-118.49	4636

703	Oroville	R	452039	BLM	48.96	-119.49	1360
703	Kramer	R	452040	BIA	48.27	-119.52	2720
703	Spectacle Lake	R	452043	BLM	48.83	-119.51	1825
703	Aeneas	R	452001	DNR	48.74	-119.62	5185
704	NCSB	R	452030	USFS	48.43	-120.14	1650
705	Entiat	R	452138	USFS	47.73	-120.24	2825
706	Douglas	R	452601	BLM	47.62	-119.9	2530
707	Saddle Mtn	R	452701	FWS	46.69	-119.69	650
707	Othello (Columia NWR)	R	453102	BLM	46.88	-119.32	855
708	Spokane BLM QD#1	R		BLM	47.54	-118.56	2100
708	Spring Canyon	R	453002	NPS	47.93	-118.93	1340

708	Escure	R	453601	BLM	47.07	-117.98	1725
708	Turnbull Wildlife	R	453506	FWS	47.41	-117.53	2250
709							
101	Bonners Ferry	R	100101	USFS	48.72	-116.29	2310
101	Magee Peak	R	100425	USFS	47.89	-116.31	4856
101	Fish Hook	R	100421	USFS	47.86	-115.91	4700
101	Hoodoo	R	100208	USFS	48.05	-116.79	2270
101	Lines Creek	R	100424	USFS	48.15	-116.29	5120
101	Nuckols	R	100423	USFS	47.54	-115.97	4000
101	Priest Lake	R	100204	USFS	48.6	-116.96	2600
101	Saddle Pass	R	100107	USFS	48.98	-116.79	5120

WASHINGTON DEPARTMENT OF NATURAL RESOURCES

HOURS OF OPERATION

Staff in the planning section are generally in the office from Monday to Friday between the hours of 0700 and 1730. When fire season dictates, one or more staff may be present during the same hours on the weekend as well.

LOCATION

Natural Resource Building
1111 Washington St SE
Olympia, WA 98501

STAFF AND CONTACT

Management Staff:
George Geissler, State Forester
Russ Lane, Wildland Fire Division Manager
Angie Lane, Assistant Division Manager

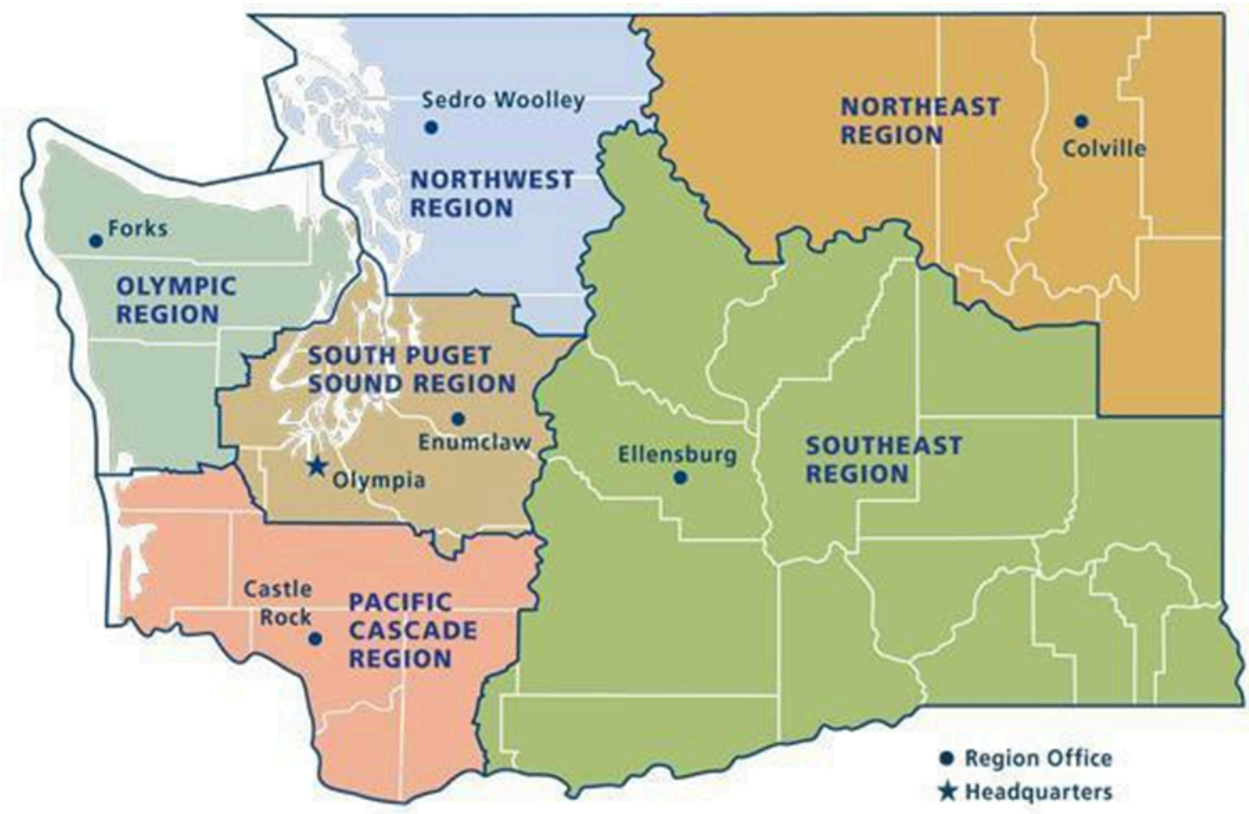
Predictive Services Section Staff:

Angie Lane	Manager	angie.lane@dnr.wa.gov	360-259-8033
Matthew Dehr	Meteorologist/RAWS	matthew.dehr@dnr.wa.gov	360-529-6541
Vaughn Cork	Fuels/Fire Regulation	vaughn.cork@dnr.wa.gov	360-902-1318
Michael Tonkel	GIS/IT Admin	michael.tonkel@dnr.wa.gov	360-764-3828
Jon Grell	Fire Intelligence	jonathan.grell@dnr.wa.gov	360-481-4865
		FAX	360-902-1757

Internet: https://www.dnr.wa.gov/programs-and-services/wildfire-resources
Twitter: https://twitter.com/waDNR_fire

OPERATIONAL AREA

For fire danger, regulation, and weather support, all DNR-managed or protected lands (13.1 million acres) in Washington are divided into six regional jurisdictions: Pacific Cascade, South Puget Sound, Olympic, Northwest, Southeast, and Northeast. These areas are further divided into districts or fire units.



For smoke management/burn requests, all forested lands (public and private) in the state which meet the requirements for DNR approval as outlined in Washington RCW 76.04 and the State Smoke Management Plan or those which pay a Forest Fire Protection Assessment tax.

SERVICES

Operational Weather and Climate Outlooks: During fire season, the meteorologist produces a daily weather briefing, fire danger, and smoke outlook for the executive and regional leadership of the Washington Department of Natural Resources, Emergency Management Division, and State Fire Marshal's office.

The meteorologist also produces daily aviation weather briefings tailored to aerial fire suppression operations, assists in smoke management decisions, and serves as the liaison between the DNR and other state, regional, or national meteorological organizations. All briefings and products are carefully coordinated with partners at the Oregon Department of Forestry, National Weather Service, and the Geographic Coordination Center.

Smoke Management Approvals: The smoke management coordinator approves all state silvicultural burns over 100-tons in Washington. Smoke management requests and approvals may be made via the DNR Burn Portal, located here: https://burnportal.dnr.wa.gov/.

Our team, given enough notice, are available to support prescribed burns on- scene. We have a full complement of portable RAWS, handheld weather instruments, a remote observing system with a four camera payload, and an E- Sampler to provide continuous meteorological support for firefighter safety, satisfying burn plan objectives, or assessing air quality/smoke dispersion.

Fire Regulation and Fire Danger: Staff are available to provide interpretation and advice for industrial fire precaution levels, burn bans, staffing, NFDRS indices and other fire danger ratings.

Fire Intelligence: Staff provide agency fire statistics including fire business metrics, trend analysis of financial and environmental data, fire reporting and investigation status, and asset tracking.

GIS Analysis: Staff maintains a situational awareness dashboard during fire season: https://fireinfo.dnr.wa.gov/

Staff also have advanced capabilities in performing in-depth spatial data analysis, predictive analytics (including machine learning), and custom map generation to support situational awareness needs either internally or externally.

RAWS Management: The Washington DNR currently maintains 32 RAWS (27 fixed and 4 portable), making it one of the largest state fire weather networks in the U.S. Six full-time radio technicians provide annual and emergency maintenance to the network and all DNR dispatch staff are trained to provide daily quality control of RAWS weather data using WIMS.

All portable RAWS can be requested for dispatch through the DNR Fire Cache.

For any issues with RAWS, please email Matthew Dehr or DNRDLRPRAWS@dnr.wa.gov.

Incident Support: Staff in our section provide a variety of on-scene NWCG-certified capabilities. We currently have qualified personnel in the following positions: ARA, PSC2, PIO1, SITL, GISS, FFT2, FFT1, ICT5, ICT4, CRWB, ENGB, FAL1, FELB, FEMO, FIRB, FOBS, IMET, RXB3, EMT, STCR, STEN, TFLD, RAWS maintenance (N-9035), and UAS operations (FAA sUAS).

Fire Training Support: We provide support (either full course or individual units) for RT-130, S-130, S-190, S-203, S-290, S-390, S-420 and CIMC to Fire Training assistance.

Salem Weather Center

Fire and Smoke Management Operating Plan 2024

OREGON DEPARTMENT OF FORESTRY'S SALEM WEATHER CENTER FIRE AND SMOKE MANAGEMENT SERVICES

HOURS

The Oregon Department of Forestry's Salem Weather Center office hours vary depending upon fire and prescribed fire activity.

The office is typically open from 0700 - 1700, Monday through Friday (closed on state holidays). During periods of high prescribed burning the office may also be open on Saturdays from 0900 – 1700.

LOCATION

Oregon Department of Forestry

2600 State Street

Salem, OR 97310

STAFF

Stacy McCarter, Mitigation Program Manager Stacy.MCCARTER@odf.oregon.gov

Pete Parsons, Lead Meteorologist, Peter.G.J.Parsons@odf.oregon.gov

Gary Votaw, Meteorologist, Gary.S.Votaw@odf.oregon.gov

Sherri Pugh, Meteorologist, Sherri.Pugh@odf.oregon.gov

Teresa Alcock, Fire Program Analyst, Teresa.Alcock@odf.oregon.gov

Christina Clemons, Field Coordinator, Christina.T.Clemons@odf.oregon.gov

CONTACT Forecast Desk 503-945-7401

Appendices

Firefighters work the Golden Fire in Klamath County, Ore.
Courtesy of Oregon Department of Forestry, Klamath-Lake District

APPENDIX A

Links to Fire Weather Agreements and Documents

Interagency Agreement for Meteorological Services and other Technical Services

https://www.nifc.gov/sites/default/files/document-media/Interagency%20Agreements.pdf

NWS Fire Weather Services Directives

- Product Specifications (NWS Instruction 10-401)
https://www.nws.noaa.gov/directives/sym/pd01004001curr.pdf

- On-site Support (NWS Instruction 10-402)
https://www.nws.noaa.gov/directives/sym/pd01004002curr.pdf

- Coordination and Outreach (NWS Instruction 10-403)
http://www.weather.gov/directives/sym/pd01004003curr.pdf

- Annual Operating Plan and Report (NWS Instruction 10-404)
http://www.weather.gov/directives/sym/pd01004004curr.pdf

- Training and Professional Development (NWS Instruction 10-405)
http://www.weather.gov/directives/sym/pd01004005curr.pdf

- Zone Change Process (NWS Instruction 10-105)
https://www.nws.noaa.gov/directives/sym/pd01001005curr.pdf

Electronic copy of the NWS D-1 spot forecast request form
https://www.nws.noaa.gov/directives/010/401j/WS_FORM_D_SPOT.pdf

National Mobilization Guide http://www.nifc.gov/nicc/mobguide/index.html

Northwest Interagency Mobilization Guide
http://gacc.nifc.gov/nwcc/admin/publications.aspx

APPENDIX B

Forecast and Service Performance Measures

A. NFDRS Forecast Accuracy Performance Measures

The following performance measures are suggested as baseline standards for improvement over persistence forecasts on an annual basis for zone averages or key stations within a fire weather zone. The verification methodology will be consistent between all NWS offices (e.g. MAE, bias scores).

Suggested Annual Baseline Goals

Parameter	Improvement over persistence forecast
Temperature:	35%
Relative Humidity:	25%
Wind speed:	10%

Wetting Rain: A "yes" or "no" field, correct 80% of the time as verified by the PD1 and PD2 forecast forecasts in NFDRS.

Lightning: A “yes” or “no” field, correct 70% of the time as verified by the LAL forecast. For verification purposes, an LAL forecast of 2 or more will be considered a “yes.” This verification effort will be a collaborative effort between NWCC and NWS.

B. Spot Forecasts for Wildfires, Prescribed Fires and other activities

Spot Forecast verification will be based on relevant agency provided observations at the fire site (e.g. a forecast for a 7 p.m. temperature must be validated by a 7 p.m. observation.) Suggested verification criteria are as follows:

Temperature:	MAE <=5 degrees Fahrenheit
Relative Humidity:	MAE of following values: RH 30%: <= 4% RH 30-50%: <= 7% RH > 50%: <=10%
Wind Speed:	MAE <= 3 mph for user defined measurement height (20 foot wind or eye-level).

C. Red Flag Warning and Fire Weather Watch

Red Flag Warnings and Fire Weather Watches will be verified in accordance with NWSI 10- 401 http://www.weather.gov/directives/sym/pd01004001curr.pdf

Verification statistics will be included in the Annual Report.

APPENDIX C

Reimbursement for NWS-Provided Training

IMETs and other NWS staff are frequently requested to provide fire weather training for fire crews as part of such interagency fire behavior courses as S190 and S290. Policy guidelines for fulfilling these requests are outlined in NWSI 10-403.

Requests for training by NWS personnel are not made using resource orders. Rather, both the USDA Forest Service and Department of Interior utilize training request forms that can be used by the NWS to obtain reimbursement for travel costs associated with the provision of weather training. The USDA Forest Service uses Form AD-672.

The Department of Interior does not have a single, standard form. However, a template Form 1681-3 can be presented to the DOI requestor. It is the responsibility of the requesting agency to provide an appropriate agreement document for training.

If the request for training comes via a state agency, the NWS must use a NOAA General Counsel template. Training requests from California, Oregon and Washington do not need to use this form as their requests are covered by the same agreement used for IMET dispatches for those states.

There are no standard forms for gaining travel expense reimbursements from local agencies or colleges. Requesting agencies should pre-pay all travel expenses for instructors who must travel to the course, or at least cover lodging costs.

A secondary, more cumbersome option is for requesting agencies to reimburse the NWS by writing a check to the U.S. Department of Commerce for the amount of the travel voucher. If this is done however, the WFO must attach a “Gifts and Bequeaths Form” to the voucher prior to submission to their Finance Office. **Under no circumstances can the requesting entity personally reimburse the NWS instructor for travel costs.**

APPENDIX D

Incident Meteorologist Billing Points of Contact for Washington and Oregon

USDA Forest Service:
USDA Forest Service; Incident Business
101B Sun Avenue NW
Albuquerque, NM 87109

National Park Service, US Fish and Wildlife Service, Bureau of Indian Affairs, Bureau of Land Management:
David R. Burley
BLM, Incident Business Lead
National Interagency Fire Center
3833 S Development Ave
Boise, ID 83705

APPENDIX E
Spot Forecast Request Form D-1

WS FORM D-1
(1-2005)
(Supersedes Previous Editions)

SPOT REQUEST
(See reverse for instructions)

U.S. Department of Commerce
NOAA
National Weather Service

Please call the NWS Weather Forecast Office (WFO) when submitting a request and also after you receive a forecast to ensure request and forecast were received.
Please provide feedback to WFO on forecast.

1. Time†	2. Date	3. Name of Incident or Project	4. Requesting Agency

5. Requesting Official	6. Phone Number	7. Fax Number	8. Contact Person

9. Ignition/Incident Time and Date

10. Size (Acres)

11. Type of Incident
- ☐ Wildfire
- ☐ Prescribed Fire
- ☐ Wildland Fire Use (WFU)
- ☐ HAZMAT
- ☐ Search And Rescue (SAR)

12. Reason for Spot Request (choose one only)
- ○ **Wildfire**
- ○ **Non-Wildfire** Under the Interagency Agreement for Meteorological Services (USFS, BLM, NPS, USFWS, BIA)
- ○ **Non-Wildfire** State, tribal or local fire agency working in coordination with a federal participant in the Interagency Agreement for Meteorological Services
- ○ **Non-Wildfire** Essential to public safety, e.g. due to the proximity of population centers or critical infrastructure.

13. Latitude/Longitude:

14. Elevation (ft, Mean Sea Level)
Top: **Bottom:**

15. Drainage

16. Aspect

17. Sheltering
- ☐ Full
- ☐ Partial
- ☐ Unsheltered

18. Fuel Type: __Grass __Brush __Timber __Slash __Grass/Timber Understory __Other_____
Fuel Model: 1,2,3 4,5,6,7 8,9,10 11,12,13 2,5,8

19. Location and name of nearest weather observing station (distance & direction from project):

20. Weather Observations from project or nearby station(s): (Winds should be in compass direction e.g. N, NW, etc.)

Place	Elevation	†Ob Time	20 ft. Wind Dir	20 ft. Wind Speed	Eye Level Wind. Dir	Eye Level Wind. Speed	Temp. Dry	Temp. Wet	Moisture RH	Moisture DP	Remarks *(Relevant Weather, etc)*

21. Requested Forecast Period
Date

Start _____

End _____

Forecast needed for:
- ☐ Today
- ☐ Tonight
- ☐ Day 2
- ☐ Extended

22. Primary Forecast Elements (Check all that are needed) ***(for management ignited wildland fires, provide prescription parameters):***

	Needed:
Sky/Weather	☐
Temperature	☐
Humidity	☐
20 ft Wind	☐
Valley	☐
Ridge Top	☐
Other (Specify in #23)	☐

23. Remarks (other needed forecast elements, forecast needed for specific time, etc.)

24. Send Forecast to:
ATTN:

25. Location:

26. Phone Number:
Fax Number:

27. Remarks (Special requests, incident details, Smoke Dispersion elements needed, etc.):

EXPLANATION OF SYMBOLS: † Use 24-hour clock to indicate time. Example: 10:15 p.m. = 2215; 10:15 a.m. = 1015
Indicate local standard time or local daylight time

APPENDIX F
HYSPLIT Request Instructions

HYSPLIT is a model which determines trajectories for parcels at a given height above ground level. An easy method has been developed to take advantage of the base information that is already input into the spot request form to generate automated HYSPLIT Trajectory forecasts.

The HYSPLIT trajectories can be used for many purposes (i.e. HAZMAT, smoke, etc.). The HYSPLIT output is only trajectory based. If you want “dispersion” based output, you must contact the forecast office, so they can submit manually from the NOAA HYSPLIT website. The HYSPLIT output represents computer model forecasts without any human interaction. They do not take into account information on burn size or fuels, thus generate trajectory forecasts for 500, 1500, and 3000 meters AGL without regarding for whether the fire plume height will reach those altitudes.

To utilize this feature, simply select YES on the right-hand side of the NWS spot page request. The HYSPLIT forecast will be automatically generated and sent to the email address(es) used in the request.

It is recommended that you try this procedure and get a feel for its content before using it for actual guidance on a burn or fire. For more information, please visit https://www.wrh.noaa.gov/wrh/UserSpotGuide2019_2.0.pdf. If you have any questions, please contact your local fire weather program leader.