

Managing Real Time and Fixed Lab Data At the Same Time





Agenda

The Benefits of Real Time Data

The Challenges of Real Time Data

Combining Real Time and Confirmatory Data in One Spot.

Delivering the most powerful data to your clients.

Federal Funding Sources



Inflation Reduction Act

\$369B in Energy & Environment

- Community Investment and Environmental Justice
- \$2.8B – 3 year Grants Envi & Climate Justice
- \$3B + \$1.1B for disadvantaged Communities to monitor and improve infrastructure
- \$3B for air pollution at ports

Agriculture & Forestry

- Lower NOx & GHG &Methane

Bipartisan Infrastructure Bill

\$550B in 5 yrs

- \$50M EPA/State/City/Community to manage funds and contractors
- \$50M Air Quality Monitoring

\$55B in water infrastructure

\$21B on pollution cleanup

American Rescue Plan

Approx. 50 Million dollars to EJ related projects.

SENSOR SPECIFICATIONS¹

PARAMETER	DISPLAY UNIT	MEASUREMENT RANGE	ACCURACY	SENSOR TYPE
Temperature	°F or °C	0 – 120°F	0.02°F	–
Humidity	%	0 – 100	0.04%	–
Pressure	hPa	950 – 1050 hPa	1 hPa	–
Particulates (PM1, PM2.5, PM10)	µg/m ³	0 – 3000 µg/m ³	4 µg/m ³	Optical
Nitrogen Dioxide	ppb or µg/m ³	0 – 5 ppm	10 ppb	Electrochemical
Sulphur Dioxide	ppb or µg/m ³	0 – 5 ppm	10 ppb	Electrochemical
Ozone	ppb or µg/m ³	0 – 5 ppm	6 ppb	Electrochemical
Carbon Dioxide	ppm	0 – 5000 ppm	40 ppb	Nondispersive Infrared
Carbon Monoxide	ppm	0 – 50 ppm	10 ppb	Electrochemical
Hydrogen Sulphide	ppb or µg/m ³	0 – 20 ppm	50 ppb	Electrochemical
Nitric Oxide (NO)	ppb or µg/m ³	0 – 5 ppm	10 ppb	Electrochemical
Hydrogen (H ₂)	ppb or µg/m ³	0 – 150 ppm	600 ppb	Electrochemical
Volatile Organic Compounds (VOC) eq. isobutylene	ppb or µg/m ³	0 – 20 ppm	20 ppb	Photoionization Detector (10.6 eV)

1. Specifications are guaranteed provided that sensors are calibrated per manufacturer's recommendations.



Field Calibration

- Sensor drift can be a concern when monitoring for a long period
- Field calibrations and bump checks are critical to ensure accurate and defensible data

Managing Real Time Data

Client Challenge: What do we do with all this stuff?

- Real Time Data has created new challenges for Data Managers
- The lab is generating thousands of data points per hour
- Most clients are confirming real time data with fixed lab confirmation samples
- We are also doing field calibrations and bump checks – this QC data is important as well.
- What do we do with all this DATA?

Cloud Portal



To view your online data



Run reports



Look at graphs



View alerts



Communicate with your field team

View Your Data Online



Sensor Health Dashboard

Filters

Site Filter: All sites ▼

Parameter Filter: TVOC ▼

Exceedance Set: US EPAAQI ▼

Date Filter: Latest ▼

Number of Sensors

76
Total Sensors

100%
% of Total Sensors

Number of Connected Sensors

65
Total Connected

85%
% of Total Sensors

Number of Disconnected Sensors

11
Total Disconnected

15%
% of Total Sensors

Concentration

0
Minimum

0.7625
Average

20.14
Maximum

Legend: ■ Connected, ■ Connection Lost, ■ Moderate

Unit Statistics

0
Minimum

0.7625
Average

20.14
Maximum

Unit % Statistics

99
Minimum

0
Average

1
Maximum

Connectivity

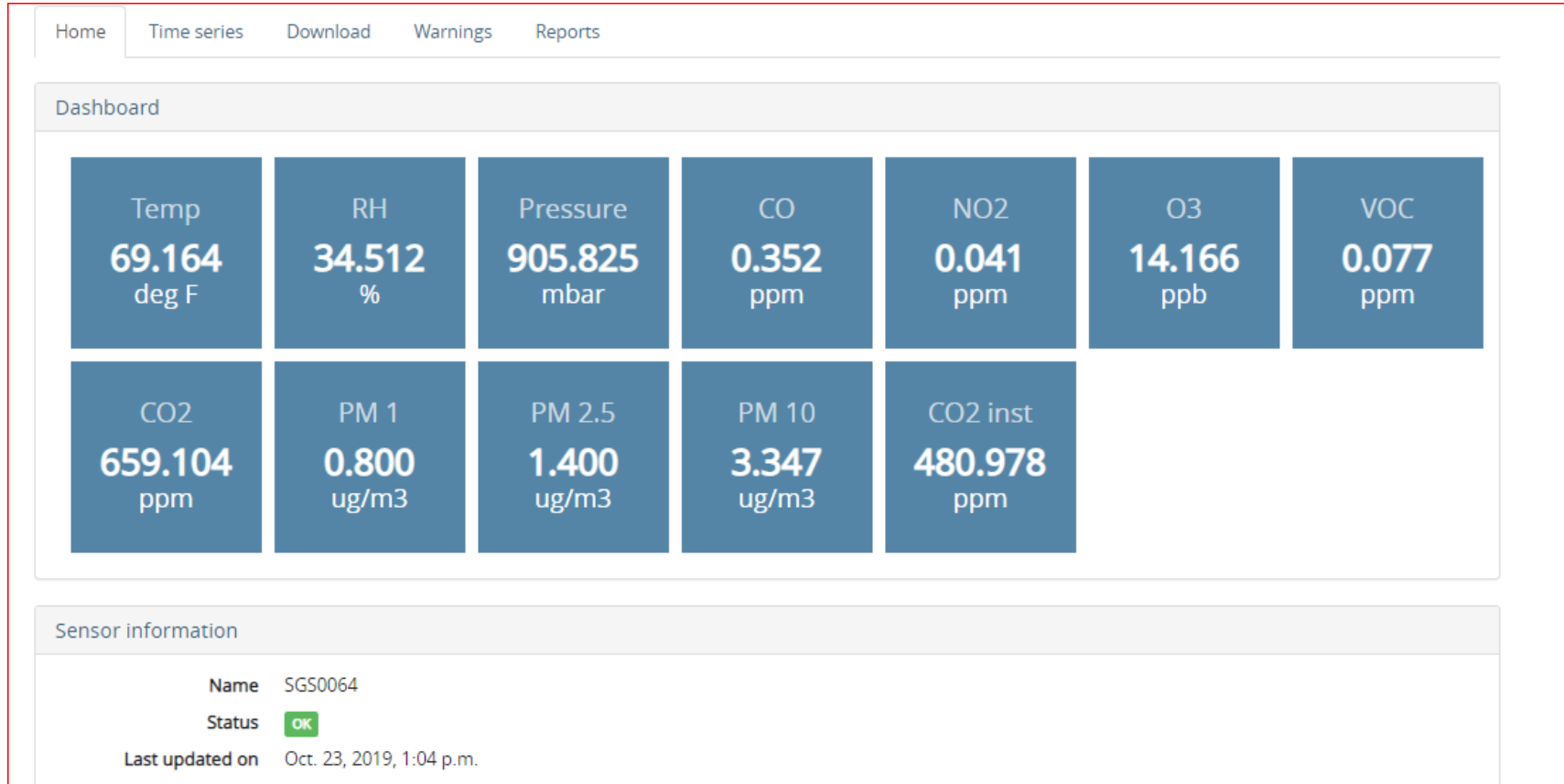
Legend: ■ Connected, ■ Connection Lost

Report by Device

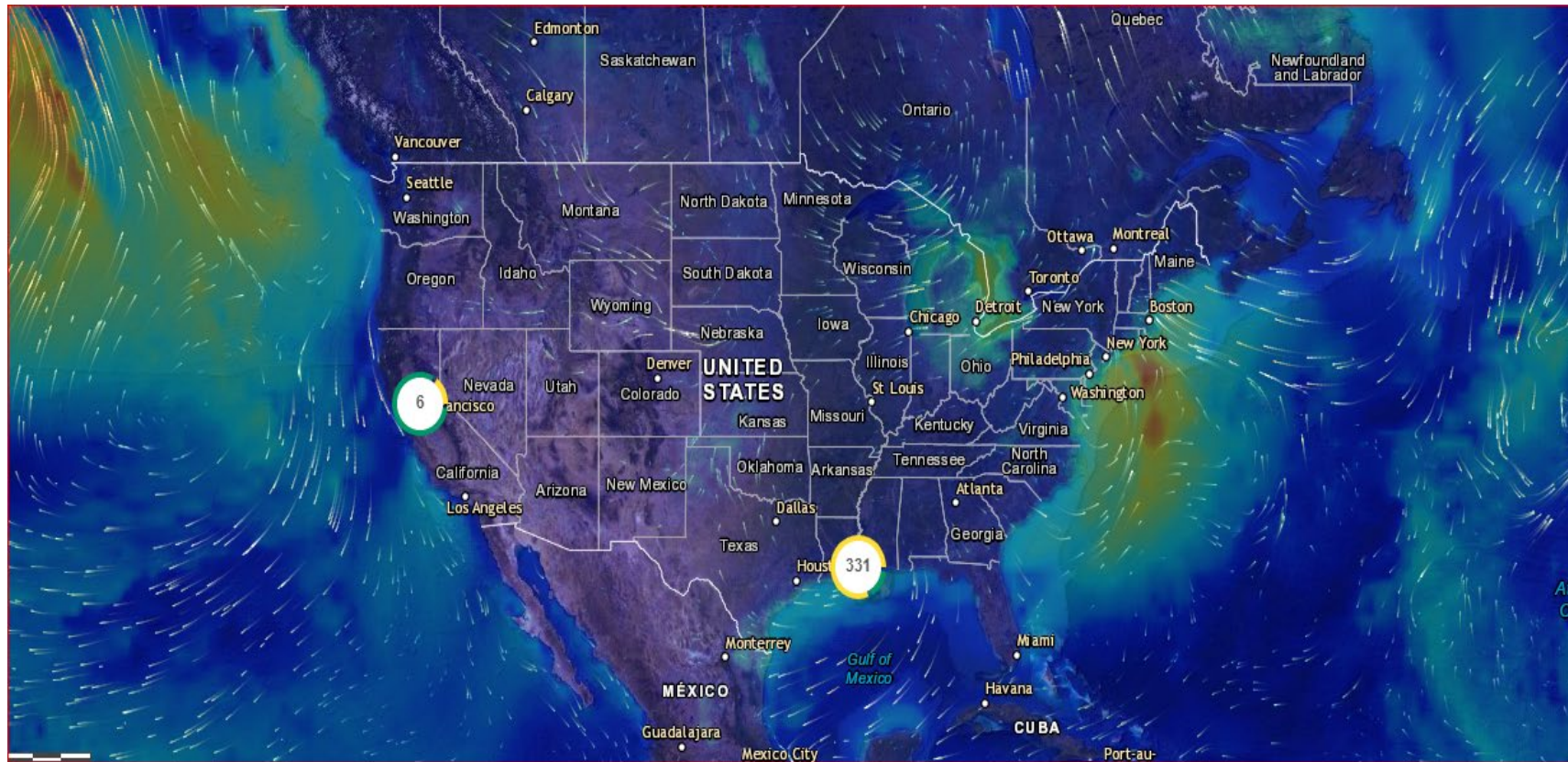
Export to Excel
Search...

Site	Client Sensor Name	Manufacturer Sensor Name	Last Connected (PDT)	Status	Parameter	Result	Unit
CDH Demo	2356	2356	9/1/2022, 11:19:00 AM	Good	TVOC	0.368	ppm
Chaco 407	Chaco 407 NW	2359	9/1/2022, 11:18:00 AM	Good	TVOC	0.224	ppm
Chaco 407	Chaco 407 NE	2345	8/26/2022, 10:21:00 PM	Connection Lost	TVOC	0.396	ppm
Chaco 407	Chaco 407 SE	2356	9/1/2022, 11:19:00 AM	Good	TVOC	0.368	ppm
Chaco 407	Chaco 407 SW	2332	9/1/2022, 11:18:00 AM	Good	TVOC	0.197	ppm
Chaco 114	Chaco 114 NW	2348	9/1/2022, 11:18:00 AM	Good	TVOC	0.006	ppm

User Interface



Wind Direction and Speed Overlay

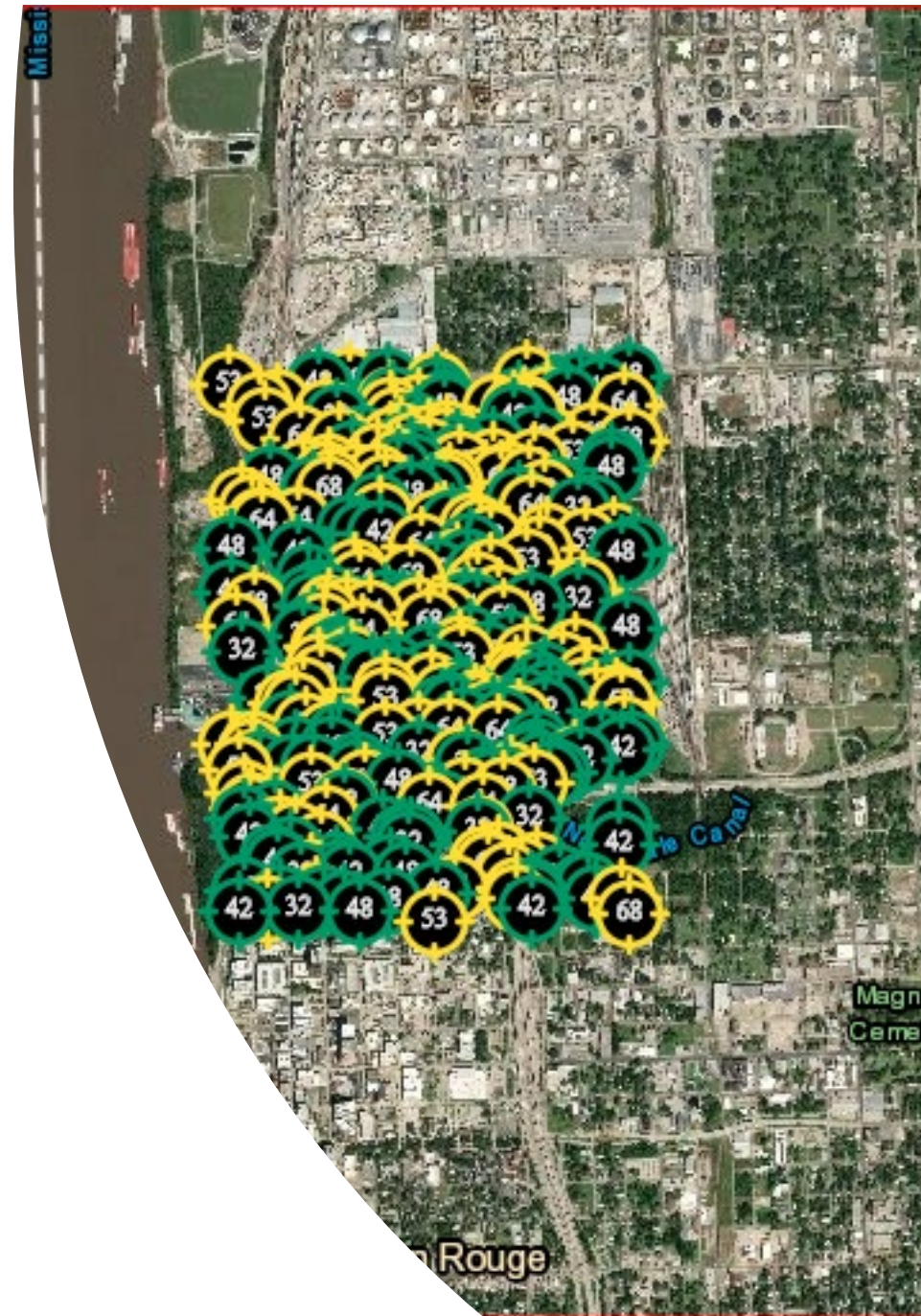


Smoke Map Overlay



Cluster View

- Monitor data from 1 unit to thousands of units
- Green, Yellow, Red alerting feature
- Instantly pick out troubled sensors
- All data viewable on any connected phone, tablet and PC



Case Studies

California Wildfires

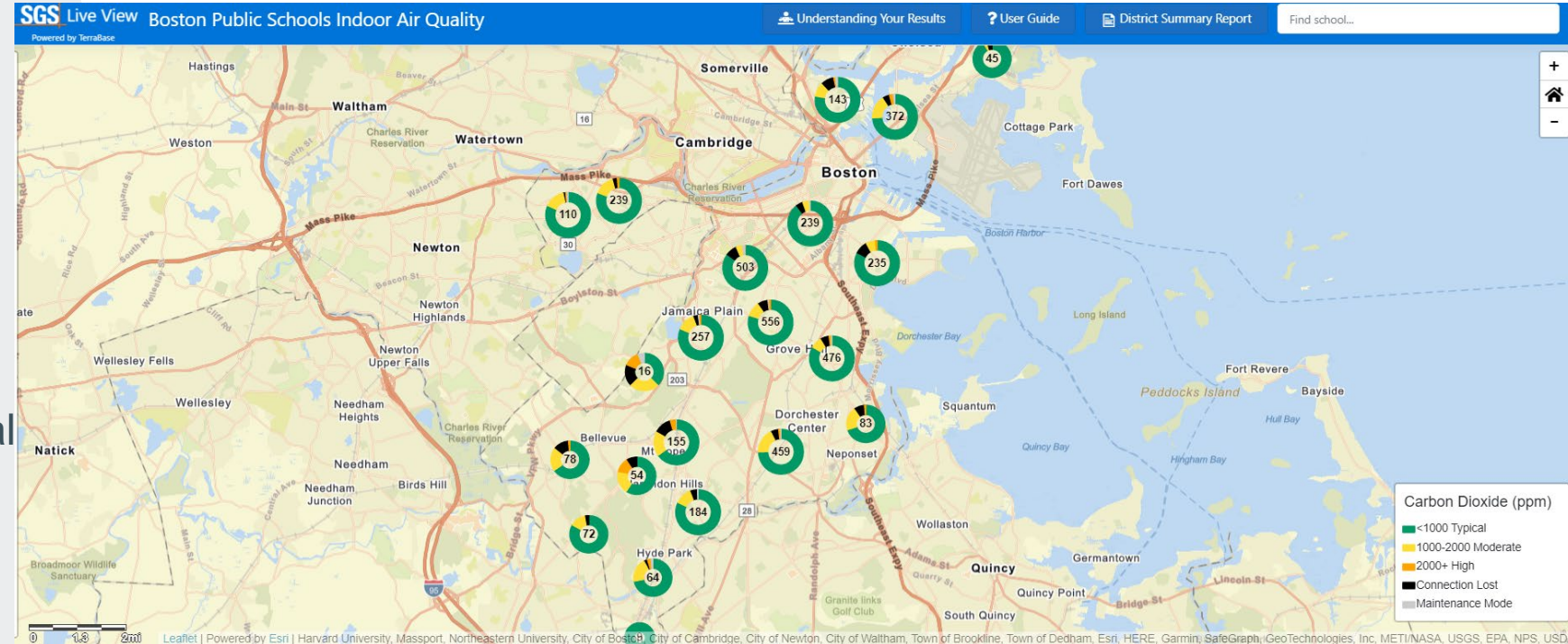
- Sampling post wildfire.
- Project length: 6 months
- Locations: Perimeter outdoor and indoor.
- 14 monitors
- Sensors: CO₂, NO₂ & PM 2.5 & 10.
- Outdoor units in protective cases.
- Plug-in power & external battery
- Connectivity: School Wi-Fi Network



Boston Public Schools Indoor Air Monitoring



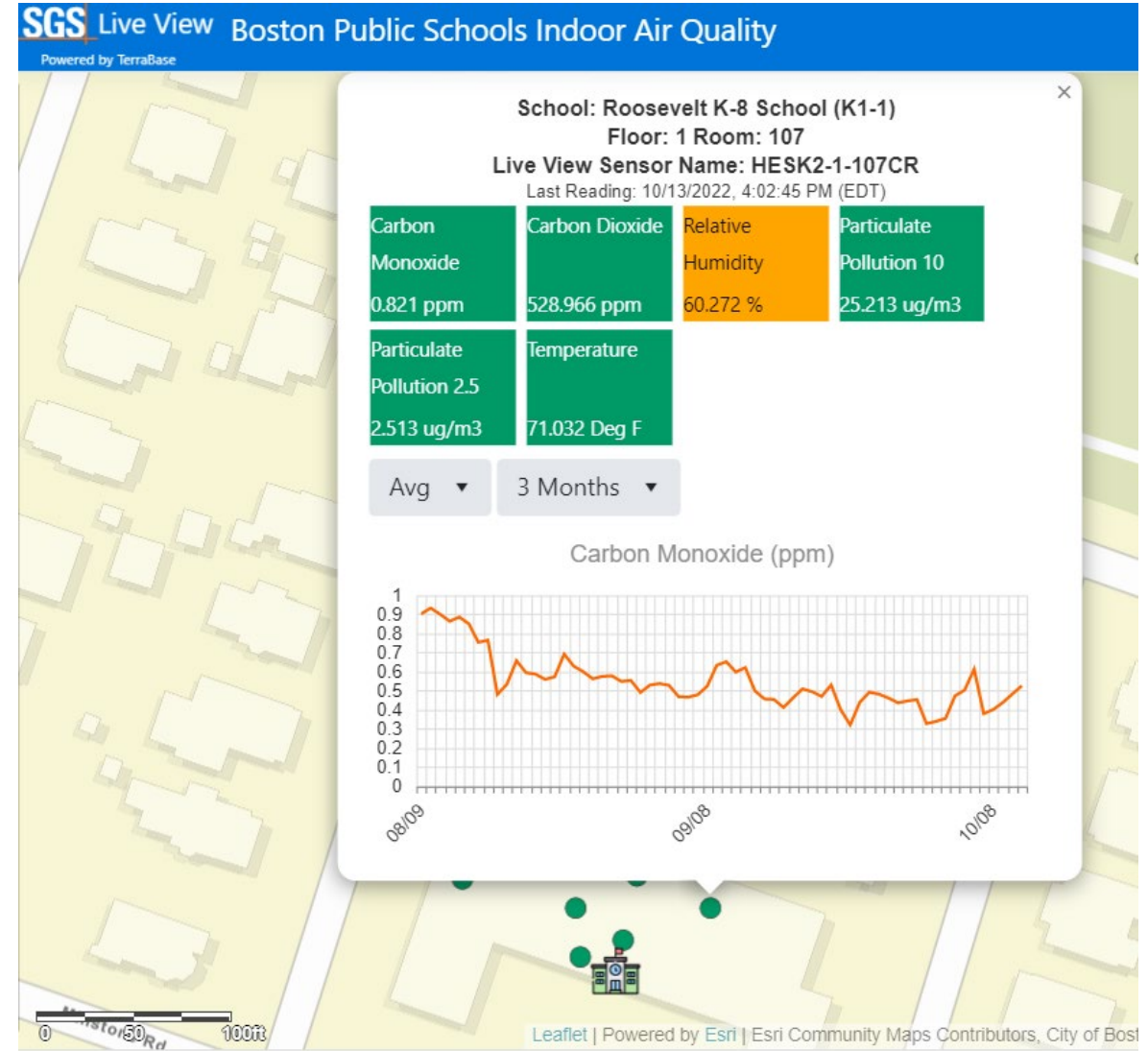
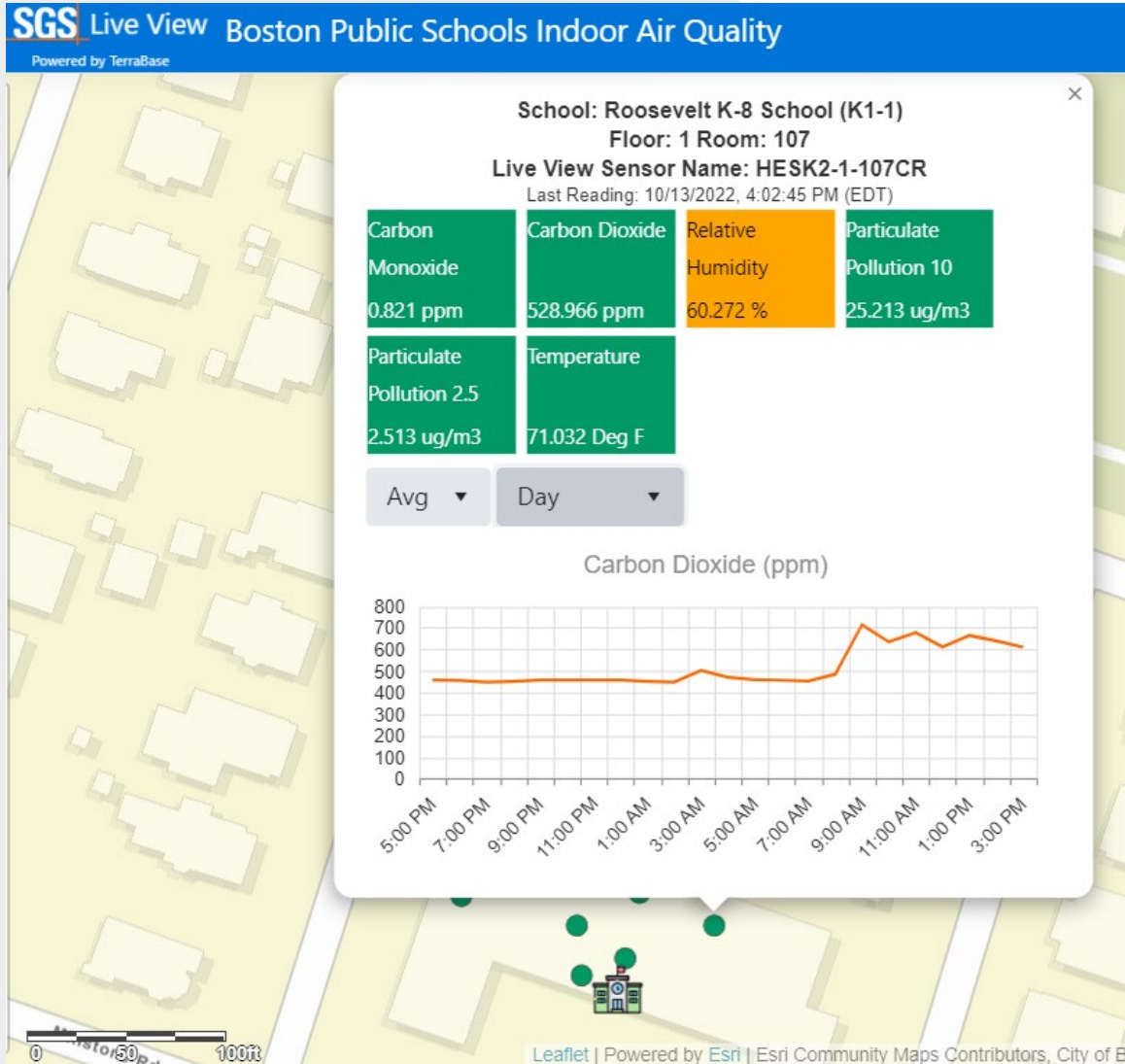
- ~4,500 indoor air and ambient air units
- Publicly Available Data
- IAQ Parameters:
 - Carbon Dioxide (CO₂)
 - Carbon Monoxide (CO)
 - Airborne particulates - Total (PM₁₀)
 - Airborne Particulates - Respirable (PM_{2.5})
 - Relative Humidity (RH%)
 - TO-15 Confirmatory Sampling for VOC



■ Boston Public Schools Indoor Air Quality



Boston Public Schools Indoor Air Quality





Thank You!

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