AIR & WASTE MANAGEMENT
ASSOCIATION

One Gateway Center, 3rd Floor
420 Fort Duquesne Blvd.
Pittsburgh, PA 15222-1435
USA

Air & Waste Management Association

Regional and Global Perspectives on Haze: Causes, Consequences and Controversies
Visibility Specialty Conference

October 25-29, 2004

Asheville, North Carolina

Regional and Global Perspectives on Haze: Causes, Consequences and Controversies Visibility Specialty Conference

October 25-29, 2004
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Professional Development Courses:

OCTOBER 25, 2004 (8:00 A.M. – 12:00 P.M.)

AIR-255: Introduction to Visibility Concepts

AIR-257: Satellite Retrieval of Air Quality Related Variables

OCTOBER 25, 2004 (1:00 P.M. – 5:00 P.M.)

AIR-258: Introduction and Hands-on Use of the VIEWS and IMPROVE Data Retrieval and Analysis Web Sites

AIR-259: Bias and Interferences in Aerosol Sampling

Air & Waste Management Association

The Air & Waste Management Association is the world's leading membership organization for environmental professionals. The Association enhances the knowledge and competency of environmental professionals by providing a neutral forum for technology exchange, professional development, networking opportunities, public education, and outreach events. A&WMA also promotes global environmental responsibility and increases the effectiveness of organizations to make critical decisions that benefit society. The views expressed by the individual presenters do not imply endorsement and are not necessarily reflective of the views of the Association.

Conference Overview

This international conference will provide a technical forum to present advances in the scientific understanding of the effects of air pollution on regional, continental and global scale haze phenomena. The conference will specifically address: emission sources, atmospheric conditions, and aerosol characteristics associated with large scale haze events; innovative monitoring, assessment and modeling methods applied to haze; and air quality management implications.

Field Trip

Shining Rock Wilderness Area
Wed. October 27, 2004
1:00 PM

We are pleased to offer the option of a field trip on Wednesday afternoon. Shining Rock Wilderness area (18,500 acres) in the Pisgah National Forest is located approximately 25 miles southwest of Asheville, NC, and is accessible from the Blue Ridge Parkway (mile marker 421). The Art Loeb trail from the Blue Ridge Parkway access road (FR-816) is one hour from Asheville. Weather permitting, hikers can take the Art Loeb trail north toward Shining Rock, following the ridge line over heath and grass balds with excellent vistas. Black Balsam Knob (6,214 ft) is 0.5 mi, Tennent Mountain (6,046 ft) is 1.7 mi, Ivestor Gap and the southern boundary of the Wilderness area is 2.4 mi.

The IMPROVE monitor for Shining Rock is located on Frying Pan Mt, accessible up a gravel access road off the Blue Ridge Parkway (near mile marker 412).

Participants are asked to indicate their interest (please see registration form) in dinner at the Pisgah Inn (5000 ft at mile marker 409) on the return trip to Asheville. The Pisgah Inn (www.pisgahinn.com) offers full menu (~$15-20 entrees) with ridgetop views.

Photo Contest

Conference participants are invited to participate in a photo contest sponsored by Air Resource Specialists, Inc. Submit up to three photographs that illustrate outstanding scenic views, visibility impairment, or unusual optical phenomena. Include the name of the photographer or image analyst (satellite imagery) and a description including date, location, and special circumstances. Photos will be displayed during the conference with prizes awarded in different categories. Email digital camera images or scanned photos to gebhart@cira.colostate.edu by October 4, 2004. Please also bring an 8x10 print of each photo to the conference. Direct questions to the above email address.

Conference Location

Holiday Inn
One Holiday Inn Drive
Asheville, NC 28806
Phone: 828-254-3211 • Fax: 828-254-1603
Cutoff: September 23, 2004
Room Rate: $104 S/D

Exhibition Hours

Tuesday, October 26
9:00 a.m. - 7:00 p.m.
Wednesday, October 27
9:00 a.m. - 12:00 p.m.

Americans with Disabilities Act

The Air & Waste Management Association supports the Americans with Disabilities Act (ADA). Those attendees requiring specific equipment or services should contact the A&WMA Meetings Manager at 412-232-3444, ext. 3126 to make those needs known in advance. We will make every reasonable effort to accommodate them.

Professional Development Courses

OCTOBER 25, 2004 (8:00 A.M. – 12:00 P.M.)
AIR-255: Introduction to Visibility Concepts
Instructor: William Malm, Ph.D., National Park Service, Colorado State University, Cooperative Institute for Research in the Atmosphere (CIRA)
This course is intended to give the attendee an understanding of fundamental principles of visibility, including the relationship of emissions to aerosol formation, atmospheric optical properties, and human perception issues as they relate to viewing scenic landscape features. Visibility concepts will be demonstrated with actual photographs showing the effect of haze on landscape features, the role that sun angle plays in the competition between path and scene radiance, the difference between uniform and layered haze, and different emissions types. Photographs will also demonstrate how an absorbing and scattering aerosol compete to change the appearance of layered and uniform hazes.

OCTOBER 25, 2004 (8:00 A.M. – 12:00 P.M.)
AIR-257: Satellite Retrieval of Air Quality Related Variables
Instructor: Rudolf Husar, Ph.D., Professor of Mechanical Engineering, Washington University
This course will cover: (1) introduction to satellite aerosol detection and monitoring; (2) current and near future satellites and their usage; (3) satellite usage examples for aerosol events: fires, dust storms, and regional haze; (4) combination of satellite and surface monitoring data; (5) Web-based satellite data resources and tools; and (6) discussion, class feedback, issues.

OCTOBER 25, 2004 (1:00 P.M. - 5:00 P.M.)
AIR-258: Introduction to the VIEWS and IMPROVE Data Retrieval and Analysis Web Sites
Instructor: Bret Schichtel, D. Sc, Physical Scientist, National Park Service, Cooperative Institute for Research in the Atmosphere (CIRA)
This course will provide an overview of the IMPROVE and VIEWS Web sites including their purpose, content, tools, and navigation. Detailed instruction will be given on all of the data access, display, and analysis tools available from these Web sites. Participants will be taken through examples illustrating how these Web resources can be used to answer questions relevant to the Regional Haze Rule, including identifying and analyzing the worst and best 20% haze days and their long-term trends. Participants are encouraged to bring their own laptops with networking capabilities. This is entirely optional, but laptops may be used for some hands-on instruction with the Web sites.

OCTOBER 25, 2004 (1:00 P.M. – 5:00 P.M.)
AIR-259: Bias and Interferences in Aerosol Sampling
Instructor: Charles McDade, Ph.D., QEP, Principal Investigator, IMPROVE Aerosol Measurements, Crocker Nuclear Laboratory, University of California, Davis
This course will cover: (1) common assumptions in aerosol sampling; (2) filter characteristics, uses, and collection efficiencies; (3) artifact corrections and field blanks; (4) denuders; (5) inlet characteristics; (6) temperature and relative humidity effects; (7) sampling duration effects; (8) flowrate measurement; (9) filter handling and shipping; (10) laboratory interferences; (11) data near the detection limit; (12) identifying bias through comparisons of related data; and (13) data handling and quality control.

Course registration includes refreshment breaks and a copy of the course manual. Lunch is on your own. For more information about the courses and the instructors, visit the A&WMA Web site at www.awma.org/events, or contact Carrie Hartz, Education Programs Coordinator, at 412-232-3444 x3120 or chartz@awma.org.

Special Issue of the Journal of the Air & Waste Management Association

A future issue of the Journal of the Air & Waste Management Association will be dedicated to select papers presented at this conference. Presenters are encouraged to submit their manuscripts for consideration and peer-review. The Journal thanks Southern Company and EPRI for their generous sponsorship of the special issue.

EPRI SOUTHERN COMPANY

Conference Agenda (Tuesday, October 26, 2004)

Platform paper presentations are limited to 20 minutes including 5 minutes for questions. Presenters of poster papers have 5 minutes to introduce their papers during the technical sessions, and as much as an hour during their poster session to interact directly with those most interested in their work. Session chairs will be strict in maintaining this schedule. All papers, regardless of presentation approach (platform or poster), require either a full manuscript or an extended abstract for the preprint volume and are eligible for inclusion in the AWMA special issue.

8:00 AM Welcome and Introductions

8:10 AM Keynote Address
An Update of Spatial And Monthly Trends in Speciated Fine Particle Concentration in the United States
W. C. Malm[1], B. A. Schichtel[1], M. L. Pitchford[2], L. L. Ashbaugh[3], C. McDade[3]; [1]Air Resources Division, National Park Service, [2]Air Resources Laboratory, NOAA, [3]Crocker Nuclear Laboratory, University of California-Davis

Session 1 Spatial and Temporal Trends

Session Chairs:
Bret A. Schichtel, *National Park Service*
Warren H. White, *University of California, Davis*

8:40 AM Platform No. 52
Trends in Speciated $PM_{2.5}$ and Visibility in Southeastern US and Meteorological Contributions to Trends
P. F. Brewer[1], J. P. Adlhoch[2], S. G. Douglas[3]; [1]VISTAS, [2]Air Resource Specialists, [3]ICF Consulting/SAI

9:00 AM Platform No. 91
A Statistical Analysis of Visibility Impairment in Federal Class I Areas
S. A. Copeland; Cira, Colorado State University

9:20 AM Platform No. 25
Tests of Long-term Stability in IMPROVE Trend Measurements
W. H. White[1], L. L. Ashbaugh[1], C. E. McDade[1], G. G. Lear[2]; [1]University of California, Davis, [2]U.S. Environmental Protection Agency

9:40 – 10:00 Poster Introductions

Poster No. 35
Organic and Elemental Carbon Long-Term Trends In Rural United States
B. A. Schichtel[1], W. C. Malm[1], W. H. White[2]; [1]National Park Service, [2]Crocker Nuclear Lab, University of California – Davis

Poster No. 67
5-Year Trend Analysis of $PM_{2.5}$ Data from the SEARCH Network
E. S. Edgerton[1], B. E. Hartsell[2], J. J. Jansen[3], D. A. Hansen[4]; [1]HQ, ARA, Inc., [2]ARA, Inc., [3]Southern Company, [4]EPRI

Poster No. 82
Spatial, Temporal, and Inter-Species Patterns in Fine Particulate Data in Texas
K. A. Gebhart[1], W. C. Malm[1], L. Ashbaugh[2]; [1]Air Resources Division, National Park Service, [2]Crocker Nuclear Laboratory, Univeristy of California at Davis

Poster No. 98
Regional Haze and PM2.5 Aerosols in the Upper Midwest and Ontario
T. F. Lavery, C. M. Rogers MACTEC Engineering & Consulting, Inc.

10:00 – 10:20 Break

Session 2 Optical Monitoring Methods

Session Chairs:
Joseph P. Adhlock, *Air Resources Specialists, Inc.*
Hans Moosmuller, *Desert Research Institute*

10:20 AM Platform No. 16
Evaluation of a New Approach for Real Time Assessment of Wood Smoke PM
G. A. Allen[1], P. Babich[2], R. Poirot[2]; [1]NESCAUM, [2]Air Pollution Control Division, Vermont Department of Environmental Conservation.

10:40 AM Platform No. 53
Insights on aerosol light absorption methods gained from the Reno Aerosol Optics Experiment
W. P. Arnott[1], H. Moosmüller[1], P. J. Sheridan[2], J. O. Ogren[3]; [1]Division of Atmospheric Sciences, Desert Research Institute, [2]Climate Monitoring and Diagnostics Laboratory, National Oceanic and Atmsopheric Administration, [3]Climate Monitoring and Diagnostics Laboratory, National Oceanic and Atmospheric Administration.

11:00 AM Platform No. 80
On-road Particulate Matter Emissions from Vehicles by Ultraviolet Backscattering and Extinction Measurements
C. Mazzoleni[1], H. Moosmüller[2], H. Kuhns[2], P. Barber[2], D. Nikolic[2], N. Nussbaum[2], O. Chang[2], R. Keislar[2], J. Watson[2]; [1]Division of Atmospheric Sciences, Desert Research Institute, [2]Desert Research Institute.

11:20 – 11:40 AM Poster Introductions

Poster No. 45
A New Integrating Nephelometer with Reduced Truncation Losses
H. Moosmüller[1], W. P. Arnott[1], R. Varma[2]; [1]Atmospheric Sciences Division, Desert Research Institute, [2]Arcadis Inc.

Poster No. 39
Operational Comparison of Optec, Radiance Research and Ecotech Nephelometers
J. V. Molenar[1], **C. M. Archuleta**[1], M. L. Tigges[1], J. P. Adlhoch[1], W. C. Malm[2], D. E. Day[3], C. M. Carrico[4]; [1]Air Resource Specialists, Inc., [2]National Park Service-Air Resources Division, Cooperatrive Institute for Research in the Atmosphere, Colorado State University, [3]Cooperative Institute for Research in the Atmosphere, Colorado State University, [4]Department of Amospheric Science, Colorado State University.

Poster No. 70
Emission Factors of Scattering Cross Section for Visibility Impairment from Fugitive Dust Sources
R. M. Varma[1], H. Moosmuller[2], W. P. Arnott[2], J. Walker[2], H. D. Kuhns[2], V. Etyemezian[2], J. A. Gillies[2]; [1]Optical Remote Sensing, ARCADIS, [2]Division of Atmospheric Sciences, Desert Research Institute

Poster No. 50
Measurement of Atmospheric Extinction with Cavity Ring Down and Cavity Enhanced Detection
H. Moosmüller[1], W. P. Arnott[1], R. Varma[2]; [1]Division of Atmospheric Sciences, Desert Research Institute, [2]Arcadis, Inc.

Poster No. 33
$PM_{2.5}$ Mass Measurements by Nephelometry in Acadia National Park
C. M. Archuleta, J. P. Adlhoch, J. V. Molenar; Air Resource Specialists, Inc.

11:40 – 1:20 Poster Session and Lunch

Session 3 Monitoring Studies

Session Chairs:
Marc L. Pitchford, *Air Resources Laboratory, NOAA*
Jeff L. Collett, Jr., *Atmospheric Science, Colorado State University*

1:20 PM Platform No. 3
One- and Three-Hour $PM_{2.5}$ Characterization, Light Extinction and Source Apportionment Using Continuous and Integrated Samplers
D. J. Eatough[1], N. L. Eatough[1], W. C. Malm[2], R. W. Long[3], W. E. Wilson[3]; [1]Chemistry and Biochemistry, Brigham Young University, [2]U.S. National Park Service, [3]U.S. Environmental Protection Agency.

1:40 PM Platform No. 7
Ammonia and Its Role in Midwestern Haze
D. M. Kenski[1], D. A. Gay[2], S. Fitzsimmons[3]; [1]Lake Michigan Air Directors Consortium, [2]Illinois State Water Survey, University of Illinois, [3]Air Quality Bureau, Iowa Department of Natural Resources

2:00 PM Platform No. 78
An Investigation of $PM_{2.5}$ Climatology at a Rural Midwest Site
N. D. Deardorff, **J. R. Turner**; Environmental Engineering Program, Washington University

2:20 PM Platform No. 12
Single Particle Analysis during the Yosemite Aerosol Characterization Study
J. L. Hand[1], W. C. Malm[2], A. Laskin[3], D. Day[1], J. Carrillo[4], T. Lee[4], K. Carrico[4], G. McMeeking[4], J. P. Cowin[3], M. J. Iedema[3]; [1]Cira, Colorado State University, [2]National Park Service, [3]Pacific Northwest National Laboratory, [4]Atmospheric Science, Colorado State University

2:40 PM Platform No. 63
Vertical Stratification of PM and PM Precursors in Winter in the San Joaquin Valley: Implications for Transport and Secondary PM Formation
S. G. Brown[1], F. W. Lurmann[1], S. H. Alcorn[1], N. P. Hyslop[2], M. Ghosh[1], E. Shields[1], E. M. Simon[1], P. T. Roberts[1]; [1]Sonoma Technology, Inc, [2]Crocker Nuclear Laboratory, University of California, Davis

3:00 – 3:15 Poster Introductions

Poster No. 22
Coarse Particle Speciation at Nine Locations in the Continental United States
W. C. Malm[1], B. A. Schichtel[1], M. L. Pitchford[2], C. McDade[3], L. L. Ashbaugh[3]; [1]Air Resources Division, National Park Service, [2]Air Resources Laboratory, NOAA, [3]Crocker Nuclear Laboratory, University of California-Davis

Poster No. 47
Causes of Haze at Big Bend National Park - Results of the BRAVO Study and More
M. L. Pitchford[1], B. Schichtel[2], K. Gebhart[2], W. C. Malm[2], E. Knipping[3], I. Tombach[4]; [1]Air Resources Laboratory, NOAA, [2]Air Quality Office, National Park Service, [3]EPRI, [4]Consultant

Poster No. 75
Identification of Source Regions Affecting South Texas During the 2002 Haze Event
M. Kim, I. Jung, K. John; Environmental Engineering, Texas A&M University-Kingsville

3:15 – 3:45 PM Break

Session 4 Monitoring Networks

Session Chairs:
Lowell L. Ashbaugh, *Crocker Nuclear Laboratory, University of California*
Neil Frank, *U.S. EPA*

3:45 PM Platform No. 88
Analysis of Aerosol and Optical Data from Four LADCO Monitoring Sites
J. P. Adlhoch[1], K. K. Sutton[1], **D. Kenski**[2], M. Koerber[2]; [1]Air Resource Specialists, Inc., [2]LADCO.

4:05 PM Platform No. 17
Spatial Representativeness of IMPROVE Sites
N. P. Hyslop, L. L. Ashbaugh, C. E. McDade; Crocker Nuclear Lab, University of California.

4:25 PM Platform No. 15
Artifact Corrections in IMPROVE
C. E. McDade, L. L. Ashbaugh; Crocker Nuclear Laboratory, University of California

4:45 PM Platform No. 65
Assessment of the Major Causes of Dust-Resultant Haze in the Western United States
V. Etyemezian[1], D. Dubois[1], M. Green[1], J. Xu[1], L. Alter[2], M. Pitchford[3]; [1]Division of Atmospheric Sciences, Desert Research Institute, [2]Western Governors Association, [3]Air Resources Laboratory, NOAA.

5:05 - 5:25 PM Poster Introductions

5:25 – 7:00 PM Reception and Poster Session

Poster No. 18
Real-time Carbon and Sulfate Measurements from the MANE-VU Rural Aerosol Intensive Network (RAIN: Design, Methods and Early Data
G. A. Allen[1], B. P. Goodwin[2], J. R. Turner[2]; [1]NESCAUM, [2]Environmental Engineering Program, Washington University in St. Louis

Poster No. 34
Overview of the IMPROVE Network's Quality Assurance Procedures and Introduction to our New Interactive Web-BasedTools
L. J. DeBell[1], W. C. Malm[2], B. A. Schichtel[2], M. L. Pitchford[3], L. L. Ashbaugh[4], C. E. McDade[4], D. Fox[1]; [1]Cooperative Institute for Research in the Atmosphere, Colorado State University, [2]Air Resources Division, National Park Service, [3]Desert Research Institute, NOAA - Air Resources Laboratory, [4]Crocker Nuclear Laboratory, University of California-Davis

Poster No. 48
The Piney Run Haze Monitoring Site: A High Elevation, Western Boundary, Air Monitoring Site in Rural Maryland
M. G. Seybold[1], C. D. Smith[1], D. Krask[1], D. L. Franks[1], G. S. Aburn[1], M. S. Castro[2], J. McKnight[2], G. Allen[3]; [1]Air Quality Monitoring, Maryland Department of the Environment, [2]University of Maryland Center for Environmental Science, [3]North East States for Coordinated Air Use Management

Poster No. 51
The Arizona Wilderness and Urban Visibility Monitoring Networks
J. P. Adlhoch[1], M. Sundblom[2], D. Anderson[2]; [1]Air Resource Specialists, Inc., [2]Arizona Department of Environmental Quality

Poster No. 77
The Visibility Information Exchange Web System (VEIWS: an update on available data sets and web based tools for data analysis and visualization
S. E. McClure[1], R. B. Ames[1], B. A. Schichtel[2], D. G. Fox[1]; [1]CIRA, [2]NPS

Wednesday, October 27, 2004

Session 5 Biogenic Smoke

Session Chairs:
William C. Malm, *CIRA*
Judy C. Chow, *Desert Research Institute*

8:00 AM Platform No. 76
Preliminary apportionments of carbonaceous aerosols to wild fire smoke using long-term records from the IMPROVE network
R. B. Ames[1], W. C. Malm[2], B. A. Schichtel[2], D. G. Fox[1]; [1]CIRA, [2]NPS

8:20 AM Platform No. 20
Hygroscopicity of Smoke Aerosols from Several Different Forest Fuels
D. E. Day; Cira, Colorado State

8:40 AM Platform No. 72
Integrating Source and Receptor Oriented Analytical Methods for Fine Particulate and Ozone: A Case Study
B. Anderson, M. Davis; USEPA Region VII.

9:00 AM Platform No. 27
Dry Aerosol Size Distributions and Derived Optical Properties During the Yosemite Aerosol Characterization Study
G. R. McMeeking[1], S. M. Kreidenweis[1], C. Carrico[1], T. Lee[1], J. Carrillo[1], J. L. Collett, Jr.[1], D. E. Day[2], J. L. Hand[2], W. C. Malm[3]; [1]Atmospheric Science, Colorado State University, [2]Cooperative Institute for Research in the Atmosphere, Colorado State University, [3]National Park Service / CIRA, Colorado State University

9:20 AM Platform No. 66
Organic Aerosol Composition In Yosemite National Park During The 2002 Yosemite Aerosol Characterization Study
G. Engling, P. Herckes, J. Carrillo, S. Kreidenweis, J. Collett; Atmospheric Science, Colorado State University

9:40 AM Platform No. 40
Wyoming Visibility Monitoring Network: Atmospheric Effects of Wildfires
C. Casten[1], D. Potter[1], C. Archuleta[2], L. Sherman[2]; [1]Air Quality Division, Wyoming Department of Environmental Quality, [2]Air Resource Specialists, Inc.

10:00 AM Platform No. 57
Characterization of Visibility Relevant Fire Emissions from Several Wildland Fuels
H. Moosmüller[1], W. P. Arnott[1], L. R. Rinehart[1], R. Susott[2], V. Kovalev[2], W. Hao[2]; [1]Division of Atmospheric Sciences, Desert Research Institute, [2]Fire Sciences Laboratory, US Forest Service

10:20 – 10:30 AM Poster Introductions

Poster No. 94
Chemical and Physical Characteristics of Wood Smoke in the Northeastern US during July 2002 Impacts from Quebec Forest Fires
R. Poirot[1], R. Husar[2]; [1]VT Dept. of Environmental Conservation, Air Pollution Control Division, [2]Center for Air Pollution Impact and Trend Analysis, Washington University

Poster No. 23
Chemical and Physical Properties of Organic Laden Ambient Aerosol in Yosemite National Park
W. C. Malm[1], D. E. Day[2], C. Carrico[3], T. Lee[3], J. Collett[3], S. Kreidenweis[3], G. McMeeking[3], J. Carrillo[3]; [1]Air Resources Division, National Park Service, [2]Cooperative Institute for Research in the Atmosphere, Colorado State University, [3]Department of Atmospheric Science, Colorado State University

10:30 – 11:00 Break

Session 6 Science/Policy Interface and Implications

Session Chairs:
Ivar Tombach, *Consultant*
Rosalina Rodriguez, *U.S. EPA*

11:00 AM Platform No. 59
Experiences with FLAG Regional Haze Guidance Applications for Coal-Fired Projects
R. J. Paine, D. W. Heinold ENSR Corporation

11:20 AM Platform No. 2
Permitting of a Power Plant Near a Class I Area Using the PLUVUE Visibility Impairment Program
G. F. Hoffnagle, P. A. Catizone, S. E. Zell, J. G. Zapert; TRC Environmental Corporation

11:40 AM Platform No. 81
Results from a New Survey of Values for Eastern Regional Haze Improvements
A. E. Smith, M. Kemp, C. L. Taylor; Charles River Associates

12:00 PM Platform No. 31
Review of the U.S. EPA Default Implementation Guideline for the Regional Haze Rule. Uncertainty: Random and Non-Random Effects
P. Ryan[1], N. Kumar[2]; [1]Sonoma Technology, Inc., [2]EPRI

12:20 PM Platform No. 102
Estimating the Probability of the Public Perceiving a Decrease In Atmospheric Haze
R.C. Henry, Department of Civil & Environmental Engineering, University of Southern California

Poster No. 26
Causes of Haze Assessment for WRAP Class I Areas - Preliminary Conceptual Model Development
J. Xu[1], D. DuBois[1], M. Green[1], D. Freeman[1], V. Etyemezian[1], M. Pitchford[2]; [1]Division of Atmospheric Sciences, Desert Research Institute, [2]NOAA Air Resource Laboratory

Poster No. 73
Light Extinction Reconstruction in IMPROVE
D. Lowenthal[1], R. Patrick[2], **N. Kumar**[3]; [1]Division of Atmospheric Sciences, Desert Research Institute, [2]Sonoma Technology, Inc., [3]EPRI

Poster No. 41
Air Pollution Hurts? An Interactive Exploration of Air Quality Issues at Sequoia/Kings Canyon National Parks
J. I. Winchester[1], M. Crapsey[2], A. Esperanza[2], J. Matsumoto[2]; [1]Cooperative Institute for Research in the Atmosphere, Colorado State University, [2]Sequoia & Kings Canyon National Parks, National Park Service

Poster No. 49
The Causes of Haze Assessment: An Overview
D. DuBois[1], M. Green[1], J. Xu[1], D. Freeman[1], V. Etyemezian[1], M. Pitchford[2]; [1]Division of Atmospheric Science, Desert Research Institute, [2]Air Resource Laboratory, NOAA

Field Trip to Shining Rock Wilderness Area will begin at 1:00 PM

Thursday, October 28, 2004

Session 7 Air Quality Simulation Modeling

Session Chair
Mark Green, *Desert Research Institute*
Kristi A. Gebhart, *Air Resources Division, National Park Service*

8:00 AM Platform No. 30
A Comparison of CALPUFF Predicted and Measured Visibility Parameters
M. J. Zufall, R. Bailey, III; Trinity Consultants

8:20 AM Platform No. 13
VISTAS Phase I Regional Fine Particulate Sensitivity Modeling to Identify the Optimal Model Configuration for Simulating Regional Haze in the Southeastern US
R. E. Morris[1], G. S. Tonnesen[2], T. W. Tesche[3], J. Boylan[4], P. Brewer[5]; [1]ENVIRON, [2]UC Riverside, [3]Alpine Geophysics, [4]Georgia Department of Environmental Protection, [5]VISTAS

8:40 AM Platform No. 90
Estimating Sulfate Attributions from Regional Sources at IMPROVE Monitors
M. G. Barna, B. A. Schichtel, K. A. Gebhart, W. C. Malm; Air Resources Division, National Park Service

9:00 AM Platform No. 14
Optimizing Secondary Organic Aerosol Representation in Particulate Matter Air Quality Models
B. K. Pun[1], C. Seigneur[1], E. Knipping[2]; [1]AER, [2]EPRI.

9:20 AM Platform No. 42
Development and Testing of an Advanced Plume-in-Grid PM Model
P. Karamchandani, C. Seigneur, K. Vijayaraghavan; AER.

9:40 – 9:50 AM Poster Introductions

Poster No. 6
Regional Haze Modelng Over The Vistas Domain: Preliminary Verification Of Models-3/cmaq For The 2002 Annual Episode
T. Tesche[1], **R. E. Morris**[2], G. Tonnesen[3]; [12]ENVIRON International Corporation, [3]University of California, Riverside

Poster No. 89
Simulating Wildfire Smoke Emissions and Transport
M. G. Barna, D. G. Fox; Co-op Institute for Research in the Atmosphere (CIRA, Colorado State University

9:50 - 10:15 AM Break

Session 8 Aerosol Monitoring Methods

Session Chairs:
Chuck E. McDade, *Crocker Nuclear Laboratory, University of California*
Delbert E. Eatough, *Brigham Young University*

10:15 AM Platform No. 32
Efficiency of IMPROVE Denuders for Removing Nitric Acid
L. L. Ashbaugh, C. E. McDade, P. Wakabayashi; Crocker Nuclear Laboratory, University of California, Davis

10:35 AM Platform No. 55
Summary of Methods and Comparison Studies for Organic and Elemental Carbon: Implications for Visibility and Global Warming
J. G. Watson, J. C. Chow, L. Chen, O. Chang; Desert Research Institute

10:55 AM Platform No. 56
Methods to Calibrate and Audit Thermal/Optical Carbon Analyzers for Visibility Studies
J. C. Chow, J. G. Watson, L. Chen, G. Paredes, O. Chang Desert Research Institute

11:15 AM Platform No. 8
The Organic Mass/Organic Carbon Ratio in IMPROVE Samples
D. Lowenthal[1], H. Elzanan[1], B. Zielinska[1], J. Chow[1], N. Kumar[2]; [1]Division of Atmospheric Sciences, Desert Research Institute, [2]EPRI

11:35 – 11:45 Poster Introductions

Poster No. 28
Nylon Filter Characterization
A. Dyson, **L. L. Ashbaugh**; Crocker Nuclear Lab, Air Quality Group, University of CA, Davis

Poster No. 24
Behavior of Fine-particle Elemental Data near the Detection Limit
W. H. White, R. A. Eldred, P. J. Feeney, C. E. McDade, B. P. Perley, D. J. Shadoan, P. H. Wakabayashi; University of California, Davis

1:35 PM Poster Session and Lunch

Session 9 Receptor Modeling

Session Chair:
Rich L. Poirot, *Vermont Agency of Natural Resources, Department of Environmental Conservation*
Shelley I. Eberly, *U.S. EPA*

1:40 PM Platform No. 71
Comparison of Trajectory Cluster Analysis to Tagged Emission Chemical Transport Model Results for Assessing Visibility Impairment at MANE-VU Class I Sites
G. Kleiman, J. Graham, E. Savelli, S. He, I. Kheirbek NESCAU

2:00 PM Platform No. 43
Sources of Fine Particulate Species in Ambient Air over Vermont
N. Gao[1], K. Lafferty[1], P. Panday[1], P. K. Hopke[2], E. Kim[2], R. L. Poirot[3]; [1]Chemistry, St. Lawrence University, [2]Chemical Engineering, Clarkson University, [3]Vermont Agency of Natural Resources, Department of Environmental Conservation

2:20 PM Platform No. 36
Reconciliation of Particulate Sulfate Source Apportionment Results at Big Bend National Park during the BRAVO Study
B. A. Schichtel[1], K. A. Gebhart[1], W. C. Malm[1], M. G. Barna[1], M. Pitchford[2]; [1]National Park Service, [2]NOAA - Air Resources Laboratory

2:40 PM Platform No. 46
Source Apportionment of $PM_{2.5}$ in Phoenix, Arizona Using Positive Matrix Factorization
H. R. Hafner[1], S. G. Brown[1], D. A. Anderson[2]; [1]Sonoma Technology, Inc, [2]Air Quality Division, Arizona Department of Environmental Quality

3:00 PM Platform No. 60
Westward transport of sulfate rich haze from the eastern US
M. C. Green[1], M. Pitchford[2], D. DuBois[1], J. Xu[1]; [1]Desert Research Institute, [2]Air Resources Laboratory, NOAA

3:20 PM Platform No. 38
Characteristics of Aerosol Nitrate at Several IMPROVE Monitoring Sites
T. Lee[1], X. Yu[1], B. Ayres[1], J. Carrillo[1], C. Carrico[1], S. M. Kreidenweis[1], J. L. Collett, Jr.[1], W. Malm[2]; [1]Department of Atmospheric Science, Colorado State University, [2]NPS/CIRA, Colorado State University.

3:40 PM Platform No. 97
Combined Aerosol Trajectory Tool (CATT for the IMPROVE Chemical Dataset
R. B. Husar[1], R. Poirot[2], K. Gebhart[3], B. A. Schichtel[3], W. Malm[3]; [1]Capita, Washington University, [2]Dec ap, Vermont Agency of Natural Resources, [3]National Park Service/CIRA3:20 – 3:50 Poster Introductions

4:00 - 4:20 Poster Introductions

Poster No. 85
Semi-Volatile Organic Compound Characterization of Biomass Combustion Emission for Prescribed Burns, Wildland Fuels, and Residential Wood Combustion
L. R. Rinehart, D. Campbell, H. Moosmüller, J. C. Chow, B. Zielinska
Division of Atmospheric Science, Desert Research Institute

Poster No. 92
U.S. EPA ORD's Receptor Model Development
S. I. Eberly; U.S. Environmental Protection Agency

Poster No. 93
US/Canada Transboundary Aerosol/Haze Observations during Spring 2004
R. Poirot[1], R. Husar[2], J. Brook[3], T. Dann[4], G. Kleiman[5], D. Kenski[6]; [1]VT Dept. of Environmental Conservation, Air Pollution Control Division, [2]Center for Air Pollution Impact and Trend Analysis, Washington University, [3]Processes Research Section, Environment Canada, [4]Air Toxics Section, Environment Canada, [5]Northeast States for Coordinated Air Use Management, [6]Lake Michigan Air Directors ConsortiumPoster No. 83
Directional Biases In Back-Trajectories Due To Model And Input Data
K. A. Gebhart[1], B. A. Schichtel[1], M. Barna[2]; [1]Air Resources Division, National Park Service, [2]Cooperative Institute for Research in the Atmosphere, Colorado State University

Poster No. 11
Analysis of Digital Images from Grand Canyon, Great Smoky Mountains, and Fort Collins, Colorado
J. V. Molenar[1], **D. S. Cismoski**[1], F. Schreiner[1], W. C. Malm[2]; [1]Air Resource Specialists, Inc., [2]National Park Service

Poster No. 95
Intercontinental Dust and Smoke over North America
R. B. Husar; Capita, Washington University

4:30-6:30 Poster Session

Friday, October 29, 2004

Session 10 Natural and Background Haze

Session Chairs:
Pat Brewer, *VISTAS*
Naresh Kumar, *EPRI*

8:00 AM Platform No. 9
The North American Background Aerosol and Global Aerosol Variation
G. M. Hidy[1], C. L. Blanchard[2]; [1]Envair/Aerochem, [2]Envair

8:20 AM Platform No. 58
Evaluating Natural Background Visibility and Reasonable Progress Goals in the VISTAS Region
I. Tombach[1], P. Brewer[2]; [1]Consultant, [2]VISTAS

8:40 AM Platform No. 68
Natural Sources of $PM_{2.5}$ and PM_{coarse} Observed in the SEARCH Network
E. S. Edgerton[1], B. E. Hartsell[2], J. J. Jansen[3], D. A. Hansen[4]; [1]HQ, ARA, Inc., [2]ARA, Inc., [3]Southern Company, [4]EPRI

9:00 AM Platform No. 87
Natural and Transboundary Pollution Influences on Aerosol Concentrations and Visibility Degradation in the United States
R. J. Park, D. J. Jacob, D. T. Fairlie, B. Alexander, R. M. Yantosca
Division of Engineering and Applied Sciences, Harvard University

9:20 – 9:40 AM Break

Session 11 Satellite and Digital Photography

Session Chairs:
Rudy B. Husar, Capita, *Washington University*
John V. Molenar, *Air Resource Specialists, Inc.*

10:00 AM Platform No. 10
Development of Techniques to Calibrate Digital Cameras and Derive Basic and Advanced Visibility Metrics from Digital Imagery
J. V. Molenar[1], D. S. Cismoski[1], F. Schreiner[1], W. C. Malm[2]; [1]Air Resource Specialists, Inc., [2]National Park Service

10:20 AM Platform No. 69
Innovative Monitoring of Visibility Using Digital Imaging Technology in an Arid Urban Environment
D. Raina[1], N. J. Parks[1,2], W. W. Li[1,2], R. W. Gray[2], S. L. Dattner[3]; [1]Civil & Environmental Engineering, University of Texas at El Paso, [2]Center for Environmental Resource Management, University of Texas at El Paso, [3]Texas Commission on Environmental Quality.

10:40 AM Platform No. 74
Digital camera system for determining regional haze. (or Techniques for air quality metric acquisition using digital imagery
F. J. Schreiner

11:00 AM Platform No. 86
Satellite Aerosol Detection in the NPOESS Era
L. Belsma; Meteorological Satellite Systems, The Aerospace Corp.

11:20 AM Platform No. 96
Co-Retrieval of Aerosol and Surface Reflectance using SeaWiFS data, 2000-2002
R. B. Husar, S. Raffuse, E. Robinson; Capita, Washington University

11:40 AM Platform No. 103
Resources for Haze Modeling and Observations at the National Climatic Data Center
Ken Knapp, Sharon LeDuc, Glenn Rutledge; NOAA/National Climatic Data Center (NCDC)

Conference Adjourns

Registration Information

Hotel Information

- The Holiday Inn is located at One Holiday Inn Drive
  Asheville, NC 28806
  Phone: 828-254-3211
  Fax: 828-254-1603
  Cutoff: September 23, 2004
  Room Rate: $104 S/D
- A block of rooms has been reserved for conference attendees.
- To ensure availability and rate, make your reservations by **September 23, 2004.** After that date, the reserved hotel room block is released for general sale.
- Make your reservations with the hotel directly by calling 828-254-3211.
- Single/double occupancy is $104, plus applicable taxes.
- Please be sure to mention the Air & Waste Management Conference on Regional Haze.

Conference-only Registration

- Complete the advance registration form on page 11.
- Mail it, with your check, credit card or purchase order information, to the Air & Waste Management Association, One Gateway Center, Third Floor, 420 Fort Duquesne Blvd. Pittsburgh, PA 1522, USA.
- Or, fax it to 412-232-3450. Faxed forms must include American Express, MasterCard, or Visa credit card information, or be accompanied by a company purchase order.
- Full registration for the conference includes admission to the sessions, the reception with exhibit on the evening of Tuesday October 26, refreshment breaks, lunches, and a copy of the conference proceedings.
- Daily registration for the conference includes admission to the technical sessions, as well as any social activities and food functions on the day specified.

Exhibit Information

Exhibitors will spend two days interfacing with attendees interested in learning more about sources, chemical and physical characteristics of aerosols, measurement methodologies, predictive modeling techniques, and air quality management implications. This is your chance to meet with qualified buyers face-to-face.

For more information, please contact Corrine Standen, Exhibit Sales Coordinator, at 412-232-3444 ext. 3136.

Tour Information

Discounted Advance-registration Rate

- To qualify for the discounted advance-registration rate, registration forms (including payment) must be received by September 23, 004.
- After this date, registration is available only at the higher on-site fee.
- For additional information regarding registration, please phone the Meetings Registrar at 412-232-344, ext. 3127, or fax your request to 412-232-3450.

Member Rate

- To qualify for the member rate, you must be an “international” member of the Air & Waste Management Association.
- If you are a Section/Chapter-only member, you do not qualify for the member rate.
- If you register for the conference at the full nonmember rate, you are entitled to a one-year membership to the Air & Waste Management Association at no additional charge.

Refund Policy

- Written refund requests must be received by April 5, 004.
- Refunds will be issued less a $75 cancellation fee. Cancellation fee will apply regardless of payment method.
- After April 2, 00, only written credit requests will be accepted.
- Credit requests must be received by April 2, 004.
- The credit, less the cancellation fee, will be valid for a period of one year for any A&WMA product or event.
- This refund policy is applicable for all occurrences, including weather-related events and other natural disasters.

Continuing Education Credit Opportunities for Conference Participation

Conference attendees may be eligible for continuing education credit (PDHs, CLEs, etc.) based upon their participation in conference events. A&WMA has been granted exempt status approval to be a Florida Board of Professional Engineers Continuing Education Provider (Exempt Provider # EXP 00079), and is an Accredited Provider of CLE in Pennsylvania (Provider # 947). Additionally, A&WMA can issue certificates to those interested in documenting continuing education and professional development hours. Please visit the on-site registration area to take advantage of these opportunities.

Symposium on Air Quality Measurement Methods and Technology 2004

Advance Registration Form

(Advance Registration Deadline: September 23, 2004)

Last Name _____ First Name _____ MI _____

Name/nickname for badge _____

Title _____ Affiliation/Company _____

Address _____

City _____ State/Province _____ Postal code _____

Telephone ( ) _____ Fax ( ) _____ E-mail _____

o Please notify membership of address change

o I am a session chair o I am a speaker

CONFERENCE REGISTRATION FEE

Conference dates: October 26-29, 2004. Full conference registration includes technical sessions, luncheons, reception with exhibits, refreshment breaks, and a copy of the conference proceedings.

	Advance	After September 23, 2004
Full-member	$430	$530
Full-nonmember	$580	$680
Daily-member*	$250	$250
Daily-nonmember*	$350	$350
Student Member	$100	$100
Student Nonmember	$130	$130

*Daily please specify day of attendance:
o Monday o Tuesday

o **Yes!** I have paid a full-nonmember registration fee and would like to receive a one-year membership to the Air & Waste Management Association at no additional charge.

Course Date: October 25, 2004
Course registration includes refreshment breaks and a copy of the course manual. Lunch is on your own. Courses are scheduled from 8:00 a.m. to 12:00 p.m., and from 1:00 p.m. to 5:00 p.m. Registration begins at 7:30 a.m. Anyone who registers for the conference at the full Nonmember rate and takes advantage of the membership offer is eligible to register for the professional development courses at the Member rate.

	Advance	After September 23
Member	$275	$375
Nonmember	$425	$525
Student-Member	$200	$300
Student-Nonmember	$230	$330

TOTAL PAYMENT

Conference Fee $_____ U.S.
Course Fee (Check all that apply)
o AIR-255 o AIR-257
o AIR-258 o AIR-259 $_____ U.S.
Tour $ 30 U.S.

TOTAL **$**_____ U.S.

Make your check or purchase order payable to the Air & Waste Management Association and mail it to
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Special Offer for Nonmember
If you are not an international Air & Waste Management Association member, and you have paid a full-nonmember conference registration fee, or a course nonmember registration fee, you are eligible to receive a one-year A&WMA membership at no additional charge. Daily registations are not eligible for this special membership offer.

Name of A&WMA member who referred me:

412.232.3450 to submit this form by fax

The Association attempts to promptly notify all advance registrants if the conference is canceled. If the conference is canceled, the Association is not liable for any expenses by the registrant other than the refund of the registration fee(s) paid by the registrant.