

Cohoes NY Fugitive Dust Source ID Study (Crystalline Silica too)

George Allen, Chief Scientist, NESCAUM
NYS-DEC and OAG



NACAA Monitoring Steering Committee, Feb. 2, 2023, EPA-RTP

Motivation

Persistent coarse-PM events impacting public housing near fenceline

BUT – No PM NAAQS violations (24-h PM₁₀ < 155 µg/m³)

Max 24-h: 110; Max 1-h: 900

Concerns re: crystalline silica levels in PM₁₀ events

NYS Office of the Attorney General: legal action to force cleanup

Needed bulletproof evidence of facility as source of PM events

Monitoring: joint effort of NYS-DEC and NESCAUM

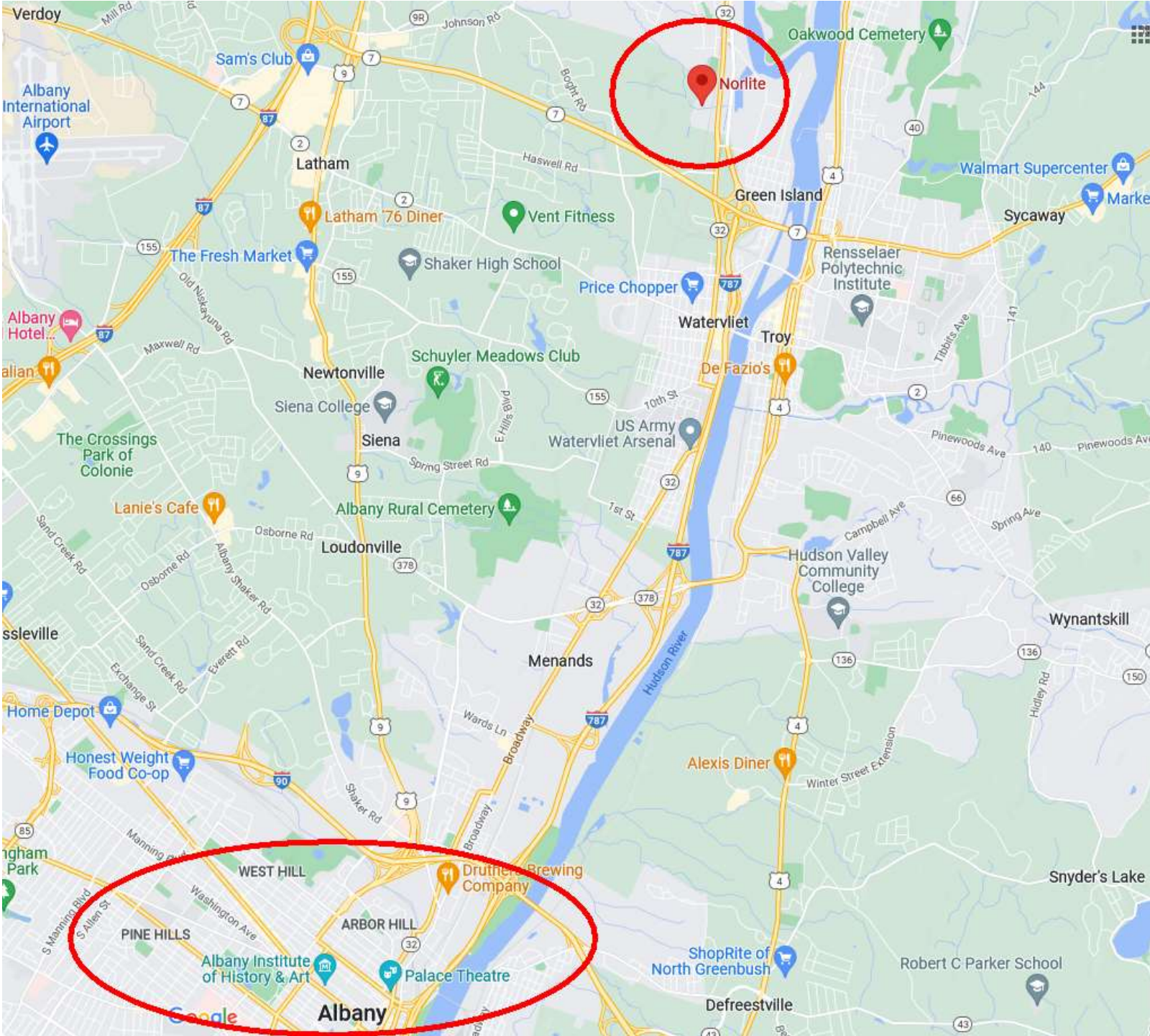
DEC: PM₁₀ Teom 1400AB as FEM

NESCAUM: sonic wind and data analysis, funded by NYS-OAG

pDR1500 as fast-response indicator

This presentation: using non-parametric wind regression to ID local PM source

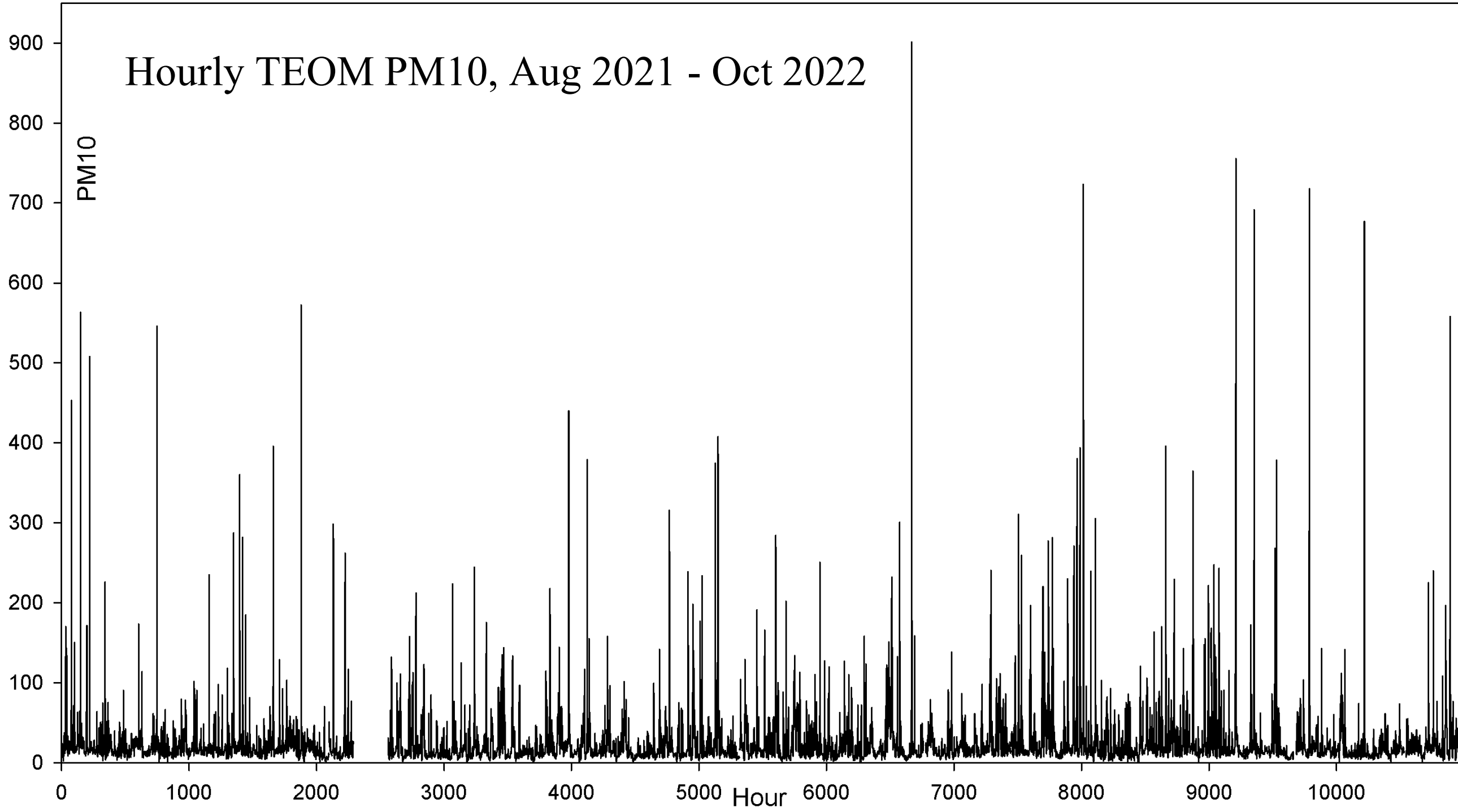
Facility location:
Cohoes, NY
9 miles NNE of Albany



Norlite facility,
public housing,
monitor location

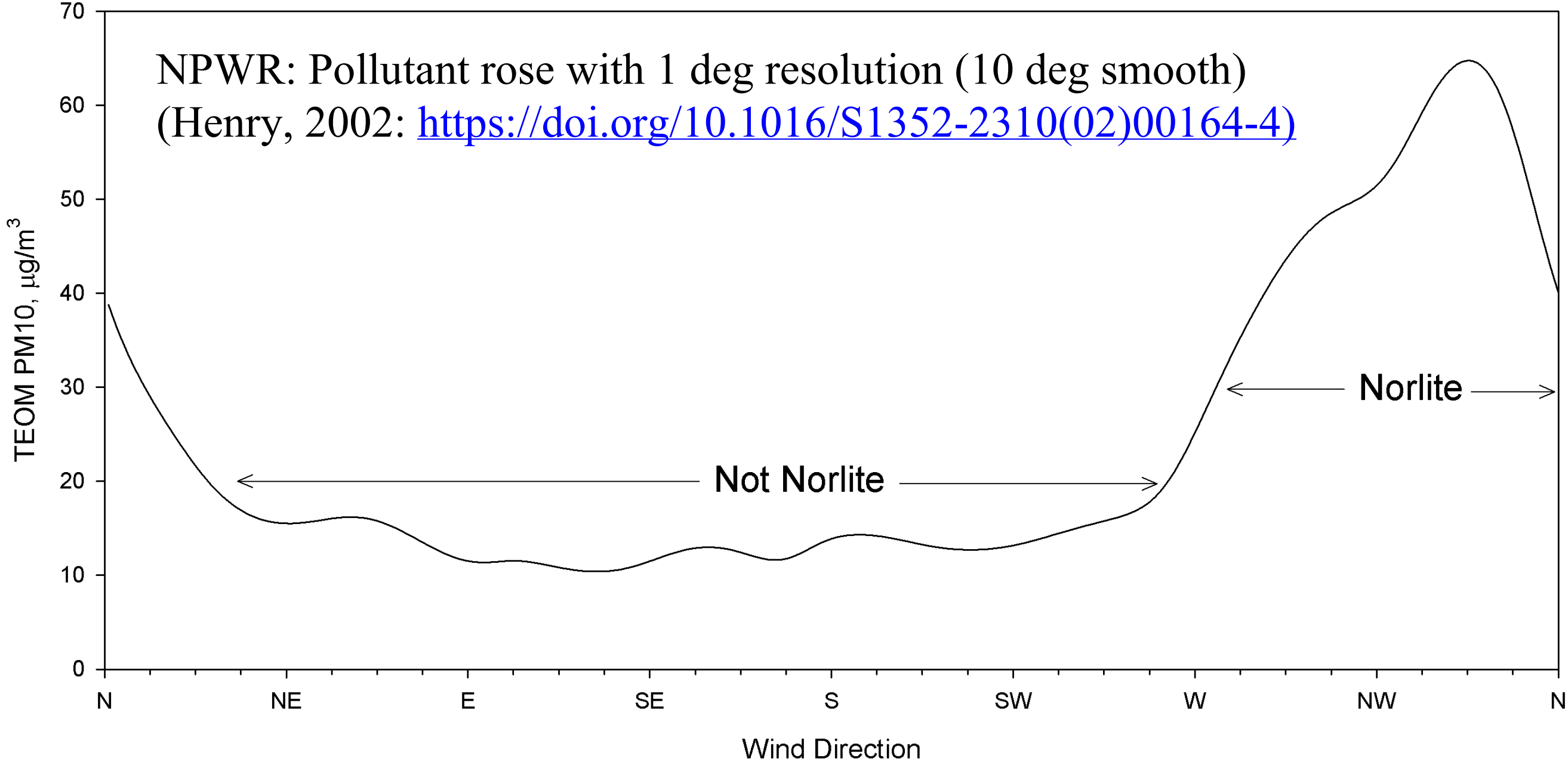


Hourly TEOM PM10, Aug 2021 - Oct 2022



Non-parametric wind regression: average PM10 by wind direction (WS >2 mph)

NPWR: Pollutant rose with 1 deg resolution (10 deg smooth)
(Henry, 2002: [https://doi.org/10.1016/S1352-2310\(02\)00164-4](https://doi.org/10.1016/S1352-2310(02)00164-4))



Same data, polar plot.

Blue circle is monitor.

Red is average PM10 by WD.

Yellow is PM10 scale, $\mu\text{g}/\text{m}^3$.

40 to 60 $\mu\text{g}/\text{m}^3$ from facility.

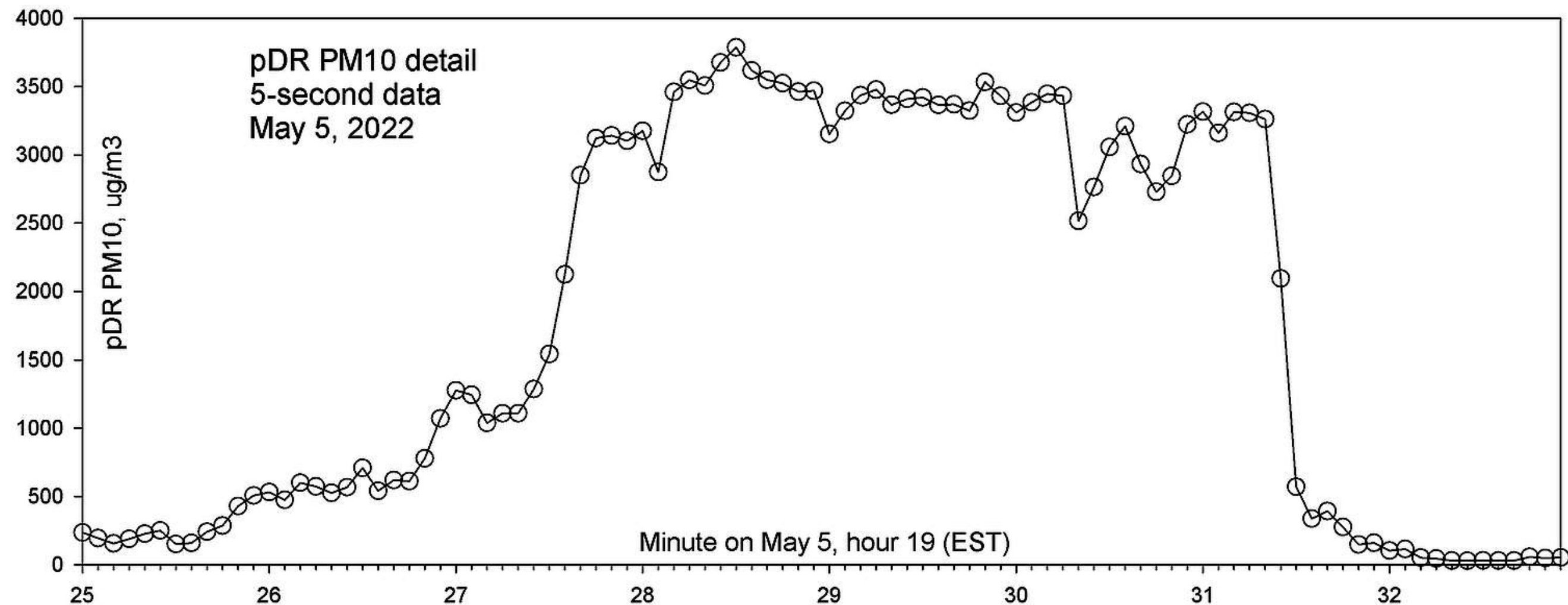
10 to 15 away (background).

User friendly Windows pgm:
available on request
(me or Jay Turner)

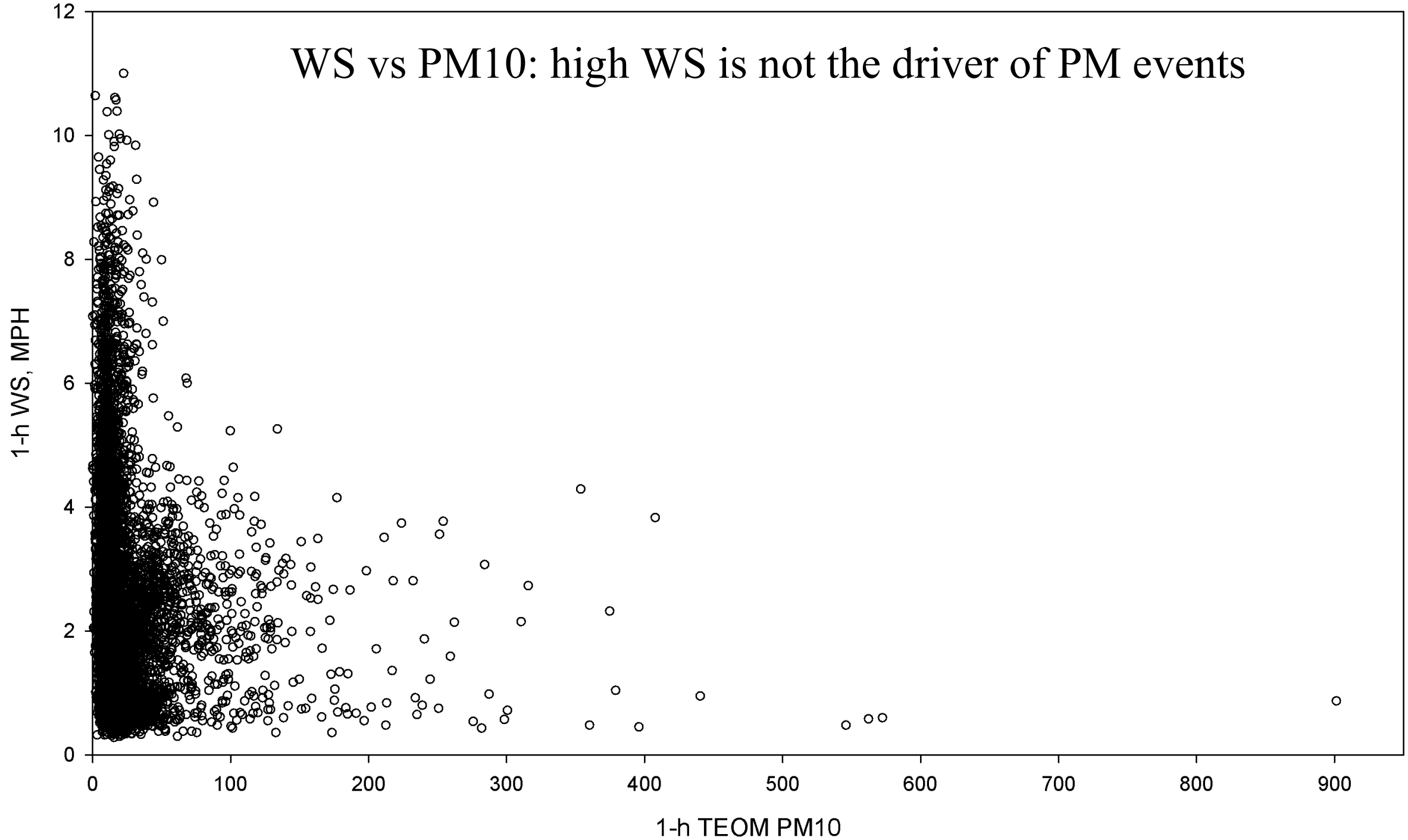


5-second optical data shows evidence of very local source (<1 km)

8 minutes of Thermo pDR1500 PM10 scaled to TEOM PM10, May 5, 2022



WS vs PM10: high WS is not the driver of PM events



WS > 2 mph channels the river valley: 25/205 deg

