
Blowing Dust and Air Quality in Doña Ana County



Air Quality Bureau Mission: To protect the inhabitants and natural beauty of New Mexico by preventing the deterioration of air quality

City of Las Cruces Dust Summit
February 19, 2014

Air Pollutant Categories

- Criteria Pollutants
 - Most common
 - Widespread
 - Hazard to public health and welfare
 - Ambient standards established
 - Hazardous Air Pollutants
 - List of 188 pollutants
 - More severe illness
 - Increased mortality
 - Emitted in smaller amounts
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National Ambient Air Quality Standards (NAAQS) for Criteria Air Pollutants

- Carbon Monoxide
- Lead
- **Particulate Matter**
- Nitrogen Dioxide
- Ozone
- Sulfur Dioxide
- Primary Standards
 - Protect Public Health
- Secondary Standards
 - Protect Public Welfare
 - Visibility
 - Environment
 - Aesthetic

Particulate Matter- PM_{10} & $PM_{2.5}$

- Aerosols-Solids or Liquid Droplets
 - Soil Dust
 - Sea Spray
 - Biological (Pollen, Spores, Viruses, etc.)
 - Smoke
 - Fly Ash
 - Sulfates
 - Nitrates
 - Organic Carbon
 - Elemental Carbon/Soot

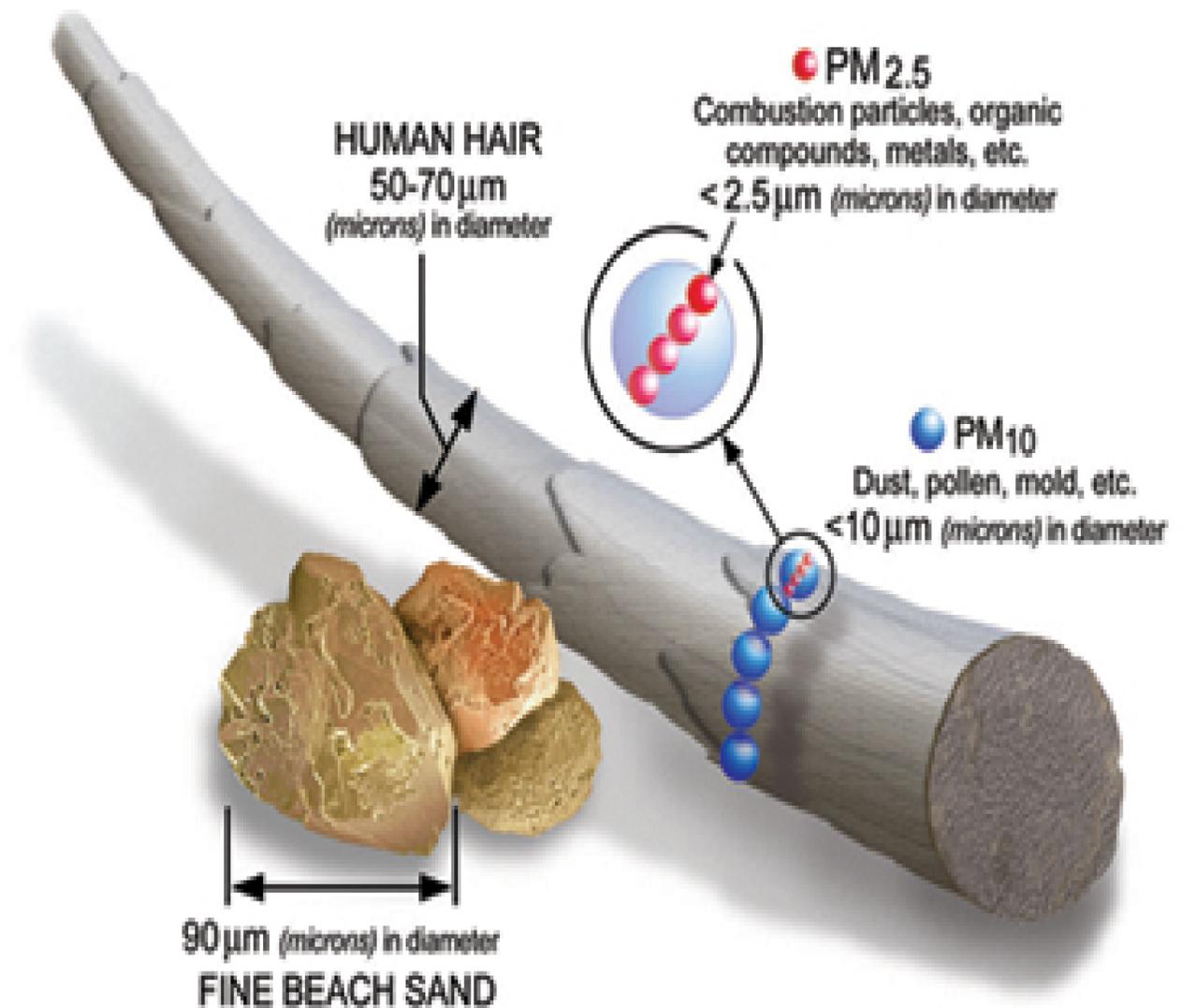


Image courtesy of the U.S. EPA

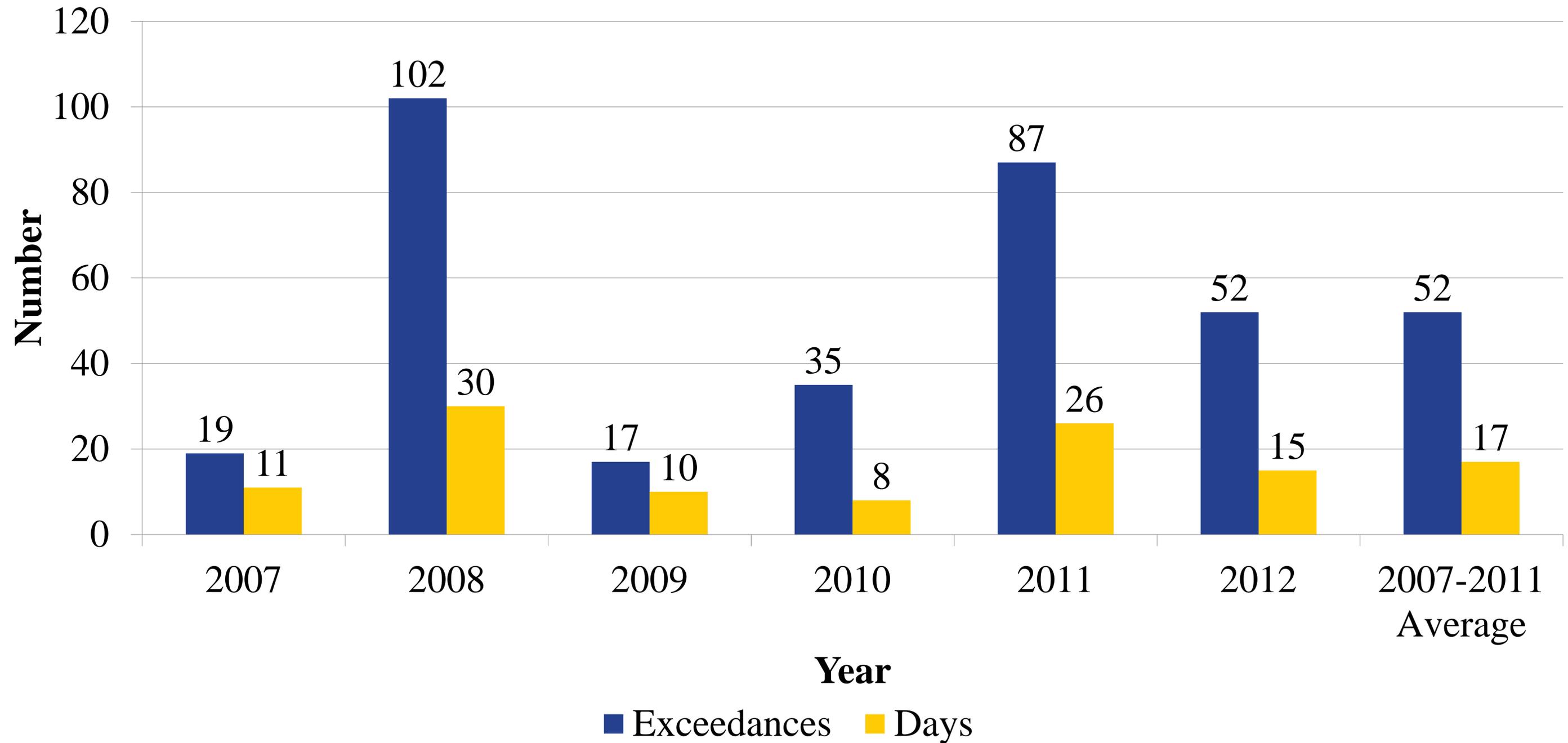
Monitoring for PM

- PM_{10}
 - Eight Sites
 - Seven Continuous
 - Two Filter Based
- $PM_{2.5}$
 - Five Sites
 - Two Filter Based
 - Four Continuous
 - Non-regulatory



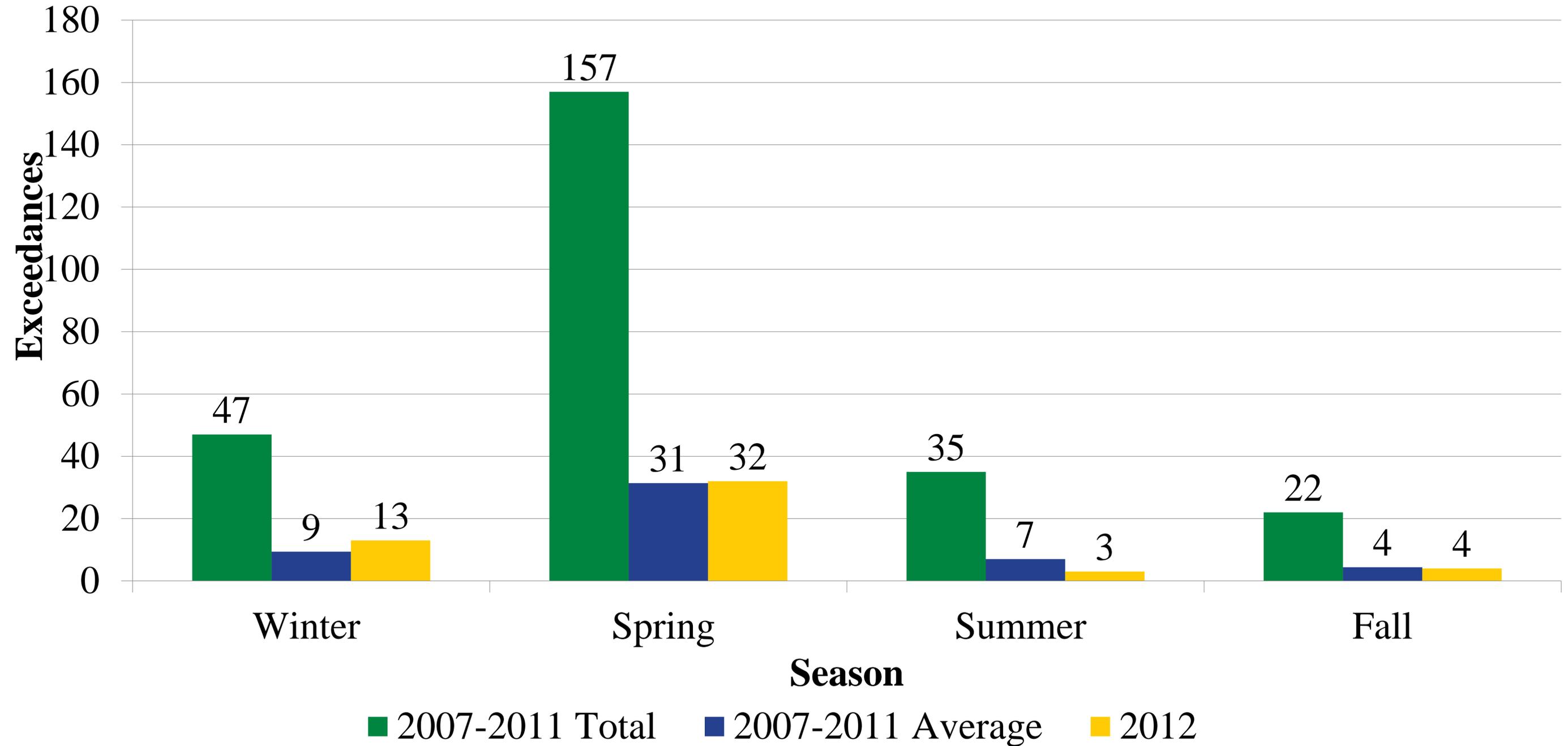
Monitoring for PM-Exceedances

PM₁₀ Exceedances



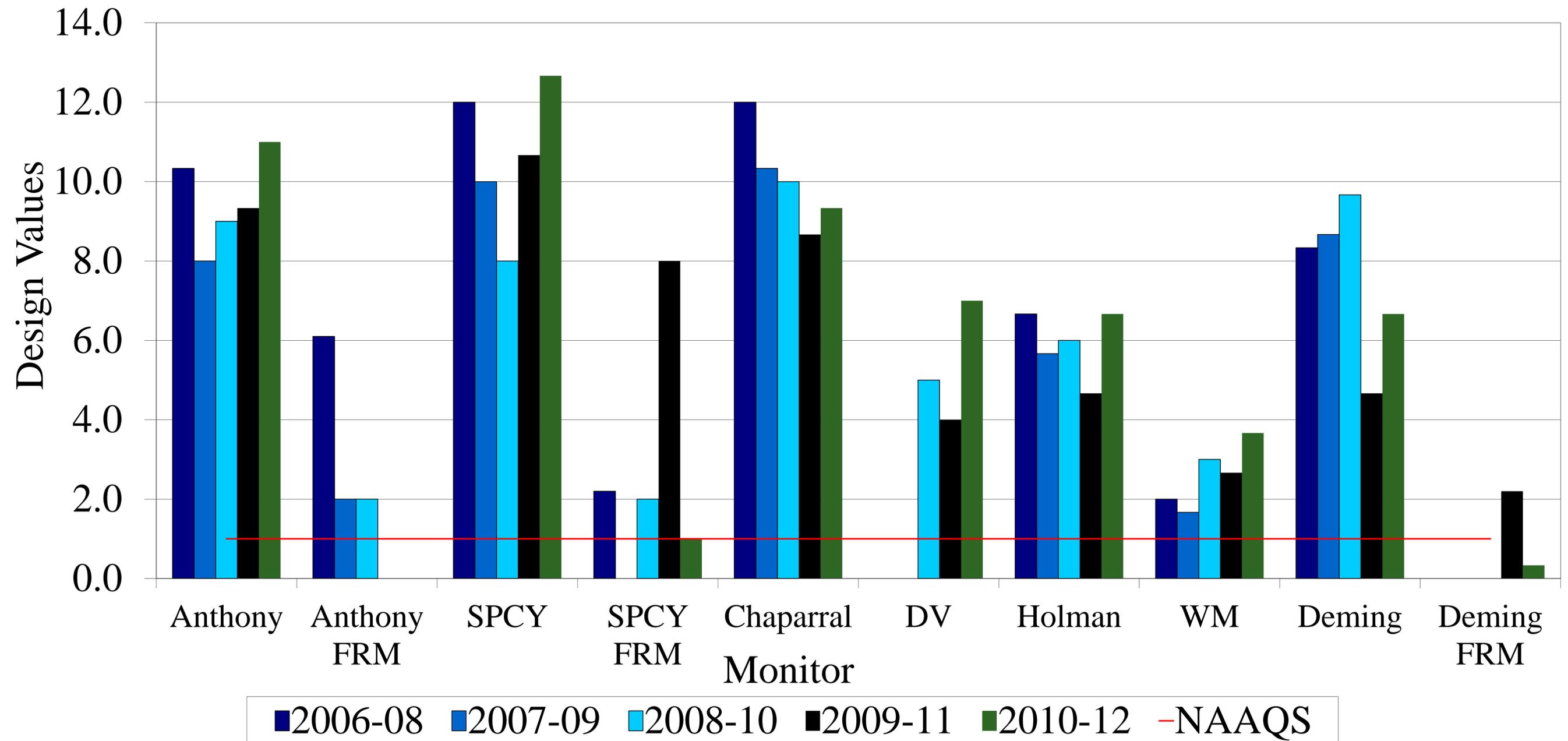
Monitoring for PM-Exceedances

PM₁₀ Exceedances



PM₁₀ Design Values*

PM₁₀ Design Values 2006-12



*Does not account for missed samples

PM_{2.5} Design Values

Averaging Period	24-Hour Design Values		Annual Design Values	
	SPCY	LC	SPCY	LC
2008-2010	34.5	12	11.2	5.4
2009-2011	38.1	12	11.9	5.3
2010-2012	50.4	12	13.5	5.7
No High Wind Events				
2008-2010	32.4	12	11.0	5.4
2009-2011	31.2	12	11.3	5.3
2010-2012	32.6	12	12.0	5.7

PM_{2.5} 24-Hour NAAQS = 35 µg/m³

PM_{2.5} Annual NAAQS = 12 µg/m³

Violating the NAAQS: Non-attainment

- Non-attainment status results in:
 - Elevated controls
 - Increased permitting requirements for new sources
 - Emission inventory
 - Adverse economic impact
 - SIP Development
- Not appropriate in some situations

Exceptional Events Rule (EER)

- “Treatment of Data Influenced by Exceptional Events” (72 FR 13560, 40 CFR Pt. 50.14)
 - All Criteria Pollutants and NAAQS
 - Replaced Natural Events Policy (NEP)
 - No More NEAPs
 - Exceptional Events
 - Spills
 - Emergencies-Human Activity
 - Fireworks
 - Natural Events
 - High Winds & Blowing Dust, Wildfires, Volcanoes, Tornadoes, Earthquakes, etc.
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NM Exceptional Events

- High Winds and Blowing Dust (PM₁₀ & PM_{2.5})
 - Most Frequent
- Wildfires (PM₁₀, PM_{2.5} & O₃)
 - No Demonstrations Submitted
- Tornadoes (PM₁₀ & PM_{2.5})
- Fireworks (PM_{2.5})

EER Administrative Requirements

- Flag Data in AQS
- Submit Demonstrations
 - Events with regulatory consequences
 - 3-years or one year before regulatory decision
- EPA Concurrence
 - Final when regulatory decision made

EER Technical Requirements

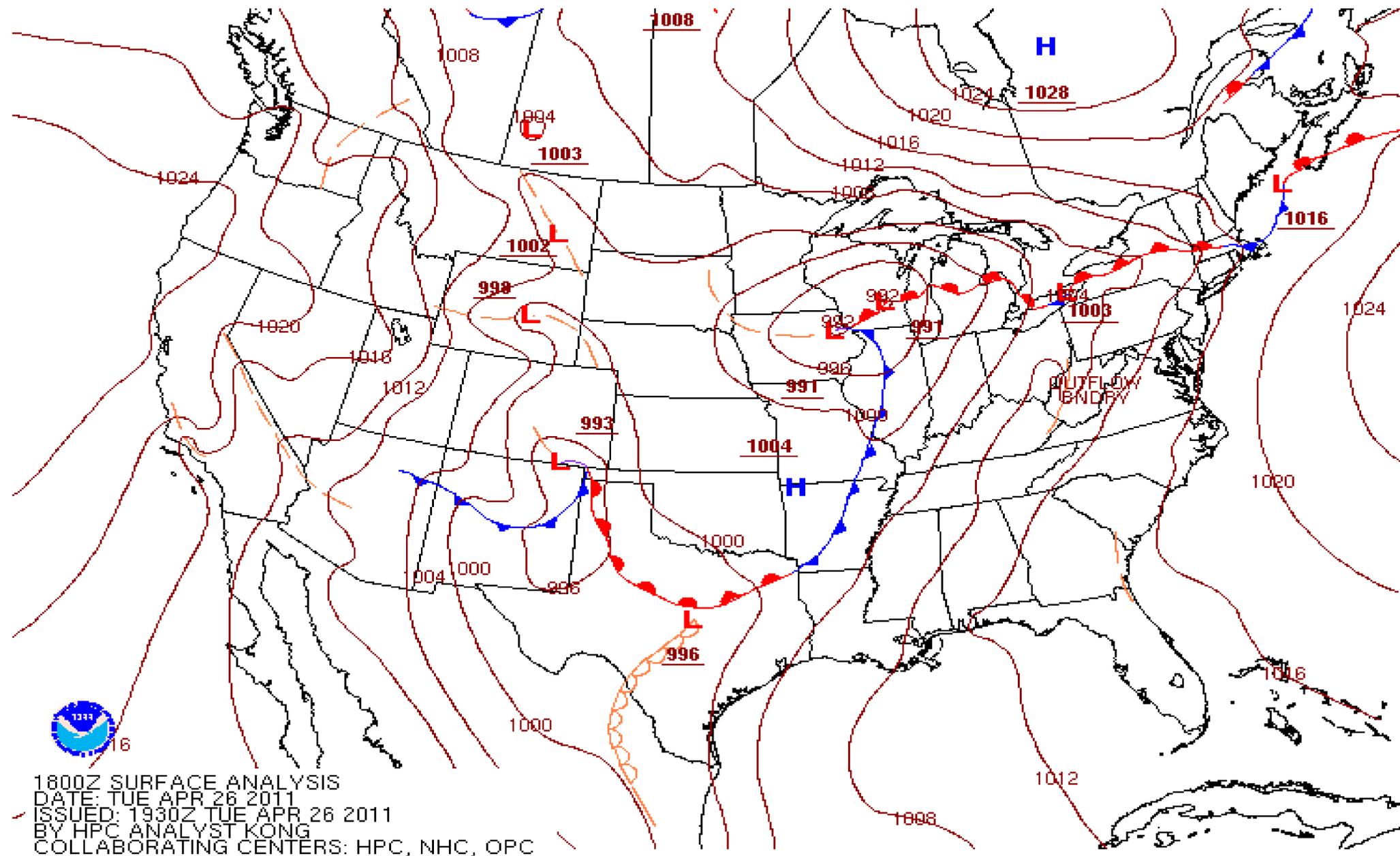
- Not Reasonably Controllable or Preventable (nRCP)
- Clear Causal Relationship (CCR)
- No Exceedance but for Event (NEBF)
- Affects Air Quality (AAQ)
- Human Activity Unlikely to Reoccur or Natural Event (HAURL/Natural Event)
- Concentration in Excess of Normal Historical Fluctuations (HF)

High Wind Blowing Dust

April 29, 2011 Exceptional Event

Monitored Exceedances in Southern New Mexico

Description of Event

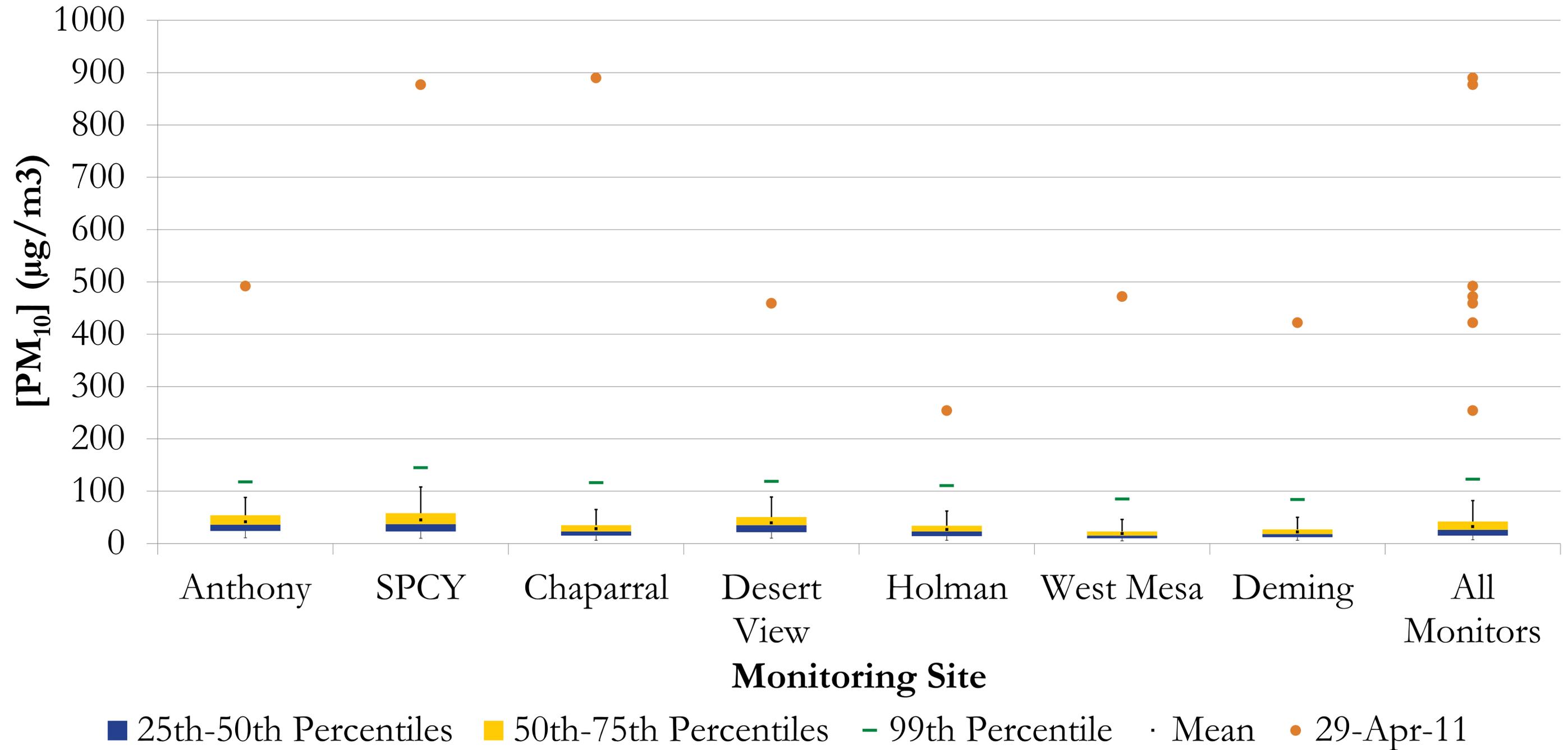


Temporal Extent and Source Areas of Event



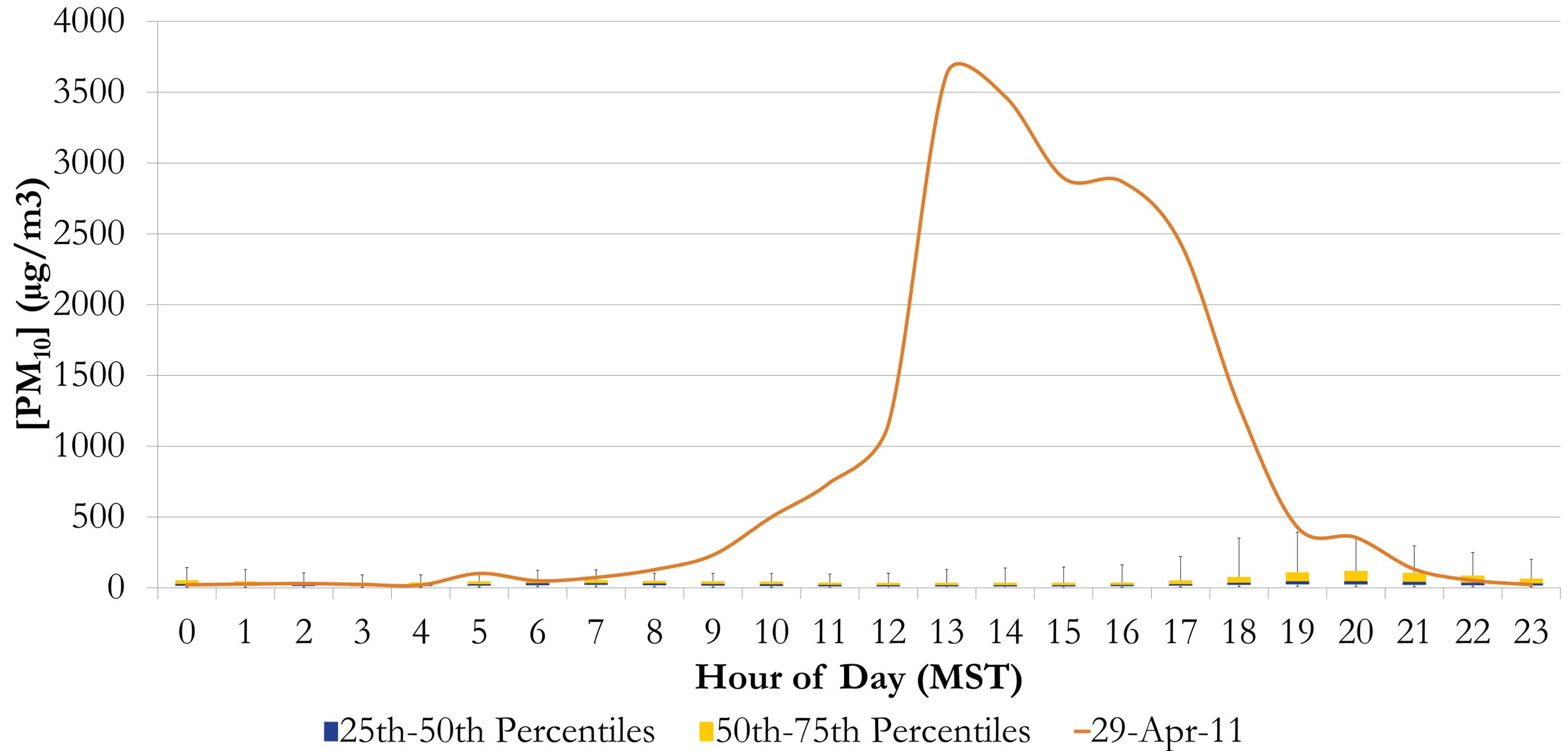
Exceptional Event?

24-Hour Average PM₁₀ Data Distribution



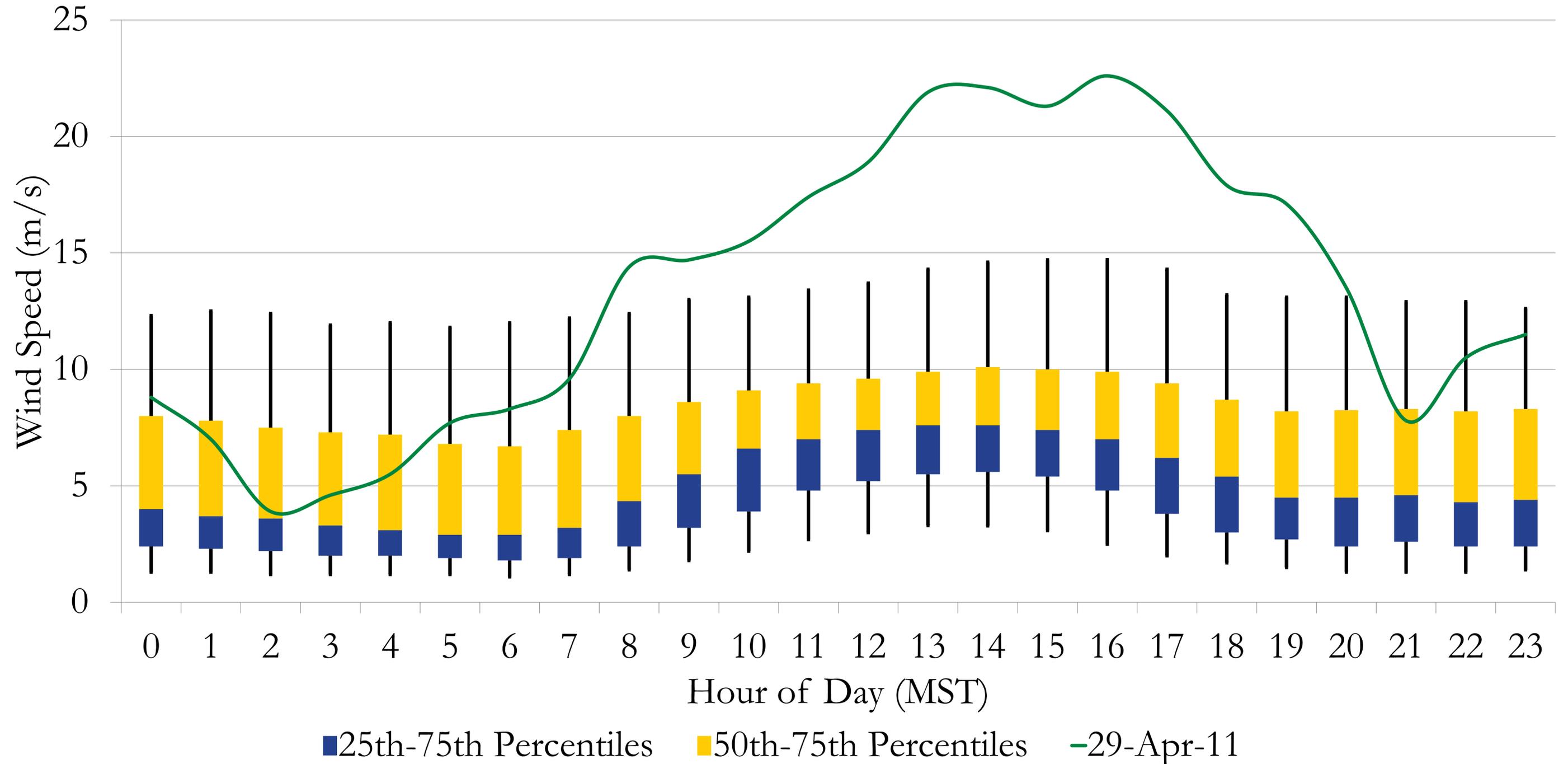
Exceptional Event?

SPCY Hourly PM_{10} Data Distribution



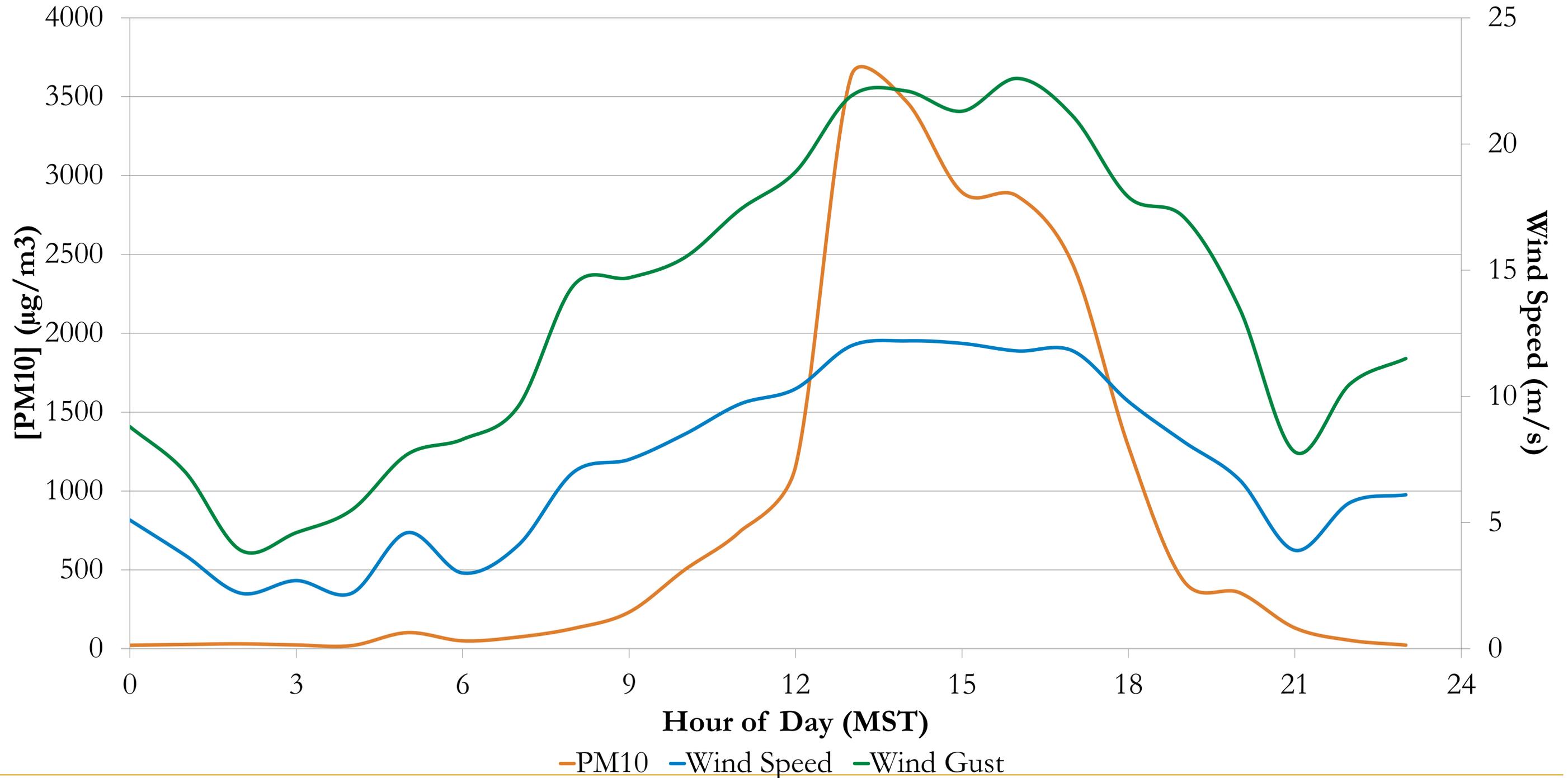
Exceptional Event?

SPCY Hourly Wind Gust Data Distribution

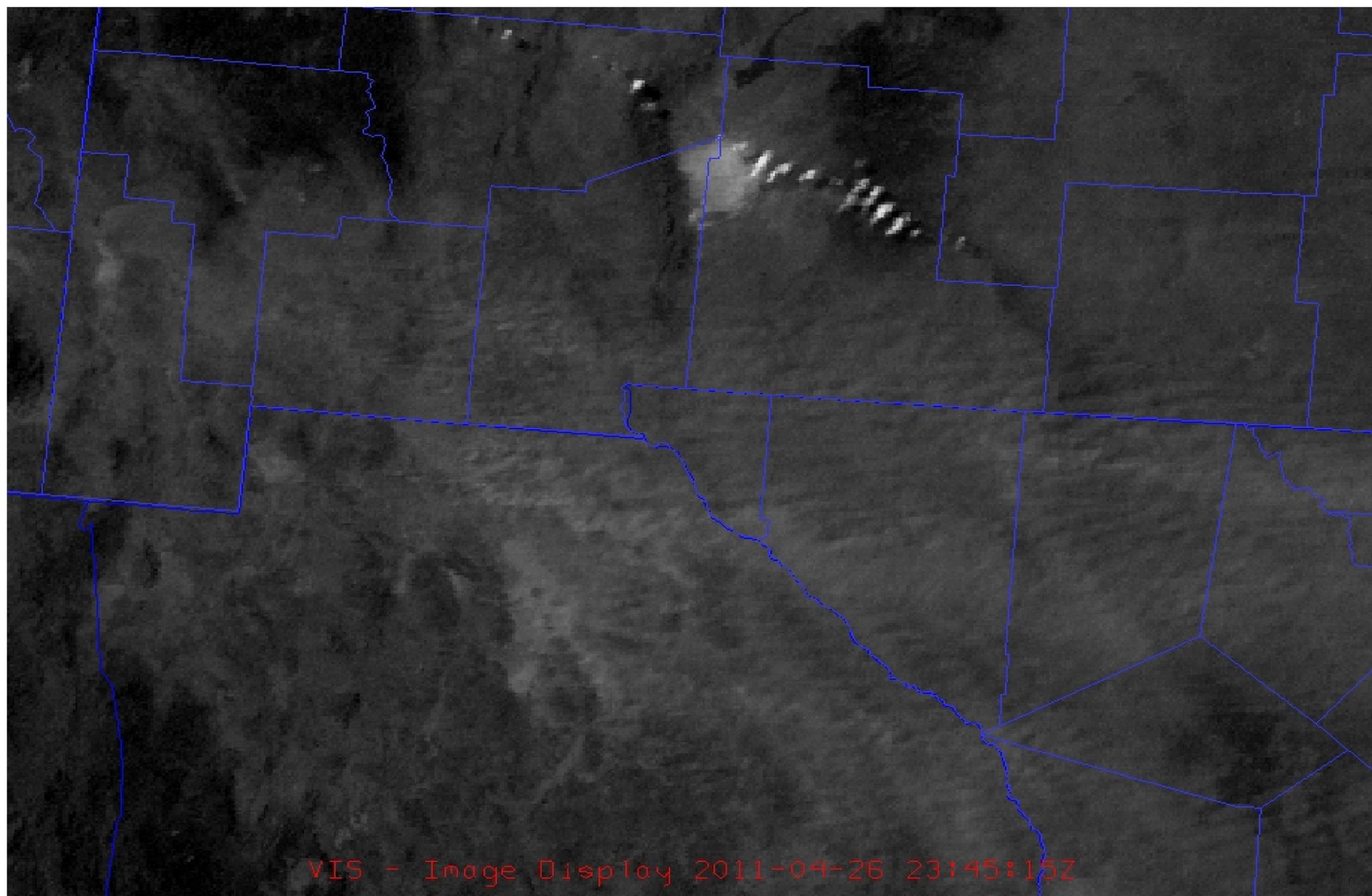


Clear Causal Relationship?

SPCY-April 29, 2011



Natural Event?



No Exceedance but For Event

	Anthony	SPCY	Chaparral	Holman	DV	WM	Deming
Max Hourly	2700	3629	3722	2023	921	1691	2204
2nd highest	1666			1907	896	1450	2195
3rd highest					836	1340	
4th highest					767		
5th highest					708		
24 hour Average*	182	151	155	164	172	187	183

*24 hour Averages calculated using only the hours listed in the table. (e.g. SPCY 3629/24 = 151)

Conclusions

- High wind blowing dust event caused exceedances of the PM_{10} NAAQS (CCR, AAQ, Natural Event)
- Event was not reasonably preventable or controllable (nRCP)
- Recorded concentrations were well above background levels (HF)
- The exceedances would not have occurred but for the event (NEBF)

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please visit the NMED-AQB website at:

www.nmenv.state.nm.us/aqb/
