

Andrew A. Zaffos

DATA SCIENTIST · GEOLOGIST · PALEOBIOLOGIST · DEVELOPER

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Current

Senior Research Scientist

ARIZONA GEOLOGICAL SURVEY

Division: Geoinformatics

University of Arizona

2017-Present

Education

Postdoctoral Fellow

ADVISOR: SHANAN E. PETERS

Research Associate and Associate Lecturer

University of Wisconsin-Madison

2015-2017

PH.D. Geology

ADVISOR: ARNOLD I. MILLER

Thesis: Diagnosis and prediction of variations in the environmental distributions of marine fossils across time and space.

University of Cincinnati

2010-2014

M.S. Geology

ADVISOR: STEVEN M. HOLLAND

Thesis: Abundance and extinction at the Ordovician/Silurian boundary of the Cincinnati Arch, USA.

University of Georgia

2008-2010

B.A. Economics

ADVISOR: ROWAN LOCKWOOD AND KAREN M. LAYOU

College of William and Mary

2004-2008

Published Papers

- Holland, S.M. and **A. Zaffos** (2011). Niche conservatism along an onshore-offshore gradient. *Paleobiology* 37:270-286.
- Zaffos, A.** and S.M. Holland (2012). Abundance and extinction in Ordovician-Silurian brachiopods, Cincinnati Arch, Kentucky and Ohio. *Paleobiology* 38:278-291.
- 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.
- 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.**, Finnegan, S., and S.E. Peters (2017). Plate-tectonic regulation of marine animal diversity. *Proceedings of the National Academy of Sciences* 114:5653-5658.
- 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.

Invited Plenary Talks, Book Chapters, and Lectures

- Zaffos, A.** (2012). Climate Change: A paleontologist's perspective. *Illinois Wesleyan University*.
- Zaffos, A.** (2012). Mass Extinction: What you need to know so it doesn't happen to you. *Northern Kentucky University*.
- 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.** (2014). Looking for first principles in paleobiology. *Centre College*.
- Zaffos, A.** (2015). Reconsidering the Age-Area hypothesis with R and Big Data. *Madison R Programming Group*.
- Zaffos, A.** (2016). The dynamics of geographic range size. *Madison Evolution Seminar Series*.
- Zaffos, A.** (2017). Geobiology: The history of early life. *University of Wisconsin-Madison*.
- Zaffos, A.** (2017). Global tectonics regulate marine biodiversity. *NOAA Science Seminar Series*.

- **Zaffos, A.** (2017). Global tectonics regulate marine biodiversity. *Arizona Geological Society*.
- **Zaffos, A.** (2017). Rethinking our expectations for global biogeographic patterns and processes. *University of Arizona*.
- **Zaffos, A.** and L. Bookman (2017). A flexible framework for data preservation and distribution. *NGGDPP Data Preservation and Rescue Workshop*.
- **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*.
- Bookman, L. and **A. Zaffos** (2018). An ArcMap Toolbar for generating geologic maps in NCGMP09 format. *NGGDPP Webinar*.
- **Zaffos, A.** and S.E. Peters (2018). The future of continental-scale geologic mapping. *USGS Geologic Mapping Forum 2018*.

Published Abstracts

- **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.
- 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.** 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.
- **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.**, 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.**, 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.
- 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.**, 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.
- **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., and S. Finnegan (2016). Plate-tectonic regulation of biodiversity and continental endemism. *Geological Society of America Abstracts with Programs* 48:152.
- 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*.
- 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*.
- **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.
- 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.
- Linzmeier, B., Hong, S., and **Zaffos, A.** (2018). The role of morphology in the development of the geographic range sizes of ammonoids. *10th International Cephalopod Symposium*.

Primary Instructor

Paleobiology 541

UNDERGRADUATE-GRADUATE COURSE

*University of Wisconsin
Spring 2016*

Physical Geology Lab 1111

UNDERGRADUATE COURSE

*University of Cincinnati
Fall 2011*

Teaching Assistant

Physical Geology 1250
UNDERGRADUATE COURSE

University of Georgia
Fall 2008

Sedimentary Geology 4500/6500
UNDERGRADUATE-GRADUATE COURSE

University of Georgia
Spring 2009

Data Analysis 6370
GRADUATE COURSE

University of Georgia
Fall 2009

Physical Geology 1102
UNDERGRADUATE COURSE

University of Cincinnati
Spring 2011

Environmental Geology 1106
UNDERGRADUATE COURSE

University of Cincinnati
Spring 2012

Astrobiology Geology 1016
UNDERGRADUATE COURSE

University of Cincinnati
Fall 2012

Scholarships and Research Support

- Hawthorne Rotary International (2004)
- University of Georgia Graduate Assistantship (2008)
- Geological Society of America Graduate Grant (2009)
- Paleontological Society, Cooper Grant (2009)
- University of Georgia Miriam Watts-Wheeler Memorial Grant (2009)
- University of Cincinnati Klekamp Grant (2011)
- University of Cincinnati Kenneth E. Caster Memorial Grant (2011)
- Paleontological Society of America, Gould Grant (2011)
- Geological Society of America Graduate Grant (2012)
- American Museum of Natural History: Theodore Roosevelt Grant (2012)
- University of Cincinnati Wycoff Fellowship (2013)
- University of Cincinnati Kenneth E. Caster Memorial Fellowship (2014)
- University of Cincinnati George and Frances Rawlinson Fellowship (2014)

Laboratories and Development Teams

- [University of Georgia Stratigraphy Lab](#) (2008-2010)
- [Macrostrat Development Team](#) (2015-Present)
- [GeoDeepDive Development Team](#) (2015-Present)
- [velociraptr R Package Developer](#) (2015-Present)
- [ePANDDA Working Group](#) (2016-Present)
- [Paleobiology Database Developer](#) (2016-Present)
- [Flyover Country Working Group](#) (2017-Present)

Community Participation

- Alpha Phi Omega Service Organization (2005-2008)
- Geological Society of America (2008-Present)
- Paleontological Society (2008-Present)

- Osher Lifelong Learning Center, Teaching Assistant (2010)
- American Society of Naturalists (2010-Present)
- Boy Scouts of America, Geology Merit Badge Counselor (2011-2013)
- Paleobiology Database Hackathon, University of California - Santa Cruz (2015)
- **Paleobiology** Reviewer (2015, 2017)
- **Journal of Biogeography** Reviewer (2016)
- **Nature: Scientific Reports** Reviewer (2016)
- **Geology** Reviewer (2017)
- Data Refuge Madison (2017)
- Paleontological Society: Career and Mentoring Panelist (2017)
- EarthRates Community Priorities and Planning (2017)
- **PeerJ** Reviewer (2017)

Current Projects

- **Zaffos, A.**, Peters, S.E., and S.M. McMullen (*in preparation*). The dynamics of geographic range size over geologic timescales.
- McMullen, S.M., Peters, S.E., Weissman, G., and **A. Zaffos** (*in preparation*). Quality of the terrestrial mammalian fossil record.
- Ito, E.T., **Zaffos, A.**, and S.E. Peters (*in preparation*). The quality of the Paleobiology Database.
- **Zaffos, A.** (*in preparation*). Reassessing our expectations for modern and ancient marine latitudinal biodiversity gradients.

Field Experience

EXTANT

- | | | |
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| 2009 | Cape Hatteras-RV , Sampled deep-sea benthic foraminifera. | North Carolina |
| 2010 | Oceanus-RV , Sampled deep-sea benthic foraminifera. | Massachusetts |
| 2011 | St. Croix , Sampled live and sub-fossil assemblages in modern sea-grass habitats. | U.S. Virgin Islands |

CENOZOIC

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| 2008 | Coastal Plain , Sampled benthic marine assemblages in un-lithified siliciclastic beds of Miocene-Pliocene age. | Virginia |
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PALEOZOIC

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|------|---|-------------------------|
| 2009 | Cincinnati Arch , Sampled benthic marine assemblages in lithified Ordovician-Silurian limestones, dolostones, and shales. | Ohio, Kentucky, Indiana |
| 2012 | Northern Appalachian Basin , Sampled benthic marine assemblages in lithified Middle Devonian limestones, sandstones, and shales. | New York |