

Lara M. Kueppers

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Climate Sciences Department
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Research Interests & Expertise

Climate-ecosystem interactions, ecological impacts of climate change, agriculture and climate change, plant-microbe interactions, regional climate modeling, model-experiment integration, species effects on ecosystem function, climate change policy.

Education

University of California, Berkeley
Ph.D. (2003) Environmental Science, Policy and Management
Dissertation: *Forest Carbon Cycling Along an Elevation Gradient: The Influence of Species and Climate*
(Committee: J. Harte, chair; C. D'Antonio; W. Silver; M. Torn)

Stanford University
B.S., M.S. (1996) Earth Systems – Biosphere track
Thesis: *The Effects of Tree Species Richness on Nutrient Cycling in a Tropical Moist Forest in Puerto Rico*
(Committee: H. Mooney; W. Silver)

Professional Experience

2013-present *Research Scientist*, Earth Sciences Division, Lawrence Berkeley National Laboratory
2013-present *Assistant Research Scientist*, Sierra Nevada Research Institute, UC Merced
2012-2013 *Faculty Scientist*, Earth Sciences Division, Lawrence Berkeley National Laboratory
2006-2013 *Assistant Professor*, School of Natural Sciences, UC Merced
2006 *Instructor*, Rocky Mountain Biological Laboratory, Colorado
2006 *Senior Research Associate*, Climate Change and Carbon Management Program, Earth Sciences Division, Lawrence Berkeley National Laboratory
2004-2006 *Postgraduate Researcher*, Department of Earth Sciences, UC Santa Cruz
1998-2003 *Graduate Student Researcher*, Division of Ecosystem Science, UC Berkeley
1995-1996 *Teaching Assistant*, Department of Earth Sciences and Department of Biological Sciences, Stanford University
1995 *Graduate Student Researcher*, International Institute of Tropical Forestry, Puerto Rico

Grants

Current (\$5,664,092 as lead PI)
2015-2018 NSF Dimensions of Biodiversity, co-PI; PI A. C. Frank, co-PI J. Pett-Ridge (total \$1,623,786)
2012-2015 LBNL-LDRD, PI (total \$834,256)

- 2014-2015 DOE BER, co-PI; PI J. Q. Chambers, co-PIs C. Koven, R. Leung, N. McDowell, R. Norby, A. Rogers (total \$4,500,000)
- 2012-2015 USDA-AFRI, co-PI; PI W. Thompson, co-PIs J. E. Campbell, P. Zimmel, L. Sloan, M. Snyder, G. Knapek, J. Outlaw (UCM \$271,024, with J. E. Campbell)
- 2007-2015 US Department of Energy, Office of Science, Terrestrial Ecosystem Sciences, PI; Co-PIs M. Torn, J. Harte, J. Mitton, M. Germino (total \$5,131,836; UCM \$2,947,755)

Completed Research Support (\$126,339 total)

- 2013-2014 NSF-IOS, co-PI; PI A. C. Frank (total \$150,335)
- 2011-2012 UC Merced Graduate Research Council, PI; co-PI A. Westerling (\$9,997)
- 2010-2012 UC Merced Graduate Research Council, co-PI; PI A. C. Frank (\$9,200)
- 2009 California Energy Commission, UCOP-CIEE, PI; co-PI J. E. Campbell (\$10,000)
- 2008 Colorado Native Plant Society, PI; Collaborator R. Butz (\$1,000)
- 2007-2008 California Energy Commission, Public Interest Energy Research-Environmental Area, PI; Co-PIs M. Torn, W. Riley (total \$74,992; UCM \$49,261)
- 2001-2002 Center for Accelerator Mass Spectrometry Grant, Lawrence Livermore National Laboratory (\$5,400 + ~80 radiocarbon analyses worth ~\$24,000)
- 1998, 2002 Grant-in-Aid of dissertation research, Sigma Xi, Berkeley Chapter (\$750)
- 1999-2001 Environmental Defense Minigrant, Environmental Defense, NY, Collaborator; PI J. Harte (\$15,000)

Awards and Fellowships

- 2004 Central Coast Joint Data Committee, 2004 GIS Day Map Contest Award
- 2004 Postdoctoral Program in Climate and Global Change, NOAA (selected as alternate)
- 1999-2003 Graduate Research Environmental Fellowship, US Department of Energy (\$76,400)
- 2001 Walter and Ruth Schubert Prize in Ecosystem Sciences, UC Berkeley (\$2,000)
- 1999-2000 University Fellowship, UC Berkeley (I declined this award)
- 1997-1998 University Fellowship, UC Berkeley (\$13,000)

Manuscripts in Review (*student co-author)

- *Winkler, D., K. Chapin* and **L.M. Kueppers**. Soil moisture mediates alpine productivity responses to warming. In review at *Global Change Biology*.
- *Fernández, M. H. Hamilton, and **L. M. Kueppers**. Back to the future: using historical climate variation to project near-term shifts in habitat suitable for coast redwood. In review at *Global Change Biology*.
- *Lu, Y. and **L. M. Kueppers**. Increased heat waves with loss of irrigation in the United States. In review at *Environmental Research Letters*.
- Moyes, A. B., M. J. Germino, **L. M. Kueppers**. Moisture rivals temperature in limiting photosynthesis by trees establishing beyond their cold-edge range limit under ambient and warmed conditions. In revision for *New Phytologist*.
- Reinhardt, K., M. Germino, **L. M. Kueppers**, J.-C. Domec, and J. Mitton. Linking carbon and water relations to drought-induced mortality in *Pinus flexilis* seedlings at their lower-elevation limit. In revision for *Tree Physiology*.

Peer Reviewed Publications (*student co-author, [#] ISI citation number)

- *Lu, Y., J. Jin, and **L. M. Kueppers**. 2015. Crop growth and irrigation interact to influence surface fluxes in a regional climate-cropland model (WRF3.3-CLM4crop). In press at *Climate Dynamics*.
- *Meromy, L., N. P. Molotch, M. Williams, K. Musselman, and **L. M. Kueppers**. 2015. Snowpack-climate manipulation using infrared heaters in subalpine forests of the Southern Rocky Mountains, USA. In press at *Agricultural and Forest Meteorology*.
- Suding, K., E. Farrar, A. King, **L. M. Kueppers**, and M. Spasojevic. 2015. Vegetation change at high elevation: Scale-dependence and interactive effects on Niwot Ridge. In press at *Plant Ecology & Diversity*.
- *Fernández, M., H. Hamilton, and **L. M. Kueppers**. 2013. Characterizing uncertainty in species distribution models derived from interpolated weather station data. *Ecosphere*. 4(5): 61. <http://dx.doi.org/10.1890/ES13-00049.1> [1]
- Moyes, A. B., C. Castanha, M. Germino, and **L. M. Kueppers**. 2013. Warming and the dependence of limber pine (*Pinus flexilis*) establishment on summer soil moisture within and above its current elevation range. *Oecologia*. 171:271-282. doi: 10.1007/s00442-012-2410-0. [6]
- Castanha, C., M.S. Torn, M.J. Germino, *B. Weibel, and **L.M. Kueppers**. 2013. Conifer seedling recruitment across a forest-to-alpine tundra gradient and effects of provenance. *Plant Ecology and Diversity*. 6(3-4): 307-318. doi:10.1080/17550874.2012.716087. [1]
- *Lu, Y., and **L. M. Kueppers**. 2012. Surface energy partitioning over four dominant vegetation types across the United States in a coupled regional climate model (WRF3-CLM3.5). *Journal of Geophysical Research - Atmospheres*. 117: D06111. doi: 10.1029/2011JD016991 [5]
- Barbour, E. and **L. M. Kueppers**. 2012. Conservation and management of ecological systems in a changing California. *Climatic Change*. 111(1): 135-163. doi: 10.1007/s10584-011-0246-y [2]
- Kueppers, L. M.**, and M. A. Snyder. 2011. Influence of agricultural irrigation on surface energy and water fluxes, surface climate, and atmospheric circulation in California. *Climate Dynamics*. 38(5-6): 1017-1029. doi: 10.1007/s00382-011-1123-0. [11]
- Reinhardt, K., C. Castanha, M. J. Germino, **L. M. Kueppers**. 2011. Ecophysiological variation in two provenances of *Pinus flexilis* seedlings across an elevation gradient from forest to alpine. *Tree Physiology* 31(6): 615-625. [6]
- *Subin, Z. M., W. J. Riley, J. Jin, *D. S. Christianson, M. S. Torn, **L. M. Kueppers**. 2011. Ecosystem feedbacks to climate change in California: Development, testing, and analysis using a coupled regional atmosphere and land-surface model (WRF3-CLM3.5). *Earth Interactions*. 15(15): 1-38. doi: 10.1175/2010EI331.1. [15]
- Luo, Y., J. M. Melillo, S. Niu, C. Beier, J. Clark, E. Davidson, J. Dukes, R. D. Evans, C. Field, C. Czimczik, M. Keller, B. Kimball, **L. Kueppers**, R. Norby, S. Peline, E. Pendall, E. Rastetter, J. Six, M. Smith, M. G. Tjoelker, and M. S. Torn. 2011. Coordinated approaches to quantify long-term ecosystem dynamics in response to global change. *Global Change Biology*, 17(2): 843-854. doi: 10.1111/j.1365-2486.2010.02265.x. [50]
- *Anderson, R., J. G. Canadell, J. T. Randerson, R. B. Jackson, B. A. Hungate, D. D. Baldocchi, G. A. Ban-Weiss, G. B. Bonan, K. Caldeira, L. Cao, N. S. Diffenbaugh, K. R. Gurney, **L. M. Kueppers**, B. E. Law, S. Luyssaert, T. L. O'Halloran. 2011. Biophysical considerations in forestry for climate protection *Frontiers in Ecology and the Environment*, 9(3): 174-182. [39]
- Jackson, R. B., J. T. Randerson, J. G. Canadell, *R. G. Anderson, R. Avissar, D. D. Baldocchi, G. B. Bonan, K. Caldeira, N. S. Diffenbaugh, C. B. Field, B. A. Hungate, E. G. Jobbágy, **L. M. Kueppers**, M. D. Nohetto, and D. E. Pataki. 2008. Protecting climate with forests. *Environmental Research Letters* 3: 044006. [96]

- Lobell, D. B., C. J. Bonfils, **L. M. Kueppers**, and M. A. Snyder. 2008. Irrigation cooling effect on temperature and heat index extremes. *Geophysical Research Letters* 35: L09705. [16]
- Kueppers, L. M.**, M. A. Snyder, L. C. Sloan, D. Cayan, J. Jin, H. Kanamaru, M. Kanamitsu, N. L. Miller, M. Tyree, *H. Du, and B. Weare. 2008. Seasonal temperature responses to land-use change in the western United States. *Global and Planetary Change*, doi:10.1016/j.gloplacha.2007.1003.1005. [37]
- Kueppers, L. M.**, M. A. Snyder, and L. C. Sloan. 2007. Irrigation cooling effect: Regional climate forcing by land-use change, *Geophysical Research Letters*, 34, L03703, doi:10.1029/2006GL028679. [84]
- Kueppers, L. M.**, E. Zavaleta, B. Fulfroost, M. A. Snyder, and L. C. Sloan. 2006. Constrained range expansion and climate change assessments - The authors reply. *Frontiers in Ecology and the Environment* 4(4): 179. [1]
- Kueppers, L. M.**, and J. Harte. 2005. Subalpine forest carbon cycling: Short- and long-term influences of climate and species. *Ecological Applications* 15(6): 1984-1999. [23]
- Kueppers, L. M.**, M. A. Snyder, L. C. Sloan, E. S. Zavaleta, and B. Fulfroost. 2005. Modeled regional climate change and California endemic oak ranges. *Proceedings of the National Academy of Science* 102(45): 16281-16286. [64]
- Kueppers, L. M.**, J. Southon, P. Baer and J. Harte. 2004. Dead wood biomass and turnover time, measured by radiocarbon, along a subalpine elevation gradient. *Oecologia* 141(4): 641-651. [68]
- Silver, W. L., **L. M. Kueppers**, A. E. Lugo, R. Ostertag, and V. Matzek. 2004. Carbon sequestration and plant community dynamics following reforestation of tropical pasture. *Ecological Applications* 14(4): 1115-1127. [62]
- Kueppers, L. M.**, P. Baer, J. Harte, B. Haya, L. E. Koteen, and M. E. Smith. 2004. A decision matrix approach to evaluating the impacts of land use activities undertaken to mitigate climate change. *Climatic Change* 63: 247-257. [10]

Other Publications (*student co-author)

- Harte, J. and **L. M. Kueppers**. 2012. Insight from integration. *Nature* 485(7399): 449. [4]
- Kueppers, L. M.** and J. E. Campbell. 2009. *Potential effects of climate change on California's bioenergy resources*. California Energy Commission Discussion Paper.
- Kueppers, L.M.**, W. Riley, J. Jin, *Z. Subin, *D. Christianson, M. Torn. 2009. *Ecosystem Feedbacks to Climate Change in California: Integrated Climate Forcing From Vegetation Redistribution*. California Energy Commission, Public Interest Energy Research Program. CEC-500-2009-075.
- Barbour, E., and **L. Kueppers**. 2008. *Conservation and Management of Ecological Systems in a Changing California*. Public Policy Institute of California, <http://www.ppic.org/main/publication.asp?i=856>, 42pp.
- Hanson P. J., A.T. Classen, **L. Kueppers**, Y. Luo, N.G. McDowell, J. Morris, A. Rogers, P. Thorton, R. Ceulemans, J. Dukes, M. Goulden, R. Jackson, A. Knapp, M. Kirschbaum, K. Lewin, M. MacCracken, J. Melillo, T. Ringler. 2008. *Ecosystem research: Understanding climate change impacts on ecosystems and feedbacks to the physical climate*. Report of the workshop on "Exploring Science Needs for the Next Generation of Climate Change and Elevated CO2 Experiments in Terrestrial Ecosystems" U. S. Department of Energy.
- Kueppers, L.M.**, M.S. Torn, and J. Harte 2007. *Quantifying Ecosystem Feedbacks to Climate Change: Observational Needs and Priorities*. A report to the Office of Biological and Environmental Research, Office of Science, U. S. Department of Energy.

- Kueppers, L.M.** 2005. Benefits of a regional climate model. *Science* 310: 1278-1279. [1]
Snyder, M. A., **L. M. Kueppers**, L. C. Sloan, D. Cayan, J. Jin, H. Kanamaru, M. Kanamitsu, N. L. Miller, M. Tyree, *H. Du, and B. Weare. 2006. *Regional Climate Effects of Irrigation and Urbanization in the Western United States: A Model Intercomparison*. California Energy Commission, PIER Energy-Related Environmental Research. CEC-500-2006-031.

Invited Presentations

- 2015 Energy and Resources Group, UC Berkeley
- 2014 American Geophysical Union 2014 Fall Meeting
Department of Biology, Penn State University
INTERFACE Workshop, Beijing, China
DOE PI Meeting, Potomac, MD
Department of Biology, University of Utah
- 2013 Landscape and Architecture and Environmental Planning Department, UC Berkeley
Ecological Society of America 2013 Annual Meeting
DOE PI Meeting, Potomac, MD
- 2012 Energy and Resources Group, UC Berkeley
Department of Ecology and Evolutionary Biology, Ohio State University
Climate Sciences Department, Lawrence Berkeley National Laboratory
Central Rockies White Pine Health Working Group, Fort Collins, CO
- 2010 American Geophysical Union 2010 Fall Meeting
Duke University
California State University, Fresno
Lawrence Livermore National Laboratory
Ecological Society of America Annual Meeting
High-Five Symposium, University of Montana, Missoula
Department of Earth and Planetary Sciences, University of California, Santa Cruz
Department of Environmental Science, Policy and Management, University of California, Berkeley
- 2009 Mountain Research Station, University of Colorado
Annual Meeting of the International Association of Landscape Ecologists, Snowbird, Utah
Department of Biological Sciences Spring Colloquium, California State University, Stanislaus
National Center for Ecological Analysis and Synthesis, University of California, Santa Barbara
- 2008 Fifth Annual California Climate Change Conference, Sacramento, California (poster given by W. J. Riley, Kueppers on leave).
- 2007 EPA Workshop: Climate Change Effects on Biological Indicators. Baltimore, Maryland.
- 2006 Dissertation Initiative for the Advancement of Climate Change Research, Pacific Grove, California (poster)
Department of Biology, San Diego State University
School of Natural Sciences, University of California, Merced
Environmental Change Initiative, Brown University
Huxley College of the Environment, Western Washington University
- 2005 Environmental Systems Seminar, University of California, Merced
Global Environmental Change and Biodiversity Workshop, Dourdan, France (poster)
- 2004 W. Silver lab seminar, University of California, Berkeley

Center for Accelerator Mass Spectrometry, Lawrence Livermore National Laboratory
EcoEvo Seminar, Department of Biological Sciences, Stanford University
2003 Department of Earth System Science, University of California, Irvine

Contributed Presentations (*student co-author)

- Lu, Y. and **L. M. Kueppers**. 2014. Irrigation reduces land-atmosphere coupling strength in the Midwest and Northern Great Plains. American Geophysical Union Fall Meeting. San Francisco, CA.
- Germino, M., B. Lazarus, C. Castanha, A. B. Moyes, and L. M. Kueppers. 2014. Physiological limitation at alpine treeline: relationships of threshold responses of conifers to their establishment patterns. American Geophysical Union Fall Meeting. San Francisco, CA.
- *Lubetkin, K. C., A. L. Westerling, **L. M. Kueppers**. 2014. Life stage filters on conifer encroachment into subalpine meadows in the central Sierra Nevada, California. Ecological Society of America Annual Meeting, Sacramento, CA.
- Moyes, A. B., C. Castanha, **L. M. Kueppers**. 2014. Microclimate factors affecting seedling emergence and survival of three conifer species within and above their current elevation ranges: results of a multi-year climate manipulation study in the Colorado Rocky Mountains. Ecological Society of America Annual Meeting, Sacramento, CA.
- Castanha, C., M. J. Germino, B. Lazarus, **L. M. Kueppers**. 2014. Effects of experimental climate warming on seedling growth for three subalpine conifers along a forest to alpine tundra gradient. Ecological Society of America Annual Meeting, Sacramento, CA.
- Frank, A. C., A. Carrell*, Dana L. Carper*, **Lara M. Kueppers**, A. B. Moyes. 2014. Aboveground N₂-fixing bacterial endophytes in subalpine conifers: A novel pathway for ecosystem acquisition of new nitrogen? Ecological Society of America Annual Meeting, Sacramento, CA.
- Lazarus, B., M. J. Germino, **L. M. Kueppers**, C. Castanha, A. B. Moyes. 2014. Threshold responses to cold and drought in tree seedlings vary among species at and above alpine treeline, but can they help explain establishment patterns? Ecological Society of America Annual Meeting, Sacramento, CA.
- Reinhardt, K., M. J. Germino, **L. M. Kueppers**, C. Castanha, J. Mitton, J.-C. Domec. 2014. Whole-plant evidence for mechanisms of drought-induced mortality of *Pinus flexilis* seedlings at their lower-elevation limit. Ecological Society of America Annual Meeting, Sacramento, CA.
- *Christianson, D.S., C.G. Kaufman, **L.M. Kueppers**, J. Harte. 2013. Towards a More Biologically-meaningful Climate Characterization: Variability in Space and Time at Multiple Scales. American Geophysical Union Fall Meeting. San Francisco, CA.
- O'Halloran, T.L., J.G. Barr B. Cook, M. Goeckede, B.E. Law, **L.M. Kueppers**, W.J. Riley. 2013. Predicting diffuse light-enhancement of GPP from plant functional traits: A multi-site synthesis. American Geophysical Union Fall Meeting. San Francisco, CA.
- Cairns, D.M., **L.M. Kueppers**, C.I. Millar. 2013. Advancing Integrated Understanding of Treeline Response to Environmental Change: the Alpine and Arctic Treeline Ecotone Network. American Geophysical Union Fall Meeting. San Francisco, CA.
- *Lu, Y. and **L.M. Kueppers**. 2013. Increased heat waves with loss of irrigation in United States. American Geophysical Union Fall Meeting. San Francisco, CA.

- Kueppers, L. M.**, C. Castanha, A. B. Moyes, M. Germino, M. S. Torn, J. Harte and J. Mitton. 2013. Responses of subalpine tree recruitment to warming within and above current altitudinal ranges. Ecological Society of America Annual Meeting, Minneapolis, MN.
- *Winkler, D. E. and **L. M. Kueppers**. 2013. Alpine productivity responses to climate change at multiple levels of biological organization. Ecological Society of America Annual Meeting, Minneapolis, MN.
- Cairns, D. M., **L. M. Kueppers**, and C. I. Millar. 2013. Moving forward – North American Treeline Network. Ecological Society of America Annual Meeting, Minneapolis, MN.
- Germino, M., K. Reinhardt, **L. M. Kueppers**, and A. B. Moyes. 2013. Can ecophysiology link pattern to process or molecules to landscapes for the study of treeline responses to climate? Ecological Society of America Annual Meeting, Minneapolis, MN.
- Moyes, A. B., B. Lazarus, M. Germino, and **L. M. Kueppers**. 2013. Warming reduces cold stress but increases moisture stress for establishing limber pine within and above alpine treeline. Ecological Society of America Annual Meeting, Minneapolis, MN.
- *Lubetkin, K. C., A. Westerling, and **L. M. Kueppers**. 2013. Spatial and temporal patterns of conifer encroachment into subalpine meadows in the central Sierra Nevada, California. Ecological Society of America Annual Meeting, Minneapolis, MN.
- *Lu, Y., J. Jin, and **L.M. Kueppers**. 2013. Effects of agriculture on surface energy partitioning and climate over the continental U.S. using WRF-CLM. Community Earth System Model Land Model Working Group Workshop, Boulder, CO. (Kueppers presented)
- Moyes, A. B., M. J. Germino, **L. M. Kueppers**. 2012. Physiological stresses of limber pine seedlings at and above treeline immediately following natural and experimentally advanced snowmelt. American Geophysical Union Fall Meeting. San Francisco, CA.
- Reinhardt, K., M. J. Germino, **L. M. Kueppers**, J. Mitton, and C. Castanha. 2012. Why Seedlings Die: Linking Carbon and Water Limitations to Mechanisms of Mortality During Establishment in Conifer Seedlings. American Geophysical Union Fall Meeting. San Francisco, CA.
- *Lu, Y., **L. M. Kueppers**. 2012. Dynamic crop growth improves regional climate simulation in continental United States. American Geophysical Union Fall Meeting. San Francisco, CA.
- Moyes, A.B., M.J. Germino, and **L.M. Kueppers**. 2012. Physiological Stresses of Limber Pine Seedlings at and above Treeline Immediately Following Natural and Experimentally Advanced Snowmelt. MtnClim 2012, Estes Park, CO. (poster)
- Kueppers, L. M.** C. Castanha, A.B. Moyes, M.J. Germino, and M. Torn. 2012. Alpine Treeline Warming Experiment: Effects of Microclimate on Subalpine Seedling Establishment within and Beyond Two Species' Current Elevation Ranges. MtnClim 2012, Estes Park, CO.
- *Winkler, D. and **L.M. Kueppers**. 2012. Plant cover responses to simulated climate change in alpine plant species. Ecological Society of America Annual Meeting, Portland, OR. (poster)
- Kueppers, L. M.**, A. B. Moyes, S. M. Ferrenberg, *D. S. Christianson, C. Castanha, and M. J. Germino. 2011. Manipulation of subalpine and alpine microclimate in the Alpine Treeline Warming Experiment. American Geophysical Union Fall Meeting. San Francisco, CA.
- Reinhardt, K., C. Castanha, M. J. Germino, and **L. M. Kueppers**. 2011. Leapfrogging of tree species provenances? Interaction of microclimate and genetics on upward shifts in tree species' range limits. American Geophysical Union Fall Meeting. San Francisco, CA.
- Castanha, C., A. B. Moyes, M. S. Torn, M. J. Germino, and **L. M. Kueppers**. 2011. Responses of subalpine conifer seedling germination and survival to soil microclimate in the Alpine Treeline Warming Experiment. American Geophysical Union Fall Meeting. San Francisco, CA. (poster)

- *Meromy, L., *J. L. Petrzela, N. P. Molotch, M. W. Williams and **L. M. Kueppers**. 2011. Snowpack-climate manipulations using thermal infrared heaters along an elevational gradient. American Geophysical Union Fall Meeting. San Francisco, CA. (poster)
- *Lubetkin, K., E. Berlow, A. Westerling, and **L. M. Kueppers**. 2011. Extent and timing of conifer encroachment into subalpine meadows in the Central Sierra Nevada, California. Ecological Society of America Annual Meeting, Austin, TX (poster)
- Kueppers, L. M.**, C. Castanha, A. B. Moyes, S. Ferrenberg, M. S. Torn, M. J. Germino. 2011. Alpine Treeline Warming Experiment: An Experimental Test of Climatic Constraints to Subalpine Tree Species' Recruitment Ranges. Interface 1st INTERFACE meeting: How Do We Improve Earth System Models? Integrating Earth System Models, Ecosystem Models, Experiments and Long-Term Data, Captiva Island, Florida (poster)
- Castanha, C., M. J. Germino, M. S. Torn, S. Ferrenberg, J. Harte, and **L. M. Kueppers**. 2010. Subalpine conifer seedling demographics: Species responses to climate manipulations across an elevational gradient at Niwot Ridge, Colorado. American Geophysical Union Fall Meeting. San Francisco, CA. (poster)
- Moyes, A. B., C. Castanha, S. Ferrenberg, M. J. Germino, and **L. M. Kueppers**. 2010. Sensitivity of limber pine (*Pinus flexilis*) seedling physiology to elevation, warming, and water availability across a timberline ecotone. American Geophysical Union Fall Meeting. San Francisco, CA. (poster)
- *Yang, X, E. Campbell, M. A. Snyder, L. Sloan, and **L. M. Kueppers**, 2010. Forecasting energy security impacts of biofuels using regional climate models. American Geophysical Union Fall Meeting. San Francisco, CA. (poster)
- Reinhardt, K., C. Castanha, M. J. Germino, and **L. M. Kueppers**. 2010. Variation in gas exchange, carbohydrates, and growth in *Pinus flexilis* seedlings from forest to alpine. Ecological Society of America Annual Meeting, Pittsburgh, PA.
- *Lu, Y., **L. M. Kueppers**, *Z. Subin and J. Jin. 2009. Modeling the climate sensitivity to forest cover in North America. American Geophysical Union Fall Meeting. San Francisco, CA. (poster)
- L. M. Kueppers**, A. Faist, S. Ferrenberg, and C. Castanha. 2009. Population and species differences in treeline tree-species germination patterns in response to climate change. American Geophysical Union Fall Meeting. San Francisco, CA. (poster)
- R. J. Butz, K. Reinhardt, M. Germino, and **L. Kueppers**. 2009. Responses of alpine vegetation to global warming: Insights from comparing alpine-restricted and broad-ranging herbs along a snowmelt gradient. American Geophysical Union Fall Meeting. San Francisco, CA.
- *Subin, Z. M., J. Jin, **L. M. Kueppers**, W. J. Riley, *D. M. Svehla, M. S. Torn. 2009. Coupling WRF 3 and CLM 3.5 for regional climate simulation and understanding interactions between land cover and the atmosphere. 10th Annual WRF Users Workshop, Boulder, CO.
- *Lu, Y., **L. M. Kueppers**, *Z. M. Subin. 2009. Modeling the climate sensitivity to forest cover in North America. 10th Annual WRF Users Workshop, Boulder, CO.
- *Subin, Z. M., J. Jin, **L. M. Kueppers**, W. J. Riley, *D. M. Svehla, M. S. Torn. 2008. Ecosystem feedbacks to climate change in California: Integrated climate forcing from vegetation redistribution, using a new regional climate model configuration. Eos Trans. AGU, 89(53), Fall Meet. Suppl., Abstract GC51B-08.
- Kueppers, L. M.**, M. A. Snyder, and L. C. Sloan. 2006. Influence of land-use change on surface energy fluxes and atmospheric circulation in California, Eos Transactions AGU, 87(52), Fall Meet. Suppl., Abstract A41B-0041 (poster).

- Kueppers, L. M.**, M. A. Snyder, L. C. Sloan, and *S. Bryant. 2005. A regional climate modeling study of the effects of irrigation and urbanization on California climate. American Geophysical Union Fall Meeting. San Francisco, CA.
- Shellito, C. J., S. Clifthorne, L. C. Sloan, and **L. Kueppers**. 2005. Importance of soil texture in paleo-vegetation modeling studies. American Geophysical Union Fall Meeting. San Francisco, CA. (poster)
- Kueppers, L. M.**, M. A. Snyder, *S. Bryant, and L. C. Sloan. 2005. Climate effects of Irrigation and urbanization in California: A regional climate modeling study. Second Annual Climate Change Research Conference, and First Scientific Conference, West Coast Governors' Global Warming Initiative, Sacramento, CA. (poster)
- Snyder, M. A., **L. M. Kueppers**, L. C. Sloan, E. S. Zavaleta, and B. Fulfrost. 2005. Application of regional climate model output to the assessment of the impacts of climate change in California. Second Annual Climate Change Research Conference, and First Scientific Conference, West Coast Governors' Global Warming Initiative, Sacramento, CA. (poster)
- Kueppers, L. M.**, L. C. Sloan, M. A. Snyder, and E. S. Zavaleta. 2005. Endemic oaks, future climate change, and regional conservation. UCSC Plant Research Symposium, Santa Cruz, CA.
- Kueppers, L. M.**, L. C. Sloan, M. A. Snyder, and E. S. Zavaleta. 2004. Large shift in endemic oak ranges due to projected future regional climate change in California. Eos, Transactions, American Geophysical Union. (poster)
- Kueppers, L. M.** and J. Harte. 2004. Mountain forest carbon feedbacks to climate change: do species matter? Ecological Society of America Annual Meeting Abstracts.
- Kueppers, L. M.** 2004. Rocky Mountain forest carbon: The influence of climate and species. Department of Environmental Science, Policy and Management, University of California, Berkeley.
- Kueppers, L. M.** 2003. Climate and species controls on forest carbon dynamics in the Rocky Mountains. Global Change Education Program End-of-Summer Workshop. Arlington, VA.
- Kueppers, L. M.**, J. Southon, and J. Harte. 2002. Climate and species controls on decomposition of coarse woody debris: radiocarbon dating of decaying logs. Global Change Education Program End-of-Summer Workshop. Argonne National Laboratory, IL.
- Kueppers, L. M.**, J. Southon, and J. Harte. 2002. Climate and species controls on decomposition of coarse woody debris: radiocarbon dating of decaying logs. Ecological Society of America Annual Meeting Abstracts 87:185.
- Kueppers, L. M.** 2002. How do climate and forest type affect carbon storage and cycling rates: Coarse woody debris decomposition. Rocky Mountain Biological Laboratory, CO.
- Kueppers, L. M.**, and J. Harte. 2001. Soil carbon loss along a climate and forest type gradient in the Rocky Mountains. Ecological Society of America Annual Meeting Abstracts 86:135-136.
- Kueppers, L. M.**, and J. Harte. 2000. Soil carbon dynamics along a forest type and elevation gradient in the Rocky Mountains: Ecological feedbacks to climate change. Eos, Transactions, American Geophysical Union 81(48): F198. (poster)
- Kueppers, L. M.**, W. L. Silver, A. E. Lugo, and H. A. Mooney. 1996. The effects of canopy tree species diversity on nutrient cycling in a restored tropical moist forest. Bulletin of the Ecological Society of America, 77(3 Suppl. Part 2): 246. (poster)

Teaching

<i>Course (lower division, upper division or graduate)</i>	<i># students</i>	<i>Institution</i>	<i>Term</i>
Guest Lecturer, Energy and Resources Group		UC Berkeley	Fall 2014
Alpine Plant Ecology and Climate Change (g), 3 units	3	UC Merced	Spring 2012
Environmental Science and Policy (ud), 4 units (co-taught with Tony Westerling)	45	UC Merced	Spring 2012
Ecosystems of California (ld), 4 units	68	UC Merced	Spring 2012
Terrestrial Ecosystem Ecology (ud/g), 3 units	18	UC Merced	Fall 2011
Climate Change and Biodiversity (executive leadership program)	24	National Parks Institute	April 2011
Environmental Science and Policy (ud), 4 units (co-taught with Tony Westerling)	73	UC Merced	Spring 2011
Ecosystems of California (ld), 4 units	93	UC Merced	Spring 2011
Climate Change and Biodiversity (executive leadership program)	27	National Parks Institute	April 2010
Terrestrial Ecosystem Ecology (ud/g), 3 units	18	UC Merced	Spring 2010
Environmental Science and Policy (ud), 4 units (co-taught with Tony Westerling)	17	UC Merced	Spring 2010
Writing a Research Proposal (g), 2 units	15	UC Merced	Fall 2009
Active Service Modified Duties		UC Merced	Spring 2009
Active Service Modified Duties		UC Merced	Fall 2008
Ecosystems of California (ld), 4 units	49	UC Merced	Spring 2008
Environmental Science and Policy (ud), 4 units (co-taught with Tony Westerling)	39	UC Merced	Fall 2007
Terrestrial Ecosystem Ecology (ud/g), 3 units	3	UC Merced	Spring 2007
Rocky Mountain Ecosystems and Climate Change	4	Rocky Mountain Biological Laboratory	Summer 2006
Guest Lecturer, Department of Environmental Science		Western Washington University	Spring 2006
Guest Lecturer, Environmental Studies Department		UC Santa Cruz	2004, 2005

Visiting Scholars Hosted

Kaiguang Zhao 2011 Currently Assistant Professor, Ohio State University

Postdoctoral Scholars Mentored

Erin Conlisk 2014-present

Yaqiong Lu 2013-present (co-mentored with Elliott Campbell, UC Merced)

Andrew Moyes 2010-2014 Currently Assistant Project Scientist, UC Merced and UC Berkeley

Ramona Butz 2007-2009 Currently Northern Province Ecologist for the Klamath, Mendocino,
Shasta-Trinity, and Six Rivers National Forests, U.S. Forest Service

Undergraduate* and Graduate Students Mentored (since 2008)

Meredith Jabis, (co-advised with J. Harte) 2012-present, PhD student, Environmental Science,
Policy and Management, UC Berkeley

Kaitlin Lubetkin (co-advised with A. Westerling) 2015, PhD, Environmental Systems, UC Merced

Lucille Watkins*, 2015 LBNL SULI program student
Rick Thomas*, 2014, LBNL SULI program student
Yaqiong Lu 2013, PhD, Environmental Systems, UC Merced
Miguel Fernandez (co-advised with H. Hamilton) 2013, PhD, Environmental Systems, UC Merced
(currently postdoc, German Centre for Integrative Biodiversity Research, Leipzig)
Daniel Winkler 2013, MS, Environmental Systems, UC Merced (currently PhD student, UC
Irvine)
Greg Vose* 2013, UC Merced REU Program student (currently PhD student, UC Irvine)
Alex Lau* 2012-2013, Cognitive Science graduate, UC Merced
Melanie Wiederhold* 2012 University of Colorado REU Program student
Alan Hong* 2010-2012, Earth Systems Science graduate, UC Merced (currently MS student, Cal
State Fullerton)
Jennifer Wolf 2011, M.S. Environmental Systems, UC Merced
Ana Becerril* 2011, Earth Systems Science graduate, UC Merced
Daniella Rodriguez* 2010 University of Colorado REU Program student
Renee Rozaieski* 2010 University of Colorado REU Program student
Marc Wasserman* 2010 UC Merced REU Program student
Ruth Xochihua* 2009-2010, Earth Systems Science graduate, UC Merced
Alyssa Carrell* 2008-2009, Biological Sciences graduate, UC Merced (2014 PhD, UC Merced)

Committee member for Danielle Christianson (PhD candidate, UC Berkeley), Alisa Keyser (PhD
candidate, UC Merced), Sharon Patris (PhD student, UC Merced), Lauren Schiebelhut (PhD
candidate, UC Merced), Alyssa Carrell (2014 PhD, UC Merced), Chelsea Carey (PhD 2014, UC
Merced), Steven Lee (MS 2013, UC Merced), Andrew Zumkehr (MS 2013, UC Merced), Xianyu
Yang (MS 2012, UC Merced), Christine Lamana (2012 PhD, University of Arizona), Gyami
Shrestha (2011 PhD, UC Merced), Jennifer Petrzelka (2011 MS, University of Colorado, Boulder),
Joan Lehman (2010 MS, UC Merced), Patrick Rahilly (2008 MS, UC Merced).

Professional Service and Workshops

2013-present Co-organizer Alpine and Arctic Treeline Ecotone Network (with Connie Millar,
USFS, and David Cairns, TAMU)
2014 Participant in NSF workshop *INTERFACE: Using results from global change
experiments to inform land model development and calibration*, Beijing, China
Ecological Society of America, 2014 Annual Meeting, Sacramento, CA. Co-
organizer, oral session titled *Advancing Knowledge of Alpine and Arctic Treeline Ecotones
and Responses to Environmental Change*
2012 Participant in NSF workshop *Climate Change and Species Interactions*, Cary Institute for
Ecosystem Studies
Panelist for NSF CRI EaSM 2 special solicitation, Washington, DC
2009 Panelist for DOE Early Career Research Program 2010 Climate and
Environmental Sciences Division, Washington DC
Participant in DOE/NSF workshop *Long-term Global Change Experiments*
Panelist on NSF Ecosystem DDIG Advisory Panel, Washington, DC
2007-2009 American Geophysical Union, Biogeosciences Fall Meeting Program Committee
2008 Participant in DOE workshop *Exploring Science Needs for the Next Generation of
Climate Change and Elevated CO₂ Experiments in Terrestrial Ecosystems*

- 2007 American Geophysical Union 2007 Fall Meeting, San Francisco, CA. Co-chair of session titled *Including Land Use and Land Cover Change in Earth System Models*
- 2006 American Geophysical Union 2006 Fall Meeting, San Francisco, CA. Co-chair of session titled *Modeling and Observation of Ecosystem, Carbon Cycle, and Energy System Feedbacks in the Earth's Climate*
- 2005 American Geophysical Union 2005 Fall Meeting, San Francisco, CA. Co-host of workshop titled *Observational Needs for Quantifying Ecosystem Feedbacks to Climate Change*
- 2004 Climate, Community & Biodiversity Alliance, Washington, DC. Reviewed draft Project Design Standards for identifying land-use carbon market projects with social and ecological co-benefits.
- 2000, 2005 Sound Science Initiative, Union of Concerned Scientists, Cambridge, MA. Reviewed draft report on Forest Carbon Storage as an Ecosystem Service. Met with California legislators during Climate Science Education Day, Sacramento, CA
- 2000 Director Search Committee, Rocky Mountain Biological Laboratory

Institutional Service

- 2014 Early Career Grant Committee, Earth Sciences Division, LBNL
- 2011-2012 Admissions Committee, Environmental Systems graduate program, UC Merced
- 2009-2012 Earth Systems Science undergraduate degree program faculty lead, UC Merced
- 2009-2012 Ad hoc Working Group on Environmental Majors and Minors, UC Merced
- 2008-2012 UC Merced Representative on the White Mountain Research Station Advisory Committee
- 2008-2012 Faculty lead (joint with M. Sprague until 2010), El Capitan High Performance Computing Cluster, UC Merced
- 2007-2012 UC Merced Representative to the California Cooperative Ecosystems Study Unit
- 2010-2011 Ecology Search Committee, UC Merced
- 2010 Participation in Preview Day on behalf of the Earth Systems Science major, UC Merced
- 2008-2010 Chancellor's Advisory Committee on the Status of Women, UC Merced
- 2009 Undergraduate Council, UC Merced
- 2008-2009 Ecology Search Committee, UC Merced
- 2007-2009 Natural Sciences Curriculum Committee, UC Merced
- 2008 Chair, Soil Biogeochemistry Search Committee, UC Merced
- 2008 Chair, Soil Physics Search Committee, UC Merced
- 2007-2008 Joint Ecology Search Committee (3 positions), UC Merced
- 2006-2007 Microbial Ecology Search Committee, UC Merced
- 2006-2007 Natural Sciences Academic Resource and Planning Committee, UC Merced

Public Service and Media

- Ongoing Alpine Treeline Warming Experiment website features Climate Change Education page as well as News, Publications, and information about our research (<https://alpine.ucmerced.edu/pub/htdocs/index.html>)
UC Merced Faculty Expert
- 2011-2012 Secretary and Founding member, Sierra Foothill Charter School - a science and sustainability focused K-8 Charter School in Catheys Valley, CA

- 2011 DeSTRESS online media. Climate scientist featured in open-licensed educational video on uncertainty and climate change for Economics, Geography, Sociology and Politics students (<http://media.streamlearn.com/video/30208262>).
BBC Radio. Feature piece on Alpine Treeline Warming Experiment.
Crested Butte Magazine. Feature article written on GLORIA alpine ecology project
Sierra Nevada Research Institute Symposium. Presentation on species ranges shifts and climate change.
Robert Fore Excellence in Education, Yosemite National Park. Presentation to local high school science teachers regarding climate change and ecological consequences.
- 2010 RMBL Exploration Experiences Climate Change Tour. Spoke with visitors to the field research station on an organized hike regarding climate change and climate and ecology research.
KVPT television. Guest climate scientist on a climate change episode of *Great Valley*, a taped half hour informational program.
Denver Post interview on subalpine and alpine species range shifts with climate change (article reprinted in Contra Costa Times).
- 2009 KPFA Radio interview on climate change
Nature News article on new DOE funded warming experiments
- 2007 ScienceNOW, KERN and KXJZ (NPR) Radio, Merced Sun-Star, Fresno Bee, and others. Provided interviews for radio, newspaper, and online outlets on the climate impacts of irrigated agriculture in California.
- 2006 Co-mentor for two Lawrence Berkeley National Laboratory K-12 Teacher Interns
2005-2006 KQED (NPR), KGO (ABC), and BBC Radio, San Jose Mercury News. Provided interviews on climate change and oak habitat shifts in California, and on forest carbon cycle feedbacks to climate change in the Colorado Rocky Mountains.
- 2005 Eyewitness News, KPIX (CBS), San Francisco, CA. Television interview on climate change and oak habitat shifts in California
- 2002 Nature Notes, KBUT, Crested Butte, CO. One hour radio interview on climate change and forest ecosystems in the Rocky Mountains.

Reviewing (manuscripts, proposals, applications)

Nature, Global Change Biology, Ecology Letters, Functional Ecology, Ecology, Ecological Applications, Oecologia, Oikos, Plant Ecology and Diversity, Journal of Arid Environments

Geophysical Research Letters, Environmental Research Letters, Climatic Change Letters, Climate Dynamics, Journal of Geophysical Research – Atmospheres, Journal of Climate, Global Biogeochemical Cycles, Water Resources Research, Journal of Hydrometeorology, Radiocarbon

NSF (Atmospheric Sciences, Environmental Biology, Ocean Sciences, Office of Polar Programs),
USDA AFRI, DOE, California PIER Program

DISCCRS V Workshop Applications, White Mountain Research Station Student Grants, Rocky Mountain Biological Laboratory Snyder Fellowship.

Professional Memberships

American Association for the Advancement of Science

American Geophysical Union

Ecological Society of America

Rocky Mountain Biological Laboratory