FIRE WEATHER
PRODUCT & SERVICE GUIDE

FOR

WESTERN & NORTH-CENTRAL NEW YORK

NATIONAL WEATHER SERVICE
BUFFALO, NY

2016
(Updated 11/16/2016)

Prepared by:
Shawn Smith
Fire Weather Program Leader
National Weather Service Buffalo, NY

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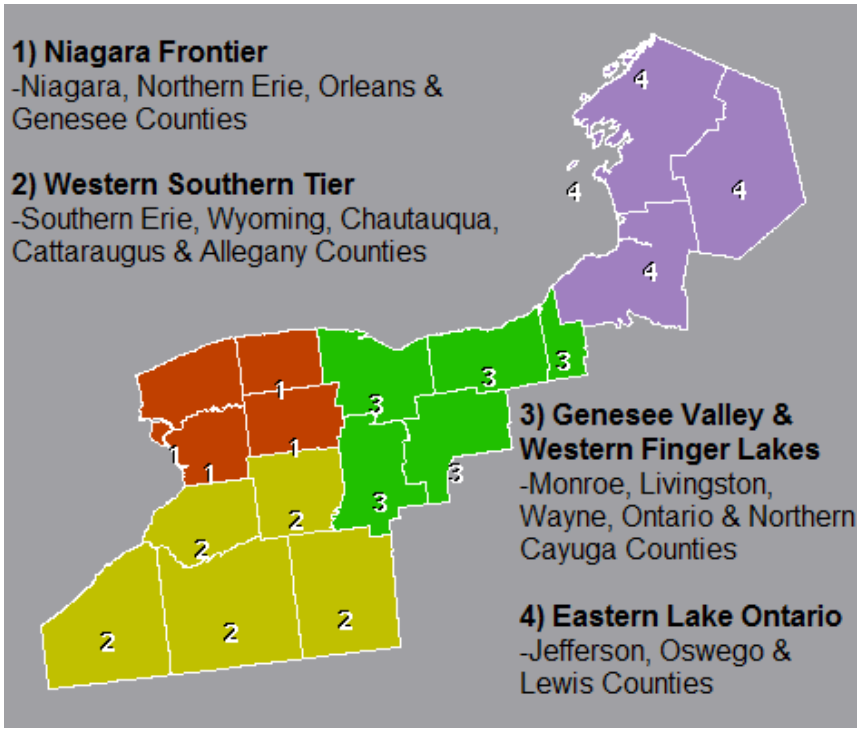
Product & Service Guide Overview

This document serves as a user guide for fire weather products and services provided by the National Weather Service office in Buffalo, NY. Details of each product and how to find or request it have been provided with product examples found in the Appendix.

For specific procedural and policy information regarding the delivery of these products and services as well as fire weather program goals and details of partner responsibilities see the NWS Buffalo Fire Weather Annual Operating Plan.

The National Weather Service Fire Weather Program provides forecast and warning services in support of fire management and control operations, leading to the effective prevention, suppression, and management of forest and rangeland fires. The major objective of the Fire Weather Program is to provide a service which will meet the meteorological requirements of federal and state wildland management agencies in the protection and enhancement of the nation's forests and rangelands.

The National Weather Service Buffalo agrees to furnish routine forecasts and warnings according to the needs of the fire weather community throughout the entire year although the typical fire weather season for western and north-central New York starts in mid-March and continues through mid-November. The coverage area for the NWS Buffalo fire weather program is western and north-central New York which is broken down into four fire weather zones. A map of the coverage area and four forecast zones is included below and located in Appendix A.



NWS Buffalo Contacts

Meteorologist-in-Charge (Acting)	Judy Levan
Warning Coordination Meteorologist (WCM)	Judy Levan
Fire Weather Program Leader	Shawn Smith

To obtain fire weather services mentioned in this plan, local, state, or federal officials may contact NWS Buffalo, NY.

Phone: 716-565-0204
Email: shawn.smith@noaa.gov

Written requests should be addressed to:

National Weather Service Buffalo
Attn: Shawn Smith
587 Aero Drive
Buffalo, NY 14225

Digital Forecasts and Services

National Digital Forecast Database (NDFD) grids are created by NWS forecasters and used to produce a wide variety of products and services for fire weather support. The fire weather graphical forecasts created by NWS Buffalo for western and north-central NY can be found at the following link with an example of the web page found in Appendix B. http://graphical.weather.gov/sectors/bufFireDay.php#tabs

Additional tools that can be of assistance to help determine the timing for a spot forecast request are:

- Hourly Weather Graphs with Fire Weather Elements (Example Appendix C): http://forecast.weather.gov/gridpoint.php?site=buf&TypeDefault=graphical
- Weather Activity Planner: http://forecast.weather.gov/wxplanner.php?site=buf
- Point Forecast Matrix: http://forecast.weather.gov/product.php?site=BUF&product=PFM&issuedby=BUF

NWS Buffalo has a fire weather dedicated webpage where users can access an abundance of fire weather information including the Annual Operating Plan (AOP), graphical forecasts, text forecasts, fire weather guidance and request a Spot forecast. The webpage is found at this link: http://www.weather.gov/buf/FireWeather

All of these tools and products are accessible nationwide through the national fire weather webpage: http://weather.gov/fire/

NWSChat Live

Chat with NWS Buffalo meteorologists 24/7 with NWSChat. This is exclusive to Federal, State or Local Government partners and Media. Users need to set up an account with username and password for access and select WFO Buffalo NY as the primary office. Once logged in select Buffalo (BUF) Chat (bufchat) from the Chatrooms dropdown list. https://nwschat.weather.gov/

Fire Weather Planning Forecast (FWF)

NWS Buffalo has assumed fire weather forecast responsibility for western and north-central New York**.** This area is made up of four Fire Weather Zones. These zones are areas that are considered to be climatologically homogeneous, and the forecast represents conditions across the zone. The daily Fire Weather Forecasts will be available on the WFO Buffalo fire weather webpage.
http://www.weather.gov/buf/FireWeather

The fire weather season for western New York and the eastern Lake Ontario counties typically starts in mid-March and continues through mid-November although exact start/end times will be determined each year through coordination with NY DEC Forest Rangers and other partners. The forecast is issued **every three hours** during the fire weather season. The more frequent forecast issuances where implemented to align the FWF with the Enhanced Short Term Forecast initiative. During the winter months the FWF will be suspended but fire weather data will still be available via the hourly weather graph on weather.gov.

An example of a Fire Weather Forecast is shown in Appendix D of this document.

Components of Routine Fire Weather Forecast

HEADLINE – A headline is required when a Fire Weather Watch or Red Flag Warning is in effect. This will include the watch/warning type, geographical area, reason for issuance, and effective time period. The headlines will also be included in the appropriate zone grouping.

DISCUSSION - This is a brief discussion of the weather systems impacting western and north-central New York through the forecast period. It may also describe significant trends in temperature, humidity and winds for the next several days. The discussion will precede the actual forecast parameters.

Tabular Data - will be provided for the three or four periods depending on issuance time. Three periods “Today, Tonight, Day 2” will be included for morning or early afternoon issuances or four periods “Tonight, Day 2, Day 2 night, Day 3” will be included for late afternoon and evening issuances. The data for the tables will be derived from forecast information input into the Gridded Forecast Editor (GFE) matrix and will include cloud cover, precipitation, temperature, 20 foot winds, humidity, Haines index, lightning activity level, mixing height, transport winds, vent rate and dispersion index averaged within each of the fire weather zone groupings.

CLOUD COVER -
CLR (clear).....0 to 6 percent coverage
MCLEAR (few clouds).....7 to 31 percent coverage
PCLDY (scattered clouds).....32 to 69 percent coverage
MCLDY (broken clouds).....70 to 94 percent coverage

CLOUDY (overcast) .....95 to 100 percent coverage

PRECIP CHC - presented in a Percentage of Probability, expressing the probability of measureable precipitation occurring at any point within the forecasted area during the specified time.
PRECIP TYPE - Precipitation will be expressed as one of the following types:

NONE	DRIZZLE	RAIN	SHOWERS	TSTMS	
FRZ DRZL	FRZ RAIN	SLEET	SLEET/RAIN	SNOW	SNOW/ FZ RA

MAX/MIN TEMP - The maximum daytime or minimum nighttime temperature for each of the 3 time periods. Temperature is given in whole degrees Fahrenheit. *Calculated as 1.4 standard deviations from the mean of all temperatures within a fire weather zone.

AM WIND / PM WIND - Morning/Afternoon 20 foot winds expressed in wind direction (one of the eight points of the compass) and wind speed (in miles per hour). *20ft wind speed calculated as 80% of 10m wind speeds.

PRECIP AMOUNT – Average amount of precipitation in hundredths on an inch. *Calculated as an average of forecasted precipitation within each fire weather zone.

PRECIP DURATION - The duration of the precipitation event in hours.

PRECIP BEGIN - The onset time of precipitation to the nearest whole hour.

PRECIP END - The ending time of precipitation to the nearest whole hour.

MIN/MAX HUMIDITY (%) - Relative Humidity range - minimum relative humidity expected during the day, and the maximum at night.

HAINES INDEX (HI) - A measure of moisture and stability. This ranges from 2 to 6, which is a sum of two components, a temperature difference (categorized 1 to 3), and a moisture/dewpoint difference (also categorized 1 to 3).

HI Value	Qualitative Term
2 or 3	VERY LOW
4	LOW
5	MODERATE
6	HIGH

The **HI** has been related to fire behavior, such that **the higher the value, the better the chance of seeing large fire development**, mainly where winds are not a factor. There are different options of the Haines index, each customized for elevation. NWS Buffalo will be using the low elevation option.

LAL - Lightning activity level category. Relates to the maximum coverage of lightning strikes expected within any 1 hour time frame during the forecast period.

1: No Lightning
3: Slight Chance/Isolated/Widely Scattered Lightning
4: Chance/Scattered Lightning
5: Likely/Numerous Lightning

*LAL of 2 and 6 not used locally

MIXING HGT - Maximum depth to which mixing of the lower atmosphere will occur. This can be a difficult parameter to forecast. This is done by estimating the maximum temperature and lifting it dry adiabatically until it reaches the forecast sounding temperature. Generally during the summer, if neither a low-level inversion nor warm air advection are present, daytime heating will produce a well-mixed atmosphere of 4000 to 7000 feet in depth. The more unstable the atmosphere, the greater the mixing height.

TRANSPORT WIND - The average wind from the surface to the mixing height. After calculating the mixing height, the average wind direction and speed within that layer is calculated.

VENT RATE – This is a simple calculation of the mixing height multiplied by the transport wind speed.

DISPERSION INDEX - The dispersion index is the ventilation rate divided by 1000.

<u>Categories of Dispersion:</u>

100 and up	Excellent
61-100	Good
41-60	Average
21-40	Fair
20 or less	Poor

<u>Examples:</u>

A) Mixing height 4500 feet, Transport Wind Speed 20 mph.
(4500 x 20) / 1000 = 90 <u>GOOD</u>

B) Mixing height 2500 feet, Transport Wind Speed 10 mph
(2500 x 10) / 1000 = 25 <u>FAIR</u>

REMARKS – Any additional significant information can be included here which relates to that particular fire weather zone. (I.e. Timing of wind shift, frontal passage or lake breeze)

EXTENDED FORECAST – This is the forecast for days 3 to 7. This includes weather type and temperatures with winds forecast out to day 5. *Calculated as a daily average of weather forecasted within all of western and north-central New York.

OUTLOOK 8 TO 14 DAYS – A general temperature and precipitation outlook with trends compared to normal. *Forecast from NWS Climate Prediction Center.

Forecast Updates

During the fire weather season, the near-term forecaster will closely monitor weather conditions and issue an updated forecast if conditions are expected to deviate **significantly** from the most recent forecast. An updated fire weather forecast should be issued only when any of the following criteria are met:

1. Red Flag criteria met, but were previously not anticipated.

2. Observed wind is 10 mph or greater than forecast, and the direction differs by two or more compass points (based on 8 compass points).

3. Relative humidity, originally forecast to be greater than 30 percent, is now expected to be less than 30 percent.

4. Numerous thunderstorms, where none were previously forecast.

5. The occurrence (or non-occurrence) of precipitation will **significantly** differ from the forecast.

6. Any unexpected weather conditions that will **significantly** impact fire service operations. (unexpected wind shifts, etc.)

The internet link for the NWS Buffalo Fire Weather Forecast is:

http://forecast.weather.gov/product.php?site=buf&product=FWF&issuedby=BUF

NFDRS Point Forecasts

The National Fire Danger Rating System (NFDRS) measures wildfire danger. The NWS role in NFDRS is that of forecasting weather parameters for input which when combined with fire weather community input (fuel moisture, etc.) allows the NFDRS software to predict the next day's fire danger index.

NWS Buffalo is responsible for inputting weather parameters (BUFFWMBUF) into the National Fire Danger Rating Forecast. An example can be found in Appendix E. These forecast parameters are generally valid for the next day at 1300 LST, except some parameters (for example max/min temperature and RH) cover a range of time as indicated below. NWS Buffalo issues this forecast at 446 PM each day. Updates are not required. The forecast is for the two Remote Automatic Weather Stations (RAWS) sites in our forecast area. These locations are as follows:

301101 ABMN6 – Iroquois National Wildlife Refuge, Basom, NY (Genesee County)
Elevation: 628 ft. Lat/Lon 43.112861, -78.404306
Owner: Dept. of Interior, FWS

300491 LWLN6 – NYSDEC Lowville Demonstration Area, Lowville, NY (Lewis County)
Elevation: 740 ft. Lat/Lon 43.809722, -75.473333
Owner: NYSDEC Div of Forest Protection

The FWM Forecast format is as follows:

FCST,######,YYMMDD,13,X,TT,RH,L1,L2,DD,SS,,TX,TN,RX,RN,P1,P2,F

Where:

######	NFDRS Station Identifier {for example, 301101}	
YYMMDD	Year Month Day (forecast valid date which is next day) 050608: June 8th, 2005	
13	Time (forecast valid time 1300 hours/1PM). *Does not change*.	
X	<u>Weather Codes</u>:	
	0 - Clear	*5 - Drizzle*
	1 - Scattered clouds	*6 - Rain*
	2 - Broken clouds	*7 - Snow/sleet*
	3 - Overcast	*8 - Showers*
	4 - Fog	*9 – Thunderstorms*
TT	Dry Bulb Temperature	
RH	Relative Humidity	
L1	Lightning Activity Level (period 1300 LST day of issuance to 2300 LST hours) *See FWF section for description of LAL codes.	
L2	Lightning Activity Level (period 2300 LST to 2300 on the next day)	

DD	Wind direction (N, NE, E, SE etc.)
SS	Wind speed (10 minute average in MPH)
,,	Between SS and TX commas are needed to hold the place for 10 hour fuel moisture values which the NWS does NOT forecast at this time. Space is held for the time being.
TX	Maximum temperature
TN	Minimum temperature
RX	Maximum relative humidity
RN	Minimum relative humidity
P1	Precipitation duration (1500-0600 LST period) in whole hours
P2	Precipitation duration (0600-1300 LST period) in whole hours
F	Wet Flag "Y/N" (Used to define if fuels at 1300 LST are forecasted to be wet. The wet flag will typically be set as N unless there is a 70% chance or higher of weather codes 5, 6 or 7 in the forecast.)

RED FLAG PROGRAM

Red Flag Event

A Red Flag event is a **critical combination of dry fuels and weather conditions that support extreme fire behavior.** This combination could lead to the occurrence of large and dangerous wildfires. Since the potential for Red Flag conditions does not exist without receptive fuel conditions, knowledge of existing fuel conditions is essential. While Red Flag conditions vary for each fire weather district, the purpose of the Red Flag Program is to alert land management agencies to developing weather conditions that, when coupled with critically dry wildland fuels, could lead to dangerous fires.

Coordination will be made between NWS Buffalo and NYSDEC, Iroquois NWR and Eastern GACC before issuance of a Red Flag Watch or Warning is issued. This will be made via a phone call to each user to determine environmental conditions contributing to the fire danger level including fuel moisture.

Red Flag Criteria

Elements considered critical red flag criteria are a combination of current or forecast **meteorological parameters** (winds, RH), **longer term dryness** (past rainfall and Keetch-Byram index), and the **vegetation status.** WFO Buffalo will use the following sets of criteria to determine when a red flag warning will be issued for particular zones. There are two different criteria based primarily upon the season. All factors within each vegetative stage must be met in order to have a Red Flag Event.

When in Vegetative Stage I & II (cured & transition – Winter/Spring/Fall)
- Winds sustained or with frequent gusts above 25 mph
- Relative Humidity at or below 30%
- Rainfall amounts for the previous 5 days of less than 0.25 inches
- Fuels input based on coordination with Federal/State Partners

When in Vegetative Stage III (green - Summer)
- Winds sustained or with frequent gusts above 25 mph
- Relative Humidity at or below 30%
- Rainfall amounts for the previous 8 days of less than 0.25 inches
- Keetch-Byram Drought Index values of 300 or greater
  See http://www.wfas.net/images/firedanger/kbdi.png

It is the user's responsibility to inform the NWS of the current stage (I, II or III) and when measured KBDI is approaching 300, over 300, and falls back below 300. With no input from the users on these parameters, the NWS will assume climatological timing for various stages.

Stage I cured – 75% or more dead
Stage II transition – 25% to 75% dead
Stage III green – less than 25% dead

During the winter the stage will be cured. Transition will occur 2 to 4 weeks after the last freeze. After about 30 days the stage will be green. The process will work backwards starting with the first freeze of fall. The average last frost in spring ranges from the 1st half of April along the lake shores to late May across the interior western Southern Tier and Tug Hill. The average first frost in fall ranges from the first half of September across the interior western Southern Tier to the second half of October along the lake shores.

As part of the warning decision making process, forecasters are encouraged to consider atmospheric stability parameters (Haines Index), temperature anomalies, mixing heights, and even cloud cover when determining the issuance of a Fire Weather Watch or Red Flag Warning – especially under low-end critical conditions and in the absence or critical fire weather patterns.

Fire Weather Watch

A Fire Weather Watch is issued to indicate the potential for dangerous fire weather conditions. Usually fire danger is in the very high to extreme category. The watch will be issued 12 to 48 hours before the onset of critical weather conditions. The watch may be issued for all, or selected portions within a fire weather zone or region. The overall intent of a Fire Weather Watch is to alert users at least a day in advance for purposes of resource allocation and firefighter safety. If expected conditions fall within Red Flag criteria, a Fire Weather Watch should be issued with the early morning Fire Weather Forecast (BUFFWFBUF) for these periods. There will be a headline indicating the important details of “where and when.”

For example:

…FIRE WEATHER WATCH IN EFFECT TUESDAY 6AM EDT THROUGH 6PM EDT FOR THE WESTERN SOUTHERN TIER…

With the issuance of a Fire Weather Watch, an additional statement BUFRFWBUF will be issued. This product will describe in more detail, the areas, reasons and timing for the watch. This product will also be issued as needed to upgrade or cancel the watch, or to provide additional information.

If the Fire Weather Watch is issued with the early morning forecast for the tonight period, an updated BUFRFWBUF should be issued by midday to either cancel the Watch, or to upgrade to a Red Flag Warning. If the Watch is for the following day, it shall be up to the afternoon forecaster’s discretion to issue an updated Fire Weather Forecast (BUFFWFBUF) and/or an updated Fire Weather Watch (BUFRFWBUF) to

inform of the expected conditions. See Appendix F for an example of a Fire Weather Watch.

Red Flag Warning

A Red Flag Warning is issued to indicate the imminent danger of severe fire weather with a relatively high probability of occurrence. Usually the fire danger is in the very high to extreme category. A Red Flag Warning will normally be issued for potential severe fire weather events in less than 12 hours. A Red Flag Warning may or may not be preceded by a Fire Weather Watch. The warning will be issued via BUFRFWBUF and contain a headline and basis for the warning issuance. A Red Flag Warning headline will also be included in the affected areas daily routine Fire Weather Forecast. A Red Flag Warning will be cancelled via a BUFRFWBUF if subsequent information indicates that the conditions are no longer expected to develop. See Appendix G for an example of a Red Flag Warning.

Fire management may also request that Red Flag Warnings or Fire Weather Watches be issued under extenuating circumstances (i.e., fuel conditions so severe that marginally windy and dry conditions would lead to extreme fire behavior).

Special Weather Statement

It is office policy, based on conversations with various users, to refrain from issuing statements for “High or Extreme Fire Danger” conditions. The Fire Danger is calculated and posted each day at many or most state and national parks. Their determination is based on their local measurements, leaning heavily toward fuel moistures, which is information for which the National Weather Service is not responsible.

Media inquiries concerning the specific fire danger should be directed to the office of NYS Department of Environmental Conservation or the NYS State Forest Ranger District Offices. However, on rare occasions during extreme events, users of the Fire Weather products may request that we “help get the word out” about the fire danger. In these rare cases, the Senior Forecaster may decide to issue a Special Weather Statement (BUFSPSBUF). This statement would incorporate the information provided by the fire weather community.

Fire Weather Area Forecast Discussion

The Area Forecast Discussion (AFD) focuses on the most significant weather issues affecting a NWS office’s forecast area over the next seven days. During heightened fire activity a fire weather section (.FIRE WEATHER...) should be included in the AFD containing weather information of interest to fire managers.

Spot Forecasts

What is a Spot Forecast and Who Can Request One?

Site-specific (spot) forecasts are localized near-term forecasts issued by the NWS in support of wildfire and natural resource management. These forecasts aid the land management and fire control agencies in protecting life and property during wildland fires, hazardous fuels reduction and rehabilitation and restoration of natural resources. Spot forecasts are also issued for hazardous materials incidents, marine incidents, search and rescue response and other threats to public safety. Spot forecasts are available anytime of the day, week or season and are considered one-time requests which are not routinely updated.

NWS Buffalo will provide spot forecasts upon request of any federal, state, tribal or local public safety official who represents the spot forecast is required to support a wildland fire. For non-wildfire purposes, NWS Buffalo will provide spot forecast service under the following circumstances and conditions:

- Upon request of any federal official who represents that the spot forecast is required under the terms of the National Interagency Agreement for Meteorological Services.

- Upon request of any state, tribal, or local 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.

- Upon request of any public safety official who represents the spot forecast is essential to public safety, e.g. due to the proximity of population centers or critical infrastructure, essential to protect incident responders, and/or essential to protect vital resources. 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.

- In support of Homeland Security Presidential Directive #5 (HSPD 5). http://training.fema.gov/EMIWeb/IS/ICSResource/assets/HSPD-5.pdf

How to request a spot forecast

Spot forecast requests can be made via three methods:

1) Navigate to the NWS National Spot Forecast Request web page **http://www.weather.gov/spot/** (***preferred method***) An example of this webpage can be found in Appendix H.

-Or- when internet service is not available:

2) Call the office via the phone number listed on page 4
3) Fill out a backup paper request form located in Appendix N and fax to NWS Buffalo. Please follow the fax with a phone call to alert the forecast staff of the incoming fax.

The Spot Forecast Request web page is also accessible through the NWS Buffalo Fire Weather web page http://www.weather.gov/buf/FireWeather by clicking on the link beneath the Spot Forecast header.

After reaching the Spot Forecast Request web page, **click on the "Submit Spot Request" link.** Then:

The following 3 steps will be entered on the Incident Location and Type Webpage. An example of this webpage can be found in Appendix I (As in India).
Step 1: select the incident location using option A or B.
Step 2: select the incident type
Step 3: click **Generate A Spot Request** to proceed to the Detailed Incident Request Form.
Step 4: fill out all the required fields highlighted in red on this form. An example of the Detailed Incident Request Form can be found in Appendix J.

The following information must be provided to NWS Buffalo by the requester in order for the spot forecast to be completed:

1. Project Name

2. Name of Requesting Agency and Requesting Official with E-mail address and contact Phone Number
   **This information will be displayed on the spot webpage which is accessible to the public. You may want to use a listed public number instead of a private number. I.e. office number, 911 center or EM office*

3. If Incident Type is a Prescribed Burn then you will have to select a "Reason For Prescribed Fire Spot Request" needs to be selected

4. Location (This will be filled in based on the incident location you entered on the previous page)

5. Enter additional Location and Fire Weather Supplemental Information if you can
6. Edit the Forecast Information section as needed including the time you would like the forecast delivered and the time you would like the forecast to start at

7. Select the requested forecast periods (Today and/or Tonight and/or Tomorrow) or if requesting in the evening (Tonight and/or Tomorrow and/or Tomorrow Night and/or Day 3

8. Select the weather elements you would like in your forecast

9. Check Yes in the NOAA Hysplit Model Box if you would like it included with your forecast

10. Enter any Remarks or special requests to be sent to the forecaster. The Remarks space is provided for the requestor to include more specific information or ask more specific questions on the expected weather such as "When will the cold front arrive?."

11. Enter current weather observations, with as much detail as possible

Step 5: After all the required fields are filled out, click **Submit Request**. Some recommended fixes to the entered data may then show up on the next page. Click "Go Back and Fix" to make changes otherwise click "Submit Request Anyway". You will then be taken back to the original Spot Forecast Request page.

Step 6: Finally, you will need to click "**Monitor Spot Forecasts"** and zoom into the location of your incident. You should see the status labeled as "Request pending" until the forecast is completed. When completed the status will change to "Completed:" with a date and time stamp. Click on the incident name to see the complete forecast. An example of the Spot Forecast Monitor Webpage can be found in Appendix K.

Spot forecast requests sent to NWS Buffalo will alarm on the forecast desk under the product code BUFSTQBUF. (An example can be found in Appendix L) A forecaster will call to acknowledge the request using the phone number entered on the request page. The forecaster will request additional information if needed to complete the forecast. For requests where fire weather parameters are not needed, a forecaster will ask if a verbal point and click forecast would be sufficient.

The spot forecasts will usually be issued with a turn-around time of 30 to 60 minutes. This is unless the request is for the next day; where in such a case, fulfillment may be delayed until the date of ignition depending on forecast workload and duty priorities.

The completed spot forecast will be issued under the product code BUFFWSBUF and posted to the Spot Forecast Monitor webpage. An example of a completed spot forecast can be found in Appendix M. If you do not have internet service then a forecaster can call you back with the details of the forecast just indicate this in the Remarks section when requesting the spot forecast. If we have to update the forecast, a forecaster will call to inform you of the upcoming change.

Requests may be submitted up to one day before the specified ignition time if used for prescribed burning. For one-day advance forecast requests and beyond, users should use the Digital Forecasts and Services detailed on page 5 and the Fire Weather Planning Forecast detailed on page 6. Multiple requests for the same project prior to ignition are strongly discouraged. The purpose of the spot forecast is for active wildfires, active all-hazard incidents, search and rescue, and prescribed projects that are intended to be performed within one day of the spot request. Planned, advanced spot forecasts up to one day in advance can however be coordinated for active, long-duration emergencies or fires. Once the project has begun, the frequency of spot updates is coordinated with the requestor.

Feedback and Validation

Feedback on spot forecasts is required to validate forecasts and improve accuracy. Feedback should ideally be submitted within a day or two of the burn or incident. The type of feedback preferred is the character of temperature, humidity and wind affecting the burn or incident period. At a minimum, the following should be included for a burn:
1) Maximum temperature
2) Minimum relative humidity
3) Significant afternoon winds (speed and direction)

Example of Minimum Required Feedback:
1) Maximum temperature = 61
2) Minimum RH = 18%
3) Afternoon winds south 2-4G8 mph (eye level) shifting to west at around 1500 hours

Acceptable Methods of Providing Spot Forecast Feedback preferably within a day or two:

1) Enter Feedback on spot forecast page. Simply type in your feedback into the box near the bottom of the forecast and click Send Feedback. ***(preferred method)***
2) Phone call to NWS Buffalo
3) Faxed copies of fireline (belt weather) observations
4) Faxed or electronically transmitted copies of hourly data from an on-site portable weather station
5) Notification of deployment of a portable GOES telemetered RAWS, so NWS can access and download the necessary data

HYSPLIT Trajectories

The HYSPLIT (Hybrid Single-Particle Lagrangian Integrated Trajectory) model is a model which determines trajectories for particles at a given height above ground level. The HYSPLIT trajectories can be used for many purposes including but not limited to HAZMAT and smoke dispersion. These are available as an optional spot forecast element via request.

HYSPLIT output represents computer model forecasts without any human interaction. They do not take into account information on burn size or fuels, thus generate trajectory forecasts for 500, 1500, and 3000 meters above ground level without regarding whether fire plume height will reach that altitude.

To utilize this feature, simply select **YES** in the box titled NOAA Hysplit Model within the Spot Forecast Request. You can see an example of this box on page two of Appendix J. Also make sure to include the email or emails where you would like the results sent to in the E-mail address field under the Spot Request Contact Information

An example of a HYSPLIT Trajectory is available in Appendix O.

Incident Meteorologist Request and Decision Support Services

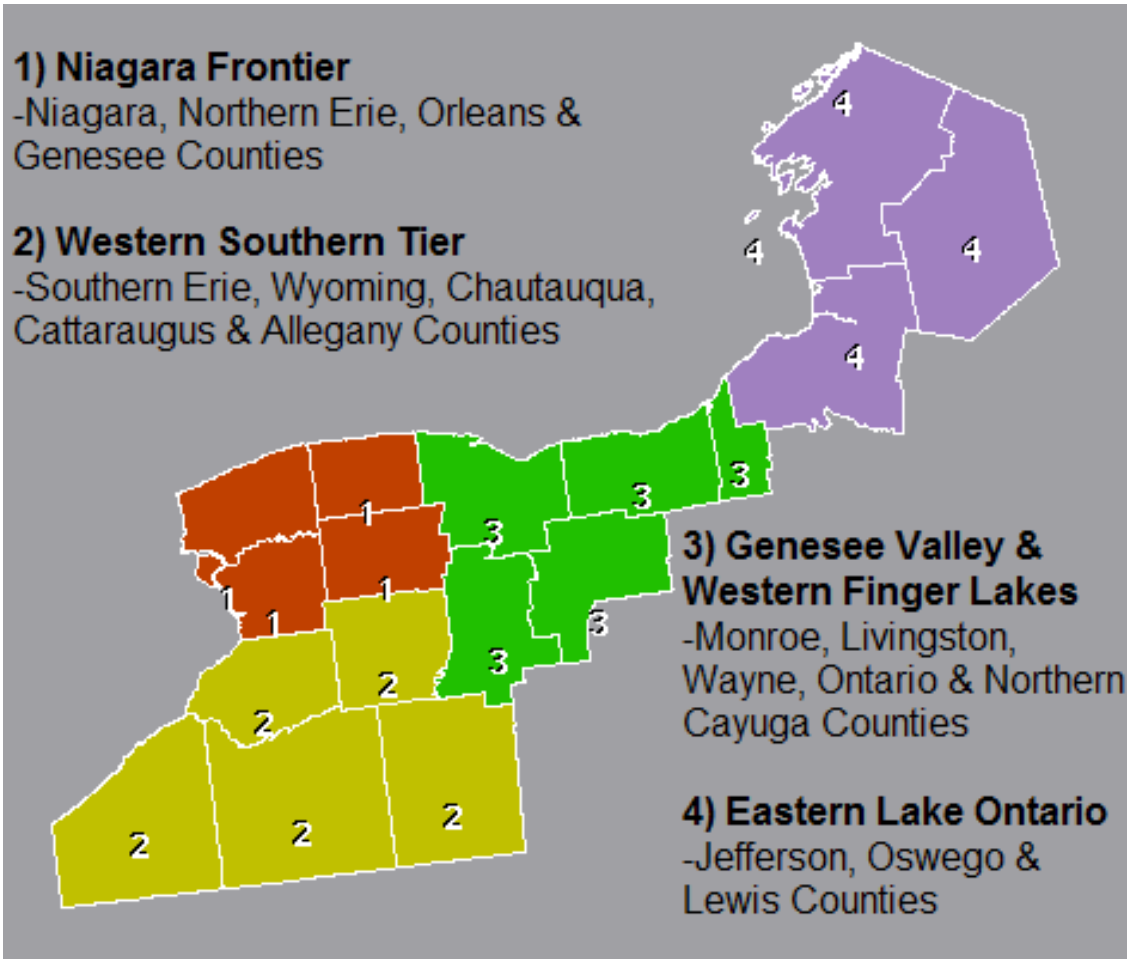
Incident Meteorologist Request

The NWS maintains a cadre of trained Incident Meteorologists (IMETs) per NWS Instruction 10-402. http://www.nws.noaa.gov/directives/sym/pd01004002curr.pdf IMETs are available for on-site or off-site decision support services for wildfires or other events that threaten life or property. All requests for IMET support from federal, state, tribal or local government emergency response agencies will be requested through the NWS National Fire Weather Operations Coordinator (NFWOC).

Decision Support Services

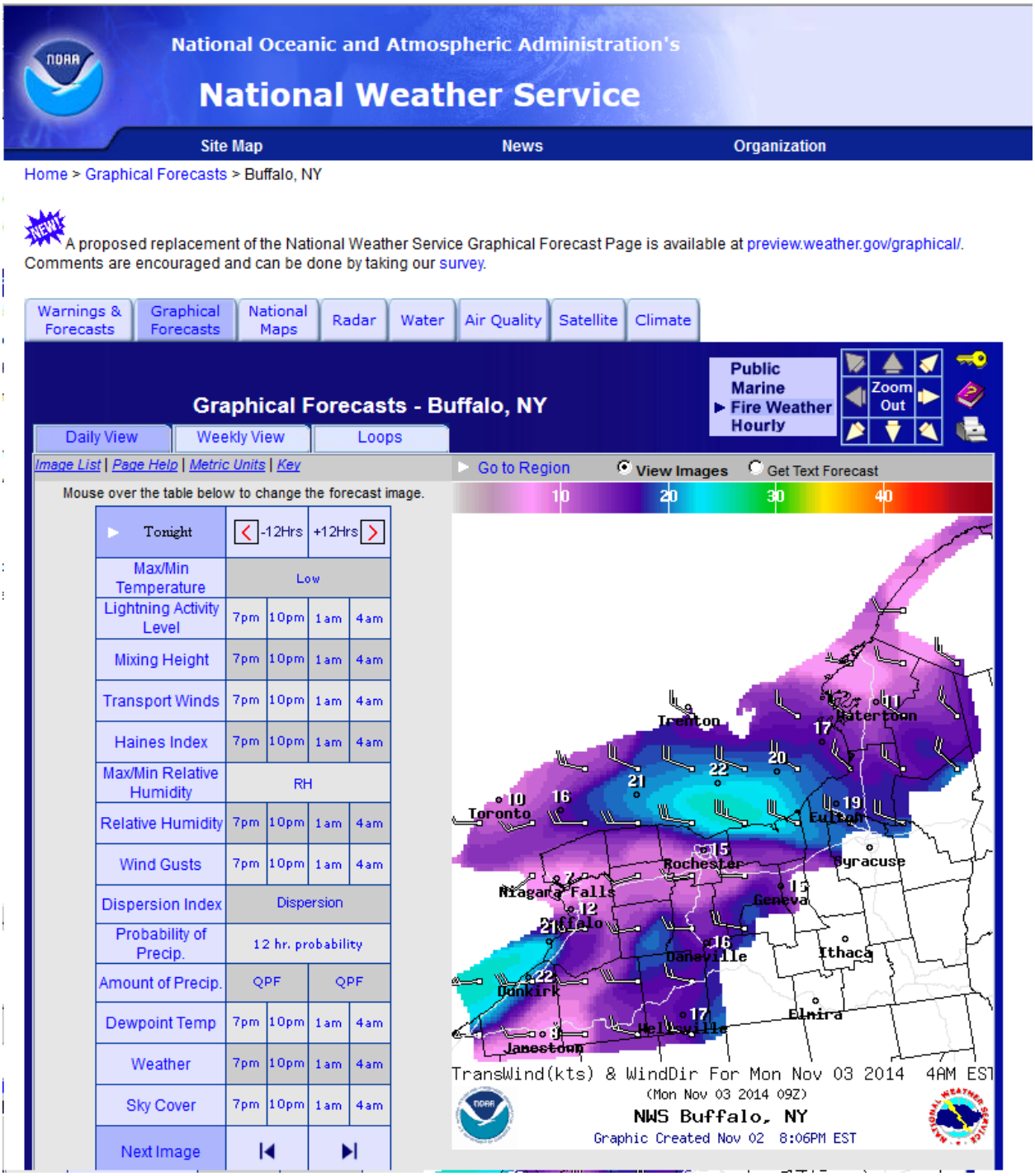
For non-wildfires such as local prescribed burns across western or north-central New York, request for on-site or off-site forecasting service can be made to the Buffalo National Weather Service Office. The fire weather program leader or another assigned staff member if available and approved by management would then provide the requested service.

APPENDIX A - Fire Weather Forecast Zones

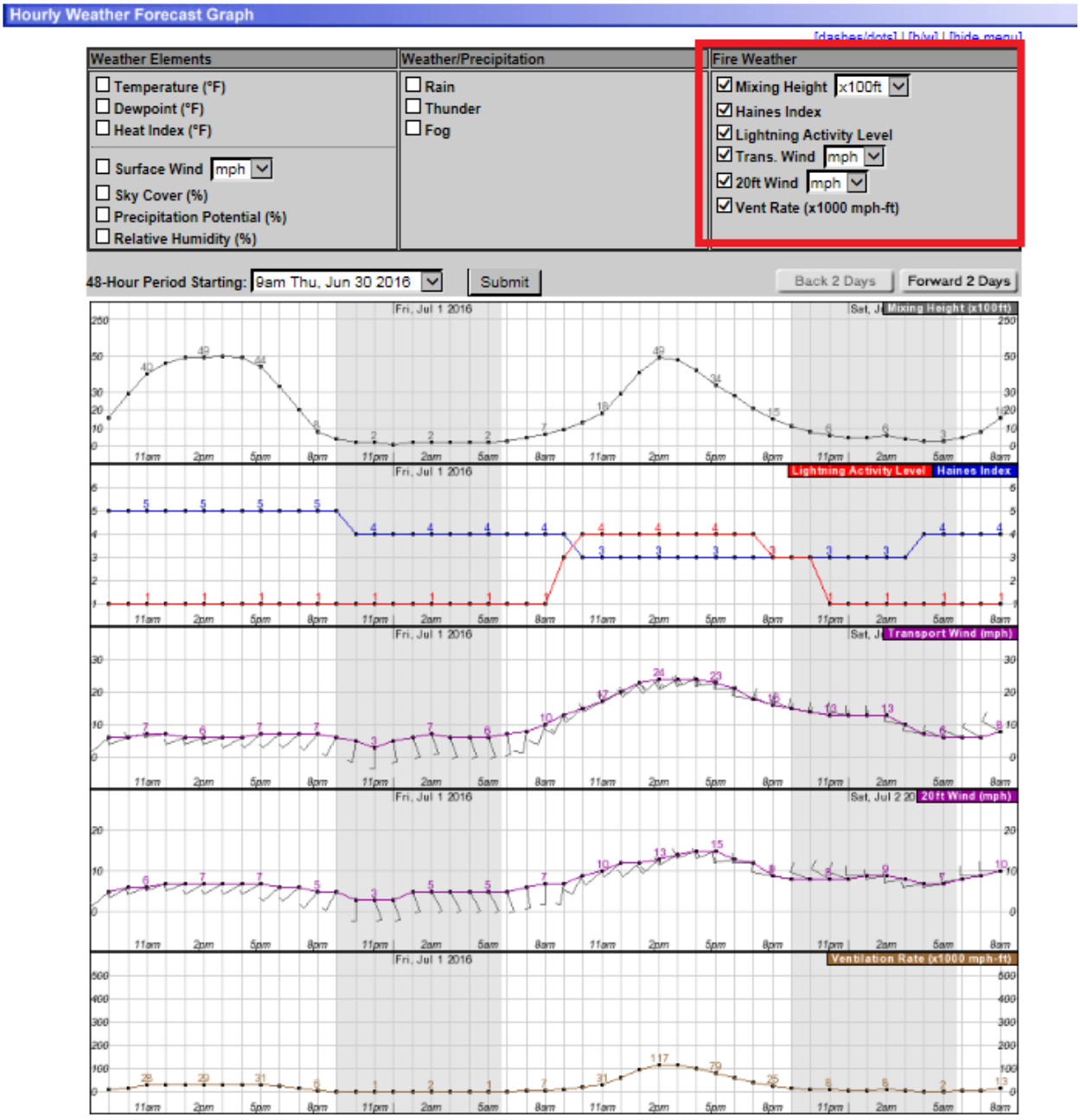


APPENDIX B – Example of NWS Buffalo Graphical Fire Weather Forecasts on weather.gov

http://graphical.weather.gov/sectors/bufFireDay.php#tabs



APPENDIX C - Example of Hourly Weather Graphs with Fire Weather Elements



Saturday, July 2 at 5am
Mixing Height: 300ft Haines Index: 4 Lightning Activity Level: 1 Ventilation Rate: 2000mph-ft
Transport Wind: W 6mph 20ft Wind: W 7mph

APPENDIX D - Example of the Daily Fire Weather Forecast (BUFFWFBUF)

```
FIRE WEATHER PLANNING FORECAST FOR WESTERN NEW YORK
NATIONAL WEATHER SERVICE BUFFALO NY
456 AM EDT TUE JUN 17 2014

.DISCUSSION...

A VERY WARM AND HUMID AIRMASS TODAY WILL GIVE WAY TO SHOWERS AND
THUNDERSTORMS. A FEW THUNDERSTORMS WILL BLOSSOM ON A LAKE BREEZE
BOUNDARY THIS AFTERNOON ACROSS SOUTHWESTERN NEW YORK STATE...THEN A
RATHER LARGE AREA OF SHOWERS AND THUNDERSTORMS WILL PASS ACROSS
WESTERN AND CENTRAL NEW YORK LATER THIS AFTERNOON AND EVENING. SOME
OF THESE STORMS MAY PRODUCE STRONG WIND GUSTS...HEAVY RAIN AND
POSSIBLE HAIL ACROSS WESTERN NEW YORK. SHOWERS AND THUNDERSTORMS WILL
LINGER INTO WEDNESDAY BEFORE A COLD FRONT DROPS ACROSS THE REGION
AND USHERS IN A REFRESHING AND DRIER AIRMASS.

NYZ001-002-010-011-172115-
NIAGARA-ORLEANS-NORTHERN ERIE-GENESEE-
456 AM EDT TUE JUN 17 2014

                              TODAY      TONIGHT          WED
CLOUD COVER                   PCLDY        MCLDY        MCLDY
PRECIP CHC (%)                   40           80           50
PRECIP TYPE                 SHOWERS        TSTMS        TSTMS
MAX/MIN TEMP                     88           67           84
AM WIND (MPH)               LGT/VAR                     W  8
PM WIND (MPH)                 SW 10        SW 12         W  6
PRECIP AMOUNT                  0.02         0.62         0.23
PRECIP DURATION                   1            7            2
PRECIP BEGIN                    4 PM   CONTINUING   CONTINUING
PRECIP END               CONTINUING   CONTINUING   CONTINUING
MIN/MAX HUMIDITY (%)             45           94           54
HAINES INDEX                      4            3            3
LAL                               4            5            5
MIXING HGT (FT-AGL)            6760          600         3020
TRANSPORT WIND (KT)           SW 21         W 20        SW 23
VENT RATE (KT-FT)            141960        12000        69460
DISPERSION INDEX                142           12           69
REMARKS...NONE.

$$

NYZ012-019>021-085-172115-
WYOMING-CHAUTAUQUA-CATTARAUGUS-ALLEGANY-SOUTHERN ERIE-
456 AM EDT TUE JUN 17 2014

                              TODAY      TONIGHT          WED
CLOUD COVER                   PCLDY        MCLDY        MCLDY
PRECIP CHC (%)                   40           80           70
PRECIP TYPE                   TSTMS        TSTMS        TSTMS
MAX/MIN TEMP                     85           65           83
AM WIND (MPH)               LGT/VAR                     W 14
```

PM WIND (MPH)	SW 10	SW 11	W 11
PRECIP AMOUNT	0.07	0.72	0.45
PRECIP DURATION	2	8	7
PRECIP BEGIN	10 AM	CONTINUING	CONTINUING
PRECIP END	CONTINUING	CONTINUING	CONTINUING
MIN/MAX HUMIDITY (%)	49	97	55
HAINES INDEX	4	3	3
LAL	4	5	5
MIXING HGT (FT-AGL)	7220	810	4400
TRANSPORT WIND (KT)	SW 21	W 22	W 24
VENT RATE (KT-FT)	151620	17820	105600
DISPERSION INDEX	152	18	106

REMARKS...NONE.

$$

NYZ003>005-013-014-172115-
MONROE-WAYNE-NORTHERN CAYUGA-LIVINGSTON-ONTARIO-
456 AM EDT TUE JUN 17 2014

	TODAY	TONIGHT	WED
CLOUD COVER	MCLEAR	MCLDY	MCLDY
PRECIP CHC (%)	30	80	50
PRECIP TYPE	SHOWERS	TSTMS	TSTMS
MAX/MIN TEMP	88	66	85
AM WIND (MPH)	LGT/VAR		W 8
PM WIND (MPH)	SW 7	SW 8	W 8
PRECIP AMOUNT	0.02	0.60	0.20
PRECIP DURATION	0	7	2
PRECIP BEGIN	4 PM	CONTINUING	CONTINUING
PRECIP END	CONTINUING	CONTINUING	CONTINUING
MIN/MAX HUMIDITY (%)	46	91	52
HAINES INDEX	4	4	3
LAL	4	5	5
MIXING HGT (FT-AGL)	7620	510	4690
TRANSPORT WIND (KT)	SW 13	W 26	W 22
VENT RATE (KT-FT)	99060	13260	103180
DISPERSION INDEX	99	13	103

REMARKS...NONE.

$$

NYZ006>008-172115-
OSWEGO-JEFFERSON-LEWIS-
456 AM EDT TUE JUN 17 2014

	TODAY	TONIGHT	WED
CLOUD COVER	MCLEAR	MCLDY	MCLDY
PRECIP CHC (%)	0	70	40
PRECIP TYPE	NONE	TSTMS	TSTMS
MAX/MIN TEMP	85	61	81
AM WIND (MPH)	LGT/VAR		W 11
PM WIND (MPH)	SW 6	S 7	W 11
PRECIP AMOUNT	0.00	0.47	0.09
PRECIP DURATION		5	2
PRECIP BEGIN		7 PM	CONTINUING
PRECIP END		CONTINUING	CONTINUING

MIN/MAX HUMIDITY (%)	40	100	53
HAINES INDEX	5	3	3
LAL	1	4	4
MIXING HGT (FT-AGL)	6560	870	3910
TRANSPORT WIND (KT)	SW 20	W 22	W 11
VENT RATE (KT-FT)	131200	19140	43010
DISPERSION INDEX	131	19	43

REMARKS...NONE.

$$

.EXTENDED FORECAST...

.WEDNESDAY NIGHT...MOSTLY CLOUDY WITH A CHANCE OF SHOWERS AND THUNDERSTORMS. LOWS AROUND 60.
.THURSDAY...MOSTLY SUNNY. HIGHS IN THE LOWER 70S.
.FRIDAY...MOSTLY CLEAR. LOWS IN THE MID 50S. HIGHS IN THE UPPER 60S.
.SATURDAY...MOSTLY CLOUDY. A CHANCE OF SHOWERS. LOWS IN THE MID 50S. HIGHS IN THE LOWER 70S.
.SUNDAY...MOSTLY CLOUDY. A CHANCE OF SHOWERS AND THUNDERSTORMS. LOWS IN THE UPPER 50S. HIGHS IN THE MID 70S.
.MONDAY...MOSTLY CLOUDY WITH A CHANCE OF SHOWERS AND THUNDERSTORMS. LOWS IN THE UPPER 50S. HIGHS IN THE LOWER 70S.

WIND WEDNESDAY NIGHT...WEST AROUND 5 MPH.
WIND THURSDAY...NORTH AROUND 10 MPH.
WIND FRIDAY...SOUTH AROUND 5 MPH.
WIND SATURDAY...EAST AROUND 5 MPH.

.OUTLOOK 8 TO 14 DAYS...
TEMPERATURES ABOVE NORMAL. PRECIPITATION ABOVE NORMAL.

APPENDIX E - Example of the National Fire Danger Rating System Forecast (BUFFWMBUF)

```
000
FNUS81 KBUF 022146
FWMBUF

NATIONAL FIRE DANGER RATING FORECAST
NATIONAL WEATHER SERVICE BUFFALO NY
446 PM EST SUN NOV 2 2014

FCST,301101,141103,13,1,52,50,1,1,WSW,13,,52,32,85,45,0,0,N
FCST,300491,141103,13,1,47,57,1,1,W,08,,47,28,89,40,0,0,N

$$
```

APPENDIX F - Example of Fire Weather Watch (BUFRFWBUF)

```
WWUS81 KBUF 081927
RFWBUF

URGENT - FIRE WEATHER MESSAGE
NATIONAL WEATHER SERVICE BUFFALO NY
327 PM EDT SUN APR 8 2012

NYZ012-019>021-085-090400-
/O.NEW.KBUF.FW.A.0002.120409T1500Z-120409T2200Z/
WYOMING-CHAUTAUQUA-CATTARAUGUS-ALLEGANY-SOUTHERN ERIE-
327 PM EDT SUN APR 8 2012

...FIRE WEATHER WATCH IN EFFECT FROM MONDAY MORNING THROUGH
MONDAY AFTERNOON FOR WIND AND LOW RELATIVE HUMIDITY FOR WESTERN
PORTIONS OF THE SOUTHERN TIER...

THE NATIONAL WEATHER SERVICE IN BUFFALO HAS ISSUED A FIRE WEATHER
WATCH FOR WIND AND LOW RELATIVE HUMIDITY...WHICH IS IN EFFECT
FROM MONDAY MORNING THROUGH MONDAY AFTERNOON.

* AFFECTED AREA...WESTERN PORTIONS OF THE SOUTHERN TIER.

* TIMING...LATE MONDAY MORNING AND MONDAY AFTERNOON.

* WINDS...20 TO 30 MPH...WITH GUSTS TO 40 MPH.

* RELATIVE HUMIDITY...DROPPING TO AROUND 30 PERCENT.

* IMPACTS...ANY FIRES THAT DEVELOP WILL BE CAPABLE OF RAPID
  SPREAD AND GROWTH. OUTDOOR BURNING IS NOT RECOMMENDED AT THIS
  TIME.

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.

&&

$$
```

APPENDIX G - Example of Red Flag Warning (BUFRFWBUF)

```
WWUS81 KBUF 041756
RFWBUF

URGENT - FIRE WEATHER MESSAGE
NATIONAL WEATHER SERVICE BUFFALO NY
156 PM EDT MON MAY 4 2015

NYZ001>008-010>014-019>021-085-042300-
/O.CON.KBUF.FW.W.0001.000000T0000Z-150504T2300Z/
NIAGARA-ORLEANS-MONROE-WAYNE-NORTHERN CAYUGA-OSWEGO-JEFFERSON-
LEWIS-NORTHERN ERIE-GENESEE-WYOMING-LIVINGSTON-ONTARIO-CHAUTAUQUA-
CATTARAUGUS-ALLEGANY-SOUTHERN ERIE-
156 PM EDT MON MAY 4 2015

...RED FLAG WARNING REMAINS IN EFFECT UNTIL 7 PM EDT THIS EVENING
FOR WIND AND LOW RELATIVE HUMIDITY FOR ALL OF WESTERN AND
NORTH CENTRAL NEW YORK...

* AFFECTED AREA...ALL OF WESTERN AND NORTH CENTRAL NEW YORK.

* TIMING...THROUGH EARLY THIS EVENING.

* WINDS...SOUTHWEST 10 TO 20 MPH WITH GUSTS UP TO 35 MPH.

* TEMPERATURES...IN THE UPPER 70S TO MID 80S AWAY FROM THE
  IMMEDIATE LAKESHORES.

* RELATIVE HUMIDITY...AS LOW AS 25 PERCENT.

* IMPACTS...FOREST AND GRASS FUELS ARE VERY DRY AND THE
  COMBINATION OF LOW HUMIDITY AND GUSTY WINDS MAY RESULT IN
  DANGEROUS FIRE BEHAVIOR. ANY FIRES THAT DO OCCUR COULD SPREAD
  QUICKLY...BURN INTENSELY...AND BE DIFFICULT TO CONTAIN. AS A
  REMINDER...A BURN BAN IS IN EFFECT ACROSS ALL OF NEW YORK
  STATE THROUGH MID MAY.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A RED FLAG WARNING MEANS THAT DANGEROUS FIRE WEATHER CONDITIONS
ARE EXPECTED DUE TO THE COMBINATION OF GUSTY WINDS...LOW RELATIVE
HUMIDITIES...AND DRY FUELS. ANY FIRES THAT DEVELOP MAY QUICKLY
GET OUT OF CONTROL AND BECOME DIFFICULT TO CONTAIN.

&&

$$
```

APPENDIX H - Example of Spot Forecast Webpage

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

National Weather Service

Spot Forecast Request

Home NWS Home News Organization

New Spot Request Form Operational on October 17, 2016

This Spot Forecast Request interface is now approved for operational use. The legacy web site for spot requests will remain running until October 16, 2016. After October 16, the www.weather.gov/spot will be the only online web service to submit spot forecasts.

Spot Forecast Request

NOTICE - This interface is intended to be used solely for the relay of forecast information to the National Weather Service. Submissions sent through this online form are intended for internal agency use. We are required (by e-Gov Act of 2002) to explicitly state that submission of any information is voluntary. For further information please read our Privacy Policy and Disclaimer. False statements on this form may be subject to prosecution under the False Statement Accountability Act of 1996 (18 U.S.C. § 1001) or other statutes.

Incident and Decision Support Forecast Request

This site is the National Weather Service interface to requesting, filling, and monitoring spot forecasts issued by our Forecast Offices and National Centers.

Click here to provide 'Spot Webpage Testing Feedback'

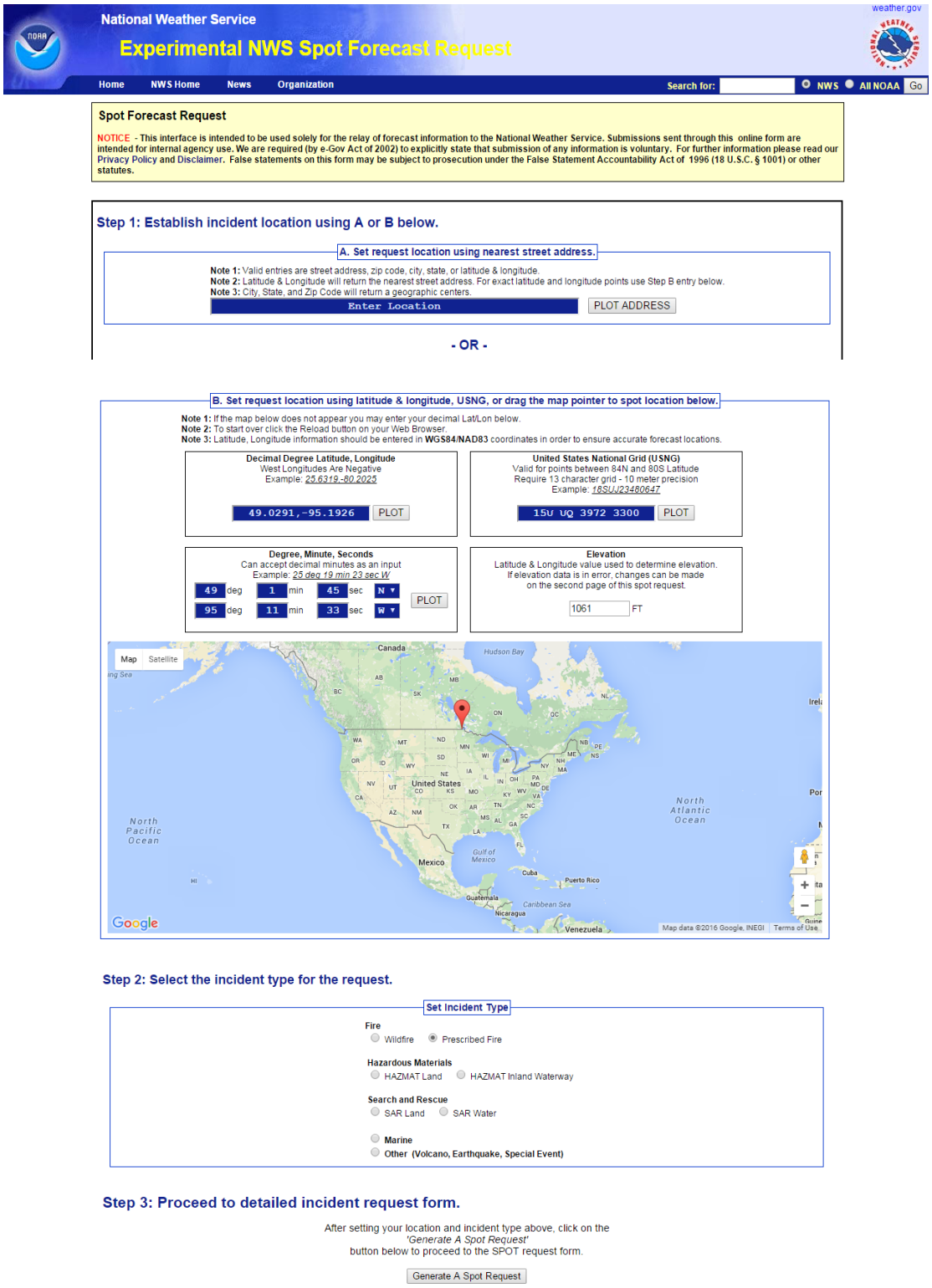
Submit Spot Request — **Interactive Request:** Request a spot forecast using an interactive map, with or without a Lat/Lon of the incident.

Monitor Spot Forecasts — **Monitor:** Use this to monitor existing spot requests and forecasts.

Please take the online survey to let us know what you think of this interface.

Download the Product Description Document (PDD)

APPENDIX I (India) - Example of the Incident Location and Type Selection Webpage for Spot Forecast Requests



APPENDIX J - Example of the Detailed Incident Request Form Webpage for Spot Forecast Requests

Spot Forecast Request

NOTICE - This interface is intended to be used solely for the relay of forecast information to the National Weather Service. Submissions sent through this online form are intended for internal agency use. We are required (by e-Gov Act of 2002) to explicitly state that submission of any information is voluntary. For further information please read our Privacy Policy and Disclaimer. False statements on this form may be subject to prosecution under the False Statement Accountability Act of 1996 (18 U.S.C. § 1001) or other statutes.

Request Page | National Weather Service Spot Program Links | Monitor Page

Spot Forecast Incident Type: Prescribed Fire

Spot Request Contact Information

(*) PROJECT NAME:

For NWS Spot forecast policy, see section 4.0 in NWS Instruction 10-401 at: http://www.nws.noaa.gov/directives/010/010.htm

(*) Requesting Agency: (*) Requesting Official:

(*) E-mail address: (*) Phone number: Phone Extension:

Contact Person: FAX number:

Reason For Prescribed Fire Spot Request

- Under the Interagency Agreement for Meteorological Services (USFS, BLM, NPS, USFWS, BIA)
- State, tribal or local fire agency working in coordination with a federal participant in the Interagency Agreement for Meteorological Services.
- Essential to public safety, e.g. due to the proximity of population centers or critical infrastructure.

Location

(WGS84 / NAD83 preferred)

(*)Latitude: 44.6241 7.5' Quad:

(*)Longitude: -72.6900

	TOP	BOTTOM
Elevation:	1147 Feet	Feet

(Elevation preferred in feet)

Fire Weather Supplemental Information

Drainage: Size: (In Acres)

Aspect: Fuel Type:

Sheltering

Full Partial Unsheltered

APPENDIX J - Continued

Forecast Information

DELIVER FORECAST	FORECAST STARTING	TIMEZONE
Date : 08/09/2016	Date : 08/09/2016	(Local Time)
Time : As Soon As Possible	Time : 21:00	EASTERN

Combined FORECAST FORMAT

2 Hr	2 Hr	2 Hr	2 Hr	Tabular Time Table Interval

Tonight	Wednesday	Wednesday Night	Thursday		Select All Periods
				Sky/Weather	
				Temperature	
				Humidity	
				Chance of Precipitation	
				Begin/End of Precipitation	
				Wind (20 FT)	
				Mixing Height	
				Transport Winds	
				Haines Index	

NOAA Hysplit Model

Would you like to include a run of the Hysplit Model with this request? If so please verify your email address above as this will be used to send you the hysplit model run.

- YES
- NO

Remarks

Observations

(*) When submitting an observation, the yellow fields are required in addition to at least one weather element.

	WX OB 1	WX OB 2	WX OB 3	WX OB 4	WX OB 5
	Remove Ob	Remove Ob	Remove Ob	Remove Ob	Remove Ob
(*)Site:					
(*)Date:					
(*)Time:	(Local)	(Local)	(Local)	(Local)	(Local)
(*)Elev:					
Wind Dir:					
Wind Spd:					
Temp:					
WB:					
RH:					
Td:					
Sky:					
Wx:					
Rmks:					

Submit Spot Request

Clicking the button below will create a one time spot request.

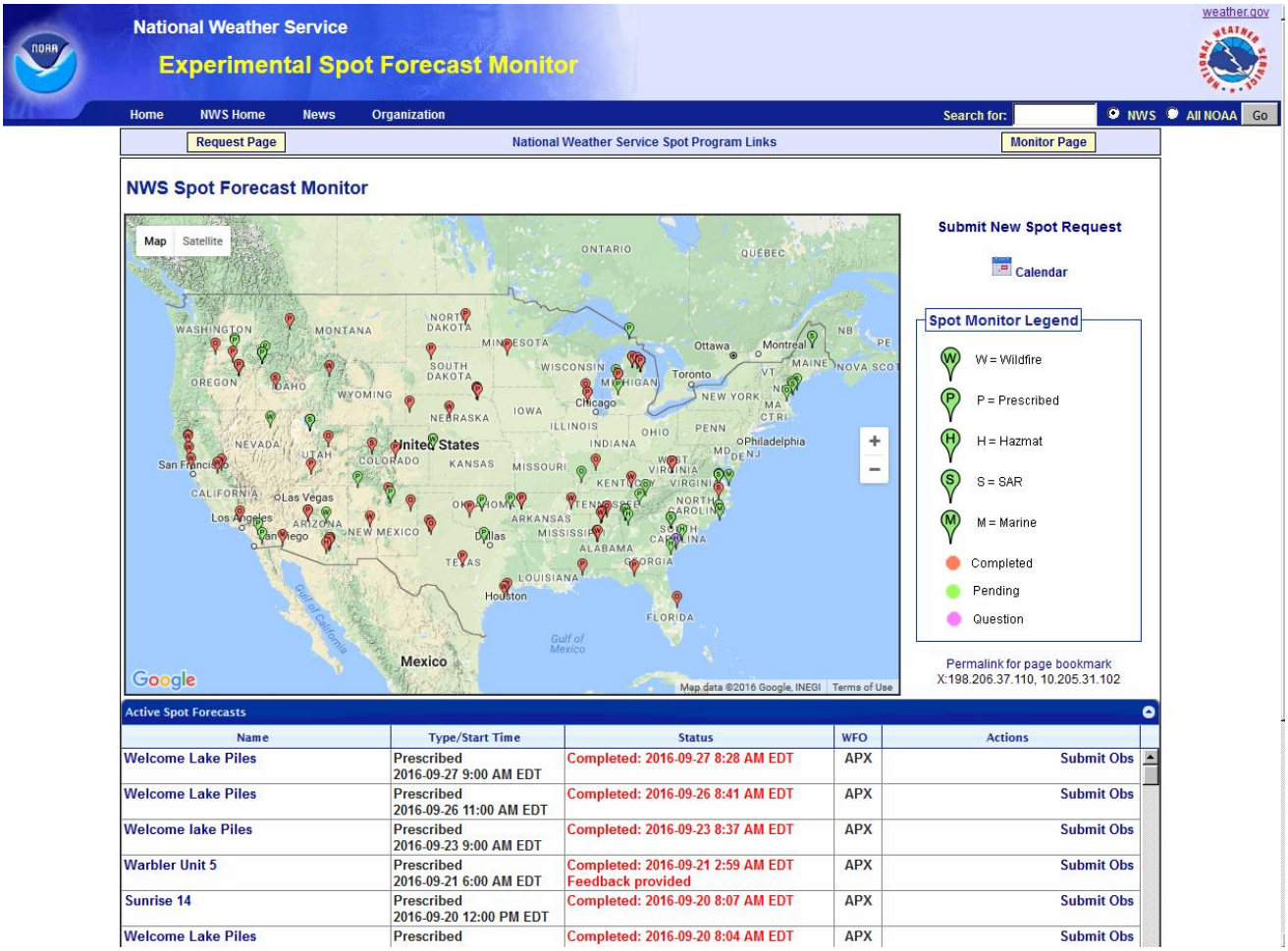
This request will be processed and a forecast will be generated by the servicing forecast office at the time they receive the spot request.

At any time until the expiration of this forecast, another immediate spot request may be generated off of the original request. Additionally, the immediate spot request can be converted into a scheduled request by contacting your servicing forecast office .

Submit Request | Cancel

APPENDIX K - Example of Spot Forecast Monitor Webpage

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



Name	Type/Start Time	Status	WFO	Actions
Welcome Lake Piles	Prescribed 2016-09-27 9:00 AM EDT	Completed: 2016-09-27 8:28 AM EDT	APX	Submit Obs
Welcome Lake Piles	Prescribed 2016-09-26 11:00 AM EDT	Completed: 2016-09-26 8:41 AM EDT	APX	Submit Obs
Welcome lake Piles	Prescribed 2016-09-23 9:00 AM EDT	Completed: 2016-09-23 8:37 AM EDT	APX	Submit Obs
Warbler Unit 5	Prescribed 2016-09-21 6:00 AM EDT	Completed: 2016-09-21 2:59 AM EDT Feedback provided	APX	Submit Obs
Sunrise 14	Prescribed 2016-09-20 12:00 PM EDT	Completed: 2016-09-20 8:07 AM EDT	APX	Submit Obs
Welcome Lake Piles	Prescribed	Completed: 2016-09-20 8:04 AM EDT	APX	Submit Obs

APPENDIX L - Example of Spot Forecast Request (BUFSTQBUF)

```
BMBB91 KBUF 251145
STQBUF

A SPOT FORECAST REQUEST HAS JUST BEEN RECEIVED FOR A PRESCRIBED FIRE
NAMED "Example Fire"

           PRIORITY:  IMMEDIATE
               DATE:  7/25/14
               TIME:  1100
       PROJECT NAME:  Example Burn
       PROJECT TYPE:  PRESCRIBED
  REQUESTING AGENCY:  Example Agency
REQUESTING OFFICIAL:  Example Official
     REQUEST REASON:  Example
                FAX:  (XXX) XXX-XXXX
    EMERGENCY PHONE:  (XXX) XXX-XXXX
           LOCATION:
              STATE:
               DLAT:   XX.XX
               DLON:   XX.XX
           EXPOSURE:  Flat
          FUEL TYPE:  grass, litter
         SHELTERING:  UNSHELTERED
   BOTTOM ELEVATION:  610
      TOP ELEVATION:  615
       SIZE (ACRES):  50

WEATHER CONDITIONS AT PROJECT OR FROM NEARBY STATIONS
TIME=0725 WIND=SW@2 T=55 TW= RH=92 TD= clr
TIME=0625 WIND=0 T=51 TW= RH=98 TD= clr
TIME=0525 WIND=0 T=50 TW= RH=99 TD= clr
TIME=0425 WIND=0 T=51 TW= RH=98 TD= clr

...REMARKS...


...WEATHER PARAMETERS REQUESTED...
    SKY / WEATHER: 1,1,1
      TEMPERATURE: 1,1,1
RELATIVE HUMIDITY: 1,1,1
     20 FOOT WIND: 1,1,1
     HAINES INDEX: 1,1,1
 SMOKE DISPERSION: 1,1,1
      WAVE HEIGHT: 1,1,1

SITE:  BUF
OFILE:  20140725
TIMEZONE:  EST5EDT
```

APPENDIX M - Example of Spot Forecast (BUFFWSBUF)

```
FNUS71 KBUF 251446
FWSBUF

SPOT FORECAST FOR EXAMPLE BURN
NATIONAL WEATHER SERVICE BUFFALO NY
1046 AM EDT FRI JUL 25 2014

FORECAST IS BASED ON IGNITION TIME OF 1100 EDT ON JULY 25.
IF CONDITIONS BECOME UNREPRESENTATIVE...CONTACT THE NATIONAL WEATHER
SERVICE.

.DISCUSSION...

HIGH PRESSURE WILL REMAIN IN PLACE OVER THE OHIO VALLEY AND PROVIDE
ANOTHER DAY OF ABUNDANT SUNSHINE WITH COOL MORNING TEMPERATURES
GIVING WAY TO A WARM AFTERNOON. SOUTHWEST FLOW AROUND THE NORTHERN
EDGE OF THIS HIGH PRESSURE WILL PRODUCE AN INCREASING SOUTHWEST
BREEZE THIS AFTERNOON. THIS LARGER SCALE SOUTHWEST WIND WILL
PREVENT A LAKE ONTARIO LAKE BREEZE FROM DEVELOPING. RELATIVE
HUMIDITY HAS BEEN SLOW TO DROP SO FAR...BUT SHOULD DROP QUICKLY
AFTER ABOUT NOON AND WILL BOTTOM OUT AT 35 TO 40 PERCENT BY LATE
AFTERNOON WITH GOOD RELATIVE HUMIDITY RECOVERY TONIGHT.

.REST OF TODAY...

SKY/WEATHER.........SUNNY (20 PERCENT).
MAX TEMPERATURE.....AROUND 78.
MIN HUMIDITY........37 PERCENT.
20 FOOT WIND........SOUTHWEST WINDS 9 TO 14 MPH.
HAINES INDEX........4 TO 5 OR LOW TO MODERATE POTENTIAL FOR LARGE
                    PLUME DOMINATED FIRE GROWTH.
MIXING HEIGHT.......MAX 6100 FT AGL.
TRANSPORT WINDS.....SOUTHWEST 10 TO 16 MPH.
SMOKE DISPERSION....MAX 85 (GOOD).

TIME (EDT)          11A 12P 1PM 2PM 3PM 4PM 5PM
SKY (%).............1   12  33  43  40  32  28
WEATHER COV.........
WEATHER TYPE........
TSTM COV............
TEMP................71  73  75  76  77  78  77
RH..................62  55  50  46  42  39  37
20 FT WIND DIR......W   W   W   W   W   SW  SW
20 FT WIND SPD......8   9   9   10  12  13  14
20 FT WIND GUST.....10  10  10  15  15  15  20
HAINES INDEX........5   5   4   4   4   4   5
SMK DISPERSION......34  45  57  68  79  85  81

.TONIGHT...

SKY/WEATHER.........PARTLY CLOUDY (35 PERCENT)...THEN BECOMING
                    MOSTLY CLOUDY (60 PERCENT).
MIN TEMPERATURE.....AROUND 59.
MAX HUMIDITY........82 PERCENT.
```

20 FOOT WIND.....SOUTH WINDS 7 TO 12 MPH.
HAINES INDEX.....3 TO 5 OR VERY LOW TO MODERATE POTENTIAL FOR
LARGE PLUME DOMINATED FIRE GROWTH.
MIXING HEIGHT.....MIN 100 FT AGL.
TRANSPORT WINDS.....SOUTHWEST 12 TO 17 MPH.
SMOKE DISPERSION....MIN 1 (POOR).

TIME (EDT)	6PM	7PM	8PM	9PM	10P	11P	MID	1AM	2AM	3AM	4AM	5AM
SKY (%).....	26	21	19	23	30	34	38	48	52	56	64	68
WEATHER COV.....												
WEATHER TYPE.....												
TSTM COV.....												
TEMP.....	75	73	71	69	67	65	62	61	59	59	60	61
RH.....	40	44	50	55	60	66	72	77	80	78	75	72
20 FT WIND DIR.....	SW	SW	SW	SW	SW	S	S	S	S	S	S	S
20 FT WIND SPD.....	12	9	7	7	6	6	6	6	6	6	6	6
20 FT WIND GUST.....	15	10	10	10	10	10	10	10	10	10	10	10
HAINES INDEX.....	5	5	5	5	4	4	4	3	3	3	3	3
SMK DISPERSION.....	65	42	21	9	3	1	1	1	1	1	1	1

.SATURDAY...

SKY/WEATHER.....MOSTLY CLOUDY (80 PERCENT). A CHANCE OF SHOWERS
IN THE MORNING. A CHANCE OF THUNDERSTORMS
THROUGH THE DAY. SHOWERS LIKELY IN THE
AFTERNOON.
MAX TEMPERATURE.....AROUND 79.
MIN HUMIDITY.....57 PERCENT.
20 FOOT WIND.....SOUTHWEST WINDS 8 TO 13 MPH. GUSTY AND ERRATIC
WINDS EXPECTED NEAR THUNDERSTORMS IN THE LATE
MORNING AND AFTERNOON.
HAINES INDEX.....3 TO 5 OR VERY LOW TO MODERATE POTENTIAL FOR
LARGE PLUME DOMINATED FIRE GROWTH.
MIXING HEIGHT.....MAX 4800 FT AGL.
TRANSPORT WINDS.....SOUTHWEST 12 TO 20 MPH...INCREASING TO 22 TO 25
MPH LATE.
SMOKE DISPERSION....MAX 98 (GOOD).

TIME (EDT)	6AM	7AM	8AM	9AM	10A	11A	12P	1PM	2PM	3PM	4PM	5PM
SKY (%).....	72	82	87	85	81	79	81	82	82	82	82	81
WEATHER COV.....	SCH	SCH	CHC	SCH	SCH	SCH	CHC	CHC	CHC	CHC	LKY	LKY
WEATHER TYPE.....	RW	RW	RW	RW	RW	RW	RW	RW	RW	RW	RW	RW
TSTM COV.....				CHC	CHC	CHC	CHC	CHC	CHC	CHC	CHC	CHC
TEMP.....	63	64	63	66	70	73	75	76	77	78	79	78
RH.....	71	70	82	74	66	61	59	58	58	58	59	61
20 FT WIND DIR.....	S	S	S	S	S	SW	SW	SW	SW	SW	SW	SW
20 FT WIND SPD.....	6	7	7	8	9	10	12	13	13	13	12	12
20 FT WIND GUST.....	10	10	10	10	10		15	15	15	15	15	15
HAINES INDEX.....	3	3	3	3	3	3	3	4	4	5	5	5
SMK DISPERSION.....	1	1	1	4	9	19	37	59	78	92	98	90

$$

FORECASTER...NWS FORECASTER
REQUESTED BY...EXAMPLE OFFICIAL
TYPE OF REQUEST...PRESCRIBED
.TAG 20140725

APPENDIX N – Backup Spot Request Form

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

SPOT REQUEST
(See reverse for instructions)

U.S. Department of Commerce
NOAA
National Weather Service

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

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

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

9. Ignition/Incident Time and Date

10. Size (Acres)

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

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

13. Latitude/Longitude:

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

15. Drainage

16. Aspect

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

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

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

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

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

21. Requested Forecast Period
Date

Start _____

End _____

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

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

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

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

24. Send Forecast to:
ATTN:

25. Location:

26. Phone Number:
Fax Number:

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

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

WS FORM D-1, January 2005 INSTRUCTIONS:

I. Incident Personnel:

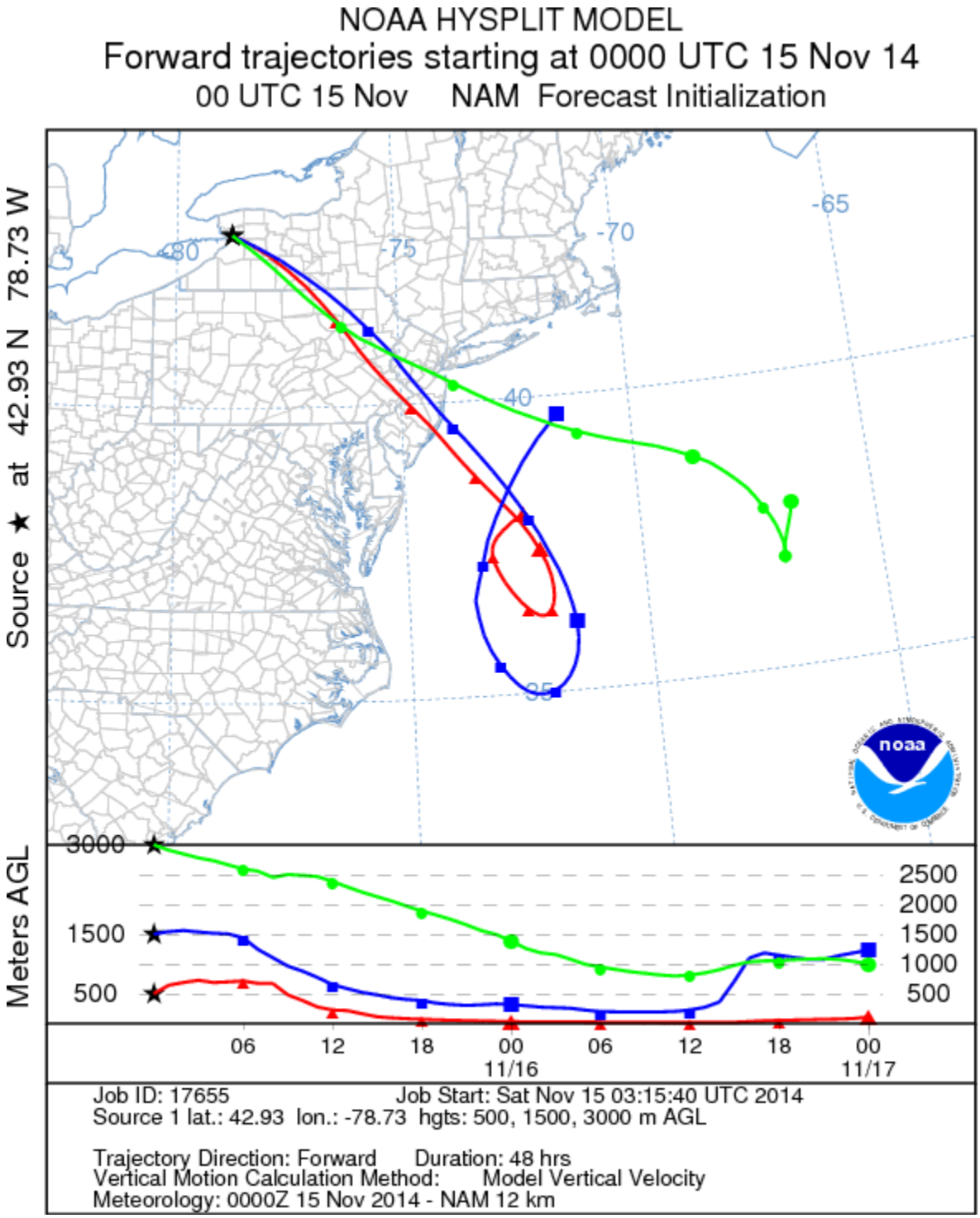
1. Complete items 1 through 27 where applicable.
   a. Example of weather conditions on site:

13. Weather Observations from project or nearby station(s):											
Place	Elevation	†Ob Time	20 ft. Wind		Eye Level Wind.		Temp.		Moisture		Remarks *(Relevant Weather, etc.)*
			Dir	Speed	Dir	Speed	Dry	Wet	RH	DP	
Unit G-50	1530'	0830	NW	6-8	NW	3-5	32		72		Observations from unit RAWS station, 50% cloud cover.

   b. If the incident (HAZMAT, SAR) involves marine, put the wave/swell height and direction in the Remarks section.
2. Transmit in numerical sequence or fax to the appropriate Weather Forecast Office. (A weather forecaster on duty will complete the special forecast as quickly as possible and transmit the forecast and outlook to you by the method requested)
3. Retain completed copy for your records.
4. **Provide feedback to NWS utilizing separate page.** Be sure to include a copy of the spot forecast with any feedback submission including forecaster's name. Feedback to NWS personnel is imperative to assist with future forecasts. Remember, feedback on correct forecasts is equally as valuable as feedback on incorrect forecasts! If spot forecast is significantly different than conditions on site, a second forecast may be required.

II. ALL RELAY POINTS should use this form to insure completeness of date and forecast. A supply of this form should be kept by each dispatcher and all others who may be relaying requests for forecasts or relaying completed forecasts to field units.

III. Forms are available from your local National Weather Service Weather Forecast Office. They may also be reproduced by other agencies as needed, entering the phone number and radio identification if desired.

NOTICE: Information provided on this form may be used by the National Weather Service for official purposes in any way, including public release and publication in NWS products. False statements on this form may be subject to prosecution under the False Statement Accountability Act of 1996 (18 U.S.C. § 1001) or other statutes.

APPENDIX O - Example of HYSPLIT Model Trajectories Forecast