



AIR & WASTE MANAGEMENT  
ASSOCIATION

# PRELIMINARY PROGRAM

## Guideline on Air Quality Models: Planning Ahead

March 19-21, 2019

Marriott at Research Triangle Park, Durham, NC

### Professional Development Courses

Monday, March 18

- Introduction to AERMOD
- Introduction to CamX
- Introduction to SCICHEM 3.2

Thank you to our sponsors



# PRELIMINARY PROGRAM

## ABOUT THE CONFERENCE

This is the 8th Specialty Conference on this evolving topic planned by the Air and Waste Management Association, in conjunction with the Atmospheric Modeling and Meteorology Committee (APM) of the Technical Council. This conference will build on past successes and cover the implementation of the changes, experience gained, and viable solutions.

## GENERAL INFORMATION

### REGISTRATION

Register online at [www.awma.org/aqmodels](http://www.awma.org/aqmodels) or complete the PDF. Mail or fax registration and payment to:

Registrar, Air & Waste Management Association  
436 Seventh Avenue, Suite 2100  
Pittsburgh, PA 15219  
Fax: 412-232-3450

**Register by the advance deadline of March 1 and save \$50 or more on conference and course rates.**

Your registration will not be processed without payment.

### REFUND POLICY

If written notice of cancellation is received on or before March 1, 2019 payment will be refunded, less a \$75 cancellation fee. (Cancellation fees apply regardless of payment method). Substitutions may be made at any time; payment for any difference is due at the time of substitution. This refund policy applies to all occurrences, including weather-related events and other natural disasters. In the unlikely occurrence of event cancellation, the Association is not liable for any expenses incurred by the registrant other than the full refund of registration fee(s) paid.

### CONFERENCE PROCEEDINGS

Conference proceedings will be posted on the A&WMA website after the conference. Attendees will be notified via e-mail when the extended abstracts / full manuscripts and presentations are available.

### CONTINUING EDUCATION CREDIT OPPORTUNITIES

Conference attendees may be eligible for continuing education credits. For more information, visit the onsite registration area, or contact Gloria Henning at +1-412-904-6021 or [glhenning@awma.org](mailto:glhenning@awma.org).

### PRESENTERS' MEETING

Presenters and Session Chairs will meet the morning of their session involvement to review program details. Presenters should bring their presentations on a memory stick/USB as well as a short bio. The meeting will be held daily one hour before the conference begins each day.

### CONFERENCE COMMITTEE

#### General Conference Chair:

Michael Hammer, Lakes Environmental Software

#### Technical Program Co-Chairs:

Pete Catizone, Woodard Curran

Robert Paine, AECOM

#### Planning Committee:

Abhishek Bhat, Ramboll

Sergio Guerra, GHD

Gale Hoffnagle, TRC Environmental Corporation

David Long, AEP

Ralph Morris, Ramboll

George Schewe, Trinity Consultants

Tony Schroeder, Trinity Consultants

Justin Walters, Southern Company

### LOCATION

#### Marriott at Research Triangle Park

4700 Guardian Drive

Durham, NC 27703

Phone 919.941.6200

Group rate: \$179. Cutoff date: March 5

Reservations can be made using the links on the conference website, or by calling 919-941-6200. Reference the Air Quality Modeling conference to secure the group rate.

### SPONSORSHIP

#### Gain exposure and make contacts with this targeted

**audience.** Sponsorship packages are available with various levels of exposure to meet your needs and budget.

Contact Jeff Schurman, A&WMA Business Development Manager, at 412-904-6003; [jschurman@awma.org](mailto:jschurman@awma.org).

## PROFESSIONAL DEVELOPMENT COURSES

*Looking to expand your industry knowledge?* Consider taking one of the professional development courses that are being offered prior to the conference on Monday, March 18, 2019. Course registration includes refreshment breaks and a copy of the course manual. The course registration fee is not included in the regular conference registration; for course prices please visit [www.awma.org/aqmodels](http://www.awma.org/aqmodels), and click on the Courses button. For more information about the courses and instructors, contact Robin Lebovitz at [rlebovitz@awma.org](mailto:rlebovitz@awma.org) or +1-412-904-6020.

### INTRODUCTION TO CAMX WITH SINGLE-SOURCE DISCUSSION

**MONDAY, MARCH 18 • 8:00 AM - 12:00 PM**

**Instructors:** Ralph Morris and Bart Brashers, *Ramboll US Corporation*

This course will be a 4-hour Introduction to Comprehensive Air-quality Model with extensions (CAMx; [www.camx.com](http://www.camx.com)) photochemical grid model (PGM). The course will provide a basic overview using a lecture-oriented presentation material on the basics of photochemistry and modeling; an introduction to CAMx, its features, data/computer requirements, Probing Tools, and new CAMx developments; and how CAMx is used in the regulatory modeling process. In addition to use of the CAMx model for regional air quality planning for ozone, PM2.5 and regional haze State Implementation Plans (SIPs), the course will also include a discussion and examples for using CAMx for single-source assessment modeling. A comparison of CAMx with EPA's Community Multiscale Air Quality (CMAQ) will also be discussed. Issues related to the hands-on operation of CAMx will be presented, but actual hands-on training will not be included in this short course. Use of the Windows version of CAMx and operating CAMx on the Cloud will also be addressed.

### INTRODUCTION TO SCICHEM

**MONDAY, MARCH 18 • 1:00 PM - 5:00 PM**

**Instructors:** Prakash Karamchandani, Ramboll US Corp. and Doug Henn, Xator Corp.

This half-day course introduces SCICHEM, a non-steady state Lagrangian puff model that can be used to study the impact of single or multiple sources on primary pollutants as well as secondary pollutants, such as ozone and secondary PM2.5. Photochemical models with a complete treatment of gas-phase and aerosol chemistry are the preferred method for a Tier 2 demonstration approach. Such models include photochemical grid models (PGMs), such as CMAQ and CAMx, as well as Lagrangian models, such as SCICHEM. SCICHEM includes chemistry modules comparable to those in CMAQ and CAMx for far field applications and secondary impacts, and an optimized chemistry scheme for near field applications for 1-hour NO2. The latest version of the model, SCICHEM 3.2, is publicly available on GitHub.

### INTRODUCTION TO AERMOD

**MONDAY, MARCH 18 • 8:00 AM - 4:30 PM**

**Instructor:** Michael Hammer, Lakes Env. Software

This full-day course provides attendees with a full understanding of the AERMOD modeling system by balancing theory with hands-on, real world case studies. At the end of this course, participants should be able to understand the basics of regulatory air dispersion modeling for permit applications and risk assessments.

Topics covered by this course include:

- Physics of air dispersion and atmospheric physics
- Meteorological pre-processing with AERMET
- Terrain processing with AERMAP
- U.S. EPA NAAQS overview
- Comparison of AERMOD to other models

Note - Attendees are required to bring a laptop to fully participate in hands-on case studies.

# PRELIMINARY PROGRAM

## TECHNICAL PROGRAM - Tuesday, March 19

8:00 am – 5:00 pm  
Registration

8:00 am – 9:00 am  
Continental Breakfast

8:00 am – 9:00 am  
Presenters' Meeting

### OPENING PLENARY SESSION

**9:00 am**

#### **Introduction and Welcome**

Michael Hammer, Lakes Environmental Software

**9:15 am - 11:30 am**

#### **Keynote Panel**

Members of U.S. EPA's Office of Air Quality Planning & Standards (OAQPS) have been invited to provide updates on current and future projects.

Invited speakers include:

- Chet Wayland, Director, Air Quality Assessment Division
- Tyler Fox, Group Leader, Air Quality Group
- Chris Owen, Physical Scientist
- George Bridgers, Model Clearinghouse Director

**11:30 am - 12:00 pm**

Stanley Krivo, U.S. EPA Region 4 Modeler (retired)

**12:00 pm - 1:00 pm**

Lunch

### **SESSION 1A: PM2.5 AND OZONE MODELING—REGULATORY APPLICATIONS**

Co-Chair: Sergio Guerra, GHD

Co-Chair: Ralph Morris, Ramboll

**1:00 pm - 1:20 pm**

MO26

#### **Evaluation of Impacts of VOCs, Primary PM2.5 and NOx Emissions on Maximum Downwind PM2.5 Concentrations using SCICHEM**

Tianyi Chen, Karthikeyan (Surya) Ramaswamy, Mark E. Garrison, Environmental Resources Management, Malvern, PA

**1:20 pm - 1:40 pm**

MO30

#### **Tier 1 Secondary Formation Assessments**

Beth Barfield, Environmental Resources Management, Raleigh, NC; Tom Wickstrom, Environmental Resources Management, Malvern, PA; Roxanne Fincher, EGGGER Wood Products, LLC, Linwood, NC

**1:40 pm - 2:00 pm**

MO33

#### **Challenges with PM2.5 Permit Modeling with Primary and Precursor Emissions**

Mary Kaplan, Robert Paine, AECOM, Chelmsford, MA

**2:00 pm - 2:20 pm**

MO18

#### **Case Study: PSD Permitting in the Age of MERPs**

Kristin Fritchman, APTIM, Lenexa KS

**2:20 pm - 2:40 pm**

MO45

#### **Guidance on the Use of EPA's MERPs in Georgia**

James W. Boylan, Di Tian, Georgia DNR, Atlanta, GA

**2:40pm - 3:00 pm**

#### **Networking Break**

### **SESSION 1B: PM2.5 AND OZONE MODELING—CASE STUDIES**

**3:00 pm - 3:20 pm**

MO01

#### **PM2.5 Precursor Insignificant Demonstration for Allegheny County, Pennsylvania**

Ralph Morris, Ramboll US Corporation, Novato, CA; Maria Zatko, Bart Brashers, Ramboll US Corporation, Lynnwood, WA; Jason Maranche, Allegheny County Health Department, Pittsburgh, PA

**3:20 pm - 3:40 pm**

MO02

#### **Air Quality Modeling of the Gulf of Mexico Region Study**

Ralph Morris, Till Stoeckenius, Tejas Shah, Bart Brashers, Ramboll US Corporation, Novato CA and Lynnwood, WA; Darcy Wilson, Bebhinn Do, Eastern Research Group, Raleigh, NC; Dennis McNally, Alpine Geophysics, Arvada, CO; Holli Ensz, Bureau of Ocean Energy Management, Washington DC

**3:40 pm - 4:00 pm**

MO04

#### **Sensibility of Modeled Secondary Particulate Formation to Ammonia Background Concentrations**

Martin Gauthier; P. Lauziere; M. Lepage; F. Robe, A. Carriere; Z. Hosseini, RWDI, Ottawa, Ontario, Canada

**4:00 pm - 4:20 pm**

MO20

#### **Impact of Power Redistribution on Regional Ozone**

Karthikeyan (Surya) Ramaswamy, Mark E. Garrison, Environmental Resources Management, Malvern, PA

**4:20 pm - 4:40 pm**

#### **Session I Discussion**

**4:45 pm - 5:15 pm**

#### **APM-Atmospheric Modeling and Meteorology Committee**

## TECHNICAL PROGRAM - Wednesday, March 20

7:00 am – 5:00 pm  
Registration

7:00 am – 8:00 am  
Continental Breakfast

7:00 am – 8:00 am  
Presenters' Meeting

### SESSION 2A: NAAQS MODELING—NO<sub>2</sub> CASE STUDIES

Co-Chair: Robert Paine, AECOM  
Co-Chair: Gale Hoffnagle, TRC

**8:00 am - 8:20 am**

MO22

#### Assessment of NO<sub>2</sub>/NO<sub>x</sub> Ratios at Fossil Fuel Power Plants

*Eladio Knipping, Stephanie Shaw, Electric Power Research Institute, Washington DC; Rich Hamel, Mike Sussman, Beth Barfield, ERM, Washington, DC; Ana Alvarez, Contractor, Washington, DC*

**8:20 am - 8:40 am**

MO25

#### Application of Alternate ARM2\_Min Parameter for 1-hour NO<sub>2</sub> NAAQS Compliance

*Daniel R. Guido, Environmental Resources Management, Indianapolis, IN*

**8:40 am - 9:00 am**

MO44

#### PRCI Ambient NO<sub>2</sub> AERMOD Performance Assessment and Model Improvement Project Modeled to Observed Comparison

*Jeffrey A. Panek, James M. McCarthy, Adrian Z. Huth, Alan J. Krol, Innovative Environmental Solutions, Inc. Cary, Illinois; Christopher Nowak, Kinder Morgan Inc., Houston, TX*

**9:00 am - 9:20 am**

MO09

#### Evaluation of Explicit NO<sub>x</sub> Chemistry Methods in AERMOD Using a New Compressor Station Dataset

*Jenny Stocker, Stephen Smith, David Carruthers, Cambridge Environmental Research Consultants, UK; Adrian Huth, Jeff Panek, Innovative Environmental Solutions, Inc., Washington, DC; Cathe Kalisz, American Petroleum Institute, Washington, DC; Robert Paine, Christopher Warren, AECOM, Washington, DC*

**9:20 am - 9:40 am**

MO13

#### Modeling of Intermittent Sources

*Jon A. Pollack, Christopher DesAutels, Exponent, Maynard, MA*

**9:40 am - 10:00 am**

#### Networking Break

### SESSION 2B: NAAQS MODELING—SO<sub>2</sub> CASE STUDIES

**10:00 am - 10:20 am**

MO05

#### The SO<sub>2</sub> Data Requirements Rule: What Next?

*Anthony J. Schroeder, Trinity Consultants, Beachwood, OH*

**10:20 am - 10:40 am**

MO10

#### Evaluation of AERMOD SO<sub>2</sub> Predictions for a Research-Grade Field Experiment

*Jeff Connors, Chris Warren, and Robert Paine, AECOM, Chelmsford, MA*

**10:40 am - 11:00 am**

MO14

#### An Initial Look at AERMOD Using a New Meteorologic and Monitoring Dataset from an area with Challenging Meteorology

*David J. Long, American Electric Power Service Corporation, Columbus, OH; Christopher Beekman, Ohio EPA, Division of Air Pollution Control, Columbus, OH*

**11:00 am - 11:20 am**

MO38

#### AERMOD Dispersion Modeling for Strategic Analysis of SO<sub>2</sub> Compliance

*George J. Schewe, Brian Otten, Trinity Consultants, Covington, KY*

**11:20 am - 11:40 am**

#### Session 2 Discussion

# PRELIMINARY PROGRAM

## TECHNICAL PROGRAM - Wednesday, March 20

### SESSION 3: METEOROLOGY CASE STUDIES

Chair: Michael Hammer, Lakes Environmental Software

**11:40 am - 12:00 pm**

MO36

#### **Land Use Characterizations for AERMET: An Evaluation of WRF vs. AERSURFACE**

Jessica Ram, Thomas S. Wickstrom, Karthikeyan (Surya) Ramaswamy, Mark E. Garrison, Environmental Resources Management, Malvern, PA

**12:00 pm - 12:20 pm**

MO16

#### **Performance Evaluation of AERMET's Convective Mixing Height Estimation Procedure**

Christopher J. Warren, AECOM, Chelmsford, MA

**12:20 pm - 12:40 pm**

MO43

#### **A WRF-MMIF Meteorological Dataset for CALPUFF Modeling in the Gulf of Mexico**

Bart Brashers, Ramboll US Corporation, Lynnwood, WA; Holli Ensz, Bureau of Ocean Energy Management, Washington DC

**12:40 pm - 1:40 pm**

Lunch

### SESSION 4: INNOVATIVE MODELING APPLICATIONS AND TECHNIQUES

Co-Chair: George Schewe, Trinity Consultants

Co-Chair: Abhishek Bhat, Ramboll

**1:40 pm - 2:00 pm**

MO06

#### **A Regional Air Quality Impact Assessment Screening Tool based upon MOVES-Matrix and AERMOD**

Daejin Kim, Haobing Liu, Hongyu Lu, Michael O. Rodgers, Randall Guensler, Georgia Institute of Technology, Atlanta, GA; Roger Wayson, AECOM, Cottonwood Shores, TX

**2:00 pm - 2:20 pm**

MO07

#### **Simulation of Point Source Pollutant Dispersion Pattern: An Investigation of Effects of Prevailing Local Weather Conditions**

O.K. Owoade, Obafemi Awolowo University, Ile-Ife

**2:20 pm - 2:40 pm**

MO19

#### **Developing Probability Maps for Accidental Releases Using AERMOD**

Amy E. McVey, Matthew J. Alvarado, Chantelle R. Lonsdale, Elizabeth S. Bettencourt, AER, Lexington, MA

**2:40 pm - 3:00 pm**

MO21

#### **Automated Software Tools to Investigate Ozone and PM2.5 from the Stratosphere and Wildfires**

Chantelle R. Lonsdale, M. Alvarado, C. Brodowski, R. Pernak, J. Henderson, A. McVey, B. Brown-Stein, J. Hegarty, AER, Lexington, MA

**3:00 pm - 3:20 pm**

Networking Break

**3:20 pm - 3:40 pm**

MO35

#### **Complementarity of Models (CTM-PinG and Lagrangian) to Reproduce Full Chemistry in Refinerie Plumes**

Olivier Duclaux, Valentin Raffort Cerea, Pierre Yves Foucher Onera, Yelva Roustan Cerea, Alexandre Armengaud Airpaca, Henri Wortham, Catherine Juery, Laboratoire Qualité de l'Air, Total Research Center, Solaize, France

**3:40 pm - 4:00 pm**

MO17

#### **Comparison Between CALPUFF and Computational Fluid Dynamics Modelling for a Transient Release of Large Particulate**

Brian Bylhouwer, Dr. Michael Murphy, Stantec Consulting, Charlottetown, PEI, Canada; Arthur Springer, Stantec Consulting, Calgary, Alberta, Canada



## TECHNICAL PROGRAM - Wednesday, March 20

**4:00 pm - 4:20 pm**

MO11

### **SCICHEM 3.2: Update, Evaluation, and Application of a Photochemical Puff model for Single Source Impact Assessments**

*Prakash Karamchandani, Lynsey Parker, Greg Yarwood, Ralph Morris, Ramboll, Novato, CA; Eladio Knipping, EPRI, Washington, D.C.; Bart Brashers, Ramboll, Lynnwood, WA; Douglas Henn, Sage Management/Xator Corp, Princeton, NJ; Naresh Kumar, EPRI, Palo Alto, CA*

**4:20 pm - 4:40 pm**

MO08

### **Visibility Impacts for Class II Areas - An Assessment of Regulatory Obligations and Best Practices**

*Thomas S. Wickstrom, Mark E. Garrison, Tianyi Chen, Jessica Ram, Environmental Resources Management, Malvern, PA*

**4:40 pm - 5:00 pm**

### **Session 4 Discussion**

**5:00 pm - 6:30 pm**

### **Town Hall Meeting: The Future of Regulatory Atmospheric Modeling**

A favorite of past Air Quality Modeling Specialty Conferences, the Town Hall provides a forum for attendees to interact with regulators and modeling community stakeholders. Panelists are given the opportunity to address a topic followed by a question-and-answer session where attendees can submit questions to the panel. This conference's topic addresses the future of regulatory atmospheric modeling.

#### **Panelists include:**

- **Tyler Fox**, Group Leader, Air Modeling Group, U.S. EPA (Invited)
- **James W. Boylan**, Ph.D.; Manager, Planning & Support Program, Georgia Department of Natural Resources
- **Ryan A. Gesser**, CCM; Georgia-Pacific Environmental Affairs
- **Rick Gillam**, U.S. EPA Region 4
- **Tim Allen**, Federal Land Manager, U.S. Fish & Wildlife Service (Invited)

## **ABOUT THE AIR & WASTE MANAGEMENT ASSOCIATION (A&WMA)**

A&WMA is a not-for-profit, nonpartisan professional organization that enhances knowledge and expertise by providing a neutral forum for technology exchange, professional development, networking, public education, and outreach to more than 6,000 environmental professionals in 65 countries. A&WMA also promotes global environmental responsibility and increases the effectiveness of organizations to make critical decisions that benefit society. A&WMA Federal Tax ID #: 25-6048614

**Consider becoming a member! For more information, please visit [www.awma.org](http://www.awma.org).**

# PRELIMINARY PROGRAM

## TECHNICAL PROGRAM - Thursday, March 21

7:00 am – 12:00 pm  
Registration

7:00 am – 8:00 am  
Continental Breakfast

7:00 am – 8:00 am  
Presenters' Meeting

### SESSION 5: PRIME2—UPDATES TO BUILDING DOWNWASH

Co-Chair: David Long, American Electric Power  
Co-Chair: Justin Walters, Southern Company

#### 8:00 am - 8:20 am

MO40

##### Alpha Version Development and Submission Process

Ron L. Petersen, Petersen Research and Consulting, LLC., Fort Collins, CO; Sergio A. Guerra, GHD, Golden, CO; James Paumier, Consultant, Raleigh, NC

#### 8:20 am - 8:40 am

MO41

##### Initial Assessment of the Plume Rise Theory in PRIME

Ron L. Petersen, Petersen Research and Consulting, LLC., Fort Collins, CO; Sergio A. Guerra, GHD, Golden, CO; James Paumier, Consultant, Raleigh, NC

#### 8:40 am - 9:00 am

MO42

##### Prime2: Model Evaluations

Sergio A. Guerra, GHD, Golden, CO; Ron L. Petersen, Petersen Research and Consulting, LLC. Fort Collins, CO; James Paumier, Consultant, Raleigh, NC

#### 9:00 am - 9:20 am

MO03

##### Sensitivity Evaluation Analysis of Updates to PRIME and BPIP Downwash Algorithms

Robert Paine; Olga Samani, AECOM, Novato, CA

#### 9:20 am - 9:40 am

MO37

##### An Evaluation of AERMOD with the PRIME2 Downwash Updates

Carlos Szembek, Environmental Resources Management, Metairie, LA; Milena Borissova, Environmental Resources Management, Boston, MA; Mark Garrison, Environmental Resources Management, Malvern, PA

#### 9:40 am - 10:00 am

MO46

##### Differences in AERMOD Results Obtained Using BPIP and Equivalent Building Dimension Inputs for PRIME and PRIME2

Stephen J. Nelson, Coal Creek Environmental Associates, Bellevue, WA; Sergio Guerra, GHD, Golden, CO; John Kirkpatrick, BAF, Bellevue, WA; Ron Petersen, CPPWIND, Bellevue, WA

#### 10:00 am - 10:20 am

##### Session 5 Discussion

#### 10:20 am - 10:40 am

##### Networking Break

### SESSION 6: MODELING CASE STUDIES

Co-Chair: Pietro Catizone, Woodard & Curran  
Co-Chair: Anthony Schroeder, Trinity Consultants

#### 10:40 am - 11:00 am

MO12

##### Characterize Roadway Dispersion Using Near Road Field Measurements and Compare to Air Quality Dispersion Models

Sheng Xiang, Yu-Ting Yu, Zhice Hu, Liuyang Sun, Kenneth Noll, Department of Civil and Environmental Engineering, Illinois Institute of Technology, Chicago, IL

#### 11:00 am - 11:20 am

MO23

##### Revisiting the Monte Carlo Method for Combining Modeled Pollutant Concentrations with Monitored Values: Case Study in Idaho

Pao Bylon, Kevin Schilling, Idaho Department of Environmental Quality, Boise, ID

#### 11:20 am - 11:40 am

MO27

##### Air Toxics Modeling of Complex Facilities in Rhode Island for Maximum Flexibility Using AERMOD

Jennifer Beaulieu, Woodard & Curran, Middletown, CT

#### 11:40 am - 12:00 pm

MO32

##### What Can We Use from The Guideline on Air Quality Models When Conducting Historical Air Dispersion Modeling Studies?

Roberto Gasparini, Spirit Environmental, LLC, Houston, TX

#### 12:00 pm - 12:20 pm

MO34

##### AERMOD Modeling For Health Impact Assessment of Dimethyl Mercury

Tapashree Tah, Andrea Siefers, Geosyntec Consultants, Indianapolis, IN

#### 12:20 pm - 12:40 pm

##### Session 6 Discussion

#### 12:40 pm Conference Adjourns