

**HAMPDEN D. KUHNS**  
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### **Education**

|       |      |                                    |                                 |
|-------|------|------------------------------------|---------------------------------|
| Ph.D. | 1997 | Carnegie Mellon University         | Civil Engineering               |
| M.S.  | 1995 | Carnegie Mellon University         | Civil Engineering               |
| B.S.  | 1992 | California Institute of Technology | Engineering and Applied Science |
| B.A.  | 1992 | Occidental College                 | Physics/3-2 Combined Program    |

### **Research Experience**

Dr. Hampden Kuhns has been a principal investigator and an active member in numerous air quality studies. His research has focused on the measurement and interpretation of emission factors from vehicle suspended road dust, mobile exhaust, and stationary sources. He designed and built the TRAKER road dust measurement system, a novel tool for measuring dust emissions from paved and unpaved roads. Dr. Kuhns has also performed applied research in the fields of chemical characterization of air pollutants, source characterization, source apportionment, GIS applications in air quality, and modeling of secondary inorganic aerosol formation. Dr. Kuhns has extensive experience in ambient air pollutant and emissions data analysis and validation. He has worked closely with officials in local and state governments to ensure that results from air quality studies can be directly applied to air pollution mitigation, state implementation plan (SIP) preparation, and compliance with U.S. EPA air quality standards.

Recently, Dr. Kuhns has developed instrumentation and algorithms to provide building managers with detailed information about their electric power and natural gas consumption. The end product of this research will be a device that identifies utility inefficiencies within a building and promote conservation.

### **Professional Experience**

|                |   |
|----------------|---|
| 2007 – Present | President/CEO IBUCS LLC   |
| 2007 – Present | Research Professor, Desert Research Institute                                   |
| 2003 – 2007    | Associate Research Professor, Desert Research Institute                         |
| 2002 – Present | Graduate Faculty, Dept of Physics, University of Nevada Reno                    |
| 1999 – 2001    | Graduate Faculty, Dept of Mechanical Engineering University of Nevada Las Vegas |
| 1998 – 2003    | Assistant Research Professor, Desert Research Institute                         |
| 1997 – 1998    | Air Quality Scientist, Desert Research Institute                                |

## **Awards**

Gillies, J. A., N. Lancaster, H. D. Kuhns, H. Moosmüller, E. McDonald, D. Gillette, and W. Nickling (2004). SERDP project (CP-1191) Characterizing and Quantifying Local and Regional Particulate Matter Emissions from Department of Defense Installations, SERDP Compliance Project of the Year.

## **Select Committees**

- Member, Desert Research Institute, Faculty Senate (1999-2002; 2005 - 2008)
- Member, Desert Research Institute, Program and Budget Committee (2003 – 2007; Chair in 2005-2006)
- Chair, Desert Research Institute, Faculty Senate (2006 - 2007)
- Co-Chair, Open Path Remote Sensing Technology Conference, U.S. E.A., (2002)
- Treasurer, Las Vegas Chapter Air and Waste Management Assoc. (1999 - 2001)
- Member and Session Chair, Las Vegas AWMA Technical Conference (2001)
- Chair, Air and Waste Management Association Annual Conference Section: Visibility Field Studies - Technical Session (2000)
- Member, Clark County Emissions Inventory Committee (1999)
- Member, Air Quality Subcommittee, Clark County (1999)
- Co-Chair, Air and Waste Management Association Annual Conference Section: Visibility Field Studies - Technical Session (2000)

## **Graduate Student Advisor**

- Gayathri Parthasarathy - Masters in Computer Science, 2006.
- Nicholas Nussbaum – Masters in Atmospheric Science, Expected Graduation May 2007
- Dongzi Zhu – Ph.D. in Atmospheric Science, Expected Graduation May 2008

## **Manuscript Review**

- Aerosol Science and Technology
- Environmental Science and Technology
- Atmospheric Environment
- Science of the Total Environment
- Journal of the Air and Waste Management Association
- Journal of Geophysical Research
- Geophysical Research Letters

## **Memberships**

- Air and Waste Management Association
- American Association of Aerosol Research

### **Patents and Patents Pending**

- Etyemezian, V., H. Kuhns, M. Pitchford, S. Ahonen, G. Nikolich (2007) Wind shear inducing soil stability measuring device. USPTO # 7,155,966.
- Kuhns H., M. Roberts, G. Nikolich, and Edwards (US/20090307178) Utility Monitoring Systems and Methods of Use. USPTO Pending, Submitted 11/15/2008.

### **Pending Publications**

- Gertler, A.W., A. Bytnerowicz, T.A. Cahill, S. Cliff, and H. Kuhns (2008). The Contribution of Atmospheric Pollutants to Declining Water Clarity in the Lake Tahoe Basin, *Restoration Ecology*, submitted.
- Zhu et al (2010) Onboard and In-plume Exhaust Measurements (in review)

### **Peer Reviewed Publications**

- Gillies, J., V. Etyemezian, H. Kuhns, J. McAlpine, J. King, S. Uppapalli, G. Nikolich, and J. Engelbrecht, 2010: Dust emissions created by low-level rotary-winged aircraft flight over desert surfaces, *Atmos. Environ.*, **44**, 1043-1053.
- Zhu, D., H.D. Kuhns, J.A. Gillies, V. Etyemezian, A.W. Gertler, and S. Brown, 2010: Inferring deposition velocities from changes in aerosol size distributions downwind of a roadway, *Atmos. Environ.*, doi:10.1016/j.atmosenv.2010.11.004
- Kuhns, H., J. Gillies, V. Etyemezian, G. Nikolich, J. King, D. Zhu, S. Uppapalli, J. Engelbrecht, and S. Kohl, 2010: Effect of Soil Type and Momentum on Unpaved Road Particulate Matter Emissions from Wheeled and Tracked Vehicles, *Aerosol Sci. Technol.*, **44**, 2010, 193-202.
- Zhu, D., N.J. Nussbaum, H.D. Kuhns, M.O. Chang, D. Sodeman, S. Uppapalli, H. Moosmüller, J.C. Chow, and J.G. Watson, 2009: In-Plume Emission Test Stand 2: emission factors for 10- to 100-kW U.S. military generators, *J. Air & Waste Manage. Assoc.*, **59**, 1446-1457.
- Nussbaum, N.J., D. Zhu, H.D. Kuhns, C. Mazzoleni, M.O. Chang, H. Moosmüller, and J.G. Watson, 2009: The In-Plume Emission Test Stand: an instrument platform for the real-time characterization of fuel-based combustion emissions, *J. Air & Waste Manage. Assoc.*, **59**, 1437-1445.
- Zhu, D., H.D. Kuhns, S. Brown, J.A. Gillies, V. Etyemezian, and A.W. Gertler, 2009: Fugitive dust emissions from paved road travel in the Lake Tahoe basin, *J. Air & Waste Manage. Assoc.*, **59**, 1219-1229.
- Mazzoleni, C., H.D. Kuhns, H. Moosmüller, J. Witt, N.J. Nussbaum, M. Oliver Chang, G. Parthasarathy, S.K.K. Nathagoundenpalayam, G. Nikolich, and J.G. Watson, 2007: A case study of real-world tailpipe emissions for school buses using a 20% biodiesel blend, *Sci. The Total Environ.*, **385**, 146-159.
- Etyemezian, V., G. Nikolich, S. Ahonen, M. Pitchford, M. Sweeney, R. Purcell, J. Gillies, and H. Kuhns, 2007: The Portable In Situ Wind Erosion Laboratory (PI-SWERL): A new method to measure PM10 windblown dust properties and potential for emissions, *Atmos. Environ.*, **41**, 3789-3796.

- Gillies, J.A., H. Kuhns, J. Engelbrecht, S. Uppapalli, V. Etyemezian, and G. Nikolich, 2007: Particulate emissions from U.S. Department of Defense artillery backblast testing, *J. Air & Waste Manage. Assoc.*, **57**, 551-560.
- Etyemezian, V., H. Kuhns, and G. Nikolich, 2006: Precision and repeatability of the TRAKER vehicle-based paved road dust emission measurement, *Atmos. Environ.*, **40**, 2953-2958.
- Moosmüller, H., R. Varma, W. Arnott, H.D. Kuhns, V. Etyemezian, and J.A. Gillies, 2005: Scattering cross-section emission factors for visibility and radiative transfer applications: military vehicles traveling on unpaved roads, *J. Air & Waste Manage. Assoc.*, **55**, 1743-1750.
- Kuhns, H., E.M. Knipping, and J.M. Vukovich, 2005: Development of a United States-Mexico Emissions Inventory for the Big Bend Regional Aerosol and Visibility Observational (BRAVO) Study, *J. Air & Waste Manage. Assoc.*, **55**, 677-692.
- Gillies, J., V. Etyemezian, H. Kuhns, D. Nikolic, and D. Gillette, 2005: Effect of vehicle characteristics on unpaved road dust emissions, *Atmos. Environ.*, **39**, 2341-2347.
- Kuhns, H., J. Gillies, V. Etyemezian, D. Dubois, S. Ahonen, D. Nikolic, and C. Durham, 2005: Spatial variability of unpaved road dust PM10 emission factors near El Paso, Texas, *J. Air & Waste Manage. Assoc.*, **55**, 3-12.
- Barber, W., H. Moosmüller, R.E. Keislar, H.D. Kuhns, C. Mazzoleni, and J.G. Watson, 2004: On-road measurement of automotive particle emissions by ultraviolet Lidar and transmissometer: theory, *Measurement Sci. Technol.*, **15**, 2295-2302.
- Mazzoleni, C., H. Moosmüller, H.D. Kuhns, R.E. Keislar, W. Barber, D. Nikolic, N.J. Nussbaum, and J.G. Watson, 2004: Correlation between automotive CO, HC, NO, and PM emission factors from on-road remote sensing: implications for inspection and maintenance programs, Transportation Research Part D: *Transport Environ.*, **9**, 477-496.
- Etyemezian, V., S. Ahonen, D. Nikolic, J. Gillies, H. Kuhns, D. Gillette, and J. Veranth, 2004: Deposition and removal of fugitive dust in the arid southwestern United States: measurements and model results, *J. Air & Waste Manage. Assoc.*, **54**, 1099-1111.
- Mazzoleni, C., H.D. Kuhns, H. Moosmüller, R.E. Keislar, W. Barber, N.F. Robinson, J.G. Watson, and D. Nikolic, 2004: On-road vehicle particulate matter and gaseous emission distributions in Las Vegas, Nevada, compared with other areas, *J. Air & Waste Manage. Assoc.*, **54**, 711-726.
- Kuhns, H.D., C. Mazzoleni, H. Moosmüller, D. Nikolic, R.E. Keislar, W. Barber, Z. Li, V. Etyemezian, and J.G. Watson, 2004: Remote sensing of PM, NO, CO and HC emission factors for on-road gasoline and diesel engine vehicles in Las Vegas, NV. *Sci. The Total Environ.*, **322**, 123-137.
- Chow, J.C., J.G. Watson, H. Kuhns, V. Etyemezian, D.H. Lowenthal, D. Crow, S.D. Kohl, J. Engelbrecht, and M.C. Green, 2004: Source profiles for industrial, mobile, and area sources in the Big Bend Regional Aerosol Visibility and Observational study, *Chemosphere*, **54**, 185-208.

- Moosmüller, H., C. Mazzoleni, W. Barber, H.D. Kuhns, R.E. Keislar, and J.G. Watson, 2003: On-Road Measurement of Automotive Particle Emissions by Ultraviolet Lidar and Transmissometer: Instrument, *Environ. Sci. & Technol.*, **37**, 4971-4978.
- Kuhns, H., V. Etyemezian, M. Green, K. Hendrickson, M. McGown, K. Barton, and M. Pitchford, 2003: Vehicle-based road dust emission measurement--Part II: Effect of precipitation, wintertime road sanding, and street sweepers on inferred PM10 emission potentials from paved and unpaved roads, *Atmos. Environ.*, **37**, 4573-4582.
- Etyemezian, V., H. Kuhns, J. Gillies, M. Green, M. Pitchford, and J. Watson, 2003: Vehicle-based road dust emission measurement: I--methods and calibration, *Atmos. Environ.*, **37**, 4559-4571.
- Etyemezian, V., H. Kuhns, J. Gillies, J. Chow, K. Hendrickson, M. McGown, and M. Pitchford, 2003: Vehicle-based road dust emission measurement (III): effect of speed, traffic volume, location, and season on PM10 road dust emissions in the Treasure Valley, ID, *Atmos. Environ.*, **37**, 4583-4593.
- Green, M., H. Kuhns, M. Pitchford, R. Dietz, L. Ashbaugh, and T. Watson, 2003: Application of the tracer-aerosol gradient interpretive technique to sulfur attribution for the big bend regional aerosol and visibility observational study, *J. Air & Waste Manage. Assoc.*, **53**, 586-595.
- Stockwell, W.R., H. Kuhns, V. Etyemezian, M.C. Green, J.C. Chow, and J.G. Watson, 2003: The Treasure Valley secondary aerosol study II: modeling of the formation of inorganic secondary aerosols and precursors for southwestern Idaho, *Atmos. Environ.*, **37**, 525-534.
- Kuhns, H., V. Bohdan, J.C. Chow, V. Etyemezian, M.C. Green, D. Herlocker, S. Kohl, M. McGown, J. Ramsdell, W.R. Stockwell, M. Toole, and J. Watson, 2003: The Treasure Valley secondary aerosol study I: measurements and equilibrium modeling of inorganic secondary aerosols and precursors for southwestern Idaho, *Atmos. Environ.*, **37**, 511-524.
- Kuhns, H., V. Etyemezian, D. Landwehr, C. MacDougall, M. Pitchford, and M. Green, 2001: Testing Re-entrained Aerosol Kinetic Emissions from Roads: a new approach to infer silt loading on roadways, *Atmos. Environ.*, **35**, 2815-2825.
- Pitchford, M., M. Green, H. Kuhns, and R.J. Farber, 2000: Characterization of regional transport and dispersion using Project MOHAVE tracer data, *J. Air & Waste Manage. Assoc.*, **50**, 733-745.
- Kuhns, H., M. Green, M. Pitchford, L. Vasconcelos, W. White, and V. Mirabella, 1999: Attribution of Particulate Sulfur in the Grand Canyon to Specific Point Sources Using Tracer-Aerosol Gradient Interpretive Technique (TAGIT), *J. Air & Waste Manage. Assoc.*, **49**, 906-915.
- Jaffrezo, J., C.I. Davidson, H.D. Kuhns, M.H. Bergin, R. Hillamo, W. Maenhaut, J.W. Kahl, and J.M. Harris, 1998: Biomass burning signatures in the atmosphere of central Greenland, *J. Geophys. Res.*, **103**, 31067-31078.
- McConnell, J.R., R.C. Bales, J.R. Winterle, H. Kuhns, and C.R. Stearns, 1997: A lumped parameter model for the atmosphere-to-snow transfer function for hydrogen peroxide, *J. Geophys. Res.*, **102**, 26809-26818.

- Kuhns, H., C. Davidson, J. Dibb, C. Stearns, M. Bergin, and J. Jaffrezo, 1997: Temporal and spatial variability of snow accumulation in central Greenland, *J. Geophys. Res.*, **102**, 30059-30068.
- Kahl, J.D.W., D.A. Martinez, H. Kuhns, C.I. Davidson, J. Jaffrezo, and J.M. Harris, 1997: Air mass trajectories to Summit, Greenland: A 44-year climatology and some episodic events, *J. Geophys. Res.*, **102**, 26861-26876.
- Davidson, C.I., M.H. Bergin, and H.D. Kuhns, 1996: Atmospheric deposition of chemical species to polar snow, *Chem. Engineer. Comm.*, **151**, 227–249.
- Bergin, M.H., S.N. Pandis, C.I. Davidson, J. Jaffrezo, J.E. Dibb, A.G. Russell, and H.D. Kuhns, 1996: Modeling of the processing and removal of trace gas and aerosol species by Arctic radiation fogs and comparison with measurements, *J. Geophys. Res.*, **101**, 14465-14478.
- Bergin, M.H., J. Jaffrezo, C.I. Davidson, J.E. Dibb, S.N. Pandis, R. Hillamo, W. Maenhaut, H.D. Kuhns, and T. Makela, 1995: The contributions of snow, fog, and dry deposition to the summer flux of anions and cations at Summit, Greenland, *J. Geophys. Res.*, **100**, 16275-16288.
- Bergin, M.H., C.I. Davidson, J.E. Dibb, J.L. Jaffrezo, H.D. Kuhns, and S.N. Pandis, 1995: A simple model to estimate atmospheric concentrations of aerosol chemical species based on snow core chemistry at Summit, Greenland, *Geophys. Res. Ltrts.*, **22**, 3517-3520.

### **Conference Presentations**

- Kuhns, H, M. Roberts, and G. Nikolich (2009) Non-Intrusive Load Monitoring with Natural Gas and Electricity. Poster presentation, American Council for an Energy-Efficient Economy Poster 178: Summer Study on Energy Efficiency in Industry, July 28 - 31, Niagara Falls, NY.
- Gillies, J.A., A.W. Gertler, D. Zhou, and H. Kuhns (2009). Long term measurements of road dust in the Lake Tahoe region. Invited paper /International Workshop on Environmental Nuisances/, Calgary, AB, Canada, 30 Nov. – 1 Dec, 2009.
- Gillies, J.A., V. Etyemezian, H. Kuhns, J. Engelbrecht, J. King, H. Moosmüller, G. Nikolich, D. Zhu, S. Uppapalli, W. Shaw, and R. Hashmonay (2009). Particulate matter emissions for dust from unique military activities. Poster presented, /Partners in Environmental Technology Technical Symposium and Workshop/, Washington, D.C., 1-3 December, 2009.
- Zhu, D. H. Kuhns, S. Brown, V. Etyemezian, J. Gillies, and A. Gertler (2008). Spatial and Seasonal Emissions of Road Dust in the Lake Tahoe Basin. Presented at the 4th Tahoe Basin Science Conference, Lake Tahoe, California, 2008.
- Etyemezian, V., H. Kuhns, J. Gillies, G. Nikolich, D. James, and S. China (2008). Measurement of Road Dust Emissions: The TRAKER and PI-SWERL Tools. 2008 Road Dust Management Practices and Future Needs Conference, San Anotnio, Texas, November 13-14, 2008.
- Gillies, J.A., V. Etyemezian, H. Kuhns, J. Engelbrecht, J. King, H. Moosmüller, G. Nikolich, D. Zhu, S. Uppapalli, W. Shaw, and R. Hashmonay (2008). Particulate matter emissions for

- dust from unique military activities: tracked vehicles. Poster presented, Partners in Environmental Technology Technical Symposium and Workshop, Washington, D.C., 2-4 December, 2008.
- Gertler, A., T. Brown, T. Cahill, S. Cliff, J. Engelbrecht, J. Gillies, J. Koracin, H. Kuhns, J. Reuter, and T. VanCuren (2008). Air Quality in the Lake Tahoe Air Basin, presented at the Lake Tahoe Environmental Summit, August 16, 2008
- Gertler, A., T. Cahill, J. Gillies, and H. Kuhns (2008). Sources of Atmospheric Pollutants Impacting Air and Water Quality in the Lake Tahoe Basin, presented at the Fall Meeting of the American Geophysical Union, San Francisco, CA, December 15-19, 2008
- Zhu, D., H. Kuhns, J. Gillies, V. Etyemezian, and A.W. Gertler (2008). Long-Term Measurements of Road Dust in the Lake Tahoe Region, presented at Environmental Nuisances: Noise, Light, Odour, & Fugitive Dust, Toronto, ON, February 11-13, 2008
- Zhu, D., H. Kuhns, J. Gillies, V. Etyemezian, and A. Gertler (2008). Spatial and Seasonal Emissions of Road Dust in the Lake Tahoe Basin, presented at the Air and Waste Management Association Annual Conference, Portland, OR, June 24-27, 2008.
- Zhu D., H. Kuhns, S. Brown, V. Etyemezian, J. Gillies, A. Gertler (2008). Spatial and Seasonal Emissions of Road Dust in the Lake Tahoe Basin, 4th Tahoe Basin Science Conference, Incline Village, NV, April.
- Langston, R., R.S. Merle, D. Hart, V. Etyemezian, H. Kuhns, J. Gillies, D. Fitz, K. Bumiller, and D. James (2007). The preferred alternative method for measuring paved road dust emissions for emissions inventories: Mobile technologies vs. the traditional AP-42 methodology. Proceedings of the 16th annual International Emission Inventory Conference – Emission Inventories: Integration, Analysis, and Communications. May 14-17, 2007, Raleigh, North Carolina, USA.
- Kuhns, H., and V. Etyemezian (2007). The Scandalous Truth about Road Dust Emissions: Results from Recent Clark County Studies. Presented to the Best Available Control Technology workgroup, Reno, Nevada, March 13, 2007.
- Etyemezian, V., H. Kuhns, G. Nikolich, D. Fitz, K. Bumiller, R. Merle, and R. Langston (2005). Vehicle based measurement of PM<sub>10</sub> paved road dust emissions in Las Vegas, NV. Spatial distribution of emissions using TRAKER. Paper presented at the Air and Waste Management annual meeting, Minneapolis, MN, June , 2005.
- Fitz, D.R., K. Bumiller, V. Etyemezian, H. Kuhns, and G. Nikolich (2005). Measurement of PM<sub>10</sub> emission rates from roadways in Las Vegas, Nevada using a SCAMPER mobile platform with real-time sensors. Paper presented at the Air and Waste Management annual meeting, Minneapolis, MN, June , 2005.
- Fitz, D.R., K. Bumiller, V. Etyemezian, H. Kuhns, and G. Nikolich (2005). Measurement of PM<sub>10</sub> emission rates from roadways in Las Vegas, Nevada using a SCAMPER mobile platform with real-time sensors. Paper presented at the 2005 EPA Emission Inventory Conference, Las Vegas, NV, April, 2005.
- Kuhns Hampden, Claudio Mazzoleni, Nicholas Nussbaum, Hans Moosmüller, Oliver Chang, Gayathri Parthasarathy, George Nikolic, John Watson, and Jay Witt (2005) Comparison of PM, NO, CO, and HC Emissions from an In-Use School Bus Fleet Using 20%

- Biodiesel and Winter Blend Fuel, poster presented at 15th CRC On-Road Vehicle Emissions Workshop, San Diego, CA, April 2005.
- Kuhns H. (2005) Source Characterization and Emission Inventories. Presentation at Lake Tahoe (LTADS) Workshop, Stateline, NV, December 14th 2005.
- Witt J. and H. Kuhns (2005) Vehicle Emissions Field Study: An Evaluation of Switching a School Bus Fleet to B20, platform presentation at PNWIS 2005 Annual Conference, Blaine WA, November 8-11, 2005.
- Gertler, A., H. Kuhns, J. Gillies, C. Damm, M. Abu-Allaban, R. Clayton, and D. Proffitt (2005). Road Dust Re-entrainment: The Impact of Winter Road Sand/Salt and Street Sweeping on Emissions, presented at the Environmental Nuisances: Noise, Odour and Fugitive Dust Conference, Mississauga, Ontario, Canada - May 9-11, 2005.
- Gertler, A., V. Etyemezian, J. Gillies, and H. Kuhns (2005). Methods to Assess Road Dust Resuspension, presented at the 16th Regional Conference of Clean Air and Environment in the Asian Pacific Area, Tokyo, Japan, August 2-4, 2005.
- Gertler, A. T. Cahill, A. Bytnerowicz, T. VanCuren, S. Cliff, J. Koracin, H. Kuhns, and L. Tarnay (2005). Importance of Atmospheric Sources on Lake Tahoe's Water Quality, presented at the Lake Tahoe Environmental Forum, Tahoe City, CA, August 21, 2005.
- Etyemezian, V., H. Kuhns, G. Nikolich, A. Gertler, D. Fitz, K. Bumiller, R. Merle, and R. Langston (2005). TRAKER: A Method for Fast Assembly and Update of Paved and Unpaved Road Dust Emission Inventories, presented at the 14th International Emission Inventory Conference, Transforming Emission Inventories - Meeting Future Challenges Today, Las Vegas, NV, April 11-14, 2005.
- Etyemezian, V., A. Gertler, J. Gillies, H. Kuhns, C. Damm, C. Denney, and J. Skotnik (2005). Methods To Assess Road Dust Resuspension and Results of Recent Studies, presented at the 15th CRC On-Road Vehicle Emissions Workshop, San Diego, CA, April 4-6, 2005.
- Damm, C.J., Kuhns, H.D., and Gertler, A.W. (2004). An Assessment of Motor Vehicle Particulate Matter Emissions Measurements. presented at the 13th International Scientific Symposium on Transport and Air Pollution, Boulder, CO, September 13-15, 2004
- Gertler, A., Kuhns, H., Damm, C., Gillies, J., Abu-Allaban, M., Clayton, R., and Proffitt, D. (2004). The Impact of Winter Road Sand/Salt and Street Sweeping on Road Dust Re-Entrainment, presented at the 13th International Scientific Symposium on Transport and Air Pollution, Boulder, CO, September 13-15, 2004
- Kuhns H., C. Mazzoleni, H. Moosmüller, D. Nikolic, R. Keislar, Barber, V. Etyemezian, J. Watson (2004) Spatial Analysis of Remotely Sensed Vehicle Exhaust Emissions from Light Duty Gasoline Vehicles in Clark County, Nevada. Paper and platform presentation at the Air and Waste Management annual meeting, Indianapolis, IN, June 22-25.
- Engelbrecht J., R. Tropp, H. Kuhns, M. Green, and J. Watson (2004) Principal Components Analysis (PCA) of Chemical Data from Four IMPROVE Sites in Northeastern USA. Paper and platform presentation at the Air and Waste Management annual meeting, Indianapolis, IN, June 22-25.



- Mazzoleni C., H. Kuhns, H. Moosmüller, N. Nussbaum, O. Chang, D. Nikolic, Barber, R. Keislar, and J. Watson (2004) On-road measurement of Automotive PM Emissions with in-plume and cross-plume systems. Platform presentation at the American Association of Aerosol Research annual meeting in Atlanta, GA, Oct. 4-8.
- Nikolic, D., H. D. Kuhns, H. Moosmüller, J. Xu, J. A. Gillies, S. Ahonen, V. Etyemezian, and M. Pitchford (2004). PI-SWERL: A Novel Method for Quantifying Windblown Dust Emissions. 23rd Annual Conference of the American Association for Aerosol Research, Atlanta, GA, October 4-8, 2004.
- Kuhns H., C. Mazzoleni, H. Moosmüller, N. Nussbaum, O. Chang, J. Chow, W. Barber, and J. Watson (2004) Measurement of in-use vehicle particulate matter exhaust using extractive in-plume monitoring. Poster presentation at the American Association of Aerosol Research annual meeting in Atlanta, GA, Oct. 4-8.
- Moosmüller H., C. Mazzoleni, Barber, H. Kuhns, R. Keislar, J. Watson (2004) An ultraviolet lidar and transmissometer for the on-road measurement of automotive particle emissions. Poster presentation at the American Association of Aerosol Research annual meeting in Atlanta, GA, Oct. 4-8.
- Mazzoleni C., H. Moosmüller, H. Kuhns, Barber, D. Nikolic, N. Nussbaum, O. Chang, R. Keislar, J. Watson (2004) On-road Particulate Matter Emissions from Vehicles by Ultraviolet Backscattering and Extinction Measurements. Platform presentation at the AWMA Specialty Conference Regional and Global Perspectives on Haze, Asheville, NC Oct. 26-29.
- Varma R. M., H. Moosmüller, W. Arnott, J. Walker, H. Kuhns, V. Etyemezian, J. Gillies (2004) Emission Factors of Scattering Cross Section for Visibility Impairment from Fugitive Dust Sources. Platform presentation at the AWMA Specialty Conference Regional and Global Perspectives on Haze, Asheville, NC Oct. 26-29.
- Kuhns H., Peter W Barber, Claudio Mazzoleni, Hans Moosmüller, John G Watson (2003) Measurement Of Particulate Matter Emissions Factors From In-Use Motor Vehicles Using Lidar. Poster presented at the PM2003 American Association of Aerosol Research Conference, Pittsburgh PA, March.
- Miller J.W., J. Watson, H. Moosmüller, H. Kuhns, D.R. Cocker, G. Croll, (2003) Off-Road Diesel Engines and Emissions of Regulated and Non-Regulated Pollutants," Partners in Environmental Technology Technical Symposium and Workshop, Washington, D.C., December.
- Kuhns H., Vicken Etyemezian, Jack Gillies, Djordje Nikolic, Sean Ahonen (2003) Vehicle Based Road Dust Emission Measurements, Platform Presentation at the NARSTO Emission Inventory Workshop, Austin, TX, October.
- Gillies J., Vicken Etyemezian, Hampden Kuhns, Djordje Nikolic, Dale A. Gillette (2003) Effect of Vehicle Characteristics on Unpaved Road Dust Emissions, Paper presented at the INRETs Workshop, Avignon, France, July.
- Mazzoleni Claudio, Hampden D. Kuhns, Hans Moosmüller, Robert E. Keislar, Peter W. Barber, Djordje Nikolic, Norman F. Robinson, and John G. Watson (2003) On-Road Remote

- Sensing Measurement of Automotive Particulate and Gaseous Emissions in Las Vegas, NV. Poster AAAR 2003 Annual Conference Anaheim, California October.
- Mazzoleni Claudio, Hans Moosmüller, Peter W. Barber, Hampden D. Kuhns, Robert E. Keislar, John G. Watson (2003) Ultraviolet LIDAR and Transmissometer for the On-Road Measurement of Automotive Particle Emission Factors, Oral Presentation AAAR 2003 Annual Conference Anaheim, California October.
- Mazzoleni Claudio, Hampden D. Kuhns, Hans Moosmüller, Robert E. Keislar, Peter W. Barber, Djordje Nikolic, Norman F. Robinson, and John G. Watson (2003) Automotive Particulate Matter and Gaseous Emission Factors from On-Road Measurement in Las Vegas, NV, Oral Presentation NARSTO Emission Inventory Workshop, Austin, TX, October.
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