MICHAEL N. GOOSEFF

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EDUCATION

Ph.D., 2001	Civil Engineering, University of Colorado, Boulder, CO
M.S., 1998	Civil Engineering, University of Colorado, Boulder, CO
B.C.E., 1996	Civil Engineering, Georgia Institute of Technology, Atlanta, GA

PROFESSIONAL EXPERIENCE

2015-present	Associate Professor, INSTAAR, Civil, Environmental, & Architectural Engineering, Univ of Colorado
2013-2015	Associate Professor, Civil & Environmental Engineering, Colorado State University
2011- 2013	Associate Professor, Civil & Environmental Engineering, Pennsylvania State University
2007-2011	Assistant Professor, Civil & Environmental Engineering, Pennsylvania State University
2004-2007	Assistant Professor, Geology & Geological Engineering, Colorado School of Mines
2002-2004	Assistant Professor, Aquatic, Watershed, and Earth Resources, Utah State University
2001-2002	Postdoctoral Researcher, Department of Geosciences, Oregon State University
1996-1998	Assistant Environmental Planner, Hydrosphere Resource Consultants, Boulder, CO
1994	Assistant Project Engineer, GEDCO Group, Inc., Smyrna, GA

LICENSURE

1996 Engineer In Training (EIT, aka Fundamentals of Engineering), State of Georgia

AWARDS AND HONORS

- Lead PI of the McMurdo Dry Valleys Antarctica LTER project (2015 - present)
- 2012 Penn State Engineering Alumni Association Outstanding Teaching Award
- Harry West Teaching Award, 2011-2012 (Department of Civil & Environmental Engineering, Penn State University)
- National Academy of Engineering Frontiers in Engineering Education Symposium, 2011 (one of 65 selected participants from Engineering programs across the US)
- UCOWR Award for Education and Public Service to the MOCHA team, 2011
- Hartz Family Development Professorship at Penn State, 2007-2010
- Outstanding Faculty Mentor, 2004 (Utah State University)

TEACHING

Since 2003 I have taught the following classes at Utah State University, Colorado School of Mines, Penn State University, Colorado State University, and University of Colorado:

- Introduction to Civil Engineering
- Fluid Mechanics
- Open Channel Hydraulics
- Ecological Engineering
- Surface Water Quality Modeling
- Physical Hydrology
- Initiating your Academic Career
- Small Watershed Hydrology
- Snow Hydrology
- Surface Water Hydrology

REPRESENTATIVE PUBLICATIONS

(* indicates student lead author); for full listing see web page

Harvey, J, and M Gooseff, 2015. River corridor science: Hydrologic exchange and ecological consequences from bedforms to basins. *Water Resources Research*, 51(9): 6893-6922.

Fountain, AG, G Saba, B Adams, P Doran, W Fraser, M Gooseff, M Obryk, JC Priscu, S Stammerjohn, and R Virginia. 2016. The impact of a large-scale climate event on Antarctic Ecosystem Processes. *Bioscience*, 66(10): 848-863.

Gooseff, MN, D Van Horn, Z Sudman, DM McKnight, KA Welch, and WB Lyons. 2016. Stream biogeochemical and suspended sediment responses to permafrost degradation in stream banks in Taylor Valley, Antarctica. *Biogeosciences*, 13, 1723-1732, doi:10.5194/bg-13-1723-2016.

Okie, JG, DJ Van Horn, D Storch, JE Barrett, MN Gooseff, L Kopsova, CD Takacs-Vesbach. 2015. Niche and metabolic principles explain patterns of diversity and distribution: theory and a case study with soil bacterial communities. *Proceedings of the Royal Society - B*, 282: 20142630.

González-Pinzón, R, AS Ward, CE Hatch, AN Wlostowski, K Singha, MN Gooseff, R Haggerty, JW Harvey, OA Cirpka, and JT Brock. 2015. A field comparison of multiple techniques to quantify groundwater–surface-water interactions. *Freshwater Science*, 34(1): 139-160.

Wollheim, WM, TK Harms, BJ Peterson, K Morkeski, CS Copkinson, RJ Stewart, MN Gooseff, and MA Briggs. 2014. Nitrate uptake dynamics of surface transient storage in stream channels and fluvial wetland. *Biogeochemistry*, 120: 239-257.

Ward, AS, MN Gooseff, TJ Voltz, M Fitzgerald, K Singha, and JP Zarnetske. 2013. How does rapidly changing discharge during storm events affect transient storage and channel water balance in a headwater mountain stream? *Water Resources Research*, 49(9): 5473-5486.

Gooseff, MN, MA Briggs, KE Bencala, BL McGlynn, and DT Scott. 2013. Do transient storage parameters directly scale in longer, combined stream reaches? Reach length dependence of transient storage interpretations. *Journal of Hydrology*, 483:16-25.

*Payn, RA, MN Gooseff, BL McGlynn, KE Bencala, and SM Wondzell. 2012. Exploring changes in the spatial distribution of stream baseflow generation during a seasonal recession. *Water Resources Research*, 48, W04519, doi:10.1029/2011WR011552.

*Ward, AS, M Fitzgerald, MN Gooseff, TJ Voltz, AM Binley, and K Singha. 2012. Hydrologic and geomorphic controls on hyporheic exchange during base flow recession in a headwater mountain stream. *Water Resources Research*, 48, W04513, doi:10.1029/2011WR011461.

Bencala, KE, MN Gooseff, and BA Kimball. 2011. Rethinking hyporheic flow and transient storage to advance understanding of stream-catchment connections. *Water Resources Research*, 47, W00H03, doi:10.1029/2010WR010066.

Levy, JS, AG Fountain, MN Gooseff, KA Welch and WB Lyons. 2011. Water tracks and permafrost in Taylor Valley, Antarctica: Extensive and shallow groundwater connectivity in a cold desert ecosystem. *Geological Society of America Bulletin*, 123(11-12):2295-2311.

Hester, ET, and MN Gooseff. 2010. Moving beyond the banks: Hyporheic restoration is fundamental to restoring ecological services and functions of streams. *Environmental Science & Technology*, 44(5): 1521-1525.

*Payn, RA, MN Gooseff, BL McGlynn, KE Bencala, and SM Wondzell. 2009. Channel water balance and exchange with subsurface flow along a mountain headwater stream in Montana, USA. *Water Resources Research*, 45, W11427, doi:10.1029/2008WR007644.

*Jensco, KG, BL McGlynn, MN Gooseff, SM Wondzell, KE Bencala, and LA Marshall. Hydrologic connectivity between landscapes and streams: Transferring reach and plot scale understanding to the catchment scale. *Water Resources Research*, 45, W04428, doi:10.1029/2008WR007225.

*Briggs, MA, MN Gooseff, CD Arp, and MA Baker. 2009. A method for estimating surface transient storage parameters for streams with concurrent hyporheic storage. *Water Resources Research*, 45, W00D27, doi:10.1029/2008WR006959.

Gooseff, MN, A Balser, WB Bowden, and JB Jones. 2009. Effects of hillslope thermokarst in northern Alaska. *Eos, Transactions of the American Geophysical Union*, 90: 29-31.

*Payn, RA, MN Gooseff, DA Benson, OA Cirpka, JP Zarnetske, WB Bowden, JP McNamara, and JH Bradford. 2008. Comparison of instantaneous and constant-rate stream tracer experiments through non-parametric analysis of residence time distributions. *Water Resources Research,* 44, W06404, doi:10.1029/2007WR006274.

Cardenas, MB, and MN Gooseff. 2008. Comparison of hyporheic exchange under covered and uncovered channels based on linked surface and groundwater flow simulations, *Water Resources Research*, 44, W03418, doi:10.1029/2007WR006506.

*Zarnetske, JP, MN Gooseff, WB Bowden, MJ Greenwald, TR Brosten, JH Bradford, and JP McNamara. Influence of morphology and permafrost dynamics on hyporheic exchange in Arctic headwater streams under warming climate conditions. *Geophysical Research Letters*, 35, L02501, doi:10.1029/2007GL032049.

Wondzell, SM, MN Gooseff, and BL McGlynn. 2007. Flow velocity and the hydrologic behavior of streams during baseflow, *Geophysical Research Letters*, 34, L24404, doi:10.1029/2007GL031256.

Wagener, T, M Weiler,B McGlynn, M Gooseff, T Meixner, L Marshall, K McGuire, and M McHale. 2007. Taking the pulse of hydrology education. *Hydrological Processes*, 21(13):1789-1792.

Gooseff, MN, JK Anderson, SM Wondzell, J LaNier, and R Haggerty. 2006. A modeling study of hyporheic exchange pattern and the sequence, size, and spacing of stream bedforms in mountain stream networks, Oregon, USA. *Hydrological Processes*, 20(11): 2443-2457.

Gooseff, MN, WB Lyons, DM McKnight, BH Vaughn, AG Fountain, and C Dowling. 2006. A stable isotopic investigation of a polar desert hydrologic system, McMurdo Dry Valleys, Antarctica. *Arctic, Antarctic, and Alpine Research*, 38(1): 60-71.

Hood, E, MN Gooseff, and SL Johnson. 2006. Changes in the character of stream water dissolved organic carbon during flushing in three small watersheds, Oregon. *Journal of Geophysical Research*, 111, G01007, doi:10.1029/2005JG000082.

Gooseff, MN, J LaNier, R Haggerty, and K Kokkeler. 2005. Determining in-channel (dead zone) transient storage by comparing solute transport in a bedrock channel-alluvial channel sequence, Oregon. *Water Resources Research*, 41, W06014, doi:10.1029/2004WR003513.

Gooseff, MN, K Strzepek, and SC Chapra. 2005. Potential effect of climate change on water temperature downstream of a reservoir: Lower Madison River, Montana. *Climatic Change*, 68(3): 331-353.

Gooseff, MN, DM McKnight, RL Runkel, and JH Duff. 2004. Denitrification and hydrologic transient storage in a glacial meltwater stream, McMurdo Dry Valleys, Antarctica. *Limnology & Oceanography*, 49(5):1884-1895.

Gooseff, MN, DM McKnight, RL Runkel and BH Vaughn. 2003. Determining long time-scale hydrologic flow paths in Antarctic streams. *Hydrological Processes*, 17(9):1691-1710.

Gooseff, MN, SM Wondzell, R Haggerty, and J Anderson. 2003. Comparing transient storage modeling and residence time distribution (RTD) analysis in geomorphically varied reaches in the Lookout Creek basin, Oregon, USA. *Advances in Water Resources*, 26(9): 925-937.

Gooseff, MN, DM McKnight, WB Lyons, and AE Blum. 2002. Weathering reactions and hyporheic exchange controls on stream water chemistry in a glacial meltwater stream in the McMurdo Dry Valleys. *Water Resources Research*, 38(12): 1279, DOI 10.1029/2001WR000834.

Conference Presentations/Abstracts:

I collaborate extensively with students and colleagues to present our research advances regularly at annual meetings of *American Geophysical Union, American Society of Limnology & Oceanography, Ecological Society of America, Geological Society of America, Society of Freshwater Science* (*formerly NABS*)

RESEARCH ACTIVITIES

$17M+ in total collaborative research projects since 2003

Current projects:

Continuous Metabolism and Nutrient Uptake Across the River Continuum (NSF Ecosystems Cluster, 2016-2019)
Arctic Oases - How does the delayed release of winter discharge from aufeis affect the ecosystem structure and function of rivers (NSF Arctic Natural Science, 2016-2018)
McMurdo Long Term Ecological Research Project (MCM LTER; NSF Antarctic Integrated System Science/Division of Environmental Biology, 2011-2016)
The McMurdo Dry Valleys: A Landscape on the Threshold of Change (NSF Antarctic Integrated System Science, 2013-2016)

Past projects:
How does changing seasonality affect the capacity of arctic stream networks to influence nutrient fluxes from the landscape to the ocean? (NSF Arctic System Sciences, 2009-2013)
Spatial and Temporal Influences of Thermokarst Failures on Surface Processes in Arctic Landscapes (NSF Arctic System Sciences, 2008-2013)
Are the Dry Valleys Getting Wetter? A Preliminary Assessment of Wetness Across the McMurdo Dry Valleys Landscape (NSF, Antarctic Earth Sciences, 2010-2013)
What are the seasonal controls on stream-riparian groundwater exchange during baseflow recession in headwater catchments? (NSF Hydrologic Sciences, 2009-2013)
The role of snow patches on distribution of soil microbial communities and biogeochemical cycling in the Antarctic Dry Valleys (NSF, Antarctic Ecosystems and Organisms, 2009-2012)
Understanding the Scaling of N Cycle Controls Throughout a River Network (NSF Ecosystem Science, 2006-2010)
MOdular Curriculum for Hydrological Advancement (MOCHA), NSF CCLI
Ground-Penetrating Radar Hyporheic Zone Project, USDA NRI
Arctic National Parks Thermokarst Inventory and Monitoring, NPS I&M
Collaborative Research: Hydrologic controls over biogeochemistry and microbial community structure and function across terrestrial/aquatic interfaces in a polar desert, NSF Antarctic Sciences
Collaborative Research: Hydrological linkages between landscapes and streams: Transferring reach and plot scale understanding to the network and catchment scales, NSF Hydrologic Sciences
Will Climate Change affect hyporheic processes in arctic streams? An assessment of interactions among geomorphology, hydrology, and biogeochemistry in Arctic stream networks, NSF Arctic Natural Sciences

LAB MEMBERS (STUDENT RESEARCHERS & POSTDOCS):
Current: A Wlostowski (PhD), C Torrens (PhD), M Spangler (MS), A Shores (PhD co-advisor), P Hendrickson (MS), C Wilson (MS)
Completed:
2016 – R Webb (PhD)
2015 – E Smull (MS), Z Sudman (MS)
2014 – W Kang (MS, pursuing PhD at CSU)
2013 – Z Langford (MS)
2012 – S Godsey (postdoc, now Assistant Professor at Idaho State Univ.), K Gerecht (MS, pursuing PhD at Colorado School of Mines), J Eveland (MS), E Bernzott (MS, now consultant in PA), C Bakey (MS, now consultant in PA), A Wlostowski (MS, pursuing PhD at CU)
2011 – A Ward (PhD, now Assistant Professor at Univ. of Iowa), S. Gregg (MS, co-advisor, now consultant in PA), T. Voltz (MS, co-advisor, now a research technician), P Kerr (MS, pursuing PhD at Notre Dame)
2010 – M Weaver (MS)
2009 – C. Kelleher (MS, co-advisor)
2008 – R. Payn (PhD, now at Montana State Univ., postdoc), M. Briggs (MS, now at USGS), A Bouchier (MS)

2007 – M. Northcott (MS, now at Exxon-Mobil), R. Goetz (MS, now at Otis Bay consulting)

2006 – J. Zarnetske (MS, now at Yale), B. Shakespeare (MS, now at Bureau of Land Management, OR)

PROFESSIONAL/OUTREACH ACTIVITIES

Current and/or Past Associate Editor for *Hydrology and Earth Systems Science*, *WIRES-Water*, and *Water Resources Research*

Editorial Board member of *Eos, Transactions of the American Geophysical Union (AGU)*

2013-2016 – Member of Hydrologic Sciences Award Committee, AGU

2014-2016 – Chair of Water Quality Technical Committee, AGU

2013-2016 – Member of the Board of Directors of CUAHSI

2012 - Co-lead (with K Singha) CUAHSI Hands-on Techniques Workshop 2012 on Stream-Groundwater Interactions

2011 Chair of NSF review committee for Office of Polar Programs

2008-2010 Secretary, Hydrology Section of the American Geophysical Union

2007 LTER site review panelist

2006, 2007, 2008, 2010, 2011 - Review Panelist, NSF

2003-present Member of the Water Quality Technical Committee, American Geophysical Union

Regularly an Invited Speaker at Universities across the US

Member of:

American Association for the Advancement of Science	American Geophysical Union
American Society of Limnology & Oceanography	American Society of Civil Engineers
Society of Freshwater Science (formerly NABS)	Ecological Society of America

PRESS:

- August 2011 - Press coverage on our lab's research on responses to climate change in the polar regions
  Voice of America: http://www.voanews.com/english/news/environment/Polar-Scientist-Charts-Melting-Caused-by-Climate-Change-127591558.html
  Alaska Dispatch: http://www.alaskadispatch.com/article/arctic-climate-will-change-faster-antarctic
  Penn State press release: http://live.psu.edu/story/54492