

Brian K. Gelder
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EDUCATION

- Iowa State University, Ames, IA*
Co-Ph.D. in Soil Science/Agricultural Engineering **2007**
Dissertation: "Land Management Database Development: Methods for Delineating Management Units and Estimating Crop and Residue cover"
- Colorado State University, Fort Collins, CO*
M.S. in Bioresource Engineering **2002**
Graduated with Honors
Thesis: "Colorado's Front Range Reservoirs: A Regional Investigation of Eutrophication Modeling"
- Iowa State University, Ames, IA*
Double B.S. in Agronomy/Agricultural Engineering **2000**
Graduated with Distinction
Honors Program Thesis: "Water Quality of Des Moines Lobe Agricultural Streams"

HONORS & AWARDS

- Dean's Citation for Extraordinary Contributions to CALS for efforts as part of Carbon Report team **2022**
- Dean's Team Award for CALS for efforts as part of STRIPS team **2018**
- Young Engineer of the Year, Iowa Section ASABE **2012**
- Journal of SWCS Research Paper Honorable Mention **2011**
- Research Excellence Award, Iowa State University
- Who's Who Among Students in American Universities **2007**
- Agronomy Department Premium Endowed Fellowship, Iowa State University **2002 – 2006**
- Agronomy Department Outstanding Graduate Student Award, Iowa State University **2006**
- Chemical & Bioresource Engineering Department Fellowship, Colorado State University **2000**
- Iowa State University nominee for USA Today Academic All America Team **2000**
- First Place ASAE K.K. Barnes Paper Contest **1999**
- Alpha Epsilon Honor Society **1997**
- Alpha Zeta Honor Society **1997**

FUNDED RESEARCH

- "Evaluation, quality assurance, and quality control of derived products from the Daily Erosion Project (DEP) derived automated hydro-conditioned digital elevation model (ahDEM)"** **06/2022-09/2023**
\$35,000 Minnesota Board of Soil and Water Resources/University of Minnesota (PI)
- "NRCS Ephemeral Gully Erosion Planning Grant PHASE 2: A Regional Assessment of High-Risk Areas for Ephemeral Gully Formation, Nebraska NRCS Cooperative Agreement NRCS** **09/2021-09/2023**

NR196526XXXXC009 \$138,112 (ISU Portion) from USDA NRCS Nebraska, Iowa, Missouri and Kansas (Co-PI; Led by Thomas Franti, U Nebraska)	
"Advanced modeling of soil erosion, sediment delivery and nutrient export from Iowa watersheds" \$55,447 Iowa Nutrient Research Center (Co-PI)	08/2020-07/2023
"Operationalization of Residue, Cover Crop and Daily Erosion Project (DEP) and Wind Erosion Prediction System (WEPS) estimates for Minnesota Agricultural Counties and DEP in Forested Regions" \$524,000 Minnesota Board of Soil and Water Resources/University of Minnesota (PI)	05/2020-09/2024
"National Hub for the Agricultural Conservation Planning Framework (ACPF) for watershed planning" \$1,499,931 from USDA Natural Resources Conservation Service; NR213A750008C007 (Co-PI; Led by Richard Cruse)	09/2021-08/2024
"Exploration and evaluation of high-resolution imagery for environmental assessment" \$237,815 from Iowa Department of Transportation HRB TR 611 (Co-PI; Led by Amy Kaleita)	08/2017-07/2022
"Extending the Agricultural Conservation Planning Framework for NRCS Evaluation and Adoption in Multiple States" \$909,964 from USDA ARS (Co-PI)	08/2019-08/2022
"Extending Agricultural Conservation Planning Framework Land Use Database" \$95,000 from USDA ARS (PI), Agreement 59-5030-8-004	04/2018-08/2019
"Nebraska Elevation Hydro-enforcement and ACPF Expansion Completion" \$378,365 from USDA NRCS Nebraska (PI), Agreement 68-6526-18-002	12/2017-6/2021
"Nebraska Elevation Hydro-enforcement and ACPF Expansion Trial" \$70,739 from USDA NRCS Nebraska (PI), Agreement 68-6526-16-503	9/2016-12/2017
"Development of Daily Erosion Project estimates and addition of WEPS estimates to DEP for agricultural counties in Minnesota" \$387,578 from Minnesota Board of Soil and Water Resources/University of Minnesota (PI)	4/2016-6/2020
"Extending Land Use Data for Use with the Agricultural Conservation Planning Framework" \$30,000 from USDA ARS (PI), Agreement 59-5030-6-003	3/2016-07/2017
Stream and Watershed Delineations using LiDAR Data \$49,844 from Iowa Department of Transportation HRB TR 692 (PI)	8/2015-3/2017
"Development of Remote Sensing Protocols for Inventory of Nutrient Management Practices" (PI) \$70,000 from Iowa Nutrient Research Center	7/2014-6/2016
" Evaluation of Current USDA Contour Buffer Strip Designs as Resources for Pollinators and for Meeting Goals of Water	8/2013-12/2015

Quality Improvement in Iowa" (Key role; Mary Harris PI) \$150,000 from US Department of Agriculture

"Attribution of changes in precipitation intensity over the central United States" (Key role; Ray Arritt PI) **4/2013-3/2016**
\$1,100,000 from US Department of Agriculture

"GIS Automation of LiDAR DEM Cutting for Hydrologic/Hydraulic Modeling" **3/2011 – 6/2012**
\$112,488 from Iowa Institute for Hydraulic Research (PI)

"Automation of DEM Cutting for Hydrologic/Hydraulic Modeling" **3/2011 – 2/2015**
\$73,873 from Iowa Department of Transportation (PI)

"Farmer Perspectives on Ecosystem Service Management, Land-Use Targeting, and the Future of Cornbelt Agriculture" **3/2011-2/2013**
\$80,769 from Leopold Center (Co-PI; John Tyndall, PI)
Project to evaluate farmer perspectives using IFARM as a survey tool.

"Crop Rotation Mapping for Biofuel Production" **12/2009-9/2011**
\$53,364 from US DoE Sun Grant (Co-PI; Rob Anex, PI)

"Biofuels and the Hydrologic Cycle" **8/2008-7/2011**
-\$303,812 from NSF (Co-PI; Rob Anex, PI)
Project to estimate atmospheric water recycling ratios and the impact of potential biofuel production scenarios on the recycling ratio.

"Determination of Tillage Type, Timing, and Residue Cover Using Remote Sensing" – \$36,987 from USDA NRCS (PI) **10/2004-9/2006**
Project to determine crop rotations, residue cover, and surface roughness for resource assessment/monitoring purposes.

RESEARCH/WORK EXPERIENCE

Iowa State University, Ames, IA
Manager Research **2020-Present**
Develop and manage research projects start to finish; budgeting and financial expenditure approval; managing direct reports (3-5) and subordinates (5-10); proposal, journal article, and final report writing. Responsible for outputs critical to Iowa Water Center research projects and goals. Instructor of record for CRP 456/556 & ABE 556, GIS Programming and Automation and CRP 454/554 & LA 554, Fundamentals of Remote Sensing and Spatial Analyst

Scientist II/Associate Scientist **2010 – Present**
Develop algorithms for hydrologic enforcement of digital elevation models. Determine crop rotations for biomass supply estimation. Develop and administer research proposals for external funding. Instructor for CRP 456/556, GIS Programming and Automation and CRP 454/554, Fundamentals of Remote Sensing and Spatial Analyst

Postdoctoral Research Associate **2007 – 2010**
Developing methods for estimating impacts of biofuel and crop production on the hydrologic cycle. Developed methods for determining crop rotations and estimating soil organic carbon. Evaluated WEPP model for estimating in-field yield variability.

GPG Inc. (Gelder Family Farm), Jewell, IA Assist in operation and management of a 440 acre corn/soybean farm. Assisted in operation of a 4,000 head per year hog finishing operation and designed compost system for swine mortalities.	1992 – 2016
Co-Chair, AquaVentures Committee Serve as technical chair for a value-added agriculture committee regarding the feasibility of indoor, recirculating shrimp production in IA and AL.	2003 – 2009
<i>Iowa State University, Ames, IA</i> Graduate Research Assistant Successfully wrote and completed two one-year proposals to the USDA NRCS for investigations into remote sensing for delineating management units and determining residue cover/surface roughness to aid in erosion modeling. Designed layout and supervised implementation of a 50 acre, 56 treatment, 280 plot soil compaction field study for Case/New Holland and Michelin.	2002 – 2007
<i>Colorado State University, Fort Collins, CO</i> Graduate Research Assistant Developed models and conducted research into modeling of eutrophication of Colorado Front Range Reservoirs. Designed and constructed weirs for water measurement at Aurora, CO.	2001 – 2002

TEACHING EXPERIENCE

<i>Iowa State University, Ames, IA</i> Instructor of Record – CRP 454/554 LA 554, Introduction to Remote Sensing and Spatial Analyst, 3-4 hours/week, 3 credits	Spr. 2023 (23) Spr. 2022 (21) Spr. 2021 (15) Fall 2019 (17) Fall 2018 (12) Fall 2017 (16) Fall 2016 (11)
Instructor of Record – CRP 456/556 AE 556, GIS Programming and Automation, 3-4 hours/week, 3 credits	Fall 2022 (21) Fall 2021 (28) Fall 2020 (27) Fall 2019 (17) Fall 2018 (22) Fall 2017 (9) Fall 2016 (17) Fall 2015 (18) Fall 2014 (17) Fall 2013 (11) Fall 2012 (13)
Graduate Committees Fatema Nourin (MS)	2023
Chelsie Ferrie (MS, Data-driven applications to address nutrient reduction goals in agricultural landscapes)	2022
Garner Kohrell (MS, Quantifying the Impacts of Climate Change on Soil Erosion and Runoff in Minnesota Agricultural Watersheds using the WEPP Model, University of Minnesota, Twin Cities)	2022
Jade Gerlitz (MS, Wetland Mapping Using LiDAR and Random Forest Machine Learning)	2022
Luis Bentancor Bossio (PhD)	Ongoing
Haleigh Summers (PhD)	Ongoing 2022

Meen Jung (MS, Urban Heat Island and Vulnerable Population in the Global South)	2021
Mandela Gadri (MS, Accessibility poverty and functioning of periodic markets: A case study of Agormanya Market in Ghana)	2021
Calvin Wong (MS, Automated Quantification of Depressional Water Storage in Prairie Pothole Landscapes Using Synthetic Aperture Radar and Random Forrest Classification)	
Yaw Kwarteng (MS)	2020
Gabriel Nelson (MS)	2020
Branden Lewis (MS)	2021
Kelly Nascimento Thompson (PhD, co-major professor)	Ongoing
Rishikumar Suresh Kumar (MS, co-major professor)	2019
Timothy Sklenar (PhD, co-major professor)	Ongoing
Vitor S. Martins (PhD)	2020
Victoria Walker (PhD)	2018
Daniel Dvorjak (MCRP, Enhancing Sidewalk Connectivity within the DART Public Transportation System)	2018
Ahmed Abdelaty (PhD, Data-driven algorithms for enhanced transportation infrastructure asset management)	2017
Samuel McDeid (MS, Morphologic characterization of upland depressional wetlands on the Des Moines Lobe of Iowa)	2017
Marina Reasoner (MCRP, Place Making with Freshmen College students: Establishing a sense-of-place through a mapping activity "Play Ames!")	2017
Carolina Bermudez (MS, Development of a remote sensing protocol for inventorying cover crop adoptions)	2016
Stephen Rashid (MCRP, Promoting Access to Public Transit: A Predictive Model)	2016
Arindam Roy (MCRP, Identifying Vacant and Underutilized Parcels Suitable for Students Living)	2016
Mohammad Rafayet Hossain (MCRP, A Study of Crop Residue Coverage in the State of Iowa and its Importance to Urban Water Supplies)	2015
Jason Patton (PhD, Comparison of SMOS vegetation optical thickness data with the proposed SMAP algorithm)	2014
Teaching Assistant – To Professor Lee Burras in IALL 461 Assisted instruction and evaluation of Introduction to GIS field class.	Summer 2005
Teaching Assistant – To Professor Lee Burras in IALL 402 Lectured and led fieldwork for one day of Watershed Hydrology and Surficial Processes field class.	Summer 2004
<i>Colorado State University, Fort Collins, CO</i>	
Teaching Assistant – To Professor Jim Loftis in CBCC 192 Prepared and led lab classes, held office hours, and administered all grades for the freshman class, Strategies of Engineering Design.	Fall 2001 Fall 2000
Teaching Assistant – To Professor Ramchand Oad in CB 464 Prepared and led lab classes, held office hours, and administered homework grades for the senior class, Soil and Water Engineering.	Spring 2001

PUBLICATIONS AND PRESENTATIONS (APA STYLE)

Refereed Publications:

- Kohrell, G. J., Mulla, D. J., & Gelder, B. K. 2023. Calibration and validation of hillslope runoff and soil loss outputs from the Water Erosion Prediction Project model in Minnesota agricultural watersheds. *Journal of the American Water Resources Association*. <https://doi.org/10.1111/1752-1688.13148>
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- Reece, D.A., Lory, J.A., Haithcoat, T.L., **Gelder, B.K.** and Cruse, R., 2023. Using Google Earth Imagery to Target Assessments of Ephemeral Gully Erosion. *Journal of the ASABE*. <https://doi.org/10.13031/ja.15254>
 - Jung, M. W., Haddad, M., & **Gelder, B. K.** 2023. Examining Heat Inequity in a Brazilian Metropolitan Region. *Environment and Planning B: Urban Analytics and City Science*. <https://doi.org/10.1177/23998083231170634>
 - Martins, V. S., Kaleita, A. L., & **Gelder, B. K.** (2021). Digital mapping of structural conservation practices in the Midwest US croplands: Implementation and preliminary analysis. *Science of The Total Environment*, 772, 145191.
 - Wang, C., Cruse, R. M., **Gelder, B.**, James, D., & Liu, X. (2021). Grid order prediction of ephemeral gully head cut position: Regional scale application. *Catena*, 200, 105158.
 - Martins, V. S., Kaleita, A. L., **Gelder, B. K.**, da Silveira, H. L., & Abe, C. A. (2020). Exploring multiscale object-based convolutional neural network (multi-OCNN) for remote sensing image classification at high spatial resolution. *ISPRS Journal of Photogrammetry and Remote Sensing*, 168, 56-73.
 - Martins, V. S., Kaleita, A. L., **Gelder, B. K.**, Nagel, G. W., & Maciel, D. A. (2020). Deep neural network for complex open-water wetland mapping using high-resolution WorldView-3 and airborne LiDAR data. *International Journal of Applied Earth Observation and Geoinformation*, 93, 102215.
 - Wang, E., Cruse, R. M., Sharma-Acharya, B., Herzmann, D. E., **Gelder, B. K.**, James, D. E., ... & Laird, D. A. (2020). Strategic switchgrass (*Panicum virgatum*) production within row cropping systems: Regional-scale assessment of soil erosion loss and water runoff impacts. *GCB Bioenergy*, 12(11), 955-967.
 - Cruse, R., Herzmann, D., Acharya, B. S., Blanco-Canqui, H., & **Gelder, B.** (2019, January). The Daily Erosion Project: Soil erosion impacts of strategic switchgrass (*Panicum virgatum*) placement in row cropped watersheds. In *Geophysical Research Abstracts (Vol. 21)*.
 - **Gelder, Brian K.**, Sklenar, T, R. Cruse, D. Herzmann, D. James, K. Gesch, and J. Lafflen. 2018. The Daily Erosion Project - Daily Estimates of Water Runoff, Soil Detachment, and Erosion. *Earth Surface Processes and Landforms*. 43:5:1105-1107. doi:10.1002/esp.4286.
 - Webber, D. F., Bansal, M., Mickelson, S. K., Helmers, M. J., Arora, K., **Gelder, B. K.**, Shrivastava M. & Judge, C. J. 2018. Assessing surface flowpath interception by vegetative buffers using ArcGIS hydrologic modeling and geospatial analysis for Rock Creek watershed in central Iowa. *Transactions of the ASABE*. 61(1): 273-283. (doi: 10.13031/trans.12350) @2018
 - Abdelaty, Ahmed, Attia, Osama, Jeong, H. David, and **Gelder, Brian K.** Dynamic Pavement Delineation and Visualization Approach Using Data Mining. 2018. *Journal of Computing in Civil Engineering*. [https://doi.org/10.1061/\(ASCE\)CP.1943-5487.0000758](https://doi.org/10.1061/(ASCE)CP.1943-5487.0000758)
 - Choi, J., Yang, F., Stepanauskas, R., Cardenas, E., Garoutte, A., Williams, R., Flater, J., Tiedje, J.M., Hofmockel, K.S., **Gelder, B.** and Howe, A., 2016. Strategies to improve reference databases for soil microbiomes. *The ISME Journal*
 - M. D. Tomer, K.M.B. Boomer, S.A. Porter, **B.K. Gelder**, D.E. James, and E. McLellan. 2015. Agricultural Conservation Planning Framework: 2. Classification of Riparian Buffer Design Types with Application to Assess and Map Stream Corridors. *Journal of Environmental Quality*. 44:768-779.
 - S. Khanal, R.P. Anex, **B.K. Gelder**, C. Wolter. 2014. Nitrogen Balance in Iowa and the implications of corn-stover harvesting. *Agriculture, Ecosystems, & Environment*. 183:21-30.
 - C. Anderson, R. Anex, R. Arritt, **B. Gelder**, S. Khanal, D. Herzmann, and P. Gassman. 2013. Regional Climate Impacts of a Biofuels Policy Projection. *Geophysical Research Letters*. 40(6):1217-1222.
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- S. Khanal, R.P. Anex, **B.K. Gelder**, P. Dixon, and P. Caragea. 2012. Cropping Pattern Choice with Proximity to Ethanol Production and Animal Feeding Operations. *Journal of Biofuels, Bioproducts, and Biorefining*. 6(4): 431-443.
 - **B.K. Gelder**, R.P. Anex, T.C. Kaspar, T. J. Sauer, and D. L. Karlen. 2011. Estimating Soil Organic Carbon on Glacial Till Plains of Central Iowa Using Aerial Imagery and Soil Surveys. *Soil Science Society of America Journal*. 75: 1821-1928.
 - **B.K. Gelder**, A.L. Kaleita, and R.M. Cruse. 2009. Estimating Mean Field Residue Cover Using Satellite Imagery and Automated Management Unit Determination. *Agronomy Journal*. 50:365-370.
 - **B.K. Gelder**, R.M. Cruse, and A.L. Kaleita. 2008. Automated Determination of Management Units for Precision Conservation. *Journal of Soil and Water Conservation*. 63:273-279.
 - **B.K. Gelder**, R.M. Cruse, and X.Y. Zhang. 2007. Comparison of Track and Tire Effects of the Planter Tractor on Corn Yield and Soil Properties. *Transactions of the ASABE*. 50:365-370.
 - R. Cruse, D. Flanagan, J. Frankenberger, **B. Gelder**, D. Herzmann, D. James, W. Krajewski, M. Kraszeski, J. Laflen, J. Opsomer, and D. Todey. 2006. Daily Estimates of Rainfall, Water Runoff, and Soil Erosion in Iowa. *Journal of Soil and Water Conservation*. 60:431-437.

Published Proceedings & Reports

- Cruse, R. M., Herzmann, D. E., Gelder, B. K., James, D. E., & Flanagan, D. C. (2023). Impacts of Changing Precipitation Events on Landscape Soil Erosion Estimates. In *Soil Erosion Research Under a Changing Climate, January 8-13, 2023, Aguadilla, Puerto Rico, USA* (p. 1). American Society of Agricultural and Biological Engineers.
 - Wilson, G., Gelder, B., Dalzell, B., Herzmann, D., & Mulla, D. (2023). The Daily Erosion Project-Incorporating Wind Erosion. In *Soil Erosion Research Under a Changing Climate, January 8-13, 2023, Aguadilla, Puerto Rico, USA* (p. 1). American Society of Agricultural and Biological Engineers.
 - Gelder, B. K. (2023). The Daily Erosion Project-Adding Channels. In *Soil Erosion Research Under a Changing Climate, January 8-13, 2023, Aguadilla, Puerto Rico, USA* (p. 1). American Society of Agricultural and Biological Engineers. Thompson, K. N. N., Herzmann, D. E., Gelder, B. K., Cruse, R. M., & Flanagan, D. C. (2023).
 - The Daily Erosion Project Going Global: Analyzing Distinct Precipitation Datasets. In *Soil Erosion Research Under a Changing Climate, January 8-13, 2023, Aguadilla, Puerto Rico, USA* (p. 1). American Society of Agricultural and Biological Engineers.
 - Wang, C., Cruse, R., Brian, G., Daryl, H., Kelly, T., & David, J. (2021, April). Influence of Ephemeral Gully Location Prediction on Soil Erosion Estimation. In *EGU General Assembly Conference Abstracts* (pp. EGU21-1478).
 - Borrelli, P., Cruse, R., Gelder, B., & Panagos, P. (2020, May). Object-oriented Soil Erosion Modelling and Daily Erosion Project: Laying the foundation for a new generation of soil erosion assessments in Europe. In *EGU General Assembly Conference Abstracts* (p. 13575).
 - Martins, V., Kaleita, A. L., Gelder, B. K., da Silveira, H. L., & Abe, C. A. (2019, December). Exploring Object-Based CNN Architecture for Land Cover Classification of High-Resolution Remote Sensing Data. In *AGU Fall Meeting Abstracts* (Vol. 2019, pp. IN51D-0672).
 - Borrelli, P., Cruse, R., Gelder, B., & Panagos, P. (2020, May). Object-oriented Soil Erosion Modelling and Daily Erosion Project: Laying the foundation for a new generation of soil erosion assessments in Europe. In *EGU General Assembly Conference Abstracts* (p. 13575).
 - Gelder, B., R. Cruse, D. Flanagan, D. James, D. Herzmann. 2016. The Daily Erosion (and Runoff) Project: Summary and Lessons Learned. *International Conference on Precision Agriculture*. St. Louis, MO.
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- Gelder, B., R. Cruse, D. Flanagan, D. James, D. Herzmann. 2016. The Daily Erosion Project: An Overview and Summary. AgroEnviron, West Lafayette, IN.
 - B. K. Gelder. 2015. Automation of DEM Cutting for Hydrologic/Hydraulic Modeling. Iowa Highway Research Board Report No. TR-631.
 - Khanal S, R.P. Anex, **B.K. Gelder**, P. Dixon, P. Caragea. 2010. Association of Cropping Pattern with Proximity to Confined Animal Feeding and Ethanol Plants. Proceedings of the Iowa Academy of Science 122nd Annual Meeting, April 16-17, Lamoni, IA.
 - C. Wortman, M. Helmers, **B. Gelder**, L. Morton, D. Devlin, C. Barden, S. Anderson, R. Broz, T. Franti, T. Regassa, P. Shea, M. Tomer, L. Frees, and D. Griffith. 2008. Targeting of Watershed Management Practices for Water Quality Protection. Heartland Regional Water Quality Coordination Initiative – University of Nebraska RP195.
 - **B. Gelder**, J. Loftis, M. Koski, B. Johnson, and L. Saito. 2003. Eutrophication of Reservoirs on the Colorado Front Range. Colorado Water Resources Research Institute Completion Report No. 194.

International Invited Presentations

- "The Daily Erosion Project: Real time soil and water resource inventory". 2017. Presentation to Northeast Institute of Geography and Agricultural Ecology, Chinese Academy of Sciences, Harbin, China.
- "Iowa Daily Erosion Project 2.0: Real time soil and water resource inventory". 2015. Presentation to the International Symposium 2015 on Surface Soil Value and Erosion: Science, Technology, and Policy." Seoul, Korea.
- "Performance of a Passive, Small-Plot Runoff Collector System under Laboratory and Field Conditions." 2006. Presentation to Northeast Institute of Geography and Agricultural Ecology, Chinese Academy of Sciences, Harbin, China.
- "Remote Sensing of Field Level Management Practices." 2006. Presentation to Northeast Institute of Geography and Agricultural Ecology, Chinese Academy of Sciences, Changchun, China.

Domestic Invited Presentations

- "Soil Erosion and The Daily Erosion Project" 2016. Presentation to North Central Regional Water Network Science 2 Success Conference. Lincoln, NE.
- "The Daily Erosion Project/Ag Conservation Planning Framework" 2016. Presentation to Osher Lifetime Learning Institute (College for Seniors), Ames, IA.
- "Soil Health" 2015. Presentation to Missouri Farmers Markets Association Annual Meeting, Columbia, MO.
- "Precision Conservation Technology at ISU: Iowa Daily Erosion Project, I-FARM, and the Future." 2007. Presentation to Heartland Regional Water Coordination Roundtable, Nebraska City, NE.
- "Using Remote Sensing to Identify Vulnerable Areas and Target BMPs: Iowa Daily Erosion Project." 2007. Presentation to Heartland Regional Water Coordination Roundtable, Nebraska City, NE.

Published Abstracts

- Gelder, B., R. Cruse, D. James, T. Sklenar, and D. Herzmann. The Daily Erosion (and Runoff) Project: High Resolution Estimates of Hydrologic Processes in the Midwestern USA. 2018 AWRA Spring Specialty Conference: GIS & Water Resources. Orlando, FL.
 - Gelder, B., R. Cruse, D. James, and D. Herzmann. Automated Correction of High Resolution DEMs for Ele-Hydro Modeling. 2018 AWRA Spring Specialty Conference: GIS & Water Resources. Orlando, FL.
 - Gelder, B., R. Cruse, D. James, T. Sklenar, and D. Herzmann. The Daily Erosion Project: Hillslope to Regional Scale Estimates of Erosion. 2017 SWCS Annual Meeting, Madison, WI.
 - Gelder, B., R. Cruse, D. Flanagan, D. James, and D. Herzmann. The Daily Erosion (and Runoff) Project: Summary and Lessons Learned. 2016 AWRA Summer Specialty Conference: GIS & Water Resources. Sacramento, CA.
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- Gelder, B., R. Cruse, D. Flanagan, D. James, D. Herzmann, and J. Laflen. IDEP2: A real time soil moisture, erosion, and runoff inventory. 2014 ASABE/CSAE Annual Meeting. Montreal, Canada.
 - Gelder, B.K., and D. James. Automated Hydrologic Enforcement of High Resolution Topography. 2014 ASABE/CSAE Annual Meeting. Montreal, Canada.
 - Gelder, B.K., and D. James. Automated Hydrologic Enforcement of High Resolution Topography. 2014 AWRA Spring Specialty Conference: GIS & Water Resources. Salt Lake City, UT.
 - Gelder, B.K., R. Cruse, D. James, D. Herzmann, J. Laflen, J. Opsomer, J. Frankenberger, D. Flanagan, W. Krajewski. IDEP: A Real Time Soil Moisture, Erosion, and Runoff Inventory. 2014 AWRA Spring Specialty Conference: GIS & Water Resources. Salt Lake City, UT.
 - Gelder, B.K., and D. James. Hydrologic Enforcement of LiDAR Derived DEMs. 2013 American Society of Agricultural and Biological Engineers Annual Meeting. Kansas City, MO.
 - Gelder, B.K. and D. James. Adaptive Hydrologic Enforcement of High Resolution Topography. 2012 American Water Resources Association Annual Meeting. Jacksonville, FL.
 - Gelder, B.K. Adaptive Hydrologic Enforcement of LiDAR-based Digital Elevation Models. 2012 SWCS Annual Meeting, Fort Worth, TX.
 - Gelder, B.K. and D. James. Hydrologic Enforcement of LiDAR for Targeted Conservation. 2012 21st Century Watershed Technology Conference and Workshop: Improving Water Quality and Environment, Bari, Italy.
 - Gelder, B.K. Iowa Daily Erosion Project. 2012 SWCS Annual Meeting, Fort Worth, TX.
 - Gelder, B.K. Adaptive Hydrologic Enforcement of High Resolution Topography. 2012 American Water Resources Association Spring Specialty Conference. New Orleans, LA.
 - Gelder, B.K., C. Anderson, R. Arritt, P. Gassman, D. Herzmann, and R. Anex. Environmental Impacts of Continental Scale Biofuel Production. 2011 American Society of Agronomy Annual Meeting, San Antonio, TX.
 - Gelder, B.K., C. Anderson, R. Arritt, P. Gassman, D. Herzmann, and R. Anex. Climatological Impacts of Biofuel Production. 2010 American Society of Agronomy Annual Meeting, Long Beach, CA.
 - Gelder, B.K., R. Cruse, R. Anex, and H. Olson. Water Footprint of Various Biofuel Crops. 2010 American Society of Agronomy Annual Meeting, Long Beach, CA.
 - Tomer, M., D. James, J. Bean, B. Gelder, and T. Moorman. Locating Potential Sites for Nutrient Interception Practices in a Tile-Drained Watershed Using Lidar Data. 2010 American Society of Agronomy Annual Meeting, Long Beach, CA.
 - Gelder, B., R. Cruse, and R. Anex. Information Centric Natural Resource Management. 2010 Soil and Water Conservation Society Annual Meeting. St. Louis, MO.
 - Gelder, B. and R. Anex. Estimating Soil Organic Matter Using Aerial Imagery and Soil Surveys. 2009 American Society of Agricultural and Biological Engineers Annual Meeting, Reno, NV.
 - Gelder, B. Adaptation of the WEPP Model for Yield Variability Prediction. 2008 Soil and Water Conservation Society Annual Meeting, Tucson, AZ.
 - **Gelder, B.K.**, R.M. Cruse, and A.L. Kaleita. Enhancing Landsat Estimates of Residue Cover Using Vegetative Indices. 2007 American Society of Agricultural and Biological Engineers, Minneapolis, MN.
 - **Gelder, B.K.**, R.M. Cruse, and A.L. Kaleita. Analysis of Multi-Temporal Remote Sensing of Crop Residue. 2006 American Society of Agronomy Annual Meeting, Indianapolis, IN.
 - **Gelder, B.K.**, R.M. Cruse, and A.L. Kaleita. Targeting Erosion Control Using Remote Sensing. 2006 Soil and Water Conservation Society Annual Meeting, Keystone, CO.
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- **Gelder, B.K.**, A.L. Kaleita, and R.M. Cruse. Remote Sensing of Field Level Management Practices. 2006 American Society of Agricultural and Biological Engineers Annual Meeting, Portland, OR.
 - **Gelder, B.K.**, and R.M. Cruse. Analysis of a GIS/Remote Sensing Watershed Model. 2005 American Society of Agronomy Annual Meeting, Salt Lake City, UT.
 - **Gelder, B.K.** Erosion and Runoff Modeling Using Remotely Sensed Tillage Data. 2005 Soil and Water Conservation Society Annual Meeting, Rochester, NY.
 - **Gelder, B.K.** Radar and Infrared Remote Sensing for Tillage Determination. 2005 American Society of Agricultural Engineers Annual Meeting, Tampa, FL.
 - **B.K. Gelder**, R.M. Cruse, J.M. Laflen, J. Opsomer, W. Krajewski, M. Kraszeski, D. Herzmann, D. James, D. Flanagan, J. Frankenberger, and D. Todey. Daily Estimates of Soil Erosion in the State of Iowa. Proceedings of ISCO 2004 - 13th International Soil Conservation Organisation Conference – Brisbane, July 2004.

Professional Presentations

- "Python Fundamentals." Half-day workshop given at 2018 Iowa Technology and Geospatial Conference. West Des Moines, IA.
- "The Daily Erosion Project: Informing conservation decisions" 2018 Integrated Crop Management Conference. Ames, IA.
- "Environmental Implications of Biofuel Production on a Central Iowa Watershed." 2007 SWCS:WNC Impacts of Increased Bio-fuel Production on the Midwest Landscape, Dubuque, IA.
- "Remote Sensing Techniques to Target Conservation Efforts at the Field Level and Beyond." 2006 SWCS Managing Agricultural Lands Conference, Kansas City, KS.
- "Root Length Density and Diameter of Three Grass Species." 1999 American Society of Agricultural Engineers Annual Meeting, Toronto, Canada.

Professional Posters

- "Residue Cover Detection for Runoff and Soil Erosion Estimation." 2013 ESRI User Conference, San Diego, CA.
- "Hydrologic Enforcement of LiDAR Derived DEMs." 2013 ESRI User Conference, San Diego, CA.
- "Automated Hydrologic Enforcement of High Resolution Topography." 2012 AWRA Spring GIS Conference, New Orleans, LA.
- "Information-Centric Natural Resource Management" 2009 SWCS Science 2 Solutions Conference, Des Moines, IA.
- "Estimating In-Field Yield Variability Using Computer Models" 2009 Iowa State University Bio-Century Research Farm Opening Day, Ames, IA.
- "Soil Organic Matter (OM) Mapping with Aerial Photos and SSURGO" 2008 Iowa State University GIS Day, Ames, IA.
- "Estimating Residue Cover Using Automatically Determined Field Boundaries and Tillage Indices" 2006 Remote Sensing and Crop Residue Survey Workshop, New Orleans, LA.
- "Tillage Detectives" 2005. Iowa State University GIS Day, Ames, IA.

Professional Review

- Reviewed Proposal No. 04-00553 for USDA Small Business Innovation Research Project Title: Improved Marketing Strategies for Innovative Soil Management Products.
- Peer reviewer for Applied Engineering in Agriculture, ASABE Transactions, Soil Science Society of America Journal, and Remote Sensing

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- Agronomy Department Data Science Committee, 2021, Member
 - Geographic Information Systems Coordination Committee (2015-Present), Member

LEADERSHIP EXPERIENCE

- Iowa Section, American Society of Agricultural and Biological Engineers
 - Vice Chair, Nominating (2012-2013)
 - Chair (2011-12)
 - Vice Chair, Programs (2010-11)
 - Secretary/Treasurer (2008-2010)
 - Nominating Committee member (2007, 2013-14)
- American Society of Agricultural and Biological Engineers
 - Young Professional Council At-Large Member (2009)
- Agronomy Graduate Organization
 - President (2003)
 - Graduate Student Senator (2004-2005)
 - Recycling Chair (2005)
- Agricultural Engineering Graduate Organization
 - Treasurer (2006)

LICENSURE/MEMBERSHIPS

- Iowa Engineer in Training #14484
- American Society of Agronomy - 1997
- Soil Science Society of America – 1997
- American Society of Agricultural and Biological Engineers - 1999
- Soil and Water Conservation Society – 2002
- American Water Resources Association - 2011