

DESCRIPTION OF SESSIONS

Filling the Gaps: Improving Measurement of Air Quality in Developing Countries Workshop

Washington DC, July 25-27, 2017

DAY 1 JULY 25, 2017

On Day 1, presentations will focus on the technical (session D1C) and policy (D1D) challenges and needs of Low and Middle Income Countries (LMICs). Based on the experience working in their home countries or other LMICs, speakers will examine LMIC needs with respect to air quality measurement (policy design, implementation and enforcement), monitoring, and remote sensing. Specific topics that may be considered in each session are described below:

SESSION D1C: TECHNICAL PERSPECTIVE AND NEEDS ASSESSMENT FROM LOW AND MIDDLE INCOME COUNTRIES

In this session, presenters will discuss, based on their experience and expertise, technical gaps and challenges to air quality monitoring in LMICs in relation to the following areas:

- I. Adequacy of ground level air quality monitoring networks
- II. Current techniques for understanding local sources of emissions and pollution exposure where ground-based measurements are limited and where ground-based measurements do not exist
- III. Adequacy of analytical capacity (e.g., equipment, skilled personnel)
- IV. Adequacy of quality assurance and quality control measures (e.g., use of reference laboratories)
- V. Operational challenges (e.g., availability of power supply)
- VI. Maintenance
- VII. Training needs
- VIII. Budgetary resources

SESSION D1D: POLICY AND DECISION-MAKING OBJECTIVES, REQUIREMENTS, GAPS IN LMICs

This session will examine policy priorities and objectives, requirements and gaps in relation to air quality measurements. Presentations will discuss how their specific city or country has addressed some of the following policy areas, and highlight areas where gaps or challenges remain:

- I. What are the policy priorities in your city/country with respect to air quality monitoring? What air quality data is needed to support key decisions?
- II. Setting of air quality standards – how are standards set? How are economic dimensions of standard-setting addressed?
- III. Which pollutants are priorities for monitoring in your city/country? – PM_{1.0}, PM_{2.5}, PM₁₀, Total Suspended Particles (TSP), Ozone, SO₂, NO_x, hydrocarbons, Volatile Organic Compounds (VOCs), Lead (Pb), other heavy metals, etc?

- IV. What measurement options are being used or considered to address data needs? (e.g., traditional air quality instrumentation, satellite remote sensing, low-cost sensors, other)
- V. What polices exist to harmonize methods, protocols, quality assurance and quality control (QA/ QC) procedures within a given city and between different cities? How is this enforced?
- VI. How are air monitoring data managed, integrated, and shared? How are air quality information shared with the public?

DAY 2 JULY 26, 2017

On Day 2, presentations will focus on the state of the science of ground based measurements (D2B), satellite and remote sensing (D2C), data integration and management (D2D), and innovations in air quality data (D2E) and discuss considerations for their application in developing countries. Specific topics that may be examined are listed below, by session:

SESSION D2B: PERSPECTIVES ON THE STATE OF THE SCIENCE AND IMPLICATIONS FOR DEVELOPING COUNTRIES: GROUND-BASED AND EXPOSURE MEASUREMENTS

In this session, technical experts will share their perspectives on options for measuring ground-level air quality for the purpose of supporting policy decision-making. Questions that may be addressed include:

- I. Policy-relevant measurement of air quality:
 - a. What are ground-level measurement infrastructure (instrumentation, network design, and other monitoring hardware) options to identify and characterize the contribution of sources, to characterize exposure, to support public health communication?
 - b. What would be the utility of lower cost or mobile monitoring technology to fill gaps in country networks, and what steps are needed to build confidence in their data?
 - c. How could multiple ground-level monitoring approaches be used in conjunction to address policy questions?
- II. Successful, sustainable air monitoring:
 - a. What are the technical, personnel, supporting laboratory capability, and other requirements to initiate and sustain different ground-level air monitoring approaches?
 - b. How would recommended technologies or measurement strategies change based on situational issues such as available power supply, existence or lack thereof of any air monitoring?

SESSION D2C: PERSPECTIVES ON THE STATE OF THE SCIENCE AND IMPLICATIONS FOR DEVELOPING COUNTRIES: SATELLITE AND REMOTE SENSING MEASUREMENTS

This session will discuss perspectives on remote sensing of air quality for the purpose of supporting policy decision-making. Questions that may be addressed include:

- I. Current state of remote sensing data:
 - a. What is the current temporal and spatial resolution of remote sensing data over Africa, South Asia, Latin America and East Asia?
 - b. How can remote sensing inform concentrations of specific pollutants of interest (particles and gases), as well as contributions from various sources?
 - c. How accurate are different remote sensing data sets?
- II. Utility of remote sensing data by LMICs:
 - a. What are the research, policy, investment and institutional capacity needs /requirements that must be addressed in order for LMICs to utilize satellite and remote-sensing methods?
 - b. What are some of the limitations and opportunities for applying satellite in LMICs?
 - c. How can satellite technology be used in the following conditions where ground-level measurements are few or do not exist? Where ground-level data may be questionable due to inconsistent or nonexistent QA/QC procedures?

SESSION D2D: DATA INTEGRATION AND MANAGEMENT

This session will discuss considerations and best practices in data integration and management. Questions that may be addressed include:

- I. What are processes to assure data are well-managed, from the point of measurement to use in analyses? (e.g., chain of custody, flagging of erroneous data, metadata etc.)
- II. What are proven approaches to manage air quality data from continuous air monitoring instruments? From integrated measurements measured in analytical laboratories?
- III. How are data sets of different time bases integrated?
- IV. What are different approaches to share data?
- V. Are emerging technologies (e.g., sensors) leading to transitions in data management practices?
- VI. What expertise is needed and how does a development country acquire, manage and potentially share relevant information?
- VII. What resources are available to assist?

SESSION D2E: INNOVATIONS IN AIR QUALITY DATA

In this session, technical experts will share specific case studies of emerging methods to collect and share air quality data. Presentations will emphasize connections to LMIC needs and data gaps.