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AGENDA

Twenty-fourth Annual George Mason University Conference on Atmospheric Transport and Dispersion Modeling

December 8-10, 2020

Conference Chairs:

Joseph Chang, RAND Corporation, Arlington, VA

Zafer Boybeyi, George Mason University, Fairfax, VA

Virtual Platform

All times in Eastern Standard Time (UTC - 5)

DAY 1 (December 8)

Session 1-Model Development (1/3)

Chair:

9:50 AM	10:00 AM	Welcoming Remarks Fernando R. Miralles-Wilhelm, James L. Kinter *Dean, College of Science; Chair, Atmospheric, Oceanic and Earth Sciences; George Mason University, Fairfax, VA*
10:00 AM	10:15 AM	**What SWIFT and MSS Provide to HPAC** Sarah Anderson-Bereznicki *Leidos*
10:15 AM	10:30 AM	**Using Collocated Doppler-Radar-Derived Radial Wind Observations to Verify HPAC Wind Fields** Jonathan M. Vogel, Sean Miner, Scott Runyon, and Jimmie Trigg *Applied Research Associates (ARA), DTRA Technical Reachback, Ft. Belvoir, VA*
10:30 AM	10:45 AM	**Post-processing Rainfall in a High-resolution Simulation of the 1994 Piedmont Flood** Scott Meech, Stefano Alessandrini, William Chapman, Luca Delle Monache *National Center for Atmospheric Research, Boulder, CO*
10:45 AM	11:00 AM	**Evaluation of Turbulence Within a Multiscale Atmospheric Model Over Complex Urban Terrain** David John Wiersema, Katherine Lundquist, Jeffery Mirocha, Fotini Katopodes Chow *Lawrence Livermore National Laboratory, Livermore, CA*
11:00 AM	11:15 AM	**Adjustments to Improve AERMOD Performance During Low Wind Conditions** R. Chris Owen, Matthew Woody, David Heist, James Thurman, Clint Tillerson, George Bridgers *Environmental Protection Agency, Research Triangle Park, NC*
11:15 AM	11:30 AM	**An Overview of Deposition in AERMOD** Matthew Woody, James Thurman, Clint Tillerson, George Bridgers, Chris Owen *Environmental Protection Agency, Research Triangle Park, NC*
11:30 AM	12:15 PM	***BREAK***

Session 2-Model Evaluation, Overviews of Datasets and Capabilities

Chair:

12:15 PM	12:30 PM	**A Comparison of Building Wakes Measurements with Numerical Modelling Approaches with Four Different Levels of Complexity During the JRII Special Sonic Anemometer Study**

		Bertrand Carissimo, Silvia Trini Castelli, Gianni Tinarelli *Centre d'Enseignement et de Recherche en Environnement Atmosphérique (CEREA) Laboratoire commun ENPC - EDF R&D, Chatou, France*
12:30 PM	12:45 PM	**HPAC Model Studies of Selected Jack Rabbit II (JRII) Releases and Comparisons to Test Data** Steven M. Simpson, Sean Miner, Thomas Mazzola, Ron Meris *Applied Research Associates (ARA), DTRA Technical Reachback, Ft. Belvoir, VA*
12:45 PM	1:00 PM	**Assessment of the MACCS Code Applicability for Nearfield Consequence Analysis** Daniel J. Clayton , Nathan E. Bixler *Sandia National Laboratories, Albuquerque, NM*
1:00 PM	1:15 PM	**Evaluation of STILT features within HYSPLIT for the CAPTEX and ANATEX tracer experiments** Christopher P Loughner, Ben Fasoli, Ariel Stein, John Lin *National Oceanic and Atmospheric Administration/Air Resources Laboratory, College Park, MD*
1:15 PM	1:30 PM	**Review of Ammonia Release Experimental Programs: Indoor Environment and Large-scale Field Trials** Jean-Marc Lacome, O. Gentilhomme, V. Debuy, T.Penelon, G. Leroy, L. Joubert, B. Truchot *INERIS, Verneuil-en-Halatte, France*
1:30 PM	1:45 PM	**Dugway Proving Ground's Meteorological Mission Support Capabilities** Bradley Hunsaker, Dragan Zajic *Dugway Proving Ground, Utah*
1:45 PM	2:00 PM	**Status on the Development of Database/Website for DTRA Programs MUST, JU03, and FFT07** Eugene Vickers, Jarell Johnson, Don Fazenbaker, Gerita Cochran, Khadijah Boykin *U.S. Army Combat Capabilities Development Command - Chemical Biological Center, Aberdeen Proving Ground, MD*
2:00 PM	2:45 PM	***BREAK***
Session 3-Model Development (2/3) ***Chair:***		
2:45 PM	3:00 PM	**Recent Developments and Validations of PMSS Model** Maxime NIBART, Jacques MOUSSAFIR, Bruno RIBSTEIN, Mohamed BAHLALI, Ugo PELISSIER *Aria Technologies, France*
3:00 PM	3:15 PM	**A Fast-running Fire Spread and Smoke T&D Model** Michael J. Brown, Sara Brambilla, Matt Nelson, Alex Josephson, Rod Linn *Los Alamos National Laboratory, Los Alamos, NM*
3:15 PM	3:30 PM	**Accelerated Large-eddy Simulation for Urban Atmospheric Boundary Layer Transport and Dispersion Using FastEddy** Jeremy Sauer, Domingo Muñoz-Esparza, Scott Swerdlin *National Center for Atmospheric Research, Boulder, CO*
3:30 PM	3:45 PM	**Recent Improvements to the QUIC Transport and Dispersion Model** Matthew Nelson, Michael J. Brown *Los Alamos National Laboratory, Los Alamos, NM*
3:45 PM	4:00 PM	**QES-Winds: A Multipurpose Fast-response Computational Wind-modeling Platform for Flow in Complex Terrain** Behnam Bozorgmehr, Zachary Patterson, Peter Willemsen, Jeremy Gibbs, Rob Stoll, Jae-Jin Kim, Eric R. Pardyjak

University of Utah, Salt Lake City, UT

4:00 PM 4:15 PM **Planetary Boundary Layer Height Accuracy and Consistency for HPAC's Historical Weather**

Joshua Boden, Scott Runyon, and Jimmie Trigg
Applied Research Associates (ARA), DTRA Technical Reachback, Ft. Belvoir, VA

4:15 PM ***DAY 1 ADJOURNS***

DAY 2 (December 9)

Session 4-Model Development (3/3)
Chair:

10:00 AM 10:15 AM **Comparison of WRF MYJ and MYNN-EDMF PBL Scheme Inputs for HPAC SCIPUFF Part 1. Effects of Vertical Wind Shear**
David Stauffer, Glenn Hunter, Douglas Henn and Ian Sykes
Xator Corporation, Reston, VA

10:15 AM 10:30 AM **Comparison of WRF MYJ and MYNN-EDMF PBL Scheme Inputs for HPAC SCIPUFF Part 2. Use of WRF TKE in SCIPUFF**
Douglas Henn, Ian Sykes, David Stauffer, and Glenn Hunter
Xator Corporation, Reston, VA

10:30 AM 10:45 AM **Toward More Robust, User-oriented Urban Models in HPAC**
Michael D. Sohn , Paul E. Bieringer, Jon Hurst, Russell Mills, Scott Kreyehagen, Joshwa Moellenkamp, Peter Melling, George Bieberbach, Martyn Bull, Matt Schirmer, David Lorenzetti
Lawrence Berkeley National Laboratory, Berkeley, CA

10:45 AM 11:00 AM **An Operational, Fast CFD Model, Aeolus, for Simulating Flow and Dispersion in Urban Areas and Complex Terrain**
Akshay A. Gowardhan, Don Lucas, Otto Alvarez
Lawrence Livermore National Laboratory, Livermore, CA

11:00 AM 12:00 PM ***BREAK***

Session 5-Jack Rabbit III
Chair:

12:00 PM 12:15 PM **Introductory Remarks**
Ron Meris
Defense Threat Reduction Agency, Fort Belvoir, VA

12:15 PM 12:30 PM **The DHS S&T CSAC Jack Rabbit III Program Initiatives: Filling Critical Hazard Prediction Data Gaps in Toxic Inhalation Hazard Chemical Release Atmospheric Dispersion Modeling for National Emergency Plan and Response**
Shannon Fox, Sun McMasters, Raymond Jablonski, and Dennis Howell
DHS Chemical Security Analysis Center, Edgewood, MD

12:30 PM 12:45 PM **Did JR I and JR II Resolve TIC Modeling Knowledge Gaps Identified in 2008 and 2010 Reports?**
Steven R. Hanna
Hanna Consultants, Kennebunkport, ME

12:45 PM 1:00 PM **Identification of Knowledge Gaps for Future Testing in Jack Rabbit III: a European Perspective**
Simon Gant, Rachel Batt, Steve Herring, Harvey Tucker
Health and Safety Executive (HSE) and Defence Science and Technology Laboratory (DSTL), UK

1:00 PM	1:15 PM	**Modelling the Near-Source Region of Jack Rabbit II Mock Urban Environment Chlorine Releases** Thomas O. Spicer, Chad Smith *University of Arkansas, Fayetteville, AR*
1:15 PM	1:30 PM	**Use of SOM technique at DTRA for Field Test Planning** Jeff Zielonka, Jimmie Trigg, Scott Runyon, Jonathan Vogel *Defense Threat Reduction Agency, Fort Belvoir, VA*
1:30 PM	1:45 PM	**Concluding Remarks** Scott Bradley and Tom Mazzola *SAIC, Lorton, VA*
1:45 PM	2:30 PM	***BREAK***

Session 6-Incident Studies, Indoor Studies
Chair:

2:30 PM	2:45 PM	**FSO SAFER: Applying Statistical Methods to Illustrate the Potential Risks from a Major Incident in the Red Sea** Murray Purves, James de Lisle, Richard Brooke, Tim Culmer *Riskaware, Bristol, United Kingdom*
2:45 PM	3:00 PM	**Modelling the Notre Dame Fire** Maxime NIBART, Marine LAPLANCHE, Xiao WEI, Armand ALBERGEL, Frédéric TOGNET, Benjamin TRUCHOT *Aria Technologies, France*
3:00 PM	3:15 PM	**HPAC 6.6 Model Validation: A look into Reanalysis Weather and EPA Sensor Data Collected During the Lackawanna Steel Fire** Leann Anthony *Applied Research Associates (ARA), DTRA Technical Reachback, Ft. Belvoir, VA*
3:15 PM	3:30 PM	**Comparison of SCIPUFF Predictions to SO2 Measurements from Instruments on the MetOp-A, MetOp-B, Aura and Suomi Satellites from the 2016 Fire at Al-Mishraq** S. Bradley, M. Franco, S. Hanna, J. Howard, R. Meris, T. Mazzola, B. Pate *SAIC, Lorton, VA*
3:30 PM	3:45 PM	**Improving Building Protection Against the Inhalation of Outdoor-Origin Aerosols: A High-Level Modeling Analysis** Richard G. Sextro, W. Woody Delp, Michael B. Dillon *Lawrence Berkeley National Laboratory, Berkeley, CA*
3:45 PM	4:00 PM	**Regional Shelter Analysis: Assessing US Building Protection** Michael B Dillon, Callen J Schwefler, Ian Chinn, Brooke R Buddemeier *Lawrence Livermore National Laboratory, Livermore, CA*
4:00 PM		***DAY 2 ADJOURNS***

DAY 3 (December 10)

Session 7-Source Term Estimation, Laboratory Studies
Chair:

10:00 AM	10:15 AM	**Inverse Modeling for the Reconstruction of Accidental Sources of Pollutants** Konstantin Kuznetso, Martin Ferrand, Bertrand Carissimo, Marc Bocquet *CEREA joint lab of Ecole des Ponts ParisTech and EDF R&D, France*
10:15 AM	10:30 AM	**Testing of a Backward Dense Gas Dispersion Model for the Source Term Estimation in the Jack Rabbit II Experiment** Stefano Alessandrini, Jeff Weil, Scott Meech

		National Center for Atmospheric Research, Boulder, CO
10:30 AM	10:45 AM	**Assessment of Chlorine Reactivity with Environmental Materials Accounting for Boundary Layer and Maximum Deposition Effects** Thomas O. Spicer, Shannon B. Fox, Bruce B. Hicks *University of Arkansas, Fayetteville, AR*
10:45 AM	11:00 AM	**Comparisons of Simulation Statistics and Experimental Data from a Scaled Oklahoma City Dispersion Study** Ty Homan, Michael Benson, Mark Owkes, Chris Elkins, Andrew Banko, Daniel Chung, Joshua Rhee, Lynne Mooradian *United States Military Academy, West Point, NY*
11:00 AM	11:15 AM	**Dense Gas Dispersion in the Wake of a Cubic Building** Romana Akhter, Nigel Kaye *Clemson University, Clemson, SC*
11:15 AM	11:30 AM	**Computational Study of Dense Gas Dispersion in a 2D Urban Canyon** Rasna Sharmin, Nigel Kaye *Clemson University, Clemson, SC*
11:30 AM	11:45 AM	**Relevance of Laboratory Data for Estimating Particle Resuspension from Outdoor Surfaces** Sara Brambilla, Michael Brown *Los Alamos National Laboratory, Los Alamos, NM*
11:45 AM	12:30 PM	***BREAK***
Session 8-COVID-19/Infectious Disease Modeling, Nuclear Applications ***Chair:***		
12:30 PM	12:45 PM	**Near-field Indoor and Outdoor Modeling of COVID-19 Transport and Dispersion – Multibox, CFD, Gaussian Plume/Puff, or K-theory** Steven R. Hanna *Hanna Consultants, Kennebunkport, ME*
12:45 PM	1:00 PM	**Does SARS-CoV-2 Transmit through Central Ventilation Systems?** Leonard Pease, Timothy Salsbury, Katrina Waters *Pacific Northwest National Laboratory, Richland, WA*
1:00 PM	1:15 PM	**Boeing 767 & 777 Aircraft Cabin Aerosol Dispersion Experiments** Sean Kinahan, David Silcott, Blake Silcott, Ryan Silcott, Peter Silcott, Braden, Silcott, Steven Distelhorst, Vicki Herrera, Danielle Rivera, Kevin Crown, Gabriel, Lucero, Wayne Bryden, Mike McLoughlin, Joshua Santarpia *National Strategic Research Institute, Annapolis Junction, MD*
1:15 PM	1:30 PM	**Atmospheric Infectious Disease Transport and the Regional Relative Risk Metric** Michael B Dillon, Charles F Dillon *Lawrence Livermore National Laboratory, Livermore, CA*
1:30 PM	1:45 PM	**Simulating Nuclear Cloud Rise Within a Realistic Atmosphere Using the Weather Research and Forecasting Model** Robert S. Arthur, Katherine A. Lundquist, Jeffrey D. Mirocha, Stephanie Neuscamman, Yuliya Kanarska, and John S. Nasstrom *Lawrence Livermore National Laboratory, Livermore, CA*
1:45 PM	2:00 PM	**The Effects of the Thermal Layer on the Particle Entrainment and Fallout in Complex Environments** Yuliya Kanarska, R. Arthur, B. Isaac, K. Lundquist, J. Morris, G. Spriggs *Lawrence Livermore National Laboratory, Livermore, CA*
2:00 PM		***DAY 3 ADJOURNS***

DAY 4 (December 11)

Jack Rabbit III Break-out Session
Chair: Ron Meris, Defense Threat Reduction Agency, Fort Belvoir, VA

10:00 AM 12:00 PM **Jack Rabbit III break-out session. All are welcome. Details TBD**