

Chapter 60 Predictive Services

Predictive Services Overview

Predictive Services provides decision-support for federal, state and local wildland fire agencies that provide operational management of and strategic planning for firefighting resources. This is accomplished through the collection, analysis and dissemination of information about fire activity, resource status, weather and fuels, and assessments of fire danger and fire potential. The AICC Predictive Services Section includes Intelligence, Fire Weather, and Fire Analysis.

Wildland Fire Weather Forecasts

AICC Predictive Services Meteorologists will provide direction and guidance which will ensure fire weather forecasts are communicated in a timely manner to firefighters.

Intelligence

The AICC Intelligence section is responsible for gathering and disseminating data regarding wildfire, prescribed fire, and resource commitments on a statewide basis. This is disseminated to local and regional fire managers and, when activated, AMAC group members. Data is gathered from 14 local units on a daily basis from mid-April through mid-September.

The Intelligence Staff, post the agency crew status list, produce year end statistics, are the data stewards of the statewide historical fire records, and provide briefings to the interagency community.

AICC Intelligence is notified by the AICC Coordinator when the following situations arise:

- An Incident Management Team is ordered.
- There are a large number of fire starts.
- Politically sensitive incidents occur, or significant major incidents occur.
- If accidents, or entrapments, occur.

AICC Intelligence then notifies their counterparts at the NICC.

Incident Status Summary (ICS-209)

ICS-209s are the primary source of Alaska fire activity information for national, regional, and local fire managers. ICS-209 information is used by managers to prioritize incidents and allocate resources locally, statewide, and at the national level. The ICS-209s are therefore an essential element in the ability to obtain resources such as smokejumpers, airtankers, helicopters, and Type 1 crews.

The Incident Status Summary (ISC-209) can be accessed via the [Wildland Fire Application Portal](#). However, permissions to use the platform must first be gained through FamAUTH.

The user guide, forms, and other helpful information can be found on the [NICC Intelligence webpage](#), the [FAM-IT Incident Applications webpage](#), and the [AICC Intelligence webpage](#). A user may also utilize the hover tips within the 209 program.

Refer to the [National Interagency Standards for Resource Mobilization](#) for additional information.

Alaska ICS-209 Requirements for Wildfires

The ICS-209 is used to report large wildfires or fires that have a significant resource commitment. Large fires are classified as 100 acres or larger in timber fuel types, 300 acres or larger in grass or brush fuel types, or when a Complex Incident Management Team is assigned. A report should be submitted daily until the incident is contained. ICS-209s should be submitted as required by the [National Interagency Standards for Resource Mobilization](#), before 8:00pm AKD.

In addition to the national standard, Alaska requires ICS-209s for all fires (whether in Critical, Full, Modified or Limited) that have a commitment of 17 or more personnel for more than one burning period (overnight). The fire dispatch offices are responsible for completing the ICS-209s in the event that the incident personnel do not submit one.

Submitting 209s during a FamAUTH-Outage

Complete the digital ICS-209 form and email it to the Geographic Area Coordination Center (GACC) and to the National Interagency Coordination Center (NICC) (intell@blm.gov). If a hard copy ICS-209 form is filled out, fax it to both the Geographic Area Coordination Center and the NICC (NICC faxes: 208-387-5663 or 208-387-5414).

A digital “paper” copy of the current ICS-209 form is available on the [NICC Intelligence webpage](#). (Incident management teams and dispatch centers should archive a copy of the ICS-209 form in case there is a network outage preventing access to the web.)

There is also a color-coded digital copy on the AICC Intel page under Forms. The color coding helps to delineate which fields need to be updated frequently, and which more often carry over.

Regardless of submission method, it is imperative to call the GACC and NICC (208-387-5093 or 208-387-5400) to let them know that a 209 is being submitted by fax or email. This will help to ensure that the ICS-209 report gets to the Intelligence staff in a timely manner.

Alaska Interagency Situation Dashboard

AICC Intelligence produces a daily situation report from April 1st through September 30th (or later if necessary). Statewide incident information for wildland and prescribed fires is assembled from the dispatch offices’ night reports. The Alaska Situation Report is now a dashboard on the AICC website.

The Situation Report narrative is the primary source for fire information and should summarize the day’s activities and expected activities for the following day.

Examples of suggested details when formulating an initial narrative are:

- Who discovered or reported the fire
- Time (when the fire was discovered or reported)
- General location (“approximately 35 miles southwest of Ruby”)
- Size
- Fire Behavior

- Fuels and natural barriers
- Weather at time of observation
- Response and general resources – unit numbers allowed, but no names
- If non-standard response – reason for
- Current and future tactics
- Resources and values at risk
- If multiple jurisdictional agencies are involved

Examples of additional items to consider for updating narratives are:

- Acreage increases/decreases and collection method
- Complexity and whether it is changing (i.e. Type 3 to Type 2)
- Estimated contain/control time

Examples:

NEWLY DISCOVERED FIRES:

At 1345 a commercial aircraft pilot reported seeing a new fire located approximately 45 miles southwest of Beaver. The fire was approximately 2-3 acres in size, 85% active and burning in white spruce and tundra. The fire plotted in a Full management option area, and it was determined that action needed to be taken. One load of smokejumpers was delivered by smokejumper aircraft J-66 along with zone helitack personnel with helicopter N34954. No additional resources were requested.

The fire plotted in a Limited management option area and no action was taken.

FIRE LOCATION IN A LIMITED FIRE MANAGEMENT OPTION AREA:

At 1517 zone detection aircraft N114MN discovered the fire located approximately 45 miles south of the village of Selawik. The fire was approximately 10 acres in size, creeping and smoldering in tundra and black spruce and located in a Limited management option area. No action taken.

FIRE LOCATED IN A FULL SUPPRESSION FIRE MANAGEMENT OPTION AREA:

At 1630 smokejumper patrol aircraft J-17 discovered the fire located 13 miles east of the village of Ambler. The fire was approximately 15 acres in size, backing and torching in black spruce and located in a Full management option area. It was determined that action needed to be taken. At 1654 eight smokejumpers were delivered by J-17. Smokejumpers worked to achieve containment, and no further resources were needed.

FIRE LOCATED IN A CRITICAL FIRE MANAGEMENT OPTION AREA:

At 1212 a private citizen from the village of Nulato reported a wildfire located about ¼ mile from the end of the Nulato airstrip. The fire was approximately 3 to 5 acres in size, running and torching in black spruce and located in a Critical management option area. It was determined that action

needed to be taken. One load of smokejumpers, 2 CL-215 scoopers and Air Attack resources responded and were able to achieve partial containment of the fire by 2200.

UPDATES: ON-GOING FIRES WHEN OBSERVATIONS WERE MADE:

- At 1833 the fire was flown by zone surveillance aircraft N9011N. The fire was 30% active, creeping and backing with 3–5-foot flame lengths. The fire size had increased to approximately 550 acres.
- The digitized fire perimeter was updated revealing a new size of 475 acres.
- Observed fire behavior included smoldering in tundra along the northwest perimeter, creeping in black spruce within the southeast corner single tree torching in black spruce throughout the interior.
- At 1833 the fire was flown by zone surveillance aircraft N9011N. There was no smoke showing.

Prescribed Fire Reporting

See the [Alaska Statewide Operating Plan](#). Please contact the Intel desk for numbering standards.

Incident Management Team Incident Reporting

When a CIMT is assigned to an incident within Alaska, the Incident Action Plan (IAP) should be submitted to the Intelligence Section at AICC daily. This information can be emailed to akacc.intel@firenet.gov or faxed to (907) 356-5698.

National Incident Management Situation Report (IMSR)

Refer to the [National Interagency Standards for Resource Mobilization](#).

Alaska Crew Movement

AICC Intelligence must be notified immediately via TTY of any crew hires, reassignments and releases.

More information on ordering procedures and Alaska Type 2 EFF/AD Crew management guidelines can be found in [Type 2 EFF Crews Chapter 30 – Crews Type 2 Contract Crews \(AK2CC\)](#)

Alaska began utilizing Type 2 Contract Crews (AK2CC) in 2020. The contract crews are on a rotation and are dispatched out of Yukon Fire Dispatch Center (AK-YFDC). Contract Crew status is available on the [AICC Crews webpage](#).

Agency Sponsored Crews

Dispatch offices, in coordination with incidents, are responsible for timely reporting of the status of the resources assigned to the incidents within their area of responsibility to the AICC Intel Desk via the local CAD and via the TTY. Refer to the [AICC Crews webpage](#) for crew status products.

Incidents will advise their supporting dispatch office regarding any change in the status of their assigned agency sponsored Type 1, Type 2IA, and Type 2 crews in a timely manner.

Fire Weather

Predictive Services Outlooks

Predictive Services outlook products include Daily, Monthly and Seasonal Outlooks for Alaska, as well as products for Canada and the remainder of the United States. These products are located on the [AICC Outlooks webpage](#).

7 Day Significant Fire Potential

Significant fire potential is “the likelihood a wildland fire event will require mobilization of additional resources from outside the area in which the fire situation originates.” It assesses the daily probability for occurrence of a new large fire and/or the daily potential for significant new growth on existing fires.

The significant fire potential forecast is influenced by a combination of fuel dryness, weather, ignition triggers, and resource capability. Fuel dryness (DL) is calculated for each PSA using designated weather station and model data to forecast the Spruce Adjective Rating (SAR) for a seven-day period. These values are in turn translated into dryness levels that are based on a national standard, scaled as follows:

- SAR= 1-2: Moist, with little or no risk of large fires (DL=Green).
- SAR = 3: Dry, with low risk of large fires in the absence of a high-risk event (DL=Yellow).
- SAR = 4-5: Very Dry, with low/moderate risk of large fires in absence of high-risk event (DL=Brown).

High risk days, days which have historically led to a high probability of significantly large and/or active fire occurrence, can also be forecast by considering critical weather and ignition triggers. The Alaska Geographic Area utilizes four high risk triggers for identifying High Risk Days. These triggers include:

- Winds –Critical wind speeds and low relative humidity resulting in an elevated chance for significant fires and the potential for significant fire growth on existing fires. (W)
- Burn Environment– An elevated chance of significant fires and potential for large fire growth due to either hot temperatures, instability, and wind, or a combination of these factors. (BEN)
- Lightning – A greater than 20% chance of significant fires due to thunderstorms. (L)
- Recreation – A greater than 20% chance of significant fires due to human activity and very dry background conditions. (R)

This product uses each of these factors to forecast areas of significant fire potential and high-risk days within a 7-day period by Predictive Service Area (PSA). Alaska is divided into 21 PSAs, each of which defines an area of consistent fire regime based on fire and weather history and

administrative boundaries (Figure 3). Forecast Fuel Moisture Codes (FFMC, DMC and DC) and Fire Behavior Indices (ISI, BUI, and FWI) can also be viewed by PSA for Alaska. (See the [Fire Danger Rating System](#) section for more information on Fuel Moisture Codes and Fire Behavior Indices.)

The 7 Day Significant Fire Potential product includes forecast narratives on weather, fuels/fire potential and resources, a color-coded interactive map, geospatial products/map services, and other data exports. This product is produced daily for Alaska from mid-May through mid-August (depending on fuel conditions). Weekend forecasts are available when the Predictive Services Weather Desk is staffed seven days a week.

This product (for Alaska and CONUS) can be found on the [AICC Outlooks](#) webpage. More information on how this product is generated can be found on the [NICC Predictive Services Outlooks](#) webpage.



Figure 3. Alaska Predictive Service Areas

- AK00 – North Slope
- AK01E - Tanana Valley East
- AK01W - Tanana Valley West
- AK02 - Upper Yukon Valley
- AK03N - Tanana Zone North
- AK03S - Tanana Zone South
- AK04 - Koyukuk/Upper Kobuk
- AK05 - Middle Yukon
- AK06 - Seward Peninsula
- AK07 - Lower Yukon
- AK08 - Yukon-Kuskokwim Delta
- AK09 - Kuskokwim Valley
- AK10 - Bristol Bay
- AK11 - Susitna Valley
- AK12 - Copper River Basin
- AK13 - Matanuska Valley and Anchorage
- AK14 - Kenai Peninsula
- AK15 - Northern Panhandle
- AK16 - Central Panhandle
- AK17 - Southern Panhandle
- AK18 - Kodiak Island

National Monthly/Seasonal Significant Wildland Fire Potential Outlook

This national product is issued by the first of each month (with an outlook period of 4 months) throughout the year. It can be found on the [AICC Outlooks](#) webpage or on the [NICC Outlooks](#) webpage. Refer to the [National Interagency Standards for Resource Mobilization](#) for details.

Alaska Monthly Significant Wildland Fire Potential Outlook

This Alaska outlook product is published by the first of each month with a 4-month outlook period. It is included in the NIFC monthly outlook and is posted to the [AICC Outlooks](#) webpage.

Alaska Seasonal Outlook

This Alaska outlook is produced at least once a year as a pdf and a video recording (podcast) and is posted by the beginning of May to the [AICC Outlooks](#) webpage. The Monthly Outlook (discussed above) will provide updates to the seasonal forecast.

Weather Briefings

Statewide Weather Briefing

Statewide weather briefings are provided based upon fire activity during the fire season, from the end of April through most of August. The briefing is at 9:45 am. A dial-in phone number and a webinar link for the briefing is available on the [AICC Fire Weather](#) webpage.

The briefing slides and video recordings (podcasts) are posted to the [AICC Fire Weather](#) webpage. Weather briefings encompass a comprehensive look at today, tomorrow, and the next day's weather as well as a seven-day weather outlook. Fuel conditions and fire danger are also discussed for the short-term.

Operations Weather Briefings

Weather briefings are also provided to the Smokejumpers during much of the fire season, typically beginning in mid-May and ending in mid-August. Recordings of the statewide weather briefing will be available daily by 10:30 am and will be used by smokejumper staff. At high PL levels, in-person briefings may also occur. If in-person briefings are provided, they will occur at 10:30 am on weekdays and 11:30 am on weekends based on requests by Smokejumper management staff and direction of AICC Center Manager or designee.

Products Issued by National Weather Service

All fire weather coordination between the National Weather Service (NWS) and AICC Predictive Services is documented annually in the [Alaska Fire Weather Program Annual Operating Plan for National Weather Service, Alaska Region \(NWS\) and Alaska Wildland Fire Coordinating Group \(AWFCG\)](#).

All fire dispatch offices are responsible for notifying their local fire departments, field personnel, and other cooperators regarding any of the advisories listed below.

Red Flag Warnings and Fire Weather Watches

Red Flag Warnings and Fire Weather Watches are issued by the NWS for weather conditions that may lead to extreme fire behavior on existing fires and/or increased ignitions. These are issued when one or more of the following conditions are occurring or expected to occur.

General Non-Convective Red Flag Warning Criteria:

All Zones	Temp \geq 75°F	RH \leq 25%	Wind \geq 15 mph (sustained)
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Exceptions to the Non-Convective Red Flag Warning Criteria:

937: Delta Junction	No temp criteria	RH \leq 25%	Wind \geq 30 mph (sustained)
Pre-Green Up* in Zones: 701-704: Anchorage/Eagle River/Hillside/Turnagain Arm 711-713, 746: Mat-Su Valley 721, 722, 725-727, 733, 734: Kenai Peninsula	Temp \geq 65°F	RH \leq 25%	Wind \geq 15 mph (sustained)

*Green up conditions are identified by local fire managers each spring to ensure an appropriate change date for South Central zones.

Lightning Criteria:

All zones	Thunderstorm Coverage = Scattered to Numerous Fuel conditions = Very Burnable per Predictive Services CFFDRS Adjectives
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When a warning or a watch is issued, it will be in the headline of the forecast. The NWS first provides notification to AICC Predictive Services. The main contact is the AICC Fire Weather Desk ((907)356-5691) or the AICC Aircraft Desk (907)356-5670). In turn, Predictive Services will transmit the watch or warning on the TTY to all interested parties, with a follow up phone call to the affected Areas or Zones. If it is after normal duty hours or when Predictive Services is not available, the AICC Aircraft Desk will receive the call, and will disseminate the information over the TTY and by telephone.

A Fire Weather Watch is issued to alert fire personnel to the possible development of a significant fire weather event for time periods beyond 24 hours. A Red Flag Warning is typically issued when conditions are occurring or expected to occur within 24 hours. At times, a Red Flag Warning may be issued more than 24 hours in advance if confidence in the event’s occurrence is high early on. A Fire Weather Watch will often be upgraded to a Red Flag Warning as event onset and the likelihood of occurrence increases.

A Fire Weather Watch remains in effect until it expires, is canceled or upgraded to a warning. A Red Flag Warning remains in effect until it expires or is cancelled. For any such change, the same notification procedures are used as when a Watch or Warning is issued.

Spot Weather Forecasts

Spot weather forecasts for wildfires, prescribed fires, or any other significant event are available from the NWS. Requests are made to the appropriate NWS office (ANC, FAI, or JNU) through a national web page and should include the following information: location, aspect, elevation, drainage, fuels, fire name and number, agency, ignition time (for prescribed fires), size, any weather observations from the field, nearby weather stations or webcams, and any other information that will aid the forecaster in providing a good spot forecast. Spot requests can be made using one of the following methods:

Internet (primary)

On the [NWS Spot Forecast Request](#) webpage, complete the information requested on the form. There are required fields as well as space for observations. When the form is completed, submit the request, and call the NWS office to confirm receipt and answer any questions the forecaster may have. This will get you a better product.

Paper

If electronic submission of the Spot Forecast Request form is not possible, the information may be faxed to the NWS, with a follow up phone call to confirm receipt and answer any questions the forecaster may have.

Other

If internet and fax are not available, a Spot Forecast may be requested via telephone from the NWS office. Be prepared with a list of all the information specified above.

A link to all Spot Weather Forecasts can be found on the [NWS Spot Forecast](#) webpage.

In all cases, maintain communication with NWS throughout the process. Communication and feedback are essential for good forecasting.

Contact information for each of the NWS offices is as follows:

NWS Office	Phone Number	Fax Number
Anchorage	(907) 266-5167	(907) 266-5188
Fairbanks	(907) 458-3705	(907) 458-3703
Juneau	(907) 790-6824	(907) 790-6827

Fuels and Fire Analysis

Fire Danger Operating Plan

The Alaska Interagency Danger Operating Plan (FDOP) is available on the [*AICC Fuels and Fire Danger*](#) web page.

The FDOP guides the application of information from decision support tools at the local level. It can be used in conjunction with the [*Alaska Interagency Wildland Fire Management Plan \(AIWFMP\)*](#) and unit level fire management plans developed by jurisdictional agencies. It documents the establishment and management of a fire weather station network and describes how fire danger ratings can be applied to local unit fire management decisions.

Canadian Forest Fire Danger Rating System

The Alaska interagency fire community utilizes the Canadian Forest Fire Danger Rating System (CFFDRS) in lieu of the National Fire Danger Rating System (NFDRS) because Alaska's primary fuels, consisting of boreal forest and tundra, are more precisely modeled by this system. The Fire Weather Index (FWI) System is a sub-component of the CFFDRS. The FWI is a tracking system that accounts for the effect of weather on forest fuels. Basic weather observations (temperature, relative humidity, wind, and precipitation) collected at each weather station at solar noon (approximately 1400 AKDT) are used to calculate a relative rating of fuel moisture content (Fuel Moisture Codes). The codes are divided into three different classes of surface and sub-surface fuels. The three Fuel Moisture Codes are then used to calculate Fire Behavior Indices that provide indicators of potential fire spread, fuel availability and flammability, and overall fire intensity and extreme fire potential. Figure 4 illustrates the weather inputs and other components used in the Fire Weather Index (FWI) System to estimate potential fire danger in Alaska.

Fuel Moisture Codes

The three Fuel Moisture Codes are temporal models of the relative fuel moisture content at three depths of the forest floor. The Fine Fuel Moisture Code (FFMC) represents fine surface litter/live moss and reflects fuel moisture changes over the course of a day. It can also be an indicator of ignition potential. The Duff Moisture Code (DMC) is associated with loosely compacted duff at moderate depths, up to about 4", and represents moisture conditions over approximately 15 days. The Drought Code (DC) indicates moisture in deep compact organic matter, greater than 4" in depth, and is therefore indicative of long term or seasonal drying trends.

Fire Behavior Indices

The Fuel Moisture Codes are used in combination to form three Fire Behavior Indices. The Initial Spread Index (ISI) is calculated from FFMC and wind speed and represents the expected fire spread potential in surface fuels. The DMC and DC are combined to generate the Buildup Index (BUI) which provides a relative estimate of the fuels available for consumption and is a good measure of seasonal severity. The ISI and BUI are combined to give a final Fire Weather Index (FWI) value that represents the overall intensity of a spreading fire. These codes and indices are also used in the Fire Behavior Prediction System component of CFFDRS to forecast fire behavior characteristics, such as rate of fire spread, fuel consumption, crown fraction burned, and fire intensity.

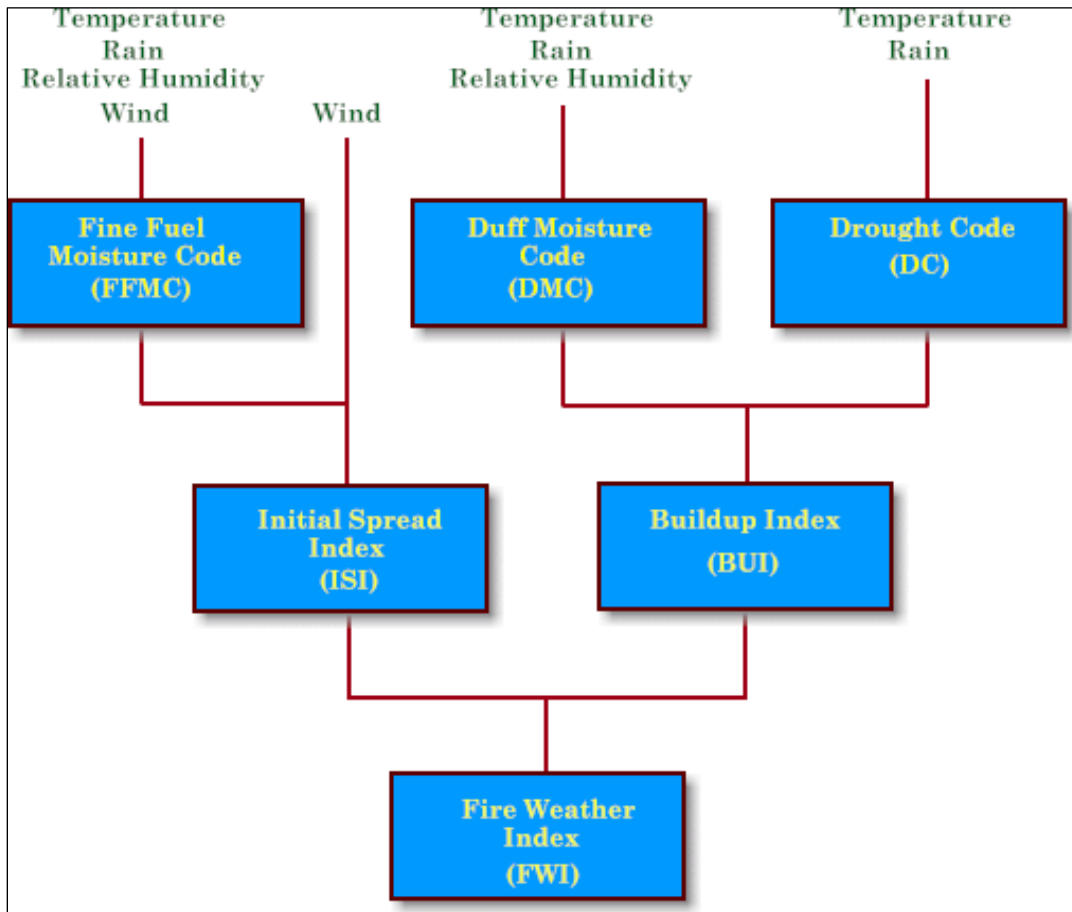


Figure 4. Components of the Canadian Forest Fire Danger Rating System's Fire Weather Index (FWI)

AK Fire & Fuels Database and Website (AKFF)

AICC has contracted with University of Utah, MesoWest and Synoptic Data to maintain the Alaska Fire Weather Index database. Daily weather and FWI values are located on the [Alaska Fire & Fuels \(AKFF\)](#) website. There are tabular, graphing, and mapping functions. The map interface also uses gridded forecast data to plot indices for each pixel across the state, as well as for each weather station. AKFF also includes a fire behavior prediction calculator, fire weather index calculator, prescribed burn planner, and data download options.

Fuels and Fire Behavior Advisories

The AICC Fuels and Fire Danger website houses [Fuels and Fire Behavior Advisories](#) that are issued by Predictive Services when the fuels conditions become exceptionally dry with very dangerous conditions for fire fighters. They are updated every two weeks or as needed.