



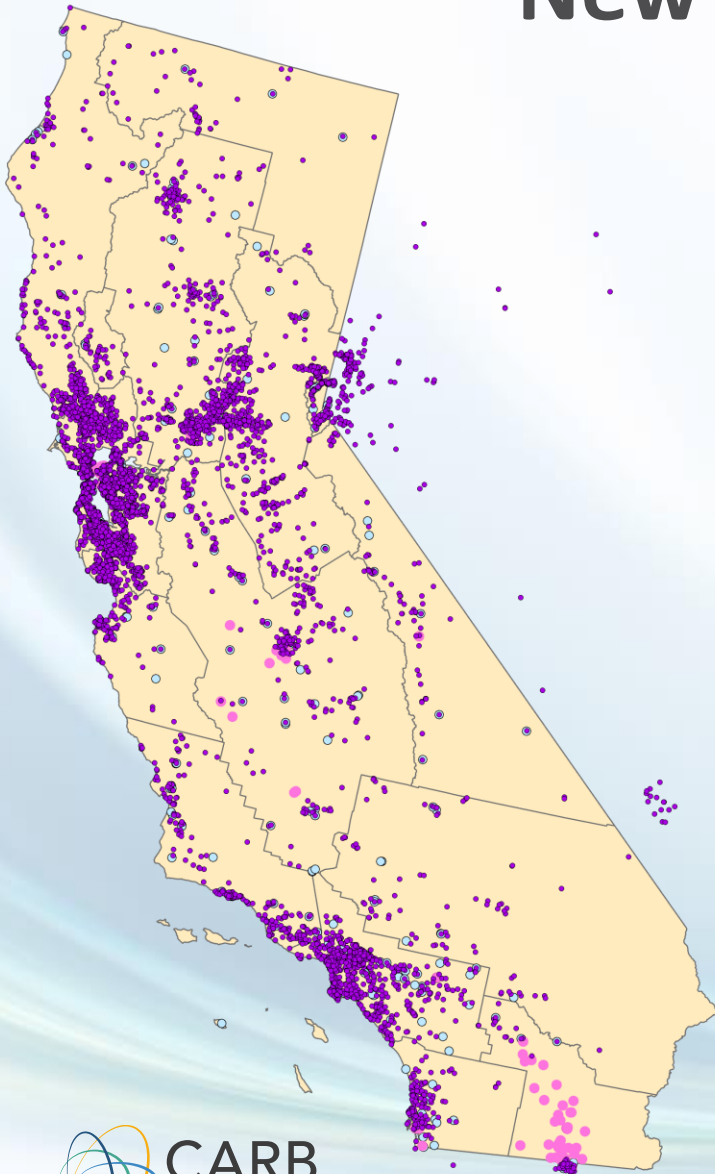
Community Air Quality Viewer (AQview)

Introduction and Data Quality Assessment

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Air Quality Planning and Science Division

CARB PQAO Training | February 2024

New Air Quality Data Challenges



Regulatory Monitors

Sites: ~250

Reporting Interval:
Daily, Hourly

Community Monitors

Sites: 100+
and growing!

Reporting Interval:
Hourly, Subhourly

Purple Air Monitors

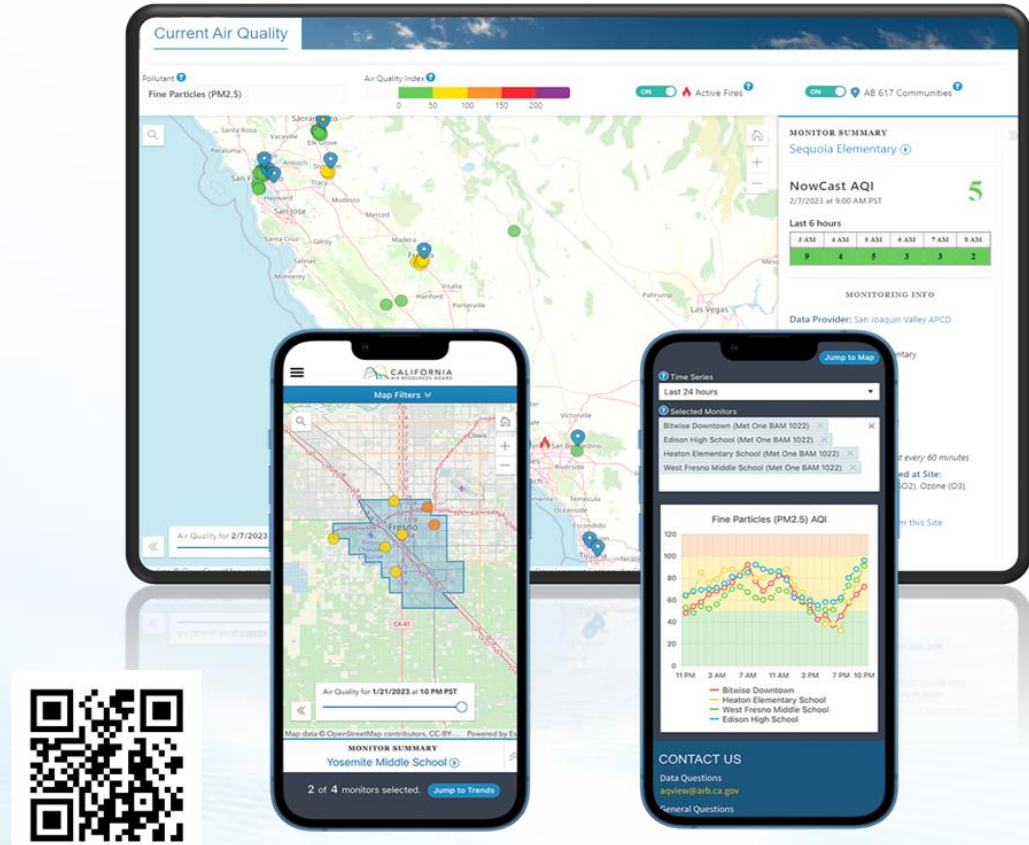
Sites: 7000+
and growing!

Reporting Interval:
~Minute

AQview is designed to support the volume, velocity, variety, and veracity of the data.

Introduction

- An innovative **cloud-based** air monitoring data system
- Provides visualization and easy access of air quality data from **diverse sources** in **near real-time**
- Designed with simple, intuitive, and **mobile-friendly** interfaces
- Provides **transparency** in how data are collected and processed



<https://aqview.arb.ca.gov/>

Main Features

Continuous Monitoring
This download tool provides air quality data from monitors that are continuously streaming to AQView and is updated on an hourly basis. Data available here are primarily from AB 617 community air quality monitoring sites. As AQView continues to expand, monitoring data from a larger variety of sources will be added to this download tool. For technical details about the data provided here, please see the Data Download Explainer. An inventory of the data made available can be found in our Pollutants in AQView page.

Download Air Quality Data
Select One Primary Filter: County, AB 617 Community
Select Parameters and Dates: Select Parameters, Start Date, End Date
Large downloads may take several minutes to complete.

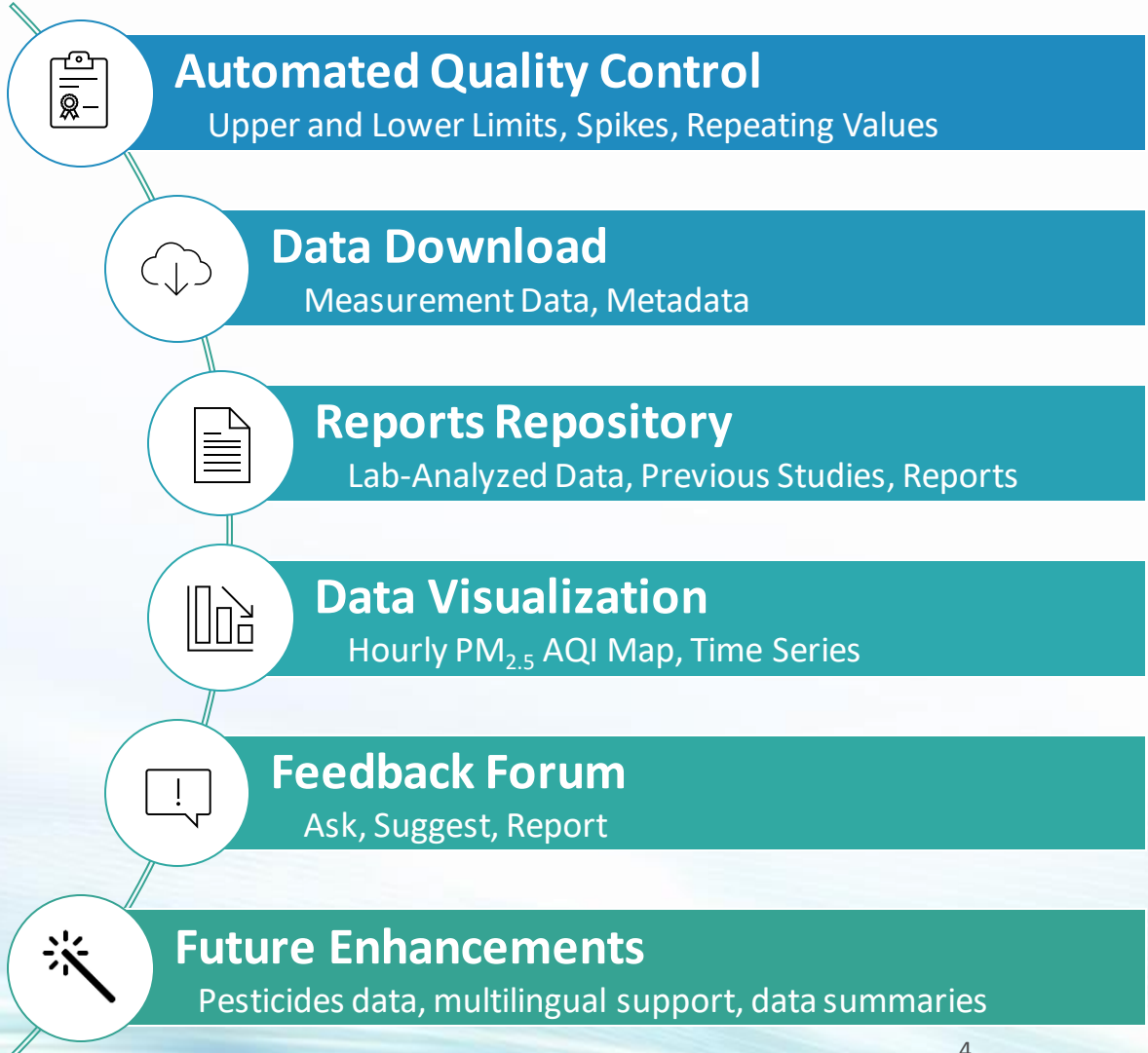
Additional Monitoring & Reports
These air basin specific tables are a repository of air quality data, reports, and other data products primarily from selected AB 617 communities and other recent community monitoring efforts. These data do not conform to the AQView continuous data format (e.g., lab-analyzed data, mobile monitoring data, etc.), and are therefore not available from the Continuous Monitoring Download Tool. For more detailed information on these data, please visit the Data Source links in each table below or contact the data provider directly. Additional data will be added as they become available.

Sacramento Valley					
Data Provider	Area Monitored	Pollutant(s)	Monitoring Period	Files & Links	Last Updated
SMAQMD	South Sacramento-Florn	Black Carbon	08/2020 - 11/2021	Raw Data (8/20-11/21) Data Source	03/17/2022
				How to Read VOC Lab Reports	

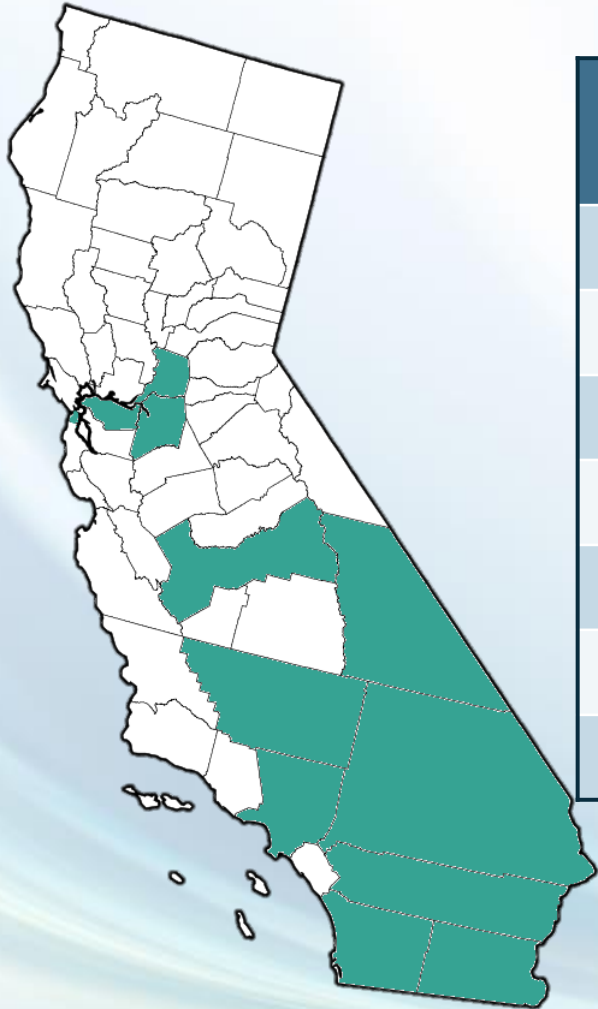
Current Air Quality
Pollutant: Fine Particles (PM2.5)
Air Quality Index: [Color Scale]
MONITOR SUMMARY: Edison High School
NowCast AQI: 4/19/2023 at 1:00 PM PDT: 6
Last 6 hours: 15, 15, 21, 21, 12, 11
MONITORING INFO: Data Provider: San Joaquin Valley APCD, County: Fresno, Site Name: Edison High School, Elevation: 92 m, Monitor Id: BAM 1022, Model: Met One BAM 1022

Feedback Forum
Tell us what you think about AQView...
Ask a question, Comment on existing feature, Suggest new feature, Report an issue, Other Feedback
On the map, my selected site was not highlighted. While I read the monitoring summary I would like to see the highlighted or different colored circle of the selected site.
It would be nice if I could select individual sites to download the data.
The map is great, but I would love to see more pollutants.
Comment Response: Thanks for the suggestion! Our Team is actively working on including a site selection field in the download tool. Stay tuned to see it in a future version of AQView.

Time Series
4 of 4 monitors selected. Jump to Trends.
Last 24 hours
Fine Particles (PM2.5) Hourly AQI
Bilinear Downtown, Heaton Elementary School, West Fresno Middle School, Madison Elementary School



Current Data by Region



Region	Communities/ Networks	Sites	Pollutants*
Bay Area	3	71	PM _{2.5} , PM ₁₀
Sacramento Valley	1	22	PM _{2.5} , PM ₁₀ , VOCs
San Joaquin Valley	5	25	PM _{2.5} , PM ₁₀ , Gases, VOCs
Great Basin	1	1	PM _{2.5} , PM ₁₀
South Coast	7	18	PM _{2.5} , PM ₁₀ , Gases, VOCs
San Diego	2	7	Black Carbon
Imperial	2	46	PM _{2.5} , PM ₁₀

**Availability of pollutants varies by site.*



Challenges of Community Monitoring Data

AQview hosts air quality data from **low-cost sensors, regulatory-grade monitors, research-grade monitors and other monitors.**

- How do we message differences in data quality?
- To what level do we assess data quality for different instrument types?
- Can we evaluate data from all instrument types on the same quality scale?
- How can we assess whether sensors are appropriately sited for ambient air quality measurements?
- How do we show all data together so that they are meaningful?



Assessing and Messaging Data Quality

Record-Level Quality Control Check

Overall Data Quality Assessment

Level 1

Preliminary QC

Automated check for flagging obvious erroneous records

Results provided in graphical displays and data downloads

Level 2

Enhanced QC

Automated QC checks with broader scope based on a longer time window

Spatial statistical tests applied to sensor clusters

Results provided in data downloads

Level 3

Overall Data Quality

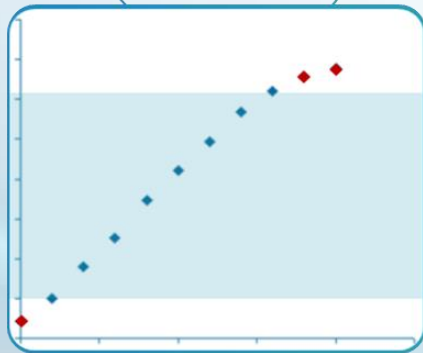
Cumulative statistical analysis. Are QC tests results remaining stable over time?

Incorporates site and monitor QA factors

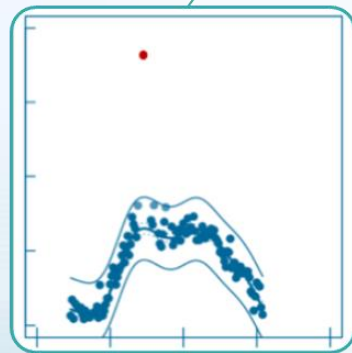
Assess instrument reliability, performance, operation, and data provider reliability

Level 1 – Preliminary QC

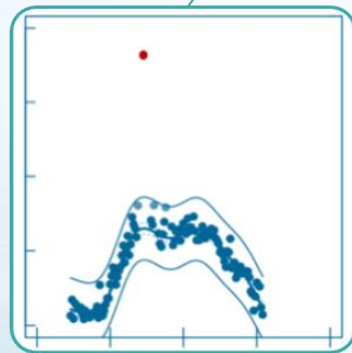
Instrument-Based Upper Limit Check



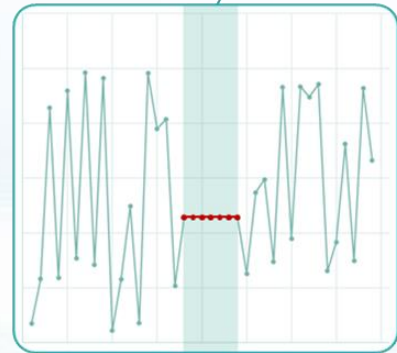
Instrument-Based Lower Limit Check



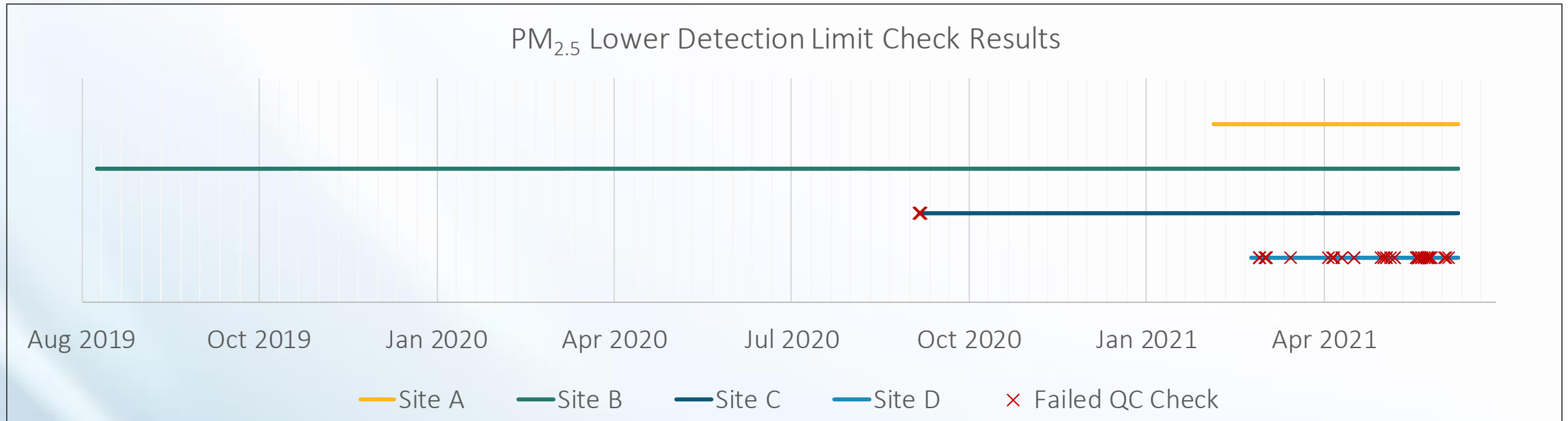
Statistical Outlier Check



Repeating Values Check

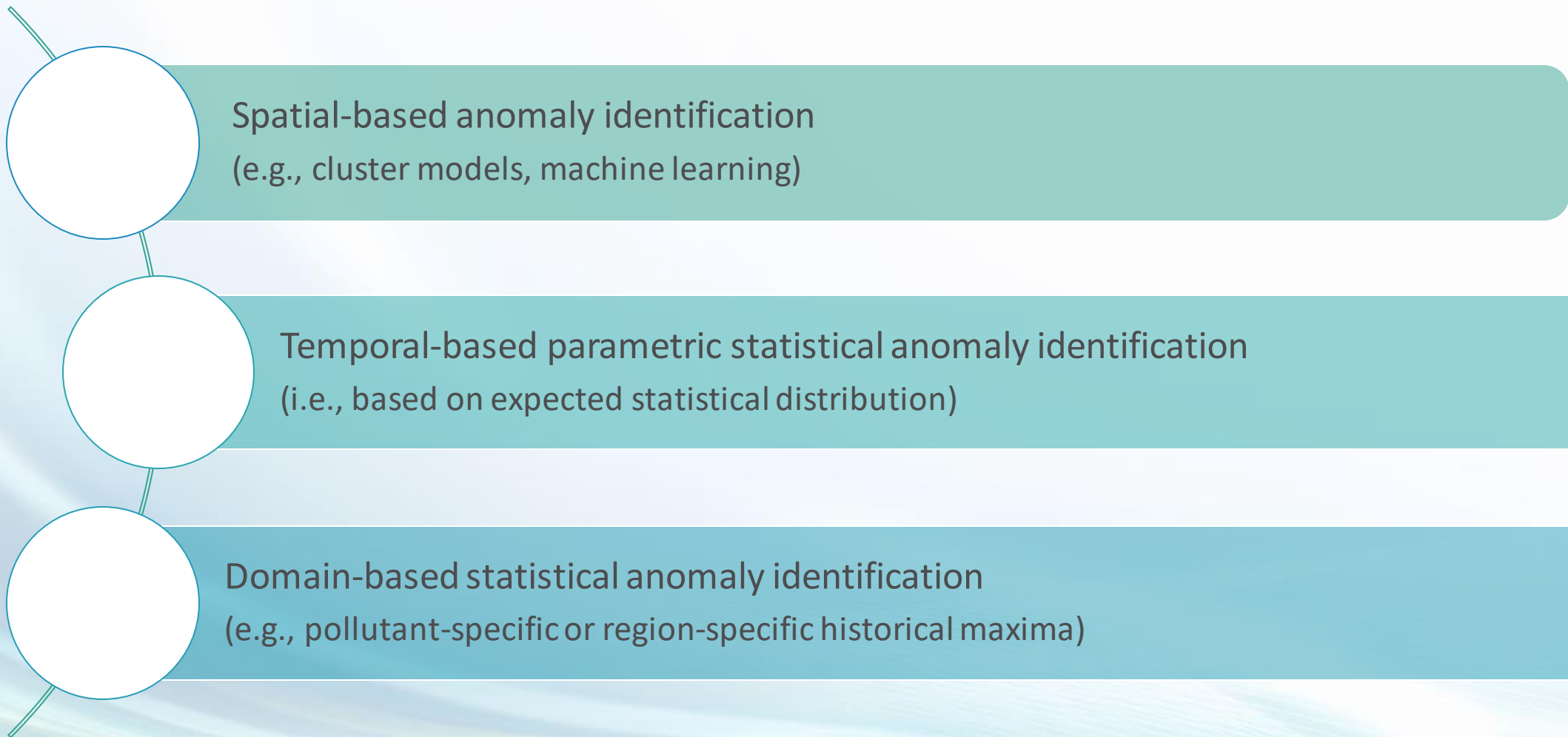


Example: Lower Detection Limit Check



Site ID	Total Number of Records	% Pass	% Fail
Site A	2856	100	0
Site B	15822	100	0
Site C	6313	99.8	0.2
Site D	2380	97.7	2.3

Level 2 - Enhanced QC



Example: PurpleAir Data Quality Control Checks

(Spatial-based Anomaly Identification)

- Identify questionable sensors by assessing the data from a group based on their spatial locations

Step 1: Parametric statistical tests against sensors within a local cluster

Bias Relative to Cluster
Median Test

Bias Relative to Standard
Deviation Test

Mean Deviation Test

Standard Deviation Test



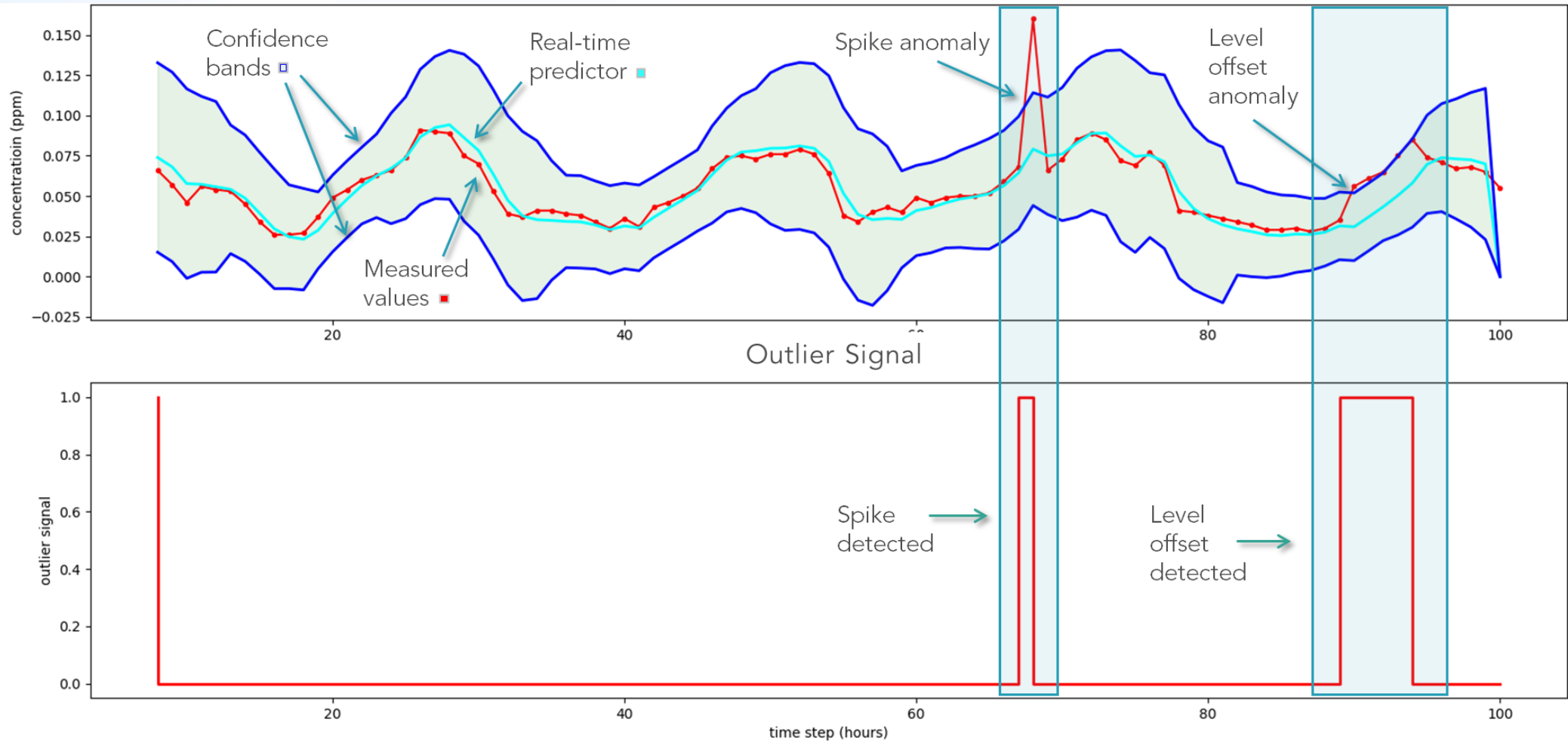
If more than two sensors fail on a test cycle

Step 2: k-means clustering for anomalous sensor reporting as a member of a local cluster

Example: Real-Time Outlier Detection

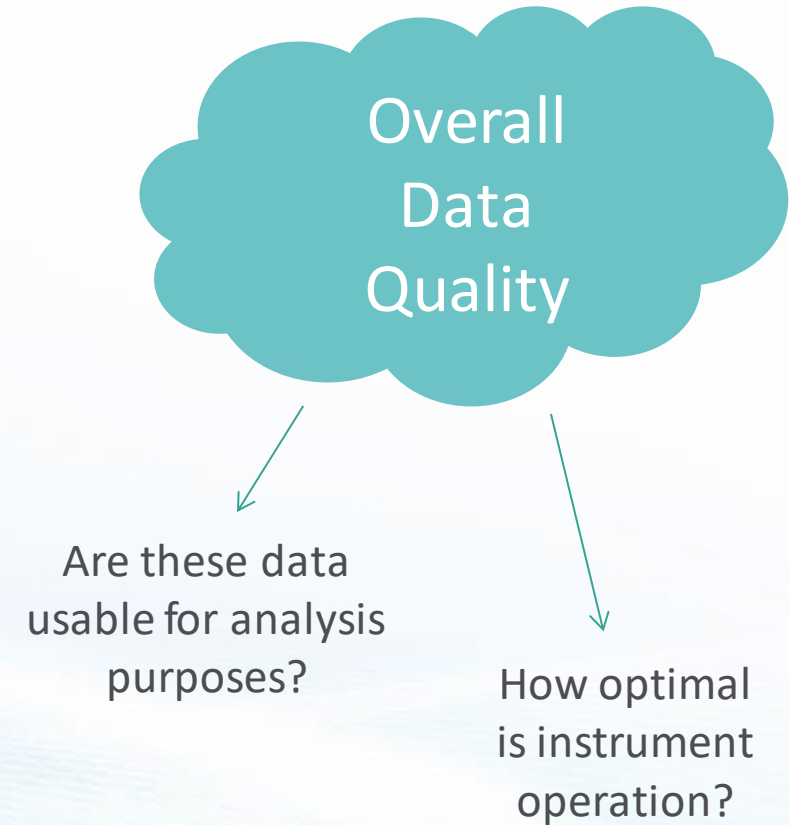
(Temporal-based Parametric Statistical Anomaly Identification)

Hourly Ozone Concentrations with Threshold Confidence Limits



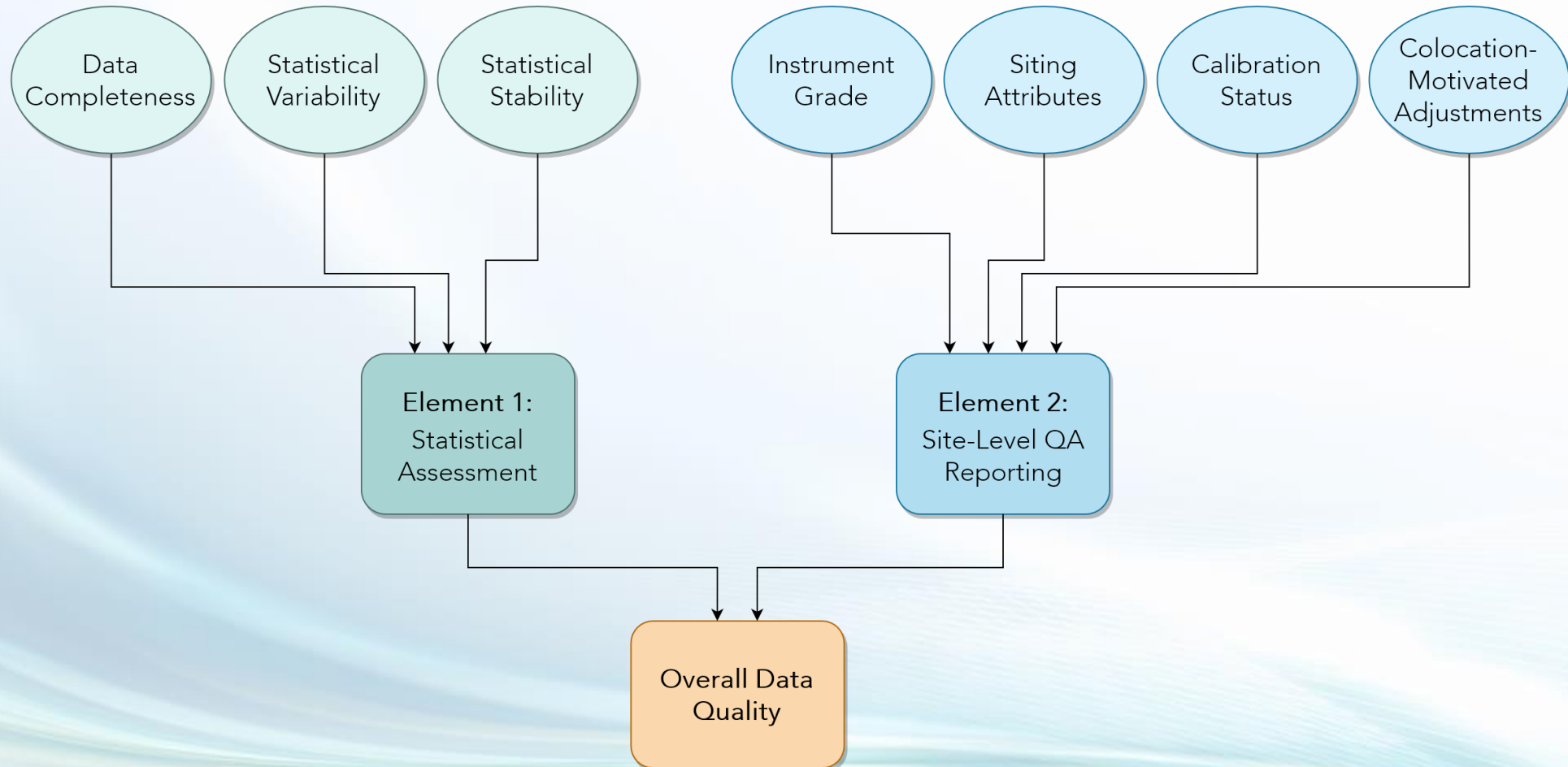
Level 3 - Overall Data Quality

- Data quality will be periodically assessed over a longer timeframe to assign an Overall Data Quality to a dataset.
- Overall Data Quality will be assigned on an instrument level via scores in two fields:
 - Statistical assessment of automated long-term QC processing results
 - Data providers' site-level QA information



Level 3 - Overall Data Quality Elements *

* Conceptual Framework

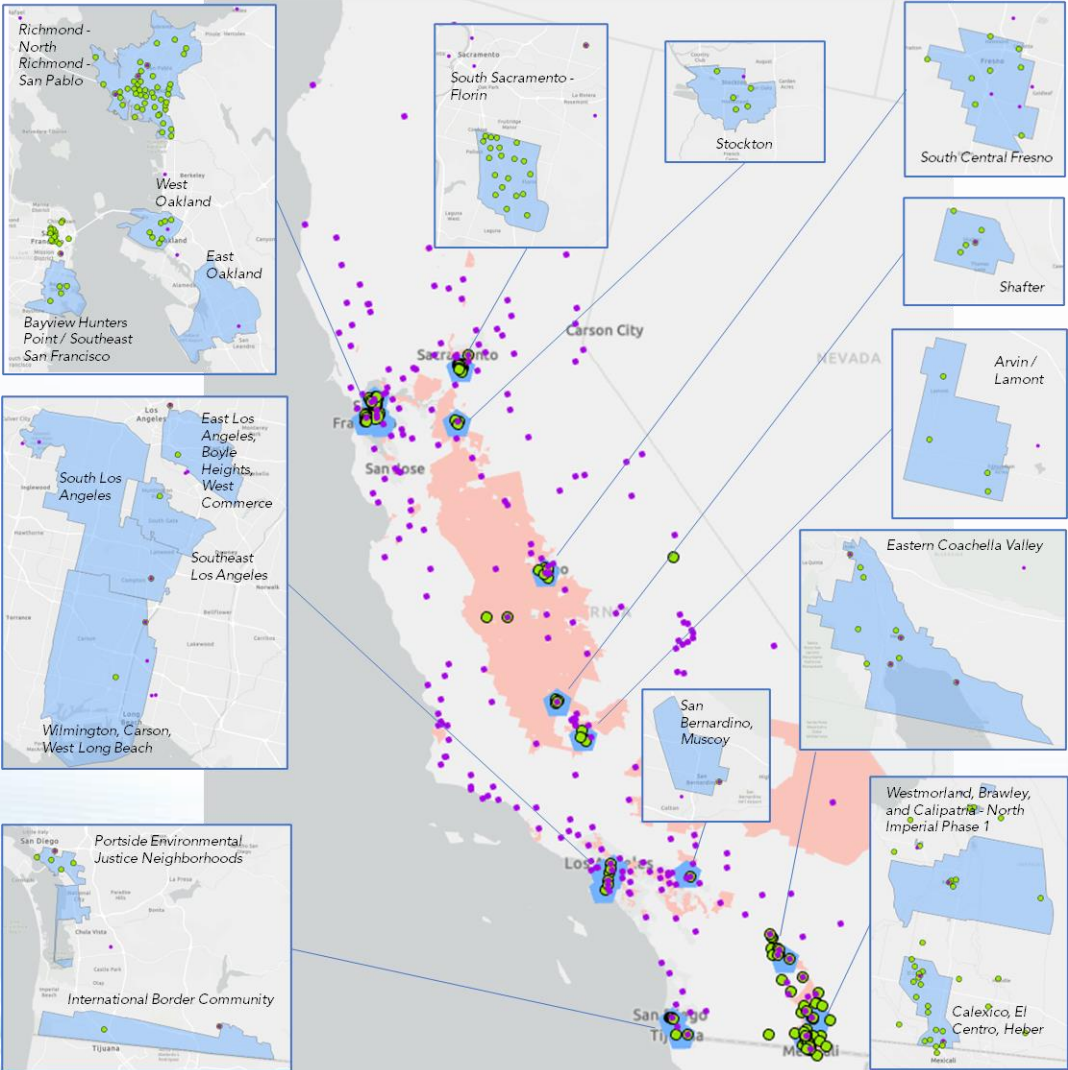


Data Available in AQview

More to come!

- Additional Data in AQview
 - Public sensor networks
 - Regulatory monitoring
 - More community monitoring
- Analysis and Interpretation of air monitoring data

- Community-scale Monitoring Site
- Regulatory Monitoring Site (active)
- ▭ AB 617 Community
- ▭ SB 535 Disadvantaged Community



AQview Team



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