

LADCO Midwest Wood Smoke Study: Grand Rapids Case Study

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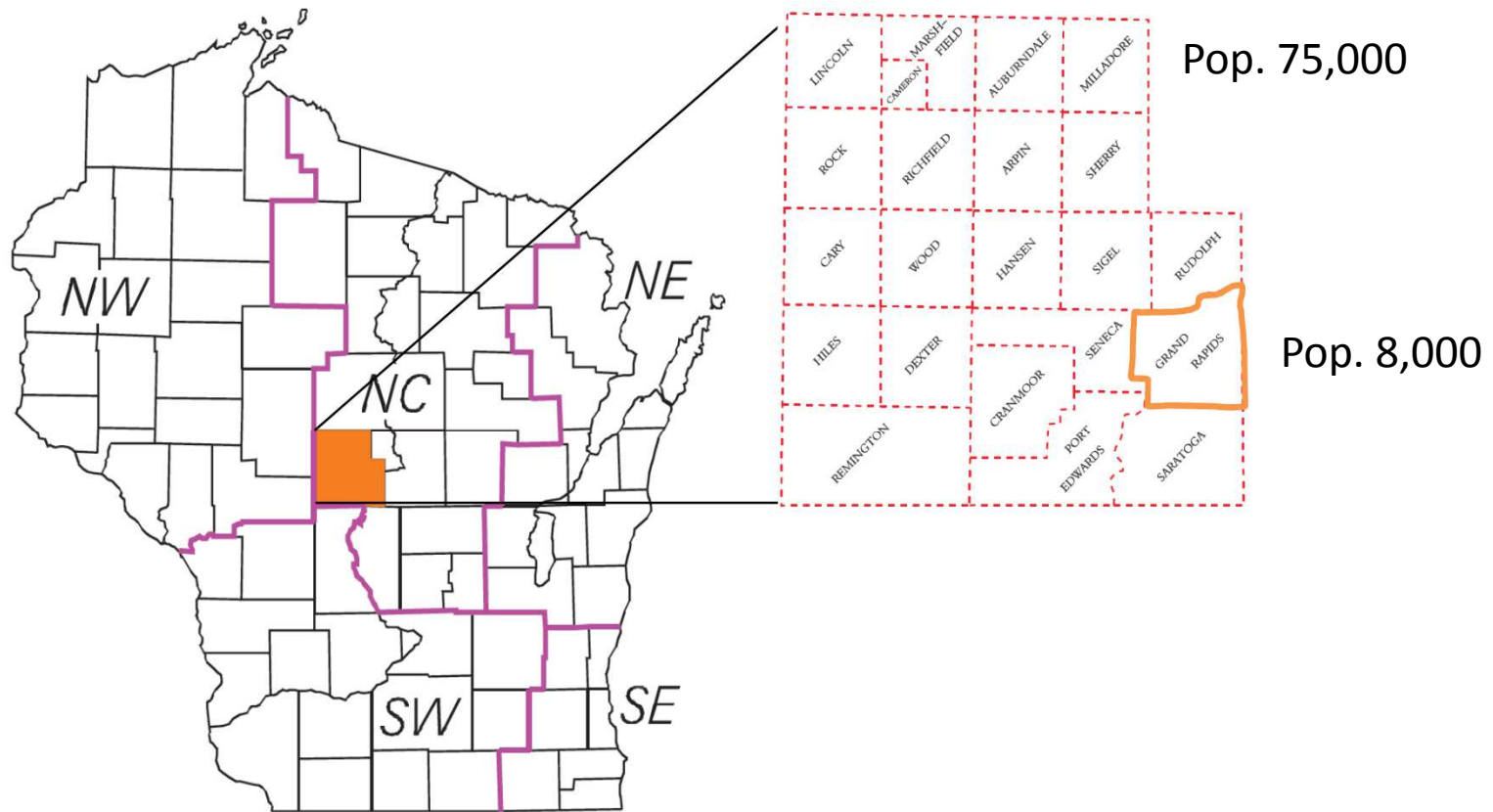
Purpose

Non-regulatory study intended to provide the citizens of the town of Grand Rapids with information regarding:

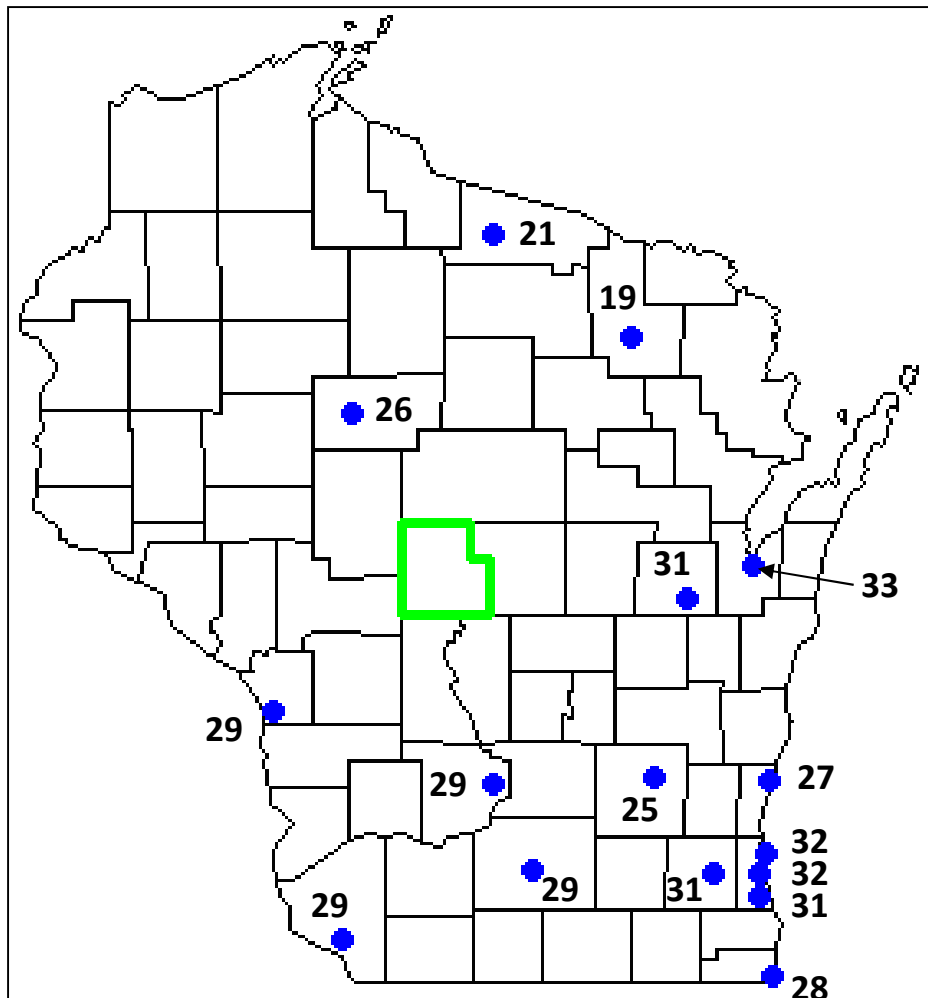
- Winter-time air quality levels in the community
- The role of wood smoke in affecting local air quality



Wood County/ Grand Rapids, WI



PM_{2.5} Concentrations in Wisconsin



2009 – 2011 Monitoring Data

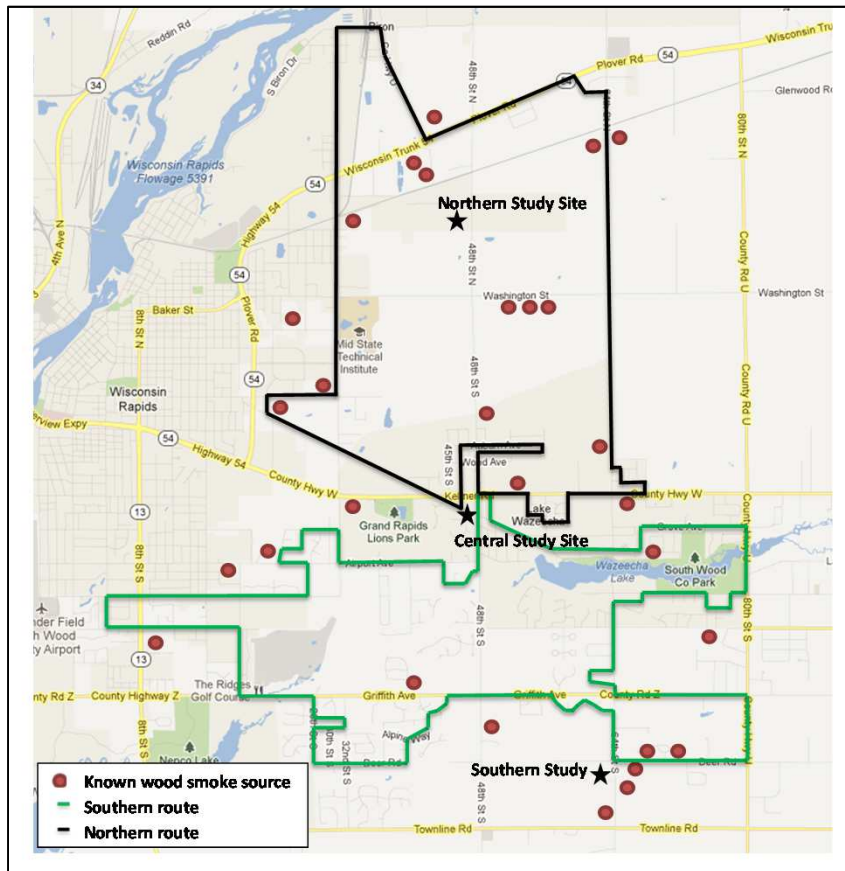
Units: micrograms per cubic meter
(μg/m³)

● WDNR PM_{2.5} Monitoring Location



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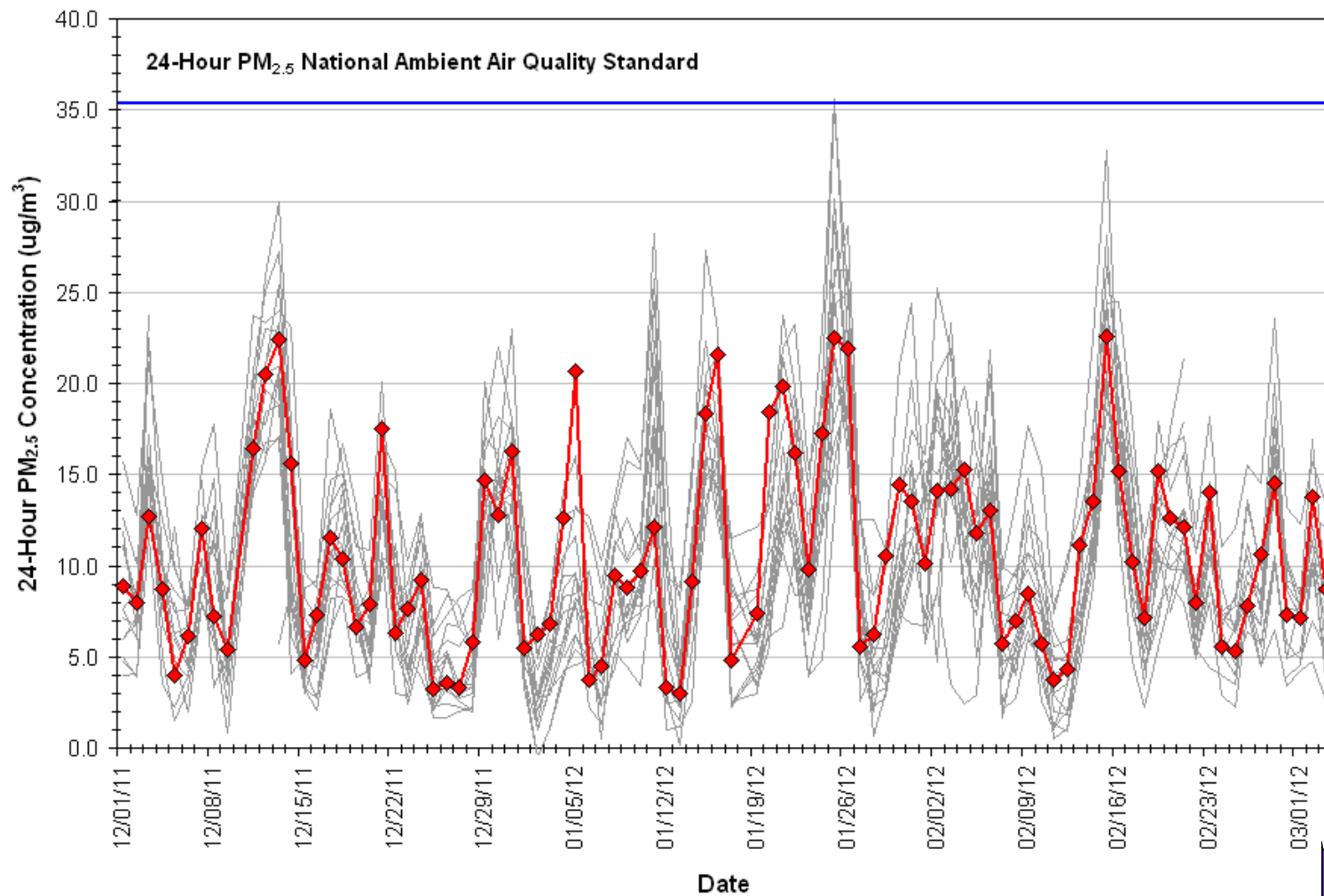
Study Details



- 3 Fixed sites
 - Central site FRM $PM_{2.5}$ and organic speciation
 - Remote sites real-time $PM_{2.5}$
 - Wind speed/direction
- Mobile $PM_{2.5}$ Monitoring



Statewide 24-Hour PM_{2.5} Concentrations

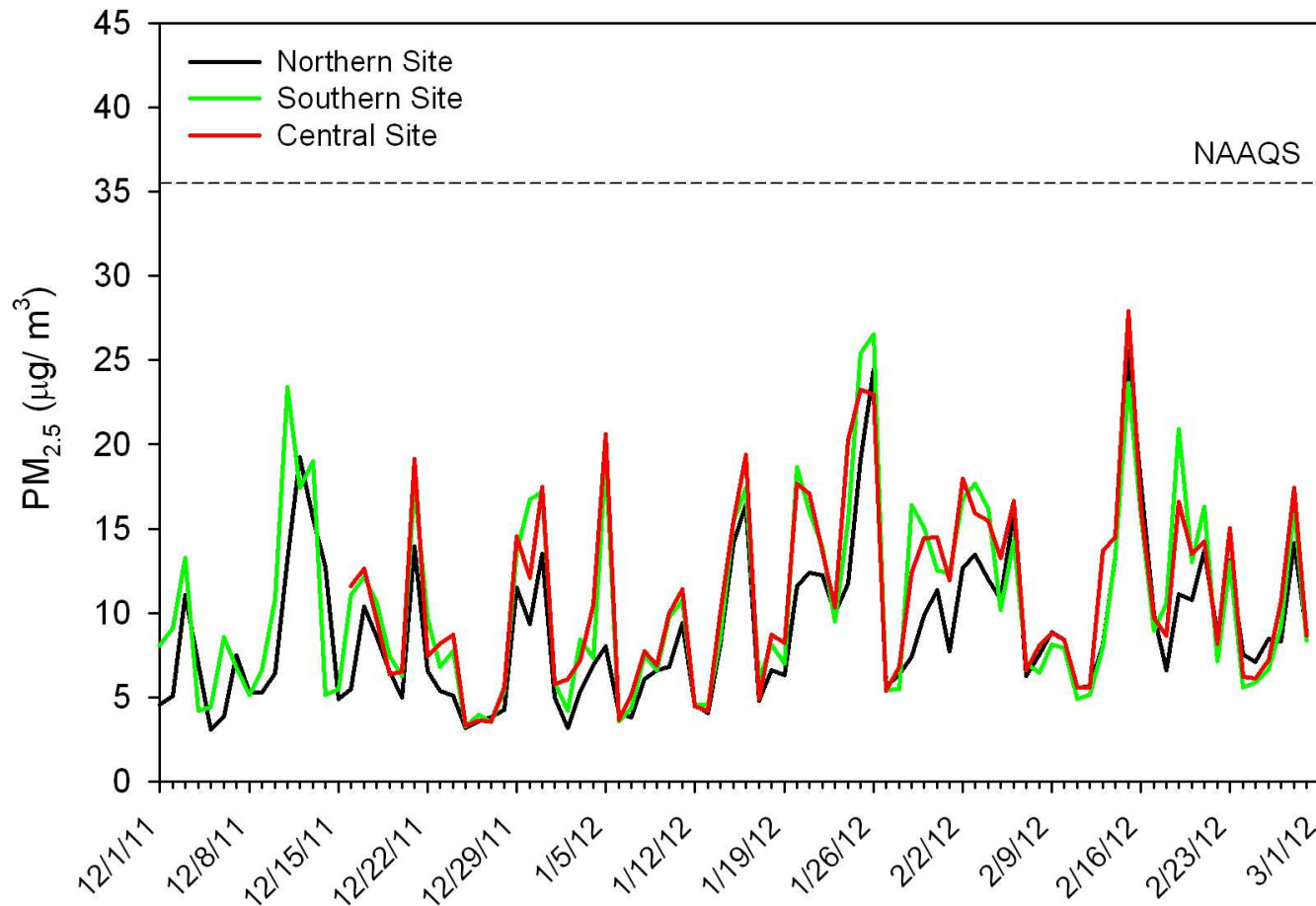


24-hour data



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24-Hour PM_{2.5} Concentrations Grand Rapids Study Sites

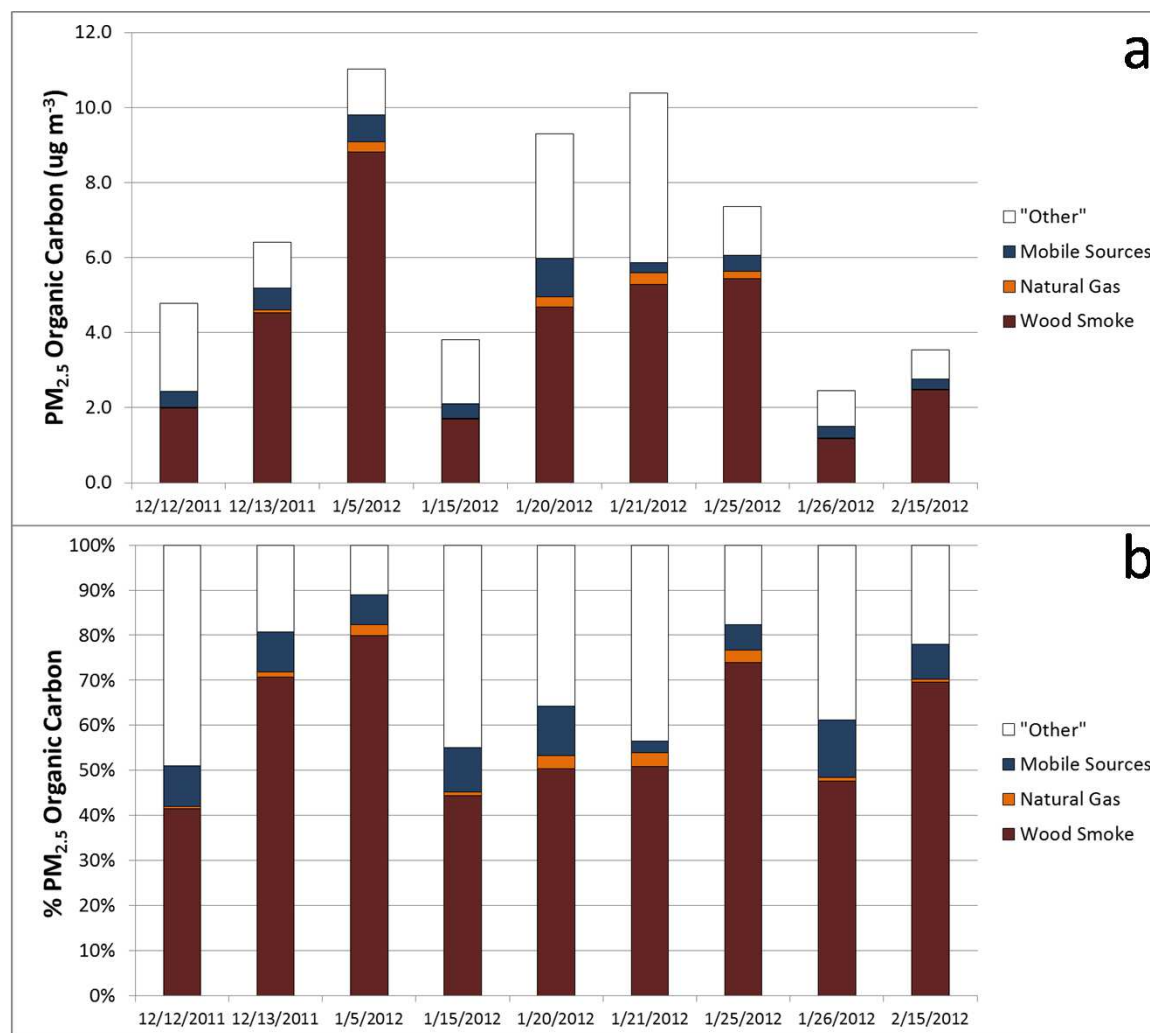


24-hour data



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Organics Source Apportionment

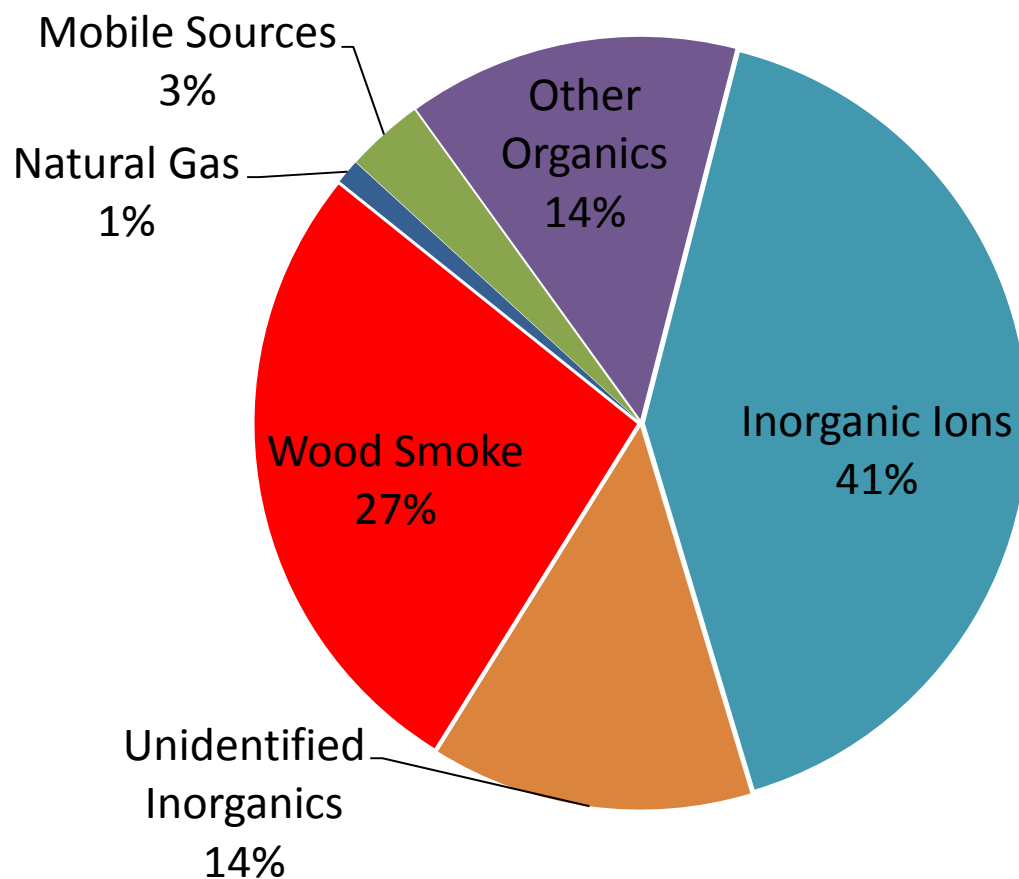


24-hour data



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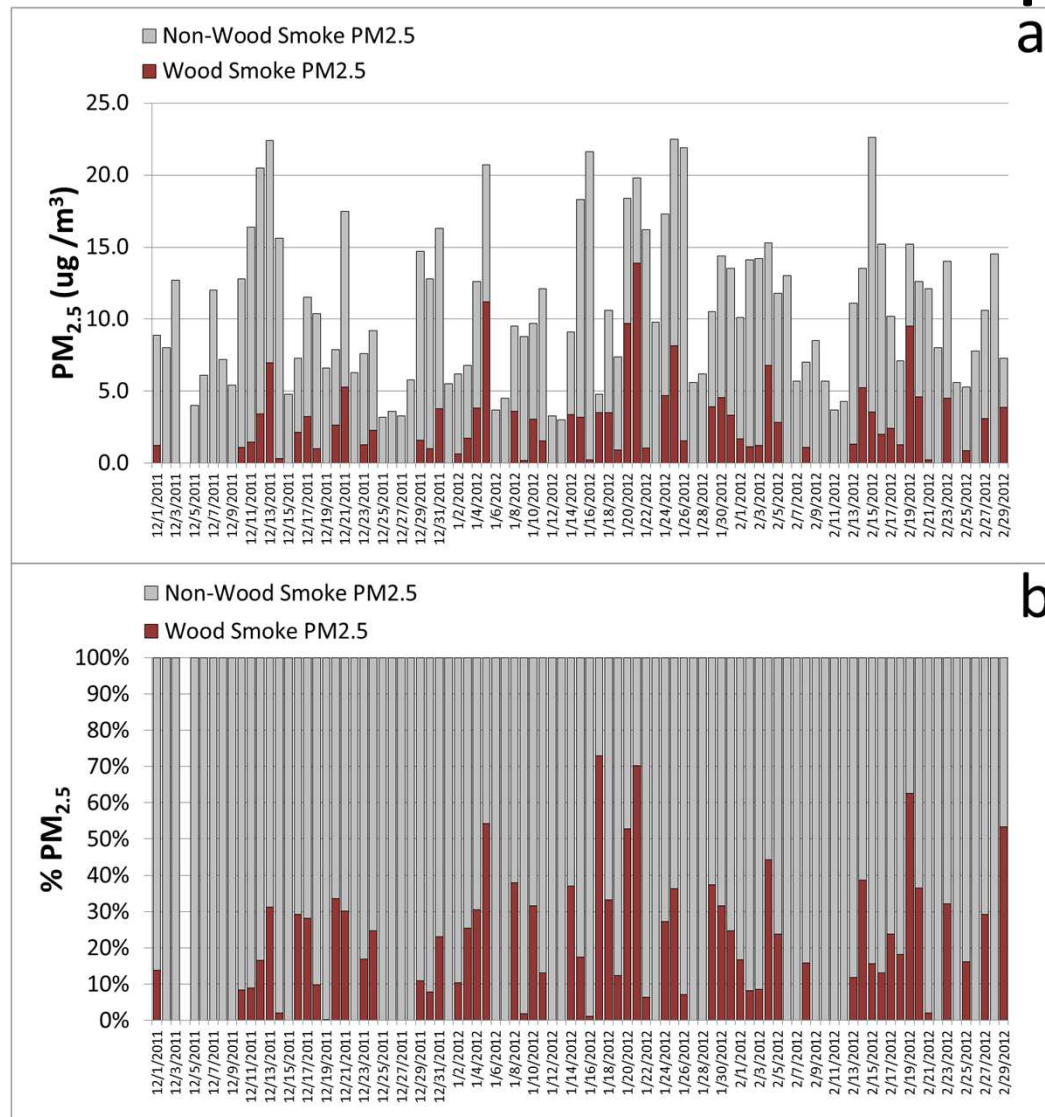
Source Contributions to PM_{2.5} Concentrations in Grand Rapids (PM_{2.5} > 18 µg/m³)



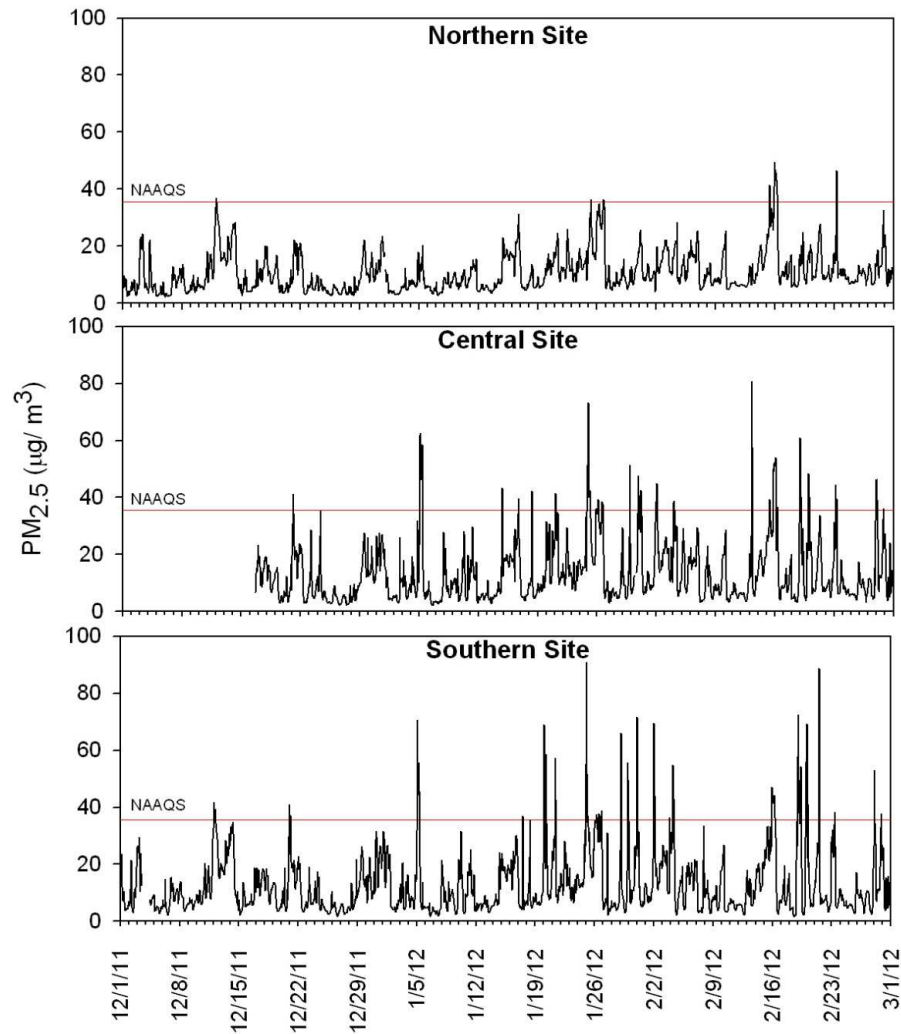
24-hour data



Wood Smoke in Grand Rapids



1-Hr PM_{2.5} Concentrations Grand Rapids Study Sites



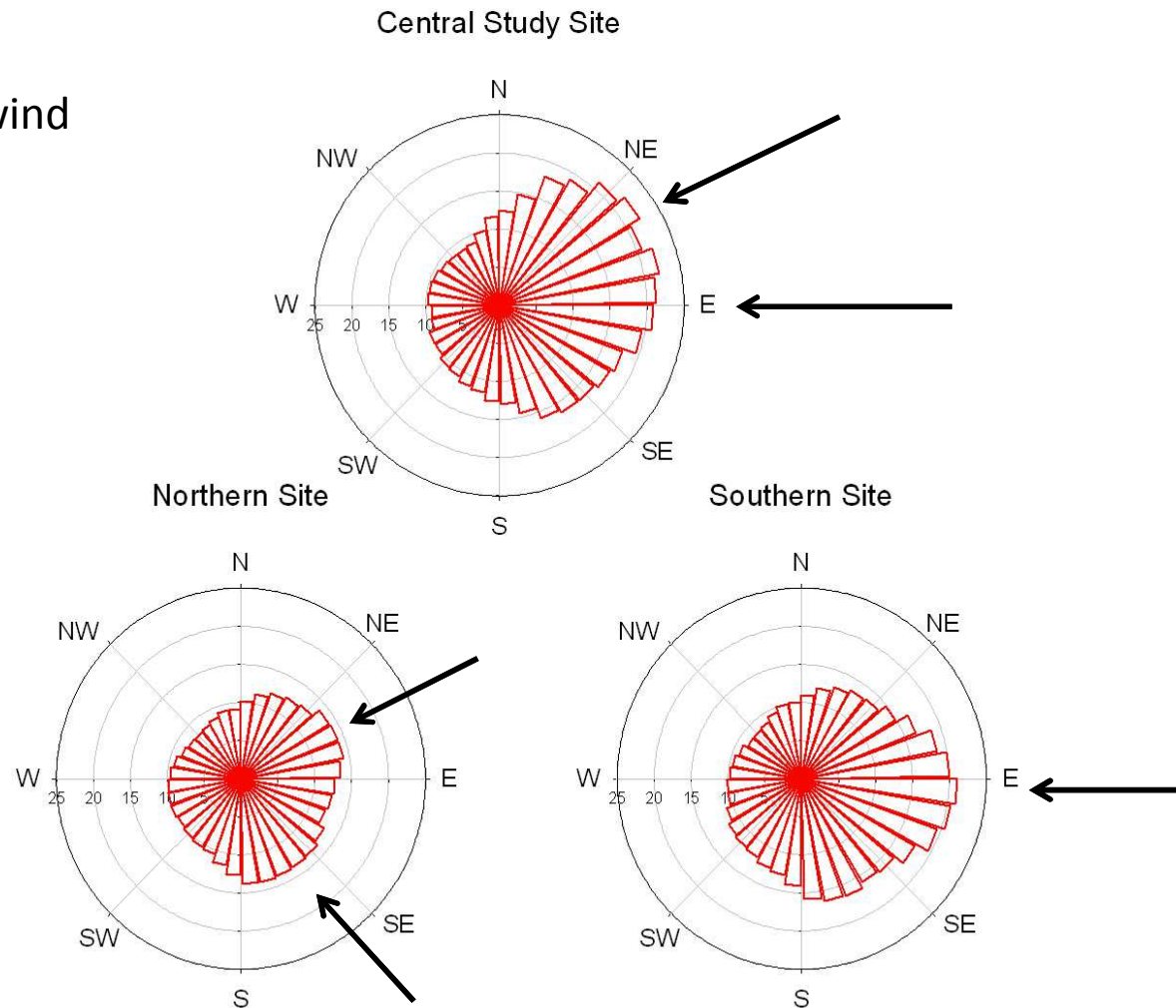
1-hour data



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Pollution Roses

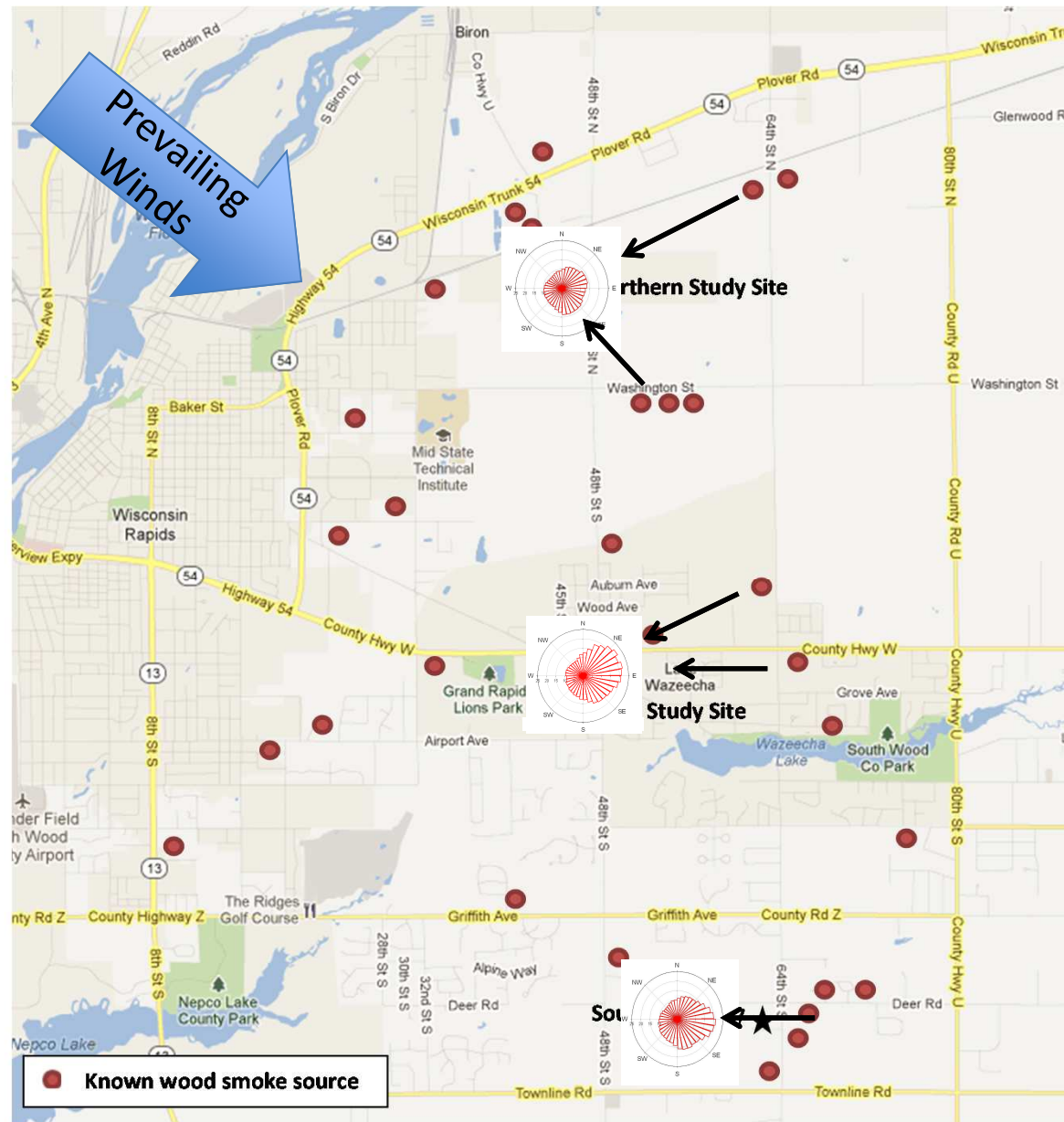
Arrows indicate wind direction



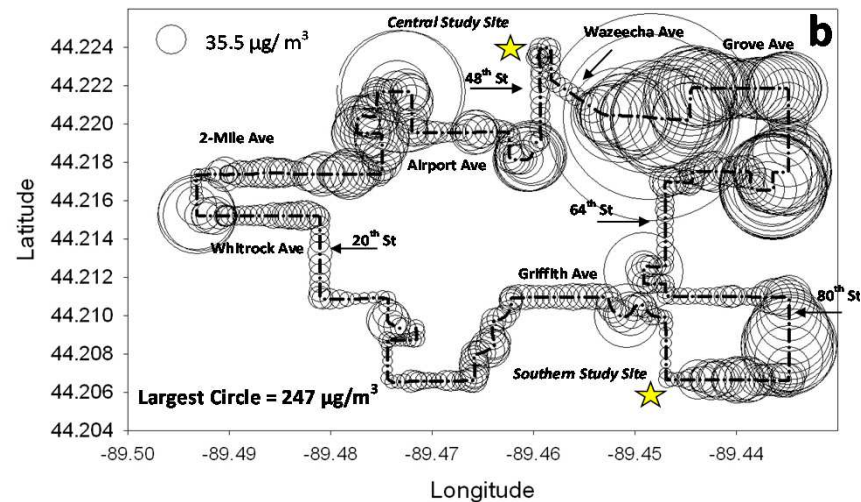
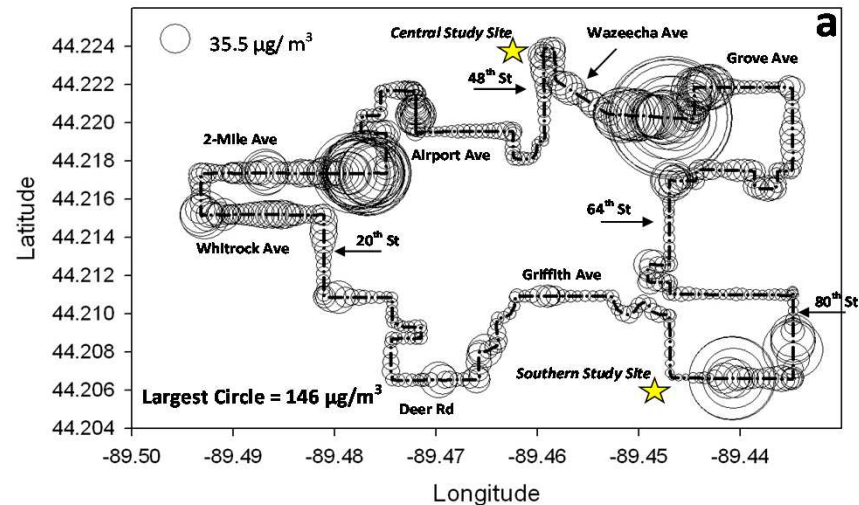
1-hour data



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Mobile Monitoring, January 20th, 2012

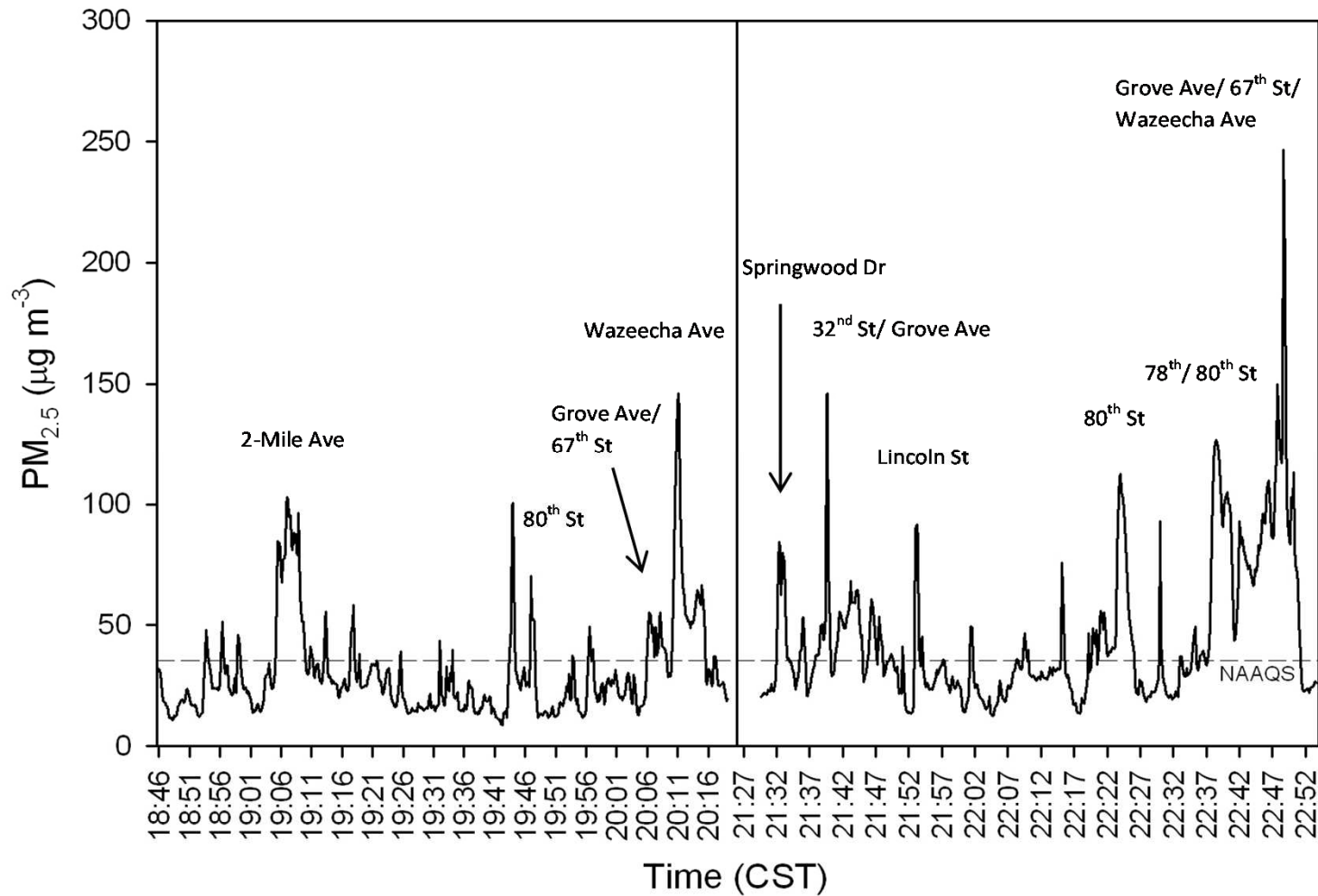


10-sec data



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Mobile Monitoring, January 20th, 2012



10-sec data



Study Findings

- PM_{2.5} air quality in Grand Rapids meets 24-hr regulatory standards
- Significant spikes in shorter-term (1-hr and 5 min)
- High concentrations observed during mobile monitoring in residential areas
- On average, wood smoke accounted for 17% of PM_{2.5} (range 0 – 63%)
- Final project report can be found at: www.ladco.org



Acknowledgements

- Lake Michigan Air Director's Consortium (LADCO)
- Wisconsin Department of Natural Resources
- Wisconsin Department of Health Services
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- Wood County Health Department
- Wood County UW-Extension
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