

Andrew A. Zaffos

DATA SCIENTIST · GEOLOGIST · PALEOBIOLOGIST

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Current

Chief of Geoinformatics

ARIZONA GEOLOGICAL SURVEY

University of Arizona

2017-Present

Education

Postdoctoral Fellow

ADVISOR: SHANAN E. PETERS

University of Wisconsin-Madison

2015-2017

PH.D. Geology

ADVISOR: ARNOLD I. MILLER

University of Cincinnati

2010-2014

M.S. Geology

ADVISOR: STEVEN M. HOLLAND

University of Georgia

2008-2010

B.A. Economics

ADVISORS: ROWAN LOCKWOOD AND KAREN M. LAYOU

College of William and Mary

2004-2008

Principal Investigator

National Science Foundation

EARTHcube DATA CAPABILITIES: SOLUTIONS FOR PALEOBOTANY: A WEB CLIENT HOSTING NOVEL CONTENT AND ITS INTEGRATION WITH EXISTING DATABASES (NSF ICER 2026961).

\$1,199,960.00

2020-2023

United States Geological Survey

2022-2023 DATA PRESERVATION AND CRITICAL MINERALS ACTIVITIES IN ARIZONA (G22AP00222).

\$136,106.00

2022-2023

United States Geological Survey

2021-2022 DATA PRESERVATION AND CRITICAL MINERALS ACTIVITIES IN ARIZONA (G21AP10428).

\$86,905.00

2021-2022

Department of Energy

A HIGH-THROUGHPUT COMPUTING INFRASTRUCTURE TO GENERATE CUSTOM, OPEN COMMUNITY GEOTHERMAL DATASETS (DE-EE0008761).

\$511,598.00

2019-2021

United States Geological Survey

FY20 PRESERVATION AND MODERNIZATION OF ARIZONA DIGITAL GEOLOGIC MAP AND MINERALS DATA (G20AP00090).

\$110,256.00

2020-2021

Department of Energy

ARIZONA GEOLOGICAL SURVEY NATIONAL GEOTHERMAL DATA SYSTEM SECURITY UPGRADES (EE0008761).

\$125,504.34

2019-2020

United States Geological Survey	\$98,415.04
2019 PRESERVATION AND MODERNIZATION OF ARIZONA DIGITAL GEOLOGIC MAP DATA AND DEVELOPMENT OF A PUBLICLY ACCESSIBLE DIGITAL CORE ARCHIVE (G19AP00099).	2019-2020
National Science Foundation	\$139,026.00
COLLABORATIVE RESEARCH: LEVERAGING DOMAIN REPOSITORIES IN FLYOVER COUNTRY, A MOBILE APP FOR GEOSCIENCE OUTREACH, DATA DISCOVERY, AND VISUALIZATION (NSF EAR 1550843).	2017-2019

Senior Personnel

Federal Emergency Management Agency	\$75,505.60
ESTABLISHING A VIRTUAL ARIZONA EARTHQUAKE CLEARINGHOUSE PLATFORM FOR A SAFER, MORE RESILIENT ARIZONA	2022-2024
Department of Energy	\$318,837.00
CARBON UTILIZATION AND STORAGE PARTNERSHIP OF THE WESTERN UNITED STATES.	2019-2023
Department of Energy	\$119,852.00
CUSP FOCUSED PROJECT PROPOSAL: CHARACTERIZATION OF CO ₂ STORAGE POTENTIAL IN HARQUAHALA BASIN, WESTERN CENTRAL ARIZONA.	2022-2023
United States Geological Survey	\$59,504.42
PRESERVATION AND MODERNIZATION OF ARIZONA DIGITAL GEOLOGIC MAP DATA.	2018-2019
Department of Defense	\$217,456
ARIZONA MILITARY AND ENERGY LAND USE PLAN.	2016-2018
National Science Foundation	\$71,673.00
GEOINFORMATICS: LEVERAGING THE PALEOBIOLOGY DATABASE FOR RESEARCH, EDUCATION, MENTORSHIP, AND INTEROPERABILITY (NSF EAR 0949416 SUPPLEMENT).	2015-2016

Published Papers

- Barnes, B.D., Sclafani, J.A., and **A. Zaffos** (2021) Dead clades walking are a pervasive macroevolutionary pattern. *Proceedings of the National Academy of Sciences* 118.
- Peters, S.E., Ross, I., Czaplewski, J., Glassel, A., Husson, J., Syverson, V., **Zaffos, A.**, and M. Livny (2017). A new tool for deep-down data mining. *Eos* 98.
- **Zaffos, A.**, Finnegan, S., and S.E. Peters (2017). Plate-tectonic regulation of marine animal diversity. *Proceedings of the National Academy of Sciences* 114:5653–5658.
- Brett, C.E., **Zaffos, A.**, and A.I. Miller (2016). Niche conservatism, tracking, and ecological stasis: A hierarchical perspective. Eldredge, N. and T. Pievani (Eds.), *Evolutionary Theory: A Hierarchical Perspective*, University of Chicago Press.
- **Zaffos, A.** and A.I. Miller (2015). Cenozoic latitudinal response curves: Individualistic changes in the latitudinal distributions of marine bivalves and gastropods. *Paleobiology* 41:33-44.
- **Zaffos, A.** and S.M. Holland (2012). Abundance and extinction in Ordovician-Silurian brachiopods, Cincinnati Arch, Kentucky and Ohio. *Paleobiology* 38:278-291.
- Holland, S.M. and **A. Zaffos** (2011). Niche conservatism along an onshore-offshore gradient. *Paleobiology* 37:270-286.

Invited Talks, Chapters, and Lectures

- **Zaffos, A.** and M. Camp (2022). Arizona Geological Survey's 'geomapmaker' toolbar for ArcGIS Pro. *Digital Mapping Techniques 2022*
- **Zaffos, A.** (2019). Ecoinformatics: Measuring biodiversity and other ecological properties. *Analytical Paleobiology Workshop*
- Maarten, B., Fosdick, J., Gehrels, G., McKay, N., Meyers, S., Morgan, L., Renne, P., Robinson, E., Schmitz, M., Singer, B., Smith, M., Walker, D., and **A. Zaffos** (2018). GEOCHRONOLOGY Toward a 4D Digital Earth: Outcomes of the EarthRates All Hands Science Priorities Workshop. *EarthRates Working Group Report to NSF*.
- **Zaffos, A.** and S.E. Peters (2018). The future of continental-scale geologic mapping. *Geologic Mapping Forum 2018*.
- Bookman, L. and **A. Zaffos** (2018). An ArcMap Toolbar for generating geologic maps in NCGMP09 format. *NGGDPP Webinar*.
- **Zaffos, A.** and S.E. Peters (2017). Building a comprehensive model of the upper-crust with the GeoDeepDive infrastructure and Macrostrat Database. *NSF EarthRates Workshop*.
- **Zaffos, A.** and L. Bookman (2017). A flexible framework for data preservation and distribution. *NGGDPP Data Preservation and Rescue Workshop*.
- **Zaffos, A.** (2017). Rethinking our expectations for global biogeographic patterns and processes. *University of Arizona*.
- **Zaffos, A.** (2017). Global tectonics regulate marine biodiversity. *Arizona Geological Society*.
- **Zaffos, A.** (2017). Global tectonics regulate marine biodiversity. *NOAA Science Seminar Series*.
- **Zaffos, A.** (2017). Geobiology: The history of early life. *University of Wisconsin-Madison*.
- **Zaffos, A.** (2016). The dynamics of geographic range size. *Madison Evolution Seminar Series*.
- **Zaffos, A.** (2015). Reconsidering the Age-Area hypothesis with R and Big Data. *Madison R Programming Group*.
- **Zaffos, A.** (2014). Looking for first principles in paleobiology. *Centre College*.
- Brett, C.E., **Zaffos, A.**, Baird, G.C., and A.J. Bartholomew (2013). Fossil beds, facies gradients, and seafloor dynamics in the Middle Devonian Moscow Formation, Western New York. Deakin, A.K. and G.G. Lash (Eds.), *New York State Geological Association 85th Annual Field Trip Guidebook*, SUNY Fredonia.
- **Zaffos, A.** (2012). Mass Extinction: What you need to know so it doesn't happen to you. *Northern Kentucky University*.
- **Zaffos, A.** (2012). Climate Change: A paleontologist's perspective. *Illinois Wesleyan University*.

Published Abstracts

- Currano, E., Cleveland, C., Contreras, D., Koll, R., Meredith, D., Peters, S., Uhen, M. and **A. Zaffos** (2021). Introducing PBOT, the integrative paleobotany portal. *Geological Society of America Abstracts with Programs* 53:6.
- Barnes, B.D., Sclafani, J.A., and **A. Zaffos** (2019). Zombies of the Phanerozoic: How prevalent are dead clades walking?. *Geological Society of America Abstracts with Programs* 51:5.
- Linzmeier, B., Hong, S., and **A. Zaffos** (2018). The role of morphology in the development of the geographic range sizes of ammonoids. *10th International Cephalopod Symposium*.
- Peters, S.E., Syverson, V.J., **Zaffos, A.**, Husson, J., Ross, I. and J. Czaplewski (2017). Extending the reach and resolution of the paleobiology database with computational and data infrastructures. *Geological Society of America Abstracts with Programs* 49:6.
- **Zaffos, A.** and S.E. Peters (2017). Reassessing our expectations for marine latitudinal biodiversity gradients in modern and ancient systems. *Geological Society of America Abstracts with Programs* 49:6.
- Ito, E.T., **Zaffos, A.**, Syverson, V.J., Ross, I.A., and S.E. Peters (2017). Identifying, cross-referencing, and extracting dark data using GeoDeepDive. *Digital Data in Biodiversity Research Conference*.
- Hartman, S. Lovelace, D.M., Linzmeier, B.J., Fitch, A., Kufner, A., **Zaffos, A.**, Matthewson, P., and W. Porter (2016) Mechanistic physiological modelling and geographic distribution of Late Triassic tetrapods. *Society of Vertebrate Paleontology Annual Meeting*.
- **Zaffos, A.**, Peters, S.E., and S. Finnegan (2016). Plate-tectonic regulation of biodiversity and continental endemism. *Geological Society of America Abstracts with Programs* 48:152.
- **Zaffos, A.** Peters, S.E., and S.K. McMullen (2015). Empirical patterns of geographic range size expansion and contraction in marine invertebrates and terrestrial mammals are well predicted by a random walk. *Geological Society of America Abstracts with Programs* 48:668.
- **Zaffos, A.**, Peters, S.E., Husson, J., and J. Czaplewski (2015). A comparative estimate of different biodiversity curves and comments on the link between rock availability and biodiversity. *Geological Society of America Abstracts with Programs* 47:71.

- Peters, S., Husson, J., Czaplewski, J., and **A. Zaffos** (2015). Macrostrat: Towards a common data infrastructure to support deep time earth systems science. *Geological Society of America Abstracts with Programs* 47:70.
- **Zaffos, A.**, Miller, A.I., and C.E. Brett (2014). A numerical model of gradient change and its implications for empirical data. *Geological Society of America Abstracts with Programs* 46:136.
- **Zaffos, A.**, Brett, C.E., and A.I. Miller (2014). The persistence of ecological gradients: What do we really know? *10th North American Paleontological Convention Abstracts, The Paleontological Society Special Publication* 13:164-165.
- **Zaffos, A.** (2011). Latitudinal preferences in Cenozoic mollusks: A change from conservatism to dynamism with the passage of time. *Geological Society of America Abstracts with Programs* 43:541.
- **Zaffos, A.** and S.M. Holland (2010). Brachiopod abundance and extinction in the Late Ordovician and Early Silurian: Background effects during a mass extinction. *Geological Society of America Abstracts with Programs* 42:481.
- Holland, S.M. and **A. Zaffos** (2009). Testing the importance of incumbency: The conservation of ecological response curves along an onshore-offshore gradient. *9th North American Paleontological Convention Abstracts, Cincinnati Museum Center Scientific Contributions* 3:145.
- **Zaffos, A.**, Bonnette, M., Christie, M., Lunze, J., Pryor, A.L., and K.M. Layou (2008). Implications of beta: Diversity partitioning during Miocene-Pliocene background extinction. *Geological Society of America Abstracts with Programs* 40:60.

Primary Instructor

Paleobiology 541

UNDERGRADUATE-GRADUATE COURSE

University of Wisconsin
Spring 2016

Physical Geology Lab 1111

UNDERGRADUATE COURSE

University of Cincinnati
Fall 2011

Physical Geology Lab 1003

UNDERGRADUATE COURSE

University of Cincinnati
Fall 2010

Teaching Assistant

Astrobiology Geology 1016

UNDERGRADUATE COURSE

University of Cincinnati
Fall 2012

Environmental Geology 1106

UNDERGRADUATE COURSE

University of Cincinnati
Spring 2012

Physical Geology 1102

UNDERGRADUATE COURSE

University of Cincinnati
Spring 2011

Data Analysis 6370

GRADUATE COURSE

University of Georgia
Fall 2009

Sedimentary Geology 4500/6500

UNDERGRADUATE-GRADUATE COURSE

University of Georgia
Spring 2009

Physical Geology 1250

UNDERGRADUATE COURSE

University of Georgia
Fall 2008

Community Participation

- Midcontinent Paleobotanical Colloquium: Virtual Workshop Online Database Solutions for Paleobotany (2020)
- National Digital Catalog Workshop (2020)
- **Current Biology** Reviewer (2019)
- Collaborative Database Effort for Geology (2018-Present)
- USGS Data Management Working Group For Geological Surveys (2018)
- Arizona Geographic Information Council Data Committee (2018-Present)
- **PeerJ** Reviewer (2017)
- EarthRates Community Priorities and Planning (2017)

- Paleontological Society: Career and Mentoring Panelist (2017)
- Data Refuge Madison (2017)
- **Geology** Reviewer (2017)
- ePANDDA Working Group (2016-2018)
- **Nature: Scientific Reports** Reviewer (2016)
- **Journal of Biogeography** Reviewer (2016)
- velociraptr R Package Developer (2015-2019)
- xDD Development Team (2015-Present)
- Paleobiology Database Development Team (2015-Present)
- Macrostrat Development Team (2015-Present)
- **Paleobiology** Reviewer (2015, 2017)
- Paleobiology Database Hackathon, University of California - Santa Cruz (2015)
- Boy Scouts of America, Geology Merit Badge Counselor (2011-2013)
- American Society of Naturalists (2010-Present)
- Osher Lifelong Learning Center, Teaching Assistant (2010)
- University of Georgia Stratigraphy Lab (2008-2010)
- Paleontological Society (2008-Present)
- Geological Society of America (2008-Present)
- Alpha Phi Omega Service Organization (2005-2008)