Air Pollution, Health & Community-based Air Monitors

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Overview of Air Pollution & Health

- Sources
- Health impacts
- Particulate matter pollution
- Air pollution in Detroit & health inequities

Air Pollution & Infectious Disease (COVID-19)

Ecology Center's work for Clean Air

- Detroit Incinerator
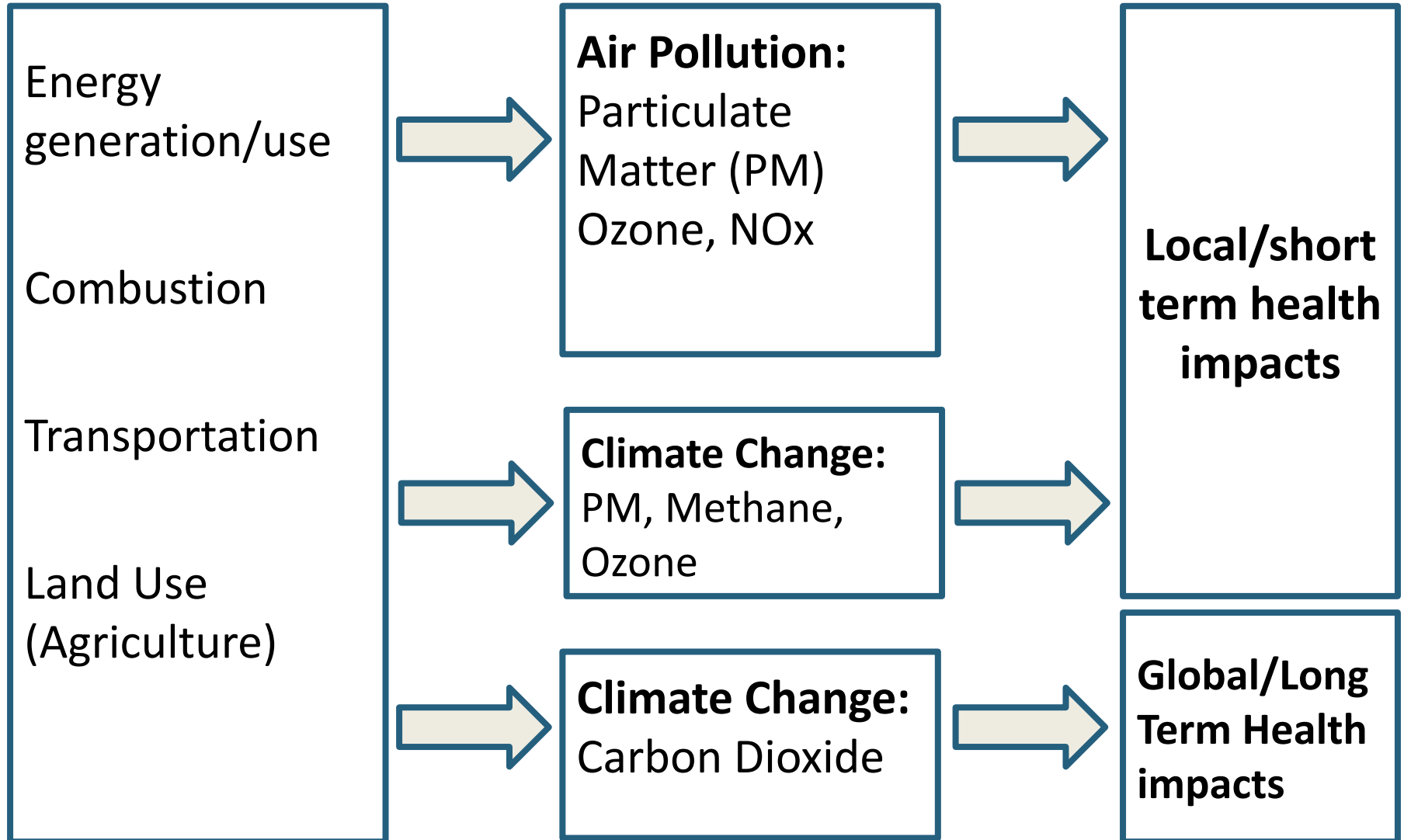- Community Air Monitoring

Air Pollution, Climate & Health

7 million people per year die from air pollution-related diseases

- stroke and heart disease, respiratory illness and cancers.

Many health-harmful air pollutants also damage the climate

- Fine particles of black carbon (soot) from diesel and biomass combustion
- ground level ozone

Source: World Health Organization

Air Pollution, Climate Change & Health

Energy generation/use Combustion Transportation Land Use (Agriculture)	→	**Air Pollution:** Particulate Matter (PM) Ozone, NOx	→	**Local/short term health impacts**
	→	**Climate Change:** PM, Methane, Ozone	→	
	→	**Climate Change:** Carbon Dioxide	→	**Global/Long Term Health impacts**

Exposure to Air Pollution

Worsens or exacerbates chronic diseases:

- Respiratory disease (asthma, COPD)
- Diabetes
- Cardiovascular disease, including hypertension

Contributes to poor pregnancy outcomes:

- Preterm birth
- Stillbirth
- Low birthweight

Particulate Matter

- A mixture of extremely small particles and liquid droplets. Can include: acids, organic chemicals, metals, soil and dust particles, and biological matter such as fungal spores.
- Can be inhaled deeply into the lungs and accumulate.
- Can pass through the lungs and enter bloodstream.
- 2.5 microns is about 1/30th the width of a human hair.
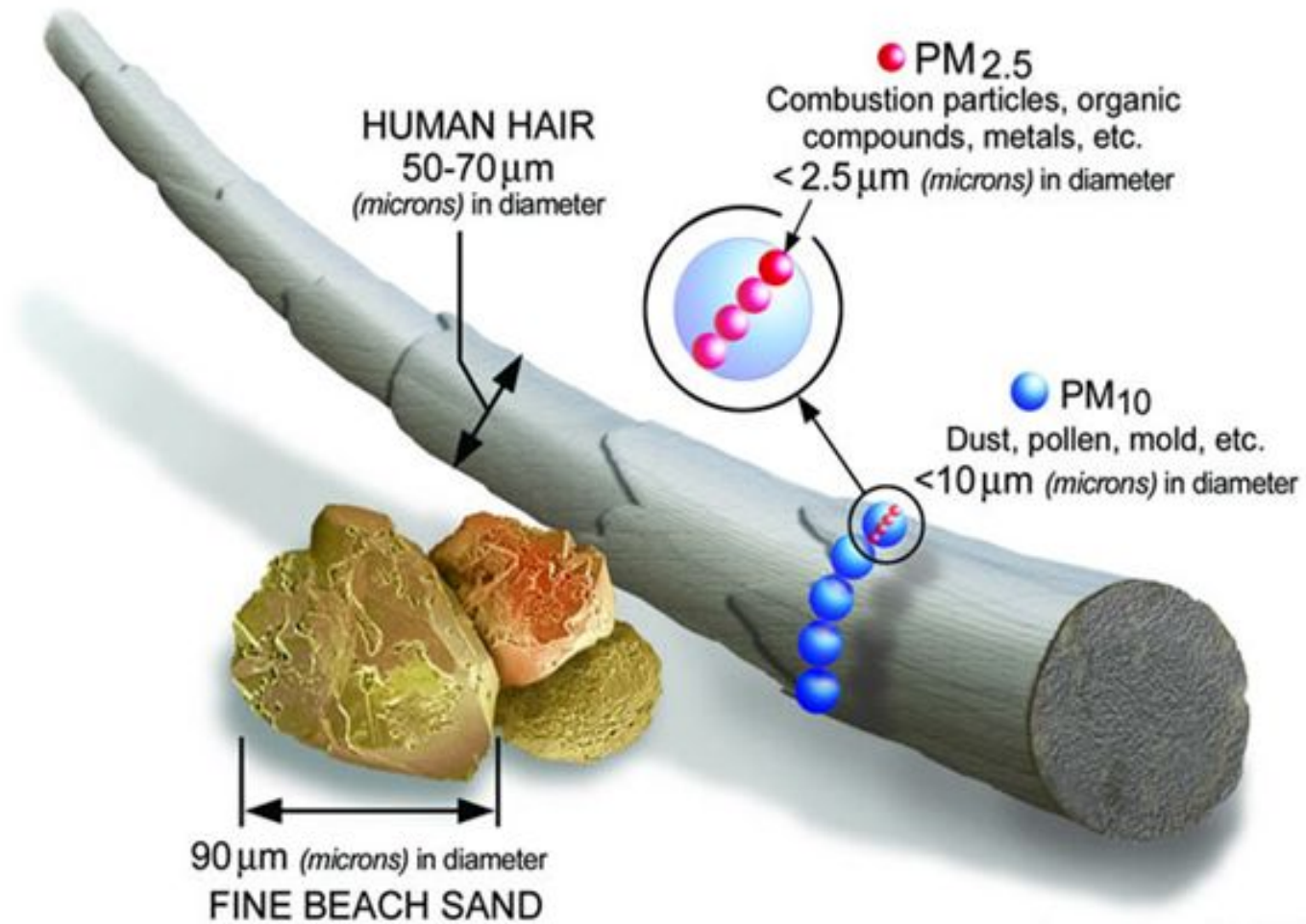
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HUMAN HAIR
50-70 μm
(microns) in diameter

PM2.5
Combustion particles, organic
compounds, metals, etc.
< 2.5 μm (microns) in diameter

PM10
Dust, pollen, mold, etc.
<10 μm (microns) in diameter

90 μm (microns) in diameter
FINE BEACH SAND

Image courtesy of the U.S. EPA

Particulate Matter

- Outdoor sources include:
  - cars
  - trucks
  - trains
  - construction equipment
  - power plants
  - incinerators
  - fireplaces
  - burning leaves and brush
  - some industrial processes

PM 10 ("Coarse fraction" particulate matter, with a diameter between 2.5 and 10 micrometers), is due to:

- crushing and grinding operations
- windblown dust from roads and fields

Particulate Matter Health Effects

Exposure to PM, particularly $PM_{2.5}$, can cause or worsen diseases and can cause death.

$PM_{2.5}$ can increase your risk of the following:
- Lung irritation, coughing, and difficulty breathing
- Asthma attacks and hospitalizations– especially children
- Adverse birth outcomes (premature births & low birth weight)
- Decreased lung function & impaired lung growth in children & teens

Particulate Matter Health Effects

$PM_{2.5}$ can increase your risk of the following:

- Increased blood pressure

- Heart attacks and irregular heartbeat

- Cancer

- Death

$PM_{2.5}$ may contribute to:

- Memory decline, brain atrophy, and dementia

- High blood sugar, diabetes

- Depression and suicide

Air Pollution Impacts are not equitably distributed

- Type of pollutant & duration of exposure
- Proximity to industrial sources
- Proximity to vehicular air pollution sources (eg, freeways, ports, rail and trucking facilities)
- Historical factors such as housing segregation, redlining play a role in who is exposed
- Race, class and access to the healthcare system, experience of racism in the health care system

Air Pollution in Detroit

- "The impacts of poor air quality **disproportionately fall on poor and minority populations**."

- "In the Detroit area, outdoor air pollution from all sources is responsible for an estimated **721 premature deaths** (571 due to $PM_{2.5}$, and 150 due to ozone)."

Community Action to Promote Health Environments: Public Health Action Plan; Improving Air Quality and Health in Detroit, 2017

Air Pollution in Detroit

○ Detroit declared "Epicenter of Asthma" by Michigan Department of Health & Human Services

○ Detroit zip codes with highest rates of asthma hospitalization:
  ■ Central: 48201, 48202 48238
  ■ Eastside: 48213, 48214, 48215

12. Rates[1] of Asthma Hospitalization[2] by ZIP Code of Residence, Detroit, 2009-2013

Map of Detroit ZIP codes:
48219, 48235, 48221, 48203, 48234, 48205, 48212, 48224, 48223, 48227, 48238, 48206, 48213, 48211, 48202, 48214, 48215, 48204, 48228, 48208, 48210, 48207, 48216, 48201, 48226, 48209, 48217

Number of Hospitalizations per 10,000 Population

- 21 - 29
- 30 - 37
- 38 - 56
- 57 - 71

Data Notes:
Source: Michigan Inpatient Database, 2009-2013, MDHHS
1. Age-adjusted to the 2000 US Standard Population
2. Asthma as primary diagnosis, ICD-9-CM: 493.XX

- ZIP Codes 48201, 48202, and 48238 in central Detroit and 48213, 48214, and 48215 in eastern Detroit had the highest asthma hospitalization rates in the city.

- Lower rates of asthma hospitalization tended to occur in ZIP Codes in the western and southwestern parts of the city.

Air Pollution & COVID-19

- Historically, studies of both the 1918 flu pandemic & 2003 SARS outbreak, have shown that areas with increased air pollution had increased death rates during the pandemic/outbreak.

- Chronic exposure to air pollution -> irritation and inflammation of lung tissue -> increased susceptibility to infectious diseases like COVID-19.

Air Pollution & COVID-19

- Poor people and people of color are more likely to be exposed to air pollution.

- Areas with higher PM2.5: increased COVID cases, severity of disease and mortality (Wu et al, 2020).

- African American are 12% of Michigan > 35% of COVID-19 cases > 40% of deaths

Breathe Free Detroit

Detroit's Incinerator

- Burned trash from 10 MI counties, Illinois, Ohio, Canada
- Cost Detroiters more
  - Detroit paid $25/ton, 66% more than other cities
  - Pollution from the facility = $2.6 M/yr in health costs
- Located in a vulnerable community
  - 87% within 1 mile are people of color
  - 60% live below the federal poverty line
  - 20% unemployment
  - 76,681 children within 5 miles; 13 schools within 1.5

Detroit's Incinerator

- Violated the federal Clean Act over 750 times in 5 years (2013 - 2017)
- Violations were on-going
- Violations included:
  - failure to monitor sulfur dioxide
  - failure to monitor carbon monoxide
  - failure to monitor nitrogen oxides
  - exceeding allowed limits of carbon monoxide emissions
  - **failure to effectively capture particulate matter**

Detroit's Incinerator

- In 2017, the incinerator performed its annual stack test with MDEQ.
- They found a hole in one of the stacks releasing uncontrolled particulate matter emissions.
- The hole remained unfixed for 65 days.
- The facility received one single violation for over 2 months of particulate matter exceedances.
- The community became concerned and wanted to know more about particulate matter in the air.

Surprise! Success

- Less than a week after we had the first Purple Air monitors in place...The incinerator shut down.

- We have expanded our monitoring area to include:
  - Southwest Detroit
  - Eastside neighborhoods near Fiat Chrysler Automotive plant, and US Ecology

Low Cost Air Monitors

Empower Community

- Community engagement/ community building
  - Monitors placed at residents homes, community centers, and schools.
  - Increase community involvement
  - Raise community awareness about air quality

- Educational tools for schools
  - School kids get hands-on experience with reading and interpreting data and comparing results.

- Increase local advocacy for better air quality standards.

Purpose of Low Cost Air Monitors

Affect Policy?

● NOT used to directly affect policy, regulations, or permits

● **Document**: Community monitors help to document how current policies are failing to protect our health

● **ID hyper local hot spots**: Regulatory monitors are too far apart to provide information on a neighborhood level.

● **Guide further monitoring**: Serve as preliminary sensors to guide where to monitor with higher quality instruments.

Project Goals

- Develop youth & community educational programing around science and civic engagement
- Organizing tool to build to leadership & support programs in toxics, health and climate/energy
- ID emission hotspots and support organizing for emissions reduction
- Build support for better local/state policy around permitting, emission reductions and air quality related health issues (asthma, etc)
- Do excellent science with academic and other collaborators

Ecology Center Monitors

The program currently uses four types of air monitors:

- 27 PurpleAir particulate matter (PM) monitors;
- 3 Aeroqual Micro Air Quality Monitors ($PM_{2.5}$, O_3, NO_2);
- 1 Aeroqual Series 500 - Portable Multi-pollutant Air Quality Monitor (CO, CO_2, H_2S, NO_2, CH_4, O_3, SO_2, VOC, PM).
- 12 Flow 2 wearable monitors (PM, NO_2, VOC)

Purple Air Monitors

- Measure PM2.5 and PM10
- Do not measure other pollutants
- Require wi-fi and electricity
- Collect and upload data every couple of minutes onto a publicly available website
- Collect data on air conditions: temperature & humidity
- Ecology Center casts the data on our own website

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Purple Air Monitors

Incinerator neighborhood
I-94 / I-75 interchange

● University Preparatory
  Academy
● Recovery Park
● Cass Commons
● James & Grace Lee Boggs
  School
● Residences on Farnsworth

Purple Air Monitors
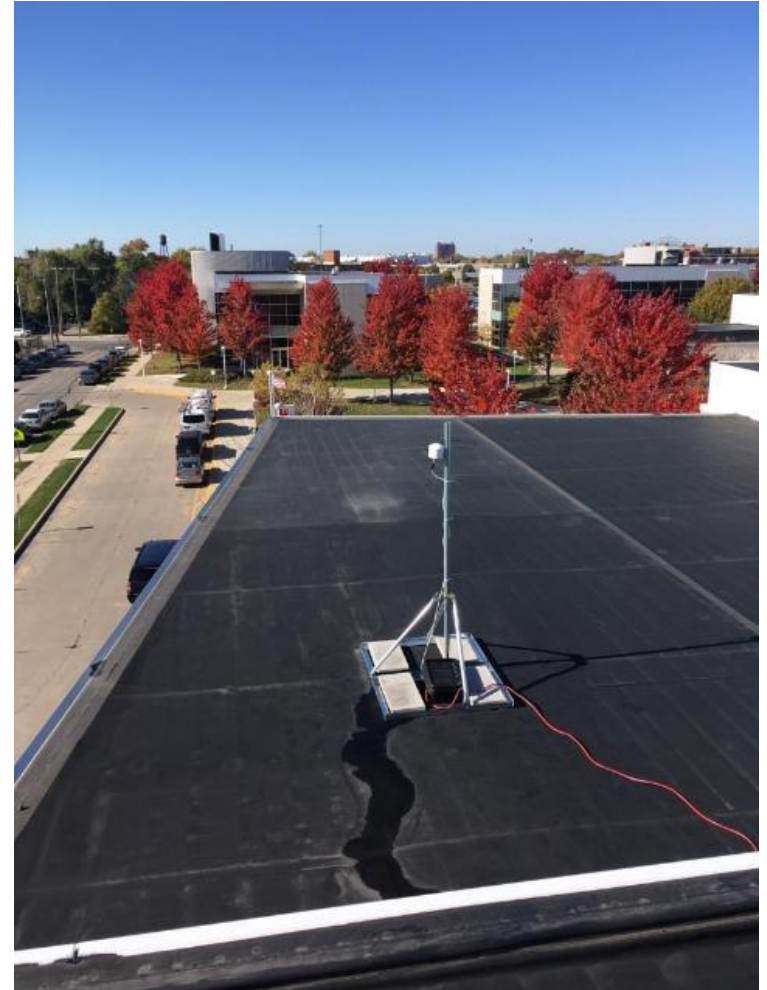
Eastside neighborhood,
near Stellantis (formerly Fiat
Chrysler Automotive)

- Eastside Community
  Network

- Residence on Cadillac

- Residence on Pennsylvania

Purple Air Monitors

Southwest Detroit Locations

- Clippert Multicultural Magnet Honors Academy

- Detroit Hispanic Development Corporation

- CHASS Clinic

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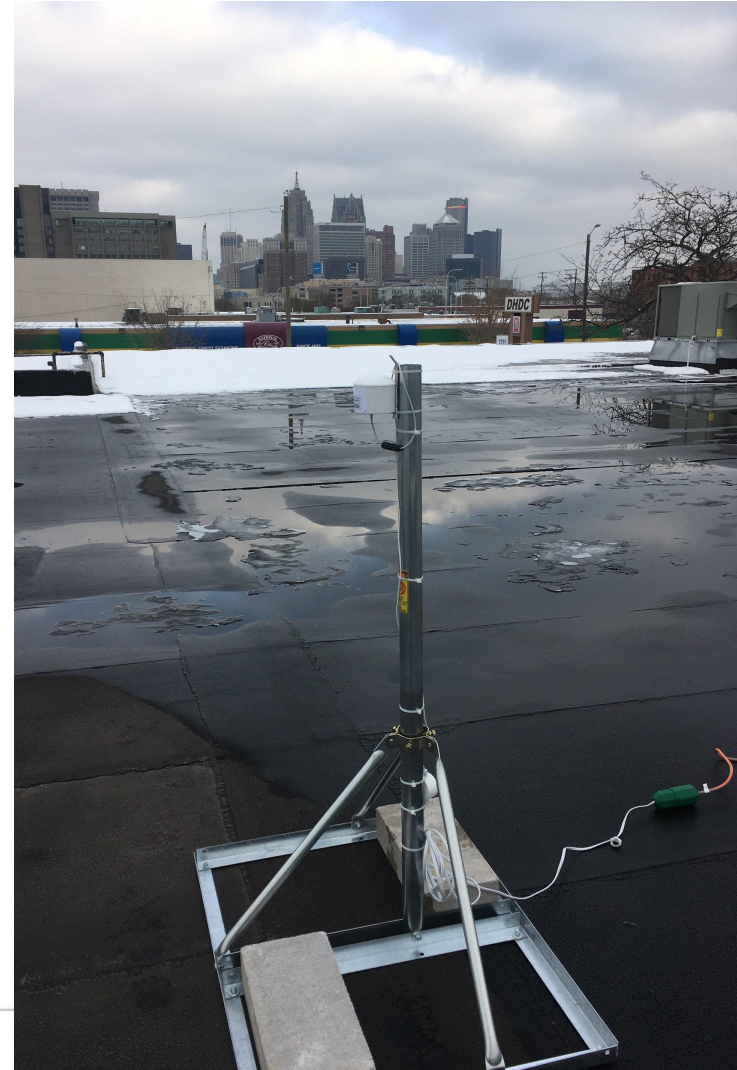
Southwest Detroit
Locations

- Residence on Vinewood St.

- Residence on Deacon St.

- Residence on Annabelle St.

Co-Location with EPA Air Monitors

Purple Air monitor installations

Purple Air Monitors
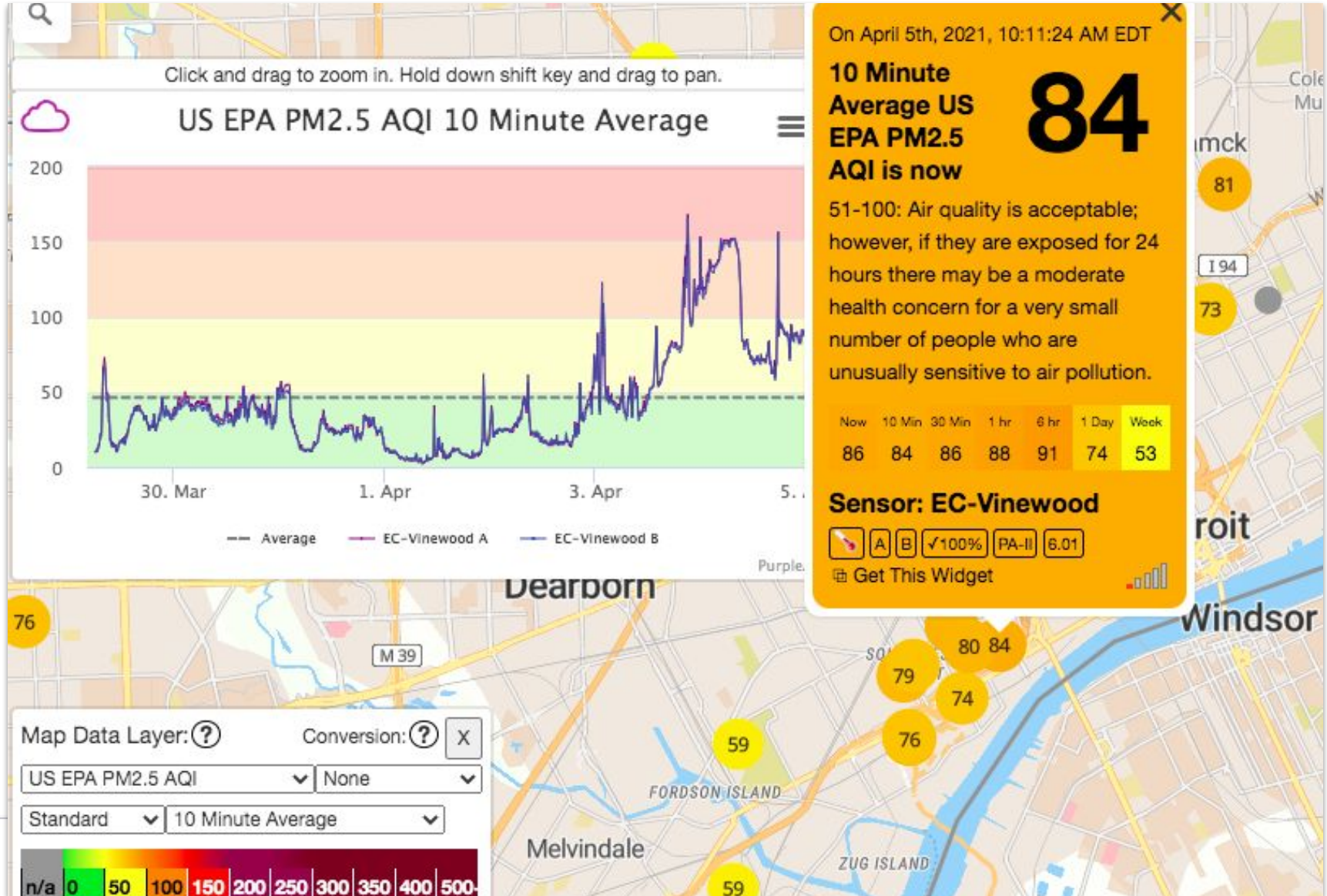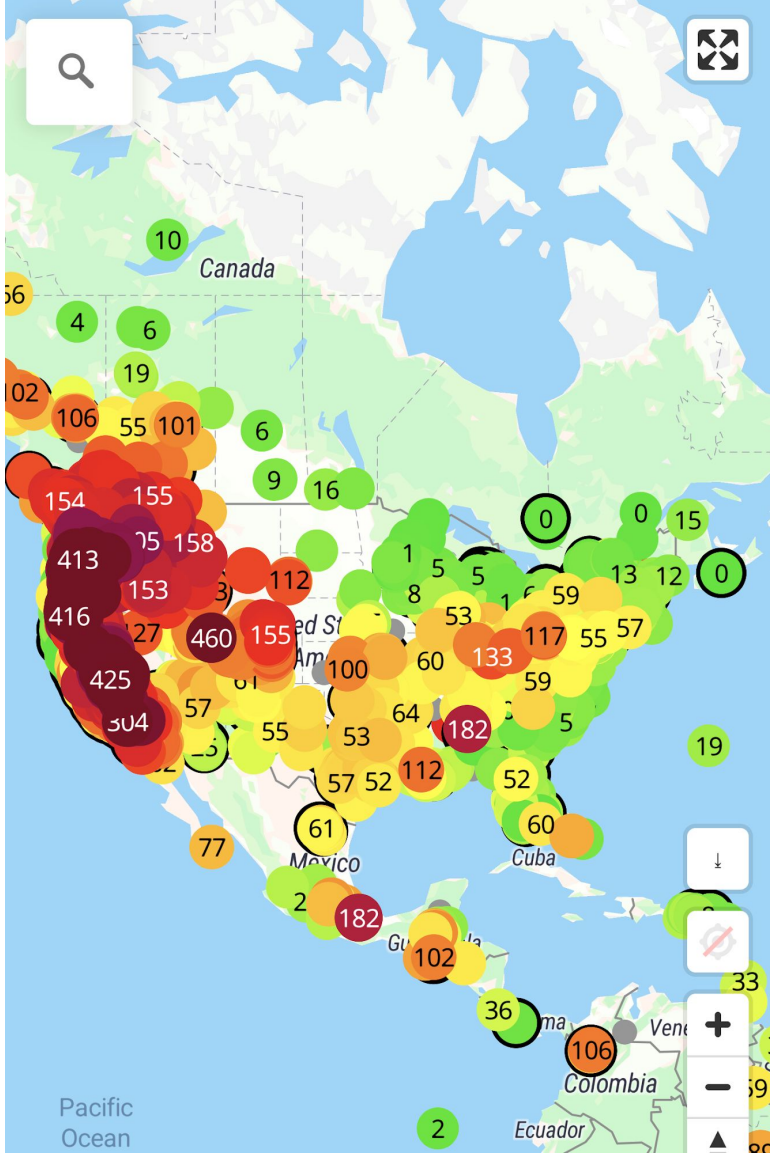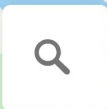
Detroit Area Monitors

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Air quality index values shown on this map are not representative of current air quality index values for these sensors.

Purple Air Monitors
Detroit Area Monitors
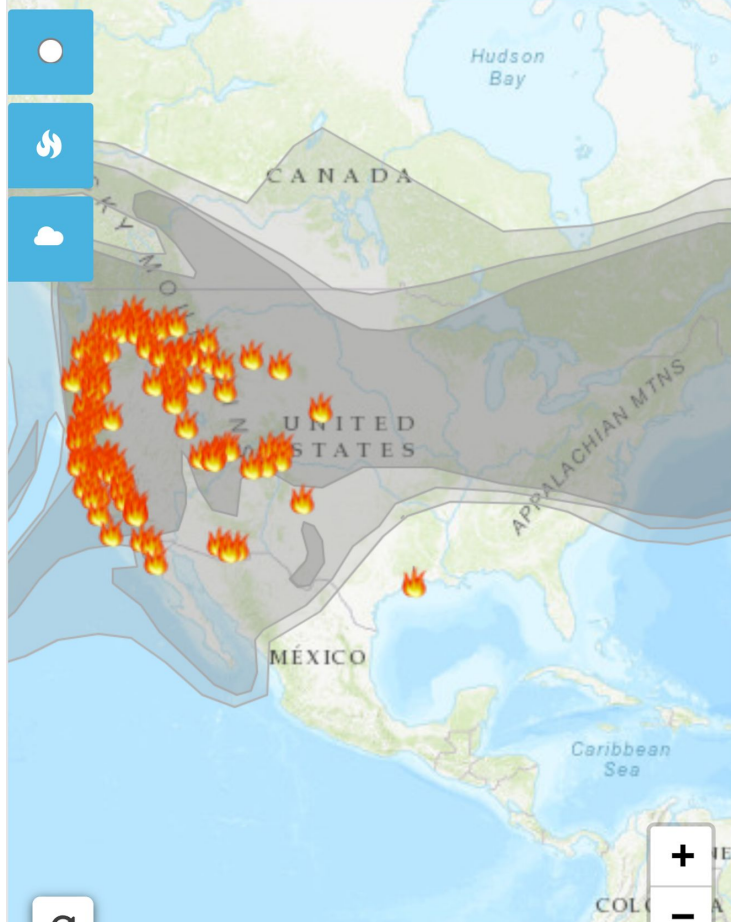
Air Quality in Detroit & Allen Park

Clarity Node-S Monitor Data Summary:
Daily Average PM 2.5 Air Quality Index (AQI)
Number of Days in Each AQI Category, August 4 - October 10, 2021

■ Good ■ Moderate
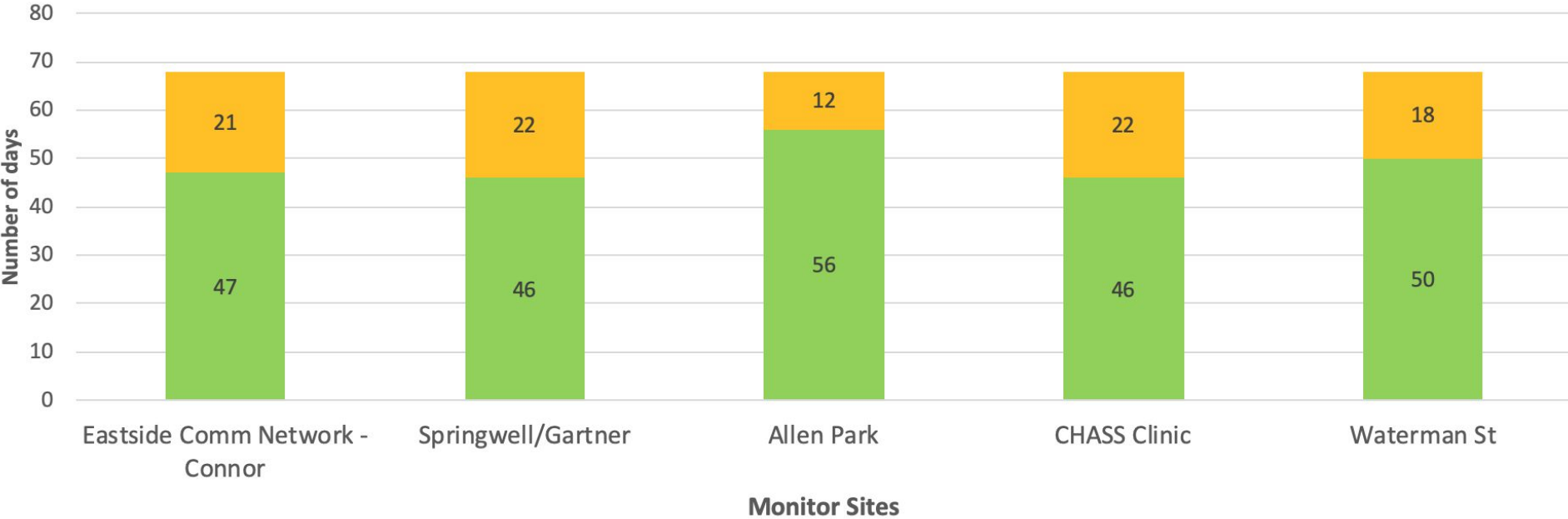
What is Air Pollution and How Does It Affect My Health?

AIR POLLUTION is a mix of solid particles and gasses in the air that can cause harm to people. Ozone and particulate matter are two dangerous types of air pollution. OZONE is produced when oxygen, nitrous oxides, and Volatile Organic Compounds (VOCs) combine in the presence of sunlight. The sources of nitrous oxide and VOCs come from car engine exhaust, industrial emissions and combustion, gasoline vapors, paints, and chemical solutions.

PARTICULATE MATTER (PM) is the small, solid material suspended in the air that is able to enter our airways when breathing. PM is classified based on the size of the particles. PM2.5 is small enough to be carried into the bloodstream through the delicate lungs. The larger PM10 settles in our sinuses and air passages because the particles are too big to pass through lung tissue. Major sources of PM pollution are fires, burning waste, exhaust, industrial processes, and windblown particles in dry environments, such as dust from agricultural fields.

AIR POLLUTION HARMS HUMAN HEALTH

- damage to lung tissue
- respiratory infections
- inflammation of airways
- asthma and bronchitis
- chronic lung disease, COPD
- premature death
- lung cancer
- heart disease
- stroke
- cognitive aging
- type II diabetes

Children exposed to air pollution are particularly sensitive to decreased lung function.

WHAT CAN I DO ABOUT AIR POLLUTION?
You can be a champion for clean air!

1. If you see or smell air pollution, call the **24-hour Pollution Emergency Alerting System (PEAS) at 800-292-4706** to report concerns.
2. **Contact cleanair@ecocenter.org,** (313) 288-0613. We can connect you with local organizations taking action for clean air or help you get involved with monitoring:
- **"Adopt a Monitor":** Visually check-in on a monitor and let us know if a problem arises.
- **Host a gathering:** Host friends and neighbors to discuss and learn more about air quality.
- **Learn more:** Learn how to interpret the monitor data and share with your community.

WHY HAVE COMMUNITY MONITORS?
- Air pollution has health impacts and some communities suffer more from poor air quality.
- Current air pollution standards and monitoring requirements are inadequate to protect health. Community monitors help to document how current policies are failing to protect health.
- Official air monitors are spaced too far apart to provide information at neighborhood-level and miss "hotspots" of concern.
- Local residents are better able to:
  - Ask questions about the air affecting everyday life.
  - Raise community awareness and advocate for improved air quality policies.

¿Qué es la contaminación ambiental y cómo afecta mi salud?

La **contaminación ambiental** es una mezcla de partículas sólidas y gases en la contaminación del aire. El ozono se produce cuando el oxígeno, los óxidos nitrosos y los compuestos orgánicos volátiles (COV) se combinan cuando se encuentran en presencia de la luz solar. Las fuentes de óxido nitroso y COV provienen del escape del motor de los automóviles, las emisiones industriales y la combustión, los vapores de gasolina, las pinturas y las soluciones químicas.

La **materia particulada** (PM, por sus siglas en ingles) es el material pequeño y sólido suspendido en el aire que puede ingresar a nuestras vías respiratorias al respirar. PM se clasifica en función del tamaño de las partículas. El PM es lo suficientemente pequeño como para ser transportado al torrente sanguíneo a través de nuestros delicados pulmones. El PM más grande se deposita en nuestros senos y conductos de aire porque las partículas son demasiado grandes para atravesar el tejido pulmonar. Las principales fuentes de contaminación por PM son incendios, quema de desechos, gases de escape, procesos industriales y partículas arrastradas por el viento en ambientes secos, como el polvo de los campos agrícolas.

LA CONTAMINACION AMBIENTAL PERJUDICA LA SALUD HUMANA

- Daño en el tejido pulmonar
- Infecciones respiratorias
- Inflamación de las vías respiratorias
- Enfermedad pulmonar crónica, EPOC
- Envejecimiento Cognitivo
- Enfermedad del corazón
- Asma y bronquitis
- Cáncer de pulmón
- Derrame cerebral
- Diabetes tipo II
- Muerte prematura

Los niños expuestos a la contaminación ambiental son particularmente sensibles a la disminución de la función pulmonar.

¿QUÉ PUEDO HACER SOBRE LA CONTAMINACIÓN AMBIENTAL? ¡Puedes ser un campeón del aire limpio!
1. Si ve o huele la contaminación en el aire, llame al Sistema de Alerta de Emergencia de Contaminación disponible las 24 horas (PEAS) al 800-292-4706 para informar inquietudes.
2. Póngase en contacto con cleanair@ecocenter.org, (313) 288-0613. Podemos conectarlo con organizaciones locales que toman medidas para conseguir aire limpio para ayudarlo a involucrarse en el monitoreo:
- Puede "Adoptar un monitor": verifique visualmente un monitor e infórmenos si surge un problema.
- Organice una reunión: organícese con amigos y vecinos para discutir el tema y aprender más sobre la calidad del aire.
- Infórmese mas: aprenda a interpretar los datos del monitor y compartirlos con su comunidad.
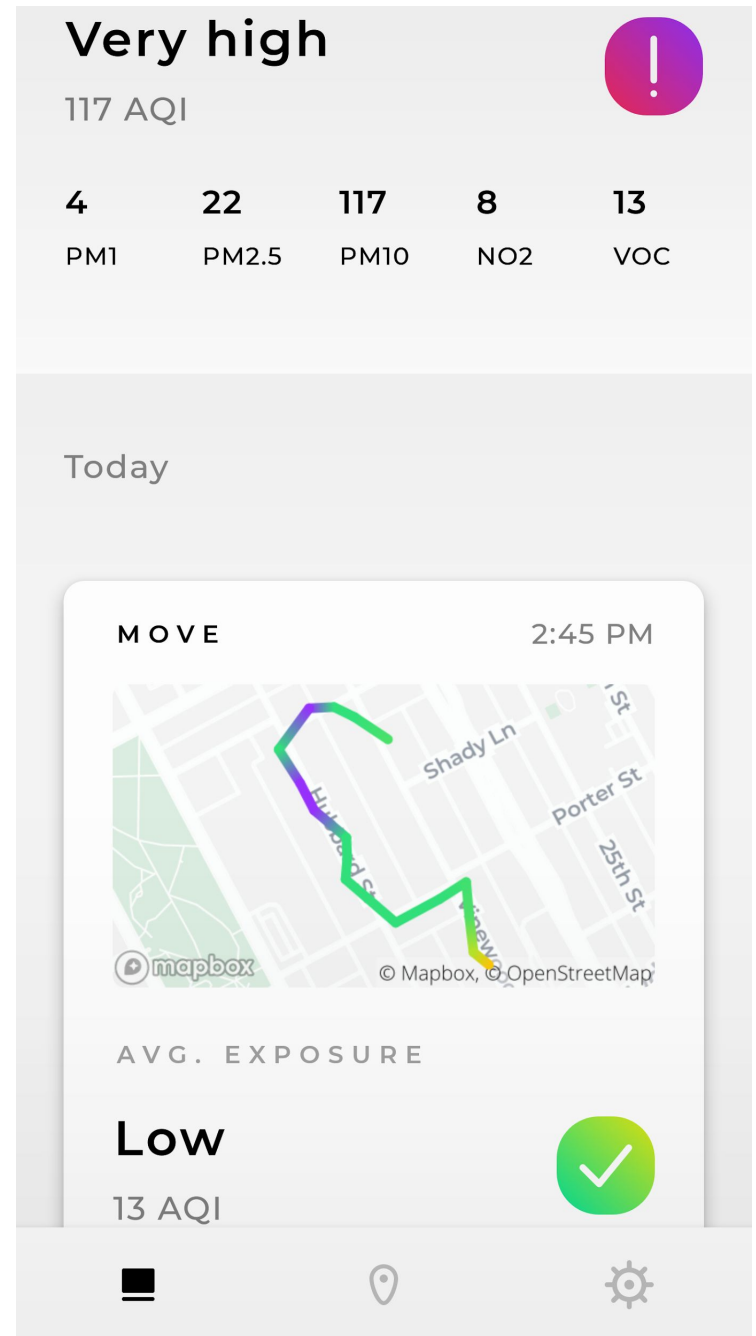
¿POR QUÉ TENER MONITORES COMUNITARIOS?
- Contaminación ambiental tiene impactos en la salud y algunas comunidades sufren más por la mala calidad.
- Los estándares actuales de contaminación del aire y los requisitos de monitoreo son inadecuados para proteger la salud. Los monitores comunitarios ayudan a documentar cómo las políticas actuales no protegen la salud.
- Los monitores de aire oficiales están demasiado separados para proporcionar información a nivel de vecindario y se pierden "puntos críticos" o inquietudes.
- Los residentes locales están en mejores condiciones para:
  - Haga preguntas sobre el aire que afecta la vida cotidiana.
  - Sensibilice a la comunidad y abogue por políticas mejoradas de calidad del aire.

Wearable Sensors

Flow 2 wearable sensor &
mobile phone app with GPS

Very high

117 AQI

4	22	117	8	13
PM1	PM2.5	PM10	NO2	VOC

Today

MOVE   2:45 PM

Shady Ln
Porter St
25th St

AVG. EXPOSURE

Low

13 AQI

Air Quality & Monitoring workshop at Georgia Street Community Collective community garden, September 2020

Air Quality & Monitor training, Hamtramck High School Students, Oct 2020

Southwest Detroit Truck Study

Detroit Air Quality Sensor Learning Collaborative

- Community, government agencies, academic institutions

- Using a wide variety of monitors for regulatory, research, community engagement, and educational purposes

- Sharing best practices and experience, sharing data

Next Steps

- **Audit of air monitors:** Conduct audit of monitors and create a website to share information

- **Communications**: Community outreach & education in Southwest and Eastside neighborhoods.

- **Quality Assurance**: Continue co-location; data management; maintenance & repair of monitors, additional installations, on-going assessment of other pollutants/monitors (SO_2)

- **Collaboration:** Planning with partners to align work on air monitoring, communications, and policy locally; creating community toolkit and scaling up regionally

THANK YOU!

QUESTIONS?

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kathryn@ecocenter.org

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Purple Air Monitors in the Community

Recovery Park also has an Aeroqual monitor

Purple Air Monitors in the Community

Residence

Purple Air Monitors at Boggs School

Co-Location with EPA Monitors
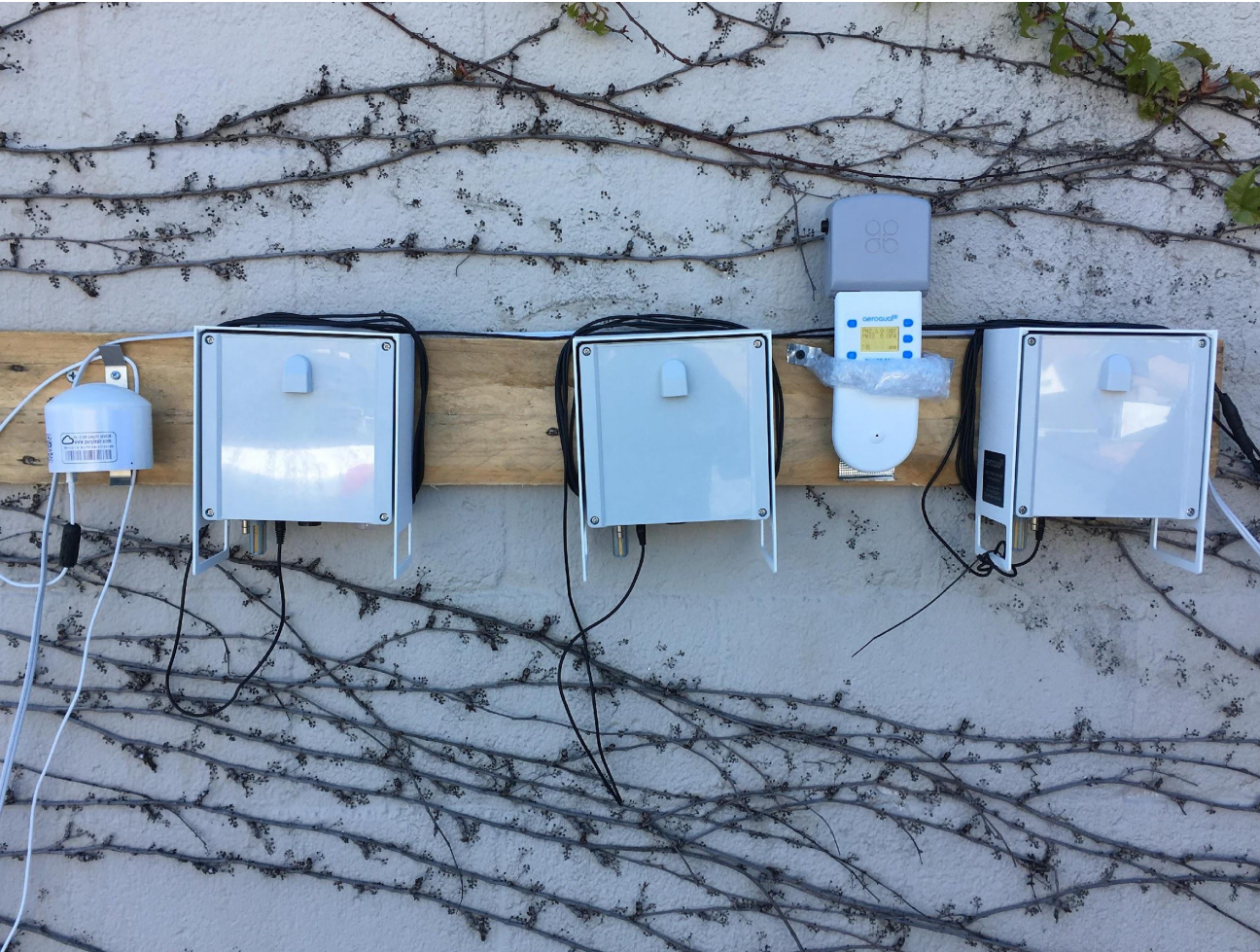
Co-location is a means for comparison and verification that air quality data is consistent.

Purple Air Monitors at

Boggs School

within 1.5 Miles

The James and Grace Lee Boggs School

www.ecocenter.org
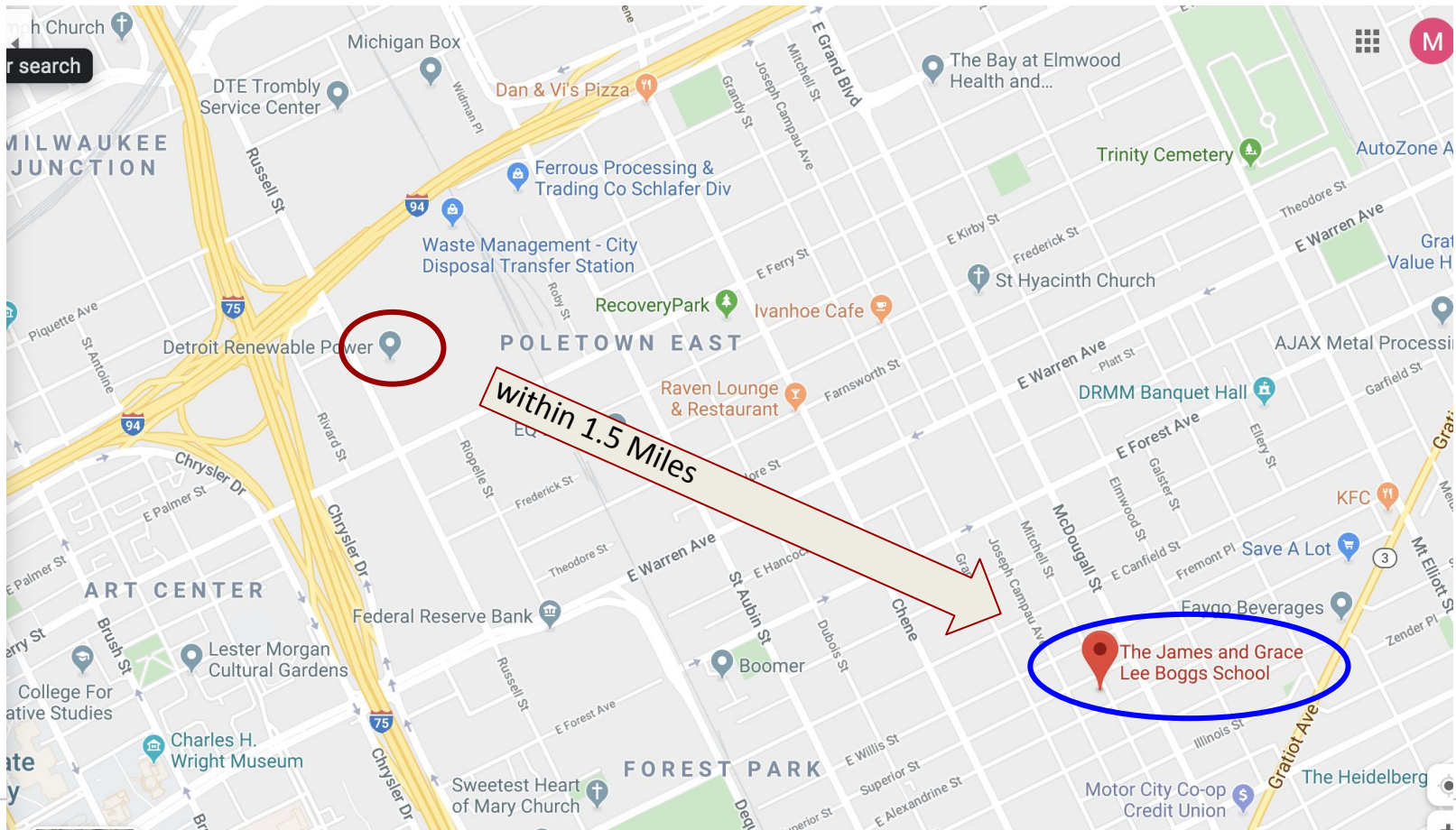
7th & 8th Graders Monitor Air Quality at Boggs School

Date	Time	Tiger Lily Room Air Sensor				Nest Roof Air Sensor				Weather Underground							Notes/Observations	Name of Stude
		Indoor PM 2.5 AQI	Indoor PM 10 AQI	Indoor Temperature (degrees Fahrenheit)	Indoor Humidity	Outdoor PM 2.5 AQI	Outdoor PM 10 AQI	Outdoor Temperature (degrees Fahrenheit)	Outdoor Humidity	Temperature (degrees Fahrenheit)	Wind Speed (mph)	Wind Direction (from)	Weather	Air Quality	AQI	Dominant Pollutant		
5/24/2019	9:11 AM	17	5	73°	41	17	5	62°	49	60°	0	N	Sunny	Good	46	PM2.5	The indoor and outdoor PM10 and PM2.5 is the same probally because the window has been open for a while	Willow
5/24/2019	2:22 AM	17	5	75°	45	21	6	65°	47	68°	2	N	Mostly Cloudy	Good	49	PM2.5	Its a little chilly people are cutting grass for memorial day, WE LOVE THAT	Christopher
5/25/2019	3:53 PM	7	7	73°	42	33	9	83°	37	85°	2	N	Mostly Cloudy	Moderate	N/A	N/A	Good day for ice cream.(DONT HAVE ANY THOUGH)	ION
5/28/2019	9:20 AM	55	14	75°	50	59	16	70°	64	70°	1	s	Mostly Cloudy	Good	n/a	n/a	dqqj;gu	cam
5/29/2019	8:38 AM	55	14	76°	42	102	46	54°	75	57°	0	sw	cloudy	Good	42	PM2.2.5	Its not a good air day if that makes any sense.(: (:	RENE
	8:48 AM	74	20	74°	46	105	46	60°	72	63°	1	NW	Mostly Cloudy	Moderate	60	PM 2.5	It smells like fire and the air is horrible today	Marleen
5/31/2019	8:52 AM	33	7	74°	41	42	9	64°	46	60°	1	N	sunny	moderate	59	pm 2.5	It is very warm out side today	
5/31/2019	2:15 PM	59	17	79°	46	61	18	84°	31	80°	0	NE	Fair	Moderate	58	pm 2.5	It's too hot and I have no idea why I'm wearing a long sleeve and jeans.	Lily
6/3/2019	9:05 AM	4	1	75°	35	0	0	52°	40	51°	3	N	sunny	good	25	pm 2.5	it's hot	
6/4/2019	8:59 AM	21	6	74°	34	21	6	74°	34	60°	0	NE	sunny	N/A	N/A	N/A	it seems like it will be hot today :^3	mimi
6/4/2019	3:21 PM	57	15	80°	38	59	18	78°	32	75°	3	N	Mostly Cloudy	moderate	59	PM2.5	Nice day!	Na'kyah
6/5/2019	10:06 AM	68	19	79°	48	89	31	71°	65	68°	0	NE	Partly Cloudy	Moderate	84	Grass Pollen	It rained earlier today.Loved it!	Aza
6/6/2019	3:18 PM	53	13	81°	51	25	6	78°	51	78°	2	N	Mostly Cloudy	Moderate	54	Grass Pollen	It's Hot, Humid, & DRYYYY	Jaya!!
6/6/2019	9:45 AM	50	12	75°	40	72	23	58°	69	59°	5	N	Cloudy	Moderate	58	PM2.5	Its cold	
6/6/2019	3:12 PM	61	18	75°	38	55	14	80°	37	70°	3	N	Mostly Cloudy	Moderate		Grass Pollen	Perfect temperture.	Sierra
6/10/2019	9:21 AM	21	5	68°	74	32	9	78°	43	68°	9	N	ompletly Cloud	Moderate		Grass pollen	Hot. Humid. But also not horid I need help	Paris
6/10/2019	2:49 AM	25	7	75°	43	53	13	66°	63	68°	28	N	Mostly Cloudy	Good	37	PM2.5	Pretty humid. Rain drizzle hear and there. Not much sun	Adilem Hernand

Boggs School Data Sheets

Purple Air Monitors

- Indoor PM 2.5
- Indoor PM 10
- Indoor Temp (F)
- Indoor Humidity
- Outdoor PM 2.5
- Outdoor PM 10
- Outdoor Temp (F)
- Outdoor Humidity

Weather Underground

- Temperature
- Wind speed
- Wind direction
- Weather (sunny, cloudy)
- Air Quality (good, moderate)
- AQI
- Dominant Pollutant

Notes/ Observations

Boggs School Kids' Notes & Observations

- "The indoor and outdoor PM$_{10}$ and PM$_{2.5}$ is the same probably because the window has been open for a while."
- "It's a little chilly. People are cutting grass for Memorial Day. WE LOVE THAT."
- "Good day for ice cream (Don't have any though)"
- "It's not a good day for air if that makes sense (: (:"
- "It smells like fire and the air is horrible today."

Boggs School Kids Report Their Findings
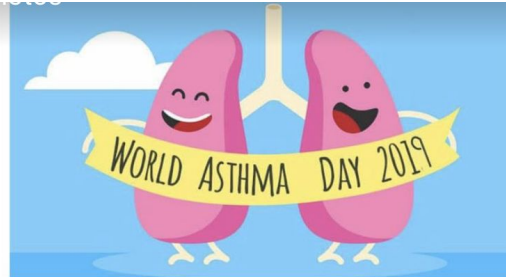
Tuesday, May 7 at 5:00-7:00 PM

Plymouth United Church of Christ

600 E. Warren Ave @ Saint Antoine St. Detroit

Presented by the Breathe Free Detroit campaign, this after-school affair is an educational event!

❀ Learn what your family can do to combat asthma ❀
from the Asthma and Allergy Foundation of America
Michigan Chapter's Executive Director Kathleen Slonager

❀ Report on local polluters as a growing threat ❀
to our health by Wayne State University's
Master of Public Health Students

❀ Report on incinerator shutdown ❀
and collecting air quality data by
The James and Grace Lee Boggs School Students

❀ Sign up for a free recycle bin from Zero Waste Detroit's ❀
Community Outreach and Education Coordinator Galen Hardy

❀❀❀ Light Food and Drinks will be provided! ❀❀❀

For more information visit: bit.ly/WorldAthsmaDay2019

Update on Schools

- Clippert Academy
  - Indoor and outdoor installed and running
- University Prep
  - Indoor and outdoor installed and running
- Boggs School
  - Need to reinstall the indoor
  - Outdoor installed and running;

WELCOME JEFF OR INSERT THANK YOU SLIDE AND END

Ecology Center Verification Methods

Calculating AQI Values

- Calculate the AQI using pollutant concentration data in the following equation:

$$AQI = \left[\frac{(PM_{obs} - PM_{min}) \times (AQI_{max} - AQI_{min})}{(PM_{max} - PM_{min})} \right] + AQI_{min}$$

PM_{obs} = observed 24-hour average concentration in µg/m³
PM_{max} = maximum concentration of AQI color category that contains PM_{obs}
PM_{min} = minimum concentration of AQI color category that contains PM_{obs}
AQI_{max} = maximum AQI value for color category that corresponds to PM_{obs}
AQI_{min} = minimum AQI value for color category that corresponds to PM_{obs}

Color	Level of Health Concern	AQI Values
Green	Good	0 to 50
Yellow	Moderate	51 to 100
Orange	Unhealthy for sensitive groups	101 to 150
Red	Unhealthy	151 to 200
Purple	Very Unhealthy	201 to 300
Maroon	Hazardous	301 to 500

Ecology Center Co-Location

Calendar: May 2019
Site: Allen Park

EC-BFD-ALLEN PARK MAY

EPA ALLEN PARK MAY

Ecology Center Co-Location

Calendar: June 2019
Site: Allen Park

EC-BFD-ALLEN PARK JUNE

EPA ALLEN PARK JUNE

Ecology Center Co-Location
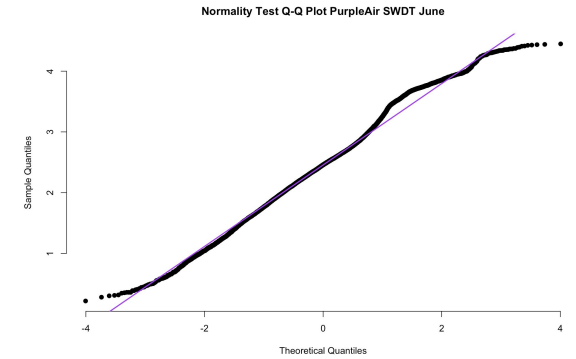
Calendar: June 2019
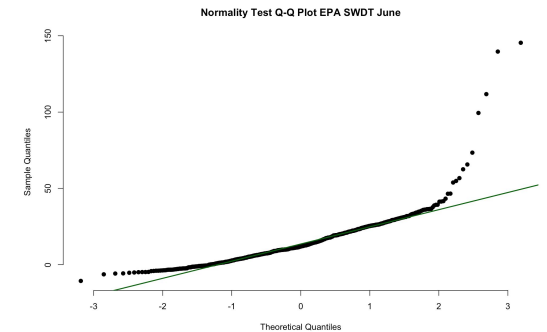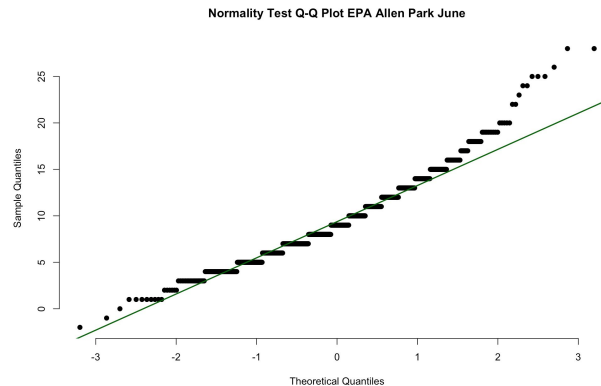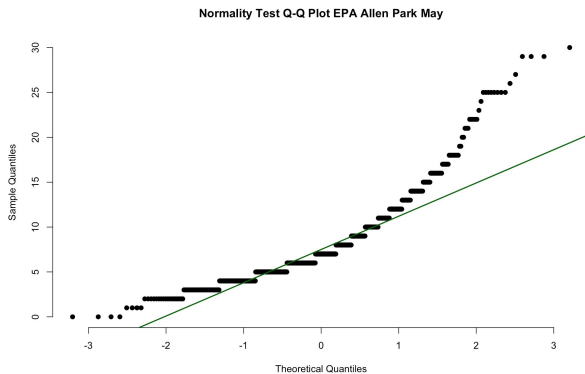# Site: EGLE Station, SW Detroit

Normality Tests

Purple Airs vs. EPA Monitors
May- June 2019
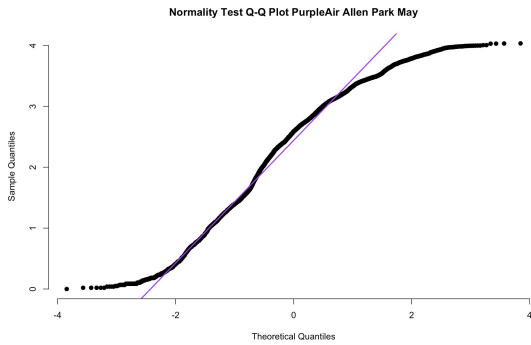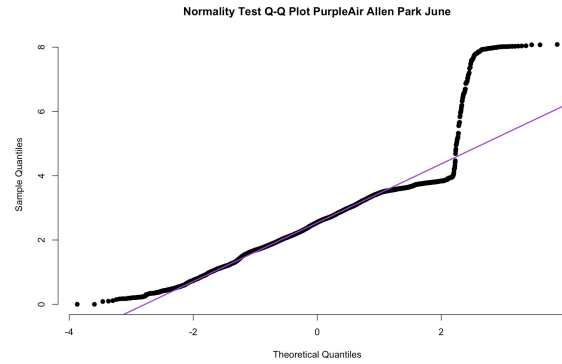
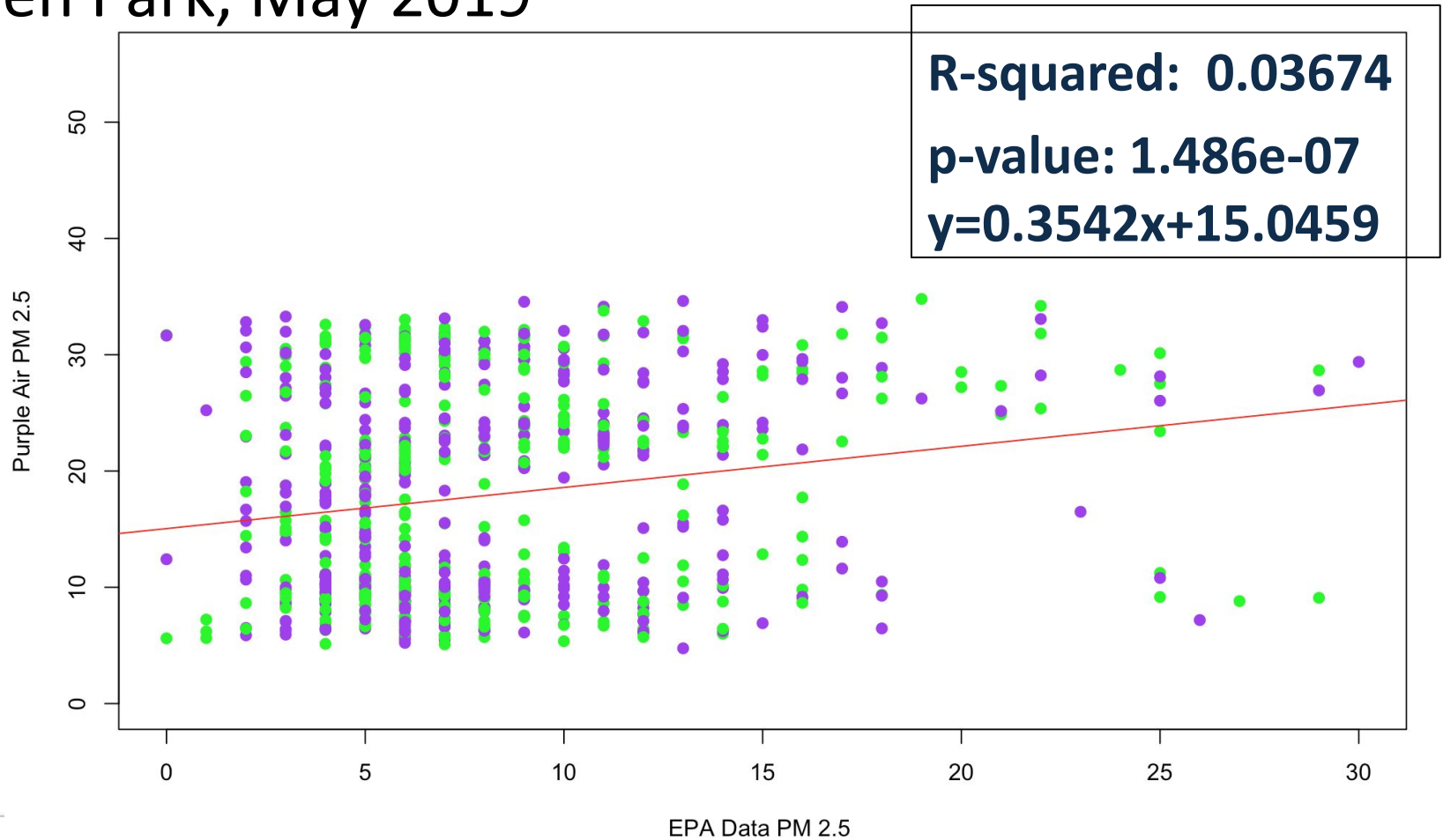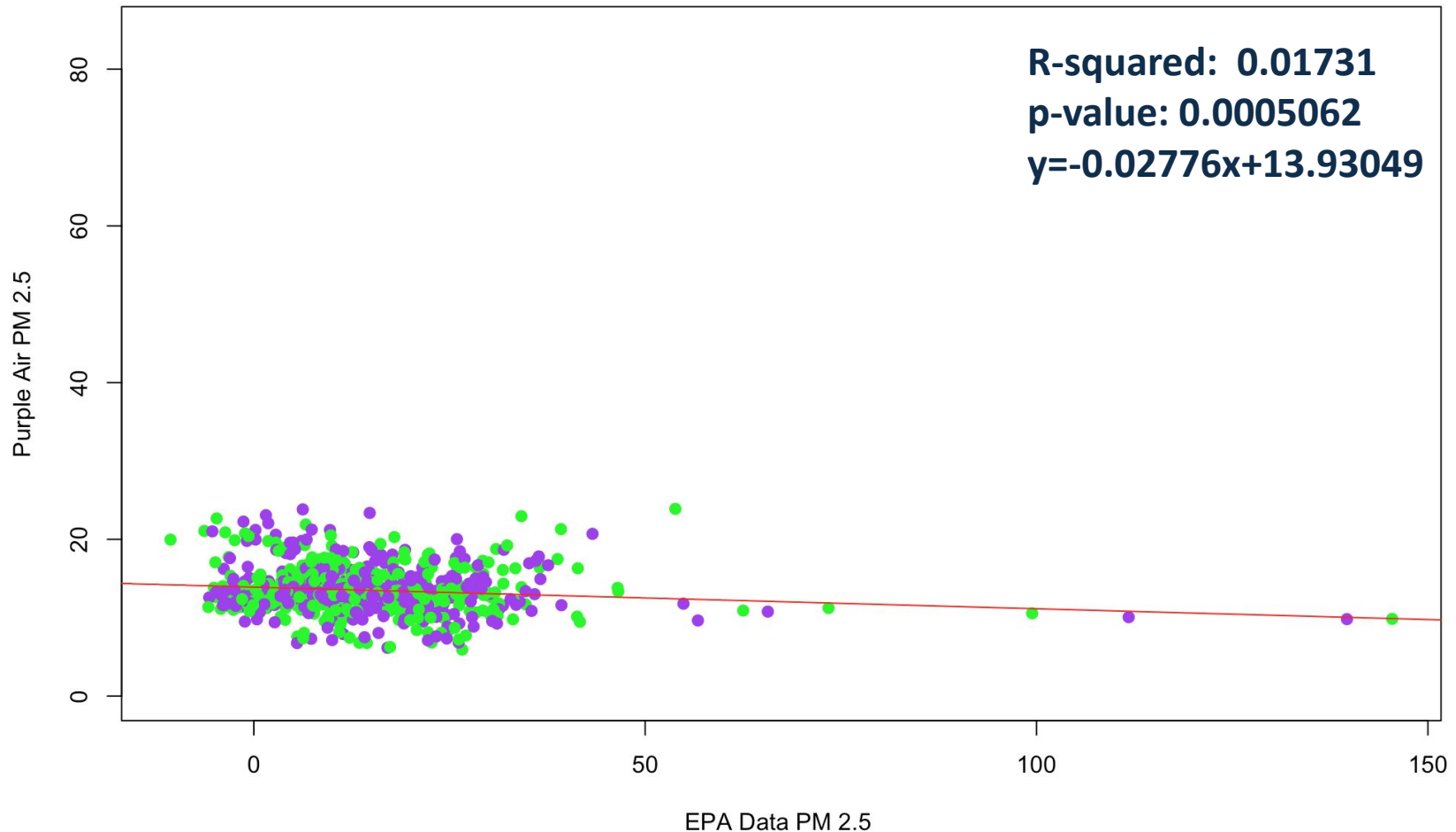Allen Park May   Allen Park June   SW Detroit June

ECOLOGYCENTER
Healthy People, Healthy Planet

Scatterplot of Correlation of Purple Air by EPA Data in Allen Park, May 2019

R-squared: 0.03674

p-value: 1.486e-07
y=0.3542x+15.0459

Results

Scatterplot of Correlation of Purple Air by EPA Data in Allen Park, June 2019
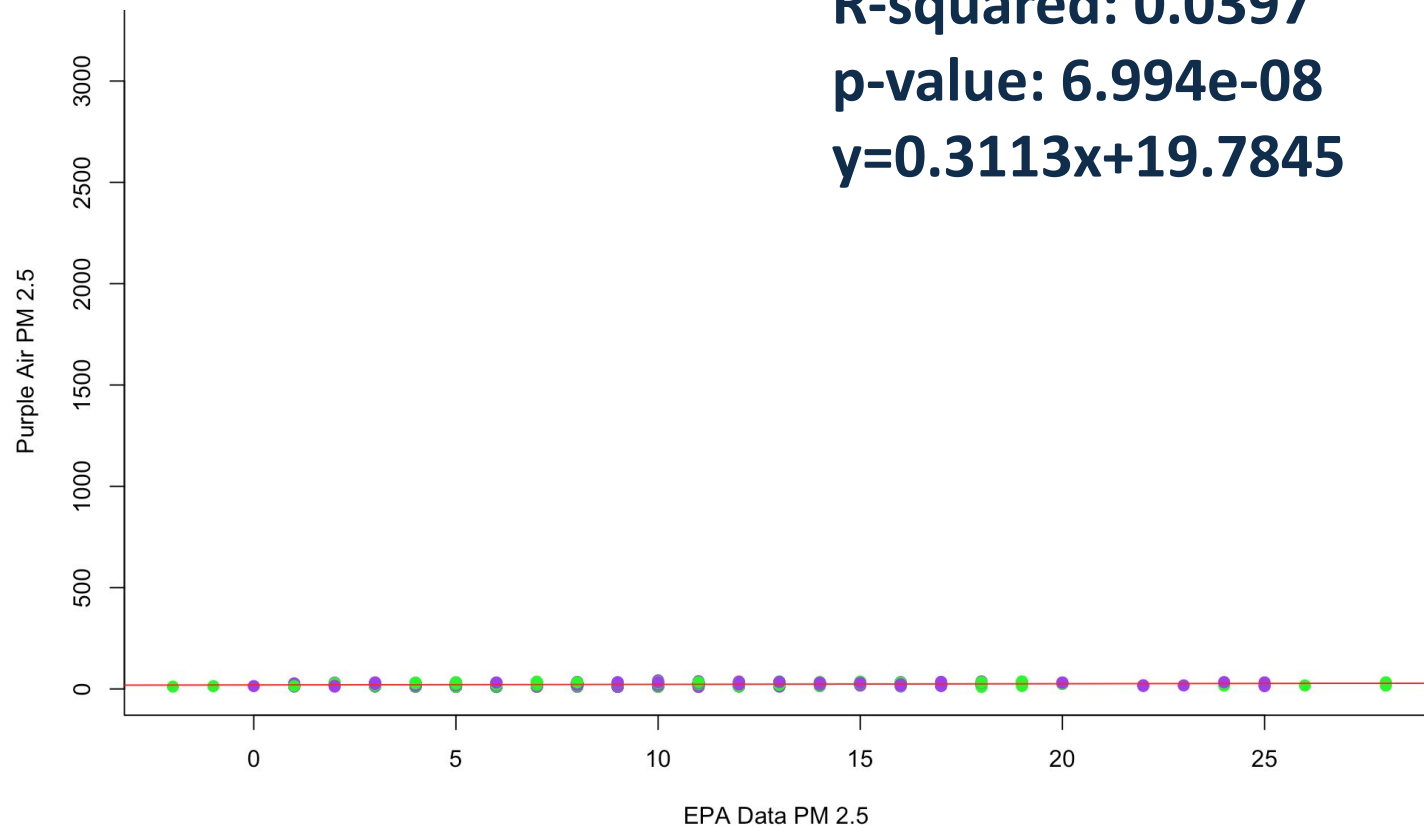
R-squared: 0.0397
p-value: 6.994e-08
y=0.3113x+19.7845

- Purple Air monitors statistically significant in similarity with EPA monitors
- R-squared values low due to lack of influence in variation
- AQI calendars suggest unreliability of gathering day-by-day data within Purple Air monitors
- Greater range in levels of health concern in Purple Air monitors = sensitivity?
- For the future: More comparative tests between distinct sites that are co-located, and data for longer periods of time

Next Steps

- Curriculum Development & Strategy for School Programs

- Installations/maintenance in SW Detroit, FCA and existing 3 schools

- Quality Assurance Plan: Co-location; data management; maintenance & repair; installation, etc.

- Communications: facts sheet for WSU/CURES project

- On-going tech assessment of other pollutants/monitors (SO2)