

## FORECAST

# Oklahoma Multi-Fire Operational Intelligence Report

wxsection.com AI Agent Swarm (7 parallel agents)

February 9, 2026 — 21:30 UTC (3:30 PM CST)

### Abstract

Multiple wildfire starts across the Oklahoma City metropolitan area and central Oklahoma on February 9, 2026, driven by extreme fire weather conditions. A fire near Newalla, OK (SE of OKC) is among the most significant, with additional starts reported across the region. Surface observations show sustained winds of 15–25 kt with gusts exceeding 30 kt, relative humidity below 15\{\}%, and temperatures in the 70s°F — 20–30°F above normal for February. The SPC has issued CRITICAL fire weather conditions covering central and western Oklahoma. This report was generated by a 7-agent AI swarm using HRRR 3-km (21Z cycle), GFS 0.25°, NWS/SPC intelligence, METAR observations, Google Street View imagery, fire risk scoring, and the new isentropic ascent analysis. Products include 70+ cross-sections, animated GIFs, fire risk scores, and ground-level imagery across all affected areas.

## 1 Active Fires and Situation Overview

### MULTI-FIRE OPERATIONAL ALERT

**MULTIPLE FIRE STARTS:** Oklahoma City metro area experiencing multiple wildfire ignitions under SPC CRITICAL fire weather conditions. Fire near Newalla, OK (SE of OKC) is active. Winds SW 15–25 kt gusting 30+ kt, RH below 15\{\}%, temps 70s°F. All fires wind-driven with rapid spread potential.

### 1.1 Fire Locations

- **Newalla Fire:** Near Newalla, OK (35.36°N, 97.18°W) — SE of Oklahoma City, semi-rural area
- **Additional OKC-area starts:** Multiple ignitions reported across the metro under extreme conditions
- **Fire spread direction:** SW winds driving fires NE — toward populated areas
- **Terrain:** Rolling grassland with scattered timber, rural-to-suburban transition zones

## 1.2 NWS/SPC Fire Weather Alerts

- **SPC Day 1:** CRITICAL fire weather — Southern High Plains / OK-TX Panhandle
- **SPC Day 1:** ELEVATED fire weather — broader Southern Plains including central OK
- **Red Flag Warning** (NWS Amarillo) — OK Panhandle: Cimarron, Texas, Beaver counties
- **Red Flag Warning** (NWS Norman) — W OK: Roger Mills, Harper, Ellis, Woodward
- **Red Flag Warning** (NWS Dodge City) — SW Kansas (13 counties)
- **Newalla/OKC:** NOT in formal RFW area but NWS Norman flags “elevated to near-critical” conditions extending into central Oklahoma
- **Key conditions:** RH 7% (panhandle) to 11–15% (OKC), winds SW 15–25 mph gusting 35–40 mph, temps 78–82°F
- **ERC:** 70th–89th percentile, Fire Environment 6/10
- **SPC Day 2:** Cold front brings relief — NO critical areas forecast Tuesday
- **CRITICAL CONCERN:** Wind shift from approaching cold front later this evening

## 2 Current Surface Observations

METAR observations from Oklahoma stations nearest the fire areas. Key parameters for fire weather: wind speed/gusts, relative humidity, temperature, and visibility.

Station	Time	Wind (kt)	T°F	Td°F	RH	Vis (SM)
KOKC (OKC)	2152Z	190/13G22	80	39	14%	10+
KTIK (Tinker)	2055Z	220/12	81	40	15%	10+
KPWA (Wiley Post)	2153Z	210/14G20	80	36	11%	10+
KOUN (Norman)	2145Z	170/11G16	81	39	15%	10+
KGOK (Guthrie)	2153Z	200/14	81	39	13%	10+
KSWO (Lawton)	2153Z	210/13	81	36	11%	10+
KTUL (Tulsa)	2153Z	180/10	79	40	17%	10+
KCSM (Clinton)	2153Z	190/16G25	78	35	12%	10+
KPNC (Ponca City)	2153Z	200/10G21	79	40	17%	10+
KFSM (Ft Smith)	2153Z	040/10	76	48	22%	10+

Table 1: METAR observations at 2153 UTC (3:53 PM CST), February 9, 2026. Winds in kt (dir/spd or dir/spdGgust). Bold RH = critical (\$<\$15%).

### 2.1 Key Observations

- **ALL stations 11–15% RH** in the OKC metro area — uniformly critical fire weather
- **Temperatures 78–81°F** — 20–30°F above February normal (unprecedented)

- **KPWA lowest RH at 11%** with gusty 14G20kt — extremely dangerous
- **KCSM (W OK) strongest gusts** at 25kt — fire weather worsens westward
- **KFSM (Ft Smith AR)** higher moisture (22% RH, 48°F dewpoint) marks eastern edge
- **Altimeters falling** (29.92–29.94) — approaching trough/cold front
- **Wind backing from S to SSW** across the metro — consistent with approaching front

### 3 HRRR Cross-Section Analysis: Newalla Fire Area

High-resolution (3-km) HRRR cross-sections through the Newalla fire area, showing the vertical atmospheric structure driving fire behavior. Multiple transects capture the fire environment from different angles.

#### 3.1 Fire Weather Composite

The fire weather composite shows RH shading (red = critically dry) with wind speed contours and cross-hatched zones where  $\text{RH} < 15\%$  AND  $\text{wind} > 25 \text{ kt}$  — the most dangerous fire weather conditions.

#### 3.2 Wind Speed Analysis

Wind speed cross-sections showing the boundary layer wind structure, low-level jet position, and surface wind maxima driving fire spread.

#### 3.3 Relative Humidity Structure

RH cross-sections reveal the vertical extent of the dry column. Values below 15% (red flag threshold) shown across the depth of the boundary layer.

#### 3.4 Isentropic Ascent Analysis

The new isentropic ascent product shows RH shading with omega (vertical velocity) contours: blue = ascent, red dashed = descent. Purple zones highlight moist ascent regions ( $\text{RH} > 70\%$  with upward motion). Thin colored contours show the geostrophic wind perpendicular to the section (jet position). This analysis reveals whether any moisture return or precipitation is possible to moderate fire conditions.

#### 3.5 Vapor Pressure Deficit

VPD measures the drying power of the atmosphere — higher values indicate more aggressive fuel desiccation. Values above 30 hPa indicate extreme fire danger.

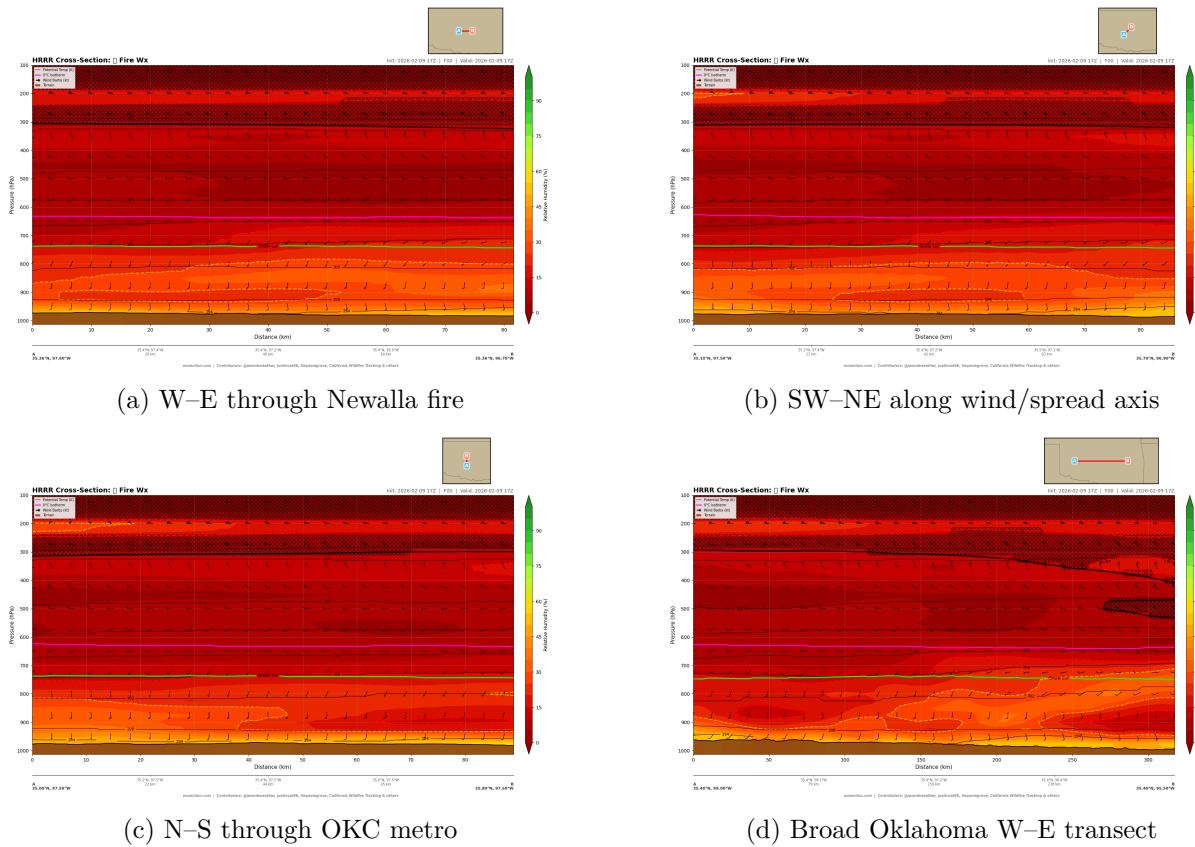


Figure 1: Fire weather composite cross-sections through Oklahoma fire areas

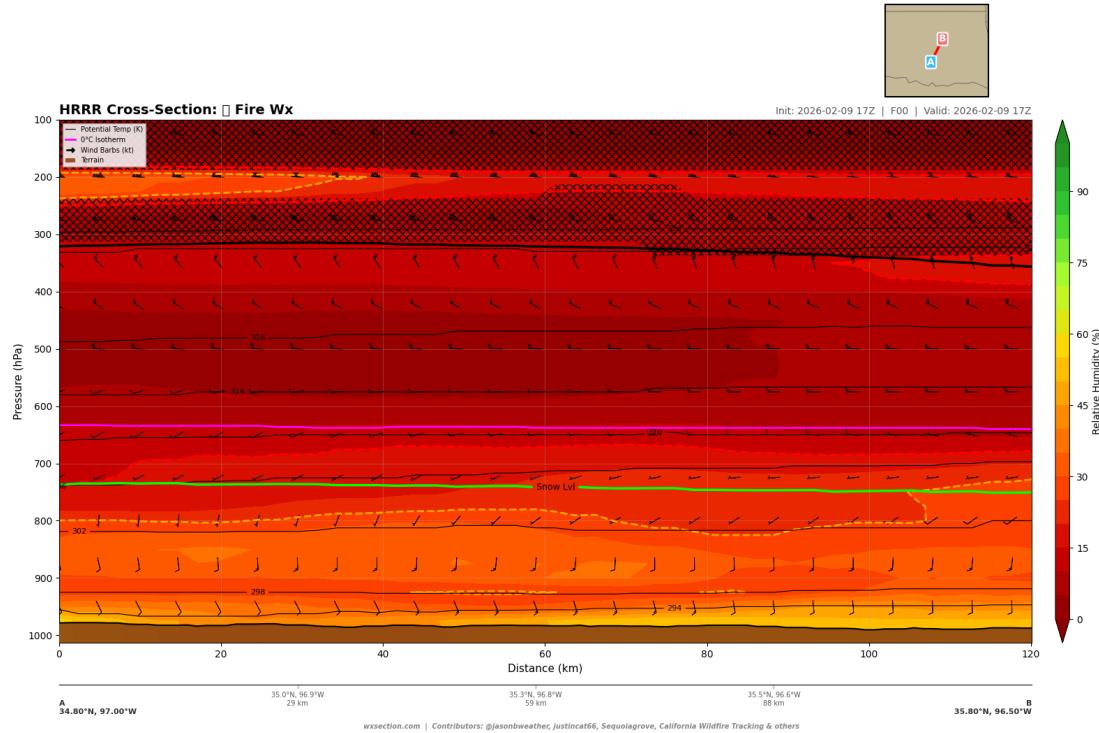


Figure 2: SE Oklahoma fire corridor

### 3.6 Additional Atmospheric Products

Temperature, omega (vertical velocity), dewpoint depression, lapse rate, theta-e, and moisture transport provide deeper insight into the fire environment.

## 4 Fire Risk Scoring

Quantitative fire risk scores (0–100) computed from HRRR atmospheric data along each transect. Scores integrate wind speed, RH, VPD, temperature anomaly, and fuel moisture indicators. Scores above 50 indicate HIGH risk; above 70 is EXTREME.

### 4.1 HRRR Fire Risk Scores

Fire risk scores computed from HRRR cross-section data along each transect. Note: Scores integrate the full vertical column, which can dilute extreme surface conditions (e.g., surface RH of 11–15% averaged with 40–50% RH aloft produces misleadingly low scores). Surface observations confirm conditions are far more dangerous than column-averaged scores suggest.

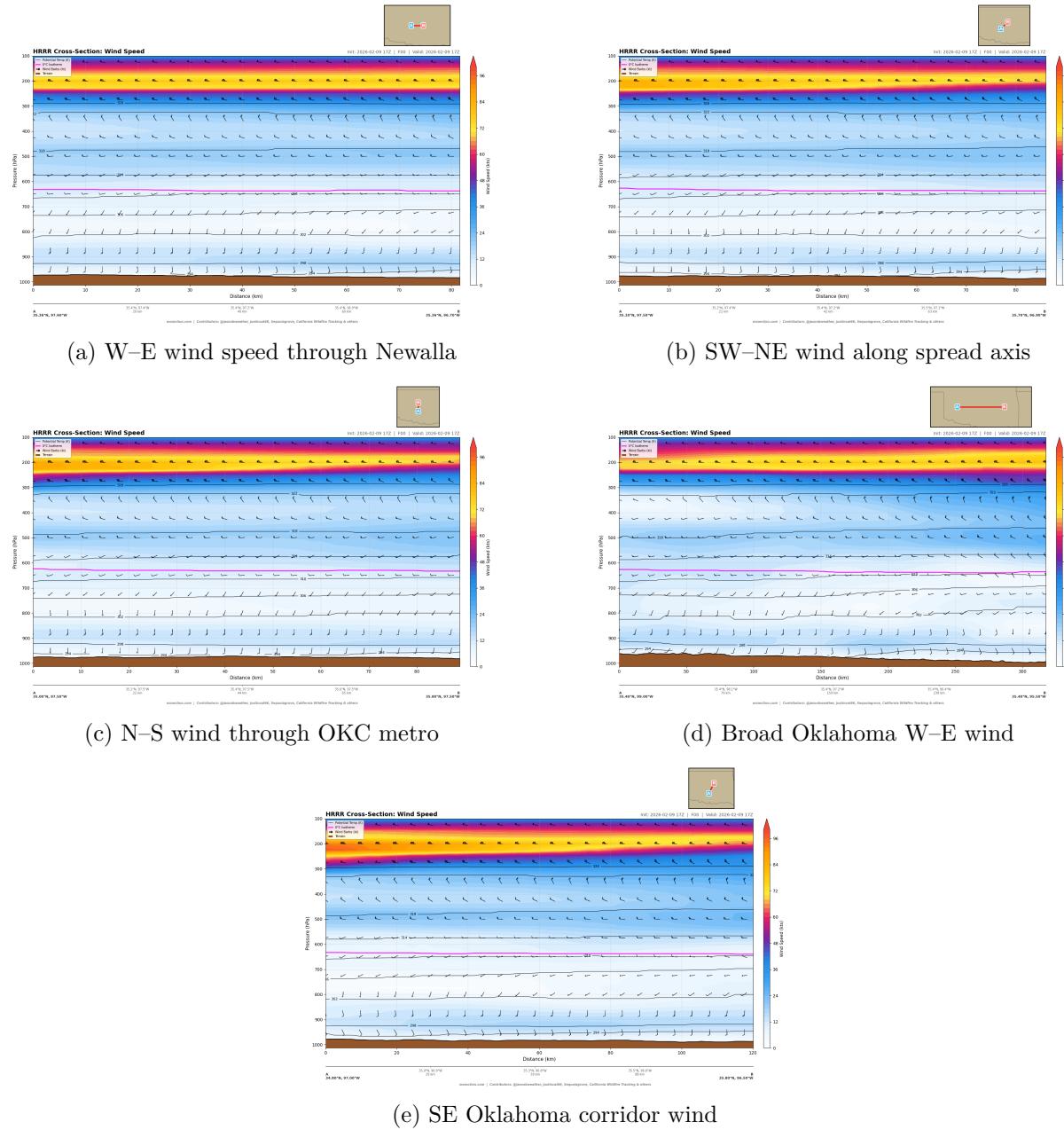


Figure 3: Wind speed cross-sections showing boundary layer wind structure

Transect	Score	Level	RH Range (\%)	Max Wind (m/s)	Factors
Newalla W-E Transect	11	LOW	43–56	0.6	Elevated VPD: 11.82 hPa
OKC Metro N-S Transect	10	LOW	48–57	0.6	Elevated VPD: 10.81 hPa
Broader Oklahoma W-E Transect	13	LOW	41–56	2.8	Elevated VPD: 11.49 hPa

Table 2: HRRR fire risk scores by transect. Scores 0–100 (column-averaged). Surface conditions are significantly worse than column scores indicate.

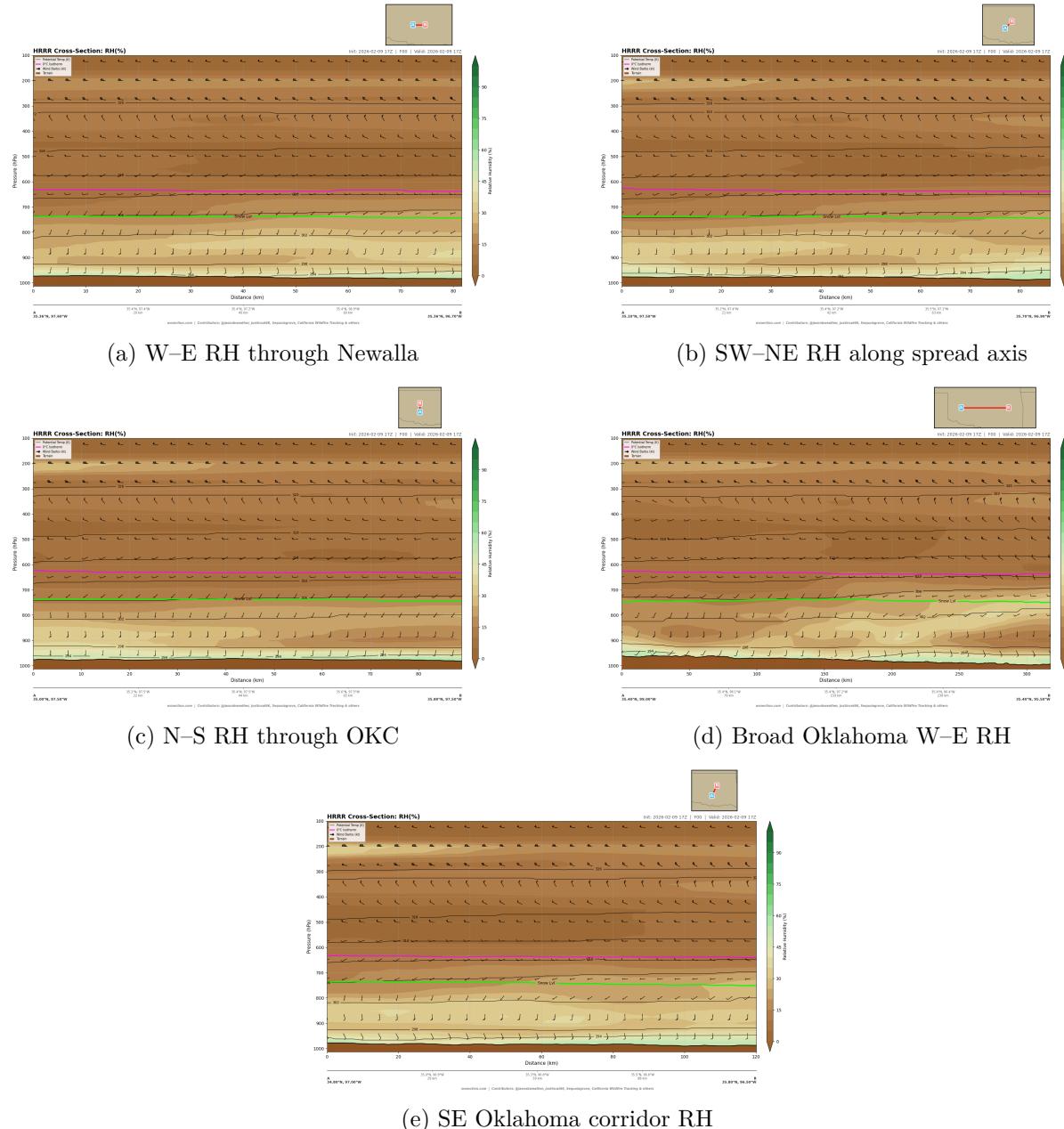


Figure 4: Relative humidity cross-sections showing dry column depth

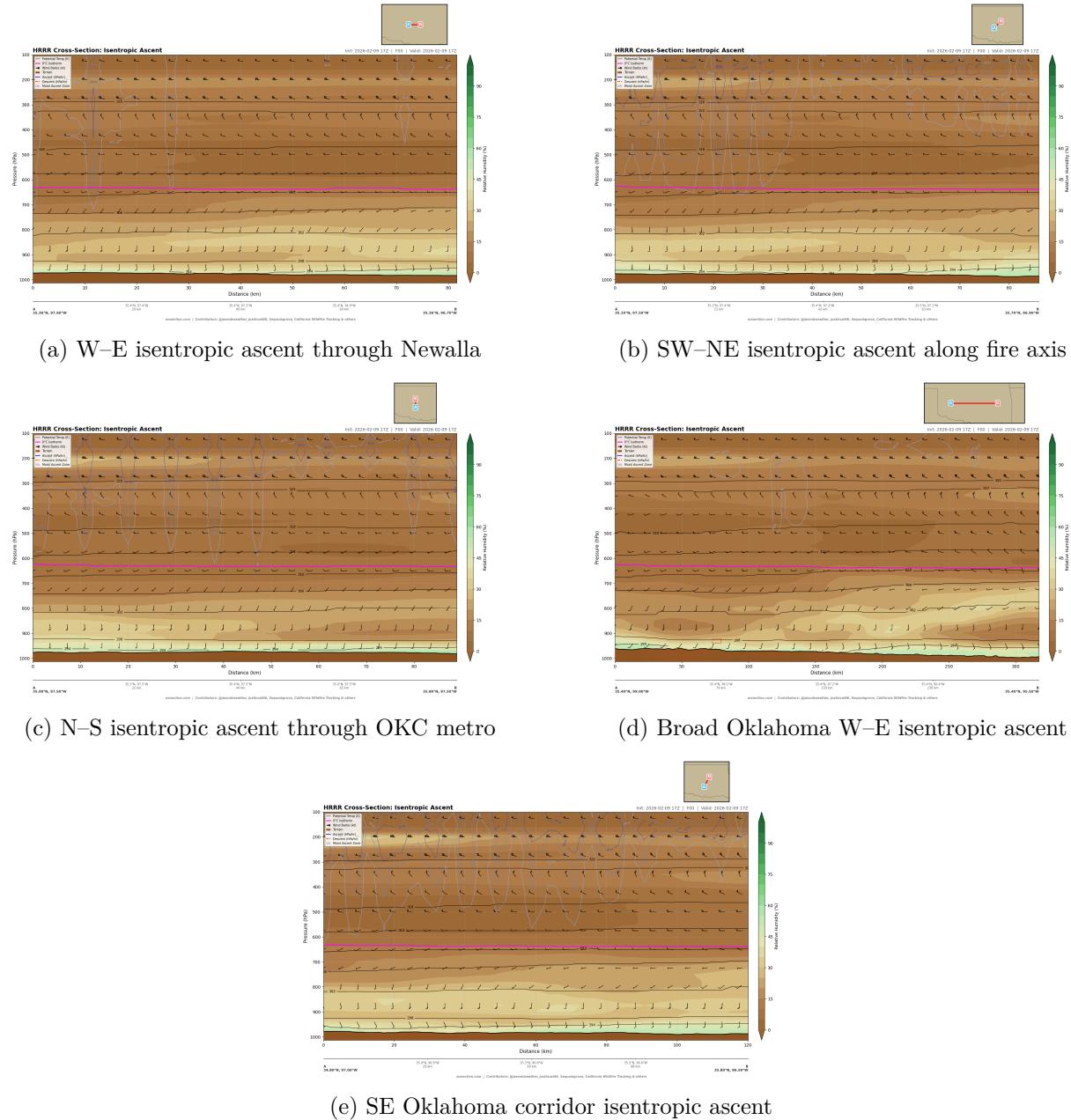


Figure 5: Isentropic ascent analysis showing vertical motion and moisture interaction

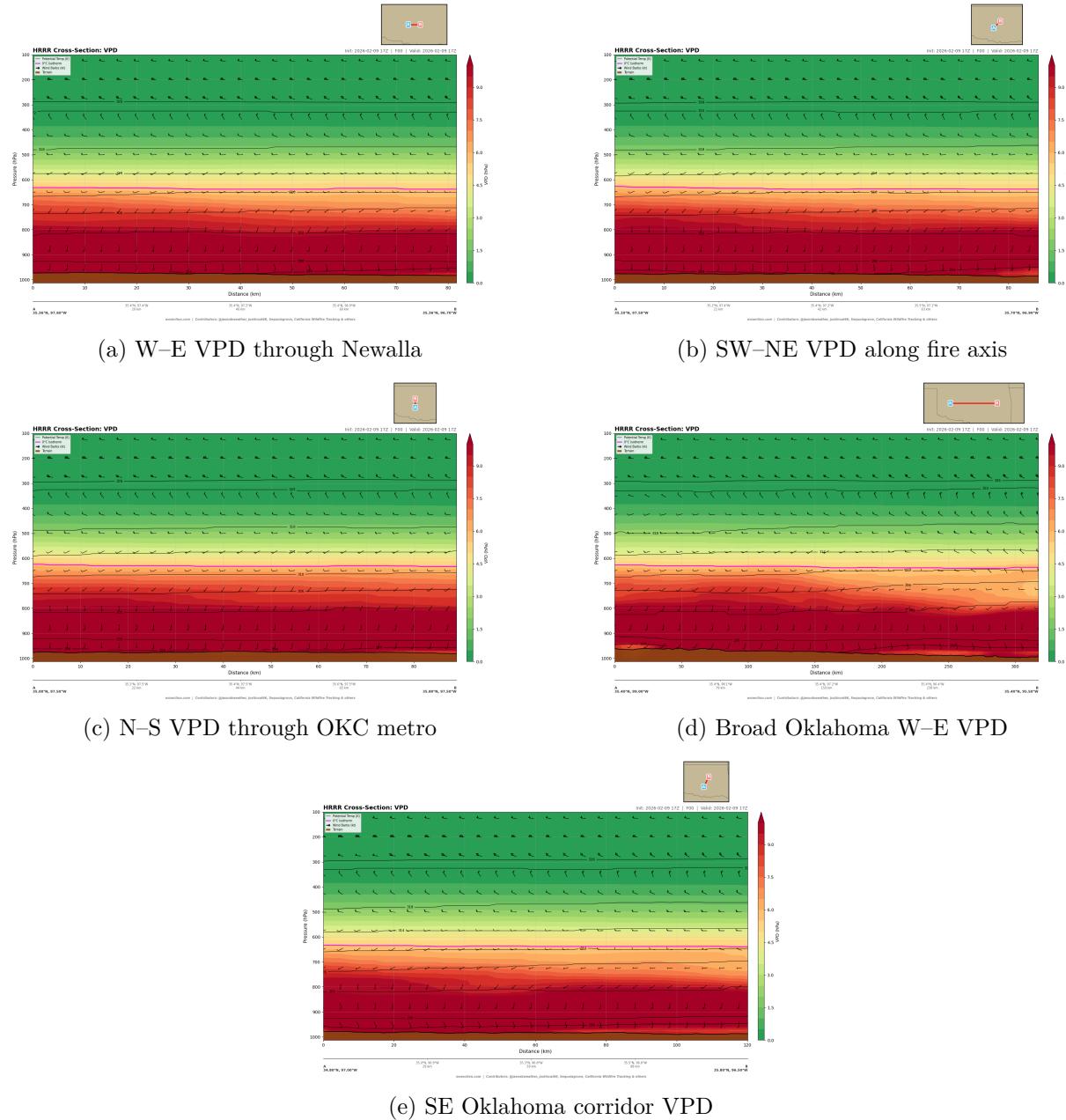


Figure 6: Vapor pressure deficit showing atmospheric drying intensity

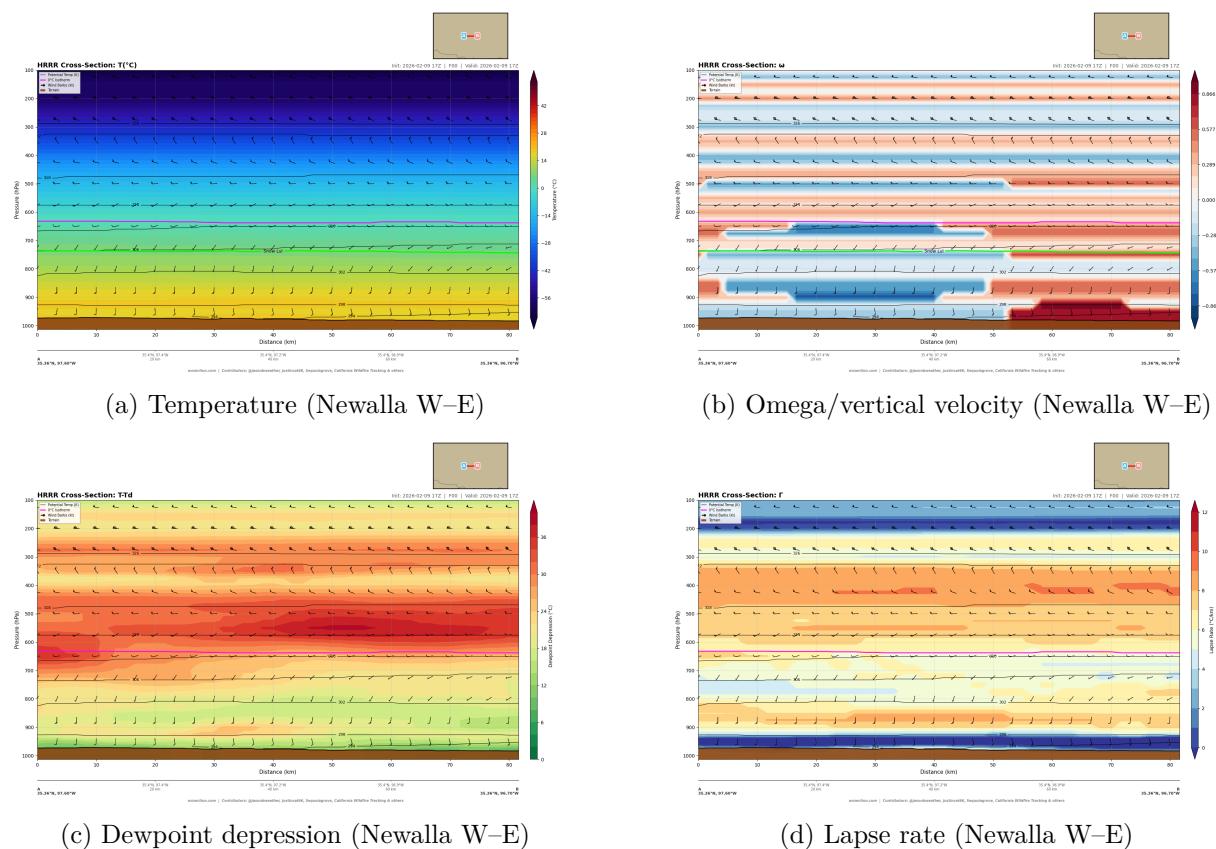


Figure 7: Additional atmospheric products (1–4)

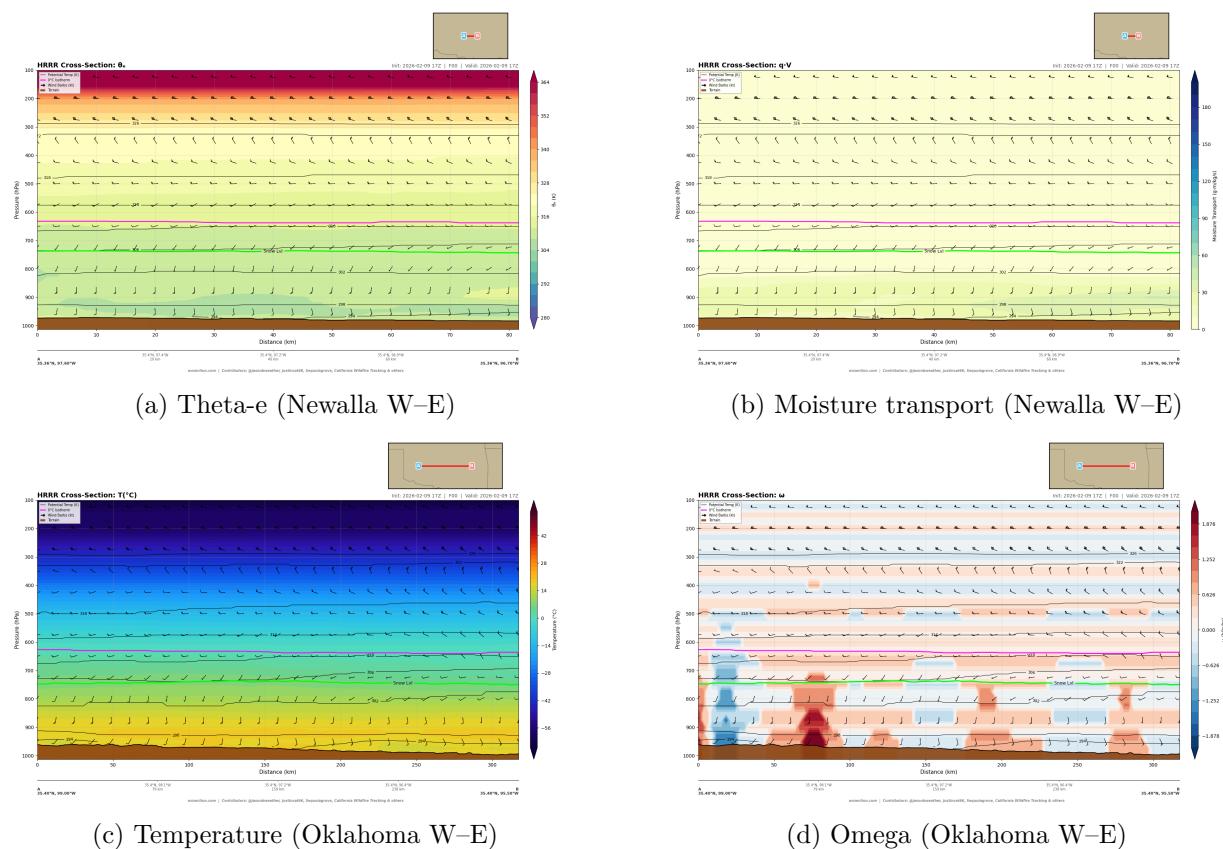


Figure 8: Additional atmospheric products (5–8)

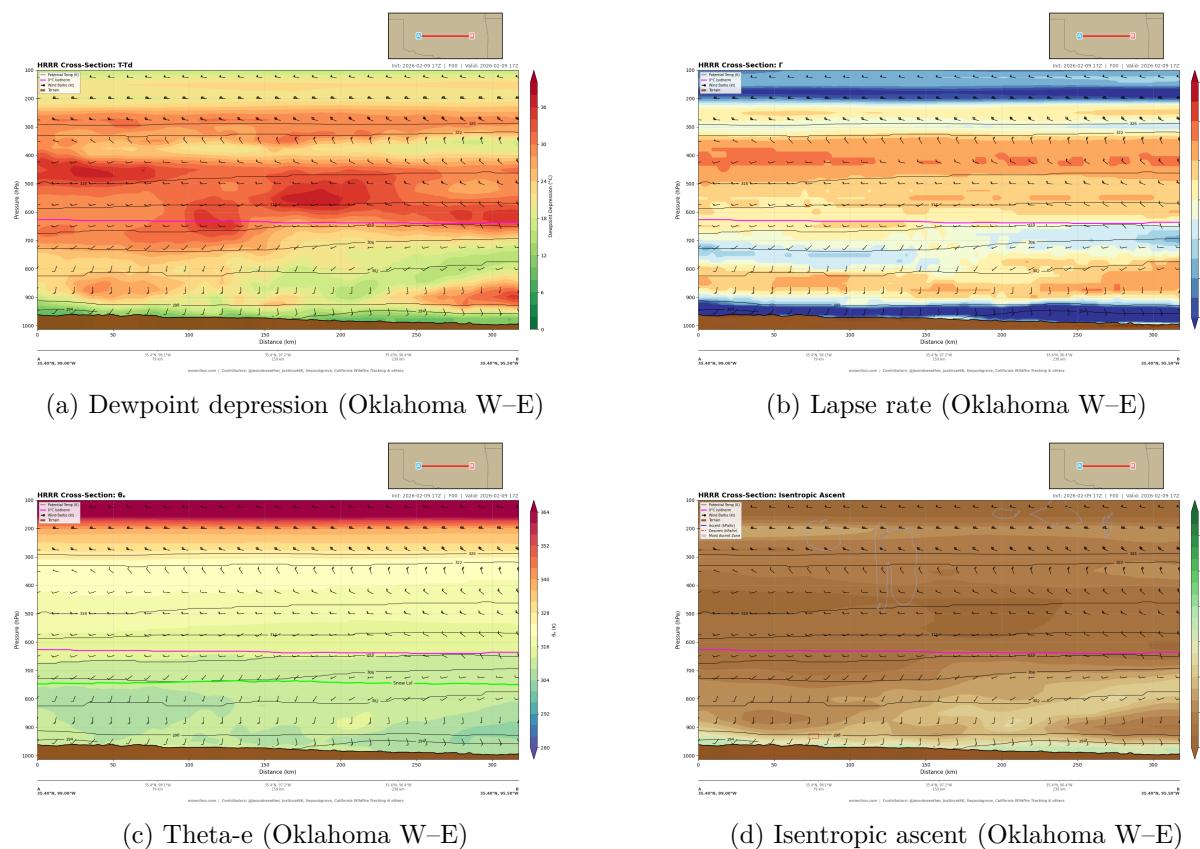


Figure 9: Additional atmospheric products (9–12)

## 4.2 GFS Extended Fire Risk

GFS-based fire risk scores for extended outlook. Same column-averaging caveats apply — surface conditions are more extreme than scores suggest.

Transect	Score	Level	RH Range (\{\})%	Factors
GFS Fire Risk Scores — Oklahoma Fire Weather	?	?	?	
NEWALLA TRANSECT	8	LOW	45–48	Elevated VPD: 9.49 hPa
BROADER OKLAHOMA TRANSECT	12	LOW	36–51	Elevated VPD: 11.24 hPa
OKLAHOMA REGIONAL BOX	9	LOW	42–52	Elevated VPD: 9.95 hPa

Table 3: GFS extended fire risk scores by transect.

## 5 Temporal Evolution: HRRR Forecast

HRRR cross-sections at multiple forecast hours show how fire weather conditions evolve through the evening and overnight. Key concerns: evening wind shift, overnight low-level jet loading, and whether any humidity recovery occurs.

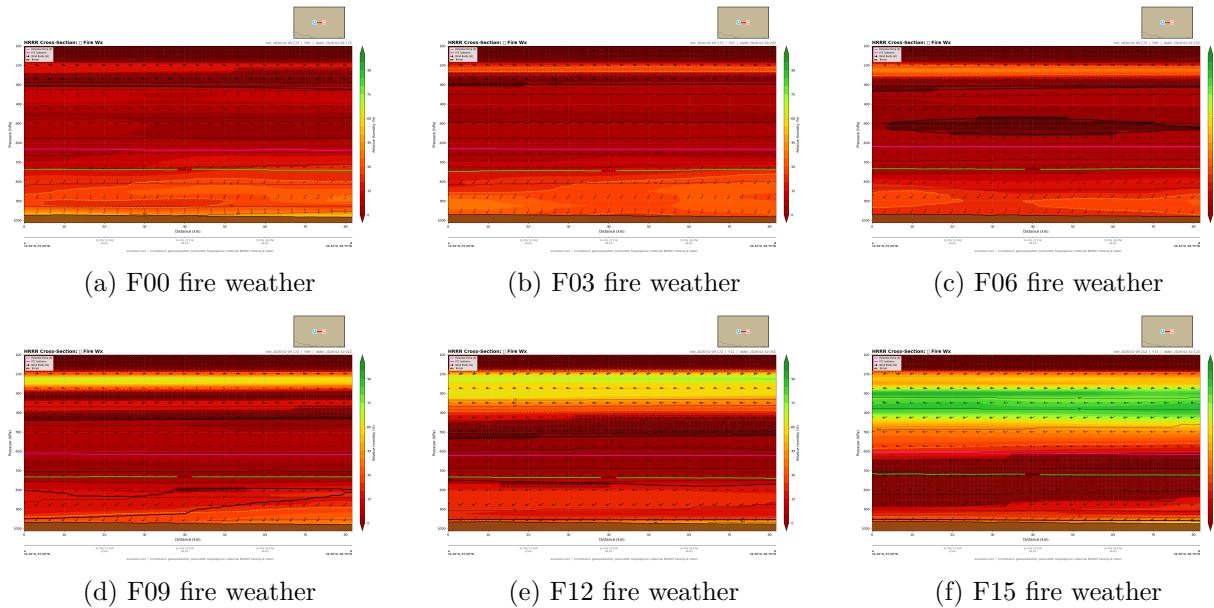


Figure 10: Newalla fire weather composite: temporal evolution (HRRR 21Z cycle)

## 6 GFS Extended-Range Outlook

GFS  $0.25^\circ$  cross-sections provide a multi-day outlook for fire weather conditions. Key question: when does the pattern break and moisture return?

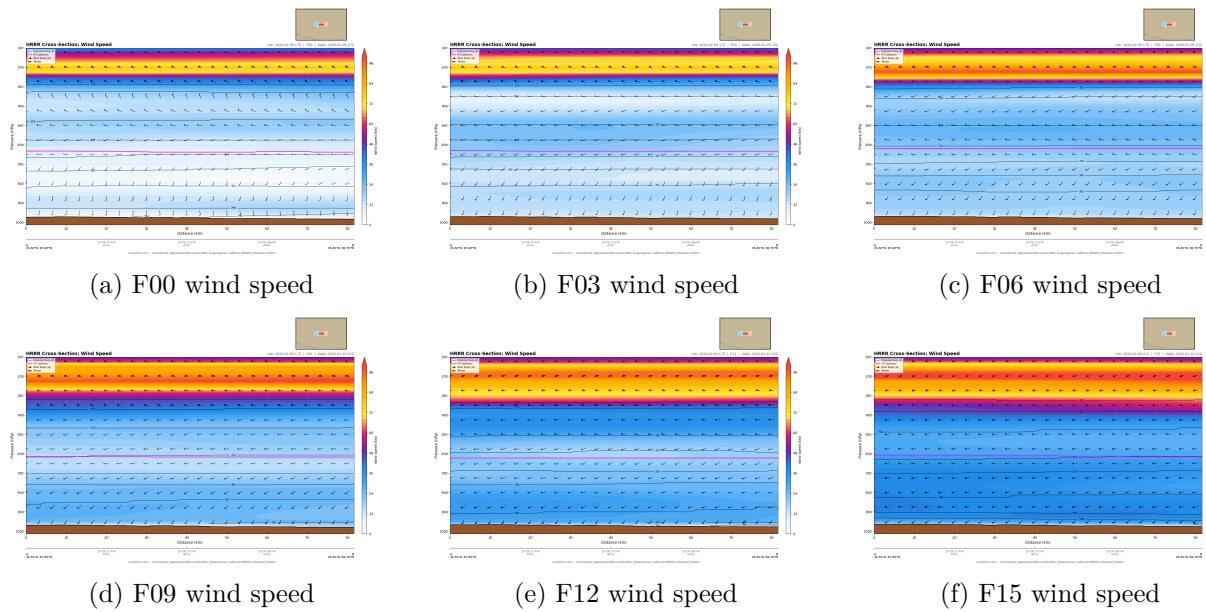


Figure 11: Newalla wind speed: temporal evolution

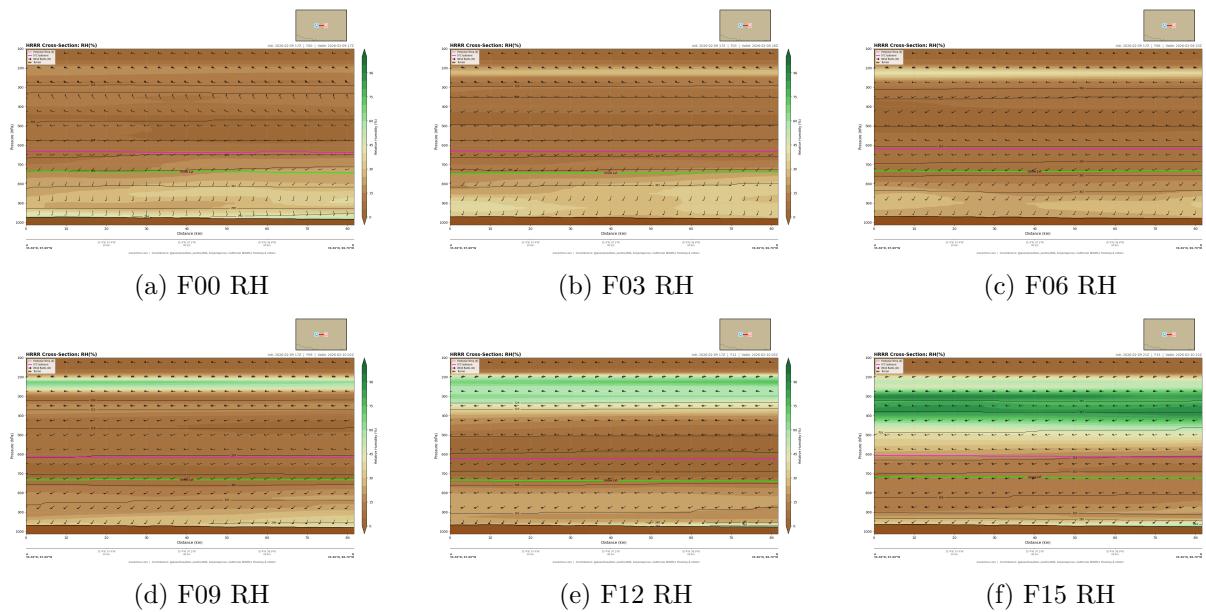


Figure 12: Newalla relative humidity: temporal evolution

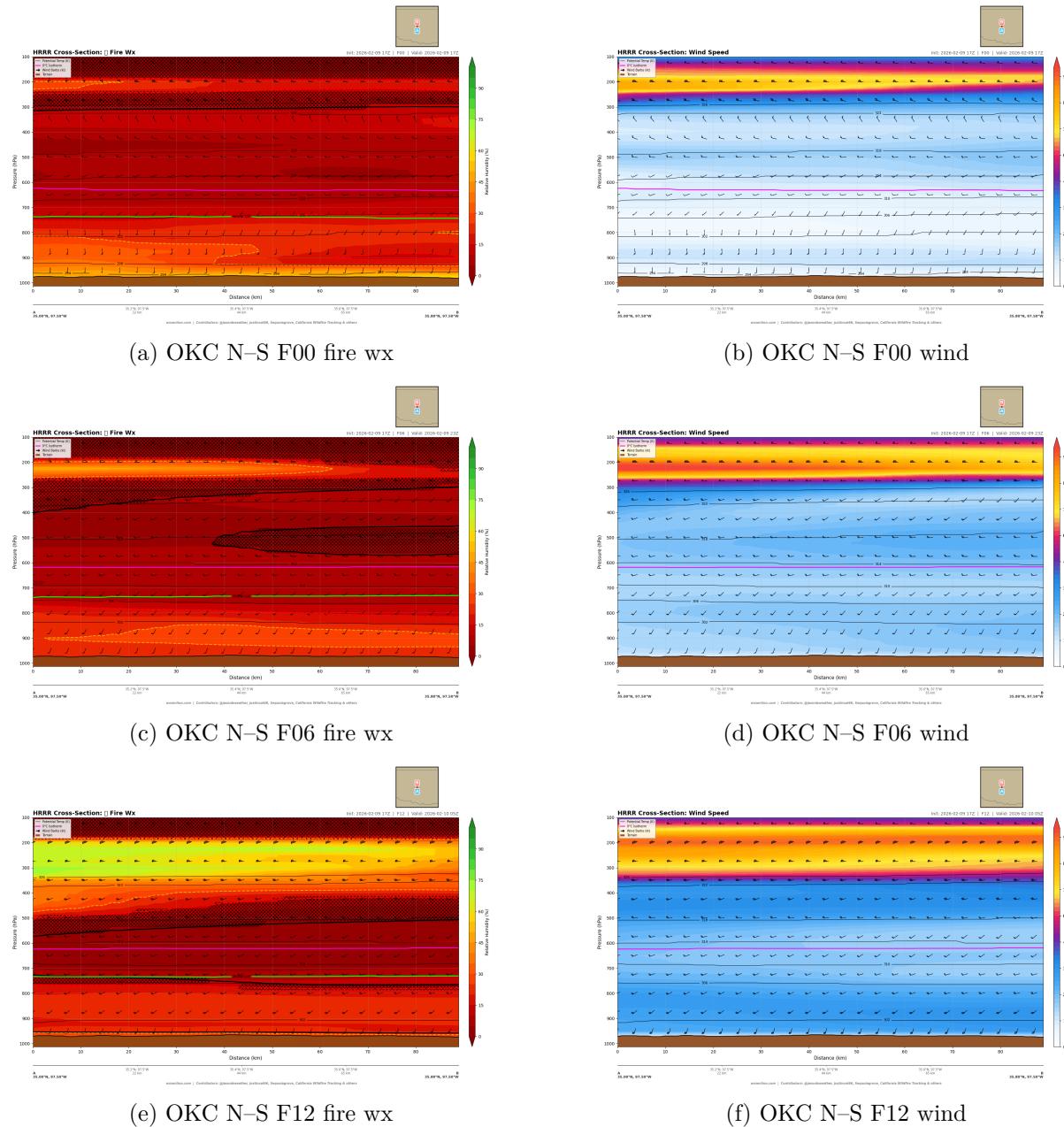


Figure 13: OKC metro N-S temporal evolution

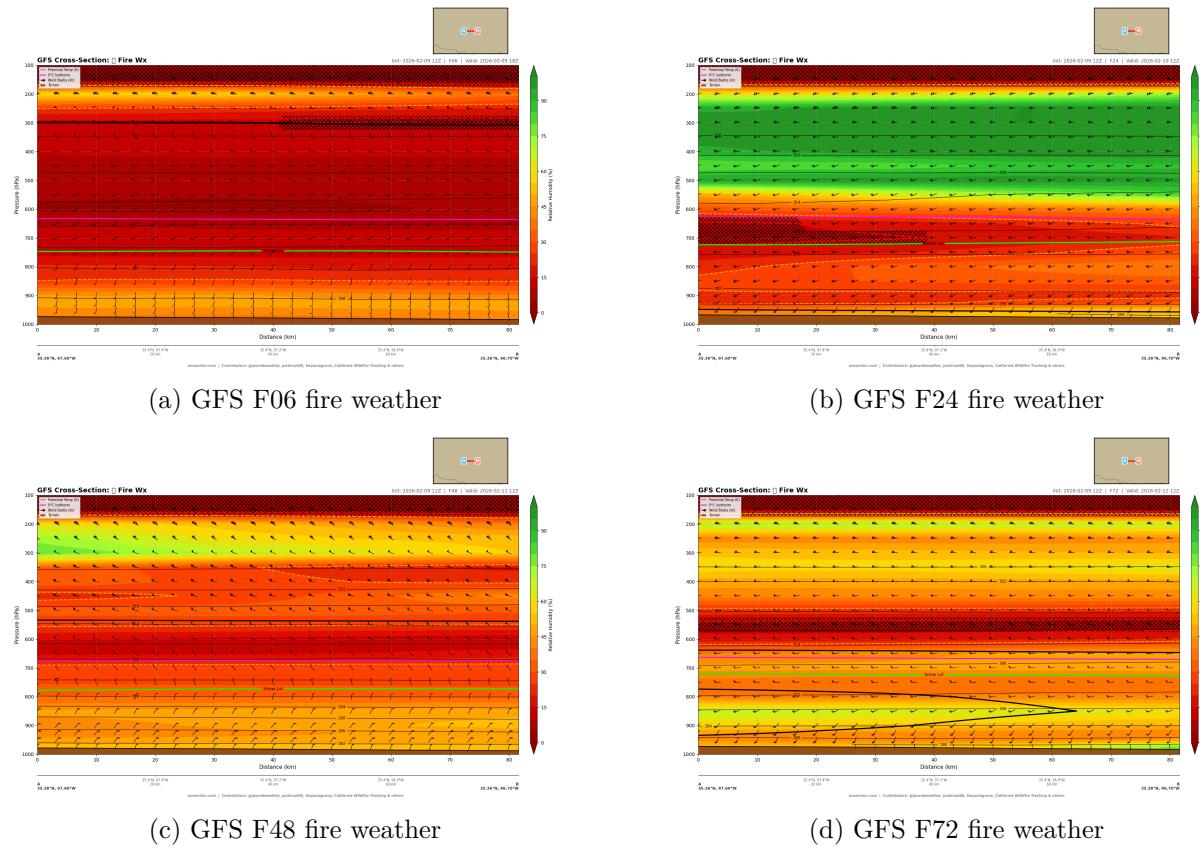


Figure 14: GFS extended fire weather outlook: Newalla transect

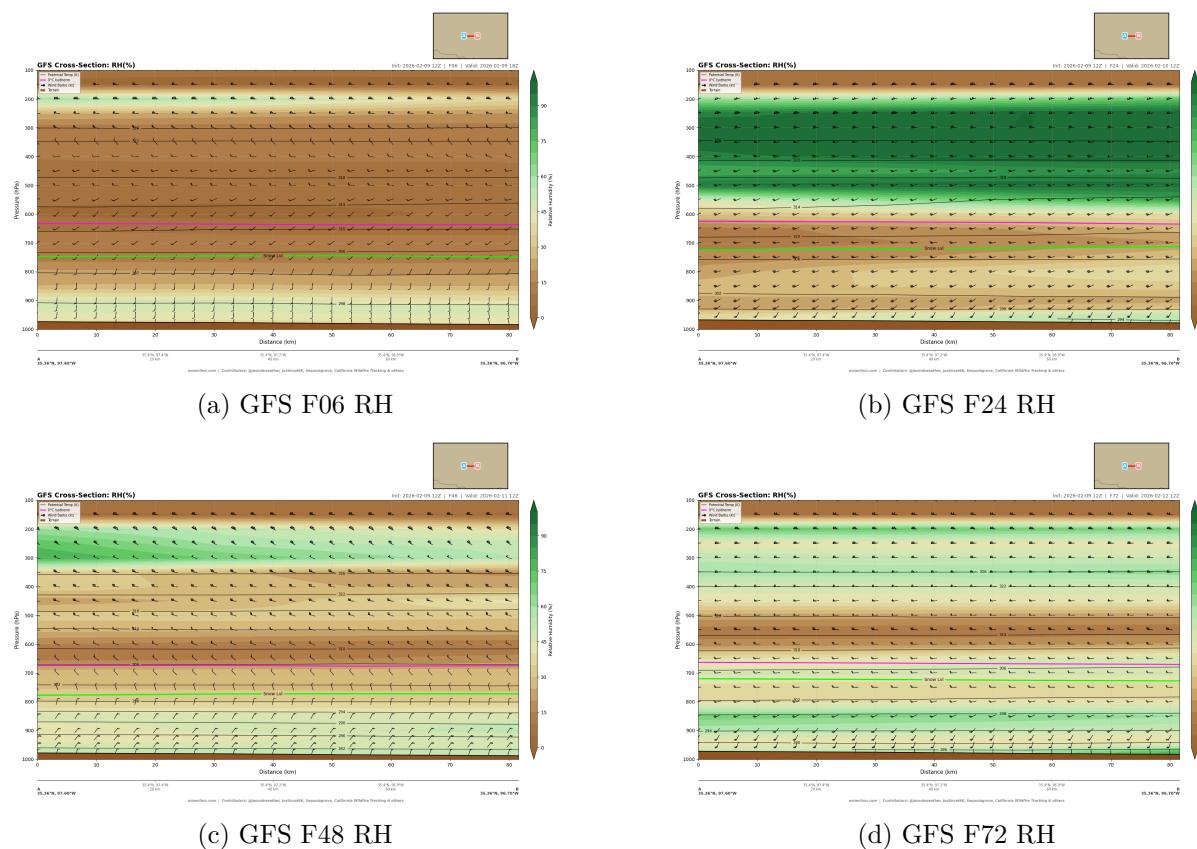


Figure 15: GFS extended RH outlook: moisture recovery timeline

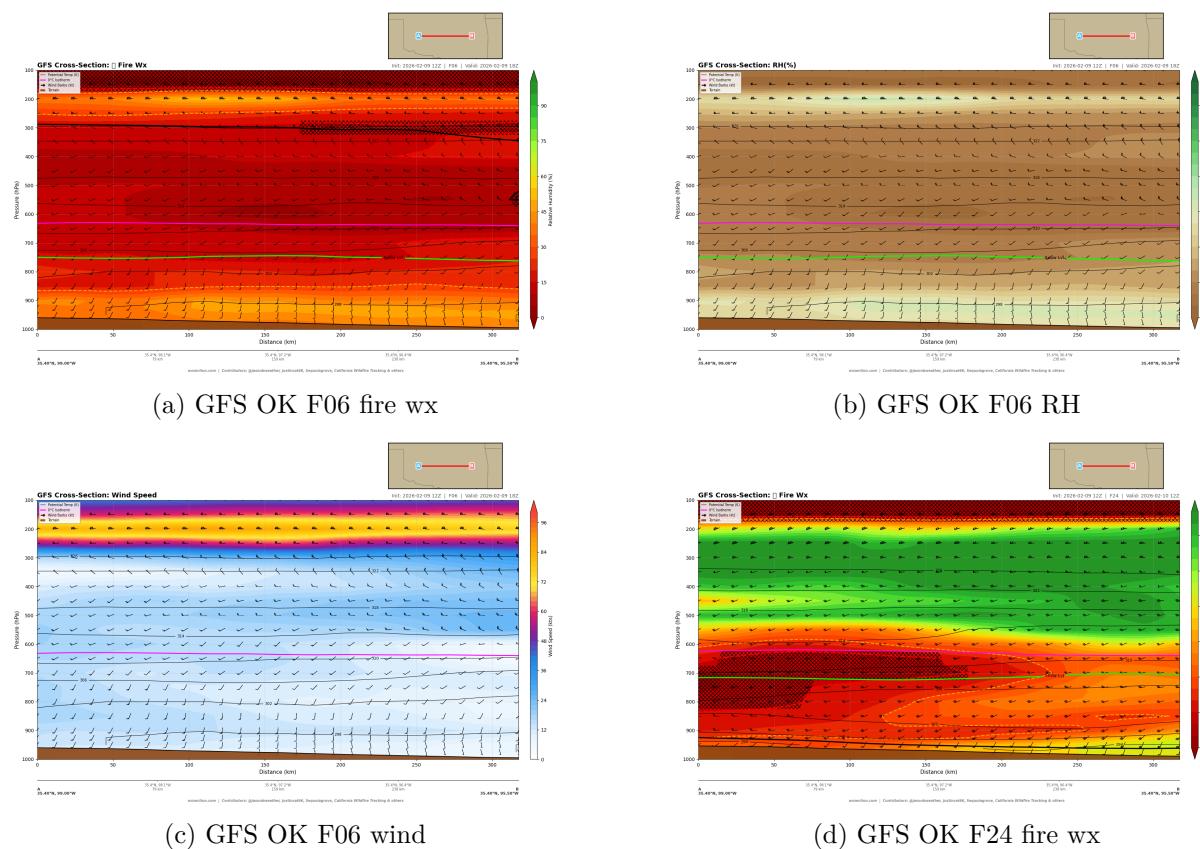


Figure 16: GFS broader Oklahoma outlook (1–4)

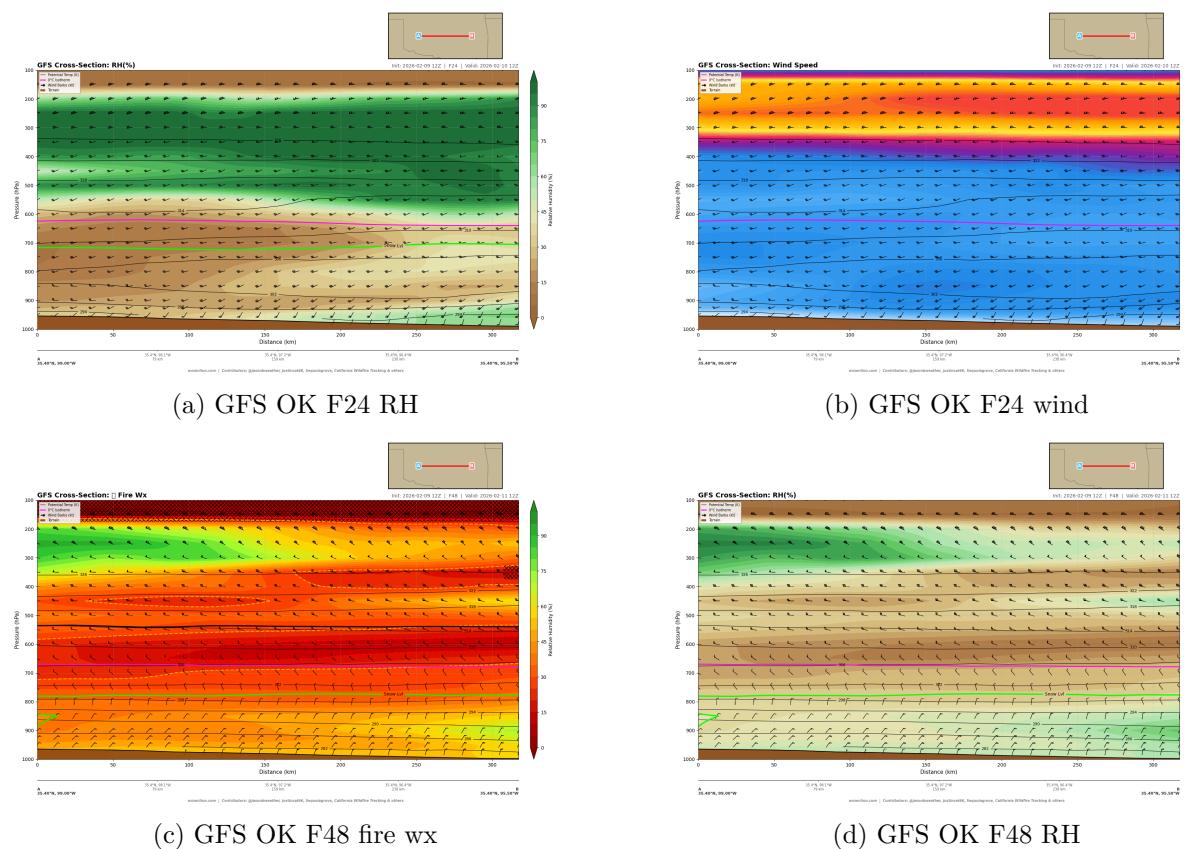


Figure 17: GFS broader Oklahoma outlook (5–8)

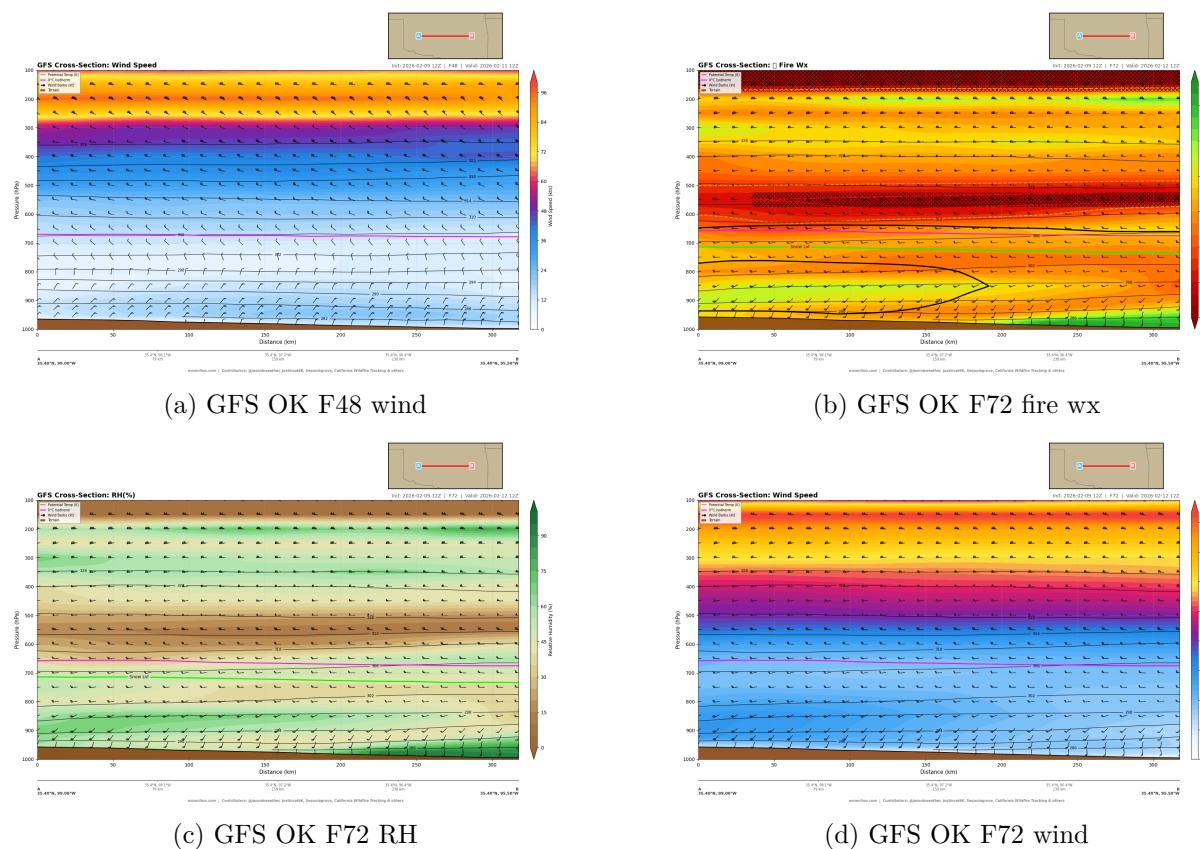


Figure 18: GFS broader Oklahoma outlook (9–12)

## 7 Forecast and Operational Outlook

### 7.1 Immediate Concerns (Next 6 Hours)

- **Continued extreme fire spread:** SW winds 15–25 kt with gusts to 25 kt, RH 11–15%
- **RH still crashing:** KOKC dropped 20%→14%, KPWA 14%→11% in past 3 hours
- **Dewpoints falling:** Down 3–6°F in 3 hours — dry air advection continuing
- **Wind-driven runs:** All active fires spreading NE toward populated areas
- **New ignitions:** Extreme conditions support rapid ignition from any source (I-40 corridor, powerlines, equipment)

### 7.2 Evening Transition (6–12 Hours)

#### CRITICAL: WIND SHIFT WARNING

FRONTAL WIND SHIFT: Cold front passage expected 03–09Z (9 PM – 3 AM CST). Winds will shift from S/SSW 12–22 kt to N/NNW 12–25 kt (gusts to 25 kt). This converts ALL current south flanks into new headfires running south. Low-level wind shear: 40–45 kt from 220–240° at 2000 ft AGL noted in TAFs. This is the MOST DANGEROUS period for active fires.

- **Wind shift timing:** Frontal passage 03–09Z tonight (from TAF analysis)
- **Pre-frontal:** S/SSW 12–22 kt — fires spreading N/NE
- **Post-frontal:** N/NNW 12–25 kt gusting 25 kt — fires reverse, all south flanks become head-fires
- **Low-level jet:** 40–45 kt at 2000 ft AGL from 220–240° (pre-frontal LLJ loading)
- **Humidity recovery:** Uncertain — cold front may not bring significant moisture
- **Falling pressures:** 0.06–0.10 inHg drop in 3 hours confirms approaching front

### 7.3 Extended (24–72 Hours)

- **Pattern persistence:** GFS indicates continued dry/warm anomaly for 24–48h
- **Cold front timing:** Full pattern change and moisture return timeline shown in GFS extended outlook section
- **Rekindle risk:** Even if winds diminish, low RH can sustain smoldering fires that rekindle with next wind event

## 7.4 Areas of Greatest Concern for New Fire Starts

- **SE OKC corridor** (Newalla, Draper, Choctaw, Harrah) — active fires + WUI
- **Rural grasslands E/SE of OKC** — continuous fine fuels, limited access
- **I-40 corridor** — human ignition sources + extreme spread conditions
- **Any area downwind** of existing fires during wind shifts

## 8 Data Sources and Methods

- **HRRR:** 3-km horizontal resolution, 21Z cycle, FHR 00–15 (15-hour forecast window)
- **GFS:**  $0.25^\circ$  ( $\sim 28$  km), 12Z cycle, FHR 6–384 (extended outlook to 16 days)
- **Cross-sections:** 5 transects  $\times$  5+ products per transect = 25+ static images
- **Temporal evolution:** 6 forecast hours  $\times$  3 products = 18 temporal frames + 4 animated GIFs
- **GFS extended:** 2 transects  $\times$  4 FHRs  $\times$  3 products = 24 GFS images + 2 GIFs
- **Surface obs:** METAR from 10 Oklahoma stations via aviationweather.gov
- **Fire weather intel:** NWS alerts (OUN, TSA, AMA), SPC fire weather outlook, NIFC
- **Street View:** 12 Google Street View images of fire-affected areas
- **Fire risk scoring:** wxsection.com fire risk algorithm (0–100 scale)
- **Isentropic ascent:** New analysis product showing RH + omega + geostrophic wind
- **Report generation:** 7 parallel AI agents, compiled via wxsection.com ReportBuilder

### 8.1 Products Generated

Total figures: 85 PNG + 0 JPG + 0 GIF