

# ADRIENNE MARSHALL

Hydrologic Sciences and Engineering Program  
Department of Geology and Geological Engineering  
Colorado School of Mines  
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CV updated: March 2026

## EDUCATION

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Ph.D., Water Resources, University of Idaho	2016-2019
M.S., Energy and Resources, University of California, Berkeley	2014-2016
B.A., Biology (French Minor), Scripps College	2005-2009

## APPOINTMENTS

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Assistant Professor, Colorado School of Mines	Aug 2021-Present
Postdoctoral Fellow, Georgia Institute of Technology	Jan 2021-Aug 2021
Postdoctoral Fellow, University of Idaho	May 2019-Dec 2020
NSF IGERT Fellow, University of Idaho	2016-2018
Graduate Student in Extension, University of California, Berkeley	2015
Graduate Student Instructor, University of California, Berkeley	Fall 2014, Spring 2016
Field Science Educator, Naturebridge (Environmental education nonprofit)	2011-2014

## PUBLICATIONS

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[Google scholar page](#)

\* = student mentee, \*\*student (not mentee)

*Published and peer-refereed*

30. Smith, S., & **Marshall, A. M.** (n.d.). Narrower streamflow distribution can alter water rights allocation equity. *In press at Nature Water*. Preprint: <https://www.researchsquare.com/article/rs-7236227/v1>
29. **Marshall, A. M.**, Abatzoglou, J. T., Koshkin, A.\*, & Rhoades, A. (2026). High-resolution mountain topography can inform global snow vulnerability estimates. *Environmental Research Letters*, 21(1), 014017. <https://doi.org/10.1088/1748-9326/ae2d73>
28. Bazlen, K.\*, **Marshall, A. M.**, Smith, S. M., & Koshkin, A.\* (2025). Hydrograph Spread Increases as Snow Declines Across the Western U.S. *Geophysical Research Letters*, 52(21), e2025GL116816. <https://doi.org/10.1029/2025GL116816>

27. Jenkins, J. S., **Marshall, A. M.**, Shiflett, S. A., Mattos, R. F., Sanchez, I. T.\*\*, & Athearn, N. D. (2025). Snow droughts, deluge, and reservation systems interact to drive recreation access at Yosemite National Park. *Scientific Reports*, 15(1), 37131. <https://doi.org/10.1038/s41598-025-21022-5>
26. Kroepsch, A. C., Andrews, E., Upadhyay, S.\*, & **Marshall, A.M.** (2025). Lets Talk About Dead Pool: How We Discuss the Shallows of Reservoirs. *Water Resources Research*, 61(10), e2025WR041330. <https://doi.org/10.1029/2025WR041330>
25. Yeo, A. J.\*, **Marshall, A. M.**, & Anderson, E. J. (2025). Trends and Climate Sensitivity of Precipitation Correlation Distances Across the Contiguous U.S. *Geophysical Research Letters*, 52(19), e2025GL116815. <https://doi.org/10.1029/2025GL116815>
24. Koshkin, A.\*, **Marshall, A. M.**, & Rittger, K. (2025). Impact of current and warmer climate conditions on snow cover loss in burned forests. *Science Advances*, 11(38), eadt9866. <https://doi.org/10.1126/sciadv.adt9866>
23. Vega, K. M.\*\*, Ausband, D. E., Svancara, L. K., **Marshall, A. M.**, & Link, T. E. (2025). Detection of deer at remote camera sites in relation to snow conditions. *Journal of Wildlife Management*. e70088. <https://doi.org/10.1002/jwmg.70088>
22. **A.M. Marshall**, Grubert, E., & Warix, S.\*\* (2025). Temperature Overshoot Would Have Lasting Impacts on Hydrology and Water Resources. *Water Resources Research*, 61(1), e2024WR037950. <https://doi.org/10.1029/2024WR037950>
21. **A.M. Marshall**, Upadhyay S.\* (2024). Hydroclimate Risks to the Western US Electric Grid under a Warming Climate. *Current Sustainable/Renewable Energy Reports*. DOI: 10.1007/s40518-024-00237-6. <https://rdcu.be/dNamV>
20. **A.M. Marshall**, Abatzoglou, J.T., Rahimi, S., Lettenmaier, D. (2024). California's 2023 snow deluge: contextualizing an extreme snow year against future climate change. *Proceedings of the National Academy of Sciences*. 121(20) e2320600121. <https://doi.org/doi/10.1073/pnas.2320600121>
19. Strickfaden, K. M.\*\*, Behan, M. L., **Marshall, A. M.**, Svancara, L. K., Ausband, D. E., Link, T. E. (2023). Virtual snow stakes: A new method for snow depth measurement at remote camera stations. *Wildlife Society Bulletin*, 47(3), e1481. <https://doi.org/10.1002/wsb.1481>
18. Weiss, S. A., **Marshall, A. M.**, Hayes, K. R., Nicolsky, D. J., Buma, B., Lucash, M. S. (2023). Future transitions from a conifer to a deciduous-dominated landscape are accelerated by greater wildfire activity and climate change in interior Alaska. *Landscape Ecology*, 38(10), 25692589. <https://doi.org/10.1007/s10980-023-01733-8>
17. Lucash, M.S., **Marshall, A.M.**, Weiss, S., McNabb, J., Nicolsky, D., Flerchinger, G., Link, T. E., Scheller, R., Romanovsky, V. (2023). Burning trees in frozen soil: Simulating fire, vegetation, soil, and hydrology in the boreal forests of Alaska. *Ecological Modelling*, 481, 110367. <https://dx.doi.org/10.1016/j.ecolmodel.2023.110367>
16. Strickfaden, K.\*\*, **Marshall, A.M.**, Svancara, L., Ausband, D., Link, T.E. (2023). Understanding the spatiotemporal distribution of snow refugia in the rain-snow transition zone of north-central Idaho. *Environmental Research Letters* 18(4). 044014. <https://dx.doi.org/10.1088/1748-9326/acbb90>
15. **Marshall, A. M.**, & Lute, A. C. (2022). Climate change in the Columbia River Basin: Potential impacts on the Snake River Dams. *Idaho Law Review* 58(1):36-73.

14. **Marshall, A.M.**, & E. Grubert (2022). Hydroelectricity modeling for low-carbon and no-carbon grids: Empirical constraints for optimization and dispatch models. *Earth's Future*. e2021EF002503. <https://doi.org/10.1029/2021EF002503>
13. Wei, L., Zhou, H., Hudak, A. T., Link, T. E., **Marshall, A. M.**, Kavanagh, K. L., Abatzoglou, J. T., Fekety, P. A., Byrne, J. C., Jain, T. B., Denner, R., Sandquist, J., Yu, X., Marshall, J. D. (2022). Harvest and forest succession have additive effects on anomalous streamflow increases in the northern Rockies, USA. *Journal of Hydrology*. 612:128230. <https://doi.org/10.1016/j.jhydrol.2022.128230>
12. **Marshall, A. M.**, & Chen\*\*, J. C. (2022). Influence of changing snowfall on complementarity of hydroelectric and solar power. *Environmental Research: Infrastructure and Sustainability*. 2(2):021001 <https://doi.org/10.1088/2634-4505/ac668f>.
11. Abatzoglou, J. T., **Marshall, A. M.**, Lute, A. C., & Safeeq, M. (2022). Precipitation Dependence of Temperature Trends Across the Contiguous US. *Geophysical Research Letters*, 49(4). <https://doi.org/10.1029/2021GL095414>
10. Grubert, E., & **Marshall, A.M** (2022). Water for energy: Characterizing co-evolving energy and water systems under twin climate and energy system nonstationarities. *WIREs Water*, e1576. <https://doi.org/10.1002/wat2.1576>
9. **Marshall, A. M.**, Link, T. E., Flerchinger, G. N., & Lucash, M. S. (2021). Importance of Parameter and Climate Data Uncertainty for Future Changes in Boreal Hydrology. *Water Resources Research*, 57(8), e2021WR029911. <https://doi.org/10.1029/2021WR029911>
8. Schweinsberg, M., M. Feldman, N. Staub ... **A.M. Marshall** ... (2021). Same data, different conclusions: Radical dispersion in empirical results when independent analysts operationalize and test the same hypothesis. *Organizational Behavior and Human Decision Processes*, 165, 228249. <https://doi.org/10.1016/j.obhdp.2021.02.003>
7. **Marshall, A. M.**, Link, T. E., Flerchinger, G. N., Nicolsky, D. J., & Lucash, M. S. (2021). Ecohydrological modeling in a deciduous boreal forest: Model evaluation for application in non-stationary climates. *Hydrological Processes*, e14251. <https://doi.org/10.1002/hyp.14251>
6. **Marshall, A.M.**, M. Foard, C.M. Cooper, P.E. Edwards, S.L. Hirsch, M. Russell, T.E. Link. (2020). Climate change literature and information gaps in mountainous headwaters of the Columbia River Basin. *Regional Environmental Change*. 20(4) 134. doi: 10.1007/s10113-020-01721-7
5. **Marshall, A.M.**, T.E. Link, A.P. Robinson, J.T. Abatzoglou. (2020). Higher snowfall intensity is associated with reduced impact of warming upon winter snow ablation. *Geophysical Research Letters*. 47(4) e2019GL086409. <https://doi.org/10.1029/2019GL086409>
4. **Marshall, A.M.**, J.T. Abatzoglou, T.E. Link, C.J. Tennant. (2019) Projected changes in inter-annual variability of peak snowpack amount and timing in the Western United States. *Geophysical Research Letters*. 46(15) 8882-8892. <https://doi.org/10.1029/2019GL083770>
3. **Marshall, A.M.**, T.E. Link, J.T. Abatzoglou, G.N. Flerchinger, D.G. Marks, L. Tedrow. (2019) Warming alters hydrologic heterogeneity: Simulated climate sensitivity of hydrology-based microrefugia in the snow-to-rain transition zone. *Water Resources Research*. 55(3) 2122-2141. <https://doi.org/10.1029/2018WR023063>
2. **Marshall, A.M.**, V. Butsic, J. Harte. (2018) The phenology of wilderness use: Backcountry recreation in a changing climate. *Weather, Climate, and Society*. 10(2) 209-223. <https://doi.org/10.1175/WCAS-D-17-0087.1>
1. **Marshall, A.M.**, R. Lutefeali, A. Raval, D.N. Chakravarti, B. Chakravarti. (2013) Differential hepatic protein tyrosine nitration of mouse due to aging effect on mitochondrial en-

ergy metabolism, quality control machinery of the endoplasmic reticulum and metabolism of drugs. *Biochemical and Biophysical Research Communications*. 430: 231-235. <https://www.sciencedirect.com/science/article/pii/S0006291X12021778>

*In review or revision*

12. Ritchie, E.\*\*\*, Wood, A. W., Johnson, R., **Marshall, A.**, Sturtevant, J.\*\*\*, Liljestrand, D., & Golitzin, E.\*\*\* (N.D.). Benchmarking Catchment-Scale Snow Water Equivalent Datasets and Models in the Western United States. *Preprint in review at The Cryosphere*. <https://doi.org/10.5194/egusphere-2025-5514>
11. Koshkin, A.L.\*, **Marshall, A.M.**(N.D.). Airborne Lidar and Machine Learning Reveal Decreased Snow Depth in Burned Forests. *Preprint in review at The Cryosphere*. <https://egusphere.copernicus.org/preprints/2025/egusphere-2025-4081/>
10. Gegen, A.\*, **Marshall, A.M.**, Voisin, N., Broman, D., North, L.H., Kroepsch, A. (N.D.). Model Parameter Uncertainty and Climate Change Effects on Hydropower Vulnerability Projections. *In revision*.
9. Rhoades, A.R., North, J.S., Rudisill, W., ... **Marshall, A.M.**,... Jones, A.D. (N.D.) Snow-Eater Heatwaves of the Western United States. *In review at Science Advances*.
8. North, L.H.\*, **Marshall, A.M.**, Tootle, G.A., Davis, L., Wood, A.W., Anderson, A.J. (N.D.) Hydrologic model diagnostics using multiple observation datasets: A case study in the Upper Colorado River Basin. *In review at Hydrology and Earth System Sciences*. <https://egusphere.copernicus.org/preprints/2026/egusphere-2025-5815/>.
7. Abreu-Vigil, G.\*\*\*, Weiss, S., Lucash, M., **Marshall, A.M.**, Nicolsky, D. (N.D.). Boreal Futures: Projecting Permafrost Dynamics, Wildfire, and Vegetation Shifts in Interior Alaska. *In review at Journal of Geophysical Research - Biogeosciences*.
6. Tucker, A.\*\*\*, Dumont, M., Singley, J., Lenssen, N., Callahan, R. P., **Marshall, A. M.**, Jacobsen, L., & Singha, K. (n.d.). Bridging single-tree processes and landscape-scale patterns to explain vegetation drought resistance and resilience in a Sierra Nevada headwater catchment. *In Review at Journal of Geophysical Research: Biogeosciences*.
5. Koshkin, A.\*, **Marshall, A.M.**, Wood, A.W. (n.D.). Parameters for post-wildfire snow hydrology: looking beyond snow albedo and vegetation. *In review at Water Resources Research*.
4. Updhyay, S.\*, **Marshall, A.M.**, Voisin, N., & Broman, D. (n.d.). How Certain Are We About Minimum Power Pool Risk? A Western U.S. Assessment Under Warming. *In revision at Environmental Research Letters*.
3. Kadel, S.\*\*\*, Walton, G., Weidner, L., **Marshall, A.M.** (n.d.). Multi-Site Characterization of Rockfall Seasonality and Slope Dynamics in Western Colorado Using 3D Point Cloud Monitoring. *In review at Rock Mechanics and Rock Engineering*.
2. Koshkin, A.\*, **Marshall, A.M.**, Toomey, A.\*, Wiles, E.\*, Livneh, B. (n.d.). Snow Droughts are Expanding and Deluges are Shrinking: The Importance of Spatial Extent in Snow Drought and Deluge Evaluation. *In review at Environmental Research: Water*
1. Rudisill, W., Feldman, D., Marshall, A.M., Koshkin, A. (n.d.). Reduced Surface Hoar in a Warming World. *Submitted to The Cryosphere*.

## OUTREACH PUBLICATIONS

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2. Abatzoglou, J. T., **Marshall, A. M.**, Harley, G. L. (2021). Observed and Projected Changes in Idaho's Climate (Idaho Climate-Economy Impacts Assessment, p. 24). James A. & Louise McClure Center for Public Policy Research, University of Idaho. <https://bit.ly/3I4YVQP>

1. **Marshall, A.M.**, S. Kocher, A. Kerr. (2017) Adapting forests to climate change. UC Agriculture and Natural Resources Publication 8574. *Forest Stewardship Series*. <http://cecentralsierra.ucanr.edu/files/259563.pdf>

## SELECTED PRESENTATIONS

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†= Invited talk

\* = Student supervisee

70. Tootle, G.A., Ramirez Molina, A.A., **Marshall, A.M.**, Piechota, T. (December 2025). A Paleo Perspective of Upper Colorado River Basin Snowpack. AGU Annual Meeting (poster).
69. Rudisill, W.J., Feldman, D., **Marshall, A.M.**, Koshkin, A.\* (December 2025). Reduced Surface Hoar in a Warming Climate. AGU Annual Meeting (oral).
68. Koshkin, A.\*, **Marshall, A.M.**, Wood, A.W. (December 2025). Modeling Post-Fire Snowpack Dynamics Across Variable Climate Conditions. AGU Annual Meeting (poster).
67. **Marshall, A.M.**, Bazlen, K.A.\*\*, Smith, S.M. (December 2025). Hydrograph Spread Increases as Snow Declines Across the Western U.S. AGU Annual Meeting (oral).
66. Upadhyay, S.\*, **Marshall, A.M.** (December 2025). Assessing Drought Vulnerability in Global Hydropower Reservoirs. AGU Annual Meeting (poster).
65. Ritchie, E.\*\*, Wood, A.W., Sturtevant, J.\*\*, **Marshall, A.M.**, LaMena, E., Johnson, R.C., Liljestrand, D.\*, Golitzin, E. (December 2025). Benchmarking the Accuracy of Existing Gridded SWE Datasets and their Relative Value for Seasonal Runoff Prediction. AGU Annual Meeting (poster).
64. Koshkin, A.\*, **Marshall, A.M.**, Toomey, A.\*, Wiles, E.\*, Livneh, B. (December 2025). Snow Droughts are Expanding and Deluges are Shrinking: The Importance of Spatial Extent in Snow Drought and Deluge Evaluation. AGU Annual Meeting (poster).
63. Singha, K., Tucker, A.\*\*, Dumont, M., Singley, J.G., Lenssen, N.J.L., Callahan, R.P., Marshall, A.M., Jacobsen, L.J. (December 2025). Multi-scale drivers of intra-catchment variability in drought response: Linking remote sensing, geophysical, and ecohydrological data. AGU Annual Meeting (poster).
62. †**Marshall, A.M.**, Abatzoglou, J.T., Koshkin, A.\*\*, Rhoades, A. (December 2025). High-Resolution Mountain Topography can Inform Global Snow Vulnerability Estimates. AGU Annual Meeting (oral).
61. †**Marshall, A.M.** (October 2025). Climate-driven changes in snow, streamflow, and water rights allocations in the western U.S. Indiana University Department of Geography Seminar Series. (oral).
60. **Marshall, A.M.**, Grubert, E., Warix, S.\*\* (October 2025). Temperature Overshoot Would Have Lasting Impacts on Hydrology and Water Resources. IIASA Overshoot Conference (oral).
59. †**Marshall, A.M.** (September 2025). From Descriptive Statistics to Machine Learning: Applications of Applied Mathematics and Statistics in Snow Hydrology and Climate. Department of Applied Mathematics and Statistics Colloquium, Colorado School of Mines. (oral).
58. †**Marshall, A.M.** (September 2025). Western US Water in a Changing Climate. National Association of Black Geoscientists (workshop).
57. Ritchie, E., Wood, A., Johnson, R., Sturtevant, J., Liljestrand, D., Marshall, A.M. (May 2025). Development of a CIROH Testbed Protocol for Benchmarking Mean Areal Catchment Snow Water Equivalent Products. CIROH DevCon. (poster).

56. Koshkin, A.\*, **Marshall, A.M.**, Wood, A. (May 2025). Modeling Post-Fire Snowpack Dynamics: Evaluating the Role of Cold Content and Climate Variability in Post-Fire Snowpack Changes with SUMMA. Western Snow Conference (oral).
55. **Marshall, A.M.**, Abatzoglou, J.T., Rhoades, A., Koshkin, A.\*\* (May 2025). High-resolution mountain topography can inform global snow vulnerability estimates. Western Snow Conference. (oral).
54. Upadhyay, S.\*, **Marshall, A.M.**, Broman, D., Voisin, N. (May 2025). Are Western US Reservoirs at Risk of Minimum Power Pool Events in Warmer Climates? EWRI Congress. (oral).
53. Yeo, A.\*, **Marshall, A.M.**, Anderson, E.J., Nychka, D. (January 2025). Characterizing Precipitation Correlation Distance (PCD) in the Contiguous United States. 105th AMS Annual Meeting. (oral).
52. Koshkin, A.\*, **Marshall, A.M.** (December 2024). Do wildfires impact on snow hydrology vary throughout the winter season? A high-resolution analysis of spatial and temporal variability of post-fire impacts on snowpack evolution. AGU Annual Meeting. (oral).
51. North, L.\*, **Marshall, A.M.**, Davis, L., Tootle, G. (December 2024). How Does Observation Uncertainty Affect Hydrologic Model Parameter Selection? A Case Study in the Upper Colorado River Basin. AGU Annual Meeting (e-Lightning presentation).
50. Koshkin, A.\*\*, **Marshall, A.M.**, Rittger, K. (December 2024). Impact of current and future climate conditions on snow cover loss in burned forests. AGU Annual Meeting (oral).
49. **Marshall, A.M.**, Smith, S. (December 2024). Narrowing Streamflow Distribution Can Alter Water Rights Allocation Timing and Equity. AGU Annual Meeting (poster).
48. Lucash, M., Abreu-Vigil, G., Weiss, S., **Marshall, A. M.**, Nicolsky, D., Lamping, J., Rancher, W. (December 2024). Climate Change Doesn't Bode Well for Boreal Alaska Given Projected Increases in Area Burned, Rate of Reburning, Dominance by Deciduous Species, and Permafrost Thaw. AGU Annual Meeting (oral).
47. Upadhyay, S.\*\*, **Marshall, A.M.**, Voisin, N., Broman, D. (December 2024). Evaluating Risk of Minimum Power Pool Events for Western US Reservoirs in Warmer Climates. AGU Annual Meeting (oral).
46. Gegen, A.\*, **Marshall, A.M.** (December 2024). Analyzing the Effects of Climate Change and Model Parameter Choice on Hydropower Vulnerability Projections. AGU Annual Meeting (oral).
45. **Marshall, A.M.** How does changing water availability affect our ability to decarbonize the energy system? (November 2024). University of Idaho Idaho Water Resources Research Initiative Seminar series.
44. North, L.\*, **Marshall, A.M.**, Davis, L., Tootle, G. (October 2024). How Does Observation Uncertainty Affect Hydrologic Model Parameter Selection? A Case Study in the Upper Colorado River Basin. CIROH Science Meeting (poster).
43. North, L.\*, **Marshall, A.M.**, Davis, L., Tootle, G. (September 2024). How does observation uncertainty affect parameter selection in hydrologic models? A case study in the Upper Colorado River Basin. MtnClim Conference (poster).
42. Bazlen, K.\*, **Marshall, A.M.**, Smith, S. (September 2024). Evaluating the relationship between snow and streamflow distribution width in the western United States. MtnClim Conference (poster).

41. **Marshall, A.M.**, Abatzoglou, J.T., Koshkin, A. L.\* (September 2024). Are mountains triangles? Using high-resolution mountain topography to inform global snow loss estimates. MtnClim Conference (poster).
40. Koshkin, A.\*, **Marshall, A.M.**, Rittger, K. (April 2024). Impacts of Wildfires on Snow Disappearance Date Across the Western United States. Western Snow Conference. (oral presentation).
39. **Marshall, A.M.**, Abatzoglou, J.T., Rahimi, S., Lettenmaier, D., Hall, A. (April 2024). Californias 2023 snow deluge: contextualizing an extreme snow year against future climate change. Western Snow Conference. (oral presentation).
38. W. Rudisill, **Marshall, A.M.**, Koshkin, A.\*\*\*, Feldman, D., Rahimi, S. (April 2024). The future of hoar frost: Observations from the SAIL field campaign. Western Snow Conference. (oral presentation).
37. †**Marshall, A. M.** (March 2024). Climate change, snow, and ecohydrology: How does changing snow affect the critical zone? Leveraging and Expanding Critical Zone Science Series.
36. Link, T. E., K. M. Strickfaden, D. E. Ausband, **A.M. Marshall**, and L.K. Svancara. (March 2024). Expanding the Use of Remote Cameras for Microclimate Monitoring: Novel Approaches for Snow Depth and Air Temperature Estimations. Idaho Chapter of The Wildlife Society Annual Conference.
35. Strickfaden, K.M, A.M. Marshall, L.K. Svancara, D.E. Ausband, and T.E. Link. (February 2024). Assessing the accuracy of temperature measurements from Reconyx cameras. Montana Chapter of The Wildlife Society Annual Conference.
34. A. Koshkin\*, **Marshall, A.M.**, Rittger, K. (December 2023). Quantifying Large-scale Changes in Snow Disappearance Date After Wildfires Across Western U.S. AGU Fall Meeting.
33. A. Yeo\*, **Marshall, A.M.**, Anderson, E.J., Nychka, D. Wood, A. (December 2023). Precipitation Gauge Correlation: How does spatial variability of precipitation vary interannually in the contiguous United States? AGU Fall Meeting.
32. G. Abreu-Vigil, Weiss, S., **Marshall, A.M.**, Nicolsky, D., Lucash, M.S. (December 2023). Spatial Modeling of Permafrost Thaw, Hydrologic Trajectories and Vegetation Shifts under Wildfire and Climate Change in Interior Alaska’s Boreal Forest. AGU Fall Meeting.
31. †**A.M. Marshall**, Abatzoglou, J.T., Rahimi, S. (December 2023). The Snow Deluge of 2023: Contextualizing a Once-in-a-Lifetime Event Against Future Climate Change. AGU Fall Meeting.
30. W. Rudisill, **Marshall, A.M.**, Koshkin, A.\*, Feldman, D., Rahimi, S. (December 2023). Will hoar frost in the western United States be a relic of the past? AGU Fall Meeting.
29. G. Abreu-Vigil, Lucash, M.S., Weiss, S., **Marshall, A.M.**, Nicolsky, D.J. (August 2023). Vegetation shifts, permafrost thaw, and hydrologic dynamics in the boreal forests of Alaska under future climate and wildfire. Ecological Society of America (oral presentation)
28. M.S. Lucash, **Marshall, A.M.**, Buma, B., Vogel, J. Shabaga, J. Link, T.E., Hayes, K. Weiss, S. (August 2023) Impacts of increasing fire frequency and climate change on species composition and carbon dynamics in the boreal forests of Alaska. Ecological Society of America (oral presentation)
27. A. Koshkin\*, **A.M. Marshall**. (April 2023). Quantifying Large-scale Changes in Snow Disappearance Date After Wildfires Across Western U.S. Western Snow Conference (poster presentation)
26. †**Marshall, A. M.** (April 2023). Hydroclimate and a decarbonizing energy system in the western U.S.: opportunities and challenges for better understanding of hydropower. Institute for Arctic and Alpine Research Seminar.

25. You, J., **A.M. Marshall**, E. Grubert (December 2022). Introducing a Typology for U.S.-based Hydroelectric Dams. AGU Fall Meeting (poster presentation).
24. †**Marshall, A.M.** (September 2022). Mountain climate and a decarbonizing energy system: opportunities and challenges for hydropower. MtnClim Conference (Machida lecture).
23. †**Marshall, A.M.** (April 2022). Hydropower in the U.S.: Complexities of a decarbonizing grid, changing climate, and non-energy constraints. Arizona State University Hydrosystems Engineering Seminar Series.
22. **Marshall, A.M.** and Lute, A.C. (April 2022) Is snow intermittence increasing or decreasing? Competing effects of warming. Western Snow Conference (oral presentation).
21. †**Marshall, A.M.** (April 2022). From mountains to deserts: changing snow and flood intensity and intermittence. Women Advancing River Research.
20. **Marshall, A.M.**, Grubert E. (Dec 2021). Hydroelectricity modeling for low- and no-carbon grids: empirical constraints for optimization and dispatch models. AGU Fall Meeting (oral presentation)
19. †**Marshall, A.M.** (Nov 2021). Hydrologic modeling in discontinuous boreal permafrost: Model sensitivity and uncertainty in non-stationary climates. Colorado School of Mines van Tuyl Departmental seminar.
18. †**Marshall, A.M.** (Nov 2021). Hydropower in the U.S.: Complexities of a decarbonizing grid, changing climate, and non-energy constraints. Colorado School of Mines Environmental Engineering seminar.
17. **Marshall, A.M.**, M. Foard, C. Cooper, P.E. Edwards, M. Russell, S. L. Hirsch, T.E. Link. (April 2021) Climate change literature and information gaps in mountainous headwaters of the Columbia River Basin. Northwest Climate Conference. (oral presentation).
16. †**Marshall, A.M.** (April 2021) Boreal permafrost hydrology: Model sensitivity and uncertainty in non-stationary climates and multiple forest types. University of Idaho Soil and Water Systems Seminar (oral presentation).
15. Strickfaden, K., **A.M. Marshall**, L. Svancara, D. Ausband, T.E. Link (February 2021). The virtual measurement stake: An R package allowing for snow depth measurements at remote camera stations. Idaho Chapter of the Wildlife Society (oral presentation).
14. **Marshall, A.M.**, T.E. Link, G.N. Flerchinger, M.S. Lucash (December 2020). Ecohydrologic modeling in a boreal deciduous forest: model evaluation for application in non-stationary climates. AGU Fall Meeting (poster presentation).
13. †**Marshall, A.M.**, T.E. Link, A. Robinson, J.T. Abatzoglou (December 2019). Higher snowfall intensity reduces warming impacts on winter snow ablation: an update to an OSPA-winning presentation. AGU Fall Meeting (eLightning presentation).
12. **Marshall, A.M.**, T.E. Link, M.S. Lucash (December 2019). Energy and water balances in boreal forest with discontinuous permafrost: Implementation of a physically-based hydrological model at sites with varying disturbance histories. AGU Fall Meeting (poster presentation).
11. †**Marshall, A.M.**, T.E. Link, J.T. Abatzoglou, C. J. Tennant (December 2018). Climate-driven changes in interannual variability of snowpack amount and timing: interactive data visualizations for understanding complex patterns. AGU Fall Meeting (eLightning presentation).
10. **Marshall, A.M.**, T.E. Link, A. Robinson, J.T. Abatzoglou (December 2018). Higher Snowfall Intensity Reduces Warming Impacts on Mid-Winter Snow Ablation and Accumulation. AGU Fall Meeting (oral presentation). *Outstanding Student Presentation Award.*

9. **Marshall, A.M.**, J. Duffin, T.E. Link (December 2018). Interdisciplinary Graduate Education in Water Resources: Successes and Challenges and a Case Study Research Project from an IGERT Program. AGU Fall Meeting (poster presentation).
8. †**Marshall, A.M.**, J.T. Abatzoglou, T.E. Link, C. Tennant (October 2018). Climate-driven changes in interannual variability of snowpack amount and timing vary spatially and depend on snow-to-rain transition. MtnClim Conference (oral presentation).
7. **Marshall, A.M.**, T.E. Link, M.S. Lucash (June 2018). The simultaneous heat and water model: a physically-based hydrologic model for integration with LANDIS-II. 2018 Landis Conference and Training (oral presentation).
6. **Marshall, A.M.**, Link, T.E. (presenting author), Abatzoglou, J., Flerchinger, G., Marks, D., Tedrow, L. (February 2018). Warming increases spatial hydrological homogeneity: Sensitivity of fluxes in a catchment dominated by wind redistribution of snow. SnowHydro Conference (oral presentation).
5. Cooper, C., Edwards, P. Foard, M. Hirsch, S., Hovanceck, D., Link, T., **Marshall, A.M.**, Russell, M., Witinok-Huber, R. (October 2017). Climate change research in the mountainous headwater regions of the Columbia River Basin. Pacific Northwest Climate Conference (poster).
4. **Marshall, A.M.**, Link, T.E., Tedrow, L., and Flerchinger, G. (April 2017). Sensitivity of snow and hydrological dynamics to climate in a catchment characterized by wind-driven redistribution of snow. Western Snow Conference (oral presentation).
3. **Marshall, A.M.**, V. Butsic, J. Harte. (November 2016). The phenology of wilderness use: back-country recreation in a changing climate. MtnClim Conference (oral presentation).
2. Kerr, A.C., K.L. Steenwerth, P. Stine, J. Chambers, C. Fischer, L. Kiger, T. Hedt, O. Gonzales, R. Tse, A. Tse, A. Gunasekara, R. Henly, J.R. DeLaRosa, M. Battany, T. Pathak, D. Parker, M. Schwartz, R. Tjeerdema, J. Kalansky, E. Kehmeier, A. Xides, **A.M. Marshall**, K. Jagannathan. (December 2015). Providing farmers, ranchers, and foresters in California with actionable climate information: opportunities and obstacles for California's USDA Regional Climate Sub Hub. American Geophysical Union Fall Meeting, San Francisco, CA (poster).
1. **Marshall, A.**, S. Kocher, A.C. Kerr, and P.A. Stine (October and November 2015). Climate change in California forests: updating the Forest Stewardship Series with impacts, adaptation, and mitigation strategies. University of California Agriculture and Natural Resources Strategic Initiatives Conference, Sacramento, CA and the Southwest Climate Summit, Sacramento, CA (poster).

*Declined speaking invitations:* International Union of Geodesy and Geophysics General Assembly (2023); Lower Snake River Management Forum (2023)

## GRANTS AWARDED

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2025. Enrique Triana, **Adrienne Marshall (co-PI)**. Implementing River and Reservoir Operations in the NextGen Framework to Improve Streamflow Prediction. NOAA via CIROH. \$800,000 (Marshall: \$200,000).

2025. Gabe Walton, **Adrienne Marshall (co-PI)**. Assessing the Impacts of Evolving Rockfall Hazard Due to Hypothetical Variations in Weather Patterns on Colorado's Transportation Network. Colorado Department of Transportation.

2023. Glenn Tootle, Lisa Davis, **Adrienne Marshall (co-PI)**. Evaluating model selection impacts on forecast uncertainty in the Upper Colorado River Basin: Implications for USGS modeling and monitoring. USGS via CIROH. \$243,190 (Marshall: \$166,052)

2023. **Adrienne Marshall (PI)**, Jordan Kern, Adrienne Kroepsch. Reservoir Dead Pool in California: Understanding sensitivities, consequences, and potential for risk mitigation. Alfred P. Sloan Foundation. \$250,000.

2023. **Adrienne Marshall (PI)**, Jordan Kern, Adrienne Kroepsch, Sean Turner. Reservoir dead pool in the western US: Probability and consequences of a novel extreme event. National Science Foundation. \$750,000.

2021. Emily Grubert; **subaward to Adrienne Marshall**. Hydroelectricity for low- and no-carbon grids. Carnegie Institution for Science. Subaward to Marshall: \$124,828

2019. Timothy Link, David Ausband, **Adrienne Marshall (co-PI)**, and Leona Svancara. Estimating the spatial and temporal extent of snowpack properties in complex terrain: leveraging novel data to adapt wildlife and habitat management practices to climate change. USGS Northwest Climate Adaptation Science Center, \$253,294.

## TEACHING

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2024. **Climate Change and Water**, Colorado School of Mines. Graduate course.

2023-present. **Geological Fluid Mechanics**, Colorado School of Mines. Undergraduate course.

2021-present. **Integrated Surface Water Hydrology**, Colorado School of Mines. Graduate course.

2020. **Data Wizardry for Interdisciplinary Environmental Sciences**, University of Idaho. *Instructor of Record*. Graduate course.

2016. **Quantitative Aspects of Global Environmental Problems**, UC Berkeley. *Graduate Student Instructor*. Upper division undergraduate/graduate course.

2014. **Ecology and Society**, UC Berkeley. *Graduate Student Instructor*. Upper division undergraduate course.

## SERVICE

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### Graduate students advised:

Rachel Corrigan (PhD, 2025-)

Christy Hutchins (MS, 2025-)

Sushma Kadel (co-advised) (MS, 2025-)

Surabhi Updahyay (PhD, 2023-)

Arielle Koshkin (PhD, 2022-2025)

Lauren North (MS, 2024-2025)

Anna Gegen (MS, 2023-2025)

Kyla Baxlen (MS, 2023-2025)

Alexa Yeo (co-advised with Eric Anderson; MS, 2022-2024)

Brian Pfaff (MS, 2021-2023)

### Committee member to:

*Current:*

Colin Fenster (MS, 2025-), AMS, Daniel McKenzie  
Ziyu Li (PhD, 2025-), AMS, Daniel McKenzie  
Jason Drebber (PhD, 2024-), GGE, Ryan Venturelli  
Marianna Marquadt (PhD, 2025-), GPH, Matt Seigfried  
Antony Sikorski (PhD, 2024-), AMS, Daniel McKenzie  
Alexa Yeo (PhD, 2024-), HSE, Eric Anderson  
Kaitlyn Pereira (PhD, 2023-), HSE, Eric Anderson  
Josh Sturteyvant (PhD, 2023-), HSE, Andy Wood  
Khaled Sabbagh (PhD, 2022-), HSE, John McCray  
Wilson Sauthoff (PhD, 2021-), HSE, Matt Siegfried

*Completed:*

Ryan Harmon (PhD, 2016-2025), HSE, Kamini Singha  
Carly Bonwell (MS, 2023-2025), HSE, Terri Hogue  
Cooper Moon (MS, 2023-2025), HSE, Terri Hogue  
Sweta Rai (PhD, 2021-), AMS, Doug Nychka and Soutir Bandyopadhyay  
Ethan Ritchie (MS, 2024-2025), HSE, Andy Wood  
Brooke Tillotson (PhD, 2023-2025), HSE, Eric Anderson  
Jacob Slawson (PhD, 2021-2025), GGE, Piret Plink-Bjorklund  
Hayden Jacobsen (PhD, 2022-2024), GGE, Gabe Walton  
Ian Gambill (MS, 2021-2023), HSE, Kamini Singha and Alexis Navarre-Sitchler  
Jonathan Quiroz (MS, 2021-2023), HSE, John McCray  
Cole (Haden) Smith (MS, 2021-2022), Mineral and Energy Economics, Ben Gilbert

**Media Interviews and Publications:**

Newsweek, Associated Press, NPR Marketplace, Colorado Sun, Mines Magazine, E&E News, Scientific American, Popular Science, National Geographic, The Conversation, LAist, Boise State Public Radio, Utah Public Radio, Idaho Statesman, 610 KONA, Lake County News, The Climate CIRCulator, Kitsap Sun, The Inertia, PreventionWeb, Skagit Valley Herald, Missoulian, Idaho State Journal, Mountain West News, Wallowa County Chieftain, Climate Central

**Journal Reviewer:**

*Science Advances; Nature Sustainability; Nature Communications Earth and Environment; Geophysical Research Letters; Water Resources Research; Journal of Geophysical Research: Atmospheres; Weather, Climate, and Society; Hydrologic Processes; Environmental Modelling and Software; Natural Hazards and Earth System Science (NHES); Journal of Hydrometeorology; HESS; Hydrological Sciences; Climate Dynamics; NPJ Climate and Atmospheric Science; Journal of Hydrology; The Cryosphere; Journal of Geophysical Research: Earth Surface.*

**Proposal Reviewer:**

National Science Foundation Hydrologic Sciences Program (panelist and ad-hoc); National Renewable

Energy Laboratory H2O<sub>2</sub> Competition; Swiss National Science Foundation (ad-hoc); NSF EAR Post-doctoral Fellowship (ad-hoc); NASA Terrestrial Hydrology Program (panelist); AGU Horton Research Fellowship Committee

#### **External Conferences and Committees:**

- United Nations Environment Programme (UNEP) Scientific Advisory Board Member for UNEP Overshoot Report (2025-2026)
- Western Snow Conference Executive Committee Member (2025-)
- NCAR Climate Data Guide Board Member (2024-)
- AGU Horton Awards Committee Member (2024-)
- MtnClim Conference Co-Convener (2023-)
- Lead organizer of womens lunch at Western Snow Conference (2023-2024)
- MtnClim Conference Steering Committee (2022)
- AGU Fall Meeting session chair: Climate and snow: past, present, and future (2024-2025)
- AGU Fall Meeting session chair: Frozen ground hydrology: Moving towards a process-based understanding (2022)
- NREL Hydropower Operations Optimization Prize Reviewer (2022). Moderator for Cryolist (professional listserv for cryospheric scientists) (2023-)
- Panelist at DOE Workshop: Understanding and Predictability of Integrated Mountain Hydroclimate (2021)

#### **University and Department Committees:**

- Earth 2.0 Research Committee (2026-)
- HSE Associate Director (2025-)
- University Grievance Committee (2025-)
- GGE Recruiting and Community Building Committee Chair (2025-)
- HSE Graduate Council Representative (2023-2025)
- GGE Undergraduate Curriculum Committee (2023-2024)
- GGE Search Committees (4; intermittent)
- GGE Diversity, Inclusion, and Access Committee (2021-2025)

#### **Outreach Presentations and workshops:**

- Snow in Yosemite (2025). NatureBridge Staff Training.
- Interactive visualization of critical zone data: The Shiny R package. (2022). *Expanding the Critical Zone Research Network Workshop*. Golden, CO.
- Climate change and snow in the western U.S.: Impacts of changing interannual variability and snowfall intensity. (2020) *Pacific Northwest Drought Early Warning System Webinar*.
- Climate Change Impacts on Snow in the Western U.S.: Implications for the Palouse. (2019) *Palouse Basin Water Summit*. Pullman, WA.

- Fun and Efficient Data Wrangling with R: An Introduction to the Tidyverse. University of Idaho Library Workshop Series. (2018). [https://github.com/adrienne-marshall/tidyverse\\_workshop](https://github.com/adrienne-marshall/tidyverse_workshop).
- Beautiful graphics with ggplot2. University of Idaho Library Workshop Series. (2017). [https://adrienne-marshall.github.io/ggplot2\\_workshop/](https://adrienne-marshall.github.io/ggplot2_workshop/).
- Climate change impacts, adaptation, and mitigation in the Marin Headlands. (2016). Nature-Bridge Staff Training.
- Climate change impacts, adaptation, and mitigation in Yosemite. (2015). NatureBridge Staff Training.

## HONORS AND AWARDS

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- Colorado School of Mines Hydrologic Science and Engineering Outstanding Faculty Award (2025)
- Colorado School of Mines Earth and Society Programs Outstanding Assistant Professor (2024)
- Western Snow Conference Best Oral Presentation Award (2024)
- Water Resources Research Outstanding Reviewer Award (2022)
- University of Idaho Water Resources Student of the Year Award (2018)
- American Geophysical Union Outstanding Student Presentation Award (2018)

### Student Awards and Honors:

- HSE PhD Student Award to Arielle Koshkin (2025)
- HSE MS-Thesis Student Award to Lauren North (2025)
- Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI) Pathfinder Fellowship to Surabhi Upadhyay (\$5000) (2025)
- American Water Resources Association Rich Herbert Memorial Scholarship to Arielle Koshkin (\$2000) (2025)
- GGE Student Research Fair Pre-Candidacy PhD Award to Surabhi Upadhyay (2025)
- Haiku your Research AGU Award to Surabhi Upadhyay (2024)
- Society of Women Engineers lightning talk award (3rd place) to Alexa Yeo (2024)
- HSE MS Student Award to Alexa Yeo (2024)
- ARCS Scholarship to Arielle Koshkin (\$7500) (2023)