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# Agenda

- Welcome
  - April meeting recap
  - WOEIP and Air Monitoring
  - WOAQ (West Oakland Air Quality-hyperlocal air monitoring)
  - Survey
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## April - Enforcement

- California Air Resources Board
  - Air District
  - City of Oakland Code Enforcement
  - City of Oakland Truck Parking Enforcement
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# 100x100 Study: West Oakland Community Air Quality Project

# 100x100 Study

Coming soon! A neighborhood network of 100 soot air pollution sensors, monitoring for 100 days in Summer - Winter 2016.



# Citizen Science & Dusttrack 8530



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# WOAQ (West Oakland Air Quality) monitoring network

- community-owned network of air quality sensors
  - environmental justice through advocacy
  - enforcement and policy
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# Project Goals

- Are there neighborhoods that need more interventions?
  - Is there policy that's working and successful?
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## Project timeline

Winter 2023-2024

### Install first wave of sensors

Installed the first group of Purple Air and Combo sensors throughout the neighborhood at various residential and commercial locations.

### Community training and early data testing

We are actively collecting data and working with WOAQ participants to understand what their monitors are telling us.

Spring 2024

Summer-Fall 2024

### Ongoing monitoring and system refinements

We'll share network data through an online portal, allowing residents to access and use the information to advocate for cleaner air.

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**How we monitor?**



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Mini vol -  
measures  
metals and dust



Micro Aeth 350 - measures black carbon



# Purple Air

Measures fine particulate matter (PM<sub>2.5</sub>)



# Summary

## Data overview of:

- Black Carbon (resident-hosted dual sensor)
- Metals (resident-hosted dual sensor)
- Metals (hourly measurements at WOEIP HQ)



Resident-hosted dual sensor

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**Why we monitor?**

# Impact Zones

Identified as areas of concern in WOEIP's modeling work with the Environmental Defense Fund, Google, and Aclima.



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# Pollutants

## Particulate matter (PM)

PM is a common proxy indicator for air pollution.

-Sulfates, nitrates, ammonia, sodium chloride, black carbon, mineral dust and water.

## Carbon monoxide (CO)

-Colourless, odourless and tasteless toxic gas produced by the incomplete combustion of carbonaceous fuels (wood, petrol, charcoal, natural gas and kerosene.)

## Ozone (O<sub>3</sub>)

-Ozone at ground level, is one of the major constituents of photochemical smog.

-Formed through the reaction with gases in the presence of sunlight.

## Nitrogen dioxide (NO<sub>2</sub>)

-Gas commonly released from the combustion of fuels in the transportation and industrial sectors.

## Sulfur dioxide (SO<sub>2</sub>)

-Colourless gas with a sharp odor, produced from the burning of fossil fuels (coal and oil)

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# WOCAP Strategy #59

The City of Oakland increases the frequency of street sweeping to decrease road dust, particularly on streets adjacent to schools, on designated truck routes, and on streets near freeways. The California Department of Transportation increases the frequency of street sweeping along the I-880, I-980, and I-580 freeways. Consideration is given to technology and techniques that avoid re-suspending road dust.

Issue area

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## WOCAP Strategy (FSM 2)

The Air District will analyze road dust emission rates for local streets.

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# Working Analysis

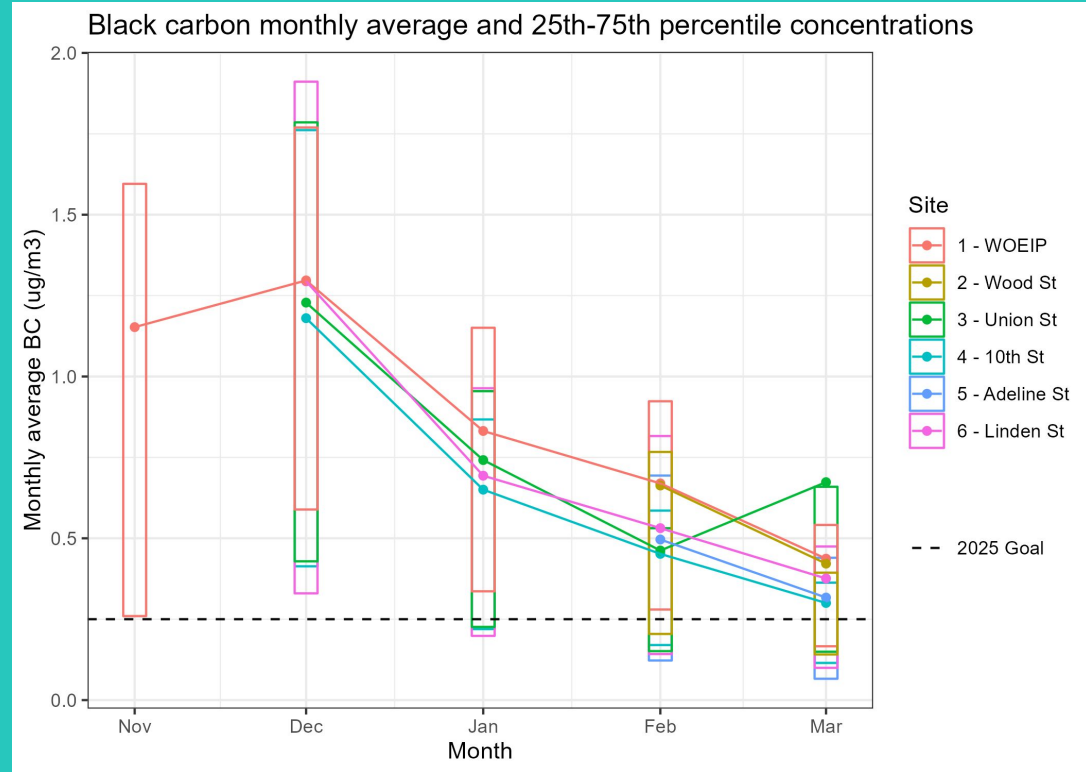


# Black Carbon (indicator of diesel PM)

WOCAP has a **2025 target** for average black carbon from diesel to be **less than  $0.25 \mu\text{g}/\text{m}^3$** .

Concentrations are typically **highest in winter** and lowest in summer.

Values in West Oakland are **trending downward in spring**, approaching the  $0.25 \mu\text{g}/\text{m}^3$  goal.



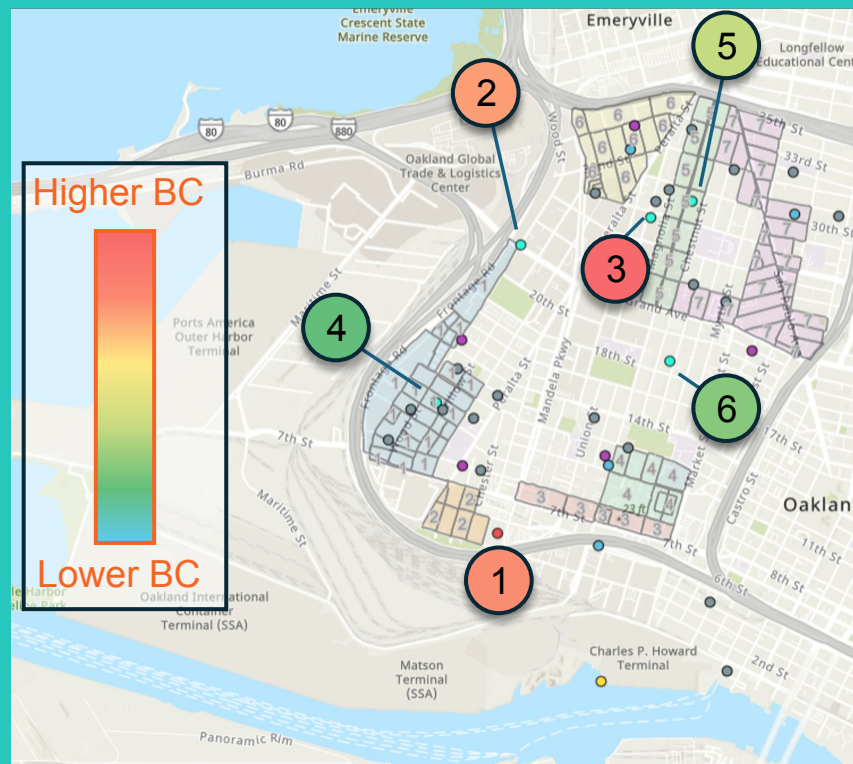


# Black Carbon (indicator of diesel PM)

Average concentrations across recent months (Feb-Mar) are above the  $0.25 \mu\text{g}/\text{m}^3$  target.

Highest concentrations are observed near WOEIP (site 1) and the CASS recycling center (site 3).

Site	Address	Average	75 <sup>th</sup> %	Max	Unit	Data begins
1	WOEIP	0.56	0.74	3.6	$\mu\text{g}/\text{m}^3$	Nov
2	Wood St	0.55	0.53	30.5	$\mu\text{g}/\text{m}^3$	Feb
3	Union St	0.58	0.61	23.1	$\mu\text{g}/\text{m}^3$	Dec
4	10th St	0.38	0.47	3.4	$\mu\text{g}/\text{m}^3$	Dec
5	Adeline St	0.41	0.57	6.9	$\mu\text{g}/\text{m}^3$	Feb
6	Linden St	0.46	0.62	5.6	$\mu\text{g}/\text{m}^3$	Dec

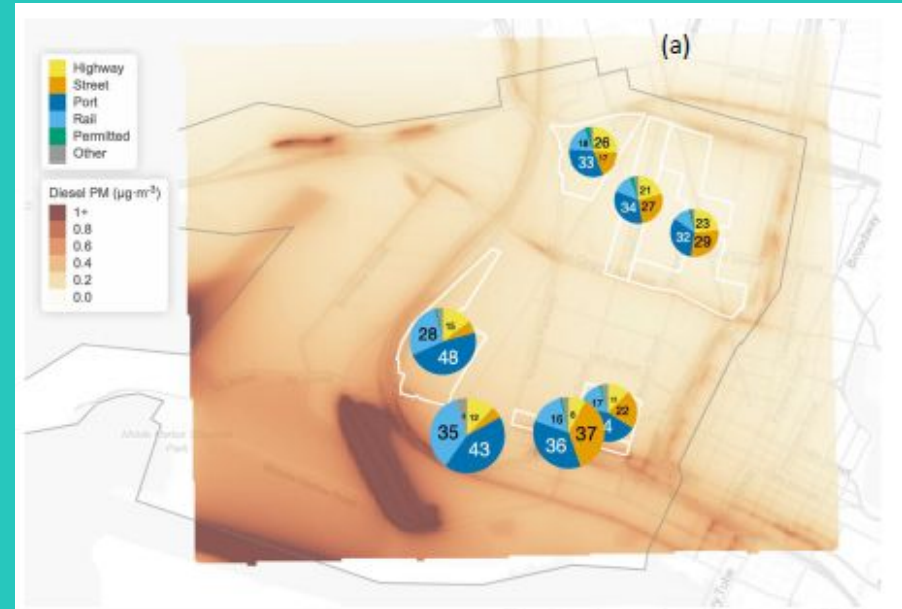
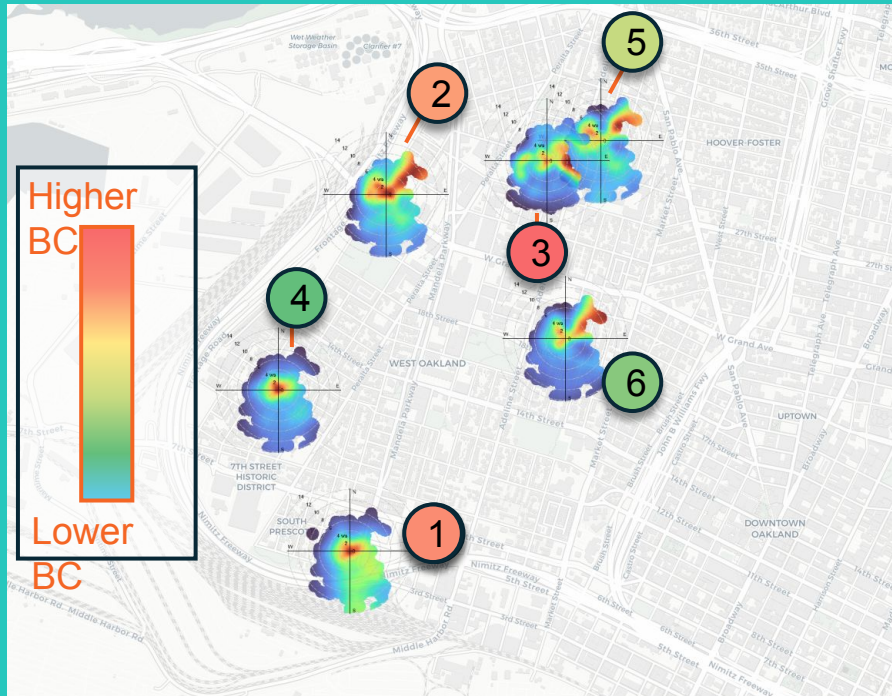


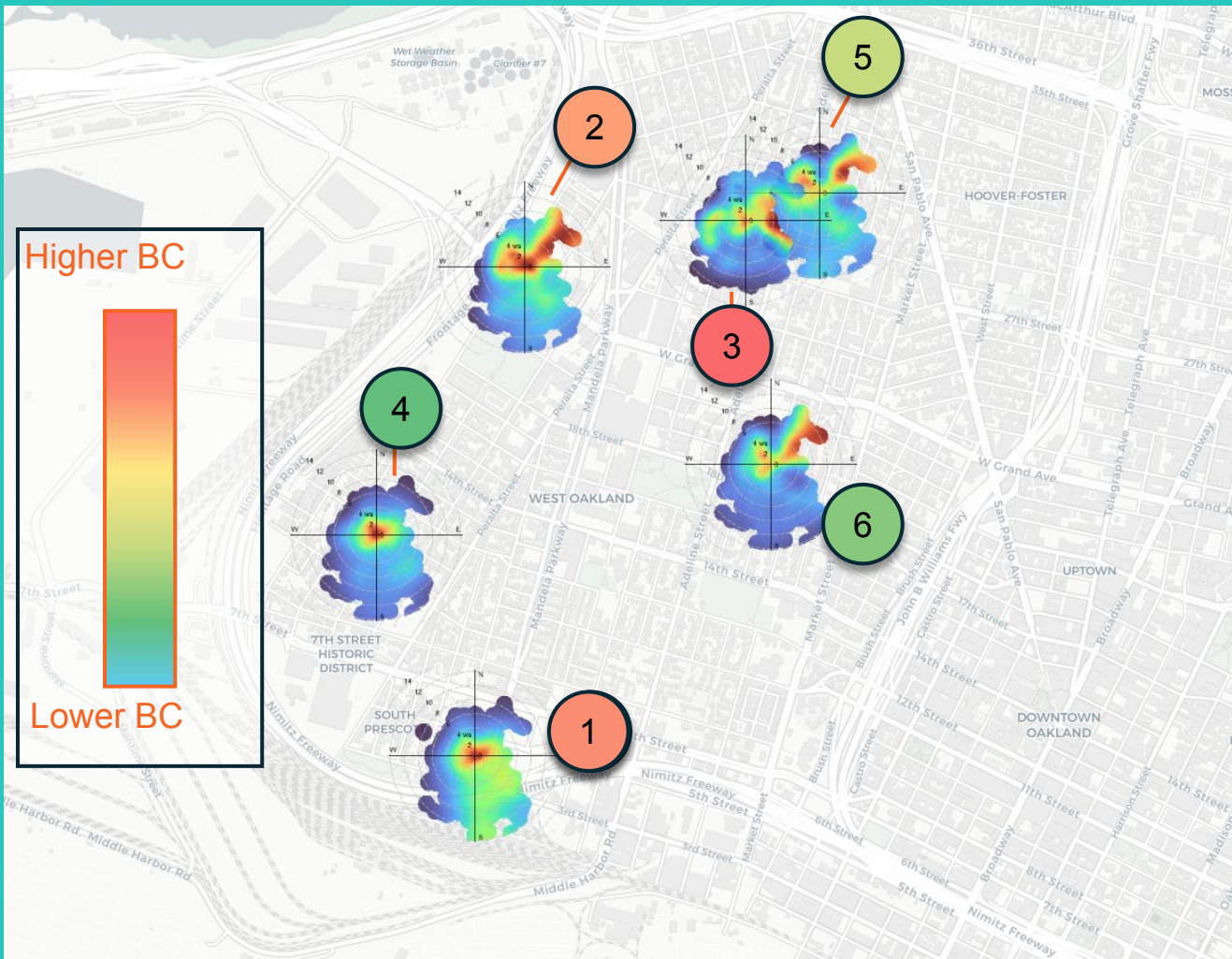
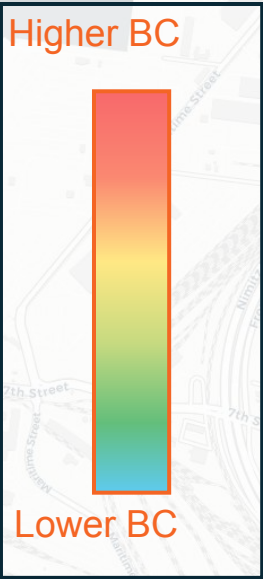


# Black Carbon (indicator of diesel PM)

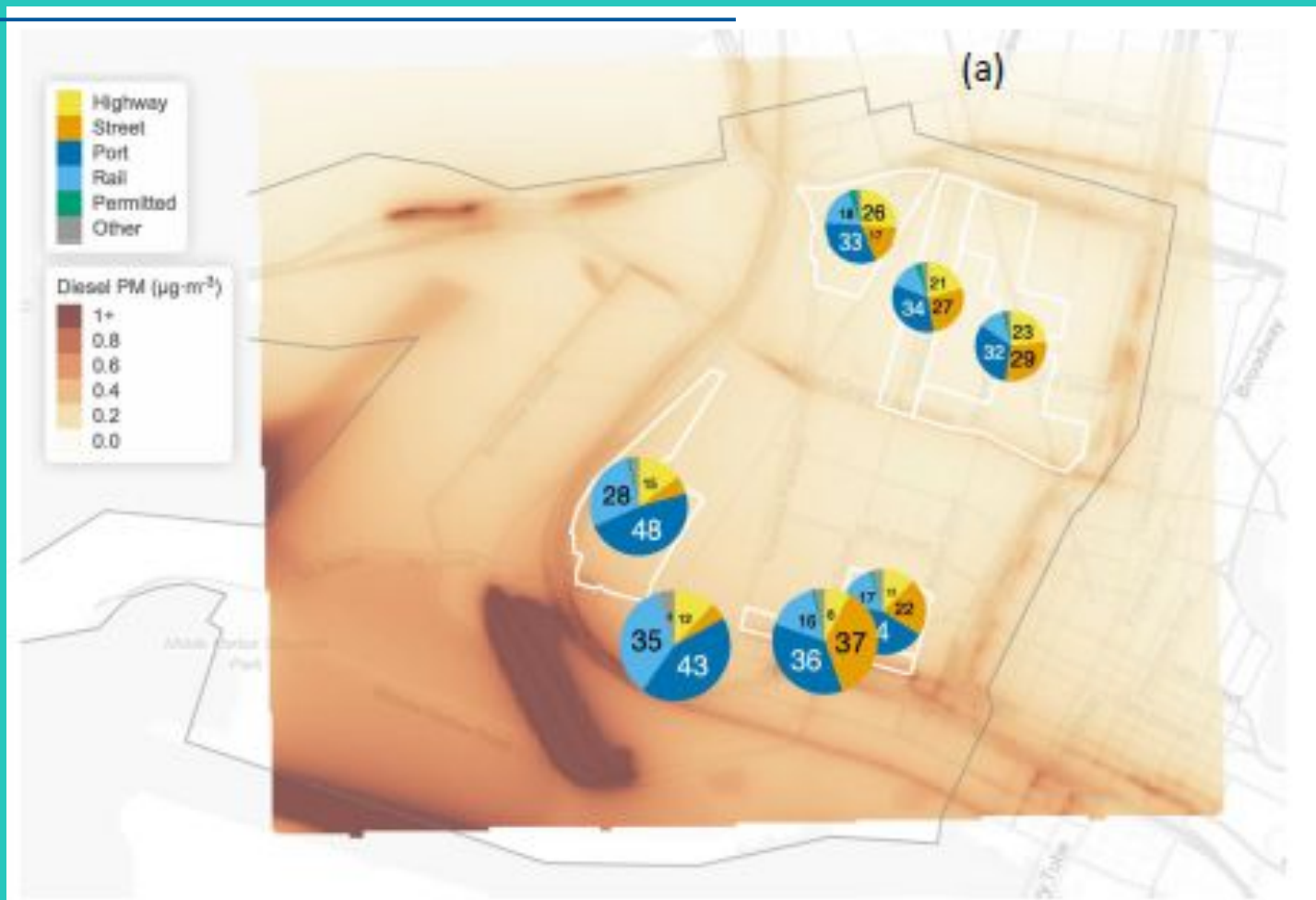
Black carbon concentrations plotted by the dominant wind direction indicates hot spots/sources.

*Example: During westerly winds, Site 2 seems to pick up I-880/logistics center traffic pollution, but also has a strong influence from the NE, also visible in sites 3, 5 and 6, from other traffic corridors.*







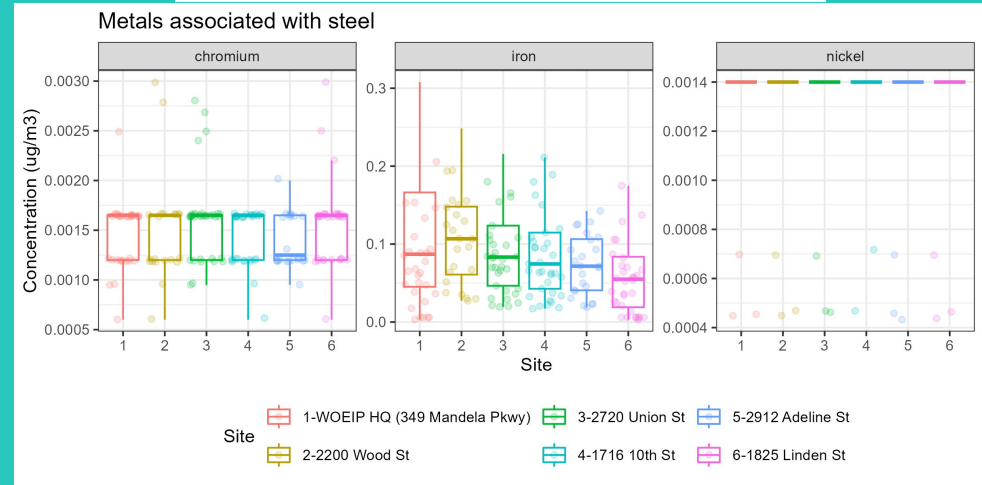
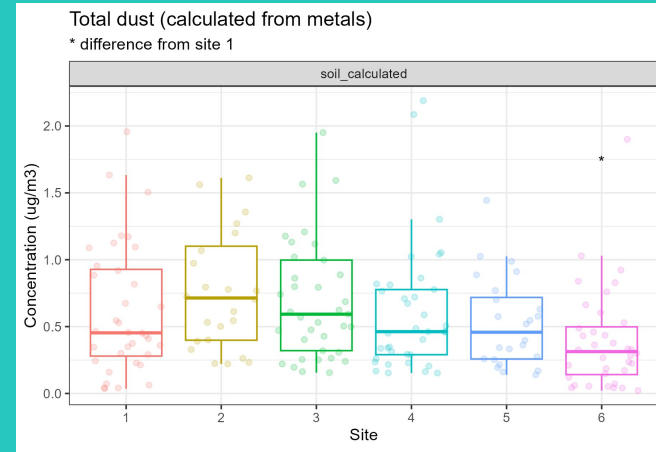




# Metals (residential dual sensor)

The residential dual sensor scans for ~40 metals twice a week.

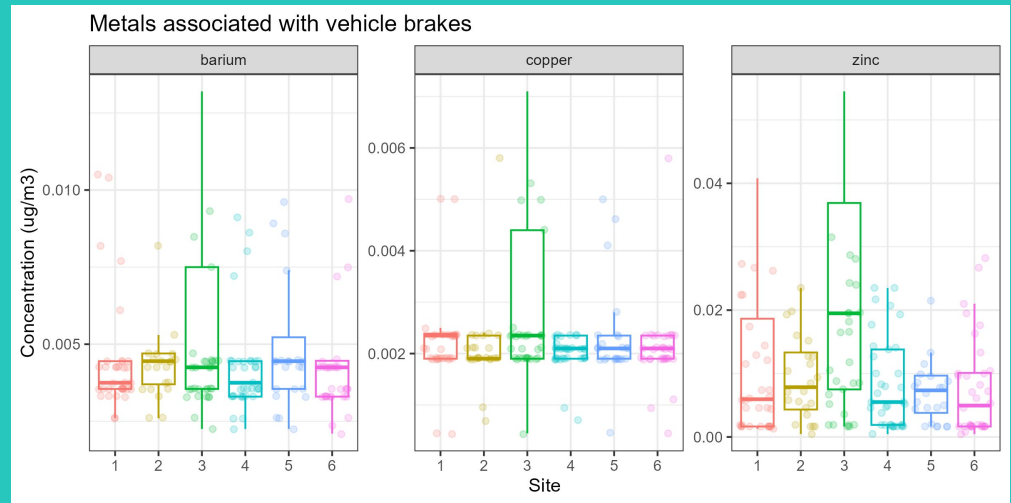
For most species, concentrations are typically similar across sites.



# Metals (residential dual sensor)

Site 3 has higher concentrations of metals such as copper, barium, and zinc.

These metals are typically associated with vehicle brakes, but may also be due to other materials being recycled at the nearby CASS recycling center.





# What are we hoping this data will allow us to do in the future?

- Current data objectives are for identifying variations across the communities
- Want our future objectives to be data-informed
- Compare previous modeling (2015-2016) to these results, evaluate if we are starting to show changes in the past ~10 years
- Will we see potential “wins” to improve air quality for our residents from the past ~10 years of combined emissions-reductions initiatives from multiple parties?



Resident-hosted dual sensor

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# Discussion

1. Where could additional monitors be installed?
  2. Where should we seek collaboration?
  3. Is there data gathering that could bridge any gaps?
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