Russell P. Callahan
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Department of Geology & Geophysics
University of Wyoming
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Education:

Ph.D.	2021, University of Wyoming, Geology
B.S.	2015, Montana State University, Environmental Science, *highest honors*

Appointments:

2021-	BCZN Postdoctoral Researcher, University of Wyoming
2015-2021	Graduate Research Assistant, University of Wyoming
2017-2018, 2020	Graduate Teaching Assistant, University of Wyoming
2013-2015	Undergraduate Research Assistant, Montana State University
2013-2014	Undergraduate Teaching Assistant, Montana State University
2013	REU Intern, Hubbard Brook Experimental Forest
2011-2014	GIS Analyst, Yellowstone Ecological Research Center

Publications:

In print or in press

Riebe, C.S., Callahan, R.P., Granke, S.B.-M., Carr, B.J., Hayes, J.L., Schell, M.S., & Sklar, L.S. (2021). Anisovolumetric weathering in granitic saprolite controlled by climate and erosion rates. *Geology*. https://doi.org/10.1130/G48191.1

Callahan, R. P., Riebe, C. S., Pasquet, S., Ferrier, K. L., Grana, D., Sklar, L. S., Taylor, N. J., Flinchum, B. A., Hayes, J. L., Carr, B. J., Hartsough, P. C., O'Geen, A. T., & Holbrook, W. S. (2020). Subsurface Weathering Revealed in Hillslope-Integrated Porosity Distributions. *Geophysical Research Letters*, *47*(15). https://doi.org/10.1029/2020GL088322

Leone, J. D., Holbrook, W. S., Riebe, C. S., Chorover, J., Ferré, T. P. A., Carr, B. J., & Callahan, R. P. (2020). Strong slope-aspect control of regolith thickness by bedrock foliation. *Earth Surface Processes and Landforms*, *45*(12), 2998–3010. https://doi.org/10.1002/esp.4947

Callahan, R. P., Ferrier, K. L., Dixon, J., Dosseto, A., Hahm, W. J., Jessup, B. S., Miller, S. N., Hunsaker, C. T., Johnson, D. W., Sklar, L. S., & Riebe, C. S. (2019). Arrested development: Erosional equilibrium in the southern Sierra Nevada, California, maintained by feedbacks between channel incision and hillslope sediment production. *GSA Bulletin*, *131*(7-8), 1179–1202. https://doi.org/10.1130/B35006.1

In preparation

Callahan, R.P., Riebe, C.S., Pasquet, S., Ferrier, K.L., Sklar, L.S., Hahm, W.J., Taylor, N.J., Grana, D., Flinchum, B.A., Hayes, J.L, & Holbrook, W.S. Forest vulnerability to drought governed by variations in bedrock composition. in prep.

Riebe, C.S., Arvin, L.J., Callahan, R.P., Ferrier, K.L., & Sklar, L.S. Suppressed correlations in cosmogenic nuclide studies of erosion rates due to dust and chemical erosion biases. in prep.

Data Repositories:

Callahan, R.P., & Riebe, C.S. (2020). D102 geophysical and core data. *Mountain Scholar,* https://doi.org/10.15786/20.500.11919/7140

Conference Presentations:

Callahan, R.P., Riebe, C.S., Granke, S.B.-M., Carr, B.J., Hayes, J.L., Schell, M.S., & Sklar, L.S. (2020). Anisovolumetric weathering is the norm, not the exception, in granitic saprolite. Abstract EP036-0004, presented at 2020 Fall Meeting, AGU, Virtual, 1-17 Dec.

Brigilio, J., Flinchum, B.A., Callahan, R.P., & Riebe, C.S. (2020). Ground Penetrating Radar Reveals Differences in Fracture Spacing Across Two Geochemically Distinct Granitic Lithologies. Abstract NS014-0009 presented at 2020 Fall Meeting, AGU, Virtual, 1-17 Dec.

Callahan, R.P. & Riebe C.S., (2019). Strong lithologic and climatic control on deep subsurface weathering revealed in landscape-scale porosity distributions. Abstract NS23A-05, presented at 2019 Fall Meeting, AGU, San Francisco, California, 9-13 Dec.

Riebe, C.S. & Callahan, R.P., (2019). Mountain ecosystem response to drought moderated by lithologic and climatic controls on subsurface water-storage capacity. Abstract B22E-03, presented at 2019 Fall Meeting, AGU, San Francisco, California, 9-13 Dec.

Riebe, C.S. & Callahan, R.P., (2019). Lithologically mediated feedbacks between subsurface weathering and ecosystem productivity. Abstract 2831, presented at 2019 Goldschmidt Meeting, Barcelona, Spain 18-23 August. (R.P. Callahan served as speaker)

Callahan, R.P., Riebe, C.S., Holbrook, W.S., & Goulden, M. (2018). Climatic and lithologic controls on critical zone structure and ecosystem productivity in the Sierra Nevada, California, evaluated using geophysical and geochemical measurements. Abstract EP11D3-2084 presented at 2018 Fall Meeting, AGU, Washington D.C., 10-14 Dec.

Riebe, C.S., Callahan, R.P., & Arvin L.J, (2018). Built on bedrock, running on dust: Controls on ecosystem productivity and vulnerability in the Sierra Nevada, California. Abstract 2157, presented at 2018 Goldschmidt Meeting, Boston, Massachusetts, 12-17 August.

Callahan, R.P., Riebe, C.S., & Ferrier, K.L. (2017). Mountain erosion over decades and millennia: new insights from cosmogenic nuclides and sediment yields. Abstract EP33C-0982 presented at 2017 Fall Meeting, AGU, New Orleans, Louisiana, 11-15 Dec.

Riebe, C.S., Callahan, R.P., Goulden M.L., Pasquet S., Flinchum B.A., Taylor N.J., & Holbrook W.S. (2017). The influence of subsurface porosity and bedrock composition and ecosystem productivity in the Sierra Nevada Batholith. Abstract EP53D-1762 presented at 2017 Fall Meeting, AGU, New Orleans, Louisiana, 11-15 Dec.

Callahan, R.P., Taylor, N.J., Pasquet, S., Dueker, K.G., Riebe, C.S., & Holbrook, W.S. (2016). Probing the critical zone using passive-and active-source estimates of subsurface shear-wave velocities. Abstract EP43C-0966, presented at 2016 Fall Meeting, AGU, San Francisco, California, 12-16 Dec.

Taylor, N. J., Riebe, C. S., Dueker, K. G., Goulden, M., Flinchum, B. A., Pasquet, S., Callahan, R.P., Hahm, W.J. & Holbrook, W. S. (2016). Comprehensive seismic surveys suggest that subsurface water-holding capacity is secondary to bedrock nutrient content as a regulator of vegetation productivity in the Sierra Nevada Batholith, California. Abstract EP43C-0964, presented at 2016 Fall Meeting, AGU, San Francisco, California, 12-16 Dec.

Callahan, R.P., Riebe, C.S., & Dosseto, A., (2016) Using Cosmogenic and U-Series Nuclides in Stream Sediment to test hypotheses about mountain landscape evolution. Abstract 347, presented at 2016 Goldschmidt Meeting, Yokohama, Japan, Jun 16-Jul 1.

Callahan, R.P. & Hartshorn, A.S. (2014) Soil geochemistry controls fire severity: A soil approach to improved understanding of forest fire consequences in southwest Montana. Abstract GC33E-0571, presented at 2014 American Geophysical Union Fall Meeting, San Francisco, CA 15-19 Dec.

Teaching Experience:

Fall 2020 Teaching Assistant for Environmental Data Analysis (Online)

Responsibilities: Assisted in transition of course to online format, including revisions to the course's labs. Facilitated student discussions, assisted with student lab exercises in Python and JMP. Grading of homework and lab assignments.

Summer 2020 Teaching Assistant for Field Camp General Mapping (Online)

Responsibilities: Helping students with virtual exercises, holding office hours, and grading of virtual mapping projects.

Summer 2019 Teaching Assistant for Field Camp Geophysics Section

Responsibilities: Assistance in data collection, analysis, and interpretation of seismic refraction, electrical resistivity, ground penetrating radars, and magnetic geophysical data collected in a small mountainous watershed in the Laramie Range, Wyoming.

Spring 2018 Teaching Assistant for Energy and Society

Responsibilities: Teaching and grading of labs related to human energy consumption and energy sources from a geologic context.

Fall 2017 Teaching Assistant for Environmental Data Analysis

Responsibilities: Lead lab sessions for 20 students. Labs focused on analyzing datasets using JMP software. Grading of homework and lab assignments.

Fall 2013 & 2014 Teaching Assistant for Intro to Soils

Responsibilities: Instructor for labs on field description and physical and chemical characterization of soils.

Graduate Student Mentoring:

Sarah Granke (MS student, University of Wyoming) Project: Quantifying physical and chemical weathering saprolite of the southern Sierra Nevada, California.	2019-2020

Undergraduate Student Mentoring:

Bryanna Pilkington (Concordia University, Montreal, Canada) Project: Climatic, lithologic, and weathering controls on forest drought response in the San Jacinto and San Gabriel Mountains, California.	2020-present
Andrew Miller (University of Wyoming) Project: Geochemical characterization of subsurface weathering in the southern Sierra Nevada, California.	2018-2019

Grants & Awards (total = $58,000):

UW Carlton R. Barkhurst Fellowship ($11,000)	2021
Wyoming NASA Space Grant Graduate Fellowship ($20,000)	2019-2020
UW Roy J. Shlemon Fellowship ($20,000)	2017-2018
UW Arts and Sciences Graduate Scholars Award ($2,500)	2017-2018
John R. Hanley Memorial Scholarship ($1,500)	2017
John M. Hummel Memorial Scholarship ($1,500)	2017

Dick and Lynne Cheney Travel Grant ($250)	2016
Goldschmidt Travel Grant ($1,250)	2016
Montana State University Award for Excellence	2015

Service & Outreach:

Wyoming State Science Fair Judge (2020): Judging of presentations for the Senior Earth and Environmental Science category and NASA Earth System Science award.

Co-organizer of Quaternary Conversations (2019-2020): Organized a university-wide monthly lecture series hosted through the Roy J. Shlemon Center for Quaternary Studies at the University of Wyoming

Hands on the Land Volunteer (2019): Shared research and assisted six high schoolers with tree surveys for two days during the summer of 2019.

Prospective Graduate Student Recruitment Organizer (2018): Organized social events and lodging for prospective students visiting the University of Wyoming Geology & Geophysics Department.

PEAKS Mentor (2015): Mentored three gifted third grade students at Longfellow Elementary School in Bozeman, Montana on science related activities.

Montana Apprenticeship Program (2014): Mentored two Native American high school students on soils related research projects at Montana State University.

Membership in Professional Societies:

American Geophysical Union
Geological Society of America