Flint Hills Wildland Fire Update

March 4, 2022

The following information on the Flint Hills wildland fires is provided weekly to keep stakeholders up to date on fires, smoke, and air quality.

Kansas Department of Health and Environment

https://www.KSFire.org/

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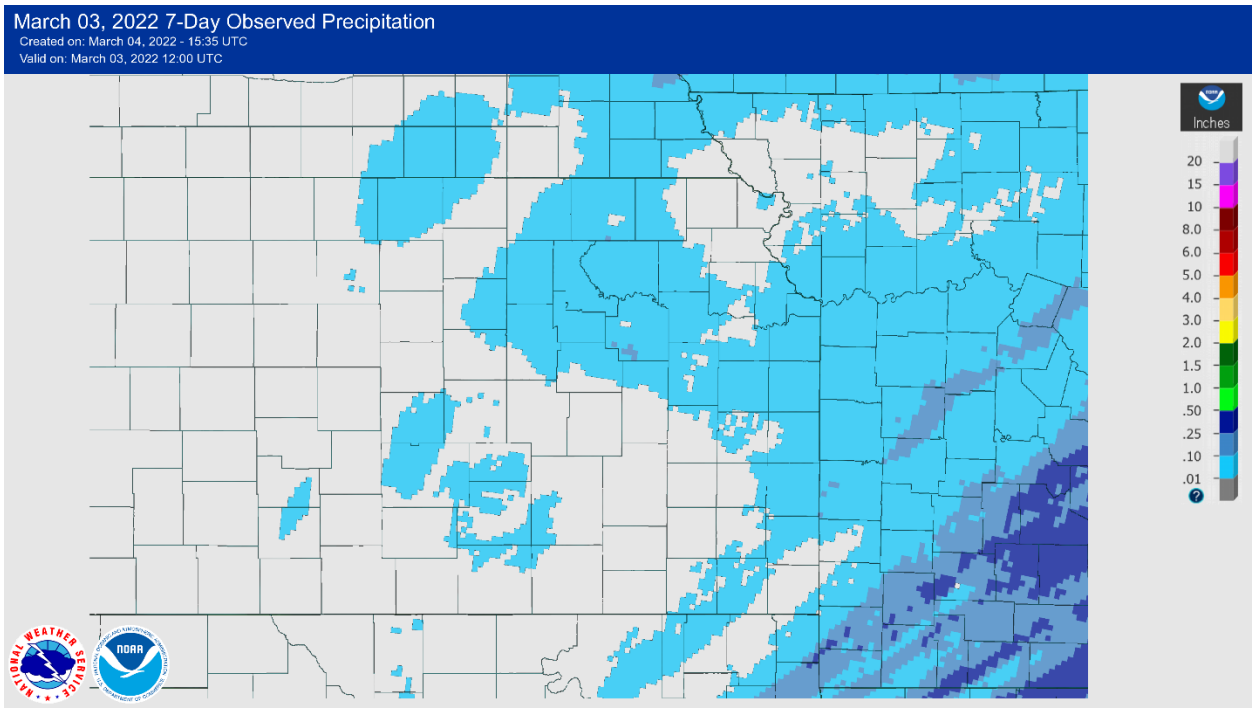
This website was developed as part of the development of the Kansas Flint Hills Smoke Management Plan. Kansas State University hosts the webpage and it includes important information for ranchers and others who might be interested in the Flint Hills. It provides training, regulations, policies, publications, a modeling tool and other links to guide people looking for information on smoke management. The development of the Flint Hills Smoke Management Plan is an attempt to balance the need for prescribed fire in the Flint Hills with the need for clean air in downwind areas.

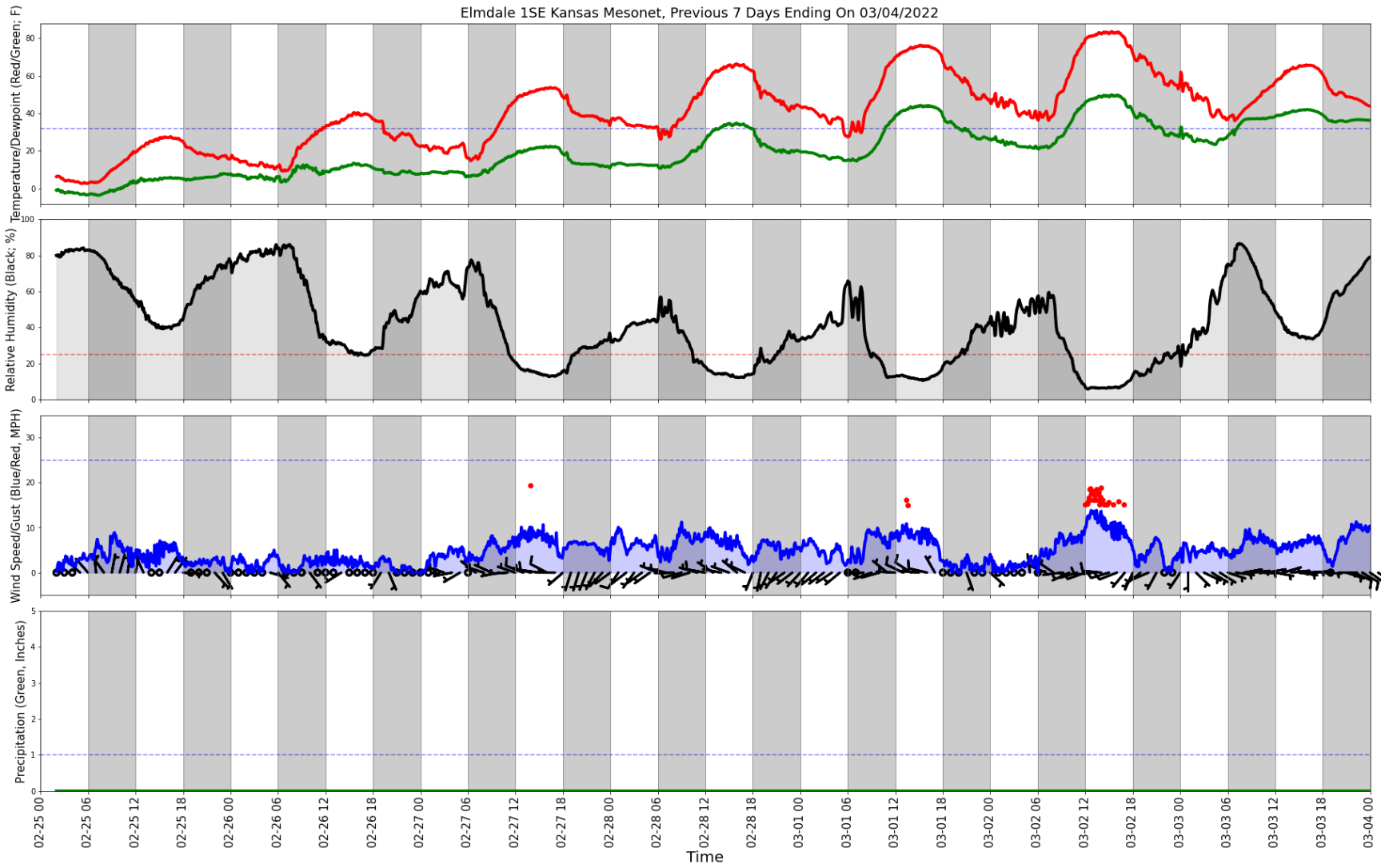
Meteorology

Dry conditions prevailed for most of the Flint Hills region over the last week with just a few locations seeing any sort of measurable precipitation, all less than a tenth of an inch of moisture. While temperatures started seasonably cool last Friday (Feb 25) a gradual rise continued through Wednesday (Mar 2) with highs pushing into the 70s and 80s before a slight cool down on Thursday (Mar 3). Despite the above normal temperatures, the winds were not too dramatic as gusts remained below 20 mph for the region. Moisture is not only lacking on the ground, it's lacking in the air too, as relative humidity values were consistently dropping into the 15-25% range Saturday (Feb 26) through Wednesday (Mar 2) with only slight improvements with the cooler temperatures on Thursday (Mar 4).

Precipitation



NOAA/NWS Observed Total Precipitation for Feb. 25 – Mar. 3, 2022.



7-day (Feb. 25 – Mar. 3, 2022) Observed Weather from Kansas Mesonet station near Elmdale, Kansas (https://mesonet.k-state.edu/)

Fire, Smoke, and Air Quality

For the period of February 25 to March 3, 2022 there were **three** air quality exceedances of the National Ambient Air Quality Standards (NAAQS) that were potentially influenced by prescribed fire within the Flint Hills region.

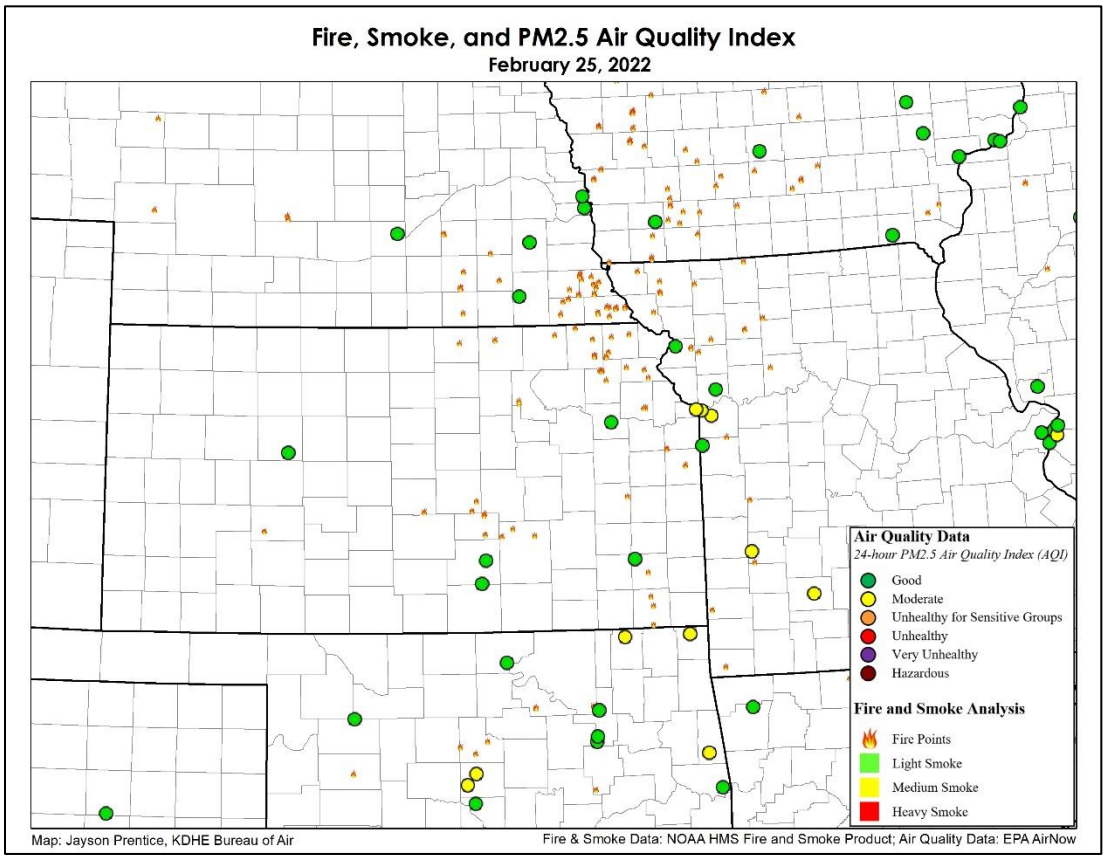
Ozone: Preliminary data indicates three exceedances of the NAAQS daily 8-hour average maximum of 70 ppb. On Thursday, March 3, 2022 the monitors in Miami, OK (75 ppb); Union, OK (72 ppb); and Alba, MO (72 ppb) all exceeded the NAAQS.

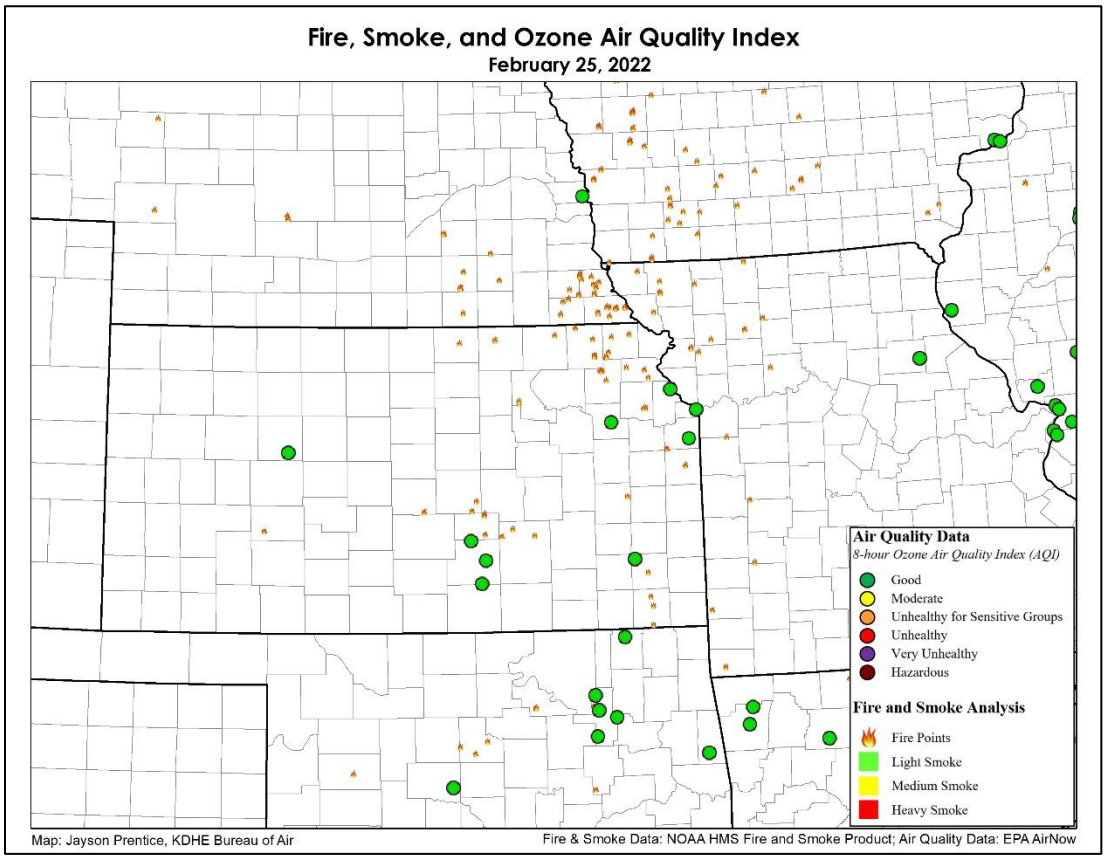
$PM_{2.5}$: Preliminary data indicates no exceedances of the NAAQS daily 24-hour average maximum of 35 µg/m^3.

Dry conditions, above to well above normal temperatures, and reasonable winds provided multiple days for potential prescribed fire within the Flint Hills and surrounding regions this past week. As a result, a gradual increase in prescribed fire was seen each day. Localized air quality impacts were seen each day through Tuesday (March 1) for areas that were adjacent or immediately downwind of any fire. More widespread burning, strong nighttime inversions, light winds, and ample sunshine led to more regional air quality concerns for Wednesday (March 2) and Thursday (March 3).

Multiple air quality monitors reported Moderate Air Quality Index (AQI) for fine particulate matter and widespread Moderate AQI for ozone was also observed on Wednesday (March 2). A cold front allowed cleaner air to move in from north to south on Thursday (March 3), but this front also pooled pollutants from prior days and allowed for a localized increase in ozone production. Widespread spread continued to be observed with regional fire activity. Combined with ample sunshine this led to numerous ozone exceedances over Oklahoma, Arkansas, and one in Missouri. However, ozone production was being influenced by general ozone transport from the south and primarily from fires outside of the Flint Hills region – more widespread burning is occurring over eastern Oklahoma. Looking at wind trajectories for monitors that exceeded the primary origin of their air was from outside the Flint Hills. The monitors in Union, OK; Miami, OK; and Alba, MO did have at least some influence from the far southern Flint Hills and were listed as exceedances influenced by prescribed burning within the Flint Hills.

The following pages have two maps for each day; One showing the 24-hour average Air Quality Index category for $PM_{2.5}$ and the other showing the 8-hour average maximum Air Quality Index category for Ozone from regulatory air quality monitors in the region. Both maps show fires and smoke as analyzed by NOAA Hazard Mapping Services.


Fire, Smoke, and PM2.5 Air Quality Index
February 25, 2022
Air Quality Data
24-hour PM2.5 Air Quality Index (AQI)
Good
Moderate
Unhealthy for Sensitive Groups
Unhealthy
Very Unhealthy
Hazardous
Fire and Smoke Analysis
Fire Points
Light Smoke
Medium Smoke
Heavy Smoke
Map: Jayson Prentice, KDHE Bureau of Air
Fire & Smoke Data: NOAA HMS Fire and Smoke Product; Air Quality Data: EPA AirNow


Fire, Smoke, and Ozone Air Quality Index
February 25, 2022
Air Quality Data
8-hour Ozone Air Quality Index (AQI)
Good
Moderate
Unhealthy for Sensitive Groups
Unhealthy
Very Unhealthy
Hazardous
Fire and Smoke Analysis
Fire Points
Light Smoke
Medium Smoke
Heavy Smoke
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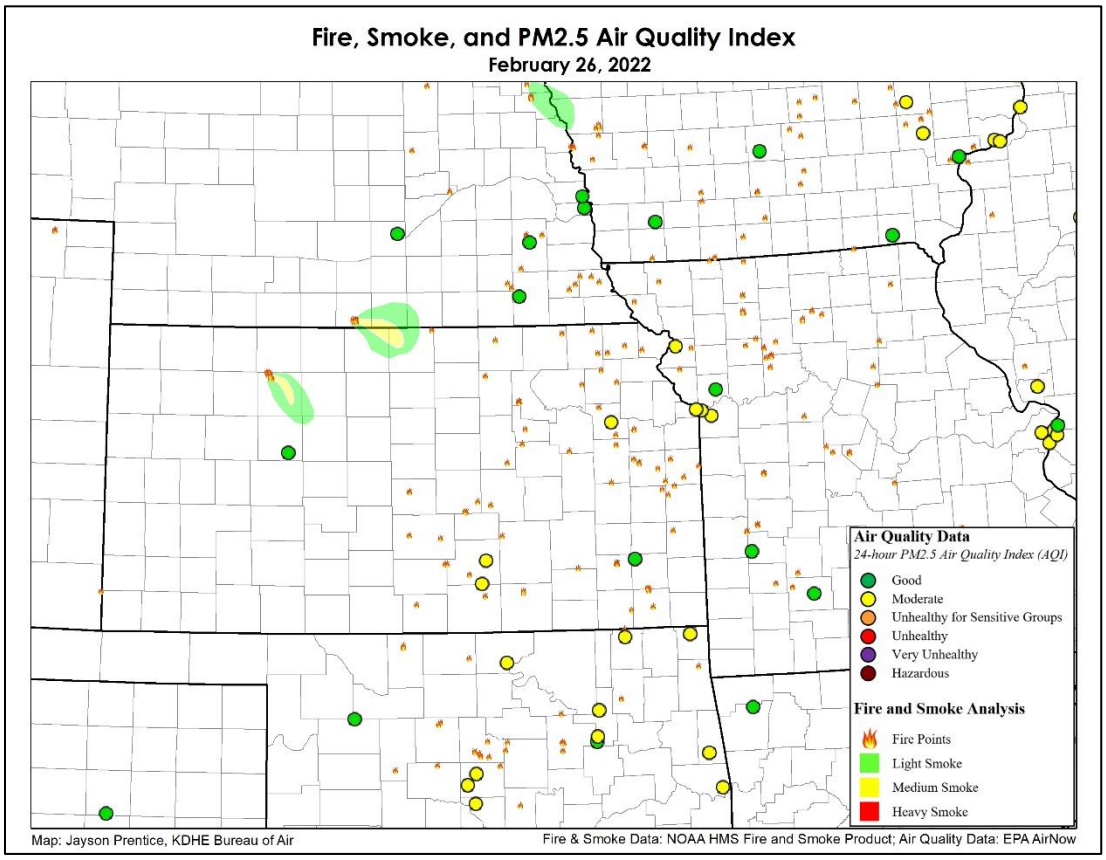
Fire, Smoke, and PM2.5 Air Quality Index
February 26, 2022
Air Quality Data
24-hour PM2.5 Air Quality Index (AQI)
Good
Moderate
Unhealthy for Sensitive Groups
Unhealthy
Very Unhealthy
Hazardous
Fire and Smoke Analysis
Fire Points
Light Smoke
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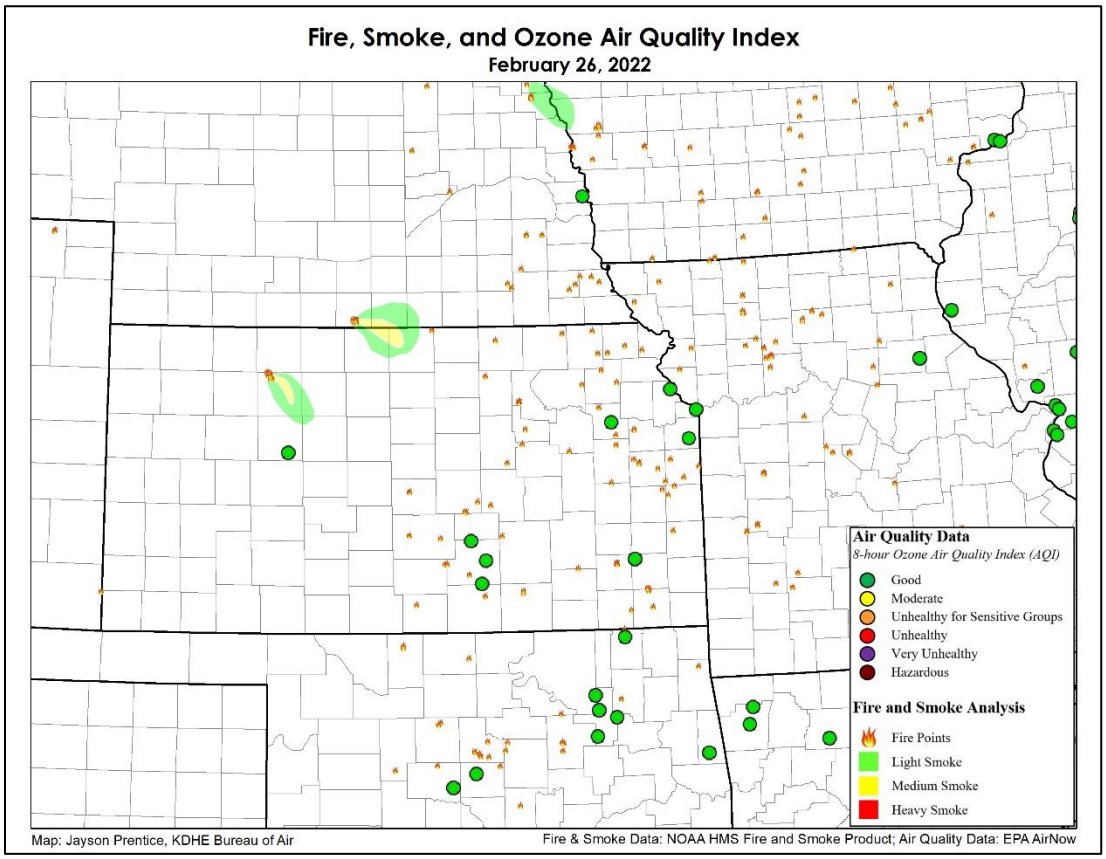
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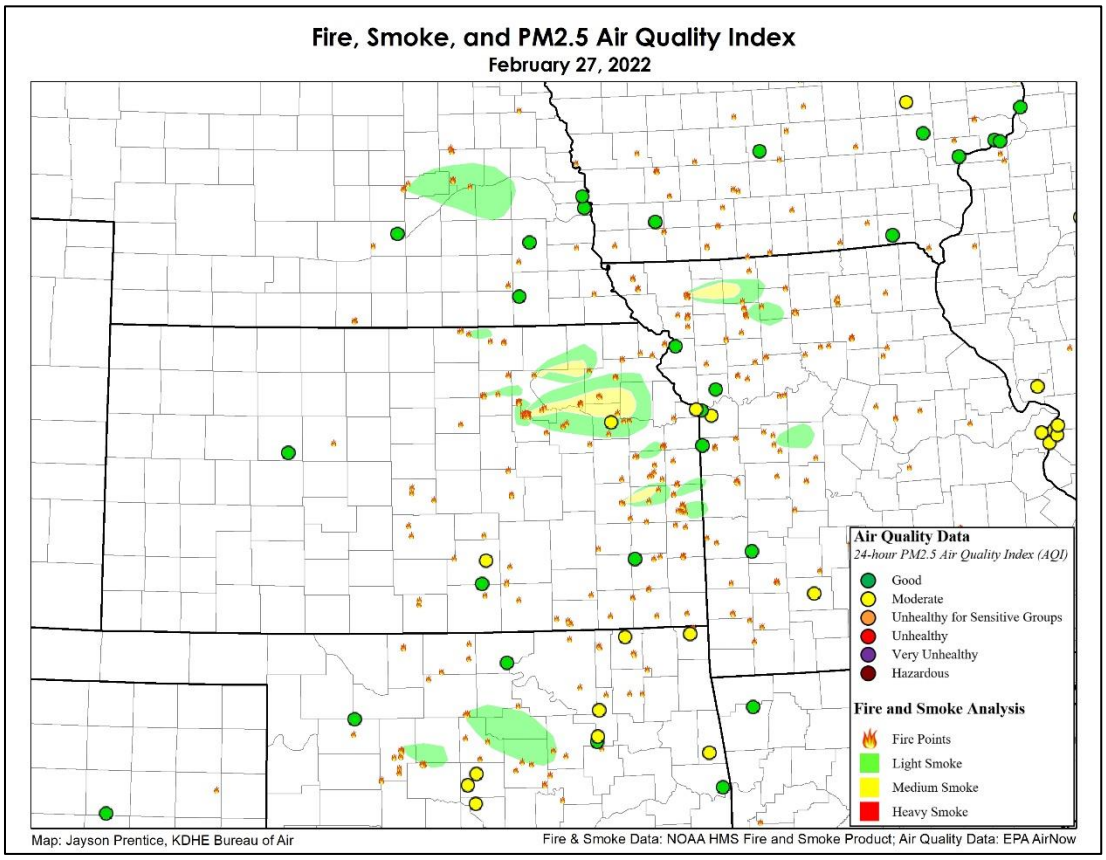
Fire, Smoke, and PM2.5 Air Quality Index
February 27, 2022
Air Quality Data
24-hour PM2.5 Air Quality Index (AQI)
Good
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Very Unhealthy
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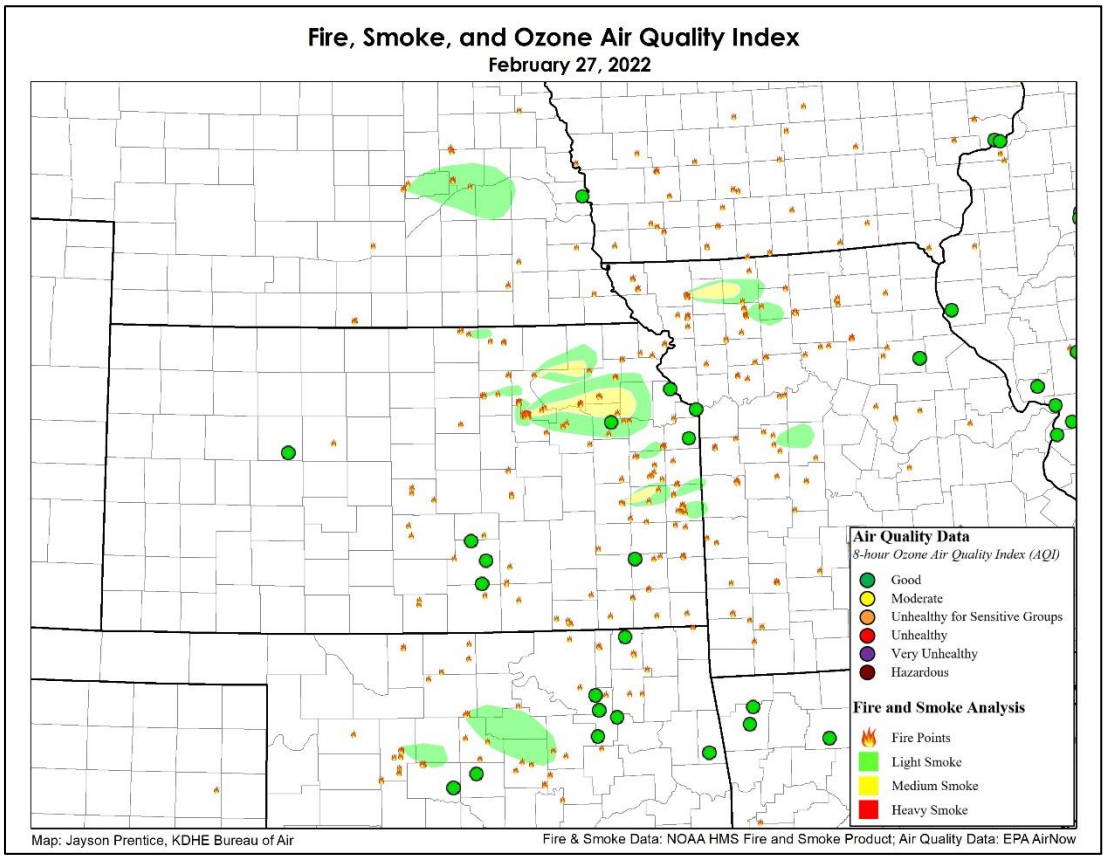
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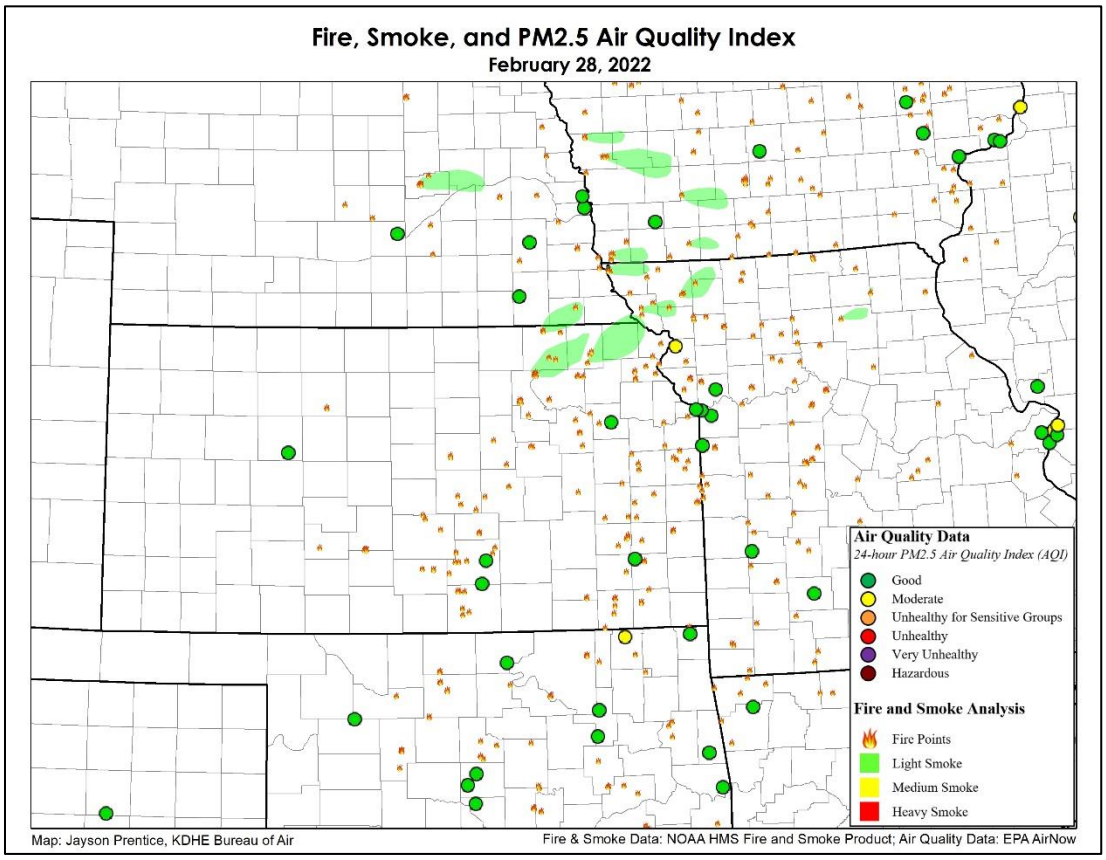
Fire, Smoke, and PM2.5 Air Quality Index
February 28, 2022
Air Quality Data
24-hour PM2.5 Air Quality Index (AQI)
Good
Moderate
Unhealthy for Sensitive Groups
Unhealthy
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Hazardous
Fire and Smoke Analysis
Fire Points
Light Smoke
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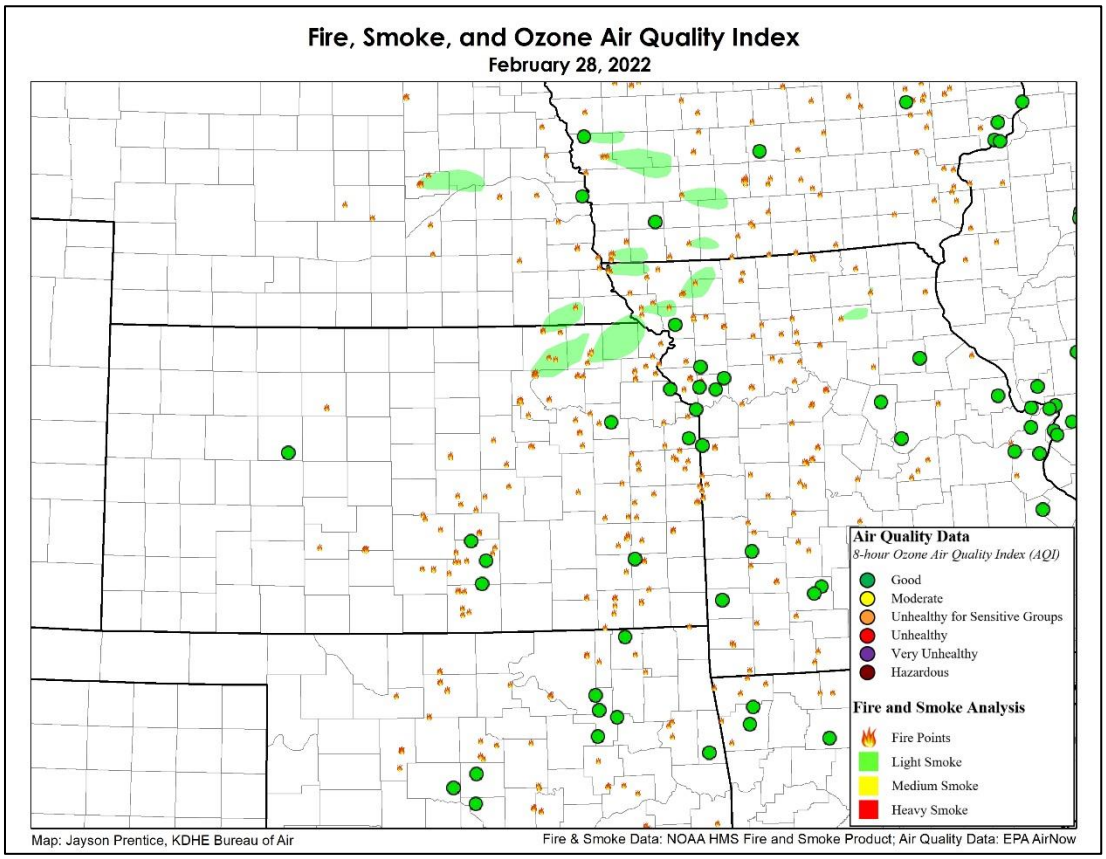
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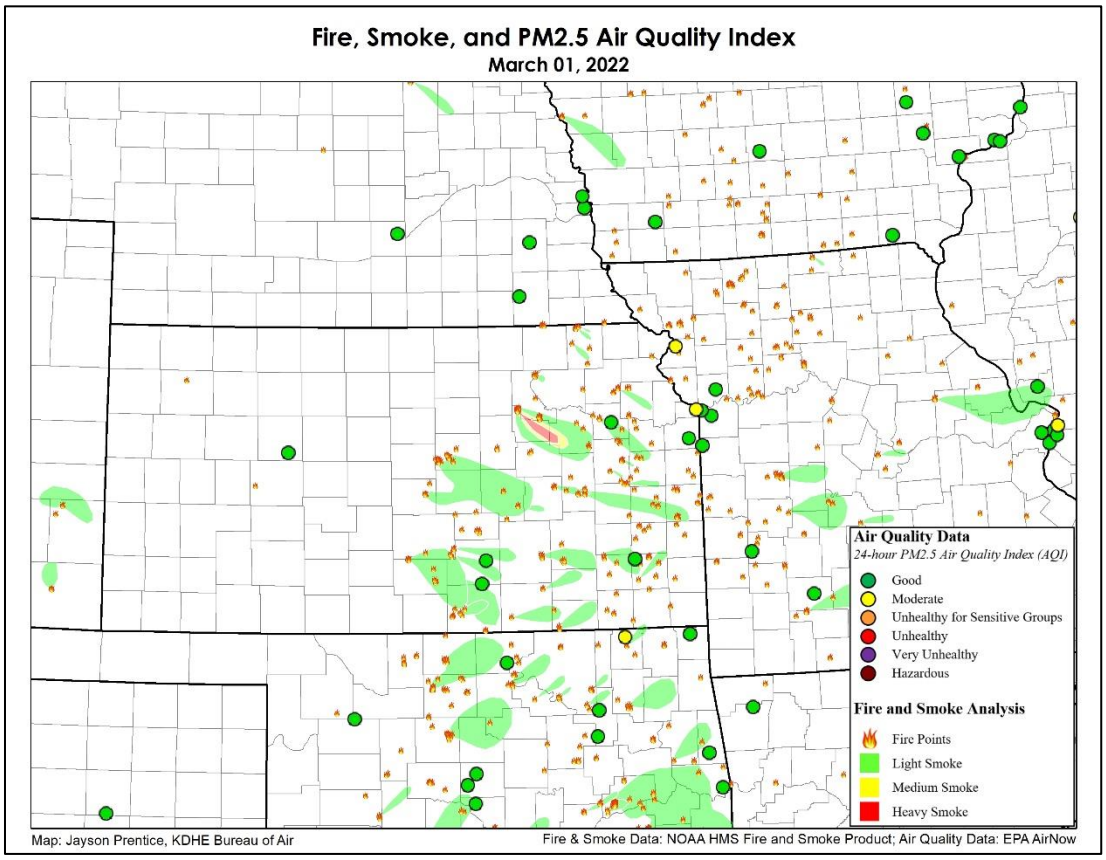
Fire, Smoke, and PM2.5 Air Quality Index
March 01, 2022
Air Quality Data
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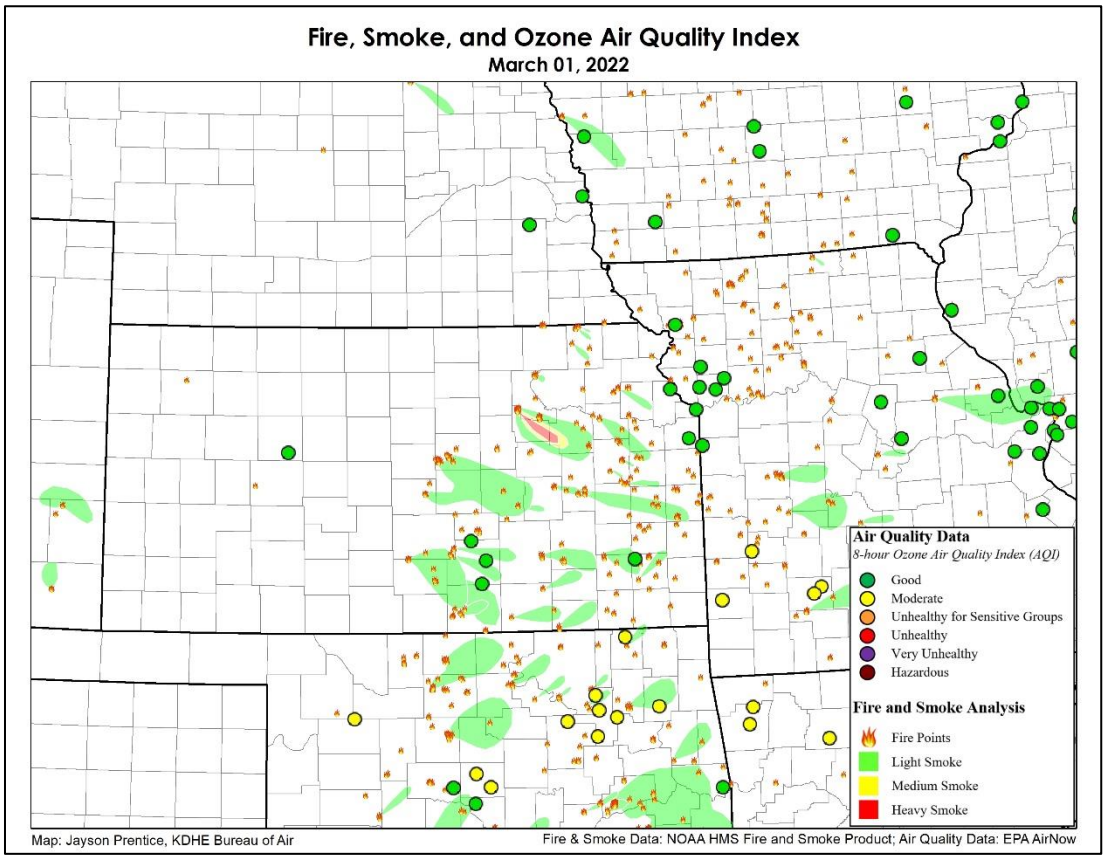
Fire & Smoke Data: NOAA HMS Fire and Smoke Product; Air Quality Data: EPA AirNow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March 01, 2022
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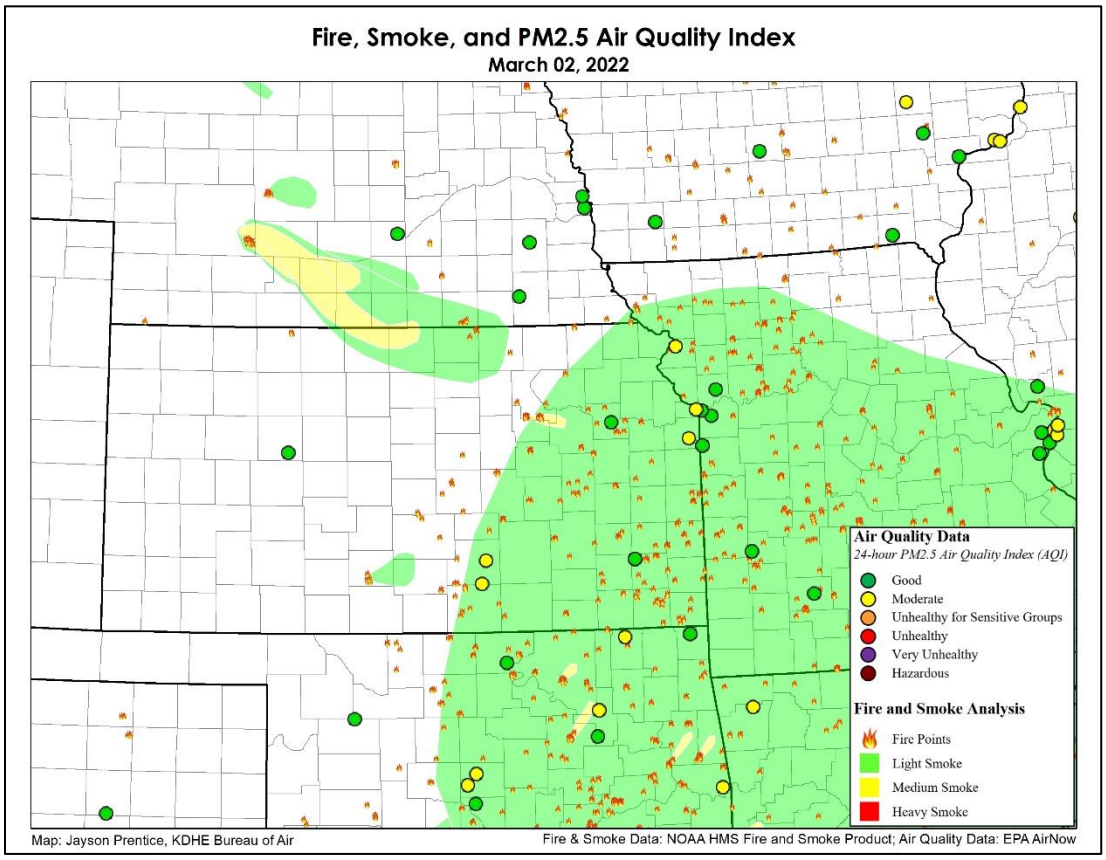
Fire, Smoke, and PM2.5 Air Quality Index
March 02, 2022
Air Quality Data
24-hour PM2.5 Air Quality Index (AQI)
Good
Moderate
Unhealthy for Sensitive Groups
Unhealthy
Very Unhealthy
Hazardous
Fire and Smoke Analysis
Fire Points
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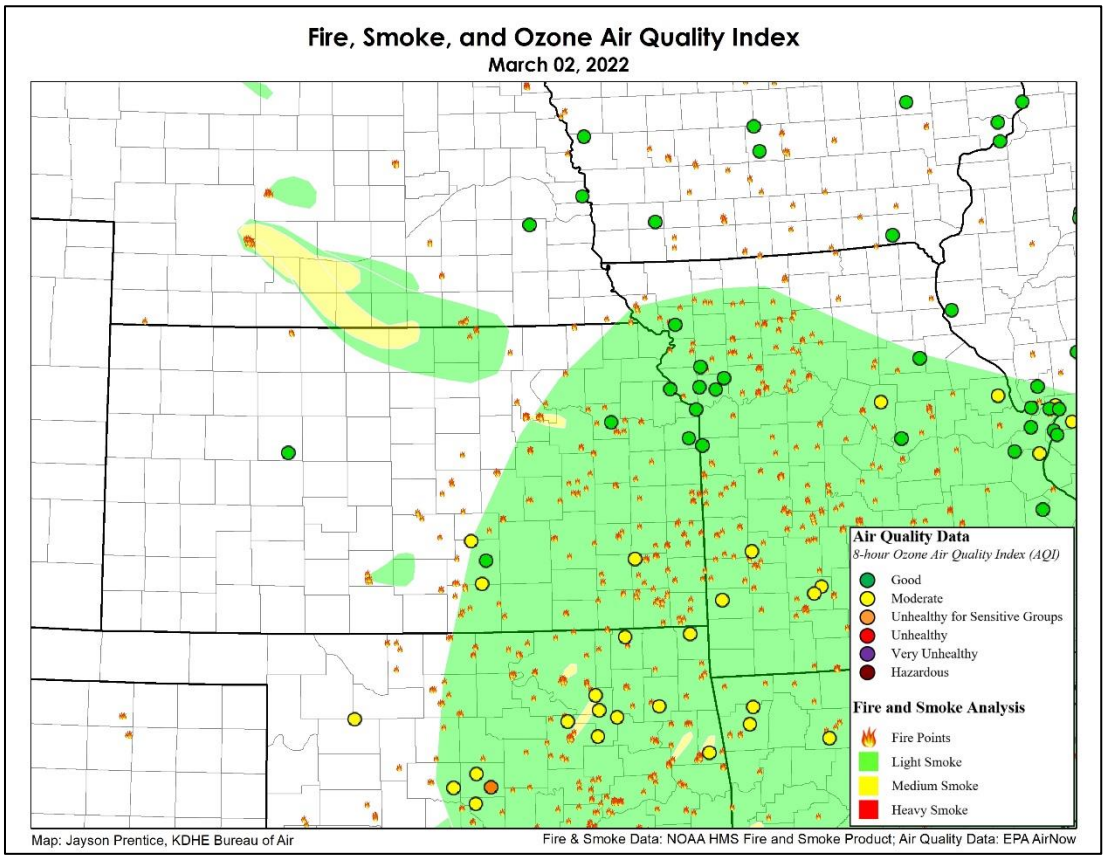
Fire & Smoke Data: NOAA HMS Fire and Smoke Product; Air Quality Data: EPA AirNow


Fire, Smoke, and Ozone Air Quality Index
March 02, 2022
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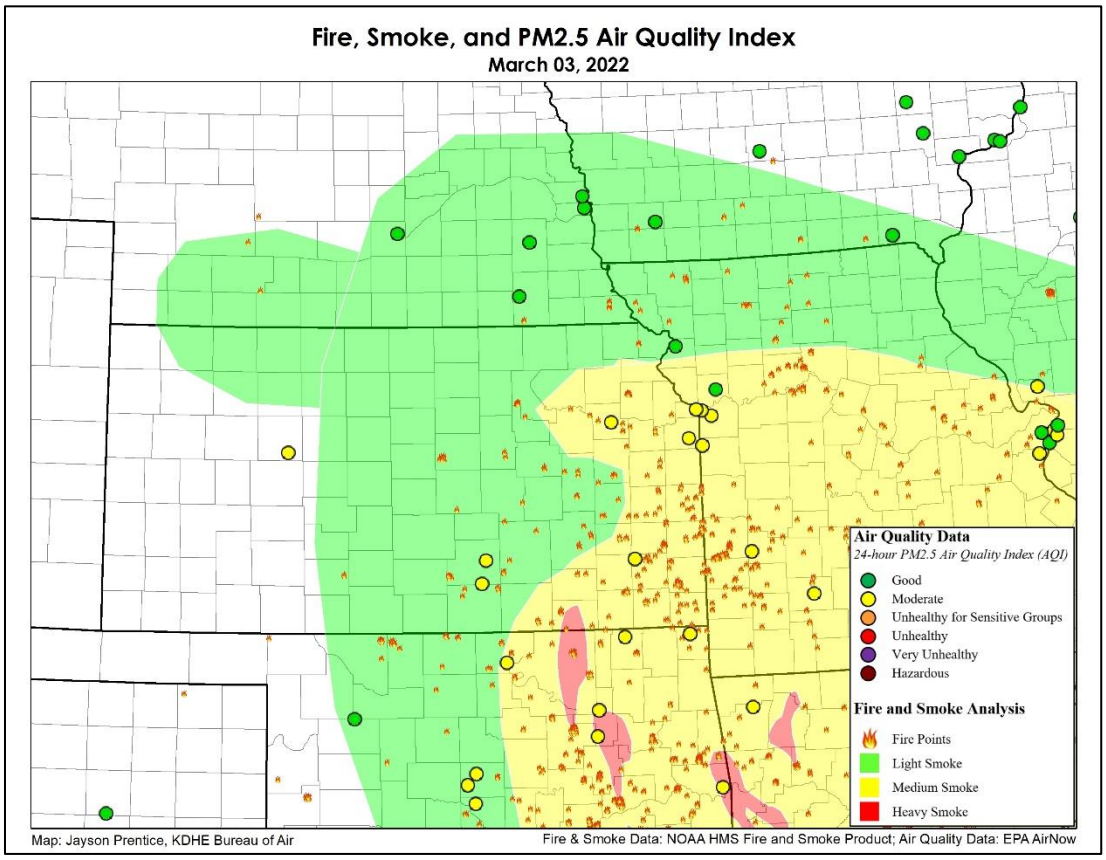
Fire, Smoke, and PM2.5 Air Quality Index
March 03, 2022
Air Quality Data
24-hour PM2.5 Air Quality Index (AQI)
Good
Moderate
Unhealthy for Sensitive Groups
Unhealthy
Very Unhealthy
Hazardous
Fire and Smoke Analysis
Fire Points
Light Smoke
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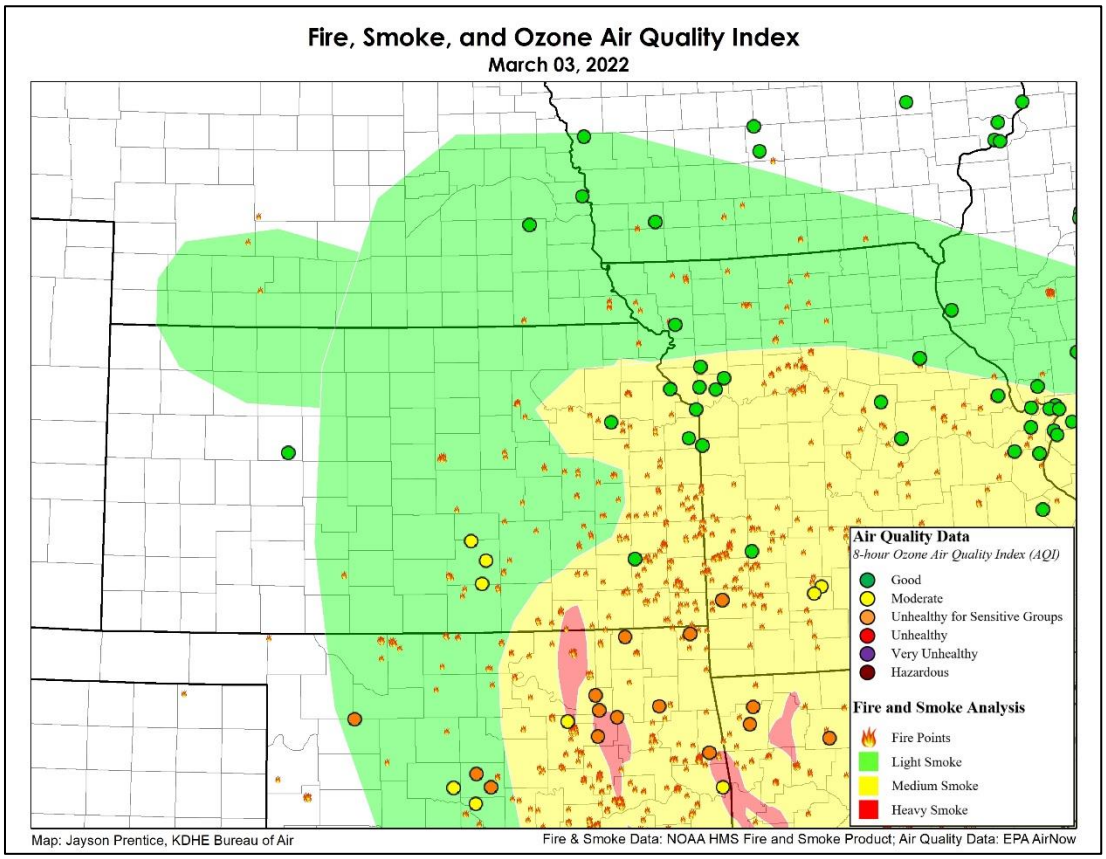
Map: Jayson Prentice, KDHE Bureau of Air
Fire & Smoke Data: NOAA HMS Fire and Smoke Product; Air Quality Data: EPA AirNow


Fire, Smoke, and Ozone Air Quality Index
March 03, 2022
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Fire & Smoke Data: NOAA HMS Fire and Smoke Product; Air Quality Data: EPA AirNow

Flint Hills Acreage Burned (February 14-20, 2022)

Yao Tang
Bureau of Air, KDHE

Counties	Acres Burned	
Butler	1,714	
Chase	31	
Chautauqua	711	
Coffey	0	
Cowley	124	
Elk	618	
Geary	77	
Greenwood	0	
Lyon	77	
Marion	185	
Morris	3,212	
Osage (KS)	0	
Pottawatomie	0	
Riley	2,934	
Wabaunsee	46	
Wilson	0	
Woodson	0	
Nowata (OK)	0	
Osage (OK)	5,143	
Washington (OK)	139	
Kay (OK)	0	
Total	**15,011**	

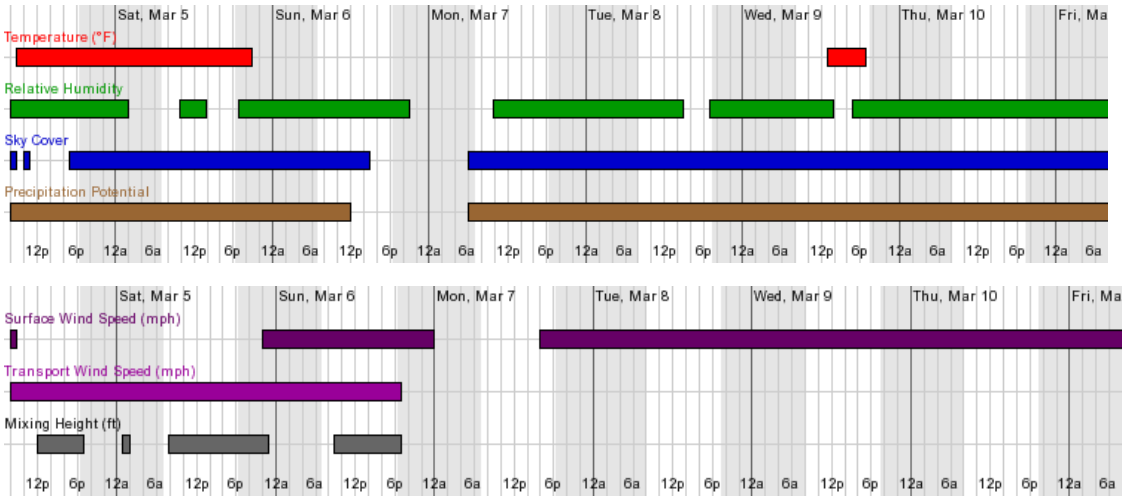
** Denotes county was partly or completely covered by clouds during latest analysis.*

Upcoming Look at Fires and Smoke

Above normal temperatures return to the Flint Hills region for Friday (Mar 4) and Saturday (Mar 5) but return with strong southerly winds with gusts of 30-40 mph likely. Very dry conditions are expected on Saturday, which combined with winds will likely lead to Red Flag Warnings (Very High to Extreme Fire Danger) for much of the region. These conditions will likely preclude any prescribed fires but will set the stage for potential wildfire concerns.

Cooler temperatures and calmer winds arrive for Sunday (Mar 6) but also with a chance of precipitation. A brisk northerly wind is expected on Monday (Mar 7) with temperatures remaining on the cool side for Tuesday (Mar 8) with otherwise very dry conditions. Temperatures warm-up a bit for Wednesday (Mar 9) but will do so with low relative humidity (less than 30%) which will continue to reduce potential for prescribed burning. Thursday (Mar 10) remains cooler ahead of the next storm system that may approach for the next weekend.

Ideal Weather Conditions for Prescribed Burning



Current National Weather Service forecast for the approximate center of the Flint Hills showing when conditions may be most favorable for wildland burning as described at KSFire.org. Conditions are most favorable when each parameter has a colored boxplot displayed for that hour.
Note: Forecast for mixing height and transport winds are only issued for the next 72 hours.
Forecast valid: 8am March 4, 2022.

For more information, contact:

Jayson Prentice
Chief, Environmental Data & Projects, Bureau of Air
Kansas Department of Health & Environment
785-291-3782
Jayson.Prentice@ks.gov