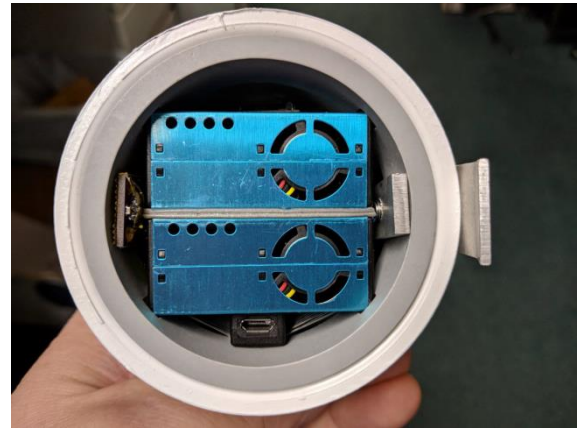# PURPLE AIR INTRO

2019 | NACAA Conference
Graeme Carvlin

Puget Sound Clean Air Agency
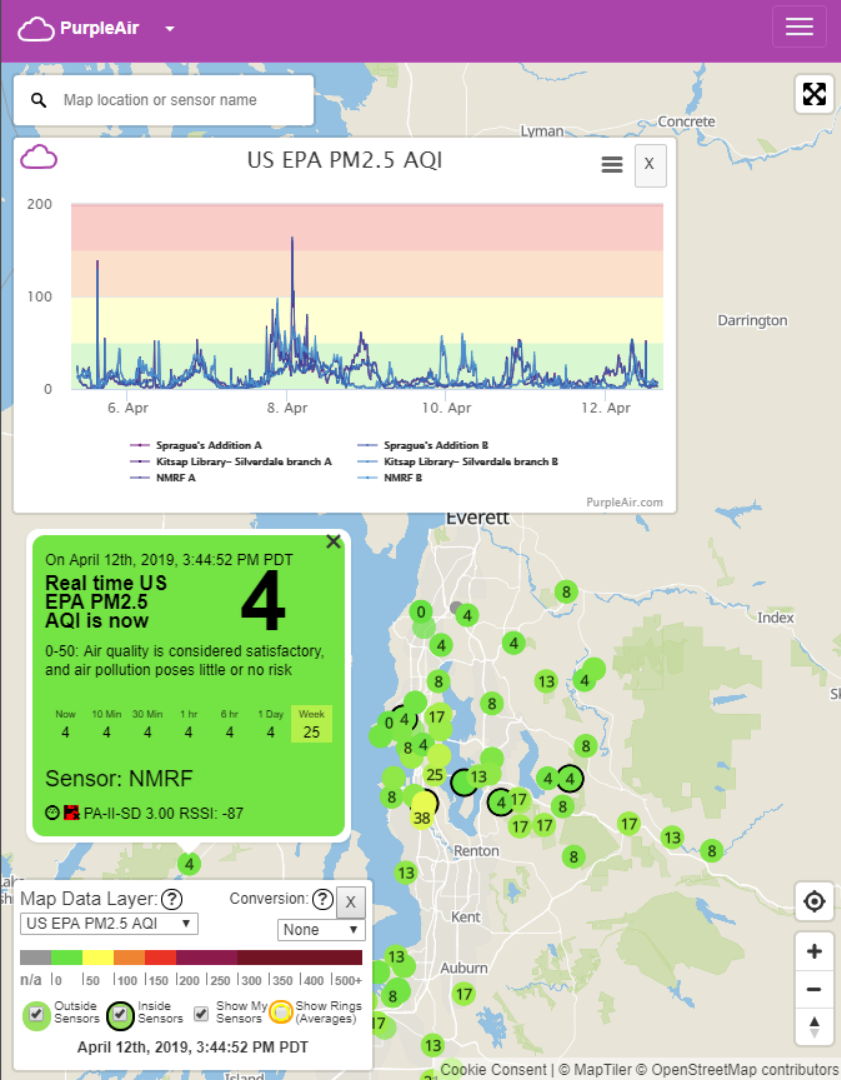
Purple Air Sensor

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

Credit to LRAPA, Lance Giles

Puget Sound Clean Air Agency

How To Use The **Purple Air** Website
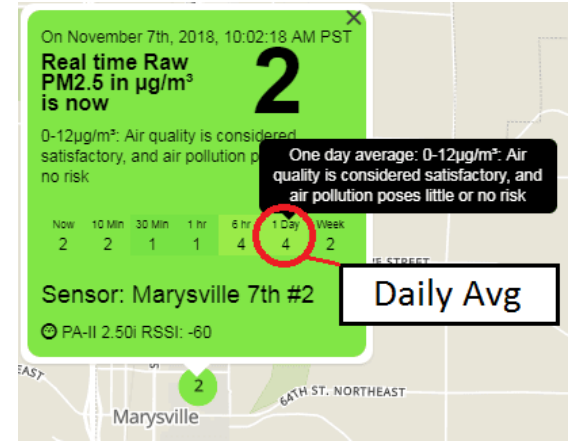
- https://www.purpleair.com/map#11.1/
- Click on "Conversion" from the drop down menu:
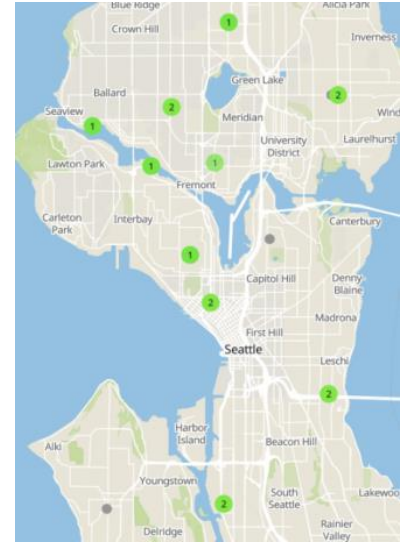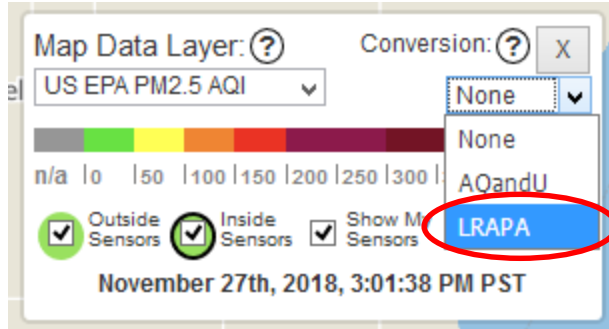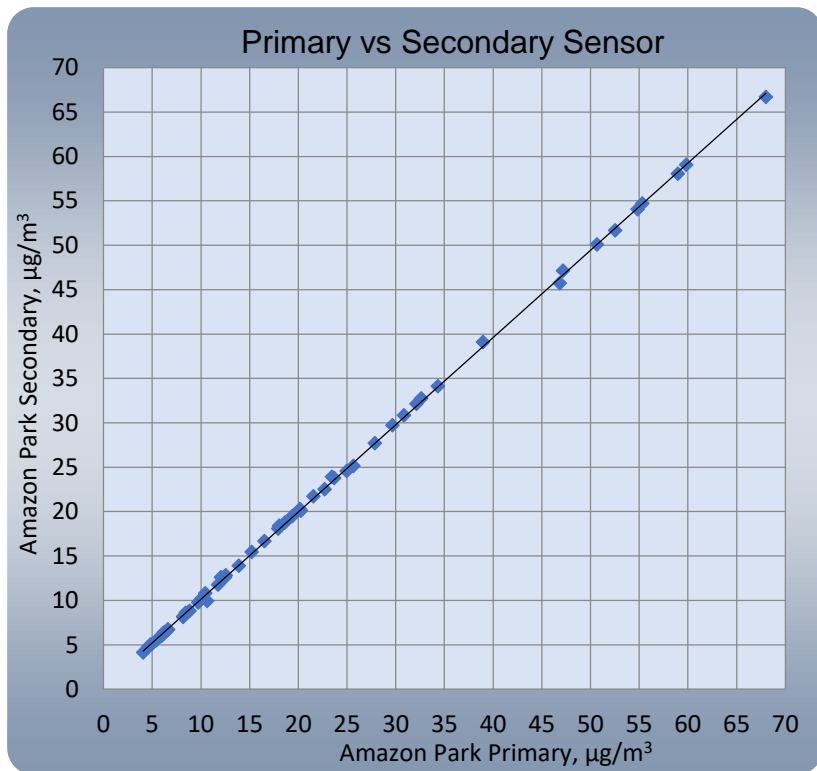

- Select "LRAPA" for the Northwest, AQandU for Utah
- Otherwise, the values are about twice as high as reality

- http://www.pscleanair.org/539/Air-Quality-Sensors

Puget Sound Clean Air Agency

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)
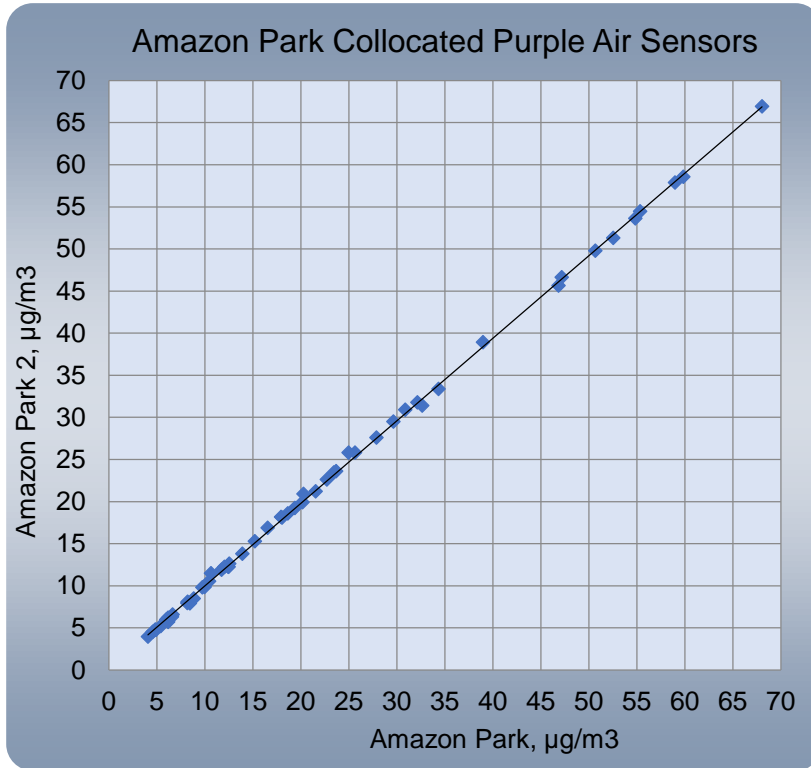
Sensor To Sensor Comparison

Primary vs Secondary Sensor

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

Credit to LRAPA, Lance Giles

Purple Air Intro
NACAA

Puget Sound Clean Air Agency

Monitor To Monitor Comparison

Amazon Park Collocated Purple Air Sensors

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

Credit to LRAPA, Lance Giles

Purple Air Intro
NACAA

Puget Sound Clean Air Agency

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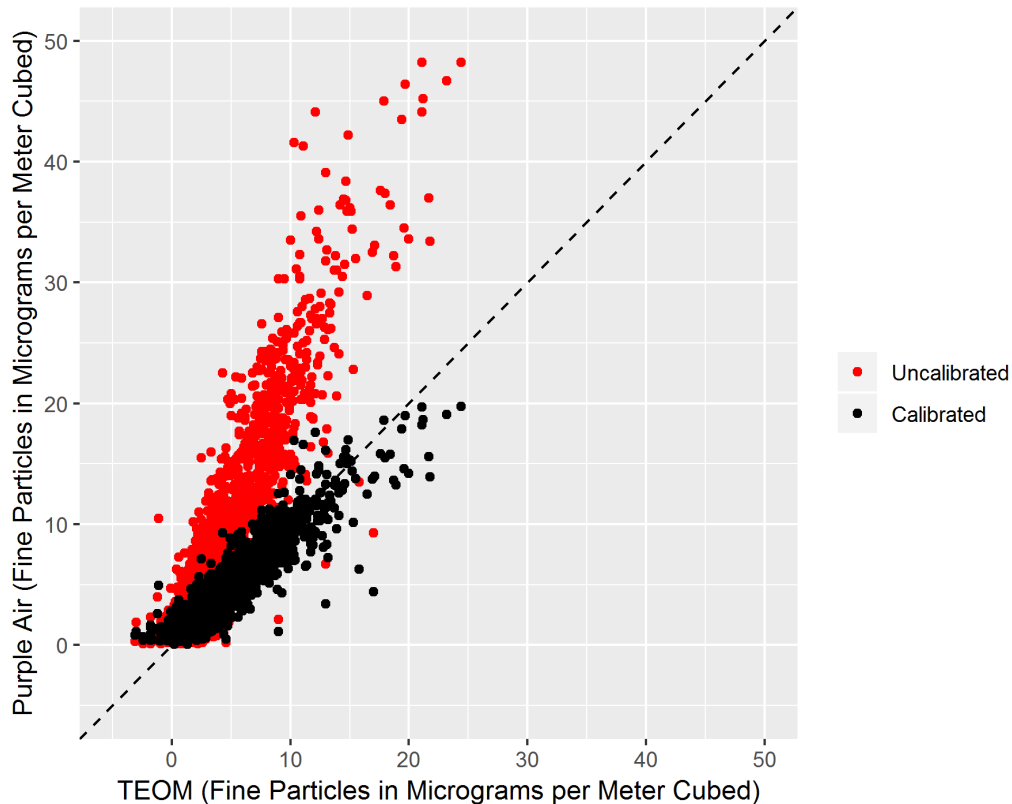
- Before calibration, Purple Air reads 2.5x higher than reference
- Calibration bring the Purple Air readings much closer to reference
- This calibration constant varies by particle composition and therefore location
  - 1.7-2.8 in our 4 counties

Purple Air Intro
NACAA

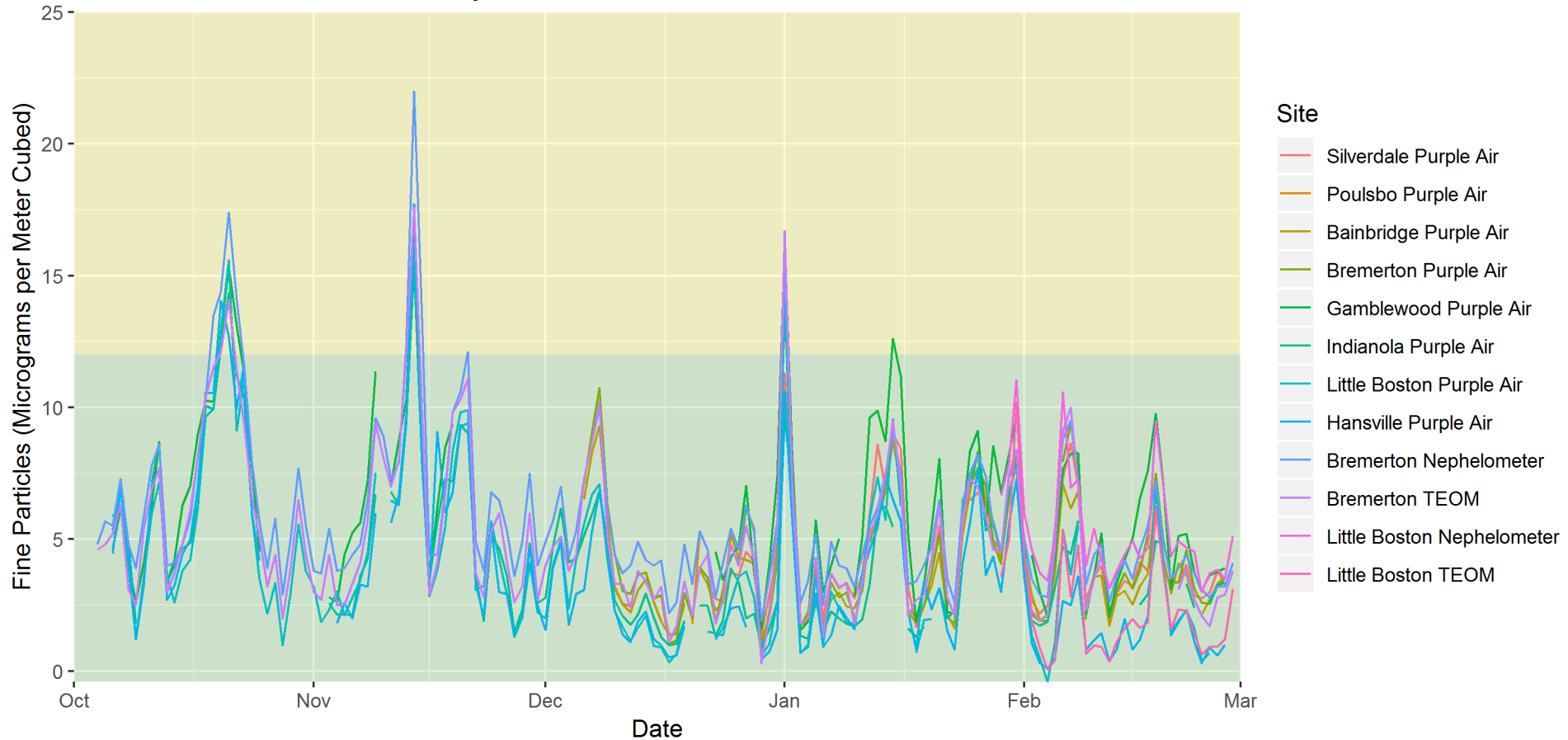Puget Sound Clean Air Agency

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
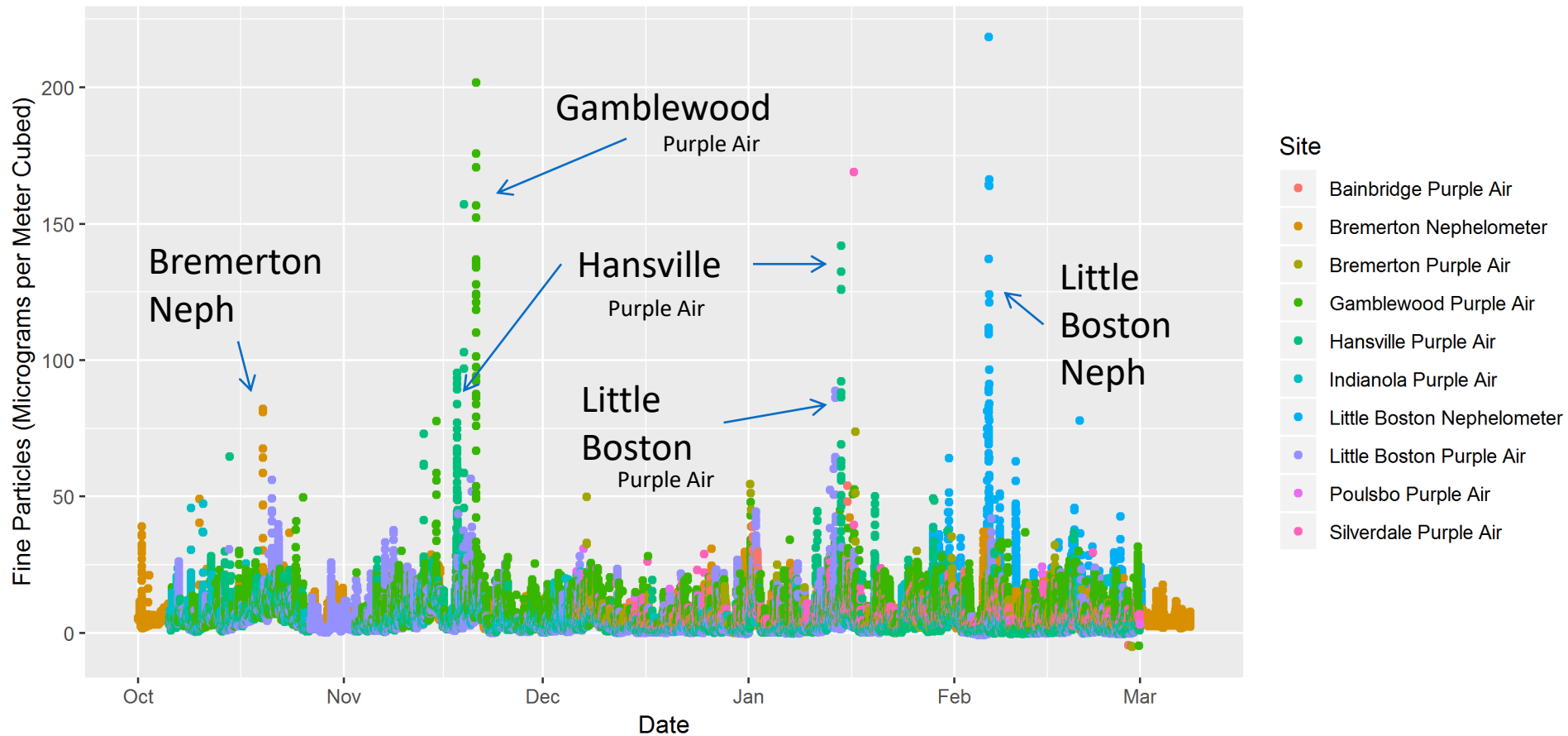 - Spread designed to cover large geography

Hansville (Purple Air)

Little Boston (Purple Air and Ref Trailer)

Gamblewood (Purple Air)

Indianola (Purple Air)

Poulsbo (Purple Air)

Silverdale (Purple Air)

Bainbridge (Purple Air)

Bremerton (Purple Air and Reg Site)

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
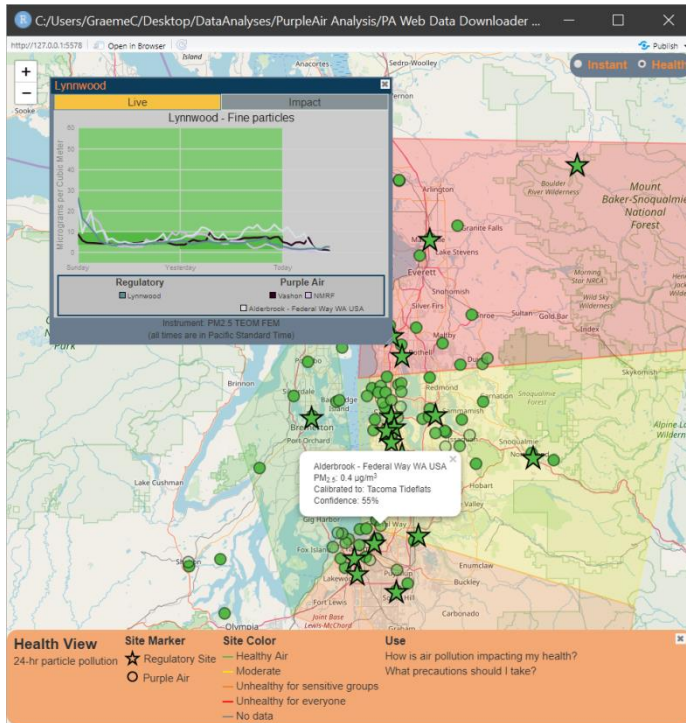 - Appropriate guidance for people of all technical skill levels

Puget Sound Clean Air Agency

Air Sensor Web Tools

Sensor Map

Regulatory and calibrated sensor data

Community Reporter

Sensor data to pdf report