

PETE D. AKERS

ADDRESS:

Department of Geographical
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EDUCATION:

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|-----------|-----------------------|---|
| 2012-2016 | Ph.D. in Geography | University of Georgia, Athens, GA
<i>Paleoclimate change in southern Indiana determined from speleothem climate proxies and analysis of modern precipitation oxygen isotope variations</i> |
| 2009-2011 | M.S. in Geography | University of Georgia, Athens, GA
<i>Climate and Maya cultural change: detecting connections using Belizean stalagmites</i> |
| 2005-2009 | B.S. in Plant Biology | Purdue University, West Lafayette, IN
<i>Graduated with distinction and completed Agriculture Honors Program</i> |

PROFESSIONAL:

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| 2016-present | Visiting Assistant Professor | University of Iowa, Iowa City, IA
<i>Department of Geographical and Sustainability Sciences</i> |
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PUBLICATIONS:

- Akers, P.D.**, Brook, G.A., Railsback, L.B., Liang, F., Webster, J.W., Reeder, P.P., Cheng, H. and Edwards, R.L., 2016: Extended and higher-resolution record of climate and land use from stalagmite MC01 from Macal Chasm, Belize: connections between major dry events, climate variability, and Maya sociopolitical changes. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 459, 268-288.
- Railsback, L.B., Xiao, H., Liang, F., **Akers, P.D.**, Brook, G.A., Dennis, W.M., Lanier, T.E., Tan, M., Cheng, H., and Edwards, R.L., 2014: A stalagmite record of abrupt climate change and possible westerlies-derived atmospheric precipitation during the Penultimate Glacial Maximum in northern China. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 393, 30-44.
- Railsback, L.B., **Akers, P.D.**, Wang, L., Holdridge, G.A., and Voarintsoa, N.R., 2013: Layer-bounding surfaces in stalagmites as keys to better paleoclimatological histories and chronologies. *International Journal of Speleology*, 42, 167-180.
- Grundstein, A.J., Ramseyer, C., Zhao, F., Pesses, J.L., **Akers, P.**, Qureshi, A., Becker, L., Knox, J.A., and Petro, M., 2010: A retrospective analysis of United States football hyperthermia deaths. *International Journal of Biometeorology*, 56(1), 11-20.

GRANTS:

- National Science Foundation Grant #BCS-1433904 (2014-2016)
 - Brook, G.A. and **Akers, P.D.**, Doctoral Dissertation Research: High-Resolution, Late Quaternary Climate and Vegetation Record for the American Midwest: Isotope and Pollen Evidence from Stalagmites and Flowstone
 - \$15,964
- Innovative and Interdisciplinary Research Grant, University of Georgia (2015-2016)
 - **Akers, P.D.**, Predicting future climate by understanding the past: an innovative stalagmite-based paleoclimate reconstruction of a warming climate for a previously unstudied region of the American Midwest
 - \$1500
- Association of American Geographers Paleoenvironmental Change Specialty Group Student Research Competition Grant (2015-2016)
 - **Akers, P.D.**, Expression of the 8.2 ka event in southern Indiana preserved in stalagmite stable isotopes
 - \$200
- Foreign Travel Assistance Program (2014)
 - Office of the Vice President for Research, University of Georgia
 - Funded travel for participation in Karst Record 7 conference, Melbourne, VIC, Australia
- Office of STEM Education Small Grant (2012-2014), University of Georgia
 - Grundstein, A., Porinchu, D.F., Vercoe, R.A., **Akers, P.D.**, and Das, U., The Development of "Inquiry-Based" Exercises on Local Physical Geographic Processes and Landforms for Geography 1111L: An Introduction to Physical Geography Laboratory Sections
- Wheeler Travel Grant (2013)
 - Department of Geography, University of Georgia
 - Travel to Association of American Geographers Annual Meeting, Los Angeles, CA

AWARDS AND HONORS:

- Winner, Best Paper Presentation (2016)
 - Geography Graduate Research Symposium, University of Georgia, Athens, GA
 - *Using intermittent stalagmite growth to reveal millennial-scale climate change in Indiana*
- Winner, John Fraser Hart Award, Best PhD Student Paper (2015)
 - 70th Annual Meeting of the Southeastern Division of the Association of American Geographers, Pensacola, FL
 - *Severe dry events and precipitation seasonality changes in the American Midwest during the Holocene: evidence from multiple proxies in a southern Indiana stalagmite calibrated with modern precipitation isotopes*
- Graduate School Dissertation Completion Award, University of Georgia (2015)
- Runner-up, Best Paper Presentation (2015)
 - Geography Graduate Research Symposium, University of Georgia, Athens, GA
 - *Temporal and spatial trends in precipitation $\delta^{18}O$ values: Keys toward improved paleoclimate research in the Eastern United States*
- Top Five, John Fraser Hart Award, Best PhD Student Paper (2014)
 - 69th Annual Meeting of the Southeastern Division of the Association of American Geographers, Athens, GA
 - *Southern hemisphere westerly wind belt shifts during the Late Pleistocene-Holocene transition (10-20 ka) as detected in five Argentine speleothems*
- Outstanding Teaching Assistant Award, University of Georgia (2012)
- Honorable Mention, Best Graduate Student Poster (2011)
 - 66th Annual Meeting of the Southeastern Division of the Association of American Geographers, Savannah, GA
 - *Climate change during the Maya Classic and Postclassic derived from a Belizean stalagmite*
- Department of Geography Teaching Assistantship, University of Georgia (2011-2015)
- Graduate School Research Assistantship, University of Georgia (2009-2011)
- Outstanding Junior, Department of Botany and Plant Pathology, Purdue University (2007-2008)
- Elsie L. Gruel Scholarship, Purdue University (2008)
 - Outstanding academic achievement as a College of Agriculture junior
- Purdue University Semester Honors List & Dean's List (All semesters, 2005-2009)
- Indiana Resident Top Scholar (2005-2009)
- Purdue University Academic Success Award (2005-2009)

CONFERENCE PROCEEDINGS:

- Akers, P.D.**, 2016: Using intermittent stalagmite growth to reveal millennial-scale climate change in Indiana. *Geography Graduate Research Symposium*, University of Georgia, Athens, GA.
- Akers, P.D.** and Welker, J.M., 2015: Changes in precipitation isotope-climate relationships from temporal grouping and aggregation of weekly-resolved USNIP data: impacts on paleoclimate and environmental applications. Poster Abstract PP11B-2216, American Geophysical Union Fall Meeting, San Francisco, CA.
- Akers, P.D.**, 2015: Severe dry events and precipitation seasonality changes in the American Midwest during the Holocene: evidence from multiple proxies in a southern Indiana stalagmite calibrated with modern precipitation isotopes. Paper Abstracts, *70th Annual Meeting of the Southeastern Division of the Association of American Geographers*, Pensacola, FL.
- Akers, P.D.**, 2015: Holocene climate change in the Midwestern US: paleoclimate evidence from Upper Porter Cave stalagmites, Indiana. Paper Abstracts, *Association of American Geographers Annual Meeting*, Chicago, IL.
- Akers, P.D.**, 2015: Temporal and spatial trends in precipitation $\delta^{18}\text{O}$ values: Keys toward improved paleoclimate research in the Eastern United States. *Geography Graduate Research Symposium*, University of Georgia, Athens, GA.
- Akers, P.D.**, 2014: Southern hemisphere westerly wind belt shifts during the Late Pleistocene-Holocene transition (10-20 ka) as detected in five Argentine speleothems. Paper Abstracts, *69th Annual Meeting of the Southeastern Division of the Association of American Geographers*, Athens, GA.
- Akers, P.D.**, Brook, G.A., Liang, F., Wang, X., Auler, A.S., Railsback, L.B., Cheng, H., Edwards, R.L., Bendetto, C., 2014; A 48,000 year record of climate change in west-central Argentina from stalagmites in Caverna de las Brujas, Mendoza Province. Paper Abstracts, *KR7: The 7th International Conference on Climate Change: The Karst Record*, Melbourne, VIC, Australia.
- Akers, P.D.**, Brook, G.A., and Liang, F., 2014: A 5300-yr stalagmite paleoclimate record from Macal Chasm, Vaca Plateau, Belize, indicating aridity during the Maya Terminal Classic and Postclassic Periods from multiple proxies. Paper Abstracts, *Association of American Geographers Annual Meeting*, Tampa, FL.
- Akers, P.D.** and Brook, G.A., 2013: Paleoclimate implications of Late Pleistocene calcium carbonate travertine from Santa Cruz province, Argentina. Paper Abstracts, *Association of American Geographers Annual Meeting*, Los Angeles, CA.
- Akers, P.D.**, 2012: The characteristics and spatial distribution of current paleoenvironmental research on the penultimate glaciation and termination. Poster Abstracts, *67th Annual Meeting of the Southeastern Division of the Association of American Geographers*, Asheville, NC.
- Railsback, L.B., **Akers, P.D.**, and Wang, L., 2012: Layer bounding surfaces in stalagmites as keys to better chronologies and paleoclimate records. Poster Abstracts, *The Geological Society of America Annual Meeting & Exposition*, Charlotte, NC.
- Akers, P.D.**, 2012: Climate and Maya cultural change: detecting connections using Belizean stalagmites. Paper Abstracts, *Association of American Geographers Annual Meeting*, New York, NY.
- Akers, P.D.**, 2011: Climate change during the Maya Classic & Postclassic derived from a Belizean Stalagmite. Poster Abstracts, *66th Annual Meeting of the Southeastern Division of the Association of American Geographers*, Savannah, GA.
- Railsback, L.B., **Akers, P.**, Babcock, L.N., Fraley, T.K., Holdridge, G.A, McMullen, S.K., Ostrowicki, K., Sletten, H.R., Wang, L., & Cox, J.E., 2011: Origin and potential paleoenvironmental significance of caliche crusts on basalt and limestone substrates in and near the Snake River Plain, southeastern Idaho. Poster Abstracts, *Southeastern Section of the Geological Society of America 60th Annual Meeting*, Wilmington, NC.

RESEARCH EXPERIENCE:

Doctoral research: Late Quaternary paleoenvironments in southern Indiana, USA (2013-current)

- Paleoenvironmental records from multiple stalagmites in four regional caves
 - Field sampling of stalagmites, laboratory sampling and analysis of paleoclimate proxies
- Analysis of spatial and climate controls on regional rainfall's modern isotopic signature
 - Statistical analysis of United States Network for Isotopes in Precipitation (USNIP) database and correlation with meteorological data

George A. Brook Research Assistant (2012-2016)

- Paleoclimate of the Vaca Plateau, Belize, and the impact on Maya society
 - Field sampling in seven caves, analysis of 5300-year stalagmite record ($\delta^{18}\text{O}$, $\delta^{13}\text{C}$, UV-stimulated luminescence, petrography)
- Last glacial period (16-33 ka) Patagonian calcite veins, Santa Cruz, Argentina
 - Calcite precipitated in rock fissures analyzed ($\delta^{18}\text{O}$, $\delta^{13}\text{C}$, UV-stimulated luminescence, petrography)
 - Examining potential links between vein detritus and Antarctic ice core dust flux
- Late Quaternary west-central Argentina paleoclimate, Caverna de las Brujas, Mendoza Province
 - Six stalagmites (0-130 ka) analyzed ($\delta^{18}\text{O}$, $\delta^{13}\text{C}$, UV-stimulated luminescence, petrography)
 - Proxy aridity signals linked to variations in southern westerly wind belt

High-altitude lake sediment sampling, White River National Forest, Colorado (2012)

- David F. Porinchi, Department of Geography, University of Georgia
- Eighteen lakes (2900-3900 masl) sampled for chironomid training set
- Field-identified plant species for lake site floral inventory

M.S. Research: Climate and Maya cultural change: detecting connections using Belizean stalagmites (2010-2011)

- 400-year stalagmite record ($\delta^{18}\text{O}$, $\delta^{13}\text{C}$, UV-stimulated luminescence, petrography)
- Very low uranium content in stalagmite required novel chronology developed from radiocarbon-dating of extracted organic material

Kevin D. Gibson Laboratory Assistant (2007-2009)

- Department of Botany and Plant Pathology, Purdue University
- Nonnative earthworm impacts on native plant populations
 - Field sampling of earthworms and vegetation, earthworm feeding experiment design
- Sustainable intercropping of fresh market tomatoes
 - Weed counts and identification, light intensity readings, agricultural site maintenance

Summer Undergraduate Research Fellowship (2006)

- Fabio H. Ribeiro, Department of Chemical Engineering, Purdue University
- Conversion of coal and biomass into hydrocarbon fuels through the Fischer-Tropsch process

TEACHING EXPERIENCE:

Visiting Assistant Professor (2016-present), Department of Geographical and Sustainability Sciences, University of Iowa

- 5 courses, 144 total students to date
- Courses taught:
 - GEOG 1020: Introduction to Global Environments
 - All lectures, exams, and presentations self-created
 - GEOG 1030: Our Digital Earth
 - Leading development of this online course offering
 - GEOG 2013: Introduction to Sustainability
 - Redeveloped course for Department of Geographical and Sustainability Sciences
 - GEOG 2950: Environmental Conservation
 - To be taught in Spring 2017
 - GEOG 3310: Landscape Ecology
 - To be taught in Spring 2017

Graduate Teaching Assistant (2011-2015), Department of Geography, University of Georgia

- 10 courses, 442 total students
- Average evaluation rating: 1.26 / 5.00 (1= excellent, 5 = poor)
- Courses taught:
 - GEOG 1113: Introduction to Landforms Lecture
 - All lectures, exams, and presentations self-created
 - GEOG 1111L: Introduction to Physical Geography Laboratory
 - Created manual that is now standard manual for course
 - GEOG 1112L: Introduction to Weather and Climate Laboratory
 - GRSC 7770: Seminar for Graduate Teaching Assistants
 - New course developed with John A. Knox specifically for new geography teaching assistants

OTHER WORK EXPERIENCE:

Pearson Education (2013-2014)

- Laboratory manual content and accuracy reviewer
 - Thomsen, C.E. and Christopherson, R.W., *Applied Physical Geography: Geosystems in the Laboratory, 9th Edition*

National Park Service, Indiana Dunes National Lakeshore (2009)

- Biological Science Technician (Monitoring), GS-0404-05
 - Fire effects monitoring team, field identification of plant species, database input and accuracy checking

ORGANIZATIONS:

- American Geophysical Union (AGU)
- Association of American Geographers (AAG)
 - Paleoenvironmental Change (PEC), Geomorphology, and Climate specialty groups
- Southeastern Division of the Association of American Geographers (SEDAAG)
 - Three-time World Geography Bowl Most Valuable Player, 2012-2014
 - Four-time SEDAAG representative for AAG World Geography Bowl, 2011-2014
 - World Geography Bowl State Coordinator (Georgia), 2015
- Geography Graduate Student Association, University of Georgia
 - Chair, 2013-2014
 - Treasurer, 2011-2012
 - Faculty Representative, 2014-2015

INVITED LECTURES:

Stalagmites as recorders of past environments: current techniques and the near future of the field, 2014: *Initiative for Quaternary Paleoclimate Research*, University of Tennessee-Knoxville. Provided an introduction to speleothem science to students and faculty and an overview of current research trends

The Classic Maya, 2014: *Resources, Society, and the Environment*, GEOG 1125, University of Georgia. Focused on the relationship of the Classic Maya to their landscape, their adaptability, and final demographic decline. Included interactive portion where student volunteers posed as Maya city-states to illustrate population growth and warfare pressures on the region

TECHNICAL SKILLS:

- Laboratory
 - Micromill and dental drill sampling of speleothems and similar calcium carbonate deposits for stable isotopes and radiometric dating (U-Th, radiocarbon)
 - Digital imaging and processing of speleothems, including visible light reflectance, ultraviolet-stimulated luminescence, and visible light transmittance
 - Thin section preparation and petrographic analysis of speleothems
 - Vegetation microcosm experiment design and replication
- Field
 - Caving for speleothem sampling and environmental monitoring
 - Eleven caves visited for sampling in Belize and Indiana
 - Climate data logging and pollen traps for modern environmental monitoring
 - Vegetation sampling and identification, including dichotomous key training
 - Institute of Botanical Training (Salem, MO) course certification (2009)
 - Botanical field trials in an agricultural setting
- Computer
 - R programming for statistical analysis, figure creation, and data management
 - Experience with Bacon and StalAge chronology packages
 - Climate teleconnection index correlation analysis

- Large spatial database management and analysis
- Adobe Photoshop and Illustrator for image creation and editing
- Esri ArcGIS for GIS analysis and map creation
- ERDAS Imagine for digital image transect analysis