

William R. Wieder

Climate and Global Dynamics Laboratory
National Center for Atmospheric Research, Boulder CO 80307
Email: wwieder@ucar.edu
ORCID iD 0000-0001-7116-1985
Tel: (303) 497-1352, Fax: (303) 497-1314

PROFESSIONAL PREPARATION

Colorado College	Biology	B.A.	2001
Colorado College	Science Education	M.A.	2003
University of Colorado, Boulder	Ecology & Evolutionary Biology	Ph.D.	2011

APPOINTMENTS

2014 – present	Project Scientist II National Center for Atmospheric Research, Climate & Global Dynamics
2012 - present	Research Scientist I University of Colorado, Institute of Arctic and Alpine Research
2011 – 2014	Postdoctoral Research Fellow National Center for Atmospheric Research, Advanced Studies Program
2011	Postdoctoral Fellow University of Colorado, Chancellor's Diversity Fellowship

PUBLICATIONS

Peer Reviewed

* denotes graduate student co-authors

1. Lombardozi DL, et al. *In Revision*. Simulating transient crop management in the Community Land Model version 5. *JGR-Biogeosciences*.
2. Kyker-Snowman, E.*, **WR Wieder**, S. Frey, AS Grandy (2019). Stoichiometrically coupled carbon and nitrogen cycling in the Microbial-Mineral Carbon Stabilization model (MIMICS-CN). *Geoscientific Model Development Discuss.*, 1-32. doi:10.5194/gmd-2019-320
3. Vira, J, P Hess, J Melkonian, **WR Wieder** (2019). An improved mechanistic model for ammonia volatilization in Earth system models: Flow of Agricultural Nitrogen, version 2 (FANv2), *Geoscientific Model Development Discuss.*, doi:10.5194/gmd-2019-233.
4. Basile SJ*, X Lin, **WR Wieder**, MD Hartman, G Keppel-Aleks (2020). Leveraging the signature of heterotrophic respiration on atmospheric CO₂ for model benchmarking. *Biogeosciences* 17, 1293-1308. doi:10.5194/bg-17-1293-2020
5. Zhang H, DS Goll, YP Wang, P Ciais, **WR Wieder**, et al. (2020). Microbial dynamics and soil physicochemical properties explain large scale variations in soil organic carbon. *Global Change Biology*, 26, 2668-2685 doi:10.1111/gcb.14994.
6. Chen, Y.*, **WR Wieder**, AL Hermes*, ELS Hinckley (2020). The role of physical properties in controlling soil nitrogen cycling across a tundra-forest ecotone of the Colorado Rocky Mountains, U.S.A. *CATENA*, 186, 104369. doi:10.1016/j.catena.2019.104369
7. **Wieder WR**†, MD Hartman, B Sulman, CD Koven, MA Bradford. (2019). Arctic systems could drive global losses or gains in soil carbon under climate change. *Geophysical Research Letters*, 46, 14486-14495. doi:10.1029/2019GL085543. †Highly downloaded paper (top 10%).
8. Lawrence DM, et al. (2019). The Community Land Model version 5: Description of new features, benchmarking, and impact of forcing uncertainty. *Journal of Advances in Modeling Earth Systems*. 11, 4245– 4287. doi:10.1029/2018MS001583.

9. Malhotra, A., K Todd-Brown, L Nave, et al. (2019). The landscape of soil carbon data: emerging questions, synergies and databases. *Progress in Physical Geography: Earth and Environment*. 43(5), 707-719. doi:10.1177/0309133319873309.
10. Fisher RA, **WR Wieder**, BM Sanderson, CD Koven, KW Oleson, C Xu, J Fisher, M Shi, AP Walker, DM Lawrence (2019). Parametric controls on vegetation responses to biogeochemical forcing in the CLM5. *Journal of Advances in Modeling Earth Systems*. 11, 2879–2895 doi:10.1029/2019ms001609.
11. **Wieder WR**, DM Lawrence, RA Fisher, GB Bonan, SJ Cheng, CL Goodale, AS Grandy, CD Koven, DL Lombardozzi, KW Oleson, & RQ Thomas (2019). Beyond static benchmarking: Using experimental manipulations to evaluate land model assumptions. *Global Biogeochemical Cycles*. 33, 1289–1309 doi:10.1029/2018GB006141.
12. Bonan GB, DL Lombardozzi, **WR Wieder**, KW Oleson, DM Lawrence, FM Hoffman, & N Collier (2019). Model Structure and Climate Data Uncertainty in Historical Simulations of the Terrestrial Carbon Cycle (1850–2014). *Global Biogeochemical Cycles*, 33, 1310–1326 doi:10.1029/2019GB006175
13. Cheng C, P Hess, **WR Wieder**, RQ Thomas et al. (2019). Decadal impacts of nitrogen additions on temperate forest carbon sinks: A data-model comparison. *Biogeosciences*, 16, 2771-2793. doi:10.5194/bg-16-2771-2019.
14. Weintraub SR, A Flores, **WR Wieder**, et al. (2019). Leveraging Environmental Research and Observation Networks to Advance Soil Carbon Science. *JGR-Biogeosciences*. 124, 1047–1055 doi:10.1029/2018JG004956.
15. Taylor P, C Cleveland, F Soper, **WR Wieder**, S Dobrowski, C Doughty AR Townsend (2019). Greater stem growth, woody allocation, and aboveground biomass in Paleotropical forests than in Neotropical forests. *Ecology*, 100, e02589. doi:10.1002/ecy.2589.
16. Vicca S, B Stocker, S Reed, **WR Wieder**, et al. (2018). Using research networks to create the comprehensive datasets needed to assess nutrient availability as a key determinant of terrestrial carbon cycling. *Environmental Research Letters*, 13, 125006. doi:10.1088/1748-9326/aaeae7.
17. Sulman BN, et al. (2018). Multiple models and experiments underscore large uncertainty in soil carbon dynamics. *Biogeochemistry*, 141, 109-123. doi:10.1007/s10533-018-0509-z.
18. Lombardozzi DL, GB Bonan, **W Wieder**, AS Grandy, C Morris*, DL Lawrence (2018). Cover crops may cause winter warming in snow-covered regions. *Geophysical Research Letters*, 45, 9889-9897. doi:10.1029/2018GL079000
19. Schädel C, C Koven, DM Lawrence, et al. (2018). Divergent patterns of experimental and model-derived permafrost ecosystem carbon dynamics in response to Arctic warming. *Environmental Research Letters*, 13, 105002. doi:10.1088/1748-9326/aae0ff.
20. Blankinship JC, et al. (2018). Improving understanding of soil organic matter dynamics by triangulating theories, measurements, and models. *Biogeochemistry* 140, 1-13. doi:10.1007/s10533-018-0478-2.
21. Bowles TM, SS Atallah, EE Campbell, ACM Gaudin, **WR Wieder**, AS Grandy (2018). Addressing agricultural nitrogen losses in a changing climate. *Nature Sustainability* 1, 399–408. doi:10.1038/s41893-018-0106-0.
22. Burns SP*, SC Swenson, **WR Wieder**, DM Lawrence, GB Bonan, JF Knowles, PD Blanken (2018). A Comparison of the Diel Cycle of Modeled and Measured Latent Heat Flux During the Warm Season in a Colorado Subalpine Forest. *Journal of Advances in Modeling Earth Systems* 10, 617-651. doi:10.1002/2017ms001248.
23. **Wieder WR**, MD Hartman, B Sulman, YP Wang, CD Koven, GB Bonan (2018). Carbon cycle confidence and uncertainty: exploring variation among soil biogeochemical models. *Global Change Biology*, 24, 1563-1579 doi:10.1111/gcb.13979.
24. Rasmussen C, K Heckman, **WR Wieder**, et al. (2018). Beyond clay: towards an improved set of variables for predicting soil organic matter content. *Biogeochemistry*, 137, 297–306 doi:10.1007/s10533-018-0424-3.

25. Koven CD, G Hugelius, DM Lawrence, **WR Wieder** (2017). Climatological temperature sensitivity of soil carbon is higher in cold than warm climates. *Nature Climate Change*, 7, 817-822 doi:10.1038/nclimate3421.
26. Bradford MA, et al. (2017). A test of the hierarchical model of litter decomposition *Nature Ecology and Evolution*, 1, 1836-1845, doi:10.1038/s41559-017-0367-4
27. Soper F, PG Taylor, **WR Wieder**, et al. (2017). Modest gaseous nitrogen losses point to conservative nitrogen cycling in a lowland tropical forest watershed. *Ecosystems*, doi:10.1007/s10021-017-0193-1.
28. **Wieder WR**, JF Knowles, PD Blanken, SC Swenson, KN Suding (2017). Ecosystem function in complex mountain terrain: combining models and long-term observations to advance process-based understanding. *JRG-Biogeosciences*, 122, 825–845 doi:10.1002/2016JG003704.
29. Taylor P, CC Cleveland, **WR Wieder**, B Sullivan, C Doughty, SZ Dobrowski, A Townsend (2017). Temperature and rainfall interact to control carbon cycling in tropical forests. *Ecology Letters*, 20(6), 779-788, doi:10.1111/ele.12765.
30. Buchkowski RW*, MA Bradford, AS Grandy, OJ Schmitz, **WR Wieder** (2017). Applying population and community ecology theory to advance understanding of belowground biogeochemistry. *Ecology Letters*, 20, 231-245, doi:10.1111/ele.12712.
31. Crowther TW, KEO Todd-Brown, CW Rowe, **WR Wieder**, et al. (2016). Quantifying global soil carbon losses in response to warming. *Nature*, 540: 104-108, doi:10.1038/nature20150.
32. Grandy, AS, **WR Wieder**, K Wickings, and E Kyker-Snowman* (2016). Beyond microbes: Are fauna the next frontier in soil biogeochemical models? *Soil Biology and Biochemistry*, 102: 40-44, doi:10.1016/j.soilbio.2016.08.008
33. Bradford MA, **WR Wieder**, GB Bonan, N Fierer, PA Raymond, TW Crowther (2016). Managing uncertainty in soil carbon feedbacks to climate change. *Nature Climate Change* 6: 751-758, doi:10.1038/nclimate3071
34. Bradford MA, B Berg, DS Maynard*, **WR Wieder**, SA Wood (2016). Understanding the dominant controls on litter decomposition. *Journal of Ecology* 104: 229–238 doi:10.1111/1365-2745.12507
35. Hinckley ELS, SP Anderson, JS Baron, PD Blanken, GB Bonan, WD Bowman, SC Elmendorf, N Fierer, AM Fox, KJ Goodman, KD Jones, DL Lombardozzi, CK Lunch, JC. Neff, MD SanClements, KN Suding, **WR Wieder** (2016). Optimizing Available Network Resources to Address Questions in Environmental Biogeochemistry. *BioScience* 66(4), 317-326, doi:10.1093/biosci/biw005
36. Fan, Z, J Neff, **WR Wieder** (2016). Model-based analysis of environmental controls over ecosystem primary production in an alpine tundra dry meadow. *Biogeochemistry* 128(1-2), 35-49, doi:10.1007/s10533-016-0193-9
37. Luo, Y, et al. (2016). Toward more realistic projections of soil carbon dynamics by Earth system models, *Global Biogeochem. Cycles*, 30, 40–56, doi:10.1002/2015GB005239
38. **Wieder WR**, CC Cleveland, WK Smith, K Todd-Brown (2015). Future productivity and carbon storage limited by terrestrial nutrient availability. *Nature Geoscience* 8, 441–444 doi:10.1038/ngeo2413
39. **Wieder WR**, CC Cleveland, WK Smith, K Todd-Brown (2015). Reply to ‘Land unlikely to become large carbon source’. *Nature Geoscience* 8, 893–894 doi:10.1038/ngeo2606
40. **Wieder WR**, AS Grandy, CM Kallenbach*, PG Taylor, GB Bonan (2015). Representing life in the Earth system with soil microbial functional traits in the MIMICS model. *Geoscientific Model Development*, 8(6), 1789-1808, doi:10.5194/gmd-8-1789-2015
41. **Wieder WR** et al. (2015). Explicitly representing soil microbial processes in Earth system models. *Global Biogeochemical Cycles*. 29: 1782–1800 doi:10.1002/2015GB005188.
42. Smith, WK, SC Reed, CC Cleveland, AP Ballantyne, WRL Anderegg, **WR Wieder**, SW Running (2015). Satellite observations call into question Earth system model projections of global terrestrial CO₂ fertilization *Nature Climate Change* 6: 306-301 doi:10.1038/nclimate2879.

43. **Wieder WR**, CC Cleveland, DM Lawrence, GB Bonan (2015). Effects of model structural uncertainty on carbon cycle projections: biological nitrogen fixation as a case study. *Environmental Research Letters* 10: 044016 doi:10.1088/1748-9326/10/4/044016
44. Cleveland CC, P Taylor, D Chadwick, K Dahlin, CE Doughty, Y Malhi, WK Smith, B Sullivan, **WR Wieder**, AR Townsend (2015). A comparison of plot-based, satellite and Earth system model estimates of tropical forest net primary production. *Global Biogeochemical Cycles* 29, 626-644 doi:10.1002/2014gb005022
45. Taylor PG, **Wieder WR**, Weintraub SR, Cohen S, Cleveland CC, Townsend AR. (2015). Organic forms dominate hydrologic nitrogen export from a lowland tropical watershed. *Ecology* 96:1229–1241 doi:10.1890/13-1418.1
46. **Wieder WR**, AS Grandy, CM Kallenbach*, BG Bonan (2014). Integrating microbial physiology and physiochemical principles in soils with the Microbial-MIneral Carbon Stabilization (MIMICS) model. *Biogeosciences* 11: 3899–3917 doi:10.5194/bg-11-3899-2014
47. Bradford MA, RJ Warren, P Baldrian, TW Crowther, DS Maynard, EE Oldfield*, **WR Wieder**, SA Wood, RJ King (2014). Climate fails to predict wood decomposition at regional scales. *Nature Climate Change* 4, 625–630 doi:10.1038/nclimate2251
48. Wang YP, BC Chen, **WR Wieder**, YQ Luo, M Leite, BE Medlyn, M Rasmussen, MJ Smith, FB Augusto, & F Hoffman (2014). Oscillatory behavior of two nonlinear microbial models of soil carbon decomposition. *Biogeosciences* 11: 1817–1831 doi:10.5194/bg-11-1817-2014
49. **Wieder WR**, J Boehnert, GB Bonan (2014). Evaluating soil biogeochemistry parameterizations in Earth system models with observations. *Global Biogeochemical Cycles* 28: 211-222 doi:10.1002/2013GB004665
50. Hinckley ES, **W Wieder**, N Fierer, and EA Paul (2014). Digging into the world beneath our feet: Bridging knowledge across scales in the age of global change. *Eos, Transactions American Geophysical Union* 95: 96-97 doi:10.1002/2014EO110004
51. Taylor PG, T Bilinski, H Fancher**, C Cleveland, D Nemergut, S Weintraub, **WR Wieder**, A Townsend (2014). Palm oil wastewater methane emissions and bioenergy potential. *Nature Climate Change* 4: 151-152 doi:10.1038/nclimate2154
52. Graham EB*, **WR Wieder**, JW Leff, SR Weintraub, AR Townsend, CC Cleveland, L Philippot, DR Nemergut. (2014). Do we need to understand microbial communities to predict ecosystem function? A comparison of statistical models of nitrogen cycling processes. *Soil Biology and Biochemistry* 68: 279–282 doi:10.1016/j.soilbio.2013.08.023
53. **Wieder WR**, GB Bonan, SD Allison (2013). Global soil carbon projections are improved by modelling microbial processes. *Nature Climate Change* 3: 909–912 doi:10.1038/nclimate1951
54. Bonan G, M Hartman, W Parton, **W Wieder** (2013). Evaluating litter decomposition in Earth system models with long-term litterbag experiments: An example using the Community Land Model version 4 (CLM4). *Global Change Biology* 19: 957–974 doi:10.1111/gcb.12031.
55. **Wieder WR***, CC Cleveland, PG Taylor, DR Nemergut, E Hinckley, L Philippot, D Bru, SR Weintraub, M Martin, AR Townsend (2013). Experimental removal and addition of leaf litter inputs reduces nitrate production and loss in a lowland tropical forest. *Biogeochemistry*. 113: 629-642
56. Pinder, RW, ND Bettez, GB Bonan, TL Greaver, **WR Wieder***, WH Schlesinger, EA Davidson (2013). Impacts of human alteration of the nitrogen cycle in the US on radiative forcing. *Biogeochemistry* 114:24-40
57. Weintraub SR*, **WR Wieder**, CC Cleveland, AR Townsend (2013). Organic matter inputs shift soil enzyme activity and allocation patterns in a wet tropical forest. *Biogeochemistry*. 114: 313-326
58. Leff JW*, **WR Wieder***, PG Taylor*, AR Townsend, DR Nemergut, AS Grandy, CC Cleveland (2012). Experimental litterfall manipulation drives large and rapid changes in soil carbon cycling in a wet tropical forest. *Global Change Biology* 18: 2969-2979

59. **Wieder WR***, CC Cleveland, CC, AR Townsend (2011). Throughfall exclusion and leaf litter manipulation drive higher rates of soil N₂O emissions from a lowland wet tropical forest. *Global Change Biology* 17: 3195–3207
60. Cleveland CC, AR Townsend, P Taylor*, S Alvarez-Clare*, MMC Bustamante, G Chuyong, P Grierson, KE Harms, BZ Houlton, A Marklein*, W Parton, S Porder, SC Reed, CA Sierra*, WL Silver, EVJ Tanner & **WR Wieder***. (2011). Relationships among net primary productivity, nutrients and climate in tropical rain forest: a pan-tropical analysis. *Ecology Letters* 14: 939-947.
61. Cleveland CC, **WR Wieder***, SC Reed*, AR Townsend (2010). Experimental drought in a wet tropical forest increases soil carbon dioxide losses to the atmosphere. *Ecology* 91: 2313-2323.
62. Nemergut DR, CC Cleveland, **WR Wieder***, CL Washenberger, AR Townsend (2010). Plot-scale manipulations of organic matter inputs to soils correlate with shifts in microbial community composition in a lowland tropical rain forest. *Soil Biology and Biochemistry* 42: 2153-2160.
63. **Wieder WR***, CC Cleveland, AR Townsend (2009). Controls over leaf litter decomposition in wet tropical forests. *Ecology* 90: 3333–3341.
64. **Wieder WR***, CC Cleveland, CC, AR Townsend (2008). Tropical tree species composition affects the oxidation of dissolved organic matter from litter. *Biogeochemistry* 88:127–138.
65. **Wieder WR*** (2006). Communicating the nature of science through historical perspectives on science. *American Biology Teacher* 68: 200-205.
66. **Wieder WR****, & NW Bower (2004). Fire history of the Aiken Canyon grassland-woodland ecotone in the southern foothills of the Colorado Front Range. *Southwestern Naturalist* 49: 239 –243.

Non-Peer Reviewed

67. **Wieder WR**, MA Bradford, AS Grandy, J Talbot (2016). Turning uncertainty into opportunity by advancing theory and models. White paper submitted by request to the Department of Energy Offices of Advanced Scientific Computing Research (ASCR) and Biological and Environmental Research (BER).
68. **Wieder WR**, SD Allison, MA Bradford, AS Grandy, EL Hinckley, SC Reed, B Stephens (2015). Scaling soil processes with data from above and below: Using space-based and local observations to advance our capacity to project carbon cycle-climate feedbacks. White paper submitted for the *2017-2027 Decadal Survey for Earth Science and Applications from Space (ESAS 2017)* for The National Academies of Sciences, Engineering, and Medicine.
69. **Wieder WR** (2014). Soil carbon: Microbes, roots and global carbon. *Nature Climate Change* 4: 1052–1053 doi:10.1038/nclimate2454
70. **Wieder WR**, J Boehner, GB Bonan and M Langseth (2014). RegridDED Harmonized World Soil Database v1.2. [Data set]. Available on-line from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, TN, USA. doi:10.3334/ORNLDAAC/1247
71. Bonan GB, S Levis, and **WR Wieder** (2012). A modeller’s perspective of long-term integrated data series of ecosystem-atmosphere processes. *ILEAPS Newsletter* 12: 6-9.

FUNDING AND AWARDS

2020	USDA-NIFA-AFRI “Soil organic matter synthesis- Improving models with data from cross-site observations and manipulations” (Wieder PI)	\$50,000
2019	NSF DEB-1926413 “Collaborative Proposal: MRA: Understanding how local-scale controls on litter decomposition shape emergent macrosystem biogeochemical patterns” (Wieder Co-I)	\$391,704
2019	University of Colorado, Boulder Research & Innovation Seed Grant Program “Measuring the pulse of global change at the interface of Earth & Life” (Wieder Co-I)	\$49,990
2018	NSF DEB-1754126 “RCN: INCyTE: Investigating Nutrient Cycling in Terrestrial Ecosystems: Integrating Observations, Experiments, and Models” (Wieder Co-I)	\$499,912
2017	LTER-NCO Working Group “Advancing soil organic matter research: Synthesizing multi-scale observations, manipulations & models” (Wieder PI)	\$55,000

2017	NASA NNX17AK19G “ <i>Developing a mechanistic understanding of variability in the atmospheric CO₂ growth rate owing to interannual climate oscillations</i> ” (Wieder Co-I)	\$196,000
2017	Bjerknes Visiting Fellow, Bjerknes Center and Uni Research Climate, Bergen Norway	\$2,500
2016	US Dept. of Energy “ <i>Microbial metabolic dependency and its impacts on the soil carbon cycle</i> ” (W. Wieder Co-I)	\$140,000
2016	US Environmental Protection Agency “ <i>Closing the terrestrial nitrogen cycle in the Community Land Model to evaluate carbon cycle and environmental consequences of reactive nitrogen</i> ” (W. Wieder PI)	\$150,000
2015	US Dept. of Energy “ <i>Benchmarking and Improving Microbial-explicit Soil Biogeochemistry Models</i> ” (W. Wieder PI)	\$500,000
2014	US Dept. of Agriculture “ <i>EaSM-3 Decadal prediction of sustainable agricultural and forest management – Earth system prediction differs from climate prediction</i> ” (Wieder Senior Personnel)	\$889,000
2013	U.S Geological Survey “ <i>Evaluating soil biogeochemistry models with data</i> ” (Wieder Senior Personnel)	\$22,500
2018	University Corp. for Atmos. Res. Outstanding Publication Award, nominated	
2014	Gene E. Likens Outstanding Publication Award (ESA Biogeosciences)	
2013	Modelling Complex Ecological Dynamics Award- 3 rd prize	
2011	National Center for Atmospheric Research, ASP-ISP Postdoctoral Fellowship	
2011	University of Colorado, Chancellor’s Diversity Initiative Postdoctoral fellowship	
2009	NSF Doctoral Dissertation Improvement Grant	
2008	NSF Graduate Research Fellowship	
2007	ARSC Foundation Scholarship	
2007	Soil Ecology Society, Parkinson Award	
2006	University of Colorado, Graduate School Student Award	
2000	Rhodes Scholarship, state semi-finalist	
1997	Boettcher Foundation Scholar	

SYNERGISTIC ACTIVITIES

1. *Educator*

- Lectured at the CESM Tutorial (2016-2019), CLM tutorial (2014, 2016, 2019), and ASP C-cycle workshop (2013).
- Initiated Research Opportunities for Students in Environmental Sciences (ROSES), a program that help place and support undergraduate research assistants in labs at CU-Boulder. Designed and implemented K-12 curriculum through workshops at CU-Boulder and in association with local school districts.
- High School Science teacher 2002-2006.

2. *Leadership and Service*

- Co-Chair of the CESM Land Model Working Group (LMWG, 2020-present)
- Member, Niwot Ridge LTER Executive Committee (2019-present).
- Principle Investigator for LTER-NCO Synthesis Working Group (2018-present).
- Co-Investigator and steering committee member, for INCyTE RCN (2018-present).
- Member, LTER Science Council Steering Committee (“Organic Matter”, 2018).
- Member, Niwot Ridge LTER Scientific Steering Committee (2018-2019).

- Member, NEON Terrestrial biogeochemistry technical working group (2017-2019).
 - Member, *Global Change Biology* Editorial Advisory Board (2017-2019).
 - Participant and writer, selected for the DOE Biological and Environmental Research Advisory Committee (BERAC) Grand Challenges II workshop this is developing recommendations for the next 20 years of research priorities for the DOE (2017).
 - Invited speaker at the National Academies of Sciences, Engineering, and Medicine “The Evolving Soil Interface of the Earth System” Washington DC, April 2016.
 - Keynote presentation at workshop to set DOE Terrestrial Ecosystem Sciences (TES) and Biological and Environmental Research (BER) funding priorities for belowground processes, Bethesda MD May 2014.
3. *Mentor.* For Ph.D. students, undergraduate research assistants, & SOARS protégées. Students were from CU-Boulder, University of West Virginia, University of New Hampshire, Cornell University, University of Tennessee, Yale University, and NCAR
 4. *Invited Speaker.* Including AGU (2019, 2018, 2016, 2015, 2013), ESA (2017, 2015, 2014 & 2012), University of Colorado Boulder (2019); Pacific Northwest National Laboratory (2019); Bjerknes Center, Bergen Norway (2015, 2017); Cornell University (2013, 2016), University of New Hampshire (2014), University of California Merced (2014), University of Colorado Denver, NCAR, NEON.
 5. *Collaborator.*
 - Co-Chair, member and presenter of the Land Model and Biogeochemistry Working Groups (NCAR).
 - Participant, Rethinking Soil Carbon Modeling workshop, Burghausen, Germany, Oct. 2018.
 - Participant, DOE Soil Carbon Dynamics Working Group (2018-present).
 - Participant, Powell Center Working Group on soil carbon- fractions and radiocarbon (2016-2018).
 - Participant, steering committee for the NSF working group to examine synergies Between NEON and LTER working group (2016-2018).
 - Participant, British Royal Society Discussion on Soil-atmosphere C fluxes, Oct. 2017
 - Invited speaker & participant for INTERFACE RCN: Saint Petersburg, FL Jan. 2016
 - Organizing committee and invited speaker for FORECAST RCN: Breckenridge, CO June 2014.
 - Invited speaker for NSF FORECAST RCN: Biosphere II, AZ Oct. 2014.
 6. *Reviewer.*
 - For journals including: PNAS, Nature, Nature Climate Change, Nature Geoscience, Biogeochemistry, Biogeosciences, Earth’s Future, Ecological Applications, Ecology, Ecology Letters, Ecosystems, Environmental Research Letters, Frontiers in Ecology and the Environment, Geoscientific Model Development, Global Biogeochemical Cycles, Global Change Biology, Geophysical Research Letters, ISME, JAMES, JGR Biogeosciences, Nature Communications, New Phytologist, Oecologia, Science of the Total Environment, Scientific Reports, Soil Biology and Biochemistry, & Ecosystems.
 - For programs and panels in NSF and DOE.