

# Continuous VOC Monitoring for Emissions Location and Sample Acquisition



National Ambient Air  
Monitoring Conference  
**PITTSBURGH**  
AUGUST 22-25, 2022

Jacob Melby  
Fixed Point Product Manager  
SENSIT Technologies  
August 24, 2022

<b>Weight</b>	Base unit: 6.75 lbs
<b>Dimensions</b>	D x W x H (6" x 8" x 16")
<b>Mounting</b>	Attached mounting flanges <i>Tripod accessory available</i>
<b>Runtime</b>	2-3 days battery backup
<b>Temp Range</b>	-20°C to 50°C
<b>Data Storage</b>	Data backup and diagnostic info

**Cellular (4G IoT Modem Included)**  
**Local RF Out (LoRaWAN Optional)**

**18-24V Power and TTL Comm**  
**PID Element (2ppm FS, 10.6eV)**



**Ultrasonic Weather Station:** Wind Speed, Direction, Humidity, Temperature, and Pressure

**Illuminated Power Button**

**Locking Option**

**NEMA 4X Polycarbonate**

**Auxiliary Port**  
*(Canister and Sorption Tube)*

- Community areas adjacent to industrial sites (chemical, oil/gas, etc)
- Real-time data for odors and hazardous air pollutants



**COLORADO**  
Department of Public  
Health & Environment



**Goal: SPOD in secure location, downwind, close to source**

Limitations

- Proximity to source not always achievable
- Security and accessibility of installation area
- Permission of property owners
  - Local government agreements
  - Private landowner permission
  - Industry permission/agreements
- Potential for tampering and vandalism
- Local terrain and predominant wind patterns

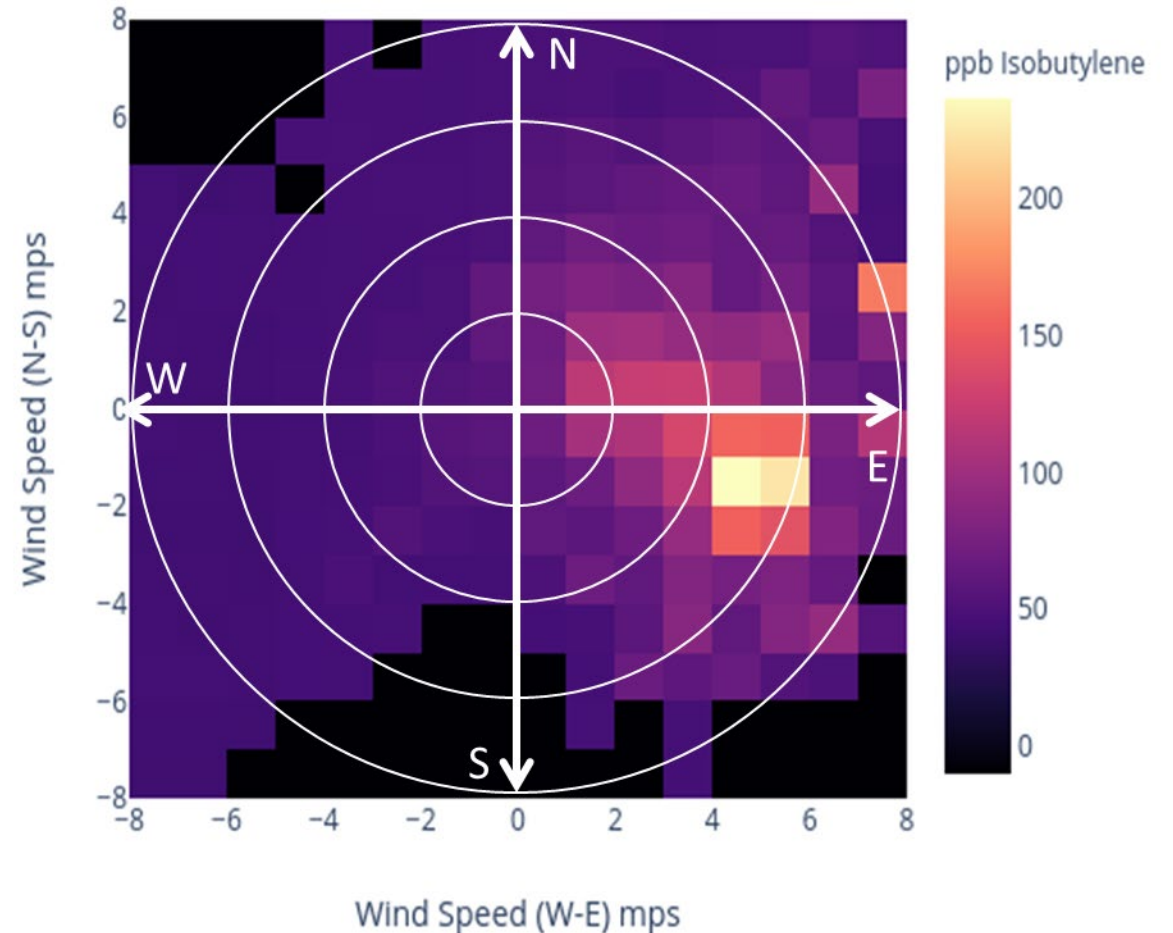
**SITE:** Residence(s) located several hundred feet to west of sound wall of oil/gas pad

**COMPLAINT:** Significant petroleum odors reported with easterly winds

**RESPONSE:**

- Site visit, try to catch emission event... **NOT SUCCESSFUL**
- Leave canister with resident to collect... **NOT SUCCESSFUL**
- Deploy SPOD between residence and sound wall to conduct continuous emissions monitoring for 1 week period... **CONFIRMED**

VOC Measurement Versus Wind Conditions



Canister Valve Controller



Valve + Canister



Sorption Tube Pump



Thermal Desorption Tube



## Concentration Threshold

Concentration Threshold: Adjustable  
Threshold Duration: (sec) Adjustable

## Wind Speed and Direction

Minimum Wind Speed: (m/s) Adjustable  
Wind Direction Range: ( ° ) Adjustable

## Combination Concentration and Wind

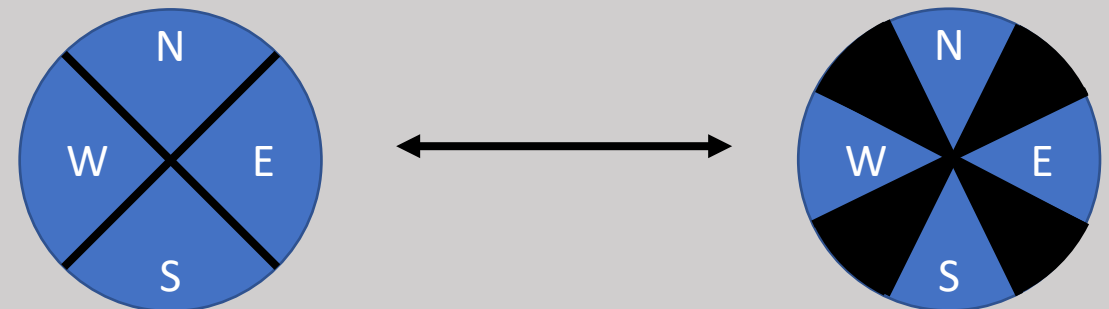
Wind Speed Ranges: (m/s) Adjustable



Concentration Threshold: (PPB) Adjustable  
Threshold Duration: (seconds) Adjustable  
Wind Direction Range: ( ° ) Adjustable

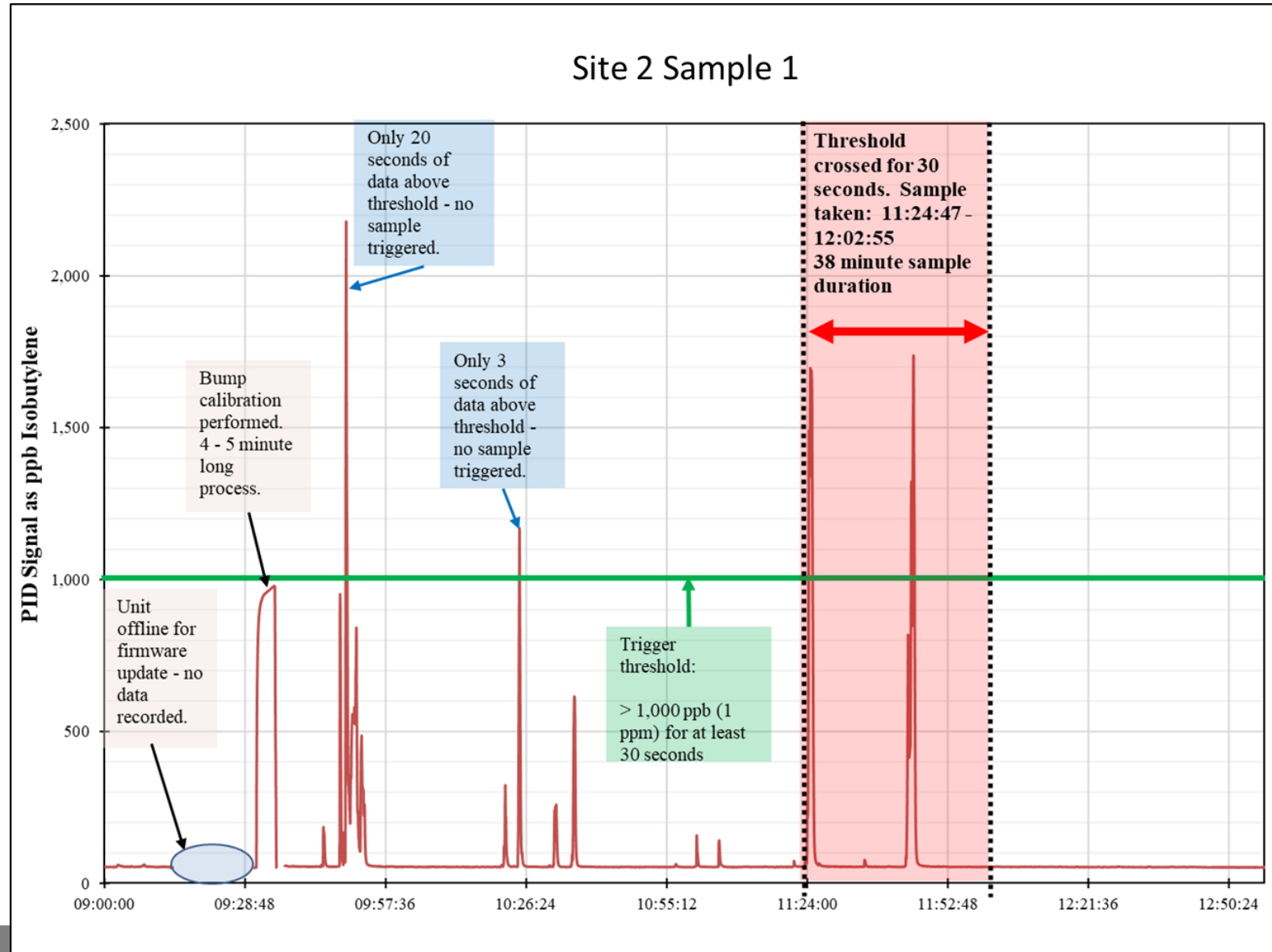
## Quadrant Sampling

4 Wind Direction Quadrants: Adjustable



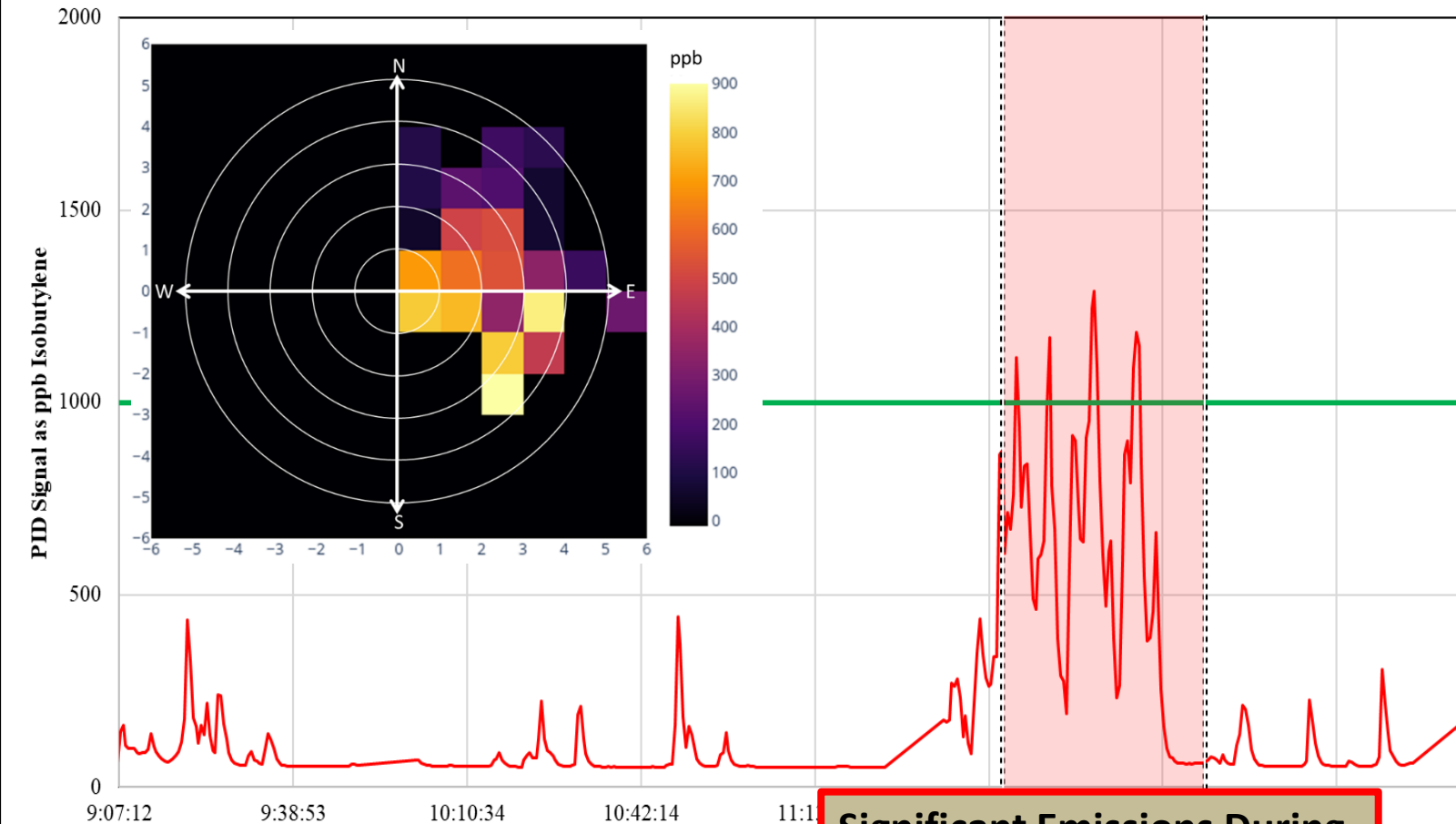
- Install canister on SPOD
- Bump test with 1000 ppb cal gas to ensure accurate PID response
- Focus on capturing large emission > 1000 ppb for 30 seconds

**Limited Emissions During Canister Sample**



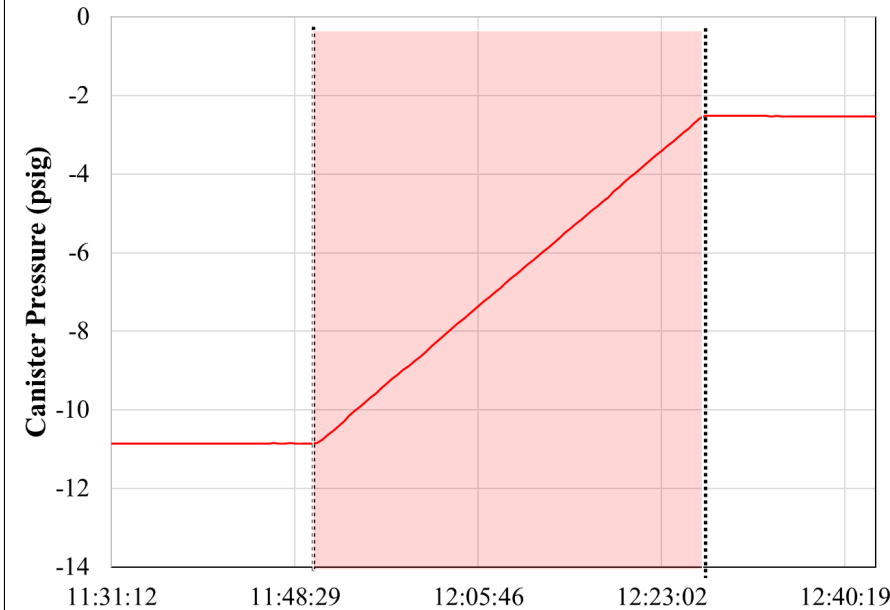


Site 2 Sample 2



**Significant Emissions During Canister Sample**

Canister Pressure Monitoring



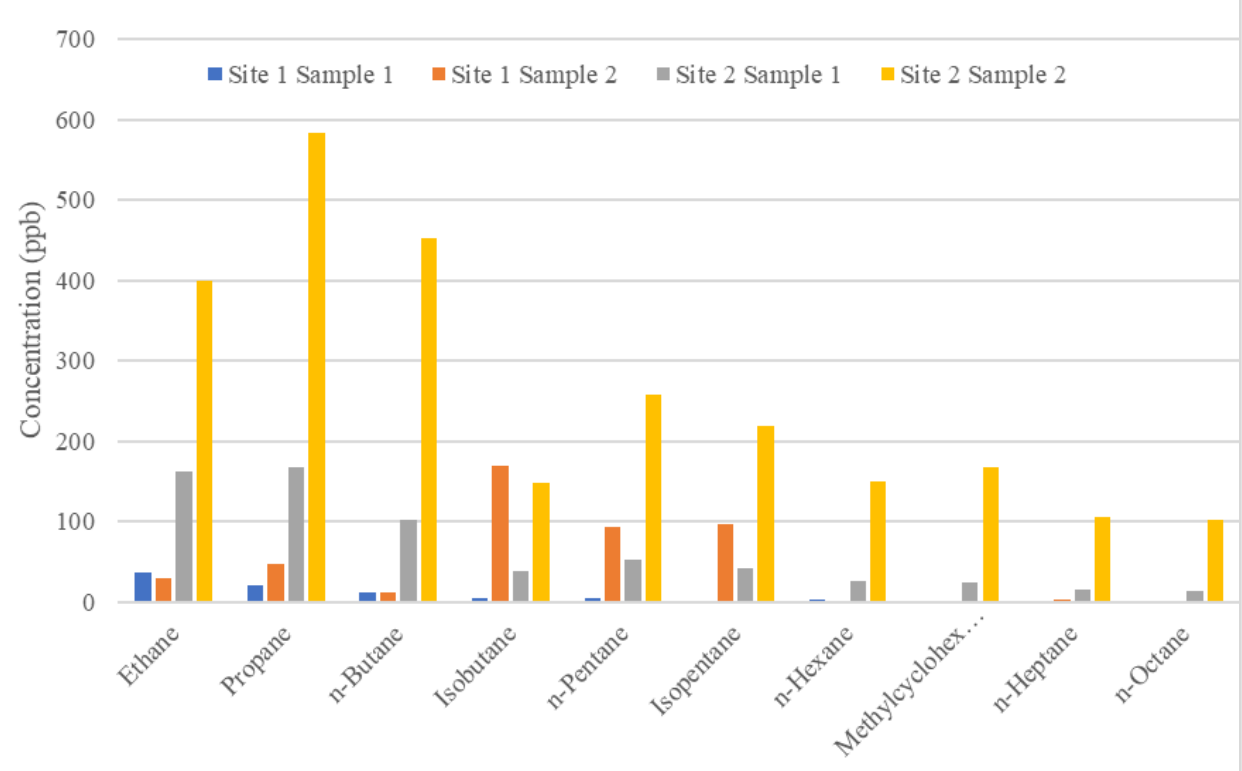
- **Continuous pressure monitoring option tracks canister pressure before, during, and after sampling**



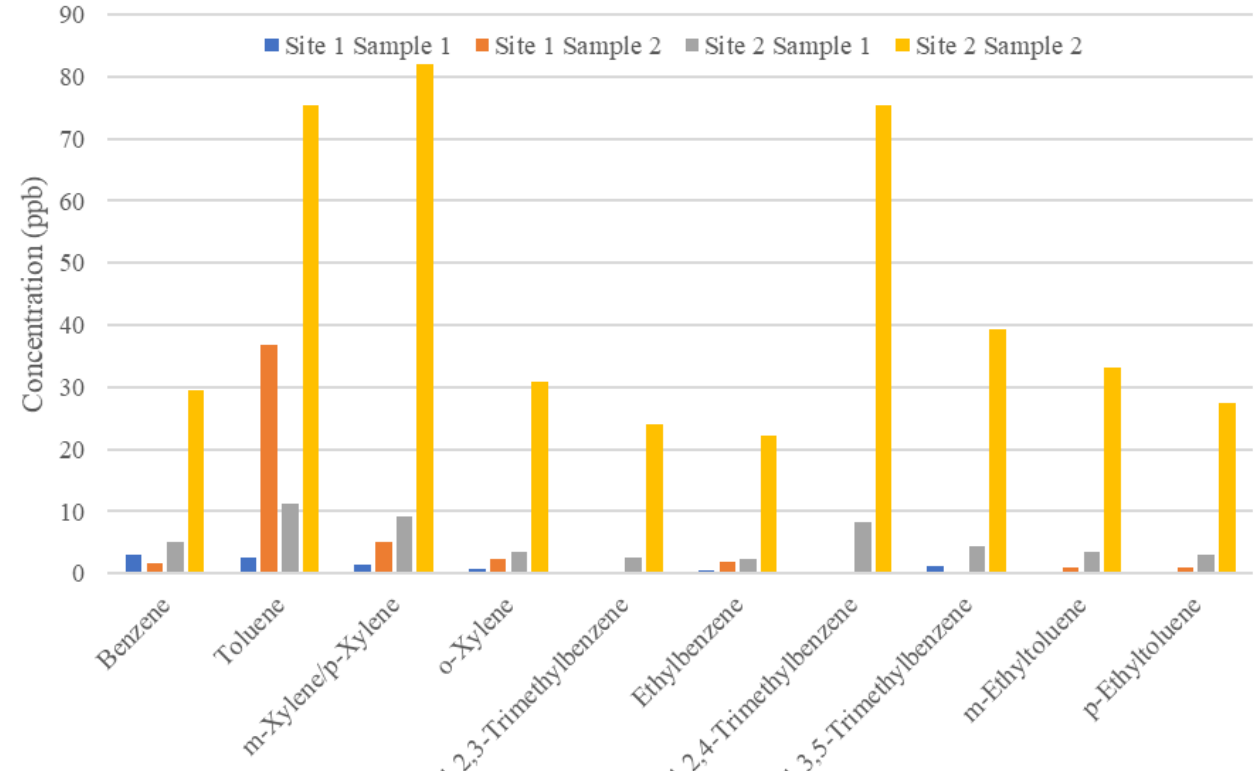
# Canister Analysis Summary

	Site 2 Sample 1	Site 2 Sample 2
Total Non-methane Organic Compounds (TNMOC) ppb	1000	5150
Speciated Non-methane Organic Compounds (SNMOC) ppb	826	3830

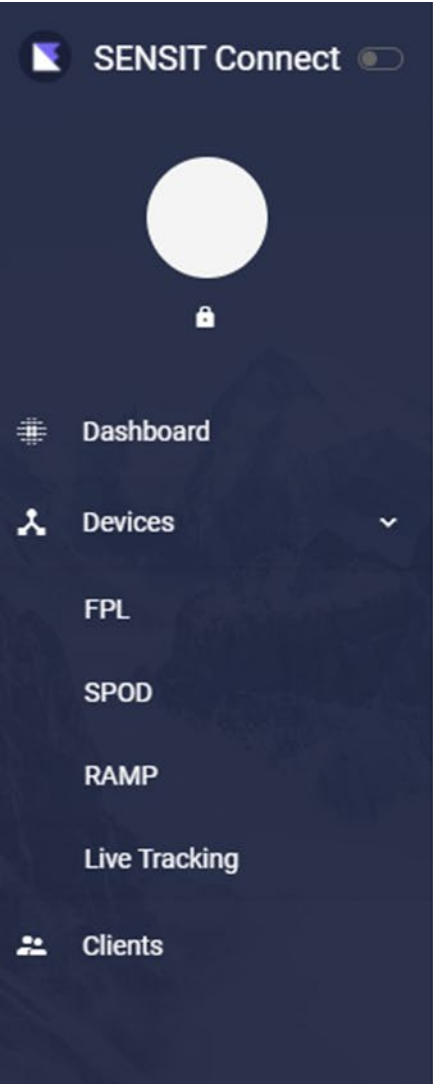
Alkane Top 10 List



Aromatics Top 10 List



## Compile and analyze data from all monitoring devices



Data visualization



Location and tracking info



Device health and settings



Alarm thresholds for notifications or local alarms



Processed and raw data download

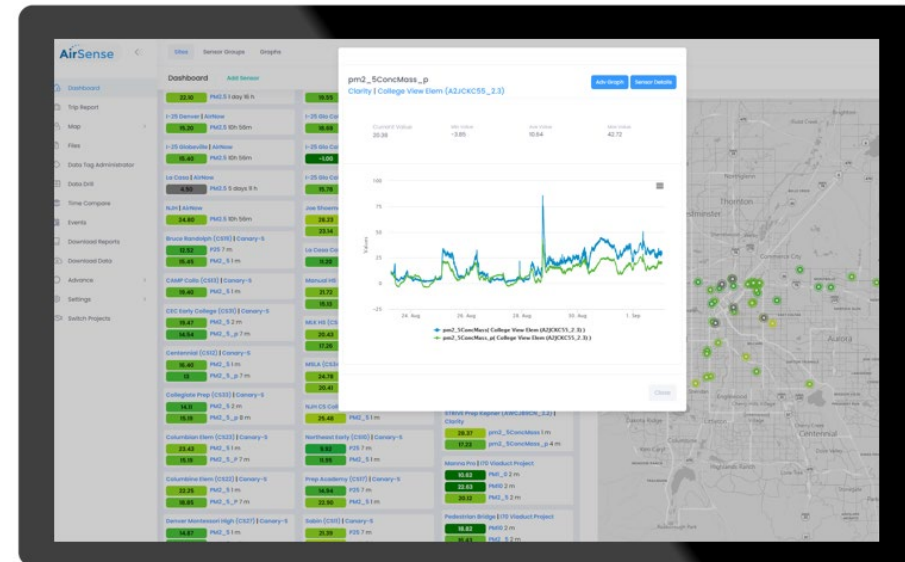
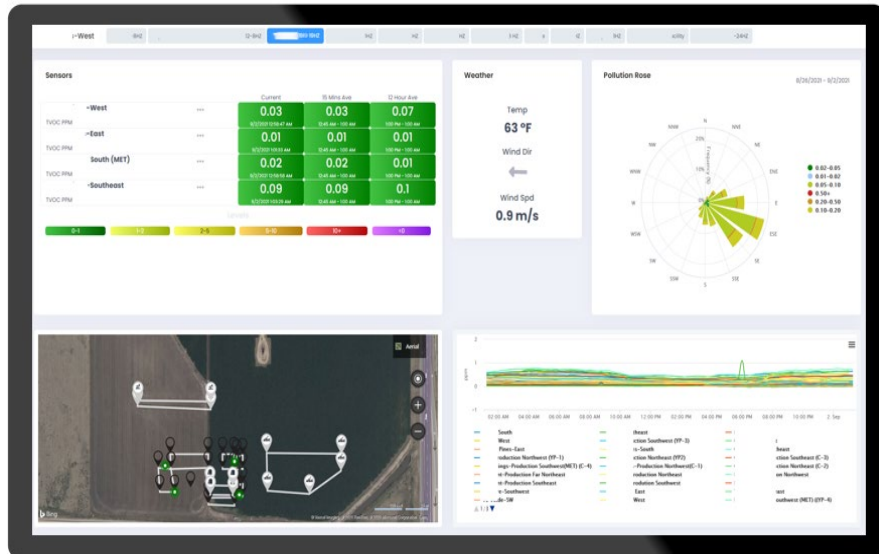


Real-time remote detection localization of leaks



**MONTROSE**  
AIR QUALITY SERVICES

- Monitoring plan creation
- Deployment and maintenance services
- Data visualization and alerts (AirSense Platform)
- Automated data report generation
- Leak location prediction





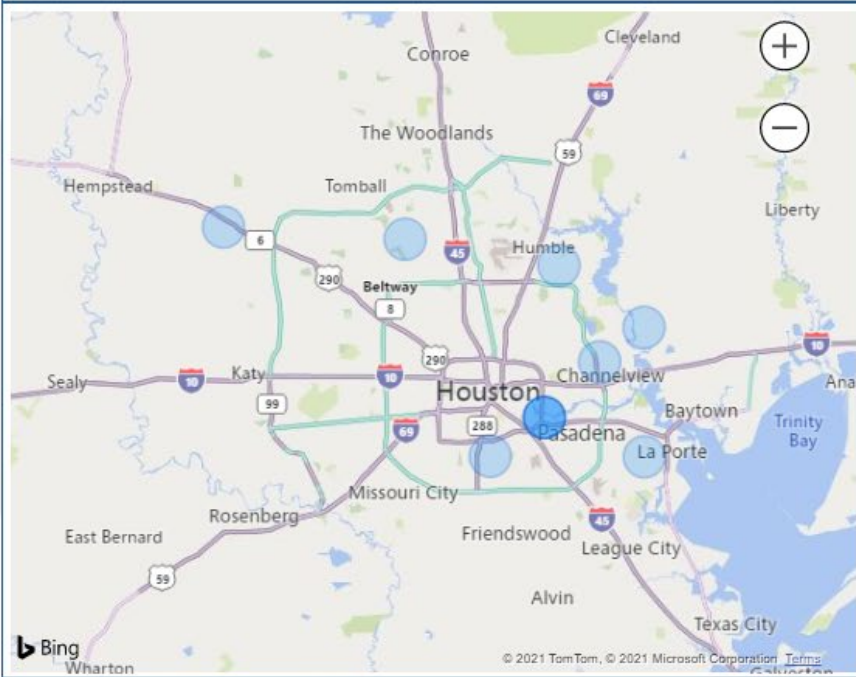
Public dashboard for community air monitoring program



## CAMP Monitoring Dashboard

Select A Location:

**Hartman Park**



**VOC (ppb)** Updated 08/17/2021 12:03 PM

Daily Average

42.39

Background Value\*

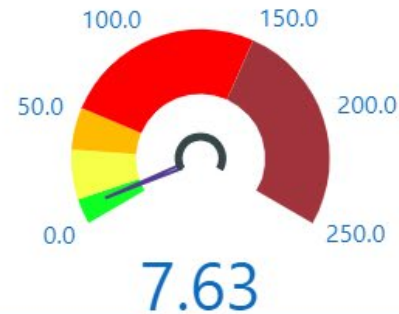
41.97

\* Yearly average value for each CAMP monitor site

**PM (ug/m<sup>3</sup>)** Updated 08/17/2021 12:03 PM

Daily Average

- PM (1.0)
- PM (2.5)
- PM (10)





**COLORADO**  
Department of Public  
Health & Environment

Questions?

Please reach out to [jmelby@gasleaksensors.com](mailto:jmelby@gasleaksensors.com)