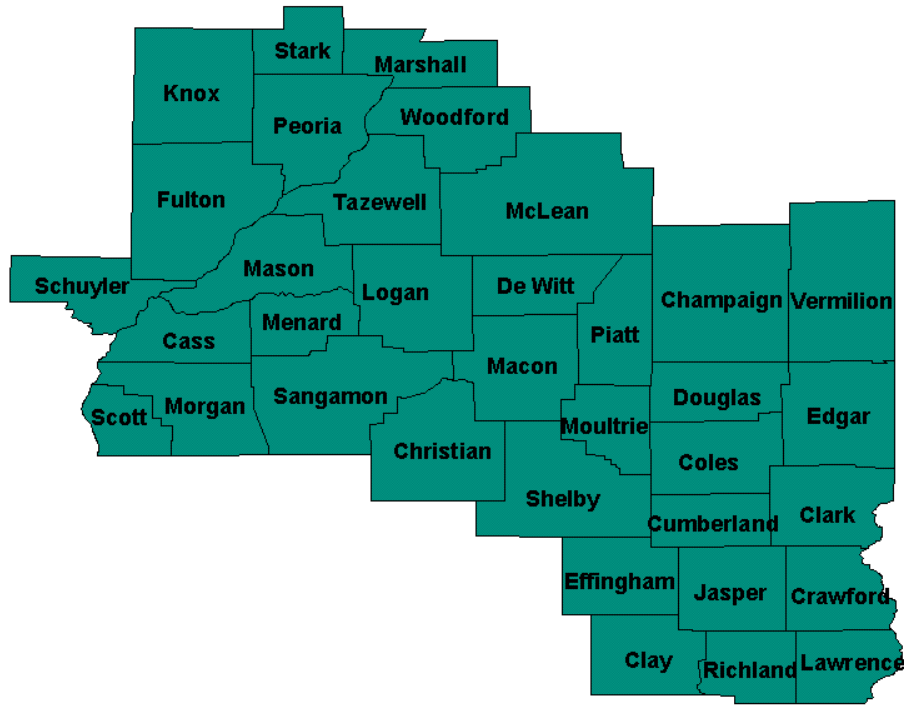


# **Operating Plan 2025**

## **Fire Weather Services for Central and Southeast Illinois**



### **1. Introduction**

This document contains the 2025 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: (217) 732-3089

Meteorologist In Charge: Ryan Knutsvig – [ryan.knutsvig@noaa.gov](mailto:ryan.knutsvig@noaa.gov)

Fire Weather Program Leader: Daryl Onton – [daryl.onton@noaa.gov](mailto:daryl.onton@noaa.gov)

Assistant Fire Weather Program Leader: Kirk Huettl – [kirk.huettl@noaa.gov](mailto:kirk.huettl@noaa.gov)

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

Services Provided: Fire Weather Zone (County) Forecasts  
Spot Forecasts  
Fire Weather Watches/Red Flag Warnings  
Hazardous Weather Outlooks  
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) 834-1435

Secondary Backup: WFO St. Louis – (636) 441-8467

## **4. Basic Services:**

### **A. Fire Weather Planning Forecast**

WFO Lincoln issues daily Fire Weather Planning Forecasts. An early morning forecast (5:30 AM) is issued 365 days per year. An afternoon forecast (3:00 PM) is issued during spring and fall fire seasons, February 15 to May 15, and September 15 to December 15, respectively. By request from partner agencies, afternoon forecasts can be issued during off-seasons. Fire Weather Planning Forecasts will be updated when a Fire Weather Watch or Red Flag Warning is issued or canceled 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. Chance of Thunder (%)**

The probability that thunderstorms will occur.

## **6. 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.

## **7. 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.

## **8. Wind 20ft**

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.

### **9. 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**).

### **10. Precip Duration**

Expected amount of time precipitating in hours (if applicable)

### **11. Precip Begin**

Local time precipitation expected to begin (if applicable)

### **12. Precip End**

Local time precipitation expected to end (if applicable)

### **13. Mixing Height(ft–agl)**

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).

### **14. 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.

### 15. Transport Wind (mph)

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.

### 16. 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)

### 17. Ventilation Rate Category [Vent Rate Category]

Five categories are used to describe the character of the Ventilation Rate. These are defined in the table below.

Category	Vent Rate (kt-ft)	Vent Rate (mph-ft)
Excellent	>= 150,000 kt-ft	>= 172,617 mph-ft
Very Good	100,000 to 150,000 kt-ft	115,078 to 172,617 mph-ft
Good	60,000 to 100,000 kt-ft	69,047 to 115,078 mph-ft
Fair	40,000 to 60,000 kt-ft	46,031 to 69,047 mph-ft
Poor	< 40,000 kt-ft	< 46,031 mph-ft

### 18. Remarks

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

### 19. Forecast for Days 3 through 7

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.

## **B. 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 eight percent or less
- [http://www.wfas.net/images/firedanger/fm\\_10.png](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 canceled 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.**

### C. 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 to confirm receipt.**

### **2. Spot Forecast Via Fax**

To request a spot forecast via fax please use Weather Service Form D-1: ([https://www.nws.noaa.gov/directives/010/401k/WS\\_FORM\\_D\\_SPOT.pdf](https://www.nws.noaa.gov/directives/010/401k/WS_FORM_D_SPOT.pdf)).

This form should be considered a manual backup to the National Weather Service Spot forecast system via the Internet. **Please call NWS Lincoln 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.

## **D. Hazardous Weather Outlooks**

Hazardous Weather Outlooks are issued by WFO Lincoln to alert the 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.

## **E. 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, Transport Wind, 20-foot Wind, and Ventilation Rate). 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](http://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

FNUS53 KILX 192030

FWFILX

Fire Weather Planning Forecast for Central/Southeast Illinois  
National Weather Service Lincoln IL  
230 PM CST Wed Feb 19 2025

.DISCUSSION...

Very cold temperatures and wind chills will continue through Thursday, then much warmer temperatures return by early next week. Light snow is expected this evening, otherwise dry conditions are expected until the middle of next week. Marginal transport winds amid mixing heights will yield mostly fair-to-poor ventilation rates through the remainder of this week.

ILZ027>031-036>038-201015-

Knox-Stark-Peoria-Marshall-Woodford-Fulton-Tazewell-McLean-  
Including the cities of Galesburg, Toulon, Peoria, Lacon, Eureka,  
Canton, Pekin, Bloomington, and Normal  
230 PM CST Wed Feb 19 2025

	Tonight	Thu	Thu Night	Fri
Cloud Cover	Pcldy	Mc clear	Mc clear	Mc clear
Precip Type	Flurries	None	None	None
Chance Precip (%)	10	0	0	0
Chance of Thunder (%)	0	0	0	0
Temp (24h trend)	-2 (-3)	20 (+4)	0	25
RH % (24h trend)	83 (+14)	56 (+3)	94	54
Wind 20ft/early(mph)	NW 9	NW 9	NW 5	Lgt/Var
Wind 20ft/late(mph)	NW 8	NW 9	Lgt/Var	Lgt/Var
Precip Amount	0.00	0.00	0.00	0.00
Precip Duration	1			
Precip Begin	6 PM			
Precip End	12 AM			
Mixing Hgt(ft-agl)		2650		2630
1700ft Mixing Temp		14		26
Transport Wnd (mph)		NW 17		SW 10
Vent Rate (mph-ft)		45050		26300
Vent Rate Category		Poor		Poor

Remarks...None.

.FORECAST FOR DAYS 3 THROUGH 7...

.SATURDAY...Mostly clear. Lows around 10. Highs in the lower 30s. Minimum RH 59 percent. Southwest winds around 5 mph.

.SUNDAY...Partly cloudy. Not as cool. Lows in the lower 20s. Highs in the mid 40s. Minimum RH 69 percent. Southwest winds around 5 mph.

.MONDAY...Partly cloudy. Lows in the lower 30s. Highs in the lower 50s. Minimum RH 64 percent. Southwest winds 5 to 10 mph.

.TUESDAY...Mostly cloudy. Lows in the mid 30s. Highs in the lower 50s. Minimum RH 70 percent. West winds 5 to 10 mph.

.WEDNESDAY...Mostly cloudy. A chance of rain. Lows in the lower 30s. Highs around 50. Minimum RH 71 percent. West winds 5 to

10 mph.

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[Forecast for next fire weather zone group]

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## 2. Red Flag Warning

WWUS83 KILX 281941

RFWILX

URGENT - FIRE WEATHER MESSAGE

National Weather Service Lincoln IL

241 PM CDT Mon Oct 28 2024

ILZ031-037-038-041>046-048-051>057-061-290900-

/O.NEW.KILX.FW.A.0002.241029T1700Z-241030T0000Z/

Woodford-Tazewell-McLean-Mason-Logan-De Witt-Piatt-Champaign-

Vermilion-Menard-Sangamon-Christian-Macon-Moultrie-Douglas-Coles-

Edgar-Shelby-

241 PM CDT Mon Oct 28 2024

...FIRE WEATHER WATCH IN EFFECT FROM TUESDAY AFTERNOON THROUGH  
TUESDAY EVENING FOR WIND AND LOW RELATIVE HUMIDITY FOR PORTIONS OF  
CENTRAL ILLINOIS...

The National Weather Service in Lincoln has issued a Fire Weather  
Watch for wind and low relative humidity, which is in effect from  
Tuesday afternoon through Tuesday evening.

\* AFFECTED AREA...Woodford, Tazewell, McLean, Mason, Logan, De  
Witt, Piatt, Champaign, Vermilion, Menard, Sangamon,  
Christian, Macon, Moultrie, Douglas, Coles, Edgar and Shelby.

\* TIMING...From Tuesday afternoon through Tuesday evening.

\* 20 FOOT WINDS...South 20 to 25 mph with gusts up to 40 mph.

\* RELATIVE HUMIDITY...As low as 30 percent.

\* 10 HOUR FUELS...Less than 9 percent.

\* IMPACTS...Any fire that develops will catch and spread  
quickly. Outdoor burning is not recommended.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

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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### 3. Fire Weather Watch

WWUS83 KILX 281941  
RFWILX

URGENT - FIRE WEATHER MESSAGE  
National Weather Service Lincoln IL  
241 PM CDT Mon Oct 28 2024

ILZ031-037-038-041>046-048-051>057-061-290900-  
/O.NEW.KILX.FW.A.0002.241029T1700Z-241030T0000Z/  
Woodford-Tazewell-McLean-Mason-Logan-De Witt-Piatt-Champaign-  
Vermilion-Menard-Sangamon-Christian-Macon-Moultrie-Douglas-Coles-  
Edgar-Shelby-  
241 PM CDT Mon Oct 28 2024

...FIRE WEATHER WATCH IN EFFECT FROM TUESDAY AFTERNOON THROUGH  
TUESDAY EVENING FOR WIND AND LOW RELATIVE HUMIDITY FOR PORTIONS OF  
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PRECAUTIONARY/PREPAREDNESS ACTIONS...

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://spot.weather.gov/>
2. Click on “New Request” near the top left corner
3. Establish the location 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 Spot Request”
6. Fill out as much information as possible, especially the required fields denoted by a red asterisk (\*).
7. If request is for a HAZMAT incident, you can request dispersion model output by selecting “YES” in the NOAA Hysplit Model section.
8. “Observations” Section (optional):
  - a. Enter one or more observations from near the burn site. Accurate and detailed observations will yield a more accurate forecast.
9. Click on “Submit Request” when completed.
10. Go to the Spot Forecast Monitor page, <https://spot.weather.gov/> and wait for your forecast to arrive
  - a. You may need to zoom in on the map to see your spot request.
  - b. When your forecast is complete, the circle on the map will change to green. Click on your ID number in the list or on the green circle on the map and then the ID number in the pop-up 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 each AWIPS Workstation as CHISTQILX. Inspect this request for details of the request. If a Hysplit dispersion model run was requested, the CHISTQILX will note “REQUESTING HYSPLIT: YES”. This Hysplit output will be generated and sent to the user automatically and the forecaster does not need to run manually.
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://spot.weather.gov/> to check if it has made it out correctly.
8. Also return to the monitor page if a question or feedback is received from person that requested the forecast (a notification will alarm).

## **Appendix D – Web Spot Forecast Monitor Maintenance Instructions (NWS Forecasters)**

1. Spot forecasts will stay on the Spot Forecast Monitor page <https://spot.weather.gov/> until they are archived. This takes place automatically, and we will be notified through our office email account.