Ryan W. Webb
Assistant Professor
Civil & Architectural Engineering &
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EDUCATION

Ph.D. 2016	**Colorado State University, Fort Collins, CO** Civil & Environmental Engineering - Hydrologic Science & Engineering Dissertation: *Fate of Snowmelt in Complex Subalpine Terrain,* Advisors: Michael Gooseff & Steven Fassnacht
M.S. 2012	**University of New Mexico, Albuquerque, NM** Civil Engineering – Hydrology & Water Resources Thesis: *Characterizing & Modeling the Impact of Coal Combustion By-products in Landfills,* Advisor: John Stormont
B.S. 2010	**University of New Mexico, Albuquerque, NM** Construction Engineering *Fundamentals of Engineering Exam passed*: October 2010

ACADEMIC APPOINTMENTS

2022 - present	**Assistant Professor:** University of Wyoming, Civil & Architectural Engineering & Construction Management
2018 - present	**Research Affiliate:** University of New Mexico, Civil, Construction, & Environmental Engineering
2018 - present	**Research Affiliate:** University of Colorado Boulder, Institute of Arctic and Alpine Research
2018 – 2021	**Research Assistant Professor:** University of New Mexico, Civil, Construction, & Environmental Engineering
2016 - 2018	**NSF Postdoctoral Fellow:** University of Colorado-Boulder, Institute of Arctic and Alpine Research
2015	**Exchange Fellow:** Tsinghua University, Beijing, China, Hydroscience and Engineering.
2012 - 2016	**Research Assistant & Teaching Assistant:** Colorado State University, Civil & Environmental Engineering
2011 - 2012	**Research Assistant:** University of New Mexico, Civil & Environmental Engineering
2009 - 2010	**Lab Technician:** University of New Mexico, Pavement & Geotechnical Lab

TEACHING EXPERIENCE

At UW	ES 2330 - Fluid Dynamics (Fall 2022, 2023)
	CE 5700 – SnowEx Hackweek Seminar (Fall 2022)
	CE 4650/5650 – Hydrology Field Methods (2023 – present)
	CE 3300 – Hydraulic Engineering (Spring 2024)
At UNM	Water Resources Field Problems (2020, 2021)
	Fluid Mechanics Laboratory (Spring 2020)
At CSU	Mechanics of Solids (Summer 2015)
	Fluid Mechanics Laboratory (Fall 2012, Spring 2013)
2011 - 2016	**Teaching Assistant:** Snow Hydrology, Watershed Problem Analysis, Watershed Measurements, Fluid Mechanics, Soil Mechanics, Dynamics, GIS for Water Resources.
2012 - 2015	**Private Tutor:** Fluid Mechanics, Soil Mechanics, Statics, Dynamics

INDUSTRY EXPERIENCE

2015 - 2016	**Private Consultant:** Testing iTOUGH2 special use code modifications
2013 - 2014	**Staff Civil Engineer**: Smith Geotechnical Engineering, Fort Collins, CO
2012	**Engineering Intern**: Daniel B. Stephens and Associates, Albuquerque, NM
2010	**Engineering Intern**: Bradbury Stamm Construction, Albuquerque, NM

COMMUNITY ENGAGEMENT

2023	**Interviewed For**: Casper Star Tribune Article – Storm pads snowpack, adds short-term challenges and potential long-term benefits
2022	**Interviewed On:** Environmental Finance Center Network Podcast - Climate Resiliency: The Challenges of a Future with Less Snow
2017	**Interviewed For:** Denver Post Article - Late March Snow Reversed Early-Season Melt and Rescued Colorado Snowpack

AWARDS & RECOGNITIONS **(Since Receiving PhD in 2016)**

2024	**University of Wyoming:** Harris Early Career Faculty Fellowship
2023	**University of Wyoming**: Presidential Scholarly Achievement Award: Early Career Faculty
2022	**Western Snow Conference:** Best Oral Presentation
2018	**Western Snow Conference:** Best Oral Presentation

PUBLICATIONS

Peer-Reviewed Journal Articles *(* indicates student led publication)*

24. López-Moreno, JI; N Callow, H McGowan, **R.W. Webb**, A Schwartz, S Bilish, J Revuelto, S Gascoin, C Deschamps-Berger, E Alonso-González, 2024. Marginal Snowpacks: The Basis for a Global Definition and Existing Research Needs. Earth Science Reviews 252:104751. https://doi.org/10.1016/j.earscirev.2024.104751

*23. Schlumpf, M., J. Hendrikx, J. Stormont, and **R.W. Webb**, 2024. Quantifying short-term changes in snow strength due to increasing liquid water content above hydraulic barriers. Cold Regions Science and Technology 218. https://doi.org/10.1016/j.coldregions.2023.104056.

22. **Webb, R.W.**, M.E. Litvak, and P.D. Brooks, 2023. The role of terrain-mediated hydroclimate in vegetation recovery after wildfire. Environmental Research Letters 18:6. doi: 10.1088/1748-9326/acd803.

21. Tarricone, J., **R.W. Webb**, HP Marshall, A.W. Nolin, and F.J. Meyer, 2023. Estimating snow accumulation and ablation with L-band interferometric synthetic aperture radar (InSAR). Cryosphere 17:5 (1997-2019). doi: https://doi.org/10.5194/tc-17-1997-2023.

20. McGrath D., R. Bonnell, L. Zeller, A. Olsen-Mikitowicz, E. Bump, **R.W. Webb**, and H.P. Marshall, 2022. A Time Series of Snow Density and Snow Water Equivalent Observations Derived From the Integration of GPR and UAV SfM Observations. Front. Remote Sens. 3:886747. doi: 10.3389/frsen.2022.886747.

19. **Webb, R.W.**, K. Musselman, S. Ciafone, K. Hale, and N. Molotch, 2022. Extending the vadose zone: Characterizing the role of snow for liquid water storage and transmission in streamflow generation. *Hydrological Processes*. 36(3), e14541. https://doi.org/10.1002/hyp.14541.

18. Fassnacht, S.R., C. Duncan, A. Pfohl, **R.W. Webb**, J. Derry, D. Reimanis, W. Sanford, 2022. Drivers of Dust-Enhanced Snowpack Melt-out and Streamflow Timing. *Hydrology*. 9, no. 3: 47. https://doi.org/10.3390/hydrology9030047.

17. Wrzesien, M.L.; S. Kumar, C. Vuyovich, E. D. Gutmann, R.S. Kim, B.A. Forman, M. Durand, M.S. Raleigh, **R.W. Webb**, and P. Houser, 2022. Development of a “nature run” for observing system

simulation experiments (OSSEs) for snow mission development. *Journal of Hydrometeorology*. doi: https://doi.org/10.1175/JHM-D-21-0071.1

16. **Webb, R.W.**; Marziliano, A.; McGrath, D.; Bonnell, R.; Meehan, T.G.; Vuyovich, C.; Marshall, H.-P. 2021. In Situ Determination of Dry and Wet Snow Permittivity: Improving Equations for Low Frequency Radar Applications. *Remote Sensing*. 13, 4617. https://doi.org/10.3390/rs13224617
15. Bonnell, R.; McGrath, D.; Williams, K.; **Webb, R.W.**; Fassnacht, S.R.; Marshall, H.-P. 2021. Spatiotemporal Variations in Liquid Water Content in a Seasonal Snowpack: Implications for Radar Remote Sensing. *Remote Sensing* 13, 4223, 2021. https://doi.org/10.3390/rs13214223.
14. **Webb, R.W.,** K. Jennings, S. Finsterle, and S. Fassnacht, 2021. Two-Dimensional Liquid Water Flow through Snow at the Plot Scale in Continental Snowpacks: Simulations and Field Data Comparisons. *The Cryosphere,* 15, 1423–1434. https://doi.org/10.5194/tc-15-1423-2021.
13. **Webb, R.W**., M. Raleigh, D. McGrath, N.P. Molotch, K. Elder, C. Hiemstra, L. Brucker, and H.P. Marshall, 2020. Within-Stand Boundary Effects of Snow Water Equivalent Distribution in Forested Areas. *Water Resources Research*. doi: 10.1029/2019WR024905.
12. **Webb, R.W.,** O. Wigmore**,** K. Jennings, M. Fend, and N.P. Molotch, 2020. Hydrologic Connectivity at the Hillslope Scale through Intra-Snowpack Flow Paths during Snowmelt. *Hydrological Processes.* doi: 10.1002/hyp.13686.
11. McGrath, D., **R.W. Webb**, D. Shean, R. Bonnell, H.P. Marshall, T. Painter, N. Molotch, K. Elder, C. Hiemstra, and L. Brucker, 2019. Spatially Extensive Ground-Penetrating Radar Snow Depth Observations during NASA's 2017 SnowEx Campaign: Comparison to in situ, airborne, and satellite observations. *Water Resources Research*. doi: 10.1029/2019WR024907.
10. **Webb, R.W.**, K. Jennings, M. Fend, and N.P. Molotch, 2018. Combining Ground Penetrating Radar with Terrestrial LiDAR Scanning to Estimate the Spatial Distribution of Liquid Water Content in Seasonal Snowpacks. *Water Resources Research.* doi: 10.1029/2018WR022680.
9. Fassnacht, S.R, **R.W. Webb**, M. Ma, 2018. Uncertainty in Water Resources: Introduction to the Special Column. Editorial in *Frontiers of Earth Science*, 12(4), 649-652, doi: 10.1007/s11707-018-0737-5.
8. **Webb, R.W**., M.N Gooseff, S.R. Fassnacht, and S.W. Webb, 2018. The Presence of Hydraulic Barriers in Layered Snowpacks: TOUGH2 Simulations and Diversion Length Estimates. *Transport in Porous Media*, 123:457-476, doi: 10.1007/s11242-018-1079-1.
7. **Webb, R.W.**, M.W. Williams, and T.A. Erickson, 2018. The Spatial and Temporal Variability of Meltwater Flowpaths: Insights from a Grid of over 100 Snow Lysimeters. *Water Resources Research*, doi: 10.1002/2017WR020866.
6. **Webb, R.W.**, S.R. Fassnacht, and M.N. Gooseff, 2018. Hydrologic Flow Path Development Varies by Aspect during Spring Snowmelt in Complex Subalpine Terrain. *The Cryosphere*, 12, 287-300, doi: 10.5194/tc-12-287-2018.
5. Fassnacht, S.R., **R.W. Webb**, and W.E. Sanford, 2017. Headwater regions–physical, ecological, and social approaches to understanding these areas: introduction to the special issue. Editorial in *Frontiers of Earth Science*. doi: 10.1007/s11707-017-0667-7.
4. **Webb, R.W.,** M.N. Gooseff, and S.R. Fassnacht, 2017. Defining the Diurnal Pattern of Snowmelt using a Beta Distribution Function. *Journal of the American Water Resources Association*. 53(3):684-696, doi: 10.1111/1752-1688.12522.
3. **Webb, R.W.,** 2017. Using Ground Penetrating Radar to Assess the Variability of Snow Water Equivalent and Melt in a Mixed Canopy Forest, Northern Colorado. *Frontiers of Earth Science*. doi: 10.1007/s11707-017-0645-0.
2. **Webb, R.W**., S.R. Fassnacht, and M.N. Gooseff, 2015. Wetting and Drying Variability of the Shallow Subsurface beneath a Snowpack in California's Southern Sierra Nevada. *Vadose Zone Journal*. 14(8), doi: 10.2136/vzj2014.12.0182.
1. **Webb, R.W.,** J. Stormont, B. Thomson, and M. Stone, 2014. Characterizing the Saturated and Unsaturated Properties of Coal Combustion By-Products (CCBs) in Landfills. *Jour. American Soc. of Mining and Reclamation.* 3(1), p. 70-99.

Published Datasets

11. **Webb, R.W.** 2021. *SnowEx20 Grand Mesa IOP UNM 800 and 1600 MHz MALA GPR, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. doi: https://doi.org/10.5067/WE9GI1GVMQF6.
10. **Webb, R.W.** 2021. *SnowEx20 Jemez UNM 800 MHz MALA GPR, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. doi: https://doi.org/10.5067/H38Q5FTBPZ8K.
9. Marziliano, A., and **R.W. Webb,** 2020. Sandia Mountains 10K Site, HydroShare, http://www.hydroshare.org/resource/f9c65581416b4021a860d648688d5d54
8. **Webb, R.W**, D. McGrath, K. Hale, and N. P. Molotch. 2019. SnowEx17 Ground Penetrating Radar, Version 2. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. doi: https://doi.org/10.5067/G21LGCNLFSC5.
7. **Webb R.W.**, K.S. Jennings, M. Fend, and N.P. Molotch, 2018. Data from: Combining ground-penetrating radar with terrestrial LiDAR scanning to estimate the spatial distribution of liquid water content in seasonal snowpacks. Dryad Digital Repository. https://doi.org/10.5061/dryad.hn626p7.
6. **Webb, R.W**., et al., 2017. UNAVCO Project U-060 – Snowpack Water Flow. UNAVCO Data Archive. https://tls.unavco.org/projects/U-060/.
5. Williams, M. and **R.W. Webb**, 2017. Snowmelt lysimeter data for Soddie site from 1998-4-1 to 2003-7-15, daily during snowmelt. http://niwot.colorado.edu
4. Williams, M. and **R.W. Webb**, 2017. Snowmelt lysimeter coordinate data for Soddie site from 1998-4-1 to 2003-7-15, yearly. http://niwot.colorado.edu
3. **Webb, R.W.** and S.R. Fassnacht, 2016. Snow density, snow depth, and soil moisture at Dry Lake study site in northern Colorado, 2013. *Colorado State University*. doi: 10.1594/PANGAEA.864253
2. **Webb, R.W.** and S.R. Fassnacht, 2016. Snow density, snow depth, and soil moisture at Dry Lake study site in northern Colorado, 2014. *Colorado State University*. doi: 10.1594/PANGAEA.864254
1. **Webb, R.W.** and S.R. Fassnacht, 2016. Snow density, snow depth, and soil moisture at Dry Lake study site in northern Colorado, 2015. *Colorado State University*. doi: 10.1594/PANGAEA.864255

Other Publications

10. Meehan, T**.,** H.P. Marshall, E. Deeb, D. McGrath, and **R. Webb**, 2020. Automatic detection of the ground through snow cover using multi-polarization coherency, *SEG Global Meeting Abstracts*: 85-88.https://doi.org/10.1190/gpr2020-023.1.
11. **Webb, R.W.**, K. Musselman, K. Hale, and N. Molotch, 2020. Monitoring a snowpack's ability to store liquid water at the small catchment scale. *SEG Global Meeting Abstracts*: 101-104. https://doi.org/10.1190/gpr2020-027.1.
10. **Webb, R.W.**, K. Jennings, and S. Finsterle, 2018. Watching the Snow Melt: Using New TOUGH2 Enhancements to Simulate Water Flow through Snow. Proceedings of TOUGH Symposium 2018, Lawrence Berkeley National Laboratory, Berkeley, California, October 8-10, 2018.
9. L. Brucker et al., 2018. Nasa Snowex'17 in situ Measurements and Ground-Based Remote Sensing. IGARSS 2018 - 2018 IEEE International Geoscience and Remote Sensing Symposium, Valencia, 2018, pp. 6266-6268. doi: 10.1109/IGARSS.2018.8517777.
8. **Webb, R.W**., N.P. Molotch, M. Fend, 2018. Combining GPR with Terrestrial LiDAR to Observe the Spatial Distribution of Liquid Water Content in Seasonal Snowpacks. Proceedings of the 86th Annual Western Snow Conference, Albuquerque, New Mexico, April 16-19, 2018.
7. L. Brucker et al., 2017. A first overview of SnowEx ground-based remote sensing activities during the winter 2016–2017. 2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Fort Worth, TX, 2017, pp. 1391-1394. doi: 10.1109/IGARSS.2017.8127223.
6. **Webb, R.W.** and S. Webb, 2015. Simulating water flow through a layered snowpack. Proceedings of TOUGH Symposium 2015, Lawrence Berkeley National Laboratory, Berkeley, California, September 28-30, 2015.
5. **Webb, R.W**., M. Sharp, B. Von Thaden, 2015. Potential Impacts of Hydrologic Changes on Nutrient Loads in the South Platte River Basin. *Proceedings of Hydrology Days 2015,* Colorado State University, Fort Collins, Colorado, April, 2015. 74-83.

4. Stednick, J. and **R.W. Webb**, 2014. Post-fire streamflow, soil erosion, and sediment detention structure performance on North Fork Douglas Creek, Waldo Canyon Fire. Final report submitted to Colorado Water Conservation Board, Department of Natural Resources, Denver, CO.
3. Stormont, J.C., B.M. Thomson, M.C. Stone, **R.W. Webb**, C. Parker, 2014. Investigation of Coal Combustion By-Products Disposal in a Semi-Arid Climate. *Proceedings of the Seventh International Congress on Environmental Geotechnics*, Melbourne, Australia, November, 2014. 934-943.
2. Parker, C., K. Hart, **R.W. Webb**, B. Thomson, J. Stormont, and M. Stone, 2013. Coal Combustion By-Products Disposal Practices at a Surface Coal Mine in New Mexico: Leachate and Groundwater Quality Study. *Proceedings of the 30th Annual Meeting of the American Society of Mining and Reclamation*. June 1-7, 2013. Laramie, WY.
1. Thomson, B, J. Stormont, M. Stone, **R.W. Webb**, C. Parker, K. Bramlett, 2012. Analysis of coal combustion by-products disposal practices at the San Juan Mine: Hydrology & water quality issues, final report to Energy, Minerals and Natural Resources Department, State of NM, Santa Fe, NM, 173 p.

STUDENTS SUPERVISED

Graduate Students

Preetika Kaur	**Current – Ph.D. Hydrology.** Feasibility of L-band radar for observing global snow water equivalent.
Nana Frimpong	**Current – M.S. Civil Engineering.** Laboratory experiments to understand post-wildfire processes on soil sealing for hydrologic fluxes in complex terrain.
Kori Mooney	**Current – M.S. Civil Engineering.** Spatio-temporal variability of snow dielectric properties in the context of remote sensing of water resources.
Jocelyn Gallais	**Current – M.S. Civil Engineering.** Effect of wildfire and forest thinning on the water balance in semi-arid headwaters.
Adrian Marzilliano	**Current – Ph.D. Civil Engineering (UNM).** Assessing new satellite technology for observing snow water resources in the Navajo Headwaters. **2020 - Master of Water Resources Program (UNM).** Measuring the variability of a moderate snowpack across a forest stand boundary in the Sandia Mountains.
Mikael Schlumpf	**2023 - M.S. Civil Engineering (UNM).** Effect of liquid water content on shear stress of snow layers in avalanche terrain.
Aljaz Praznik	**2019 – 2020 Lab Technician (UNM).** Construction of physical flood control model in Hydraulics Lab

Undergraduate Students

Nolan Gerdes	**2023 – McNair Fellow.** Evaluating the Recovery of Hydraulic Conductivity in Fire-Affected Soils.
Jacob Huerta	**2023 – Laboratory Assistant.** Laboratory Experiments to Understand Post-Wildfire Processes on Soil Sealing for Hydrologic Fluxes in Complex Terrain
Jared Hylander	**2023 – Summer Laboratory Assistant.** Laboratory Experiments to Understand Post-Wildfire Processes on Soil Sealing for Hydrologic Fluxes in Complex Terrain
Adan Martinez	**2019 - Summer Community College Opportunity for Research Experience (SCCORE program at UNM)**. Analysis of portable hydraulic conductivity methods
Kara Garcia	**2017 - Research Experience for Community College Students (RECCS program at CU Boulder).** Permeability of surface soils across an elevational gradient in the Colorado Front Range
Meghan Wilson	**2011 - Laboratory Assistant.** Laboratory testing of saturated hydraulic conductivity of ash samples.

FUNDED PROPOSALS (Total = $3,261,000; Webb portion total = $1,401,000)

BOR 2023- ongoing	**Co-PI, 346,000. Bureau of Reclamation Award.** Seasonal Snow Water Supply Forecast guided by the Climatic Oscillation using the Non-Gaussian Information Metrics for the Inland Basins. Lead PI: Noriaki Ohara
USGS SC CASC 2023 - ongoing	**Co-PI, $448,000. Climate Adaptation Science Center Award.** The role forest structure plays in regulating water availability and implications for natural resources and ecosystem function. Lead PI: Marcy Litvak.
BOR 2022 - ongoing	**Collaborator, $59,646 (amount to WY). Bureau of Reclamation Award.** Assessing the Utility of New Satellites to Advance State of the Art Snow Forecasting Capabilities. Collaborators: M. Stone, E. Kelly, D. Llewellyn.
NASA 2022 – ongoing	**PI, $474,725. NASA THP Award.** Evaluation of L-band InSAR using L-band GPR: Sensitivity to Liquid Water Content, Topography, and Land Cover to Determine Feasibility for Global SWE Applications. Co-PIs: D. McGrath, H.P. Marshall.
NSF 2022 – ongoing	**PI, $306,976. NSF Award #2136339.** Laboratory Experiments to Understand Post-Wildfire Processes on Soil Sealing for Hydrologic Fluxes in Complex Terrain. Co-PI: M. Stone
AMAFCA 2018-2021	**Co-PI: $145,000 annually. Albuquerque Metropolitan Arroyo and Flood Control Authority.** Open Channel Modeling of North Diversion Channel Outlet. Lead PI: M. Stone
NSF 2018 - 2021.	**PI, $290,000, NSF EAR Award #1824152.** Extending the Vadose Zone: Characterizing the role of Snow for Liquid Water Storage and Transmission in Streamflow Generation. Co-PIs: O. Wigmore, N. Molotch, and K. Musselman.
NASA 2017 - 2020	**Co-PI, $445,000, NASA THP Award #80NSSC18K0877.** Constraining Airborne and Satellite Algorithms for Estimating Snow Water Equivalent through Spatially Extensive Ground Penetrating Radar Observations during NASA's SnowEx Campaign. PI: D. McGrath, Co-I: H.P. Marshall.
NASA 2020 - 2021	**PI, $41,000. NASA Award # 80NSSC20K0921.** Developing an Improved Snowpack Liquid Water Content Algorithm.
NSF 2016 – 2018	**PI, $174,000, NSF EAR Award #1624853.** New Approaches to Address Scaling Issues for Lateral Flow of Water in a Layered Snowpack.

SYNERGISTIC ACTIVITIES

2024 - ongoing	**Wyoming Indian High School,** Outreach hydrology lessons and field trips
2023	**AGU Cryosphere Section,** Grant & Awards reviewer/panelist
2022 – ongoing	**AGU Hydrology Section,** Reviewer/Panelist for Horton Research Grant
2022 - 2023	**UW CAECM dept.,** Undergraduate Curriculum Committee
2022	**NASA,** THP SnowEx Leadership Group
2021 - ongoing	**UW,** Faculty Mentor for Engineers Without Borders Student Chapter
2021 - ongoing	**NASA,** Albedo Working Group, L-Band InSAR working Group
2020 - ongoing	**NASA,** Reviewer and Panelist (at least one panel per year)
2020 - ongoing	**NSF,** Reviewer and Panelist (at least one panel per year)
2019 – ongoing	**AGU Fall Meeting**: Organize Cryosphere Flash Freeze Student Competition
2017 - ongoing	**AGU Executive Committee Member**: Cryosphere Section
2016 - ongoing	**Reviewer:** Nature, Water Resources Research, Geophysics, The Cryosphere, Hydrology and Earth System Sciences, WIREs Water, Hydrological Processes, Hydrology, Journal of the American Water Resources Association, Frontiers of Earth Science, Sustainable Water Resources Management, Hydrology Research, Vadose Zone Journal, Journal of Mountain Science, Geophysical Research Letters
2016 - ongoing	**AGU Fall Meeting**: Session Convener/Chair, OSPA judge

2021	**Judge,** Central New Mexico STEM Research Challenge (Science Fair)
2021	**IPCC Expert Reviewer,** Second Order Draft for the *Intergovernmental Panel on Climate Change (IPCC) Working Group II, Sixth Assessment Report (AR6) Climate Change 2021: Impacts, Adaptation and Vulnerability*
2017 - 2021	**Early Career Representative**: AGU Cryosphere Section Executive Committee
2019	**Outreach:** High Schooler Night at Explora Children's Museum
2019	**Science Mentor:** Summer Community College Opportunity for Research Experience
2017 - 2019	**Science Mentor:** Research Experiences for Community College Students (RECCS)
2016 - 2017	**Science Research Mentor**: Boulder Valley School District
2016 – 2018	**Guest Associate Editor**: 2 special issues in Frontiers of Earth Science – Headwater Regions, Uncertainty in Hydrology
2016	**Program Chair:** Hydrology Days session, Fort Collins, CO.
2014 - 2016	**Judge**: Colorado Middle and High School Science and Engineering Fairs
2011 - 2012	**President**: Engineers Without Borders, UNM Student Chapter
2011	**Judge**: MESA Middle School Engineering Competition
2011	**Fundraising Chair**: Engineers Without Borders, UNM Student Chapter
2010	**Marshal**: Chi Epsilon, UNM Chapter
2009	**Volunteer**, National Society of Black Engineers conference at UNM

PRESENTATIONS

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, 2023. What physical mechanisms are driving changes in runoff for continental mountain forests? *AGU Fall Meeting 2023*. San Francisco, CA.

Gallais, J., **R.W. Webb**, and M. Litvak, 2023. Impacts of wildfire on the water balance in a snow dominated mixed conifer forest (Valles Caldera, NM). *AGU Fall Meeting 2023*. San Francisco, CA.

Marziliano, A., and **R.W. Webb**, 2023. Sentinel-1 Snow Depth Retrievals at the Catchment Scale in the San Juan Mountains, Colorado. *AGU Fall Meeting 2023*. San Francisco, CA.

López, J., J. Callow, H. McGowan, **R.W. Webb, R.W.**, S. Bilish, J. Revuelto, E. Alonso-Gonzalez, S. Gascoin, 2022. Marginal Snowpacks: A Necessary Research Challenge. *AGU Fall Meeting 2022*. Chicago, IL.

Webb, R.W., K. Musselman, S. Ciafone, K. Hale, and N. Molotch, 2022. Extending the vadose zone: Characterizing the role of snow for liquid water storage and transmission in streamflow generation (poster). *AGU Fall Meeting 2022*. Chicago, IL.

Webb, R.W., K. Musselman, S. Ciafone, K. Hale, and N. Molotch, 2022. Extending the vadose zone: Characterizing the role of snow for liquid water storage and transmission in streamflow generation. *Western Snow Conference 2022*. Salt Lake City, UT. **(AWARDED BEST ORAL PRESENTATION)**

Webb, R.W., Liquid Water in Snow. Presentation at the SnowEx Community Meeting. February 17, 2022.

Meehan, T., A. Hojatimalekshah, H.P. Marshal, E. Deeb, D. McGrath, **R. Webb**, R. Bonnell, M. Raleigh. 2021. Advancements in ground-penetrating radar for applications in seasonal snow: measuring and modeling average snow density with radar travel-time and LiDAR snow depth at Grand Mesa, Colorado. *AGU Fall Meeting 2021*, New Orleans, LA.

Tarricone, J., H.P. Marshall, **R. Webb**, A. Nolin, F. Meyer. 2021. InSAR and Optical Sensor Fusion for SWE Retrievals: A case study in the Jemez River Basin, NM. *AGU Fall Meeting 2021*, New Orleans, LA.

Forster, R, J. Lund, E. Deeb, H.P. Marshall, R. Cassotto, L. Pitcher, **R. Webb**. 2021. Airborne and ground-based interferometric synthetic aperture radar (InSAR) measurements to estimate snow water equivalent (SWE) in Utah during SnowEx 2021. *AGU Fall Meeting 2021*, New Orleans, LA.

Webb, R.W., Marziliano, A., McGrath, D., Bonnell, R., Meehan, T.G., Vuyovich, C., Marshall, H.-P. 2021. In Situ Determination of Dry and Wet Snow Permittivity: Snow Water Equivalent Algorithm Development for Low Frequency Radar Applications. *AGU Fall Meeting 2021*, New Orleans, LA.

Tarricone, J., **R.W. Webb**, A. Nolin, and H.P. Marshall, 2021. Validating L-Band InSAR SWE Retrievals in the Jemez River Basin, New Mexico. *Western Snow Conference 2021*, virtual.

Marziliano, A. and **R.W. Webb**, 2021. Measuring variability of a moderate snowpack across a forest stand boundary in New Mexico. *Western Snow Conference 2021*, virtual.

Wrzesien, M., S.V. Kumar, C. Vuyovich, E. Gutmann, R.S. Kim, B.A. Forman, M.T. Durand, M.S. Raleigh, **R.W. Webb**, and P. Houser, 2020. Development of a "nature run" for observation system simulation experiments (OSSE) for snow mission development. *AGU Fall Meeting 2020*, virtual.

Ciafone, S., K. Musselman, N. Molotch, K. Hale, and **R.W. Webb**, 2020. Effects of Wind Flow and Topography on Snow Distribution and Liquid Water Content in Mountain Snowpacks, Colorado. *AGU Fall Meeting 2020*, virtual.

Bonnell, R., D. McGrath, **R.W. Webb**, H.P. Marshall, and S.R. Fassnacht, 2020. Terrain and Canopy Controls on Liquid Water Content in a Continental Snowpack: Implications for InSAR Remote Sensing Techniques. *AGU Fall Meeting 2020*, virtual.

Webb, R.W., K. Musselman, K. Hale, S. Ciafone, and N. Molotch, 2020. Characterizing a Snowpack's Ability to Store Liquid Water at the Small Catchment Scale – A Comparison of Ground-Based Remote Sensing Observations and Hydrologic Modeling. *AGU Fall Meeting 2020*, virtual.

Tsinnajinnie, L., **R.W. Webb**, and E. Watson, 2020. Responses of baseflow to snowpack variability in semiarid, snow-dominated, mountainous watersheds. *AGU Fall Meeting 2020*, virtual.

McGrath, D., R. Bonnell, A. Olsen-Mikitowicz, C. Duncan, H.P. Marshall, **R.W. Webb**, and K. Williams, 2020. Initial results from the NASA SnowEx 2020 L-Band campaign at Cameron Pass, Colorado. *AGU Fall Meeting 2020*, virtual.

Webb, R.W., A. Marziliano, R. Bonnel, H.P. Marshall, and D. McGrath, 2020. Developments toward an improved snowpack liquid water content algorithm. SnowEx Workshop 2020, virtual.

Webb, R.W., M. Raleigh, D. McGrath, N.P. Molotch, K. Elder, C. Hiemstra, L. Brucker, and H.P. Marshall, 2019. Within-Stand Boundary Effects of Snow Water Equivalent Distribution in Forested Areas. *AGU Fall Meeting 2019,* San Francisco, CA.

Bonnel, R., D. McGrath, H.P. Marshall, and **Webb, R.W.,** 2019. Spatiotemporal Variations in Liquid Water Content in a Continental Seasonal Snowpack Measured by Ground-Penetrating Radar (poster). *AGU Fall Meeting 2019*, San Francisco, CA.

Webb, R.W., 2020. Extending the vadose zone: Can we observe and characterize the storage and transmission of liquid water through snow?. Invited Seminar, Department of Earth and Planetary Sciences, University of New Mexico, September 18, 2020.

Webb, R.W., 2019. Extending the Vadose Zone: Understanding Unsaturated Flow through Snow. Invited Seminar, Department of Geosciences, Boise State University, November 11, 2019.

Webb, R.W., M. Fend, K.S. Jennings, O. Wigmore, T. Erickson, S. Finsterle, M.W. Williams, N.P. Molotch, 2018. New Approaches to Address Scaling Issues of Water Flow through Snow. *AGU Fall Meeting 2018*, Washington, D.C.

Webb, R.W., K. Jennings, S. Finsterle, 2018. Watching the Snow Melt: Using New TOUGH2 Enhancements to Simulate Water Flow through Snow (poster). *TOUGH Symposium 2018*. Berkeley, CA.

Webb, R.W., 2018. Extending the Vadose Zone: Understanding Unsaturated Flow through Snow. *UNM Civil Engineering Graduate Seminar Lecture*, September 19, 2018. Albuquerque, NM.

Webb, R.W., M. Fend, K. Jennings, T. Erickson, M. Williams, N. Molotch, 2018. Sensitivity of Snowmelt Runoff Processes in the Colorado Rockies to a Changing Climate. *The UNM 3rd Annual Resilience Colloquium*. Albuquerque, NM.

Webb, R.W., N.P. Molotch, and M. Fend, 2018. Combining Ground Penetrating Radar with Terrestrial LiDAR Scanning to Observe the Spatial Distribution of Liquid Water Content in Seasonal Snowpacks. *Western Snow Conference 2018*. Albuquerque, NM. **(AWARDED BEST ORAL PRESENTATION)**

Webb, R.W., N.P. Molotch, and M. Fend, 2018. Combining Ground Penetrating Radar with Terrestrial LiDAR Scanning to Observe the Spatial Distribution of Liquid Water Content in Seasonal Snowpacks. *Hydrologic Sciences Symposium*. University of Colorado, Boulder, CO.

Webb, R.W., N.P. Molotch, and M. Fend, 2018. Combining Ground Penetrating Radar with Terrestrial LiDAR Scanning to Observe the Spatial Distribution of Liquid Water Content in Seasonal Snowpacks. *AGU Hydrology Days 2018*. Colorado State University, Fort Collings, CO.

Webb, R.W., M.W. Williams, and T.A. Erickson, 2017. The spatial and temporal variability of meltwater flowpaths: insights from a grid of over 100 snow lysimeters. *AGU Fall meeting 2017*, New Orleans, LA.

Webb, R.W., 2017. Watching the Snow melt. Guest Lecturer. *WR 474: Snow Hydrology*

Webb, R.W., M. Fend, and N. Molotch, 2017. Meltwater flow through snow across elevational gradients in the Colorado Rocky Mountains, USA. *International Workshop on Modeling Meltwater in Snow and Firn.* Copenhagen, Denmark. September, 2017

Webb, R.W., D. McGrath, K. Hale, and N. Molotch, 2017. Results from Mobile GPR surveys during SnowEx 2017: Overview & Looking Forward. *NASA SnowEx Workshop – Sharing Experiences and Preliminary Results*. Longmont, CO.

Webb, R.W., 2017. Using GPR to Assess the Variability of SWE and Melt in a Mixed Canopy Forest, Northern CO. *Western Snow Conference*. Boise, ID.

Webb, R.W., 2017. Using GPR to Assess the Variability of SWE and Melt in a Mixed Canopy Forest, Northern CO. *Hydrologic Sciences Symposium*. University of Colorado, Boulder, CO.

Webb, R.W., M.W. Williams, and T.A. Erickson, 2017. The Uncertainty of Snowmelt Basal Outflow using over 100 Snow Lysimeters. *AGU Hydrology Days*, Colorado State University, Fort Collins, Colorado.

Webb, R.W., M. Gooseff and S. Fassnacht, and S. Webb, 2016. The Presence of Hydraulic Barriers in Layered Snowpacks: TOUGH2 Simulations and Diversion Length Estimates. *AGU Fall Meeting 2016*, San Francisco, CA.

Webb, R.W., 2016. Snowmelt. Guest Lecturer. *WR 474: Snow Hydrology*

Webb, R.W., S. Fassnacht, and M. Gooseff, 2016. The Sub-daily Temporal Distribution of Snowmelt. *AGU Hydrology Days,* Colorado State University, Fort Collins, Colorado.

Webb, R.W., M. Gooseff and S. Fassnacht, 2015. The Sub-Daily Distribution of Snowmelt (poster*). AGU Fall Meeting*, San Francisco, CA.

Fassnacht, S., A. Pfohl, **R.W. Webb**, W. Sanford, and Y. Huang, 2015. Shifting of Dominant Hydrological Processes in Headwater Catchments under a Changing Climate (poster*). AGU Fall Meeting*, San Francisco, CA.

Webb, R.W., S. Fassnacht, and M. Gooseff, 2015. Spatial and Temporal Distribution of Water in Snow and Soil during Spring Snowmelt in a Small Watershed in Northwest Colorado. *AGU Fall Meeting*, San Francisco, CA.

Webb, R.W. and S. Fassnacht, 2015. The Fate of Water During Snowmelt in Complex Mountainous Terrain*. Headwater Regions Symposium 2015: The Global Social, Ecological, and Hydrological Importance*. Tsinghua University, Beijing, China.

Webb, R.W., M. Sharp, B. Von Thaden, 2015. Potential Impacts of Hydrologic Changes on Nutrient Loads in the South Platte River Basin. *Hydrology Days 2015,* Colorado State University, Fort Collins, Colorado, April, 2015.

Webb, R.W., 2014. Variability of Snowmelt Infiltration. *CGWA monthly luncheon meeting*. October 15, 2014.

Webb, R.W., 2014. Ice Crystal Development and Growth. Colorado State University. Guest Lecturer. *WR 474: Snow Hydrology*

Webb, R.W. and S. Fassnacht, 2014, Soil Moisture Variability beneath a Melting Snowpack. *Joint RMWEA/RMSAWWA annual conference*. Albuquerque, NM.

Webb, R.W., 2014. Soil Moisture Variability beneath a Melting Snowpack. *AGU Hydrology Days*, Colorado State University, Fort Collins, CO.

Webb, R.W., 2014. The Other Side: The Non-Engineering Aspects of Engineering Projects in Developing Countries (poster). *AGU Hydrology Days*, Colorado State University, Fort Collins, CO, April 2014.

Webb, R.W. and S. Fassnacht, 2013. Soil Moisture Variability beneath a Melting Snowpack (poster). *AGU Fall Meeting*, San Francisco, CA.

Webb, R.W., 2013. Floodplain Analysis. Colorado State University, Guest Lecturer. *WR 416: Land Use Hydrology*

Webb, R.W., 2013. Snow and Soil Moisture Variability. Colorado State University, Guest Lecturer. *WR 474: Snow Hydrology*.

Webb, R.W., J. Stormont, B. Thomson, and M. Stone, 2012. *Characterizing and Modeling the Hydraulic Properties of Coal Combustion By-Products*. AGU Hydrology Days, Colorado State University, Fort Collins, CO.

Webb, R.W., J. Stormont, B. Thomson, and M. Stone, 2011. *Characterizing the Hydraulic Properties of Coal Combustion By-Products*. AWRA conference; Albuquerque, NM.

Parker, C. and **R.W. Webb**, 2011. *Analysis of Coal Combustion By-Products (poster)*. AWWA Rocky Mountain Regional Conference; Albuquerque, NM.

Webb, R.W., 2011. *The Impact of Dust Storms on Snowpack Runoff Patterns (poster)*. AWWA Rocky Mountain Regional Conference; Albuquerque, NM.

Webb, R.W., 2011. *Impact of Dust Storms on the Snowpack Runoff Patterns in the San Juan Mountains (poster)*. USCID National Conference, Albuquerque, NM.

Webb, R.W., 2011. *My experiences in the STEM fields*. New Mexico Alliance for Minority Participation, UNM.

PROFESSIONAL MEMBERSHIPS

American Geophysical Union
Engineers Without Borders
Western Snow Conference