Findings from the 2013 EPA Air Sensors Workshop

In March 2013, the U.S. Environmental Protection Agency (EPA) hosted a workshop, entitled Air Sensors 2013: Data Quality & Applications, in Research Triangle Park, NC. This was the third in a series of next-generation air monitoring (NGAM) workshops and brought together representatives from EPA, academia, sensor developers, community environmental advocacies, citizen citizens, and state and regional air quality offices. In-person and web-accessed attendance to the workshop included more than 400 registrants and reinforced the high degree of interest being witnessed for this emerging scientific area.

The workshop focused on introducing attendees to new technologies, sensor application opportunities, and emerging issues, including how sensors might be evaluated for data quality and/or calibrated during their use, and involved a worldwide search for invited presenters to underline the global emphasis on sensor technologies being exhibited across the globe. The workshop featured invited speakers devoted to four primary topics:

1. New technologies, hot science, and instruments on the horizon
2. Data quality, evaluation, and calibration
3. Big data, management and analysis
4. Recent applications of sensors

A hands-on technology demonstration was held concurrent with the workshop and included nearly 20 sensor prototypes involving the collection of environmental pollutants ranging from volatile organic compounds (VOCs) to particulate matter (PM). In addition, a diverse poster session was conducted during the workshop and provided sensor developer, citizen scientist, and regulatory officials alike the opportunity to learn more about emerging technologies and their potential use for a wide variety of environmental applications.

To further leverage the value of such a concentration of scientists and interested parties associated with sensor research, a total of six breakout sessions were held that provided attendees with an opportunity to respond to a variety of strawman discussion points developed by the workshop organizers. Breakout groups were led in the following discussions:

1. Citizen science and sensors;
2. Reducing measurement uncertainty: Calibration approaches;
3. Sensor performance and application guidelines;
4. Designing a sensor information clearing house;
5. Big data: Approaches for managing, analyzing, and visualizing large data sets; and
6. New technologies: Challenges, data gaps, and needs.

In concert with EM, conference organizers will be sharing key findings from the workshop in a series of invited articles; the first four of those articles are published in this issue (articles start on page 6). A second set of six articles will be published in the August 2014 issue. These articles will summarize in their entirety information gleaned from the invited presentations, breakout sessions, and technology demonstrations pertaining to the four primary topics of the workshop. We believe you as the reader will quickly see that not only has the age of sensor development reached a highly advanced stage, the threshold of their widespread use for a variety of environmental applications is on the horizon. em