

AGENDA

Thirtieth Annual George Mason University Conference on Atmospheric Transport and Dispersion Modeling

June 10-11, 2026

Conference Chairs:

Joseph Chang, Fairfax, VA

Zafer Boybeyi, George Mason University, Fairfax, VA

**Enterprise Hall, Room 178
George Mason University, Fairfax, VA**

DAY 1 (June 10) Enterprise Hall, Room 178

Session 1-Machine Learning; Early Detection Capability of Global Networks

Chair: Joseph Chang, Fairfax, Virginia

9:55 AM 10:00 AM Welcoming Remarks

- 1.1 10:00 AM 10:20 AM **High-Resolution Data-driven Atmospheric Characterization for Improved Inputs into Atmospheric Transport and Dispersion Models**
Shaun T. Howe, Nichoals Elmer, Zackary Siemon, Jonathan Moul
Areté, Falls Church, Virginia
- 1.2 10:20 AM 10:40 AM **Imitating HYSPLIT Dispersion with a Toy Deep-learning Neural Network**
Sonny Zinn, Mark Cohen
NOAA Air Resources Laboratory, College Park, Maryland
- 1.3 10:40 AM 11:00 AM **Conditional Diffusion Modeling Versus the Analog Ensemble for Empirical-statistical Downscaling of Near-surface Winds Over Complex Terrain**
Chris Rozoff, Stefano Alessandrini
National Center for Atmospheric Research, Boulder, Colorado
- 1.4 11:00 AM 11:20 AM **Evaluating a Global Sentinel Sounding Network for Stratospheric Aerosol Detection Using HYSPLIT**
Sergio Ibarra-Espinosa¹, Alice Crawford²
¹ *Cooperative Institute for Satellite Earth System Studies, Earth System Science Interdisciplinary Center, University of Maryland, College Park, Maryland;* ² *NOAA Air Resources Laboratory, College Park, Maryland*

11:20 AM 12:50 PM **LUNCH BREAK**

Session 2-Nuclear Studies

Chair: Matthew Nelson, Los Alamos National Laboratory, Los Alamos, New Mexico

- 2.1 12:50 PM 1:10 PM **Modeling Multi-spectral Satellite Imaging of Nuclear Clouds**
Joshua Szekely, Jennifer Bewley, Adam Ehrenberg, Noah Plymale, Matthew Walker
Institute for Defense Analyses, Alexandria, Virginia
- 2.2 1:10 PM 1:30 PM **Near-field Atmospheric Dispersion of a Gas Emitted from a Hot Source: A Comparison between Analytical Modelling and in Situ Measurements**
Anthony Mendez, Sylvain Dupont, Philippe Laguionie

Autorité de Sûreté Nucléaire et de Radioprotection (ASNR), 50130 Cherbourg-en-Cotentin, France

2.3 1:30 PM 1:50 PM **Independent Open-source Analysis of U.S. Nuclear Weapons Effects**

Bemnet Alemayehu

Natural Resources Defense Council, Washington, District of Columbia

2.4 1:50 PM 2:10 PM **Review of Operational Fallout Models**

Steven R. Hanna

Hanna Consultants, Kennebunkport, Maine

2.5 2:10 PM 2:30 PM **Fallout Modeling of Hypothetical Nuclear Attacks on Russian Missile Silo Fields Using HYSPLIT**

Joseph Chang

Independent Consultant, Fairfax, Virginia

2:30 PM 3:00 PM **COFFEE BREAK**

Session 3-Model Development

Chair: Steven R. Hanna, Hanna Consultants, Kennebunkport, Maine

3.1 3:00 PM 3:20 PM **Joint Aerosol Dispersion Experiments (JADE): A Sensor-driven Approach for Aerosol Transport and Dispersion Modeling in Mechanically Ventilated Buildings**

Michael D. Sohn¹, Marion L Russell², Richard Fry²

¹ Lawrence Berkeley National Laboratory, Berkeley, California; ² Defense Threat Reduction Agency, Ft. Belvoir, VA

3.2 3:20 PM 3:40 PM **Calculated Wind Fields in HPAC Using MC-SCIPUFF and the SCIPUFF Urban Flow Solver**

Sean Miner

Defense Threat Reduction Agency, Albuquerque, New Mexico

3.3 3:40 PM 4:00 PM **Surrogate Modelling of Chemical Dispersion for Fast Emergency Response and Planning**

En Rui Liang

Threat Simulation and Mitigation, CBRNE, Home Team Science & Technology Agency, Singapore

3.4 4:00 PM 4:20 PM **Using a Quantum/Classical Hybrid Model to Simulate Turbulence Parameters at the Savannah River Site**

Joseph Wermter, Christopher Sobecki, Larry Deschaine

Savannah River National Laboratory, Aiken, South Carolina

3.5 4:20 PM 4:40 PM **Investigation of Wildfire Smoke Plume Rise Estimation Using a Standalone HYSPLIT Utility**

Tianfeng Chai, Hyun Cheol Kim, Charles H. Fite, Fantine Ngan, Mark Cohen

NOAA Air Resources Laboratory, College Park, Maryland

DAY 1 ADJOURNS

7:00 PM

NO-HOST SOCIAL DINNER

Our Mom Eugenia, 2985 District Ave, Fairfax, Virginia

DAY 2 (June 11) Enterprise Hall, Room 178

Session 4-Decision Support; Experiments

Chair: Alice Crawford, NOAA Air Resources Laboratory, College Park, Maryland

4.1 10:00 AM 10:20 AM **Modeling Unmanned Systems in SBPM's Exterior Model**

Ian Squires, Alyssa Cunningham

- Naval Surface Warfare Center, Indian Head Division, Indian Head, MD*
- 4.2 10:20 AM 10:40 AM **From Model to Mission: Lessons Learned Integrating Atmospheric Dispersion Modelling into Operational CBRN Warning and Reporting Systems**
Robert Gordon
Riskaware, United Kingdom
- 4.3 10:40 AM 11:00 AM **Evidence of Diurnal Winds in Highly Complex Terrain: the EMRTC 2019 Field Experiment**
Patrick J. Stofanak, Zachary D. Ruble, Matthew A. Nelson, Sara Brambilla
Los Alamos National Laboratory, Los Alamos, New Mexico
- 4.4 11:00 AM 11:20 AM **Effects of Complex Terrain on Neutral-Balloon Lagrangian Tracers Trajectories**
Rebecca Beal, Matthew Nelson, Sara Brambilla
Los Alamos National Laboratory, Los Alamos, New Mexico
- 4.5 11:20 AM 11:40 AM **TBD**
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- 11:40 AM 1:10 PM **LUNCH BREAK**
- Session 5-Building Effects; Concentration Estimation and Fluctuations; Plume Sampling**
Chair: Zafer Boybeyi, George Mason University, Fairfax, Virginia
- 5.1 1:10 PM 1:30 PM **Investigating the Wake of an Isolated Building Under Idealized Real-world Conditions**
Matthew Nelson, Becca Beal, Rod Linn
Los Alamos National Laboratory, Los Alamos, New Mexico
- 5.2 1:30 PM 1:50 PM **Water Channel Measurements of Contaminant Dispersion with Indoor-outdoor Exchange: A Comparison to Field Data**
Christopher Tamer¹, Cody Chin¹, Tyler Lynch¹, Simone Willson², Tuhin Bandopadhyay², Marc Samland¹, Laura Villafane², Andrew Banko¹
¹ *United States Military Academy, West Point, NY;* ² *University of Illinois at Urbana-Champaign, Urbana, IL*
- 5.3 1:50 PM 2:10 PM **Statistical Approaches to Concentration Estimation in Lagrangian Particle Models**
Alice Crawford¹, Fantine Ngan^{1,2}
¹ *NOAA Air Resources Laboratory, College Park, Maryland;* ² *Cooperative Institute for Satellite Earth System Studies, University of Maryland, College Park, Maryland*
- 5.4 2:10 PM 2:30 PM **Application of Concentration and Dosage Variance in CBRN Consequence Estimation**
Scott L. Weinrich, Matthew L. Mendonca, Alison E. Lawrence, Jay S. Shah, Jason Zhang
Institute for Defense Analyses, Alexandria, Virginia
- 5.5 2:30 PM 2:50 PM **A Tool to Identify Plume Sampling Locations**
Andrew Thomas, Brian Viner, Joseph Wermter
Savannah River National Laboratory, Aiken, South Carolina
- 5.6 2:50 PM 3:10 PM **Estimating Acute Inhalation Risks from Lithium Ion Battery Energy Storage System Fires Using SCICHEM**
Matthew James Alvarado, Amy McVey
JANUS Research Group, Lexington, Massachusetts
- 3:10 PM 4:10 PM **COFFEE BREAK**
- 4:10 PM **DAY 2 ADJOURNS**