

# Joseph A. Mason

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**Research Interests:** Eolian and hillslope geomorphology, loess stratigraphy/sedimentology, pedology and soil geomorphology, paleopedology, Quaternary landscape evolution, geomorphic response to Quaternary climate change. *Geographic focus:* Great Plains, northern China, central Rocky Mountains, Upper Mississippi Valley.

## Formal Education

Ph. D., Geography, University of Wisconsin-Madison (1995). Dissertation title: "Effects of glacial-interglacial climate change on mass wasting, southeastern Minnesota."  
(Advisor: James C. Knox).  
M. S., Soil Science, University of Minnesota (1992). Advisor: Edward A. Nater  
B. S., University of Wisconsin--Stevens Point (1989). Major: Soil Science.

## Academic Positions

Professor (2008-present), Associate Professor (2004-2008), Assistant Professor (2003-2004)  
Department of Geography, University of Wisconsin-Madison. Affiliate status in  
Department of Soil Science  
Chair, Department of Geography, University of Wisconsin-Madison (2018-2021)  
Assistant Professor, Department of Geosciences and Conservation and Survey Division  
(Nebraska's state geological survey), University of Nebraska-Lincoln (1997-2003).  
Assistant Professor, Department of Geography, Northern Illinois University (1995-1997).  
Visiting Professor, Department of Geography, University of Oregon (Summer, 1995).  
Lecturer, Department of Geography, University of Wisconsin-Madison (1993-1994).  
Graduate Fellow, University of Wisconsin-Madison (1992-1993; 1994-95).  
NSF Graduate Fellow, University of Minnesota (1989-91) and UW-Madison (1991-1992).

## Honors and Fellowships

Fellow, Geological Society of America  
J. H. Mackin Grant, Geological Society of America, 1993.  
National Science Foundation Graduate Fellowship, 1989-92.

## Publications

### 1. Peer-Reviewed Journal Articles (92 published or in press)

- Dolui, M., Nel, T., Chacon, S., Phillips, L.M., McMurtry, A.R., Moreland, K., McFarlane, K., **Mason**, J.A., Marin-Spiotta, E., de Graaff, M.A., Ghezzehei, T., Berhe, A.A., 2026. Soil organic matter stabilization by polyvalent cations in a buried alkaline soil. *Journal of Geophysical Research-Biogeosciences*, 131: e2025JG009241. <https://doi.org/10.1029/2025JG009241>.
- Dolui, M., Nel, T., Phillips, L.M., McMurtry, A.R., Moreland, K., Tfaily, M., McFarlane, K., **Mason**, J.A., Marin-Spiotta, E., de Graaff, M.A., Ghezzehei, T., Berhe, A.A., 2026. Composition and persistence of organic matter along eroding and depositional transects in buried vs. modern soil layers: A case of the Brady paleosol at Wauneta, Nebraska. *Geoderma*, 465:117660. <https://doi.org/10.1016/j.geoderma.2025.117660>.
- Mason**, J.A., McDowell, T.M., Vo, T. 2025. Evolution of loess tablelands in the central Great Plains: Relief generation by loess accumulation and the importance of closed depressions. *Journal of Geophysical Research-Earth Surface* 130: e2025JF008375. <https://doi.org/10.1029/2025JF008375>.
- Wang, L., Hou, C., Pang, X., Zhang, H., Yizhaq, H., **Mason**, J.A., Lu, H., Xu, Z. 2025. Slowdown of dune migration in East Asia's inland deserts: A 35-year response to wind stilling. *Geophysical Research Letters* 52: e2024GL113506. <https://doi.org/10.1029/2024GL113506>
- Avram, A., **Mason**, J.A., del Valle Villalonga, L., Constantin, D., Grecu, S., Veres, D., Marković, S., Timar-Gabor, A. 2025. Revisiting the chronology of a key loess section in North America using multiple luminescence dating methods. *Geological Society of America Bulletin* 137: 3207-3220. <https://doi.org/10.1130/B38165.1>
- McMurtry, A.R., Kasmerchak, C.S. Vaughan, E.A., Dolui, M., Phillips, L.M., Mueller, C.W., Pett-Ridge, J., Berhe, A.A., **Mason**, J.A., Marín-Spiotta, E., de Graaff, M.-A., 2024. Getting to the root of the problem: soil carbon and microbial responses to root inputs in a buried paleosol along an eroding hillslope in southwestern Nebraska, U.S.A. *Soil Biology and Biochemistry* 109549. <https://doi.org/10.1016/j.soilbio.2024.109549>
- Zhang H., Li, S., **Mason**, J.A., Yizhaq, H., Gui, D., and Xu, Z., 2024. Biogeomorphological niche of a landform: Machine-learning approaches reveal controls on the geographical distribution of *Nitraria tangutorum* nebkhas. *Earth Surface Processes and Landforms* 49:1515-1529. <https://doi.org/10.1002/esp.5783>
- Namier, N., Hao, Q., Gao, X., Fu, Y., Marković, S.B., Hambach, U., Veres, D., **Mason**, J.A., Song, Y., Deng, C., Gavrilov, M.B., Marković, R., Guo, Z. 2023. Comprehensive magnetic analysis of the tephras in Middle-Late Pleistocene loess records of Serbia, and implications for tephra identification, correlation, and loess chronology.

*Quaternary Science Reviews* 313: 108202,  
<https://doi.org/10.1016/j.quascirev.2023.108202>

- McDowell, T. M., Vo, T., Marín-Spiotta, E., **Mason**, J.A. 2022. Hydrology of a semiarid loess-paleosol sequence, and implications for buried soil connection to the modern climate, plant-available moisture, and loess tableland persistence. *Journal of Geophysical Research-Earth Surface*, 127: e2022JF006800.  
<https://doi.org/10.1029/2022JF006800>
- Huang, X., Miao, X., Chang, Q., Zhong, J., **Mason**, J.A., Hanson, P.R., Ou, X., Xu, L., Lai, Z., 2022. Tibetan dust accumulation linked to ecological and landscape response to global climate change. *Geophysical Research Letters* 49: e2021GL096615.  
<https://doi.org/10.1029/2021GL096615>
- Li, S., **Mason**, J.A., Xu, Y., Xu, C., Zheng, G., Yizhaq, H., Pan, S., Lu, H., Xu, Z., 2021. Biogeomorphology of nebkhas in the Mu Us dune field, north central China: Chronological and morphological results. *Geomorphology* 107979.  
<https://doi.org/10.1016/j.geomorph.2021.107979>
- Chen, Y., Yizhaq, H., **Mason**, J.A., Zhang, X., Xu, Z., 2021. Dune bistability identified by remote sensing in a semi-arid dune field of northern China. *Aeolian Research* 53:100751. <https://doi.org/10.1016/j.aeolia.2021.100751>.
- Constantin, D., **Mason**, J.A., Veres, D., Hambach, U., Panaiotu, C.G., Zeeden, C., Zhou, L., Marković, S.B., Gerasimenko, N., Avram, A., Tecsă, V., Groza-Sacaci, S.-M., del Valle Villalonga, L., Begy, R.C., and Timar-Gabor, A., 2021. OSL-dating of the Pleistocene-Holocene climatic transition in loess from China, Europe, and North America, and evidence for accretionary pedogenesis. *Earth Science Reviews* 221:103769. <https://doi.org/10.1016/j.earscirev.2021.103769>.
- Xu, Z., **Mason**, J.A., Xu, C., Yi, S., Bathiany, S., Yizhaq, H., Zhou, Y., Holmgren, M., Lu, H., 2020. Critical transitions in Chinese dunes during the past 12,000 years. *Science Advances* 6:eay8020. <https://doi.org/10.1126/sciadv.aay8020>.
- Tecsă, V., **Mason**, J.A., Johnson, W.C., Miao, X., Constantin, D., Radu, S., Magdas, D.A., Veres, D., Marković, S.B., and Timar-Gabor, A., 2020. Late Pleistocene to Holocene loess in the central Great Plains: Optically stimulated luminescence dating and multi-proxy analysis of the Enders section (Nebraska, USA). *Quaternary Science Reviews* 229:106130. <https://doi.org/10.1016/j.quascirev.2019.106130>.
- Johnson, W. C., Halfen, A. F., Spencer, J. Q. G., Hanson, P. R., **Mason**, J. A., and Young, A. R., 2019, Late MIS 3 stabilization of dunes in the eastern Central Great Plains, USA: *Aeolian Research* 36: 68-81. <https://doi.org/10.1016/j.aeolia.2018.12.002>.
- Kasmerchak, C.S., **Mason**, J. A., Liang, M., 2019. Laser diffraction analysis of aggregate disintegration and stability in forest and grassland soils of northern Minnesota, U.S.A. *Geoderma* 338: 430-444. <https://doi.org/10.1016/j.geoderma.2018.06.020>.

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- Sweeney, M.R., Lu, H., Cui, M., **Mason**, J.A., Feng, H., Xu, Z. 2016. Sand dunes as potential sources of dust in northern China. *Science China Earth Sciences* 59:760-769. <https://doi.org/10.1007/s11430-015-5246-8>
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Xu, Z., Lu, H., Yi, S., Vandenberghe, J., **Mason**, J.A., Zhou, Y., and Wang, X. 2015. Climate-driven changes to dune activity during the Last Glacial Maximum and deglaciation in the Mu Us dune field, north-central China. *Earth and Planetary Science Letters* 427:149-159. <https://doi.org/10.1016/j.epsl.2015.07.002>

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Xu, Z., **Mason**, J.A., and Lu, H. 2015. Vegetated dune morphodynamics during recent stabilization of the Mu Us dune field, north-central China. *Geomorphology* 228: 486-503. <https://doi.org/10.1016/j.geomorph.2014.10.001>

Chen, Y., Lu, H., Yi, S., Zhang, E., Xu, Z., Yu, K., and **Mason**, J.A., 2015. A preliminary reconstruction of precipitation in southern Mu Us sandy land at margin of Asian monsoon-dominated region during late Quaternary. *Journal of Geographical Sciences* 3: 301-310. <https://doi.org/10.1007/s11442-015-1169-8>

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Schmeisser McKean, R.L., Goble, R.J., **Mason**, J.A., Swinehart, J.B., Loope, D.B., 2015. Temporal and spatial variability in dune reactivation across the Nebraska Sand Hills, USA. *Holocene* 25: 523-535. <https://doi.org/10.1177%2F0959683614561889>

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Sweeney, M.R., and **Mason**, J.A. 2013. Mechanisms of dust emission from Pleistocene loess deposits, Nebraska, USA. *Journal of Geophysical Research: Earth Surface Processes* 118:1-12. <https://doi.org/10.1002/jgrf.20101>

Lu, H., Yi, S., Liu, Z., **Mason**, J.A., Jiang, D., Cheng, J., Stevens, T., Xu, Z., Zhang, E., Jin,

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- Lu, H., Zhou, Y., Liu, W., **Mason**, J.A. 2012. Organic stable carbon isotopic composition reveals late Quaternary vegetation changes in the dune fields of northern China. *Quaternary Research* 77: 433-444
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- Mason**, J.A., Swinehart, J.B., Hanson, P.R., Loope, D.B., Goble, R.J., Miao, X., and Schmeisser, R.L. 2011. Pleistocene dune activity in the central Great Plains, U.S.A. *Quaternary Science Reviews* 30:3858-3870.
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- Jacobs, P.M., **Mason**, J.A., Hanson, P.R. 2011. Mississippi Valley regional source of loess on the southern Green Bay Lobe Land Surface, Wisconsin. *Quaternary Research* 75:574-583
- Lu, H., Zhao, C., **Mason**, J.A., Yi, S., Zhao, H., Zhou, Y., Ji, J., and Swinehart, J. 2011. Holocene climatic changes revealed by aeolian deposits from the Qinghai Lake area (northeastern Qinghai-Tibetan Plateau) and possible forcing mechanisms. *The Holocene* 21:297-304.
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- Mason**, J.A., Lu, H.Y., Zhou, Y.L. Miao, X.D., Swinehart, J.B., Liu, Z., Goble, R.J., and Yi, S. 2009. Dune mobility and aridity at the desert margin of northern China at a time of peak monsoon strength. *Geology* 37:947-950.

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- Mason, J. A., and Knox, J.C.** 1997. Age of colluvium indicates accelerated late Wisconsinan hillslope erosion in the Upper Mississippi Valley. *Geology* 25:267-270.
- Jacobs, P. M., Knox, J.C., and **Mason, J.A.** 1997. Preservation and recognition of Middle and Early Pleistocene loess in the Driftless Area, Wisconsin. *Quaternary Research* 47:147-154.
- Mason, J. A., Nater, E.A., and Hobbs, H.C.** 1994. Transport direction of Wisconsinan loess in southeastern Minnesota. *Quaternary Research* 41:44-51.
- Mason, J. A., and Nater, E.A.** 1994. Soil morphology--Peoria Loess grain size relationships, southeastern Minnesota. *Soil Science Society of America Journal* 58:432-439.
- Mason, J. A., Milfred, C.J., and Nater, E.A.** 1994. Distinguishing parent material and soil age effects on an Ultisol of north-central Wisconsin, U.S.A. *Geoderma* 61:165-189.

## 2. Book Chapters

- Mason, J.A., Swinehart, J.B., and Loope, D.B.,** 2020. The Nebraska Sand Hills p. 585-603 in N. Lancaster and P. Hesp, *Dunes of North America*. Springer.
- Mason, J.A., Jacobs, P.M., and Leigh, D.S.,** 2019. Loess, eolian sand, and colluvium in the Driftless Area, pp. 61-73 in E. Carson, J. Elmo Rawling III, J. Michael Daniels, and J.W. Attig. *The Physical Geography and Geology of the Driftless Area: The Career and Contributions of James C. Knox*. Special Paper 543. Geological Society of America, Boulder, Colorado.
- Mason, J.A., and Jacobs, P.M.** 2017. Soils and paleosols in glacial environments. p. 585-603 in J. Menzies and J.J.M. van der Meer, *Past Glacial Environments, 2<sup>nd</sup> Ed.* Elsevier.
- Mason, J.A.** 2011. Evidence of environmental change from aeolian and hillslope sediments and other terrestrial sources. In J.A. Matthews (ed.) *Handbook of Environmental Change*. Sage.
- Knox, J.C., Leigh, D.S., Jacobs, P.M., **Mason, J.A.,** and Attig, J.W. 2011. Kieler Formation pp. 157-172 in Syverson, K.M., Clayton, L., Attig, J.W., and Mickelson, D.M.

(editors), *Lexicon of Pleistocene Stratigraphic Units of Wisconsin*, Wisconsin Geological and Natural History Survey Technical Report 1, Madison, Wisconsin.

**Mason**, J.A. and Jacobs, P.M. 2007. Nature of Quaternary paleosols. In *Encyclopedia of Quaternary Science* (S. Elias, ed.). Elsevier.

**Mason**, J. A., and Zanner, C.W. 2004. Grassland Soils. In D. Hillel and M. Singer (eds.) *Encyclopedia of Environmental Soil Science*. Elsevier.

### **3. Textbook**

**Mason**, J.A., Burt, J., Muller, P.O., and de Blij, H.J., 2016. *Physical Geography: The Global Environment*, 5<sup>th</sup> Ed. Oxford University Press, New York.

de Blij, H.J., Muller, P.O., Burt, J., and **Mason**, J.A. 2013. *Physical Geography: The Global Environment*, 4<sup>th</sup> Ed. Oxford University Press, New York.

### **4. Field Trip Guidebook Section**

Bettis, E.A., III, J.A. **Mason**, J.A., Swinehart, X.-D. Miao, P.R. Hanson, R.J. Goble, D.B. Loope, P.M. Jacobs, H.M. Roberts. 2003. Cenozoic eolian sedimentary systems of the USA mid-continent. In D. Easterbrook (ed.), *Quaternary Geology of the United States*. Geological Society of America, Boulder, Colorado, pp. 195-218.

### **5. Open-File Reports** (internal state geological survey review only)

**Mason**, J. A., and R. M. Joeckel. 2002. Surficial geology of the Platte River Valley, Fremont to Ashland (Fremont East, Arlington, Valley, Wann, and Ashland East 7.5-Minute Quadrangles). Conservation and Survey Division Open-File Report 68, University of Nebraska, Lincoln [CDROM].

**Mason**, J. A., R. F. Diffendal, Jr., and R. M. Joeckel (Eds.). 2001. Program and Abstracts, 7th International Conference on Fluvial Sedimentology. Conservation and Survey Division Open-File Report 60, University of Nebraska, Lincoln [CDROM].

**Mason**, J. A. 2001. Surficial geology of the Fort Calhoun and Kennard Quadrangles, Nebraska. Conservation and Survey Division Open-File Report 56, University of Nebraska, Lincoln [CDROM].

### **6. Digital Geologic Maps** (internal state geological survey review only)

**Mason**, J. A. 1999. Surficial Geology of the Fort Calhoun 7.5' Quadrangle.

**Mason**, J. A. 1999. Stack Map of the Fort Calhoun 7.5' Quadrangle.

**Mason**, J. A. 1999. Surficial Geology of the Kennard 7.5' Quadrangle.

**Mason, J. A.** 1999. Stack Map of the Kennard 7.5' Quadrangle.  
**Mason, J. A., and R. M. Joeckel.** 2000. Surficial Geology of the Arlington 7.5' Quadrangle.  
**Mason, J. A., and R. M. Joeckel.** 2000. Stack Map of the Arlington 7.5' Quadrangle.  
**Mason, J. A., and R. M. Joeckel.** 2000. Surficial Geology of the Valley 7.5' Quadrangle.  
**Mason, J. A., and R. M. Joeckel.** 2000. Stack Map of the Valley 7.5' Quadrangle.  
**Mason, J. A., and R. M. Joeckel.** 2000. Surficial Geology of the Wann 7.5' Quadrangle.  
**Mason, J. A., and R. M. Joeckel.** 2000. Stack Map of the Wann 7.5' Quadrangle.  
**Mason, J. A., and R. M. Joeckel.** 2001. Surficial Geology of the Ashland East Quadrangle.  
**Mason, J. A., and R. M. Joeckel.** 2001. Stack Map of the Ashland East Quadrangle.  
**R. M. Joeckel and J. A. Mason.** 2001. Surficial Geology of the Fremont East Quadrangle.  
**R. M. Joeckel and J. A. Mason.** 2001. Stack Map of the Fremont East Quadrangle.  
**Mason, J. A., and R. M. Joeckel.** 2003. Stack Map of the Ashland West Quadrangle.

**External Funding** (does not include funding for geologic mapping through STATEMAP program at UNL)

National Endowment for the Humanities, “Whose Land Was “Granted” to the Land Grant? Teaching Indigenous Dispossession in Wisconsin and Beyond,” AA-289974-23, Project Director: Caroline Gottschalk Druschke, Co-Directors, Kasey Keeler, Jen Rose Smith, Ruth Goldstein, and Joe **Mason**, \$149,922, 2023-2024.

National Science Foundation, “Coevolution of Aeolian Landscapes and Soils,” EAR-1920625, PI: J.A. **Mason**, Co-PI: Erika Marin-Spiotta, \$331,900, 2019-2023 (with extensions).

National Science Foundation, “Collaborative Research: Vulnerability of carbon in buried soils to climate change and landscape disturbance,” EAR-1623814, PI: Erika Marin-Spiotta, Co-PI: J.A. **Mason**, collaborative project with UC-Merced (PI: Asmeret Asefaw Berhe) and Boise State Univ. (PI: Marie-Anne de Graff), total award of \$776,800 (UW-Madison portion \$399, 932), 2016-2022 (with extensions).

National Science Foundation, “Effects of Past Vegetation Change on Soil Formation Near the Prairie-Forest Vegetation Border with Implications for the Future,” BCS-1263582, PI: J.A. **Mason**, \$199,869, 2013-2016.

National Science Foundation, “Collaborative Research: Linking loess landforms and eolian processes,” EAR-0921312, PIs: J.A. **Mason**, P.R. Hanson (University of Nebraska), and M. Sweeney (University of South Dakota), \$248,797 (award to all three institutions, UW-Madison portion is \$152,306), 2009-2011.

National Science Foundation, “Collaborative Research: The significance of the loess mantle in Midwestern soil catena evolution,” BCS-0751750 PIs: J.A. **Mason**, P.M. Jacobs (Univ. of Wisconsin-Whitewater) and P.R. Hanson (University of Nebraska), \$239,840 (award to all three institutions, UW-Madison portion is \$162,169), 2008-2011.

National Science Foundation, “Acquisition of an X-ray diffraction unit for earth science research and education at the University of Wisconsin, Madison,” EAR-0824890, P.I. Huifang Xu, Co-P.I.s Clark Johnson, Eric Roden, Joseph **Mason**, Nita Sahai, \$148,346, 2008-2009.

National Science Foundation, “Collaborative Research: Dunefield records of late Quaternary climate change, northern China,” ATM-0502489 and ATM-0502511; PIs: J.A. **Mason**, R.J. Goble (Univ. of Nebraska) and J.B. Swinehart (Univ. of Nebraska), Collaborator: H.-Y. Lu, Nanjing University. \$376,246 (award to both institutions, UW-Madison portion is \$288,665), 2005-2010.

National Science Foundation, “Collaborative Research: Resolving the Enigma of Late Quaternary Loess on the Great Plains,” BCS-0352683 and BCS-0352748; PIs: J.A. **Mason** and D. B. Loope (Univ. of Nebraska), Co-PIs: R.J. Goble and J.B. Swinehart (Univ. of Nebraska), Collaborator: H.-Y. Lu, Chinese Academy of Sciences—Institute of Earth Environment. \$249,817 (award to both institutions, UW-Madison portion is \$133,561), 2004-2007.

National Science Foundation, “Sand Hills Biocomplexity: Integrating Biogeophysical Processes Across Time and Space,” PI: D. Wedin, Co-PIs: G. M. Henebry, D. B. Loope, Co-Investigators: T. J. Arkebauer, D. P. Billesbach, S. C. Fritz, R. J. Goble, D. C. Gosselin, F. E. Harvey, Q. Hu, J. A. **Mason**, C. M. Rowe, J. B. Swinehart, C. W. Zanner, V. A. Zlotnik. \$1,794,236, 2003-2008 [award to University of Nebraska-Lincoln, with subcontract of \$27,549 to UW-Madison for Mason’s contribution].

U. S. Geological Survey, “Evaluation of Conductive Properties of Surficial Aquifer in the Nebraska Sand Hills,” P. I.: V. Zlotnik, Co-P. I.’s: D. Loope and **J. A. Mason**, \$14,946, 2001-2002.

National Science Foundation “Collaborative Research: A Detailed Chronology of the Loess-Paleosol Record of the Last Two Glacial/Interglacial Cycles in the North American Midcontinent,” P. I.’s: E. A. Bettis III (University of Iowa), **J. A. Mason**, and J. Morris (Washington University), \$222,495 [total to all institutions, University of Nebraska-Lincoln portion = \$38,063], 2001-2003.

National Science Foundation, “Collaborative Research: Detecting Spatial Patterns of Dust Effects on Soils: Testing New methodology in the Central Great Plains,” P. I.’s: **J. A. Mason** and P. M. Jacobs (Univ. of Wisconsin-Whitewater), \$180,000 [total to all institutions, University of Nebraska-Lincoln portion = \$100,365], 2000-2003.

National Science Foundation, “Biocomplexity Incubation Activity - Spatio-temporal coupling of ecological and geological dynamics in the Nebraska Sandhills,” P. I.: David Wedin, Co-P. I.’s: G. Henebry, D. Loope, A. Joern, T. Arkebauer, S. Fritz, J. Knops, **J. A. Mason**, W. Schacht, and J. Clark, \$100,000, 2000-2002.

## Invited Lectures

1998 Northern Illinois University, Department of Geography  
 1999 University of Minnesota, Department of Soil Science  
 1999 University of Minnesota, Department of Geology and Geophysics  
 2003 Nebraska Society of Professional Soil Scientists  
 2003 Northern Illinois University, Department of Geology  
 2004 University of Wisconsin-Eau Claire, Department of Geography  
 2004 Institute for Earth Environment-Chinese Academy of Sciences  
 2005 American Quaternary Association  
 2005 University of Minnesota, Quaternary Paleoecology Program  
 2006 Minnesota Native Plant Society, Annual Symposium  
 2008 Nanjing University  
 2010 American Quaternary Association  
 2011 University of Minnesota, Department of Soil, Water, and Climate  
 2011 University of Minnesota, Quaternary Paleoecology Program  
 2012 American Quaternary Association  
 2013 Wisconsin State Historical Museum, History Sandwiched In series  
 2013 Pardee Symposium, Geological Society of America Annual Meeting  
 2014 DFG (German Science Foundation), invited talk at conference in Gargan, Iran (declined)  
 2014 Nanjing University, College of Geographic and Oceanographic Science  
 2018 Nanjing University, College of Geographic and Oceanographic Science  
 2021 University of Iowa, Department of Geosciences  
 2023 Northern Illinois University, Department of Earth, Atmosphere and Environment  
 2024 University of Oklahoma, School of Geoscience

## **Course Development**

Developed online version of Geography 342 (Geography of Wisconsin), with grant from UW-Madison Continuing Studies, 2013-2014. Course has subsequently been offered and updated in each summer term and spring semester.

Revised Geog/EnvirSt 127 (Physical Systems of the Environment) to make it a four credit course with hands-on case studies and lab projects, 2024.

## **Courses Taught**

### ***A. At University of Nebraska-Lincoln, Department of Geosciences:***

Physical Geology  
 Environmental Geology  
 Soil Geomorphology  
 Urban and Environmental Geology  
 GIS/RS Applications in Geosciences

### ***B. At Northern Illinois University, Department of Geography:***

Introduction to Natural Environmental Systems (= Intro. Physical Geography)  
 Introduction to Soil Science  
 Field Methods

Pedology

***C. At University of Oregon, Department of Geography:***

Geomorphology

Global Environmental Change

***D. At University of Wisconsin-Madison, Department of Geography:***

Geomorphology

Soil Geomorphology

Landforms and Landscapes of North America

The Quaternary Period

Global Physical Environments

Physical Systems of the Environment

Changing Landscapes of the American West

Geography of Wisconsin (classroom and online)

Special Topics: Terrain Analysis and Visualization in Geomorphology

***E. At Nanjing University***

Processes of the Critical Zone

**Graduate Students Advised**

***A. At Northern Illinois University***

Jay Angel, M. S. 1997

Mukila Maitha, M. S. 1997

Jennifer Troast, M. S. 1998.

Cathryn Dowd, M. S., 1998.

William Wetzel, M. S. 1998

Mark Stelford, Ph. D. 2001 (I was advisor, 1995-1997)

***B. At University of Nebraska-Lincoln***

Paul R. Hanson, M.S. 2002, Ph. D., 2005. Currently Professor, University of Nebraska-Lincoln

Xiaodong Miao, transferred to UW-Madison

***C. At UW-Madison***

Xiaodong Miao, Ph.D. 2005, currently faculty member at Henan University, China

Corey Werner, Ph.D. 2007, currently Professor, Central Missouri State University

Paul Reyerson, Ph.D. 2012

Samantha Greene, Ph.D. 2013, currently environmental consultant

Kristine Gruley, Ph.D., 2014, currently at Savanna Institute

Fei Ma, M.S., Ph.D. 2017, currently data scientist

Henry Loope, Ph.D. 2023, currently Geologist, Indiana Geological Survey

Taylor McDowell, M.S. 2020, Ph.D. 2024, UW-Madison



Karen Russ, Ph.D. student, withdrew from program  
Aaron Feggestad, M.S., 2005, currently environmental consultant  
Anthony Beauchaine, M.S. 2008  
Laura Eddey, M.S. 2014, Ph.D. Sheffield University, currently instructor at Sheffield University  
Leslie Sinak, M.S., 2013  
Chase Kasmerchak, M.S. 2016, Ph.D. 2023 (Erika Marín-Spiotta, advisor)  
Kevin McKeehan, M.S. 2019, Ph.D. 2022, Michigan State (Alan Arbogast, advisor)  
Mae Wallace, currently M.S. student

***D. At Institute for Earth Environment-Chinese Academy of Sciences***

Zhou Yali, Ph.D. 2008 (coadvisor), currently Associate Professor, Sha'anxi Normal University

***E. At Nanjing University***

Xu Zhiwei, Ph.D. 2013 (coadvisor), currently Associate Professor, Nanjing University

**Other Undergraduate Student Teaching/Mentoring/Research Experience(examples):**

Guided 20 students and three faculty from Nanjing University, China, on a field tour of geomorphology in the central Rocky Mountains and Great Plains (2012)

Research Mentor, Undergraduate Research Scholars Program (2006-2007): Supervised work by Phueng Cha on the NSF-funded project, "Dunefield records of late Quaternary climate change, northern China." I trained Phueng Cha in the use of ArcGIS, including several basic types of spatial analysis. Using ArcGIS and Excel, she studied the relationships between climate variables and NDVI in dunefields of north China over the period 1983-2003. She presented a poster on her work at the undergraduate research fair in spring, 2007, and she is a coauthor of a paper in press on remote-sensing based analysis of recent dunefield activity in north China.

Research Mentor, Undergraduate Research Scholars Program (2014-2015): Supervised work by Hawa Keita on the NSF-funded project, "Effects of Past Vegetation Change on Soil Formation Near the Prairie-Forest Vegetation Border with Implications for the Future" Hawa prepared samples for stable carbon isotope analysis and radiocarbon dating and presented a poster on preliminary results at the undergraduate research fair in 2015. Coauthor on a paper reporting the results that will be submitted soon (had to wait for completion of field sampling, isotopic measurements, and modeling that stretched over the following years).

Research Mentor, Undergraduate Research Scholars Program (2019-20): Supervised work by Tien Vo on the NSF-funded project, "Coevolution of Aeolian Landscapes and Soils" Tien carried out particle size and carbonate content analyses and assisted with moisture retention curve measurements, and gave a presentation on her work in spring,

2020. She has worked as an undergraduate assistant in this project starting in May, 2020. During the summer of 2020, I worked with her remotely on a GIS analysis for the project. She started with no knowledge of GIS and through the training that I provided she is now proficient in a wide variety of operations in ArcGIS. She will be a coauthor on one or more papers reporting project results.

**Other Undergraduate Research Mentoring:** Tony Giuffre, an undergraduate chemistry/geology major, carried out lab work for my projects over several years. I worked with him to test and refine several fairly complex lab procedures (e.g. soil phosphorus fractionation), and he then worked with Paul Reyerson to develop biogenic silica extraction methods for use in Paul's Ph.D. research. Tony reported results from his Ph.D. work on calcite formation at Virginia Tech with papers in *PNAS*. Mengyu Liang, an undergraduate geography major, worked for several years on my project on soil response to vegetation change in northern Minnesota and is a coauthor of a published paper from that project.

**Supervision of Senior Theses:** Nicholas Legg (2006) studied paleohydrology of streams draining the Medicine Bow Mountains, Wyoming. I spent a week in the field in Wyoming with Nick, getting him started on data collection for this project. He is now an environmental consultant. Samantha Hayes (2009) studied clay mineralogy of Glacial Lake Oshkosh sediments, and then went on to an M.S. at Southern Illinois University. Mengyu Liang (2017) completed a thesis on land use change in relation to forest and prairie soils in northern Minnesota. Tien Vo completed a senior thesis on remote sensing of vegetation response to wet and dry years in dune fields and loess landscapes of Nebraska (2022-23).

### **Public Service Activities (examples):**

Gave a talk on the origin and geographic significance of Wisconsin's Central Sand Plain in the History Sandwiched In series at the Wisconsin State Historical Museum (2013).

Produced a report to Minnesota DNR foresters on soils of steep colluvial slopes on state forest lands in southeastern Minnesota (2009-2010).

Provided information on soils and geomorphology on colluvial slopes in southeastern Minnesota for MN Dept. of Natural Resources classification of natural plant communities; invited lecture on the same topic presented at MN Native Plant Society symposium, March 2006.

Provided information on Nebraska's loess hills to the village of Brady, Nebraska, for their website.

### **Professional Service**

#### ***National/International:***

Panelist, National Science Foundation Geography and Spatial Sciences and Geomorphology and Land Dynamics programs.

Associate Editor, *The Holocene* (2005-2016); generally, one of the three top-ranked journals in the field of Quaternary studies, covering environmental change over the past 11,000 years, and I was one of two editors handling most North American papers.

Member of review panel for student research grant proposals, Geological Society of America Quaternary Geology and Geomorphology Division, 2017 and 2022.

Field trip organizer and leader, 2011 Geological Society of America Annual Meeting, Minneapolis. Field trip co-leader, 2014 North-Central GSA Meeting, Lincoln, Nebraska.

Reviewer for *Aeolian Research*, *Annals of the American Association of Geographers*, *Catena*, *Journal of Arid Environments*, *The Holocene*, *Earth Surface Processes and Landforms*, *Earth and Planetary Science Letters*, *Earth Science Reviews*, *European Journal of Soil Science*, *Geochimica et Cosmochimica Acta*, *Geoderma*, *Geology*, *Geological Society of America Bulletin*, *Geoarchaeology*, *Geomorphology*, *Geophysical Research Letters*, *Nature Geoscience*, *Quaternary Research*, *Quaternary International*, *Journal of Quaternary Science*, *Quaternary Science Reviews*, *Journal of Sedimentary Research*, *Soil Science Society of America Journal*, special publications of the Soil Science Society of America and INQUA, the U. S. Geological Survey, the National Science Foundation, the Royal Netherlands Academy of Science, and the Polish National Science Centre.

Abstract Coordinator for Seventh International Conference on Fluvial Sedimentology, Lincoln Nebraska, August 2001 (compiled and edited > 230 abstracts).

Nebraska representative (1998-2002) and 2002 chair of NCR-3 Committee; this committee, sponsored by the U. S. D. A., coordinates linkages between soil scientists at Midwestern land grant universities and the National Cooperative Soil Survey.

***UW-Madison/other universities and potentially K-12 schools:***

Starting in Fall 2021, I have worked with a group of faculty and graduate students from several programs on a project to develop curriculum acknowledging and critically examining the role of Indigenous dispossession in the development of the University, including land grants under the Morrill Act. In planning for this effort we met with and sought input from members of Tribal Nations in the state involved in education, some of whom also attended a later meeting where we presented our plans for specific projects. We have made significant progress towards development of teaching materials and have a pending National Endowment for the Humanities grant proposal that would support additional work. The materials developed area intended for initial use at UW-Madison but will also be useful for people working on similar issues at other universities and possibly K-12 schools.

***UW-Madison:***

University Library Committee (Physical Sciences Division representative, 2005-2008)

Campus Planning Committee (non-voting member representing University Library Committee, 2007-8)

Faculty Appeals Committee, College of Letters and Science (2004-2006);

Department of Geography: *Department Chair* (2019-2021); *Chair*, DEIC Committee (2022-23), Curriculum Committee (2017-18), Graduate Affairs Committee (2014-2016), Graduate Budget Committee (2006-9), Faculty Recruitment Committee (2007), Departmental Services Committee (2012-2014); *member*, Advisory Committee (2007-8), Faculty Evaluation and Compensation (formerly Budget) Committee (2006-2007; 2012-2013; 2022-23), Curriculum Committee (2012-2013, 2016), Graduate Affairs Committee (2003-9), Staff Evaluation and Compensation Committee (2022-23) Advisor for Physical Geography, Area Studies, and Honors (2003-2005; 2009-10, 2011-2012).

Wisconsin Geological and Natural History Survey, UW-Extension: Search committee member (2007)

Department of Geoscience, UW-Madison: Search committee member (2013-14)