Air Quality Measurement Methods and Technology Conference 2023

Durham, North Carolina, USA
14-16 November 2023

Technical Program – Tuesday, November 14

7:30 am – 5:00 pm
Conference Registration
Imperial Foyer

7:30 am – 8:30 am
Continental Breakfast and Presenters' Meeting
Imperial 4567 and Session Rooms

8:30 am – 6:15 pm
Exhibition Viewing
Imperial 4567

Opening Keynote Session

8:30 am – 9:45 am
Imperial 123

Welcome & Opening Remarks
Jordan Haywood, A&WMA President; Ned Shappley, Ingrid George, Conference Co-Chairs

Next Generation Emissions Monitoring in Today's Regulations…N/A
Tomás Carbonell, Deputy Assistant Administrator for Stationary Sources, US EPA Office of Air and Radiation (OAR)

9:45 am – 10:15 am
Networking Break, Exhibition Viewing, and Poster Viewing
Imperial 4567 & Foyer

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Tomás Carbonell

Technical Program – Tuesday, November 14, con't.

Session 1A: GHG Monitoring – Landfills
[concurrent with Sessions 1B and 1C]
Imperial 123

Chairs: Roger Green, WM, and Eben Thoma, US EPA

10:15 am – 10:40 am
ME21 **Validating the Effectiveness of Drone Based Methane Surface Emission Monitoring in Municipal Solid Waste Using EPA Approved ALT-150...N/A**
David Barron, Sniffer Robotics

10:40 am – 11:05 am
ME37 **An Examination of Temporal and Spatial Variations in Methane Emissions from Landfills...1**
Ali Lashgari, Ryan Brush, Project Canary, PBC

11:05 am – 11:30 am
ME81 **Field-deployable Sensor Networks, Rovers and Flux Chambers; Exploring the Utility of Low-cost Air Sensors in Quantifying Surface Methane Concentrations, Hotspot Detection and Surface Emissions at Landfills...N/A**
Michael Hannigan, Evan Coffey, Helena Pliszka, University of Colorado Boulder, Boulder, CO; Roger Green, Amy Bannister, Amanda Duchesne, WM

11:30 am – 11:55 am
ME114 **Using Surface Emissions Monitoring (SEM) Data to Locate Leak Locations and Estimate Methane Emissions Fluxes from Landfills...N/A**
Tarek Abichou, FAMSU-FSU; Nizar Belhaj Ali, University of Gabès, Tunisia; Roger Green, WM

Session 1B: Advances in Open-path Optical Remote Sensing
[concurrent with Sessions 1A and 1C]
Royal AB

Chairs: Jason DeWees and Jeff Ryan, US EPA

10:15 am – 10:40 am
ME23 **Next Generation of BTEX Monitoring Inside Refineries: UCLA's Optical Tent...N/A**
Jochen Stutz, Fedele Colosimo, Sol Cooperdock, University of California Los Angeles, Los Angeles, CA; Olga Pikelnaya, Andrea Polidori, South Coast Air Quality Management District, Diamond Bar, CA

10:40 am – 11:05 am
ME38 **Technical Evaluation of an Innovative Open-path Hydrogen Sulfide Air Monitoring System...N/A**
Eric Stevenson, Argos Scientific, Inc., CA; Donald Gamiles, Argos Scientific, Inc., WA; Cliff Gordon, M&C TechGroup North America, CA; Pawel Kluczynski, AirOptic, Poznan, Poland

11:05 am – 11:30 am
ME103 **Using Mobile Optical Remote Sensing for Emission Estimates of Air Pollutants from Stationary Sources: Need for Standard Method Development...N/A**
Olga Pikelnaya, Jack Porter, Catalina Tsai, Andrea Polidori, South Coast Air Quality Management District, Diamond Bar, CA; Johan Mellqvist, Jerker Samuelsson, Marianne Ericsson, Fluxsense Inc., San Diego, CA

11:30 am – 11:55 am
ME101 **Leak Detection from Oil Wells in Los Angeles Using Optical Remote Sensing Mobile Platform: Enhancing Knowledge and Mitigation Strategies...N/A**
Catalina Tsai, Jack Porter, Pami Mukherjee, Yifan Yu, William Senga, Veudy Cen, Jeremy Huff, Robert Wimmer, Mike Hamdan, Matt Prather, Olga Pikelnaya, Andrea Polidori, South Coast Air Quality Management District, Diamond Bar, CA

Session 1C: Particulate Matter
[concurrent with Sessions 1A and 1B]
Auditorium

Chairs: Tim Hanley and Karoline Barkjohn, US EPA

10:15 am – 10:40 am
ME89 **Gravimetric Validation and Spatial Variability of PM10 and Heavy Metals in Two US Fenceline Communities as Part of the HAP-Map Study...N/A**
Peter DeCarlo, Mina Tehrani, Shivang Agarwal, Amira Yassine, Edward Fortner, Benjamin Werden, Ellis Robinson, Ana Rule, Kirsten Koehler, Johns Hopkins University

10:40 am – 11:05 am
ME92 **A Comparison of Trace Metal Composition of PM10 Measurements Potentially Emitted from Playa and Desert Surfaces in the Imperial Valley, California...6**
Maarten D. Schreuder, Hank Dickey, Yohannes T. Yimam, Brian M. Schmid, Formation Environmental, LLC, Sacramento, CA

11:05 am – 11:30 am
ME139 **Update on the Ambient PM2.5 Network in the USA...20**
Tim Hanley, US EPA

11:30 am – 11:55 am
ME100 **Evaluation of Metals in Ambient Air Using a Field Deployable XRF and Passive Sampling Techniques...N/A**
Roger West, Kristin Bunker, Traci Lersch, Gary S. Casuccio, RJ Lee Group, Pittsburgh, PA

12:00 pm – 1:00 pm
Lunch for all sessions
Empire Ballroom

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Session 2A: GHG Monitoring – Landfills
[concurrent with Sessions 2B and 2C]
Imperial 123

Chairs: Eben Thoma, US EPA, and Roger Green, WM

Session 2B: Advances in Optical Gas Imaging
[concurrent with Sessions 2A and 2C]
Royal AB

Chairs: Gerri Garwood, US EPA, and Tracey Footer, ERG

Session 2C: Community Monitoring
[concurrent with Sessions 2A and 2B]
Auditorium

Chairs: Corey Mocka and Rachelle Duvall, US EPA

Session 2A

1:00 pm – 1:25 pm
ME119 **Understanding and Reducing Fugitive Landfill Emissions Using Combined Well Performance and Methane Air Monitoring...29**
Melinda Sims, Peter Quigley, Chris Makselon, LoCI Controls, Inc., Wareham, MA; Eben D. Thoma, Megan MacDonald, Wyatt Champion, Susan Thorneloe, US EPA Office of Research and Development (ORD), RTP, NC; Max Krause, US EPA ORD, Cincinnati, OH

1:25 pm – 1:50 pm
ME75 **Providing Accessible Data on Landfill Methane Emissions Using Airborne and Satellite Remote Sensing...N/A**
Tia Scarpelli, Carbon Mapper, Pasadena, CA; Alana Ayasse, University of Arizona, Tucson, AZ; Dan Cusworth, Carbon Mapper and University of Arizona; Riley Duren, University of Arizona, Carbon Mapper, and NASA Jet Propulsion Laboratory, Pasadena, CA; Eben Thoma, Max J. Krause, Daniel Heins, Susan Thornloe, US EPA

1:50 pm – 2:15 pm
ME133 **Large Scale Landfill Emission Measurement Across Canada: Measurement Methods...N/A**
David Risk, Afshan Khaleghi, Evelise Bourlon, Rebecca Martino, Jordan Stuart, St. Francis Xavier University, Antigonish, Canada

2:15 pm – 2:40 pm
ME105 **Application of a Novel Airborne LiDAR Measurement to Quantify Landfill Methane Emissions and Leak Locations...46**
Madjid Delkash, Delkash Consulting; Grant Aivazian, Michael Thrope, Bridger Photonics, Inc.; Paul Imhoff, University of Delaware; Ramin Yazdani, University of California Davis

Session 2B

1:00 pm – 1:25 pm
ME68 **Quantifying Emission Rate of Super Emitter with an OGI Camera...56**
Yousheng Zeng, Jon Morris, Al Sanders, Providence Photonics, LLC, Baton Rouge, LA

1:25 pm – 1:50 pm
ME39 **Next Generation Image-based Quantification...61**
John Leitel, Konica Minolta Sensing Americas

1:50 pm – 2:15 pm
ME93 **Partially Single-Blind Controlled Release Assessment of the Performance of Quantitative Optical Gas Imaging (OQGI) Instrument...69**
Chiemezie Ilonze, Clay Bell, Daniel Zimmerle, Colorado State University, Fort Collins, CO; Jiayang (Lyra) Wang, Arvind P. Ravikumar, University of Texas at Austin, Austin, TX

2:15 pm – 2:40 pm
ME104 **Gas Detection and Quantification Methodology Using an Innovative Infrared Hyperspectral Gas Cloud Imaging System...N/A**
Quan Shen, Junchuan Shi, Aaron Araujo, Robert Kester, Honeywell Process Solutions, Houston, TX

Session 2C

1:00 pm – 1:25 pm
ME06 **Inverse Modeling of Formaldehyde Based on MOOSE Measurements...76**
Eduardo Olaguer, Michigan Department of Environment, Great Lakes, and Energy (EGLE)

1:25 pm – 1:50 pm
ME24 **Community Monitoring Hexavalent Chromium – The City of Paramount...85**
Randall Baxter, Trinity Consultants

1:50 pm – 2:15 pm
ME58 **Hyper Local Community Monitoring With an Integrated Mobile Platform in Sacramento, CA...N/A**
Justin Coughlin, Abhilash Vijayan, Eric Winegar, Steve Brown, Hilary Hafner, Nathan Pavlovic, Charles Scarborough, Sonoma Technology, Inc., Petaluma, CA; Nick Spada, University of California at Davis, Davis, CA; Janice Lam Snyder, Levi Ford, David Yang, Katherine Chin, Sacramento Metropolitan Air Quality Management District, Sacramento, CA; Anthony Miller, Aurelie Marcotte, Entanglement Technologies, Inc., San Bruno, CA

2:15 pm – 2:40 pm
ME65 **Exploring Ways to Communicate Mobile Air Toxics Data to Communities...110**
Jason C. Schroder, Derek Price, Ashley Collier-Oxandale, Natalie Smith, Ezra Levin, Rudra Pokhrel, Colorado Department of Public Health and Environment

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2:40 pm – 3:10 pm
Networking Break, Exhibition Viewing, and Poster Viewing
Imperial 4567 & Foyer

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Session 3A: GHG Monitoring – Landfills
[concurrent with Sessions 3B and 3C]
Imperial 123

Chairs: Ali Lashgari, Project Canary, PBC, and Bryan Staley, Environmental Research & Education Foundation

3:10 pm – 3:35 pm
ME85 **Measurements of Fugitive Emissions of Methane Using Modified SOF…118**
Johan Mellqvist, Jerker Samuelsson, John Johansson, Brian Offerle, FluxSense Inc, Huntington Beach, CA; Pontus Andersso, FluxSense Inc and South Coast Air Quality Management District, Diamond Bar, CA

3:35 pm – 4:00 pm
ME07 **Gaussian Plume Inverse Modeling of Methane Emissions from Landfills…131**
Eduardo Olaguer, Michigan Department of Environment, Great Lakes, and Energy (EGLE)

4:00 pm – 4:25 pm
ME132 **A Controlled Release Experiment For Investigating Methane Measurement Performance at Landfills…N/A**
David Risk, Colin Vibert, Elise Canning, Pylyp Buntov, Yurii Dudak, St. Francis Xavier University, Antigonish, Canada

4:25 pm – 4:50 pm
ME56 **Advances in Data-driven Design of Tracer Dispersion CFD Models for the Purpose of Urban-scale Evolution and Quantification of GHG Emissions…140**
Jorge Guerra, Nathan Eichenlaub, Project Canary, PBC

Session 3B: Remote Sensing of Flares and Stacks
[concurrent with Sessions 3A and 3C]
Royal AB

Chairs: Tracey Footer, ERG, and Gerri Garwood, US EPA

3:10 pm – 3:35 pm
ME29 **Hyperspectral Thermal Infrared Imaging of Fugitive Methane Emissions from Flare Stacks…144**
Mark L. Norman, Telops, Inc., Quebec City, Canada

3:35 pm – 4:00 pm
ME69 **Precision and Accuracy of the VISR Lite Method for Flare Monitoring…151**
Yousheng Zeng, Jon Morris, Providence Photonics, LLC, Baton Rouge, LA; Tracey Footer, Eastern Research Group, Inc.

4:00 pm – 4:25 pm
ME79 **Measurements of Methane, Soot, and NOx from Flares Subjected to Crosswind…N/A**
Alexis D. Tanner, Milad Mohammadi, Matthew R. Johnson, Carleton University, Ottawa, ON, Canada; Brian M. Crosland, CanmetENERGY Ottawa, Ottawa, ON, Canada; Gregory A. Kopp, Western University, London, ON, Canada

4:25 pm – 4:50 pm
ME87 **Evaluation of the Potential Accuracy of a UAV-Based Methodology for Flare Combustion Efficiency…N/A**
Simon A. Festa-Bianchet, Milad Mohammadi, Alexis D. Tanner, Matthew R. Johnson, Carleton University, Ottawa, ON, Canada; Gregory A. Kopp, Western University, London, ON, Canada

Session 3C: Community Monitoring
[concurrent with Sessions 3A and 3B]
Auditorium

Chairs: Andrea Clements and Corey Mocka, US EPA

3:10 pm – 3:35 pm
ME90 **Combining Fixed Site and Mobile Measurements of VOCs, Metals, and PMs to Quantify Community Exosure and Risk: Results from the HAP-MAP…N/A**
Peter DeCarlo, Ellis Robinson, Mina Tehrani, Roger Sheu, Carolyn Gigot, Andrea Chiger, Megan Claflin, Ed Fortner, Manjula Canagaratna, Conner Daube, Ben Werden, Rob Roscioli, Jordan Krechmer, Scott Van Bramer, Ana Rule, Kirsten Koehler, Tara Yacovitch, Thomas Burke, Keeve Nachman, Johns Hopkins University

3:35 pm – 4:00 pm
ME71 **Evaluation of the Impact Large Scale Pollution Source on a Nearby Public School in an Environmental Justice Community…159**
Hailey Gebhart, Cary Secrest, Argos Scientific, Inc., WA; Michael Lopes-Serrao, Parkrose School District, OR; Jessica Kleiss, Lewis and Clark College, OR; Melisa Crosby, Parkrose Argay Opportunity Coalition, OR

4:00 pm – 4:25 pm
ME99 **Overview of an Innovative Community Air Monitoring Program in the SF Bay Area…171**
Marilyn Bardet, Kathy Kerridge, Nancy Lund, David Lindsay, Benicia Community Air Monitoring Program, Benicia, CA

4:25 pm – 4:50 pm
ME49 **Overview of the Porter Ranch Community Air Monitoring Project…N/A** *Tarryn Jubelin, Donald Gamiles, Argos Scientific, Inc., CA; Jochen Stutz, Fedele Colosimo, University of California, Los Angeles, CA; Patty Glueck, Aliso Mom's Alliance, CA; Olga Pikelnaya, Yifan Yu, Andrea Polidori, South Coast Air Quality Management District, Diamond Bar, CA*

5:00 pm – 6:00 pm
Networking Reception in the Exhibit Hall
Imperial 4567 & Foyer

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7:30 am – 5:00 pm
Conference Registration
Imperial Foyer

7:30 am – 8:30 am
Continental Breakfast and Presenters' Meeting
Imperial 4567 and Session Rooms

7:30 am – 3:30 pm
Exhibition Viewing
Imperial 4567

Session 4A: Oil and Gas Studies
[concurrent with Sessions 4B and 4C]
Imperial 123

Chairs: Melissa Weitz, US EPA, and Ali Lashgari, Project Canary, PBC

Session 4B: Advances in Stationary Source Method
[concurrent with Sessions 4A and 4C]
Royal AB

Chairs: Ray Merrill and Jeff Ryan, US EPA

Session 4C: Emissions from Agriculture
[concurrent with Sessions 4A and 4B]
Auditorium

Chairs: Ian Rumsey and John Walker, US EPA

8:30 am – 8:55 am
ME88 **A National-Scale Measurement-Based Oil and Gas Methane Census...186**
Matthew R. Johnson, Bradley M. Conrad, David R. Tyner, Carleton University, Ottawa, ON, Canada

8:55 am – 9:20 am
ME40 **Methane Emissions from Abandoned Oil and Gas Wells in Colorado...N/A**
Anna Hodshire, Stuart N. Riddick, Mercy Mbua, Arthur Santos, Ethan Emmerson, Fancy Cheptonui, Cade Houlihan, Younki Cho, Wendy Hartzell, Dan Zimmerle, Colorado State University, Fort Collins, CO

9:20 am – 9:45 am
ME19 **Evaluating Natural Gas Emissions from Upstream Oil and Gas Facilities in West Virginia using Next Generation Measurement Methods...199**
Tracey L. Footer, Eastern Research Group, Inc., Cottonwood Heights, UT; Eben Thoma, US EPA, RTP, NC; Derek Johnson, Nigel Clark, West Virginia University, Morgantown, WV; Scott Herndon, Conner Daube, Aerodyne, Billerica, MA

9:45 am – 10:10 am
ME22 **Methane Venting from Production Storage Tanks: Temporal Variability and Implications for Measurement...208**
Simon A. Festa-Bianchet, Matthew R. Johnson, Carleton University, Ottawa, ON, Canada

8:30 am – 8:55 am
ME52 **Non-nulling Protocols for Fast, Accurate, 3-D Velocity Measurements in Stacks...218**
A. Johnson, I. Shinder, J. Filla, J. Boyd, M. Moldover National Institute of Standards and Technology; M. Gentry, Airflow Sciences Corporation

8:55 am – 9:20 am
ME123 **Characteristics of Condensable Particulate Formation in the EPA Method 202 Sampling Train...227**
Paul Van Rooy, Dave Nash, Ned Shappley, Walter Lin, US EPA OAR, RTP, NC; Peter Kariher, US EPA ORD, RTP, NC; Jason Dewees, US EPA OAR and ORD

9:20 am – 9:45 am
ME20 **Updates on an Analytical Method for Detecting Per- and Polyfluoroalkyl Substances (PFAS) from Stationary Source Air Emissions – Other Test Method 45 (OTM-45)...245**
Marci Smeltz, Jeffrey Ryan, Stephen Jackson, Erin Sheilds, US EPA ORD; Raymond Merrill, US EPA OAR, Matthew Allen, Jacobs Technology Inc., Critical Mission Solutions

9:45 am – 10:10 am
ME36 **Per- and Polyfluorinated Alkyl Substances (PFAS) Detected in Source Samples Using Thermal Desorption-Gas Chromatography/Mass Spectrometry...258**
M. Ariel Geer Wallace, Stephen Jackson, US EPA ORD, RTP, NC; William Preston, CSS Inc., Durham, NC; Laura Miles, Hannah Calder, Stephen Davies, Markes International, Bridgend, Wales, UK

8:30 am – 8:55 am
ME66 **Using Machine Learning to Optimize Hyperparameters for Process-based Models for Estimating Ammonia Emitted from Stored Dairy Manure...277**
Rana Genedy, Jactone Ogejo, Virginia Tech

8:55 am – 9:20 am
ME134 **Ammonia Concentrations and Modelled Dry Deposition Across the Snake River Valley...292**
J.T. Walker, J. Bash, US EPA ORD, Durham, NC; A. Leytem, US Department of Agriculture, Kimberly, ID; Z. Wu, RTI International, Durham, NC; G. Beachley, US EPA Office of Atmospheric Protection, Washington, DC; C. Baublitz, US EPA ORD and OAQPS, Durham, NC

9:20 am – 9:45 am
ME74 **Interaction Between Increased Animal Welfare and Emissions from Pig Houses...N/A**
Michael Jørgen Hansen, Pablo Garcia Perez, Lise Bonne Guldberg, Anders Feilberg, Aarhus University; Vivi Aarestrup Moustsen, SEGES Innovation P/S; Yolande Seddon, University of Saskatchewan

9:45 am – 10:10 am
ME106 **Insights on Methane Emission from Pig Manure Management by Combining Emission Measurement and Modeling...299**
Sasha D. Hafner, Frederik R. Dalby, Michael J. Hansen, Aarhus University, Aarhus, Denmark

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10:10 am – 10:40 am
Networking Break, Exhibition Viewing, and Poster Viewing
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Session 5A: GHG Monitoring – ONG
[concurrent with Sessions 5B and 5C]
Imperial 123

Chairs: Chiemezie Illonze, Colorado State University, and Melissa Weitz, US EPA

10:40 am – 11:05 am
ME76 **Progress Towards Collaborative NGEM Methods: A Case Study Using SENSIT FMD...308**
Jason Gu, Jacob Melby, Sensit Technologies, Inc., Valparaiso, IN; Wyatt Champion, Megan MacDonald, Eben Thoma, US EPA ORD, RTP, NC

11:05 am – 11:30 am
ME12 **Finding & Quantifying Fugitive Emitters with Novel Quantum Lidar Gas Imaging...324**
Aaron Van Pelt, QLM Technology Ltd.; Andrew Speck, SLB

11:30 am – 11:55 am
ME34 **Probabilities of Detection for Aerial Survey of Oil and Gas Setor Methane Emissions...N/A**
Michael J. Thorpe, Dominic Altamura, Cameron Dudiak, Bridger Photonics, Inc., Bozeman, MT; Bradley M. Conrad, David R. Tyner, Matthew R. Johnson, Carleton University, Ottawa, ON, Canada

11:55 am – 12:20 pm
ME72 **Near-Source Safety and Health Risks of Oil and Gas Super Emitters...N/A**
Kelsey R. Bilsback, Chowdhury G. Moniruzzaman, Jeremy K. Domen, Lee Ann L. Hill, Jessie M. Jaeger, Jasmine Lee, Sebastian T. Rowland, PSE Healthy Energy, Oakland, CA; Daniel Bon, Carbon Mapper, Pasadena, CA; Daniel H. Cusworth, Carbon Mapper, Pasadena, CA, and University of Arizona, Tucson, AZ

Session 5B: Fenceline and Near-source Studies
[concurrent with Sessions 5A and 5C]
Royal AB

Chairs: David Berkowitz and Ray Merrill, US EPA

10:40 am – 11:05 am
ME04 **Utilization of Broadband Cavity Ring-down Spectroscopy for Mobile Leak Detection in the Port of Rotterdam...N/A**
Hugo Bison, DCMR Rijnmond Environmental Service, Schiedam, The Netherlands; Aurelie Marcotte, Anthony Miller, Entanglement Technologies, Inc., San Bruno, CA

11:05 am – 11:30 am
ME122 **Optically Enhanced "WaveRunIR™-EXT45" Targeting Ethylene Oxide...331**
Troy M. Boley, Spectrum Environmental Solutions LLC, Austin, TX

11:30 am – 11:55 am
ME14 **Assessing Fuel Storage Tank Fugitive Emissions Using Lower-cost Sensors and Triggered Canisters: The Greensboro Storage Tank Assessment with Remote Sensing Technologies (G-START) Project...341**
Wyatt M. Champion, Megan MacDonald, Ingrid George, Eben Thoma, US EPA ORD, RTP, NC; Jacob D. Carpenter, Ryan Brown, Daniel Garver, US EPA Region 4, Atlanta, GA; Brittany Thomas, Jacobs Technology Inc., Tullahoma, TN

11:55 am – 12:20 pm
ME45 **Demonstration of a Novel Odor Identification System using Remotely Operated Canister Samplers (ROCS) with an Odor Reporting Tool in Rubbertown...352**
Ingrid George, Rachelle Duvall, William Mitchell, Lillian Alston, US EPA ORD, RTP, NC; Nina Warren, Oak Ridge Associated Universities, Oak Ridge, TN; Garrett Wiley, Matthew Collins, Jacobs Technology, Inc., RTP, NC; Sheryl Good, EPA Region 4, Atlanta, GA; Billy DeWitt, Michelle King, Louisville Metro Air Pollution Control District, Louisville, KY; Catherine Seppanen, University of North Carolina at Chapel Hill, Chapel Hill, NC

Session 5C: Emissions from Agriculture
[concurrent with Sessions 5A and 5B]
Auditorium

Chairs: John Walker and Ian Rumsey, US EPA

10:40 am – 11:05 am
ME27 **Slurry Funnels with Partial Pit Ventilation and Frequent Flushing as a Strategy to Mitigate Emissions from Sow Farms...N/A**
Pablo García, Anders Feilberg, Lise B. Guldberg, Michael J. Hansen, Aarhus University, Aarhus, Denmark

11:05 am – 11:30 am
ME137 **Engineered Windbreak Wall Can Reduce Odor and Ammonia Emissions from Livestock Barns...364**
Sanjay Shah, Richard Goforth, Jonas Asbill, Praveen Kolar, North Carolina State University, Raleigh, NC

11:30 am – 11:55 am
ME94 **Significant Underestimation of Broiler House Emission Rates with Static Chamber-Based Methods...N/A**
Huan Chen, Clemson University, SC; Changyoon Jeong, Louisiana State University Agricultural Center, Bossier City, LA; Kyoung S. Ro, USDA Agricultural Research Service, SC

11:55 am – 12:20 pm
ME18 **Ammonia and Ammonium Concentrations and Deposition in the Near Fields of Poultry Production Facilities...N/A**
Sam Cherotich, Suraya Akter, Lingjuan Wang-Li, Lingying Zhao, Kenneth Anderson, John Classen, Wei Shi, North Carolina State University, Raleigh, NC

12:20 pm – 1:30 pm
Featured Presentation and Lunch
Empire Ballroom

A Personal View of Early Topics in the Study of Black Carbon Aerosols...377
Dr. Tony Hansen, President, Magee Scientific Co.; Lawrence Berkeley National Lab (retired)

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Session 6A: GHG Monitoring – ONG
[concurrent with Sessions 6B and 6C]
Imperial 123

Chairs: Mercy Mbua, Colorado State University, and Paul Van Rooy, US EPA

Session 6B: NGEM for Ethylene Oxide
[concurrent with Sessions 6A and 6C]
Royal AB

Chairs: Megan Macdonald and David Berkowitz, US EPA

Session 6C: Air Toxics/VOC Ambient
[concurrent with Sessions 6A and 6B]
Auditorium

Chairs: Doris Chen, US EPA, and Randy Bower, ERG

1:30 pm – 1:55 pm
ME73 **Quantifying Emissions from a Small Oil Sands Demonstration Pit Lake using OP-FTIR Measurements Coupled with Vertical Radial Plume Mapping...N/A**
Youssef Taha, Ignacio Gallardo, Ahmad Kia, Randy Rudolph, AECOM

1:55 pm – 2:20 pm
ME102 **Detection, Localization and Quantification of Methane Emissions on Oil and Gas Sites Using Point in Space Continuous Monitoring Systems...400**
Dorit Hammerling, William Daniels, Meng Jia, Colorado School of Mines

2:20 pm – 2:45 pm
ME95 **Assessing the Progress of the Performance of Continuous Emission Monitoring Solutions Under a Single-Blind Controlled Testing Protocol...420**
Chiemezie Ilonze, Ethan Emerson, Daniel Zimmerle, Aidan Duggan, Colorado State University, Fort Collins, CO

2:45 pm – 3:10 pm
ME83 **A Data-Driven Algorithm for Optimizing Continuous Monitoring Point-Sensor Placement on Oil and Gas Sites...427**
Meng Jia, Troy Sorensen, Dorit Hammerling, Colorado School of Mines

1:30 pm –1:55 pm
ME30 **Ethylene Oxide (EtO) Field Ambient Method Evaluation (FAME)...N/A**
Ali Gitipour, Lillian Alston, Ingrid George, US EPA ORD, RTP, NC; Faith Waldron, Preston Burnette, Jacobs Technology, Inc., RTP, NC; Alexia Scott, Eastern Research Group; Nina Warren, Oak Ridge Associated Universities, Oak Ridge, TN

1:55 pm – 2:20 pm
ME86 **Performance Evaluations of CRDS-Based Ethylene Oxide Monitoring Systems for Workplace and CEMS Applications...454**
J.D. Bent, G. Lucic, D. Miller, J. Avrunin, K. Baumann, K. Skog, Picarro Inc, Santa Clara, CA

2:20 pm – 2:45 pm
ME117 **Mobile and Multipoint Process Unit Monitoring of Ethylene Oxide Emissions at a Chemical Facility in EPA Region 7...462**
Eben D. Thoma, Ali Gitipour, Ingrid George, Peter Kariher, Megan MacDonald, Wyatt Champion, US EPA ORD, RTP, NC; Alex Edwards, US EPA Region 7, Lenexa, KS; Josh Childers, Volker Schmid, CleanAir Engineering Inc., Pittsburgh, PA

2:45 pm – 3:10 pm
ME126 **Ethylene Oxide Measurements Near a Chemical Facility in Verona, Missouri: Interim Results...478**
Alex Edwards, Andy Hawkins, US EPA Region 7 Air and Radiation Division; Adam Zachary, US EPA Region 7 Laboratory Services and Applied Science Division; Mike Davis, US EPA Region 7 Office of Intergovernmental Affairs; Eben Thoma, Ingrid George, Ali Gitipour, Megan MacDonald, US EPA ORD

1:30 pm –1:55 pm
ME136 **Determination of Ethylene Oxide at Ultra-Trace Concentrations in Ambient Air Using EPA Method TO-15A: Optimization of VOC Preconcentrator and GC/MS Analytical Method Parameters...489**
Tamira Cousett Karen Oliver, Andrew Whitehill, US EPA ORD, RTP, NC; Carlton Witherspoon, Jacobs Technology, Inc., Tullahoma, TN

1:55 pm – 2:20 pm
ME107 **A Cryogen Free TO15 Preconcentrator with Reduced Air Background for Measuring Ethylene Oxide at Low Part Per Trillion Levels...N/A**
Daniel B Cardin, Tom X Robinson, Daniel J Cardin, John Quintana, Entech Instruments, Simi Valley, CA

2:20 pm – 2:45 pm
ME32 **Incorporating Ethylene Oxide Into TO-15a. Discussion on the Development of the Analytical Method and Efforts to Achieve the Lowest Possible Detection Limit...N/A**
Ericka Hackmeister, Markes International Inc, Sacramento, CA; Hannah Calder, Laura Miles, Markes International Ltd, Brigend, UK

2:45 pm – 3:10 pm
ME129 **Overcoming the Difficulties of Implementing TO-15A in Ambient Air Laboratories...505**
Mitchell Howell, Kyle Rasmus, Julie L. Swift, Donna Tedder, Eastern Research Group, Inc., Morrisville, NC

3:10 pm – 3:40 pm
Networking Break, Exhibition Viewing, and Poster Viewing
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Session 7A: GHG Monitoring – ONG
[concurrent with Sessions 7B and 7C]
Imperial 123

Chairs: Mercy Mbua and Chiemezie Illonze, Colorado State University

3:40 pm – 4:05 pm
ME03 **Examining Advancements in Semiconducting Methane Sensors: Reducing Moisture Interference in Stationary Methane Emissions Detection Units...519**
Michael Krenek, Field Geo Services, Inc.

4:05 pm – 4:30 pm
ME05 **Comparing Mox and Laser Spectroscopy Technology in Point Sensor Networks for Continous Monitoring of Methane Emissions...529**
Javier Bilbao, Sensirion Connected Solutions, Switzerland

4:30 pm – 4:55 pm
ME46 **A New Instrument for Ambient Atmospheric Methane Measurement...545**
Matt Walbran, David Bones, Anna Farquhar, Geoff Henshaw, Aeroqual

4:55 pm – 5:20 pm
ME50 **Comparative Performance Analysis of Ground-Based Continuous Methane Measurement Sensors...N/A**
Dustin Solomon, Ali Lashgari, William Foiles, Project Canary, PBC

Session 7B: Fugitive and Fenceline NGEM
[concurrent with Sessions 7A and 7C]
Royal AB

Chairs: Stephen Jackson and Ali Gitipour, US EPA

3:40 pm – 4:05 pm
ME15 **Towards Application-based Automated Processing of Fenceline Sensor Data...555**
Megan MacDonald, Eben Thoma, Wyatt Champion, Ingrid George, US EPA ORD, RTP, NC

4:05 pm – 4:30 pm
ME33 **Strategies for Geospatial Mobile Monitoring...568**
Alexia Scott, ERG, Morrisville, NC

4:30 pm – 4:55 pm
ME84 **Continuous Community Monitoring of Air Quality Around Major Refineries in Los Angeles Area Using Mobile Extractive FTIR and DOAS...577**
Jerker Samuelsson, Johan Mellqvist, Antony Babore, Daniel Ruiz, FluxSense Inc, Huntington Beach, CA; Olga Pikelnaya, South Coast Air Quality Management District, Diamond Bar, CA

4:55 pm – 5:20 pm
ME70 **Utilizing Multiple Air Detection Methods for Effective Leak Detection and Repair at Refineries...589**
Eliko Angel, Amir Sagi, Bazan Oil Refiners, Haifa, Israel; Mark Wicking Baird, Argos Scientific Africa Inc., Cape Town, South Africa

Session 7C: Air Toxics/VOC Ambient
[concurrent with Sessions 7A and 7B]
Auditorium

Chairs: Randy Bower, ERG, and Doris Chen, US EPA

3:40 pm – 4:05 pm
ME124 **Update on Diffusive Sampling of Volatile Organic Compounds on CarbopackTM X and CarbographTM 5TD...596**
Andrew R. Whitehill, Tamira Cousett, Karen Oliver, US EPA ORD, RTP, NC

4:05 pm – 4:30 pm
ME110 **Optimizing EPA Method 325 by Performing Secondary Trapping of TD Tube Recovered Compound Inside of the GCMS Oven...N/A**
Daniel B Cardin, Daniel J Cardin, Tom Robinson, Weier Hao, John Quintana, Entech Instruments, Simi Valley, CA

4:30 pm – 4:55 pm
ME118 **Highly Resolved Formaldehyde Measurements in Suburban Outdoor and Indoor Air: Long-term Monitoring of Concentrations and Emission Rates...607**
Karsten Baumann, Jonathan Bent, Jan Woźniak, Juan Carlos Guerrero, Kai Skog, Chris Rella, Joel Avrunin, Picarro Inc., Santa Clara, CA

4:55 pm – 5:20 pm
ME77 **Using Automated Gas Chromatography for Continuous Monitoring of Ambient Air Toxics in Communities...N/A**
Yifan Yu, Catalina Tsai, Olga Pikelnaya, Andrea Polidori, South Coast Air Quality Management District, Diamond Bar, CA; Tsung-Kuan A. Chou, Tirah Wu, Douglas Chen, Tricorntech Corporation, San Jose, CA

5:30 pm – 7:00 pm
Women in Science Networking Event
Imperial 123 & Foyer

Women in Science Now: How to Use Science to Overcome the Remaining Hurdles to Equity...N/A
Lisa M.P. Munoz, Author of *Women in Science Now: Stories and Strategies for Achieving Equity* Moderated by Aurelie Marcotte, Entanglement Technologies

Networking event to follow discussion. All attendees are welcome to join!

Technical Program – Thursday, November 16

7:30 am – 12:00 pm
Conference Registration
Imperial Foyer

7:30 am – 8:30 am
Continental Breakfast and Presenters' Meeting
Imperial Foyer and Session Rooms

Session 8A: Advances in Underground NG Leak Detection
[concurrent with Sessions 8B and 8C]
Imperial 123

Chairs: Hannah Halliday and Wyatt Champion, US EPA

8:30 am – 8:55 am
ME09 Methane Emissions Quantification using Advanced Mobile Leak Detection and EQ Platforms...617
Alnoor Ebrahim, John D. Drumheller, Southern Cross/Sparus Holdings, Norcross, GA

8:55 am – 9:20 am
ME41 **Using Controlled Subsurface Releases to Investigate the Effect of Leak Variation on Above-ground Natural Gas Detection...628**
Mercy Mbua, Stuart N. Riddick, Fancy Cheptonui, Cade Houlihan, Younki Cho, Daniel J. Zimmerle, Colorado State University, Fort Collins, CO; Shanru Tian, The University of Texas, Arlington, TX; Kathleen M. Smits, South Methodist University, Dallas, TX

9:20 am – 9:45 am
ME43 **Emissions Measurement and Reduction in Gas Distribution Networks...641**
Robby Vaughn, Picarro, Santa Clara, CA

9:45 am – 10:10 am
ME98 **Modeling Approach to Quantify a Below Ground Pipeline Leak Using Aboveground Instruments...649**
Fancy Cheptonui, Stuart N. Riddick, Dan Zimmerle, Colorado State University, Fort Collins, CO

Session 8B: Advancement in EtO Measurements
[concurrent with Sessions 8A and 8C]
Royal AB

Chairs: Ali Gitipour and Nealson Watkins, US EPA

8:30 am – 8:55 am
ME57 **Cavity Ring-Down Spectroscopy Method Validation and OTM Development...N/A**
Josh Childers, Clean Air Engineering, Inc., Pittsburgh, PA

8:55 am – 9:20 am
ME97 **Applying OE-FTIR for Compliance with Ethylene Oxide Emissions Test Methods...N/A**
Olivia Madamba, Kelly McPartland, Thermo Fisher Scientific, East Windsor, CT

9:20 am – 9:45 am
ME115 **Speciated Volatile Organic Compound and Ethylene Oxide Emissions from Residential Wood and Pellet Stove Appliances...661**
Nina Warren, Oak Ridge Associated Universities, Oak Ridge, TN; Ingrid George, Larry Virtaranta, Edgar Thompson, Peter Kariher, Joseph Martin, Michael Hays, Tiffany Yelverton, Amara Holder, Lillian Alston, US EPA ORD, RTP, NC; Angelina Brashear, US EPA OAQPS, RTP, NC; Diya Yang, Jacobs Technology, Inc., RTP, NC

9:45 am – 10:10 am
ME59 **Review of Ethylene Oxide Monitoring and Measurements with AROMA-ETO...N/A**
Anthony Miller, Jake Margolis, Aurelie Marcotte, Michael Armen, Entanglement Technologies, Inc., San Bruno, CA

Session 8C: Mobile Source Emissions
[concurrent with Sessions 8A and 8B]
Auditorium

Chairs: Eric Winegar, Sonoma Technology, Inc., and Joe Martin, US EPA

8:30 am – 8:55 am
ME48 **Personal Exposure to Particle Number Concentration in Various Transport Modes During Rush Hour Along a Fixed Route in Delhi...N/A**
Akash Kumar Singh, Dudun Mehta, Arun Srivastava, Jawaharlal Nehru University, New Delhi

8:55 am – 9:20 am
ME61 **Variability of Light-duty Vehicle Emissions in Utah County...N/A**
Darrell Sonntag, Amber Allen, Brigham Young University

9:20 am – 9:45 am
ME121 **Desorption and Quantification of 6PPD and 6PPD-quinone from Tire Wear Particulate on Quartz Fiber Filters...672**
Joseph Martin, US EPA ORD

9:45 am – 10:10 am
ME116 **Use of Real-Time Mass Spectrometer for Measuring VOC Emissions from Road Transport...681**
Leslie Silva, Nathan Hoppens, Syft Technologies, Los Angeles, CA; Samuel Cliff, Ally Lewis, Marvin Shaw, James Lee, Stephen Andrews, Jim Hopkins, Ruth Purvis, Amber Yeoman, University of York, York, UK; Michael Flynn, University of Manchester, Manchester, UK

10:10 am – 10:40 am
Networking Break
Imperial Foyer

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Session 9A: Advancements in GHG Mobile Monitoring Platforms
[concurrent with Sessions 9B and 9C]
Imperial 123

Chairs: Aurelie Marcotte, Entanglement Technologies, and Hannah Halliday, US EPA

10:40 am – 11:05 am
ME42 **Towards Understanding Methane Emission Uncertainties from Datasets Simulating UAV-mounted TDLAS In-situ Measurements...696**
Kyle Dawson, Abigail Corbett, Brendan Smith, Peter Barber, Iain Cooper, SeekOps, Inc.

11:05 am – 11:30 am
ME44 **Industrial GHG Emissions Monitoring from In-situ Methane and CO2 Concentration Measurements On-board an Unmanned Aircraft Vehicle...706**
Ludovic Donnat, Catherine Juéry, Olivier Ventre, Florent Pineau, Abel Maunoury, Nicolas Galas, Laura Chaussinand, Rachel Levi, Theo Hirth, Caroline Castano Uribe, Nicolas Huet, Total Energies OneTech, France; Lilian Joly, Jean-Louis Bonne, Nicolas Dumelié, Jérémie Burgalat, Nicolas Chauvin, Julien Cousin, Thomas Decarpenterie, Reims University, France

11:30 am – 11:55 am
ME82 **Drone Based Measurments of Emissions of CH4 in Industrial Applications...715**
Johan Mellqvist, Vladmir Conde, Chalmers University of Technology, Gothenburg, Sweden; Sumedh Bandodkar, Samuel Brohede, Pontus Andersson, Brian Offerle, Jerker Samuelsson, FluxSense AB, Gothenburg, Sweden

11:55 am – 12:20 pm
ME138 **Resolving Pitfalls in Nitrogen Dioxide Measurements...728**
Charles Odame-Ankrah, Global Analyzer Systems Ltd

Session 9B: Air Shed Measurements and Analysis
[concurrent with Sessions 9A and 9C]
Royal AB

Chairs: Nealson Watkins and Andrew Whitehill, US EPA

10:40 am – 11:05 am
ME60 **Observations of Volatile Organic Compunds and Nitrogen Oxides at Carlsbad Caverns National Park: Source Attribution and Impacts on Ozone Formation...741**
Andrey Marsavin, Da Pan, Yong Zhou, Amy P. Sullivan, Lillian E. Naimie, Ilana B. Pollack, Julieta F. Juncosa Calahoranno, Emily V. Fischer, Barkley C. Sive, Jeffrey L. Collett Jr., Colorado State University, Fort Collins, CO; Anthony J. Prenni, Bret A. Schichtel, Colorado State University and National Parks Service Air Resource Division, Lakewood, CO; Katherine B. Benedict, Los Alamos National Laboratory, Los Alamos, NM

11:05 am – 11:30 am
ME64 **A Deep Dive into Next Generation BTEX Ambient Air Monitors...759**
Jason C. Schroder, Pamela Rickly, Derek Price, Heather McIntyre, Jon Kinney, Colorado Department of Public Health and Environment

11:30 am – 11:55 am
ME96 **Using a Spatial Canister Network to Determine Source Contributions and Local Emission Rates of Methane and Volatile Organic Compounds...N/A**
Jeffrey L. Collett, Jr., Emily Lachenmayer, Weixin Zhang, I-Ting Ku, Da Pan, Yong Zhou, Colorado State University, Fort Collins, CO; Brent Buck, Morgan Frazier, Ajax Analytics, Fort Collins, CO

11:55 am – 12:20 pm
ME08 **Estimating Local-scale Impacts of Air Pollution Sources Using High Time Resolution Measurement Data...769**
Janet Burke, US EPA ORD, Durham, NC; Ronald Henry, University of Southern California (retired), Los Angeles, CA; Will Wetherell, Missouri Department of Natural Resources, Jefferson City, MO; Katherine Haile, Scott Hamilton, US EPA Region 5, Chicago, IL; Charles Scarborough, Crystal McClure, Sonoma Technology, Petaluma, CA; Tim Hanley, Nealson Watkins, US EPA OAR, Durham, NC

Session 9C: Data Quality and Quality Assurance
[concurrent with Sessions 9A and 9B]
Auditorium

Chairs: Joe Martin, US EPA, and Eric Winegar, Sonoma Technology, Inc.

10:40 am – 11:05 am
ME55 **Development of an Efficient Method for Trace-level Analysis of Ozone Depleting Substances in Ambient Air...779**
Lilin Zhou, Zhichao Liu, Yujun Hu, Shuai Wu, Qingyu Zhang, Sirong Lin, Gesheng Dai, Nutech Instruments, Inc.

11:05 am – 11:30 am
ME01 **An Improved Approach to Analysis of Air Quality Data...790**
David R. Weise, USDA Forest Service, Riverside, CA; Javier Palarea-Albaladejo, University of Girona, Girona, Catalonia, Spain

11:30 am – 11:55 am
ME25 **A Remote Calibration Methodology for Urban Air Sensor Networks...800**
Lena F Weissert, Geoff S Henshaw, David E Williams, Aeroqual

11:55 am – 12:20 pm
ME80 **Performance Evaluation of VOCS and PM 2.5 Low Cost Sensors in Harris County, TX...811**
Loredana Suciu, Bradley Flowers, AECOM Technical Services Inc., Houston, TX

Technical Posters

Posters will be on display in the Imperial Foyer to view during breaks throughout the conference!

ME11 Fast Response Open-Path Mobile Gas Leak Detector...823
Paul Wehnert, Heath Consultants

ME16 A Low-Cost Sensor Platform for Mobile Methane Measurements...N/A
Jonathan Silberstein, University of Colorado at Boulder, Boulder, CO

ME28 Proactive Emission Monitoring in Petrochemical Industries: An Expanded Application Case for the Extended Use of PAMS...N/A
Chung-Laing Tai, Jen-Shuo Hsieh, Tsang-Chin Chen, EPA, Executive Yuan, Taiwan; Chi-Pei Li, Yen-Ting Lu, Tzu-Hao Kuo, Sinotech Engineering Services, Ltd., Taipei, Taiwan

ME31 Characterization of Ambient Hazardous Air Pollutant and Control from Gas Stations...824
Yung-Chen Yao, Shih-Ru Tsai, Industrial Technology Research Institute, Taiwan, ROC; Chung-Liang Tai, Environment Protection Administration, Executive Yuan, Taiwan, ROC; Wen-Tzu Liu, Chung Yuan Christian University, Taoyuan, Taiwan, ROC

ME35 High-Resolution Mobile Community Air Monitoring in Disadvantaged Communities Across New York State...N/A
Joseph Marto, Dominic Moronta, Gavin Lemley, Amanda Teora, New York State Department of Environmental Conservation, Albany, NY

ME53 Simple, Novel High-Precision Cavity Ringdown Spectroscopy for Air Monitoring of CO_2 and CH_4...825
James N. Hodges, Rebecca Livingston, Brian M. Siller, Process Insights, Horsham, PA

ME78 Defensible Emissions Measurement Methods Are Required to Support Plugging and Abandonment of Orphaned Oil and Gas Wells...826
David L. Elam, Jr., TRC Environmental Corporation; David Stewart, Greenfield Environmental Solutions

ME91 A Multi-disciplinary Approach to Estimate the Temporal and Spatial Emissions of Fugitive Dust from Desert Area Sources...827
Maarten D. Schreuder, Yohannes T. Yimam, Brian M. Schmid, Hank Dickey, Formation Environmental LLC, Sacramento, CA; Jessica Humes, Imperial Irrigation District, Imperial, CA

ME111 Reliable Long-Term Sampling into Vacuum Sampling Canisters...N/A
Daniel B. Cardin, John Quintana, Entech Instruments, Simi Valley CA

ME112 Advanced Quantification of Methane Emissions Using UAV Curtain Flux Method and Comparison with Flux Chamber Method...N/A
Ramin Yazdani, Sajjad Karimi, University of California at Davis; Paul Imhoff, University of Delaware; Madjid Delkash, Delkash Consulting; Mint Kunkel, Michael Thorpe, Bridger Photonics, Inc.; Eladio Knipping, Stephanie Shaw, EPRI

ME123 Characteristics of Condensable Particulate Formation in the EPA Method 202 Sampling Train...N/A
Paul Van Rooy, Dave Nash, Ned Shappley, Walter Lin, US EPA OAR, RTP, NC; Peter Kariher, US EPA ORD, RTP, NC; Jason Dewees, US EPA OAR and ORD

ME131 Use and Modifications to the Ambient Ion Monitor for Use in Source Characterization in Agricultural Environments...N/A
Philip J. Silva, USDA-ARS, Bowling Green, KY

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