Erich R. Mueller

Expertise	Hydrology, Geomorphology, Rivers, Environmental Geoscience	
CONTACT INFORMATION	Department of Geosciences Walter Maxwell Gibson College of Natural Sciences Southern Utah University Cedar City, UT 84720 USA	e-mail: erichmueller@suu.edu phone: 435-865-8326 web: erichrmueller.com
EDUCATION	University of Colorado, Boulder, CO Ph.D., Geography	2012
	University of Colorado, Boulder, CO M.A., Geography	2002
	University of Wisconsin, Madison, WI B.S., Geology and Geophysics Certificate in Environmental Studies	2000
RESEARCH INTERESTS	 Watershed hydrology and geomorphology Fluvial geomorphology and applied river science Flow hydraulics and sediment transport processes Landscape-scale connectivity in geologic systems Geospatial analysis and computational modeling 	
Evene		
EXPERIENCE	Southern Utah University, Cedar City, UT ASSOCIATE PROFESSOR ASSISTANT PROFESSOR Department of Geosciences	2025 - present 2019 - 2025
	University of Wyoming, Laramie, WY VISITING ASSISTANT PROFESSOR Department of Geography	2017 - 2019
	U.S. Geological Survey, Flagstaff, AZ RESEARCH HYDROLOGIST Southwest Biological Science Center Grand Canyon Monitoring and Research Center	2013 - 2017
	Northern Arizona University, Flagstaff, AZ ADJUNCT FACULTY School of Earth Sciences and Environmental Sustainability	2015 - 2017
	Utah State University, Logan, UT POST-DOCTORAL RESEARCHER Department of Watershed Sciences	2012 - 2013

University of Colorado, Boulder, CO

Associate Hydrologist

GRADUATE INSTRUCTOR/TEACHING ASSISTANT/RESEARCH ASSISTANT	2007 - 2012
Department of Geography	
Hydrotech Water Resource Consultants Helena MT	

2005 - 2007

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University of Colorado, Boulder, CO	
Professional Research Assistant/Lecturer	2003 - 2004
Department of Geography	

University of Colorado, Boulder, CO

RESEARCH ASSISTANT/TEACHING ASSISTANT	2000 - 2002
Department of Geography	

Wisconsin Geological and Natural History Survey, Madison, WI	2000
Wasatch-Uinta Geology Field Camp, Park City, UT	1999
University of Wisconsin Sea Grant Institute, Madison, WI	1998

REFEREED PUBLICATIONS

- 30. Salter, G., Topping, D.J., Wang, J., Schmidt, J.C., Yackulic, C.B., Bair, L.S., **Mueller E.R.**, and Grams, P.E. (under review) Reservoir Operational Strategies for Sustainable Sand Management in the Colorado River. Submitted to *Water Resources Research*.
- Grams, P.E., Topping, D.J., Salter, G., Chapman, K.A., Tusso, R.B., and Mueller E.R. (2025) Implementation of Controlled Floods for Sediment Management on the Colorado River in Grand Canyon Under Aridification. *River Research and Applications*, 41(2), 334-348, doi: 10.1002/rra.4374.
- Joerger, S.T., Smith, M.E., Buscombe, D., and Mueller E.R. (2024) Evidence for littoral convergence and sediment delivery to Mattole submarine canyon, Northern California. Frontiers in Earth Sciences, 12: 1377997, doi: 10.3389/feart.2024.1377997.
- 27. Kemper, J.T., Rathburn, S.L., **Mueller E.R.**, Wohl, E., and Scarmado, J. (2023) Geomorphic effects of increased sediment supply in low-gradient, alluvial rivers. *Earth-Science Reviews*, 241, 104429, doi: 10.1016/j.earscirev.2023.104429.
- Mueller E.R., Sudweeks, G.P., Ashton, S.A., and Olson, M.C. (2023) Snow drought and monsoon floods: Hydrological extremes in the Cedar Valley watershed during water year 2021, Southwestern Utah. Geology of the Intermountain West, 10, 93–111, doi: 10.31711/giw.v10.pp93-111.
- 25. Hazel, J.E. Jr., Kaplinski, M., Buscombe, D., Grams, P.E., Mueller, E.R., Hamill, D., and Ross, R.P. (2022) Multi-decadal sandbar response to flow management downstream from a large dam: the Colorado River in Marble and Grand Canyons, Arizona. U.S. Geological Survey Scientific Investigations Report 1873, doi: 10.3133/pp1873.
- 24. Grams, P.E., Head, E., and Mueller, E.R. (2022) Effects of flow regulation and drought on geomorphology and floodplain habitat along the Colorado River in Canyonlands National Park, Utah. River Research and Applications, 38(7): 1266-1276, doi: 10.1002/rra.4014.
- 23. Kemper, J.T., Rathburn, S.L., Friedman, J.M., Nelson, J.M, **Mueller, E.R.**, and Vincent, K.R. (2022) Fingerprinting historical tributary contributions to floodplain sediment using bulk geochemistry. *Catena*, 214: 106231, doi: 10.1016/j.catena.2022.106231.
- 22. Kemper, J., Thaxton, R.D., Rathburn, S.L., Freidman, J.M., Mueller, E.R., and Scott, M.L. (2021) Sediment-ecological connectivity in a large river network. *Earth Surface Processes and Landforms*, 47(2), 639-657, doi: 10.1002/esp.5277.

- 21. Mueller, E.R. and Grams, P.E. (2021) A morphodynamic model to evaluate long-term sandbar rebuilding using controlled floods in the Grand Canyon. *Geophysical Research Letters*, 48, e2021GL093007, doi: 10.1029/2021GL093007.
- Sabol, T.A., Griffiths, R.E., Topping, D.J., Mueller, E.R., Tusso, R.B., and Hazel Jr., J.E. (2021) Strandlines from large floods on the Colorado River in Grand Canyon National Park. U.S. Geological Survey Scientific Investigations Report 2021-5048, 41 pp., doi: 10.3133/sir20215048.
- 19. Chapman, K.A., Best, R.J., Smith, M.E., **Mueller, E.R.**, Grams, P.E., and Parnell, R.A. (2021) Estimating the contribution of tributary sand inputs to controlled flood deposits for sandbar restoration using elemental tracers, Colorado River, Grand Canyon National Park, Arizona. *Geological Society of America Bulletin*, 133(5-6), 1141–1156, doi: 10.1130/B35642.1.
- Lima, R., Buscombe, D., Sankey, T., Grams, P., and Mueller, E. (2019) Using oblique imagery to measure hypsometric changes in sandbar volume following controlled floods in the Grand Canyon. *Proceedings of SEDHYD 2019*, Conferences on Sedimentation and Hydrologic Modeling, June 24-28, 2019, Reno, Nevada, USA, 15pp.
- 17. Mueller, E.R., Grams, P.E., Hazel, J.E. Jr., and Schmidt, J.C. (2018) Variability in eddy sandbar dynamics during two decades of controlled flooding of the Colorado River in the Grand Canyon. Invited Review for *Sedimentary Geology*, 363, 181-199, doi: 10.1016/j.sedgeo.2017.11.007.
- Topping, D.J., Mueller, E.R., Schmidt, J.C., Griffiths, R., Dean, D.J., and Grams, P.E. (2018)
 Long-term evolution of sand transport through a river network: relative influences of a dam versus natural changes in grain size from sand waves. *Journal of Geophysical Research Earth Surface*, 123(8), 1879-1909, doi: 10.1029/2017JF004534.
- 15. Smith, M.E., Werner, S.H., Buscombe, D., Finnegan, N.J., Sumner, E.J., and **Mueller, E.R.** (2018) Seeking the shore: Evidence for active submarine canyon head incision due to coarse sediment supply and focusing of wave energy. *Geophysical Research Letters*, 45(22), 12,403-12,413, doi: 10.1029/2018GL080396.
- Smith, M.E., Finnegan, N.J., Mueller, E.R., and Best, R.J. (2017) Durable terrestrial bedrock predicts submarine canyon formation. *Geophysical Research Letters*, 44(20), 10332-10340, doi: 10.1002/2017GL075139.
- Sankey, J.B., Kreitler, J., Hawbaker, T.J., McVay, J.L., Miller, M.E., Mueller, E.R., Vaillant, N.M., Lowe, S.E., and Sankey, T.T. (2017) Climate, wildfire, and erosion ensemble foretells more sediment in western USA watersheds. *Geophysical Research Letters*, 44(17), 8884-8892, doi: 10.1002/2017GL073979.
- 12. Mueller, E.R., Schmidt, J.C., Topping, D.J., Shafroth, P.B., Rodríguez-Burgueño, J.E., Ramírez-Hernández, J., and Grams, P.E. (2017) Geomorphic change and sediment transport during a small artificial flood in a transformed post-dam delta: the Colorado River delta, United States and Mexico. *Ecological Engineering*, 106, 757-775, doi: 10.1016/j.ecoleng.2016.08.009.
- 11. Mueller, E.R., Smith, M.E., and Pitlick, J. (2016) Lithology-controlled evolution of stream bed sediment and basin-scale sediment yields in adjacent mountain watersheds, Idaho, USA. *Earth Surface Processes and Landforms*, 41(13), 1869-1883, doi: 10.1002/esp.3955.
- Mueller, E.R., Schmidt, J.C., Topping, D.J., and Grams, P.E. (2015) Geomorphic change in the limitrophe reach of the Colorado River in response to the 2014 delta pulse flow, United States and Mexico. *Proceedings of SEDHYD 2015*, Conferences on Sedimentation and Hydrologic Modeling, April 19-23, 2015, Reno, Nevada, USA, p. 1501-1512.
- Mueller, E.R., Grams, P.E., Schmidt, J.C., Hazel Jr., J.E., Alexander, J.S., and Kaplinski, M. (2014) The influence of controlled floods on fine sediment storage in debris fan-affected canyons of the Colorado River basin. *Geomorphology*, 226, 65-75, doi: 10.1016/j.geomorph.2014.07.029.
- 8. Mueller, E.R., Grams, P.E., Schmidt, J.C., Hazel Jr., J.E., Kaplinksi, M., Alexander, J.S., and Kohl, K. (2014) Monitoring and research to describe geomorphic effects of the 2011 high flows on the Green River in Canyon of Lodore, Dinosaur National Monument. *U.S. Geological Survey Scientific Investigations Report 2014-5022*, 66 pp., doi: 10.3133/sir20145022.

- Mueller, E.R. and Pitlick, J. (2014) Sediment supply and channel morphology in mountain river systems:
 Controls on single-thread to braided transitions. Journal of Geophysical Research
 Earth Surface, 119, 1516-1541, doi: 10.1002/2013JF003045.
- Mueller, E.R. and Pitlick, J. (2013) Sediment supply and channel morphology in mountain river systems: 1. Relative importance of lithology, topography, and climate. *Journal of Geophysical Research - Earth Surface*, 118, 2325–2342, doi: 10.1002/2013JF002843.

Editor selection as an AGU Research Spotlight

- Pitlick, J., Mueller, E.R., and Segura, C. (2012) Differences in sediment supply to braided and single-thread channels: what do the data tell us? Chapter 35 in *Gravel-bed Rivers: Processes*, *Tools, Environments*, Church, M., Biron, P.M., and Roy, A. Eds. John Wiley and Sons, Chichester, UK, doi: 10.1002/9781119952497.ch35.
- Smith, M.E., Carroll, A.R., and Mueller, E.R. (2008) Elevated weathering rates in the Rocky Mountains during the early Eocene climatic optimum, *Nature-Geoscience*, 1, 370-374, doi:10.1038/ngeo205.
- 3. Pitlick, J., Mueller, E.R., Segura, C., Cress, R., and Torizzo, M. (2008) Relation between flow, surface-layer armoring, and sediment transport in gravel-bed rivers. *Earth Surface Processes and Landforms*, 33, 1192-1209, doi: 10.1002/esp.1607.
- Mueller, E.R. and Pitlick, J. (2005) Morphologically based model of bed-load transport capacity in a headwater stream. *Journal of Geophysical Research - Earth Surface*, 110, F02016, doi: 10.1029/2003JF000117.
- Mueller, E.R., Pitlick, J., and Nelson, J.M. (2005) Variation in the reference Shields stress for bed load transport in gravel-bed streams and rivers. Water Resources Research, 41, doi: 10.1029/2004WR003692.

Papers in Preparation

Mueller, E.R. Hydro-climatic and geologic influences on the downstream scaling of sediment yields in large watersheds of the northern Rocky Mountains, USA. For submission to *Earth Surface Processes and Landforms*.

Lima, R., Buscombe, D., Sankey, T.T., Grams, P.E., and **Mueller E.R**. Semantic segmentation of time series imagery using deep convolutional neural networks: a case study of sandbars in Grand Canyon. For submission to *Water Resources Research*.

THESES

University of Colorado, Boulder, CO

Ph.D. Dissertation: Landscape controls on sediment supply and stream channel morpho-dynamics in the northern Rocky Mountains

M.A. Thesis: Downstream changes in channel morphology through a network of gravel-bed streams

University of Wisconsin, Madison, WI

B.S. Thesis: Paleohydrologic investigation of the Turtle Creek valley, Wisconsin: Evidence and estimates for a catastrophic flood event

Teaching

SOUTHERN UTAH UNIVERSITY

Assistant Professor

Geology 1050/1055: Geology of the National Parks

Geology 1110/1115: Physical Geology

Geology 3010/3015: Environmental Geology

Geography 3350/3355: Geomorphology

Geology 3610/3615: Hydrology

Geology 2000/4000: Various Field Trips

Geology 4900: Seminar - The Colorado River

Geology 4960: Field Geology

University of Wyoming

Visiting Assistant Professor

Geography 1010: Introduction to Physical Geography

Geography 3010: Geomorphology of Earth's Dynamic Landscape

Geography 4000: Terrain Analysis

Geography 4450/5450: Fluvial Geomorphology

Geography 4880/5880: Large River Management in the Colorado River Basin Geography 4880/5880: Hydrogeomorphology-Ecology Interactions in Rivers

NORTHERN ARIZONA UNIVERSITY

Co-Instructor - Fall 2015

Earth and Environmental Science (EES) 698: Topics in Fluvial Geomorphology

University of Colorado

Primary Instructor

Geography 3511: Introduction to Hydrology (Spring 2009, 2010; Fall 2011)

Geography 1011: Landscapes and Water (Intro Phys Geog) (Spring 2004, 2008; Fall 2008, 2010)

Teaching Assistant

Geography 4241: Principles of Geomorphology (Fall 2007) Geography 3511: Introduction to Hydrology (Spring 2011) Geography 1992: Human Geographies (Spring 2001) Geography 1011: Landscapes and Water (Fall 2000, 2009)

STUDENT SUPERVISION

Current Students

Devon Fischer (B.S.) Southern Utah University, Geology

Faculty Advisor, 2024-present

Project: Streamflow and geomorphology of mountain streams in the Parowan Valley watershed

Gibson Bezoski (B.S.) Southern Utah University, Geology

Faculty Advisor, 2025

Project: Geomorphology of mountain streams in the Parowan Valley watershed

Former Students

Jacob Santana (B.S.) Southern Utah University, Geology

Faculty Advisor, 2024-2025

Project: Geomorphology of mountain streams in the Parowan Valley watershed

Autumn Jessen (B.S.) Southern Utah University, Environmental Science

Faculty Advisor, 2024-2025

Project: Geomorphology of mountain streams in the Parowan Valley watershed

Kaden Dalton (B.S.) Southern Utah University, Environmental Science

Faculty Advisor, 2023-2024

Project: Streamflow and groundwater recharge in the Parowan Valley, Utah

Ian Meyer (B.S.) Southern Utah University, Geology

Faculty Advisor, 2023-2024

Project: Streamflow and groundwater recharge in the Parowan Valley, Utah

Dawson Christiansen (B.S.) Southern Utah University, Environmental Science

Faculty Advisor, 2023-2024

Project: Ecological effects of mowing Big Sagebrush (Artemisia tridentata)

Ammon Hennessey (B.S.) Southern Utah University, Environmental Science

Faculty Advisor, 2023-present

Project: Historical channel change of the San Juan River, Utah

Alex Butler (B.S.) Southern Utah University, Geology

Faculty Advisor, 2022

Project: GIS analysis of historical channel of the San Juan River, Utah

Logan Wegner (B.S.) Southern Utah University, Geology

Faculty Advisor, 2021-present

Project: Glacier modeling on the Markagunt Plateau

Garrett Sudweeks (B.S.) Southern Utah University, Geology

Faculty Advisor, 2021-2022

Project: 2021 flooding in the Cedar Valley watershed

Shad Ashton (B.A.) Southern Utah University, Geosciences

Faculty Advisor, 2021-2022

Project: 2021 flooding in the Cedar Valley watershed

Micah Olson (B.S.) Southern Utah University, Geology

Faculty Advisor, 2021-2022

Project: UAV monitoring of topographic change

Melissa Chen (B.S.) Southern Utah University, Geology

Faculty Advisor, 2022

Project: Hydraulic modeling of the Paria River, Utah

Courtney Miller (B.S.) Southern Utah University, Geology

Faculty Advisor, 2022

Project: Effects of El-Nino on snowpack and streamflow in southwest Utah

Luke Alder (B.S.) Southern Utah University, Biology

Project Advisor, spring 2022

Project: Changes to snow accumulation and melt following wildfire

Lauren Nickell (B.S.) Southern Utah University, Geology

Faculty Advisor, 2020-2021

Project: Post-fire geomorphic change of streams on the Markagunt Plateau, Utah

Ryan Lima (Ph.D.) Northern Arizona University, Geology

Committee Member, 2017-2021

Project: Monitoring Grand Canyon sandbars using oblique remote camera imagery

Lukas Malle (B.S.) University of Wyoming, Geology

Faculty Advisor, 2019

Project: Effectiveness of glacial and fluvial erosion in granitic, volcanic, and sedimentary drainage basins in Wyoming

Samuel Werner (M.S.) Northern Arizona University, Geology

Committee Member, 2016-2018

Project: Tracking fluvial bedload entering Delgada submarine canyon, northern California

Katie Chapman (M.S.) Northern Arizona University, Geology

Committee Member, 2015-2017

Project: Sediment fingerprinting of sandbar source areas

 $\label{eq:michelle Loozen (M.Sc.)} \ \ Delft \ \ University \ of \ Technology, \ Hydraulic \ Engineering$

Committee Member, 2015-2017

Project: Hydraulic modeling of riparian vegetation-sandbar-eddy interactions

Undergraduate Field Assistants

Lauren Nickell; Derek Weller (later completed a Ph.D.); Aaron Zettler-Mann (later completed a Ph.D.), Jason Hoefer; Wade Grewe; John Schrader; Mike McGowan; Megan Corrigan; Aaron Cloud; Casey Ward

Honors and Awards

Outstanding Faculty Award (2022): Department of Geosciences, Southern Utah University

Nominated for PIE Award (2019): University of Wyoming - Promoting Intellectual Engagement (PIE) Award honors instructors who inspire excitement, inquiry, and autonomy in first-year courses

USGS STAR Award (2014): U.S. Geological Survey Southwest Biological Science Center - Colorado River delta work

Gilbert F. White Dissertation Fellowship (2011): Faculty nominated; Department of Geography - University of Colorado

Graduate Student Teaching Excellence Award (2010-2011): Faculty nominated; Graduate School - University of Colorado

Fall Meeting Outstanding Student Paper Award (2007): Hydrology Section, American Geophysical Union

Recruitment Fellowship (2007): Department of Geography - University of Colorado

Graduation with Distinction (2000): Geology and Geophysics - University of Wisconsin

Mack C. Lake Outstanding Senior Scholarship (2000): Geology and Geophysics - University of Wisconsin

L. R. Laudon Outstanding Junior Scholarship (1999): Geology and Geophysics - University of Wisconsin

Grants

- National Science Foundation Hydrological Sciences, Co-PI with colleagues from Colorado State University, (2024-2026). Collaborative Research: The role of temporally varying specific storage on confined aquifer dynamics,
- Department of Interior Cooperative Ecosystem Studies Unit Colorado Plateau Network, PI in collaborative research with USGS, (2024-2026). River channel morphodynamics in the western Grand Canyon segment of the Colorado River.
- Department of Interior Cooperative Ecosystem Studies Unit Colorado Plateau Network, PI in collaborative research with USGS, (2020-2023). Morphodynamic modeling to evaluate sandbar dynamics in the Grand Canyon Investigators.
- Gibson Fellowship awarded for SUU student research funding (2020-2021)
- University of Wyoming National Park Service Grant. Co-Investigator (multiple PIs A. Kasprak and others), (2017). "Influence of vegetation on braid bar formation in Grand Teton National Park"
- Glen Canyon Dam Adaptive Management Work Group, Grand Canyon Monitoring and Research Center Triennial Work Plan. Co-Investigator (multiple PIs J. Schmidt and others), (2015 2017). "Sandbars and Sediment Storage Dynamics: Long-term Monitoring and Research at the Site, Reach, and Ecosystem Scales", \$4,253,400.
- Gary Gaile Memorial Research Grant (2010) "Influence of sediment supply on the transition from single-thread to braided channels, Sunlight Creek, Wyoming" Department of Geography, University

of Colorado

- Geological Society of America Research Grant (2008) "Physiographic controls on sediment delivery, spatial organization of channel morphology, and resultant sediment yields in the northern Rockies" Geological Society of America
- Beverly Sears Grant (2008) "Watershed-scale controls on sediment delivery, spatial organization of channel morphology, and resultant sediment yields in the northern Rocky Mountains" Graduate School, University of Colorado
- United Government of Graduate Students Grant (2008) "Lithologic and hydraulic controls on network-scale variations in sediment yield: Big Wood and North Fork Big Lost Rivers, Idaho" Travel to AGU conference, Graduate School, University of Colorado
- U.S. Geological Survey Jack Kleinman Internship for Volcano Research (2007) "Channel adjustment and sediment transport dynamics of the North Fork Toutle River in response to the November 2006 flood flows" USGS Cascades Volcano Observatory

AGENCY REPORTS

International Boundary and Water Commission, Minute 319 Colorado River Limitrophe and Delta Environmental Flows Monitoring Interim Report (2016) Contributed the geomorphology and sediment transport section: https://sonoraninstitute.org/resource/minute-319-colorado-river-limitrophe-and-delta-environmental-flows-monitoring-interim-report/.

Mueller, E.R., Grams, P.E., and Schmidt, J.C. (2014) Synthesis of Geomorphic Research and Monitoring Recommendations for Protection of River Resources in Dinosaur National Monument. Draft final report submitted to the National Park Service.

Schmidt, J.C., Mueller, E.R., and Manners, R.B. (2013) Yampa River Opinion. White paper submitted to the National Park Service. 57pp.

Pitlick, J. and Mueller, E.R. (2004) Hydraulic geometry of gravel-bed rivers. Final Report, U.S. Forest Service Challenge Cost-Share Agreement Number 01-CS-11221625-156, 39pp.

PROFFESIONAL PRESENTATIONS (*student author)

- *Fischer, D., *Santana, J., *Jessen, A., and Mueller, E. (2025) Channel geometry and sediment transport in a steep, fault-block mountain range: Parowan Creek, southwestern Utah. Geological Society of America Abstracts with Programs, 57(5), doi: 10.1130/abs/2025RM-410168, May 2025.
- Mueller, E., *Dalton, K., *Fischer, D., and *Meyer, I. (2025) Climatic and geologic controls on streamflow hydrology in southwestern Utah. Geological Society of America Abstracts with Programs, 57(5), doi: 10.1130/abs/2025RM-410269, May 2025.
- Salter, G, Topping, D.J., Wright, S.A., Nelson, J.M, Mueller, E.R, and Grams, P.E. (2023) The washload to bed-material load continuum: Transport, storage, and release of fine sediment in a large canyon-bound river. River, Coastal, and Estuarine Morphodynamics Conference, Urbana-Champaign, IL, September 26, 2023.
- Mueller, E.R. (2023) The 2021 floods in the Cedar Valley watershed from a perspective of the flood hydrology of southwestern Utah and the 2023 snowmelt season. Utah Floodplain and Stormwater Management Association Annual Conference, Cedar City, Utah, October. 2023. INVITED.
- Salter, G., Topping, D., Wright, S., Nelson, J., Mueller, E., and Grams, P. (2023) Numerical modeling of mud transport, storage and Release on the Colorado River, Arizona. Federal Interagency Sedimentation and Hydrologic Modeling Conference SEDHYD 2023, May 2023, St. Louis, MO.
- Kemper, J.T., Rathburn, S.L., Mueller, E.R., Wohl, E. and Scamardo, J. (2022) Geomorphic effects of increased sediment supply in low-gradient, alluvial rivers. American Geophysical Union Fall Meeting, Dec. 2022, Chicago, IL.
- *Ashton, S., *Sudweeks, G., *Olson, M., and Mueller, E. (2022) Precipitation and streamflow hydrology during the summer 2021 monsoon flooding of the Cedar Valley, Utah. Geological Society

- of America Abstracts with Programs, 54(2), doi: 10.1130/abs/2022CD-373772, Mar. 2022.
- *Kemper, J.T., *Thaxton, R.D., Rathburn, S.L., Freidman, J.M., Mueller, E.R., and Scott, M.L. (2021) Sediment-ecological connectivity in a large river network. Fall Meeting, American Geophysical Union, Dec. 2021.
- *Kemper, J., Rathburn, S., Friedman, J., Nelson, J. and Mueller, E. (2021) Tributary basin contributions to floodplain sediments: sediment fingerprinting in the Yampa River basin, Colorado. Fall Meeting, American Geophysical Union, Dec. 2021.
- *Kemper, J.T., *Thaxton, R.D., Rathburn, S.L., Freidman, J.M., Scott, M.L., and Mueller, E.R. (2020) Connecting the dots: building a sediment-ecological connectivity framework to link tributary erosion to downstream floodplain forest establishment in a large river network. Fall Meeting, American Geophysical Union, Dec. 2020.
- Mueller, E.R. (2021) Dams, controlled floods, and geomorphic change in the Colorado River basin. Utah Valley University Earth Science Department Seminar Series, Mar. 2021. INVITED.
- Mueller, E.R. and Grams, P.E. (2020) A simple morphodynamic model to evaluate decadal-scale sandbar dynamics downstream from a large dam. Fall Meeting, American Geophysical Union, Dec. 2020.
- *Kemper, J.T., *Thaxton, R.D., Rathburn, S.L., Freidman, J.M., Scott, M.L., and Mueller, E.R. (2020) Connecting the dots: building a sediment-ecological connectivity framework to link tributary erosion to downstream floodplain forest establishment in a large river network. Fall Meeting, American Geophysical Union, Dec. 2020.
- *Nickell, L.S. and Mueller, E.R. (2020) Geologic controls on post-fire channel response, Markagunt Plateau, Utah. Geological Society of America Abstracts with Programs, 52(6), doi: 10.1130/abs/2020AM-359392, Oct. 2020.
- *Kemper, J., *Thaxton, R.D., Rathburn, S.L., Freidman, J.M., Scott, M.L., and Mueller, E.R. (2020) Sediment-ecological connectivity: exploring the links between tributary erosion and flood-plain forest establishment in a large river basin. Geological Society of America Abstracts with Programs, 52(6), doi: 10.1130/abs/2020AM-352939, Oct. 2020.
- Grams, P., *Head, E., and Mueller, E. (2020) Channel and floodplain changes in the Meander Canyon segment of the Colorado River in Canyonlands National Park, Utah. 40th Annual Researchers Meeting of the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program, Jan. 2020.
- Topping, D., Griffiths, R., Dean, D., Grams, P., Mueller, E., Schmidt, J., and *Leonard, C. (2020) Drivers of sand transport and storage, with implications for fish habitat, in the Yampa and Green Rivers. 40th Annual Researchers Meeting of the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program, Jan. 2020.
- Mueller, E.R. (2019) Landscape-scale controls on stream and river dynamics in the Intermountain West. Southern Utah University, Jan. 2019. INVITED.
- Topping, D.J., Rubin, D.M., Griffiths, R.E., Dean, D.J., Grams, P.E., Schmidt, J.C., and Mueller, E.R. (2018) Grain-size controls on sand storage in rivers. Fall Meeting, American Geophysical Union, Dec. 2018.
- Mueller, E.R. (2018) Dams, controlled floods, and the evolving rivers of the Colorado River basin. Southern Oregon University, Nov. 2018. INVITED.
- Mueller, E.R. (2018) Geomorphic effects of controlled floods in the Colorado River basin. Colorado State University Geoscience Seminar Series, Oct. 2018. INVITED.
- Mueller, E.R., Topping, D.J., and Grams, P.E. (2018) Contrasting effects of dams on river morphology and sand transport in the Colorado River basin. Great Plains/Rocky Mountain Section Meeting, American Association of Geographers, Oct. 2018.
- Mueller, E.R. and Grams, P.E. (2018) Modeling decadal changes in sandbar volume using sub-daily records of flow and sediment concentration downstream from a large dam. Cordilleran/Rocky

- Mountain Section Meeting, Geological Society of America, May 2018.
- Mueller, E.R. and Schmidt, J.C. (2017) Circuitous to single thread: post-dam geomorphic transformation of the Colorado River in its delta. Fall Meeting, American Geophysical Union, Dec. 2017. INVITED.
- Topping, D.J., Griffiths, R.E., Dean, D.J., Grams, P.E., Buscombe, D.D., and Mueller, E.R. (2017) On-demand continuous mass-balance sediment budgets for river science and management. Annual Meeting, Geological Society of America, Oct. 2017. INVITED.
- Grams, P.E., Buscombe, D., Topping, D.J., and Mueller, E.R. (2017) Sand pulses and sand patches on the Colorado River in Grand Canyon. 10th Symposium on River, Coastal and Estuarine Morphodynamics (RCEM), Trento Padova, Italy, September 19, 2017.
- Mueller, E.R. (2017) Landscape-scale controls on sediment supply in natural and dam-affected river systems. Invited Seminar, Department of Earth and Atmospheric Sciences, University of Northern Colorado, Greeley, CO, Mar. 10, 2017. INVITED.
- Grams, P.E., Schmeeckle, M., Mueller, E.R., Buscombe, D., Kasprak, A., and *Leary, K.P. (2016) Experimental Demonstration of 3-Dimensional Flow Structures and Depositional Features in a Lateral Recirculation Zone. Fall Meeting, American Geophysical Union, Dec. 2016.
- *Head, E., Grams, P.E., Parnell, R.A., and Mueller, E.R. (2016) Channel Narrowing and the Relationship Between Geomorphic Change and Native Fish Habitat on the Colorado River in Canyonlands National Park, Utah. Fall Meeting, American Geophysical Union, Dec. 2016.
- Mueller, E.R., Schmidt, J.C., and Topping, D.J. (2016) Post-dam geomorphic transformation of the Colorado River in its delta and implications for controlled flow releases. Geological Society of America Annual Meeting, Denver, CO. Sept. 2016.
- Mueller, E.R., Grams, P.E., Hazel, Jr., J.E., and Schmidt, J.C. (2016) Variability of eddy sandbar response during two decades of controlled flooding along the Colorado River in Grand Canyon. Geological Society of America Annual Meeting, Denver, CO. Sept. 2016.
- Smith, M.E., Finnegan, N.J., and Mueller, E.R. (2016) Durable terrestrial geology and catchment slope promote submarine canyon headwall incision. Geological Society of America Annual Meeting, Denver, CO. Sept. 2016.
- *Werner, S.H., Smith, M.E., and Mueller, E.R. (2016) Linking the land to the sea: Tracking fluvial bedload from coastal watersheds to Delgada submarine canyon, northern California. Geological Society of America Annual Meeting, Denver, CO. Sept. 2016.
- Sankey, J.B., Kreitler, J., Hawbaker, T., Staley, D., Rengers, F., Mueller, E.R., McGuire, L.A., and Kasprak, A. (2016) A multi-model approach to project regional post-fire sediment dynamics. Geological Society of America Annual Meeting, Denver, CO. Sept. 2016.
- *Chapman, K., Parnell, R., Smith, M.E., and Mueller, E.R. (2016) Evaluating the effectiveness and long-term sustainability of experimental floods on the Colorado River in the Marble Canyon reach of Grand Canyon, AZ. Geological Society of America Annual Meeting, Denver, CO. Sept. 2016.
- Mueller, E.R., Grams, P.E., Topping, D.J., Schmidt, J.C., Wright, S.A., Melis, T.S., Rubin, D.M., Hazel, Jr., J.E., and Kaplinski, M. (2016) Science-based strategies for experimental flooding in Grand Canyon. National Conference on Ecological Restoration, Coral Springs, FL. Apr. 2016. INVITED.
- Mueller, E.R., Grams, P.E., Hazel, Jr., J.E., and Schmeeckle, M. (2015) Linkages between controlled floods, eddy sandbar dynamics, and riparian vegetation along the Colorado River in Marble Canyon, Arizona. Fall Meeting, American Geophysical Union, Dec. 2015.
- Kaplinski, M., Buscombe, D., *Ashley, T., Tusso, R., Grams, P.E., McElroy, B., and Mueller, E.R. (2015) Observations of Sand Dune Migration on the Colorado River in Grand Canyon using High-Resolution Multibeam Bathymetry. Fall Meeting, American Geophysical Union, Dec. 2015.
- *Chapman, K., Parnell, R., Smith, M.E., Grams, P.E., and Mueller, E.R. (2015) Use of Composite

- Fingerprinting Technique to Determine Contribution of Paria River Sediments to Dam-Release Flood Deposits in Marble Canyon, Grand Canyon, AZ. Fall Meeting, American Geophysical Union, Dec. 2015.
- Mueller, E.R., Schmidt, J.C., Topping, D.J., and Grams, P.E. (2015) Geomorphic change in the limitrophe reach of the Colorado River in response to the 2014 delta pulse flow, United States and Mexico. 3rd Joint Federal Interagency Conference on Sedimentation and Hydrologic Modeling, April 19-23, Reno, Nevada, USA.
- Mueller, E.R, Schmidt, J.C., Topping, D.J., Shafroth, P.B., and Grams, P.E.. (2014) Geomorphic response in the Limitrophe reach of the Colorado River to the 2014 delta pulse flow, United States and Mexico. Fall Meeting, American Geophysical Union, Dec. 2014.
- Mueller, E.R. (2014) Geomorphology and groundwater hydrology of the Colorado River delta pulse flow. Upper Colorado River Basin Water Forum, Grand Junction, CO, Nov. 6, 2014. INVITED.
- Mueller, E.R., Grams, P.E., and Schmidt, J.C. (2013) The effect of controlled floods on decadal-scale changes in channel morphology and fine sediment storage in a debris-fan affected river canyon. Fall Meeting, American Geophysical Union, Dec. 2013.
- Mueller, E.R., Grams, P.E., Hazel Jr., J.E., Kaplinksi, M., Alexander, J.S., Schmidt, J.C., and Kohl, K. (2013) Monitoring geomorphic effects of 2011 high flows on the Green River in Canyon of Lodore, Dinosaur National Monument. River Management Society Conference, Grand Junction, CO, Mar. 2013.
- Mueller, E.R. (2013) Geomorphic response to the 2011 flood in the Canyon of Lodore. Dinosaur National Monument River Science Symposium, Jensen, UT, Feb. 27, 2013. INVITED.
- Mueller, E.R. (2013) Geomorphology and sediment transport dynamics of braided streams in the Greater Yellowstone Region. Department of Watershed Sciences Seminar Series, Utah State University, Feb. 12, 2013. INVITED.
- Mueller, E.R., Smith, M.E., and Pitlick, J. (2012) Using stream sediment lithology to explore the roles of abrasion and channel network structure in shaping downstream sediment yields. Fall Meeting, American Geophysical Union, Dec. 2012.
- Mueller, E.R. (2012) Landscape controls on sediment supply, sedimentology, and channel pattern for streams in the northern Rocky Mountains. USGS Southwest Biological Science Center, Flagstaff, AZ, Jul. 2012. INVITED.
- Mueller, E.R. and Pitlick, J. (2011) Braided streams in the greater Yellowstone region: linking geology, sediment supply, and channel morphodynamics. Fall Meeting, American Geophysical Union, Dec. 2011.
- *Davidson, C., *DiFiori, R., Smith, M.E., and Mueller, E.R. (2011) From Kings Peak to the Delgado submarine canyon: Tracking littoral inputs to the deep sea at the Mendicino Triple Junction, California. Fall Meeting, American Geophysical Union, Dec. 2011.
- Mueller, E.R. and Pitlick, J. (2011) The geomorphology of braided streams in the greater Yellowstone region. 6th Annual Hydrologic Sciences Symposium, University of Colorado, Mar. 2011.
- Pitlick, J., Meertens, C., Major, J., Normandeau, J., Spicer, K., Mosbrucker, A., and Mueller, E. (2010) Identifying sediment sources and quantifying rates of erosion along the North Fork Toutle River near Mount St. Helens, WA. Fall Meeting, American Geophysical Union, Dec. 2010.
- Mueller, E.R., and Pitlick, J. (2010) Lithology, sediment supply, and channel morphology in the northern Rocky Mountains, USA. Gravel Bed Rivers 7, Quebec, Canada, Sept. 2010.
- Pitlick, J., Segura, C., and Mueller, E.R. (2010) Influence of sediment transport intensity and hydrology on the bankfull hydraulic geometry of gravel bed rivers. Eos Trans. AGU, 91(26), West. Pac. Geophys. Meet. Suppl. Abstract H52A-05. American Geophysical Union, Jun. 2010. INVITED.
- Mueller, E.R. and Pitlick, J. (2010) Lithology, sediment supply, and channel adjustments in three northern Rocky Mountain streams. 5th Annual Hydrologic Sciences Symposium, University of

- Colorado, Mar. 2010.
- Mueller, E.R., and Pitlick, J. (2009) Geomorphic and sediment supply controls on transitions between single-thread and braided channel planforms, Sunlight Creek, Wyoming. Eos Trans. AGU, 90(52), Fall Meet. Abstract EP32A-08. Fall Meeting, American Geophysical Union, Dec. 2009.
- *Hoefer, J.M., Smith, M.E., and Mueller, E.R. (2009) Tracking the downstream fate of diverse lithologies in modern fluvial systems, Northern Rocky Mountains, Idaho. GSA Abstracts with Programs, 41(7), p.144. Geological Society of America Annual Meeting, Oct. 2009.
- Mueller, E.R., Pitlick, J., Smith, M.E. (2008) Lithologic and Hydraulic controls on network-scale sediment yield: Big Wood and North Fork Big Lost Rivers, Idaho. Eos Trans. AGU, 89(52), Fall Meet. Suppl. Abstract H44B-02. Fall Meeting, American Geophysical Union, Dec. 2008.
- Mueller, E.R. and Pitlick, J. (2008) Hydraulic geometry of streams and rivers in the Northern Rocky Mountains of Idaho: correlating channel form and sediment transport dynamics. 3nd Annual Hydrologic Sciences Symposium, University of Colorado, Mar. 2008.
- Mueller, E.R. (2008) Geomorphic response to rainfall and flooding along the North Fork Toutle River, Mount St. Helens, WA. Hydrology, Water Resources, and Environmental Fluid Mechanics Seminar Series, Dept. of Civil and Enivronmental Engineering, Univ. of Colorado, Boulder, Mar. 2008. INVITED.
- Mueller, E.R., Pitlick, J., Spicer, K., and Major, J.J. (2007) Channel width adjustments to flood flows in a highly erodible landscape, North Fork Toutle River, Mount St. Helens, WA. Eos Trans. AGU, 88(52), Fall Meet. Suppl. Abstract H44B-02. Fall Meeting, American Geophysical Union, Dec. 2007. *AGU Hydrology Section Student Paper Award*
- Pitlick, J., Mueller, E., Major, J., and Spicer, K. (2007) Response of the North Fork Toutle River to November 2006 rainfall and flooding. GSA Abstracts with Programs, 39(6), p.178. Geological Society of America Annual Meeting, Oct., 2007. INVITED.
- Pitlick, J., Mueller, E., and Segura, C. (2007) Surface-layer armoring and its effect on sediment transport in high-gradient channels. 2nd Annual Hydrologic Sciences Student Research Symposium, University of Colorado, Mar. 2007. INVITED.
- Pitlick, J., Mueller, E. R., Segura-Sossa, C., Cress, R., and Torizzo, M. (2005) Channel geometry and sediment transport in gravel-bed rivers. Sixth Gravel-Bed Rivers Conference, Lienz, Austria. Sept. 2005.
- Pitlick, J., Mueller, E., Segura-Sossa, C., and Torizzo, M. (2004) Adjustments of bed sediment texture to variations in shear stress in high-gradient streams. Eos Trans. AGU, 85(47), Fall Meet. Suppl. Abstract H43A-0363. American Geophysical Union, Dec. 2004.
- Mueller, E., Pitlick, J., and Nelson, J.M. (2003) Variability of reference shear stress in gravel-bed streams. Eos Trans. AGU, 84(47), Fall Meet. Suppl., Abstract H52A-1160. American Geophysical Union, Dec. 2003.
- Mueller, E., Pitlick, J., and Nelson, J.M. (2003) Effects of gradient on transport thresholds and channel morphology in mountain watersheds. Annual Meeting of the Rocky Mountain Hydrological Research Center. Nov. 10, 2003.
- Mueller, E., Pitlick, J., and Torizzo, M. (2002) Downstream variability in the surface textures of steep gravel-bed streams, Rocky Mountains, Colorado. Eos Trans. AGU, 83(47), Fall Meet. Suppl., Abstract H21G-07. American Geophysical Union, Dec. 2002.
- Pitlick, J. and Mueller, E. (2002) Adjustments of channel width and bed material to downstream changes in discharge and sediment load. Annual Meeting of the Rocky Mountain Hydrological Research Center. Sep. 2002.
- Mueller, E., Pitlick, J. (2001) Downstream changes in channel morphology through a network of gravel-bed streams. Eos Trans. AGU, 82(47), Fall Meet. Suppl., Abstract H41D-0306. American Geophysical Union, Dec. 2001.
- Surveying using RTK/RTN-GPS/GNSS, total station, rod and level; bedload and suspended load

sediment transport measurement; stream gaging using ADCP and current meters; sedimentology, stratigraphy, and field mapping of alluvial deposits; standard and image-based grain-size analysis

ArcGIS, Python, LaTeX, Matlab, R, S-Plus, SigmaPlot, Inkscape, common Windows database, spreadsheet, and presentation software; HEC-RAS; Multi-dimensional flow and sediment transport modeling using IRIC - the International River Interface Cooperative (i-ric.org)

SERVICE AND OUTREACH

* Manuscript Reviewer (2009-present):

Journal of Geophysical Research JOURNAL OF HYDRAULIC ENGINEERING Water Resources Research EARTH SURFACE PROCESSES AND LANDFORMS GEOMORPHOLOGY Zeitschrift für Geomorphologie U.S. Geological Survey ECOLOGICAL ENGINEERING NEW ZEALAND JOURNAL OF GEOLOGY AND GEOPHYSICS SEDIMENTOLOGY JOURNAL OF THE AMERICAN WATER RESOURCES ASSOCIATION Remote Sensing GEOLOGICAL SOCIETY OF AMERICA BULLETIN Water JOURNAL OF ECOHYDRAULICS Hydrological Processes NATIONAL SCIENCE FOUNDATION EARTH SURFACE DYNAMICS SCIENCE ADVANCES SCIENCE OF THE TOTAL ENVIRONMENT UTAH ACADEMY GEOMORPHICA

- * Various Department, College, and University Committees, Southern Utah University, 2019-present.
- * Public Outreach for the Geosciences: participated in multiple outreach events at Southern Utah University including the Geosciences Open House, Red Riot, STEAMfest, Science Fairs, Career Nights, etc. Southern Utah University, 2019-present.
- * Environmental Science Program Development Chair, Southern Utah University, 2021-2023.
- * GeoClub faculty advisor, Southern Utah University, 2020-2023.
- * Panelist for "Collaboration and Equity in the Colorado River Basin in a Future of Drought", Geography Awareness Week, University of Wyoming, Nov. 12, 2018.
- * Session convener for "Advances in River Science in the Intermountain West" at the Cordilleran/Rocky Mountain Section Meeting, Geological Society of America, Flagstaff, Arizona, May 2018.
- * Participant in "My Favorite Map" as part of Geography Awareness Week at the University of Wyoming. November, 2018
- * Panel Member: National Science Foundation Geomorphology and Land-Use Dynamics (NSF-GLD) Postdoctoral Fellowship Panel. March, 2017
- * Presented a webinar for the Minute 319 Delta science team on historical channel change in the Colorado River Delta. August, 18, 2016
- * Presented a research overview at USGS Headquarters entitled "Geomorphic response to controlled floods in the Colorado River basin". August, 15, 2015
- * USGS Volunteer: Flagstaff Science in the Park. Demonstrated geomorphic processes to the public using an EmRiver Stream Table for the USGS Grand Canyon Monitoring and Research Center as part of a community-wide science outreach week, Flagstaff, Arizona, September 28, 2014.
- * USGS Volunteer: Flagstaff Science in the Park. Demonstrated geomorphic processes to the public using an EmRiver Stream Table for the USGS as described above, September 21, 2013.
- * Steering Committee: Hydrologic Sciences Research Symposium, University of Colorado; Committee member responsible for development and implementation of symposium featuring graduate students and invited faculty members, Fall 2010-Spring 2011.
- * Mentor: Oversaw and developed research assistantships for geography students in the Undergraduate Research Opportunities (UROP) program at CU-Boulder, 2008-2010.
- * Panel Member: Department of Geography Colloquium, University of Colorado, Research publica-

tions and funding in physical and human geography, September 18, 2009.

- * Graduate Student Liaison: Physical Geography hire, Department of Geography, University of Colorado. Department successfully hired two new physical geography professors. Dec. 2008- Spring 2009.
- * Invited Field Trip Leader: Geology and geography field trip of Rocky Mountain National Park and the Front Range for a group of 22 Chinese geographers and geoscientists attending a GIS short course at the University of Colorado, August 2008.
- * Volunteer: Assisted Wildland Restoration Volunteers (WRV) with sediment monitoring in the restoration of forest roads and hillslopes affected by off-road vehicles, Carnage Creek, Boulder County, CO, August 2007.

Press

- 2013: Research on mountain rivers featured in EOS, the periodical of the American Geophysical Union: Schultz, C. (2013), "Tying bulk watershed properties to mountain river channel evolution", Eos Trans. AGU, 94(49), 484, onlinelibrary.wiley.com/doi/10.1002/2013EO490010/abstract
- **2014:** Story on Dinosaur National Monument research in the Environmental Monitor: "Study documents changes to Green River after 2011 flood below Flaming Gorge Dam"; www.fondriest.com/news/study-docoments-changes-green-river-2011-flood-flaming-gorge-dam.htm
- 2014: Multiple news reports about the U.S.-Mexico Minute 319 Colorado River Delta pulse flow; served as geomorphology lead on international science team. pulseflow.arizona.edu/science-media
- **2016:** USGS News Release: "A River Ran Through It and Brought Life, At Least for a While: Scientists Study Effects of Water Released Across U.S.-Mexico Border", www.usgs.gov/news/a-river-ran-through-it-and-brought-life-least-a-while
- **2017:** Multiple reports on Geophysical Research Letters article on wildfire-induced increases in sedimentation in the Western U.S. Example articles:

www.usgs.gov/news/increases-wildfire-caused-erosion-could-impact-water-supply-and-quality-west-2 phys.org/news/2017-09-wildfire-caused-erosion-impact-quality-west.html thinkprogress.org/relentless-western-wildfires-e6acdf241a53/

Featured in Frontiers in the Environment and Ecology dispatches: "Post-fire erosion could clog reservoirs" - onlinelibrary.wiley.com/doi/10.1002/fee.1726/full

2017: Research highlight in Science on recent work on submarine canyons in Geophysical Research Letters; "Sorting out submarine canyons" - science.sciencemag.org/content/358/6361/317.4

2021: KSL News TV interview with reporter Garna Mejia regarding drought conditions and effects of the 2021 monsoon storms.

2023: Interviews regarding Utah's exceptional snowpack and spring flooding:

KSL: www.ksl.com/article/50624164/a-tale-of-two-regions-why-snowmelt-runoff-looks-different-in-northern-southern-utah

KUER: www.kuer.org/health-science-environment/2023-05-18/how-climate-change-is-increasing-the-unpredictability-of-utahs-streams

Professional Affiliations

Geological Society of America (1999-present) Quaternary Geology and Geomorphology Division American Geophysical Union (2001-present) Hydrology Section, Earth and Planetary Surface Processes Group

Association of American Geographers (2006-2022) Geomorphology Specialty Group Utah Geological Association (2020-present)