



Department of  
Environmental  
Conservation

# 2023 Air Sensors Quality Assurance Workshop

How do we ensure adequate data quality for our needs?

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Amanda Teora - NYSDEC

# Importance of data quality

- Having accurate, complete, consistent, reliable, and timely data is critical to ensuring that stakeholders have confidence in the decisions that are made using that data
- Poor-quality data can lead to not only the loss of time and resources, but incorrect conclusions, poor decision making, and expose agencies and organizations to risk
- Inaccurate AQI

# Engaging with sensor data

# Responding to citizen concerns

- NYSDEC staff utilized sensors alongside regulatory monitors in our Albany South End Community Air Quality Study
- Sensors were collocated, and data needed to compare well to be used in the final study report



# Community-based organizations

- As part of our work supporting New York's Climate Act, community-based organizations received grants to support independent deployments of air sensor networks in areas of concern
- As part of grant requirements, applicants are required to compare sensor data with regulatory data to determine precision and bias
- They must demonstrate that the selected instrumentation is suitable for the proposed work
  - “The detection limit, integration period, environmental conditions, battery life, etc. will be adequate for the study design and location.”



# Citizen sensor data

- Reacting to public concerns
- Working with sensor data from outside groups is challenging as documentation is unavailable or incomplete
- Often, staff must work quickly to evaluate if values of concern are from a benign local source, bad sensor, bad siting, or from a possible hazard



# Screening for issues at permitted sources

- When using non-regulatory tools or sensors to screen for issues, clearly state if the data can or cannot be used for enforcement
- Clearly communicate limitations of instrumentation such as known sensor interferences and expected zero or span drift
- We used the sensors to direct when and where to use enforcement level equipment



# Enforcement

The State of New York does not use low-cost air quality sensors as standalone monitors for enforcement action



# Communications



# Recommendations

# State agency needs

- Lower barriers for regulatory agency access
- Data file consistency and standards for reporting data
- Accuracy and precision information available
- Education for sensor hardware and data users
- Improved documentation for sensor deployments and metadata



# Documentation recommendations

- Comprehensive documentation for sensor data, in plain language
  - What data fields mean
- Metadata for sensor deployments
  - Location and environmental documentation
- Sensor characteristics and specifications
  - Sensor interference and detection limits
- Standard operating procedures (SOPs) for data collection and handling



# Looking forward

- As a state agency, we have been just able to keep up with concerns that have stemmed from PM focused sensor data
- We need better QA/QC and metadata guidelines to be implemented before the tidal wave of gas and total VOC sensor data



# Thank you

A sincere thank you to all our site operators, site supervisors, forecasters, researchers, regional staff, communications office, EJ office, and partner agencies



# Contact info

- Amanda Teora
- Research Scientist
- Albany, NY
- [dar.web@dec.ny.gov](mailto:dar.web@dec.ny.gov)

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