John Francis Knowles

Assistant Professor
Department of Land Resources and Environmental Sciences
Montana State University
334 Leon Johnson Hall
Bozeman, Montana 59717-3120
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RESEARCH INTERESTS

Land-Atmosphere Interactions; Ecohydrology; Ecosystem Ecology; Watershed Hydrology; Network Science; Environmental Gradients; Mountains; Drylands; Natural Climate Solutions

EDUCATION

2015 **Ph.D., University of Colorado Boulder**
Department of Geography
Dissertation: *Spatio-Temporal Patterns of Soil Respiration and the Age of Respired Carbon from High-Elevation Alpine Tundra* (119 pp.)
Faculty Advisor: Dr. Peter D. Blanken
Cumulative GPA: 3.99/4.0

2009 **M.A., University of Colorado Boulder**
Department of Geography
Thesis: *Meteorological Controls on the Seasonal Exchange of Water and Carbon Dioxide from High-Elevation Alpine Tundra* (155 pp.)
Faculty Advisor: Dr. Peter D. Blanken
Cumulative GPA: 3.97/4.0

2003 **B.A., Vassar College**
Department of Hispanic Studies (Minor in Religious Studies)
Highest General and Departmental Honors, *Phi Beta Kappa*
Honors Thesis: *The Cruel Paradox of Moroccan Immigration in Spain Today* (In Spanish; 55 pp.)
Faculty Advisor: Dr. Eva M. Woods
Cumulative GPA: 3.77/4.0

PROFESSIONAL APPOINTMENTS

2024– **Assistant Professor**, Montana State University, Department of Land Resources and Environmental Sciences

2024– **Adjunct Professor**, California State University, Chico, Department of Earth and Environmental Sciences

2017– **Research Affiliate**, University of Colorado Boulder Institute of Arctic and Alpine Research (INSTAAR)

2021–2024 **Assistant Professor**, California State University, Chico, Department of Earth and Environmental Sciences

2018–2021 **Research Ecologist**, USDA ARS Southwest Watershed Research Center, Supervisor: Dr. Russell L. Scott

2017–2018 **Postdoctoral Research Associate**, University of Arizona School of Geography,

Development & Environment, Mentor: Dr. Greg A. Barron-Gafford

2015–2017 **Postdoctoral Research Associate**, University of Colorado INSTAAR and Niwot Ridge Long Term Ecological Research Program (LTER), Mentors: Drs. Noah P. Molotch and Katherine N. Suding

2008–2015 **Research Technician**, Niwot Ridge LTER and University of Utah, Nederland, CO, Supervisor: Dr. David R. Bowling

GRANTS AND CONTRACTS

2023–2026 **California State University Agricultural Research Institute (Co-PI, $365k)**, *Comparing regenerative and conventional hay cultivation practices in southern California* (Logan Smith Lead PI).

2023–2025 **University of California Office of Research and Innovation (Co-PI, $6.1M),** *California soil carbon accrual project and workforce training program* (R02CM7064; Cynthia Daley Lead PI).

2022–2025 **National Science Foundation (Lead PI, $200k)**, *ORE-CZ: Ecohydrological controls on soil respiration and the apparent respiratory quotient across a dynamic storage gradient* (EAR 2227975).

2022–2028 **National Science Foundation (Senior Personnel, $7.7M)**, *LTER: Long-term research on the dynamics of high-elevation ecosystems: a framework for understanding rates of ecological response to climate change* (DEB 2224439; Nancy Emery Lead PI).

2021–2023 **National Science Foundation (Co-PI, $2.1M)**, *GCR: Co-defining climate refugia to inform the management of mountain headwater systems* (GCR 2120891; Keith Musselman Lead PI).

2021–2023 **California State University Agricultural Research Institute (Lead PI, $130k)**, *Measuring what matters: Sensing soil moisture and crop stress from the ground up* (SP5928201).

2017–2018 **Colorado Water Institute (Lead PI, $50k)**, *Bark beetle impacts on remotely sensed evapotranspiration in the Colorado Rocky Mountains* (CWCB 5365761).

2016–2022 **National Science Foundation** (**Senior Personnel, $6.8M)**, *LTER: Long-term research on the dynamics of high-elevation ecosystems -- a framework for understanding ecological responsiveness to climate change* (DEB 1637686; Katherine Suding Lead PI).

2017–2018 **Niwot Ridge Long Term Ecological Research (LTER) Program (Co-PI, $19k)**, *From patch to catchment: Toward understanding interactions across scales in the alpine zone* (Eve-Lyn Hinckley Lead PI).

2011–2013 **National Science Foundation (Lead PI, $12k)**, *Doctoral Dissertation Research: Spatio-temporal patterns of soil respiration and the age of respired carbon from high-elevation alpine tundra* (BCS 1129562).

PUBLICATIONS (*STUDENT)

41) Webb, R.W., **J.F. Knowles**, *A. Fox, *A. Fabricus, *T. Corrie, *K. Mooney, *J. Gallais, *N.A.G. Frimpong, *C.A. Akurugu, G. Barron-Gafford, P.D. Blanken, S.P. Burns, J. Frank, and M. Litvak (2024). Energy-water asynchrony principally determines water available for runoff from snowmelt in continental montane forests. *Hydrological Processes*, 38(10): e15297. doi:10.1002/hyp.15297

40) Jay, K.R., W.R. Wieder, S.C. Swenson, **J.F. Knowles**, S. Elmendorf, H. Holland-Moritz, and K.N. Suding (2023). Topographic heterogeneity and aspect moderate exposure to climate change across an alpine tundra hillslope. *Journal of Geophysical Research: Biogeosciences* 128(11): e2023JG007664. doi:10.1029/2023JG007664

39) **Knowles, J.F.**, *N.R. Bjarke, A.M. Badger, M. Berkelhammer, J.A. Biederman, P.D. Blanken, M. Bretfeld, S.P. Burns, B.E. Ewers, J.M. Frank, J.A. Hicke, L. Lestak, B. Livneh, D.E. Reed, R.L. Scott, and N.P. Molotch (2023). Bark beetle impacts on forest evapotranspiration and its partitioning. *Science of the Total Environment* 880: 163260. doi:10.1016/j.scitotenv.2023.163260

38) Scott, R.L., M.R. Johnston, **J.F. Knowles**, N. MacBean, K. Mahmud, M.C. Roby, and M.P. Dannenberg (2023). Interannual variability of spring and summer monsoon growing season carbon exchange at a semiarid savanna over nearly two decades. *Agricultural and Forest Meteorology* 339: 109584. doi:10.1016/j.agrformet.2023.109584

37) Biederman, J.A., M.D. Robles, R.L. Scott, and **J.F. Knowles** (2022). Streamflow response to wildfire differs with season and elevation in adjacent headwaters of the Lower Colorado River Basin. *Water Resources Research* 58(3): e2021WR030687. doi:10.1029/2021WR030687

36) *Wang, X., J.A. Biederman, **J.F. Knowles**, R.L. Scott, A.J. Turner, M.P. Dannenberg, P. Köhler, C. Frankenberg, M.E. Litvak, G.N. Flerchinger, B.E. Law, H. Kwon, S.C. Reed, W.J. Parton, G.A. Barron-Gafford, and W.K. Smith (2022). Satellite solar-induced chlorophyll fluorescence and near-infrared reflectance capture complementary aspects of dryland vegetation productivity dynamics. *Remote Sensing of Environment* 270: 112858. doi:10.1016/j.rse.2021.112858

35) *Javadian, M., W.K. Smith, K. Lee, **J.F. Knowles**, R.L. Scott, J.B. Fisher, D.J.P. Moore, W.J.D. van Leeuwen, G. Barron-Gafford, and A. Behrangi (2022). Canopy temperature is regulated by ecosystem structural traits and captures the ecohydrologic dynamics of a semiarid mixed conifer forest site. *Journal of Geophysical Research: Biogeosciences* 127(2): e2021JG006617. doi:10.1029/2021JG006617

34) Dannenberg, M.P., D. Yan, M.L. Barnes, W.K. Smith, M.R. Johnston, R.L. Scott, J.A. Biederman, **J.F. Knowles**, *X. Wang, T. Duman, M.E. Litvak, J.S. Kimball, A.P. Williams, and Y. Zhang (2022). Exceptional heat and atmospheric dryness amplified losses of primary production during the 2020 U.S. Southwest hot drought. *Global Change Biology* 28(16): 4794-4806. doi:10.1111/gcb.16214

33) Dwivedi, R., C. Eastoe, **J.F. Knowles**, J. McIntosh, T. Meixner, P.A. Ferre, R. Minor, G. Barron-Gafford, N. Abramson, M. Stanley, and J. Chorover (2022). Tandem use of multiple tracers and metrics to identify dynamic and slow hydrological flowpaths. *Frontiers in Water* 4: 841144. doi:10.3389/frwa.2022.841144

32) *Lee, E., P. Kumar, **J.F. Knowles**, R.L. Minor, N. Tran, G.A. Barron-Gafford, and R.L. Scott

(2021). Convergent hydraulic redistribution and groundwater access supported facilitative dependency between trees and grasses in a semi-arid environment. *Water Resources Research* 57(6): e2020WR028103. doi:10.1029/2020WR028103

31) Chu, H., X. Luo, Z. Ouyang, W.S. Chan, S. Dengel, S.C. Biraud, M.S. Torn, S. Metzger, J. Kumar, M. Altaf Arain… **J.F. Knowles**… D. Zona [70 total authors] (2021). Representativeness of eddy-covariance flux footprints for areas surrounding AmeriFlux sites. *Agricultural and Forest Meteorology* 301-302: 108350. doi:10.1016/j.agrformet.2021.108350

30) *Dwivedi, R., C. Eastoe, **J.F. Knowles**, *L. Hamann, T. Meixner, P.A. Ferre, W.E. Wright, G.-Y. Niu, R. Minor, G.A. Barron-Gafford, N. Abramson, B. Mitra, S.A. Papuga, M. Stanley, and J. Chorover (2021). An improved practical approach for estimating catchment-scale response functions through wavelet analysis. *Hydrological Processes* 35(3): e14082. doi:10.1002/hyp.14082

29) Scott, R.L., **J.F. Knowles**, J.A. Nelson, P. Gentine, X. Li, G. Barron-Gafford, R. Bryant, and J.A. Biederman (2021). Water availability impacts on evapotranspiration partitioning. *Agricultural and Forest Meteorology* 297: 108251. doi:10.1016/j.agrformet.2020.108251

28) Barron-Gafford, G.A., **J.F. Knowles**, E.P. Sánchez-Cañete, R.L. Minor, *E. Lee, *L. Sutter, N. Tran, P. Murphy, E.P. Hamerlynck, P. Kumar, R.L. Scott (2021). Hydraulic redistribution buffers climate variability and regulates grass-tree interactions in a semiarid riparian savanna. *Ecohydrology* 14(3): e2271. doi:10.1002/eco.2271

27) **Knowles, J.F.**, R.L. Scott, J.A. Biederman, P.D. Blanken, S.P. Burns, S. Dore, T.E. Kolb, M.E. Litvak, and G. A. Barron-Gafford (2020). Montane forest productivity across a semi-arid climatic gradient. *Global Change Biology* 26(12): 6945-6958. doi:10.1111/gcb.15335

26) *Yang, J.C., T.S. Magney, D. Yan, **J.F. Knowles**, W.K. Smith, R.L. Scott, and G.A. Barron-Gafford (2020). The photochemical reflectance index (PRI) captures the ecohydrologic sensitivity of a semi-arid mixed conifer forest. *Journal of Geophysical Research: Biogeosciences* 125(11): e2019JG005624. doi:10.1029/2019JG005624

25) **Knowles, J.F.**, R.L. Scott, R.L. Minor, and G.A. Barron-Gafford (2020). Ecosystem carbon and water cycling from a sky island montane forest. *Agricultural and Forest Meteorology* 281: 107835. doi:10.1016/j.agrformet.2019.107835

24) *Dwivedi, R., **J.F. Knowles**, C. Eastoe, R. Minor, N. Abramson, B. Mitra, W.E. Wright, J. McIntosh, T. Meixner, P.A. Ferre, C. Castro, G.-Y. Niu, G.A. Barron-Gafford, M. Stanley, and J. Chorover (2020). Ubiquitous fractal scaling and filtering behavior of hydrologic fluxes and storages from a mountain headwater catchment. *Water* 12(2): 613. doi:10.3390/w12020613

23) *Murphy, P.C., **J.F. Knowles**, D.J.P. Moore, K. Anchukaitis, D.L. Potts, and G.A. Barron-Gafford (2020). Topography influences species-specific patterns of seasonal primary productivity in a semiarid montane forest. *Tree Physiology* 40(10): 1343-1354. doi:10.1093/treephys/tpaa083

22) *Dwivedi, R., C. Eastoe, **J.F. Knowles**, W.E. Wright, *L. Hamann, R. Minor, B. Mitra, T. Meixner, J. McIntosh, P.A. Ferre, C. Castro, G.-Y. Niu, G.A. Barron-Gafford, N. Abramson, S.A. Papuga, M. Stanley, J. Hu, and J. Chorover (2020). Vegetation source water identification using isotopic and hydrometric observations from a sub-humid mountain catchment. *Ecohydrology* 13(1): e2167. doi:10.1002/eco.2167

21) Smith, W.K., M.P. Dannenberg, D. Yan, S. Hermann, M.L. Barnes, G.A. Barron-Gafford, J.A. Biederman, S. Ferrenberg, A.M. Fox, *A. Hudson, **J.F. Knowles**, N. Macbean, D.J.P. Moore, P.L. Nagler, S.C. Reed, *W.A. Rutherford, R.L. Scott, *X. Wang, and *J. Yang (2019). Remote sensing of dryland ecosystem structure and function: Progress, challenges, and opportunities. *Remote Sensing of Environment* 233: 111401. doi:10.1016/j.rse.2019.111401

20) Olshansky, Y., **J.F. Knowles**, G.A. Barron-Gafford, C. Rasmussen, N. Abramson, and J. Chorover (2019). Soil fluid biogeochemical response to climatic events. *Journal of Geophysical Research: Biogeosciences* 124(9): 2866-2882. doi:10.1029/2019JG005216

19) **Knowles, J.F.**, P.D. Blanken, C.R. Lawrence, and M.W. Williams (2019). Evidence for non-steady-state carbon emissions from snow-scoured alpine tundra. *Nature Communications* 10(1): 1306. doi:10.1038/s41467-019-09149-2

18) Barnard, D.M.[#], **J.F. Knowles**[#], H.R. Barnard, M.L. Goulden, J. Hu, M.E. Litvak, and N.P. Molotch (2018). Reevaluating growing season length controls on net ecosystem production from evergreen conifer forests. *Scientific Reports* 8(1): 17973. doi:10.1038/s41598-018-36065-0. [#]**These authors contributed equally to this work.**

17) *Chang, L.-L., *R. Dwivedi, **J.F. Knowles**, Y.-H. Fang, G.-Y. Niu, J.D. Pelletier, C. Rasmussen, M. Durcik, G.A. Barron-Gafford, and T. Meixner (2018). Why do large-scale land surface models produce a low ratio of transpiration to evapotranspiration? *Journal of Geophysical Research: Atmospheres* 123(17): 9109-9130. doi:10.1029/2018JD029159

16) **Knowles, J.F.**, N.P. Molotch, E. Trujillo, and M.E. Litvak (2018). Snowmelt-driven trade-offs between early and late season productivity negatively impact forest carbon uptake during drought. *Geophysical Research Letters* 45(7): 3087-3096. doi:10.1002/2017GL076504

15) *Zhang Q., **J.F. Knowles**, R.T. Barnes, R. Cowie, N. Rock, and M.W. Williams (2018). Surface and subsurface water contributions to streamflow from a mesoscale watershed in complex mountain terrain. *Hydrological Processes* 32(7): 954-967. doi:10.1002/hyp.11469

14) Burns S.P., S.C. Swenson, W.R. Wieder, D.M. Lawrence, G.B. Bonan, **J.F. Knowles**, and P.D. 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 System*s 10(3): 617-651. doi:10.1002/2017MS001248

13) Sexstone, G.A., D.W. Clow, S.R. Fassnacht, G.E. Liston, C.A. Hiemstra, **J.F. Knowles**, and C.A. Penn (2018). Snow sublimation in mountain environments and its sensitivity to forest disturbance and climate warming. *Water Resources Research* 54(2): 1191-1211. doi:10.1002/2017WR021172

12) **Knowles J.F.**, L.R. Lestak, and N.P. Molotch (2017). On the use of a snow aridity index to predict remotely sensed forest productivity in the presence of bark beetle disturbance. *Water Resources Research* 53(6): 4891-4906. doi:10.1002/2016WR019887

11) Wieder W.R., **J.F. Knowles**, P.D. Blanken, S.C. Swenson, and K.N. Suding (2017). Ecosystem function in complex mountain terrain: combining models and long-term observations to advance process-based understanding. *Journal of Geophysical Research: Biogeosciences* 122(4): 825-845. doi:10.1002/2016JG003704

10) Cowie R., **J.F. Knowles**, K.R. Dailey, M.W. Williams, *T.J. Mills, and N.P. Molotch (2017). Sources of streamflow along a headwater catchment elevational gradient. *Journal of Hydrology* 549: 163-178. doi:10.1016/j.jhydrol.2017.03.044

9) **Knowles J.F.**, P.D. Blanken, and M.W. Williams (2016). Wet meadows contribute the majority of overwinter soil respiration from snow-scoured alpine tundra. *Journal of Geophysical Research: Biogeosciences* 121(4): 1118-1130. doi:10.1002/2015JG003081

8) Berkelhammer M., D.C. Noone, *T.E. Wong, S.P. Burns, ***J.F. Knowles**, *A. Kaushik, P.D. Blanken, and M.W. Williams (2016). Convergent approaches to determine an ecosystem's transpiration fraction. *Global Biogeochemical Cycles* 30(6): 933-951. doi:10.1002/2016GB005392

7) *Barnhart T.B., N.P. Molotch, B. Livneh, A.A. Harpold, **J.F. Knowles**, and *D. Schneider (2016). Snowmelt rate dictates streamflow. *Geophysical Research Letters* 43(15): 8006-8016. doi:10.1002/2016GL069690

6) ***Knowles J.F.**, A.A. Harpold, *R. Cowie, *M. Zeliff, H.R. Barnard, S.P. Burns, P.D. Blanken, J.F. Morse, and M.W. Williams (2015). The relative contributions of alpine and subalpine ecosystems to the water balance of mountainous, headwater catchment. *Hydrological Processes* 29(22): 4794-4808. doi:10.1002/hyp.10526

5) ***Knowles J.F.**, P.D. Blanken, and M.W. Williams (2015). Soil respiration variability across a soil moisture and vegetation community gradient within a snow-scoured alpine meadow. *Biogeochemistry* 125(2): 185-202. doi:10.1007/s10533-015-0122-3

4) ***Knowles J.F.**, S.P. Burns, P.D. Blanken, and R.K. Monson (2015). Ecosystem fluxes of energy, water, and carbon dioxide in mountain ecosystems at Niwot Ridge, Colorado. *Plant Ecology & Diversity* 8(5-6): 663-676. doi:10.1080/17550874.2014.904950

3) Burns S.P., N.P. Molotch, M.W. Williams, ***J.F. Knowles**, *B. Seok, R.K. Monson, A.A. Turnipseed, and P.D. Blanken (2014). Snow temperature changes within a seasonal snowpack and their relationship to turbulent fluxes of sensible and latent heat. *Journal of Hydrometeorology* 15: 117-142. doi:10.1175/JHM-D-13-026.1

2) ***Knowles J.F.**, P.D. Blanken, M.W. Williams, and K.M. Chowanski (2012). Energy and surface moisture seasonally limit evaporation and sublimation from snow-free alpine tundra. *Agricultural and Forest Meteorology* 157: 106-115. doi:10.1016/j.agrformet.2012.01.017

1) Blanken P.D., M.W. Williams, S.P. Burns, R.K. Monson, ***J.F. Knowles**, K.M. Chowanski, and T. Ackerman (2009). A comparison of water and carbon dioxide exchange at a windy alpine tundra and subalpine forest site near Niwot Ridge, Colorado. *Biogeochemistry* 95(1): 61-76. doi:10.1007/s10533-009-9325-9

INVITED SCIENTIFIC PRESENTATIONS (*STUDENT)

11) **Knowles, J.F.** Land-atmosphere exchange of water and nutrients in the western USA. Land Resources and Environmental Sciences Department Seminar. Bozeman, MT, 3 February 2025.

10) Musselman, K., N. Tarasewicz, L. Schwebs, A. Parsekian, K. Bailey, C. Parsons, K. Kelsey, B. Buma, **J.F. Knowles**, E.-L. Hinckley, J. Parker, and P. Blanken. The EcoTram: New measurements permit the study of lateral connectivity of landscapes, energy, and water in the Como Creek watershed, Colorado. AGU24, Washington, DC, 9-13 December 2024.

9) Molotch, N.P., E. Kennedy, **J.F. Knowles**, S.P. Burns, and P.D. Blanken. Impacts of snowmelt

timing and magnitude on subalpine forest productivity. AGU24, Washington, DC, 9-13 December 2024.

8) **Knowles, J.F.**, R.L. Scott, J.A. Biederman, P.D. Blanken, S.P. Burns, S. Dore, T.E. Kolb, M.E. Litvak, and G.A. Barron-Gafford. Montane forest productivity across a semiarid climatic gradient. ESA Annual Meeting, Portland, OR, 6-11 August 2023.

7) **Knowles, J.F.** Ecohydrology: bridging techniques, applications, and scales. California State University Chico, Earth and Environmental Science Department Seminar. Chico, CA, 15 February 2023.

6) **Knowles, J.F.** Ecohydrology: bridging techniques, applications, and scales. University of California Davis, Environmental and Water Resources (EWR) Program Seminar. Davis, CA, 17 January 2023.

5) **Knowles, J.F.** Bark beetle impacts on forest evapotranspiration and its partitioning. NSF Long Term Ecological Research (LTER) Program All Scientists Meeting, Pacific Grove, CA, 19-23 September, 2022.

4) **Knowles, J.F.** and J.T. Crawford. Control points of biogeochemical cycling due to changing subsurface conditions. Niwot Ridge Long Term Ecological Research (LTER) Program Mid-Term NSF Site Review, Boulder, CO, 21-22 August 2019.

3) *Barnhart T.B., B. Livneh, N.P. Molotch, **J.F. Knowles**, A.A. Harpold, and *D. Schneider. Rapid snowmelt leads to greater streamflow across the western United States. AGU Fall Meeting, San Francisco, CA, 14-18 December 2015.

2) ***Knowles, J.F**., *B. Seok, D. Helmig, and M.W. Williams. Trace gas fluxes and atmospheric chemistry measurements at Niwot Ridge, Colorado. Symposium on Atmospheric Chemistry and Physics at Mountain Sites, Steamboat Springs, CO, 11-15 August 2014.

1) Williams M.W., *R. Cowie, ***J.F. Knowles**, and *M. Zeliff. Evaporation and sublimation from a high elevation catchment in the Colorado Rocky Mountains, USA. American Society of Agricultural and Biological Engineers (ASABE) International Symposium, Raleigh, NC, 7-10 April 2014.

TEACHING

Montana State University

Watershed Hydrology (ENSC 444)	Spring 2025

California State University, Chico

Hydrology (ERTH 380)	Fall 2021-2023
Ecohydrology (ERTH 537)	Spring 2023
Hydrological Field Methods (ERTH 382)	Spring 2022; 2024
Senior Seminar (ERTH 475)	Spring 2022-2024

University of Colorado Boulder

Landscapes and Water (GEOG 1011)	Spring 2016
Introduction to Hydrology (GEOG 3511)	Fall 2013
Principles of Climate (GEOG 3601), Teaching Assistant	Spring 2009-2014
Introduction to Hydrology (GEOG 3511), Teaching Assistant	Fall 2010; 2012
Mountain Geography (GEOG 3251), Teaching Assistant	Fall 2008; 2011
Principles of Geomorphology (GEOG 4241), Teaching Assistant	Fall 2009

Climate and Vegetation (GEOG 1001), Teaching Assistant	Spring 2008
Landscapes and Water (GEOG 1011), Teaching Assistant	Fall 2007

Invited Lecturer

Regenerative Agriculture, CSU Chico	Spring 2024
Environmental Sensing, CSU Chico	Fall 2023
Foundations of Ecology, CSU Chico	Fall 2023
Big Chico Creek Watershed Tour, CSU Chico	Spring 2022-2023
Field Hydrology Methods, University of Arizona	Spring 2020
Flux Measurements and Advanced Modeling, U. Colorado Boulder	Summer 2017
Soils Geography, U. Colorado Boulder	Fall 2016
Introduction to Global Climate Change, Colorado College	Spring 2014-2017

MENTORING

Postdoctoral Scholars

Arshdeep Singh, Earth and Environmental Sciences, CSU Chico	2024–

Graduate Students

Abigail Bozza, Earth and Environmental Sciences, CSU Chico (M.S.)	2023–
Dana Thomas, Earth and Environmental Sciences, CSU Chico (M.S.)	2022–2024

Undergraduate Honors

Vincent Evangelist, Earth and Environmental Sciences, CSU Chico	2024–
Kyle Mason, Earth and Environmental Sciences, CSU Chico	2023–2024

Graduate Committees

Kristen Powell, LRES, Montana State U. (M.S.)	2024–
Annie Carlile, School of Biological Sciences, U. Utah (Ph.D)	2024–
Anna Krause, Biology, CSU Chico (M.S.)	2024–
Nick Corak, Physics, Wake Forest University (Ph.D.)	2023–
Molly Huber, Environmental Studies, U. Colorado Boulder (M.S.)	2020–2021
Qinghuan Zhang, Geography, U. Colorado Boulder (Ph.D.)	2017–2018
Kelsey Dailey, Environmental Studies, U. Colorado Boulder (M.S.)	2015–2016

AWARDS AND FELLOWSHIPS

2023 **Research, Scholarship, and Creative Activity Award ($6.6k)**, California State University Chico

2016 **Finalist** (eight campus-wide finalists per year), Outstanding Postdoctoral Researcher Award, University of Colorado Boulder

2016 **Editors' Citation for Excellence in Refereeing**, *Journal of Geophysical Research: Biogeosciences*, doi:10.1029/2017EO073671.

2015 **Summer Research Fellowship ($6k)**, University of Colorado Graduate School

2013 **Kolff-Dinaburg Memorial Summer Research Fellowship ($3k)**, University of Colorado Geography Department

2010 **Gary Gaile Memorial Research Fellowship (2.5k)**, University of Colorado Geography Department

PROFESSIONAL ACTIVITIES

Proposal Review Panelist, National Science Foundation (NSF) Division of Earth Sciences (3x)

Ad-Hoc Proposal Reviewer, Swiss National Science Foundation; Autonomous Province of Bolzano, South Tyrol, Italy; Canada Foundation for Innovation; National Science Foundation

2024 **Co-Convener**, "Frontiers in Ecohydrology" Oral Session, AGU24 Annual Meeting

2023– **Principal Investigator**, U.S. Department of Energy (DOE) AmeriFlux Program, Big Chico Creek (US-BgC) site

2022 **Co-Convener**, "Natural Climate Solutions: New strategies for translating direct measurements to actionable information" Organized Oral Session, Ecological Society of America Annual Meeting

2020– **Principal Investigator**, DOE AmeriFlux Program, Niwot Ridge Alpine Tundra (US-NR3 & US-NR4) sites

2019 **Co-Organizer**, University of Arizona workshop to accelerate development of NSF Critical Zone Collaborative Network (CZCN) proposals (with Dr. J. McIntosh)

2018 **Panelist**, University of Arizona School of Geography and Development Professional Development Seminar, "Organizing and Writing a Manuscript"

2014 **Internal Reviewer**, University of Colorado Museum and Field Studies Program, Report Submitted to the Vice Chancellor of Academic Affairs

2014 **Workshop Leader**, *Climate Change 101*, Teaching Controversial Topics Workshop, University of Colorado Ecology and Evolutionary Biology department

2012– **Ad-Hoc Journal Reviewer**, *Agricultural and Forest Meteorology*; *Arctic, Antarctic, and Alpine Research*; *Biogeosciences; Bulletin of the American Meteorological Society*; *Climatic Change*; *Communications Biology*; *Ecohydrology*; *Ecosphere; Ecosystems; Forest Ecology and Management; Geophysical Research Letters; Global Biogeochemical Cycles; Global Change Biology*; *Hydrological Processes*; *Hydrology and Earth System Sciences; Journal of the American Water Resources Association; Journal of Arid Environments*; *Journal of Geophysical Research (Atmospheres*; *Biogeosciences)*; *Journal of Glaciology*; *Journal of Hydrology*; *Nature Plants; Plant and Soil; Plant Biology; PLoS ONE*; *Remote Sensing*; *Science of the Total Environment*; *Scientific Reports*; *Water Resources Research*

2011 **Short Course Participant**, Radiocarbon in Ecology and Earth System Science, University of California, Irvine, CA

2009– **Professional Member**, American Geophysical Union (Biogeosciences and Hydrology sections); Ecological Society of America (Biogeosciences section); Phi Beta Kappa (Inducted 2003)

2008 **Short Course Participant**, Flux Measurements and Advanced Modeling, University of Colorado Mountain Research Station, Nederland, CO

SERVICE AND OUTREACH

2023– **Member**, American Geophysical Union (AGU) Ecohydrology Technical Committee

2022–2024 **Campus Program Coordinator**, AGU Bridge Program

2022–2024 **Board of Directors**, Center for Water and the Environment, California State University, Chico

2022–2024 **Faculty Member Representative**, Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI)

2022–2023 **Organizing Committee**, CUAHSI Biennial Colloquium (Tahoe City, CA)

2022 **Judge**, Ecological Society of America (Biogeosciences Section) Sulzman student publication award

2020–2021 **Founder and Lead**, USDA ARS Peer Mentorship Initiative

2020–2021 **Pacific West Area Representative**, USDA ARS Postdoc Advisory Council

2019–2021 **Member**, USDA ARS Equal Employment Opportunity (EEO) Committee (Tucson, AZ location)

2017 **Lead**, Renaissance School (Castle Rock, CO) Adventure Education Program for 6th Graders

2016– **Judge**, Outstanding Student Paper Award (OSPA), AGU Fall Meeting

2016 **Focus Group Member**, Study to Optimize Performance of NASA Distributed Active Archive Centers (DAACs)

2016 **Beta Version Tester**, National Snow and Ice Data Center (NSIDC) IceBridge Web Portal User Interface

2016 **Teacher Trainer**, Winter Wildlands Alliance SnowSchool Program

2014–2015 **Graduate Student Representative**, Niwot Ridge LTER

2013–2016 **Chair**, City of Boulder (CO) Homeownership Committee (3-year term)

2012 **Intern Adviser**, Alexander Dawson K-12 School (Lafayette, CO) 72-hour Senior Internship

2010–2013 **Panelist**, City of Boulder (CO) ClimateSmart Solar Grant Committee (3-year term)

2010–2013 **Affordable Housing Representative**, City of Boulder (CO) Homeownership Committee (3-year term)

2010–2011 **Peer Mentor**, University of Colorado Gamma Theta Upsilon Graduate Student Mentor Program