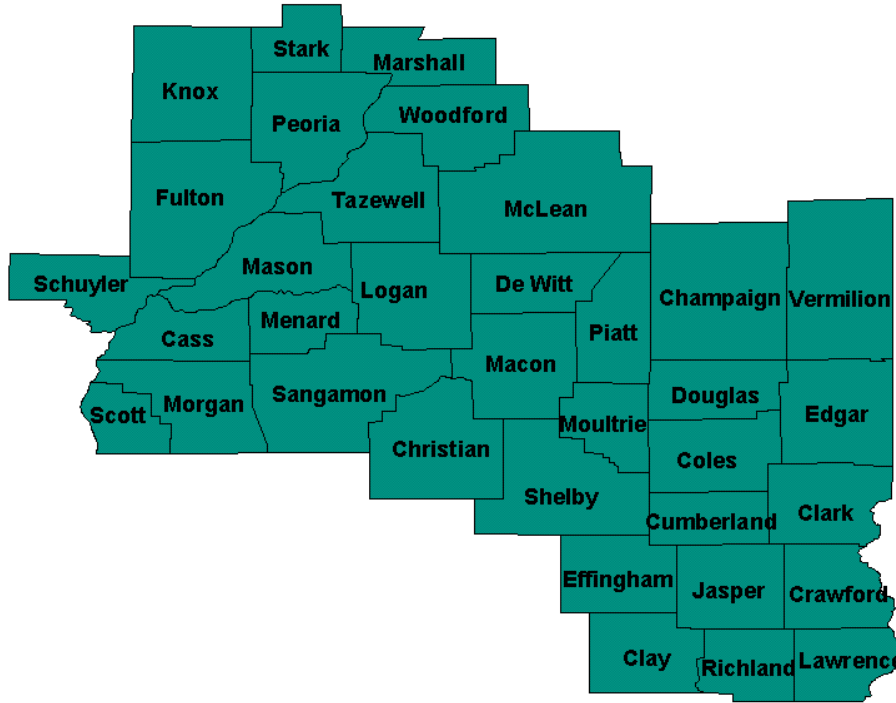


Operating Plan 2019

Fire Weather Services for Central and Southeast Illinois



1. Introduction

This document contains the 2019 Operating Plan for the fire weather forecast area for the National Weather Service Office (WFO) at Lincoln. This is an interagency agreement for meteorological services between the above National Weather Service Office and the following agencies:

U.S. Fish and Wildlife Service:

Illinois River National Wildlife & Fish Refuges

State of Illinois

Illinois Department of Natural Resources (DNR)

2. Fire Weather Service Area and Contact Information for NWS Office at Lincoln

The National Weather Service Office at Lincoln is staffed 24 hours a day 365 days a year. Contact information and the service area for WFO Lincoln are shown below:

Phone/Fax: (800)611-4570/(217)732-3546

Meteorologist In Charge: Ernest Goetsch – ernest.goetsch@noaa.gov

Fire Weather Program Leader: Daryl Onton – daryl.onton@noaa.gov

Assistant Fire Weather Program Leader: Chuck Schaffer – chuck.schaffer@noaa.gov

Internet Address to Fire Weather Products: <https://www.weather.gov/ilx/fire>

Services Provided: Fire Weather Zone (County) Forecasts – Seasonal Spring/Fall
Spot Forecasts
Fire Weather Watches/Red Flag Warnings
Hazardous Weather Outlooks
Fire Weather Activity Planner
Hourly Weather Forecast Graphs

3. Service Backup:

The following NWS offices will provide service backup for fire weather products for WFO Lincoln:

Primary Backup: WFO Chicago – (815) 834-0651 (24 hour internal number)

Secondary Backup: WFO St. Louis – (800) 852-7497 (24 hour internal number)

4. Basic Services:

A. Fire Season

Specific dates for starting and ending routine services will be determined by coordination with the various user agencies and the National Weather Service office. It is expected in average years that the spring fire weather season will run from February 15th to May 1st and that fall fire weather season will range from October 1st to November 30th

B. Fire Weather Planning Forecast

WFO Lincoln issues daily routine forecasts (during locally agreed upon fire seasons) during the early morning (5:30 AM) and afternoon (3:00 PM). Fire Weather Planning Forecasts will be updated when a Fire Weather Watch or Red Flag Warning is issued or cancelled or when forecast elements are deemed unrepresentative. Fire Weather Planning Forecasts will include the following general components:

1. Discussion

The discussion should be concise, but describe the main weather features to adequately explain why the forecast weather will occur. The discussion should also highlight significant changes that will affect the fire environment. Typically the discussion will cover the next two days, however, significant changes in any forecast period should be discussed. A headline will be included for Fire Weather Watches, Red Flag Warnings, and other significant weather deemed appropriate by the fire weather meteorologist.

2. Cloud Cover

This element describes the sky condition for the forecast period.

3. Precipitation (Precip) Type

This is a general descriptor of the precipitation type (rain, sleet, snow, showers, thunderstorms, etc.).

4. Chance of Precipitation [Chance Precip (%)]

The probability of precipitation expresses the chance that measurable rainfall will occur at any given point within a county zone group. Measurable rainfall is 0.01 inches or greater. Chance of precipitation is expressed in percent.

5. High/Low Temperature with 24-hour Trend [Temp (24HR Trend)]

Temperatures will be encoded in degrees Fahrenheit. The high temperature will be forecast for the day period, and low at night.

6. High/Low Relative Humidity with 24-hour Trend [RH % (24HR Trend)]

Relative humidity is expressed in percent. The low humidity will be forecast for the day period, and high humidity at night.

7. 20 Foot Wind

The forecast wind speed for the fire weather forecasts will reflect the 10 minute average wind that is commonly measured at fire weather sites. The wind direction will be forecast to the sixteen cardinal points of the compass and expressed in miles per hour (mph). Wind direction will indicate the direction the wind is blowing from (**i.e. SSW 15 mph**). Since most surface observation stations used for National Weather Service forecasts measure wind speed/direction at 10 meters (roughly 33 feet) with a two minute average, a reduction factor of 20% is used to arrive at the 20 foot wind forecast.

8. Precipitation (Precip) Amount

The expected average rainfall for a county zone group will be expressed in decimal notation in inches (**i.e. 0.10 to 0.50 inches, 1.00 to 1.50 inches**).

9. Mixing Height

Mixing height is the extent or depth to which smoke will be dispersed by means of turbulence and diffusion. The forecast of mixing height is expressed in feet above ground level (AGL) and is the maximum mixing height expected (generally during the afternoon).

10. 1700 foot (500 meter) Mixing Height Temperature (1700FT Mixing Temp)

This is the surface temperature that must be reached in order for the mixing depth to reach 1700 feet. Once the forecast temperature is reached at the burn site, it can be assumed that the mixing height above the burn site is at least 1700 feet or 500 meters.

Note: One consequence of the Clean Air Act, is that land managers must practice principles of careful smoke management. This is done by combining favorable meteorological conditions with a variety of prescribed fire techniques so that smoke will be readily dispersed. The 1700 foot/500 meter mixed layer is a common suggested minimum mixing layer depth for prescribed burning to limit the concentration of particulate matter near the ground and to limit the areal coverage of limited visibility due to smoke. Local regulations or practices may differ.

11. Transport Wind

Transport wind is the average wind speed in miles/hour in the mixing depth above the surface. These winds are good indications of the horizontal dispersion of suspended particles. The transport wind is the forecast wind at the time of maximum mixing of the atmosphere, normally during the mid afternoon.

12. Ventilation Rate/Dispersion Index [Vent Rate (MPH-FT)]

Ventilation Rate is a measure of the ability of the atmosphere to disperse smoke or other pollutants. Ventilation Rate/Dispersion Index can be defined as the product of the mixing height of the atmosphere multiplied by the wind speed. Higher ventilation rates result in greater transport of smoke away from the source, and lower ventilation indices result in reduced transport away and therefore a greater near-ground impact. It depends on two components: The depth of the mixed layer (or unstable layer) above the ground and the average wind speed or transport wind within that mixed layer.

Ventilation Rate (mph ft) = Mixing Height (ft) x Average Transport Winds (mph)

13. Haines Index

Haines Index is used to indicate the potential for wildfire growth by measuring the stability and dryness of the air over a fire. It is calculated by combining the stability and moisture content of the lower atmosphere into a number that correlates well with large fire growth. The stability term is determined by the temperature difference between two atmospheric layers (temperature at 950 mb level minus temperature at 850 mb level); the moisture term is determined by the temperature and dew point difference at the 850 mb level. This index has been shown to be correlated with large fire growth on initiating and existing fires where surface winds do not dominate fire behavior. The Haines Index can range between 2 and 6. The drier and more unstable the lower atmosphere is, the higher the index.

14. Remarks

Appropriate remarks to add value to the forecast or mark significant weather changes.

15. Extended Forecast

A general extended forecast will be included in the fire weather planning forecast text. This will include expected general weather conditions, high and low temperatures, and 20 foot winds. The extended forecast will cover a period out to 7 days and should be considered for general planning purposes only.

C. 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 an extreme fire danger. These conditions alert land management agencies to the potential for widespread fire control problems.

Fire Weather Watches will be issued when there is a high potential for a Red Flag event. The watch will be issued between 12 to 72 hours before the onset of warning conditions. The watch can be issued for all or select portions of the region.

Fire Weather Watches should not be issued, or continued, to indicate that low confidence or borderline warning conditions will take place. In these situations, forecasters should describe the expected conditions and state the reasons for forecast uncertainty in the discussion portion of the routine planning forecast.

A Red Flag Warning is used to warn of an impending, or occurring, Red Flag event. Its issuance denotes a high degree of confidence that weather and fuel conditions consistent with local Red Flag criteria will occur within 24 hours or less. A Forecaster can issue the warning for all or part of their fire weather forecast area.

Red Flag Warning criteria for WFO Lincoln follow:

- Sustained 20 foot winds of 20 mph or higher
- Forecast minimum surface relative humidity of 25% or less
- 10 hour fuel moisture reaching or expected to reach seven percent or less
http://www.wfas.net/images/firedanger/fm_10.png

These criteria are general parameters and they should be considered with the whole fire weather environment in mind.

Because of the potential impact upon user programs brought about by a Red Flag Warning, it is imperative that the warning be promptly cancelled when the conditions cease to exist or if the conditions are no longer expected to develop. The cancellation will be issued under the RFW product header.

D. Spot Forecasts

Site specific (spot) forecasts are non-routine products issued at the request of the user. NWS offices will provide spot forecast service upon request of any federal, state, or local official required to support wildfire suppression operations. For non-wildfire purposes, resources permitting, NWS offices will provide spot forecast service under the following circumstances and conditions:

1. Upon request of any federal official who represents that spot forecast support is required under the terms of the Interagency Agreement for Meteorological Services.
2. Upon request of any state, local, or tribal official who represents that the spot

- forecast is required to carry out their wildland fire management responsibilities in coordination with any federal land management agency participating in the Interagency Agreement for Meteorological Services.
3. Upon request of any public safety official who represents that the spot forecast is essential to public safety. A “public safety official” is an employee or contract agent of a government agency at any level (federal, state, local, tribal, etc.) charged with protecting the public from hazards including wildland fires of whatever origin and/or other hazards influenced by weather conditions such as hazardous material releases.
 4. In support of Homeland Security Presidential Directive #5 (HSPD 5).
<http://training.fema.gov/EMIWeb/IS/ICSResource/assets/HSPD-5.pdf>

NWS offices will not provide spot forecasts to private citizens or commercial entities not acting as an agent of a government agency.

Requests for a spot forecast will normally be transmitted to the WFO via the Internet Spot Forecast Request Program (NWS Spot), telephone, or fax.

Spot forecasts for active fires should be updated when the forecaster becomes aware of any significant unanticipated weather changes that may have an impact on fire suppression or controlled burning operations and/or safety of personnel. Updates can consist of a telephone/verbal update in lieu of a written product. Land management personnel should contact the WFO if forecast conditions become unrepresentative of the observed weather.

Unless otherwise stated by the requesting agency, the forecast parameters of sky condition, weather, temperature, relative humidity, 20 foot wind, significant/sudden changes in wind speed or direction, along with mixing heights, transport winds, and stability, if available, shall be provided.

Site forecasts for ongoing wildfires are crucial to fighting fires and personnel safety. Of paramount importance are forecasts of wind velocity and humidity. For an ongoing wildfire, an attempt should be made to provide a current observation at the time a forecast is requested. The observation will aid the forecaster in preparing a more accurate site specific forecast.

1. Spot Forecast Requests Via the NWS Spot Forecast Program

Spot forecasts via the Internet are requested through the NWS office at Lincoln’s fire weather page: <https://www.weather.gov/ilx/fire>
Please call NWS Lincoln at (800) 611-4570 to confirm receipt.

2. Spot Forecast Via Fax

Persons requesting a spot forecast via fax should utilize [Weather Service Form D-1](#). This form should be considered a manual backup to the

National Weather Service Spot forecast system via the Internet. Please call NWS Lincoln at (800) 611-4570 to confirm receipt.

3. Spot Forecast Requests Via Telephone

Spot requests via telephone should be reserved for occasions where a quick forecast update is needed and time restraints and/or available resources prohibit the use of the Internet or fax. Both the requesting agency and WFO Lincoln should document as thoroughly as possible any information communicated during a phone/verbal spot forecast briefing.

E. Hazardous Weather Outlooks

Hazardous Weather Outlooks are issued by WFO Lincoln to alert the general public to potentially dangerous weather situations. When a combination of meteorological conditions leads to an increased fire danger but falls short of Fire Weather Watch or Red Flag Warning criteria, the threat will be included in the Hazardous Weather Outlook. This statement should make the public aware of heightened fire danger and discourage open burning and careless use of smoking materials. Fire Weather Watches and Red Flag Warnings will also be mentioned in the Hazardous Weather Outlook.

F. Weather Activity Planner

The Weather Activity Planner is a web utility that can be used to interrogate the digital forecast database over the upcoming 7 days for weather parameters required for a given activity or burn. Several fire-weather-specific weather elements (Transport Winds, Ventilation Rate, Haines Index, etc.) are available during fire season (when Fire Weather Planning Forecasts are available). The Weather Activity Planner is to be used for planning purposes only, and should be followed up with a Spot Forecast if a prescribed burn is planned. The Weather Activity Planner is available at:

<https://forecast.weather.gov/wxplanner.php?site=ilx>

G. Hourly Weather Forecast Graph

The Hourly Weather Forecast Graph shows forecast element trends in a graphical format for the most detailed forecast possible at a particular location. The graph interrogates the National Weather Service digital forecast database, and contains several fire-weather-specific weather elements (Mixing Height, Haines Index, Transport Wind, 20-foot Wind, and Ventilation Rate) during fire season. The Hourly Weather Forecast Graph should be used for planning purposes only, and should be followed up with a Spot Forecast if a prescribed burn is planned. The Hourly Weather Forecast Graph is available by going to www.weather.gov/ilx, clicking on your location on the map, then clicking on the Hourly Weather Forecast Graph on the resulting page.

Appendix A – Fire Weather Product Examples

1. Fire Weather Planning Forecast

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FNUS53 KILX 011953
FWFILX

FIRE WEATHER PLANNING FORECAST FOR CENTRAL/EASTERN AND SOUTHEASTERN IL
NATIONAL WEATHER SERVICE LINCOLN IL
253 PM CDT THU MAY 1 2008

.DISCUSSION...
GUSTY SOUTHERLY WINDS WILL CONTINUE ACROSS CENTRAL ILLINOIS
THROUGH FRIDAY...AS A STORM SYSTEM SLOWLY APPROACHES FROM THE
WEST. LOW-LEVEL RH WILL ALSO INCREASE THROUGH THE PERIOD... LEADING TO AN
INCREASING CHANCE FOR THUNDERSTORMS BEGINNING TONIGHT AFTER MIDNIGHT AND
CONTINUING THROUGHOUT THE DAY FRIDAY. A COLD FRONT WILL SWING THROUGH THE
AREA FRIDAY EVENING... RESULTING IN WINDS SHIFTING TO WESTERLY FRIDAY NIGHT
INTO SATURDAY. AFTER THAT...A FEW LIGHT RAIN SHOWERS AND MUCH COOLER WEATHER
WILL BE IN THE FORECAST FOR SATURDAY.

ILZ027>031-036>038-040-041-020800-
KNOX-STARK-PEORIA-MARSHALL-WOODFORD-FULTON-TAZEWELL-MCLEAN-
SCHUYLER-MASON-
INCLUDING THE CITIES OF...GALESBURG...PEORIA...BLOOMINGTON...
NORMAL...HAVANA
253 PM CDT THU MAY 1 2008

                TONIGHT      FRI          FRI NIGHT    SAT
CLOUD COVER      MCLDY        CLOUDY       CLOUDY       CLOUDY
PRECIP TYPE      TSTMS        TSTMS        TSTMS        TSTMS
CHANCE PRECIP (%) 40           70           40           40
LOW/HIGH TEMP (F) 60           73           48           59
MAX/MIN RH (%)   86           51           80           53
20FT WIND AM(MPH)      S 15-19     S 15-19     SW 13-17
20FT WIND PM(MPH)     S 10-14 G19 S 16-20     SW 6-10 G18 W 14-18
PRECIP AMOUNT (IN) 0.15        0.43        0.04        0.07
MIXING HGT (FT-AGL)      3300       5100
1700FT MIXING TEMP      69         50
TRANSPORT WND (MPH)     S 39       W 28
VENT RATE (MPH-FT)      138158     141897
HAINES INDEX          3           3
VERY GOOD            VERY GOOD

REMARKS...NONE.

.FORECAST FOR DAYS 3 THROUGH 7...

.SUNDAY...PARTLY CLOUDY. LOWS IN THE LOWER 40S. HIGHS IN THE
LOWER 60S. NORTHWEST WINDS 11 TO 15 MPH.
.MONDAY...PARTLY CLOUDY. LOWS IN THE LOWER 40S. HIGHS IN THE
UPPER 60S. WIND LESS THAN 10 MPH.
.TUESDAY...PARTLY CLOUDY. LOWS IN THE MID 40S. HIGHS IN THE LOWER
70S. WIND LESS THAN 10 MPH.
.WEDNESDAY...MOSTLY CLOUDY. LOWS AROUND 50. HIGHS IN THE LOWER
70S. MINIMUM RH 0 PERCENT. WIND LESS THAN 10 MPH.
.THURSDAY...MOSTLY CLOUDY WITH A 40 PERCENT CHANCE OF SHOWERS AND
THUNDERSTORMS. LOWS IN THE MID 50S. HIGHS AROUND 70. WIND LESS
THAN 10 MPH.
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[Forecast for next fire weather zone group]

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2. Red Flag Warning

WWUS83 KILX 201550
RFWILX

RED FLAG WARNING
NATIONAL WEATHER SERVICE LINCOLN IL
1050 AM CDT SAT SEP 20 2008

...RED FLAG WARNING IN EFFECT FROM 12 PM TO 7 PM CDT TODAY...

ILZ027>031-036>038-040>057-061>063-066>068-071>073-210000-
/O.NEW.KILX.FW.W.0001.080920T1700Z-080921T0000Z/
KNOX-STARK-PEORIA-MARSHALL-WOODFORD-FULTON-TAZEWELL-MCLEAN-
SCHUYLER-MASON-LOGAN-DE WITT-PIATT-CHAMPAIGN-VERMILION-CASS-
MENARD-SCOTT-MORGAN-SANGAMON-CHRISTIAN-MACON-MOULTRIE-DOUGLAS-
COLES-EDGAR-SHELBY-CUMBERLAND-CLARK-EFFINGHAM-JASPER-CRAWFORD-
CLAY-RICHLAND-LAWRENCE-
1050 AM CDT SAT SEP 20 2008

...RED FLAG WARNING IN EFFECT FROM 12 PM TO 7 PM CDT TODAY...

THE NATIONAL WEATHER SERVICE IN LINCOLN HAS ISSUED A RED FLAG
WARNING...WHICH IS IN EFFECT FROM 12 PM TO 7 PM CDT TODAY.

SOUTHERLY WINDS OF 20 TO 30 MPH WILL DEVELOP THIS AFTERNOON. THESE GUSTY
WINDS WILL COMBINE WITH MINIMUM AFTERNOON RELATIVE HUMIDITY VALUES AROUND 20
PERCENT AND RECENT DRY CONDITIONS TO PRODUCE HIGH FIRE DANGER THROUGH
SUNSET.

A RED FLAG WARNING MEANS THAT CRITICAL FIRE WEATHER CONDITIONS
ARE EITHER OCCURRING NOW...OR WILL SHORTLY. A COMBINATION OF
STRONG WINDS...LOW RELATIVE HUMIDITY...AND WARM TEMPERATURES WILL
CREATE EXPLOSIVE FIRE GROWTH POTENTIAL.

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3. Fire Weather Watch

WWUS83 KILX 200353
RFWILX

FIRE WEATHER WATCH
NATIONAL WEATHER SERVICE LINCOLN IL
1053 PM CDT FRI SEP 19 2008

...FIRE WEATHER WATCH IN EFFECT FROM SATURDAY AFTERNOON THROUGH
SATURDAY EVENING...

ILZ027>031-036>038-040>057-061>063-066>068-071>073-201200-

/O.NEW.KILX.FW.A.0001.080920T1700Z-080921T0000Z/
KNOX-STARK-PEORIA-MARSHALL-WOODFORD-FULTON-TAZEWELL-MCLEAN-
SCHUYLER-MASON-LOGAN-DE WITT-PIATT-CHAMPAIGN-VERMILION-CASS-
MENARD-SCOTT-MORGAN-SANGAMON-CHRISTIAN-MACON-MOULTRIE-DOUGLAS-
COLES-EDGAR-SHELBY-CUMBERLAND-CLARK-EFFINGHAM-JASPER-CRAWFORD-
CLAY-RICHLAND-LAWRENCE-
1053 PM CDT FRI SEP 19 2008

...FIRE WEATHER WATCH IN EFFECT FROM SATURDAY AFTERNOON THROUGH
SATURDAY EVENING...

THE NATIONAL WEATHER SERVICE IN LINCOLN HAS ISSUED A FIRE WEATHER
WATCH...WHICH IS IN EFFECT FROM SATURDAY AFTERNOON THROUGH SATURDAY EVENING.

SOUTHERLY WINDS OF 20 TO 30 MPH ARE POSSIBLE SATURDAY AFTERNOON. THESE GUSTY
WINDS COULD COMBINE WITH MINIMUM AFTERNOON RELATIVE HUMIDITY VALUES AROUND
25 PERCENT AND RECENT DRY CONDITIONS TO PRODUCE HIGH FIRE DANGER SATURDAY
AFTERNOON AND EARLY EVENING.

A FIRE WEATHER WATCH MEANS THAT CRITICAL FIRE WEATHER CONDITIONS
ARE FORECAST TO OCCUR. LISTEN FOR LATER FORECASTS AND POSSIBLE RED FLAG
WARNINGS.

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Appendix B – Web Spot Forecast Instructions – (external user)

This section contains basic instructions for entering spot forecast requests on our website.

1. Go to spot forecast request page:

<https://www.weather.gov/spot/>

2. Click on “Submit a new Spot Request”
3. Establish the location for the spot using one of the methods provided in box A or B
4. Select the incident type (usually Prescribed Fire in this area)
5. Click the button “Generate A Spot Request”
6. All elements in red are required.
7. “Spot Request Contact Information” Section:
 - a. Enter a name for your prescribed burn or wildfire.
 - b. Enter your name, the name of your agency, and contact information.
8. “Reason for Spot Forecast Request” Section:
 - a. Unless spot request is for a wildfire, most nonfederal users will use the 3rd option.
9. “Location” Section:
 - a. Some items should be prefilled for you from the previous page.
 - b. Enter elevation of fire in feet (enter both top and bottom elevation if terrain is not flat).
10. “Fire Weather Supplemental Information” Section:
 - a. Enter size of fire (acres) as well as nearest drainage.
 - b. Enter aspect (the direction a slope faces).
 - c. Indicate what fuel is burning (grass, pine trees, etc).
 - d. Select the degree of sheltering at the fire location.
11. “Forecast Information” Section:
 - a. Enter forecast delivery time (when you want it), as well as the forecast start time (when ignition is planned if a Prescribed Burn).
 - b. Click on the weather elements desired.
 - c. Forecast weather elements can be requested for any or all of the next three forecast periods (Today, Tonight, Tomorrow).
12. “Observations” Section:
 - a. Enter one or more observations from near the burn site. Accurate and detailed observations will yield a more accurate forecast.
13. “Remarks” Section:
 - a. Please provide us with any additional information you think will help with the forecast process
14. If request is for a HAZMAT incident, you can request dispersion model output by selecting “YES” in the NOAA Hysplit Model section
15. Click on “Submit Request” when completed.

16. Go to the Spot Forecast Monitor page, <https://www.weather.gov/spot/monitor/> and wait for your forecast to arrive
 - a. This page updates once a minute.
 - b. You may need to zoom in on the map to see your spot request.
 - c. When "Status" box changes to "Completed", click on the name of your fire to obtain your forecast. Provide us feedback if desired.

Appendix C – Web Spot Forecast Instructions (NWS Forecasters)

1. A requested spot forecast will alarm at the DSS/Short Term Forecaster's AWIPS Workstation (XT-5) as CHISTQILX.
2. Ensure fire weather grids are current. The grids will need to be populated/edited for requests that arrive outside of Fire Weather season.
3. Run the FWS formatter from the Formatter Launcher in GFE.
4. Select the appropriate spot request from the list (newest should be on top). Make sure the buttons and boxes selected on this and the following pop-up box are appropriate.
5. The formatter will run after you say "OK" on the second pop-up box. Write a discussion for the Spot Forecast that is generated, and QC the rest of the product.
6. Once you are satisfied with the Spot Forecast, click on the "Transmit..." button.
7. After the forecast has been transmitted, go to the Spot Forecast Monitor page <https://www.weather.gov/spot/monitor/> to check if it has made it out correctly. It may be necessary to scroll in on the map to see the spot request.
8. Print a hard copy of the Spot Forecast and leave it in the Fire Weather Program Leader's mailbox.
9. Also return to the monitor page if a question or feedback is received from person that requested the forecast (a notification will alarm on XT-5).