



Department of
Environmental
Conservation

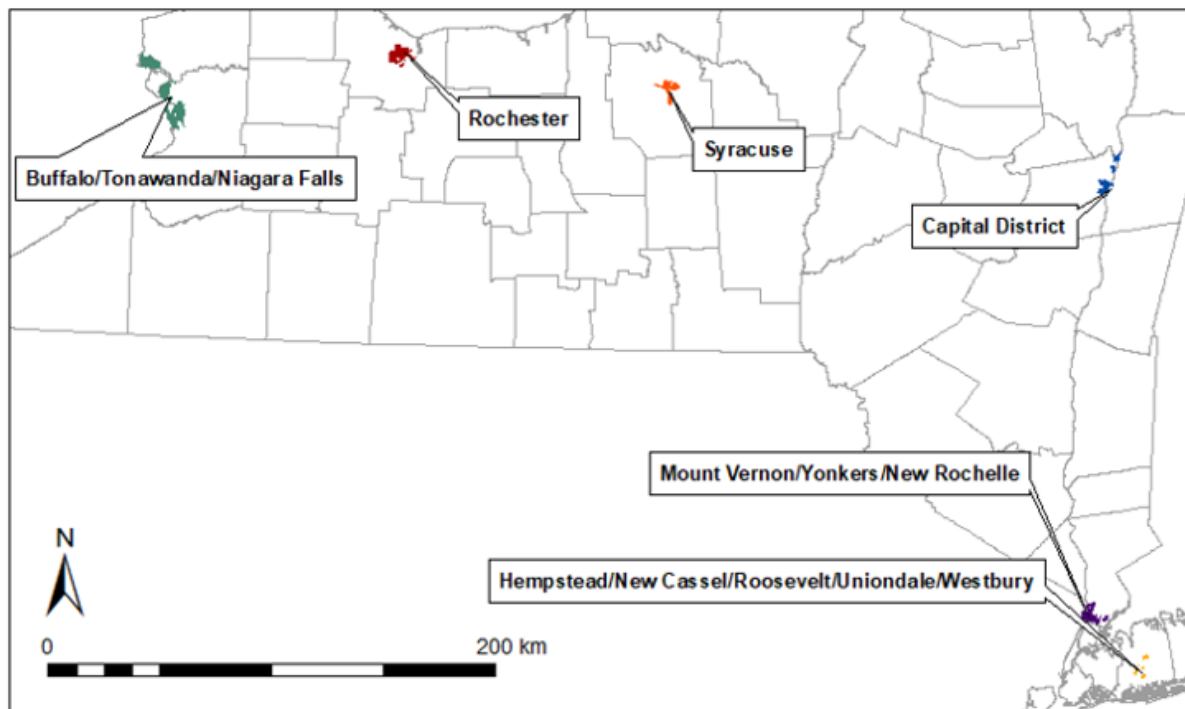


Aclima Mobile Screening in NY

402,591,531

1 Second Data Points Collected over 1 Year in 10 Communities

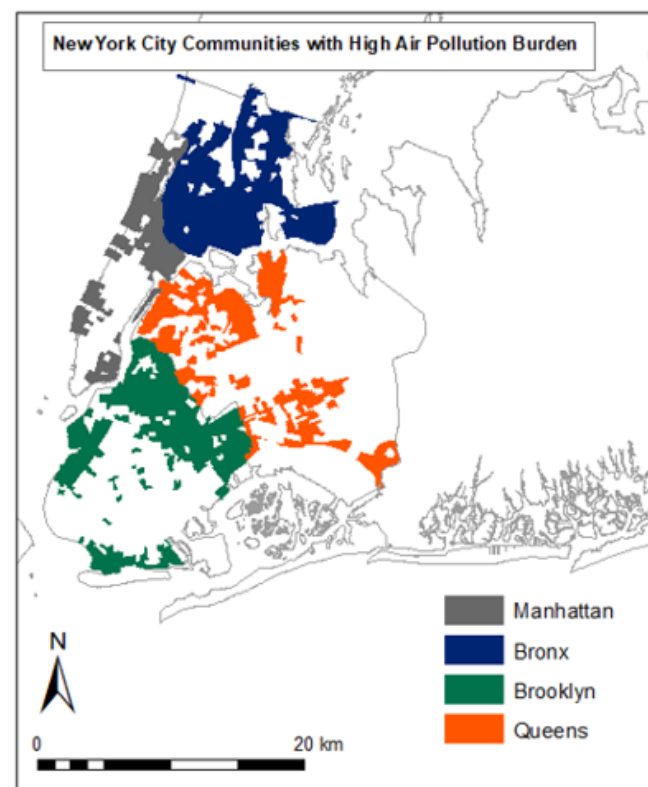
NACAA Monitoring Steering Committee Meeting
Diamond Bar, CA
January 30-31, 2024



Study Start Dates:

July 1: Buffalo/Tonawanda/Niagara Falls, Capital, Bronx, Manhattan

Sept 1: Rochester, Syracuse, Mt Vernon/Yonkers/New Rochelle, Queens, Brooklyn and Hempstead/New Cassel/Roosevelt/Uniondale/Westbury



Sensor Technology

- Aclima calibrates the sensors by comparing to a regulatory monitor (2 weeks) or standard before deploying on the road
- Calibration is checked at the end of the study and a linear correction may be applied to account for drift
- PM is checked intra-network
- BC is flow calibrated only

Gases and PM_{2.5}



Volatile Organic
Compounds

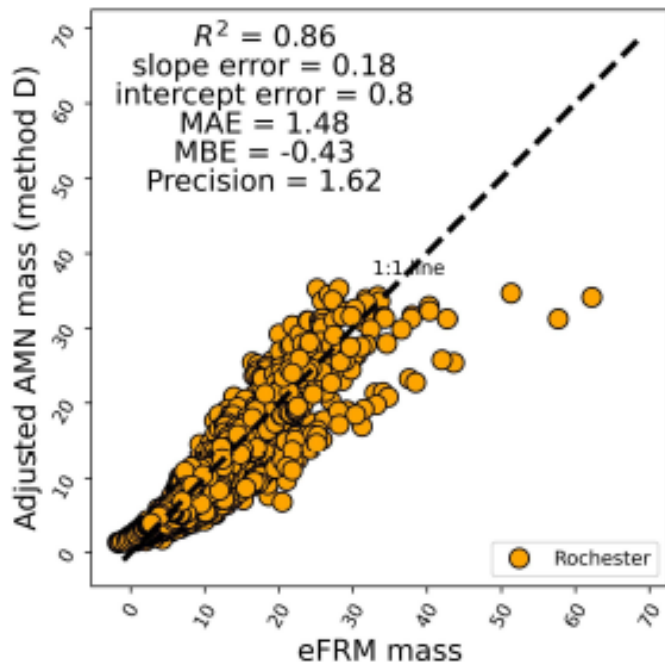
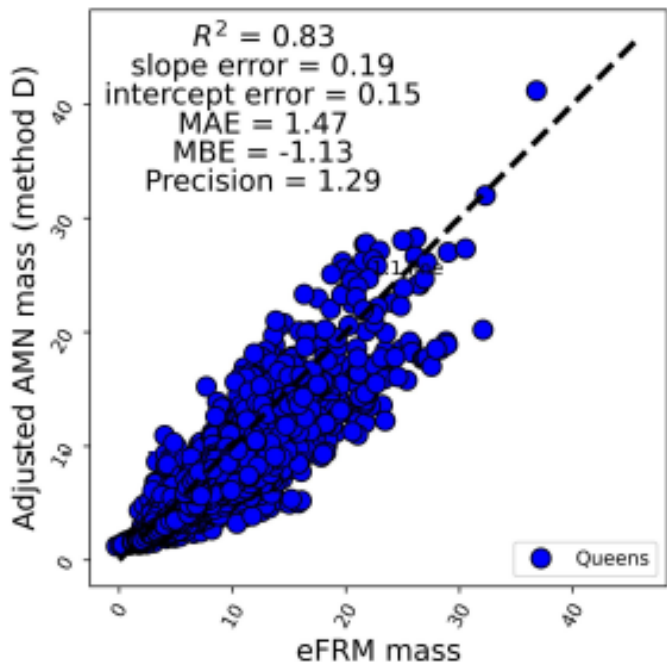
Black Carbon

Sensor Collocation

- AMN Sensors were installed at two DEC monitoring stations for 1 Year
- 'Co-location' show how sensor results are affected by changes in season and environmental conditions
- Review of this comparison will improve initial sensor calibration to make the annual concentration estimates more accurate



PM-2.5 Collocation Results

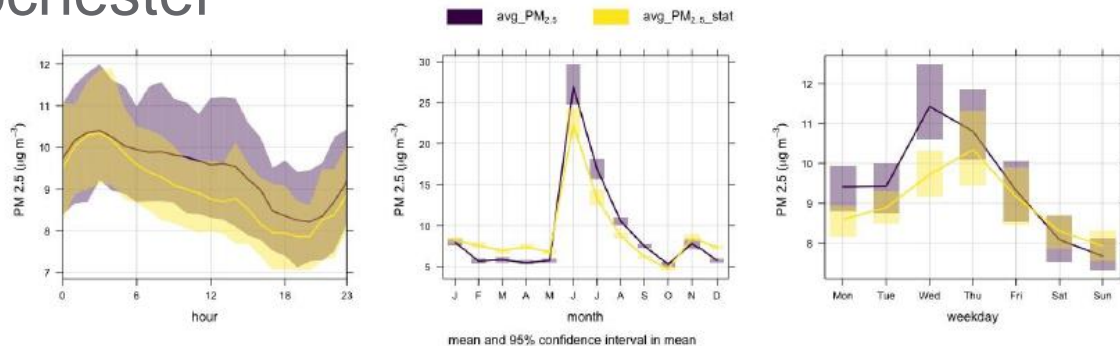


AMN compared to adjT640 before the Quebec fires

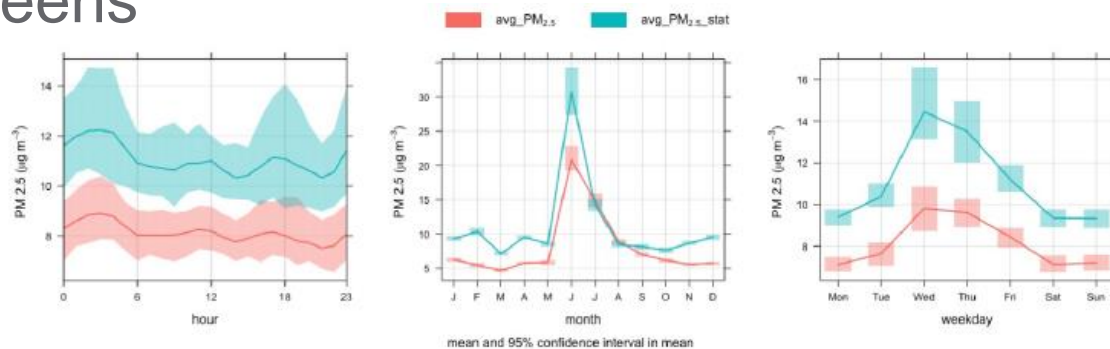


PM-2.5 Collocation

Rochester



Queens



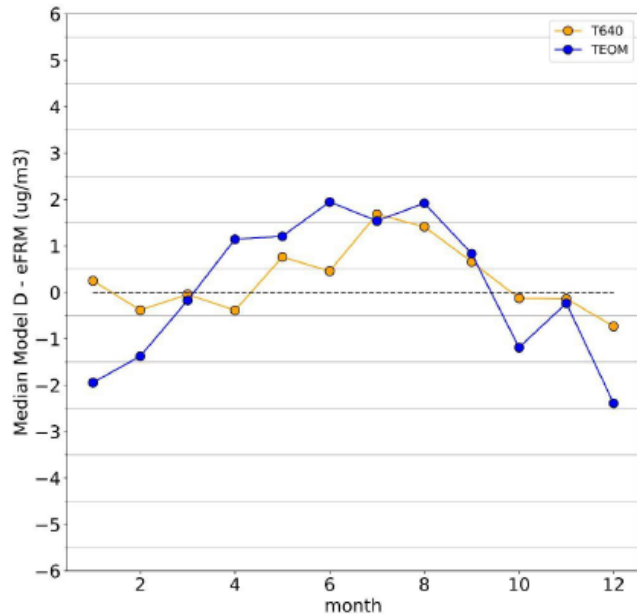
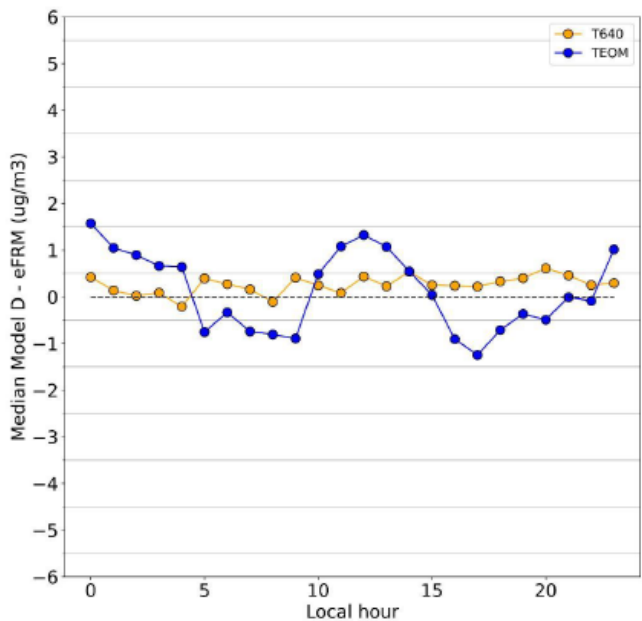
“_stat” suffix indicates the regulatory measurement reference

Aclima’s PM-2.5 sensor detects particles >0.3 micron

Aclima PM-2.5 are biased lower in NYC

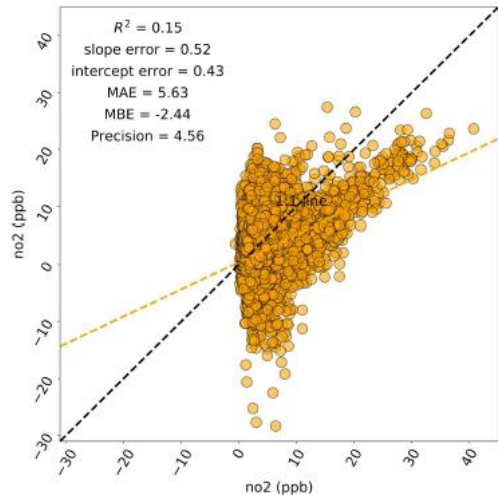
PM-2.5 Median Bias by Day and Month

Aclima PM-2.5 misses much of the volatile components of PM

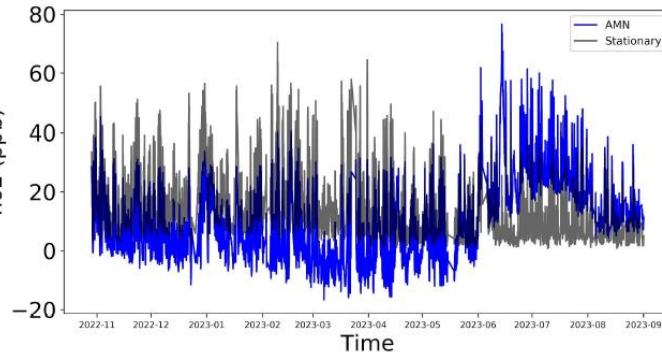
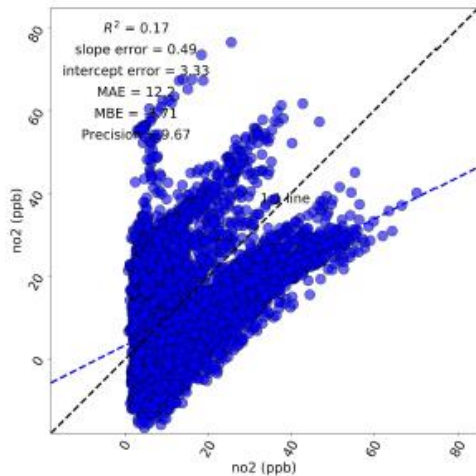


NO₂ Collocation Results

Rochester

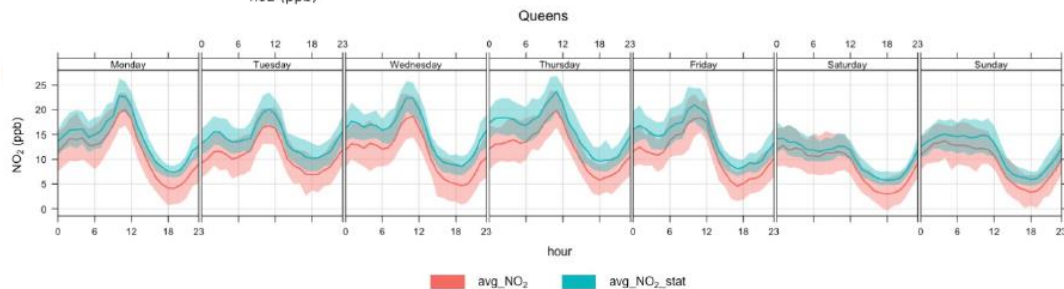


Queens



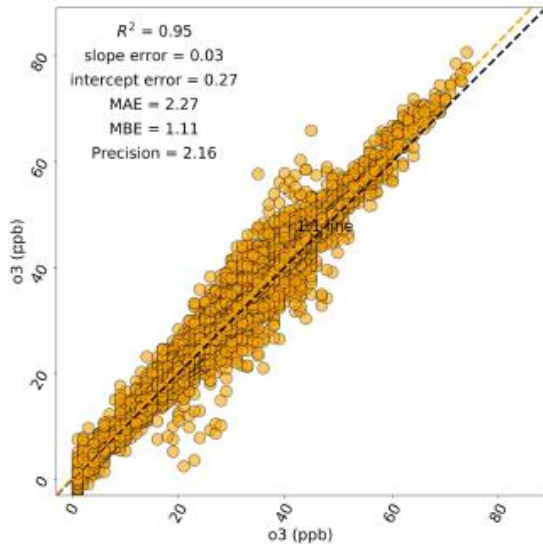
An EPA TTP altered the performance of some of Aclima's sensors

The sensor did track ambient data over time



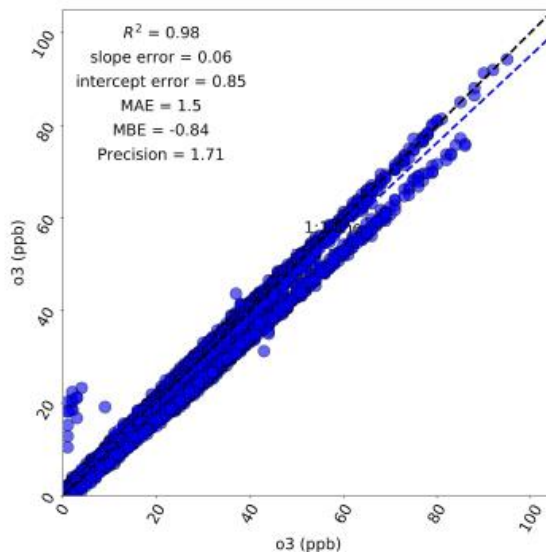
Ozone Collocation Results

Rochester



(y-axis = AMN; x-axis = Reference)

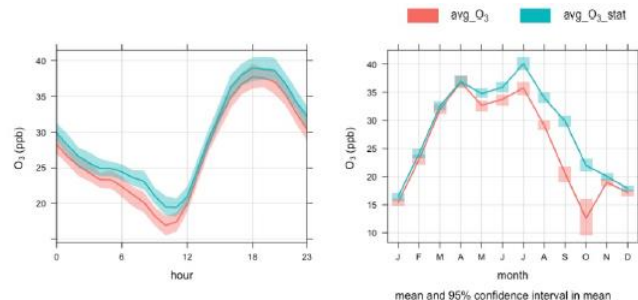
Queens



(y-axis = AMN; x-axis = Reference)

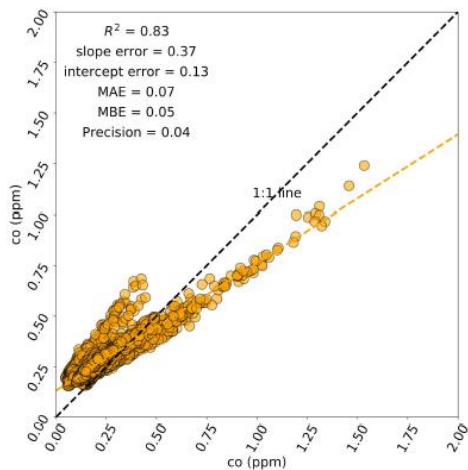
Sensor drift and the TTP may have impacted the later results

Queens

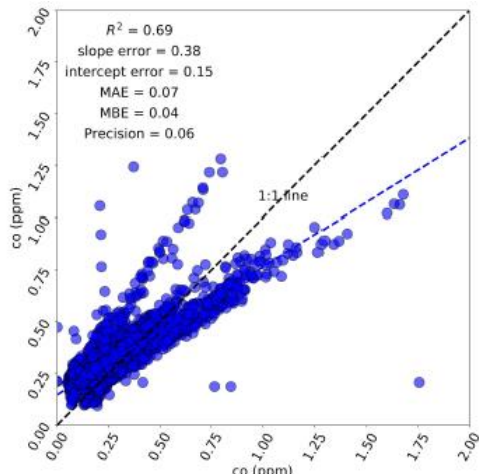


CO Collocation Results

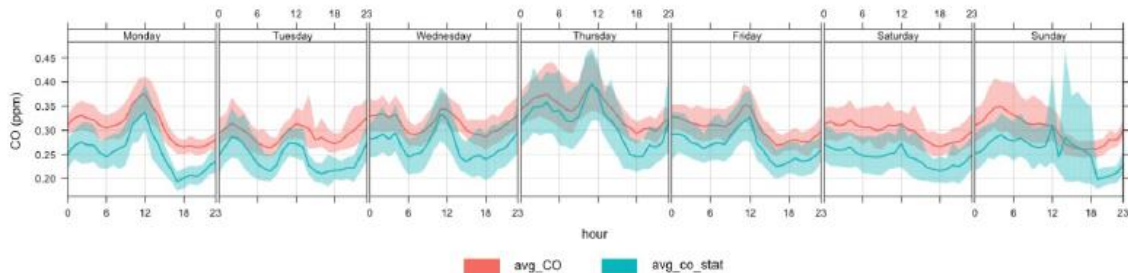
Rochester



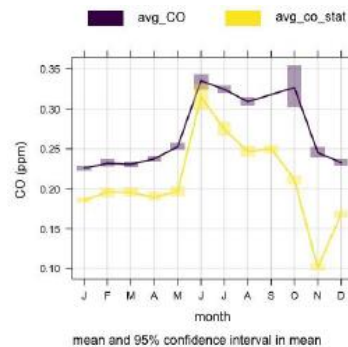
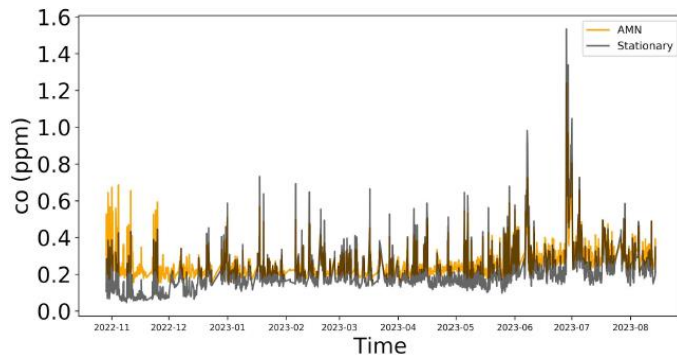
Queens



Queens



Rochester



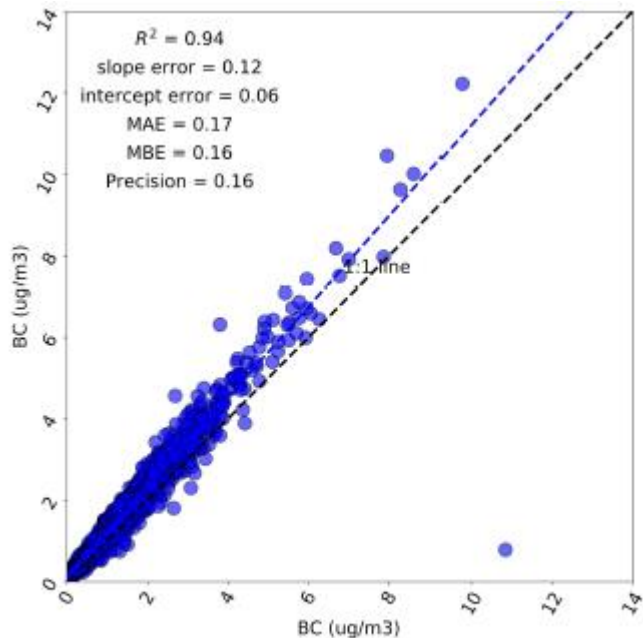
mean and 95% confidence interval in mean



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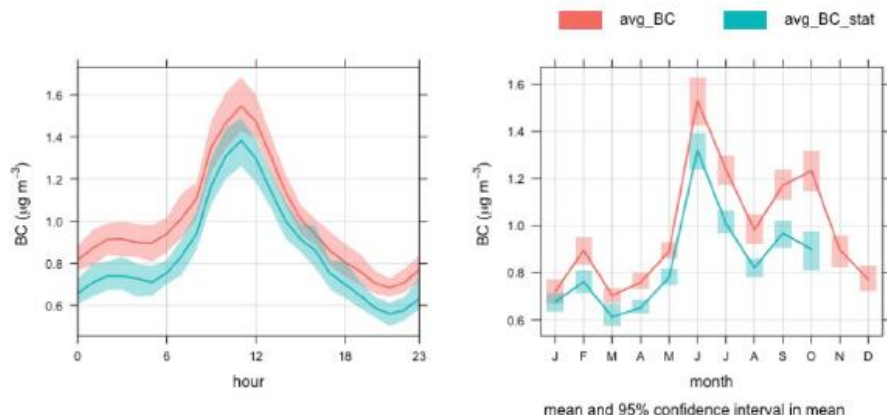
BC Collocation Results

Queens Near Road



(y-axis = AMN; x-axis = Reference)

BC results were good,
Aclima was a little higher



“In-Flight”

Results based on preliminary sensor calibrations

Quarterly snapshots, limited number of passes, not as representative of time/day

Data Collection: First Available Data

Bronx (CLCPA) Annual 2022

This view shows the typical pollutant levels measured *so far* at each road segment, colored by percentile.

This is an early indication of which areas have relatively higher or lower pollution levels and may change as Aclima collects and verifies more data.

Report 2 of 4: 7/1/2022 - 12/31/2022

Annual Measurement Period: 7/1/2022 - 6/30/2023

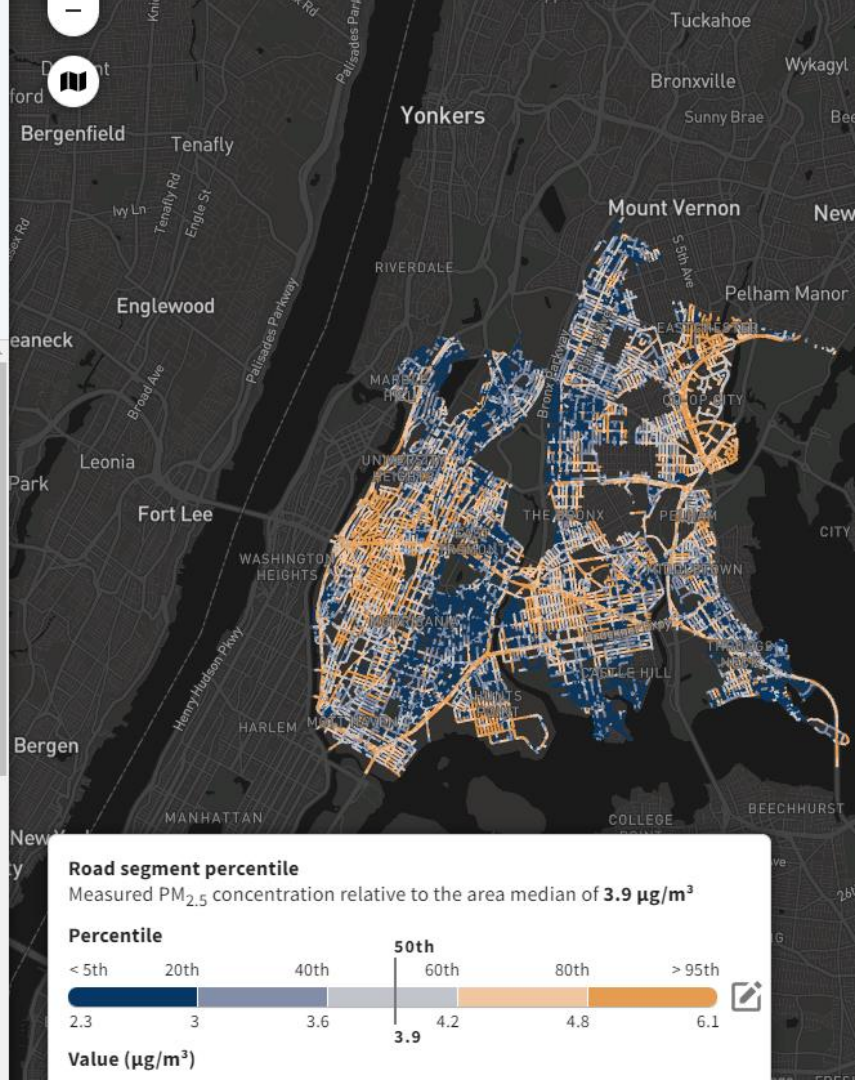
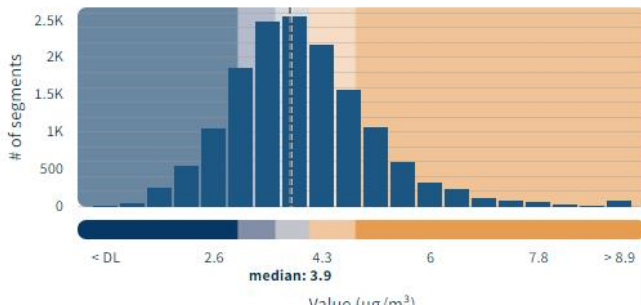


Measured Pollutants

PM_{2.5} O₃ NO₂ NO CO CO₂ BC CH₄

Pollutant: Fine Particulate Matter

of road segments by PM_{2.5} value



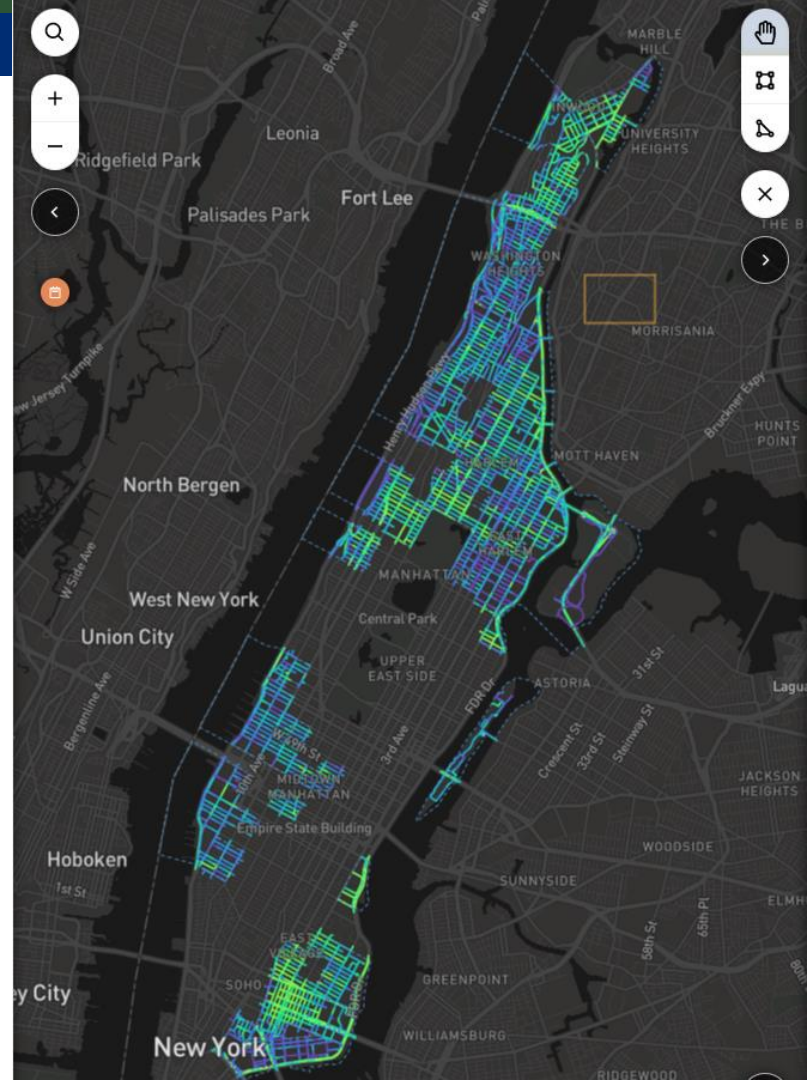
Final Aclima Data Product: “AirNY”

Web accessible map of each pollutant based on an estimate of the annual median for every 100m road segment

Segment color will be based on the study area median’s confidence intervals

Sources, receptors, a diesel/traffic and a methane leak tool will be available

Pollutants with DL above baseline may be displayed as peaks (NO, Ethane, maybe BTEX)



NYSDEC Report

The methods are still in development

<https://www.youtube.com/watch?v=CFa-XCRmHU4>

Community Air Monitoring Initiative

Improving Air Quality in Disadvantaged Communities

New York State Department of Environmental Conservation
January 22, 2024



[Introduction](#)

[What is Mobile Monitoring?](#)

[How to Use These Storymaps](#)

[Understanding Sensor Data](#)

[Overall Findings](#)

[Next Steps](#)

Introduction

The New York State Department of Environmental Conservation (DEC) is working with community members to better understand air pollution burdens and inform actions to improve air quality in 10 Disadvantaged Communities. Through the Community Air Monitoring Initiative (CAM Initiative), as required by the Climate Leadership and Community Protection Act, DEC collected



Mapping Tools: Buffalo, Tonawanda, and Niagara Falls

New York State Community Air Monitoring Initiative 2022-2023

January 23, 2024

[Introduction](#)

[Peaks Analysis](#)

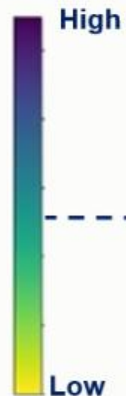
[Hotspot Locator Tool](#)

[Mobile Source Indicator Tool](#)

Introduction

DEC used three different approaches to process and analyze the 1-second raw data: peaks analysis, hotspot locator tool, and mobile source indicator tool. Each approach illustrates elevated and persistent pollutant levels to facilitate evaluating mobile and stationary sources.

Pollutant Levels



Peaks are the highest values of the elevated levels

Above = Elevated

Below = Not Elevated

Pollutant Level Across Study Area



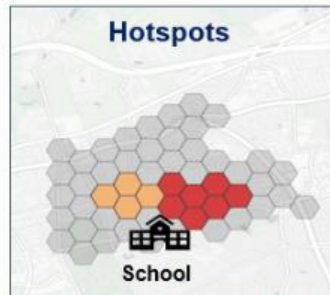
Drive passes
1 second
data

Elevated Test



Drive passes are averaged, grouped into shapes (hex bins), and compared to study area

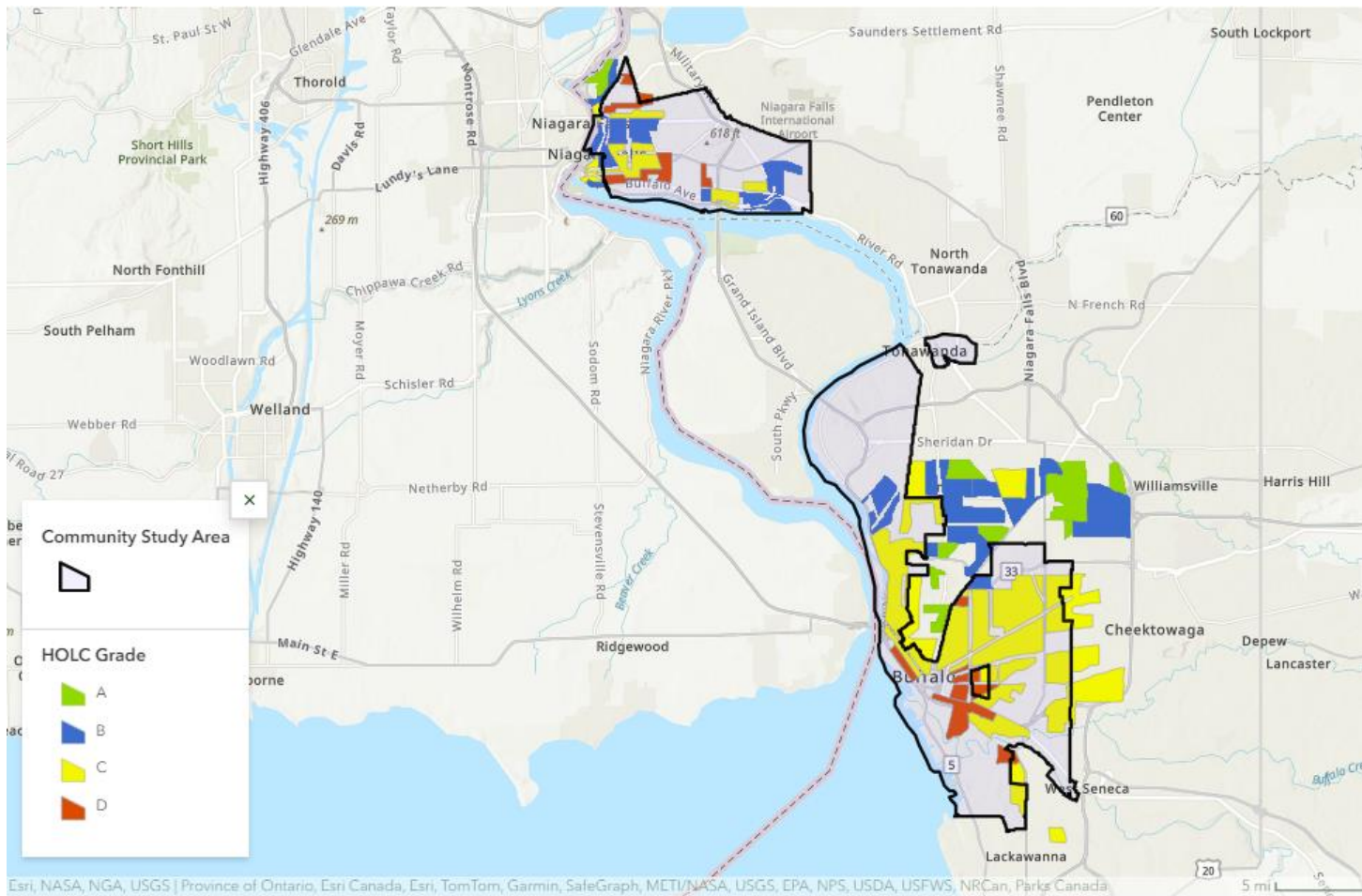
If Above
Pollutant
Level Across
Study Area



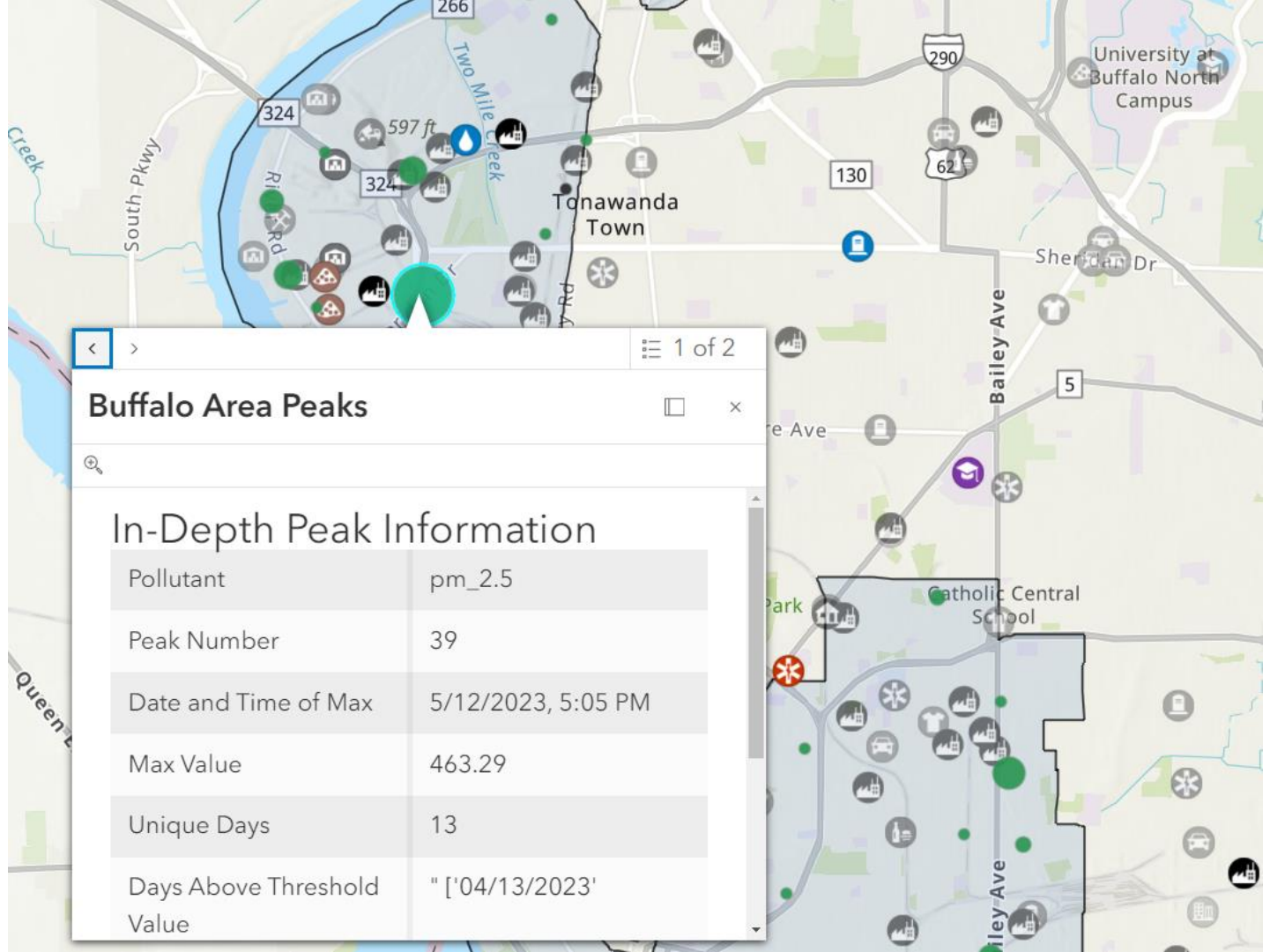
Hotspots
Groups of elevated pollutants are mapped and identified as hotspots for source identification



Potential PM Sources
Concrete/Asphalt
Scrap Metal
Auto Body



Historical Redlining in Buffalo, Tonawanda and Niagara Falls



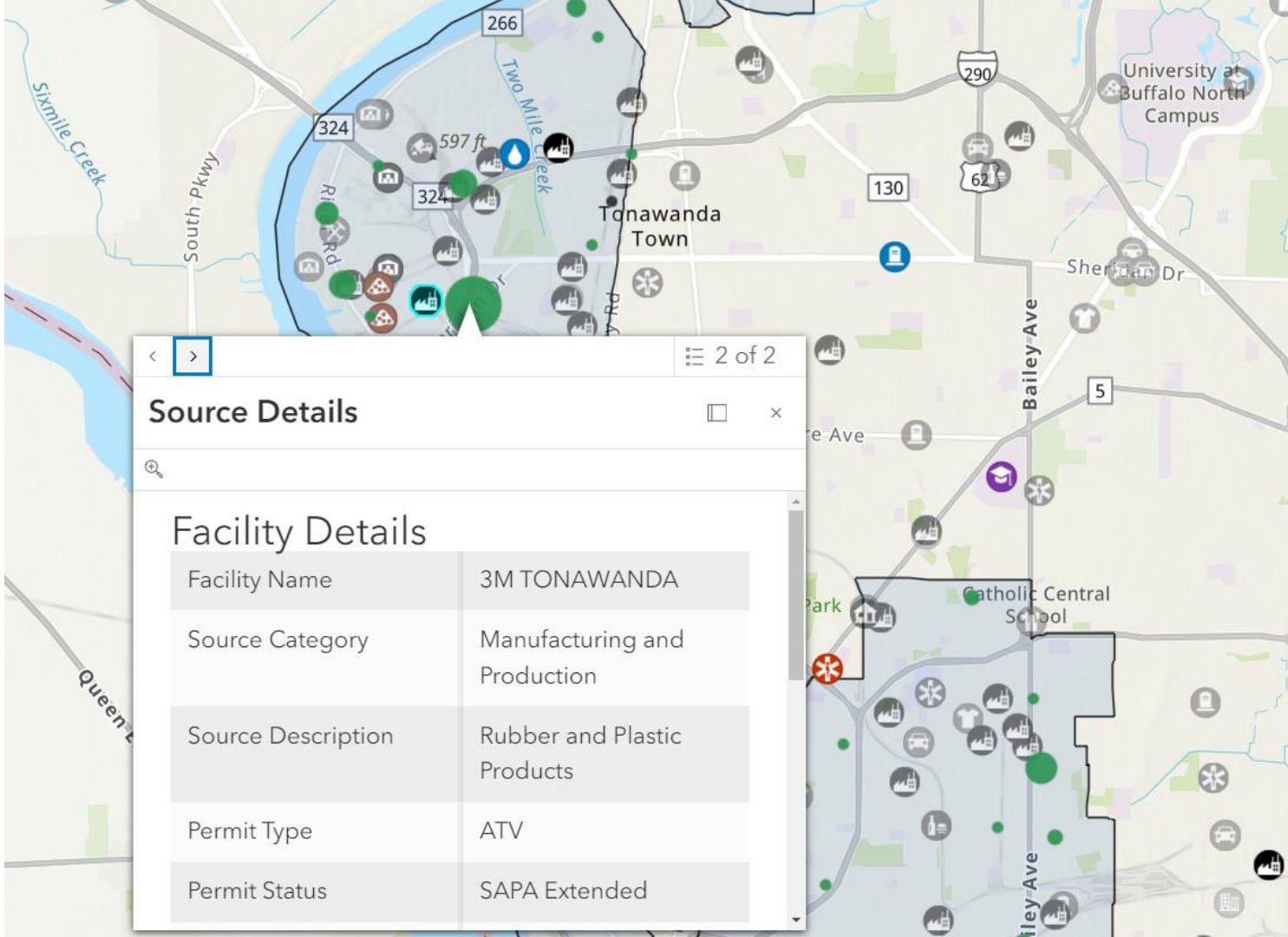
< > 1 of 2

Buffalo Area Peaks

🔍

In-Depth Peak Information

Pollutant	pm_2.5
Peak Number	39
Date and Time of Max	5/12/2023, 5:05 PM
Max Value	463.29
Unique Days	13
Days Above Threshold Value	" ['04/13/2023'



< > 2 of 2

Source Details

Facility Name: 3M TONAWANDA

Source Category: Manufacturing and Production

Source Description: Rubber and Plastic Products

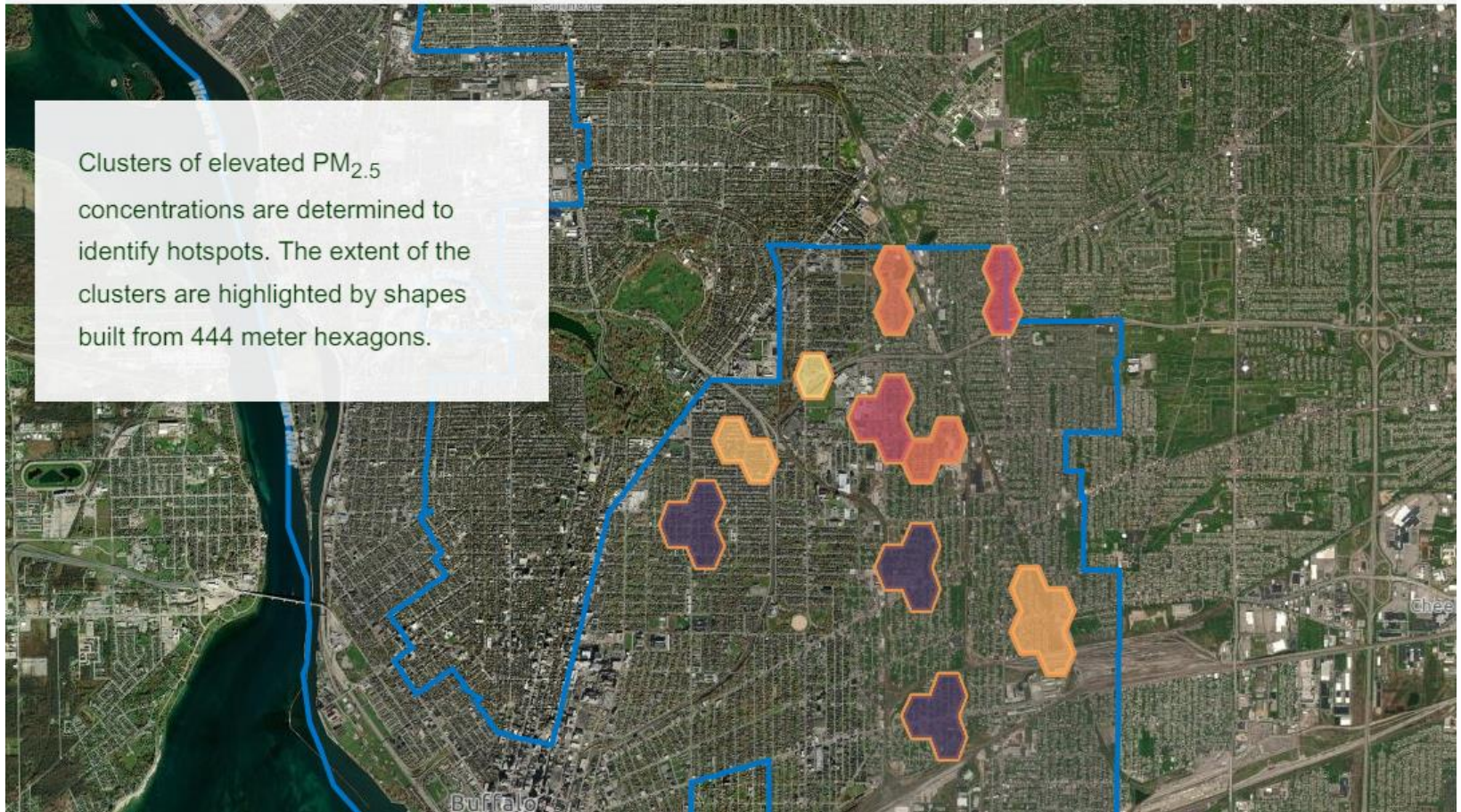
Permit Type: ATV

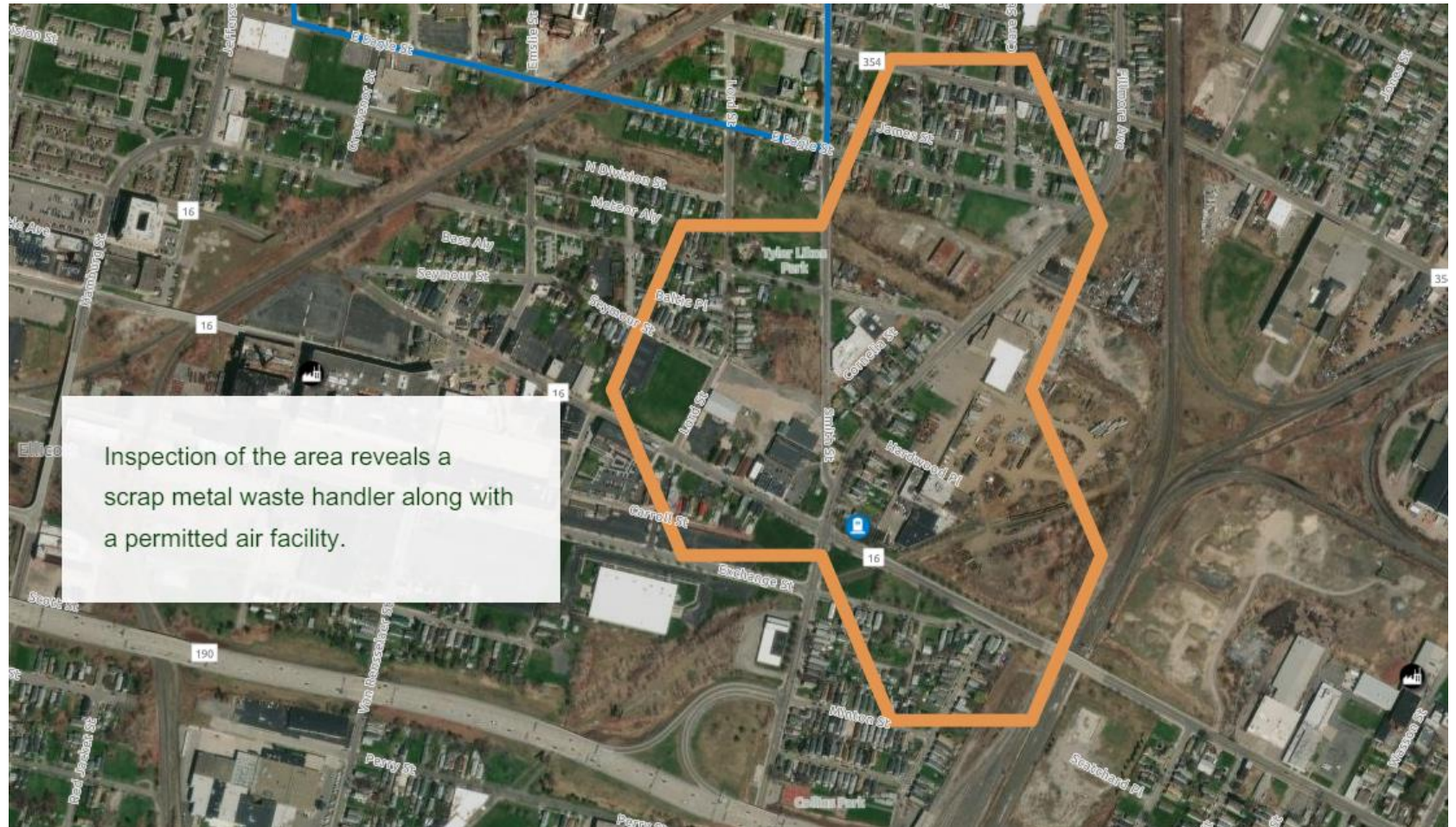
Permit Status: SAPA Extended

On 9 unique days, extremely high concentrations of $PM_{2.5}$ were found next to a metals machine shop and a school bus lot in Tonawanda.

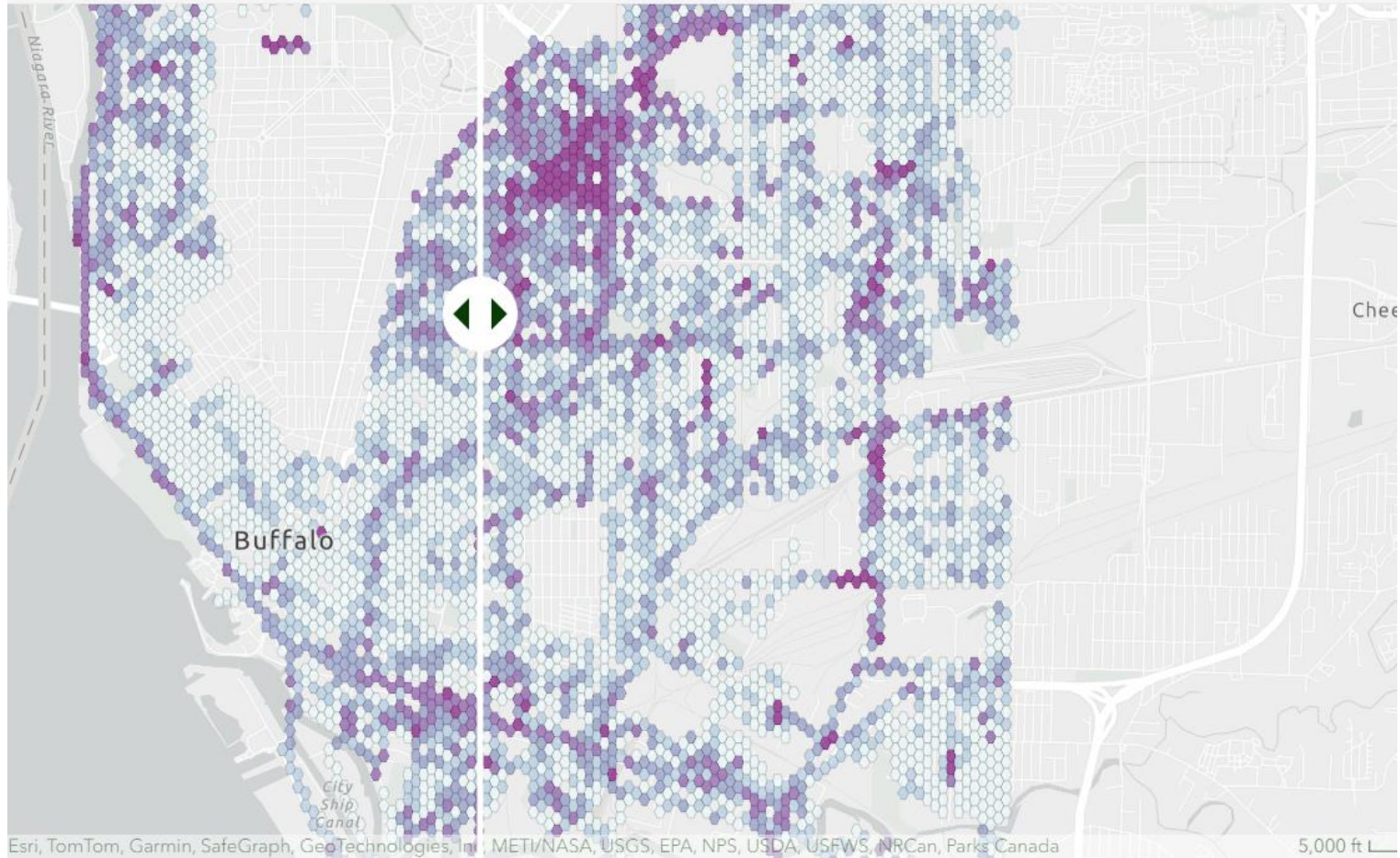


Clusters of elevated $PM_{2.5}$ concentrations are determined to identify hotspots. The extent of the clusters are highlighted by shapes built from 444 meter hexagons.





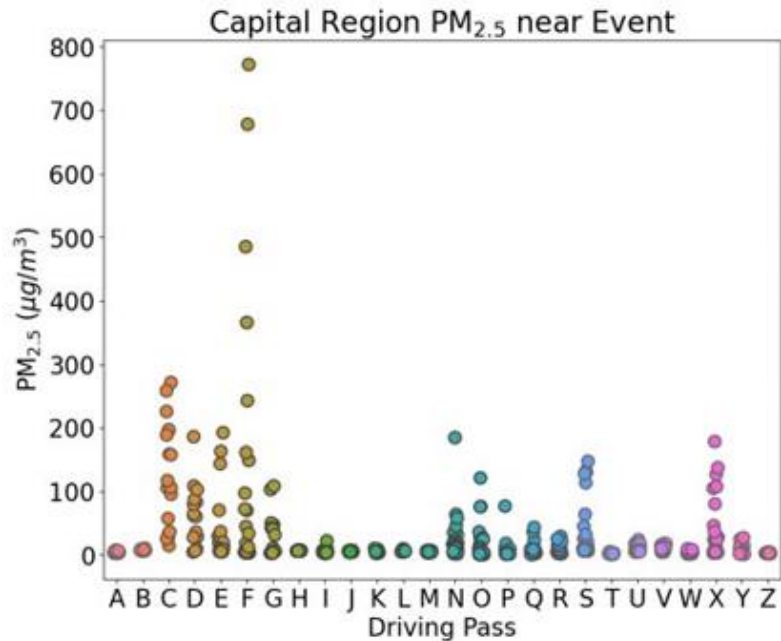
Inspection of the area reveals a scrap metal waste handler along with a permitted air facility.



Non-Diesel Indicator

Diesel Indicator

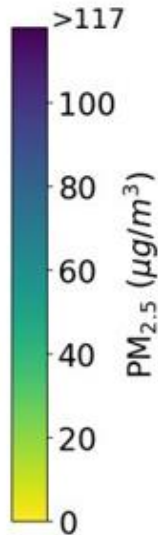
In-house Interim Source Identification



Elevated Capital Region PM_{2.5}



Map images © 2022 Esri used under license. All rights reserved.



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Capital District (North of Albany)

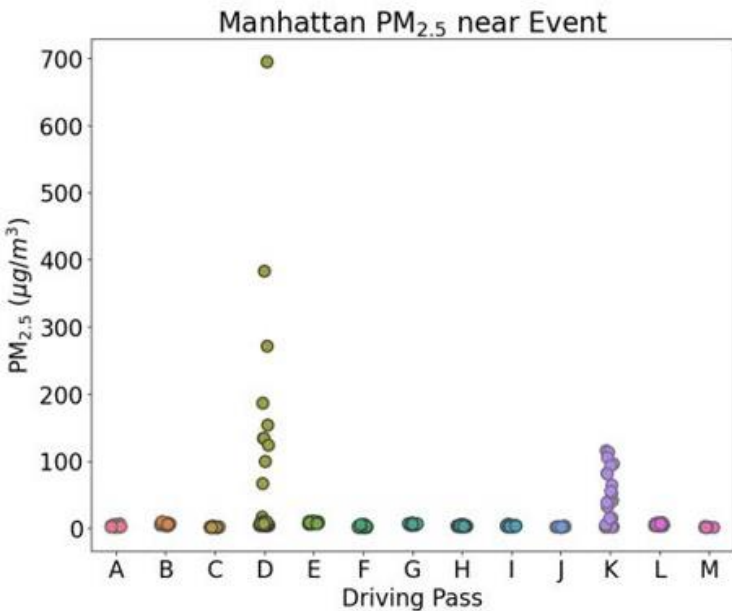


Habitat for Humanity built low-income housing along the block

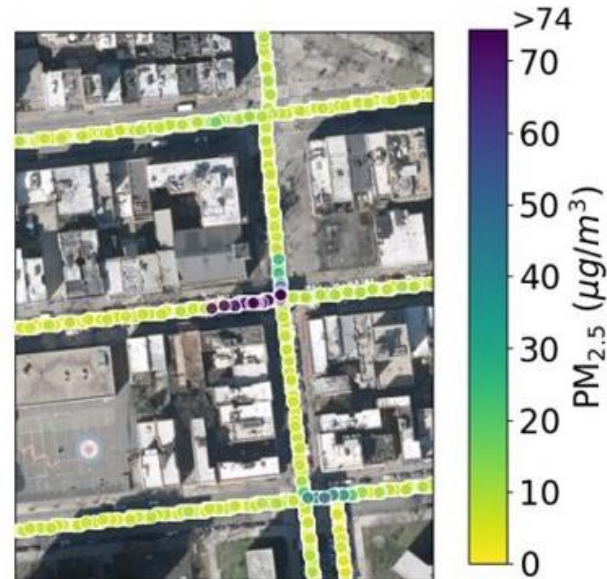


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In-house Interim Source Identification



Elevated Manhattan PM_{2.5}



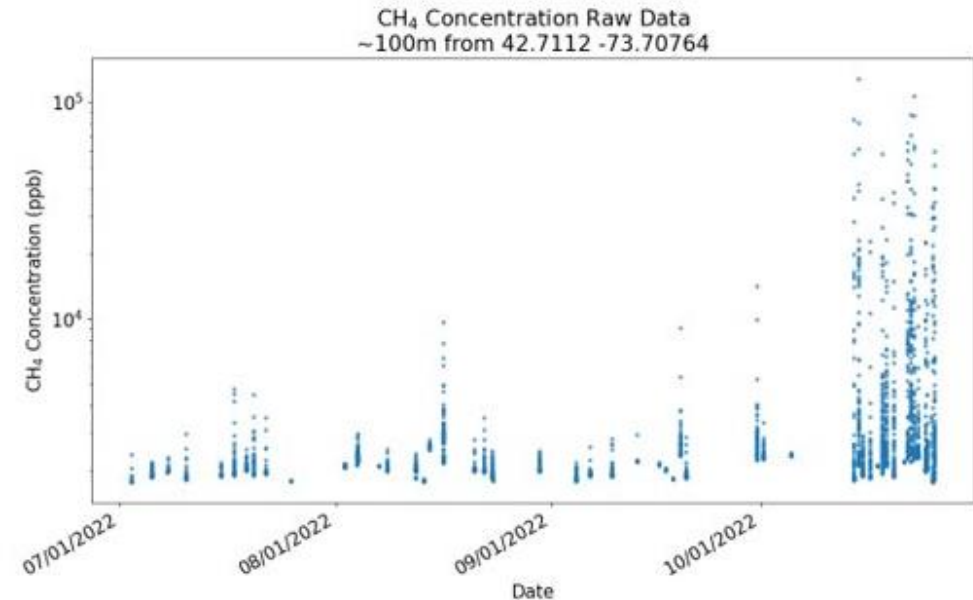
Manhattan

June 2019

July 2022

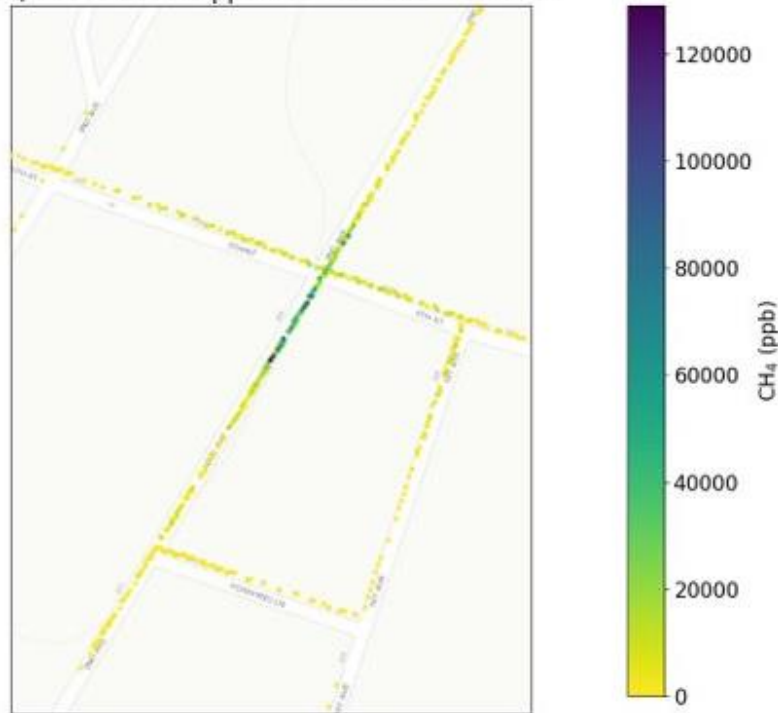


Interim Source Identification: Methane

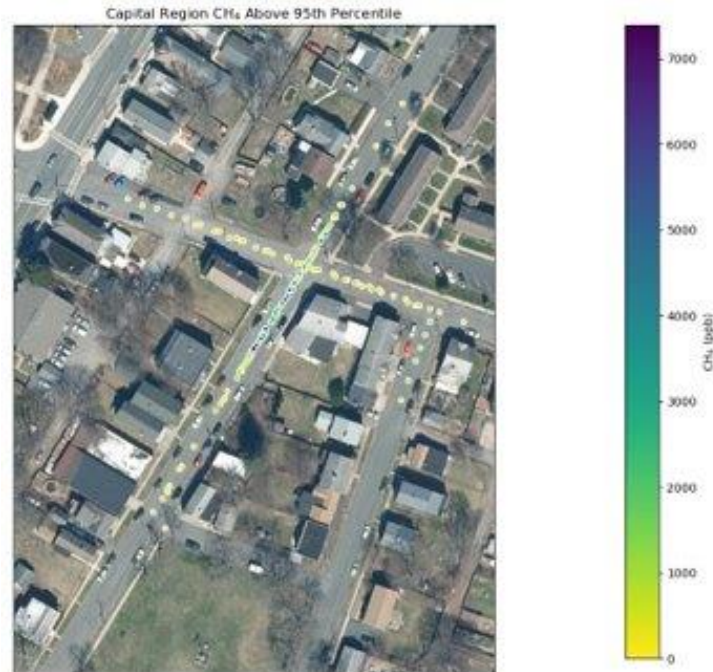


One of two methane peaks above 100,000 observed in the region

CH₄ above 2809.0 ppb near 42.7112 -73.70764



Capital District (North of Albany)



Discussion

DEC in charge of all messaging to the public

DEC required QAPP, sensor collocation and documented QA

1-sec and median road segment data can be difficult to explain
BC on I95 in the Bronx can be twice PM-2.5 or more

1-Sec data analysis is more informative than the annual
segment data

Program did not collect data in non-DAC areas for comparison

Thank You

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