Marty D. Frisbee

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Last Updated: June 28, 2019

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, NC, May 2002, *Cum Laude Graduate*

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

Appointments:

August 2014 – Present
Assistant Professor of Hydrogeology and Applied Geology, Department of Earth, Atmospheric, and Planetary Sciences, Purdue University, West Lafayette, IN

September 2013 – Present
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.

Current Graduate Students:

1. Zachary Meyers, Ph.D. Candidate, EAPS, Purdue University

2. Jordyn Miller, Ph.D. Student, EAPS, Purdue University
3. Derrick Slick, M.S. Student (co-advised), EAPS, Purdue University

Current Graduate Student Committees:

1. Md. Sanoar Rahman, Ph.D. Candidate, ABE/ESE, Purdue University
2. Sayan Dey, Ph.D. Candidate, CE, Purdue University
3. Siddharth Saskena, Ph.D. Candidate, CE, Purdue University
4. Kyungdoe Han, Ph.D. Student, EES, New Mexico Tech
5. Khaled Pordel, Ph.D. Student, NRES, University of Nevada – Reno (DRI – Reno)
6. Mohamed Atef Moham Abouelnour, Ph.D. Student, ABE, Purdue University
7. Sadia A. Jame, Ph.D. Student, ABE, Purdue University

Current Visiting Scholars:

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

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

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

Teaching Experience:

Water World (EAPS 200), Purdue University, 2018
Contaminant Hydrogeology (EAPS 680), Purdue University, 2016, 2018
Hydrogeology (EAPS 584), Purdue University, 2015, 2017
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 (GEOL1121) Lab Courses, Georgia Southern University, 2013
Environmental Geology (GEOL1340) Lab Courses, Georgia Southern University, 2013
Global Change Hydrology (ERTH 340), New Mexico Tech, 2010

Publications ([1] Graduate Student, [2] Undergraduate Student):

1. **Frisbee, M.D.**, Z.P. Meyers[1], J.B. Miller[1], C.L. Box[1], N.S. Stewart-Maddox[1], 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.

2. Stewart-Maddox, N.S.[1], **M.D. Frisbee**, C.L. Andronicos, D.P. Genereux, and Z.P. Meyers[1] (2018) Identifying the regional extent and geochemical evolution of interbasin groundwater flow using geochemical inverse modeling and $^{87}Sr/^{86}Sr$ ratios in a complex conglomeritic aquifer, *Chemical Geology*, *500*, 20-29, doi:10.1016/j.chemgeo.2018.07.026.

3. Miller, J.B.[1] and **M.D. Frisbee** (2018), Creating a field pump using 3D printed, precise-fitting, reproducible brackets, *Groundwater Monitoring & Remediation*, doi:10.1111/gwmr.12285.

4. 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.

5. **Frisbee, M.D.**, Z.P. Meyers[1], N.S. Stewart-Maddox[1], M.W. Caffee, P. Bogeholz[2], and M.N. Hughes[2] (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*, doi:10.1002/hyp.11345.

6. **Frisbee, M.D.**, D.G. Tolley[1], 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.

7. **Frisbee, M. D.**, E. H. Tysor[2], N. S. Stewart-Maddox[1], L. M. Tsinnajinnie[1], 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.

8. Tolley, D.G.[1], **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.

9. **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.

10. **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.

11. **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.

12. **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.

13. **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.

14. **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.

15. **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.

16. **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/.

17. 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.

18. **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.

19. **Frisbee, M.D.** and 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.

20. Sharer, D.L. and **M.D. Frisbee** (2003), Don't Just Tell Me, Show Me! Presenting a Microelectronics Course Completely on the Internet, Session 1647, *Proceedings of the 2003 ASEE Annual Conference & Exposition*, Nashville, TN.

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 3rd Edition, John H. Cushman and Dan M. Tartakovsky (editors).

Conference and Outreach Talks:

1. "Is baseflow in the headwaters of the Wabash River, IN/OH supported by Pleistocene recharge?", Session 59, GSA Annual Meeting, Indianapolis, IN (November 2018).

2. "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).

3. "Using multiple isotopes to identify sources of streamflow and baseflow in the Wabash River watershed", Indiana Geological & Water Survey Seminar, Bloomington, IN (April 2018).

4. *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).

5. *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).

6. "Old, nutrient-free groundwater moderates the solute chemistry of baseflow in three small catchments located in Shades State Park and Ross Hills Reserve, 38th Annual Indiana Water Resources Association (IWRA) Conference, Marshall, IN (June 2017).

7. "What is the source of baseflow in small, 1st order tributaries to the Wabash River?", 37th Annual Indiana Water Resources Association (IWRA) Conference, Angola, IN (June 2016).

8. "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).

9. *Outreach* - "Where does streamflow come from and why does it matter?", Hydrology Workshop, Fremont County Conservation District, Cañon City, CO (August 2015).

10. "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).

11. *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).

12. "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).

13. "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).

14. "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).

15. "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).

16. "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).

17. "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).

18. "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).

19. "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).

20. "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).

21. "Don't Just Tell Me, Show Me! Presenting a Microelectronics Course Completely on the Internet", Session 1647, Proceedings of the 2003 ASEE Annual Conference & Exposition, Nashville, TN (2003).

Research and Teaching Awards:

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
Presentation title: "Trends in Stream Chemistry in the Saguache Creek Watershed and its Implications on Conceptual Models of Runoff Generation in Large Watersheds".

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:
AGU (American Geophysical Union), 2005 – Present
GSA (Geological Society of America), 2005 – Present
NMGS (New Mexico Geological Society), 2005 – Present
IWRA (Indiana Water Resources Association), 2014 – Present
NGWA (National Ground Water Association), 2017 – Present