

CURRICULUM VITAE

NAME

Ham, Jay M

ADDRESS

Soil and Crop Sciences
College of Agricultural Sciences

Plant Sciences

PHONE

(970) 491-4112

EDUCATION

1990 Ph D, Texas A & M

1986 MS, Oklahoma State Univ

1984 BS, Kansas State Univ

ACADEMIC POSITIONS

2008 - Present Professor, Colorado State University.

2000 - 2008 Professor, Kansas State University.

1994 - 2000 Associate Professor, Kansas State University.

February 1, 1990 - February 1, 1994 Assistant Professor, Kansas State University.

SABBATICALS

(2015) Department of Atmospheric Science, CSU, Sabbatical at CSU Atmospheric Science Dept. in Fall of 2015

PUBLISHED WORKS

Refereed Journal Articles

Anapalli, S. S., Ahuja, L. R., Ma, L., Trout, T. J., McMaster, G. S., Nielsen, D. C., Andales, A. A., Halvorson, A. A., Chavez, J. L., Ham, J. M., Fang, Q. X. Developing and generalizing average corn crop water production functions across years and locations using a system model. *Agricultural Water Management*.

Saseendran, Ahuja, L. R., Ma, L., Trout, T. J., McMaster, G. S., Nielsen, D. C., Ham, J. M., Andales, A. A., Halvorson, A. A., Chavez, J. L., Fang, Q. (2015). Developing and normalizing average corn crop water production functions across years and locations using a system model. *Agricultural Water Management*, 157, 65-77.

Saseendran, Trout, T. J., Ahuja, L. R., Ma, L., McMaster, G. S., Nielsen, D. C., Andales, A. A., Chavez, J. L., Ham, J. M. (2015). Quantifying crop water stress factors from soil water measurements in a limited irrigation experiment. *Agricultural Systems*, 137, 191-205.

- Saseendran, Ahuja, L. R., Ma, L., Nielsen, D. C., Trout, T. J., Andales, A. A., Chavez, J. L., Ham, J. M. (2014). Enhancing the water stress factors for simulation of corn in RZWQM2. *Agronomy Journal*, 106(1), 81-94.
- Saseendran, Ahuja, L. R., Ma, L., Trout, T. J., McMaster, G. S., Nielsen, D. C., Ham, J. M., Andales, A. A., Halvorson, A. D., Chavez, J. L., Fang, Q.-X. (in press). Developing and normalizing average corn crop water production functions across years and locations using a system model. *Agricultural Water Management*.
- Murphy, J., Ham, J. M., Owensby, C. (2014). Design and Testing of a Novel Gas Exchange Chamber. *Academic Research Journal of Agricultural Science and Research*, 2(3), pp. 34-46. www.academicresearchjournals.org/ARJASR/Index.htm
- Anapalli, S. S., Ahuja, L. R., Ma, L., Nielsen, D. C., Trout, T. J., Andales, A. A., Chavez, J. L., Ham, J. M. (2013). Enhancing the water stress factors for simulation of corn in RZWQM2. *Agronomy Journal*, 106(1), 81-94.
- (2012). Standardization of flux chamber and wind tunnel flux measurements for quantifying volatile organic compound and ammonia emissions from area sources at animal feeding operations. *Atmospheric Environment*, 66, 72-83.
- (2011). Influence of Reduced Nitrogen Diets on Ammonia Emissions from Cattle Feedlot Pens. *Atmosphere*, 2(4), 655-670.
- (2011). Linking plant growth responses across topographic gradients in tallgrass prairie. *Oecologia*, DOI 10.1007/s00442-011-1948-6.
- (2011). Validating remotely sensed land surface fluxes in heterogeneous terrain with large aperture scintillometry. *International Journal of Remote Sensing*, 32(21), 6273-6293.
- (2010). Net Carbon Fluxes Over Burned and Unburned Native Tallgrass Prairie. *Rangeland Ecol Manag*, 63, 72-81.
- (2009). Adaptation of a speciation sampling cartridge for measuring ammonia flux from cattle feedlots using relaxed eddy accumulation. *Atmos Environ*, 43, 1753-1759.
- (2009). Measuring Seepage from Waste Lagoons and Earthen Basins with an Overnight Water Balance Test. *T Asabe*, 52, 835-844.
- (2009). Nutrient Accumulation below Cattle Feedlot Pens in Kansas. *J Environ Qual*, 38, 909-918.
- (2008). Assessing the multi-resolution information content of remotely sensed variables and elevation for evapotranspiration in a tall-grass prairie environment. *Remote Sens Environ*, 112, 2977-2987.
- (2008). Surface boundary layer of cattle feedlots. *Agr Forest Meteorol*, 148, 1882-1893.
- (2008). Water balance of a stock-watering pond in the Flint Hills of Kansas. *Rangeland Ecol Manag*, 61, 329-338.
- (2006). Evaluation of MODIS NPP and GPP products across multiple biomes. *Remote Sens Environ*, 102, 282-292.
- (2006). Fluxes of CO₂ from grazed and ungrazed tallgrass prairie. *Rangeland Ecol Manag*, 59, 111-127.
- (2006). Regional CO₂ fluxes inferred from mixing ratio measurements. *Tellus B*, 58, 523-536.

- (2005). Lagoon-biogas emissions and carbon balance estimates of a swine production facility. *J Environ Qual*, 34, 198-206.
- (2005). Measurement and partitioning of in situ carbon dioxide fluxes in turfgrasses using a pressurized chamber. *Agron J*, 97, 627-632.
- (2005). Movement of lagoon-liquor constituents below four animal-waste lagoons. *J Environ Qual*, 34, 1234-1242.
- (2005). Response to "Comments on 'On the construction and calibration of dual-probe heat capacity sensors'". *Soil Sci Soc Am J*, 69, 1666-1667.
- (2004). Improved theory for calculating sap flow with the heat pulse method. *Agr Forest Meteorol*, 126, 169-173.
- (2004). On the construction and calibration of dual-probe heat capacity sensors. *Soil Sci Soc Am J*, 68, 1185-1190.
- (2003). Experimental test of density and energy-balance corrections on carbon dioxide flux as measured using open-path eddy covariance. *Agron J*, 95, 1393-1403.
- (2003). Field Evaluation of the Dual-Probe Heat-Pulse Method for Measuring Soil Water Content. *Vadose Zone J*, 2, 552-560.
- (2003). Isotopic air sampling in a tallgrass prairie to partition net ecosystem CO₂ exchange. *J Geophys Res-Atmos*, 108.
- (2003). Laboratory Evaluation of the Dual-Probe Heat-Pulse Method for Measuring Soil Water Content. *Vadose Zone J*, 2, 389-399.
- (2002). Measurement and modeling of soil CO₂ flux in a temperate grassland under mowed and burned regimes. *Ecol Appl*, 12, 1318-1328.
- (2002). Seasonal water balance of an Ozark hillslope. *Agr Water Manage*, 55, 71-82.
- (2002). Seepage losses from animal waste lagoons. *T Asae*, 45, 983-992.
- (2002). Uncertainty analysis of the water balance technique for measuring seepage from animal waste lagoons. *J Environ Qual*, 31, 1370-1379.
- (2001). Evapotranspiration in a prairie ecosystem. *Agron J*, 93, 338-348.
- (2000). Root-zone hydraulic lift evaluated with the dual-probe heat-pulse technique. *Aust J Soil Res*, 38, 927-935.
- (2000). The effect of CO₂ enrichment on leaf photosynthetic rates and instantaneous water use efficiency of *Andropogon gerardii* in the tallgrass prairie. *Photosynth Res*, 65, 121-129.
- (2000). Toward site-specific design standards for animal-waste lagoons. *J Environ Qual*, 29, 1721-1732.
- (1999). Biomass production and species composition change in a tallgrass prairie ecosystem after long-term exposure to elevated atmospheric CO₂. *Global Change Biol*, 5, 497-506.
- (1999). Dual probe heat pulse technique for measuring soil water content and sunflower water uptake. *Soil Till Res*, 50, 345-348.

- (1999). Effect of spring burning on the surface energy balance in a tallgrass prairie. *Agr Forest Meteorol*, 97, 43-54.
- (1999). Elevated CO₂ and leaf longevity in the C-4 grassland-dominant *Andropogon gerardii*. *Int J Plant Sci*, 160, 1057-1061.
- (1999). Measuring evaporation and seepage losses from lagoons used to contain animal waste. *T Asae*, 42, 1303-1312.
- (1999). Measuring sensible heat flux in plastic mulch culture with aerodynamic conductance sensors. *Agr Forest Meteorol*, 95, 13-Jan.
- (1999). Seepage losses and nitrogen export from swine-waste lagoons. *J Environ Qual*, 28, 1090-1099.
- (1998). Fluxes of CO₂ water vapor, and energy from a prairie ecosystem during the seasonal transition from carbon sink to carbon source. *Agr Forest Meteorol*, 89, 14-Jan.
- (1998). Measuring soil water content under turfgrass using the dual-probe heat-pulse technique. *J Am Soc Hortic Sci*, 123, 937-941.
- (1998). Responses of soil respiration to clipping and grazing in a tallgrass prairie. *J Environ Qual*, 27, 1539-1548.
- (1997). Measuring soil water content in the laboratory and field with dual-probe heat-capacity sensors. *Agron J*, 89, 535-542.
- (1997). Photosynthetic gas exchange and water relation responses of three tallgrass prairie species to elevated carbon dioxide and moderate drought. *Int J Plant Sci*, 158, 608-616.
- (1997). Water vapour fluxes and their impact under elevated CO₂ in a C₄-tall grass prairie. *Glob Change Biol*, 3, 189-195.
- (1996). A dual-heater gauge for measuring sap flow with an improved heat-balance method. *Agron J*, 88, 149-155.
- (1996). Effect of elevated atmospheric carbon dioxide and open-top chambers on transpiration in a tallgrass prairie. *J Environ Qual*, 25, 691-701.
- (1996). Responses in stomatal conductance to elevated CO₂ in 12 grassland species that differ in growth form. *Vegetatio*, 125, 31-41.
- (1996). Sap flow in wheat under free-air CO₂ enrichment. *Plant Cell Environ*, 19, 147-158.
- (1995). Fluxes of CO₂ and Water-Vapor from a Prairie Ecosystem Exposed to Ambient and Elevated Atmospheric CO₂. *Agr Forest Meteorol*, 77, 73-93.
- (1995). Measurements of Water-Use by Prairie Grasses with Heat-Balance Sap Flow Gauges. *J Range Manage*, 48, 150-158.
- (1994). An Evaluation of a Surface-Energy Balance Method for Partitioning Et Data into Plant and Soil Components for a Surface with Partial Canopy Cover. *Agr Forest Meteorol*, 67, 253-267.
- (1994). Modeling the Effect of Mulch Optical-Properties and Mulch Soil Contact Resistance on Soil Heating under Plastic Mulch Culture. *Agr Forest Meteorol*, 71, 403-424.

- (1993). Biomass Production in a Tallgrass Prairie Ecosystem Exposed to Ambient and Elevated Co₂. *Ecol Appl*, 3, 644-653.
- (1993). Error Analysis of the Heat Pulse Method for Measuring Soil Volumetric Heat-Capacity. *Soil Sci Soc Am J*, 57, 1444-1451.
- (1993). Heat-Balance Sap Flow Gauge for Small-Diameter Stems. *Plant Cell Environ*, 16, 593-601.
- (1993). Optical-Properties of Plastic Mulches Affect the Field Temperature Regime. *J Am Soc Hortic Sci*, 118, 188-193.
- (1993). Positional Variation in the Soil Energy-Balance beneath a Row-Crop Canopy. *Agr Forest Meteorol*, 63, 73-92.
- (1993). Technique for Measuring Air-Flow and Carbon-Dioxide Flux in Large, Open-Top Chambers. *J Environ Qual*, 22, 759-766.
- (1993). Traversing Sensor Platform for Environmental Measurements. *Agron J*, 85, 965-968.
- (1992). On the Measurement of Soil Surface-Temperature. *Soil Sci Soc Am J*, 56, 370-377.
- (1991). Aerodynamic and Surface Resistances Affecting Energy-Transport in a Sparse Crop. *Agr Forest Meteorol*, 53, 267-284.
- (1991). Soil and Canopy Energy Balances of a Row Crop at Partial Cover. *Agron J*, 83, 744-753.
- (1990). Determination of Soil-Water Evaporation and Transpiration from Energy-Balance and Stem-Flow Measurements. *Agr Forest Meteorol*, 52, 287-301.

Non-Refereed Journal Articles

- Hengen, T., Sieverding, H., Cole, A., Ham, J., Stone, J. Eco-Efficiency Model for Evaluating Feedlot Rations in the Great Plains, United States. *Journal of Environmental Quality*.
- Sun, K., T., Miller, D., Zondlo, M., Shinkwiler, K., Nash, C., Ham, J. M. (2015). Open-path eddy covariance measurements of ammonia fluxes from a beef cattle feedlot. *Agric. Forest Meteorology*, 213, 193-202.
- Stratton, J. J., Ham, J. M., Borch, T. Ammonia Emissions from Sub-Alpine Forest and Mountain Grassland Soils. *Atmospheric Environment*.
- Galles, K., Stratton, J., Westover, E., Levin, E. J. T., Ham, J. M., Borch, T., Wagner, J. J., Kreidenweis, S., Collett, J. L. (2010). Laboratory chamber system for measuring ammonia emissions from intact soil cores: studies of cattle feedlots and forest soils. *29th Conference on Agricultural and Forest Meteorology*.
- (1999). Measurement resolution of the dual probe heat balance technique. *M Th van Genuchten, FJ Leij, and L Wu (eds) Proceedings of the international workshop characterization and measurement of the hydraulic properties of unsaturated soils Univ of California Press, Riverside, CA*.

Non-Refereed Proceedings or Transactions

- Ham, J. M., Williams, C., Stratton, J., Borch, T. (2011). Weather-based conditional sampling of ammonia near livestock operations using passive samplers. *ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL*

SOCIETY (vol. 242).

- (2012). *Arduino-based control system for measuring ammonia in air using conditionally-deployed diffusive samplers*. Poster H11I-1286 American Geophysical Union Fall Meeting San Francisco, CA December.
- (2012). *Estimating Ammonia Emissions from a Dairy Using Robotic Diffusive Samplers and Inverse Modeling*. Paper No: 121337380 ASABE Annual International Meeting Dallas, Texas July 29 – August 1.
- (2012). *Estimating ammonia fluxes from livestock operations using a network of conditionally-deployed diffusive samplers and inverse modeling*. 30th AMS Conference on Agricultural and Forest Meteorology 29 May-1 June, Boston, MA.
- (2012). *Estimating Emissions of Ammonia and Methane from an Anaerobic Livestock Lagoon Using Micrometeorological Methods and Inverse Modeling*. Poster B51F-0631 American Geophysical Union Fall Meeting San Francisco, CA December.
- (2012). *Identifying ammonia hotspots on a Colorado dairy using conditional passive samplers and inverse modeling*. # W244 ADSA-AMPA-ASAS-CSAS-WSASAS Joint Meeting July 15-27 Phoenix, AZ.
- (2012). *Measuring methane fluxes from confined livestock operations using open-path eddy covariance: a challenging opportunity*. 30th AMS Conference on Agricultural and Forest Meteorology 29 May-1 June, Boston, MA.
- (2011). *Assessing the Ability of Nitrogen Isotopes to Distinguish Ammonia Sources Affecting Rocky Mountain National Park*. American Geophysical Union Fall Meetings San Francisco, CA.
- (2011). *Best Management Practices for Reducing Ammonia Emissions*. CSU Extension Fact Sheet.
- (2011). *Conditional Sampling of Ammonia Using Robotic Diffusive Samplers*. American Geophysical Union Fall Meetings San Francisco, CA.
- (2011). *Measuring Evapotranspiration in Urban Irrigated Lawns in Two Kansas Cities*. American Geophysical Union Fall Meetings San Francisco, CA.
- (2011). *Measuring Methane Emissions From Livestock Operations Using Open-Path Eddy Covariance*. American Soc Agronomy Annual Meetings San Antonio, TX.
- (2011). *Weather-based Conditional Sampling of Ammonia Near Livestock Operations Using Passive Samplers*. American Chemical Society Annual Meetings Denver, CO.
- (2011). *Weather-based Conditional Sampling of Ammonia Using Robotic Diffusive Samplers*. American Soc Agronomy Annual Meetings San Antonio, TX.
- (2010). *Influence of reduced N diets on ammonia emissions from cattle feedlot pens*. International Symposium on Air Quality and Manure Management for Agriculture CD-Rom Proceedings of the 13-16 September 2010 Conference (DoubleTree Hotel, Dallas Texas) Publication date, 13 September 2010 ASABE Publication Number 711P0510cd.
- (2010). *Measuring and Modeling Ammonia Emissions from Cattle Feedlots: Can We Reduce Nitrogen Losses?*. Proceedings of Great Plains Soil Fertility Conference Denver, CO March 2.
- (2010). *Modeling Ammonia Emissions from Cattle Feedlot Pens*. International Symposium on Air Quality and

Manure Management for Agriculture CD-Rom Proceedings of the 13-16 September 2010 Conference (DoubleTree Hotel, Dallas Texas) Publication date, 13 September 2010 ASABE Publication Number 711P0510cd.

- (2007). *Measuring Ammonia Fluxes from Cattle Feedlots using Time-averaged Relaxed Eddy Accumulation*. International Symposium on Air Quality and Waste Management For Agriculture Broomfield, Colorado American Society of Agricultural and Biological Engineers.
- (2007). *Measuring the Seepage Rate from Lagoons Using an Overnight Water Balance Test*. International Symposium on Air Quality and Waste Management For Agriculture Broomfield, Colorado American Society of Agricultural and Biological Engineers.
- (2003). *Standards for measuring seepage from animal waste lagoons and manure storages*. American Society of Agricultural Engineers Annual Meetings Las Vegas, NV Paper Number 034130.
- (1998). *Dual probe heat-pulse technique for measuring water content of soil with sunflower*. Proceedings of the International Congress of Soil Science Domaine de Limère, Ardon, France (Proceedings also published on CD ROM).

Book Review

- (2005). *Evaluating Seepage Losses and Liner Performance at Animal-Waste Lagoons Using Water Balance Methods* (pp. 75-101). L Reddi (ed) Animal Waste Containment in Lagoons ASCE Manual and Report #105 Am Soc Civil Engineers, Reston, VA.
- (2005). *Useful equations and tables in micrometeorology*. Hatfield, JL, and Baker, JM (eds) Micrometeorology in Agricultural Systems Agronomy Monograph No 17 American Society of Agronomy, Madison, WI.
- (1995). *Ecosystem level responses of tallgrass prairie to elevated CO₂*. Global change and terrestrial ecosystems 6 responses to elevated CO₂ Koerner, C and H Mooney (ed) Physiologie Ecology Series, Academic Press.

PAPERS PRESENTED/SYMPOSIA/INVITED LECTURES/PROFESSIONAL MEETINGS/WORKSHOPS

- December 15, 2015, "A New Approach to Sap Flow Measurement Using 3D Printed Gauges and Open-source Electronics", AGU Fall Meeting, American Geophysical Union.
- December 15, 2015, "Eddy covariance measurements of NH₃ fluxes over a natural grass land with an open-path quantum cascade laser-based sensor", AGU, Fall Meeting, American Geophysical Union.
- May 12, 2014, "Estimating Ammonia Fluxes from Cattle Feedlots using Time-averaged Concentration Data Measured with Conditionally Deployed Passive Samplers", Agric and Forest Met Meeting, American Meteorology Society, Portland, OR.
- May 12, 2014, "Using 3D-printers and Low-cost Microcontroller Boards to Build Open-source Environmental Instrumentation", Agric and Forest Met Meeting, American Meteorology Society, Portland, OR.
- December 12, 2013, "Evaluation of a tracer release and measurement system for the detection and quantification of air emissions using the tracer ratio method", Fall Meeting, AGU, (Presenter) Collett, J., San Francisco, CA.
- December 10, 2013, "Quantifying Urban Natural Gas Leaks from Street-Level Methane Mapping", Fall meeting, AGU, (Presenter) Ham, J. M., san francisco.
- December 9, 2013, "Using Arduinos and 3D-printers to Build Research-grade Weather Stations and

Environmental Sensors", AGU Fall Meeting, AGU, San Francisco, CA.

December 9, 2013, "Comparison of Techniques to Estimate Ammonia Emissions at Cattle Feedlots Using Time-Averaged and Instantaneous Concentration Measurements", Fall meeting, AGU, (Presenter) Shonkwiler, K., San Francisco, CA.

April 2, 2013, "Estimating Ammonia Emissions from Livestock Operations Using Low-Cost, Time-Averaged Concentration Measurements", (Presenter) Shonkwiler, K., Denver, CO.

April 1, 2013, "Managing Livestock Ammonia: A Volatile, Promiscuous, Fugitive In the Atmosphere?", National Conference: Waste to Worth: Spreading Science and Solutions., (Presenter) Ham, J. M., Denver, CO.

2012, "CSU Crop Clinic– CSU Soils & Atmosphere".

2012, "Emissions and Transport of Reactive Nitrogen from Cattle Feedlots Along Colorado's Front Range. Air & Waste Management Association. Golden, CO."

2012, "Ham, J.M., C. Williams, and K. Shonkwiler-Arnold. 2012. Arduino-based control system for measuring ammonia in air using conditionally-deployed diffusive samplers. Poster H111-1286. American Geophysical Union. Fall Meeting. San Francisco, CA. December, 2012."

2012, "Ham, J.M., C. Williams, and K. Shonkwiler-Arnold. 2012. Estimating Ammonia Emissions from a Dairy Using Robotic Diffusive Samplers and Inverse Modeling. Paper No: 121337380 . ASABE Annual International Meeting Dallas, Texas. July 29 – August 1, 2012."

2012, "Ham, J.M., C. Williams, and K. Shonkwiler-Arnold. 2012. Estimating ammonia fluxes from livestock operations using a network of conditionally-deployed diffusive samplers and inverse modeling. 30th AMS Conference on Agricultural and Forest Meteorology. 29 May -- 1 June 2012, Boston, MA."

2012, "Ham, J.M., K. Shonkwiler-Arnold, W. J. Massman, and C. Williams. 2012. Measuring methane fluxes from confined livestock operations using open-path eddy covariance: a challenging opportunity. 30th AMS Conference on Agricultural and Forest Meteorology. 29 May -- 1 June 2012, Boston, MA."

2012, "Nitrogen Deposition. 23rd South Platte Water Forum. Loveland, CO".

2012, "Shonkwiler-Arnold, K. Ham, J.M., and C. Williams. 2012. Estimating Emissions of Ammonia and Methane from an Anaerobic Livestock Lagoon Using Micrometeorological Methods and Inverse Modeling. Poster B51F-0631. American Geophysical Union. Fall Meeting. San Francisco, CA. December, 2012."

2012, "Williams, C., Ham, J.M., and K. Shonkwiler-Arnold. 2012. Identifying ammonia hotspots on a Colorado dairy using conditional passive samplers and inverse modeling. # W244. ADSA-AMPA-ASAS-CSAS-WSASAS Joint Meeting. July 15-27. Phoenix, AZ."

2011, "Ham, J. 2011. Global Climate Change: Agriculture, Air, and Water. AES Annual Conference. Fort Collins, CO."

2011, "Ham, J. 2011. Nitrogen in Livestock Systems: Reactive Nitrogen in the Air. EPA Region 8 Seminar. Denver, CO."

2011, "Ham, J., C. Williams, J. Stratton, T. Borch. 2011. Weather-based Conditional Sampling of Ammonia Near Livestock Operations Using Passive Samplers. American Chemical Society Annual Meetings. Denver, CO."

2011, "Ham, J., C. Williams, J. Stratton, and T. Borch. 2011. Weather-based Sampling of Ammonia near Livestock Operations Using Robotic Diffusive Samplers. Institute for Livestock and Environment Annual Meeting. Fort Collins, CO."

2011, "Ham, J., C. Williams, J. Stratton, and T. Borch. 2011. Weather-based Conditional Sampling of Ammonia Using Robotic Diffusive Samplers. American Soc. Agronomy Annual Meetings. San Antonio, TX."

2011, "Ham, J., C. Williams, J. Stratton, and T. Borch. 2011. Conditional Sampling of Ammonia Using Robotic Diffusive Samplers. American Geophysical Union

Fall Meetings. San Francisco, CA."

2011, "J. Ham and C. Williams. 2011. Sampling of Ammonia Near Livestock Operations Using Passive Samplers. RMNP Ag Sub-committee. Longmont, CO."

2011, "J. Ham, C. Williams, K. Shonkwiler. 2011. Measuring Methane Emissions From Livestock Operations Using Open-Path Eddy Covariance. American Soc. Agronomy Annual Meetings. San Antonio, TX."

2011, "Shonkwiler, K., D. Bremer, and J. Ham. 2011. Measuring Evapotranspiration in Urban Irrigated Lawns in Two Kansas Cities. American Geophysical Union Fall Meetings. San Francisco, CA."

2011, "Shonkwiler, K., J. Ham, and C. Williams. 2011. Measuring Methane Emissions from a Dairy Lagoon using Open-path Eddy Covariance. Institute for Livestock and Environment Annual Meeting. Fort Collins, CO."

2011, "Stratton, J., J. M. Ham, C. Williams, D. Roosendaal, and T. Borch. 2011. Assessing the Ability of Nitrogen Isotopes to Distinguish Ammonia Sources Affecting Rocky Mountain National Park. American Geophysical Union Fall Meetings. San Francisco, CA."

2010, "Galles, K., J. Stratton, E. Westover, E. Levin, J. Ham, T. Borch, J. Wagner, S. Kreidenweiss, J. Collett. 2010. Evaluating Ammonia Emissions with a Laboratory Chamber System. Agricultural and Forest Meteorology Meetings. American Society of Meteorology. Aug. 3, Keystone, CO."

2010, "Galles, K.J., J.M. Ham, E. Westover, J.J. Stratton, J. Wagner, S. Archibeque. 2010. Influence of reduced N diets on ammonia emissions from cattle feedlot pens. International Symposium on Air Quality and Manure Management for Agriculture Conference. Sept. 13. Dallas, TX."

2010, "Ham, J.M. 2010. Air Emissions from

Agriculture: from Fields to Feedlots. Seminar Series. Institute for Livestock and the Environment. March 25. Fort Collins, CO."

2010, "Ham, J.M. 2010. Air Quality and Emissions Team: Institute for Livestock and the Environment. Presentation to Exec Council, Colorado Livestock Association. Feb. 16. Fort Collins, CO".

2010, "Ham, J.M. 2010. Air Quality Issues in Agriculture. Agricultural Air Quality Symposium. Feb. 24, 2010. Fort Collins, CO."

2010, "Ham, J.M. 2010. Air Quality Issues in Agriculture. Agricultural Air Quality Symposium. Feb. 25, 2010. Sterling, CO."

2010, "Ham, J.M. 2010. Measuring Ammonia Fluxes Using Relaxed Eddy Accumulation and Continuous Gas Analysis. Agricultural and Forest Meteorology Meetings. American Society of Meteorology. Aug. 4, Keystone, CO."

2010, "Ham, J.M. 2010. Measuring Fluxes of NH₃ and Other Trace Gases Using Eddy Covariance and Relaxed Eddy Accumulation. Colloquium Series. Dept. of Atmospheric Science, CSU. Sept. 23. Fort Collins, CO."

2010, "Ham, J.M. 2010. Measuring Methane Emissions from Cattle Feedlots: A New Approach. Stakeholder Conference. Institute for Livestock and the Environment. CSU. Dec. 2. Fort Collins, CO."

2010, "Ham, J.M. 2010. Modeling Ammonia Emissions from Cattle Feedlot Pens. International Symposium on Air Quality and Manure Management for Agriculture Conference. Sept. 13. Dallas, TX."

2010, "Ham, J.M. 2010. Nitrogen in Livestock Systems: Reactive Nitrogen in the Air. Stakeholder Conference. Institute for Livestock and the Environment. CSU. Dec. 2. Fort Collins, CO."

2010, "Ham, J.M. 2010. Towards a Verifiable Ammonia Emissions Inventory for Cattle

Feedlots in the Great Plains. EPA
Investigators Meeting. Nov. 16. Durham, NC".

2010, "Ham, J.M. Ammonia Research Update.
Feeders Council. Colorado Livestock
Association. Annual Convention. June 25.
Vail, CO."

2010, "Ham, J.M. Ammonia Research Update. Dairy
Council. Colorado Livestock Association.
Annual Convention. June 25. Vail, CO."

2010, "Ham, J.M. and P. Woodford. 2010. Rocky
Mountain National Park and Farm
Fertilizer - What s the Connection.
Colorado Ag Classic. Dec. 9, Loveland
Embassy Suites, Loveland, CO."

2010, "Ham, J.M., 2010. Update on Livestock
Ammonia Research and New Grants.
Agricultural Air Quality Symposium. Feb.
25, 2010. Sterling, CO."

2010, "Ham, J.M., 2010. Update on Livestock
Ammonia Research and New Grants.
Agricultural Air Quality Symposium. Feb.
24, 2010. Fort Collins, CO."

2010, "Ham, J.M., and J. Davis. 2010. Update on
Livestock Ammonia Research. Joint
Agricultural Subcommittee of State
Legislature. Feb. 17, 2010. Denver, CO."

2010, "Ham, Jay, Shawn Archibeque, Thomas
Borch, and Jeffrey Collett. 2010.
Emissions And Transport Of Reactive
Nitrogen From Cattle Feedlots Along
Colorado's Front Range. Investigators
Meeting. USDA AFRI (air quality). Aug.
23. Amarillo, TX."

2010, "Stratton, J., E. Levin, J. Ham, S.
Kreidenweis, J. Collett, Jr., and T.
Borch. 2010. Quantifying Ammonia
Emissions from High Elevation Grassland
and Forest Soils. American Geophysical
Union. Fall Meeting. Dec. San Francisco, CA".

2010, "Stratton, J., E. Levin, J. Ham, S.
Kreidenweiss, J. Collett, and T. Borch.
2010. Evaluation of Ammonia Emissions
from High Elevation Native
Soils. Stakeholder Conference. Institute

for Livestock and the Environment. CSU.
Dec. 2. Fort Collins, CO.".

2010, "Westover, E.C., J.J. Wagner, T. L. Engle, T.C. Bryant, S. Archibeque, and J. Ham. The influence of dietary protein regimens on crude protein and dry matter apparent digestibility in steers fed a steam-flaked corn based diet. American Society of Animal Science Annual Meetings. July. Denver, CO.".

OTHER ACTIVITIES/ACCOMPLISHMENTS – PUBLICATIONS/SCHOLARLY RECORD

(June 10, 2014). Workshop, "Search Chair Training," CSU, Fort Collins, CO, United States.

(June 10, 2014). Workshop, "Search Chair Training," CSU, Fort Collins, CO, United States.

(December 12, 2013 - December 17, 2013). Conference Attendance, "AGU fall meetings," AGU NAGT, San Francisco, CA, United States. Approximate Number of Hours Spent Per Year: 40.

(December 10, 2013). Workshop, "AGU/NAGT Bringing active learning into the classroom," AGU NAGT, San Francisco, CA. Approximate Number of Hours Spent Per Year: 5.

(October 1, 2013 - October 3, 2013). Professional Meeting, "National Robotics Initiative PI meeting," NSF, Washington DC, DC. Approximate Number of Hours Spent Per Year: 20.

(April 1, 2013 - April 5, 2013). Conference Attendance, "Waste to Worth, Spreading Science and Solutions," eXtension, Denver, CO. Approximate Number of Hours Spent Per Year: 40.

(January 15, 2013). Workshop, "EPA Workshop for Dept of Ag directors," EPA, Estes Park, CO. Approximate Number of Hours Spent Per Year: 8.

TEACHING:

<u>Year</u>	<u>Semester</u>	<u>Course No./Title</u>	<u>Cr. Hrs.</u>	<u>Enrollment</u>
2016	Spring	SOCR500 - Environmental Measurement Laboratory	1	20
2016	Spring	SOCR522 - Micrometeorology	3	11
2016	Spring	SOCR322 - Principles of Microclimatology	3	32
2015	Fall	SOCR650 - Research Proposal Development	1	2
2015	Spring	SOCR480A6 - Environmental Measurement with Arduino	1	14
2015	Spring	SOCR522 - Micrometeorology	3	1
2015	Spring	SOCR322 - Principles of Microclimatology	3	7
2014	Fall	SOCR650 - Research Proposal Development	1	11
2014	Spring	SOCR480A6 - Environmental Measurement with Arduino	1	22
2014	Spring	SOCR522 - Micrometeorology	3	11
2014	Spring	SOCR322 - Principles of Microclimatology	3	26
2013	Fall	SOCR650 - Research Proposal Development	1	12
2013	Spring	SOCR495 - Independent Study	18	8
2012	Fall	SOCR680A3 - Research Proposal Development	1	11
2012	Spring	SOCR522 - Plant Canopy Meteorology	3	3
2012	Spring	SOCR322 - Principles of Microclimatology	3	25
2011	Fall	SOCR680A3 - Research Proposal Development	1	15

2011	Spring	SOCR522 - Plant Canopy Meteorology	3	6
2011	Spring	SOCR322 - Principles of Microclimatology	3	19
2010	Fall	SOCR680A3 - Research Proposal Development	1	17
2010	Spring	SOCR522 - Plant Canopy Meteorology	3	16
2010	Spring	SOCR322 - Principles of Microclimatology	3	24
2009	Fall	SOCR699 - Thesis	18	9

Guest Lectures:

<u>Year</u>	<u>Semester</u>	<u>Course No./Title</u>	<u># of Guest Lectures</u>	<u>Delivery Mode</u>
2014	Fall	SOCR - Environmental Issues in Ag	1	Face to Face

Evidence of Teaching Effectiveness (Annual Input)

Other Evidence

Fall 2013, SOCR 650–Research Proposal Development
Failed to have the students fill out the evaluation forms this year

EXTENSION/ENGAGEMENT ACTIVITIES/ACCOMPLISHMENTS

Presentation

EPA Workshop on NH3. Estes Park, CO. Number of times program was made: 1. Total number of participants: 40. Percent Responsible: 25%. 2012.

Guest lecture, Foundations of Soil Sci SOCR 580. Percent Responsible: 100%. 2012.

Workshop

EDF Workshop on Urban CH4 losses. Fort Collins, CO. Total number of participants: 30. Percent Responsible: 25%. 2012.

COMMITTEES

(2012).

(2012).

(2012).

(2010).

College IT committee, (June 20, 2012 - Present).

CIRA Fellow, (March 1, 2012 - Present).

(2012).

(2012).

(2010).

Graduate Committee.

Search Committee Chair, (April 1, 2014 - October 1, 2014).

(2012).

(2012).

(2012).

(2010).

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

American Meteorological Society. (2007 - 2010).

American Society of Agric. and Biol. Engineers. (2000 - 2010).

American Geophysical Union. (1995 - 2010).

American Society of Agronomy. (1991 - 2010).

Soil Science Society of America. (1991 - 2010).

Agric Forest Meteorol. (2012 - Present).

AGU, San Francisco, CA. (2012 - Present).

Air & Waste Management Association, Golden, CO. (2012 - Present).

Amer. Soc. Agric. Biol. Engineering, Dallas, TX. (2012 - Present).

American Meteorological Soc., Boston, MA. (2012 - Present).

Bulletin of the American Meteorological Society. (2012 - Present).

CSU Extension, Loveland, CO. (2012 - Present).

CSU Extension, Fort Collins, CO. (2012 - Present).

Member, NSF. (2012 - Present).

RMNP Ag Subcommittee, Greeley, CO. (2012 - Present).

South Platte Water Forum, Loveland, CO. (2012 - Present).

Sparkfun electronics, Boulder, CO. (2012 - Present).

American Chemical Society, Denver, CO. (2011 - Present).

American Society of Agronomy, San Antonio, TX. (2011 - Present).

USDA, Washington, DC. (2011 - Present).

Agricultural and Forest Meteorology. (2010 - Present).

Atmospheric Environment. (2010 - Present).

CSU, Fort Collins, CO. (2010 - Present).

CSU, Sterling, CO. (2010 - Present).

Global Change Biology. (2010 - Present).

Journal of Environmental Quality. (2010 - Present).

Mathworks, Denver, CO. (2010 - Present).

Member, AGU. (2012).

Member, Amer. Meteorol Soc. (2012).

Member, Amer. Soc. Agric. Bio. Engineering. (2012).

Member, ASA. (2012).

Member, SSSA. (2012).

Member Agriculture Air Quality Technical Workgroup for State of Colorado. (2011).

Member of the Agricultural Air Quality Working group and RMNP Subcommittee that deals with Ag NH₃ and its impact on RMNP. (2011).

Work with Poudre School District (District accountability board). Also, assist with STEM program. (2011).

Member, Computer Technology and Communications Committee. (2010 - 2011).

Member, Search Com. (Ecology Position). (2010 - 2011).

Member of the Agricultural Air Quality Working group and RMNP Subcommittee that deals with Ag NH₃ and its impact on RMNP. (2010).

Radio interview discussion panel: Saturday Morning Farm Equipment Show with Keith Maxey . 1310 KFKA News Talk Radio. Topic: Ammonia in RMNP. Jan. 28, 2010. (2010).

Served on an expert discussion panel entitled "Notes from the Underground: Solutions to Green House Gas Mitigation are in our Soils." Invited by Diana Wall and the The School of Global Environmental Sustainability. Oct 20, 2010. (2010).

Served on an expert discussion panel for for the Institute for Livestock and the Environment Annual Stakeholder Meeting. Topic: Ag Nitrogen. Dec 2, 2010. (2010).

Member, Grad Panel. (2009 - 2010).

Institute for Livestock and the Environment. (2008 - 2010).

Member, American Meteorological Society. (2007 - 2010).

Member, American Society of Agric. and Biol. Engineers. (2000 - 2010).

Member, American Geophysical Union. (1995 - 2010).

Member, American Society of Agronomy. (1991 - 2010).

Member, Soil Science Society of America. (1991 - 2010).

OTHER ACTIVITIES/ACCOMPLISHMENTS – SERVICE/OUTREACH

City of McCall Idaho. (2010).

Fellow, CIRA, Fort Collins, CO. (2011 - Present).

Poudre School District. (2012 - Present).

Poudre School District. (2012 - Present).

Poudre School District. (2012 - Present).

poudre school district. (2011 - Present).

Poudre School Disctrict. (2010 - Present).
