

# Air Pollution Extremes Workshop

Columbia University, New York, NY USA

2920 Broadway

555 Lerner Hall

November 1-2, 2018

## AGENDA

### **Thursday November 1**

8:30 **Breakfast**

9:00 Welcome & Introduction (V. Faye McNeill)

#### Session 1: Perspectives from Around the Globe

*Moderator: Dan Westervelt*

9:15 Susan Anenberg: Estimating mortality associated with ambient air pollution in cities worldwide

9:25 Randall Martin: Perspectives on Global Fine Particulate Matter

9:35 Luisa Molina: Science-based Air Quality Management: Experience from Mexico City

9:45 Ritesh Gautam: Widespread Winter Fog over south Asia and its connection with air pollution, urban heat islands and agriculture fires

9:55 Abdus Salam: Air Quality Status at an Extremely Polluted Southeast Asian Mega City - Dhaka, Bangladesh

10:05 Puji Lestari: Field observation of particulate matter and Carbonaceous composition during peat fire episode in Sumatra Indonesia

10:15 **Coffee**

#### Session 1 (Continued): Perspectives from Around the Globe

10:40 Doug Worsnop: On-line mass spectrometry to reveal the composition of ambient aerosols

10:50 Wahid Mellouki: Air Pollution in Africa: Overview and challenges

11:00 Eloise Marais: Building Capacity to Monitor and Assess Air Quality in Africa

11:10 Discussion Panel

#### Session 2: Sources of Air Pollution

*Moderator: A.R.Ravishankara*

11:40 Eri Saikawa: Uncertainties in emission estimates of greenhouse gases and air pollutants in China and India and their impacts on regional air quality

11:50 Peter DeCarlo: In-situ measurements of aerosol composition in Nepal: linking aerosol sources to ambient concentrations

12:00 Sri Hapsari Budisulistiorini: Atmospheric processes influence the light-absorption properties of brown carbon in haze particles from Indonesian peat and biomass burning

12:10 **Lunch (on your own)**

Session 2 (Continued): Sources of Air Pollution

- 1:30 Sagnik Dey: Monitoring pollution build-up in Delhi during the dry season of 2001-2016 from space
- 1:40 Daven Henze: Sources of PM<sub>2.5</sub> during pollution events in Korea
- 1:50 Shahzad Gani: Submicron aerosol composition in the world's most polluted megacity: The Delhi Aerosol Supersite campaign
- 2:00 Alexandra Karambelas: Mitigating future ambient air-pollution attributable mortalities with emissions reductions
- 2:10 Discussion Panel
- 2:40 *Poster previews: 1-slide overview*
- 3:10 **Coffee**

Session 3: Chemical composition and processing

*Moderator: V. Faye McNeill*

- 3:40 Becky Alexander: Heterogeneous Sulfate Aerosol Formation Mechanisms in Chinese Haze Events
- 3:50 Guangjie Zheng: Characteristics and Formation Mechanisms of Beijing Haze Episodes
- 4:00 Lijie Li: Nitrogen Dioxide and Secondary Aerosol Formation during Chinese Haze-Aerosol Episodes
- 4:10 Jay Slowik: Investigation of Secondary Organic Aerosol in Asian Megacities using an Extractive Electrospray Ionization Time-of-Flight Mass Spectrometer (EESI-LTOF)
- 4:20 Yafang Cheng: Multiphase chemistry as a key to understand air pollution and its mitigation strategies
- 4:30 Loretta Mickley: Contribution of hydroxymethane sulfonate to ambient particulate matter: A potential explanation for high particulate sulfur during severe winter haze in Beijing
- 4:40 Discussion Panel
- 5:10 Adjourn to walk to poster session
- 5:30 *Poster Session & Reception*

**Friday November 2**

8:30 **Breakfast**

Session 4: Climate and Weather of Air Pollution Extremes

*Moderator: Arlene Fiore*

- 9:00 Sanat Kumar Das: Is fog responsible for winter-time extreme air pollution? A study over Eastern India
- 9:10 Yuxuan Wang: Air pollution extremes due to drought
- 9:20 Abhjit Chatterjee: The interaction between aerosols of varying sizes and rains of varying intensities and duration controls the below-cloud aerosol scavenging and acid rain: A long-term (2009-2015) study over eastern Himalaya in India

- 9:30 Marina Astitha: Seasonal ozone vertical profiles over North America using the AQMEII group of air quality models: model inter-comparison and stratospheric intrusions
- 9:40 Session 4 Discussion Panel
- 10:10 **Coffee**

### Session 5: Emerging Observations and Modeling Tools

*Moderator: A.R. Ravishankara*

- 10:40 Andreas Tilgner: Model studies on multiphase chemistry interactions under polluted environmental conditions with MCM/CAPRAM
- 10:50 Priyanka DeSouza: Integration of data from low-cost air quality monitors with MISR satellite data: A case study in Nairobi
- 11:00 Barry Lefer: The International Integrated Observing System for Air Quality
- 11:10 Sarath Guttikunda: Air Pollution knowledge Assessment (APnA) city program - to support short-term (forecasts) and long-term (policy) analysis for Indian cities
- 11:20 R Subramanian: Air quality monitoring with lower-cost, low-power sensors
- 11:30 Rebecca Garland: Developing a platform for simulating air quality and impacts in South Africa
- 11:40 Rajesh Kumar: Improving short-term air quality predictions over the US using chemical data assimilation and analog-based statistical methods
- 11:50 Jun Wang: MAIA: A satellite mission to study air pollution and public health
- 12:00 **Lunch (on your own)**
- 1:10 **Coffee available**

### Session 5 (Continued)

- 1:10 Bryan Duncan: Air pollution forecasts using the NASA GEOS model: A unified tool from local to global scales
- 1:20 Josh Apte: Fall 2018 air pollution in New Delhi: Tracking sources with online measurements and real-time models
- 1:30 Session 5 Discussion Panel

### Session 6: The Science-Policy-Health Nexus

*Moderator: Ruth DeFries*

- 2:00 Jia Xing: Representing the nonlinear responses of tropospheric ozone and fine particulate matter to precursor emission changes
- 2:10 Miriam Marlier: Indonesian Haze Exposure and Local Health Outcomes
- 2:20 Dilip Chate: Ozone precursors emission mitigation for Chronic Obstructive Pulmonary Disease (COPD) cases in India
- 2:30 Mike He: Short- and Intermediate- Term Exposure to NO<sub>2</sub> and Mortality: A Multi-County Analysis in China
- 2:40 Ye Wu: The regional and urban air quality impacts from future fuel diversity in China
- 2:50 Susanne Bauer: Desert dust, industrialization and agricultural fires: Health impacts of air pollution in Africa
- 3:00 Session 6 Discussion Panel

Wrap-up Discussion: Science and Policy perspectives

*Moderator: V. Faye McNeill*

3:30 Open discussion: Common features and potential differences across the globe

4:15 Adjourn

## Poster presentations

|           |                             |   |
|-----------|-----------------------------|---|
| <b>1</b>  | Umesh<br>Kulshrestha        | An Integrated Atmospheric Chemistry Approach for a Holistic Solution of Air Pollution   |
| <b>2</b>  | A.R. (Ravi)<br>Ravishankara | Premature Mortality due to PM2.5 over India:<br>Effect of Atmospheric Transport and anthropogenic emissions                                       |
| <b>3</b>  | Xiaomeng Jin                | Diagnosing the sensitivity of surface ozone pollution to precursor emissions: the view from space   |
| <b>4</b>  | Li Ke                       | Occurrence of severe air pollution events over eastern China under climate change   |
| <b>5</b>  | Dan Westervelt              | Mid-21st century ozone air quality in China under emissions scenarios and climate change  |
| <b>6</b>  | Dan Westervelt              | Development of a PM2.5 monitoring site in the megacity of Kinshasa, Democratic Republic of Congo  |
| <b>7</b>  | Steve Chillrud              | Effect of a cookstove intervention and Harmattan winds on personal exposure in rural Ghana: results from the GRAPHS study                         |
| <b>8</b>  | Eri Saikawa                 | Indoor air pollution in Tibet   |
| <b>9</b>  | Martin Stute                | Use of air quality data in education  |
| <b>10</b> | Dilip Chate                 | Enhancing decision-making activities in the area of air quality air pollution extremes in Delhi: modeling Plans                                   |
| <b>11</b> | P.S. Praveen                | ICIMOD's recent activities towards understanding and mitigating air pollution in the Hindu Kush Himalaya (HKH)                                    |
| <b>12</b> | Hang Su                     | Elucidating the origin of high aerosol pH in northern China   |
| <b>14</b> | V. Faye McNeill             | Aerosol Acidification During Winter Haze Episodes in Beijing and Xi'an, China   |
| <b>15</b> | Md Abid Sikder              | Toward modeling wintertime aerosol chemistry in Dhaka, Bangladesh   |
| <b>16</b> | Adeesh Kolluru              | Modeling multiphase chemistry during extreme haze episodes in Delhi using GAMMA   |
| <b>17</b> | Disha Sharma                | Tracking the influence of long range transport of dust aerosols on their chemical characteristics observed in the NorthWest Indo Gangetic Plains. |
| <b>18</b> | Tianjia Liu                 | Temporal shifts in agricultural burning associated with the double-crop cycle of Punjab, India: implications for regional air quality             |
| <b>19</b> | Jordan Schnell              | Air quality impacts from the electrification of light-duty passenger vehicles in the United States  |
| <b>20</b> | Pierre Gentine              | Can we use machine learning to improve convection representation and vertical transport?  |
| <b>22</b> | Robert Field                | Coupled chemistry-climate model simulations of a massive 2017 smoke plume   |
| <b>23</b> | Katelyn O'Dell              | Current and future trends in wildfire smoke PM2.5 in the United States  |
| <b>24</b> | Beizhan Yan                 | Impact of long-range wildfire smoke plumes on air quality in New York City  |