

## Shanan E. Peters

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### Education:

- Ph.D. The University of Chicago, Geology and Paleontology Dissertation: “Evenness, richness, and the Cambrian-Paleozoic faunal transition in North America” Advisor: Michael Foote
- B.S. Denison University, Geology and Biology, Honors, Summa Cum Laude  
Honors Thesis: “Paleoecology of the Waldron Shale (Wenlockian) of southeastern Indiana”  
Advisor: Kennard Bork

### Positions:

- 2015-pres. Dean L. Morgridge Professor, University of Wisconsin-Madison
- 2013-2015 Associate Professor, University of Wisconsin-Madison
- 2014.01-06 Visiting Blaustein Professor, Stanford University
- 2007-2013 Assistant Professor, University of Wisconsin-Madison
- 2006-2008 Research Associate, University of Michigan, Museum of Paleontology
- 2003-2006 Visiting Assistant Professor and Michigan Society Fellow, University of Michigan and University of Michigan Department of Geological Sciences and Museum of Paleontology

### Academic Honors and Awards:

- 2014 Paleontological Society Fellow
- 2014.10 Charles Schuchert Award, Paleontological Society
- 2014.01 Blaustein Fellowship, Stanford University, Dept. of Geological and Environmental Sci.
- 2012-14 Dean L. Morgridge Associate Professor of Geoscience
- 2012.07 NSF CAREER award
- 2010.10 2009 Best Paper Honorable Mention. Peters, S.E., et al. 2009. *Palaaios* 24:290-302.
- 2010.04 James Lee Wilson Medal, SEPM, Society for Sedimentary Geology
- 2007.12 Hodson Award, Palaeontological Association
- 1999 EPA STAR Graduate Fellowship
- 1999 NSF Graduate Fellowship
- 1998 Kirtly F. Mather Award for Excellence in the Geological Sciences, Denison University
- 1998 Phi Beta Kappa Inductee
- 1998 Sigma Xi Inductee

### Teaching Awards:

- Honored Instructor, University Housing, University of Wisconsin-Madison  
Fall Semester 2018, 2017, 2016, 2015, 2012, 2011, 2010  
Spring Semester 2016

### Publications:

Reviewed Research Articles: (reprints and links at <http://strata.geology.wisc.edu>, [Google Scholar](#))

61. Keller, C.B., J.M. Husson, R.N. Mitchell, W.F. Bottke, T.M. Gernon, P. Boehnke, E.A. Bell, N.L. Swanson-Hysell, S.E. Peters. 2019. Neoproterozoic glacial origin for the Great Unconformity. *Proc. Nat. Academy Sci. U.S.A.* 201804350. doi:pnas.1804350116
60. Keating-Bitonti, C.R., and S.E. Peters. 2019. Influence of increasing carbonate saturation in Atlantic bottom water during the late Miocene. *Palaeogeography, Palaeoclimatology, Palaeoecology*
59. Cohen, P.A., R. Lockwood, S.E. Peters. 2018. Integrating Macrostrat and Rockd into undergraduate Earth Science Teaching. *Elements of Paleontology* doi:10.1017/9781108681445
58. Linzmeier, B.J., N.H. Landman, S.E. Peters, R. Kozdon, K. Kitajima, J.W. Valley. 2018. Ion microprobe-measured stable isotope evidence for ammonite habitat and life mode during early ontogeny. *Paleobiology* doi:10.1017/pab.2018.21

57. Gee, C.T., P.M. Sanders, S.E. Peters, M.T. El-Hennawy, M.S.M. Antar, I.S. Zalmout, P.D. Gingerich. 2018. Fossil burrow assemblage, not mangrove roots: reinterpretation of the main whale-bearing layer in the late Eocene of Wadi Al-Hitan, Egypt. *Palaeodiversity and Palaeoenvironments*. doi:10.1007/s12549-018-0337-0
56. Husson, J.M., and S.E. Peters. 2018. Nature of the sedimentary rock record and its implications for Earth system evolution. *Emerging Topics in Life Sciences*. doi:10.1042/ETLS20170152
55. Peters, S.E., and J. Husson. 2018. We need a global comprehensive stratigraphic database: here's a start. *The Sedimentary Record* 16(1). doi:10.2110/sedred.2018.1
54. Peters, S.E., J.M. Husson, J. Czaplowski. 2018. Macrostrat: a platform for geological data integration and deep-time Earth crust research. *Geochemistry, Geophysics, Geosystems* 19:1393-1409 doi: 10.1029/2018GC007467
53. Zaffos, A., S. Finnegan, and S.E. Peters. 2017. Plate tectonic regulation of marine animal diversity. *Proc. Nat. Academy Sci. U.S.A.* 114(22):5653–5658 doi:10.1073/pnas.1702297114
52. Peters, S.E., J.M. Husson, J. Wilcots. 2017. Rise and fall of stromatolites in shallow marine environments. *Geology* 45:487-490 doi:10.1130/G38931.1
51. Peters, S.E., and J.M. Husson. 2017. Sediment cycling on continental and oceanic crust. *Geology* 45:323-326. doi:10.1130/G38861.1
50. Husson, J.M., S.E. Peters. 2017. Atmospheric oxygenation driven by unsteady growth of the continental sedimentary reservoir. *Earth and Planetary Science Letters* 460:68-75. doi:10.1016/j.epsl.2016.12.012
49. Linzmeier, B.J., R. Kozdon, S.E. Peters, J.W. Valley. 2016. Oxygen isotope variability within *Nautilus* shell growth bands. *PLoS One* 11(4):e0153890. doi:10.1371/journal.pone.0153890
48. Nelsen, M.P., W.A. DiMichele, S.E. Peters, C.K. Boyce. 2016. Delayed fungal evolution did not cause the Paleozoic peak in coal production. *Proc. Nat. Academy Sci. U.S.A.* 113: 2442-2447. doi:10.1073/pnas.1517943113.
47. Peters, S.E. and M. McClennen. 2016. The Paleobiology Database application programming interface. *Paleobiology* 27:1-7. doi: 10.1017/pab.2015.39
46. Fraass, A.J., D.C. Kelly, S.E. Peters. 2015. Macroevolutionary history of the planktic foraminifera. *Annual Review of Earth and Planetary Sciences* 43:5.1-5.28. doi:10.1146/annurev-earth-060614-105059.
45. Varela, S., J. González-Hernández, L. F. Sgarbi, C. Marshall, M.D. Uhen, S.Peters and M. McClennen. 2015. paleobioDB: an R-package for downloading, visualizing and processing data from the Paleobiology Database. *Ecography* 38:001-007. doi: 10.1111/ecog.01154
44. Peters, S.E. C. Zhang, M. Livny, and C. Ré. 2014. A machine reading system for assembling synthetic paleontological databases. *PLoS One* 9(12) e113523. doi: 10.1371/journal.pone.0113523
43. Fan, Y., S. Richard, R.S. Bristol, S.E. Peters, et al. 2014. DigitalCrust: A 4D data system of material properties for transforming research on crustal fluid flow. *Geofluids* doi: 10.1111/gfl.12114.
42. Zhang, C., V. Govindaraju, J. Borchardt, T. Foltz, C. Ré, S. Peters. 2013. GeoDeepDive: Statistical inference using familiar data-processing languages. ACM SIGMOD 2013, New York, New York.
41. Peters, S.E., D.C. Kelly, and A. Fraass. 2013. Oceanographic controls on the diversity and extinction of planktonic foraminifera. *Nature* 493:398-401. doi:10.1038/nature11815.
40. Stowe, K.A., C.G. Hochwender, K. Fleck, N. Duvall, D. Lewkiewicz, S. Trimble, S. Peters. 2013. Costs of glucosinolates in *Brassica rapa*: Are they context dependent? *Open Journal of Ecology* 3:185-195. doi: 10.4236/oje.2013.32022.
39. Aswasereelert, W., S.R. Meyers, A.R. Carroll, S.E. Peters, M.E. Smith, and K.L. Feigl. 2013. Basin-scale cyclostratigraphy of the Green River Formation, Wyoming. *GSA Bulletin* 125:216-228. doi:10.1130/B30541.1.
38. Halevy, I., S.E. Peters, and W.W. Fischer. 2012. Sulfate burial constraints on the Phanerozoic sulfur cycle. *Science* 337:331-334. doi:10.1126/science.1220224.
37. Peters, S.E. and R.R. Gaines. 2012. Formation of the 'Great Unconformity' as a trigger for the Cambrian Explosion. *Nature* 484:363-366. doi:10.1038/nature10969.
36. Finnegan, S. N.A Heim, S.E. Peters, and W.W. Fischer. 2012. Climate change and the selective signature of the Late Ordovician mass extinction. *Proceedings of the National Academy of Sciences U.S.A.* 109(18):6829–6834. doi:10.1073/pnas.1117039109.
35. Peters, S.E. and D.P. Loss. 2012. Storm and fair-weather wave bases: a relevant distinction? *Geology* 40:511-514. doi: 10.1130/G32791.1

34. Gingerich, P.D., I.S. Zalmout, M.S.M. Antar, E.M. Williams, A.E. Carlson, D.C. Kelly, and S.E. Peters. 2012. Reply: Large-scale glaciation and deglaciation of Antarctica during the late Eocene. *Geology* 40:E255. doi:10.1130/G33046Y.1.
33. Hannisdal, B. and S.E. Peters. 2011. Phanerozoic Earth system evolution and marine biodiversity. *Science* 334:1121-1124. doi: 10.1126/science.1210695.
32. Peters, S.E. and N.A. Heim. 2011. Macrostratigraphy and macroevolution in marine environments: testing the common-cause hypothesis. In, A. McGowan and A.B. Smith, eds. Comparing the geologic and fossil records: implications for biodiversity studies. *Special Publication of the Geological Society of London* 358:95-104. doi: 10.1144/SP358.7
31. Crampton, J.S., M. Foote, R.A. Cooper, A.G. Beu, and S.E. Peters. 2011. The fossil record and spatial structuring of environments and biodiversity in the Cenozoic of New Zealand. In, A. McGowan and A.B. Smith, eds. Comparing the geologic and fossil records: implications for biodiversity studies. *Special Publication of the Geological Society of London* 358:105-122. doi: 10.1144/SP358.8.
30. Finnegan, S., S.E. Peters, and W.W. Fischer. 2011. Late Ordovician-Early Silurian selective extinction patterns in Laurentia and their relationship to climate change. In J.C. Gutiérrez-Marco, I. Rábano, and D. García-Bellido, eds. Ordovician of the World. *Cuadernos del Museo Geominera* 14:155-159.
29. Heim, N.A. and S.E. Peters. 2011. Regional environmental breadth predicts geographic range and longevity in fossil marine genera. *PLoS One* 6:(5) e18946; doi:10.1371/journal.pone.0018946
28. Peters, S.E., and N.A. Heim. 2011. Stratigraphic distribution of marine fossils in North America. *Geology* 39:259-262; doi: 10.1130/G31442.1.
27. Meyers, S.R. and S.E. Peters. 2011. A 56 million year rhythm in North American sedimentation during the Phanerozoic. *Earth and Planetary Science Letters* 303:174-180. doi:10.1016/j.epsl.2010.12.044
26. Heim, N.A. and S.E. Peters. 2011. Covariation in macrostratigraphic and macroevolutionary patterns in the marine record of North America. *GSA Bulletin* 123:620-630.
25. Peters, S.E., A.E. Carlson, D.C. Kelly, and P.D. Gingerich. 2010. Large-scale glaciation and deglaciation of Antarctica during the late Eocene. *Geology* 38:723-726.
24. Wilson, J.A., D.M. Mohabey, S.E. Peters, and J.J. Head. 2010. Predation upon hatchling dinosaurs by a new snake from the Late Cretaceous of India. *PLoS Biology* 8(3).
23. Hannisdal, B.J., and S.E. Peters. 2010. On the relationship between macrostratigraphy and geological processes: quantitative information capture and sampling robustness. *The Journal of Geology* 118:111-130.
22. Peters, S.E., and N.A. Heim. 2010. The geologic completeness of paleontological sampling in North America. *Paleobiology* 36:61-79.
21. Adrain, J.M., S.E. Peters, S.R. Westrop. 2009. The Marjuman (Upper Cambrian) trilobite *Cedarina* Lochman: thoracic morphology, systematics, and new species from western Utah and eastern Nevada, USA. *Zootaxa* 2218:35-58.
20. Wilkinson, B.H., B.J. McElroy, S.E. Kesler, S.E. Peters, and E.D. Rothman. 2009. Global geologic maps are tectonic speedometers—rates of rock cycling from area-age frequencies. *Geological Society of America Bulletin* 121:760-779.
19. Peters, S.E., M.S. Antar, I.S. Zalmout, P.D. Gingerich. 2009. Sequence stratigraphic control on preservation of late Eocene whales and other vertebrates at Wadi Al-Hitan, Egypt. *Palaios* 24:290-302.
18. Peters, S.E. 2008. Macrostratigraphy and its promise for paleobiology. Pp. 205-232 in P.H. Kelley and R.K. Bambach, eds. From evolution to geobiology: research questions driving paleontology at the start of a new century. *The Paleontological Society Papers*, Vol. 14.
17. Peters, S.E. 2008. Environmental determinants of extinction selectivity in the fossil record. *Nature* 454:626-629.
16. Alroy, J., M. Aberhan, D.J. Bottjer, M. Foote, F.T. Fürsich, P.J. Harries, A.J.W. Hendy, S.M. Holland, S.C. Ivany, W. Kiessling, M.A. Kosnik, C.R. Marshall, A.J. McGowan, A.I. Miller, T.D. Olszewski, M.E. Patzkowsky, S.E. Peters, L. Villier, P.J. Wager, N. Bonuso, P.S. Borkow, B. Brenneis, M.E. Clapham, L.M. Fall, C.A. Ferguson, V.L. Hanson, A.Z. Krug, K.M. Layou, E.H. Leckey, S. Nürnberg, C.M. Powers, J.A. Sessa, C. Simpson, A. Tomasovych, C.C. Visaggi. 2008. Phanerozoic trends in the global diversity of marine invertebrates. *Science* 321:97-100.
15. Peters, S.E. and W.I. Ausich. 2008. A sampling-adjusted macroevolutionary history for Ordovician-Early Silurian crinoids. *Paleobiology* 34:104-116.
14. Peters, S.E. 2007. The problem with the Paleozoic. *Paleobiology* 33:165:181.

13. Bailey, C.M., S.E. Peters, J. Morton, N.L. Shotwell. 2007. The Mechum River Formation, Virginia Blue Ridge: A record of Neoproterozoic and Paleozoic tectonics in southeastern Laurentia. *American Journal of Science* 307:1-22.
12. Peters, S.E. 2006. Genus richness in Cambrian-Ordovician benthic marine communities in North America. *Palaios* 21:580-587.
11. Peters, S.E. 2006. Genus extinction, origination and the durations of sedimentary hiatuses. *Paleobiology* 32:387-407.
10. Peters, S.E. 2006. Macrostratigraphy of North America. *Journal of Geology* 114:391-412.
9. Peters, S.E. 2005. Geologic constraints on the macroevolutionary history of marine animals. *Proceedings of the National Academy of Sciences U.S.A.* 102:12326-12331.
8. Ausich, W.I, and S.E. Peters. 2005. A revised macroevolutionary history for Ordovician-Early Silurian crinoids. *Paleobiology* 31:538-551.
7. Peters, S.E. 2004. Relative abundance of Sepkoski's evolutionary faunas in Cambrian-Ordovician deep subtidal environments in North America. *Paleobiology* 30:543-560.
6. Peters, S.E. 2004. Evenness of Cambrian-Ordovician benthic marine communities in North America. *Paleobiology* 30:325-346.
5. Peters, S.E. and M. Foote. 2002. Determinants of extinction in the fossil record. *Nature* 416:420-424.
4. Peters, S.E. and M. Foote. 2001. Biodiversity in the Phanerozoic: a reinterpretation. *Paleobiology* 27:583-601.
3. Peters, S.E., and K.B. Bork. 1999. Species abundance models: an ecological approach to inferring paleoenvironment and resolving paleoecological change in the Waldron Shale (Silurian). *Palaios* 14:234-245.
2. Peters, S.E., and K.B. Bork. 1998. Secondary tiering on crinoids from the Waldron Shale (Silurian: Wenlockian) of Indiana. *Journal of Paleontology* 32:887-894.
1. Bailey, C.M., and S.E. Peters. 1998. Glacially influenced sedimentation in the Late Neoproterozoic Mechum River Formation, Blue Ridge province, Virginia. *Geology* 26:623-626.

#### Other Publications:

14. Park Boush, L., K. Lehnert, A. Myrbo, A. Noren, S. Peters, B. Singer, J. Williams. 2017. What's Your Delta? EarthRates--A New NSF Funded Research Coordination Network for Linking Scales Across the Sedimentary Crust. *The Sedimentary Record* 15(4):4-8. doi:10.2110/sedred.2017.4
13. Peters, S.E., I. Ross, J. Czaplowski, A. Glassel, J. Husson, V. Syverson, A. Zaffos, and M. Livny. 2017. A new tool for deep-down data mining. *Eos*, 98, <https://doi.org/10.1029/2017EO082377>
12. Chan, M.A., S.E. Peters, B. Tikoff. 2016. The future of field geology, open data sharing, and cybertechnology in Earth science. *The Sedimentary Record* 14:4-10.
11. Peters, S.E. C. Zhang, M. Livny, and C. Ré. 2014. A machine-compiled macroevolutionary history of Phanerozoic life. *ArXiv Preprint*:1406.2963.
10. Peters, S.E., C. Ré, M. Livny, C. Zhang, V. Govindarau, M. McClennen, J.J. Czaplowski. 2014. Brining paleontology's "dark data" to light. *The Paleontological Society Special Publications* 13:4-6.
9. Noren, A., J. Brigham-Grette, K. Lehnert, S. Peters, J. Williams, E. Ito, D. Anderson, E. Grimm. 2014. Cyberinfrastructure for paleogeoscience. Pp 50-56 In A.S. Cohen and D.M. Zur. *Continental Scientific Drilling WorkshopSeries: Report 2013*.
8. Peters, S.E. 2014. The Paleobiology Database Release PBDB Navigator. *Priscum* 21(1):1-2.
7. Gaines, R.R. and S.E. Peters. 2013. The geological mystery that triggered animal evolution. *New Scientist* 218:30-31.
6. Peters, S.E. 2013. Back to bedrock for paleobiology. *Trends in Ecology and Evolution* 28:452-453. doi: 10.1016/j.tree.20013.01.020.
5. Gurnis, M., L. Flesch, D. Okaya, S. Peters, D. Walker, T. Ahern, F. Boler, R. Arrowsmith. 2012. A preliminary strategic plan for EarthScope cyberinfrastructure. EarthScope Cyberinfrastructure Subcommittee White Paper Report.
4. Peters, S.E., M. Livny, K. Squire, J. Williams, B. Hibbard, P. Kishor, P. McLaughlin, S. Millar, T. Whittaker, N. Wiegand, and T. Millar. 2011. Towards a new distributed platform for integrative geoscience: an EarthCube design approach and prototype plan. NSF EarthCube white paper report.

3. Gurnis, M., L. Flesch, D. Okaya, S. Peters, D. Walker, T. Ahern, and F. Boler. 2011. EarthCube lessons, opportunities and challenges from EarthScope. NSF EarthCube white paper report.
2. Gurnis, M., S.E. Peters, and M. Huber. 2011. Paleogeographic and plate tectonic reconstructions: critical components linking the evolution of the solid, fluid, and living Earths. NSF EarthCube white paper report.
1. Peters, S.E. 2008. A geologist questions a grand theory. *Nature* 456:5.

**Professional Meeting Abstracts (partial list):**

95. Barnes, B.D., J. Zambito, S.E. Peters. 2017. A multi-proxy geochemical approach to identifying the Hangenberg crisis in the Bakken Formation, Williston Basin, USA. Geological Society of America Abstracts 48.
94. Sliwinski, M., A. Ishida, K. Kitajima, B.C. Schreiber, A. Denny, B. Barnes, M. J. Spicuzza, S.E. Peters, J.W. Valley. 2017. Beyond conventional: gleaning deeper insights into dolomitization of the Bakken petroleum system through in-situ c- and o-isotope microanalysis. Geological Society of America Abstracts 48.
93. Peters, S.E., V.J.P. Syverson, A. Zaffos, J. Husson, I. Ross, J. Czaplewski. 2017. Extending the reach and resolution of the Paleobiology Database with computational and data infrastructures. Geological Society of America Abstracts 48.
92. Linzmeier, B.J., N.H. Landman, J.A. Sessa, S.E. Peters, I.J. Orland, K. Kitajima, R. Kozdon, J.W. Valley. 2017. Using in situ geochemistry to investigate the depth habitat of ammonites. Geological Society of America Abstracts 48.
91. Syverson, V., and S.E. Peters. 2017. The quantitative footprint of natural history collections and specimens in the scientific literature. Geological Society of America Abstracts 48.
90. 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 48.
89. Peters, S.E., and J.J. Czaplewski. 2017. Macrostrat: an integrative environment for leveraging geological maps and linked data resources. Geological Society of America Abstracts 48.
88. Peters, S.E. and J.J. Czaplewski. 2017. Leveraging geologic maps in a multi-scale interactive environment. USGS-AASG Digital Mapping Techniques Workshop Series. Minneapolis.
87. 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, Ann Arbor, MI.
86. Husson, J.M. and S.E. Peters. 2016. Shifting locus of carbonate sedimentation and the trajectory of Paleozoic pCO<sub>2</sub>. AGU Fall Meeting, San Francisco.
85. Peters, S.E., J.M. Husson, I. Ross, J.J. Czaplewski. 2016. Macrostrat and GeoDeepDive: a platform for geological data integration and deep-time research. AGU Fall Meeting, San Francisco.
84. Liu, C., S.E. Peters, I. Ross, J.J. Golden, R.T. Downs, R.M. Hazen. 2016. Reconstructing the evolution of first-row transition metal minerals by GeoDeepDive. AGU Fall Meeting, San Francisco.
83. Zaffos, A., S.E. Peters, and S. Finnegan. 2016. Plate-tectonic regulation of biodiversity and continental endemism. Geological Society of America Abstracts with Programs 48:7. doi: 10.1130/abs/2016AM-283298
82. Linzmeier, B.J., J.A. Sessa, I.J. Orland, N.H. Landman, S.E. Peters, J.W. Valley. 2016. Stable isotope investigation of early ontogeny in Upper Cretaceous Owl Creek Formation ammonites. Geological Society of America Abstracts with Programs. 48:7. doi: 10.1130/abs/2016AM-286961
81. Linzmeier, B.J., J.A. Sessa, I.J. Orland, N.H. Landman, S.E. Peters, J.W. Valley. 2016. Stable isotope investigation of early ontogeny in Upper Cretaceous Owl Creek Formation ammonites. Geological Society of America Abstracts 48(7).
80. Husson, J., S.E. Peters. 2015. Modes of continental sediment storage and the history of atmospheric oxygen. AGU Fall Meeting, San Francisco.
79. Peters, S.E., M. Livny, I. Ross, J. Husson. 2015. GeoDeepDive: towards a machine reading-ready digital library and information integration resource. AGU Fall Meeting, San Francisco.
78. Peters, S.E., J. Husson. 2015. Phanerozoic growth of the epicontinental sedimentary reservoir: implications for long-term sea level change. AGU Fall Meeting, San Francisco.
77. Wilcots, J., J. Husson, S.E. Peters. 2015. Stromatolite distribution in space and time: a machine-reading assisted quantitative analysis. Geological Society of America Abstracts 47.
76. Peters, S.E., J. Husson, R.R. Gaines. 2015. A great divide: the physical stratigraphic record of earth systems changes at the dawn of animals. Geological Society of America Abstracts 47.
75. Peters, S.E., C. Zhang, I. Ross, M. Livny. 2015. PaleoDeepDive: towards an automated system for paleontological data discovery and retrieval from the published literature. Geological Society of America Abstracts 47.
74. Zaffos, A., S.E. Peters, S. McMullen. 2015. Empirical patterns of geographic range size expansion and contraction in marine invertebrates and terrestrial mammals are well predicted by a random walk. Geol. Soc. of America Abstracts 47
73. Husson, J., and S.E. Peters. 2015. Macrostratigraphic constraints on the global carbon cycle. Geol. Soc. Am. Abs. 47.
72. Peters, S.E. Preliminary macrostratigraphic analysis of Precambrian sedimentation in Laurentia. Strati2015, Graz.
71. Zaffos, A., S.E. Peters, J. Husson, J. Czaplewski. 2015. A comparative estimate of different biodiversity curves and comments on the link between rock availability and biodiversity. Geological Society of America North Central Section.
70. Husson, J., S.E. Peters, J. Czaplewski. 2015. Macrostratigraphic constraints on the global carbon cycle. Geological Society of America North Central Section.

69. Peters, S.E., J. Husson, J. Czaplewski, A. Zaffos. 2015. Macrostrat: towards a common data infrastructure to support deep time Earth systems science. Geological Society of America North Central Section.
68. Boyce, K.C. and S.E. Peters. 2014. Fungal evolution is not relevant to the Carboniferous peak in coal deposition. Geological Society of America Abstracts 46(6).
67. Haddad, E., S. Finnegan, S.E. Peters. 2014. Selective survivorship in the Late Devonian: insights into extinction drivers from integrated analysis of macroevolutionary and macrostratigraphic patterns. Geological Society of America 46(6).
66. Peters, S.E., J. Czaplewski, and S. Finnegan. 2014. Paleogeographic boundary conditions for Phanerozoic biodiversity analysis: a quantitative framework. Geological Society of America Abstracts 46(6).
65. Peters, S.E. and D.B. Rowley. 2013. The present-day elevations of ancient marine shelf sediments and long-term rates of sediment accumulation. Geological Society of America Abstracts 45(7).
64. Turner, M. M. Gurnis, J. Cannon, X. Qin, S.E. Peters, P. Kishor, J. Czaplewski. 2013. Cyberinfrastructure for plate tectonic reconstructions. Geological Society of America Abstracts 45(7).
63. Gaines, R.R., S.E. Peters, E. Hammarlund, D.E.G. Briggs, C. Qi, X. Hou, S.E. Gabbot, D.E. Canfield. 2013. The Early Phanerozoic 'taphonomic window.' Geological Society of America Abstracts 45(7).
62. Heim, N.A., S.E. Peters, J.L. Payne, J. Saltzman. 2013. The role of paleogeographic data services in improving paleobiological education and research. Geological Society of America Abstracts 45(7).
61. Linzmeier, B., N. H. Landman, R. Kozdon, S.E. Peters. 2013. Oxygen isotope evidence of habitat change during early ontogeny in Cretaceous *Hoploscaphites*. Geological Society of America Abstracts 45(7).
60. Gaines, R. and S.E. Peters. 2013. Transient ocean chemistry during the Cambrian Explosion. Geol. Soc. Lyell Meeting.
59. Kishor, P., N. Heim, S.E. Peters and M. McClennen. 2012. Earth-Base: a free and open source, RESTful Earth sciences platform. Fall Meeting AGU.
58. Heim, N.A., P. Kishor, M. McClennen and S.E. Peters. 2012. Earth-Base: testing the temporal congruency of paleontological collections and geologic maps of North America. Fall Meeting AGU.
57. Metcalfe, K.S., R.R. Gaines, and S.E. Peters. 2012. Evidence for elevated flux of iron to the early Phanerozoic ocean. Geological Society of America Abstracts 44.
56. Gaines, R.R. and S.E. Peters. 2012. Strange brew: pervasive patterns of unusual chemical sedimentation and transient ocean chemistry at the dawn of the Phanerozoic. Geological Society of America Abstracts 44.
55. Peters, S.E. and N.A. Heim. 2012. Identifying stratigraphic cyclicity at the scale of continents and basins. Geological Society of America Abstracts 44.
54. Heim, N.A., and S.E. Peters. 2012. There is no Phanerozoic rock record bias. Geological Society of Am. Abstracts 44.
53. Foltz, T., J. Borchardt, and S.E. Peters. 2012. Stratigraphic covariation in carbonate sedimentology and stable carbon isotopes: evidence for sea level-linked carbon cycling during the Sauk Transgression? Geological Society of America Abstracts 44.
52. Tofte, M., S.E. Peters, and R.R. Gaines. 2012. Sedimentary petrology of the Sauk Sequence on the transcontinental arch: testing the smoking GUn. Geological Society of America Abstracts 44.
51. Halevy, I., S.E. Peters, and W. Fischer. 2012. Stratigraphic constraints on critical fluxes in the Phanerozoic sulfur cycle. Goldschmidt Conference Abstracts.
50. Doebbert, A., T. Lamaskin, S.E. Peters, S.R. Meyers, and A. Carroll. 2011. A new confidence-limits based method for comparing detrital zircon U-Pb age distributions. Geological Society of America Abstracts Abstracts 43.
49. Finnegan, S., S.E. Peters, N.A. Heim, and W.W. Fischer. 2011. Macrostratigraphic and macroecological determinants of extinction risk during the Ordovician mass extinction. Geological Society of America Abstracts Abstracts 43.
48. Heim, N.A., D. Rook, and S.E. Peters. 2011. Macrostratigraphy and the non-marine fossil record of North America. Geological Society of America Abstracts 43.
47. Peters, S.E. 2011. Macrostratigraphy: a quantitative framework for testing the causes and consequences of mass extinctions. Geological Society of America Abstracts 43.
46. Hannisdal, B. and S.E. Peters. 2011. Phanerozoic Earth system evolution and marine biodiversity. Geological Society of America Abstracts 43.
45. Peters, S.E. and R.R. Gaines. 2011. The Great Unconformity: a smoking GUn for the Cambrian Explosion? Geological Society of America Abstracts 43.
44. Gaines, R.R. and S.E. Peters. 2011. Seawater chemistry and the decline of Burgess Shale-type preservation. Geological Society of America Abstracts 43.
43. Finnegan, S., S.E. Peters, and W.W. Fischer. 2011. Late Ordovician-Early Silurian selective extinction patterns in Laurentia and their relationship to climate change. 11th. Intl. Symp. on the Ordovician System.
42. Rook, D.L., N.A. Heim, J. Marcot, and S.E. Peters. 2011. Contrasting patterns of rock and biotic diversity in the marine and terrestrial fossil records of North America. Society of Vertebrate Paleo. Annual Meeting.
41. Crampton, J.S., M. Foote, R.A. Cooper, A.G. Beu, and S.E. Peters. 2010. Fossil biases and biodiversity: common cause role of spatial structuring. Geoscience Society of New Zealand Misc. Pub. 129, 74.
40. Fraass, A., S.E. Peters, and D.C. Kelly. 2010. Statistical evidence for selectivity in the planktic foraminifera. International Symposium on Foraminifera Abstracts Volume with Program, p. 86-87.
39. Loss, D.P., and S.E. Peters. 2010. Storm and normal wavebases: a relevant distinction? GSA Abstracts 42.

38. Rook, D.L., N.A. Heim, and S.E. Peters. 2010. What are we missing? Geological completeness of paleontological sampling in the terrestrial Cenozoic of North America. Society of Vertebrate Paleontology Annual Meeting Abstracts with Programs.
37. Meyers, S.R. and S.E. Peters. 2010. A 56 million year rhythm in North American sedimentation during the Phanerozoic. Geological Society of America Abstracts 42(5).
36. Heim, N.A., and S.E. Peters. 2010. Global distribution predicts regional geographic range and longevity in marine genera of North America. Geological Society of America Abstracts 42(5).
35. Keating-Bitonti, C., D.C. Kelly, S.E. Peters, and K. Billups. 2010. Influence of North Atlantic deep water on global carbon cycling during the Late Miocene. Geological Society of America Abstracts 42(5).
34. Fraass, A.J. and S.E. Peters. 2010. Statistical evidence for selectivity in the planktic foraminifera. Geological Society of America Abstracts 42(5).
33. Peters, S.E., D.C. Kelly, and A. Fraass. 2010. Deep-sea macrostratigraphy and the macroevolution of planktic foraminifera. Geological Society of America Abstracts 42(5).
32. Linzmeier, B., S.E. Peters, R. Kozdon, R. H. Mapes, and J.W. Valley. 2010. Resolving depth migration in *Nautilus macromphalus* by ion microprobe analysis of  $\delta^{18}\text{O}$ . Geological Society of America Abstracts 42(5).
31. Peters, S.E. 2010. Macrostratigraphy and macroevolution in marine environments: testing the common-cause hypothesis. Lyell Symposium, IPC, London (invited keynote address).
30. Peters, S.E., and N.A. Heim. 2009. The stratigraphic distribution of fossils within gap-bound sedimentary rock packages. Geological Society of America Abstracts with Programs 41.
29. Peters, S.E., and N.A. Heim. 2009. The geological completeness of paleontological sampling in North America. North American Paleontological Convention Abstracts with Programs 41.
28. Heim, N.A., and S.E. Peters. 2009. Macrostratigraphy and the North American Fossil Record: The Stratigraphic Distribution of Fossils within Gap-Bound Sediment Packages. N. American Paleontol. Conv.
27. Frass, A., D.C. Kelly, and S.E. Peters. 2009. Macroevolution of the planktonic foraminifera. North American Paleontological Convention Abstracts with Programs.
26. McLaughlin, P.I., S.E. Peters, and N. Emerson. 2009. Stratapendium, a community-based, interactive web archive for geological data. GSA Abstracts with Programs v. 41(4).
25. Peters, S.E. and N.A. Heim. 2009. Macrostratigraphy and the North American fossil record: rocks and fossils in time and space. GSA Abstracts with Programs v. 44(4).
24. Wasereelert, W. S.E. Peters, K. L. Feigl, and A. R. Carroll. 2008. Macrostratigraphy of the Lacustrine Wilkins Peak Member, Green River Formation, WY, USA. GSA Abstract with Programs 40.
23. Peters, S.E. 2007. Are Sepkoski's evolutionary faunas evolutionary lithofacies? GSA Abstracts Programs.
22. Peters, S.E. and B. Hannisdal. 2007. The effect of depositional sequence asymmetry on origination and extinction rates: insights from modeling. Geological Society of America Abstracts with Programs 39.
21. Ausich, W.I. and S.E. Peters. 2007. Standardized sampling of Ordovician-Early Silurian crinoids: macroevolution and the end-Ordovician extinctions. Geological Society of America Abstracts Programs 39.
20. Abrajvitch, A., B. Oliva, S. Peters, A. Beehr, and R. Van der Voo. 2006. Paleomagnetic results from Late Pennsylvanian marls and Early Permian red paleosols of the Dunkard Group, Ohio and West Virginia, U.S.A. American Geophysical Union Fall Meeting.
19. Peters, S.E. and M. Foote. 2006. Carbonates, siliciclastics and the evolution of faunal composition. Second International Paleontological Congress Proceedings, Beijing.
18. Ausich, W.I. and S.E. Peters 2006. Ordovician crinoid faunas from Ohio. GSA Abstracts with Programs 38.
17. Peters, S.E. 2005. Closing the gap: mass extinctions and the durations of sedimentary hiatuses. GSA Abstracts with Programs 36.
16. Wall, P. D., L. C. Ivany, B. H. Wilkinson, and S. Peters. 2005. The effect of sedimentary rock outcrop area on estimates of marine Phanerozoic diversity. GSA Abstracts with Programs 36.
15. Ausich, W.I., W. Kammer, and S.E. Peters. 2005. Data accuracy for geoinformatics: the state of taxonomic databases and the need for protocols. NAPC, Nova Scotia.
14. Peters, S.E. 2004. New quantitative analyses of the stratigraphic record: implications for paleobiology. GSA Abstracts with Programs 35.
13. Ausich, W.I. and S.E. Peters. 2004. New and refined data on Ordovician to Early Silurian crinoids yield a revised macroevolutionary history. GSA with Programs 35.
12. Peters, S.E. 2003. Recognized globally, manifested locally: Sepkoski's evolutionary faunas in North American Cambrian-Ordovician benthic assemblages. GSA Abstracts with Programs 35.
11. Peters, S.E. 2002. Evenness, richness, and the Cm-Pz faunal transition. GSA Abstracts Programs 34.
10. Peters, S.E. 2001. The evenness and richness components of taxonomic diversity. GSA Abstracts 33.
9. Peters, S.E. and M. Foote. 2001. Large-scale heterogeneity in the stratigraphic record: a significant source of bias in global diversity estimates. *Paleobios* 21 supplement to no. 2, p.102.
8. Hochwender, C. G., K.A. Stowe, S. Trimble, and S. Peters. 1998. Benefit and cost of defense in *Brassica rapa*. Ecological Society of America Annual Meeting Abstracts, p.71.

7. Bailey, C.M, and S.E. Peters. 1997. Structure and depositional setting of the late Neoproterozoic Mechum River Formation, Blue Ridge Province, VA. Geological Society of America Abstracts with Programs, 9:3.
6. Peters, S.E., and K.B. Bork. 1997. Fresh-water arthropods and Neuropteris preserved in ironstone concretions: A new lagerstätte from the Permian of Ohio. The Ohio Journal of Science vol. 97, no. 2, p. 39.
5. Peters, S.E., and K.B. Bork. 1997. Hitch-hiking in Silurian seas: well preserved crinoids and associated epibionts from the Waldron Shale (Silurian; Wenlockian) of southeastern Indiana. Geological Society of America Abstracts with Programs vol 29, no. 4.
4. Peters, S.E. 1996. Paleocological succession in the Waldron Shale. Ohio Journal of Science vol. 96, no. 2.
3. Peters, S.E. 1995. Cornulitid occurrences on *Paraspirifer bownockeri*: implications for Spiriferacea current-systems. Geological Society of America Abstracts with Programs vol. 27, no. 7, p. 382.
2. Peters, S.E. 1995. Morphologic variation in the cornulitids from the Waldron and Silica Shales. The Ohio Journal of Science vol. 95, no. 2, p. 28.
1. Peters, S.E. 1994. Cornulitids from the Waldron and Silica Shales: polyphyletic or diverse epizoans. Geological Society of America Abstracts with Programs vol. 26, no. 7, p. 487.

#### **Databases and Software Infrastructure:**

1. Macrostrat (<https://macrostrat.org>): a relational geospatial database describing rocks and sediments in Earth's upper crust.
2. Czaplewski, J.J. and S.E. Peters. 2016. Rockd (<https://rockd.org>): a mobile application for field-based geological observation and discovery.
3. GeoDeepDive (<https://geodeepdive.org>): a digital library and machine reading system designed to enable algorithmic location and extraction of data in the published scientific literature.
4. Friends of the U. of Michigan Museum of Paleontology Archive (<http://michiganbasinfossils.org>)
5. Paleobiology Database lead of IT team (<https://paleobiodb.org>)
6. Sepkoski's Online Genus Database (<http://strata.geology.wisc.edu/jack>)

#### **Research Grants and Fellowships (PI and Co-PI status):**

- |         |  |
|---------|--|
| 2018-19 | DARPA-PA-18-02-AIE-FP-019 "Curating Earth systems models from scientific publications", PI (Co-PIs Rekatsinas, Livny; Computer Science)  |
| 2017-20 | NSF EarthCube-1740694: "Collaborative Proposal: EarthCube Integration: Geochronology Frontier at the Laboratory-Cyberinformatics Interface," Co-P.I.                                 |
| 2015-17 | NSF "Collaborative Research: ABI Development: Building Interoperable Cyberinfrastructure at the Interface between Paleogeoinformatics and Bioinformatics". Co-P.I.                   |
| 2014-17 | NSF ICER-1440312: "EarthCube Building Blocks: Collaborative Proposal: Digital Crust – A 4D Exploratory Environment for Earth Science Research and Learning." Co-P.I.                 |
| 2013-18 | NSF ACI-1343760: "EarthCube Building Blocks: A Cognitive Computer Infrastructure to Support Geoscience," P.I.  |
| 2012-13 | NSF "EAGER COLLABORATIVE: Bringing Together Computational and Linguistic Methods to Extract 'Dark' Geosciences Data for the EarthCube Framework." Co-P.I.                            |
| 2012-13 | NSF "EAGER: Service-based integration platform for EarthCube." Co-P.I.   |
| 2012-19 | NSF EAR-1150082 "CAREER: Towards a high-resolution quantification of the N. American rock record: leveraging field data, citizen science, and education for macrostratigraphy." P.I. |
| 2010-16 | NSF EAR-0949416 Geoinformatics: "Leveraging the PaleoDB for Research, Education, Mentorship, and Interoperability." P.I.   |
| 2008-11 | NSF, EAR-0819931 Sedimentary Geology and Paleobiology: "Macrostratigraphy and macroevolution in N. America: a test of the common cause hypothesis." P.I.                             |
| 2008-10 | USGS Contract Award: "Macrostratigraphy of North America." P.I.  |
| 2008-09 | UW-Extension Innovation grant  |
| 2007-09 | American Chemical Society Petroleum Research Fund Research Grant – Type G "A section-based approach to quantifying the geologic record." P.I.  |
| 2006-07 | NSF EAR-0544941 Sedimentary Geology and Paleobiology "Constraining geological and macroevolutionary patterns & processes in the Phanerozoic", P.I.                                   |
| 2003-06 | Michigan Society of Fellows Postdoctoral Fellowship  |
| 2003    | Ohio State University Postdoctoral Fellowship (declined)   |
| 2002    | Doolittle Research Grant, University of Chicago  |
| 2000    | Paleontological Society Grant-in-Aid of Student Research   |
| 2000    | Sigma Xi Grant-in-Aid of Research  |



2000 Hinds Fund Research Grant, The University of Chicago  
 1999-02 U.S. Environmental Protection Agency, Science To Achieve Results Graduate Fellowship  
 1999 National Science Foundation, Graduate Fellowship (declined)  
 1997 Denison University Research Fund Grant award  
 1994-98 Denison University Faculty Full Scholarship for Achievement

**Invited Symposia Keynotes and Lectures (selected):**

2019.02.25 Harvard University EPS Lecture  
 2018.11.04 Pardee Keynote Symposium, Geological Society of America, Indianapolis  
 2018.05.07 GFZ Potsdam Lecture  
 2018.05.02 British Geological Survey Lecture  
 2018.06.06 Invited talk: 4D Workshop: Deep-time Data Driven Discovery and the Evolution of Earth, D.C.  
 2017.10.25 Pardee Keynote Symposium, Geological Society of America, Seattle  
 2017.08.24 Halliburton STEPS Distinguished Lecture, Houston TX  
 2017.02.23 Continental Margins II Lecture, Rice Univ. (<http://earthscience.rice.edu/iress/>)  
 2016.03.09 Lyell Symposium lecture, London, UK  
 2016.02.04 Gordon Research Conference: Geobiology, Galveston, TX  
 2015.11.02 Pardee Keynote Symposium, Geological Society of America, Baltimore  
 2014.12.10 Keynote Address, Deep-Time Data Workshop, San Francisco, CA  
 2014.02.15 Keynote Address, North American Paleontological Convention, Gainesville, FL  
 2013.05.14 EarthScope National Meeting Plenary Talk  
 2011.10.01 Keynote, multidisciplinary approaches to mass extinctions, GSA national meeting, Minneapolis  
 2010.06.30 Keynote Lecture, Lyell Symposium, International Palaeontological Congress, London  
 2010.05.15 Yale University, Frontiers in Paleontology and Geomicrobiology Lecture  
 2007.10.01 Natural History Museum, London, First Inaugural Earth Perspectives Lecture Keynote Address

**University and Professional Service (selected):**

2016-pres Dept. of Geoscience Council  
 2015-pres AGU IT Advisory Task Force  
 2015-pres UW-Madison Center for Climatic Research Core Member  
 2015-pres Faculty Senator (alternate)  
 2013-pres Paleobiology Database IT lead  
 2016-18 Office of the Vice Chancellor for Research & Graduate Education Fall Competition Committee  
 2015-18 North American Commission on Stratigraphic Nomenclature, GSA Representative  
 2016-2017 Undergraduate Committee Chair  
 2015 SEPM Ballot Committee  
 2011-2015 EarthScope Cyberinfrastructure subcommittee  
 2013.10 Co-Organizer, Geochronology EarthCube Domain Workshop  
 2013.02 Steering Committee, Paleogeosciences EarthCube Domain Workshop  
 2011-2013 STEPPE Advisory Committee, Director Search Committee  
 2010-2013 Advisor, Student PaleoClub, Dept. Geoscience, UW-Madison  
 2004-2007 Editor, *Paleobiology Matters of the Record*  
 2004-2006 University of Michigan Distinguished Dissertation Awards selection committee

**Courses Regularly Taught:**

Geo731 Carbonate Geology (2 credits)  
 Geo690 Wasatch-Uinta Geology Field Camp (6 credits)  
 Geo875 Sedimentary Geology and Paleobiology Seminar (1 credit)  
 Geo457 Advanced Field Methods, White Lake Mapping Course (2 credits)  
 Geo431 Sedimentology and Stratigraphy Laboratory (1 credit)  
 Geo430 Sedimentology and Stratigraphy Lecture (3 credits)  
 Geo376 Conducted Week-long Undergraduate Field Course (1 credit)  
 Geo204 Geologic Evolution of the Earth (4 credits)  
 Geo110 Evolution and Extinction (4 credits; fulfills college bioscience requirement)

### **Supervised Students:**

- 2018-pres Aaron Kuffner: vertebrate paleontology and stratigraphic paleobiology  
2017-pres Daniel Segessenmen (Ph.D.): stratigraphic paleobiology during the Ediacaran-Phanerozoic transition  
2013-pres Co-Advisor, Scott Hartman (Ph.D.): vertebrate paleoecology and evolution  
2015-17 Advisor, Ben Barnes (M.S.): isotopic signature of authigenic Late Devonian carbonate cements  
2012-17 Advisor, Sharon McMullen (Ph.D.): “Stratigraphic paleobiology in non-marine basins.”  
2009-17 Co-Advisor, Ben Linzmeier (Ph.D.): “Depth migratory behavior in *Nautilus macromphalus* as recorded by  $\delta^{18}\text{O}$  of shell aragonite.” (M.S. defense date 15 November, 2011).  
2011-13 Advisor, Tim Foltz (M.S.): “Sequence stratigraphic, geochemical, and petrographic analysis of the Sauk Sequence, Bob Marshall Wilderness, Montana.” (now in private industry)  
2008-12 Advisor, David Lovelace (Ph.D.): “Paleontology, paleosols, and paleoenvironments of the Triassic Chugwater Group.” (now research scientists at UW-Madison Geology Museum)  
2008-11 Co-Advisor, Caitlin Keating-Bitonti (M.S.): “The influence of North Atlantic deepwater on the global carbon cycle during the Late Miocene.” (now a Ph.D. student at Stanford).  
2008-10 Co-Advisor, Erin Fenlon (M.S.): “Goldilocks’ bivalves: evolution on three spatiotemporal scales.” (now working in private sector).  
2008-09 Co-Advisor, Andy Fraass (M.S.): “The macroevolutionary history of the planktonic foraminifera.” (now Ph.D. student U.Mass. at Amherst).

### Undergraduate senior thesis and research students:

- 2017-18 Jarret Smith: Comparative macrostratigraphic analysis of Souther American basins  
2016-17 Erika Ito: GeoDeepDive data extraction and Macrostrat geologic map integration  
2015 Julia Wilcots: Stromatolite distribution in space and time: a machine-reading assisted quantitative analysis  
2012-13 Jackson Borchardt: sedimentary petrology and geochemistry of the Cambrian Sauk Sequence in the Bob Marshall Wilderness, Montana  
2011-12 Marshall Tofte: “Sedimentary petrology of the Cambrian Sauk sequence in northern Illinois.”  
2009-10 Angeline Catena: “Provenance analysis of the Chugwater Group, Wyoming”  
2008-09 Neal Auchter: “Late Cretaceous to Recent macrostratigraphy of New Zealand”

### **Supervised Postdoctoral Fellows and Academic Staff**

- 2018-pres Daven Quinn, postdoc  
2016-17 Valerie Syverson, postdoc  
2015-17 Andrew Zaffos, postdoc  
2014-17 Jon Husson, postdoc  
2013-pres John J. Czaplewski, programmer  
2012-pres Michael McClennen, programmer  
2011-15 Puneet Kishor, programmer  
2008-12 Noel Heim, postdoc