

# Mini-Conference on Low Cost Sensor Implementation

Governing Board Retreat  
March 9, 2017



# Low Cost Sensors

- Sensor Technology Maturing
  - Sensor construction
  - Improved algorithms
  - Performance and reliability
- Technology Demonstration Projects
  - Many useful applications
  - Networking
  - Big data



- Most comprehensive sensor evaluation program in the Nation
- 30+ sensors tested to date
- [www.aqmd.gov/aq-spec](http://www.aqmd.gov/aq-spec)
  - 5,000+ new visitors per month
- 2 pilot projects
  - Rainbow disposal facility
  - PM sensor network in San Bernardino/Redlands
- \$1.6M in external funding including:
  - EPA STAR Grant (community education)
  - EPA Community Scale Grant (air toxic monitoring)
  - NASA Grant (validation of satellite AQ data)
- Next steps:
  - State-wide sensor network development
  - Sensor certification program (E-Enterprise)



# Symposium on Low Cost Sensors

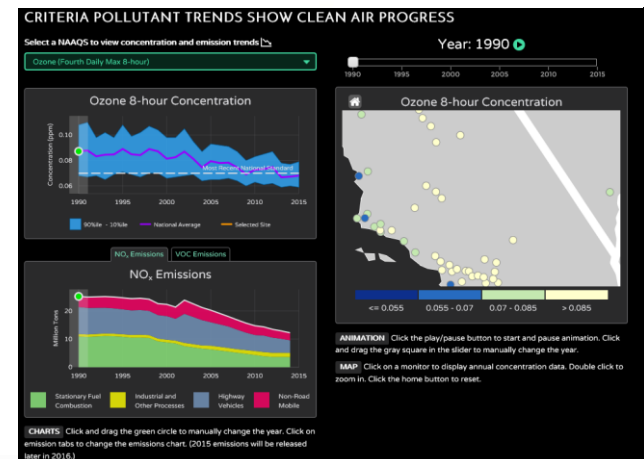
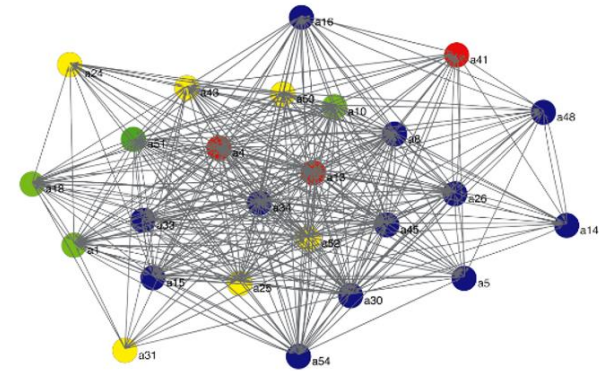
- **Purpose:** Providing an informative discussion on the status of low cost sensor technology, and connecting stakeholders to share perspectives on how to implement sensor networks and interpret the data
- SCAQMD Headquarters

Late Summer 2017



# Topics

- Sensor testing (SCAQMD AQ-SPEC, U.S.EPA, JRC)
- Sensor calibration and durability issues
- Sensor connectivity and networking
- Data QA/QC, analysis, interpretation and visualization
- Development of applications for managing AQ sensor data
- Development of sensor data standards
- Analysis of the costs associated with creating large sensor networks and handling big data
- Communicating sensor data to the public



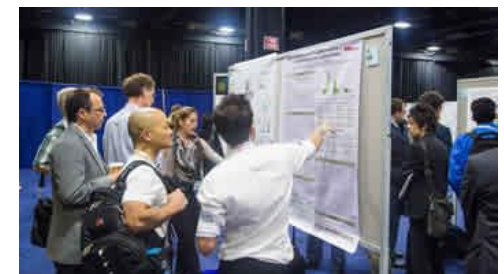
# Preliminary Agenda

- **9:00 a.m. Welcome** (Wayne Nastri, Executive Officer, SCAQMD)
- **9:10 a.m. Current State of Sensor Technology** (Enterprise member / U.S. EPA / SCAQMD / Vendor)
  - Advances in technology
  - Recent growth in usage
  - Understanding sensor objectives
- **9:30 a.m. Sensors Performance** (SCAQMD / U.S. EPA)
  - Status of evaluation programs
  - Sensor quality trends
- **10:00 a.m. Data, Data, Data** (Microsoft, Amazon, Google, Other)
  - Challenge of managing “big (sensor) data”
  - Data standardization
  - Business interest and resources to connect, maintain and display data
- *10:45 a.m. Break (15 minutes)*
- **11:00 a.m. Deployments and Applications** (SCAQMD, Maryland, CCA, Salton Sea Community, USC)
  - Case studies
  - Challenges
  - Lessons Learned
  - Resources that could have been useful
- *12:00 p.m. Lunch (60 minutes)*
- **1:00 p.m. Data Visualization** (Envirosuite / Purple Air/ Other)
  - Backend applications and tools for visualizing data
- **1:30 p.m. Data Analysis, Interpretation & Communication** (Community Groups / Health Experts)
  - Techniques
  - Fixed monitoring vs sensor network
  - Expectations
  - What is required for data to be actionable
  - Communication to public
- **2:15 p.m. Break out Sessions/ Poster Session (All)**
  - Emergency response
  - Sensor certification
  - Case studies
  - Sensor research
- **3:30 p.m. Future Goals of Sensor Technologies (Expert Panel)** (Community Groups, Academia, Government, Vendor, other users)
  - Discussion
  - Q&A session
- **4:15 p.m. Wrap-Up / Closing Remarks**
- **Exhibit Hall: 10 am to 5:00 pm**
  - Sensor Vendors
  - Sensor Deployment
  - Government Agencies
  - Community Groups



# Presentations / Breakout Sessions / Exhibit Hall

- Platform presentations on sensor development, performance, and applications
- Breakout sessions for discussions on specialized topics (emergency response, case studies, sensor certification)
- Booths for Manufacturers/Vendors/Developers/Data Visualization tools
- Poster sessions (academia, developers, citizen scientists)



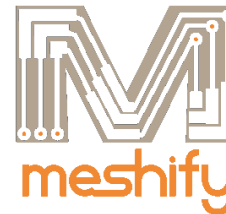
# Informational Resources

- U.S. EPA Air Sensor Toolbox
- SCAQMD AQ-SPEC website
- 2014 U.S. EPA Air Sensors Workshop





# Proposed Participants



# AQ-SPEC Partners / Collaborators

- Vendors:
  - AethLabs
  - Air Quality Egg
  - Alphasense
  - DylosFoobot
  - HabitatMAp
  - Hanvon
  - MetOne
  - Origins
  - PurpleAir
  - RTI
  - Speck
  - TSI
  - Unitec
  - Vaisala
- IoT Companies:
  - Microsoft
  - Amazon Web Services
  - Meshify
  - Valarm
  - Element Blue / Sensor Insight
  - Purple Air
  - STI
  - EnviroSuite
  - Win Wire