

Guideline on Air Quality Models 2017

The Changes

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14-16 November 2017

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FINAL PROGRAM

PROFESSIONAL DEVELOPMENT COURSES - Monday, November 13, 2017

7:00 am - 5:00 pm

Conference and Course Registration

Lobby

8:00 am - 4:30 pm

INTRODUCTION TO AERMOD (ticket required)

Paris Room

Instructor: Michael Hammer, Lakes Environmental Software

This course provides a full understanding of the AERMOD modeling system by balancing theory with hands-on, real world case studies. Participants will learn the basics of regulatory air dispersion modeling for permit applications and risk assessments. Topics include • Physics of air dispersion and atmospheric physics • Meteorological pre-processing with AERMET • Terrain processing with AERMAP • EPA NAAQS overview and • Comparison of AERMOD to other models.

For complete course descriptions, go to www.awma.org/aqmodels and select the courses tab.

8:00 am - 12:00 pm

INTRODUCTION TO CAMx (ticket required)

Vienna A

Instructors: Ralph Morris and Bart Brashers, *Ramboll Environ*

The course will provide a brief 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.

1:00 pm - 5:00 pm

INTRODUCTION TO SCICHEM 3.1 (ticket required)

Vienna A

Instructors: Doug Henn, *Xator Corp.* and Prakash Karam-Chandani, *Ramboll Environ*

This 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.

TECHNICAL PROGRAM - Tuesday, November 14, 2017

7:00 am - 5:00 pm

Conference Registration

Lobby

7:30 am - 8:30 am

Continental Breakfast

Lobby

7:30 am - 8:30 am

Presenter's Meeting

Brussels

KEYNOTE SESSION

Amsterdam-London

Moderator: Justin Walters, Southern Company

Co-Moderator: Pietro Catizone, TRC Environmental Corp.

8:30 am - 8:45 am

Introductions N/A

Gale F. Hoffnagle, TRC Environmental Corporation

8:45 am - 9:00 am

Opening Remarks N/A

Chet Wayland, Director, Air Quality Assessment Division, U.S. EPA

9:00 am - 9:15 am

Update on EPA's CAA Permit Streamlining Activities N/A

Vera Kornylak, Senior Policy Advisor, U.S. EPA – OAQPS

9:15 am - 9:45 am

FRM Appendix W Guideline Revisions and Future Directions 1

Tyler Fox, Group Leader, Air Quality Group, U.S. EPA

9:45 am - 10:15 am

AERMOD Development Plan and Priorities 17

Chris Owen, Physical Scientist, U.S. EPA – OAQPS

10:15 am - 10:45 am

Cumulative Impact Analyses 26

George M. Bridgers, Model Clearinghouse Director, U.S. EPA – OAQPS

10:45 am - 11:00 am

Refreshment Break

Sponsored by:


11:00 am - 11:30 am

Single Source Ozone and PM2.5 Demonstrations 38

Kirk Baker, Physical Scientist, U.S. EPA – OAQPS

11:30 am - 12:00 pm

Update on Interagency Workgroup on Air Quality Modeling 47

Bret A. Anderson, National Air Modeling Coordinator, U.S. Forest Service

12:00 pm - 1:30 pm

Lunch Presentation

Venetian Room, Third Floor

"The Guidelines - A First Hand Retrospective" N/A
Al Cimorelli, U.S. EPA Region 3 Meteorologist/Modeler (retired)

TECHNICAL PROGRAM - Tuesday, November 14, 2017

SESSION 1: AERMOD ISSUES

Amsterdam-London

Moderator: David Long, American Electric Power

Co-Moderator: Michael Hammer, Lakes Environmental

1:40 pm - 2:00 pm

MO02

Progress in Low Wind Modeling Refinements 61

Robert Paine, AECOM, Chelmsford, MA

2:00 pm - 2:20 pm

MO14

Optimizing Model Processing Time via FASTAREA and FASTALL 69

Kristin Fritchman, APTIM, Lenexa, KS; Leah Blinn, APTIM, Pittsburgh, PA

2:20 pm - 2:40 pm

MO01

Does AERMOD Double Count Hours in Design Value Determinations? 72

Gale Hoffnagle, TRC, Windsor, CT

2:40 pm - 3:00 pm

MO04

A Research on a Modeling Phenomenon in AERMOD and ISC3 77

Igor Schnayder, Sage ATC Environmental Consultants, Don Watzel, Sage ATC Environmental Consulting, LLC, Laramie, WI

3:00 pm - 3:20 pm

Refreshment Break

3:20 pm - 3:40 pm

MO27

Ambient NO₂ AERMOD Performance Assessment and Model Improvement project data Summary 93

Jeffery Panek, James McCarthy, Adrian Huth, Alan Krol, Innovative Environmental Solutions Inc., Cary, IL; Christopher Nowak, Kinder Morgan, Houston, TX

3:40 pm - 4:00 pm

MO42

AERMOD Evaluations Revisited 104

Mark Garrison, ERM, Malvern, PA; Richard Hamel, Carlos Szezbek, ERM, Boston, MA; Beth Barfield, ERM, Raleigh, NC

4:00 pm - 4:20 pm

MO05

Characterization of Moisture and Highly Industrialized Area Heat Effects on Plume Rise in Dispersion Modeling 119

Laura Warren, Robert Paine, AECOM, Chelmsford, MA

4:20 pm - 4:40 pm

Session Recap

4:40 pm - 5:40 pm

APM-Atmospheric Modeling and Meteorology Committee Meeting

Local Chapter Event

All attendees of the Modeling Conference are invited to attend the A&WMA Research Triangle Chapter event at 6:00 pm on Tuesday, November 14 in the Coach's Room at the Sheraton.

The presentation will be "Modeling in the New Era: Personal Reflections" by Gale Hoffnagle, *Director of Air Quality, TRC Environmental Corporation, and conference chair.*

The event is free and food and beverages will be available for purchase.

Contact Kevin Eldridge at kevin.eldridge@erm.com if you plan to attend.

FINAL PROGRAM

TECHNICAL PROGRAM - Wednesday, November 15, 2017

7:00 am - 5:00 pm
Conference Registration
Lobby

7:00 am - 8:00 am
Continental Breakfast
Lobby

7:00 am - 8:00 am
Presenter's Meeting
Vienna A, Brussels

SESSION 2: METEOROLOGICAL ISSUES

Amsterdam-London

Moderator: Sergio Guerra CPP, Wind Engineering
Co-Moderator: George Schewe, Trinity Consultants

8:00 am – 8:20 am

MO28

A Case Study Using Prognostic Meteorological Data in AERMOD 127

Anthony Schroeder, CCM, Trinity Consultants, Indianapolis, IN; Qiguo Jing, Neelesh V. Sule, Trinity Consultants, Dallas, TX

8:20 am – 8:40 am

MO32

A Comparative Study of Sensor Output from Solar Radiation Sensors with Varying Spectral Responses and the Impacts on AERMOD Modeling Results

Application of Parallel Gaussian Puff Model for Long Range Transport Studies 141

Shane Hansen, Inter-Mountain Labs, Sheridan, WY

8:40 am – 9:00 am

MO34

Practical Applications of Prognostic Meteorological Models to Support Air Quality Permitting 149

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

9:00 am – 9:20 am

MO41

Evaluation of Low Wind Adjustments to U* 173

Mark Garrison, Thomas Wickstrom, Environmental Resources Management, Malvern, PA

9:20 am - 9:40 am

Session Recap

9:40 am – 10:00 am

Refreshment Break

SESSION 3: AERODYNAMIC DOWNWASH ISSUES

Amsterdam-London

Moderator: Kevin Eldridge, ERM
Co-Moderator: Dustin Pittman, ERM

10:00 am – 10:20 am

MO09

Solution to AERMOD/PRIME PM10 Over predictions for Extremely Short, Long and Wide Buildings 186

Sergio Guerra, Ron Petersen, CPP Inc., Fort Collins, CO; John Kirkpatrick, Basic American Foods, Blackfoot, ID; Stephen Nelson, Coal Creek Environmental Associates, Bellevue, WA

10:20 am – 10:40 am

MO44

CFD for Rooftop Stack Dispersion 198

Michael Carl, Aimee Smith, Goncalo Pedro, RWDI, Guelph, On

10:40 am – 11:00 am

MO20

Evaluation of AERMOD/PRIME Theory for Porous Structures 204

Ron Petersen, Sergio Guerra, CPP Wind Engineering, Fort Collins, CO

11:00 am – 11:20 am

MO13

PRIME2: Development and Evaluation of Improved Building Downwash Algorithms for Solid and Streamlined Structures 209

Ron Petersen, Sergio Guerra, CPP Inc., Fort Collins, CO

11:20 am – 11:40 am

MO18

PRIME2: Model Evaluation and Consequence Analysis 226

Sergio Guerra, Ron Petersen, CPP Wind Engineering, Fort Collins, CO

11:40 am - 12:00 pm

Session Recap

12:00 pm - 1:00 pm

Lunch

Vienna A, B, Brussels

TECHNICAL PROGRAM - Wednesday, November 15, 2017

SESSION 4: SECONDARY FORMATION MODELING

Amsterdam-London

Moderator: Ralph Morris, Ramboll Environ

Co-Moderator: Mark Garrison, ERM

1:00 pm – 1:20 pm

MO03

Accounting for Secondary PM2.5 Formation in Georgia 244
James Boylan, Byeong-Uk Kim, Yan Huang, Georgia Department of Natural Resources, Atlanta, GA

1:20 pm – 1:40 pm

MO06

Photochemical Grid Modeling with CAMx for Ozone Impacts Supporting Inter-Precursor Trading for Nonattainment New Source Review Permit Offset – A Practical Case Study 249
Qi Zhang, James Red, Providence Engineering and Environmental Group LLC, Houston, TX

1:40 pm – 2:00 pm

MO08

Analyzing Secondary PM2.5 Formation from Single Source Modeling Data 253
Arijit Pakrasi, APTIM, Houston, TX; Amber Isaac, APTIM, Pittsburgh, PA

2:00 pm – 2:20 pm

MO22

Hybrid Plume/Grid Modeling for the Allegheny County, Pennsylvania Annual PM2.5 State Implementation Plan 265
Ralph Morris, Ramboll Environ, Novato, CA; Bart Brashers, Ramboll Environ, Lynnwood, WA; Jason Maranche, Tony Sadar, Allegheny County Health Department, Pittsburgh, PA

2:20 pm – 2:40 pm

Refreshment Break

Sponsored by



2:40 pm – 3:00 pm

MO26

Model Comparison of Single Source Impacts on Secondary Pollutants: SCICHEM, CMAQ and CAMx 273
Prakash Karamchandani, Jaegun Jung, Tejas Shah, Greg Yarwood, Ralph Morris, Ramboll Environ, Novato, CA; Eladio Knipping, EPRI, Washington, D.C.; Biswanath Chowdhury, Xator Corp., Princeton, NJ; Ana Alvarez-Gomez, Contractor for STI, Petaluma, CA; Bart Brashers, Ramboll Environ, Lynnwood, WA; Naresh Kumar, Palo Alto, CA

3:00 pm – 3:20 pm

MO30

The Importance of Transport to Ozone Pollution in Delaware 280
Mojtaba Moghani, Cristina Archer, University of Delaware, Newark, DE

3:20 pm – 3:40 pm

MO35

Modeling Secondary Impact on PM2.5 in Urban Subarctic Environment 285
Wenxian Zhang, Mark Hixson, Thomas Carlson, Trinity Consultants, Sacramento, CA

3:40 pm - 4:00 pm

MO23

Windows Version of the Comprehensive Air-quality Model with extensions (CAMx) 290
Ralph Morris, Chris Emery, Gary Wilson, Ramboll Environ, Novato, CA

4:00 pm – 4:20 pm

MO38

Application of CAMx to refine MERPs for Maryland 297
Surya Ramaswamy, Mark Garrison, Environmental Resources Management, Malvern, PA

4:20 pm – 4:40 pm

MO36

Application of SCICHEM to develop MERPs 305
Tianyi Chen, Karthikeyan (Surya) Ramaswamy, Mark Garrison, Environmental Resources Management, Malvern, PA

4:40 pm – 5:00 pm

MO39

Uncertainties of Long-Range Concentration Predictions from Photochemical Grid Models 312
Mary Kaplan, Robert Paine, AECOM, Chelmsford, MA; Marco Rodriguez, Courtney Taylor, AECOM, Fort Collins, CO

5:00 pm - 6:30 pm

Town Hall Meeting -The Revisions to the Guideline on Air Quality Models: Successes and Challenges

Amsterdam-London

Panelists:

- Bret Anderson, National Air Modeling Coordinator, U.S. Forest Service
- Jim Boylan, Program Manager, Georgia EPD
- Chris Owen, Physical Scientist, U.S. EPA – OAQPS
- Tyler Fox, Group Leader, Air Quality Modeling Group, U.S. EPA – OAQPS
- Maggie Peloso, Counsel, Environmental and Natural Resources, Vinson & Elkins

The Town Hall is a mainstay of this conference that encourages the audience to engage the panelists on important and relevant topics. Each panelist will have the opportunity to provide brief opening remarks, which will be followed by open discussion and Q&A with the audience. Bring your questions!

FINAL PROGRAM

TECHNICAL PROGRAM - Thursday, November 16, 2017

7:00 am - 10:00 am

Conference Registration
Lobby

7:00 am - 8:00 am

Continental Breakfast
Lobby

7:00 am - 8:00 am

Presenter's Meeting
Vienna

SESSION 5: AERMOD APPLICATIONS

Amsterdam-London

Moderator: Robert Paine, AECOM

Co-Moderator: Ron Petersen, CPP Wind Engineering

8:00 am – 8:20 am

MO10

SO₂ Designation Modeling Case Study – W.A. Parish Generating Station 323

Richard Hamel, ERM, Boston, MA; Craig Eckberg, NRG Energy, Houston, TX

8:20 am – 8:40 am

MO21

SO₂ NAAQS Designation Modeling Analyses for DRR Applicable Sources Compliance Demonstration – Case Study 335

Pietro Catizone, Matthew Jones, TRC Environmental Corp., Windsor, CT; Paz Tison, Roger Pabunan, Guam Power Authority, Hagatna, Guam

8:40 am – 9:00 am

MO07

Modeling of Infrequent and Random Peak Emission Events for Permit Applications 361

Christopher Warren, Robert Paine, AECOM, Chelmsford, MA

9:00 am – 9:20 am

MO24

Methods for Simulating Actual Emissions in Regulatory Air Quality Modeling Analyses 368

Ryan Gesser, Matthew Stresing, Georgia-Pacific LLC, Atlanta, GA

9:20 am – 9:40 am

MO29

Determining Background and Nearby Source Concentrations 389

George Schewe, Brian Otten, Trinity Consultants, Covington, KY

9:40 am – 10:00 am

Refreshment Break

10:00 am – 10:20 am

MO33

Updating the 20D Tool for the Cumulative Impact Analysis 404

Kevin Eldridge, ERM NC, Inc., Raleigh, NC; Dustin Pitman, ERM, Seattle, WA

10:20 am – 10:40 am

MO37

Pseudo-Source Parameters for Flares 420

Michael Zelensky, Alberta Energy Regulatory, Calgary, Alberta; B.W. Zelt, Zelt Professional Services Inc., Calgary, Alberta

10:40 am – 11:00 am

MO40

Monte Carlo Methods for Addressing Intermittent Emissions 436

Mark Garrison, ERM, Malvern, PA; Richard Hamel, Carlos Szembek, Environmental Resources Management, Boston, MA

11:00 am – 11:20 am

MO43

BLP and AERMOD – Not Perfect Together 450

Milena Borissova, Environmental Resources Management, Boston, MA; Jenny Brown, Environmental Resources Management, Charleston, SC; Mark Garrison, Environmental Resources Management, Malvern, PA

11:20 am – 11:40 am

MO25

A Novel Approach for Developing a Background Value or Weight of Evidence for a Background Value to Use in Air Quality Modeling 456

David Long, American Electric Power, Columbus, OH

11:40 am – 12:00 pm

Session Recap

Conference Wrap-up and Adjourn