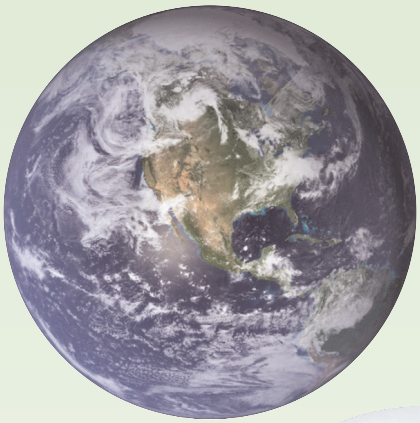
Environmental Monitoring, Evaluation, and Protection in New York: Linking Science and Policy

November 15-16, 2007

Albany Marriott • 189 Wolf Road • Albany, NY



This conference brings together scientists and policy makers to share information on environmental research in New York State and its implications for making and evaluating policy. The New York Energy $mart℠ Environmental program supports policy-relevant research in order to enhance understanding of energy-related environmental issues. The program will highlight the latest research on air quality and related health issues, ecosystem responses to atmospheric pollutants, climate change issues, and environmental issues related to renewable and emerging technologies.

New York Energy $mart℠

EMEP

En ironmental Mo ito ing, Evalua ion, & Protec ion

NYSERDA

New York State Energy Research and Development Author

New York Energy $mart℠

Public Service Commission — NYSERDA

Environmental Monitoring, Evaluation, and Protection in New York: Linking Science and Policy

November 15-16, 2007

Albany Marriott • 189 Wolf Road • Albany, NY

Poster Session

The conference will include a poster session highlighting current EMEP projects, as well as other related research projects. Conference participants are encouraged to attend the reception and poster session on the evening of November 15th, and visit the poster area during the lunch and break periods.

Conference Proceedings

NYSERDA will distribute proceedings from this conference, which will include presentation abstracts. Proceedings and speaker presentations will be posted on the EMEP website.

For More Information

www.nyserda.org/programs/environment/emep/

Photo by Greg McGee

Water Sampling in the Tug Hill Region

Photo by Adirondack Lakes Survey Corp.

Monitoring Adirondack Water Quality

NYSERDA'S EMEP PROGRAM: SUPPORTING THE SCIENTIFIC FOUNDATION FOR SOUND ENERGY AND ENVIRONMENTAL POLICIES

It is my pleasure to invite you to attend NYSERDA's fifth biennial Environmental Monitoring, Evaluation and Protection (EMEP) conference. This conference brings together scientists and policy makers to share information on energy-related environmental research in New York State and to discuss implications for policy. Many of the researchers presenting at this conference have been supported by the **New York Energy Smart**[SM] program, as part of our environmental research initiatives.

NYSERDA's EMEP program provides policy-relevant research aimed at two primary goals:

- Enhancing the understanding of energy-related pollution and its impact on the environment and human health; and
- Characterizing sources of energy-related pollution and defining opportunities for environmental improvements.

We know that energy production and use pose significant burdens on our environment. Yet we know that energy is absolutely vital to the overall well being of our society. This conference provides an opportunity to help ensure that our energy and environmental policies are informed and supported by the latest scientific findings.

I hope you can join us.

Sincerely,

Paul D. Tonko
President and CEO
New York State Energy Research and Development Authority

CONFERENCE SPONSORS

NYSERDA New York State Energy Research and Development Authority

Department of Environmental Conservation New York State

New York State Department of Public Service Commission

United States Environmental Protection Agency

Environmental Defense finding the ways that work

Environmental Energy Alliance of New York
1125 Broadway . Albany, NY 12204

NESCAUM Northeast States for Coordinated Air Use Management

DOH

EPRI Electric Power Research Institute

USGS science for a changing world

Environmental Monitoring, Evaluation, and Protection in New York: Linking Science and Policy

November 15-16, 2007

Albany Marriott • 189 Wolf Road • Albany, NY

Thursday, November 15, 2007

8:00 a.m. **Registration and Continental Breakfast**

8:30 a.m. **Welcome and Opening Remarks**

- Paul Tonko, President and CEO, New York State Energy Research and Development Authority
- Pete Grannis, Commissioner, New York State Department of Environmental Conservation

9:00 a.m. **Climate Change Science and Policy**
Chair: Peter Iwanowicz, Director, Office of Climate Change, New York State Department of Environmental Conservation

- **Intergovernmental Panel on Climate Change: State of the Science**
  David Rind, Senior Scientist, NASA Goddard Institute for Space Studies
- **Climate Change Issues in the Northeast**
  Peter Frumhoff, Senior Scientist and Director, Union of Concerned Scientists

10:15 a.m. **Break**

10:30 a.m. **Climate Change Science and Policy (continued)**

- New York/Regional Policy Initiatives
  Regional Greenhouse Gas Initiative: RGGI Update and Auction Plans
  Peter Iwanowicz, Director, Office of Climate Change, New York State Department of Environmental Conservation, and William Shobe, Director of Business and Economic Research, University of Virginia
- Industry Perspective: Managing Climate Change Risk
  TBD
- Local Climate Change Initiatives in New York State
  Kim Lundgren, Director, ICLEI - Local Governments for Sustainability USA
- Sequestration Opportunities in New York State
  Taury Smith, Research Scientist IV, Reservoir Characterization Group, Center for Stratigraphy and Paleontology, New York State Museum

12:00 p.m. - 2:00 p.m. **Lunch, Poster Session and Keynote Address**
Peter Lehner, Executive Director, Natural Resources Defense Council

THURSDAY, NOVEMBER 15, 2007 (continued)

2:00 p.m. **Environmental Issues Related to Alternative Energy and Emerging Technologies (to be continued on Day 2)**
Chair: Jeff Peterson, Program Manager, NYSERDA
Update and Lessons Learned From Alternative Energy and Emerging Technology Projects in New York State

- Roosevelt Island Tidal Energy Environmental Assessment
  Ron Smith, Chief Executive Officer, Verdant Power New York
- Wildlife Monitoring Study at Maple Ridge Wind Farm
  David Mizrahi, Vice President for Research, New Jersey Audubon Society
- Comparative Analysis of Generation Impacts to Wildlife
  Jim Newman, Co-Director, Environmental BioIndicators Foundation and Vice President/Principal Scientist, Pandion Systems
- Environmental Issues Related to New Coal Technologies
  Michael Slanders, Office of Clean Energy Systems, U.S. Department of Energy

4:00 p.m. - 6:00 p.m. **Reception and Poster Session**

CONFERENCE SPONSORS

New York State Energy Research and Development Authority

New York State Department of Public Service

New York State Department of Environmental Conservation

New York State Department of Health

U.S. Environmental Protection Agency

U.S. Geological Survey

Electric Power Research Institute

Environmental Defense

Environmental Energy Alliance of New York

Northeast States for Coordinated Air Use Management

Verdant Power installs turbine in East River

Friday, November 16, 2007

8:00 a.m. **Continental Breakfast**

8:30 a.m.

Session A

Air Quality and Related Health Research

This session will focus on key science/policy questions associated with carbonaceous PM2.5: Is carbonaceous PM2.5 a significant contributor to PM2.5? Where does it come from? What are its health effects? What are options for control?

Session Co-Chairs: Praveen Amar, Director, Science and Policy, Northeast States for Coordinated Air Use Management (NESCAUM) and Ellen Burkhard, Project Manager, NYSERDA

Welcome/Introduction: Ellen Burkhard, NYSERDA

Carbonaceous Aerosols in New York State and their Contributions to PM 2.5 - Ken Demerjian, Director, Atmospheric Sciences Research Center, University at Albany

Seasonal Patterns of Organic Molecular Markers in Ambient Aerosols Around New York City and Clues to their Sources - Monica Mazurek, Assistant Professor, Rutgers University

Assessment of Carbonaceous PM 2.5 for New York State and the Region - John Graham, Project Manager, NESCAUM

Carbonaceous Matter in Air Quality Model Applications - Gopal Sistla, Director, Bureau of Air Research, New York State Department of Environmental Conservation

Session B

Ecosystem Response to the Deposition of Sulfur and Nitrogen

This session will focus on key science/policy questions associated with trends in acid deposition and its effects: Are lakes, streams, and ecosystems in New York recovering from adverse effects of acidification?

Session Co-Chairs: Stuart Findlay, Senior Scientist, Institute of Ecosystem Studies and Mark Watson, Senior Project Manager, NYSERDA

Welcome/Introduction: Mark Watson, NYSERDA

Trends in Deposition - Doug Burns, Director, National Acid Deposition Assessment Program

Long Term Trends in Lakes - Karen Roy, Research Scientist, New York State Department of Environmental Conservation

Trends in Streams and Soils - Greg Lawrence, Research Scientist, U.S. Geological Survey

Biological and Forest Health Trends - Myron Mitchell, Director, Council on Hydrologic Systems Science and Distinguished Professor, State University of New York College of Environmental Science and Forestry

Critical Deposition Loads: Using Trend Data, and Informing Environmental Protection Strategies - Tim Sullivan, Biological Scientist/Environmental Chemist, E&S Environmental Chemistry

Wrap-up: Stuart Findlay, Institute of Ecosystem Studies

10:15 a.m. **Break**

10:30 a.m.

Session A, continued

Semivolatile Emissions and Photochemical Aging: Implications for Human Exposure and Control Strategies - Allen Robinson, Assistant Professor, Carnegie Mellon University

Health Effects and Exposure Risk of Wood Smoke - Philip Johnson, Yale Graduate School, Independent Environmental Health Consultant

Health Effects of Diesel PM - Pat Kinney, Associate Professor, Columbia University

Control Options/Clean Diesel Initiative - Tim Hansen, Southern Research Institute

Summary of Presentations and Discussion, Praveen Amar, NESCAUM

Photo by Ellen Burkhard

Air Monitoring at Pinnacle State Park

Session C

Science and Policy Issues Related to Mercury in the Environment

This session will focus on the latest findings on mercury in the environment, and the policy implications for New York State, the region, and the nation.

Session Co-Chairs - David Schmeltz, USEPA Clean Air Markets Division and Mark Watson, Senior Project Manager, NYSERDA

Welcome/Introduction - Mark Watson, NYSERDA

Clean Air Mercury Rule Update - Sam Napolitano, Director, Clean Air Markets Division, U.S. Environmental Protection Agency

New York State Mercury Reduction Initiatives David Shaw, Director, Division of Air Resources, New York State Department of Environmental Conservation

New York/Regional Mercury Monitoring - Activities and Needs - David Gay, National Atmospheric Deposition Program Assistant Coordinator, Mercury Deposition Network

Mercury "Hotspots": Implications for New York and the Region - Charles Driscoll, Professor of Environmental Systems Engineering and Director of the Center for Environmental Systems Engineering, Syracuse University

Mercury in Food Webs - David Evers, Executive Director, BioDiversity Research Institute

Wrap-up: David Schmeltz, USEPA Clean Air Markets Division

12:30 p.m. **Lunch**

1:45 p.m. **Environmental Issues Related to Alternative Energy and Emerging Technologies (continued from Day 1)**

Chair: Neil Murphy, President, State University of New York College of Environmental Science and Forestry

Update on Environmental Issues Related to Biofuels

- European Perspective and Case Study on Small-Scale Biomass - Thomas Nussbaumer, Founder and Owner, Verenum (Switzerland)
- Biopower - Technology and Policy Challenges - Ed Gray, President, Antaries Group
- Ethanol/Biodiesel - Challenges and Opportunities - Carl Mas, Associate Project Manager, NYSERDA
- Biogas: Environmental Performance of Biogas Systems - TBD

3:30 p.m. Closing Comments: Elizabeth Thorndike, Founder and Director, Center for Environmental Information and Member of NYSERDA Board

EMEP POSTER PRESENTATIONS (Preliminary List)

Ecosystem Response to Sulfur, Nitrogen and Mercury	
A Slowing of Stream Recovery Trends in the Catskill Mountain Region	U.S. Geological Survey
Assessment of Chemistry and Benthic Communities in Streams of the Oswegatchie-Black River Basins	U.S. Geological Survey
Assessment of Extent to Which Intensively Studied Lakes are Representative of the Adirondack Mountain Region	E&S Environmental Chemistry
Assessment of Nitrogen and Acidic Deposition Impacts to Terrestrial and Aquatic Ecosystems of Tug Hill	State University of New York College of Environmental Science and Forestry
Atmospheric Deposition and Stream Water Monitoring in Biscuit Brook Watershed, Catskill Mountains, N.Y.	U.S. Geological Survey
Biogeochemistry and Hydrology of an Adirondack Watershed: A Comparative Approach	State University of New York College of Environmental Science and Forestry
Comparison of Cloud and Rain Chemistry Observations at Whiteface Mountain	Adirondack Lakes Survey Corp/NYS Department of Environmental Conservation
Dynamics of Hg in Forest Wetland Ecosystems in the Adirondack Region of NY, USA	Syracuse University
Effects of Whole-Watershed Calcium Addition on the Soil Chemistry at a Northern Hardwood Forest	Syracuse University
Influence of Model and Input Accuracy on the Prediction Quality for Acidic Deposition Scenarios	Syracuse University
Long-Term Monitoring and Assessment of Mercury Based on Integrated Sampling Using the Common Loon, Prey Fish, Water, and Sediment	Adirondack Loon Conservation Program
Long-Term Monitoring Program for Evaluating Changes in Water Quality in Adirondack Lakes	Adirondack Lakes Survey Corporation
Mercury Accumulation in Seston Across a Range of Lakes in the Adirondack Mountains, New York	Syracuse University
Mercury in Bats: A Little-Known Wildlife Endpoint	BioDiversity Research Institute
Mercury in Salamanders: Effects of Watershed Geospatial Heterogeneity and Disturbance	BioDiversity Research Institute
Mercury in Songbirds: Assessing Exposure and Effects in Terrestrial Ecosystems	BioDiversity Research Institute
Mineral Sources of Calcium and Phosphorus in Soils of the Northeastern USA	State University of New York College of Environmental Science and Forestry
NYSDEC's Program to Monitor Mercury Wet Deposition and Ambient Hg(0), RGM and Hg(p) in Two Urban Areas in New York	New York State Department of Environmental Conservation
Real-Time Ecosystem Analyses in the Adirondack Mountains: An Evaluation of Watershed Response to Changes in Atmospheric Deposition and Climate Change	State University of New York College of Environmental Science and Forestry
Regional Forest Health and Stream and Soil Chemistry Using a Multi-Scale Approach and New Methods of Remote Sensing Interpretation, Catskill Mountains, NY	U.S. Geological Survey/ U.S. Forest Service
Response of Yellow Perch (*Perca flavescens*) in Adirondack Lakes to Changes in Atmospheric Deposition of Mercury and Strong Acids	Syracuse University
Retention, Transformation, and Potential Long-Term Export of Mercury from Wetlands to Surface Waters in the Adirondack Region, New York, USA	Syracuse University
Strategic Monitoring of Mercury in New York State Fish	New York State Department of Environmental Conservation
Unexpected Responses of an Oak Forest to Nitrogen Amendment	Institute of Ecosystem Studies

EMEP POSTER PRESENTATIONS (Preliminary List)

Air Quality and Health	
A Case Study of Urban Particle Acidity and Its Influence on Secondary Organic Aerosol	University at Albany, Atmospheric Sciences Research Center
A Comprehensive Evaluation of the NYS Clean Air School Bus Program	Cornell University
A High-Resolution Time-of-Flight Aerosol Mass Spectrometer Study on Size Resolved Aerosol Composition at the Peak of Whistler Mountain during INTEX-B	University at Albany, Atmospheric Sciences Research Center
A Method for Extracting Additional Information on the Organic, Elemental, and Pyrolyzed Carbon from Real Time Measurements with the Sunset Carbon Aerosol Analyzer	University at Albany, Atmospheric Sciences Research Center
A Quantitative Protocol for Highly Polar Organic Compounds in PM2.5 from the New York City Airshed	Rutgers University
Air Quality and Exposure Impacts of Clean Diesel Technologies/Strategies in New York--A Framework for Emissions Estimation and Air Quality	Cornell University
Characteristics of Aerosol Growth Events at Urban and Rural Locations in New York	University at Albany, Atmospheric Sciences Research Center
Characterization of Nitrogen Containing Organic Species in Fog/ Cloud Waters Using a High-Resolution Time-of-Flight Aerosol Mass Spectrometer	University at Albany, Atmospheric Sciences Research Center
Characterization of Oxygenated Organic Compounds Using a High-Resolution Time-of-Flight Aerosol Mass Spectrometer	University at Albany, Atmospheric Sciences Research Center
Characterization of Ultrafine Particle Emissions from a Gasoline Vehicle	University at Albany
Component Analysis of Organic Aerosols in Urban, Rural, and Remote Atmospheres Based on Aerosol Mass Spectrometry	University at Albany, Atmospheric Sciences Research Center
Continuous Measurements of Nitric Acid and Ammonia at a Rural New York Site	University at Albany, Atmospheric Sciences Research Center
Fast Time Response Measurements of Gaseous Nitrous Acid (HONO) Using a Tunable Diode Laser Absorption Spectrometer	University at Albany, Atmospheric Sciences Research Center
Generation and Characterization of Secondary Organic Aerosols Using a High-Resolution Time-of-Flight Aerosol Mass Spectrometer	University at Albany, Atmospheric Sciences Research Center
Highlights of PM2.5 Continuous Speciation Measurements in New York	University at Albany, Atmospheric Sciences Research Center
HONO Emissions from Vehicle Exhaust as a Function of Vehicle Operating Conditions	University at Albany, Atmospheric Sciences Research Center
Interference of Organic Signals in Highly-time Resolved Nitrate Measurements by Aerosol Mass Spectrometer	University at Albany, Atmospheric Sciences Research Center

EMEP POSTER PRESENTATIONS (Preliminary List)

Long-Term Trends and Impacts of Cloud Amount on Sulfate Concentrations over the United States	University at Albany, Atmospheric Sciences Research Center
Miniature Instruments for Particle Sizing and Compositional Analysis	Clarkson University
Ozone, Trace Gas, Particulate Matter, and Key Indicator Measurements at ASRC's Rural Field Site in Addison, NY: 1995-2005	University at Albany, Atmospheric Sciences Research Center
Modeling Formation and Evolution of Size-Resolved Soot Particles in Diesel Engine	University at Albany
Monitoring the Impact of Title IV (EPA Acid Rain Program) at Whiteface Mountain: An Exercise in "Accountability" in Air Quality Management	University at Albany, Atmospheric Sciences Research Center
Numerical Modeling of Regional Scale Ultrafine Particle Formation in the Northeast United States	University at Albany, Atmospheric Sciences Research Center
Organic Speciation of Vehicle Exhaust Particulates: Gasoline and Diesel Light-Duty Vehicles	Rutgers University
Photoelectric Charging Characteristics of Particles from Mobile Emissions: Applications to Source-Selective Measurements	Clarkson University
Predicting Near Real-Time PM2.5 FRM Concentrations from Continuous Mass and Species Measurements in New York City	New York State Department of Environmental Conservation
Relationship Between Aerosol Scattering and Fine Particulates at Whiteface Mountain in Upstate New York	University at Albany, Atmospheric Sciences Research Center
Rethinking the Role of Binary H2SO4-H2O Homogenous Nucleation in Nanoparticle Formation in Vehicular Exhaust	University at Albany
Seasonal Abundance of Wood Smoke Markers and Cholesterol in Fine Particles from the New York Metropolitan Area	Rutgers University
Traffic Impacts on Air Quality: The Missing Link in Pollution Exposure?	University at Albany, Atmospheric Sciences Research Center
Ultrafine Particles and Cardiac Responses: Evaluation in a Cardiac Rehabilitation Center	University of Rochester Medical Center and Clarkson University
Alternative Energy and Emerging Technologies	
Environmentally Friendly Bio-Energy with Biochar Return to Soil	Cornell University
Roosevelt Island Tidal Energy Project: Environmental Impact Studies	Verdant Power
Synthesis of Electricity Generation Impacts to Wildlife	Environmental BioIndicators Foundation
Climate Change	
Permanent CO2 Sequestration in Ocean Sediments: Flow-Through Reactor Studies	Lamont-Doherty Earth Observatory
Regional Assessment of Gas Potential in New York State Shale	New York State Museum
Environmental Technology: Power Generation	
Using Milling Technology and CFD Modeling to Improve Trona Utilization for SO_3 Control at AES Somerset	O'Brien & Gere
Using LIBS Measurement for Coal Quality Monitoring and Upgraded Power Plant Control	Lehigh University

Conference Location

The conference will be held at the Albany Marriott, 189 Wolf Road in Albany, New York. A block of rooms has been reserved at a special rate of $103.00 per night, plus tax. To receive the NYSERDA conference rate, reservations must be made no later than October 24, 2007. Call the Albany Marriott at (800) 443-8952 for reservations.

The Albany Marriott is only five minutes from the Albany International Airport and offers a free shuttle to and from the airport. For further information and directions, visit the Marriott website at: **www.marriott.com**

Other nearby hotels include:

- Holiday Inn (518) 458-7250
- The Desmond (518) 869-8100
- Red Roof Inn (518) 459-1971
- Best Western (518) 458-1000
- Courtyard by Marriott (518) 482-8800
- Wingate Hotel (518) 869-9100

Program Contacts

Technical or program issues
Mark Watson: voice - (518) 862-1090, ext. 3314;
fax - (518) 862-1091; mw1@nyserda.org

Logistics and registration
Amanda Stevens: voice - (518) 862-1090, ext. 3325;
fax - (518) 862-1091; emep@nyserda.org

Poster Session
Zywia Wojnar: voice - (914) 422-4450;
fax - (914) 422-4180; zwojnar@law.pace.edu

Registration and Conference Fee

Registration is available through the EMEP website at: www.nyserda.org/programs/environment/ EMEP/ conferences.asp. The registration form and conference fee of $95.00 must be submitted by **November 9, 2007**. Student rate: $40.00.

If paying by check, please make payable to **NYSERDA** and send it, with the registration form, to:

Amanda Stevens
NYSERDA – EMEP
17 Columbia Circle
Albany, NY 12203-6399

❑ Yes, I will be attending the reception on Thursday, November 15, 2007, at 4:30 p.m.

❑ I have special meal requirements (please list): _____

Credit Card Type (VISA OR MASTERCARD): _____

Name on Credit Card: _____

Address of Cardholder if different from below: _____

_____

Credit Card Number: __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

Expiration Date: __ __/__ __

Card ID Number: __ __ __

(Your Card ID Number is a 3-digit number located after your account number in the signature strip on the back of your card.)

Signature: _____

Amount $: _____

Name		Title
Organization		
Address		
Address		
City	State	Zip + 4
Phone No. ( )		Fax No. ( )
E-mail		Website Address