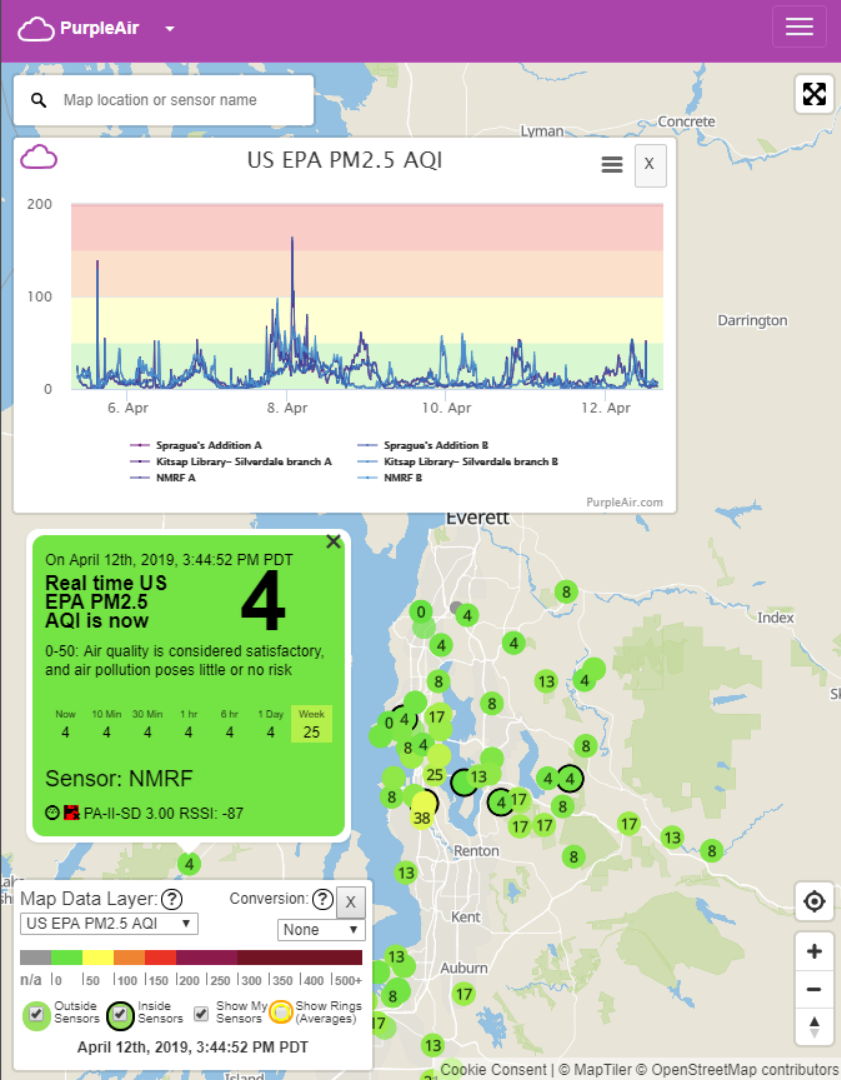


# PURPLE AIR INTRO

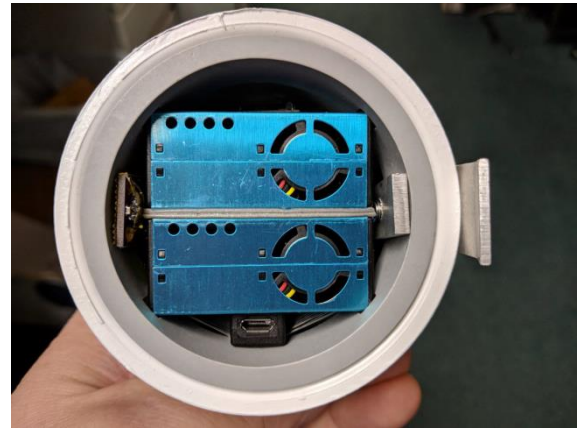
2019 | NACAA Conference  
Graeme Carvlin

Purple Air Intro  
NACAA



# Purple Air Sensor

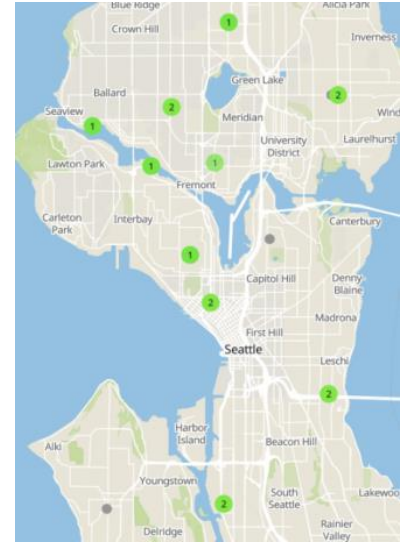
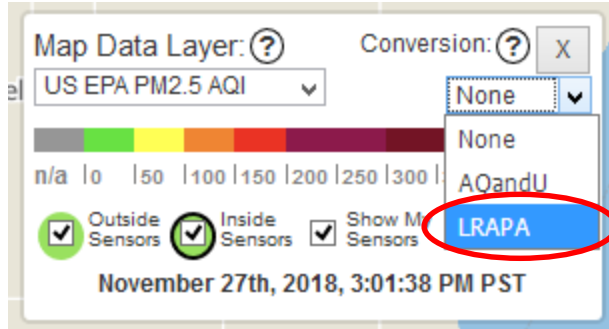
- Low-cost (\$230)
- Power, wifi
- Require calibration



Credit to LRAPA, Lance Giles

# How To Use The Purple Air Website

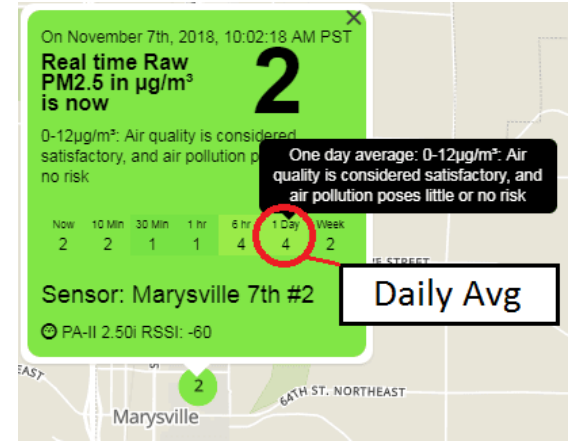
- <https://www.purpleair.com/map#11.1/>
- Click on “Conversion” from the drop down menu:



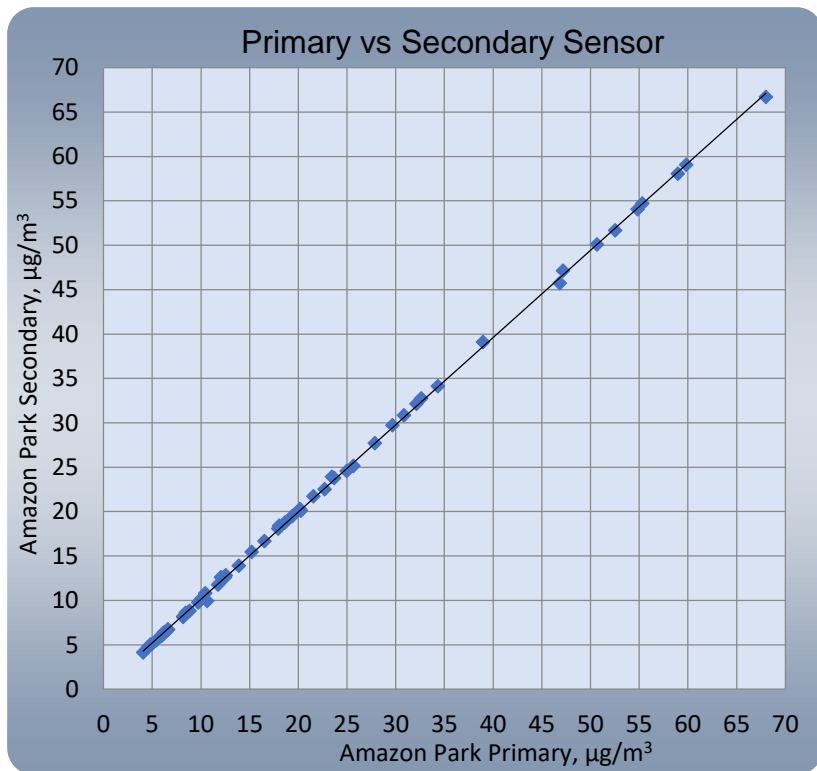
- Select “LRAPA” for the Northwest, AQandU for Utah
- Otherwise, the values are about twice as high as reality
- <http://www.pscleanair.org/539/Air-Quality-Sensors>

# How To Use The Purple Air Website

- Click on the site
- Since the AQI is only good for a full day of measurements, you should look at the “1 Day” average (the second from the right)



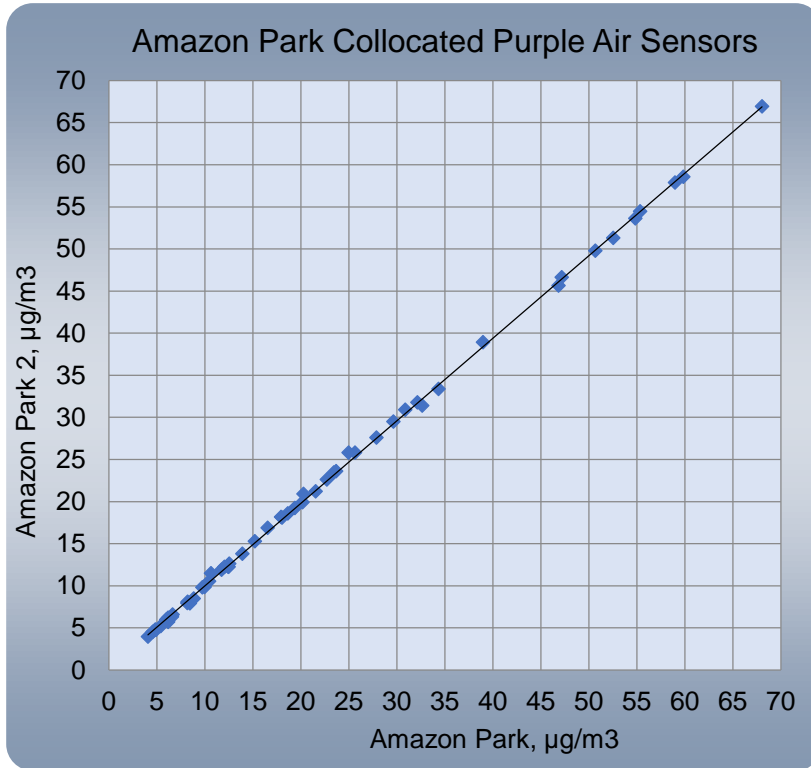
# Sensor To Sensor Comparison



- $R^2 = 0.999$ , Slope = 0.98, Intercept = 0.31

Credit to LRAPA, Lance Giles

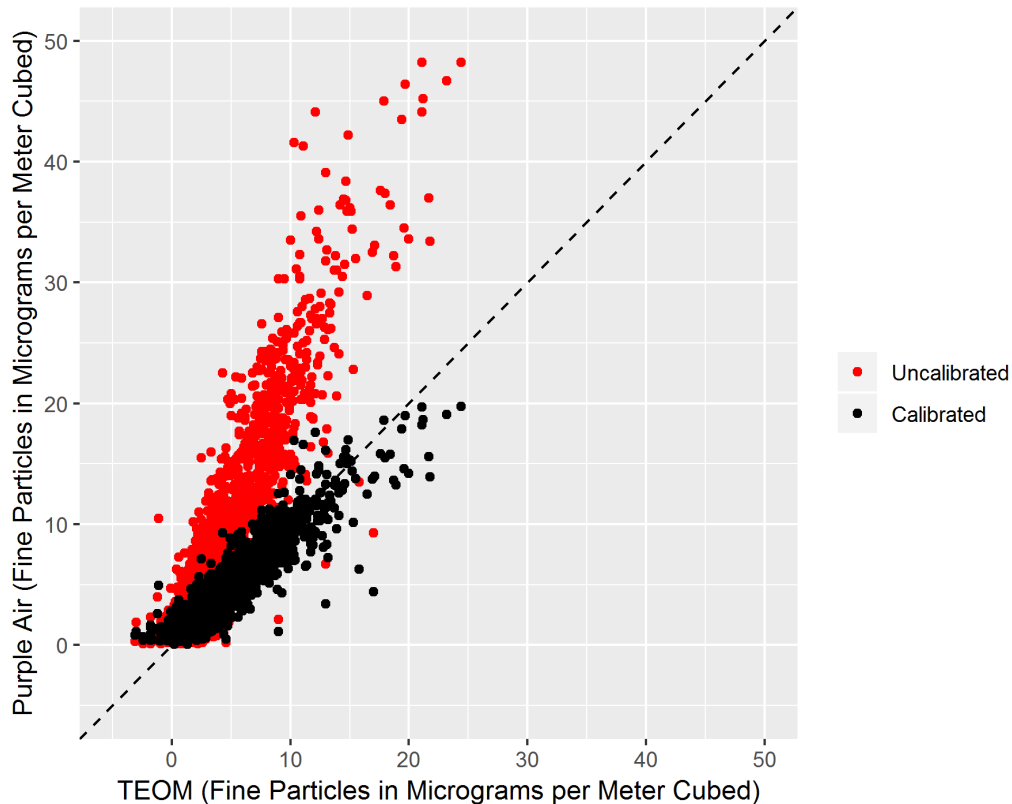
# Monitor To Monitor Comparison



- $R^2 = 0.999$ , Slope = 0.98, Intercept = 0.20

Credit to LRAPA, Lance Giles

## Calibration of Purple Air to Bremerton TEOM



- Before calibration, Purple Air reads 2.5x higher than reference
- Calibration bring the Purple Air readings much closer to reference
- This calibration constant varies by particle composition and therefore location
  - 1.7-2.8 in our 4 counties

# Kitsap Study

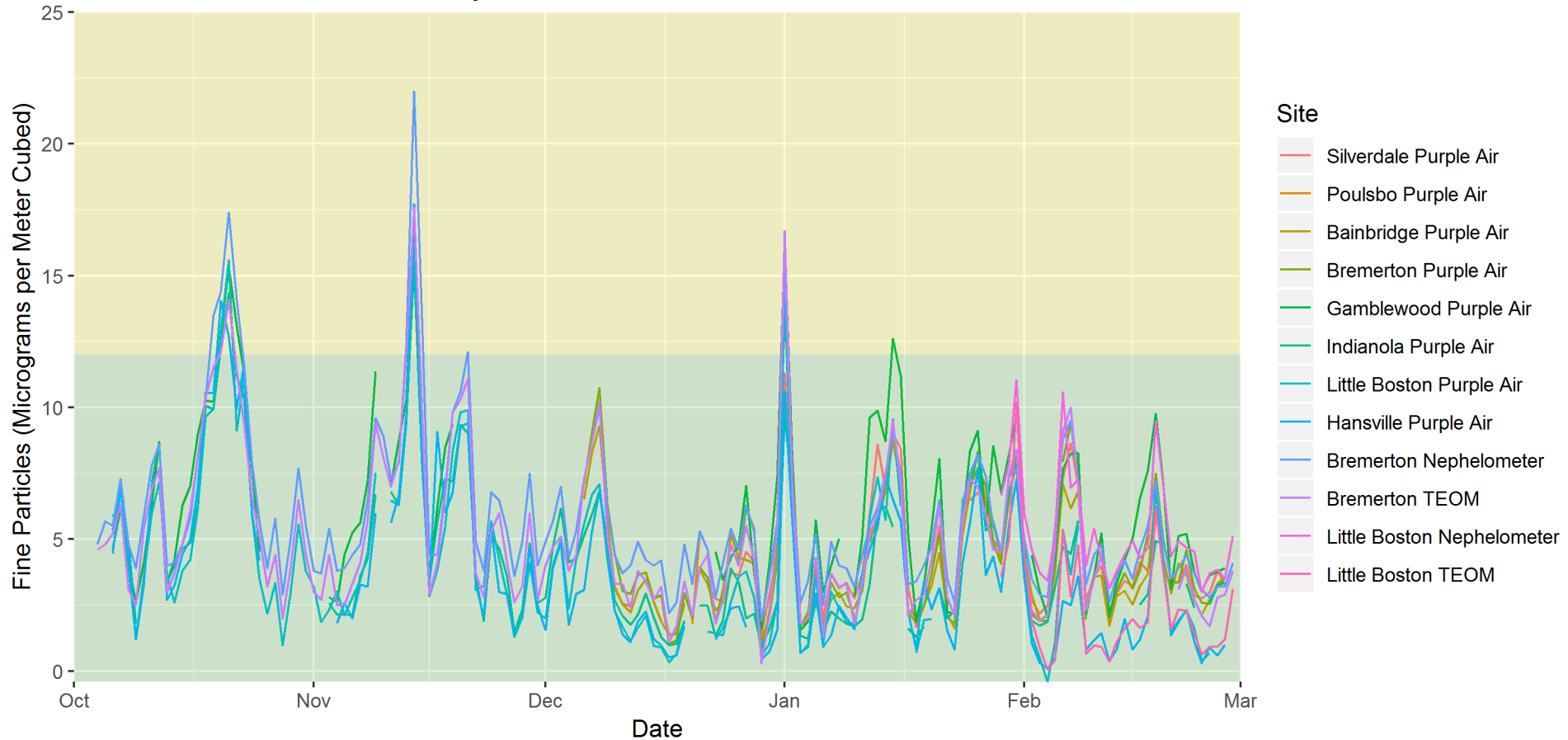
- Are there communities with high levels of wood smoke that our regulatory monitor is missing?
- Pilot Purple Air Sensors at several locations
  - Deployed Oct 2018 to Apr 2019
  - Spread designed to cover large geography

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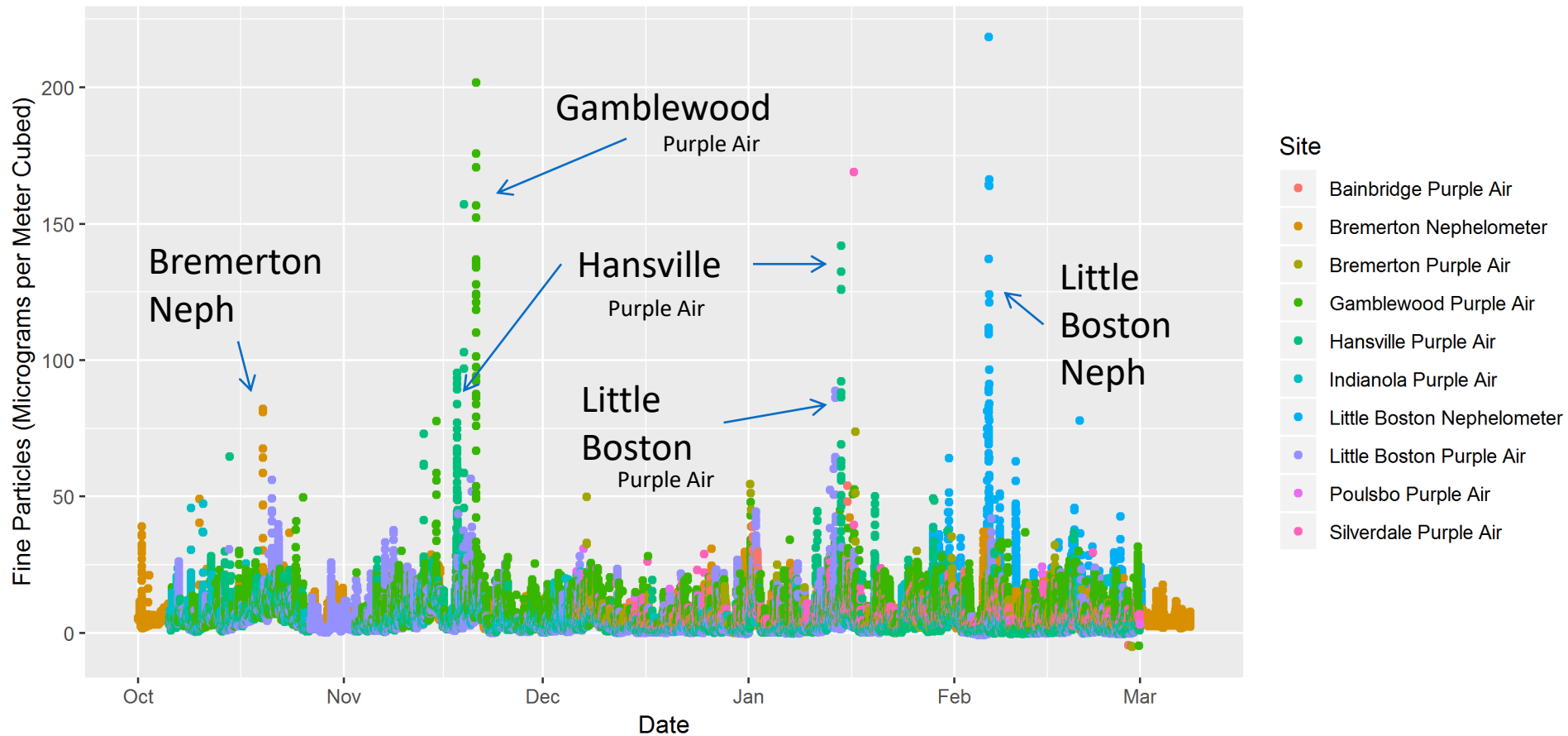




# Daily Fine Particle Levels Over Time



# Minute Fine Particle Levels Over Time



# Sensor Loan Program

- Loan out monitors to community groups and individuals
  - 5x Dylos, 6x Air Beams, 20x Purple Air
- Questionnaire to collect information about monitor use
- Guidance for monitor operation and how to analyze data
  - Appropriate guidance for people of all technical skill levels



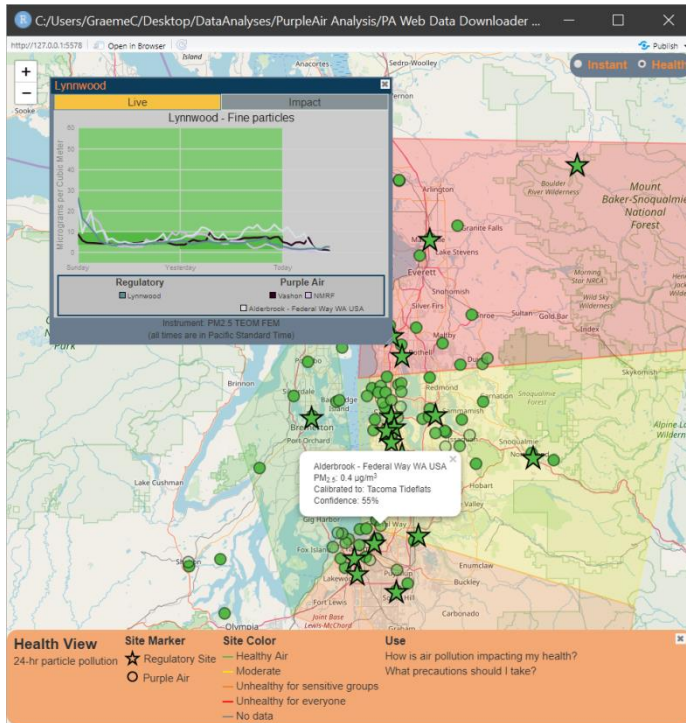
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# Air Sensor Web Tools

## Sensor Map

## Community Reporter

Regulatory and calibrated sensor data



### Community Reporter

#### Labels

For stationary sensors, like the Purple Air, the label should be the name of where the sensor is located. For sensors used on sensor walls, the label should be the name of the location or date of the walk. Make sure that your labels cover as much of your data as possible. Any data that does not have a label will not be processed.

Consult the Experiment Log section of the Sensor Loan Program Manual for help completing this section.

Step 1. Add a descriptive label such as a location (e.g., Auburn 12th St).

Step 2. Select the sensor this label applies to.

Step 3. Select the start and end dates for the label.

Step 4. (Optional) If you know the latitude and longitude for your sensor add it in, otherwise skip these boxes.

Step 5. Click the **Add** button. Repeat for the rest of your labels.

Create Label    Select sensor    Start Date    End Date

Downtown Seattle    Sensor1    04/01/2019 2:05 PM    04/16/2019 2:06 PM

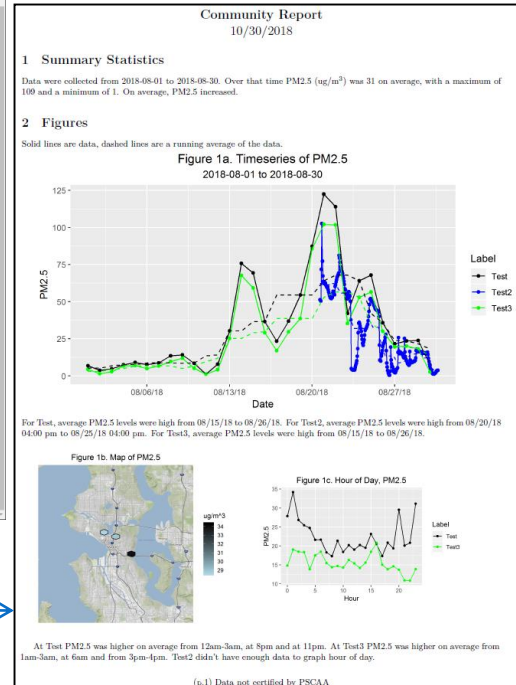
Lat (optional)    Lon (optional)

47.613906    -122.335769    Add

Label	Sensor	Start Date	End Date	Latitude	Longitude	Remove
Downtown Seattle	Sensor1	04/01/2019 2:05 PM	04/16/2019 2:06 PM	47.613906	-122.335769	X

**CAUTION:**  
Once you are sure the file and label information are correct click the Process Data button. It can take up to 30 minutes to process large date sets. Once the data is processed, if you return to this section the data will have to be processed again.

Back    Process Data    Download Report



Sensor data to pdf report