Kansas Department of Health and Environment
Division of Environment

A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

Douglas Watson| April 16, 2025

A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

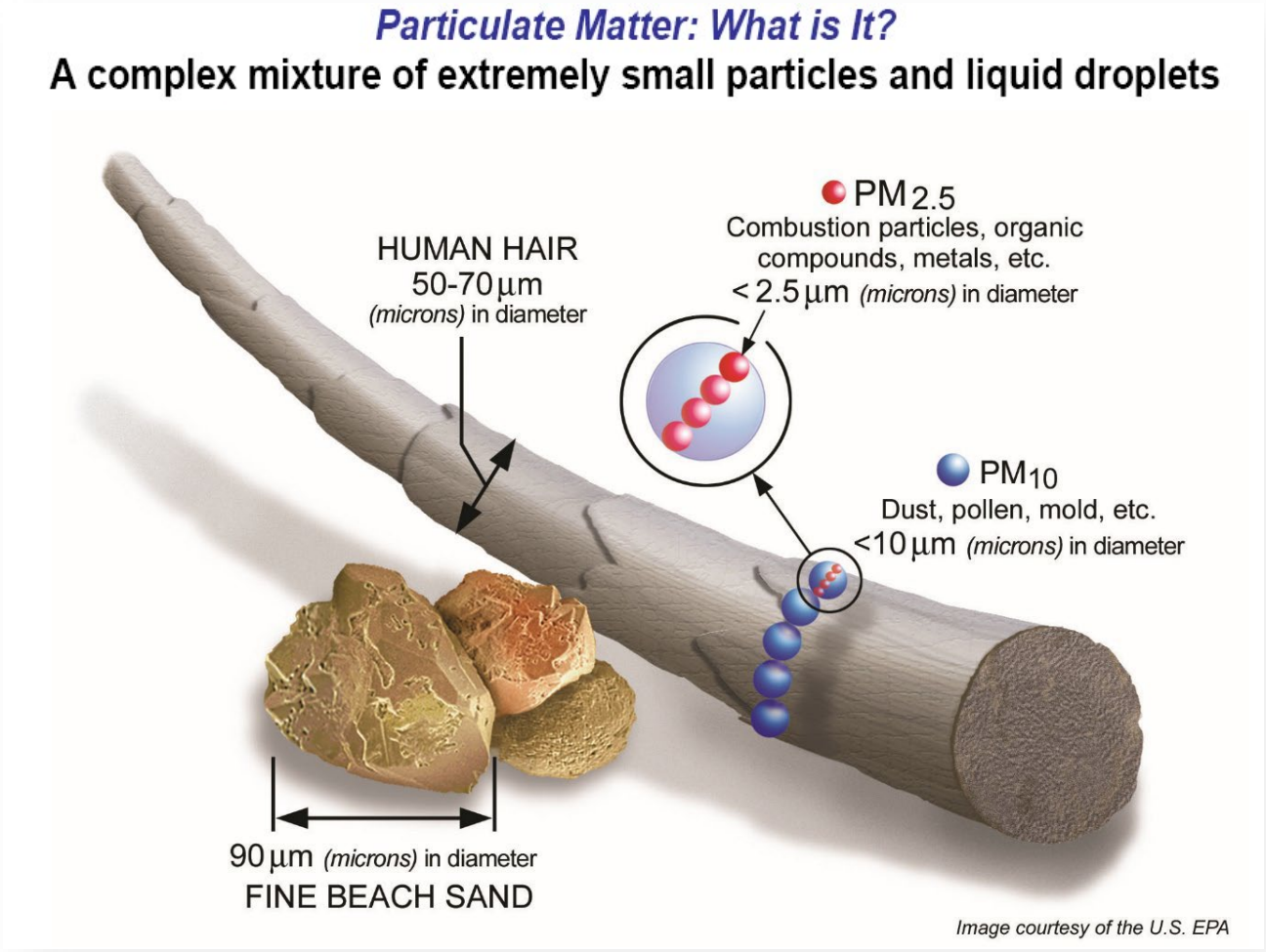
National Ambient Air Quality Standards (NAAQS)

- Clean Air Act (CAA) requires EPA to
  - Set National Ambient Air Quality Standards for six air pollutants
  - Review every 5 years
  - Determine which counties meet the standards
- Based on Health effects
- Cost not taken into consideration in setting standards

A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

NAAQS Pollutants

- Ozone
- Particulate Matter
  - PM_{10}
  - $PM_{2.5}$
- Carbon Monoxide
- Sulfur Dioxide
- Lead
- Nitrogen Dioxide



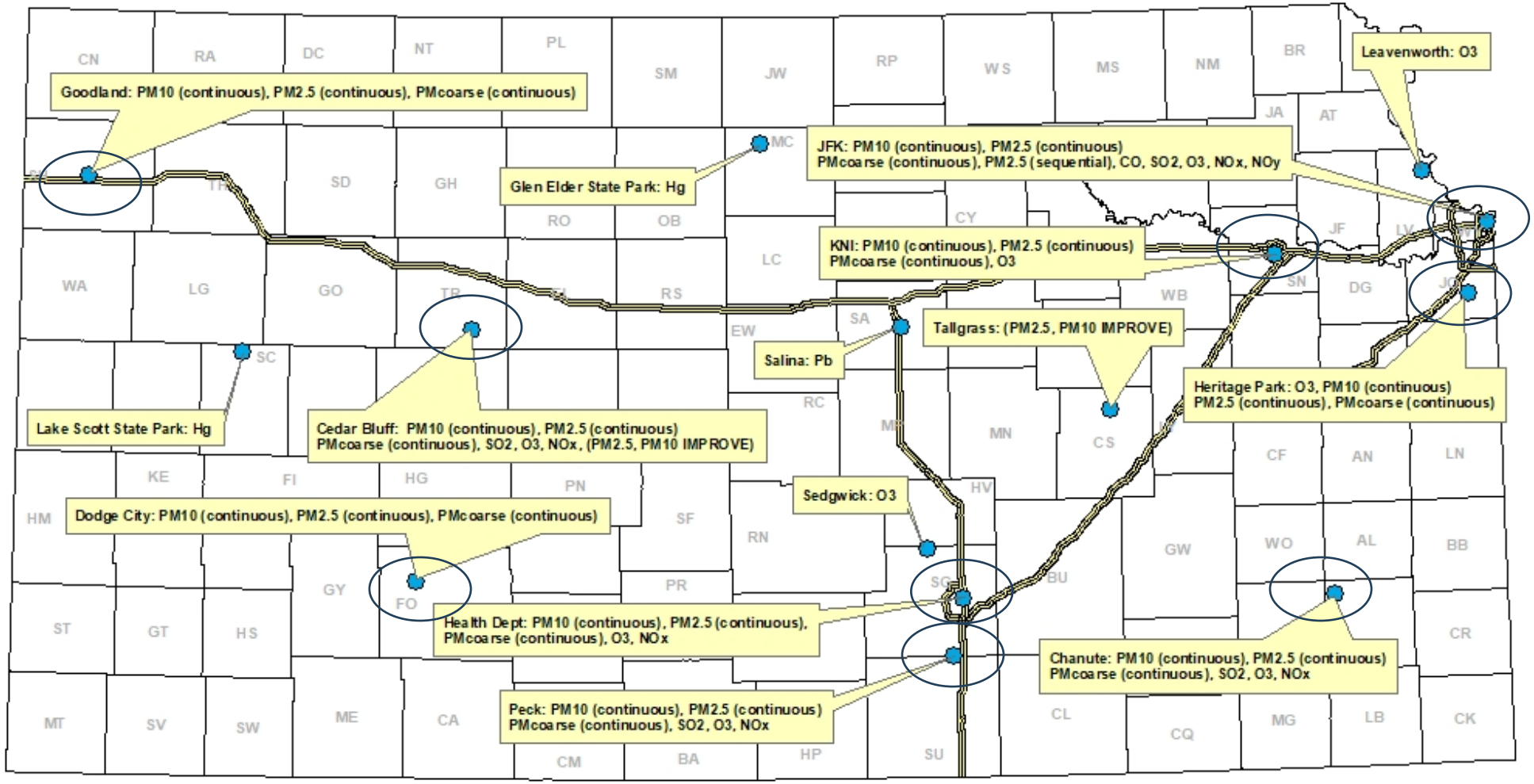
A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

Why do we monitor?

- Compliance with air quality standards
- Evaluate trends
- Determine health-risk
- Establish baseline concentrations
- PSD construction permit requirement
- Model validation
- Post results to national database

A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

2025 Kansas Air Monitoring Sites



Main Elements of the PM NAAQS Final Decision

- EPA **strengthened the level of the primary (health-based) annual standard for fine particles** ($PM_{2.5}$) to 9.0 micrograms per cubic meter ($\mu g/m^3$) to reflect the latest available health science.
- EPA is **not changing all other PM standards:**
  - The primary (health-based) and secondary (welfare-based) 24-hour $PM_{2.5}$ standards stay at the level of 35 $\mu g/m^3$
  - The primary and secondary 24-hour PM_{10} standards stay at the level of 150 $\mu g/m^3$
  - The secondary annual $PM_{2.5}$ standard stays at the level of 15.0 $\mu g/m^3$
- EPA is also:
  - Revising the Air Quality Index (AQI) to improve public communications about the risks from $PM_{2.5}$ exposures
  - Making changes to the monitoring network to enhance protection of air quality in communities overburdened by air pollution

A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

Designations/Implementation Timeline

Designations Action	Anticipated Date
EPA promulgates 2024 Revised Primary Annual Fine Particle NAAQS final rule	February 7, 2024
States certify 2023 $PM_{2.5}$ data; EPA calculates design values	May 2024
States and Tribes submit their designations recommendations to EPA	No later than February 7, 2025
States certify 2024 $PM_{2.5}$ data; EPA calculates design values	May 2025
EPA notifies states and Tribes concerning any intended modifications to their recommendations (120-day letters); 30- day public comment period begins	Mid-October 2025 (120 days prior to final designations
End of 30-day public comment period	Mid-November 2025
States and Tribes submit additional information, if any, to respond to the EPA's modification of recommended designations	Mid-December 2025
Final designations decisions (without extension)	February 6, 2026

A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

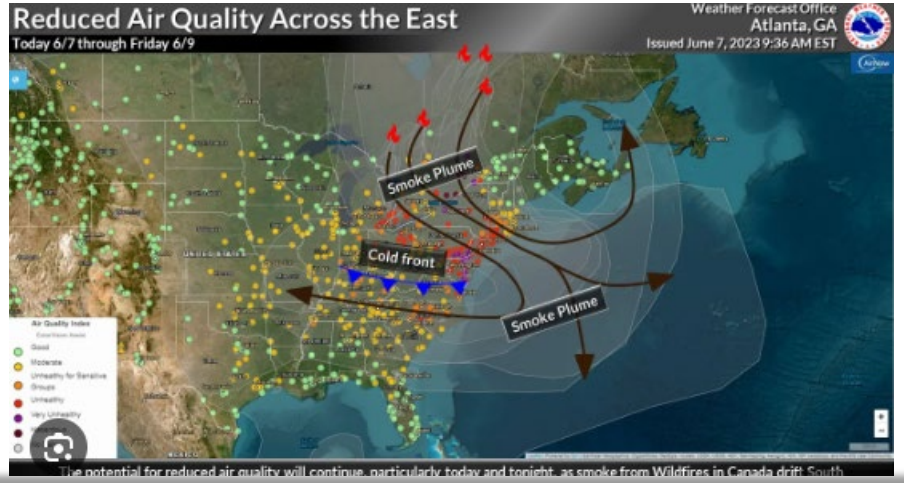
Table 2. Kansas Ambient $PM_{2.5}$ Monitor Design Values (2021–2023)			
Site Name	**AQS Site ID**	**County**	**2021–2023 Annual $PM_{2.5}$ Design Value ($\mu g/m^3$)**
Dodge City	20-057-0002	Ford	***
Heritage Park	20-091-0010	Johnson	8.3
Chanute	20-133-0003	Neosho	9.3
Wichita Health Department	20-173-0010	Sedgwick	9.7
KNI	20-177-0013	Shawnee	8.8*
Goodland	20-181-0003	Sherman	4.3**
Peck	20-191-0002	Sumner	8.9*
Cedar Bluff	20-195-0001	Trego	6.8*
JFK	20-209-0021	Wyandotte	9.6

*- Did not meet data completeness requirements
**- New monitor installed March 21, 2023
***- New monitor installed September 19, 2023

A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

What were the Remaining Issues in 2024?

- T640(x) $PM_{2.5}$ Instrument - Data High Bias Correction
  - EPA made data corrections in Air Quality System (AQS) database.
  - Did it really correct the issues?
- Data Influenced by Exceptional Events (wildfires, fireworks, etc.)
  - BOA analysis showed that there were not enough days influenced by these events to change the design values at the three sites.



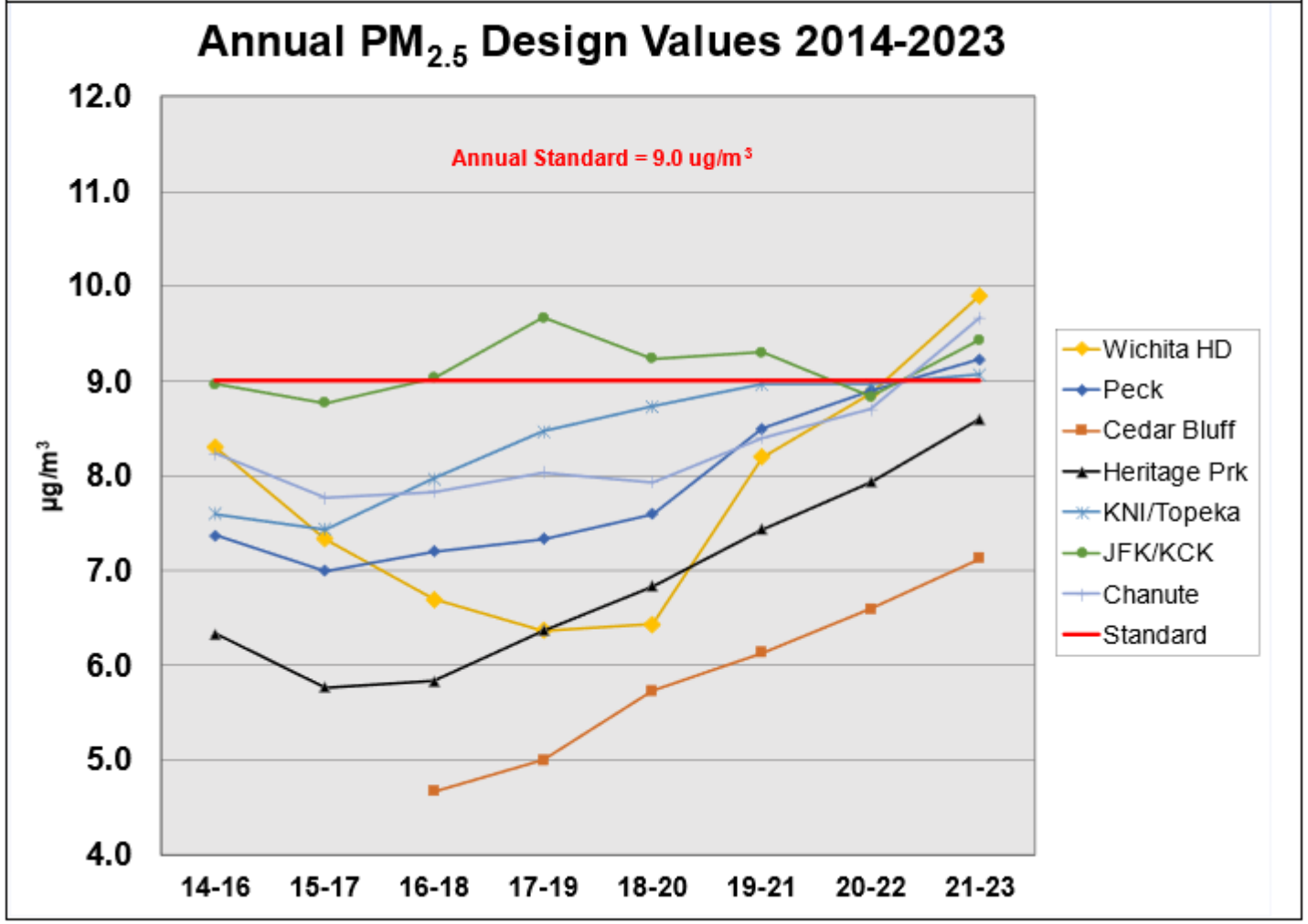
A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

KDHE Designation Recommendation for Kansas?

- The State of Kansas recommended that the three monitors (T640Xs) located in Neosho County (Chanute), Sedgwick County (Wichita HD) and Wyandotte County (JFK) that currently do not meet the new primary annual standard of 9.0 $\mu g/m^3$ be designated “Unclassifiable” for the new standard, based on the continued concerns by many states over the data being produced by the T640(X) and the analysis performed by the BOA.

A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

Figure 4. Annual $PM_{2.5}$ Design Values for Kansas Monitors (2014-2023)



Kansas Department of Health and Environment

A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

Figure 5. JFK Unadjusted FEM vs. FRM Comparison

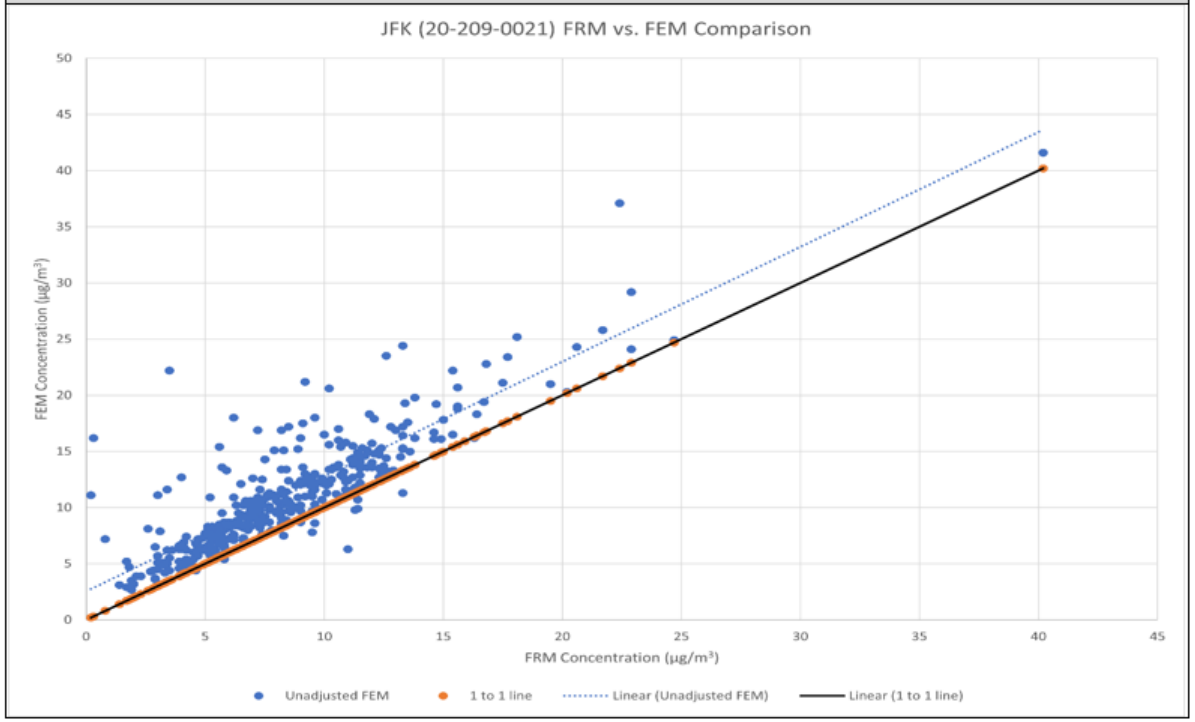


Figure 8. JFK FRM vs. FEM EPA Adj Comparison

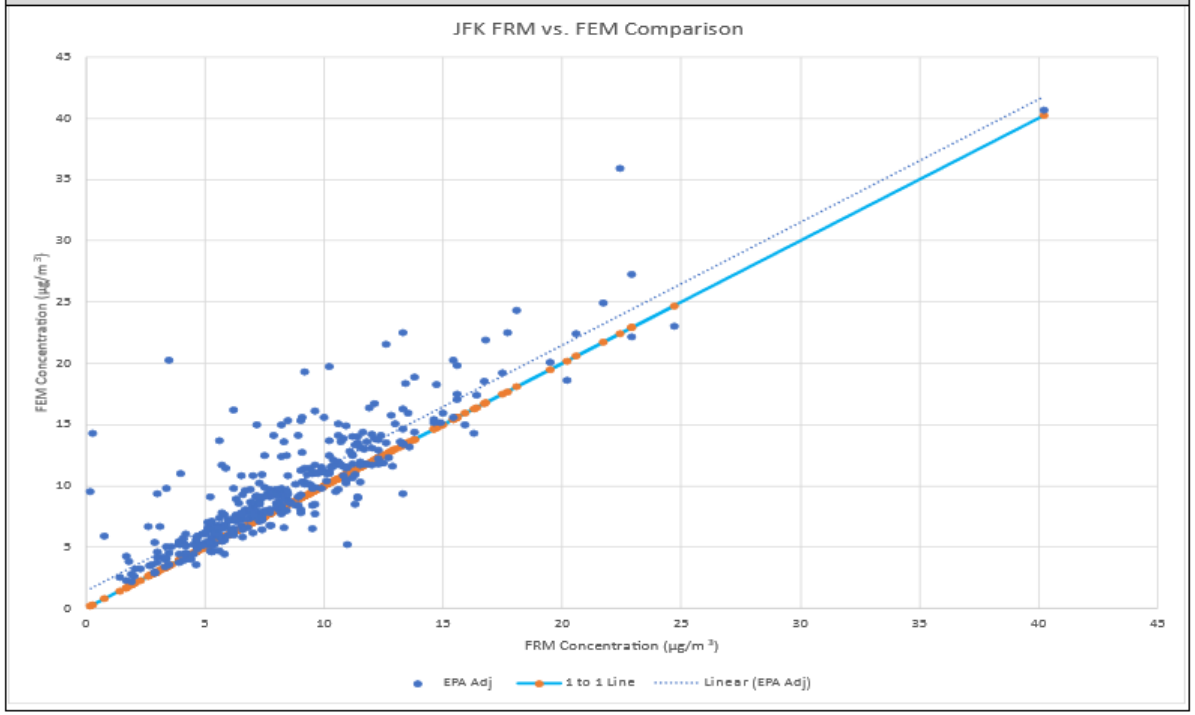


Table 4. Teledyne T640/T640X Alignment Algorithm Implemented by EPA

CASE	$PM_{2.5}$ Conc.	Temp. ≤ 20° C	CASE	$PM_{2.5}$ Conc.	Temp. > 20° C
A	≤ 10 µg/m³	T640/x * 0.813233	C	≤ 5 µg/m³	T640/x * 0.813233
B	> 10 µg/m³	T640/x – 1.861	D	> 5 µg/m³	T640/x – 0.925

A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

State of Georgia Equation:
Unadj. T640/x * 0.813233

Figure 9. JFK FRM vs. FEM Georgia Adj

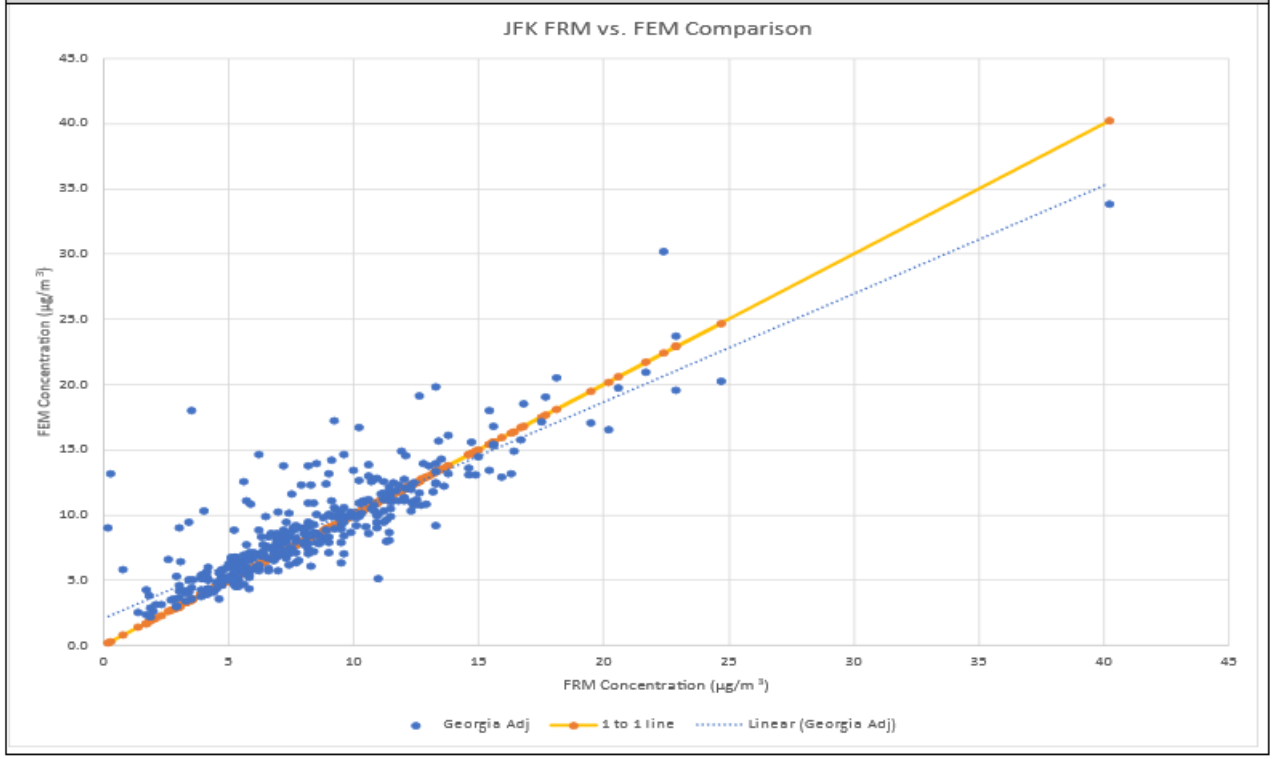


Table 5. Normalized Mean Bias at JFK Monitor

Site Name	Unadjusted FEM	EPA Adjusted FEM (POC 23)	Georgia Adjusted FEM
JFK-KCK (20-209-0021)	32.78%	17.54%	7.98%

A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

Figure 10. JFK T640X FEM (Adj Data) vs. Troost TEOM FEM

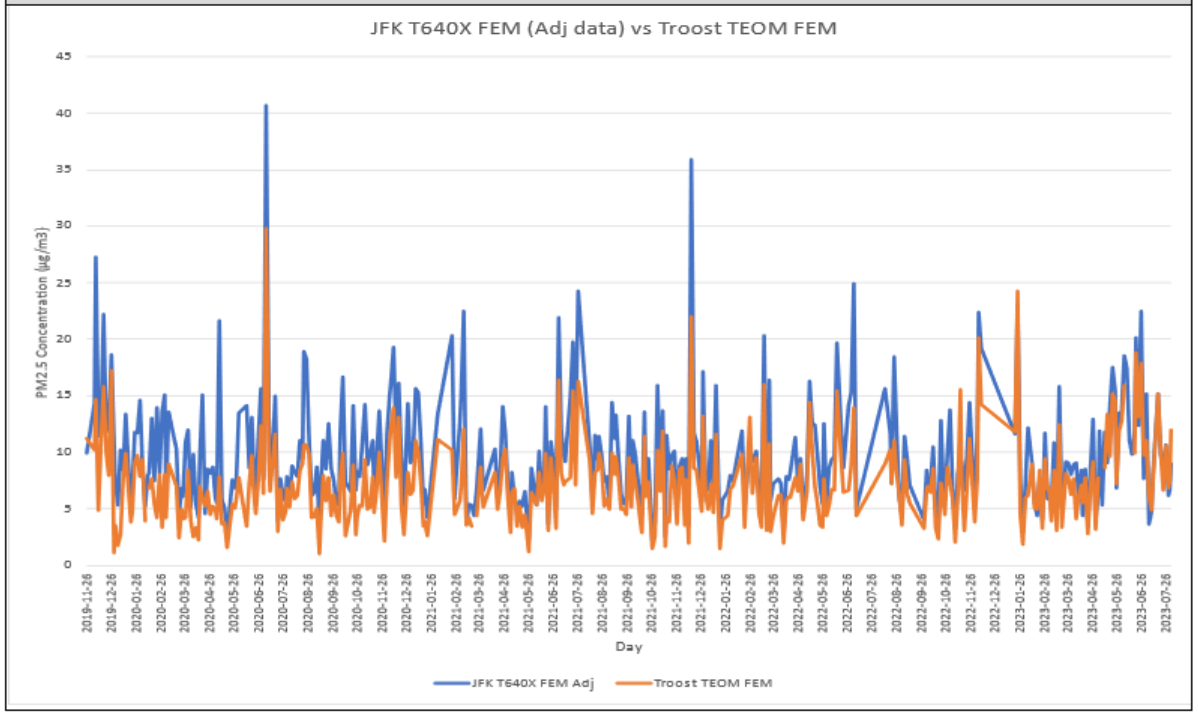
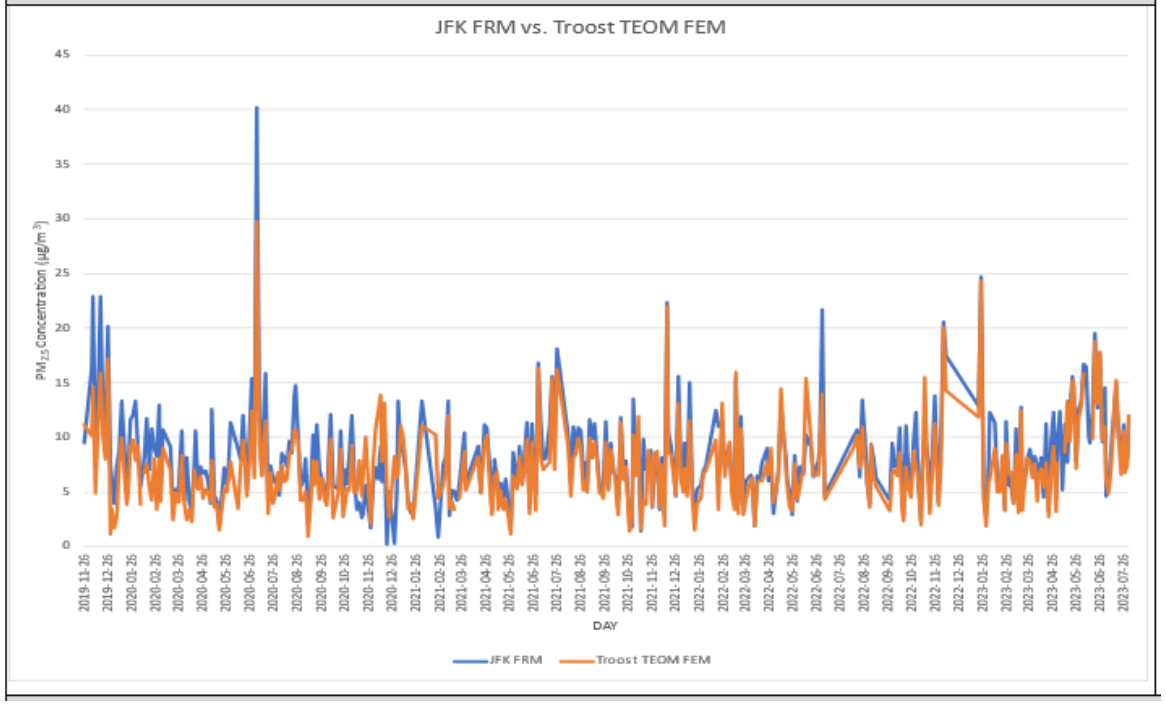
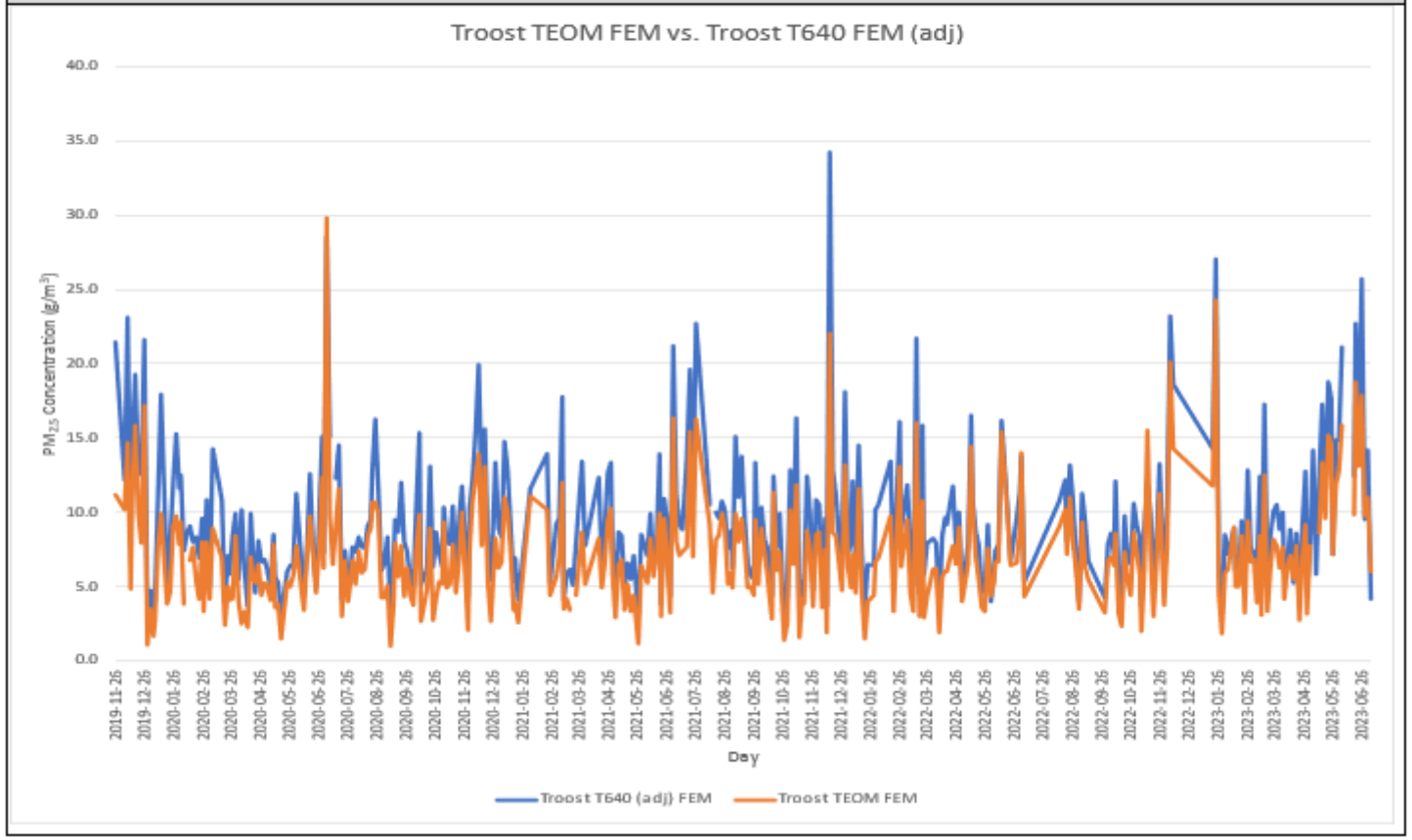


Figure 11. JFK FRM vs. Troost TEOM FEM



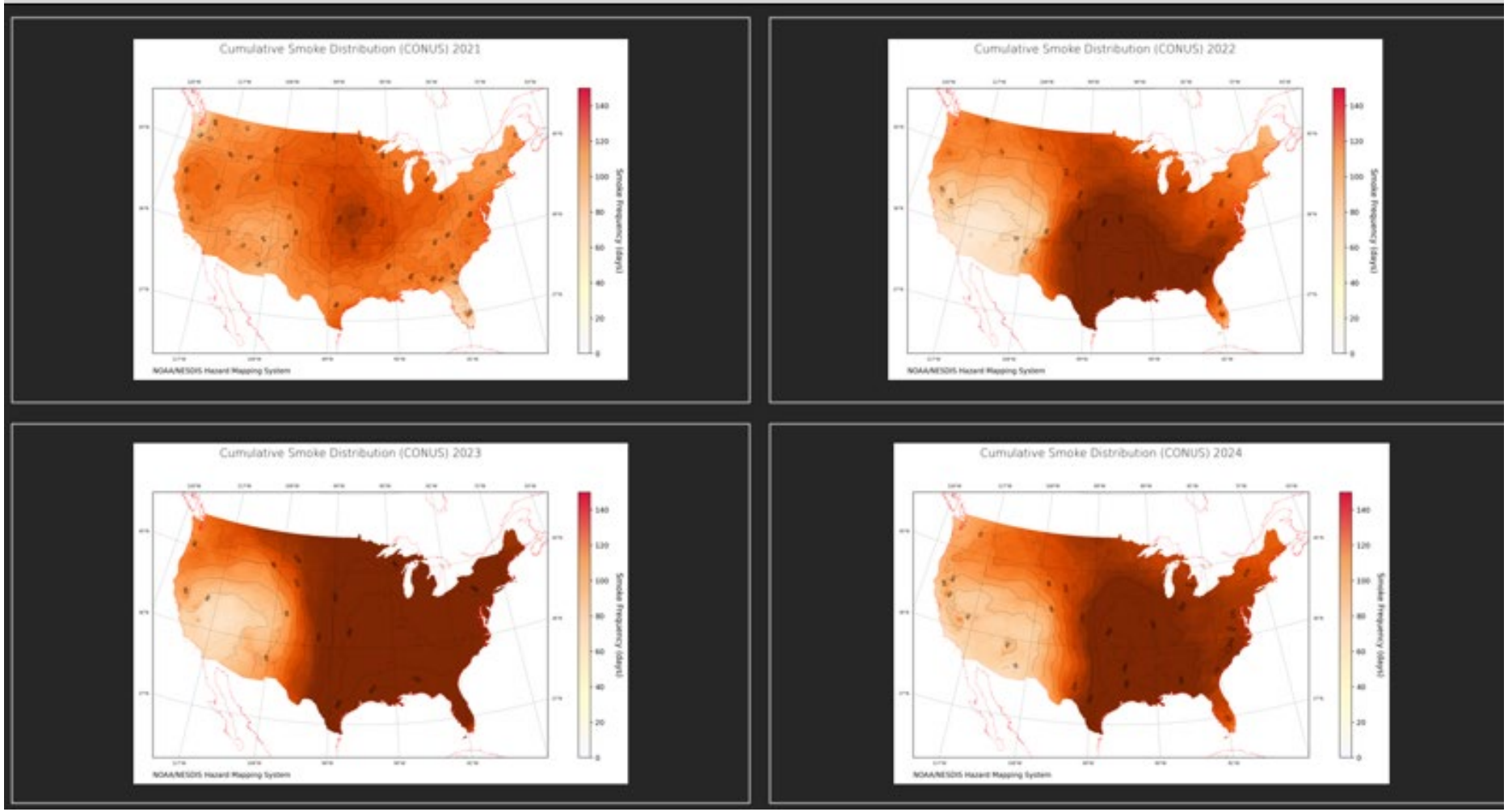
A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

Figure 12. Troost TEOM FEM (NAAQS) vs. Troost T640 (adj) FEM



A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

Figure 15. Cumulative Smoke Data Statistics - CONUS (2021-2024)



A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

Figure 16. AirNow-Tech September 6, 2023 $PM_{2.5}$ Data

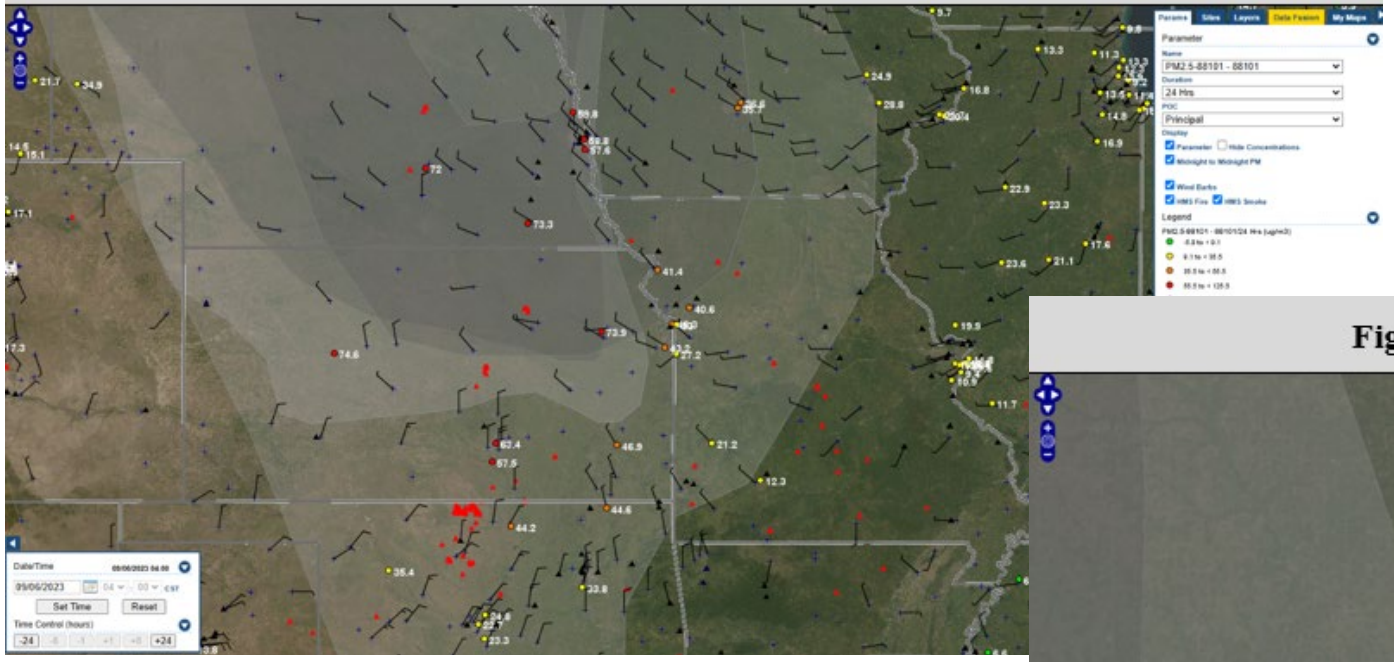
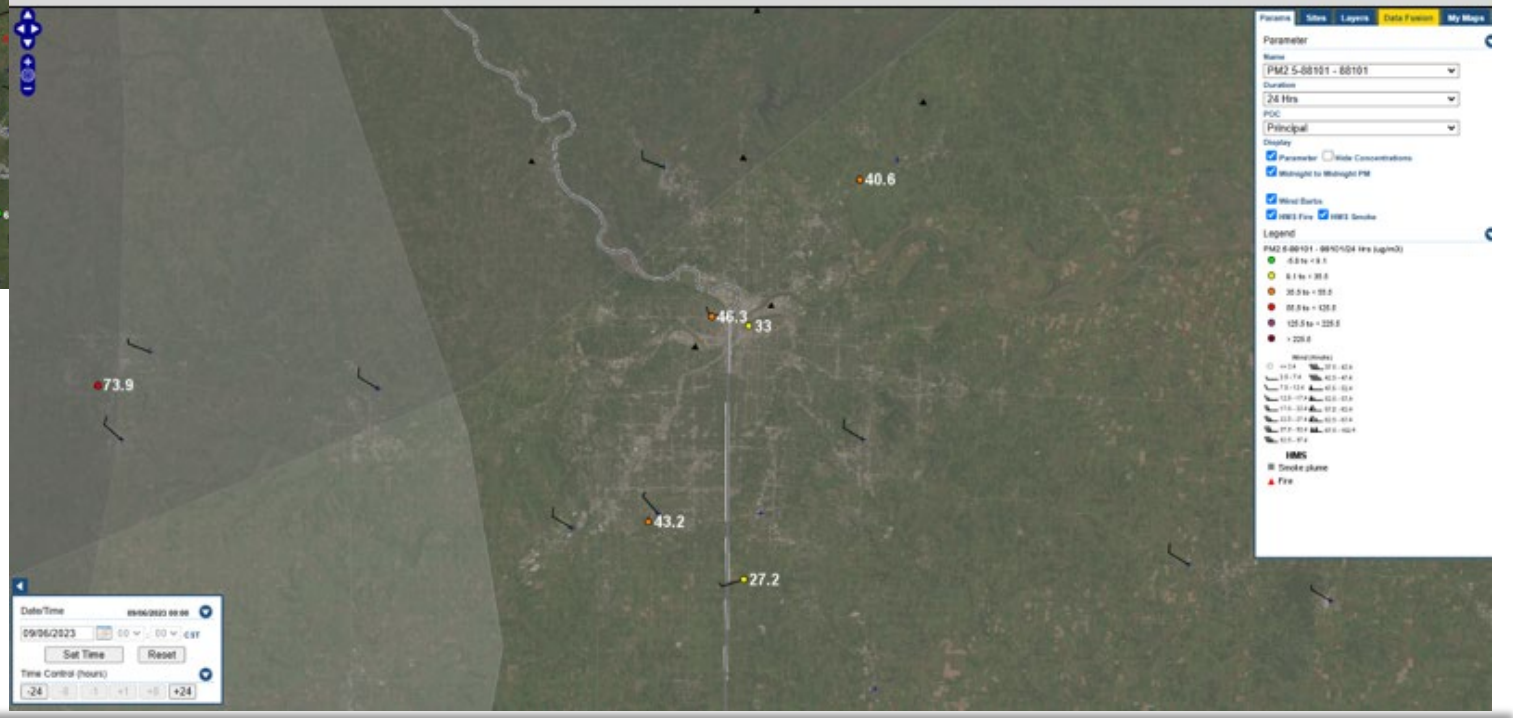


Figure 17. AirNow-Tech September 6, 2023 $PM_{2.5}$ Data



A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

Figure 18. AirNow-Tech September 7, 2023 $PM_{2.5}$ Data

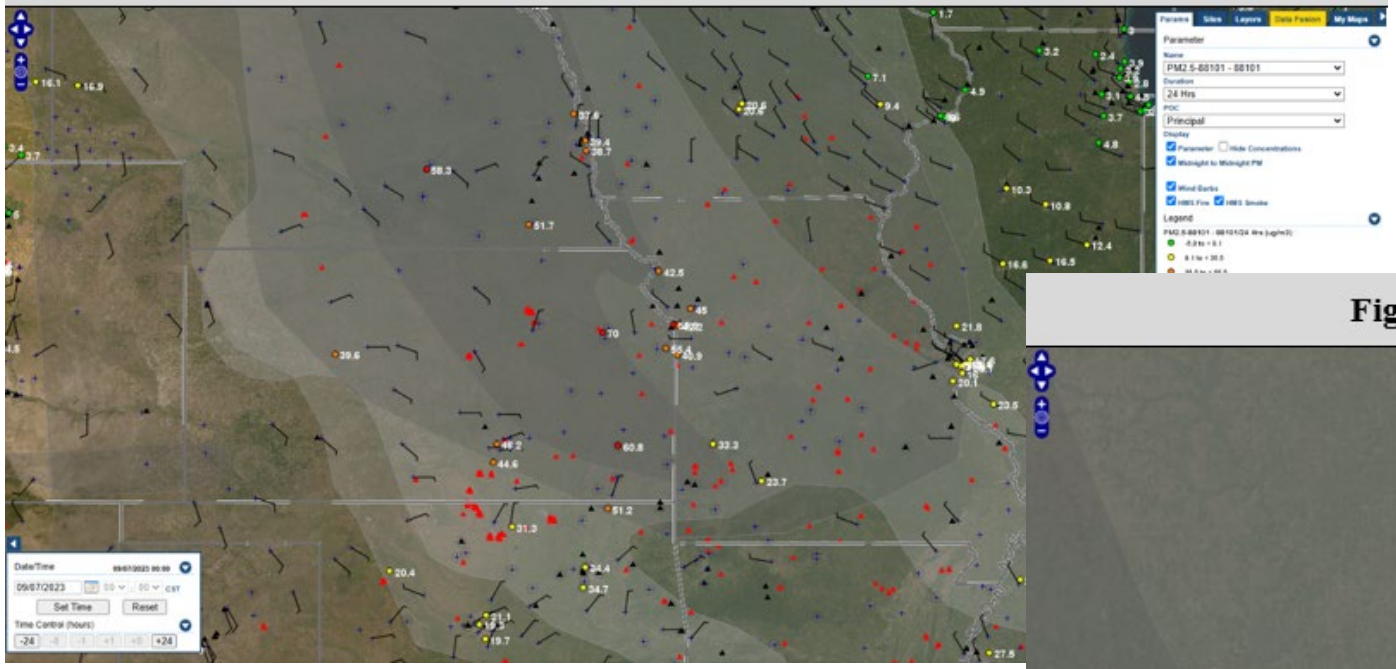
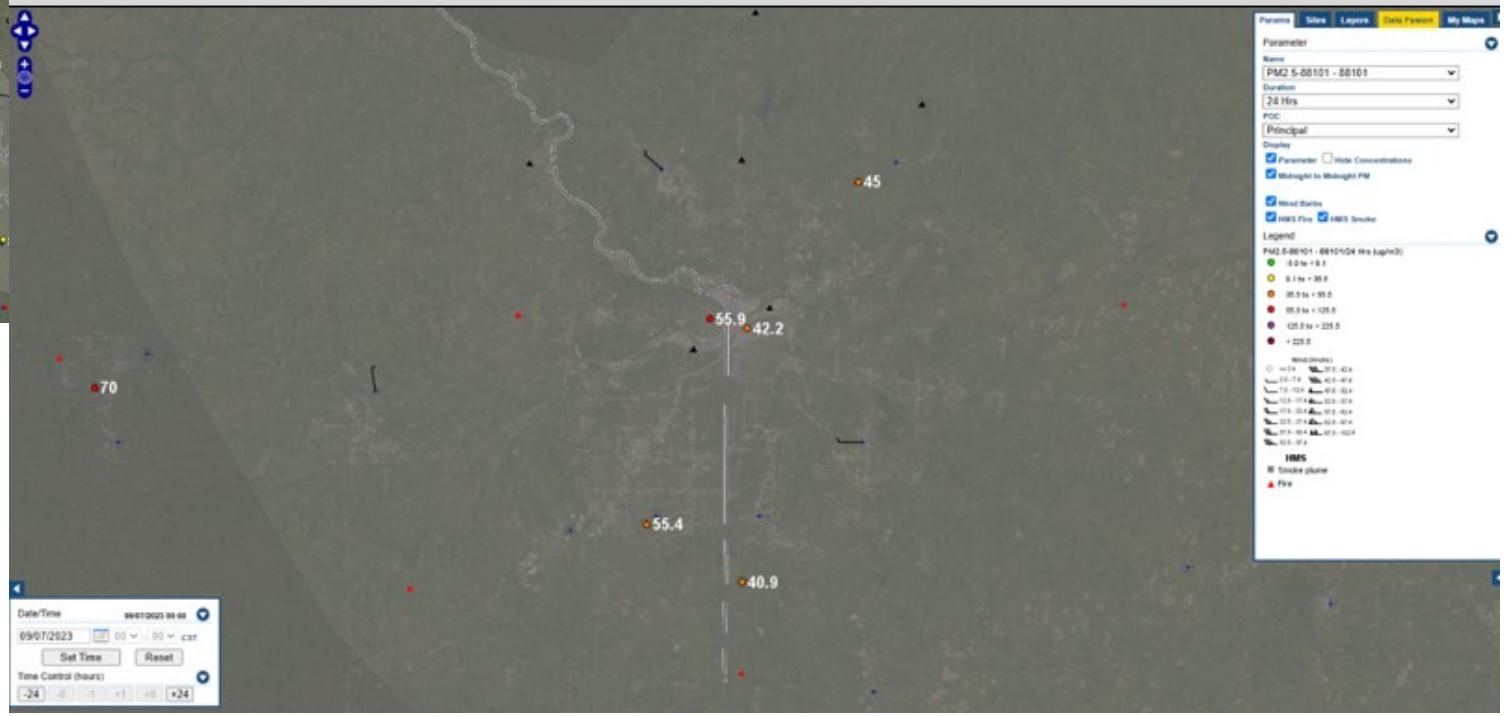


Figure 19. AirNow-Tech September 7, 2023 $PM_{2.5}$ Data



A New $PM_{2.5}$ Annual Standard, Where Do We Go From Here?

EPA Administrator Lee Zeldin announcement on March 12, 2025

EPA will "revisit" the March 2024 reconsideration of the National Ambient Air Quality Standards (NAAQS) for particulate matter (PM), which lowered the primary annual $PM_{2.5}$ NAAQS from 12.0 to 9.0 micrograms per cubic meter. The more stringent standard "has raised serious concerns from states across the country and served as a major obstacle to permitting," EPA asserts.

Thank you/Questions

Douglas Watson
Director, Bureau of Air
Douglas.Watson@ks.gov
785-296-0910