Imperial County Community Air Monitoring Project
Using low cost sensors to develop a community air monitoring network

AQ-SPEC Sensor Conference
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California Environmental Health Tracking Program
Comite Civico del Valle
University of Washington

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Project overview

NIEHS grant
• Research to Action
• Jan 2014 – Oct 2018

Main project partners
• CA Environmental Health Tracking Program
• Comite Civico del Valle
• University of Washington
• Consultants: UCLA, GWU

Aims
• Deploy network of 40 PM monitors in Imperial County
• Produce useful, high-quality data
• Implement community actions
• Engage community throughout
• Ensure network sustainability
Air quality is a community priority

- PM10 standards unmet
- High rates of asthma
- Few regulatory monitors
- Need for more local air quality data
Community monitoring and low-cost sensors

- New opportunities with next generation sensors
- Democratizing data and science
- Leveraging community knowledge and capacity
- Community air monitoring network as a complement to regulatory monitoring
Establish community participation structures

Design and deploy air monitoring network

Assess, analyze, and interpret data

Display and disseminate air monitoring results
- Real-time
- Spatial analysis
- Datasets

Implement community action strategies
• Funded, equitable community partnerships
• Establish community advisory group
• Engage technical experts
• Careful selection of monitors and evaluation of data quality
• Community participation in site selection

Environ Health Perspect. 2017 Jul 31;125(7)
Best Practices (cont)

• Community participation in site recruitment and monitor deployment

• Community access and ownership of data

• Useful, understandable, accessible data display and dissemination

• Ensure sustainability of monitoring
Sensors for **non-regulatory** monitoring

“Community Air Monitors”

Customized low-cost optical particle counter + Small computer & other env sensors (e.g., temp and RH) + Wireless Networking + Robust Enclosure + Internet Database on the Cloud with data available on the web

System designed by Graeme Carvlin, PhD student UW
Deployed and maintained by Comite Civico del Valle
Making data accessible, useful & understandable

www.ivanair.org

**IVAN Air Monitoring**

Poor air quality can harm your health. Take action to reduce your exposure to air pollutants. Use the list or map to view current air quality levels at your nearest air monitor. Sign up to receive alerts when the air quality near you is unhealthy. Scroll down to learn more.

**LIST OF MONITORS IMPERIAL**

**MAP OF MONITORS**

View an interactive map of the air monitors

**GET AIR QUALITY ALERTS**

**ABOUT THE NETWORK**

IVAN Air Monitoring is a network of 40 air monitors located throughout Imperial County. These monitors measure current levels of particulate matter air pollution (PM2.5 and PM10). The air quality measurements are displayed on this website.
Better understanding of community air quality

Regulatory monitors

IVAN AIR monitors
Lessons Learned

• **Early community engagement is critical**
  – Provides local knowledge, relationships, capacities
  – Builds trust
  – Improves utility of data
  – Funding is critical

• **Training should be integrated to build capacity and sustainability**
  – Nature of contaminant
  – Monitoring science and siting
  – Hardware/software troubleshooting
  – Monitor calibration
  – QA/QC
  – Data transfer/flow

• **Community should guide decision-making**
  – Monitor locations
  – Data dissemination and visualization methods/platforms
  – Information/messaging that is understandable and useful
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- Tyler Lopez
- Eduardo Murillo
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- Katie Fellows
- Edmund Seto

Community Participants and Air Monitor Hosts

Technical Advisory Group

Equipment loans/colocations
- CA Air Resources Board
- Imperial Irrigation District
- US EPA

Community Steering Committee
- Ray Askins
- Alejandro Bejarano
- Astrid Calderas
- Claudia Cristerna
- Edie Harmon
- John Hernandez
- Jose Flores
- Leticia Ibarra
- Arturo Medina
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