NATIONAL
FIRE WEATHER
ANNUAL OPERATING PLAN

2021

I. INTRODUCTION

This document serves as the National Interagency Fire Weather Annual Operating Plan (AOP), detailing national-level services, products and responsibilities for both the Wildland Fire Agencies and the National Oceanic and Atmospheric Administration's (NOAA's) National Weather Service (NWS). The general relationship between NWS and the interagency fire management community is set forth in the National Interagency Agreement for Meteorological Services, referred to as the "National Agreement" from here on. References include:

- National Weather Service Policy Instructions (NWSI) 10-4, 401, 402, 403, 404, 405 and 407
- The National Agreement
- National Mobilization Guide

II. SIGNIFICANT CHANGES SINCE PREVIOUS PLAN

Section VI.D is clarified to specify instances when a NWS IMET can be ordered to the Geographic Area Coordination Center (GACC) for meteorological support of incidents. Section VI.H is reworded to update the language concerning use of fire detections. Service Program Team calls in section VI.H is added as an interagency coordination responsibility.

III. SERVICE AREA AND ORGANIZATIONAL DIRECTORY

Fire weather services are provided by NWS Weather Forecast Offices (WFOs) and National Centers with fire weather forecasting responsibility, the interagency Predictive Services units at the 10 GACCs, and the National Interagency Coordination Center (NICC).

NWS' Fire Weather Services Program is managed under its Analyze, Forecast and Support Office (http://www.weather.gov/organization/afs), within the Severe, Fire, Public and Winter Weather Services Branch (AFS21). The NWS is responsible for providing fire weather forecast products and services to the fire and land management community for the protection of life and property, promotion of firefighter safety, and stewardship of America's public wildlands. In addition to three dedicated, full time fire weather management positions at the National Interagency Fire Center (NIFC), the Fire Weather Program also has a dedicated Information Technology Officer (ITO) located in Salt Lake City, Utah at the NWS Western Region Headquarters.

Predictive Services consists of meteorologists, intelligence coordinators, and wildland fire analysts located at 10 GACCs and NICC. Programmatic oversight is the responsibility of the Predictive Services Operating Group (PSOG) and general guidance is provided by the National Interagency Mobilization Guide and the Interagency Standards for Fire and Fire Aviation Operations (Red Book).

IV. NATIONAL WEATHER SERVICE SERVICES AND RESPONSIBILITIES

A. Basic Services

The following constitute the current operational fire weather forecast products provided by NWS, as well as, experimental and/or prototype forecast products or services. Any experimental products are labeled accordingly.

Fire Weather Planning Forecasts

Fire Weather Planning forecasts are issued by all NWS WFOs with fire weather users requesting NWS services. The intent is to provide general, zone-based information for daily preparedness and planning purposes.

Product specifications can be found in NWSI 10-401
http://www.nws.noaa.gov/directives/010/010.php

Spot Forecasts (FWS)

Spot forecasts are site-specific forecast products issued for wildfires, prescribed fires, search and rescue operations, aerial spraying, etc., and are available upon request at any time of day, week, or season. Spot forecasts are available to any federal, state or municipal agency in accordance with requirements outlined in NWSI 10-401. By policy, spot forecasts may also be issued to entities formally designated to act on behalf of any federal, state or municipal Agency when the Agency attests that the spot is being used in defense of public safety.

Spot forecast specifications can be found here:
http://www.nws.noaa.gov/directives/sym/pd01004001curr.pdf

Fire Weather Watches (FWW) and Red Flag Warnings (RFW)

A Red Flag event is a critical combination of dry fuels, weather conditions and other local criteria that support extreme fire behavior and/or excessive fire starts that significantly impact initial attack. Specific objective criteria for Red Flag events are defined in local, regional, and/or state AOPs.

RFW and FWW forecast specifications can be found here:
http://www.nws.noaa.gov/directives/sym/pd01004001curr.pdf

National Fire Danger Rating System Forecasts (NFDRS)

NWS' role with respect to the NFDRS system is to provide forecasts of required meteorological parameters as input to the NFDRS software to facilitate prediction of fire danger indices. Please note that not all NWS offices produce NFDRS forecasts.
NFDRS forecast specifications can be found here:
http://www.nws.noaa.gov/directives/sym/pd01004001curr.pdf

Digital Services

All WFOs produce a digital forecast database that provides a variety of web accessible planning tools for fire weather partners. These tools can be of assistance to help determine the timing for a spot forecast request and include:

- WFO-specific Point Forecast Matrix (PFM)
- Digital Point Forecast
- Hourly Weather Graphs
- WFO-specific Meteograms

Storm Prediction Center Fire Weather Outlooks

The Storm Prediction Center produces Day 1, Day 2, and Day 3-8 Fire Weather Outlooks for the lower 48 states. These outlooks describe critical combinations of dry fuels with large-scale weather conditions that favor extreme fire behavior and/or excessive fire starts.

Fire weather outlook forecast specifications can be found here:
http://www.nws.noaa.gov/directives/sym/pd01004001curr.pdf

B. Incident Response

NWS will maintain a cadre of Incident Meteorologists (IMETs) and will ensure this cadre is fully trained, certified, and able to meet requests as staffing resources and appropriated funding permits. Agencies participating in the National Agreement request NWS IMETs first to Federal incidents. For non-Federal incidents, the requesting agency may order an NWS IMET or another qualified meteorologist to support incident meteorological needs.

IMETs generally provide direct, onsite support for active fire management operations. However, agencies may require fire weather support for operations or activities that are not directly associated with a specific wildland fire incident. In these situations, remote or off-site fire weather support by the local servicing WFO may be a suitable alternative. Users of these services should contact their local WFO to make arrangements.

The coordination for all IMET dispatches and training assignments is accomplished between the National Fire Weather Operations Coordinator (NFWOC) and the NICC or GACC. NICC and GACC Predictive Services assist the NFWOC in efficiently dispatching IMETs to requested incidents. National dispatching procedures are found in the National Incident Mobilization Guide. IMETs are dispatched using the most cost efficient manner and the closest resources concept. Predictive services will be provided access to a list of deployed NWS meteorologists in support of incidents, including IMETs.

All requests for IMETs are processed with the following information:

1. Name of fire
2. Location of fire
3. Directions to location where the IMET is to report and fire camp location
4. Name of Incident Commander, Plans Chief, and Fire Behavior Analyst (if available)
5. Request and Resource Order number for each IMET

One must verify that the "Special Needs" section on the Resource Order includes authorization for use of a rental vehicle, cell phone, computer equipment, and the All Hazards Meteorological Response System (AMRS).

Agency requests for IMET support for long-duration, non-wildfire incidents, such as smoke-sensitive prescribed fires, should follow this process:

1. Provide a written request to the NWS with as much lead time as possible.
2. Explore options with NWS for on-site versus in-office support.
3. Discuss and document forecast requirements with NWS.

Additionally, the requesting agency is responsible for providing adequate shelter to allow the fire weather meteorologist and equipment to function efficiently. This should include a location free of excessive dust, heat, and moisture, and protection from wind and other elements.

Refer to local or regional AOPs for additional guidance or exceptions to these responsibilities.

C. Forecaster Training

NWS recognizes the need for specialized training in fire weather for its forecasters. Any NWS meteorologist producing fire weather products or acting as a WFO fire weather local program leader will have met the requirements set forth in NWSI 10-405. NWS IMET training and certification is

also defined in NWSI 10-405.

Training requirements can be found at: http://www.nws.noaa.gov/directives/sym/pd01004005curr.pdf

V. WILDLAND FIRE AGENCY SERVICES AND RESPONSIBILITIES

Predictive Services Program

The Predictive Services Program provides decision-support products and services to wildland fire managers for managing and mobilizing firefighting resources. More specifically, Predictive Services is tasked with enhancing proactive wildland fire management that emphasizes safety, cost containment, efficiency, and ecosystem health by successfully anticipating critical fire events through the integration of climate, weather, fuels, fire danger, situation analysis, and resource status information. Additionally, Predictive Services collaborates with cooperating agencies, academic and research partners, and the private sector to advance the state of the science.

A. Basic Services

7-Day Significant Fire Potential Outlook
Integrates weather, climatology, historical fire occurrence, and fuels state into a statistical assessment of significant fire potential by Predictive Services Area (PSA). It includes a general weather synopsis, fire potential and resources discussions.

Daily Fire Weather Outlooks
Combines information from the NWS, Fire Consortia for the Advanced Modeling of Meteorology and Smoke (FCAMMS), Predictive Services meteorologists and other sources into graphics of significant fire weather parameters.

Multi-media briefings
May provide a recorded briefing on current and forecasted fire potential including fire weather forecasts, fuels status information, and resource availability.

National Significant Wildland Fire Potential Outlooks
Incorporates all available weather, climate and fire danger information to provide medium- and long-term predictions of significant fire potential. Reports consists of discussions of global climate patterns that affect fire activity in the U.S., including drought trends; regional discussions from the GACCs describing current weather and fuels conditions and fire activity and expected trends for the next one to four months; national maps delineating forecasts of above and below normal fire potential.

North American Significant Wildland Fire Potential Outlook
A complementary product to the National Significant Wildland Fire Potential Outlook that is jointly prepared by the U.S. Predictive Services, Natural Resources-Canada, and Servicio Meteorológico National de Mexico.

Fuels and Fire Behavior Advisories
Delineate areas of hazardous fuel conditions and projected active fire behavior. Production is coordinated with fire management personnel within the Geographic Areas and with NICC through Predictive Services.

National Fuel Moisture Database

Provides oversight to an online, site-specific archive of live and dead fuel moisture sample data for both large and fine fuels. The database is managed regionally at the Geographic Area Coordination centers.

B. Program Management and Incident Response Assistance

Coordination
Predictive Services coordinates with wildland fire managers and various service providers including, but not limited to, NWS, the private sector, and the research community.

RAWS/NFDRS
Geographic Area Coordination Center (GACC) Predictive Services monitors and, in some instances, manages portions of the interagency RAWS program. This includes data quality assurance, station maintenance and acquisition, and development and provision of training.

C. Agency Computer Systems

Where such fire management computer systems as the Weather Information Management System (WIMS) are locally available, access to the systems will be granted to NWS to provide or develop services, as needed. Continual access to the Internet is a key component of IMET success, and incidents should strive to provide data line access to IMETs to the best of their ability.

D. WIMS IDs for NFDRS Stations

All NFDRS observation stations are assigned a 6-digit NWS station identification number for use in WIMS. Available GACC Remote Automated Weather Stations (RAWS) Coordinators must be contacted for assignment of a 6-digit number for any new station or for any changes in location made to existing stations that already have an NWS ID number. The RAWS Coordinator will obtain appropriate 6-digit IDs and will notify NWS and other appropriate entities of any new or relocated NFDRS stations.

E. Fire Weather Observations

RAWS & NFDRS
Observations from RAWS sites will be the latest data available from satellite interrogations. RAWS and NFDRS stations should be sited and maintained according to NWCG PMS 426-3, "National Fire Weather Station Standards and Guidelines." Regardless of station age or location, RAWS maintenance requirements must be adhered to.

If a known maintenance or data accuracy problem exists with an NFDRS forecast site, the problem will typically be reported to the station owner by the NIFC RAWS Depot via e-mail (rawshelp@blm.gov). It is the duty of the station owner to take corrective action. If a WFO knows of this problem and maintenance is not completed on the observation site, the WFO may suspend the NFDRS forecast for that site until the problem is solved. Notification of the NFDRS forecast suspension will be coordinated with Predictive Services in the affected Geographic Area Coordination Center.

Fireline Observations & Spot Forecast Feedback

Fire line observations are required when requesting a spot forecast. Fire management agency personnel will take standard fire line observations of temperature, humidity, wind speed and direction and weather/sky condition consistent with guidance provided in NFES 2140, "Weather Station Handbook - an Interagency Guide for Wildland Managers." If a fire line observation cannot be obtained, the requestor must provide an observation site to be used in lieu of the fire line observation.

Spot Forecast Feedback and Validation

Feedback on spot forecasts is necessary to validate forecasts and improve accuracy. On-site incident staff is strongly encouraged to actively communicate with the office that issued a spot forecast to report condition changes, request updates and/or provide post event analysis.

VI. JOINT RESPONSIBILITIES

A. Training

Meteorological training assistance for NWCG and other courses will be provided jointly. Requests for training from WFOs should be directed to the local WFO's Meteorologist-in-Charge (MIC). Requests for training from Predictive Services meteorologists should be directed to the GACC or NICC Predictive Services Units. In all cases, sufficient advance notice should be given to allow for scheduling and proper preparation. A minimum of six weeks is recommended.

Requests for NWS personnel to provide training should be accompanied by a separate reimbursement or advancement of funds Agreement for training. It is important to remember that the National Agreement does not provide a mechanism for reimbursement for training.

B. Incident Response Reimbursement

Assistance will also be provided to respective Agency finance centers and NWS Regional Headquarters personnel after the dispatch to ensure proper reimbursement procedures are followed. As outlined in the National Agreement, all costs directly associated with incident response will be reimbursed by the requesting Agency. These costs not only include those associated directly attributable to the IMET, but also costs incurred by the home duty station of the IMET. This includes the overtime costs of the duty station forecasters required to fill in shifts left vacant by the departing IMET. Also, in extremely busy fire seasons where long-term high national planning levels require extended IMET assignment requests, temporary duty (TDY) forecaster assignments may also be required. This may be necessary to maintain an IMET's home WFO shift requirements while making IMETs available to Incident Command Teams. This TDY option will only be exercised in exceptional cases where numbers of dispatched IMET numbers are very high.

Telecommunication services costs will be computed annually based on the average prorated percentage rate of use, as applicable, and/or otherwise attributable to the Wildland Fire Agencies. The Wildland Fire Agencies reimburse all attributable communication costs and split the prorated cost annually, among themselves, according to the NWCG cost distribution rate, and billings/payments will be administered at the national level via separate reimbursable agreement(s) for telecommunication services.

C. Interagency IMET Standards

The NWS and Interagency Wildland Fire Agencies will develop and maintain Interagency IMET qualifications to meet the needs of the Wildland Fire Agencies.

The NWS and Interagency Wildland Fire Agencies work together at the national level to review IMET qualifications and standards annually, as outlined by NWS Policy Instructions 10-402 and 10-405 (http://www.nws.noaa.gov/directives/010/010.htm). Changes, as appropriate, will be added as an appendix to this National AOP. These changes will also be coordinated and included as appropriate within NWS Policy Instructions 10-402 and 10-405.

D. Coordination Issues

Given the distinct missions of NWS and the Wildland Fire Agencies, care must be taken to maximize efficiency and coordination when weather information and/or products are critical for the safety of fire fighters and the public. With the best interests of fire fighters and the public in mind, NWS and Predictive Services work together to assure a consistent weather message is delivered to fire managers. Open coordination, appropriate sharing of key information, leveraging and sharing of software development, and coordination calls are strongly encouraged. Also, to assure warning consistency, NWS has the final authority for issuing all Fire Weather Watches and Red Flag Warnings. On incidents, the IMET is the final authority for all fire weather forecast information. If possible, Predictive Services and the NWS will join efforts in disseminating each other's products. NWS and Predictive Services also work to establish websites displaying all available information.

Occasionally, staffing concerns may lead to requests for an operational IMET presence at a GACC. A request for a NWS forecaster (IMET) to be detailed to a GACC can be requested during heightened fire activity, under a resource order involving wildland fire suppression activities. Requests will be fulfilled as staffing resources and appropriated funding allows. Any IMET dispatch request of this sort should be made and processed through the National Fire Weather Operations Coordinator (NFWOC). NFWOC will coordinate with the appropriate NWS Regional Headquarters office before approving or denying such a request. While dispatched, the IMET will operate under the direction of the GACC Center Manager for day to day duties, analogous to Incident Command System procedures where the IMET operates within the Plans Section and Incident Commander.

IMETs cannot be ordered to GACCs to perform standard GACC duties or routinely backfill GACC vacancies. For NWS to fill requests for IMETs, GACCs must be under a high state of preparedness, implying that there is an explicit danger posed from several, active wildfires. Specifically, the NWS will only consider an IMET request when the ordering GACC is at Planning Level 3 or higher. Also, the NWS will consider a GACC request when there is a Type 1, Type 2 or National Incident Management Organization (NIMO) Incident Management Team active in the GACC area.

Efficient coordination during significant fire activity is the key to fire fighter and public safety. When coordinating issues, some suggested discussion topics and methods of coordination include but are not limited to:

- Overview of fire activity and fire potential situation.
- Regional synopsis of current and expected fire weather situation and/or other pertinent forecast concerns from a Geographic Area perspective.
- Round-robin discussions where all participants will have the opportunity to ask questions

and share information regarding forecast concerns, forecast differences, etc.

E. Monitoring, Feedback and Improvement of Fire Weather and Fire Potential Information

Predictive Services and NWS meteorologists monitor all sources of fire weather and fire potential information to ensure consistency, quality, and applicability. Where issues arise, data are archived and brought to the attention of the provider to enhance awareness and work toward improvement. Some priorities include:

- NFDRS forecast consistency with station climate histories.
- General forecast parameter consistency.
- Utility of fuel dryness information.
- Accuracy and applicability of the RFW program.
- Quality of fireline observations and spot forecast feedback.
- Overall adherence to policies and procedures set forth in AOPs.

Fire detection and reporting in real time is an area of emerging technology through the new Geostationary Satellite Server (GOES) and Joint Polar Satellite System (JPSS) satellite programs. Detection of fire has historically been a Fire Agency duty. The NWS Fire Weather Services Program will continue to work closely with the Fire Agencies and Predictive Services to identify advancements in using detections of fire to inform warning services aligned with NWS policy directives that support the needs of Fire Agencies.

F. Technology Transfer

NWS and Predictive Services meteorologists integrate advanced technology, analysis, and prediction systems into fire management planning and operations. Efforts include but are not limited to:

- Regional numerical modeling of weather and smoke dispersion.
- Proper use of RAWS and NFDRS.
- Research and development to advance fire meteorology.

G. Annual Operating Plans (AOPs)

The National Weather Service and Predictive Services jointly develop National and regional AOPs which are reviewed jointly on an annual basis. Regional AOPs are constrained within the limits of the national AOP. AOPs must include, but are not limited to, red flag warning and fire weather watch criteria, individual and joint responsibilities, and technology transfer requirements.

H. Interagency Participation

WFOs and Predictive Services units are expected to participate in AOP meetings, NWCG committees and subcommittees, NWS Service Program Team calls, and other groups and meetings, as appropriate.

VII. EFFECTIVE DATES OF THE AOP

February 1, 2021 to February 1, 2022.

Strictly, this AOP shall be effective on the date the last signature is placed on the signature section and it will remain in effect until the date the last signature is placed on the signature page the following year. Updates or amendments may be added in the interim upon agreement of all signatories.

VIII. AGENCY SIGNATURES

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Date: 2021.01.25 11:01:01 -05'00'

Severe, Fire, Public, and Winter Weather Services Branch Chief — Date
Analyze, Forecast and Support Office
NOAA National Weather Service

JARROD SIMONTACCHI (Affiliate)

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Date: 2021.01.20 20:36:52 -07'00'

Center Manager — Date
National Interagency Coordination Center