

**Research Interests and Expertise**

Digital Soil Mapping, Soil Geomorphology, Spatial Analysis, History and Philosophy of Soil Science

**Education**

Ph.D., Geography, Michigan State University, August 2013

M.S., Soil Science and Water Resources (co-majors); minor in Political Science, Iowa State University,  
May 2006

B.S., Environmental Science, Iowa State University, May 2000

**Professional Affiliations**

Certified Geographic Information Science Professional (GISP)

European Geosciences Union  
Soil Science Society of America

American Association of Geographers  
Professional Soil Classifiers of Iowa

Gamma Theta Upsilon, International Geographic Honor Society, MSU

Phi Kappa Phi Honor Society

Golden Key International Honor Society

**Honors and Awards**

- |      |   |
|------|---|
| 2018 | Dan Yaalon Young Scientist Medal, International Union of Soil Sciences  |
| 2015 | Citation for Excellence in Manuscript Review, Soil Science Society of America Journal   |
| 2012 | First place, Graduate Student Oral Competition, Division S-5 (Pedology), Soil Science Society of America                            |
| 2011 | Second place, Geography Graduate Research Presentation Competition, MSU   |
| 2011 | Soil Classifiers Association of Michigan Scholarship (\$1,000)  |
| 2010 | Outstanding Service in Recruitment and Retention, College of Agriculture and Life Sciences, ISU                                     |
| 2008 | Outstanding Professional Skill Award, Association for Communication Excellence in Agriculture, Natural Resources, and Life Sciences |
| 2005 | Williams Soil Conservation Scholarship, Soil and Water Conservation Society (\$1,000)   |
| 2003 | Teaching Excellence Award, ISU  |

## Professional Experience

### **Agronomy Department**, Iowa State University, Ames, Iowa

Assistant Professor - August 2015 to present

- Spatial analysis of soil landscapes for understanding pedogenic processes
- Advancing methods in digital soil mapping (spatial prediction of soil properties)
- Providing more useful soil information to a wide variety of audiences
- Teaching two new courses: *Geospatial Technologies* and *Digital Soil Mapping*

### **Institute of Soil Landscape Research**, Leibniz Centre for Agricultural Landscape Research (ZALF), Müncheberg, Germany

Coordinator for the Cross-Sector Project on Land Structure - September 2013 to July 2015

- Coordination and optimization of data collected across multiple projects
- Production of landscape-scale soil maps of soil carbon using multi-scale covariates
- Analysis of modeling techniques' impact on geographic patterns and estimated uncertainty
- Editing of German colleagues' manuscripts for improved communication in English

### **Geography Department**, Michigan State University, East Lansing, Michigan

Graduate Assistant and Course Instructor - August 2010 to August 2013

- Instructed courses (as primary instructor) on *Introductory Geographic Information* and advanced *Problems in Geographic Information Science*
- Taught laboratory course (as teaching assistant) in *Physical Geography*
- Taught online courses (as instructor) in *Physical Geography*, *Introductory Geographic Information*, as well as *People and the Environment*
- Developed new analytical methods for particle size data from laser diffractometry, resulted in a peer-reviewed publication

### **Environmental Programs and Department of Agronomy**, Iowa State University, Ames, Iowa

Undergraduate Coordinator - June 2006 to August 2010

- Increased enrollment 91% for Agronomy and 133% for Environmental Science, over a 4-year time span
- Publicized/promoted the disciplines of Agronomy and Environmental Science
- Advised students in Environmental Science

### **Wetlands Research Group**, Iowa State University, Ames, Iowa

Research Assistant - March 2001 to June 2006

- Analyzed the glaciated landscapes of the United States' Midwest and their implications for land and water quality
- Conducted research on the use of wetlands for water quality improvement in the Upper Mississippi and Ohio River basins
- Administered GPS data and GIS projects in ArcGIS
- Managed two large capacity servers for collaborative work environment and data security

## Publications

### Refereed Journal Articles (27)

#### *While at ISU (6)*

- 2018 27. Marques, K., J.A. Dematte, **B.A. Miller**, and I. Lepsch. Geomorphometric segmentation of complex slope elements to improve soil mapping in southeast Brazil. *Geoderma*, under review.
26. Nyland, K.E., C.S. Kasmerchak, A. Kamoske, V. Breeze, R.J. Schaetzl, M. Bomber, S.E. Thomas, L. Grove, K. Komoto, and **B.A. Miller**. Spatial analysis of Holocene-aged loess deposits in the lee of large dunes in northern Michigan, USA. *Geology*, under review.
- 2017 25. Nyland, K.E., R.J. Schaetzl, A. Ignatov, and **B.A. Miller**. A new depositional model for sand-rich loess on the Buckley Flats outwash plain, northwestern Lower Michigan. *Aeolian Research*, in press. doi: 10.1016/j.aeolia.2017.05.005.
- 2016 24. Brevik, E.C., J.A. Homburg, **B.A. Miller**, T.E. Fenton, J.A. Doolittle, and S.J. Indorante. Selected highlights in American soil science history from the 1980s to the mid-2010s. *Catena* 146:128-146. doi: 10.1016/j.catena.2016.06.021.
23. **Miller, B.A.**, S. Koszinski, W. Hierold, H. Rogasik, B. Schröder, K. Van Oost, M. Wehrhan, and M. Sommer. Towards mapping soil carbon landscapes: issues of sampling scale and transferability. *Soil and Tillage Research* 156:194-208. doi: 10.1016/j.still.2015.07.004.
22. **Miller, B.A.** and R.J. Schaetzl. History of soil geography in the context of scale. *Geoderma* 264:284-300. doi: 10.1016/j.geoderma.2015.08.041.
21. Brevik, E.C., C. Calzolari, **B.A. Miller**, P. Pereira, C. Kabala, A. Baumgarten, and A. Jordán. Soil mapping, classification, and pedologic modeling: History and future directions. *Geoderma* 264:256-274. doi: 10.1016/j.geoderma.2015.05.017.
20. Brevik, E.C., A. Baumgarten, C. Calzolari, A. Jordán, C. Kabala, **B.A. Miller**, and P. Pereira. Editorial: Historical perspectives and future needs in soil mapping, classification, and pedologic modeling. *Geoderma* 264:253-255. doi: 10.1016/j.geoderma.2015.09.022.

#### *Prior to ISU (19)*

- 2015 19. Koszinski, S., **B.A. Miller**, W. Hierold, H. Haelbich, and M. Sommer. Spatial modeling of organic carbon in degraded peatland soils of northeast Germany. *Soil Science Society of America Journal* 79(5):1496-1508. doi: 10.2136/sssaj2015.01.0019.
18. Brevik, E.C. and **B.A. Miller**. The use of soil surveys to aid in geologic mapping with an emphasis on the Eastern and Midwestern United States. *Soil Horizons* 56(4). doi: 10.2136/sh15-01-0001.
17. **Miller, B.A.**, S. Koszinski, M. Wehrhan, and M. Sommer. Comparison of spatial association approaches for landscape mapping of soil organic carbon stocks. *SOIL* 1(1):217-233. doi: 10.5194/soil-1-217-2015.

16. **Miller, B.A.** and R.J. Schaetzl. Digital classification of hillslope position. *Soil Science Society of America Journal* 79(1):132-145. doi: 10.2136/sssaj2014.07.0287.
15. Arbogast, A.F., M.D. Luehmann, **B.A. Miller**, K.M. Adams, P.A. Wernette, J.D. Waha, G.A. O'Neil, Y. Tang, J.J. Boothroyd, C.R. Babcock, P.R. Hanson, T.A. Daly, and A.R. Young. Late-Pleistocene paleowinds and aeolian sand mobilization in north-central Lower Michigan. *Aeolian Research* 16:109-116. doi: 10.1016/j.aeolia.2014.08.006.
14. **Miller, B.A.** and C.L. Burras. Comparison of surficial geology maps based on soil survey and in depth geological survey. *Soil Horizons* 56(1). doi: 10.2136/sh14-05-0005.
13. **Miller, B.A.**, S. Koszinski, M. Wehrhan, and M. Sommer. Impact of multi-scale predictor selection for modeling soil properties. *Geoderma* 239-240:97-106. doi: 10.1016/j.geoderma.2014.09.018.
- 2014 12. **Miller, B.A.** and R.J. Schaetzl. The historical role of base maps in soil geography. *Geoderma* 230-231:329-339. doi: 10.1016/j.geoderma.2014.04.020.
11. **Miller, B.A.** Semantic calibration of digital terrain analysis. *Cartography and Geographic Information Science Journal* 41:166-176. doi: 10.1080/15230406.2014.883488.
10. Adewopo, J.B., C. VanZomeren, R.K. Bhomia, M. Almaraz, A.R. Bacon, E. Eggleston, J.D. Judy, R.W. Lewis, M. Lusk, **B.A. Miller**, C. Moorberg, E. Hodges-Snyder, and M. Tiedeman. Top-ranked priority research questions for soil science in the 21st century. *Soil Science Society of America Journal* 78:337-347. doi: 10.2136/sssaj2013.07.0291.
- 2013 9. Luehmann, M.D., R.J. Schaetzl, **B.A. Miller**, and M.E. Bigsby. Thin, pedoturbated, and locally sourced loess in the western Upper Peninsula of Michigan. *Aeolian Research* 8:85-100. doi: 10.1016/j.aeolia.2012.11.003.
- 2012 8. **Miller, B.A.** and R.J. Schaetzl. Precision of soil particle size analysis using laser diffractometry. *Soil Science Society of America Journal* 76:1719-1727. doi: 10.2136/sssaj2011.0303.
7. **Miller, B.A.** The need to continue improving soil survey maps. *Soil Survey Horizons* 53(3). doi: 10.2136/sh12-02-0005.
6. Schaetzl, R.J., F.J. Krist Jr., and **B.A. Miller**. A taxonomically based, ordinal estimate of soil productivity for landscape-scale analyses. *Soil Science* 177:288-299. doi: 10.1097/SS.0b013e3182446c88.
5. **Miller, B.A.**, W.G. Crumpton, and A.G. van der Valk. Wetland hydrologic class change from prior to European settlement to present on the Des Moines Lobe, Iowa. *Wetlands Ecology and Management* 20:1-8. doi: 10.1007/s11273-011-9237-z.
- 2011 4. **Miller, B.A.** Marketing and branding the agronomy major at Iowa State University. *Journal of Natural Resources and Life Science Education* 40:1-9. doi: 10.4195/jnrise.2009.0037u.

- 2009 3. **Miller, B.A.**, W.G. Crumpton, and A.G. van der Valk. Spatial distribution of historical wetland classes on the Des Moines Lobe, Iowa. *Wetlands* 29:1146-1152. doi: 10.1672/08-158.1.
- 2008 2. **Miller, B.A.**, C.L. Burras, and W.G. Crumpton. Using soil surveys to map Quaternary parent materials and landforms across the Des Moines Lobe of Iowa and Minnesota. *Soil Survey Horizons* 49:91-95.
- 2006 1. Crumpton, W.G., G.A. Stenback, **B.A. Miller**, and M.J. Helmers. Potential benefits of wetland filters for tile drainage systems: impact of nitrate loads to Mississippi River subbasins. U.S. Department of Agriculture, Project Report IOW06682. 34 pp.

### Book Chapters (7)

- 2018 7. Targulian, V.O., R.W. Arnold, E.C. Brevik, and **B.A. Miller**. Pedosphere. In: B. Fath. *Encyclopedia of Ecology*. Elsevier.
- 2017 6. **Miller, B.A.** Geographic information systems and spatial statistics applied for soil mapping: A contribution to land use management. In: P. Pereira, E.C. Brevik, M. Munoz-Rojas, and **B.A. Miller** (eds.). *Soil mapping and process modelling for sustainable land use management*. Elsevier.
5. Pereira, P., E.C. Brevik, M. Munoz-Rojas, **B.A. Miller**, A. Smetanova, D. Depellegrin, I. Misiune, A. Novara, and A. Cerdá. Soil mapping and process modeling for sustainable land management. In: P. Pereira, E.C. Brevik, M. Munoz-Rojas, and **B.A. Miller** (eds.). *Soil mapping and process modelling for sustainable land use management*. Elsevier.
4. Brevik, E.C., P. Pereira, M. Munoz-Rojas, **B.A. Miller**, A. Cerdá, L. Parras-Alcántara, and B. Lozano-García. Historical perspectives on soil mapping and process modeling for sustainable land management. In: P. Pereira, E.C. Brevik, M. Munoz-Rojas, and **B.A. Miller** (eds.). *Soil mapping and process modelling for sustainable land use management*. Elsevier.
3. **Miller, B.A.** Digital soil mapping and pedometrics. In: *International Encyclopedia of Geography*. Wiley - Association of American Geographers. doi: 10.1002/9781118786352.
2. Bromley, M. and **B.A. Miller**. Soil mapping and maps. In: *International Encyclopedia of Geography*. Wiley - Association of American Geographers. doi: 10.1002/9781118786352.
- 2016 1. Schaetzl, R.J. and **B.A. Miller**. Use of soil maps and surveys to interpret soil-landform assemblages and soil-landscape evolution. In: *Geopedology - An Integration of Geomorphology and Pedology for Soil and Landscape Studies*. J.A. Zinck, G. Metternicht, G. Bocco, and H.F. Del Valle (eds). Springer. pp. 251-264. doi: 10.1007/978-3-319-19159-1\_15.

### Books (1)

- 2017 1. Pereira, P., E.C. Brevik, M. Munoz-Rojas, and **B.A. Miller** (eds.). *Soil mapping and process modeling for sustainable land use management*. Elsevier. 398 p.

### Other Published Works (4)

- 2016 4. **Miller, B.A.** and J. Juilleret. A Survey to Better Understand the Use of the Terms “Colluvium” and “Alluvium”. National Cooperative Soil Survey Newsletter 76:7-9.
3. **Miller, B.A.** Soil informatics: Better maps for Iowa. Getting into Soil and Water. The Soil and Water Conservation Club and The Iowa Water Center, Iowa State University – University Extension, in press.
- 2012 2. Luehmann, M.D., R.J. Schaetzl, and **B.A. Miller**. An update on the loess in the western Upper Peninsula of Michigan. Soil Classifiers of Michigan.
- 2010 1. **Miller, B.A.** Soil as a history book. Getting into Soil and Water. The Soil and Water Conservation Club and The Iowa Water Center, Iowa State University – University Extension, p. 14-15.

### Grants (\$616,805)

#### Research Grants – Funded (\$605,391)

No.	Period	Agency	Amount	Total	Title	Role	Collaborators
5	2018	Iowa Water Center	\$21,156	\$21,156	Spatial Potential for Enhanced In-field Denitrification from Perennial Vegetative Filter Strips	Co-PI	D. Linton
4	2017-2018	USDA-NRCS	\$8,921	\$100,000	Completion of the Isee Soils Database for the North Central Region	Co-PI	D. Schulze, J. Crum, D. Hopkins, N. Jelinski, D. Malo, P. Quackenbush, M. Ransom, J. Turk
3	2017	USAID – Legume Innovation Lab	\$5,400	\$5,400	Enhanced farmer management decisions app	Co-PI	E. Luvaga, R. Mazur
2	2017-2020	NSF	\$123,174	\$399,717	Drainage network evolution following continental glaciation	Co-PI	A. Anders, K. Gran, P. Moore
1	2016-2017	USDA-NRCS	\$79,118	\$79,118	Integrating Soil Health Assessment and Laterally Connected Soil Systems	Co-PI	M. Castellano
Total			\$237,769	\$605,391			

## Travel Award Grants (\$3,614)

No.	Period	Agency	Amount	Title	Role
4	2018	Iowa State University	\$1,114	Foreign Travel Grant	PI
3	2016	Department of Agronomy (ISU)	\$700	Baker Travel Fund	PI
2	2015	Department of Agronomy (ISU)	\$1,000	Baker Travel Fund	PI
1	2015	College of Agriculture & Life Sciences (ISU)	\$800	NSF Regional Grants Conference	PI

## Prior to ISU (\$7,800)

No.	Period	Agency	Amount	Title	Role
4	2013	Association of American Geographers	\$500	Dissertation Research Grant	PI
3	2012	Michigan State University	\$6,000	Dissertation Completion Fellowship	PI
2	2012	Council of Graduate Students, Michigan State University	\$300	Travel Grant	PI
1	2012	Michigan State University	\$1,000	Graduate Office Fellowship	PI

**Oral Presentations (24)**

Name of presenter listed first. Students mentored indicated by underlining.

*While at ISU (14 presentations, 5 of which were invited)*

2018 **Miller, B.A.**, C.L. Burras, O. Semalulu, and M. Tenywa. Strengthening an indigenous soil classification system using GIS-based mapping of the Buganda catena, Uganda. *Presentation* at the European Geosciences Union General Assembly, Vienna, Austria.

2017 **Miller, B.A.**, C.L. Burras, M. Tenywa, O. Semalulu, and S. Kyebogola. GIS-based Mapping of the Buganda Soil Catena, Uganda: Strengthening the indigenous soil classification system. *Invited presentation* at USAID Feed the Future Innovation Lab for Collaborative Research on Grain Legumes, Ouagadougou, Burkina Faso.

Tenywa, M.M., O. Semalulu, R. Miiro, S. Kyebogola, P. Kyomuhendo, C.L. Kizza, J.G.M. Majaliwa, J. Nampijja, A.W. Lenssen, **B.A. Miller**, C.L. Burras, and R. Mazur. Developing a methodology for mapping local soil types along the Buganda Catena, Uganda. *Invited presentation* at USAID Feed the Future Innovation Lab for Collaborative Research on Grain Legumes, Ouagadougou, Burkina Faso.

Cruse, R.M., B. Sharma, and **B.A. Miller**. Spatial Evaluation of Lost Water Holding Capacity of Watersheds. *Presentation* at Soil and Water Conservation Society International Annual Conference, Madison, Wisconsin.

Sharma, B., **B.A. Miller**, and R.M. Cruse. Spatial Evaluation of Lost Water Holding Capacity of Watersheds. *Invited presentation* at American Society of Agricultural and Biological Engineers, Spokane, Washington.

**Miller, B.A.**, E.C. Brevik, J.A. Homburg, T.E. Fenton, and S.J. Indorante. Understanding Americans: a focus on the transition from traditional to digital soil mapping. *Presentation* at the European Geosciences Union General Assembly, Vienna, Austria.

**Miller, B.A.**, S. Koszinski, W. Hierold, H. Rogasik, B. Schröder, K. Van Oost, M. Wehrhan, and M. Sommer. Towards mapping soil carbon landscapes: issues of sampling scale and transferability. *Presentation* at the European Geosciences Union General Assembly, Vienna, Austria.

2016 Schaetzl, R.J., K.E. Nyland, A. Ignatov, and **B.A. Miller**. Concurrent Loess and Saltating Sand Deposition on the Buckley Flats Outwash Plain of Northwestern Lower Michigan. *Presentation* at Geological Society of America, Denver, Colorado.

**Miller, B.A.** Soil Informatics: is it just another way to use a buzzword? *Invited presentation* at Department of Agronomy, Iowa State University, Ames, Iowa.

**Miller, B.A.** Soil Informatics. *Invited presentation* at Pioneer-DuPont, Johnston, Iowa.

**Miller, B.A.** and J. Juilleret. Colluvium versus Alluvium: Preliminary Survey Results. *Presentation* at the National Cooperative Soil Survey, North Central Regional Conference, Sycamore, Illinois.

**Miller, B.A.** Resolution or Analysis Scale: What Matters Most? *Presentation* at the European Geosciences Union General Assembly, Vienna, Austria.

Nyland, K.E., R.J. Schaetzl, A. Ignatov, and **B.A. Miller**. Mapping and Characterizing the Loess Cover on the Buckley Flats, Northwestern Lower Michigan. *Presentation* at Michigan Academy of Science, Arts, and Letters, University Center, Michigan.

2015 **Miller, B.A.** Digital Hillslope Position: A Basis for Consistent Identification of Toposequences. *Presentation* at Soil Science Society of America Conference, Minneapolis, Minnesota.

*Prior to ISU (10 presentations, 4 of which were invited)*

2015 **Miller, B.A.** GIS and Spatial Statistics in Soil Mapping. *Invited presentation* at the European Geosciences Union General Assembly, Vienna, Austria.

2014 Schaetzl, R.J. and **B.A. Miller**. Soil Taxonomy and Geomorphology: Better Correspondence Means Better Soil Maps. *Invited presentation* at Soil Science Society of America Conference, Long Beach, California.

**Miller, B.A.**, R.J. Schaetzl, and M.D. Luehmann. A Method for Distinguishing the Original Textural Properties of Loess that Has Been Mixed with Underlying Sediment. *Presentation* at International Quaternary Association Conference on Loess Research, Wrocław, Poland.



**Miller, B.A.** and R.J. Schaetzl. Map Scale in the Context of Progress in Soil Geography. *Presentation* at the European Geosciences Union General Assembly, Vienna, Austria.

**Miller, B.A.** and E.C. Brevik. Development of Base Maps' Role in Soil Mapping. *Invited presentation* at the Soil System Sciences Division President's Scientific Session of the European Geosciences Union General Assembly, Vienna, Austria.

**Miller, B.A.**, S. Koszinski, M. Wehrhan, and M. Sommer. Multiscale Parameter Selection for Predicting Soil Organic Carbon. *Presentation* at Digital Soil Mapping Workshop, Tübingen, Germany.

2013 Crumpton, W.G., G.A. Stenback, D. Green, and **B.A. Miller**. Potential Impact of Targeted Wetland Restoration on Nitrate Loads to Mississippi River Subbasins: Performance Forecast Modeling of Loads and Load Reductions. *Presentation* at Soil and Water Conservation Society Conference, Reno, Nevada.

Luehmann, M.D., R.J. Schaetzl, **B.A. Miller**, and M.E. Bigsby. Locally Sourced Loess Deposits within the Western Upper Peninsula of Michigan. *Presentation* at Michigan Academy of Science Arts & Letters Conference, Holland, Michigan.

2012 **Miller, B.A.** Improving Soil Maps with a Semantically Calibrated, Digital Model for Delineating Hillslope Position. *Presentation* at Soil Science Society of America Conference, Cincinnati, Ohio.

2011 **Miller, B.A.** Dead Zone in the Gulf of Mexico: Nitrate Yield from the Upper Mississippi and Ohio River Basins. *Invited presentation* at Michigan State University, Department of Geography Colloquium, East Lansing, Michigan.

### Poster Presentations (23)

Name of presenter listed first. Students mentored indicated by underlining.

#### While at ISU (15)

2018 Khaledian, Y., and **B.A. Miller**. Soil sample optimization for precision agriculture. *Poster* at the European Geosciences Union General Assembly, Vienna, Austria.

Linton, D., and **B.A. Miller**. Digital soil mapping of agricultural fields with perennial vegetation strips on contours. *Poster* at the European Geosciences Union General Assembly, Vienna, Austria.

Jordan, E.V., **B.A. Miller**, and M.J. Castellano. Does Landscape Position or Long-Term Cover-Cropping Have a Greater Effect on Soil Health? *Poster* at the European Geosciences Union General Assembly, Vienna, Austria.

**Miller, B.A.**, D. Schulze, J. Crum, D. Hopkins, N. Jelinski, D. Malo, P. Quackenbush, M. Ransom, J. Turk, and the Isee Network. Impressive Interpretations from the USA Soil Survey Maps. *Poster* at the European Geosciences Union General Assembly, Vienna, Austria.

- Miller, B.A.** William Smith's 1815 Delineation of the Strata of England and Wales with Part of Scotland: ...Varieties of Soil According to the Variations in the Substrata. *Poster* at the European Geosciences Union General Assembly, Vienna, Austria.
- Brevik, E.C. and **B.A. Miller**. Marbut's 1935 Atlas of the Soils of the United States. *Poster* at the European Geosciences Union General Assembly, Vienna, Austria.
- 2017 Jordan, E.V., B.A. Miller, and M.J. Castellano. Does Landscape Position or Long-Term Cover-Cropping Have a Greater Effect on Soil Health? *Poster* at the Soil Science Society of America Conference, Tampa, Florida.
- Pereira, P., E.C. Brevik, M. Muñoz-Rojas, and **B.A. Miller**. Soil Mapping and Processes Modelling for Sustainable Land Management: A Review. *Poster* at the European Geosciences Union General Assembly, Vienna, Austria.
- Brevik, E.C., P. Pereira, M. Muñoz-Rojas, and **B.A. Miller**. Soil Mapping and Process Modeling for Sustainable Land Use Management: A Brief Historical Review. *Poster* at the European Geosciences Union General Assembly, Vienna, Austria.
- Brevik, E.C., J.A. Homburg, **B.A. Miller**, T.E. Fenton, J.A. Doolittle, and S.J. Indorante. Selected Aspects of Soil Science History in the USA – 1980s to the 2010s. *Poster* at the European Geosciences Union General Assembly, Vienna, Austria.
- Jordan, E.V., B.A. Miller, and M.J. Castellano. Does Landscape Position or Long-Term Cover-Cropping have a Greater Effect on Soil Health? *Poster* at the Soil Health Conference, Ames, Iowa.
- 2016 Jordan, E.V., B.A. Miller, and M.J. Castellano. A Purposive Sampling Design for Mapping Soil Health. *Poster* at the National Cooperative Soil Survey, North Central Regional Conference, Sycamore, Illinois.
- Miller, B.A.** and J. Juilleret. Defining Colluvium and Alluvium: An Experiment to Discuss and Consolidate Perspectives. *Poster* at the European Geosciences Union General Assembly, Vienna, Austria.
- Brevik, E.C. and **B.A. Miller**. Using Soil Maps as a Tool to Improve Geologic Maps. *Poster* at the European Geosciences Union General Assembly, Vienna, Austria.
- 2015 **Miller, B.A.** and J. Juilleret. What is Colluvium?: An Interactive Poster Seeking a Common Definition to Improve International Communication. *Poster* at Soil Science Society of America Conference, Minneapolis, Minnesota.
- Prior to ISU (8)*
- 2015 **Miller, B.A.** S. Koszinski, W. Hierold, B. Schröder, M. Wehrhan, and M. Sommer. Issues of Sampling Scale and Transferability for Digital Soil Mapping. *Poster* at the European Geosciences Union General Assembly, Vienna, Austria.

- 2014 **Miller, B.A.**, and R.J. Schaetzl. Digital Classification of Hillslope Position for Defining Soil Map Units. *Poster* at Soil Science Society of America Conference, Long Beach, California.
- 2012 Arbogast, A.F., M.D. Luehmann, **B.A. Miller**, K.M. Adams, P.A. Wernette, J.D. Waha, G.A. O'Neil, Y. Tang, J.J. Boothroyd, C.R. Babcock, P.R. Hanson, T.A. Daly, and A.R. Young. Late-Pleistocene Wind-flow Patterns and Dune Formation in North-Central Lower Michigan. *Poster* at Geological Society of America Annual Meeting, Charlotte, North Carolina.
- Crumpton, W.G., G.A. Stenback, D. Green, and **B.A. Miller**. Potential Impact of Targeted Wetland Restoration on Nitrate Loads to Mississippi River Subbasins: Performance Forecast Modeling of Loads and Load Reductions. *Poster* at Gulf Hypoxia Task Force and the National Association of States' Departments of Agriculture Field Day, Ames, Iowa.
- Miller, B.A.**, R.J. Schaetzl, and M.D. Luehmann. A New Method for Distinguishing the Original Textural Properties of Loess that Has Been Mixed with Underlying Sediment. *Poster* at International Quaternary Association Conference on Loess Research, Novi Sad, Serbia.
- Miller, B.A.**, R.J. Schaetzl, and F.J. Krist. The Soil Productivity Index: Taxonomically Based, Ordinal Estimates of Soil Productivity. *Poster* at Association of American Geographers Conference, New York, New York.
- 2011 **Miller, B.A.**, R.J. Schaetzl, and F.J. Krist. The Soil Fertility and Drainage Indexes: Taxonomically Based, Ordinal Estimates of Relative Soil Properties. *Poster* at National Cooperative Soil Survey Conference, Asheville, North Carolina.
- 2010 **Miller, B.A.**, C.L. Burras, and W.G. Crumpton. Using Soil Surveys to Map Quaternary Parent Materials. *Poster* at Binghamton Geomorphology Symposium, Columbia, South Carolina.

### Student Mentoring

Graduate Students (7)

\*major adviser

Name	Period	Degree
Madelyn Rabenhorst*	11/2017 - present	M.S.
Vitor Souza-Martins	10/2017 - present	Ph.D.
Rob McGuire	09/2017 – present	M.S.
Joshua McDanel*	08/2017 – present	M.S.
Daniel Linton*	08/2016 – present	M.S.
Yones Khaledian*	08/2016 – present	Ph.D.
Elaine Johnson*	01/2016 - present	M.S.

Undergraduate Advisees (21)

Year	Major	Quantity
2017	Agronomy	14
2016	Agronomy	7

Honors Mentor Program (3)

Name	Period	Poster Presentation
Emily Tonn	01/2017 – 05/2017	Predicting Soil Respiration: An Experiment in Geographic Information Systems and Data Mining
David Barker	01/2016 – 05/2016	Spatial Analysis of Profit Variation at the Sub-Field Scale
Caleb Wood	01/2016 – 05/2016	Comparing Simple and Ordinary Kriging Methods for Annual Iowa Precipitation

### Teaching

#### Teaching Evaluations for Classroom Instruction at Iowa State University

On a scale from 1=very poor to 5=very good, students were asked to provide their overall rating of the instructor. Higher numbers are better; 5.00 is a perfect score. Raw data available upon request.

Semester	Course	Credits	Title	Enrollment	Teaching Evaluation
Fall 2017	Agron 270X	3	Geospatial Technologies	30	4.67
Fall 2016	Agron 270X	3	Geospatial Technologies	16	4.47

#### Guest Lectures (9)

2018	CRP 251X
2017	Agron 181, Agron 360, Agron 463
2016	Agron 260, Agron 410 (2), EnSci 698
2015	Agron 410

**Teaching Evaluations for Classroom Instruction at Michigan State University**

On a scale from 1=strongly agree to 5=strongly disagree, students were asked to evaluate the statement: "Instructor did an overall effective job." Lower numbers are better; 1.00 is a perfect score. Raw data available upon request.

Semester	Course	Credits	Title	Enrollment	Teaching Evaluation
Fall 2012	Geo 221	3	Intro. Geographic Information	140	1.29
Spring 2012	Geo 425	4	Problems in GIScience	13	1.00
Fall 2011	Geo 206L	1	Physical Geography Lab	12	1.09
Spring 2011	Geo 206L	1	Physical Geography Lab	12	1.12
Fall 2010	Geo 206L	1	Physical Geography Lab	25	1.57

**Institutional Service**

2018 Chair, Research Section of the Agronomy Departmental Review Self-Study  
 2017- Department of Agronomy IT Committee  
 2016- Environmental Science Graduate Program Admissions Committee  
 2016- Department of Agronomy Strategic Planning Committee  
 2015- GIS Certificate Committee  
 2015- Co-adviser, Soil and Water Conservation Club, Iowa State University  
 2016 Department of Agronomy Communication Specialist Search Committee  
 2016 Department of Agronomy Systems Analyst III Search Committee

**Professional Service**

2017- Editorial Board, Geoderma Regional  
 2016- Editorial Board, Geoderma  
 2016- Committee on Post-Soil Horizons Publishing Options, Member  
 2014-2018 Committee Member - History, Education, and Society of Soil Science Subdivision, European Geosciences Union (Chair, 2016-2018)  
 2015 Guest Editor, Geoderma, Special issue on "Soil Mapping, Classification, and Modelling: History and Future Directions"  
 2015 Associate Editor, Soil Horizons  
 2012-2013 Soil Information Systems Sub-committee - "Top 25 Questions for Soil Science Research in the 21<sup>st</sup> Century" Soil Science Society of America initiative

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**Journal Reviews (46)**

2018 Geoderma; Geoderma Regional  
2017 Environmental Monitoring and Assessment; Geoderma (2); Geoderma Regional (2);  
National Science Centre, Poland; Natural Sciences Education; Precision Agriculture;  
Progress in Physical Geography; Science of the Total Environment (2)  
2016 Hungarian National Research, Development, and Innovation Office; Journal of Plant  
Nutrition and Soil Science (2); Nature - Scientific Reports; Remote Sensing (2); Science of  
the Total Environment; Soil Science Society of America Journal; Solid Earth (2)  
2015 Geoderma (3); International Journal of Geographic Information Science; Journal of Plant  
Nutrition and Soil Science (2); Pedosphere; PLOS ONE; Soil Horizons; Soil Science Society of  
America Journal  
2014 Catena (2); Geoderma (2); Geoderma Regional; Journal of Plant Nutrition and Soil Science  
(3); SOIL; Soil Science Society of America Journal  
2013 Soil Horizons; Cartography and Geographic Information Science Journal  
2010 Journal of Natural Resources and Life Science Education