

# **Weather Issues that Impact Rx Burns Across Northern and Central New Mexico**

**New Mexico Rx Fire Workshop**

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**NWS Albuquerque**

**March 2nd, 2017**

# Outline

- Useful weather products and websites
  - Increase your situational awareness!
- Significant Weather Events
  - Pattern names and brief explanation
  - Specific weather products to monitor and prescribed burn actions to consider



# Useful Weather Products and Websites



# Red Flag Warning Fire Weather Watch

## Criteria

- 20-foot wind 20 mph or greater and/or gusts 35 mph or greater
- RH less than or equal to 15%
- Haines 5 or 6; temps above normal; unusually high mixing heights; less cloud cover
- Fire Danger Adjective Rating High or higher

Fire Weather Products				
Location	Fire Weather Products	Red Flag Warning / Fire Weather Watch	Point Forecast Matrix	Technical Fire Discussion
Albuquerque	<a href="#">Latest &amp; Archive</a>		<a href="#">Latest &amp; Archive</a>	<a href="#">Latest &amp; Archive</a>
El Paso	<a href="#">Latest &amp; Archive</a>	<a href="#">RFW</a>	<a href="#">Latest &amp; Archive</a>	<a href="#">Latest &amp; Archive</a>

## NWS Albuquerque

[Weather.gov](#) > Albuquerque, NM

[Current Hazards](#) [Current Conditions](#) [Radar](#) [Forecasts](#) [Rivers and Lakes](#)

Thurs Record Highs



Fire

Forecaster's Discussion

Activity Planner

Hourly View

Aviation Forecasts

Local Forecast Page

**Weather.gov Click on appropriate forecast area then choose “Forecasts” and “Fire”**

# Hourly Tabular and Graphs

<http://www.srh.noaa.gov/ridge2/fire/>

The screenshot displays the NWS Fire Weather website interface. On the left, there is a navigation menu with options like 'Current Hazards', 'Fire Situation', 'Forecasts', 'Current Conditions', 'Outlooks', 'Drought/Precip', 'Fuels', 'Air Quality', 'Admin', 'GACCs', 'Other Agencies', and 'Safety Information'. The main content area features a map of the Pacific Northwest region, including cities like Vancouver, Seattle, Portland, Salt Lake City, and Sacramento. A 'Fire Weather News' section is visible above the map, and a 'NWS Enhanced Data Display' section is below it. On the right, the 'NWS Fire Weather -- Zone Forecast' window is open, showing a 'Tabular Forecast' for a 48-hour period starting on Wednesday, March 15, 2017, at 7pm. The forecast table includes columns for Date, Hour (MDT), and various weather elements such as Temperature, Dewpoint, Wind Chill, Surface Wind, and Wind Dir. The 'Fire Weather' section includes checkboxes for Rain, Thunder, Snow, Freezing Rain, Sleet, Fog, and other fire-related metrics like Mixing Height, Haines Index, and Lightning Activity Level.

**NWS Fire Weather -- Zone Forecast**

Fire Zone Forecast | Hourly Graph | Tabular | Request Spot

**Tabular Forecast**

Weather Elements:  Temperature (°F),  Dewpoint (°F),  Wind Chill (°F),  Surface Wind (mph),  Sky Cover (%),  Precipitation Potential (%),  Relative Humidity (%)

Weather/Precipitation:  Rain,  Thunder,  Snow,  Freezing Rain,  Sleet,  Fog

Fire Weather:  Mixing Height (x100ft),  Haines Index,  Lightning Activity Level,  Trans. Wind (kt),  20ft Wind (mph),  Vent Rate (x10000 mph-ft),  Dispersion Index,  Red Flag Threat Index

48-Hour Period Starting: 7pm Wed, Mar 15 2017 [Submit] [Back 2 Days] [Forecast]

Date	03/15					03/16															
Hour (MDT)	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Temperature (°F)	66	59	52	48	46	45	44	45	45	45	46	47	48	51	55	61	67	72	74	76	76
Dewpoint (°F)	9	9	10	10	10	11	12	13	14	15	16	17	17	16	16	16	16	16	15	15	14
Wind Chill (°F)				44	41	40	39	39	40	40	40	41	43								
Surface Wind (mph)	9	9	9	9	9	9	9	10	10	11	11	13	13	14	14	15	15	16	17	18	21
Wind Dir	W	W	W	SW	SW	SW	SW	W	W	W	W	W	W	W	W	W	NW	NW	W	W	W

Use the interactive map to find your burn location (zoom in). Choose tabular or hourly graph. Pick and choose elements you want to see such as temperature, humidity, and wind.

# Detailed Discussions

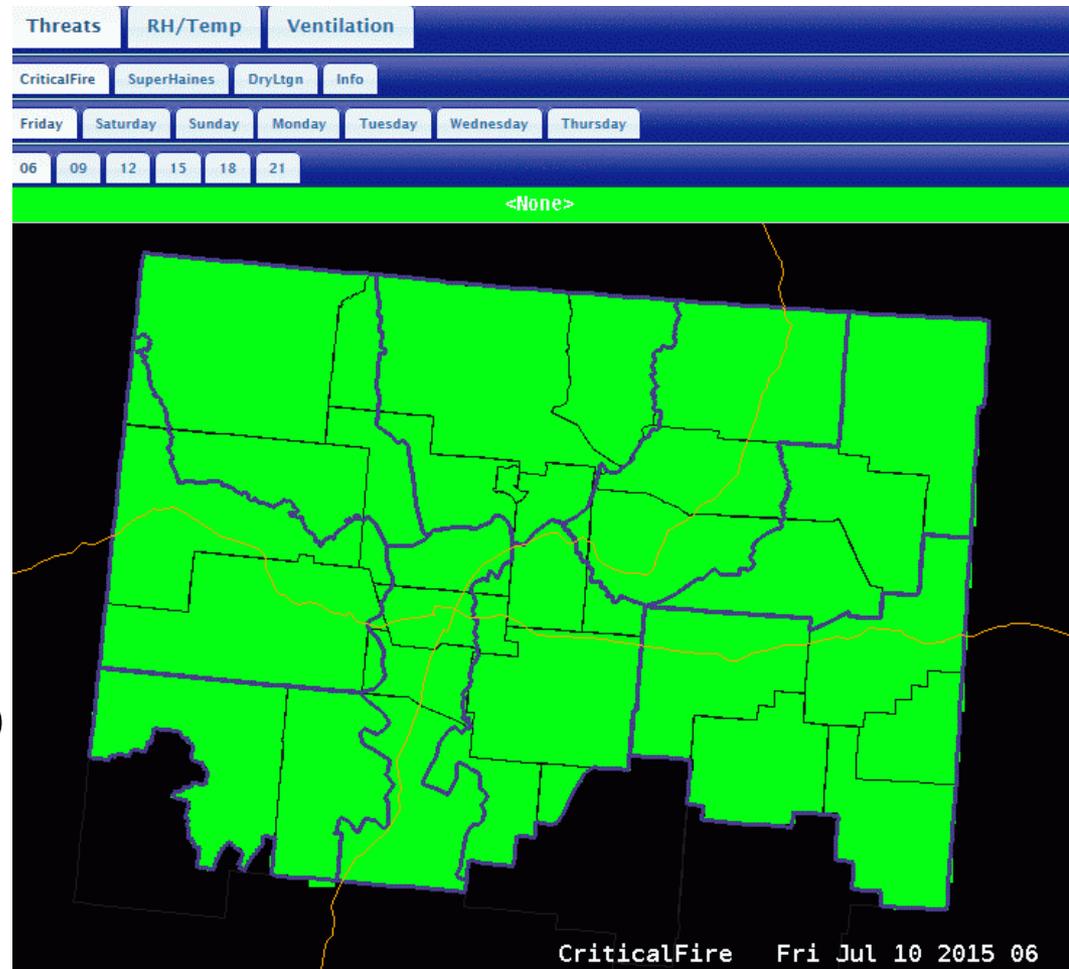
- Choose “Technical Fire Discussion” within Fire Weather Products list **Area Forecast Discussion**
- **Forecasts-Fire-Fire Weather Products-Technical Disc**
- Allows you to get into the head of a forecaster
- Highlights
  - Significant trends
  - Convey threats/impacts
  - Gauge confidence
  - Understand challenges

Fire Weather Products				
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El Paso	<a href="#">Latest &amp; Archive</a>	<b>RFW</b>	<a href="#">Latest &amp; Archive</a>	<a href="#">Latest &amp; Archive</a>
Midland	<a href="#">Latest &amp; Archive</a>	<b>RFW</b>	<a href="#">Latest &amp; Archive</a>	
Lubbock	<a href="#">Latest &amp; Archive</a>	<b>RFW</b>		
Amarillo	<a href="#">Latest &amp; Archive</a>	<b>RFW</b>	<a href="#">Latest &amp; Archive</a>	<a href="#">Latest &amp; Archive</a>
Flagstaff	<a href="#">Latest &amp; Archive</a>	<b>RFW</b>		
Phoenix	<a href="#">Latest &amp; Archive</a>	<b>RFW</b>		<a href="#">Latest &amp; Archive</a>
Tuscon	<a href="#">Latest &amp; Archive</a>	<b>RFW</b>		<a href="#">Latest &amp; Archive</a>

Note: Please check times on all products to make sure they are current.

# Situational Awareness Web page

- Graphics update by 5 am and 4:15 pm each day
- Forecast out 7 days
- **Info tab** explains each graphic
- Great planning tool to see trends in weather



# Specialized Services

- Special Services
  - Phone briefings
    - Explain or decipher online weather forecasts
  - Spot forecasts
    - Site-specific
    - Limited to government agencies or government sponsored entities



[Back to the Albuquerque Fire Weather Page](#)

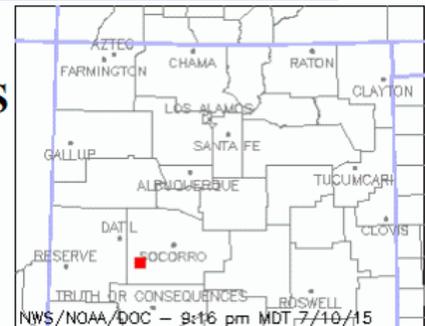
## ALBUQUERQUE SPOT FORECASTS

for  
Friday

← Jul 10 2015 →

[CALENDAR](#)

[Submit a new Spot Request](#)

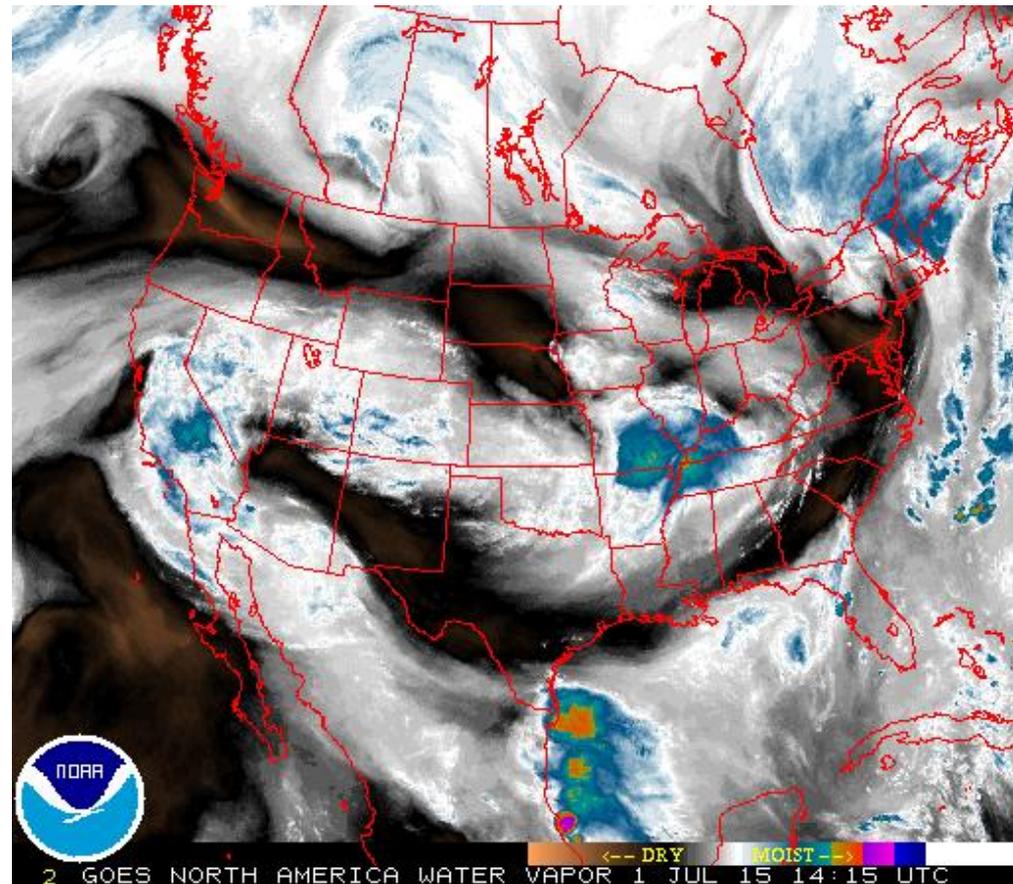


Name	Ignition Time	Status
<a href="#">Red Canyon</a>	<a href="#">WILDFIRE</a>	<a href="#">COMPLETE at 7:10 am MDT</a>

[Track forecasts sent from AWIPS](#)



# Significant Weather Patterns



# Significant Weather Patterns

## ■ Wind Events

### ■ Break Down of the Upper Ridge

- Classic western US critical fire weather pattern
- Strong W-SW wind, unstable atmosphere and low RH

### ■ Chinook Downslope/Mtn Waves

- Most common early spring, late fall and winter
- Strong WNW winds aloft over the Sangre's
  - Look for lenticulars (“flying saucers”) and “Chinook Arch” clouds



### ■ Thunderstorms

- Outflows can travel over 30 miles; distance from radar and mountain blockage determines detection
- Most critical during hot/low RH/dry fuel environment

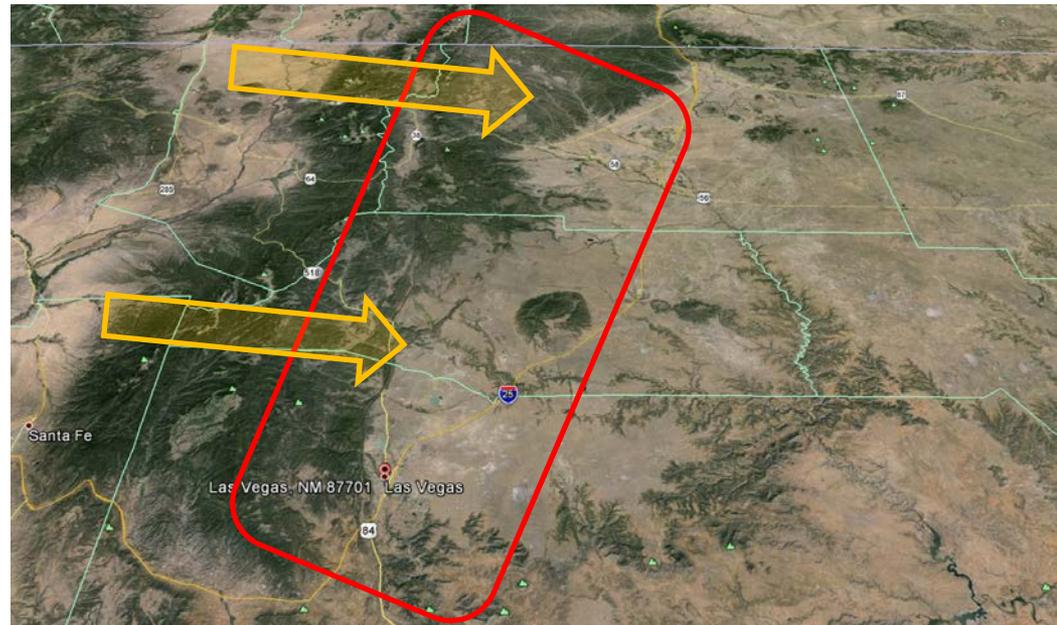
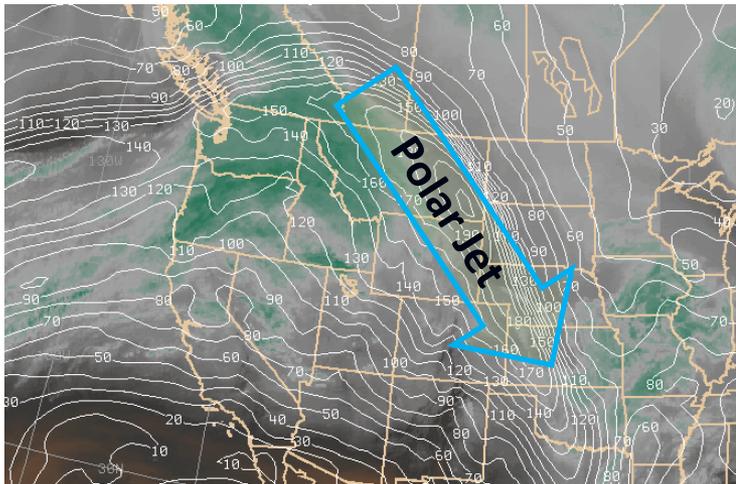
# Possible Rx Actions



- Break Down of Upper Ridge
  - Monitor Red Flag Warnings/Fire Wx Watches
  - Monitor Situational Awareness website
    - Critical graphic trends
  - If a multiple day Red Flag event is expected 2 to 3 days after the burn is finished think extra mop-up (perimeter/interior problem areas)
  - Postpone ignition if you don't have additional help due to extra mop-up/monitoring

# Possible Rx Actions

- Chinook/Mtn Wave Downslope Events
  - Monitor 'Area Forecast Discussion' and Situational Awareness Website - 24 hr RH forecast
  - Consider extra monitoring during the overnight hours especially for areas along the east slopes of the Sangre de Cristos



*February 14, 2014 Water Vapor Satellite overlaid with Jet wind speeds*

# Possible Rx Actions

- Thunderstorm Wind
  - Consider putting less fire on the ground during the late morning/early afternoon hours when thunderstorms are in the forecast
  - Shut down ignitions when t-storms are nearby
  - Post a lookout that has a good view (360 degrees of the surrounding area); Monitor storm movement and perhaps monitor the radar if there is cell coverage (understand radar limitations)
  - Thunderstorms in a low humidity (less than 25%), dry fuel environment can be dangerous

# Significant Weather Patterns

- Hot-Dry-Unstable
  - “Super Haines”
    - Above normal temps both day and night
      - Sometimes hear the term “heat wave”
    - Unusually dry airmass with poor humidity recoveries at night
    - Abundant morning-early afternoon sun
    - Most likely to occur June to early July



*Big Spring Fire, June 25, 2008*

# Possible Rx Actions

- Hot-Dry-Unstable
  - Monitor Situational Awareness website
    - 24 hour humidity forecast
      - 25% or less
    - Max/Min Temperature Difference from Climo
      - + 5 to 10 degrees or more above normal
    - Max Mixing Height forecast values above 15,000 AGL feet
    - Super Haines forecast
  - Consider putting less fire on the ground...especially in a closed canopy and dry heavy surface fuel environment along steep slopes

# Significant Weather Patterns

## ■ Smoke Events

- Stagnant or long duration Subsidence Ridge
- Very dry airmass (overnight burning issues)

## ■ Possible Rx Actions

- Monitor Situational Awareness website
  - Trends in Mixing Height/Transport Wind/Ventilation Rate/24 hr RH and hourly Hysplit graphics
- Postpone burn or burn less acreage per day
  - When the fuels are excessively dry
  - RH recoveries are predicted to be poor
  - Main drainage leading to a populated area
- More coordination with NM Health Dept.

# Significant Weather Patterns

## ■ Wetting Events

Look for these terms  
in weather discussions

### ■ High Plains Moisture Surge

- “Back Door Cold Front”

- “Southeast Return Flow from Gulf of Mexico”

- “Closed or Cut Off Low” “Pacific Trough Passage”

## ■ Possible Rx Actions

- Carefully review Area Forecast Discussion product to gauge forecaster confidence or call the NWS office

- Postpone burn if the wetting event is likely during early to mid stages of your burn

**The End**

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