



AECOM

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PRIMARY DISCIPLINE: Air and Noise Pollution Measurement, Modeling, Abatement and Engineering

EDUCATION:

- Ph.D., Civil Engineering, Vanderbilt University, 1989.
- M.S., Civil Engineering, University of Texas at Austin, 1985.
- B.E.S., Environmental Engineering, University of Texas at Austin, 1980.
- A.S., Chemistry, Austin Community College, 1977.

PROFESSIONAL LICENSES:

Professional Engineer

- Florida (1992 – Present, #0045634)
- Tennessee (1988 – Present, #020099)
- Texas (1984 – 2000, 2018 – Present, #128385)

EXPERIENCE:

- Senior Environmental Engineer – Noise and Air Quality, AECOM, Jul. 2017 – Present.
- Aero – Research – Chief Engineer, Wyle Aerospace Group, Dec., 2014 – Jul. 2017.
- Principal Technical Advisor (previously called National Expert), Volpe National Transp. Sys. Center, Oct., 2006 – Nov., 2014.
- Professor, University of Central Florida, May, 2002 – Oct., 2006.
- Associate Professor, University of Central Florida, May, 1995 – May, 2002.
- Assistant Professor, University of Central Florida, Aug., 1990, – May, 1995.
- Assistant Research Professor, Vanderbilt University, Aug., 1989 – Aug., 1990.
- Research Instructor, Vanderbilt University, Sept., 1987 – Aug., 1989.
- Consulting Engineering, Beginning in 1980.
- Research Assistant/Instructor, Vanderbilt University, 1985 – 1989.
- Engineer, Texas State Dept. of Highways and Public Transp., 1973 – 1985.
- Research Assistant, University of Texas, Center for Energy Studies, 1984.
- Sergeant, U.S. Marine Corps, Dec., 1969 – 1973
- Lab Technician, Rudy Manufacturing Corporation, 1968 – 1969

JOB RELATED EXPERIENCE

- Development of Guidance including a literature search on noise abatement measures for highways, FHWA, (on-going).
- Development of Worst Hour Procedure and 24-Hour Descriptor Estimation Using TNM3.0, FHWA, 2020.
- Dispersion Modeling for Stack Permitting, Misawa AFB, U.S. Air Force, 2019.
- Development of an Interactive Tool for Understanding the NEPA Process at General Aviation Airports, Airport Cooperative Research Program, ACRP Report 02-73, National Academy of Science, 2019.
- LAX Airport Air Quality Review, Los Angeles World Airports, 2018.
- Research and Development of a Prediction Method for Meteorological Effects on Roadway Noise, NCHRP Project No. 25-52, National Academy of Science, 2018.
- Development of NEPA Guidance Tools for NSR/PSD/HAP/GHG, U.S. Air Force, 2017.
- Development of a NOx Chemistry Module for EDMS/AEDT to Predict NO2 Concentrations, ACRP 02-43, Airport Cooperative Research Program, National Academy of Science, 2015–2016.
- NEPA Review of Air Force Environmental Documents (Air and Noise), 2014-2015.
- Dispersion Modeling for Title V Permitting, Holloman AFB, U.S. Air Force, 2015.
- Evaluation of Ethanol Fuel Blends as Implemented in MOVES2014, Reformulated Fuels Association, 2015.
- Development of Guidance for Understanding Air Quality and Public Health Studies Related to Airports, ACRP 02–42, Airport Cooperative Research Program, National Academy of Science, 2012–2015.
- Review of Coal Dust Emissions, BNSF Railway, 2014.
- Chair, Technical Committee on Review of Multiple Submittals in Support of ORA, Volpe National Transportation Center, 2014.
- Air Quality Modeling for Categorical Exclusions, NCHRP 25–25, Task 78, National Academy of Science, 2013 – 2014.
- Air Quality Section Reviews for the Northeast Corridor Rail EIS, Federal Railroad Administration, 2012 – 2014.
- Chair, Technical Committee on Review of Multiple Contracts for Alternative Fuels used by Aircraft, Federal Aviation Administration, 2011–2014.
- Air Quality Analysis (NEPA and GHG) Section on Trolley Implementation EIS, Lowell, MA, National Park Service, 2011 – 2013.
- Technical Assistance in the Development of the AEDT Model, Federal Aviation Administration, 2006–2014.
- Modeling and Measurement of Quieter Pavements in Florida, On–Board Sound Intensity Studies, Part 1 and Part 2, Florida Department of Public Transportation, 2004 – 2014.

- Weigh Station Truck Study Effects on Air Quality, Laredo, Texas, Pilot Program on NAFTA Long–Haul Trucking Provisions, 2012.
- Participation in Development of the FHWA/EPA MOVES Training Course, 2012.
- Recorder for the committee reviewing Solicitation DTFH61–12–R–00056, Topic 2B, Low–Powered Wireless Sensors for Environmental Stewardship, Impact Avoidance, or Mitigation Monitoring, 2010 – 2012.
- Development of proper monitoring techniques at airports including on–site measurements, ACRP 02–08, Airport Cooperative Research Program, National Academy of Science, 2010 – 2012.
- Evaluation of Near–field Dispersion Methodologies for Aircraft Turbine Engines, Federal Aviation Administration, 2011.
- A Comprehensive Development Plan for a Multi–modal Noise and Emission Model, Model Development, ACRP 02–09, Airport Cooperative Research Program, National Academy of Science, 2011.
- Course Review and Development for FHWA Clean Air Act Implementation, Federal Highway Administration, 2011.
- Air Quality Sampling at Dulles Airport for Priority Pollutants and HAPs as part of ACRP 02–34, National Academy of Science, 2010.
- Technical Support on Air Quality issues, CAEP 7, 8, 9, (International Committee on Airport Environmental Protection) Working Group 2 and 3, Federal Aviation Administration, (Includes development of a first order approximation for Particulate Matter Emissions of Commercial Turbine Aircraft, FOA3.0 now used internationally), 2002 – 2010.
- Technical Support on the Emission and Dispersion Modeling System, Federal Aviation Administration, 2002 – 2010.
- Technical Support on Development of a Hybrid Model with AERMOD and CMAQ, PARTNER Project with the University of North Carolina, Federal Aviation Administration, 2009.
- Technical Support on Impacts of Hazardous Pollutant from Airports including Particulate Matter Sampling at TF Green Airport, PARTNER Project with Harvard School of Public Health, Federal Aviation Administration, 2009.
- Technical Support on Global Aircraft Emission Impacts, PARTNER Project with Stanford University, Federal Aviation Administration, 2008.
- Air Quality Permitting, HAARP Facility Alaska, U.S. Air Force, 2008.
- Measurement of Background Concentrations of CO₂ and Hartsfield Study, APEX2 at Oakland International Airport and APEX3 at Cleveland Hopkins International Airport), Federal Aviation Administration, 2005 – 2008.
- The use of LIDAR to measure jet aircraft plume characteristics and particulate matter mass emissions at 3 Major Airports (Los Angeles International, Atlanta Hartfield. International, Denver International), Federal Aviation Administration, 2001–2008.
- Fort Lauderdale–Hollywood International Airport Environmental Assistance for Innovative Noise Control Including Low Frequency Noise Measurement and Analysis, Fort Lauderdale–Hollywood International Airport, 2006.

- Urban Infilling Impacts on Florida's Solid Waste Facilities, Pinellas County Utilities, 2006.
- Air Transportation Center of Excellence, Federal Aviation Administration, 2004 – 2006.
- Railroad Shaker Noise, 4 cities in Florida, 2 in Mississippi, and 1 in Michigan, Yelvington Distributors, 1999 – 2006.
- Verification of the Emission and Dispersion Modeling System, Version 4, using AERMOD by measurements at Dulles International Airport, Federal Aviation Administration, 2005.
- Simulation Modeling of Railroad Noise to Assist in Environmental Document Preparation, Florida Department of Transportation, 2005.
- Measurement, Metrics and Health Effects of Emissions, Federal Aviation Administration, 2005.
- Simulation Visualization of Highway Noise Near Barriers, Florida Department of Transportation, 2005.
- Assistance with Local Noise Ordinance Development, Winter Springs, FL, 2005.
- Sound Control at Large Shopping Stores; Publix Supermarkets (multiple stores), Wal-Mart (multiple stores), Target, IKEA, 1994 – 2005.
- Multiple highway air quality prediction projects; Dunn Engineering, Neal Schaffer, Gresham & Smith, Snell Environmental Group, Bowlby & Associates, KCI, Kimley-Horn, McCormick-Taylor, 1988 – 2005.
- Propagation of Low Frequency Noise and Measurement, Metrics and Health Effects of Emissions, PARTNER Air Transportation Center of Excellence, Federal Aviation Administration, 2004.
- Railroad Yard and Shaker Noise in Jacksonville, Florida, Florida Rock, 2004.
- Highway and Rail Noise Study/Evaluation of Impact on Flamingo Park Neighborhood, Florida Department of Transportation, 2003 – 2004.
- Numerous Housing and Urban Development Sound Surveys and Abatement Design, 1995 – 2004).
- Design of An Absorptive Noise Barrier Wall, Duratek Corporation, 2003.
- Advanced Analysis of Collected Noise Traffic Data in the Presence of Noise Barriers, Florida Department of Transportation, 2002 – 2003.
- Design Guide for Quiet Pavement Research, Purdue University Center for Safe and Quiet Highways (includes Matching Funds from Center for Advanced Transportation Simulation Systems, 2003.
- Continued Assistance to the Federal Aviation Administration, Volpe National Transp. Center, 2001 – 2003.
- Literature Review of Particulate Matter Emissions from Aircraft, Federal Aviation Administration, 2002.
- Development of a Gaussian Dispersion Model for Hovercraft, U.S. Postal Service, 2002.
- Air Quality Analysis for Washington Reagan Airport (Emission and Dispersion Modeling), Ricondo & Associates, 2002.

- Evaluation of Noise Barriers in Florida with Measurements and Modeling, Florida Department of Transportation, 2000 –2001.
- Assistance to the Federal Aviation Administration, Volpe National Transportation Center; 1999.
- Transportation Noise Research: Development of a True Simulation Noise Model, Center for Advanced Transportation Simulation Systems, 1999.
- Barrier Effectiveness Validation for the State of Florida, Florida Department of Transportation; 1999.
- Continued AAMA Model Development, American Automobile Manufacturer Association, 1998.
- Measurement and Analysis of Glycol Deposition During Aircraft Deicing, NorthWest Airlines, 1998.
- Development of Hot Spot Guidelines; CoDOT, 1998.
- Software Applications and Developments to Estimate the Percentage of Hot/Cold Starts; 1998.
- Air Quality Analysis for San Antonio Airport (Emission and Dispersion Modeling), Ricondo & Assoc., 1997.
- Update to 32 Bit and Distribution of the AAMA Community Noise Model; American Automobile Manufacturer Association, 1997.
- Rock Creek Parkway Air Quality Measurements and Modeling; Phase I; National Park Service, 1997.
- A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations; Florida Department of Transportation, 1997.
- Vehicle Fleet Age in Florida, Florida Department of Transportation, 1997.
- FLINT, A Florida Intersection Model, Florida Department of Transportation, 1996.
- Determination of Hot/Cold Start Proportions for Use in Mobile Source Emission Models, Florida Department of Transportation, 1996.
- Air Quality Analysis (Emission and Dispersion Modeling) for Midway Airport, Ricondo & Assoc., 1996.
- Fundamentals of Acoustics Training for Local Officials; Orange County, Florida, 1996.
- Continued Development of the AAMA Community Noise Model; American Automobile Manufacturer Association, 1995.
- Advisory Role in National Noise Model, Volpe National Transportation Center, 1994.
- Assistance in air quality modeling and mobile source legislation for China; Asian Bank with Post Buckley International, 1994.
- FHWA/Volpe Labs Stop-and-Go Noise Levels; Volpe National Labs, 1994.
- Updating the AAMA Community Noise Model – Phase II; American Automobile Manufacturer Association, 1994.
- Air Quality Effects Due to Highway Improvements; Pennsylvania DOT, 1994.
- Ozone Evaluation of East Central Florida, Florida Department of Environmental Regulation, 1994.
- HOV Lane Effects on Air Quality; Tennessee DOT, 1993.

- Air Quality Modeling Graphics; Florida Department of Transportation, 1993.
- Noise Analysis and Assistance with Noise Legislation for Mexico; World Bank with Post Buckley International, 1993.
- Updating the AAMA Community Noise Model, American Automobile Manufacturer Association, 1993.
- Atmospheric Effects on Traffic Noise Propagation, Department of Sponsored Research, University of Central Florida, 1993.
- Determination of Vehicle Fleet Age in Florida, Florida Department of Transportation, 1993.
- Noise Control Ordinance Research; Orange County Florida Health Dept., 1993.
- Ozone Evaluation of East Central Florida, Florida Department of Environmental Regulation and East Central Florida Regional Planning Council, 1993.
- Improved Estimates and Estimation Techniques for Multi-media Pollutant Releases from Surface Finishing Operations, 1993.
- Air Quality Methodology Evaluation, University of South Florida, 1992.
- Development of STAMINA 3.0, a New Traffic Noise Model; Volpe National Transportation Center, (later named the Traffic Noise Model (TNM), 1992.
- I440 Noise Barrier Evaluation, Tennessee Department of Transportation, 1992.
- Extension of Reference Emission Factors for STAMINA model to include 55–65 mph range, Florida Department of Transportation, 1992.
- Individual Environmental Research Award, University of Central Florida, Department of Sponsored Research, 1991.
- Air Quality and Noise Analysis for Environmental Impact Statement Support and Yearly Inventory Reporting, Nashville International Airport, Nashville Airport Authority, 1986 – 1989.
- Air Quality Analysis, John C. Tune Regional Airport for Annual Inventory Reporting, Nashville Airport Authority, 1986 – 1989.
- Industry Pre-plant Noise Survey, the Saturn Corporation, 1988.
- Air Quality Analysis On Multiple Future Scenarios, Los Angeles International Airport, 1987.
- In Charge of Air Quality Monitoring and Noise Program, Texas State Department of Public Transportation, 1973 – 1985.
- Model validation assistance for the TEXIN and TEXLINE air quality intersection models, working with Texas A&M University, 1983.
- Railroad electrification feasibility study (air, noise, water, vibration), Dannenbaum Engineering Corp., 1983.

PEER REVIEWED JOURNAL ARTICLES

WAYSON, R.L., K. Kaliski, J.M. MacDonald, E. Salomons, D.D. Reiter, Data Collection and Modeling Results to Permit Estimation of Meteorological Effects on Roadway Noise, Transportation Research Record, National Academy of Science, vol. 2673, 11: pp. 243-253, June 12, 2019, Washington, D.C.

Hsu, H.H, Gary A.E.A. Houseman, J. Vallarino, S.J. Melly, R.L.WAYSON, J.D. Spengler, and J.I. Levy, The relationship between aviation activities and ultrafine particulate matter concentrations near a mid-sized airport, *Atmospheric Environment*. Apr 2012, Vol. 50: 328–337.

Wilkerson, J.T., M.Z. Jacobson, A. Malwitz, S. Balasubramanian, R.L. WAYSON, G.G. Fleming, A.D. Naiman, and S.K. Lele, Analysis of emission data from global commercial aviation: 2004 and 2006, *Atmospheric Chemistry and Physics*, volume 10, issue 13, 2010, pp. 6391 – 6408.

Wilkerson, J.T., M.Z. Jacobson, A. Malwitz, A., S. Balasubramanian, WAYSON, R.L., G.G. Fleming, A.D. Naiman, and S.K. Lele, Analysis of emission data from global commercial aviation: 2004 and 2006, *Atmospheric Chemistry and Physics Discussions* Volume 10, Issue 2, 2010, pp. 2945 – 2983.

WAYSON, R.L., G.G. Fleming, R. Iovinelli, Methodology to Estimate Particulate Matter Emissions from Certified Commercial Aircraft Engines, *J. Air & Waste Manage. Assoc.* **59**:91–100, 2009, pp. 91 – 100.

Cota, H., M. Bastasch, R.L. WAYSON, T. Thatcher, Now Hear This! What All Environmental Engineers Should Know About Noise Control, *EM Magazine, Air & Waste Management Assn*, March, 2008, pgs. 4–7.

H.M. Al-Deek, R.L. WAYSON, C.D. Cooper, D. Keely, R. Traynelis, P.S. Liu, L.C. Malone, and A. Datz, Queueing Algorithm for Calculating Idling Emissions in FLINT—the FLorida INTersection Air Quality Model, *Transportation Research Record*, Vol. 1987, *Journal of the Transportation Research Board*, Washington, D.C., 2006.

Kim, B., R.L. WAYSON, and G. Fleming, Development of Traffic Air Quality Simulation Model, *Transportation Research Record: Journal of the Transportation Research Board*, Vol. 1987, 14 2006, pp. 73–81.

El-Aassar, A., R.L. WAYSON, and J.M. MacDonald, Comparison of TNM 2.5 to TNM 2.1 and Measured Data, *Transportation Research Record, Journal of the Transportation Research Board*, Vol. 1941(1), National Academies, Washington, D.C., 2005 pp. 149 – 154.

Bernhard, R. and R.L. WAYSON, Pavement Noise 101: how to pavement create noise? How is it measured? How can it be controlled?, *HMAT Hot Mix Asphalt Technology*, Volume 10, Issue Number 6, 2005, pp. 18 – 22.

MacDonald, J.M, R.L. WAYSON, M. Berrios, A. El-Aassar, Sound Levels and Shadow Zones Behind Barriers in Florida, *Transportation Research Record, Journal of the Transportation Research Board*, No. 1880, National Academies, Washington, D.C., 2004, pgs, 158 – 164.

WAYSON, R.L., J.M. MacDonald, A. El-Aassar, W. Arner, W. Lindeman and M. Berrios, Noise Trends Behind Highway Noise Barriers, Transportation Research Record, Journal of the Transportation Research Board, National Academies, 2003, Washington, D.C.

WAYSON, R.L., J.M. MacDonald, W. Arner, W. Lindeman and M. Berrios, Florida Noise Barrier Evaluation and Computer Model Validation, Transportation Research Record No. 1859, Journal of the Transportation Research Board, National Academies, 2003, Washington, D.C., pgs. 72–78.

J.M. MacDonald and R.L. WAYSON, The Railway Noise Model, Transportation Research Record No. 1670, National Research Council, 1999, Washington, D.C., pgs. 76–80.

WAYSON, R.L., J.M. MacDonald, and W. Lindeman, A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations, Transportation Research Record No. 1626, National Research Council, 1998, Washington, D.C., pgs. 49–57.

WAYSON, R.L., J.M. MacDonald, R. Eaglin, and B. Wendling, A Simulation Approach to Traffic Noise Modeling: American Automobile Manufacturers Association Community Noise Model Version 4.0, Transportation Research Record No. 1601, National Research Council, 1997, Washington, D.C., pgs. 64–70.

Al-Deek, H., R.L. WAYSON, C.D. Cooper, D. Keely, R. Traynelis, P.S. Liu, L.C. Malone, and A. Datz, Queuing Algorithm for Calculating Idling Emissions in FLINT – the Florida Intersection Air Quality Model, Transportation Research Record No. 1587, National Research Council, 1997, Washington, D.C., pgs. 128–136.

Ogle, T.W.A, R.L. WAYSON and W. Lindeman, "Effect of Vehicle Speed on Sound Frequency Spectra", Transportation Research Record No. 1559, National Research Council, Washington, D.C., 1996, pgs. 14–25.

Al-Deek, H.M., R.L. WAYSON and A.E. Radwan, "A Methodology for Evaluating ATIS Impacts on Air Quality", Journal of Transportation Engineering, Journal of Transportation Engineering, Vol.121, No. 4, American Society of Civil Engineers, New York, July/August, 1995, pgs. 376–384.

WAYSON, R.L. and T.W.A. Ogle, "Development of Reference Mean Emission Levels for Highway Traffic Noise in Florida", Transportation Research Record No. 1416, Transportation Research Board, National Research Council, 1993, pgs. 82–91.

Hall, M.S., J.D. Dietz, C.D. Cooper, R.L. WAYSON, and D. Bauman, "Atmospheric Releases of Hexavalent Chromium From Hard Chromium Plating Operations", Journal of Plating and Surface Finishing, November, 1992, pgs. 18–22.

WAYSON, R.L. and W. Bowlby, "Atmospheric Effects on Traffic Noise Propagation," Transportation Research Record No. 1255, Transportation Research Board, National Research Council, Washington, D.C., 1990, pgs. 59–72.

Bowlby, W., R.L. WAYSON and R. Stammer, "Predicting Stop–and–Go Traffic Noise with STAMINA 2.0," Transportation Research Record No. 1255, Transportation Research Board, National Research Council, Washington, D.C., 1990, pgs. 73–86.

Bowlby, W., and R.L. WAYSON, "The Use of Microcomputers to Perform Airport Emission Inventories," Journal of Transportation Engineering, American Society of Civil Engineers, New York, Vol. 116, No. 3, May, 1990, pgs. 328–337.

WAYSON, R.L. and W. Bowlby, "Airport Air Pollutant Inventories: Pitfalls and Tools," Transportation Research Record No. 1240, Transportation Research Board, National Research Council, Washington, D.C., 1989, pgs. 28–36.

WAYSON, R.L., "The Use of a Knowledge–Based Expert System to Maximize Airport Capacity in Harmony with Noise Mitigation Plans," Transportation Research Record No. 1218, Transportation Research Board, National Research Council, Washington, D.C., 1989, pgs. 31–41.

WAYSON, R.L. and W. Bowlby, "Noise and Air Pollution of High Speed Rail Systems," invited for presentation at High Speed Rail Convention, Las Vegas, May 19–22, 1987, Journal of Transportation Engineering, American Society of Civil Engineers, New York, Vol. 115, No. 1, January, 1989, pgs. 20–36.

WAYSON, R.L. and W. Bowlby, "Inventorying Airport Air Pollutant Emissions," Journal of Transportation Engineering, American Society of Civil Engineers, New York, Vol. 114, No. 1, January, 1988, pgs. 1–20.

PEER REVIEWED TECHNICAL PUBLICATIONS

WAYSON, R.L., Relationship Between Pavement Surface Texture and Highway Traffic Noise, National Cooperative Highway Research Synthesis No. 268, National Research Council, Washington, D.C., 1998, 85 pgs.

Bowlby, W., R.L. WAYSON, S. Chiguluri, M. Martin and L.A. Herman, Interrupted Flow Reference Energy Mean Emission Levels for the FHWA Traffic Noise Model, U.S. Dept. of Transportation, John A. Volpe National Transportation Center, Cambridge, MA, December, 1995.

G.S. Anderson, W. Bowlby, C.W. Menge, and R.L. WAYSON, Highway Traffic Noise Prediction Procedures: Review and Evaluation Report, Report No. DTS–75–HW366–

LR1, U.S. Dept. of Trans., Federal Highway Administration, Washington, D.C., December, 1992, 142 pgs.

BOOKS AND BOOK CHAPTERS

WAYSON, R.L. [As Member of National Research Council Task Force] Managing Carbon Monoxide Pollution in Meteorological and Topographical Problem Areas, National Academy Press, Washington, D.C., 2003.

WAYSON, R.L., G.G. Fleming, B. Kim, A Review of Literature on Particulate Matter Emissions from Aircraft, Letter Report, Federal Aviation Administration Report DTS-34-FA22A-LR1, ISBN9781499702194, 2002.

WAYSON, R.L. [As Member of National Research Council Task Force] The On-Going Challenge of Managing Carbon Monoxide Pollution in Fairbanks, Alaska, National Academy Press, Washington, D.C., 2002.

WAYSON, R.L., "Environmental Considerations During Transportation Planning", Transportation Planning Handbook, (major revisions and updates) CRC Press, 2002.

WAYSON, R.L. (One of lead authors), Air Transport Operations and Relation to Emissions, Aviation and the Global Environment, Intergovernmental Panel on Climate Change, United Nations Environmental Program, Cambridge Press, 1999.

WAYSON, R.L., Relationship Between Pavement Surface Texture and Highway Traffic Noise, National Cooperative Highway Research Synthesis No. 268, National Research Council, Washington, D.C., 1998, 85 pgs.

WAYSON, R.L., "Environmental Considerations During Transportation Planning", Transportation Planning Handbook, CRC Press, 1995.

Cohn, L.F., R.L. WAYSON, R.A. Harris, "Environmental and Energy Considerations", Institute of Traffic Engineers Planning Handbook, Prentice-Hall, Inc., 1992, pgs 447-477.

PEER REVIEWED PRESENTATIONS AND PROCEEDINGS

WAYSON, R.L., K. Kaliski, J.M. MacDonald, E. Salomons, D.D. Reiter, Data Collection and Modeling Results to Permit Estimation of Meteorological Effects on Roadway Noise, Transportation Research Board Annual Meeting, Washington, D.C., January, 2019.

WAYSON, R.L., K. Kaliski, J.M. MacDonald, E.M. Salomans, D.D. Reiter, Data Collection and Modeling Results to Permit Estimation of Meteorological Effects on Roadway Noise, Transportation Research Board Annual Meeting, Washington, D.C., January, 2019. (accepted)

WAYSON, R.L., F. Castaneda, S. Wallace, Planning for Sustainability While Considering Climate Change, Paper # 410014, AWMA, Hartford, CT., June 25-28, 2018.

WAYSON, R.L., F. Castaneda, S. Wallace, Dispersion Modeling for Federal Facilities; When and What, Paper # 410371, AWMA, Hartford, CT., June 25-28, 2018.

WAYSON, R.L., K. Nakada, B. Kim, G. Noel, G. Cooper, Modeling Ethanol Blends with MOVES2014, Paper # 1059, AWMA, New Orleans, LA., June 20-23, 2016.

Kim, B., K. Nakada, WAYSON, R.L., B. Manning, Development of the Puff Model for Airport Air Quality, Paper # 1119, AWMA, New Orleans, LA., June 20-23, 2016.

WAYSON, R.L., K. Nakada, B. Kim, F. Castaneda, III, Avoiding Pitfalls When Conducting Dispersion Modeling at Government Facilities, Paper # 1036, AWMA, New Orleans, LA., June 20-23, 2016.

WAYSON, R.L., G. Noel, G. Cooper, Impact of Ethanol Blends on Emissions Estimates, 26th CRC Real World Emission Workshop, March 13-16, 2016.

WAYSON, R.L., J.M. MacDonald, Can Pavement Testing Be Used As Acoustic Parameter Surrogates?, Transportation Research Board Annual Meeting, Washington, D.C., January, 2016.

WAYSON, R.L., J.M. MacDonald, Pavement Research in Florida: OBSI, Transportation Research Board Annual Meeting, Washington, D.C., January, 2016.

WAYSON, R.L., Use of Common Pavement Parameters for Noise Prediction, Paper # 454, AWMA, Raleigh, N.C., June 21-25, 2015.

WAYSON, R.L., J.M. MacDonald, A. Martin, Using On-Board Sound Intensity (OBSI) for Other Purposes, Paper No. 32764, Air and Waste Management Association Annual Meeting, Long Beach, CA, June, 2014.

Noel, G., WAYSON, R.L., Assessing Emissions from Commercial Motor Vehicle Safety Inspections at Weigh Stations and Port of Entry Facilities, Paper No. 33629 Air and Waste Management Association Annual Meeting, Long Beach, CA, June, 2014.

WAYSON, R.L., Mobile Source Modeling Characteristics Using CAL3QHC/MOVES, Paper No. 13348, Air and Waste Management Association Annual Meeting, Chicago, IL, June, 2013.

WAYSON, R.L., Using AERMOD for Highway Projects, Paper 2012-A-347-AWMA, Air and Waste Management Association Annual Meeting, San Antonio, TX., June, 2012.

WAYSON, R.L., Florida Application of On-Board Sound Intensity for Highway Noise Analysis, Paper 2012-A-350-AWMA, Air and Waste Management Association Annual Meeting, San Antonio, TX., June, 2012.

WAYSON, R.L., Noise Impact: Wind Turbines and Wind Turbulence, Paper No. 2011-A-329-AWMA, Air and Waste Management Association Annual Meeting, Orlando, FL., June 2011.

Noel, G., R.L. WAYSON, and A. Klauber, Utilizing Traffic Simulation Tools with MOVES and AERMOD, Paper No. 2011-A-717-AWMA, Orlando, FL., Air and Waste Management Association Annual Meeting, June 2011.

WAYSON, R.L., J.M. MacDonald, M. Berrios, On-Board Sound Intensity Measurements: The Florida Experience, Paper No. 201-A-941-AWMA, Calgary, Canada, June 2010.

Wilkeson, J.T., M.Z. Jacobson, S. Balasubramanian, A. Malwitz, R.L. WAYSON, G. Fleming, A.D. Naiman, and S.K. Lele, Global Commercial Aviation Emissions Inventory for 2004, Paper A53A-0234, AGU 2008 Fall Meeting, 2008.

Eberhard, W.L., R.L. WAYSON, B. J. McCarty, R. D. Marchbanks, W. Alan Brewer, 2008: Lidar Method for Measuring Particulate Emission Rate from Aircraft Jet Engines – Initial Trial and Planned Improvements, International Laser Radar Conference Proceedings, 24th Annual Meeting, June 23–27, 2008, Boulder, Colorado.

McCarty, B.J., W.L. Eberhard, R.L. WAYSON, R.D. Marchbanks, Lidar method to characterize the size, growth and rise of jet engine exhaust plumes, ILR Conference, 2008.

WAYSON, R.L., G. Fleming, and R. Iovinelli, First Order Approximation 3.0: Documentation of Model Development, Pittsburgh, PA., Air and Waste Management Association Annual Meeting, June 2007.

WAYSON, R.L., J.M. MacDonald, A.K. Martin, D. Rasmussen, G. Fleming, G. Noel, and R. Iovinelli, Particulate Matter at Two Large North American Airports, Paper No. 2007-A-401-AWMA, Pittsburgh, PA., Air and Waste Management Association Annual Meeting, June 2007.

Kim, B., R.L. WAYSON, G.G. Fleming, Component Verification and Sensitivity Analysis of Traffic Air Quality Simulation Model, proceedings and presented at the Transportation Research Board Annual Meeting, Washington, D.C., January, 2007.

Cota, H.M., R.L. WAYSON, M. Basstasch, T.Thatcher, What (or Why) Should Environmental Engineers Know (Something) About Noise Control?, Paper No. 2007–AB–615–AWMA, Air and Waste Management Association Annual Meeting, Pittsburgh, PA., June 2007.

El–Aassar, A. and R.L. WAYSON, Factors Affecting Outdoor Sound Wave Propagation, Presented at the 98th Annual Meeting of the Air and Waste Management Association, Minneapolis, MN, June, 2005.

Eberhard, W.L., W.A. Brewer, and R.L. WAYSON, Lidar observation of jet engine exhaust for air quality. Second Symposium on Lidar Applications, 85th AMS Annual Meeting, San Diego California, January 9–13, 2005.

Eberhard, W.L., W.A. Brewer, and R.L. WAYSON, LIDAR Observations of Jet Engine Exhaust for Air Quality, American Meteorological Society Annual Meeting, January, 2004.

WAYSON, R.L. and R.J. Peppin, Evaluating Sound Absorption in Situ using “ADRIENNE”, Noise–Con 04, Institute of Noise Control, Baltimore, MD., 2004.

WAYSON, R.L., B. Kim, G.G. Fleming, N. Garrity, C. Hall, T. Thrasher, B. Colligan, and J. Draper, Integration of AERMOD into EDMS, Proceedings and presented at the 96th Annual Meeting of the Air and Waste Management Association, San Diego, CA, 2003.

WAYSON, R.L., G.G. Fleming, N. Garrity, B. Kim, J. McDonald, M. Lau, J. Draper, Validation of FAA’s Emissions and Dispersion Modeling Systems (EDMS): Carbon Monoxide Study, Proceedings and presented at the 96th Annual Meeting of the Air and Waste Management Association, San Diego, CA, 2003.

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Dietz, J.D., K.S. Cheze, R.L. WAYSON, and C.D. Cooper, Toxic Release Inventory Emissions Estimation for the Surface Finishing Industry, EPA/AESF Contract No. CR 817586-02-0, University of Central Florida, Civil and Environmental Engineering Dept., Orlando, FL, September, 1993, 139 pgs.

Dietz, J.D., P.J. Sutch, D.W. Bauman, C.D. Cooper and R.L. WAYSON, Atmospheric Releases of Formaldehyde from Electroless Copper Plating Operations, EPA/AESF Contract No. CR 817586-02-0, University of Central Florida, Civil and Environmental Engineering Dept., Orlando, FL, August, 1993, 86 pgs.

WAYSON, R.L. and T.W.A. Ogle, Extension of Reference Emission Factors for the STAMINA 2.0 Model to Include 55-65 MPH, Report No. FL/DOT/RMC/0534-3510, Florida Dept. of Trans., Tallahassee, FL, July, 1992, 80 pgs.

L. Herman, W. Bowlby, T. O'Grady, C. Chen, M. Jamison and R.L. WAYSON, Determination of Traffic Noise Barrier Effectiveness, Report No. I-440-4(13)204, Tennessee Dept. of Transportation, Nashville, TN, November, 1991, 148 pgs.

W. Bowlby, J. Li and R.L. WAYSON, TrafficNoiseCAD – True Interactive Graphics for Traffic Noise Analysis and Design, Report No. USDOT-UTC-4-TN-10, Southeastern Consortium of University Transportation Centers, Raleigh, NC, December, 1990, 25 pgs.

WAYSON, R.L. and W. Bowlby, Airport Air Quality Policy, Modeling, and Monitoring, Project No. 90-180-6, submitted to Rowan Williams Davies & Irwin, Inc. for Public Works Canada, November 1, 1990, 134 pgs.

Bowlby, W., R.L. WAYSON, R. Stammer, Predicting Stop-and-Go Traffic Noise Levels, NCHRP Report No. 311, Transportation Research Board, National Research Council, Washington, D.C., November, 1989, main text 96 pgs., supplement 87 pgs.

Texas State Department of Highways and Public Transportation, Noise Guidelines, Austin, Texas, 1984, revised 1985, 46 pgs.

Over one hundred Environmental Assessments and Environmental Impact Statements, Noise Portions; for Texas State Department of Highways and Public Transportation; 1983-85 (as Principal Investigator).

Moe, R., R.L. WAYSON and J. Wise, Indoor Air Quality of Building 1, Texas State Department of Highways and Public Transportation, Technical Report, Austin, Texas, 1983, 40 pgs.

WAYSON, R.L., Analytical and Experimental Assessment of Highway Impact on Air Quality, Appendix G, FCIP Study 2-8-75-218, 1978.

WAYSON, R.L., Characteristics of Highway Runoff in Texas, provided technical assistance and review; FCIP Study 1-8-77-516; 1977.

Moe, R., R.L. WAYSON, J. Wise and J. Johnson, The Design and Construction of a Mobile Air Monitoring Lab, Austin, Texas, 1976, 68 pgs.

WAYSON, R.L., Texas State Department of Highways and Public Transportation, Texas Traffic Sound Level Evaluation Procedures, Austin, Texas, 1974, 37 pgs.

EDUCATIONAL JOURNAL SERIES

Dr. Wayson has written a series of educational articles for the Wall Journal, which is an informative magazine about outdoor noise control. Seven universities have requested the right to use these articles in their classrooms. A letter from Texas A&M is included in the documentation section as an example of the requests. Later articles have occurred with the latest printed in 2001.

REVIEW OF TECHNICAL BOOKS AND ARTICLES

Dr. Wayson has reviewed two text books for publishers and well over 800 journal articles and proceeding papers for Environmental Science, Technology and Atmospheric Environment, American Society of Civil Engineers, Transportation Research Board, Air & Waste Management Association, Federal Aviation Administration, Argonne National Labs, Volpe National Labs, the Environmental Protection Agency, Transportation Research International Journal, and the World Bank.

One important review, and noted in acknowledgements, was my comments being added into the 1999 EPA Document, Evaluation of Air Pollutant Emissions from Subsonic Commercial Jet Aircraft, EPA420-R-99-013.

COMMUNITY SERVICE

- Member of Florida Noise Task Team, 2004 – 2018.
- U.S. Delegate and Support to Assistant Secretary of Transportation, AGOA Conference, Addis Ababa, Ethiopia, 2013.
- U.S. Member of the Thailand IVLP meeting in Washington, D.C., 2013.
- Continued work of AASHTO Standard Committee on Measurement of Tire/Pavement Noise Using the On-Board Sound Intensity Method (current).
- Continued work of AASHTO Standard Committee on Measuring the Influence of Road Surfaces on Traffic Noise Using a U.S. Modified Statistical Pass-by Method (current).
- Continued work of AASHTO Standard Committee on Measuring the Influence of Road Surfaces on Traffic Noise Using a Continuous-Flow Traffic Time-Integrated Method (CTIM) (current).
- National Research Council Review Group for NCHRP Project on Pavement/Tire Noise (2003-2010).
- Member of Federal Aviation Review Team on AEDT, the New Age of Modeling, 2003 – 2006.
- Invited Guest, European Committee on Aviation Emission (AERONET), 2000-2002). Note: Only U.S. Invitee at last meeting.
- Guest Lecturer at Volpe National Transportation Systems Center, 2004.
- Guest Lecturer at Bahi University, Brazil, 2002, 2004.
- Guest Lecturer at Unversitat of Santa Maria, Chile, 2003.

- Guest Lecturer at University of Massachusetts, Amherst, MA, 2002.
- Training of *Federal Highway Administration and Arizona DOT personnel* in Methods to Abate Highway Noise, sponsored by American Society of Civil Engineers (2001).
- Service to the *National Research Council* (Sponsor, U.S. Environmental Protection Agency), Investigation and Reporting of Carbon Monoxide Episodes in Meteorological and Topographical Problem Areas (2001–present).
- Guest Lecturer at Cairo University, Egypt, 2000.
- Lead Author, Aviation and the Global Atmosphere, *Intergovernmental Panel on Climate Change, the United Nations Task Force*. (Intergovernmental Panel on Climate change, IPCC, 1999.)
- Six presentations at the request of the *Florida Department of Transportation's* for Annual Environmental Management Office Meetings, on Noise and Air Quality Research at UCF, (1998, 1999, 2001, 2002, 2003).
- Training course for *Orange County Environmental Protection Department* on Noise Fundamentals and Community Noise Measurement/Enforcement (February, 1996).
- Provided training to *Hillsborough County Health Department* on Noise Fundamentals (April, 1995).
- Provided instruction on the use of air quality models at the request of the *Florida Department of Transportation* in Tallahassee for state employees.
- Provided advice to *Orange County Environmental Protection Department* on Noise Regulation Implementation, 1992–5.
- Guest lecturer at *Vanderbilt University*, "Air Pollution from Mobile Sources", 1991.

TECHNICAL ORGANIZATION INVOLVEMENT

Fellow Member (2004), Air & Waste Management Association, AWMA (formerly the Air Pollution Control Association, APCA)

- Chair, Committee on Transportation and Land Use, 2018 – Present.
- Vice–Chair, Committee on Transportation and Land Use, 2014 – 2018.
- Chair, Committee on Noise and Vibration, 2011 – 2014.
- Chair, Session on Noise Emerging Issues, 2014.
- Chair, Session on Aviation Emissions and Noise Interdependencies, 2008.
- Chair, 2003 Session on Recent Research at Airports for Air Quality.
- Chair, 2001 Session on Measurement of Industrial and Transportation Noise Before & After Abatement.
- Chair, 2001 Session on On–Road Vehicle Emission Measurement and Validation.
- Chair, 2001 Session on Recent Developments in Highway Air Quality Modeling.
- Chair, 2001 Session on Comprehensive Airport Emission Inventories.
- Chair, 2000 Session on Modeling and Control of Noise from Transportation and Industrial Sources.
- Chair, 1999 Session on Advances in Mobile Source Emissions and Dispersion Modeling.

- Chair, 1998 Session on Community Noise Abatement.
- Liaison between AWMA Technical Council and Education Council (1998 – 1999).
- Chair, 1998 Session on Advances in Noise Modeling.
- Chair, AWMA Source Division (1995 – 1998).
- Chair, 1997 Session on Advances in Mobile Source Modeling.
- Chair, 1997 Session on Motor Vehicle Emissions Modeling: Recent Advances and Emerging Issues
- Chair, Source Division, 1995 – 1997
- Chair, 1996 Session on Advances in Mobile Source Modeling.
- Vice–Chair, 1995 Session on Mobile Source Topics.
- Vice–Chair, 1995 Session on Advanced Noise Issues.
- Chair, AWMA Committee on Mobile Sources (1992 – 1995)
- Vice–Chair, Source Division (1992 – 1995).
- Vice–Chair, AWMA Committee on Noise (1986 – 1989 and 1992 – 1995).
- Technical Program Vice–Chair, National Conference on "Tropospheric Ozone" (1994).
- Chair, 1994 Session on Mobile Source Modeling.
- Chair, 1993 Session on Off–Road Mobile Sources.
- Chair, 1992 AWMA Session on Noise Control.
- Chair, 1992 Session on Transportation Control Options at Specialty Conference. on "Cooperative Clean Air Technology"
- Chair, APCA Committee on Noise (1989–1992).
- Vice–Chair, APCA Committee on Mobile Sources (1989 – 1991).
- Past Board of Directors Member and President of Local Chapter (Western and Middle Tennessee Chapter), 1990.
- Chair of 1989 APCA Session on Mobile Source Modeling.
- Co–Chair of 1988 APCA Session on Alternate Fuels.
- Chair of 1987 APCA Session on Mobile Source Mitigation.

Member, American Society of Civil Engineers (ASCE)

- Chair, ASCE Task Committee on Energy & Environmental Aspects of Transportation (1998 – 2004).
- Vice–Chair, ASCE Task Committee on High Speed Ground Transportation Systems (Secretary, 1987 – 1989).
- Chair, ASCE Task Committee on Energy & Environmental Aspects of Transportation (1992 – 1997).
- Technical Chair of Technical Conference, "Transportation Planning and Air Quality III", Lake Tahoe, CA, August, 1997.
- Planning Committee of Specialty Conference, "Transportation Planning and Air Quality II, Boston, May, 1993.
- Co–Chair of Specialty Conference, "Transportation Planning and Air Quality," Santa Barbara, CA, July, 1991.
- Technical Chair, Specialty Conference, "First ASCE International Conference on High Speed Ground Transportation," Orlando, FL, October, 1992.

Transportation Research Board (TRB)

- Member, TRB Committee on Transportation Noise and Vibration, ADC40, 2018 – present.
- Member, TRB Committee on Transportation and Air Quality, ADC20, 2017 – present.
- Secretary, TRB Committee on Transportation and Air Quality, ADC20, 2010 – 2017.
- Member, TRB Committee on Environmental Impacts of Aviation, AVO30, 2006 – 2013.
- Member, TRB Committee on Transportation Noise and Vibration, ADC40, 2005 – 2012.
- Member, TRB Committee on Transportation & Air Quality (1989 – 2005).
- Member, TRB Committee on Transportation–Related Noise & Vibration (1993 – 2004).
- Co–Technical Chair, Summer Meeting of Committee on Transportation and Air Quality, Irvine, CA, July, 1996.
- Co–Technical Chair, Summer Meeting of Committee on Transportation and Air Quality, Portland, OR, July, 1994.

Associate Member, Institute of Noise Control Engineers (2000 – Present)

Member, Society of Automotive Engineers (1997 – 2005)

Other

- Panel Member, Transportation Research Board of the National Academies, Project: Measuring Tire–Pavement Noise at the Source, 2004 – 2010.
- Member of Federal Aviation Review Team on AEDT, the New Age of Modeling, 2003 – 2010.
- National Research Council Review Group for NCHRP Project on Pavement/Tire Noise (2003 – 2004).
- Service to the *National Research Council* (Sponsor, U.S. Environmental Protection Agency), Investigation and Reporting of Carbon Monoxide Episodes in Meteorological and Topographical Problem Areas (2001 – 2002).

HONORS AND AWARDS

- Best Paper of the Year – Awarded by the Transportation Research Board Committee on Transportation Related Noise and Vibration (2020).
- Certificate of Excellence, Instructor of Excellence for FY 2013, National Highway Institute.
- Achievement Award, Volpe National Transportation Systems Center for Work on the Aviation Environmental Development Tool Team (2012).
- Director’s Individual Recognition Award, Volpe National Transportation Systems Center (2011).

- Environmental Measurement Field Team Member Achievement Award (2010).
- NASA Recognition Award as part multi-disciplinary team (2010).
- Part of Award Team awarded Noble Prize for work with the International Panel on Climate Change (IPCC) on Global Warming (Aviation and the Global Atmosphere) (2007).
- Best Paper of the Year – Awarded by the Transportation Research Board Committee on Transportation Related Noise and Vibration (2005).
- Elected to Fellow Member, Air & Waste Management Association, 2004.
- Distinguished Researcher for the College of Engineering, University of Central Florida (2003 – 2004).
- UCF College of Engineering and Computer Science Distinguished Research Lecturer (2003).
- Achievement Award, Volpe National Transportation Systems Center for Work on Maglev Air/Noise Evaluations Team (2000).
- Achievement Award, Volpe National Transportation Systems Center for Work on Lateral Attenuation of Aircraft Noise Team (2000).
- Honorary Member of Chi Epsilon (voted on by UCF Student Chapter; *1st at UCF*) (1999).
- Professional Service Award, College of Engineering and Department of Civil and Environmental Engineering and, University of Central Florida (1998–1999).
- Best Paper of the Year (1998) — Awarded by the Transportation Research Board Committee on Transportation Related Noise and Vibration (1998).
- Undergraduate Teacher of the Year, Department of Civil and Environmental Engineering, University of Central Florida (1997–1998).
- Professional Service Award, Department of Civil and Environmental Engineering and College of Engineering, University of Central Florida (1996–1997).
- Outstanding Researcher for the College of Engineering, University of Central Florida (1993–1994).
- Teacher Incentive Program Award at University of Central Florida, from legislative program, (1993).
- Best Paper of the Year (1993) — Awarded by the Transportation Research Board Committee on Transportation Related Noise and Vibration (1993).
- Outstanding Researcher, College of Engineering, University of Central Florida (1993).
- Outstanding Researcher for Department of Civil and Environmental Engineering, University of Central Florida (1992–1993).
- Outstanding Paper on Transportation Noise Control — Awarded by the Transportation Research Board Committee on Transportation Related Noise and Vibration (1990).
- Tau Beta Pi.
- National Academy of Sciences and Federal Aviation Administration – Award and Grant on Public Sector Aviation Issues (1988).
- Vanderbilt University Dissertation Research Award (1987 and 1988).
- IBM School Grant (1985 – 1987).
- Vanderbilt Scholarship (1985 – 1988).
- Federal Highway Administration Scholarship Grant (1977).

TEACHING

College Classroom

- Air Pollution with Lab
- Air Pollution Measurements with Lab
- Environmental Analysis of Transportation Systems
- Environmental Impact Analysis
- Outdoor Noise Control
- Engineering and the Environment
- Introduction to Transportation Engineering
- Introduction to the Engineering Profession
- Man and His Environment
- Independent Studies

Continuing Education

- National Highway Institute Course on Traffic Noise (5), 2008, 2009, 2010, 2011, 2012
- FAA AEDT Beta Training (Noise and Emissions), 2011.
- Advanced Traffic Noise Modeling, with Dr. William Bowlby (32 hours of instruction) 1991, 1992 (3), 1993, 1994, 1995, 1998 (3), 1999 (3), 2000 (2), 2001 (3), 2002, (2), 2003 (2), 2004 (2), 2005 (2), 2006 (3).
- Modeling of Mobile Source Air Quality Impacts, with Dr. C. David Cooper, (24–hours of instruction) 1993, 1994, 1995, 1996, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2006.
- Advanced Traffic Noise Modeling taught for USDOT at ILDOT Facility, (24–hours of instruction) 2002.
- ASCE Noise Seminar for ADOT, (12–hours of instruction) 2001.
- Advanced Traffic Noise Modeling taught for Washington and Oregon DOTs (24–hours of instruction) 1999.
- International Road Federation International Air Quality Seminar, multiple instructors with my contribution on air quality, noise, and environmental reporting (8–hours of instruction) 1992, 1993, 1994, 1995.
- University of Wisconsin, Madison Highway Project Development, multiple instructors (4–hours of instruction) 1996, 1997, 1998, 1999.
- Motor Vehicles and the Environment, for the World Bank, multiple instructors with my contribution on air quality, noise, and environmental reporting (8–hours of instruction) 1991.
- Outdoor Noise Measurements, (16 hours of instruction) 1994, 1995, 1998, 2000, 2002.