



# South Coast Air Quality Management District



21865 Copley Drive, Diamond Bar, CA 91765-4178  
(909) 396-2000 • www.aqmd.gov

## YOUNG LEADERS ADVISORY COUNCIL

April 22, 2020 ♦ 12:30 p.m.

### Advisory Council Members

Fabian R. Wesson, Chair

James Albert

Roxana Barrera

Monica Cantoran

José Trinidad Castañeda III

Jin Chen

Isis Frausto-Vicencio

Ana Gonzalez

Larysha Green

Yannick Matia

Gerald Mendoza

Cassie Nguyen

Nithya Palani

Maya Prasad

Michael Rodriguez

Paije Rush

Alexandra Rae Santora

Lizbeth Sierra

Priya Vedula

Janielle Vidal

Mikayla Winfery

### ♦ PLEASE NOTE THE LOCATION CHANGE ♦

**Pursuant to Governor Newsom's Executive Order N-29-20, (March 18, 2020), previously noticed locations are no longer available. The Board Assistants Briefing meeting will only be conducted via video conferencing and by telephone on Wednesday, April 22, 2020, 12:30 p.m. Please follow the instructions below to join the meeting remotely.**

### TELECONFERENCE LOCATION

Per Governor Newsom's Executive Order N-25-20, (March 12, 2020), teleconference locations do not need to be disclosed more open to the public.

### **INSTRUCTIONS FOR ELECTRONIC PARTICIPATION**

**Join Zoom Meeting – from PC or Laptop**

<https://scaqmd.zoom.us/j/255162867>

**Meeting ID: 255 162 867 (applies to all)**

**Teleconference Dial In**  
+1 346 248 7799  
**One tap mobile**  
+16699006833,255162867#

**Audience will be allowed to participate during public comment periods.**

**Computer controls for participants:**

The following commands can be used on your computer's Zoom application during the meeting:

- ◆ Toggle mute/unmute by selecting **Mute** on the bottom-left
- ◆ Select **Participants** followed by **Raise Hand** on the right-hand side to raise hand

**Phone controls for participants:**

The following commands can be used on your phone's dial pad while in Zoom meeting:

- ◆ \*6 – Toggle mute/unmute
- ◆ \*9 – Raise hand

**PUBLIC COMMENT WILL STILL BE TAKEN**

**AGENDA**

*Members of the public may address this body concerning any agenda item before or during consideration of that item (Gov't. Code Section 54854.3(a)). If you wish to speak, raise your hand on Zoom or press Star 9 if participating by telephone. All agendas for regular meetings are posted at South Coast AQMD Headquarters, 21865 Copley Drive, Diamond Bar, California, at least 72 hours in advance of the regular meeting. Speakers may be limited to three (3) minutes each.*

**CALL TO ORDER**

Call to Order/Opening Remarks  
*(No Motion Required)*

Fabian Wesson  
Assistant Deputy Executive  
Officer/Public Advisor  
Legislative, Public Affairs & Media

**ACTION ITEMS (Item 1)**

1. Approval of January 22, 2020 Meeting Minutes  
*(Motion Required)*  
*[Attachment 1]*

Fabian Wesson

**DISCUSSION ITEMS (Items 2 through 4)**

2. Youth Climate Commission  
*(No Motion Required)*  
*Los Angeles County staff will give a presentation on the newly formed Youth Climate Commission.*  
*[Attachment 2]*

Alison Frazzini  
Advisor  
County of Los Angeles  
Chief Sustainability Office

3. AQ-SPEC  
*(No Motion Required)*  
*Staff will give a presentation on South Coast AQMD's AQ-SPEC program.*  
*[Attachment 3]*
- Vasileios Papapostolou  
Program Supervisor  
Science & Technology  
Advancement
4. Member Updates  
*(No Motion Required)*
- All

### **OTHER MATTERS**

5. Other Business  
*Any member of this body, or its staff, on his or her own initiative or in response to questions posed by the public, may ask a question for clarification, may make a brief announcement or report on his or her own activities, provide a reference to staff regarding factual information, request staff to report back at a subsequent meeting concerning any matter, or may take action to direct staff to place a matter of business on a future agenda. (Govt. Code Section 54954.2)*
6. Public Comment Period  
At the end of the regular meeting agenda, an opportunity is provided for the public to speak on any subject within the Young Leader Advisory Council's authority that is not on the agenda. Speakers may be limited to three (3) minutes each.

**Next Meeting Date** – Wednesday, July 22, 2020 at 12:30 p.m.

### **ADJOURNMENT**

#### **Document Availability**

*All documents (i) constituting non-exempt public records, (ii) relating to an item on an agenda for a regular meeting, and (iii) having been distributed to at least a majority of the Council after the agenda is posted, are available prior to the meeting for public review at the South Coast Air Quality Management District, Public Information Center, 21865 Copley Drive, Diamond Bar, CA 91765.*

#### **Americans with Disabilities Act**

*The agenda and documents in the agenda packet will be made available, upon request, in appropriate alternative formats to assist persons with a disability (Gov't Code Section 54954.2(a)). Disability-related accommodations will also be made available to allow participation in the Young Leaders Advisory Council meeting. Any accommodations must be requested as soon as practicable. Requests will be accommodated to the extent feasible. Please contact Bradley Whitaker at (909) 396-3128 from 7:00 a.m. to 5:30 p.m., Tuesday through Friday, or send the request to [bwhitaker@aqmd.gov](mailto:bwhitaker@aqmd.gov).*



# South Coast Air Quality Management District

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## YOUNG LEADERS ADVISORY COUNCIL WEDNESDAY, JANUARY 22, 2020 MEETING MINUTES

### **Members Present:**

James Albert  
Roxana Barrera  
José Trinidad Castañeda III  
Ana Gonzalez  
Yannick Matia  
Nithya Palani  
Alexandra Santora  
Lizbeth Sierra  
Janielle Vidal (By Phone)

### **Members Absent:**

Monica Cantoran  
Mayra Jackson  
Gerald Mendoza  
Cassie Nguyen  
Paije Rush  
Mikayla Winfery

### **South Coast AQMD Staff:**

Fabian R. Wesson, Chair, Assistant Deputy Executive Officer/Legislative, Public Affairs & Media  
Nancy Feldman, Principle Deputy District Counsel/Legal  
Bradley Whitaker, Senior Public Information Specialist/Legislative, Public Affairs & Media  
Emily Liemsakul, Human Resources Technician/Administrative & Human Resources  
Brandee Keith, Secretary/Legislative, Public Affairs & Media

### **Agenda Item #1: Call to Order/Opening Remarks**

Ms. Fabian Wesson called the meeting to order at 12:35 p.m. and led the meeting in introductions.

### **Agenda Item #2: Approval of October 23, 2019 Meeting Minutes**

Mr. James Albert moved to approve the October 23<sup>rd</sup> minutes. Mr. Jose Trinidad Castaneda seconded the motion. Ana Gonzalez noted a correction to be made. Minutes were approved as corrected.

### **Agenda Item #3: Voter Registration**

Ms. Kathy Bresnan with the League of Women Voters delivered a presentation on voter registration.

Mr. Jose Castaneda offered clarification that there would be a voting period between February 3<sup>rd</sup> and March 3<sup>rd</sup>, rather than a single day.

Mr. James Albert shared a demonstration with the group to show how to check their current voter status.

### **Agenda Item #4: Jobs and Internships at South Coast AQMD**

Ms. Emily Liemsakul delivered a presentation on job and internship opportunities at South Coast AQMD.

There were no questions or comments regarding the presentation.

### **Agenda Item #5: Member Updates**

Ms. Roxana Barrera announced her city had voted to bring in an Amazon warehouse without involving members of the community, and without producing any proof of environmental impact report, which has upset many residents.

Ms. Alexandra Santora continues to work with the California Science Center and plans to start a California Naturalists training program.

Mr. José Trinidad Castañeda III expressed an interest in connecting with staff on a matter related to residential wood burning. He shared a vote by the city of Irvine to move forward in a partnership with Community Choice Energy. He also shared that tribal nations have begun zoning new areas for solar farms.

**ACTION ITEM:** Staff to connect with Mr. Trinidad Castañeda III on matter concerning residential wood burning.

*Staff sent information to Mr. Trinidad Castañeda III on commercially available air monitoring and the Check Before You Burn program and provided one his constituents with contact information for South Coast AQMD's AQ-SPEC program.*

Mr. James Albert shared an interest in partnering with the South Coast AQMD's new school program to bring more information about voter registration and community involvement on environmental issues. He requested a possible rescheduling of the next YLAC meeting as it would be held on Earth Day.

**ACTION ITEM:** Staff to connect Mr. Albert with contact information for the WHAM program and look into rescheduling meeting on April 22.

*Staff provided contact information for WHAM and how to request potential program partnerships. The April 22 meeting was not rescheduled.*

Ms. Ana Gonzalez announced efforts to fight the San Bernardino approval of the Amazon warehouse, and further expansions of warehouses considering their effects on residential communities.

Ms. Janielle Vidal (via telephone) shared she would be pursuing work with local environmental justice organizations in Orange County and invited any interested members to connect with her on the subject.

Mr. James Albert requested staff look into the possibility of incorporating a Google Hangouts or similar online communication tool for video conference.

**ACTION ITEM:** Staff to look into incorporating an online digital communication tool for YLAC members.

*Staff created a LinkedIn group for members to communicate between meetings.*

Ms. Ana Gonzalez requested an update on the AQ-SPEC program.

**ACTION ITEM:** Staff to provide Ms. Gonzalez with the latest update on the AQ-SPEC program.

*Staff provided information on AQ-SPEC to Ms. Gonzalez. An AQ-SPEC presentation for the next meeting.*

Mr. James Albert expressed an interest in learning more about the Governing Board and how members are selected or appointed.

**ACTION ITEM:** Staff to provide information to Mr. Albert on how Governing Board members are selected or appointed.

*Staff provided Mr. Albert with information on the Governing Board selection process.*

**Agenda Item #6: Other Business**

None

**Agenda Item #7: Public Comment Period**

None

**Agenda Item #8: Next Meeting Date**

The next regular YLAC meeting is scheduled for Wednesday, April 22, 2020, at 12:30 p.m.

**Adjournment**

Mr. Bradley Whitaker adjourned the meeting at 2:05 p.m.



OurCounty

Countywide Sustainability Plan

LA County Chief Sustainability Office

April 22, 2020



# Background

# The County's Aims & Roles

## The plan is:

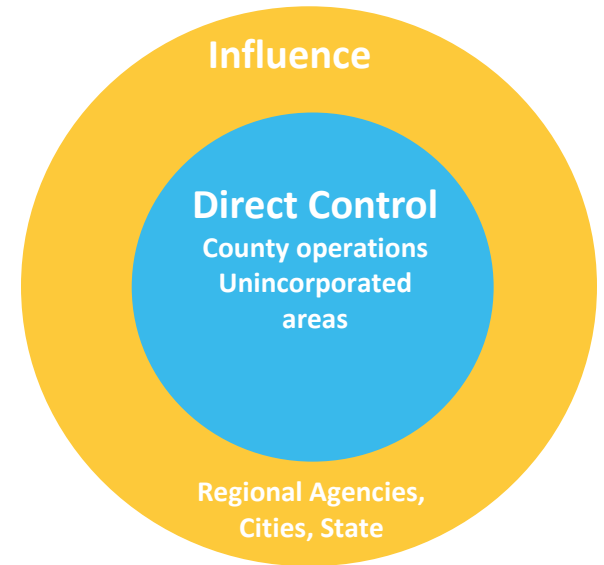
- Aspirational, Comprehensive, Long-Term, Regional, Actionable

## Plan is analogous to a strategic plan

- Sets out a vision and strategy, but does not include a detailed implementation strategy

## Plan mostly addresses areas of County's control

- Does include some areas where we can influence others (Metro, South Coast AQMD, etc.)



# Guiding Principles for Equitable Engagement

- Ask, don't tell (aka: listen, don't talk)
- Intersectional approach with focused discussions on:
  - Energy and climate
  - Water
  - Waste and resource management
  - Transportation
  - Open space
  - Public health and air quality
  - Equity and resilience
- Centering of environmental justice issues
- Early and deep involvement by stakeholders representing low-income communities and communities of color





What's in the plan?

## Goals

Broad statement of a desired future state

Buildings and infrastructure that support human health and resilience

## Strategies

More specific statement on the approach to achieve the goal

Integrate climate adaptation and resilience into planning, building, infrastructure, and community development decisions.

## Actions

Detailed statements on the policy or program to fulfill the strategy

Build shade structures at major transit stops, such as those identified in Metro's Active Transportation Strategic Plan, prioritizing communities with high heat vulnerability.

# High Level Goals



Resilient and healthy community environments where residents thrive in place



Buildings and infrastructure that support human health and resilience



Equitable and sustainable land use and development without displacement



A prosperous LA County that provides opportunities for all residents and businesses and supports the transition to clean economy sectors



Thriving ecosystems, habitats, and biodiversity



Accessible parks, public lands, and public spaces that create opportunities for respite, recreation, ecological discovery, and cultural activities

# High Level Goals



A fossil fuel-free LA County



A convenient, safe, clean, and affordable transportation system that expands mobility while reducing car dependency



Sustainable production and consumption of resources



A sustainable and just food system that enhances access to affordable, local, and healthy food



Inclusive, transparent, and accountable governance that supports participation in sustainability efforts, especially by disempowered communities



A commitment to realize OurCounty sustainability goals through creative, equitable, and coordinated funding and partnerships



# Board of Supervisors Adoption and Direction on Next Steps

- Adopted by unanimous vote on August 6, 2020
- Included directives to:
  - Add sustainability to Board-Directed priorities
  - Ensure all department heads have an OurCounty performance goal
  - Develop near-term priorities by February
  - Create a funding strategy
  - Update County's legislative agenda
  - Report progress annually (August)



# Youth Climate Commission



- First proposed in October
- CSO consulted with stakeholders and submitted recommendations in Feb
- Next steps approved in March:
  - Hire consultant to create curriculum
  - Develop & implement recruitment, application, and selection process
  - Identify speakers, plan activities, secure technical advisors
  - Write ordinance & by-laws
- Originally-planned launch: late August

# Youth Climate Commission



- 25 Commissioners (5 from each district) ages 15-22
- 2-year terms, renewable one time
- Responsibilities include:
  - Provide input on 3 annual occasions: development of near-term priorities, release of annual updates, and development of legislative agenda
  - Annual Report on Commission activities
- Activities include:
  - Quarterly in-person meetings, monthly remote meetings, periodic site visits
- Supports include:
  - Stipends
  - Orientation retreat
  - Educational and skill-building activities in the areas of climate science, climate change mitigation and adaptation strategies, leadership development, coalition-building, policymaking



[OurCountyLA.org](https://www.OurCountyLA.org)



# Young Leaders Advisory Council

## AQ-SPEC: Air Quality Sensor Performance Evaluation Center

*Vasileios Papapostolou, Sc.D.*

Program Supervisor | AQ-SPEC  
Science & Technology Advancement

April 22, 2020



# Outline

- Background & Significance
- Field and Laboratory Testing
- Applications, Networks, Community Outreach

## Disclaimer

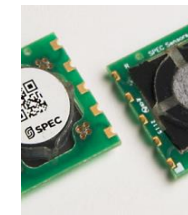
The South Coast Air Quality Management District does not endorse individual vendors, products or services. Therefore, any reference herein to any vendor, product or services by trade name, trademark, or manufacturer or otherwise does not constitute or imply the endorsement, recommendation or approval of the South Coast Air Quality Management District.



# AQ-SPEC

## Air Quality Sensor Performance Evaluation Center

- Established in July 2014
- Main Goals & Objectives
  - Provide guidance & clarity
  - Promote successful evolution and use of sensor technology
  - Minimize confusion
- Sensor Selection Criteria
  - Commercially available
  - Criteria pollutants & air toxics
  - Real- or near-real time, time resolution  $\leq 5$ -min
  - High sensitivity at ambient level and low concentrations
  - Continuous operation for two months, using AC/DC power
  - Retrievable data
  - Low-cost...?





# AQ-SPEC

## Air Quality Sensor Performance Evaluation Center

*From 2014 – 2020:*

*63 PM sensors & 53 Gas-phase sensors*

➤ How do sensors reach AQ-SPEC for an evaluation:

- Internet search by AQ-SPEC team
- Contacted by:
  - Manufacturers
  - Vendors
  - Developers
  - Integrators
  - Citizen Scientists
  - Air Quality Experts/Researchers
  - Other AQMD/APCD Agencies

The screenshot shows the AQ-SPEC website interface. On the left is a blue navigation menu with the South Coast AQMD logo and links for Home, Conference 2017, Sensors, Evaluations, Research Projects, Resources, Workshops, Sensor News, About Us, Contact AQ-SPEC, FAQs, Advisory Board, and About SCAQMD. Below the menu are language selection and sign-up options. The main content area features a header with the South Coast Air Quality Management District logo and social media icons, followed by the AQ-SPEC title and subtitle. A video player is embedded in the center, showing the AQ-SPEC logo and a play button. To the right of the video is a 'Recently added/updated:' section with a list of articles, including a new article by Feinberg et al. and others. At the bottom, there is a 'Background' section and a 'Main Goals & Objectives' section.





South Coast  
AQMD

# Air Quality Sensing – Low-Cost/Consumer-grade?

- OEM/ raw sensor/ raw sensing head

➤ \$15 to \$400



- Sensing unit:  $\geq 1$  OEM + housing + user interface + external communication + power capabilities

➤ \$150 to \$400 to \$7,000





# AQ-SPEC

## Air Quality Sensor Performance Evaluation Center

### Field Testing

- Sensor tested in triplicates
- Two month deployment (various time intervals, random)
- Location:
  - South Coast AQMD Riverside-Rubidoux Air Monitoring Station
  - Inland site
  - Fully instrumented
- Land use: Apartment complexes, single-family residences, school grounds, retail outlets, vacant lots
- Potential PM sources:
  - California State Route 60 (1 km away)
  - Small private airport (1.5 km away)

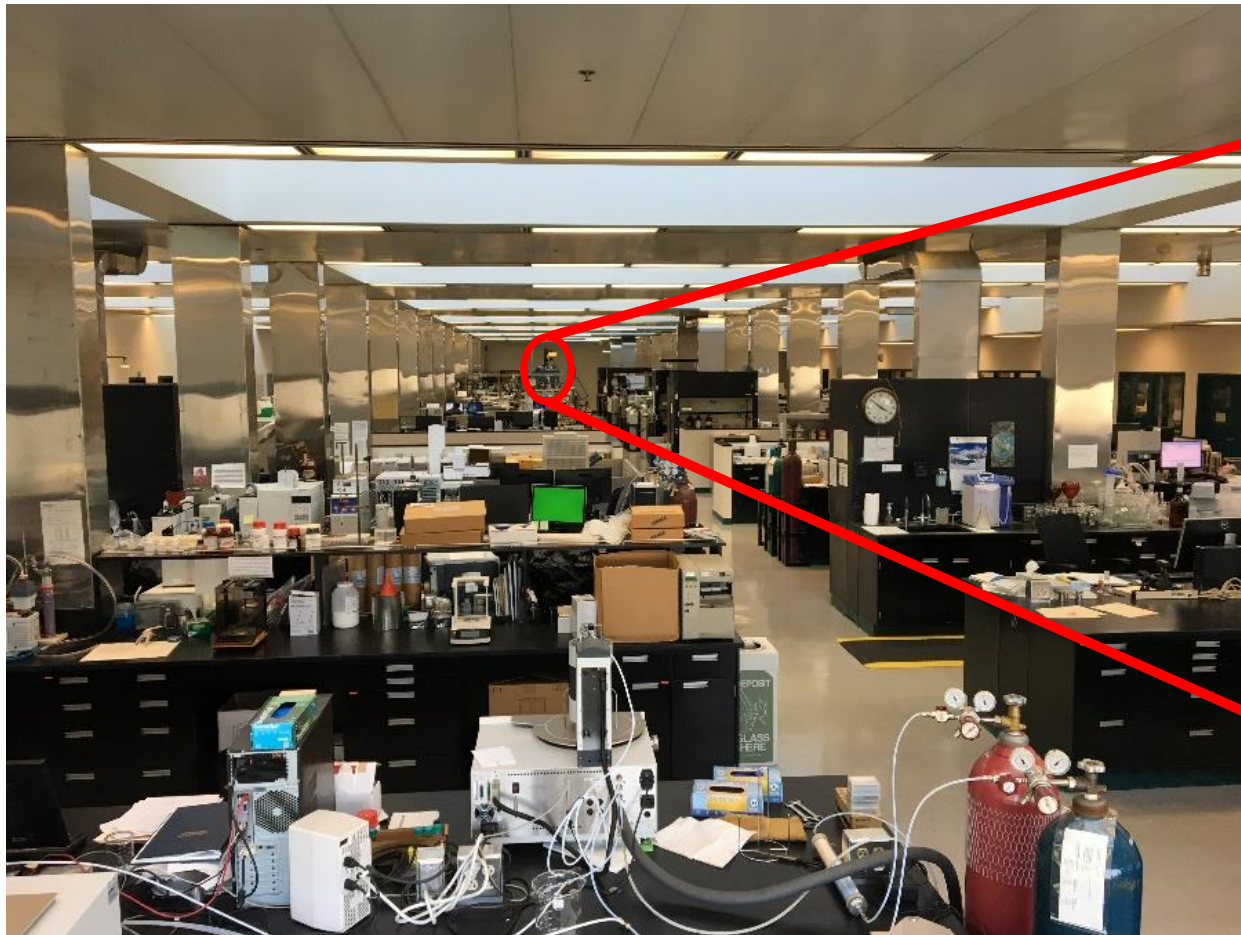




# AQ-SPEC

Air Quality Sensor Performance Evaluation Center

## Laboratory Testing





# AQ-SPEC

## Air Quality Sensor Performance Evaluation Center

### PM Sensors

Sensor Image	Make (Model)	Est. Cost (USD)	Pollutant(s)	*Field R <sup>2</sup>	*Lab R <sup>2</sup>	Summary Report
	Aeroqual (AQY) Ver. 0.5	\$3,000	PM <sub>2.5</sub>	0.84 to 0.87	0.99	PDF (1,178 KB)
	AethLabs (microAeth)	\$6,500	BC (Black Carbon)	0.79 to 0.94		
	Air Quality Egg (2018 Model)	\$249	PM <sub>2.5</sub>	0.86 to 0.88	0.99	PDF (771 KB)
			PM <sub>2.5</sub>	0.84 to 0.85	0.99	
			PM <sub>10</sub>	0.12 to 0.13		
	Air Quality Egg (Version 1)	\$200	PM	~ 0.0		
	Air Quality Egg (Version 2)		PM <sub>2.5</sub>	0.79 to 0.85		
			PM <sub>10</sub>	0.31 to 0.40		
	AirThinx (IAQ)	\$100	PM <sub>2.5</sub>	0.68 to 0.73		
			PM <sub>2.5</sub>	0.95		
	Airviz Inc. (Speck)	\$150	PM <sub>2.5</sub>	0.32		
	Alphasense (OPC-N3)	\$338	PM <sub>2.5</sub>	0.78 to 0.82	0.99	PDF (698 KB)
			PM <sub>2.5</sub>	0.52 to 0.67	0.99	
			PM <sub>10</sub>	0.45 to 0.52	TBD	
	AS-LUNG (Air Quality Station)	\$2000	PM <sub>2.5</sub>	0.42 to 0.88		
			PM <sub>2.5</sub>	0.59 to 0.81		
			PM <sub>10</sub>	0.15 to 0.23		
	AS-LUNG (Portable)	\$1000	PM <sub>2.5</sub>	0.86 to 0.78	0.99	PDF (875 KB)
			PM <sub>2.5</sub>	0.78 to 0.99	0.99	
			PM <sub>10</sub>	0.11 to 0.14		
	Cair	\$200	PM <sub>2.5-10</sub>	0.43 to 0.51		
			PM <sub>2.5-10</sub>	0.39 to 0.51		
	Clarity (Node)	\$1300	PM <sub>2.5</sub>	0.73 to 0.76	0.99	PDF (1,030 KB)
	Dylos (DC1100 Pro)	\$300	PM <sub>0.5-2.5</sub>	0.65 to 0.85	0.89	PDF (1,384 KB)
	Dylos (DC1700-PM)	\$475	PM <sub>2.5</sub>	0.58 to 0.68	0.95	PDF (823 KB)
			PM <sub>10</sub>	0.15 to 0.18		
	EcoWitt (WH415B)	\$100	PM <sub>2.5</sub>	0.39		
	Edimax (AirBox)	\$249	PM <sub>2.5</sub>	0.85		
	Edimax (Edigreen Home)	\$299	PM <sub>2.5</sub>	0.82		
	FabLab		PM <sub>2.5</sub>	0.94		
			PM <sub>2.5</sub>	0.77		

### Gas-Phase Sensors

Sensor Image	Make (Model)	Est. Cost (USD)	Type	Meas.	*Field R <sup>2</sup>	*Lab R <sup>2</sup>	Summary Report
	2B Technologies (POM)	\$4,500	UV absorption (FEM Method)	O <sub>3</sub>	1.00	0.99	PDF (1,295 KB)
	Aeroqual (AQY) Ver. 0.5	\$3,000	Electrochem	NO <sub>2</sub>	0.77	0.98	PDF (1,158 KB)
			Metal Oxide	O <sub>3</sub>	0.95	0.98	PDF (1,163 KB)
	Aeroqual (S-500)	\$500	Metal Oxide	O <sub>3</sub>	0.85	0.99	PDF (1,197 KB)
	Air Quality Egg Ver. 1	\$200	Metal Oxide	CO	0.0		
				NO <sub>2</sub>	0.40		
				O <sub>3</sub>	0.85		
	Air Quality Egg Ver. 2	\$240	Electrochem	CO	0.0		
				NO <sub>2</sub>	0.0		
				SO <sub>2</sub>	n/a		
				CO	0.42 to 0.80		
				NO	0.0 to 0.44		
	AQMesh Ver. 4.0	\$10,000	Electrochem	CO	0.88		
				NO	0.93		
				NO <sub>2</sub>	0.37		
				O <sub>3</sub>	0.77		
	APIIS	\$4,995	Electrochem	CO	0.94		
	CairPol Cairsens (CO)	\$1,243	Electrochem	CO	0.94		
	CairPol Cairsens (NO <sub>2</sub> )	\$1,198	Electrochem	NO <sub>2</sub>	0.0 to 0.12		
	Kumak (Air A10)	~\$5,000	Electrochem	CO	0.58		
				NO	0.87		
				NO <sub>2</sub>	0.29		
				O <sub>3</sub>	0.87		
	Magnascan SRL (USAQ-Monitor INDUSTRIAL HW103)	~\$1,300	Electrochem	CO	0.03		
				NO <sub>2</sub>	0.03		
				O <sub>3</sub>	0.03		
				NO	n/a		
				NO <sub>2</sub>	0.0		
	Perkin Elmer (ELM)	\$5,200	Metal Oxide	O <sub>3</sub>	0.89 to 0.96		
	Smart Citizen Kit	\$200	Metal Oxide	CO	0.50 to 0.85		
				NO <sub>2</sub>	0.0		
				CO	0.84 to 0.90		
	Spec Sensors	\$500	Electrochem	NO <sub>2</sub>	0.0 to 0.16		
				O <sub>3</sub>	0.0 to 0.24		
				CO	0.0		
	uHoo	\$300	Metal Oxide	CO	0.43 to 0.72		
				O <sub>3</sub>	0.43 to 0.72		
	UNITEC	\$2,200	Metal Oxide	CO	0.33 to 0.43	0.99	PDF (1,283 KB)
				NO <sub>2</sub>	0.60 to		

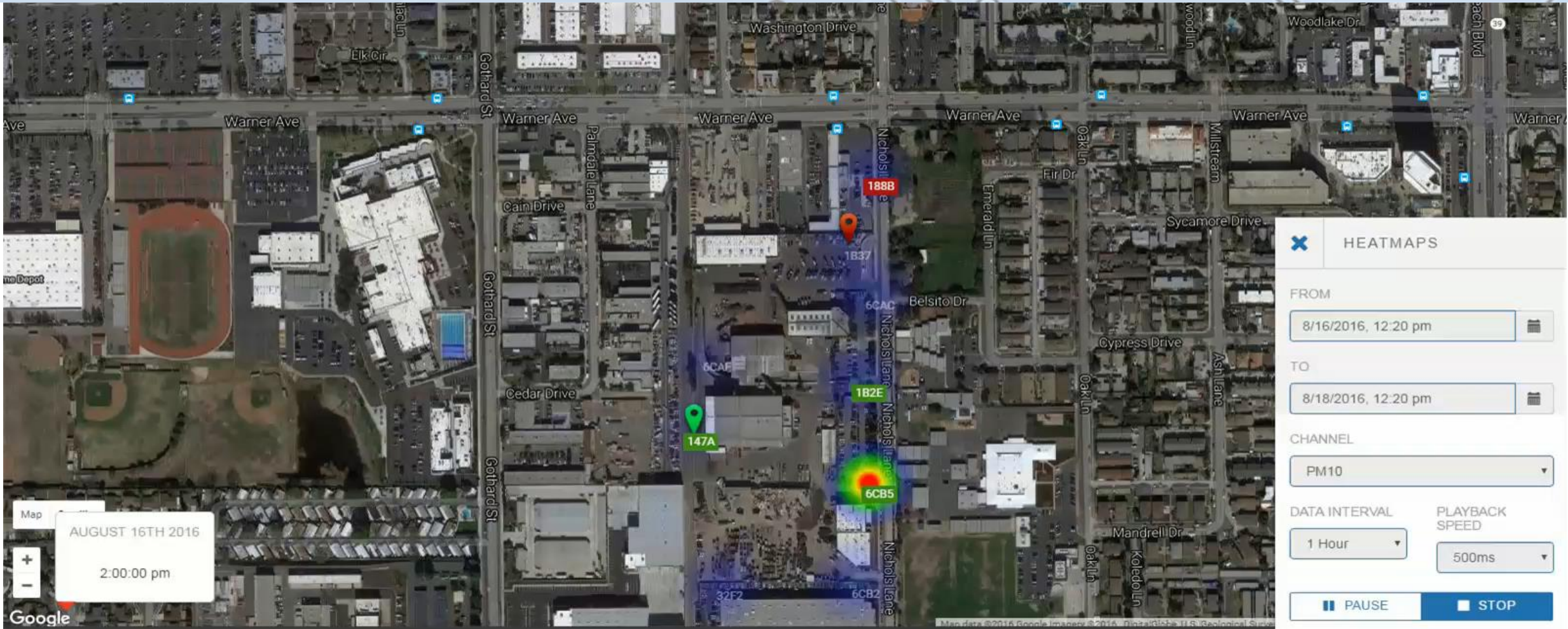
Results Publicly Available at:

[www.aqmd.gov/aq-spec/evaluations/summary](http://www.aqmd.gov/aq-spec/evaluations/summary)



# AQ-SPEC

Air Quality Sensor Performance Evaluation Center





# AQ-SPEC

## Air Quality Sensor Performance Evaluation Center

## Engage, Educate and Empower California Communities on the Use and Applications of “Low-cost” Air Monitoring Sensors

Specific aims:

1. Develop educational material for communities
2. Evaluate / identify candidate sensors for deployment
3. Deploy selected sensors in California communities
4. Communicate lessons learned to the public

400 PM sensors

(>60% of sensors installed and reporting data)

+100 Aeroqual nodes (e.g. PM<sub>2.5</sub>, PM<sub>10</sub>, O<sub>3</sub>, NO<sub>x</sub>)

(All nodes are installed and reporting data)

Cloud-Based Sensor Data Platform Architecture

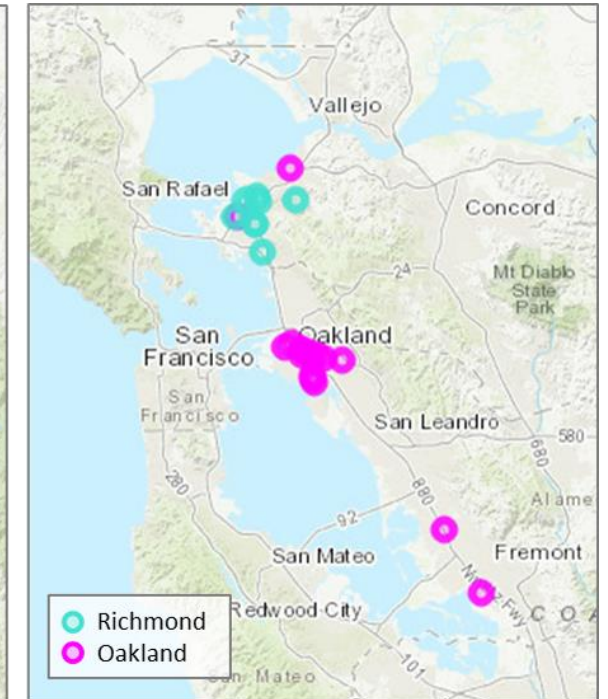
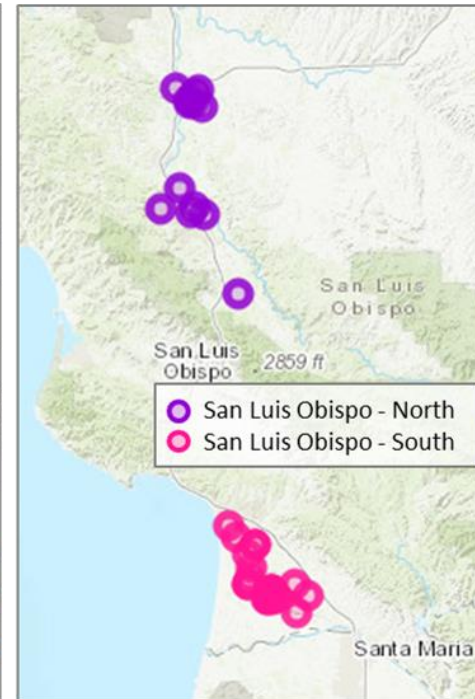
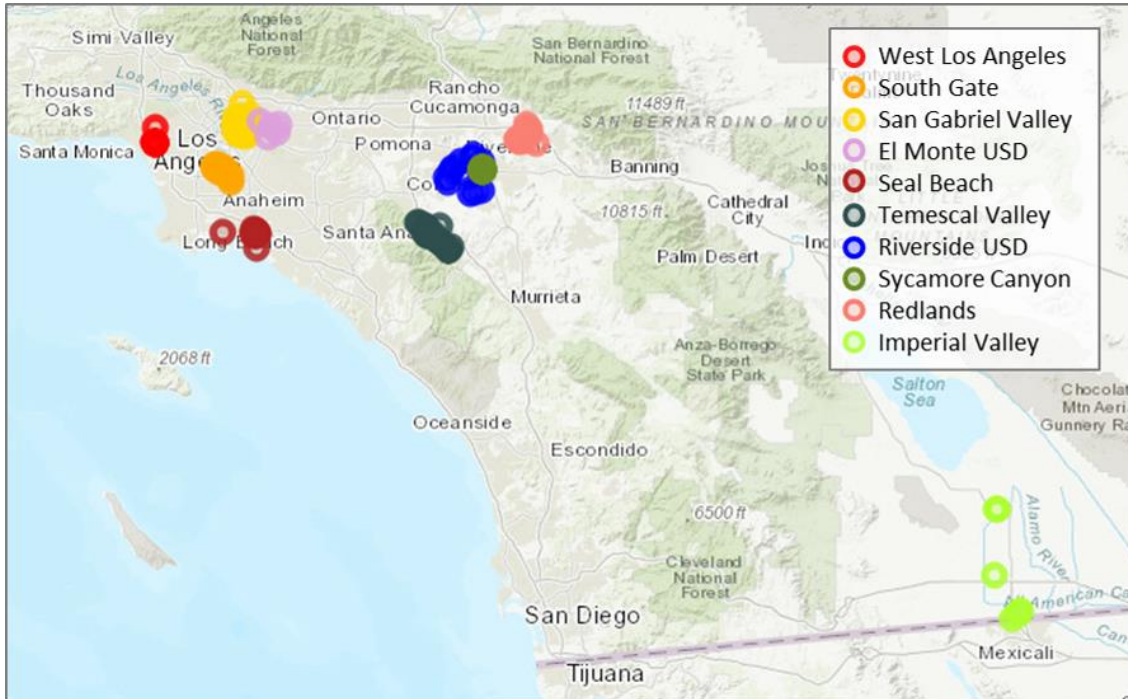
- Data ingestion, storage, QA/QC, analysis, visualization and mapping
- Data dissemination





# Deployed sensors in multiple California communities and performed a thorough validation and interpretation of the collected data

- Working with 14 communities
- Sensor Data Analysis for and with Communities
  - Shared a preliminary analysis of network data with each community
  - Developed new tools to facilitate advanced data processing and analysis (open-source, R-based AirSensor package)





# New methods to engage, educate, and empower local communities on the use and applications of "low-cost" sensors

• STAR

## Particle Pollution

Particle pollution is a general term for a mixture of solid particles and liquid droplets in the air.

Particle size (i.e., spherical diameter) for fine and coarse particles. Fine particles are 2.5 micrometers or smaller. Coarse particles are between 2.5 and 10 micrometers.

and

Particulate matter can cause or contribute to heart disease, heart attacks, asthma, and other respiratory problems.

What are we breathing?  
How to Monitor Air Pollution for Community Action

## Infographic Example:

### What can we learn from these PurpleAir sensors about outdoor air quality? A QUICK LOOK AT THE UNIVERSITY VILLAGE APARTMENTS PURPLEAIR SENSORS

This analysis uses all available data from outdoor sensors collected from December 2017 - December 2018. Note, the results presented here as well as data interpretations are preliminary.

#### A YEAR OF DATA

- Similar PM<sub>2.5</sub> levels across all sensors & reference data
- Darker = overlapping sensors
- Lighter = single sensor

#### DAILY PM<sub>2.5</sub> TRENDS

**Weekday** **Weekend**

**DAY** **NIGHT**

Weekday peak is likely due to morning rush hour

In general, pollution accumulates at night and in the early morning due to a stable atmosphere

Then, atmospheric mixing during the day results in the lowest pollution levels in the late afternoon

#### ELEVATED PM<sub>2.5</sub> IN THE FALL/WINTER

- Lower wind speeds
- Cold-weather inversions = LESS DILUTION

Inversions: stable conditions, caused by a layer of warm air over a cold one, can last for days, trapping emissions

The sensor data reflects expected trends, and if sensors can show us when air quality is behaving as we might expect, can they also highlight anomalies and provide new information at sites?

Guidebook Preview:

## PM<sub>2.5</sub> Air Quality Trends at Mark Keppel High School

For Asian Pacific Islander Forward Movement

Methodology  
Data Collection

Roberts Environmental Center  
ASIAN PACIFIC ISLANDER FORWARD MOVEMENT

Roberts Environmental Center at Claremont McKenna College  
Natural Sciences Team  
June 2019

from Ashley [unclear] and JTC) to the values from monthly PM<sub>2.5</sub> e following

Report Produced by Student Partners:

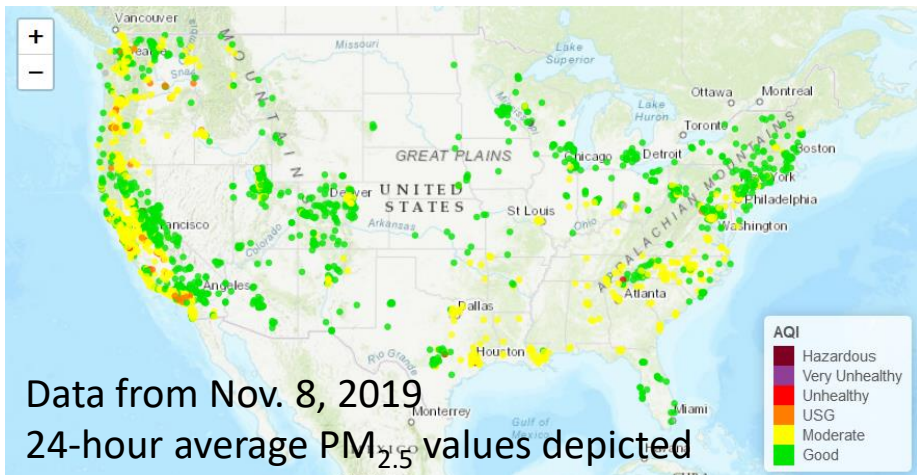




# Tools to Enhance Engagement with Data: AirSensor package

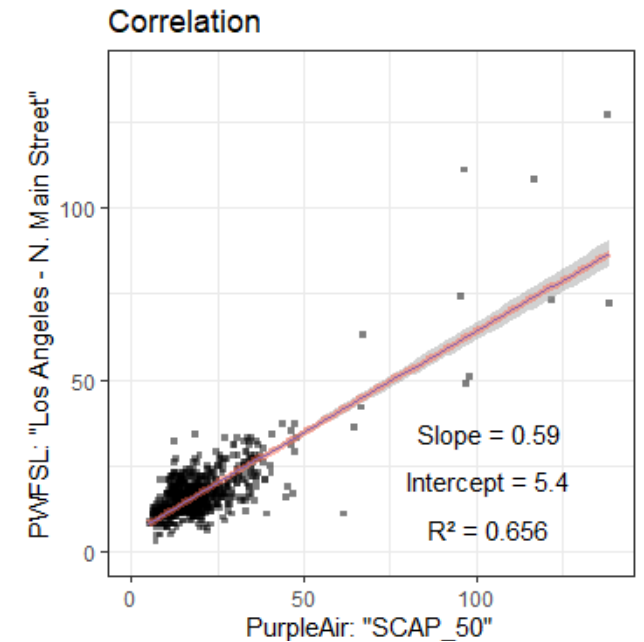
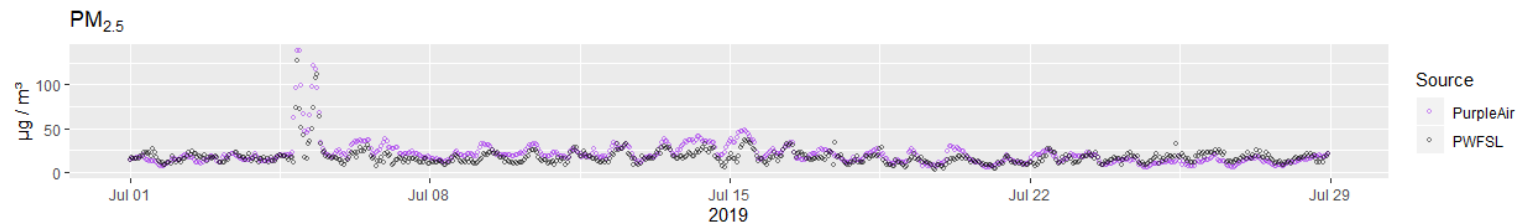
*Open-source, R-based package includes:*

- Simple access to real-time and historic data from all public PurpleAir sensors in the US
- Functions to examine “State-of-Health” metrics, filter outliers, apply QA/QC algorithms, and time-average data
- Plotting and mapping functions to explore data
- Functions to merge sensor data with regulatory data from nearest AirNow site or meteorological data from the nearest NOAA site



Data from Nov. 8, 2019  
24-hour average PM<sub>2.5</sub> values depicted

Sensor/Monitor Comparison  
Distance: 7.7km



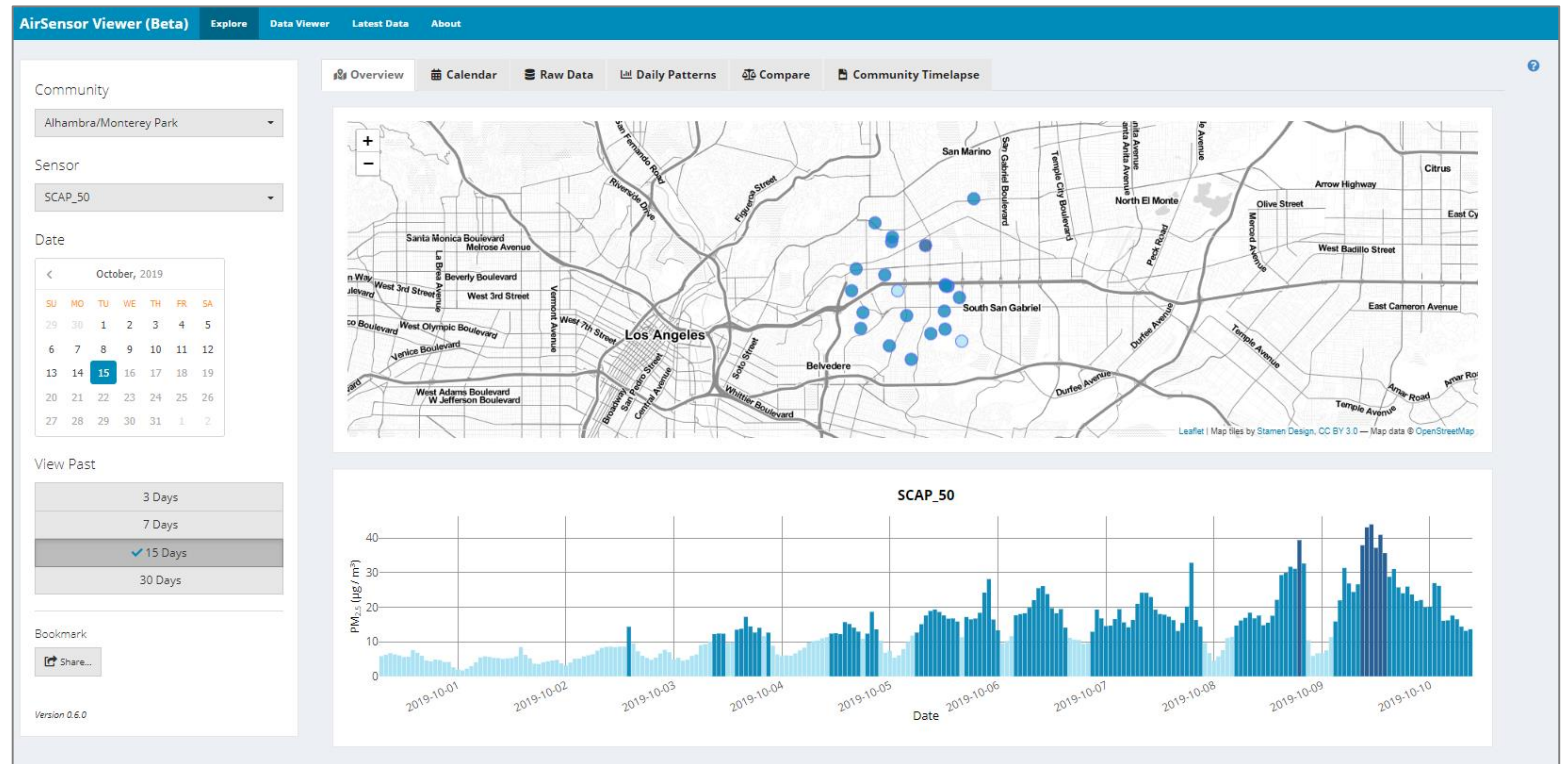


# Tools to Enhance Engagement with Data: DataViewer

*With this tool, users can:*

- View averages on a map
- View data from a single sensor over time
- View Calendar Plots of the data from a single sensor
- Examine diurnal pollutant trends
- Compare sensors to the nearest reference site
- Examine sensor data w.r.t. supplementary data, such as wind data
- View timelapses of sensor data

**NO PROGRAMMING EXPERIENCE NEEDED!**



Community

Seal Beach

Sensor

SCSB\_20

Date

October, 2018

SU	MO	TU	WE	TH	FR	SA
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

View Past

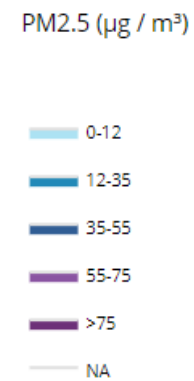
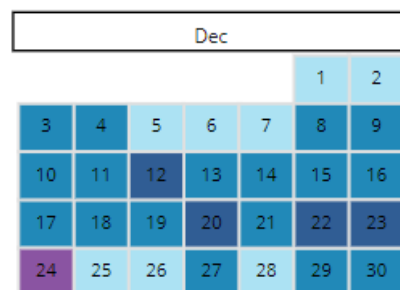
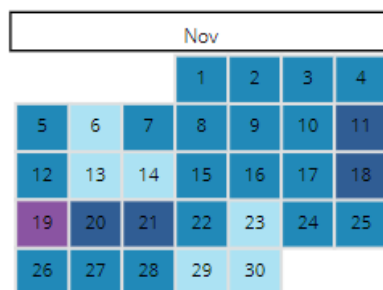
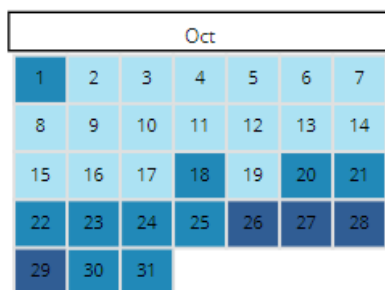
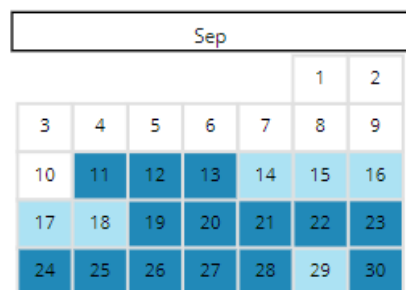
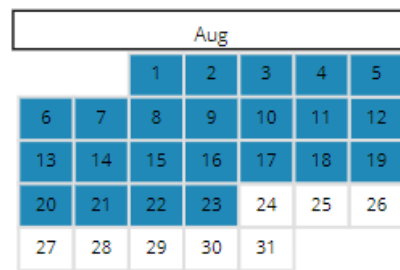
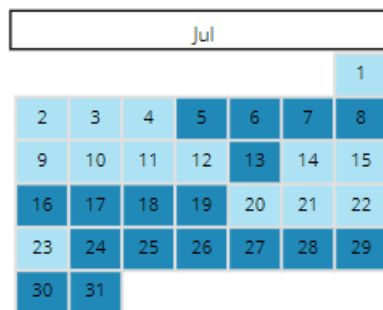
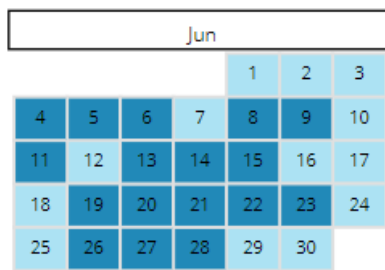
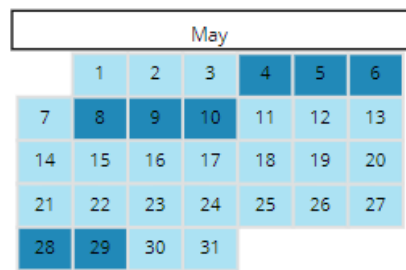
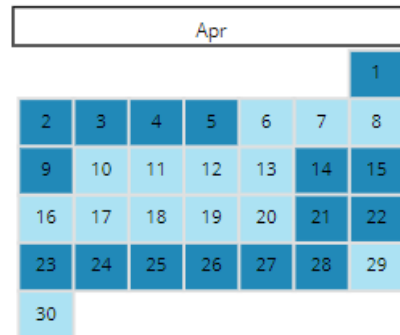
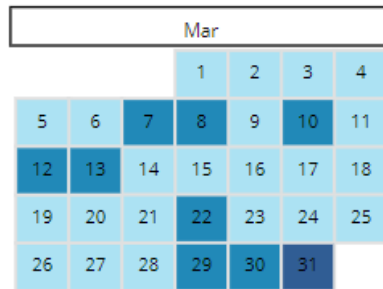
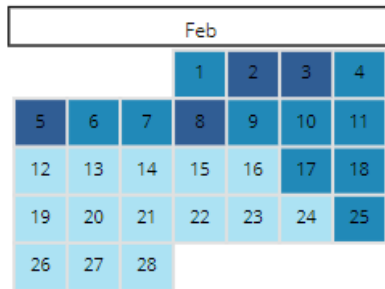
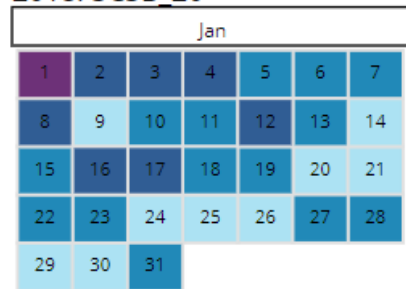
- 3 Days
- 7 Days
- 15 Days
- 30 Days

Bookmark

Share...

Calendar View

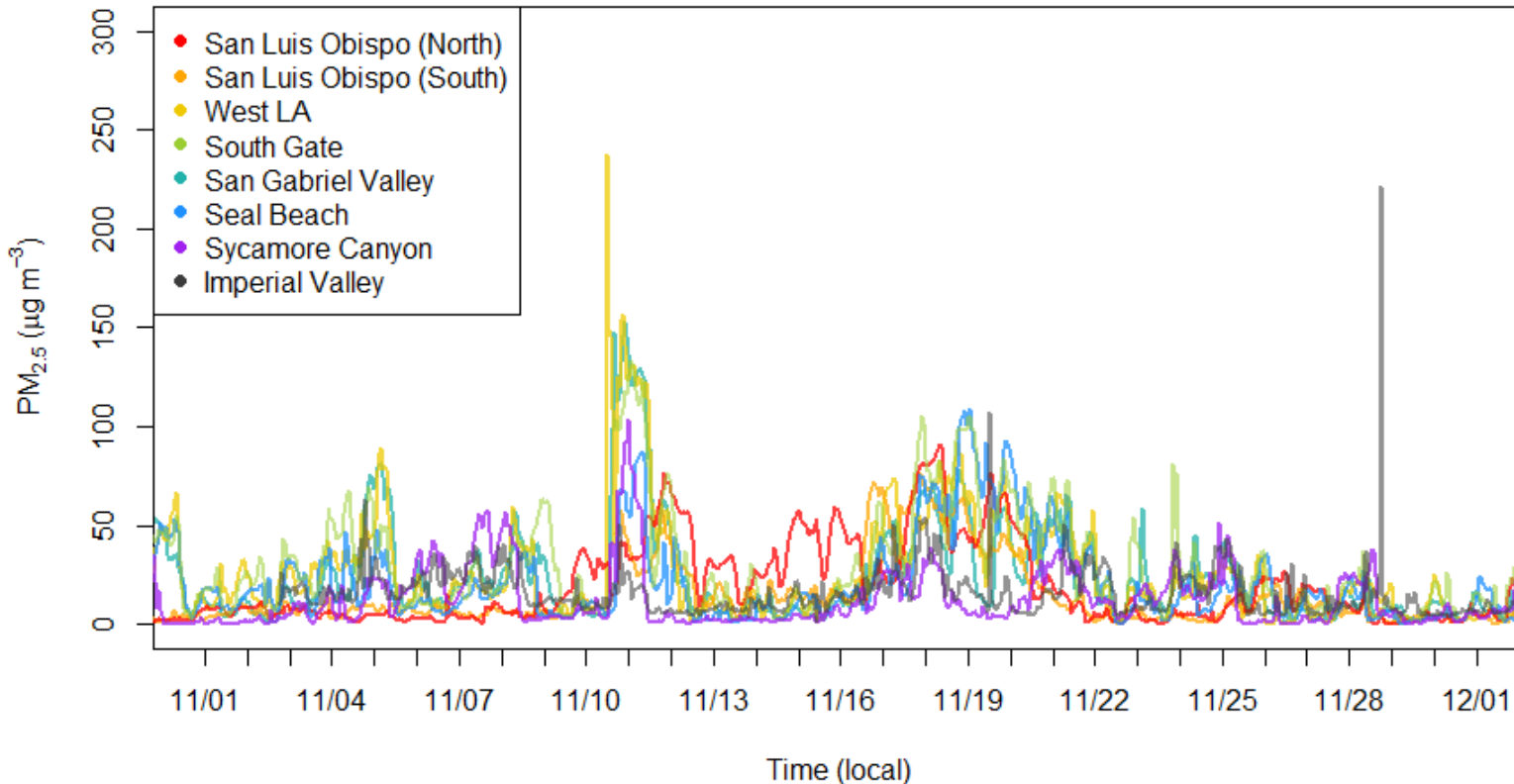
2018: SCSB 20



# Example: Tracking the Woolsey Fire

- Woolsey Fire: November 8<sup>th</sup>, 2018 – November 21<sup>st</sup>, 2018
- Impacted air quality throughout the South Coast Air Basin

Hourly Averaged Data from each Community Network

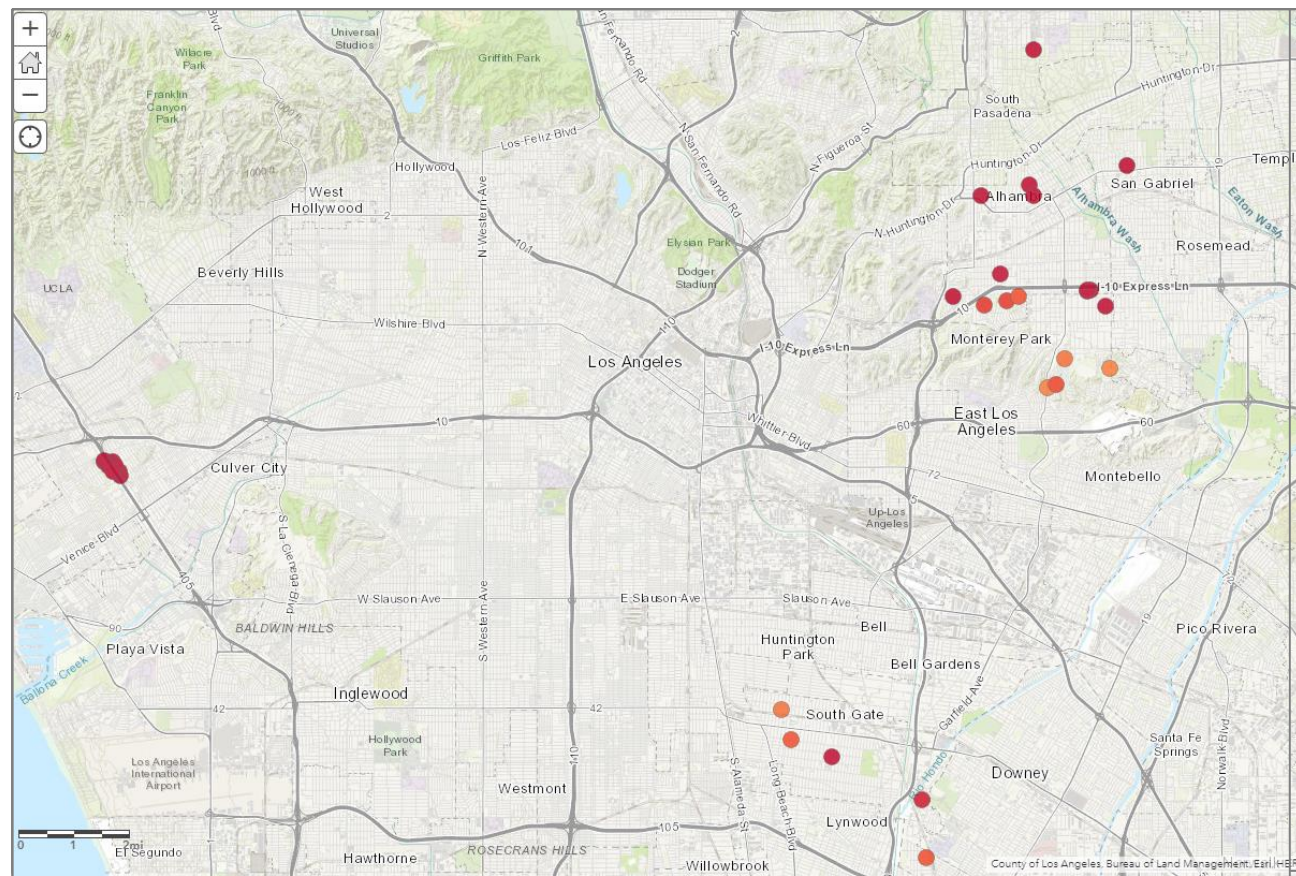
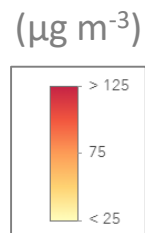
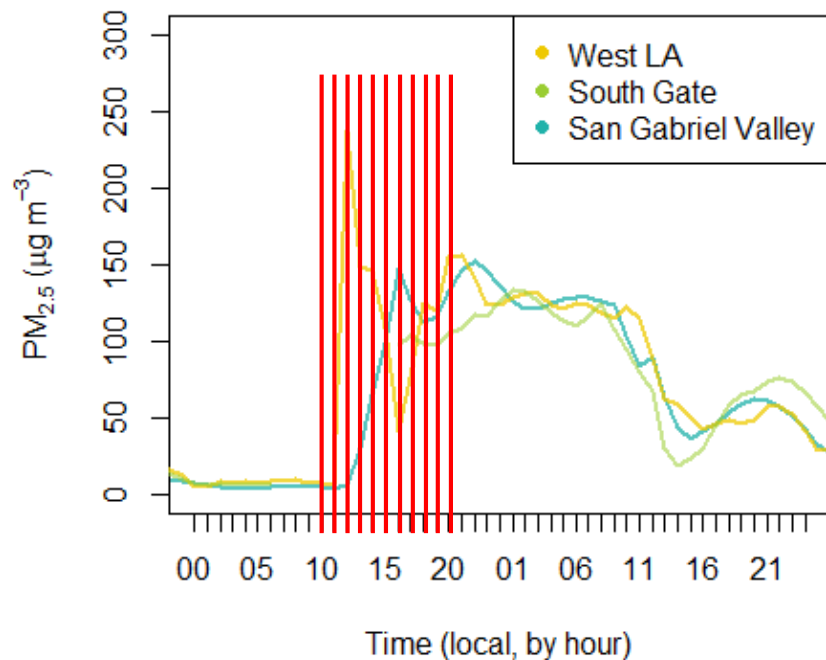


# Example: Tracking the Woolsey Fire

- Focusing on transported smoke observed on November 10<sup>th</sup>, 2018
- Sensors provide greater spatial and temporal resolution of dynamic conditions

November 10, 2018 10:00 pm

(END)



(more sensors come online in South Gate)



## Mobile Air Monitoring

### ***Mobile Sampling (using a vehicle)***

- High spatial resolution/coverage of an area or community
- Flexibility (e.g., possible to sample upwind and downwind of potential sources)

### ***Low-Cost Air Quality Sensors***

- Typically accessible in terms of cost and operability
- Some sensors provide real-time feedback or information



*Merging these tools may lead to a more accessible way to learn more about air quality in communities*



# AQ-SPEC

Air Quality Sensor Performance Evaluation Center

## Currently:

- ✓ ASTM D22.05 Testing Protocol – IAQ sensors for measuring CO<sub>2</sub> and PM<sub>2.5</sub>
- ✓ Mobile Sensor Testing Protocol
- ✓ VOC Sensor Testing Protocol – Total/Speciated VOC

## Next:

AQ-SPEC Chamber #2 to accommodate testing of 20+ sensors simultaneously, aging/vibration/wind effects/rapid climatic changes experiments:

- Development of sensor performance targets
- AQ-SPEC Library program
- Development of ASTM D22.03 test method for performance evaluation of ambient air quality sensors and other sensor-based instruments



# AQ-SPEC

Air Quality Sensor Performance Evaluation Center

Jason Low, Ph.D.

Andrea Polidori, Ph.D.

Vasileios Papapostolou, Sc.D.

Ashley Collier-Oxandale, Ph.D.

Berj Der Boghossian, M.Sc.

Brandon Feenstra, M.Sc.

Michelle Kuang, Ph.D.

Randy Lam, M.Sc.

Wilton Mui, Ph.D.



[www.aqmd.gov/aq-spec](http://www.aqmd.gov/aq-spec)

Contact AQ-SPEC: [info.aq-spec@aqmd.gov](mailto:info.aq-spec@aqmd.gov)  
+1 (909) 396-2713

Contact Vasileios: [vpapapostolou@aqmd.gov](mailto:vpapapostolou@aqmd.gov)  
+1 (909) 396-2254