

**Marty D. Frisbee**

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*Last Updated: January 30, 2023*

**Education:**

**Ph.D. Hydrology**, New Mexico Tech, Socorro, NM, June 2010

Ph.D. Dissertation Title: *Streamflow Generation Processes and Residence Times in a Large, Mountainous Watershed in the Southern Rocky Mountains of Colorado, USA*

**M.S. Earth Science**, University of North Carolina at Charlotte, Charlotte, NC, December 2004

M.S. Thesis Title: *Hillslope Hydrology and Wetland Response of Two Small, Zero-order Boreal Catchments located on the Precambrian Shield, Ontario, Canada*

**B.S. Electrical Engineering Technology**, University of North Carolina at Charlotte, Charlotte, NC, May 2002, *Cum Laude Graduate*

**Minor Biology** (Ecology), University of North Carolina at Charlotte, Charlotte, NC, May 2002

**Appointments:**

August 2021 – Present

*Associate Professor*, Department of Earth, Atmospheric, and Planetary Sciences, Purdue University, West Lafayette, IN

August 2014 – August 2021

*Assistant Professor*, Department of Earth, Atmospheric, and Planetary Sciences, Purdue University, West Lafayette, IN

September 2013 – January 2019

*Adjunct Professor*, Department of Earth and Environmental Science, New Mexico Tech, Socorro, NM

August 2013 – May 2014

*Visiting Assistant Professor of Geology*, Department of Geology and Geography, Georgia Southern University, Statesboro, GA

January 2012 – August 2013

*Postdoctoral Researcher*, Department of Earth and Environmental Science, New Mexico Tech, Socorro, NM

July 2010 – August 2011

*Project Hydrogeologist*, AMEC Earth & Environmental Consulting, Socorro, NM.

**Recent Synergistic and Outreach Activities:**

Co-convenor for Topical Session T104: From Pores to Mountains, and Minutes to Millennia: Session Dedicated to the Contributions of Rob Bowman, Fred Phillips, and John Wilson, 2016 GSA Annual Meeting, Denver, CO.

Co-convenor for Topical Session B066: Spring Ecosystems: The Quintessential Groundwater-Dependent Ecosystem, 2013 AGU Fall Meeting, San Francisco, CA.

Co-convenor for Topical Session H083: The flow below: Defining, quantifying, and understanding baseflow, 2013 AGU Fall Meeting, San Francisco, CA.

Principal Investigator for EPSCoR Tri-State Innovation Working Group: Resilience of Springflow Processes to the Effects of Climate Change, Valles Caldera Science and Education Center, Jemez Springs, NM, October 2012.

Co-convenor for Topical Session T97: Novel Techniques for the Identification and Quantification of Regional-Groundwater Contributions to Streamflow and Related Processes, 2012 GSA Annual Meeting, Charlotte, North Carolina.

Consulting Scientist for the assessment and realignment of streamflow and snowfall monitoring capabilities; Navajo Nation HydroClimate Monitoring Network, 2010 – 2011

Reviewer (Journals): Water Resources Research, Hydrological Processes, Geophysical Research Letters, Hydrogeology Journal, Journal of Arid Environments, Groundwater, Hydrology and Earth System Sciences (HESS), Nature, WIREs Water.

Reviewer (Proposals & Review Panel): NSF Hydrological Sciences, Indiana Water Resources Research Center (IWRRC)

Technical Panel for Lafayette/West Lafayette Groundwater Management (LEAP Project)

*JTPC for Hydrogeology Division – GSA 2024 (training in 2023)*

**Current Postdoctoral Researchers:**

1. None

**Current Graduate Students:**

1. Srilani Wickramasinghe, Ph.D. student, ESE/EAPS, Purdue University
2. Ayobami Oladapo, M.S. student, EAPS, Purdue University
3. Derrick Slick, M.S. Student, EAPS, Purdue University (co-advised with Ken Ridgway)

**Current Graduate Student Committees:**

1. Kyungdoe Han, Ph.D. Student, EES, New Mexico Tech
2. Sadia A. Jame, Ph.D. Student, ABE, Purdue University
3. Les Warren, Ph.D. Student, FNR, Purdue University
4. Chung-Yuan Liang, Ph.D. Student, CE, Purdue University

### **Past Postdoctoral Researchers:**

1. Odiney Alvarez-Campos (co-sponsored with Lisa Welp), 2019-2020, EAPS, Purdue University
2. Elizabeth Olson (co-sponsored with Lisa Welp), 2018-2022, EAPS, Purdue University

### **Past Graduate Students:**

1. Douglas G. Tolley, M.S. (research advisor), EES, New Mexico Tech, defended 2013
2. Noah Stewart-Maddox, M.S., EAPS, Purdue University, defended 2017
3. Lani Tsinnajinnie, Ph.D. (research advisor), EES, New Mexico Tech, defended 2018
4. Carolyn (Box) Gleason, M.S., EAPS, Purdue University, defended 2018
5. Zachary Meyers, Ph.D., EAPS, Purdue University, defended 2020
6. Jordyn Miller, Ph.D., EAPS, Purdue University, defended 2021

### **Past Graduate Student Committees (Committee Member):**

1. Sayan Dey, M.S., CE, Purdue University, defended 2016
2. Lauren Colliver, M.S., EAPS, Purdue University, defended 2016
3. Timothy Henderson, M.S, EAPS, Purdue University, defended 2016
4. Feng Yu, Ph.D., ESE/EAPS, Purdue University, defended 2018
5. Siddharth Saskena, Ph.D., CE, Purdue University, defended 2019
6. Mohamed Atef Moham Abouelnour, Ph.D., ABE, Purdue University, defended 2020
7. Khaled Pordel, Ph.D., NRES, University of Nevada – Reno, defended 2020
8. Sayan Dey, Ph.D., CE, Purdue University, defended 2021
9. Md. Sanoar Rahman, Ph.D., ABE/ESE, Purdue University, defended 2022

### **Past Visiting Scholars:**

1. Alex Bortolon de Matos, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil, 2019

### **Current & Past Undergraduate Student Researchers Mentored (<sup>1</sup> UROP, <sup>2</sup>REU):**

1. Elizabeth Tysor, New Mexico Tech, 2012 – 2015
2. Noah Stewart-Maddox, New Mexico Tech, 2012 – 2015
3. Kevin Betone, New Mexico Tech, 2013
4. Vanessa Ward<sup>1</sup>, Santa Fe Community College, 2013
5. Patrick Coker<sup>1</sup>, UNM-Taos, 2013
6. Amber Degon<sup>2</sup>, Georgia Southern University, 2014
7. Jake Swanson<sup>2</sup>, Georgia Southern University, 2014
8. Jordan Howard<sup>2</sup>, Georgia Southern University, 2014
9. Philine Bogeholz, Georgia Southern University (Purdue SURF student), 2015
10. Megan Neary, EAPS, Purdue University, 2015
11. Madison Hughes, EAPS, Purdue University, 2015 – 2016
12. Laura Alejandra Beltrán Daza, Universidad Nacional de Colombia (UREP-C), 2016
13. Benjamin Sadler, EAPS, Purdue University, 2016
14. Kyle Kube, EAPS, Purdue University, 2017
15. Hannah Yee, CHEM, Purdue University, 2017 – 2018
16. Hannah Jongkind, EAPS, Purdue University, 2018, 2019 – 2020
17. Ashley Steed, BIOL, Purdue University, 2018

18. Katie O'Malley, CHEM, Purdue University, 2018 – 2019
19. Katrina Poling, EAPS, Purdue University, 2019
20. James Haydock, EAPS, Purdue University, 2018 – 2019
21. Joel Woods, EAPS, Purdue University, 2018 – 2019
22. Michael Greenfield, EAPS, Purdue University, 2019
23. Caelum Mroczek, CLA/EAPS, Purdue University, 2019
24. Sneha Nachimuthu, EAPS, Purdue University, 2018 – 2021
25. Lainey Colglazier, EAPS, Purdue University, 2019
26. Liana Zogbi, EAPS, Purdue University, 2019 – 2020
27. Jonathon Ellingson, EAPS, Purdue University, 2020 – 2021
28. Zachary Kleyn, EAPS, Purdue University, 2020 – 2021
29. Joseph Poccia, EAPS, Purdue University, 2020
30. Andrew Wanstall, EAPS, Purdue University, 2021
31. Emily Moenika Lee Zaretzky, CS, Purdue University, 2021
32. Laura Rossana Fracica Gonzalez, Universidad Nacional de Colombia (UREP-C), 2021
33. Ethan Ritchie, EAPS, Purdue University, 2022
34. Austin Rushinsky, EAPS, Purdue University, 2022
35. Mariana Sierra Arboleda, Universidad Nacional de Bogotá (UREP-C), 2022
36. Ian Joseph Shaw, EAPS, Purdue University, 2023

**Teaching Experience:**

Water World (EAPS 200), Purdue University, 2018, 2020, 2021, 2023  
 Contaminant Hydrogeology (EAPS 680), Purdue University, 2016, 2018, 2020, 2022  
 Hydrogeology (EAPS 584), Purdue University, 2015, 2017, 2019, 2021  
 Isotope Hydrology (EAPS 591), Purdue University, 2023  
 Field Geology of North America (EAPS 590, co-taught), Purdue University, 2015  
 Planet Earth: Foundations of Earth Science (EAPS 100), Purdue University, 2015, 2016, 2017  
 Introduction to Earth Sciences (GEOL 1121) Lab Courses, Georgia Southern University, 2013  
 Environmental Geology (GEOL 1340) Lab Courses, Georgia Southern University, 2013  
 Global Change Hydrology (ERTH 340), New Mexico Tech, 2010

**Current Research Grants:**

2019: NSF: Hydrologic Sciences, PI, \$374,618  
 Proposal Title: Collaborative Research: Quantifying the contribution of alpine glacier meltwater to mountain-block recharge using microbiological markers and environmental isotopes.

2019: Arequipa Nexus Institute, UNSA NEXUS Phase II, Co-Investigator, \$232,684.  
 Proposal Title: Estimating relative inputs of glacial meltwater, groundwater, and irrigation runoff in rivers of Arequipa, Peru.

**Expired Research Grants (since Purdue):**

2015: NSF: Integrated Earth Systems, Co-Investigator, \$372,552.  
 Proposal Title: Collaborative Research: Tectonic and climatic forcing of hydrological systems in the southern Great Basin: Implications for ancient and future aquatic system resilience.

2018: C4E Signature Areas Seed Grant Program 2018, Co-Investigator, \$15,000

Proposal Title: Microbiome approaches to detect contamination in water resources to safeguard global rural populations.

2015: USGS-Indiana Water Resources Research Center, Principal Investigator, \$15,000  
Proposal Title: What Is the Source of Baseflow in the Wabash River Watershed?

**Expired Research Grants (before Purdue):**

2012: NSF-EPSCoR Innovation Working Group (IWG) Award, Principal Investigator, \$10,100  
IWG Title: How Resilient are Springflow Processes to the Effects of Climate Change?

2006: NM WRRI Student Research Grant, \$5,000.

Proposal Title: Runoff Processes and the Evolution of Water Chemistry in the Saguache Creek Watershed of the Upper Rio Grande.

**Articles in Press, Review, and Preparation (<sup>1</sup>Graduate Student, <sup>2</sup>Undergraduate Student, <sup>P</sup>Postdoc):**

1. Friel, A., K. Pordel, Z. Meyers, C.O. Seymour, N.J. Thomas, F.M. Phillips, J.R. Knott, D.W. Sada, L. Rademacher, **M.D. Frisbee**, B.P. Hedlund, Synecological response of spring benthic prokaryotes and macroinvertebrates to Paleozoic roof pendant-derived calcium, *Ecosphere*, accepted, December 2022.
2. Miller, J.B.<sup>1</sup>, **M.D. Frisbee**, T.L. Hamilton, and A.K. Liljedahl, Groundwater provides temporary resilience to alpine catchments in glacial retreat, *Nature Geoscience*, in review, November 2022.
3. Olson, E.J.<sup>P</sup>, L.R. Welp, **M.D. Frisbee**, S.A. Zuñiga, O. Alvarez-Campos<sup>P</sup>, W.R. Roque Quispe, C.I. Salazar Mamani, M.R. Arenas Carrión, J.D. Rodríguez, J.M. Jara, A. Ccancapa-Cartagena, C.T. Jafvert, Spatially-heterogeneous glacial meltwater recharge in drainages surrounding the rapidly-ablating Coropuna ice cap, Peruvian Andes, *Hydrological Processes*, in revision.
4. Meyers, Z.P.<sup>1</sup>, N.S. Stewart-Maddox, L.K. Rademacher, and **M.D. Frisbee**, An alternative data preprocessing approach for clustering analysis of hydrochemical data, *Groundwater*, in revision.
5. Tsinnajinnie, L.M.<sup>1</sup>, **M.D. Frisbee**, J.L. Wilson, and I.P. Brady, Hydrostratigraphic and structural controls on streamflow generation in the Chuska Mountains, Navajo Nation, AZ/NM, *Journal of Hydrology: Regional Studies*, in revision.
6. O'Malley, K.G.<sup>2</sup>, **M.D. Frisbee**, Z.P. Meyers<sup>1</sup>, and L.K. Rademacher, Using <sup>4</sup>He/<sup>222</sup>Rn to investigate the importance of the internal “plumbing” of desert springs on spring stability, *Geology*, in preparation.
7. **M.D. Frisbee**, L.A.B. Daza<sup>2</sup>, N.S. Stewart-Maddox<sup>1</sup>, and B.D. Newman, Using endmember mixing analyses (EMMA) to quantify gaining and losing transitions in a semiarid,

mountainous watershed in northern New Mexico, USA, *Journal of Hydrology: Regional Studies* in preparation.

**Publications (<sup>1</sup>Graduate Student, <sup>2</sup>Undergraduate Student, <sup>P</sup>Postdoc):**

1. Frisbee, M.D., M.W. Caffee, and G. Michalski (2022), Using Multiple Tracers to Disentangle the Sources of Baseflow in the Headwaters of a Large Agricultural Watershed, *Journal of Hydrology*, 609, 127769, doi:10.1016/j.jhydrol.2022.127769.
2. Meyers, Z.P.<sup>1</sup>, L.K. Rademacher, M.D. Frisbee, and S.R. Warix (2022), Extending classical geochemical weathering studies through the mountain block: The effect of increasing scale on geochemical evolution in the Sierra Nevada (CA), *Chemical Geology*, 598, 120831, doi:10.1016/j.chemgeo.2022.120831.
3. Alvarez-Campos, O.<sup>P</sup>, E.J. Olson<sup>P</sup>, L.R. Welp, **M.D. Frisbee**, S.A. Zuñiga Medina, J.D. Rodríguez, W.R. Roque Quispe, C.I. Salazar Mamani, M.R. Arenas Carrión, J.M. Jara, A. Ccancapa-Cartagena, and C.T. Jafvert (2022), Evidence for high-elevation salar recharge and interbasin groundwater flow in the Western Cordillera of the Peruvian Andes, *Hydrology and Earth System Sciences (HESS)*, 26, 483–503, doi:10.5194/hess-26-483-2022.
4. Miller, J.B.<sup>1</sup>, **M.D. Frisbee**, T.L. Hamilton, and S.K. Murugapiran (2021) Recharge from glacial meltwater is critical for alpine springs and their microbiomes, *Environmental Research Letters*, 16, 064012, doi:10.1088/1748-9326/abf06b.
5. Meyers, Z.P.<sup>1</sup>, **M.D. Frisbee**, L.K. Rademacher, and N.S. Stewart-Maddox<sup>1</sup> (2021) Old groundwater buffers the effects of a major drought in groundwater-dependent ecosystems of the eastern Sierra Nevada (CA), *Environmental Research Letters*, 16, 044044, doi:10.1088/1748-9326/abde5f.
6. Aboelnour, M.A., B.A. Engel, **M.D. Frisbee**, M.W. Gitau and D.C. Flanagan (2021) Impacts of watershed physical properties and land use on baseflow at regional scales, *Journal of Hydrology: Regional Studies*, 35, 100810, doi:10.1016/j.ejrh.2021.100810.
7. Tsinnajinnie, L.M.<sup>1</sup>, **M.D. Frisbee**, and J.L. Wilson (2020), Groundwater from perennial springs provide refuge from wildfire impacts in mountainous semiarid watershed, *Journal of Hydrology*, doi:10.1016/j.jhydrol.2020.125701.
8. Gleason, C.L.<sup>1</sup>, **M.D. Frisbee**, L.K. Rademacher, D.W. Sada, Z.P. Meyers<sup>1</sup>, J.R. Knott, and B.P. Hedlund (2020) Hydrogeology of desert springs in the Panamint Range, California, USA: Geologic controls on the geochemical kinetics, flowpaths, and mean residence times of springs, *Hydrological Processes*, 1-26, doi:10.1002/hyp.13776.
9. Warix, S.R., L.K. Rademacher, Z.P. Meyers<sup>1</sup>, and **M.D. Frisbee** (2020) Groundwater geochemistry and flow in the Spring Mountains, NV: Implications for the Death Valley Regional Flow System, *Journal of Hydrology*, 580, 124313, doi:10.1016/j.jhydrol.2019.124313.

10. Gleason, C.L.<sup>1</sup>, **M.D. Frisbee**, L.K. Rademacher, D.W. Sada, and Z.P. Meyers<sup>1</sup> (2019) Hydrogeology of desert springs in the Panamint Range, California, USA: Identifying the sources and amount of recharge that support spring flow, *Hydrological Processes*, 34, 730-748, doi:10.1002/hyp.13621.
11. **Frisbee, M.D.**, Z.P. Meyers<sup>1</sup>, J.B. Miller<sup>1</sup>, C.L. Box<sup>1</sup>, N.S. Stewart-Maddox<sup>1</sup>, E.B. Larson, S. Saksena, S. Dey, and E.E. Frisbee (2019), Processes leading to the activation (re-activation) of a paleokarst sinkhole and the subsequent drying of waterfalls in a small catchment located in northern Indiana, USA, *Journal of Cave and Karst Studies*, 81(2), 69-83, doi:10.4311/2017ES0116.
12. Miller, J.B.<sup>1</sup>, **M.D. Frisbee**, and Hamilton, T.L. (2018) Does meltwater from alpine glaciers provide mountain-block recharge? A discussion of evolving conceptual models and methodological challenges, in *Libro de Proceeding Seminario Internacional de Modelamiento Numérico de Fluidos Aplicado a la Ingeniería: Universidad Nacional de San Agustín, Arequipa-Perú*, Eds. Andrade Tacca, Cesar Augusto, ISBN: 978-612-4337-37-6.
13. Stewart-Maddox, N.S.<sup>1</sup>, **M.D. Frisbee**, C.L. Andronicos, D.P. Genereux, and Z.P. Meyers<sup>1</sup> (2018) Identifying the regional extent and geochemical evolution of interbasin groundwater flow using geochemical inverse modeling and <sup>87</sup>Sr/<sup>86</sup>Sr ratios in a complex conglomeritic aquifer, *Chemical Geology*, 500, 20-29, doi:10.1016/j.chemgeo.2018.07.026.
14. Miller, J.B.<sup>1</sup> and **M.D. Frisbee** (2018), Creating a field pump using 3D printed, precise-fitting, reproducible brackets, *Groundwater Monitoring & Remediation*, doi:10.1111/gwmr.12285.
15. Smith, S.C., C. Roemmele, B. Miller, and **M.D. Frisbee** (2018), There's Something in the Water: Using Problem-Based Scenarios to Analyze Porosity, Infiltration and Aquifer Contamination, *The Science Teacher*, 85(3), 58-62.
16. **Frisbee, M.D.**, Z.P. Meyers<sup>1</sup>, N.S. Stewart-Maddox<sup>1</sup>, M.W. Caffee, P. Bogeholz<sup>2</sup>, and M.N. Hughes<sup>2</sup> (2017), What is the source of baseflow in agriculturally-fragmented catchments? Complex groundwater/surface-water interactions in four tributary catchments of the Wabash River, Indiana, USA., *Hydrological Processes*, 31, 4019-4038, doi:10.1002/hyp.11345.
17. **Frisbee, M.D.**, D.G. Tolley<sup>1</sup>, and J.L. Wilson (2017), Field estimates of groundwater circulation depths in two mountainous watersheds in the western U.S. and the effect of deep circulation on solute concentrations in streamflow, *Water Resources Research*, 53, doi:10.1002/2016WR019553.
18. **Frisbee, M. D.**, E. H. Tysor<sup>2</sup>, N. S. Stewart-Maddox<sup>1</sup>, L. M. Tsinnajinnie<sup>1</sup>, J. L. Wilson, D. E. Granger, and B. D. Newman (2016), Is there a geomorphic expression of interbasin groundwater flow in watersheds? Interactions between interbasin groundwater flow, springs, streams, and geomorphology, *Geophysical Research Letters*, 43, 1158–1165, doi:10.1002/2015GL067082.

19. Tolley, D.G.<sup>1</sup>, **M.D. Frisbee**, and A.R. Campbell (2015), Determining the importance of seasonality on groundwater recharge and streamflow in the Sangre de Cristo Mountains using stable isotopes, in: *Guidebook 66 - Geology of the Las Vegas Area*, Lindline, Jennifer; Petronis, Michael; Zebrowski, Joseph, New Mexico Geological Society 66th Annual Fall Field Conference Guidebook, 312 p.
20. **Frisbee, M.D.**, J.D. Gomez, F.M. Phillips, A.R. Campbell, and J.L. Wilson (2013), Residence time distributions of water in watersheds: Are we missing the tail (and the tale)? *Geophysical Research Letters*, 40, doi:10.1002/grl.50895.
21. **Frisbee, M.D.**, J.L. Wilson, and D.W. Sada (2013), Climate change and the fate of desert springs, *Eos*, 09 April 2013, doi: 10.1002/2013EO15.
22. **Frisbee, M.D.**, F.M. Phillips, A.F. White, A.R. Campbell, and F. Liu (2013), Effect of source integration on the geochemical flux from springs, *Applied Geochemistry*, doi:10.1016/j.apgeochem.2012.08.028.
23. **Frisbee, M.D.**, F.M. Phillips, G.S. Weissmann, P.D. Brooks, J.L. Wilson, A.R. Campbell, and F. Liu (2012), Unraveling the mysteries of the large watershed black box: Implications for the streamflow response to climate and landscape perturbations, *Geophysical Research Letters*, 39, doi:10.1029/2011GL050416.
24. **Frisbee, M.D.**, F.M. Phillips, A.R. Campbell, F. Liu, and S.A. Sanchez (2011), Streamflow generation in a large, alpine watershed in the southern Rocky Mountains of Colorado, USA: Is streamflow generation simply the aggregation of hillslope runoff responses, *Water Resources Research*, 47, W06512, doi: 10.1029/2010WR009391.
25. **Frisbee, M.D.**, F.M. Phillips, A.R. Campbell, and J.M.H. Hendrickx (2010), Modified passive capillary samplers for collecting samples of snowmelt infiltration for stable isotope analysis in remote, seasonally inaccessible watersheds 1. Laboratory evaluation, *Hydrological Processes*, 24, 825-833, doi: 10.1002/hyp.7523.
26. **Frisbee, M.D.**, F.M. Phillips, A.R. Campbell, J.M.H. Hendrickx, and E.M. Engle (2010), Modified passive capillary samplers for collecting samples of snowmelt infiltration for stable isotope analysis in remote, seasonally inaccessible watersheds 2. Field evaluation, *Hydrological Processes*, 24, 834-849, doi:10.1002/hyp.7524.
27. **Frisbee, M.D.**, F.M. Phillips, A.R. Campbell, and J.M.H. Hendrickx (2009), Using passive capillary samplers to collect snowmelt recharge and soil-meltwater endmembers for stable isotope analysis, in *Planning for an Uncertain Future – Monitoring, Integration, and Adaptation, Proceedings of the Third Interagency Conference on Research in the Watersheds*: U.S. Geological Survey Scientific Investigations Report 2009-5049, edited by R.M.T. Webb and D.J. Semmens, 292 pp. Online: <http://pubs.usgs.gov/sir/2009/5049/>.
28. Vivoni, E.R., A.J. Rinehart, L.A. Méndez-Barroso, C.A. Aragón, G. Bisht, M.B. Cardenas, E.M. Engle, B.A. Forman, **M.D. Frisbee**, H.A. Gutiérrez-Jurado, S. Hong, T.H. Mahmood,



K. Tai, and R.I. Wyckoff (2008), Vegetation controls on soil moisture distribution in the Valles Caldera, New Mexico, during the North American monsoon, *Ecohydrology*, 1, 225-238.

29. **Frisbee, M.D.**, C.J. Allan, M.J. Thomasson, and R. Makereth (2007), Hillslope Hydrology and Wetland Response of Two Small Zero-Order Boreal Catchments on the Precambrian Shield, *Hydrological Processes*, 21, 2979-2997.

### **Book Chapters:**

1. **Frisbee, M.D.**, C.L. Shope, M.A. Briggs, and D.F. Boutt (2016), Field Methods for the Evaluation of Groundwater and Surface-Water Interactions, in The Handbook of Groundwater Engineering 3<sup>rd</sup> Edition, John H. Cushman and Dan M. Tartakovsky (editors).

### **Conference Talks of M.D. Frisbee:**

1. **Invited:** “An evolving conceptual framework describing the vulnerability of desert springs: An example from the Panamint Range, Death Valley, USA”, Session 22, T186, GSA 2020 Connects Online (October 2020).
2. **Invited:** “Disentangling sources of baseflow (and salinity) in the headwaters of an agriculturally-dominated watershed using multiple isotopic and geochemical tracers”, Session 82, T98, GSA 2020 Connects Online (October 2020).
3. **Invited:** “Geologic controls on circulation depths, geochemical kinetics, and residence times of mountain groundwater systems”, Session 69: T140, GSA Annual Meeting, Phoenix, AZ (September 2019).
4. “Hydrological fragmentation and genetic isolation of springs following tectonic extension in the Southern Great Basin of NV and CA”, Session 238: T9, GSA Annual Meeting, Phoenix, AZ (September 2019).
5. “Is baseflow in the headwaters of the Wabash River, IN/OH supported by Pleistocene recharge?”, Session 59, GSA Annual Meeting, Indianapolis, IN (November 2018).
6. **Invited:** “Does meltwater from alpine glaciers provide mountain-block recharge? A discussion of evolving conceptual models and methodological challenges.”, Seminario Internacional de Modelamiento Numerico de Fluidos Aplicado a la Ingenieria (SIMFAI-2018), Universidad Nacional de San Agustín de Arequipa (UNSA), Arequipa, Peru (August 2018).
7. **Invited:** “How does the source of baseflow impact nitrate concentrations in four small tributary catchments to the Wabash River, Indiana?”, American Society of Agricultural and Biological Engineers (ASABE) 2018 Annual International Meeting, Detroit, MI (July 2018).
8. **Invited:** “Using multiple isotopes to identify sources of streamflow and baseflow in the Wabash River watershed”, Indiana Geological & Water Survey Seminar, Bloomington, IN (April 2018).

9. *Outreach* - “Where does the acequia water in El Rito come from?”, Public Outreach Event: Groundwater in El Rito: The Connection Between the Mountains and the Communities, El Rito, NM (July 2017).
10. *Outreach* - “Where does streamflow come from? Why does it matter?”, Public Outreach Event: Groundwater in El Rito: The Connection Between the Mountains and the Communities, El Rito, NM (July 2017).
11. “Old, nutrient-free groundwater moderates the solute chemistry of baseflow in three small catchments located in Shades State Park and Ross Hills Reserve, 38<sup>th</sup> Annual Indiana Water Resources Association (IWRA) Conference, Marshall, IN (June 2017).
12. “What is the source of baseflow in small, 1st order tributaries to the Wabash River?”, 37<sup>th</sup> Annual Indiana Water Resources Association (IWRA) Conference, Angola, IN (June 2016).
13. **Invited:** “When stream gauges lie! Implications of interbasin groundwater flow on the watershed response to climate and landscape perturbations.” Iowa State University Department of Geological and Atmospheric Sciences Fall Seminar Series, Ames Iowa (October 2015).
14. *Outreach* - “Where does streamflow come from and why does it matter?”, Hydrology Workshop, Fremont County Conservation District, Cañon City, CO (August 2015).
15. “Groundwater/Surface Water Interactions in Complex Geology: Insights and Frustrations from the El Rito Watershed, New Mexico”, Purdue Water Community New Faculty Seminar (November 2014).
16. *Outreach* - “Alluvial Groundwater Resources in the Black Mesa Basin of the Navajo and Hopi Nations”, Sloan Native American Educational and Cultural Center, Purdue University (September 2014).
17. **Invited:** “Using the Residence Times of Springs to Understand the Role of Groundwater in Surface Water Systems of Large Watersheds”, EPA Region 8 Webinar: Groundwater Withdrawal Impacts on Surface Waters (April 2013).
18. “Strong Interactions Between Streamflow and Deep Groundwater Inferred from Trends in Stream Chemistry in Three Mountainous Watersheds in Different Geologic Settings”, Session 53, GSA Annual Meeting, Charlotte, NC (November 2012).
19. **Invited:** “What Can Streamflow Generation Processes Tell Us About the Long-Term Streamflow Response to Climate Change”, Geoscience Colloquia for Fall 2011 Semester, Department of Geosciences, University of Wisconsin-Milwaukee (October 2011).

20. “Streamflow Generation Processes and Structured Trends in Streamflow Chemistry in a Large, Alpine Watershed: Is Groundwater the Connection?”, Session H31J-05, AGU Fall Meeting, San Francisco, CA (December 2010).
21. “The Role of Deep, Basin-Scale Groundwater on Streamflow Generation Processes in a Large, Alpine Watershed in the Southern Rocky Mountains of Colorado, USA”, New Mexico Tech Hydrology Seminar Series Fall 2009 (September 2009).
22. “The Role of Deep, Basin-Scale Groundwater in Streamflow Generation from a Large, Alpine Watershed in the Headwaters of the Rio Grande”, SAHRA (Sustainability of semi-Arid Hydrology and Riparian Areas) 9th Annual Meeting, Tucson, AZ (September 2009).
23. “Runoff Generation in the Headwaters of the Rio Grande”, SAHRA (Sustainability of semi-Arid Hydrology and Riparian Areas) 8th Annual Meeting, Tucson, AZ (October 2008).
24. “Passive Capillary Samplers for Collecting Snowmelt Recharge for Stable Isotope Analysis in Remote Watersheds”, 3rd Interagency Conference on Research in Watersheds, Estes Park, CO (September 2008).
25. “Trends in Stream Chemistry in the Saguache Creek Watershed and Its Implications on Conceptual Models of Runoff Generation in Large Watersheds”, 2008 New Mexico Water Resources Symposium, Socorro, NM (August 2008).

**Conference Talks of <sup>P</sup>Postdocs, <sup>1</sup>Graduate Students, and <sup>2</sup>Undergraduate Students in Frisbee’s Research Group:**

1. Alvarez-Campos, O.<sup>P</sup>, E.J. Olson<sup>P</sup>, **M.D. Frisbee**, L.R. Welp-Smith, S.A. Zúñiga Medina, W.R. Roque Quispe, C.I. Salazar Mamani, M.R. Arenas Carrión, and J. Diaz Rodriguez (October 2020), “Identifying groundwater recharge zones in Western Cordillera of the Central Andes of southern Peru”, Session 22, T186, GSA 2020 Connects Online.
2. Meyers, Z.P.<sup>1</sup>, **M.D. Frisbee**, L.K. Rademacher, B.P. Hedlund, A.D. Friel, K. Pordel, and D.W. Sada (December 2019), “Integrated Earth Systems in the eastern Sierra Nevada, CA: Connections between mineralogy, hydrogeology, geochemistry, and benthic ecology (Invited)”, Session H44C, AGU Fall Meeting, San Francisco, CA.
3. Miller, J.B.<sup>1</sup>, **M.D. Frisbee**, T.L. Hamilton, and S. Murugapiran (December 2019), “Glacial melt recharges mountain aquifers: A groundwater study using traditional stable isotopic techniques combined with microbial fingerprinting techniques.”, Session H13H, AGU Fall Meeting, San Francisco, CA.
4. Meyers, Z.P.<sup>1</sup>, **M.D. Frisbee**, L.K. Rademacher, A.D. Friel, B.P. Hedlund, K. Pordel, and D.W. Sada (September 2019), “Examining landscape placement as a control on spring hydrochemistry and ecological diversity”, Session 174: T142, GSA Annual Meeting, Phoenix, AZ

5. Meyers, Z.P.<sup>1</sup>, **M.D. Frisbee**, L.K. Rademacher, and N.S. Stewart-Maddox (November 2018), “Old groundwater sustains groundwater-dependent vegetation during the 2011-2017 California drought”, Session 134-2: T103, GSA Annual Meeting, Indianapolis, IN.
6. Gleason, C.L.<sup>1</sup>, **M.D. Frisbee**, Z.P. Meyers<sup>1</sup>, L.K. Rademacher, K. Pordel, and A. Friel (November 2018), “Life in the rain shadow: Understanding sources of recharge and groundwater flowpaths to groundwater-dependent ecosystems in the Panamint Range, Death Valley, California, USA”, Session 134-2: T103, GSA Annual Meeting, Indianapolis, IN.
7. Stewart-Maddox, N.S.<sup>1</sup>, **M.D. Frisbee**, C.L. Andronicos, D.P. Genereux, and Z.P. Meyers<sup>1</sup> (October 2017), “Using the geochemical kinetics and <sup>87</sup>Sr/<sup>86</sup>Sr ratios of a complex reworked aquifer to identify the regional extent of interbasin groundwater flow and its impact on regional baseflow generation”, Session 194: T10, GSA Annual Meeting, Seattle, WA.
8. Stewart-Maddox, N.S. (July 2017), “Where does El Rito Creek’s water come from?”, Public Outreach Event: Groundwater in El Rito: The Connection Between the Mountains and the Communities, El Rito, NM.
9. Tsinnajinnie, L.M., **M.D. Frisbee**, and J.L. Wilson (December 2015), “Are Springs Important in the Post-fire Revegetation of Semiarid, Snow-dominated, Mountainous Watersheds?”, Session H34B-07, AGU Fall Meeting, San Francisco, CA.

#### **Conference Talks of Student Collaborators:**

1. Pordel, K., A.D. Friel, Z.P. Meyers<sup>1</sup>, D.W. Sada, J. Umek, **M.D. Frisbee**, L.K. Rademacher, and B.P. Hedlund (September 2019), “Hydrogeology, macro- and microfauna in isolated desert springs: Are there similar patterns in the biological organization?”, Session 174: T142, GSA Annual Meeting, Phoenix, AZ.
2. A.D. Friel, K. Pordel, Carolyn Gleason<sup>1</sup>, Z.P. Meyers<sup>1</sup>, **M.D. Frisbee**, D.W. Sada, L.K. Rademacher, and B.P. Hedlund, “Similarities in large-scale ecological patterns of microbial and benthic macroinvertebrate communities in desert springs of the Panamint Mountain Range”, Session 238: T9, GSA Annual Meeting, Phoenix, AZ.
3. Pordel, K., D.W. Sada, J. Umek, Z.P. Meyers<sup>1</sup>, S.R. Warix, and **M.D. Frisbee** (November 2018), “Integrating hydrogeology and aquatic ecology: Evidence through the structure of benthic macroinvertebrate communities and water geochemistry in the Owens Valley, CA”, Session 134-2: T103, GSA Annual Meeting, Indianapolis, IN.
4. Friel, A.D., Z.P. Meyers<sup>1</sup>, C.L. Gleason<sup>1</sup>, S.R. Warix, C.O. Seymour, **M.D. Frisbee**, and L.K. Rademacher (November 2018), “Microbial diversity and community structure of desert springs across hydrogeochemical gradients in the southern hydrographic Great Basin”, Session 134-2: T103, GSA Annual Meeting, Indianapolis, IN.

#### **Poster Sessions (<sup>P</sup>Postdoc, <sup>1</sup>Graduate Student, <sup>2</sup>Undergraduate Student):**

1. Fracica Gonzalez, L.R.<sup>2</sup>, **M.D. Frisbee**, and J.B. Miller<sup>1</sup> (December 2021), “Geochemical modeling of glaciated mountain aquifers in Mount Hood, Oregon and Glacier National Park, Montana”, AGU Fall Meeting, New Orleans, LA.
2. Olson, E.J.<sup>P</sup>, L.R. Welp, G. Michalski, **M.D. Frisbee**, A. Larrea Valdivia, J. Reyes, and K.T. Magara Gomez (December 2021), “Isotopic evidence for fog-fed groundwater recharge near lomas forests along the arid Atacama-Sechura coastal desert”, AGU Fall Meeting, New Orleans, LA.
3. Olson, E.J.<sup>P</sup>, L.R. Welp-Smith, **M.D. Frisbee**, O. Alvarez-Campos<sup>P</sup>, S. A. Zuñiga Medina, W.R. Roque Quispe, M.A. Carrión, C.I. Salazar Mamani and J. Diaz Rodriguez (December 2020), “Tracing the impact of glacial melt on the hydrology of the Andean Nevado Coropuna glacier and adjacent drainages”, AGU Fall Meeting, Online Everywhere.
4. Alvarez, O.<sup>P</sup>, E.J. Olson<sup>P</sup>, **M.D. Frisbee**, L.R. Welp-Smith, W.R.R. Quispe, M.A. Carrion, C.I.S. Mamani, S.A.Z. Medina, and J.M.J. Gonzalez (December 2019), “Investigating the Source of Springs in Arequipa, Peru”, Session A21U, AGU Fall Meeting, San Francisco, CA.
5. Andrews, K.R., Y. Ibarra, L.K. Rademacher, Z.P. Meyers<sup>1</sup>, and **M.D. Frisbee** (September 2019), “History of groundwater flow in the Southern Great Basin inferred from paleohydrologic deposits”, Session 267: T142, GSA Annual Meeting, Phoenix, AZ.
6. Meyers, Z.P.<sup>1</sup>, **M.D. Frisbee**, L.K. Rademacher, C.L. Gleason<sup>1</sup>, S.R. Warix, and B.P. Hedlund (November 2018), “Dissolved noble gases as forensic tracers to investigate mountain-front springs in Owens Valley, CA”, Session 180: T94, GSA Annual Meeting, Indianapolis, IN.
7. Warix, S.R., L.K. Rademacher, Z.P. Meyers<sup>1</sup>, **M.D. Frisbee**, C.L. Gleason<sup>1</sup>, and B.P. Hedlund (November 2018), “Geologic controls on groundwater flowpaths in the Spring Mountains, NV inferred from spring water geochemistry and <sup>87</sup>Sr/<sup>86</sup>Sr”, Session 106: T103, GSA Annual Meeting, Indianapolis, IN.
8. Tsinnajinnie, L.M.<sup>1</sup>, **M.D. Frisbee**, and J.L. Wilson (December 2017), Hydrostratigraphic and structural controls on streamflow generation in the Chuska Mountains, Navajo Nation, AZ/NM, AGU Fall Meeting, New Orleans, LA.
9. Warix, S.R., Z.P. Meyers<sup>1</sup>, C.C. Box<sup>1</sup>, A. Friel, B. Hedlund, **M.D. Frisbee**, L.K. Rademacher (October 2017), Mineral weathering and groundwater flow in Owens Valley springs, GSA Annual Meeting, Seattle, WA.
10. Meyers, Z.P.<sup>1</sup>, **M.D. Frisbee**, D.E. Granger, and E.B. Larson (June 2017), Why did the waterfalls in Fitch’s Glen dry up? Investigating the processes leading to the reactivation of a swallow hole in a small catchment underlain by buried karst located near Logansport, IN, 38<sup>th</sup> Annual Indiana Water Resources Association (IWRA) Conference, Marshall, IN.

11. Tsinnajinnie, L.M.<sup>1</sup>, **M.D. Frisbee**, and J.L. Wilson (September 2016), Hydrostratigraphic and Structural Controls on Streamflow Generation in Semiarid, Snow-Dominated, Mountainous Watersheds in the Chuska Mountains of the Navajo Nation, northern NM/AZ, GSA Annual Meeting, Denver, CO.
12. Stewart-Maddox, N.S.<sup>1</sup>, **M.D. Frisbee**, E.H. Tysor, and L.A.B. Daza (September 2016), Can Spring Contributing Areas Be Used to Identify Interbasin Groundwater Flow? The Role of Interbasin Groundwater Flow in Springflow in the Tusas Mountains of New Mexico, GSA Annual Meeting, Denver, CO.
13. Meyers, Z.P.<sup>1</sup>, **M.D. Frisbee**, L.K. Rademacher, S. Warix, B.P. Hedlund, and A.D. Friel (September 2016), Desert Spring Characterization from Hydrochemical Data Analyses, GSA Annual Meeting, Denver, CO.
14. Friel, A. D., N.J. Thomas, Z.P. Meyers<sup>1</sup>, **M.D. Frisbee**, and B.P. Hedlund, B. P. (April 2016), Exploring biogeographical patterns of methanogenic archaeal communities in desert spring sediments, Nevada NASA 2016 Statewide Annual Meeting, Reno, NV.
15. Wilson, J.L., **M.D. Frisbee**, J.D. Gomez-Velez, and F.M. Phillips (December 2015), Why Does the Convolution Integral Method Provide Systematically Biased Estimates of Watershed Residence Times?, AGU Fall Meeting, San Francisco, CA.
16. Hughes, M.<sup>2</sup>, P. Bogeholz<sup>2</sup>, and **M.D. Frisbee** (November 2015), Quantifying Groundwater/Surface-water Interactions in Small Tributary Drainages to the Wabash River using Radon-222 and Other Environmental Tracers, GSA Annual Meeting, Baltimore, MD.
17. Tsinnajinnie, L.<sup>1</sup>, **M.D. Frisbee**, J.L. Wilson (December 2014), Incorporating Watershed-Scale Groundwater/Surface Water Interactions to Better Understand How ENSO/PDO Teleconnections Affect Streamflow Variability in Geologically Complex, Semiarid, Snow-Dominated Mountainous Watersheds, AGU Fall Meeting, San Francisco, CA.
18. Tysor, E.H.<sup>2</sup>, J. Swanson<sup>2</sup>, N. Stewart-Maddox<sup>2</sup>, A. Degon<sup>2</sup>, J. Howard<sup>2</sup>, **M.D. Frisbee**, J.L. Wilson, B.D. Newman (December 2014), Testing a Community Water Supply Well Located near a Stream for Susceptibility to Stream Contamination and Low-flows, AGU Fall Meeting, San Francisco, CA.
19. Stewart-Maddox, N.<sup>2</sup>, A. Degon<sup>2</sup>, E.H. Tysor<sup>2</sup>, J. Swanson<sup>2</sup>, J. Howard<sup>2</sup>, **M.D. Frisbee**, J.L. Wilson, B.D. Newman (December 2014), The Role of Structure and Stratigraphy on Groundwater/Surface Water Interactions in a Gaining Reach of the El Rito Watershed Part 2: Shallow Geophysics and Temperature Evidence, AGU Fall Meeting, San Francisco, CA.
20. Stewart-Maddox, N.<sup>2</sup>, A. Degon<sup>2</sup>, E.H. Tysor<sup>2</sup>, J. Swanson<sup>2</sup>, J. Howard<sup>2</sup>, **M.D. Frisbee**, J.L. Wilson, B.D. Newman (October 2014), The Role of Structure and Stratigraphy on Groundwater/Surface Water Interactions in a Gaining Reach of the El Rito Watershed Part 1: Geochemistry and Isotopic Evidence, GSA Annual Meeting, Vancouver, BC, Canada.

21. Tysor, E.H.<sup>2</sup>, J. Howard<sup>2</sup>, N. Stewart-Maddox<sup>2</sup>, J. Swanson<sup>2</sup>, A. Degon<sup>2</sup>, **M.D. Frisbee**, J.L. Wilson, B.D. Newman (October 2014), Springs and the Role of Stratigraphy and Structure on Streamflow Generation in the El Rito Watershed, GSA Annual Meeting, Vancouver, BC, Canada.
22. Tsinnajinnie, L.<sup>1</sup>, **M.D. Frisbee**, J.L. Wilson (December 2013), When Springflow becomes Streamflow: Understanding the Connections between Baseflow and Stream Discharge in a Sedimentary, Mountainous, Watershed in Northern New Mexico, AGU Fall Meeting, San Francisco, CA.
23. Tolley, D.G.<sup>1</sup>, **M.D. Frisbee**, J.L. Wilson, J. Harding<sup>1</sup> (December 2013), The Significance of Deep Groundwater Contributions to Streamflow in a Crystalline Bedrock Mountain Watershed, AGU Fall Meeting, San Francisco, CA.
24. Ward, V.<sup>2</sup>, P.K. Coker<sup>2</sup>, N. Stewart-Maddox<sup>2</sup>, E.H. Tysor<sup>2</sup>, L. Tsinnajinnie<sup>1</sup>, **M.D. Frisbee**, J.L. Wilson (October 2013), Groundwater/Surface Water Interactions along a Losing Reach of the El Rito Watershed, GSA Annual Meeting, Denver, CO.
25. Tolley, D.G.<sup>1</sup>, **M.D. Frisbee**, J.L. Wilson (October 2013), High-Elevation Mountain Streamflow Generation: The Role of Deep Groundwater, GSA Annual Meeting, Denver, CO.
26. Tolley, D.G.<sup>1</sup>, **M.D. Frisbee**, J.L. Wilson (December 2012), Deep Groundwater Contributions to Surface Water in a Mountainous Watershed, Northern New Mexico, AGU Fall Meeting, San Francisco, CA.
27. **M.D. Frisbee**, F.M. Phillips, A.F. White (December 2011), A New Look at an Old Proxy: Spring Chemistry as an Indicator of the Solute Weathering Release from Deep Groundwater Systems, AGU Fall Meeting, San Francisco, CA.
28. **M.D. Frisbee**, F.M. Phillips, A.R. Campbell, F. Liu (October 2009), Identifying the Ground Water Component in Springflow Generation to Quantify Error in Weathering Release Curves in a Large, Alpine Watershed in the Southern Rocky Mountains of Colorado, USA, GSA Annual Meeting, Portland, OR.
29. **M.D. Frisbee**, F.M. Phillips, A.R. Campbell, F. Liu (December 2008), Deep Groundwater Contributions as a Primary Control on Stream Chemistry and Apparent Age in a Large Alpine Watershed in the Southern Rocky Mountains of Colorado, AGU Fall Meeting, San Francisco, CA.
30. E.M. Bastien, F.M. Phillips, **M.D. Frisbee** (December 2008), Progressive Salinization and Chemical Evolution of the Rio Grande (New Mexico) Driven by Interaction of Deep Brine Leakage with Agricultural Processes, AGU Fall Meeting, San Francisco, CA.
31. **M.D. Frisbee**, F.M. Phillips, A.R. Campbell (October 2007), Applications of Stable Isotopes for Hydrograph Separation of Baseflow in the Saguache Creek Watershed, SAHRA 7<sup>th</sup> Annual Meeting, Tucson, AZ.

32. **M.D. Frisbee**, F.M. Phillips, A.R. Campbell (April 2007), Origin of the Chemical Composition of Springs in the Saguache Creek Watershed of the San Juan Mountains in Colorado, New Mexico Geologic Society Annual Spring Meeting 2007, Socorro, NM.
33. Marrero, S.M., F.M. Phillips, **M.D. Frisbee** (April 2007), Chlorine-36 in the Rio Grande”, New Mexico Geologic Society Annual Spring Meeting 2007, Socorro, NM.
34. **M.D. Frisbee**, G.H. Bracht, F.M Phillips (October 2006), On the Selection of the Saguache Creek Watershed for Catchment Scale Hydrological Investigations Part 1: Hydrological Processes”, SAHRA 6<sup>th</sup> Annual Meeting, Scottsdale, AZ.
35. G.H. Bracht, **M.D. Frisbee**, F.M. Phillips (October 2006), On the Selection of the Saguache Creek Watershed for Catchment Scale Hydrological Investigations Part 2: Preliminary Hydrochemistry”, SAHRA (Sustainability of semi-Arid Hydrology and Riparian Areas) 6<sup>th</sup> Annual Meeting, Scottsdale, AZ.
36. **M.D. Frisbee**, F.M. Phillips (October 2005), Preliminary Investigation of Chloride Concentrations in Streams of the Valles Caldera, NM (Summer 2005), SAHRA 5<sup>th</sup> Annual Meeting, Tucson, AZ.
37. **M.D. Frisbee**, C.J. Allan, M.J. Thomasson, R. Makereth (September 2005), Hillslope Hydrology and Wetland Response of a Small Zero-order Boreal Catchment on the Precambrian Shield, Slope InterComparison Experiment (SLICE) Workshop, HJ Andrews Experimental Forest, Blue River, OR.
38. A.J. Rinehart, E.R. Vivoni, L.A. Méndez-Barroso, C.A. Aragón, M.B. Cardenas, E.M. Engle, **M.D. Frisbee**, H.A. Gutiérrez-Jurado, T.H. Mahmood, K. Tai, and R.I. Wyckoff (April 2005), Design and Implementation of a Hydrometeorological Field Campaign in the Valles Caldera, NM, 2005 Water Research Symposium (WRRRI) Annual Conference, Socorro, NM.
39. **M.D. Frisbee**, C.J. Allan (2004), Storm Runoff Study of the Mint Hill City Park, LID EPA-319 Project Site”, 2004 Water Resources Research Institute (WRRRI) Annual Conference, Raleigh, NC.
40. **M.D. Frisbee**, D.L. Sharer (2003), Providing Additional Support to Internet-Based Learning by Applying Supplemental Instruction Techniques, Session 1547, Proceedings of the 2003 ASEE Annual Conference & Exposition, Nashville, TN.

**Research and Teaching Awards:**

Fall 2021: EAPS Teaching Honor Roll (EAPS 584)  
 Spring 2021: EAPS Teaching Honor Roll (EAPS 200)  
 Fall 2019: EAPS Teaching Honor Roll (EAPS 584)  
 Fall 2019: Purdue Seed for Success Research Award  
 Spring 2019: EAPS Graduate Student Mentoring Award  
 Fall 2018: EAPS Teaching Honor Roll (EAPS 680)



Spring 2018: EAPS Teaching Honor Roll (EAPS 200)  
Fall 2017: EAPS Teaching Honor Roll (EAPS 584)  
Spring 2017: EAPS Teaching Honor Roll (EAPS 100)  
Fall 2016: EAPS Teaching Honor Roll (EAPS 680)  
Spring 2016: EAPS Teaching Honor Roll (EAPS 100)  
Fall 2015: EAPS Teaching Honor Roll (EAPS 584)  
Spring 2015: EAPS Teaching Honor Roll (EAPS 100)  
Spring 2009: Outstanding Teaching Assistant Award, New Mexico Tech.  
2008: Best Student Presentation Award, New Mexico Water Research Symposium, Socorro, NM  
2006: 1st Place Poster Presentation, SAHRA (Sustainability of semi-Arid Hydrology and Riparian Areas) 6th Annual Meeting, Scottsdale, AZ.  
2005: Best PhD/Postdoc Poster Presentation, SLICE Workshop, HJ Andrews Experimental Forest, Blue River, OR.

**Professional Service:**

GSA (Geological Society of America), 2005 – Present  
AGU (American Geophysical Union), 2005 – Present  
NMGS (New Mexico Geological Society), 2005 – Present  
IWRA (Indiana Water Resources Association), 2014 – Present