Air Sensors California Conference

Air Sensor Data for Action: Advancing Equity and Creating Change

April 30 - May 3, 2024 Riverside, CA

Announcing the 2024 Session Topics

Check out the topics our Technical Program Committee are developing for this year's conference! We will be opening a call for abstracts in the next few weeks, so stay tuned. Forward this email to anyone who may be interested in attending this year's conference and encourage them to sign up for the email list here!

Visit Our Website for Updates

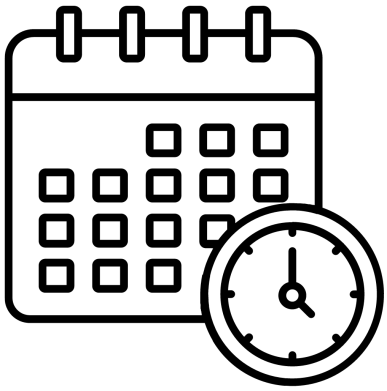
Our team is looking to you as researchers, educators and community scientists to share your knowledge at the conference. This year we are asking for your proposals for not only Podium and Poster Presentations, but also Trainings, New Sessions, and Tours. The Call for Abstracts will open Tuesday, August 29th and allow you to submit any of the above items for consideration in the program.

Dates to Remember

Abstract Submissions Open
August 29, 2023

Abstract Submission Deadline
October 23, 2023

Early Bird Registration Opens
November 1, 2023



The Potential of Low-cost Sensors in Regulatory Applications: How Far We Have Gone

Raiford Hann, *CARB*
Alastair (Ally) Lewis, *NCAS and University of York*
Haofei Yu, *UC Fresno*

Low-cost sensors (LCS) have enabled characterization of air quality through measurement of air pollution concentrations at unprecedented scales, underscoring their potentials to reshape air pollution regulations for designing and implementing precise and targeted pollution control strategies. Yet, the well-known performance limitations of low-cost sensors have greatly hindered their use in regulatory air monitoring that requires rigorous data quality standards. This session welcomes submissions that explore innovative,

groundbreaking or even transformative approaches to incorporating data from less precise low-cost sensors into regulatory frameworks. All aspects of related sensor applications are invited, which include but are not limited to: novel sensor/monitor design, new calibration approach, innovative data fusion/assimilation method, air pollution policy design based at least partially on low-cost sensor data, among others. Discussion of limitations and gaps in LCS performance that prevent their current use in regulatory monitoring is also encouraged.

Community-Centric Data Collection: Unleashing the Power of Mobile Sensors

Olivia Ryder, *Sonoma Technology*
Marwa El Sayed, *Embry Riddle Aeronautical University*
Melissa Lunden, *Aclima*

In an era marked by growing concerns about air quality and its impact on public health, the integration of mobile air sensors into community applications has emerged as a promising tool. This session aims to explore how mobile air sensors are revolutionizing the way communities engage with and address air quality issues. For this session, we seek to bring together experts, researchers, and community leaders who are at the forefront of leveraging mobile air sensors for community-driven air quality monitoring, to explore how mobile air sensors empower communities with real-time air quality data, foster environmental awareness, and drive informed decision-making.

Community Ownership and Use of Sensor Data

Ashley Collier-Oxandale, *Colorado Department of Health*
Rowena Fletcher-Wood, *Columbia University*
Daisha Wall, *Clean Air North Carolina*

For air quality sensors to fulfill the promise of helping to improve public and environmental health, data must be effectively communicated appropriately and clearly for a given audience. This means knowing and understanding the audience first and foremost. Effective communication enables data to be used in personal and decision-making, which could inform local actions and policies to improve air quality. To explore this topic, we welcome presentations and posters discussing, but not limited to, the following:

- Public and community partners who have worked with researchers using sensor data – their experience and learnings from case study projects;
- Translating technical details (e.g., regarding air quality science or sensor data quality) into information for public audiences and key lessons learnt;
- Sensor data visualization and best practices.

Challenges and Successes in Community Air Quality Monitoring: Implementing and Evaluating Community-Based Air Quality Monitoring Programs

David Ridley, *CARB*
Amanda Kaufman, *US EPA*

Community scale monitoring programs have been rolled out in dozens of locations over recent years because of advances in air sensor technology. New sensor technologies have the potential provide insight into air pollutant concentrations and disparities on neighborhood scales, ultimately yielding valuable information to improve public health. Understanding past challenges and successes is key to building the most effective community monitoring programs in the future. In this session we will explore existing community air monitoring systems with a focus on (1) how new technologies and methods are being applied to tackle monitoring objectives, (2) how programs have complemented and expanded on regulatory monitoring (3) how data has been leveraged to create action, and (4) how program success has been evaluated quantitatively.

QA/QC Tips, Tricks, and Tools

Alena Bartonova, *NILU*
Eben Cross, *QuantAQ*
IQ Mead, *Imperial College*

Open source tools for analysis, QC, and visualization, data management; Challenges and solutions in the use of sensors without access to regulatory data: Quality control and data accuracy maintenance: On-going quality control and calibration.

Performance Standards and Certification Efforts: On-going Quality Control and Calibration

Martine Van Poppel, *VITO* | **Edurne Ibarrola**, *KUNAK*

Currently, there is not a uniform certification or standard that sets performance targets for air quality sensors. Moreover, performance needs will depend on the application of a sensor and evaluation approaches may vary for different applications. This session will highlight efforts to develop, compare and/or apply performance targets, performance parameters, and testing protocols or programs to understand sensor performance. It will also address scientific insights on performance parameters and how to deal with sensor performance over time. New insights in performance targets for air quality sensors are welcome!

Leveraging Low-Cost Air Quality Sensors for Exposure Assessment and Health Effects Research

Kofi Amegah, *University of Cape Coast*
Liam O'Fallon, *NIEHS*
Orly Stampfer, *Washington State Department of Health*
Yisi Liu, *USC*

Low-cost air quality sensors provide an accessible and affordable way to assess air pollution exposures, which have implications for health outcomes. Sensors provide opportunities for high spatiotemporal resolution measurement. However, they also present data quality, maintenance, and interpretation challenges. Speakers in this session will share experience and discuss the use of sensors in exposure assessment and health research, including strategies for use, benefits, and challenges.

Next Generation Sensing

R. Subramanian, *CSTEP*
Karoline Barkjohn, *US EPA*

Current air quality sensors focus on criteria air pollutants and have well-known limitations. We invite talks on sensors for emerging and non-regulated pollutants, new technology to measure existing pollutants, and other sensor hardware innovations. Talks may also explore what future sensor developments are needed.

Air Sensor Network Design and Evaluation Through an Equity Lens

Naomi Zimmerman, *University of British Columbia*
Yanju Chen, *CARB*
Dr. Tianjun Lu, *California State University Dominguez Hills*

Sensor network design decisions, particularly around sensor siting, are influenced by the objectives of the sensor network. In this session, we will discuss sensor network design when the outcome or focus is on better understanding equity/inclusivity indicators while ensuring effective sensor distribution. We welcome abstracts that discuss the motivation and logistics of sensor siting in this context, approaches for identifying equity/inclusivity indicators that both inform sensor network design and that can be assessed using low-cost sensor data, and results from sensor network deployments.

Sensors as a Component of Urban Air Quality Management Planning

Lekan Popoola, *University of Cambridge*
Jin Xu, *CARB*
Don Collins, *University of California Riverside*

How to combine data from regulatory instruments and low-cost sensors for developing and implementing air quality management plans; Local vs regional air quality infrastructure and exploring how these two paradigms of ‘sensing’ pollution present different challenges & opportunities.

Weight of Evidence: Building the Case for Change by Combining Sensor Dara with Other Evidence Bases

Ethan McMahon, *Consultant*
Rebecca Garland, *University of Pretoria and ANGA*
Albert Presto, *Carnegie Mellon University*

How to combine data from regulatory instruments and low-cost sensors for developing and implementing air quality management plans; Local vs regional air quality infrastructure and exploring how these two paradigms of ‘sensing’ pollution present different challenges & opportunities.

Next Generation Air Quality Monitoring Networks

Carl Malings, *NASA*
Pallavi Pant, *HEI*
Haofei Yu, *University of Central Florida*

The current paradigm for using low-cost sensors typically involves calibrating and deploying one or more sensors, collecting data, and analyzing these data in isolation to determine air quality at each sensors' location. This session will feature presentations about how we might move beyond that, and what the next generation of air quality monitoring networks might look like. We encourage presentations about innovative approaches which combine data from multiple sensors across a network, and potentially also external systems such as satellite remote sensing instruments or atmospheric transport and chemistry model outputs, to best use the strengths of these different approaches to build up our overall understanding of air quality. Potential topics include data assimilation or data fusion with low-cost sensor data, air quality forecasting with low-cost sensor networks and meteorological data, and strategies for in-situ performance verification or re-calibration of low-cost sensors using network-level data quality metrics. Note that this session is not designed for presentations on new sensor technologies (these should be submitted to the "future sensor development needs" session) nor for presentations about the use of sensors together with socioeconomic data (these should be submitted to the "weight of evidence" session).

Buildings: Exploring Opportunities and Challenges of Indoor Sensing

Suresh Dhaniyala, *Clarkson University*
Randy Chapman, *US EPA*

This session will cover the challenges and opportunities of using low-cost sensors for air quality assessment inside buildings.

Air Toxics & VOC Sensing

Hanyang Li, *University of California Davis*
Serena Chung, *US EPA*

The advent and widespread use of low-cost sensors have dramatically improved the ability of communities to measure their exposure to criteria air pollutants such as particulate matter, ozone, and nitrogen oxides. However, many underserved communities also face exposure to hazardous air pollutants (HAPs). This session aims to bring together researchers, community members, industrial partners, and government agencies to discuss the latest advancements and challenges in monitoring of and exposure assessment to HAPs.

Low Cost Sensors in LMICs

Zoe Chafe, *C40*

Dan Westervelt, *Columbia University*
Kalpana Balakrishna, *SRU-ICMR Centre for Advanced Research on Air Quality, Climate and Health, Sri Ramachandra Institute for Higher Education and Research, Chennai*

This will be a cross cutting theme throughout all session topics. As sensor accuracy improves, costs decrease and sizes shrink, they being used more frequently in low and middle income countries to provide more comprehensive data in more locations. Abstract submissions from people working in and with LMICs are strongly encouraged to apply to session topics above. Sessions will highlight the successes and opportunities for improvement on the work conducted in LMICs on each session. Additional sessions will be designed for LMIC-related problems and successes as groups form. LMIC related abstracts will be able to note the LMIC they are working with on the submission page.

Visit Our Website for Updates

ASIC Ghana 2023 Registration Open

Registration is open!

ASIC brings top scientists from around the world to share their research findings and discuss new approaches and methods to improve on our ever-developing understanding of air quality sensors. Find registration information and forms in the links below. Be sure to share the conference with friends and colleagues!

Learn about the ASIC Ghana Conference

Questions? Contact the Conference Manager, Sandra Hemingway at sehemi@ucdavis.edu or Conference Staff at **airqualityevents@ucdavis.edu**