

# AGENDA

## Twentieth Annual George Mason University Conference on Atmospheric Transport and Dispersion Modeling

June 14-16, 2016

Conference Chairs:

Joseph Chang, Homeland Security Studies and Analysis Institute, Falls Church, VA  
Zafer Boybeyi, George Mason University, Fairfax, VA

Enterprise Hall, Room 80  
George Mason University, Fairfax, VA

Last updated: 6/10/2016

### DAY 1 (June 14)

#### Session 1-Urban Dispersion International Evaluation Exercise (UDINEE)

Chair: Joe Chang, Homeland Security Studies and Analysis Institute

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|----------|----------|--|
| 8:00 AM  | 8:10 AM  | Welcoming remarks  |
| 8:10 AM  | 8:30 AM  | <b>GMU Workshop/Conference History</b><br>Steven Hanna, David Bacon, Zafer Boybeyi, and Joseph Chang<br><i>Hanna Consultants, Leidos, GMU, HSSAI</i>   |
| 8:30 AM  | 8:50 AM  | <b>UDINEE Project: The First Multi-model Urban Dispersion Model Comparison for Radiological Dispersion Device Releases</b><br>Miguel A. Hernández-Ceballos, Stefano Galmarini, Steven Hanna, Thomas Mazzola, Joseph Chang, Roberto Bianconi, Roberto Bellasio<br><i>European Commission, Joint Research Centre, Ispra, Italy</i> |
| 8:50 AM  | 9:10 AM  | <b>UDINEE Project: First Results Comparing Observed and Modeled Time Series and Spatial Model Forecasting Results</b><br>Miguel A. Hernández-Ceballos, Stefano Galmarini, Steven Hanna, Thomas Mazzola, Joseph Chang, Roberto Bianconi, Roberto Bellasio<br><i>European Commission, Joint Research Centre, Ispra, Italy</i>      |
| 9:10 AM  | 9:30 AM  | <b>Consideration of Possible Future Developments to the Urban Scheme in the NAME Model</b><br>Lois Huggett, David Thomson, and Helen Webster<br><i>Met Office, Exeter, United Kingdom</i>  |
| 9:30 AM  | 9:50 AM  | <b>Canadian Urban Flow and Dispersion Modeling System (CUDM): Prototype</b><br>Najat Benbouda, Nils Ek, and Pierre Bourgouin<br><i>Environment Canada, Dorval, Canada</i>  |
| 9:50 AM  | 10:10 AM | <b>UDINEE Project: Description of ESTE Approach and Results</b><br>Ludovit Liptak, Peter Carny, and Eva Fojcikova<br><i>ABmerit, Slovakia</i>  |
| 10:10 AM | 10:40 AM | <b>COFFEE BREAK</b>  |

#### Session 2-Visualization Techniques and Indoor/Outdoor Transport

Chair: Julie Pullen, Steven Institute of Technology

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|----------|----------|---|
| 10:40 AM | 11:00 AM | <b>HPAC Analyst - Results Analysis and Visualization for HPAC</b><br>Steven Schneider, Ian Sykes, and Doug Henn<br><i>Sage Management</i>   |
| 11:00 AM | 11:20 AM | <b>Integration of Google Maps/Earth with Microscale Meteorology Models and Data Visualization</b><br>Giap Huynh, Yansen Wang, and Chatt Williamson<br><i>U.S. Army Research Laboratory</i>  |
| 11:20 AM | 11:40 AM | <b>Simulating the Ingress of a Hazardous Material into a Residential Building</b><br>Simon Batchelor, Simon Parker, and Steven Herring<br><i>Defence Science and Technology Laboratory Porton Down, Salisbury, United Kingdom</i> |
| 11:40 AM | 12:00 PM | <b>Recent Developments in "Box Models" for Estimating Indoor-Outdoor Transport</b>  |

David M. Lorenzetti and Michael D. Sohn  
*Lawrence Berkeley National Laboratory*

12:00 PM 1:20 PM **LUNCH BREAK**

**Session 3-Special OFCM Session**

**Field Experiments and Observational Networks to Support Challenges with High Resolution Dispersion Models and Chair: Jeff McQueen, NOAA/National Weather Service**

- 1:20 PM 1:30 PM **OFCM session introduction**  
Jeff McQueen and OFCM ATD staff  
*NOAA/National Weather Service*
- 1:30 PM 1:40 PM **DTRA Modeling for Smoke, Dust, Volcanic Ash**  
Ronald Meris  
*Defense Threat Reduction Agency*
- 1:40 PM 1:50 PM **Introduction of HABIT v2.0 Code**  
Casper Sun, Thomas Spicer, and Syed Haider  
*Nuclear Regulatory Commission*
- 1:50 PM 2:10 PM **Mock Urban Setting Test (MUST) and Granite Mountain Atmospheric Science Testbed (GMAST) at Dugway Proving Ground**  
John Pace, Dragan Zajic, Donald Storwold, Erik Vernon  
*Dugway Proving Ground*
- 2:10 PM 2:30 PM **Dispersion Simulations of Inline HYSPLIT for Sagebrush Tracer Experiment**  
Fong (Fantine) Ngan and Ariel Stein  
*NOAA/Air Resources Laboratory and CICS/University of Maryland*
- 2:30 PM 2:50 PM **Army Research Lab's Meteorological Sensor Array, White Sands Missile Range**  
Chatt Williamson  
*U.S. Army Research Laboratory*
- 2:50 PM 3:20 PM **COFFEE BREAK**

**Session 4-Special OFCM Session**

**Field Experiments and Observational Networks to Support Challenges with High Resolution Dispersion Models and Chair: Daniel Meléndez, NOAA/National Weather Service**

- 3:20 PM 3:40 PM **The Mountain Terrain Atmospheric Modeling and Observations (MATERHORN) Program (2011-2016)**  
Harindra J.S. Fernando, Joshua Hacker, Fotini Katopodes Chow, Eric Pardyjak, and Stephan F.J. de Wekker  
*University of Notre Dame*
- 3:40 PM 4:00 PM **Overview of the 2015-2016 Jack Rabbit II Chlorine Release Field Trials**  
Shannon Fox, Mark Whitmire, Leo Stockham, Ronald Meris, Thomas Mazzola, Joseph Chang, Steven Hanna, Thomas Spicer, Michael Sohn, Damon Nicholson, and Andy Byrnes  
*Chemical Security Analysis Center*
- 4:00 PM 4:20 PM **New York State Mesonet: First 3D Mesonet and Possible Dispersion Applications**  
Everette Joseph  
*University at Albany*
- 4:20 PM 4:40 PM **The Second Wind Forecast Improvement Project (WFIP2): Observations and Model Evaluation**  
James Wilczak, R. Banta, L. Benjamin, S. Benjamin, L. Berg, L. Bianco, J. Bickford, A. Brewer, A. Choukulkar, K. Clawson, A. Clifton, J. Cline, D. Cook, I. Djalalova, H. Fernando, K. Friedrich, E. Gritmit, J. Kenyon, B. Kosovic, C. King, K. Lantz, C. Long, J. Lundquist, M. Marquis, J. McCaa, K. McCaffrey, S. Midya, V. Morris, J. Olson, Y. Pichugina, J. Sharp, M. Stoelinga, W. Shaw, K. Wade, S. Wharton  
*NOAA/Earth System Research Laboratory*
- 4:40 PM 4:50 PM **An introduction to the Modelers' Data Archive**  
Joseph Chang and Steven Hanna  
*Homeland Security Studies and Analysis Institute*
- 4:50 PM 5:30 PM **Discussion, Future Needs, and Science Priorities**  
Jeff McQueen and Daniel Meléndez  
*NOAA/National Weather Service, Office of the Federal Coordinator for Meteorology*
- 5:30 PM **DAY 1 ADJOURNS**

## DAY 2 (June 15)

### Session 5-Jack Rabbit II Field Experiment

Chair: Leo Stockham, Leidos

- 8:00 AM 8:20 AM **Jack Rabbit II Field Tests: Disseminator Data and Preliminary Analysis**  
Tom Spicer  
*University of Arkansas*
- 8:20 AM 8:40 AM **Blowdown Modeling of the Jack Rabbit II Releases**  
Rick Babarsky, Joe Leung, and Ian Sykes  
*U.S. Army*
- 8:40 AM 9:00 AM **Preliminary Analysis of Observations from the Jack Rabbit II–2015 Field Experiment on Dense Gas Dispersion in a Built Environment**  
Steven Hanna, Joseph Chang, Thomas Spicer, Michael D. Sohn, Shannon Fox, Mark Whitmire, Leo Stockham, Thomas Mazzola  
*Hanna Consultants*
- 9:00 AM 9:20 AM **Field Observations of Dense Gas Transport in Office Trailers and Synthetic Buildings**  
Michael D. Sohn, William W. Delp, and Wanyu Rengie Chan  
*Lawrence Berkeley National Laboratory*
- 9:20 AM 9:40 AM **Integrated Puff and Lagrangian Particle Modeling of Dense Gas Dispersion for Jack Rabbit II**  
Jeff Weil, D. Steinhoff, and L. Delle Monache  
*National Center for Atmospheric Research*
- 9:40 AM 10:00 AM **Simulation with PMSS and Code\_SATURNE of Some Jack Rabbit II Experiments**  
F. Gomez, J. Moussafir, M. Nibart, L. Makke, G. Tinarelli, P. Armand, C. Duchenne, O. Oldrini, S. Bereznicki, and R. Vernot  
*ARIA Technologies, Boulogne-Billancourt, France*
- 10:00 AM 10:30 AM **COFFEE BREAK**

### Session 6-Jack Rabbit II Field Experiment & Climate Data Sets for Modeling

Chair: Thomas Mazzola, Engility Corporation

- 10:30 AM 10:50 AM **Application of the Aeolus Fast CFD Model for Simulating Chlorine Releases During Jack Rabbit II Field Experiments**  
Akshay Gowardhan  
*Lawrence Livermore National Laboratory*
- 10:50 AM 11:10 AM **Jack Rabbit II Modeling Support Using QUIC-Railcar**  
David Morad  
*Naval Surface Warfare Center Dahlgren*
- 11:10 AM 11:30 AM **Integral Model Predictions of Chlorine Dispersion for the Proposed Jack Rabbit II Experiments in 2016**  
Bryan McKenna, Maria Mallafrè Garcia, Simon Gant, Harvey Tucker, Graham Tickle, Rachel Batt, Henk Witlox, and Jan Stene.  
*Health and Safety Laboratory, Harpur Hill, United Kingdom*
- 11:30 AM 11:50 AM **New Features of the Global Climatological Analysis Tool (GCAT)**  
Stefano Alessandrini, Francois Vandenbergh, Yonghui Wu, Wanli Wu, and Richard J. Babarsky  
*National Center for Atmospheric Research*
- 11:50 AM 12:10 PM **Self-Organizing Maps to Generating Reduced-Size, Statistically Similar Climate Datasets**  
Ryan Cabell, Daniel Steinhoff, and Luca Delle Monache  
*National Center for Atmospheric Research*
- 12:10 PM 1:30 PM **LUNCH BREAK**

### Session 7-Dispersion Modeling Studies

Chair: Steve Hanna, Hanna Consultants

- 1:30 PM 1:50 PM **Novel Ensemble Atmospheric Modeling Techniques for the Simulation of Large-Scale Dispersion**  
David Werth, Grace Maze, Robert Buckley, Steven Chiswell, Robert Kurzeja, and Brian Viner  
*Savannah River National Laboratory*
- 1:50 PM 2:10 PM **Dispersion Behavior in Severe Vapor Cloud Explosion Incidents**  
Simon Gant, Graham Atkinson and Harvey Tucker

*Health and Safety Executive, Harpur Hill, United Kingdom*

2:10 PM 2:30 PM **LIDAR Backscatter and Wind Data Assimilation into the Second Order Closure Integrated PUFF (SCIPUFF) Model**

Paul E. Bieringer, Scott Higdon, George Bieberbach, Jonathan Hurst, and Shane Mayor  
*Aeris LLC*

2:30 PM 2:50 PM **A Microscale CFD Simulation of Three Days in a Neighborhood of Toulouse for Pollutant Dispersion**

Zhenlan Gao, Raphael Bresson, and Bertrand Carissimo  
*Centre d'Enseignement et de Recherche en Environnement Atmosphérique, Chatou, France*

2:50 PM 3:10 PM **The Effects of the General Power Outage in Turkey in 2015 to Pollutant Concentrations**

Orhan Şen and Ramazan Özgenc  
İstanbul Technical University, Istanbul, Turkey

3:10 PM 3:40 PM **COFFEE BREAK**

### **Session 8-Joint Effects Model Increment 2 (JEM 2)**

**Chair: Tom Spicer, University of Arkansas**

3:40 PM 4:00 PM **Joint Effects Model (JEM 2.0) Technology and Program Status**

Sami Rishmawi  
*JPMIS*

4:00 PM 4:20 PM **Joint Effects Model (JEM) 2.0 Uses CCMI Standards for Rapid S&T Integration into Operational Environments**

Mark Brosnan, Michael Rocheleau, George Bieberbach, Jonathan Hurst, Phil Wingfield, Martyn Bull, Matthew Ward, Thomas Smith, Eric Rial, Sami Rishmawi, and Russ Brown  
*General Dynamic Information Technology*

4:20 PM 4:40 PM **The Urban Sub-system Capability and its Future Integration into CCMI Systems**

Steven Herring and Martyn Bull  
*Defence Science and Technology Laboratory Porton Down, Salisbury, United Kingdom*

4:40 PM 5:00 PM **Verification of the Joint Effects Model Increment 2**

George Bieberbach, Jonathan Hurst, Michael Rocheleau, Mark Brosnan, Luke Jadamec, Phil Wingfield, Martyn Bull, Kevin Grunenberg, Matthew Queenan, Thomas Smith, Eric Rial, Sami Rishmawi, and Russ Brown  
*Aeris LLC*

5:00 PM 5:20 PM **Independent Results Validation of the Joint Effects Model (JEM) 2.0**

Joseph Chang, Steven Hanna, and James Bowers  
*Hanna Consultants*

5:20 PM **DAY 2 ADJOURNS**

### **DAY 3 (June 16)**

#### **Session 9-DTRA Reachback**

**Chair: Ronald Meris, Defense Threat Reduction Agency**

8:00 AM 8:20 AM **National CWMD Technical Reachback Enterprise (NCTRE)**

MAJ Christopher Nohle  
*Defense Threat Reduction Agency*

8:20 AM 8:40 AM **How Decision Makers Use HPAC Hazard Plots**

Ronald Meris  
*Defense Threat Reduction Agency*

8:40 AM 9:00 AM **HPAC Terrain, Land Cover and Weather Options: A Sensitivity Study**

Yaitza Luna-Cruz and Christopher Marciano  
*Defense Threat Reduction Agency*

9:00 AM 9:20 AM **Indoor Hazard Modeling: An Operational Perspective**

Mariana Cruz  
*Defense Threat Reduction Agency*

9:20 AM 9:40 AM **DTRA/SCC-WMD Technical Reachback Support of Jack Rabbit II Testing: Cl<sub>2</sub> Plume and Concentration Analysis with HPAC**

- Steven Simpson and Sean Miner  
*Defense Threat Reduction Agency*
- 9:40 AM 10:00 AM **Preliminary Assessment of Urban Dispersion Modeling (UDM) Performance for UDINEE and the Joint Urban 2003 Urban Dispersion Experiment**  
Sean Miner, Thomas Mazzola, and John Magerko  
*Defense Threat Reduction Agency*
- 10:00 AM 10:30 AM **COFFEE BREAK**

**Session 10-Validation and Development**

**Chair: Paul Bieringer, Aeris LLC**

- 10:30 AM 10:50 AM **Validation of Five Hazard Assessment Models Against the Modelers' Data Archive**  
Timothy J. Bauer  
*Naval Surface Warfare Center Dahlgren*
- 10:50 AM 11:10 AM **Assessing the Performance of Atmospheric Dispersion Models to Support Emergency Response**  
Steven Herring and Pablo Huq  
*Defence Science and Technology Laboratory Porton Down, Salisbury, United Kingdom*
- 11:10 AM 11:30 AM **Evaluating Atmospheric Transport and Dispersion Models with Perfluorocarbon Tracer Experiments**  
Thomas Watson  
*Brookhaven National Laboratory*
- 11:30 AM 11:50 AM **JECP System Performance Model (SPM) SKUI Model Development**  
Harold K. Barnette  
*Naval Surface Warfare Center Dahlgren*
- 11:50 AM 12:10 PM **SHARC: Waterborne Hazard Forecasting for the Maritime Environment**  
Jennifer Cragan, Richard Fry, Ronald Meris, and Matthew ward  
*Maritime Planning Associates*
- 12:10 PM 1:30 PM **LUNCH BREAK**

**Session 11-Dispersion Modeling Studies and Health Effects**

**Chair: Zafer Boybeyi, George Mason University**

- 1:30 PM 1:50 PM **Time of Cloud Arrival Predicted for Emergency Response**  
Ludovit Liptak, Peter Carny, and Eva Fojcikova  
*ABmerit, Slovakia*
- 1:50 PM 2:10 PM **Retrieval of Unknown Elevated Emissions in Urban Environments using Building Resolving CFD Approach**  
Pramod Kumar, Amir-Ali Feiz, Sarvesh Kumar Singh, Pierre Ngae, Grégory Turbelin, Nadir Bekka  
*Universite d'Evry-Val d'Essonne, France*
- 2:10 PM 2:30 PM **Turbulent Flow Simulations in Urban Using a Lattice Boltzmann Model**  
Yansen Wang, Benjamin MacCall, Giap Huynh, and Leelinda Dawson  
*U.S. Army Research Laboratory*
- 2:30 PM 2:50 PM **Internal Building Hazard (IBH) – Capabilities: Current and Future**  
Matthew G. Wolski  
*Naval Surface Warfare Center Dahlgren*
- 2:50 PM 3:10 PM **Are Toxic Load-based Toxicity Models Consistent with Experimental Observations? Independent Analysis of Steady-exposure Data from the 2012–2013 ECBC/NAMRU-D Toxicological Experiments**  
Alexander J. Slawik, Kevin C. Axelrod, James B. Silva, Ivo K. Dimitrov, Jeffry T. Urban, and Nathan Platt  
*Institute for Defense Analyses*
- 3:10 PM 3:30 PM **Radiological EIA based on Land Use Data from Remote Sensing Technology**  
Eva Fojcikova, Ludovit Liptak, and Peter Carny  
*ABmerit, Slovakia*
- 3:30 PM 3:50 PM **The AIRCITY Platform. Application of the High-resolution PMSS Model (Parallel Micro SWIFT SPRAY) to Several Large Cities Worldwide: Paris, Rome, Hong-Kong, Torino, Wuhan, Milano. Lessons Learned and Operational Issues**  
J. Moussafir, M. Nibart, F. Velay, Q. Zhang, G.Tinarelli, G.Carlino, R. Prandi, P.Armand, C.Duchenne, and O. Oldrini  
*ARIA Technologies, Boulogne-Billancourt, France*
- 3:50 PM **DAY 3 ADJOURNS**