

Ryan W. Webb

Assistant Professor
Civil & Architectural Engineering &
Construction Management
University of Wyoming

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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)
CE 5700 – SnowEx Hackweek Seminar (Fall 2022)
CE 5880 – Advanced Hydrology (Spring 2023)
- At UNM Water Resources Field Problems (2020, 2021), Fluid Mech. Lab (Spring 2020)
- At CSU Mechanics of Solids (Summer 2015), Fluid Mech. Lab (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

PUBLICATIONS

Peer-Reviewed Journal Articles

- Webb, R.W.**, M.E. Litvak, P.D. Brooks, 2023. The role of terrain-mediated hydroclimate in vegetation recovery after wildfire, *Environmental Research Letters*, doi: 10.1088/1748-9326/acd803.
- Tarricone, J., **R.W. Webb**, H.P. Marshall, A.W. Nolin, F.J. and Meyer, 2023. Estimating snow accumulation and ablation with L-band InSAR, *The Cryosphere*, <https://doi.org/10.5194/tc-2022-224>.
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](https://doi.org/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

Nana Afua Frimpong Kori Mooney	Current – M.S. Civil Engineering. Laboratory tests to investigate post-wildfire soil sealing processes.
Jocelyn Gallais	Current – M.S. Civil Engineering. Spatio-temporal variability of snow dielectric properties in the context of remote sensing of water resources.
Mikael Schlumpf	Current – M.S. Civil Engineering (UNM). Effect of wildfire and forest thinning on the water balance in semi-arid headwaters.
Adrian Marziliano	Current - M.S. Civil Engineering (UNM). Effect of liquid water content on shear stress of snow layers in avalanche terrain.
	2020 - Masters of Water Resource Program. Measuring the variability of a moderate snowpack across a forest stand boundary in the Sandia Mountains.
Aljaz Praznik	2019 – 2020 Lab Technician. Construction of physical flood control model in Hydraulics Lab

Undergraduate Students

Jared Hylander	2023 – Lab assistant in post wildfire soil sealing experiments
Jacob Huerta	2023 – Lab assistant in post wildfire soil sealing experiments
Nolan Gerdes	2023 – McNair Fellowship. Soil recovery time post-wildfire
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 (as of September 2022)

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 PI, **\$174,000, NSF EAR Award #1624853.** New Approaches to Address Scaling Issues for Lateral Flow of Water in a Layered Snowpack.

SYNERGISTIC ACTIVITIES

2022 - ongoing **UW CAECM dept.**, Undergraduate Curriculum Committee
 2022 - ongoing **NASA**, THP SnowEx Leadership Group
 2021 - ongoing **NASA**, 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., Extending the Vadose Zone: Characterizing the Storage and Transmission of Liquid Water through Snow. *Invited Seminar Speaker University of Colorado-Boulder*. Feb. 1, 2023. Boulder, CO.
 López, J., J. Callow, H. McGowan, **R.W. Webb**, 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. Marshall, 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. Bonnell, 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.
- Bonnell, 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 Collins, 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*
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American Geophysical Union
Engineers Without Borders
Western Snow Conference