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JASON PHILIP KAYE

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RESEARCH INTERESTS

I use ecosystem ecology as a lens to study the changing biogeochemical cycles of terrestrial ecosystems. I am particularly interested in the nitrogen cycle of plants and soils in forests and agricultural ecosystems.

EDUCATION

Ph.D. 2000. Colorado State University, Ecology
M.S. 1997. Northern Arizona University, Forestry, with Honors
B.A. 1993. University of Virginia, Chemistry, with Distinction

PROFESSIONAL APPOINTMENTS

2015-2016 Investigador Invitado. Universidad Politécnica de Madrid
2012- Professor of Soil Biogeochemistry, Dept. of Ecosystem Science and Management, Penn. State Univ. (promoted from Associate to Full Professor in 2016)
2005-2012 Assistant then Associate (tenured in 2011) Professor of Soil Biogeochemistry, Dept. of Crop and Soil Sci., Penn. State Univ.
2002-2004 Assistant Professor, School of Life Sciences, Arizona State Univ.
2000-2002 USDA Postdoctoral Research Fellow, Department of Forest Sciences, Colorado State Univ.
1997-2000 Grad. Research Assistant, Graduate Degree Program in Ecology, Colorado State Univ.
1995-1997 Grad. Research Assistant, School of Forestry, Northern Arizona Univ.
1993-1994 Research Assistant, Harvard Forest LTER, Harvard Univ.
1992 Research Assistant, Virginia Coastal Reserve LTER, Univ. of Virginia.

HONORS AND AWARDS

Fulbright Scholar, Spain
Bellis Award, Penn State Intercollege Degree Program in Ecology
Community of Excellence Teaching Award, NACTA Chapter of PSU
Junior Faculty Fellow in Conservation and the Environment, A.W. Mellon Foundation
Early Career Research Award, Environment and Natural Resources Institute, PSU
Distinguished Alumni Award, Colorado State University Graduate Degree Program in Ecology

PEER REVIEWED RESEARCH ARTICLES (my students, postdocs, technicians are in italics)

Schipanski, M., M.E. Barbercheck, *E.G. Murrell*, J. Harper, *D.M. Finney*, J.P. Kaye, R.E. Smith, and D.A. Mortensen. In review Rotation strategies for balancing multiple objectives in organic feed and forage cropping systems. *Agriculture, Ecosystems & Environment*, in review.
Murrell, E.G., *M.E. Schipanski*, *D.M. Finney*, M.C. Hunter, M. Burgess, *J.C. LaChance*, B. Baraibar, *C.M. White*, D.A. Mortensen, and J.P. Kaye. 2016. Achieving diverse cover crop mixtures: Effects of planting date and seeding rate. *Agronomy Journal*, in press.
Finney, D.M., J.S. Buyer, and J.P. Kaye. 2016. Living cover crops have immediate impacts on soil microbial community structure and function. *Journal of Soil and Water Conservation*. In press.
Kaye, J.P., M.W. Kaye, S.C. Hart, W.W. Covington, and P.Z. Fulé. 2016. Slow carbon and nutrient accumulation in trees established after fire exclusion in the southwestern United States. *Ecological Applications*. doi: 10.1002/eap.1407

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- Saha, D., B. Rau, J.P. Kaye, F. Montes, P.R. Adler, and A.R. Kemanian. 2016. Landscape control of nitrous oxide emissions during the transition from conservation reserve program to perennial grasses for bioenergy. *Global Change Biology Bioenergy*. doi: 10.1111/gcbb.12395
- Weitzman, J.N., and J.P. Kaye. 2016. Nitrate retention capacity of milldam-impacted legacy sediments and relict A horizon soils. *Biogeosciences Discussions* <http://www.soil-discuss.net/soil-2016-60/>
- Finney, D.M. and J.P. Kaye. 2016. Functional diversity in cover crop polycultures increases multifunctionality of an agricultural system. *Journal of Applied Ecology*. doi: 10.1111/1365-2664.12765
- Weitzman, J.N, and J.P. Kaye. 2016. Variability in nitrogen and carbon cycling across forest, urban and agricultural land uses. *Ecosystems* doi: 10.1007/s10021-016-0007-x
- White, C.M., A. Kemanian, D.M. Finney, and J.P. Kaye. A Model-Data Fusion Approach for Predicting Cover Crop Nitrogen Supply to Corn. *Agronomy Journal*. 108:2527-2540. doi:10.2134/agronj2016.05.0288
- Brantley, S. R. DiBiase, T. Russo, Y. Shi, H. Lin, K. J. Davis, M. Kaye, L. Hill, J. Kaye, D. Eissenstat, B. Hoagland, A. Dere, A. L. Neal, K. Brubaker, D. Arthur. 2016. Designing a suite of measurements to understand the critical zone. *Earth Surface Dynamics* 4:211-235.
- Finney, D., C. White, and J. Kaye. 2016. Biomass production and carbon:nitrogen ratio influence ecosystem services from cover crop mixtures. *Agronomy Journal* 108:39–52. doi:10.2134/agronj15.0182
- Finney, D.M., Eckert, S.E., and J.P.Kaye. 2015. Drivers of nitrogen dynamics in ecologically based agriculture revealed by long-term, high frequency field measurements. *Ecological Applications* 25:2210-2227. <http://dx.doi.org/10.1890/14-1357.1>.
- Hasenmueller, E., L. Jin, G. Stinchcomb, H. Lin, S. Brantley, J.P. Kaye. 2015. Topographic controls on the depth distribution of soil CO₂ in a small temperate watershed. *Applied Geochemistry* 63:58-69.
- Wiechmann, M., M. Hurteau, J. Kaye, and J. Miesel. 2015. Charcoal C content following prescribed burning in a mixed-conifer forest, Sierra Nevada, California. *PLOS ONE* 10(8): e0135014. doi:10.1371/journal.pone.0135014
- Lewis, D., M. Castellano, and J.P. Kaye. 2014. Forest succession, soil carbon accumulation, and rapid nitrogen storage in poorly-remineralized soil organic matter. *Ecology* 95: 2687-2693.
- Jin, L., N. Ogrinc, T. Yesavage, E. Hasenmueller, L. Ma, P. Sullivan, J. Kaye, C. Duffy, and S. Brantley. 2014. The CO₂ consumption potential of gray shale weathering: insights from the evolution of carbon isotopes in the Susquehanna Shale Hills critical zone observatory. *Geochimica et Cosmochimica Acta* 142:260-280.
- White, C., Kemanian, A. and J. Kaye. 2014. Implications of carbon model structure for simulated nitrogen mineralization dynamics. *Biogeosciences* 11:9667-9695.
- McDaniel, M., J. Kaye, M. Kaye. 2014. Do “hot moments” become hotter under climate change?: Soil nitrogen dynamics from a climate manipulation experiment in a post-harvest forest. *Biogeochemistry* 121:339-354.
- Weitzman, J., K. Forshay, J.P. Kaye, Meyer, P., Koval, J., and R. Walter. 2014. Potential nitrogen and carbon mineralization in a landscape rich in mill dam legacy sediments. *Biogeochemistry* 120:337-357.
- Kurth, V., S. Hart, C. Ross, J. Kaye, P. Fule. 2014. Stand-replacing wildfires increase nitrification for decades in southwestern ponderosa pine forests. *Oecologia* 174:395-407.
- Lewis, D. B., J. P. Kaye, and A. P. Kinzig. 2014. Legacies of agriculture and urbanization in labile and stable organic carbon and nitrogen in Sonoran Desert soils. *Ecosphere* 5(5):59. <http://dx.doi.org/10.1890/ES13-00400.1>
- McDaniel, M.D., J.P. Kaye, M.W. Kaye, and M.A. Bruns. 2014. Climate change interactions affect soil CO₂ efflux and microbial functioning in a post-harvest forest. *Oecologia* 174:1437-1448.

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- Schipanski, M.*, R.G. Smith, T.L. Pisani-Gareau, R. Jabbour, *D.B. Lewis*, M.E. Barbercheck, D.A. Mortensen, J.P. Kaye. 2014. The structure of multivariate relationships influencing crop yields during the transition to organic management. *Agriculture Ecosystems and Environment* 189:119-126.
- Lee, C., G.W. Feyereisen, A.N. Hristov, C.J. Dell, J.P. Kaye, and D. Beegle. 2014. Effect of dietary protein concentration on utilization of dairy manure nitrogen for plant growth, leachate nitrate losses, and ammonia emissions from lysimeters. *Journal of Environmental Quality* 43:398-408.
- Schipanski, M.*, M. Barbercheck, M.R. Douglas, *D.M. Finney*, K. Haider, J.P. Kaye, A.R. Kemanian, D.A. Mortensen, M.R. Ryan, J. Tooker, and *C.M. White*. 2014. A conceptual framework for evaluating ecosystem services provided by cover crops in agroecosystems. *Agricultural Systems* 125:12-22.
- McDaniel, M.D.*, R.J. Wagner, C.R. Rollinson, B.A. Kimball, M.W. Kaye, and J.P. Kaye. 2014. Microclimate and ecological threshold responses in a warming and wetting experiment following whole-tree harvest in central Pennsylvania. *Theoretical and Applied Climatology* 116:287-299.
- Zhang, Y., Y. Qian, D. Bremer, J. Kaye, and W.J. Parton. 2013. Simulation of N₂O Emissions and estimation of global warming potential in turfgrass systems using the DAYCENT model. *Journal of Environmental Quality* 42: 1100-1108.
- Castellano, M.*, *D. Lewis*, and J.P. Kaye. 2013. Response of soil nitrogen retention to the interactive effects of soil texture, hydrology, and organic matter. *JGR-Biogeosciences* 118:280-290.
- McDaniel, M.*, J. Kaye, and M. Kaye. 2013. Field climate manipulations had limited effects on soil extracellular enzyme activities in a post-harvest forest. *Soil Biology and Biochemistry* 56: 90-98.
- Ross, C.*, J.P. Kaye, M.W. Kaye, V.J. Kurth, *R. Brimmer*, S.C. Hart, and P.Z. Fulé. 2012. Ecosystem carbon remains low for three decades following fire and constrains soil CO₂ responses to precipitation in southwestern ponderosa pine forests. *Ecosystems* 15:725-740.
- Sponseller, R., S. Hall, D. Huber, N. Grimm, J. Kaye, C. Clark, and S. Collins. 2012. Variation in monsoon precipitation drives spatial and temporal patterns of *Larrea tridentata* growth in the Sonoran Desert. *Functional Ecology* 26:750-758.
- Lee, C., A. N. Hristov, C. J. Dell, G. W. Feyereisen, J. Kaye, and D. Beegle. 2012. Effect of dietary protein concentration on ammonia and greenhouse gas emitting potential of dairy manure. *J. Dairy Sci.* 95:1930-1941.
- Lewis, D.* and J.P. Kaye. 2012. Inorganic nitrogen immobilization in live and sterile soil of old-growth conifer and hardwood forests: implications for ecosystem nitrogen retention. *Biogeochemistry* 111:169-186.
- Castellano, M.*, J.P. Kaye, H. Lin, and J. Schmidt. 2012. Linking carbon saturation concepts to nitrogen saturation and retention. *Ecosystems* 15:175-187. DOI: doi:10.1890/100068
- Kaye, J.P., *S.E. Eckert*, D.A. Gonzales, J.O. Allen, S.J. Hall, R.A. Sponseller, and N.B. Grimm. 2011. Decomposition of urban atmospheric carbon in Sonoran Desert soils. *Urban Ecosystems* 14:737-754.
- Lewis, D.B.*, J.P. Kaye, R. Jabbour, and M.E. Barbercheck. 2011. Labile carbon and other soil quality indicators in two tillage systems during transition to organic agriculture. *Journal of Renewable Agriculture and Food Systems* 26:342-353.
- Collins, S.L., S.R. Carpenter, S.M. Swinton, D. Orstein, D.L. Childers, T.L. Gragson, N.B. Grimm, J.M. Grove, S.L. Harlan, J.P. Kaye, A.K. Knapp, G.P. Kofinas, J.J. Magnuson, W.H. McDowell, J.M. Melack, L.A. Ogden, G.P. Robertson, M.D. Smith, A.C. Whitmer. 2011. An integrated conceptual framework for long-term social-ecological research. *Frontiers in Ecology and the Environment* 9:351-357.
- Hall, S.J., R. Sponseller, N. Grimm, D. Huber, J. Kaye, C. Clark, S. Collins. 2011. Ecosystem response to nutrient enrichment in the Sonoran Desert across an urban airshed. *Ecological Applications*. 21:640-660

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- Castellano, M.J.*, J.P. Schmidt, J.P. Kaye, C. Walker, C.B. Graham, H. Lin, C. Dell. 2011. Hydrological controls on heterotrophic soil respiration across an agricultural landscape. *Geoderma* 162:273-280.
- Sullivan, B.W., T.E. Kolb, S.C. Hart, J.P. Kaye, B.A. Hungate, S. Dore, and M. Montes-Helu. 2011. Wildfire reduces carbon dioxide efflux and increases methane uptake in ponderosa pine forest soils of the southwestern USA. *Biogeochemistry* 104:251-265.
- Diggins, C., P.Z. Fulé, J.P. Kaye, and W.W. Covington. 2010. Future climate affects management strategies for maintaining forest restoration treatments. *International Journal of Wildland Fire* 19:903-913.
- Majumdar, A., Paul, D., and J. Kaye. 2010. Sensitivity analysis and model selection for a generalized convolution model for spatial processes. *Bayesian Analysis* 5:493-518.
- Adviento-Borbe, M.A.A.*, J.P. Kaye, M. A. Bruns, *M.D. McDaniel*, *M. McCoy*, S. Harkcom. 2010. Soil greenhouse gas and ammonia emissions in a long-term maize-based cropping systems experiment. *Soil Science Society of America Journal* 74:1623-1634
- Castellano, M.J.*, J.P. Schmidt, J.P. Kaye, C. Walker, C. Graham, H. Lin, and C. Dell. 2010. Hydrological and biogeochemical controls on the timing and magnitude of nitrous oxide flux across an agricultural landscape. *Global Change Biology*. 16:2711-2720.
- Kaye, J.P., Romanya, J., and R. Vallejo. 2010. Plant and soil carbon accumulation following fire in Mediterranean woodlands. *Oecologia*. 164:533-543.
- Cook J., R.S. Gallagher, J.P. Kaye, J. Lynch, and B. Bradley. 2010. Optimizing vetch nitrogen production and corn nitrogen uptake in a no-till cropping system. *Agronomy Journal* 102:1491-1499.
- Esque, T.C., J.P. Kaye, S.E. Eckert, L.A. DeFalco, and C.R. Tracy. 2010. Short-term soil inorganic N pulse after experimental fire alters invasive and native annual plant production in a Mojave Desert shrubland. *Oecologia* 164:253-263.
- Staravoytov A., R.S. Gallagher, K. Jacobsen, J.P. Kaye, and B. Bradley. 2010. Management of small grain residues to retain legume-derived nitrogen in corn cropping systems. *Agronomy Journal* 102:895-903.
- Dore, S., T. Kolb, M. Montes-Helu, S. Eckert, B. Sullivan, B. Hungate, J.P. Kaye, S. Hart, G. Koch, and A. Finkral. 2010. Carbon and water fluxes from ponderosa pine forests disturbed by wildfire and thinning. *Ecological Applications* 20:663-683.
- Laughlin, D.C., S.C. Hart, J.P. Kaye, and M.M. Moore. 2010. Evidence for indirect effects of plant diversity and composition on net nitrification. *Plant and Soil* 330:435-445; DOI 10.1007/s11104-009-0217-5
- Castellano, M.J.* and J.P. Kaye. 2009. Global within-site variance in soil solution nitrogen and hydraulic conductivity are correlated with clay content. *Ecosystems*. 12:1343-1351.
- Fricks, B.*, J.P. Kaye, and R. Seidel. 2009. Abiotic NO₃⁻ retention in agroecosystems and a forest soil. *Soil Science Society of America Journal* 73:1137-1141
- McCrackin, M. T.K. Harms, N.B. Grimm, S.J. Hall and J.P. Kaye. 2008. Responses of soil microorganisms to resource availability in urban, desert soils. *Biogeochemistry* 87: 143-155.
- Sullivan, B.W., T.E. Kolb, S.C. Hart, J.P. Kaye, S. Dore, and M. Montes-Helu. 2008. Thinning reduces soil carbon dioxide but not methane flux from southwestern USA ponderosa pine forests. *Forest Ecology and Management* 255: 4047-4055.
- Morehouse, K.H.*, T. Johns, J.P. Kaye, and M.W. Kaye. 2008. Carbon and nitrogen cycling immediately following bark beetle outbreaks in southwestern ponderosa pine forests. *Forest Ecology and Management* 255:2698-2708.
- Dore, S., T.E. Kolb, M. Montes-Helu, B.W. Sullivan, W.D. Winslow, S.C. Hart, J.P. Kaye, G.W. Koch, B. A. Hungate. 2008. Long-term impact of a stand-replacing fire on ecosystem CO₂ exchange of a ponderosa pine forest. *Global Change Biology* 14: 1801-1820.

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- Majumdar, A., J.P. Kaye, C. Gries, D. Hope, R. Burdick, and N. Grimm. 2008. Hierarchical spatial modeling and prediction of multiple soil nutrients and carbon concentrations. *Communications in Statistics—Simulation and Computation* 37: 434–453.
- Kaye, J.P., Majumdar, A., Gries, C., Buyantuyev, A., Grimm, N., Hope, D., Jenerette, G., Zhu, W., Baker, L. 2008. Hierarchical Bayesian scaling of soil properties across urban, agricultural, and desert ecosystems. *Ecological Applications* 18:132-145.
- Oleson, J., Hope, D., Gries, C., and J.P. Kaye. 2006. Estimating soil properties in heterogeneous land-use patches: a Bayesian approach. *Environmetrics* 17: 517-525.
- Lewis, D., J.P. Kaye, C. Gries, A. Kinzig, and C. Redman. 2006. Agrarian legacy in soil nutrient pools of urbanizing arid lands. *Global Change Biology* 12: 703-709.
- Kaye, J.P., P. Groffman, N.B. Grimm, L. Baker, and R. Pouyat. 2006. A distinct urban biogeochemistry? *Trends in Ecology and Evolution* 21:192-199.
- Hope, D., W. Zhu, C. Gries, J. Oleson, J.P. Kaye, N.B. Grimm, and L. Baker. 2005. Spatial variation in soil inorganic nitrogen across an arid urban ecosystem. *Urban Ecosystems* 8:251-273.
- Kaye, J.P., S.C. Hart, P.Z. Fulé, W.W. Covington, M.M. Moore, and M.W. Kaye. 2005. Initial carbon, nitrogen, and phosphorus fluxes following ponderosa pine restoration treatments. *Ecological Applications* 15: 1581-1593.
- Boyle, S., S.C. Hart, J.P. Kaye, and M. Waldrop. 2005. Restoration and canopy type influence soil microflora in a Ponderosa pine forest. *Soil Sci. Society of America Journal* 69:1627–1638.
- Kaye, J.P., R. McCulley, and I.C. Burke. 2005. Carbon fluxes, nitrogen cycling and soil microorganisms in adjacent urban, native and agricultural ecosystems. *Global Change Biology* 11:575-587.
- Binkley, D., G. Ice, J.P. Kaye, and C. Williams. 2004. Nitrogen and phosphorus concentrations in forest streams of the United States. *Journal of the American Water Resources Association* 40:1277-1291.
- Binkley, D., J.P. Kaye, M. Barry, and M. Ryan. 2004. First rotation changes in soil carbon and nitrogen in a *Eucalyptus* plantation in Hawaii. *Soil Science Society of America Journal* 68:1713–1719.
- Kaye, J.P., I.C. Burke, A. Mosier, and J.P. Guerchman. 2004. Methane and nitrous oxide fluxes from urban soils to the atmosphere. *Ecological Applications* 14:975–981.
- Kaye, J.P., D. Binkley, and C. Rhoades. 2003. Stable soil nitrogen accumulation and flexible organic matter stoichiometry during primary floodplain succession. *Biogeochemistry* 63:1-22.
- Kaye, J.P., D. Binkley, X. Zou, and J. Parrotta. 2002. Non-labile soil ¹⁵nitrogen beneath three tree species in a tropical plantation. *Soil Science Society of America Journal* 66:612–619. (principal author)
- Kaye, J.P., J.E. Barrett, and I.C. Burke. 2002. Stable carbon and nitrogen pools in grassland soils of variable texture and carbon content. *Ecosystems* 5: 461-471.
- Kaye, J.P., S.C. Resh, M.W. Kaye, and R. Chimner. 2000. Nutrient and carbon dynamics in a replacement series of *Eucalyptus* and *Albizia* trees. *Ecology* 81:3267-3273.
- Kaye, J.P., S.C. Hart, R.C. Cobb, and J. Stone. 1999. Water and nutrient outflow following ecological restoration of a ponderosa pine/bunchgrass ecosystem. *Restoration Ecology* 7:252-261.
- Boone, R.D., K.J. Nadelhoffer, J.D. Canary, and J.P. Kaye. 1998. Roots exert a strong influence on the temperature sensitivity of soil respiration. *Nature (London)* 396:570-572.
- Kaye, J.P. and S.C. Hart. 1998. Restoration and canopy type effects on soil respiration in a ponderosa pine-bunchgrass ecosystem. *Soil Science Society of America Journal* 62:1062-1072.
- Kaye, J.P. and S.C. Hart. 1998. Ecological restoration alters nitrogen transformations in a ponderosa pine-bunchgrass ecosystem. *Ecological Applications* 8:1052-1060.
- Kaye, J.P. and S.C. Hart 1997. Competition for nitrogen between plants and soil microorganisms. *Trends in Ecology and Evolution* 12:139-143.

PEER REVIEWED BOOK CHAPTERS

- Yu, Xuan, C. Duffy, J. Kaye, W. Crow, G. Bhatt, Y. Shi. 2015. Watershed Reanalysis of Water and Carbon Cycle Models at a Critical Zone Observatory. *In: V. Lakshmi (ed.), Remote Sensing of the Terrestrial Water Cycle, Geophysical Monograph, 206.* AGU Books.

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- Burke, I.C., Mosier, A., P.B. Hook, D.G. Milchunas, J.E. Barrett, M.A. Vinton, R.L. McCulley, J.P. Kaye, R.A. Gill, H.E. Epstein, R.H. Kelly, W.J. Parton, C.M. Yonker, P. Lowe, and W. Lauenroth. 2008. Soil organic matter and nutrient dynamics of shortgrass steppe ecosystems. *In: W. Lauenroth and I. Burke (eds.), Ecology of the Shortgrass Steppe: A Long-Term Perspective.* Oxford University Press
- Nadelhoffer, K.J., R.D. Boone, R.D. Bowden, J.D. Canary, J.P. Kaye, P. Micks, A. Ricca, J.A. Aitkenhead, K. Lajtha, and W.H. McDowell. 2004. The DIRT experiment: Litter and root influences on forest soil organic matter stocks and function. *In: D. Foster and J. Aber (eds.), Forests in Time. Synthesis Volume of the Harvard Forest LTER Program.* Yale University Press.
- Burke, I.C., J.P. Kaye, S.P. Bird, S.A. Hall, R.L. McCulley, and G.L. Sommerville. 2003. Evaluating and testing models of terrestrial biogeochemistry: The role of temperature in controlling decomposition. Pp. 225-253. *In: Canham, C.D., J.J. Cole, and W.K. Lauenroth, editors. Models in Ecosystem Science.* Princeton (NJ): Princeton University Press.

FUNDED GRANTS

- 5/2017-4/2019. USDA NE SARE Graduate Fellowship. Advisor of lead-PI. Interseeded cover crops: Evaluating nitrogen retention services provided by plant-microbe relationships. With S. Isbell (Ph.D. Student) \$14,998.
- 8/2016-8/2017. DOE. Co-PI. Understanding ecohydrological controls of biogeochemical reactions and fluxes at the watershed scale. With Li Li, and 5 others. \$180,000.
- 9/2015-9/2019. USDA NIFA OREI. Lead PI. Making diversity functional: Farm-tuning cover crop mixtures to meet grower needs. With M. Barbercheck and D. Mortensen. \$999,972.
- 8/2015-7/2018. USDA NIFA ORG. Co-PI. Unraveling the interactive effects of tillage, residue, and manure additions on nitrous oxide emissions in grain and silage systems. With Armen Kemanian. \$375,481.
- 9/2015-1/2016. US Fulbright Commission. Sole PI. Faculty Fulbright Scholar to Spain. ~\$15,000.
- 10/2014-9/2018. USDA NIFA OREI. Co-PI. A reduced-tillage toolbox: Alternative approaches for integrating cover crops and reduced tillage in an organic feed and forage system. With Mary Barbercheck (PD), William Curran, Armen Kemanian, and several others. \$2,000,000.
- 10/2014-9/2016. USDA NIFA Graduate Fellowship. Advisor of lead-PI. A deeper understanding: using the depth distribution of N₂O to improve predictions of soil-atmosphere emissions. With J. Weitzman (Ph.D. Student). \$75,610.
- 08/2014-07/2017. Co-PI. DOE. Linking topographic variation in belowground C processes with hydrological processes to improve Earth System models. With D. Eissenstat and 4 others. \$1,000,000.
- 10/2013-9/2018. Co-PI. NSF EAR. Using the Susquehanna-Shale Hills CZO to project from the geologic past to the anthropocene future. With Susan Brantley and 9 co-PIs. \$4,496,160.
- 10/2013-9/2017. Co-PI, USDA NIFA. Biologically based fertilizer recommendations to meet yield expectations and preserve water quality. With A. Franzleubbers and many others. \$500,000 (\$90,000 to PSU).
- 6/2013-8/2014. Co-PI. USDA/USDI JFSP Graduate Fellowship. Quantifying the effect of fuel size on charcoal formation during prescribed fire. With M. Weischman (M.S. Student) and M. Hurteau. \$23,612.
- 9/2012 to 8/2013. Co-PI. NSF EAR. An accomplishment-based renewal of the Susquehanna-Shale Hills Critical Zone Observatory. With Susan Brantley and 9 co-PIs. \$1,000,000.
- 8/2012-7/2015: Advisor of lead-PI. USDA NIFA Graduate Fellowship. Building belowground diversity with cover crops to enhance agroecosystem resilience to climate change. With D. Finney (Ph.D. student). \$75,000.
- 8/2012-7/2014. Co-Advisor of lead-PI. USDA NIFA Postdoctoral Fellowship. Plant mediation of nitrogen mineralization via shifts in rhizosphere carbon allocation. With M. Schipanski (Postdoc) and D. Mortensen. \$130,000.

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- 9/2011-8/2013: Advisor of lead-PI, USDA-NESARE Cover crop cocktails: Harnessing diversity to enhance nitrogen retention in agroecosystems. With D. Finney (Ph.D. student). \$14,998
- 3/2011 to 2/2012: Sole-PI, PA-WRRC. Quantifying the N retention capacity of legacy sediments and hydric soils before and after restoration. \$16,700.
- 9/2011-8/2016: Lead-PI, USDA OREI. Finding the right mix: Multifunctional cover crop cocktails for organic systems. With M. Barbercheck, D. Mortensen, D. Luthe, and 6 others. \$2,296,803.
- 1/2011-12/2014: Co-PI, USDOT Sun Grant. Production and life-cycle assessment of herbaceous bioenergy crops across the heterogeneous landscape of the Northeast. With Kemanian (lead-PI), Adler and Drohan. \$253,941.
- 10/2010-9/2014: Co-PI, USDA Cooperative Agreement. Integrated Pasture-Crop Rotation. With M. Hall (lead-PI). \$168,970.
- 9/2010-8/2013: Co-PI, NSF-OISE-IRES. International: Training global change ecologists through a US-Spain collaboration, with M.W. Kaye (lead PI) and D. Behring. \$149,553.
- 6/2009-5/2010: Advisor of lead-PI, NSF-DEB-Ecosystem Studies. Dissertation Research: Nitrogen transformation and transport along a soil texture gradient. With M. Castellano (Ph.D. student and Lead-PI and H. Lin (co-PI). \$11,540.
- 7/2008-6/2012: Lead-PI, NSF-DEB-Ecosystem Studies. Testing a conceptual model of the terrestrial nitrogen cycle including rapid stabilization of nitrogen in soil, with C.E. Martinez and J. Ewing. \$532,371. (plus REU supplements of \$21,240)
- 7/2007-6/2012: Co-PI, NSF Critical Zone Observatory Network. Regolith & the Critical Zone in the Susquehanna River Basin: The Shale Experiment, with Chris Duffy and many Co-PIs. \$4,250,000 (plus REU supplements of \$7400 to Kaye).
- 10/2007-9/2011: Co-PI, USDA NRI. Transitions to Prosperity and Sustainability: Enhancing Small and Medium-Sized Farms in the Rural Exurban-Urban Transitional Zone, with J. Findeis (PD), D. Mortensen, R. Stedman, K. Brazier, and D. Miller. \$491,018.
- 10/2007-9/2011: Co-PI, USDA RAMP Weed management, environmental quality and profitability in organic feed and forage production systems, with M. Barbercheck, D. Mortensen, J. Harper, and N.E. Kiernan. \$980,804.
- 7/2007-6/2010: Co-PI, NOAA-NERRS Graduate Research Fellowship Program. Using soil properties as a framework for understanding nutrient transport and transformation at the terrestrial-aquatic estuarine interface. To Mike Castellano (Ph.D. Student) with J. Kaye (Advisor) and H. Lin (co-Advisor) as Co-PIs. \$59,483.
- 9/2007-8/2011: Co-PI, DOE NICCR. Northeastern forest regeneration in warmer and wetter climate, with M. Kaye and M. Abrams. \$410,831.
- 10/2006-9/2009; Co-PI, USDA/USDI Joint Fire Sciences, Modeling forest change and management alternatives on a restored landscape, with P. Fule and W. Covington. \$140,000 (\$39,651 to Kaye).
- 4/2005-6/2010: Sole-PI, The Andrew Mellon Foundation. A new conceptual model of the terrestrial N cycle based on rapid uptake of N into stable soil organic matter; \$260,000.
- 4/2005-3/2009: Lead-PI, NSF-DEB-Ecosystem Studies. Collaborative Research: Ecosystem responses to nutrient deposition from the urban atmosphere; with N. Grimm, S.H. Hall, and J. Allen; \$707,000 (\$96,000 to Kaye).
- 8/2005-7/2010: Lead-PD, USDA NRI Competitive Grants, Managed Ecosystems: Fire management and carbon storage in Southwestern ponderosa pine forests, with S. Hart, P. Fule, S. Haase, K. Prewitt, and M. Kaye. \$450,000.
- 9/2005-8/2009: Co-PI, USDA National Needs Fellowships in Integrated Soil and Water Sciences, with H. Lin, T. Wagener, J. Shortle, and G. Petersen. \$138,000.
- 11/2005-6/2006: Co-PI, PSU CAS Seed Grant, Coupled Soil Hydrologic and Biogeochemical Dynamics at Multiple Scales - A Preliminary Investigation, with H. Lin, and M.A. Bruns. \$15,000.

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- 8/2005-7/2008: Co-PD, USDA NRI Special Research Grants: Improved Dairy Management Practices. Integrated Strategies for Reducing Gas Emissions from Dairy Farms, with T. Richard, E. Wheeler, G. Varga, and M. Bruns. \$330,000.
- 9/2004-8/2007: co-PI, USDA/NASA/DOE Carbon Cycle Science Program. Carbon dioxide and methane fluxes in disturbed southwestern ponderosa pine forests, with T. Kolb, G.W. Koch, B. Hungate, and S.C. Hart; \$700,000 (\$74,000 to Kaye).
- 11/2004-10/2010: co-PI, NSF-DEB-Long-Term Studies. Central Arizona Phoenix LTER: Phase 2, with N. Grimm, C. Redman, and 23 other co-PIs; \$4,919,954.
- 1/2004-12/2004: lead PI, College of Liberal Arts and Sciences, ASU. Developing a collaborative research initiative in ponderosa pine forest ecology at ASU, with M.W. Kaye, and J. Sabo. \$19,650.
- 9/2003-8/2005: co-PI, NSF Biocomplexity in the Environment, Coupled Biogeochemical Cycles. Coupled biogeochemical cycles in urban and agricultural ecosystems: role of hydrology, stoichiometry, spatial linkages, and human behavior; with P. Brezonik, L. Baker, S. Hobbie, J. King, D. Mulla, M. Bauer, and D. Hope; \$355,317
- 3/2003-8/2004: co-PI, Office of the Vice Provost for Research, ASU. Pilot socio-ecological research project at Agua Fria National Monument, with K. Spielmann and 7 co-PIs; \$51,000.
- 10/2002-9/2005: sole PI, NSF International Studies. Fire management and carbon storage in Spain and the United States; \$32,125.
- 5/2001-4/2003: co-PI, Ecological Restoration Institute. Long-term effects of restoration on the function of a ponderosa pine-bunchgrass ecosystem, with S.C. Hart; \$50,630.
- 8/2000-7/2002: sole PI, USDA NRI Competitive Grants, Managed Ecosystems. Land-use change in central Colorado: Ecosystem consequences of urbanization; \$90,000.

PRESENTATIONS AT CONFERENCES

- Morris, A., and J.P. Kaye.* 2016. Managing Inter-Seeded Cover Crops and Tillage to Decrease Nitrate Leaching and Nitrous Oxide Emissions from Agricultural Soils. ASA/CSSA/SSSA International Annual Meetings. Phoenix, AZ.
- White, C.M. A. Kemanian, and J.P. Kaye.* 2016. Predicting Corn Yield with a Soil Organic Matter Test and Cover Crop Nitrogen Credits. ASA/CSSA/SSSA International Annual Meetings. Phoenix, AZ.
- Finney, D.M., C.M. White, and J.P. Kaye.* 2015. Using diverse cover crop cocktails to provide agroecosystem services. ASA/CSSA/SSSA International Annual Meetings. Minneapolis, MN.
- Finney, D.M. and J.P. Kaye.* 2015. Quantitative approaches to multifunctionality assessment in agroecosystems. Entomological Society of America International Annual Meetings. Minneapolis, MN.
- Weitzman, J., and J.P. Kaye.* 2015. Variability in soil nitrogen retention across forest, urban, and agricultural land uses. Ecological Society of America Annual Meeting. Baltimore, MD.
- Finney, D.M. and J.P. Kaye.* 2015. Functional diversity promotes multifunctional cover cropping systems. Ecological Society of America Annual Meeting. Baltimore, MD.
- Brantley, S., H. Lin, P. Sullivan, X. Gu, E. Hasenmueller, J. Kaye.* 2014. Exploring how rock turns to regolith at the Susquehanna Shale Hills Critical Zone Observatory, Central Pennsylvania. GSA Northeastern Section, Lehigh, PA.
- Davis, K., C. Duffy, D. Eissenstat, Y. Shi, D. Baldwin, S. Brantley, E. Hasenmueller, Y. He, J. Kaye, M. Kaye, H. Lin, K. Nauthani, A. Neal, X. Yu, and F. Zhang.* 2014. Model-data synthesis of the carbon and water cycles at very high resolution in complex topography. Ameriflux Meeting, Patomac, Maryland.
- Gu, X., E. Hasenmueller, J. Kaye, and S. Brantley.* 2014. Role of Tree Roots on Porosity Evolution during Shale Weathering. Goldschmidt Conference, Sacramento, California.
- Grantham, A., J.P. Kaye, M. Hall, and D. Schrenker.* 2014. Organic perennial pastures outperform organic annual pastures with lower N losses and equivalent yields when exposed to drought,

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- extreme rainfall and simulated grazing. Soil Science Society of America Meetings. Long Beach, CA.
- Schipanski, M.*, M. Barbercheck, *D.M. Finney*, R. Smith, J.P. Kaye, D. Mortensen, and J. Harper. 2014. Rotation strategies for balancing multiple management objectives in organic cropping systems. Agronomy Society of America Meetings, Long Beach, CA.
- Schrenker, *D.*, M.H. Hall, A. *Grantham*, J.P. Kaye, and R.H. Skinner. 2014. Potential of warm-season annual pastures in rotation with corn silage for organic dairies. Agronomy Society of America Meetings, Long Beach, CA.
- White, C.M.*, A.R. Kemanian, and J.P. Kaye 2014. Implications of carbon saturation model structure for simulated nitrogen mineralization dynamics. Soil Science Society of America Meetings. Long Beach, CA.
- White, C.M.*, T. DuPont, D. Hartman, M. Hautau, and J.P. Kaye 2014. Cover crop mixtures can improve nitrogen retention and supply in organic grain cropping systems. Agronomy Society of America Meetings, Long Beach, CA.
- Weitzman, J.* and J.P. Kaye 2014. A deeper understanding: Using the depth distribution of N₂O in soil to improve predictions of soil-atmosphere emissions. Soil Science Society of America Meetings. Long Beach, CA.
- Weitzman, J.*, and J. Kaye. 2014. The depth distribution of N₂O, O₂, and CO₂ along topographic gradients at the Shale Hills CZO. Critical Zone National All Hands Meeting, Fish Camp, CA.
- Schipanski, M.*, R. Smith, T. Pisani-Gareau, R. Jabbour, *D. Lewis*, M. Barbercheck, D. Mortensen, and J. Kaye. 2013. The structure of multivariate relationships influencing crop yields during the transition to organic management. Ecological Society of America Meetings, Minneapolis
- Grantham, A.*, J. Kaye, M. Hall, and D. Schrenker. 2013. Market, policy and climate changes as drivers of ecological and biogeochemical shifts in dairy ecosystems. Ecological Society of America Meetings, Minneapolis
- Jin, L., N. Ogrinc, T. Yesavage, E. *Hasenmueller*, L. Ma, J. Kaye, S. Brantley. 2013. Using C and S isotopes to elucidate carbonic versus sulfuric acid reaction pathways during shale weathering in the Susquehanna Shale Hills Critical Zone Observatory. Fall Meeting, AGU, San Francisco.
- Hasenmueller, E.*, L. Jin, L. Smith, M. Kaye, H. Lin, S. Brantley, J. Kaye. 2013. Depth and Topographic Controls on Soil Gas Concentrations and Fluxes in a Small Temperate Watershed. Fall Meeting, AGU, San Francisco.
- Finney, D.* and J. Kaye. 2013. Cover crop cocktails enhance nitrogen management. Soil Science Society of America Meeting, Tampa, Florida
- Saha, D., F. Montes, J. Kaye, P. Adler, B. Rau, A. Kemanian 2013. How many samples are needed to estimate the annual N₂O flux from soils? Soil Science Society of America Meeting, Tampa, Florida
- Finney, D.* and J. Kaye. 2012. Nitrate dynamics in organic cropping systems. Soil Science Society of America Meeting, Cincinnati, Ohio
- Jin, L., N. Ogrinc, T. Yesavage, J. Kaye, and S. Brantley. 2012. Drawdown of atmospheric CO₂ by gray shale weathering: insights from carbon, sulphur, and oxygen isotope systematics in the Susquehanna Shale Hills Critical Zone Observatory. AGU Annual Fall Conference Proceedings, San Francisco.
- Kaye J., *D. Lewis*, and M. Castellano. 2012. Rapid immobilization of inorganic nitrogen in stable soil organic matter of forest ecosystems. Ecosummit, Columbus, Ohio
- Kizewski, F. R., J. P. Kaye, and C. E. Martinez. 2012. Nitrate transformation and immobilization: effects of biotic/abiotic, oxic/anoxic conditions. 22nd V.M. Goldschmidt Conference, Montreal, Canada.
- Saha, D., A. Kemanian, B. Rau, J. Kaye, and P. Adler. 2012. Landscape control of nitrous oxide emission in biomass crops in the Ridge and Valley Ecoregion. Soil Science Society of America Meeting, Cincinnati, Ohio

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- Zhang, Y., Y. Qian, D. Bremer, J. Kaye. 2012. Simulation of N₂O emissions from two cool season turfgrass lawns using the Daycent model. Soil Science Society of America Meeting, Cincinnati, Ohio
- Adviento-Borbe, A.A., J. Kaye, M.A. Bruns, M.D. McDaniel, M.T. McCoy, and W.S. Harkcom.* 2011. Crop rotation and fertilizer type affect ammonia and greenhouse gas emissions in long-term maize-based agroecosystems. Soil Science Society of America Meetings, San Antonio.
- Castellano, M., J. Kaye, H. Lin, and J. Schmidt.* 2011. Carbon saturation concepts and nitrogen retention theory. Soil Science Society of America Meetings, San Antonio.
- Schipanski, M., S. Stephanie, M. Barbercheck, M. Douglas, D. Finney, K. Haider, J. Kaye, D. Mortensen, J. Tooker, and C. White.* 2011. A conceptual framework for evaluating multifunctionality of cover crops in agroecosystems. Soil Science Society of America Meetings, San Antonio.
- McDaniel, M.D., J.P. Kaye, M.V. Bruns, and M.W. Kaye.* 2011. Soil extracellular enzyme activities from a forest harvest and climate manipulation experiment in central Pennsylvania. Enzymes in the Environment Conference, Bad Nauheim, Germany
- Wagner, R., M.W. Kaye, J. Kaye, M. Abrams. 2011. Growth and physiological responses of deciduous tree seedlings to three years of increased temperature and precipitation treatments. Ecological Society of America, Austin
- Watson, J., *Lewis, D., Kaye, J., and S. Duiker.* 2010. Application of S – Theory to Evaluate the Effects of Tillage and Cover Crops On Soil Quality. Soil Science Society of America Meeting, Long Beach, November.
- Wagner, R. M.W. Kaye, J.P. Kaye, and M.D. Abrams. 2010. Seedling physiological responses to increased temperature and precipitation in a northeastern deciduous forest. Ecological Society of America Meeting, Pittsburgh, August.
- Weitzman, J.N., A.M. Pfeiffer, and J.P. Kaye.* 2010. Changes in soil carbon and nitrogen stability and aggregation across urban, forest, and agricultural ecosystems Ecological Society of America Meeting, Pittsburgh, August.
- Brimmer, R., A.M. Pfeiffer, and J.P. Kaye.* 2010. An assessment of soil C and N pools in limestone-derived soils across diverse land uses in central Pennsylvania. Ecological Society of America Meeting, Pittsburgh, August.
- McDaniel, M.D., J.P. Kaye, M.A. Bruns, and M.W. Kaye.* 2010. Ecosystem disturbance in a warmer and wetter northeastern US: How will soil C and N losses and microbial communities respond to forest harvest in the future? Ecological Society of America Meeting, Pittsburgh, August.
- Lewis, D.B., and J.P. Kaye.* 2010. Rapid immobilization of inorganic nitrogen in stable soil organic matter of forest ecosystems: Reviving the successional N retention hypothesis Ecological Society of America Meeting, Pittsburgh, August.
- Castellano, M., J.P. Kaye, H. Lin. and J. Schmidt.* 2009. Biophysical Controls On Ecosystem Nitrogen Cycling along a Soil Texture Gradient. Soil Science Society of America meetings, Pittsburgh
- Castellano M., J.P. Kaye, H. Lin, and J.P. Schmidt.* 2009. Reactive nitrogen retention and flushing along a soil texture gradient. Ecological Society of America Meeting, Albuquerque, August.
- Hall S.J., R.A. Sponseller, N.B. Grimm, D. Huber, C. Clark, S.L. Collins, J.P. Kaye, and J. Allen. 2009. Ecosystem response to the urban atmosphere in the Sonoran Desert. Ecological Society of America Meeting, Albuquerque, August.
- Jin, L., D. Andrews, *N. Kaiser, J.P. Kaye, H. Lin, and S. Brantley.* 2009. Nutrient dynamics and its influence on rock-water interaction at Shale Hills catchment, a critical zone observatory at Pennsylvania, USA. Geological Society of America meetings. Portland, October.
- Kolb, T.E., S. Dore, M.C. Montes-Helu, B.W. Sullivan, S.E. Eckert, J.P. Kaye, S.C. Hart, G.W. Koch, A. Finkral, and B.A. Hungate. 2009. Carbon and water fluxes from ponderosa pine forests disturbed by wildfires and thinning. Ecological Society of America Meeting, Albuquerque, August.
- Kurth, V., S.C. Hart, P.Z. Fulé, and J.P. Kaye. 2009. Nitrogen dynamics along a 33-year stand-replacing wildfire chronosequence in southwestern ponderosa pine forests. Ecological Society of America Meeting, Albuquerque, August.

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- McDaniel, M.D.*, J.P. Kaye, M.W. Kaye, and B. Kimball. 2009. Measuring the interactive effects of warming and wetting on soil C and N losses and microbial communities following forest harvesting. Soil Science Society of America meetings, Pittsburgh
- Wagner, R., M. Kaye, J. Kaye, and M. Abrams. 2009. Acclimation and adaptation of deciduous tree seedlings to a warmer, wetter climate. Ecological Society of America Meeting, Albuquerque, August.
- Findeis, J.L., J. Bishop, K. Brasier, B. Demeke, J. Kaye, D. Miller, D. Mortensen, R. Stedman, R. Salcedo Du Bois, and S. Li. 2008. Human Population Dispersion and the Structure of Agriculture in the Susquehanna Rural-Exurban-Urban Transition Zone (T-Zone). Rural Sociological Society, Manchester, NH. July.
- Castellano, M.J.* and J.P. Kaye. 2008. Variation in soil solution nitrogen is a function of clay content. 1st International Hydropedology Conference, University Park, July.
- Kurth, V., J.P. Kaye, S.C. Hart, P.Z. Fule, S. Haase, and C. Ross. 2008. Fire management and carbon storage in ponderosa pine forests. Natural Resource Extension Professionals conference. Madison, Wisconsin, May.
- Bruns, M.A., McCoy, M., Adviento-Borbe, A., and Kaye, J.P. 2007. Toward an understanding of mechanisms leading to peak soil N₂O emissions during midseason corn production. Soil Science Society of America meetings, New Orleans
- Castellano, M., Walker, C., Schmidt, J., Dell, C., Kaye, J., and Lin, H. 2007. Soil nutrient transport and transformation during extreme water table fluctuations in an agro-ecosystem. Soil Science Society of America meetings, New Orleans
- Cook, J, Gallagher, R, Kaye, J.P., Lynch, J., Starovoytov, A., and McCoy, W. 2007. Improving the synchrony of hairy vetch (*Vicia villosa*) nitrogen release for corn (*Zea mays*) growth. Soil Science Society of America meetings, New Orleans
- Dore, S., M. Montes-Helu, T.E. Kolb, B. W. Sullivan, W. D. Winslow, S. C. Hart, J. P. Kaye, G. W. Koch, B. A. Hungate. 2007 Carbon Dioxide and energy exchange in disturbed southwestern ponderosa pine forests. December meeting of American Geophysical Union.
- Fricks, B.*, J.P. Kaye, and R. Siedel. 2007. Abiotic reactions play a role in nitrate retention in three agroecosystems. Presented at the Ecological Society of America meeting, San Jose, August 2007.
- Fricks, B.*, J.P. Kaye, R. Siedel, and P Hepperly. 2007. Historic and present nitrate loss in a long-term cropping systems trial. Presented at the Soil Science Society of America meeting, New Orleans, November 2007.
- Hall, S.J., R. Sponseller, N.B. Grimm, J.P. Kaye, and J.O. Allen. 2007. Ecosystem response to the urban atmosphere in the Sonoran Desert. Ecological Society of America, August, San Jose, California.
- McCoy, M.T.*, A. Adviento-Borbe, J. P. Kaye, and M. A. Bruns. 2007, Diversity of *amoA* sequences and comparison of N cycle processes in agricultural soils fertilized with inorganic N or dairy manure. American Society of Microbiology meeting, Toronto, May 2007 and Environmental Chemistry Student Symposium at Penn State.
- Starovoytov, A., Gallagher, R., Kaye, J.P., Richard, T., Cook, J., and McCoy, W. 2007. Management alternatives to enhance sequestration of legume-based nitrogen. Soil Science Society of America meetings, New Orleans
- Kaye, J., M. Kaye, S. Eckert, P. Fule, S. Hart, S. Haase, and K. Prewit. 2006. Accumulation of carbon and nutrients in Ponderosa pine trees during 120 years of fire exclusion. Soil Science Society of America Meetings, Indianapolis, IN.
- Lewis, D., J. Kaye, C. Redman, and A. Kinzig. 2006. Importance of historical and present-day land use for the lability of soil C and N. World Congress of Soil Science, Philadelphia, PA.
- Lewis, D., J. Kaye, C. Redman, and A. Kinzig. 2006. Legacies of agriculture in carbon and nutrient pools of arid urban soils. World Congress of Soil Science, Philadelphia, PA.
- Gries, C., C. Bang, J. Briggs, M. Di'Iorio, L. Dugan, R. Erickson, S. Earl, S. Feath, M. Feldner, N.B. Grimm, D. Hope, J.P. Kaye, A. Kinzig, C. Kochert, A. Majumdar, C. Redman, E. Shock, Q.

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- Stewart, L. Taylor-Taft, J. Walker, J. Stutz, M. Tseng, S. Whitcomb, X. Zhuo. Survey200: CAP LTER's approach to extensive field monitoring. Central Arizona Phoenix LTER All Scientists Meeting, Tempe, AZ.
- Hall, S. N. Grimm, J. Kaye, and J. Allen 2006. Ecosystem response to the urban atmosphere in the Sonoran Desert. Ecological Society of America Meetings, Memphis, TN.
- Lewis, D. and J. Kaye. 2006. Response of soil carbon pools and fractions to a century of land use change. Ecological Society of America Meetings, Memphis, TN
- Montes-Helu, M.C., S. Dore, B. Sullivan, S. Hart, J. Kaye, W. Winslow, G. Koch, B. Hungate, and T. Kolb. 2006. Carbon Fluxes in Disturbed Southwestern Ponderosa Pine Forests. Ameriflux Annual Meeting, Boulder, CO.
- Sponseller, R., S. Hall, N. Grimm, J. Kaye, J. Allen, D. Huber, J. Riddell, Q. Stewart, C. Kochert, and A. Ghimire. 2006. Effects of the urban atmosphere on ecosystem processes in the Sonoran desert: Initial patterns. LTER All Scientists Meeting Estes Park, CO.
- Richard, T., E. Wheeler, G. Varga, J.P. Kaye, and M.A. Bruns. 2005. Strategies for reducing gas emissions from dairy farms. Penn State Dairy Cattle Nutrition Workshop, Grantville, PA.
- Horn, K, Johns, T., and J.P. Kaye. 2005. Nitrogen dynamics in ponderosa pine stands infested with bark beetles. Ecological Society of America, Montreal, Quebec.
- Kaye, J.P., A. Majumdar, C. Gries, D. Hope, W. Zhu, N. Grimm, D. Jenerette, and L. Baker. 2005. The spatial distribution of soil carbon and nitrogen in a regional matrix of urban, agricultural, and desert ecosystems. Ecological Society of America, Montreal, Quebec.
- Hungate, B. S. Hart, J.P. Kaye, G. Koch, and T. Kolb. 2005. Ecological restoration of western forests: a win-win for fire and carbon management? AAAS Rocky Mountain Region, Tucson, AZ.
- Kaye, J.P., Romanya, J. and R. Vallejo. 2005. Carbon sequestration following stand replacing fires in Spanish woodlands. USDA Greenhouse Gas Symposium, Baltimore, MD.
- Grimm, N.B., J.P. Kaye, S.J. Hall, J.O. Allen, and D.B. Lewis. 2004. A distinct urban biogeochemistry? Ecological Society of America, Portland, OR and CAP LTER Research Symposium, Tempe, AZ.
- Briggs, J.M., M. Hegmon, J.P. Kaye, K.W. Kintigh, K.A. Spielman, and A.T. Smith. 2004. Legacies on the landscape: Integrating ecology and archaeology to understand long-term human-ecosystem interactions. Ecological Society of America, Portland, OR.
- Hope, D. C. Gries, P. Warren, M. Katti, G. Stuart, W. Zhu, J. Oleson, and J.P. Kaye. 2004. How do humans restructure the biodiversity of the Sonoran desert? Southwest Deserts Conference, Tucson, AZ.
- Hart, S.C., S.I. Boyle, J.P. Kaye, D.R. Guido, J. Thomas. 2003. Long-term effects of restoration on the function of a ponderosa pine - bunchgrass ecosystem. Southwest Fire Initiative, Flagstaff, AZ and U.S. Soil Ecology Conference, Palm Springs, CA.
- Thomas, J, S.I. Boyle, D. R. Guido, S.C. Hart, and J.P. Kaye. 2003. Long-term effects of restoration on soil respiration in a ponderosa pine – bunchgrass ecosystem. Arizona – Nevada Academy of Sciences, Flagstaff, AZ.
- Thomas, J., S.C. Hart, J.P. Kaye, D.R. Guido, and S.I. Boyle 2003. Long-term effects of restoration on soil respiration and net N mineralization and nitrification in a ponderosa pine-bunchgrass ecosystem. Southwest Fire Initiative, Flagstaff, AZ.
- McCulley, R. and J.P. Kaye. 2003. Soil microbial communities in urban ecosystems compared to nearby native grasslands and agriculture. CAP-LTER Research Symposium. Tempe, AZ.
- Kaye, J.P. and I.C. Burke. 2002. Carbon fluxes in an urban ecosystem compared to adjacent grasslands and agriculture. Ecological Society of America, Tucson, AZ.
- Hart, S.C., J.P. Kaye, W.W. Covington, P.Z. Fulé, and M.M. Moore. 2002. Water, nutrient, and carbon fluxes following ecological restoration of southwestern ponderosa pine forests. Ecological Society of America, Tucson, AZ.
- Guerschman J.P., J.P. Kaye and I.C. Burke 2002. Land cover classification in an urban-rural gradient with Landsat TM data using a combination of hard and soft classifier methods. Int. Symposium on Remote Sensing of the Environment, Buenos Aires, Argentina.

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- Kaye, J.P. and D. Binkley. 2001. Non-labile soil nitrogen accumulation during primary floodplain succession. Soil Science Society of America, Charlotte, N.C.
- Burke, I.C., J.P. Kaye, S. Bird, S. Hall, R. McCulley, and G. Sommerville 2001. Evaluating and testing models of terrestrial biogeochemistry: The role of temperature in controlling decomposition. Institute of Ecosystem Studies, Cary Conference IX, Millbrook, NY.
- Kaye, J.P., R.C. Resh, M.W. Kaye, and R. Chimner 1999. Interactions among C, N, and P cycles in mixed stands of *Eucalyptus* and *Albizia*. Ecological Society of America, Spokane, WA.
- Hart, S.C., W.W. Covington, M.M. More, P.Z. Fule, and J.P. Kaye 1998. Historical reconstruction of structure and function of ponderosa pine/bunchgrass ecosystems. Ninth North American Forest Soils Conference.
- Kaye, J.P. and S.C. Hart. 1997. Succession and restoration effects on soil respiration in a ponderosa pine-bunchgrass ecosystem. Soil Science Society of America, Anaheim, CA.
- Kaye, J.P. and S.C. Hart 1997. Postsettlement tree invasion alters belowground processes in a ponderosa pine-bunchgrass community. Ecological Society of America, Albuquerque, NM.
- Boone, R.D. K.J. Nadelhoffer, J.P. Kaye, and R.D. Bowden 1994. Biological and physical controls on soil organic matter storage: the DIRT experiment. International Ecology Meeting, Manchester, UK.
- Canary, J.D., R.D. Boone, K.D. Nadelhoffer, R.D. Bowden, and J.P. Kaye 1996. Estimates of above- and belowground litter inputs to a forest soil using CO₂ fluxes as measured by two methods. Ecological Society of America, Providence, RI.
- Kaye, J.P. and S.C. Hart 1996. Alteration of the nitrogen cycle following ecological restoration of a ponderosa pine forest. Ecological Society of America, Providence, RI.
- Nadelhoffer, K.D., R.D. Boone, J.D. Canary, and J.P. Kaye 1995. Effects of temperature on tree root and microbial respiration in a temperate forest soil. Soil Science Society of America, St. Louis, MO.

INVITED SEMINARS

- White, C.M., D.M. Finney, E. Murrell, B. Baraibar-Padro, J. Hinds, M.C. Hunter, M. Barbercheck, D. A. Mortensen, J.P. Kaye 2016. Ecosystem service provisioning by cover crop mixtures and monocultures in an organic feed and forage cropping system. Invited contribution to the symposium--Can cover crop mixtures maximize agro-ecosystem services? Phoenix, AZ.
- Kaye, J.P. 2016. It isn't easy applying biodiversity-ecosystem function theory to agriculture. Penn State Ecology Discussions seminar series.
- Kaye, J.P. 2014. Using biodiversity-ecosystem function relationships to design multifunctional agroecosystems. Villanova University.
- Kaye, J.P. 2013. Using ecology to design multifunctional agroecosystems. Universidad Politecnica de Madrid.
- Kaye, J.P. 2013. Using ecology to design multifunctional agroecosystems. Department of Food Sciences, Penn State.
- Kaye, J.P., M.W. Kaye, C.R. Rollinson, and M. D. McDaniel. 2011. Adding Insult to Injury: How will climate change alter plant and soil recovery following forest harvesting. Cary Institute of Ecosystem Studies.
- Kaye, J.P. 2009. Ecosystem response to the urban atmosphere in the Sonoran Desert. University of Maryland-Baltimore County.
- Kaye, J.P., J. Romanya, M. Kaye, R. Vallejo, S. Hart, and P.Z. Fulé. 2009. Resilience of carbon storage to fire-regime change: contrasting examples from woodlands in Arizona and Spain. Ecological Society of America Meeting, Albuquerque, August.
- Kaye, J.P. 2008. Legacies in soils and in scientists. Colorado State University, Graduate Degree Program in Ecology, Distinguished Alumni Seminar, October 2008.
- Kaye, J.P. 2008. Can soil microbes benefit from urban organic carbon deposition?, October 2008, Department of Environmental Engineering, Penn State.
- Kaye, J.P. 2008. Tradeoffs between fire management and carbon storage in ponderosa pine forests. School of Forest Resources, Penn State.

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- Kaye, J. 2008. Ghosts of agriculture past in the soils of Phoenix, Arizona. University of Pennsylvania, Philadelphia, PA.
- Kaye, J.P. 2007. Ghosts of agriculture past in the soils of Phoenix, Arizona. Cornell University, Ithaca, NY.
- Hall, S., N. Grimm, J.P. Kaye, J. Allen, and D. Lewis. 2006. Ecosystem Responses to Urbanization Across the Central Arizona-Phoenix (CAP) LTER Site. American Geophysical Union, Baltimore, MD.
- Kaye, J.P. 2006. Will urban ecology lead to new ecological theory or just new field sites? University of Pittsburgh, Pittsburgh, PA.
- Kaye, J.P. 2005. Will ecologists or geochemists make the next big discoveries in the nitrogen cycle? Pennsylvania State University Inter-College Degree Program in Ecology, University Park, PA.
- Kaye, J.P. 2004. Linking land management to nitrogen dynamics at regional to microbial scales. Pennsylvania State University. University Park, PA.
- Kaye, J.P. 2003. From fire suppression to prescribed fire in southwestern ponderosa pine forests. Jornades sobre Incendis Forestals i Recerca. Solsona, Spain.
- Kaye, J.P. 2003. Urban ecosystem ecology in Colorado and Arizona. Northern Arizona University, Flagstaff, AZ.
- Kaye, J.P. 2002. The changing nitrogen cycle of terrestrial ecosystems, Arizona State University, Tempe, AZ.
- Kaye, J.P. 2002. Restoring ecosystem function to ponderosa pine forests after 120 years of fire suppression. University of Alicante, Spain.
- Kaye, J.P. 2001. The changing nitrogen cycle of terrestrial ecosystems. University of Utah, Salt Lake City, UT.
- Kaye, J.P. 2000. Controls on soil nitrogen retention: diving into recalcitrant pools. Cornell University, Ithaca, NY.
- Kaye, J.P. 2000. Controls on soil nitrogen retention: diving into recalcitrant pools. Institute of Ecosystem Studies, Millbrook, NY.

ADVISORS

M.S.: Dr. Stephen C. Hart; Ph.D.: Dr. Dan Binkley

ADVISEES (my students and postdocs)

Joseph Amsili, M.S. Soils, began fall 2016

Sarah Isbell, Ph.D. Ecology, began fall 2015

Andrew Morris, MS Soils, began fall 2015

Lillian Hill, M.S. Ecology, began fall 2014

Elizabeth Hasenmueller, Postdoc, fall 2012-winter 2013

Mac Burgess, Postdoc, spring 2012-winter 2013

Meagan Schipanski, Postdoc, 2011 – winter 2013

Alison Grantham, Ph.D. Ecology, began fall 2011

Denise Finney, Ph.D. Ecology, completed spring 2015

Charlie White, Ph.D. Soils, completed fall 2015

Julie Weitzman, M.S. and Ph.D. Soils, began fall 2009

Rachel Brimmer, Ph.D. Soils, began fall 2008

Marshall McDaniel, Ph.D. Soils, completed winter 2010

Mike Castellano, Ph.D. Soils, completed winter 2009

Chris Ross, M.S. Ecology, completed summer 2008

Michelle Gresalfi, M.S. Ecology, completed spring 2007

Barbara Fricks, M.S. Soils, completed summer 2007

Arlene Adviento-Borbe, Postdoc, summer 2006-summer 2008

David Lewis, Postdoc., fall 2005-fall 2009

Tracy Johns, M.S., ASU, completed spring 2006

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Kari Morehouse, M.S., ASU, completed summer 2005

CO-ADVISEES

Debasish Saha, Ph.D., Soil Science and Biogeochemistry, completed spring 2015

(Primary advisor: Armen Kemanian)

Beth Hoagland, Ph.D., Geosciences and Biogeochemistry, in progress

(Primary advisor: Tess Russo)

ADVISEES (I serve on the graduate committee of these students)

Mitch Hunter, Ph.D., Agronomy, in progress

Abbe Hamilton, M.S., Agronomy, completed 2016

Xin Gu, Ph.D. Geosciences, in progress

Mandi Martino, Ph.D. Geosciences, completed 2014

Tania Galinda, Ph.D., Horticulture, in progress

Virginia Pravia, Ph.D., Agronomy, in progress

Emily Duncan, Ph.D., Soil Science and Biogeochemistry, completed 2016

Andrew Hunt, Ph.D., Soil Science, in progress

Vanathi Duraisamy, Ph.D., Agronomy, in progress

Xuan Yu, Ph.D., Civil and Environmental Engineering, completed 2014

Ashlee Dere, Ph.D., Geosciences, completed 2014

Larry York, Ph.D. Ecology, completed 2014

Morgan Weichmann, M.S., Ecology, completed 2014

Denyse Schrenker, M.S., Agronomy, completed 2014

Hengjing Yan, Ph.D. Civil and Environmental Engineering, completed summer 2013

Lauren Smith, M.S., Ecology, completed summer 2013

Marc Goebel, Ph.D., Ecology, completed summer 2013

Jessica Moon, Ph.D., Ecology, completed spring 2013

Rebekah Wagner, Ph.D. Ecology, completed winter 2012

Tanushree Dutta, Ph.D., Soils, completed summer 2011

Kevin Mueller, Ph.D., Ecology, completed spring 2011

Danielle Andrews, Ph.D., Soils, completed winter 2011

Dan Heggenstaller, M.S., Forest Sciences, completed spring 2010

Aaron Diefendorf, Ph.D., Geosciences, completed fall 2010

Marlyse Williams, Ph.D., Ag and Bio Engineering, completed summer 2010

Chris Junium, Ph.D., Geosciences, in progress, completed winter 2009

Anna Starovtoytov, M.S., Ecology, completed summer 2009

Justine Cook, M.S., Agronomy, completed summer 2009

David Verbee, M.S., Agronomy, completed spring 2009

Katherine Gordon, M.S., Ecology, completed spring 2009

Ashlee Dere, M.S. Soils, completed summer 2009

Qing Zhu, Ph.D., Soil Science, completed winter 2009

Dawn Sedorovich, Ph.D., Ag and Bio Eng., completed winter 2007

Jenny Marie Edwards, M.S. Horticulture, completed fall 2005

Jennifer Harden, M.S., ASU, completed winter 2004

Tamara Harms, M.S. ASU, completed spring 2004

ADVISEES (undergraduate students who conducted research in my lab)

Emily Soll, spring 2016-

Nancy Bao, WISER, fall 2015-

Drew Paul, fall 2015-

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Nicole Kubizki, fall 2014- spring 2015
Matthew Rider, summer 2014-fall2015
Mary Lemmon, summer 2014-spring 2016
Betsy Nottingham, summer 2014
Sydney Laudenslager, summer 2012-spring2014
Lauren Kaminsky, spring 2014-fall 2014
Katherine Speicher, spring 2014-fall 2014
Erin Hill, spring 2013-winter 2013
Juan Rodriguez, Monsegur summer 2013 (SROP)
Laura Davis, spring 2012-fall2013
Marianne Kochin, spring 2012-fall 2013
Briana Yablonski, spring 2013 – fall 2014
Bret Turner, spring 2013-present
Kristen Kyler, fall 2011 – spring 2012
Jena Trolio, fall 2011-spring 2014
Sara Jones, summer 2012 – summer 2013
Lena Harper, fall 2009-fall 2012
Irena Gorski, fall 2009
Avery Dunn, 2010
Brian Creamer, summer 2010
Kristen Jurinko, 2009
Melanie Moore, 2009
Logan Zugay, 2009-2010
Erica Dreibelbis
Nicholas Kaiser, REU, summer 2009
Andrew Wreschnig, REU, summer 2008
Lauren Seiler, undergraduate honors thesis, spring 2008-spring 2009
Lori Ann Clayton, summer 2008
Hunter Stambaugh, 2008
Doug Manning, 2007
Michelle Knabb, fall 2007 – spring 2010
Catherine Pierce, spring 2007 – fall 2008
Krystal Bealing, summer 2006 – spring 2010
Kristine Jimenez, winter 2005 – fall 2007
Amanda Conover, winter 2005 – spring 2007
James Gunn, ASU, summer 2004
Merry Spradling, ASU, winter 2004
Kelly Balcarczyk, ASU, summer 2003
Sarah Shaffer, undergraduate honors thesis, CSU, completed 2002.
Laura Straup, CSU, REU, 2001.

TEACHING EXPERIENCE

PSU	ERM 413W	Case Studies in Ecosystem Management (3 credits)
PSU	FOR 499	Global Change Ecology Research in Spain (3 credits)
PSU	SOILS/GEOSC597	Topics in Biogeochemistry (2 credits)
PSU	SOILS590	Colloquium in Crop and Soil Sciences (1 credit)
PSU	SOILS071 GN IL	Environmental Sustainability (3 credits)
PSU	ECLGY597A	Classical Ecology (2 credits: team taught)
PSU	ECLGY597B	Advances in Ecology (3 credits; team taught)
PSU	AGECO197B	Environmental Sustainability (3 credits)
PSU	SOILS571	Ecosystem Nutrient Cycles (3 credits)

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PSU	SOILS597B	Soil Properties and Functions (3 credits; team taught)
ASU	BIO491/594 GLG 490/598	Soil Ecology (4 credits with lab)
ASU	BIO491	Stable Isotopes in Ecological Research (1 credit)
ASU	BIO491/594	Global Change Biology (2 credits)
ASU	BIO594 - IGERT workshop	Social/Environmental Aspects of Irrigation Systems (3 credits)
ASU	BIO314/414	Biology and Society Research Colloquium (3 credits)
ASU	BIO311	Biology and Society (3 lectures in team taught course)