Mariah S. Carbone
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Research Interests
Earth system science, climate change, global change ecology, terrestrial biogeochemical cycling, isotopes, biosphere-atmosphere exchanges of carbon, water, and energy, plant-soil interactions.

Education

2007	Ph.D. Earth System Science, University of California, Irvine
1999	B.A. Earth & Environmental Science, Cum Laude, Wesleyan University, Connecticut
1998	Abroad at James Cook University, Townsville, Queensland, Australia

Research Positions

2017-	Assistant Research Professor, Center for Ecosystem Science and Society/Department of Biological Sciences, Northern Arizona University, Flagstaff
2013-16	Research Scientist, Earth Systems Research Center, University of New Hampshire, Durham
2011-12	National Center for Ecological Analysis & Synthesis Postdoctoral Fellow, Santa Barbara, California
2008-10	NOAA Climate & Global Change Postdoctoral Fellow, Department of Geography, University of California, Santa Barbara
2002-07	Graduate Research Assistant, Department of Earth System Science, University of California, Irvine
1999, 01-02	Research Assistant, Niwot Ridge LTER, Institute of Arctic & Alpine Research, University of Colorado, Boulder
2000	Research Assistant, La Reserva Pacuare, Costa Rica
1997	Undergraduate Research Assistant, Atmospheric Chemistry Division, National Center for Atmospheric Research, Boulder, Colorado

Publications

Carbone MS, AD Richardson, M Chen, EA Davidson, H Hughes, KE Savage, DY Hollinger (2016) Constrained partitioning of autotrophic and heterotrophic respiration reduces model uncertainties of forest ecosystem carbon fluxes but not stocks. *J. Geophys. Res.* doi: 10.1002/2016JG003386.

Richardson AD, MS Carbone, BA Huggett, ME Furze, CI Czimczik, JC Walker, X Xu, P Murakami, PG Schaberg (2015) Distribution and mixing of old and new nonstructural carbon in two temperate trees. *New Phytologist,* doi: 10.1111/nph.13273.

Dietze MC, A Sala, MS Carbone, CI Czimczik, JA Mantooth, AD Richardson, R Vargas (2014) Nonstructural carbon in woody plants. *Annual Review of Plant Biology.* 65: 667-687. doi: 10.1146/annurev-arplant-050213-040054.

Carbone MS, CI Czimczik, TF Keenan, P Murakami, N Pederson, PG Schaberg, X Xu, AD Richardson (2013) Age, allocation, and availability of nonstructural carbon in mature red maple trees. *New Phytologist*, 200, 1145-1155. doi: 10.1111/nph.12448.

Richardson AD, MS Carbone, TF Keenan, CI Czimczik, DY Hollinger, P Murakami, PG Schaberg, X Xu (2013) Seasonal dynamics and age of stemwood nonstructural carbohydrates in temperate forest trees. *New Phytologist,* 197, 850–861. doi: 10.1111/nph.12042.

Carbone MS, AP Williams, AM Ambrose, ES Bradley, CM Boot, TE Dawson, SM Schaeffer, JP Schimel, CJ Still (2013) Cloud shading and fog drip influence the metabolism of a coastal pine ecosystem. *Global Change Biology*, 19, 484–497. doi: 10.1111/gcb.12054.

Subke JA, MS Carbone, M Khomik, P Stoy, M Bahn (2012) Biotic interactions and biogeochemical processes in the soil environment. *Biogeosciences*, 9, 1823–1825. doi:10.5194/bg-9-1823-2012.

Keenan TF, MS Carbone, M Reichstein, AD Richardson (2011) The model-data fusion pitfall: assuming certainty in an uncertain world. *Oecologia*, 167, 587-597. doi: 10.1007/s00442-011-2106-x.

Carbone MS, CJ Still, AM Ambrose, TE Dawson, AP Williams, CM Boot, SM Schaeffer, JP Schimel (2011) Seasonal and episodic moisture controls on plant and microbial contributions to soil respiration. *Oecologia*, 167, 265-278. doi:10.1007/s00442-011-1975-3.

Marin-Spiotta E, OA Chadwick, M Kramer, MS Carbone (2011) Carbon delivery to deep mineral horizons in Hawaiian rainforest soils. *J. Geophys. Res*., 116, G03011, doi:10.1029/2010JG001587.

Vargas R, MS Carbone, M Reichstein, DD Baldocchi (2011) Frontiers in soil respiration research: from measurements to model-data integration. *Biogeochemistry,*102,1-13, doi:10.1007/s10533-010-9462-1.

Bahn M, M Reichstein, EA Davidson, J Grünzweig, M Jung, MS Carbone et al. (2010) Soil respiration at mean annual temperature predicts annual total across vegetation types and biomes. *Biogeosciences*, 7, 2147-2157. doi:10.5194/bg-7-2147-2010.

Carbone MS, GC Winston, SE Trumbore (2008) Soil respiration in perennial grass and shrub ecosystems: linking plant and microbial sources with environmental controls on seasonal and diel timescales. *J. Geophys. Res.,* 113, G02022. doi:10.1029/2007JG000611.

Carbone MS & R Vargas (2008) Automated soil respiration measurements: new challenges, information, and opportunities. *New Phytologist,* 177, 295-297.

Carbone MS & SE Trumbore (2007) Contribution of new photosynthetic assimilates to respiration by perennial grasses and shrubs: residence times and allocation patterns. *New Phytologist,* 176, 124-135. doi: 10.1111/j.1469-8137.2007.02153.x.

Carbone MS, CI Czimczik, KE McDuffee, SE Trumbore (2007) Allocation and residence time of photosynthetic products in a boreal forest using a low-level ^{14}C pulse-chase labeling technique. *Global Change Biology,* 13, 466-477. doi: 10.1111/j.1365-2486.2006.01300.x.

Czimczik CI, MS Carbone, GC Winston, SE Trumbore (2006) Changing sources of soil respiration with time since fire in a boreal forest. *Global Change Biology,* 12, 957-971. doi: 10.1111/j.1365-2486.2006.01107.x.

Czimczik CI, KK Treseder, MS Carbone, SE Trumbore (2005) Radiocarbon–a low impact tool to study nutrient transport by soil fungi under field conditions. *New Phytologist*, 166, 595-600. doi: 10.1111/j.1469-8137.2005.01326.x.

Litaor MI, TR Seastedt, MD Walker, MS Carbone, A Townsend (2005) The biogeochemistry of phosphorus across an alpine topographic/snow gradient. *Geoderma,*124, 49-61. doi: 10.1016/j.geoderma.2004.04.001.

Fellowships

National Center for Ecological Analysis & Synthesis Postdoctoral Fellowship (2011-13) "A synthesis of soil respiration in semi-arid and arid ecosystems across multiple spatial and temporal scales."

NOAA Climate & Global Change Postdoctoral Fellowship (2008-10) "Interactions among fog, soil respiration, and carbon cycling in California's coastal conifer forests."

Kearney Foundation Graduate Fellowship (2004-06) "Quantifying autotrophic and heterotrophic sources of soil respiration in a California desert ecosystem."

Jenkins Graduate Fellowship (2002-04) Dept. of Earth System Science, UC Irvine

Grants

Rocky Mountain Biological Laboratory Research Grant (2011-13) $1,400. "Quantifying environmental and biological controls on soil CO_2 effluxes in East River valley forests." Sole PI.

William F. Milton Fund (2010) $40,000. "Nonstructural carbohydrate reserves in forest trees: How does tree size impact the capacity for resilience to stress factors?" Contributor, main writer. PI: AD Richardson.

European Science Foundation (2009) "Diurnal- to century-scale controls on soil respiratory fluxes: Towards a new generation of integrated experimental and modeling approaches." Contributor. PIs: M Bahn, M Reichstein, I Janssens.

Kearney Foundation (2008-10) $253,000. “Fog drip drives summertime soil respiration in California's coastal conifer forests.” Co-I, main writer. Co-PIs: CJ Still, TE Dawson, JP Schimel.

Book Chapters

Schuur EAG, MS Carbone, CE Hicks Pries, F Hopkins, SM Natali. Radiocarbon in Terrestrial Systems in *Radiocarbon in Ecology and Earth System Science.*

Popular Press

Weiss KR “Summertime fog preserves relic coastal pine forests.” *Los Angeles Times,* November 30, 2012. http://articles.latimes.com/2012/nov/30/science/la-sci-sn-summertime-fog-preserves-relic-coastal-forests-20121129.

Academic Awards

Best Student Publication Award (2007) Dept. of Earth System Science, UC Irvine
Best Student Publication Award nominee (2007) Ecological Society of America, San Jose, CA
Outstanding Presentation Award (2006) Institute for Geophysics and Planetary Physics
Jones Excellence Award (1999) Wesleyan University
Academic All-American nominee, Soccer (1998) Wesleyan University
Academic All-New England Small College Athletic Conference, Soccer (1995-98)