

Exceptional Events from the Ground Up: Case Study of Cheyenne NCore During 2020

Leif O. Paulson, Ph.D.

Wyoming DEQ-Air Quality Division
Air Pollution Monitoring Program



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Overview

1. Wyoming DEQ-AQD's Monitoring Responsibilities
2. A Return to 2020
3. A Visit to Cheyenne NCore
4. An Examination of Cheyenne NCore's PM_{2.5} Data
5. The Wyoming DEQ-AQD's Use of Satellite Data
6. A Finished Exceptional Events Demonstration



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Wyoming DEQ-AQD's Monitoring Network Objectives

1. Determine the representative concentrations in areas of high population density.
2. Determine the impact on ambient air quality from significant sources.
3. Determine the general background concentration levels.
4. Determine the extent of regional pollutant transport among populated areas and in rural and remote areas.
5. Determine welfare-related impacts in support of secondary standards.
6. Determine the highest concentration expected to occur in the area covered by the network.
7. Research pollutant and meteorological behaviors in areas of concern.

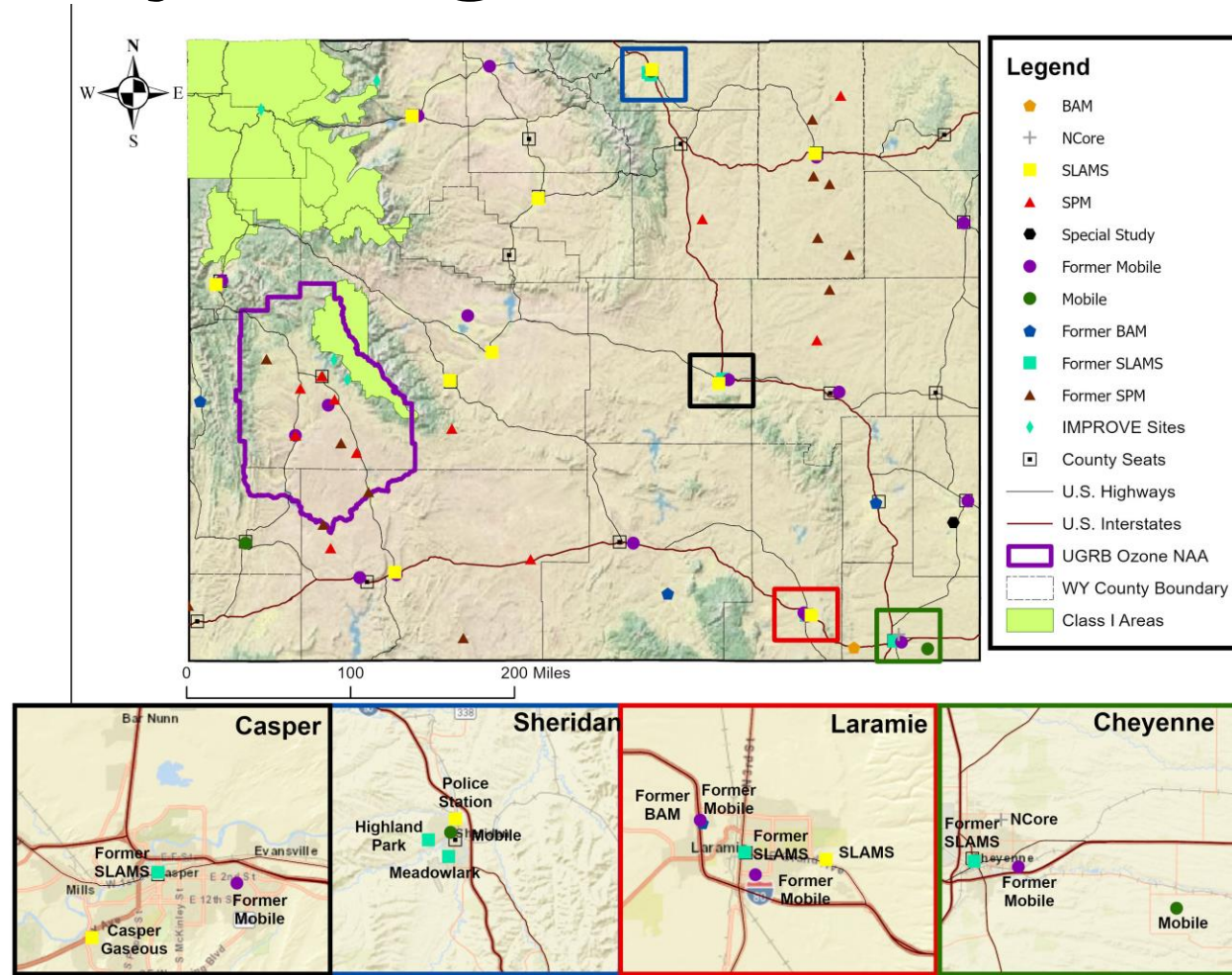


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Where Wyoming DEQ-AQD Has Monitored

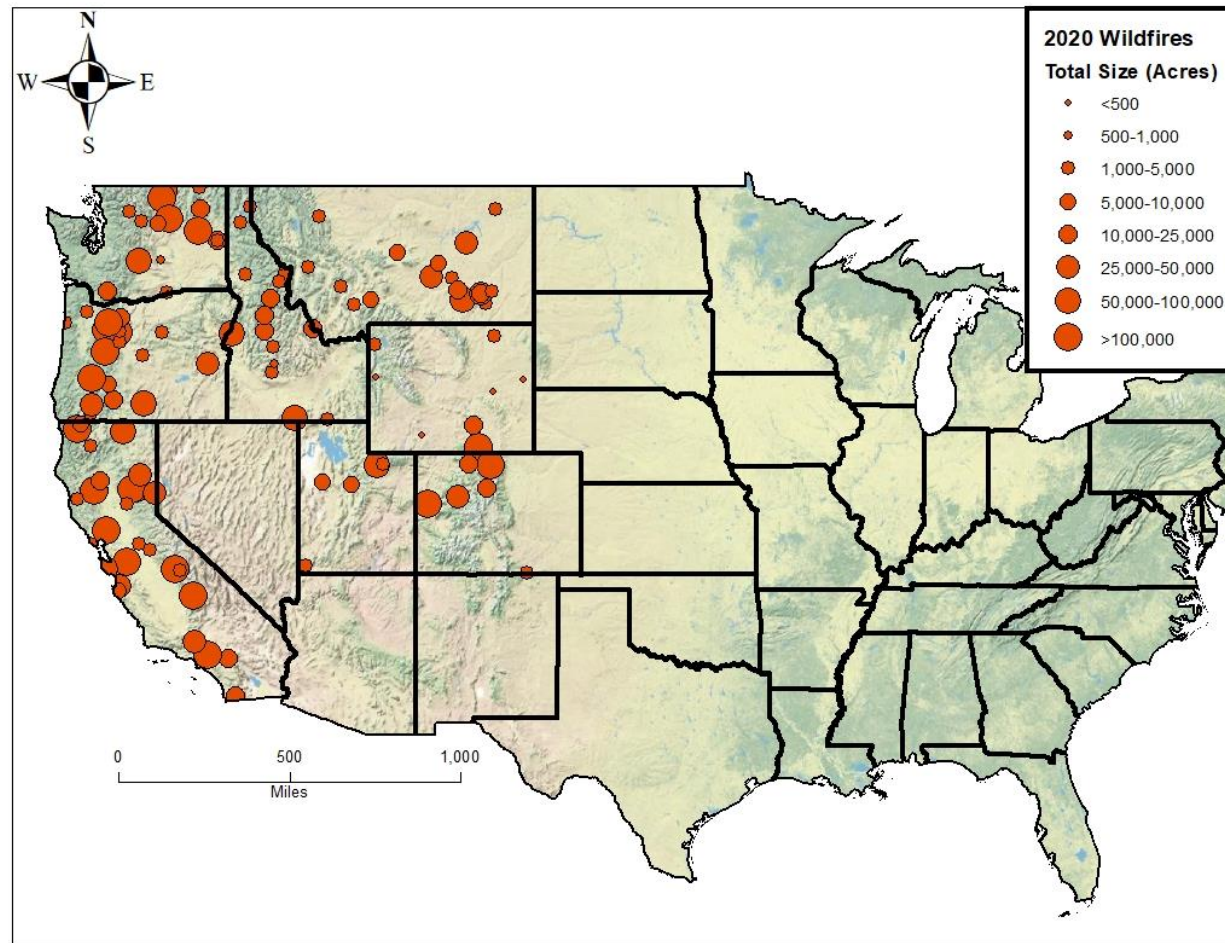


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2020 Fire Events

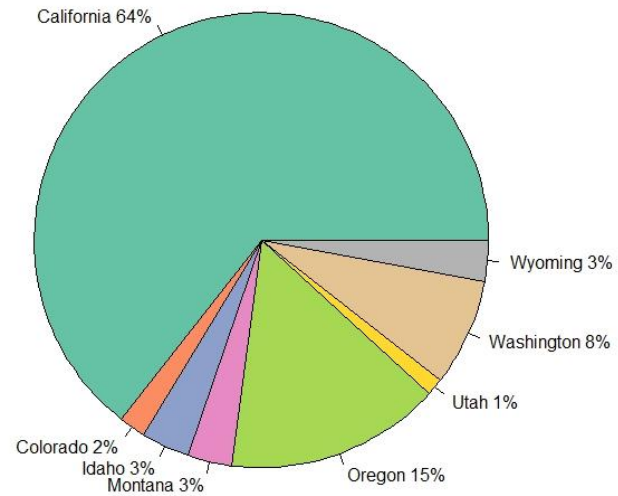


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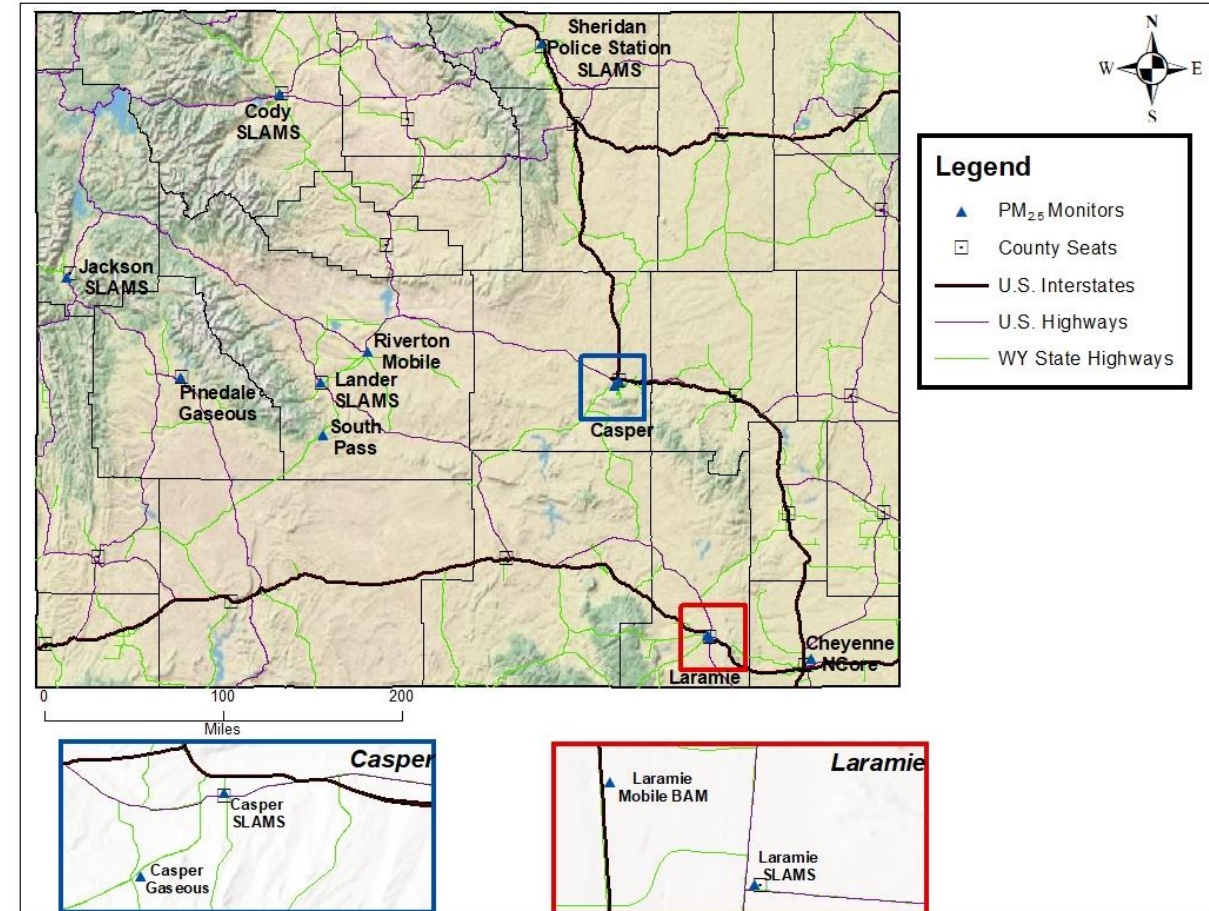
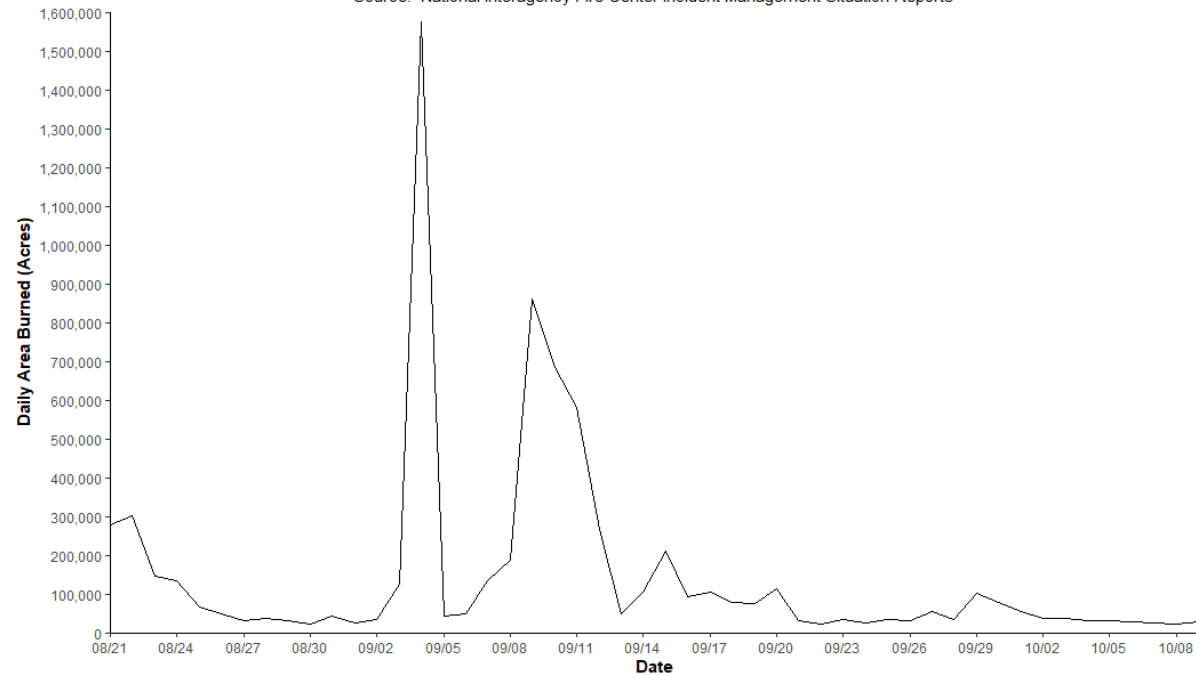
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Pie Chart of States with Percentage of Acres Burned During the 2020 Event Period



Daily Area Burned from Wildfires during the 2020 Event Period

Source: National Interagency Fire Center Incident Management Situation Reports



- Thirty-seven (37) PM_{2.5} exceedances
- Two (2) event periods
 - August 21-September 18 (western & central WY)
 - September 25-October 9 (southeastern WY)

Welcome to Cheyenne NCore

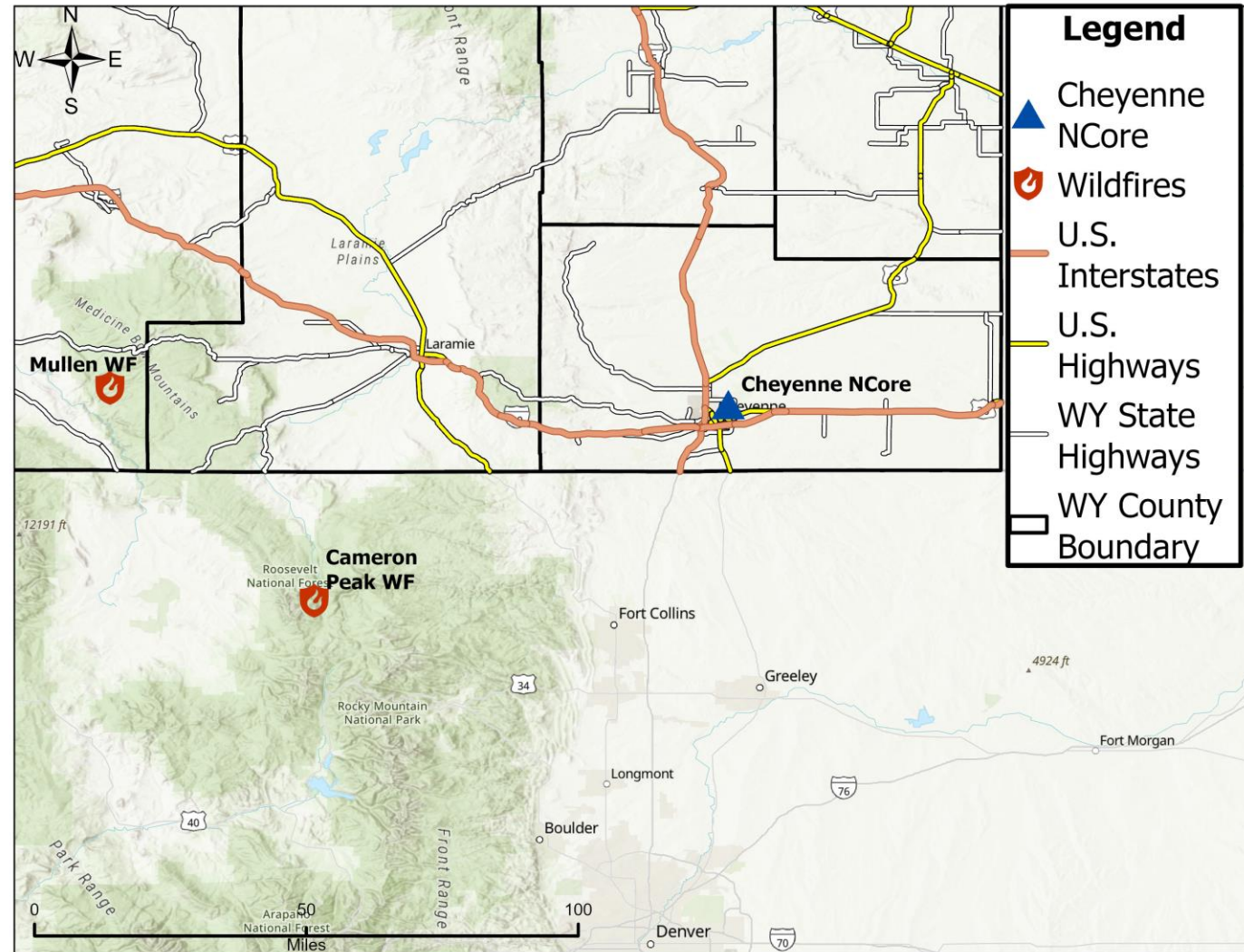


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What Affected Cheyenne NCore



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Cameron Peak and Mullen Fires

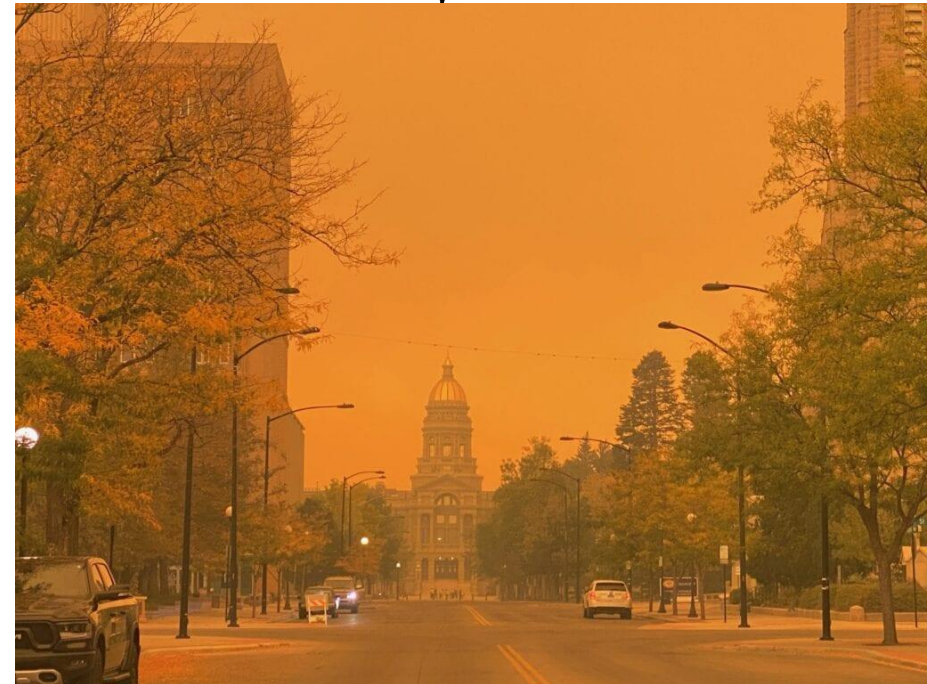
Cameron Peak

- Area Burned: 208,913 acres
- Dates: August 13, 2020-December 2, 2020



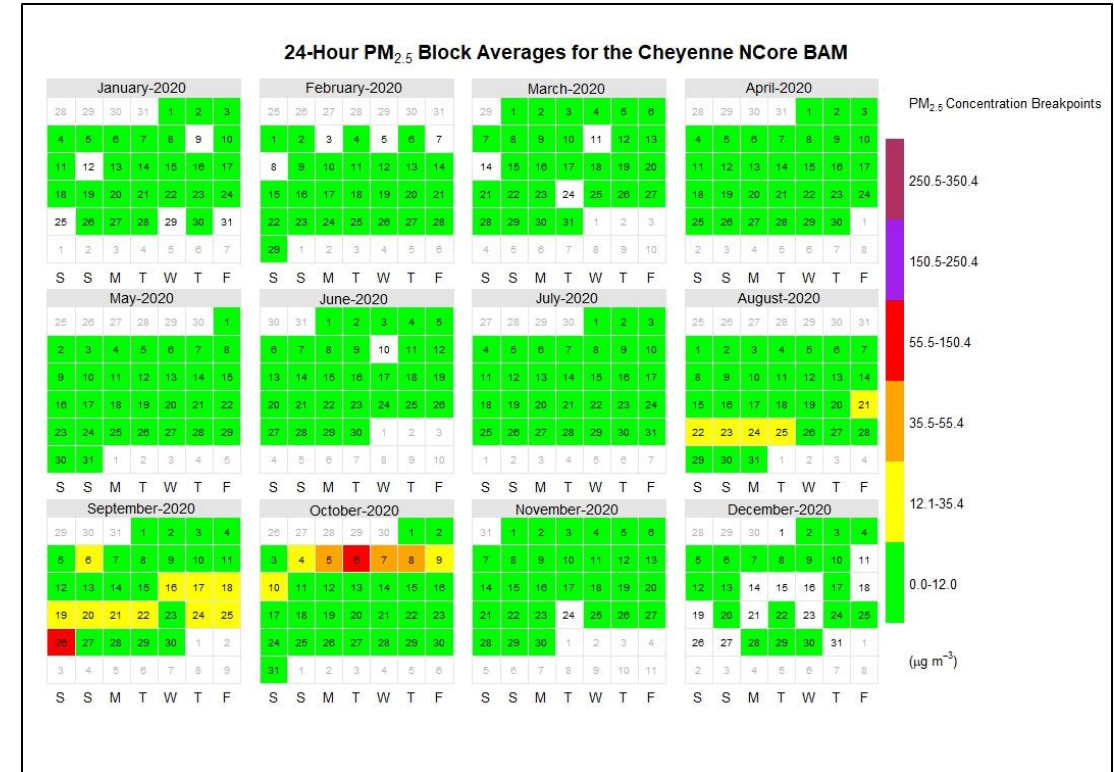
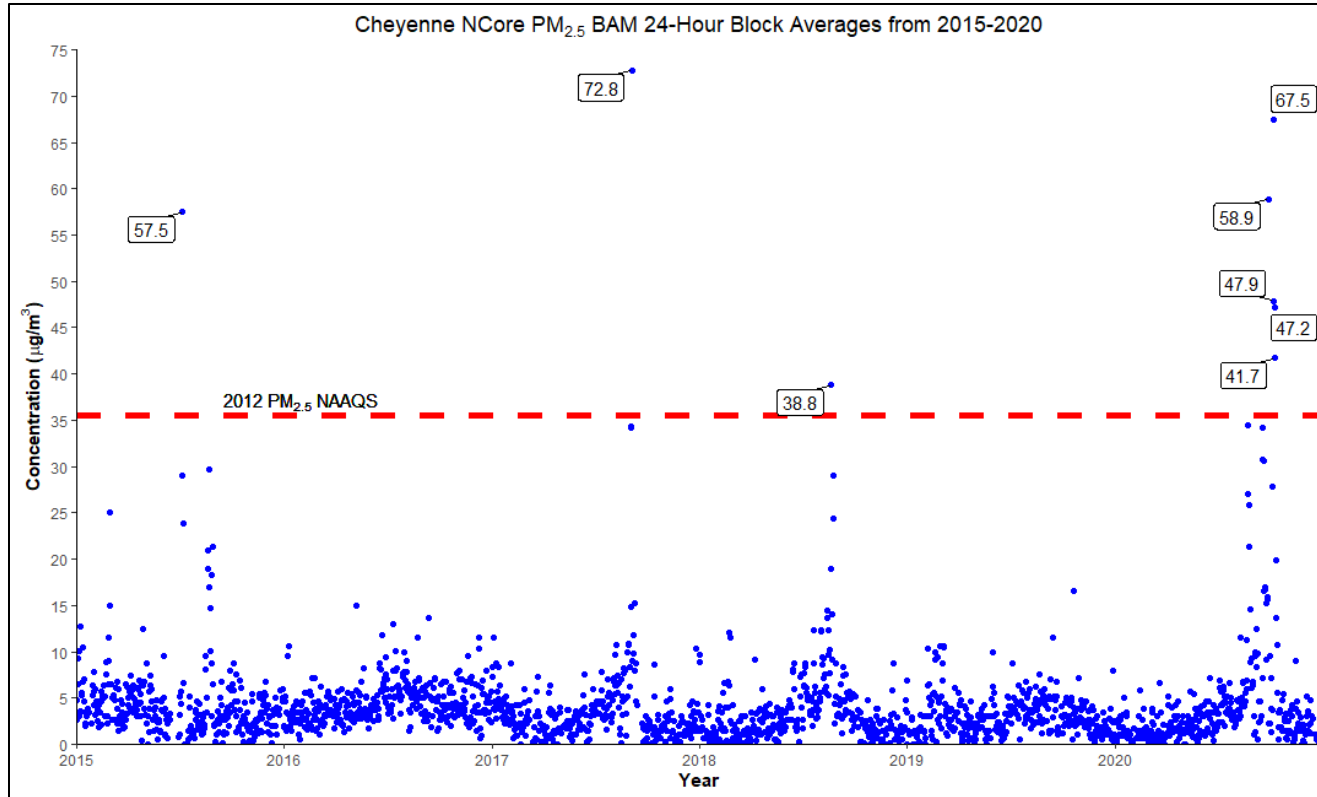
Mullen

- Area Burned: 176,878 acres
- Dates: September 17, 2020-December 10, 2020



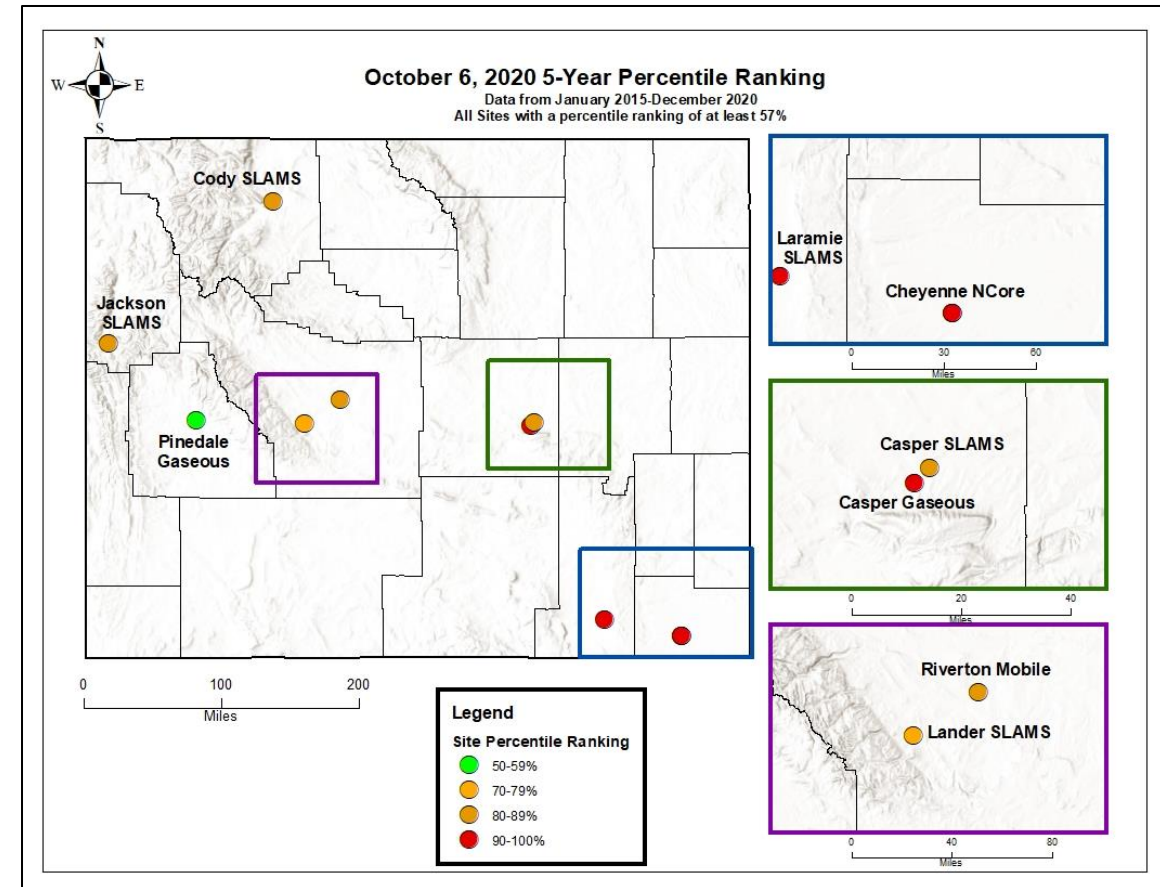
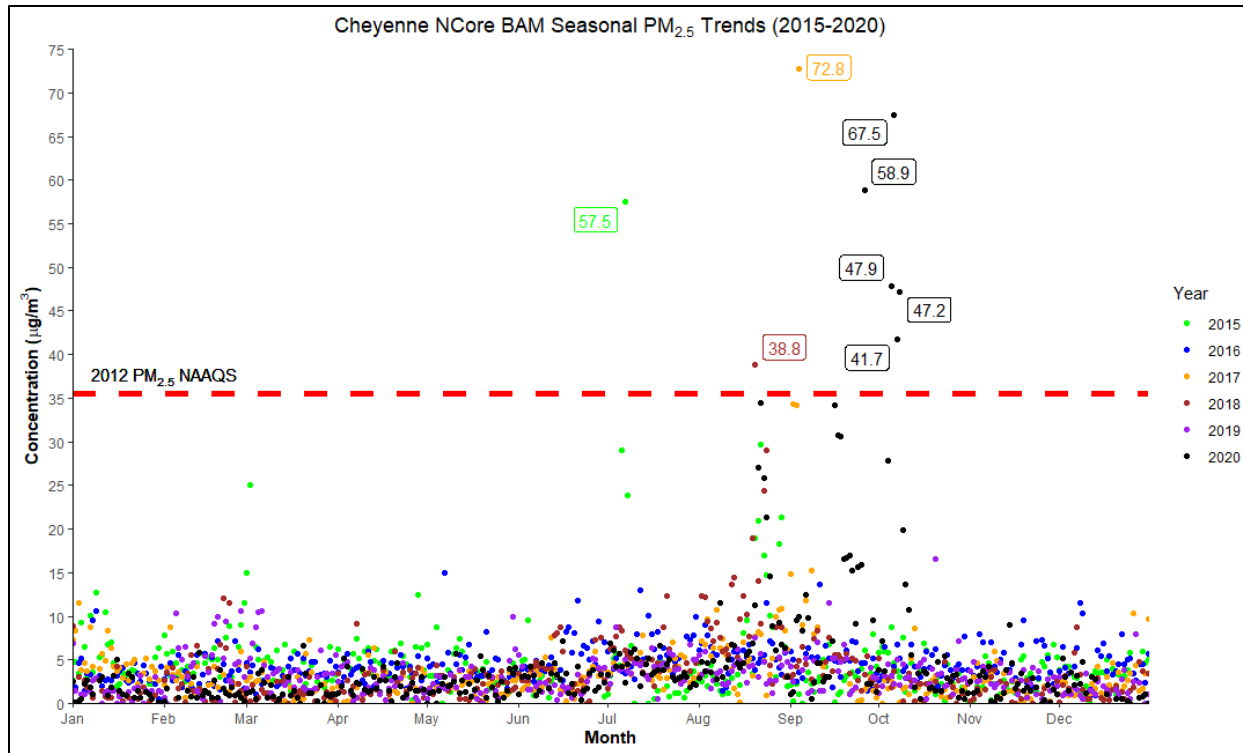
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Clear Causal Relationship



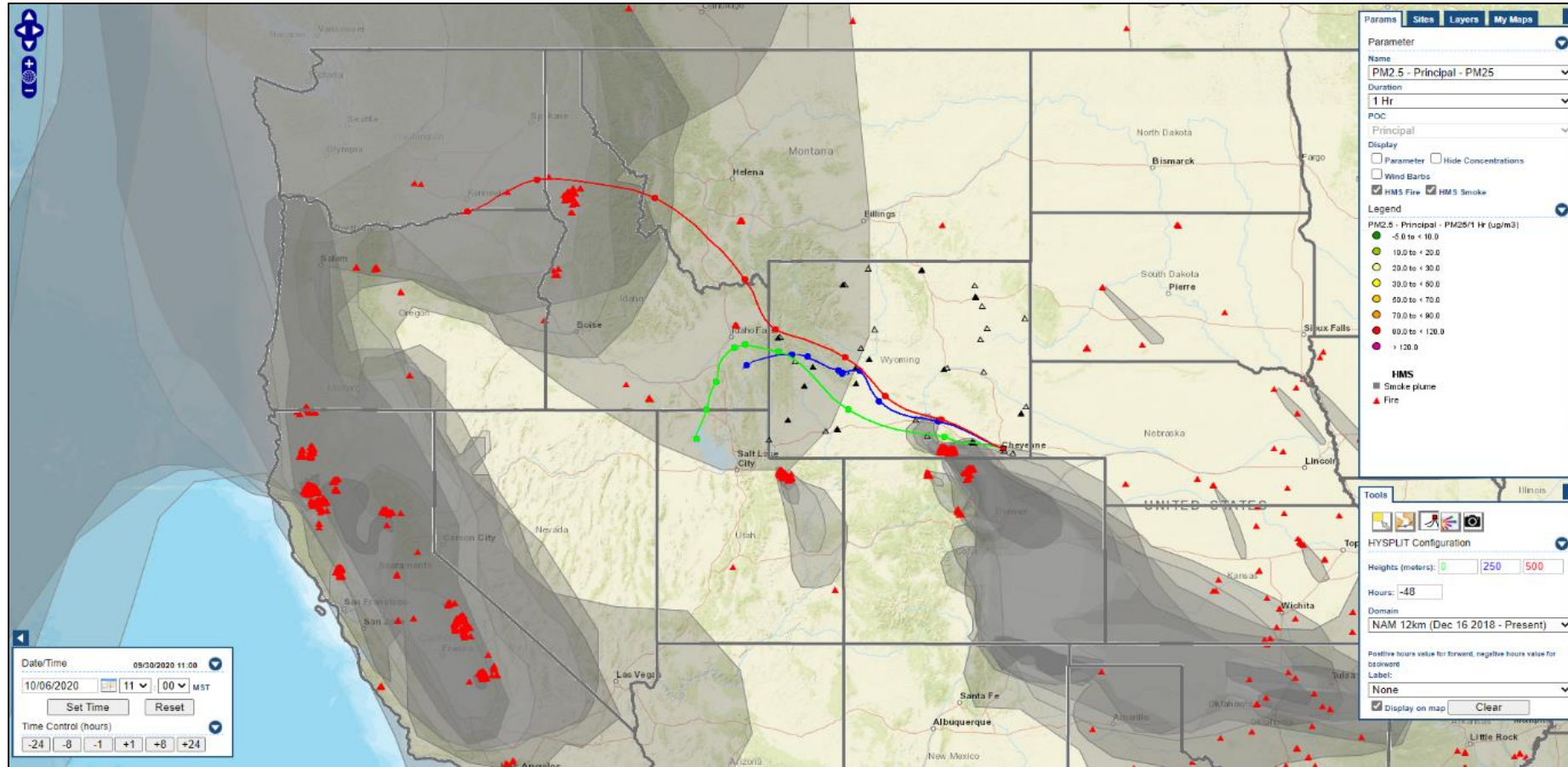
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Clear Causal Relationship



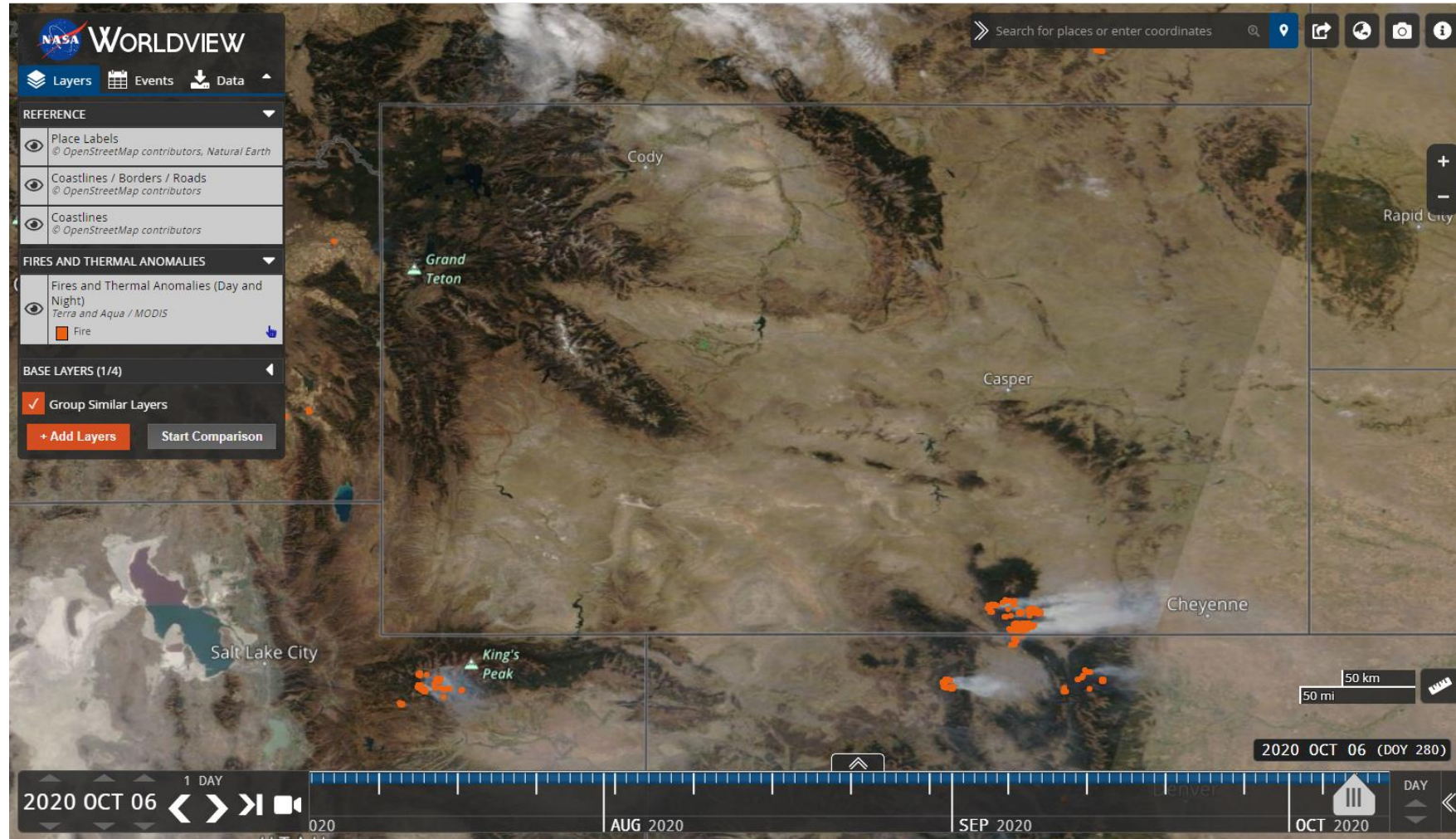
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Our Use of Satellite Data



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Summary

Takeaways & Lessons Learned

- Demonstrations require time and resources
- Capture information during the event
- Consider new ideas to present or communicate information (R, ArcGis, AirNow-Tech, etc.)
- Use expertise and other resources when available (Meteorologists, Satellite Data, etc.)

Resources

- WyVisNet
(<https://www.wyvisnet.com>)
- Exceptional Event Demonstration
(<https://deq.wyoming.gov/aqd/monitoring/>)
- Annual Monitoring Network Plan
(<https://deq.wyoming.gov/aqd/monitoring/>)
- NCore Monitoring Network
(<https://www.epa.gov/amtic/ncore-monitoring-network>)



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Questions and Discussion



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