

Sierra V. Petersen

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RESEARCH APPOINTMENTS

Assistant Professor **2017-present**
Earth and Environmental Sciences Department, University of Michigan, Ann Arbor, MI

Postdoctoral Research Fellow **2014-2017**
NSF-OCE postdoctoral fellow (2014-2016), postdoctoral fellow (2016-2017)
Earth and Environmental Sciences Department, University of Michigan, Ann Arbor, MI

EDUCATION

Harvard University, Cambridge, MA **2009-2014**
Ph.D., Earth & Planetary Sciences; Advisor: Daniel P. Schrag
Thesis: “Rapid Climate Change in the Cenozoic: Insights from Geochemical Proxies”
Research topics: paleoclimate/paleoceanography, Dansgaard-Oeschger events, glacial cycles, stable isotope geochemistry, clumped isotope paleothermometry, Cenozoic climate

Harvard University, Cambridge, MA **2009-2012**
A.M., Earth & Planetary Sciences; Advisor: Daniel P. Schrag

California Institute of Technology (Caltech), Pasadena, CA **2005-2009**
B.Sc. with honors, Geochemistry

ACADEMIC HONORS, AWARDS, and FELLOWSHIPS

Crosby Research Award **2019**
Outstanding Postdoctoral Fellow Award, University of Michigan **2016**
Marine Geoscience Leadership Symposium (MGLS) **2015**
NSF Ocean Sciences Postdoctoral Research Fellowship **2014-2016**
NOAA Climate and Global Change Postdoctoral Fellowship (Declined) **2014**
Graduate School of Arts and Sciences Merit Fellowship, Harvard University **FALL 2013**
Peirce Fellowship, Harvard University **2009-2010**
Howard Reynolds Memorial Prize, Caltech **2009**
Summer Undergraduate Research Fellowship, Samuel P & Frances Krown Fellow, Caltech **2008**
Summer Undergraduate Research Fellowship, Jim & Karen Cutts Fellow, Caltech **2006**

MANUSCRIPTS IN PREPARATION, SUBMITTED or IN REVIEW

(*student author in Petersen group)

Petersen, S.V., W.F. Defliese, C. Saenger, M. Daëron, C.M. John, K.W. Huntington, J.R. Kelson, S.M. Bernasconi, A.S. Colman, T. Kluge, G.A. Olack, A.J. Schauer, D. Bajnai, M. Bonifacie, S.F.M Breitenbach, J. Fiebig, A.B. Fernandez, G.A. Henkes, D. Hodell, A. Katz, S. Kele, K.C. Lohmann, B.H. Passey, D.A. Petrizzo, B.E. Rosenheim, A. Tripathi, R. Venturelli, E.D. Young, and I.Z. Winkelstern, Effects of improved ¹⁷O Correction on Inter-Laboratory

Agreement in Clumped Isotope Calibrations, Estimates of Mineral-Specific Offsets and Acid Fractionation Factor Temperature Dependence, (*in revision* in *Geochemistry, Geophysics, Geosystems* special issue)

*S. Scholz, **S.V. Petersen**, Escobar, J., C. Jaramillo, A.J.W. Hendy, W.D. Allmon, F. Moreno, J. Curtis, B.M. Anderson, N. Hoyos, J.C. Restrepo, N. Perez, Isotope Schlerochronology and Tropical Seasonality during the Mid Miocene Climatic Optimum, (*in review*)

*Meyer, K.W., **S.V. Petersen**, K.C. Lohmann, J.D. Blum, S.J. Washburn, M.W. Johnson, J.D. Gleason, A.Y. Kurz, and I.Z. Winkelstern, End-Cretaceous Mercury Concentrations Reveal Climate Influence of Deccan Traps Large Igneous Province (*in review*)

PEER-REVIEWED PUBLICATIONS

(*Student author in Petersen group)

12. de Winter, N. J., Vellekoop, J., Vorsselmans, R., Golreihan, A., Soete, J., **Petersen, S. V.**, *Meyer, K. W., Casadio, S., Speijer, R. P., and Claeys, P. (2018), An assessment of latest Cretaceous *Pycnodonte vesicularis* (Lamarck, 1806) shells as records for palaeoseasonality: A multi-proxy investigation, *Climate of the Past*, 14m 725-749, doi:10.5194/cp-14-725-2018
11. *Meyer, K.W., **S.V. Petersen**, K.C. Lohmann, and I.Z. Winkelstern (2018), Climate of the Late Cretaceous North American Gulf and Atlantic Coasts, *Cretaceous Research*, 89, 160-173, doi:10.1016/j.cretres.2018.03.017.
10. Gallagher, T.M., N.D. Sheldon, J.L. Mauk, **S.V. Petersen**, N. Gueneli, and J. J. Brocks (2017), Constraining the thermal history of the North American Midcontinent Rift System using carbonate clumped isotopes and organic thermal maturity indices, *Precambrian Research*, 294, 53-66, doi:10.1016/j.precamres.2017.03.022.
9. Bassis, J. N., **S. V. Petersen**, and L. M. Cathles (2017), Heinrich events driven by feedback between ocean forcing and glacial isostatic adjustment, *Nature*, 542, 332-334, doi:10.1038/nature21069.
8. Winkelstern, I. Z., M. P. Rowe, K. C Lohmann, W. F. Defliese, **S. V. Petersen**, A. W. Brewer (2017), Meltwater pulse recorded in Last Interglacial mollusk shells from Bermuda, *Paleoceanography*, 32, doi:10.1002/2016PA003014.
7. **Petersen, S. V.**, C. R. Tabor, K. C. Lohmann, C. J. Poulsen, K. W. Meyer*, S. J. Carpenter, J. M. Erickson, K. K. S. Matsunaga, S. Y. Smith, and N. D. Sheldon (2016), Salinity and Temperature of the Late Cretaceous Western Interior Seaway, *Geology*, 44, 903-906, doi:10.1130/G38311.1.
6. **Petersen, S. V.**, A. Dutton, and K. C Lohmann (2016), End-Cretaceous extinction in Antarctica linked to both Deccan volcanism and meteorite impact via climate change, *Nature Communications*, 7:12079, doi: 10.1038/ncomms12079.
5. **Petersen, S. V.**, I. Z. Winkelstern, K. C Lohmann, and K. W. Meyer* (2016), The effects of PorapakTM trap temperature on $\delta^{18}\text{O}$, $\delta^{13}\text{C}$, and Δ_{47} in preparing samples for clumped isotope analysis, *Rapid Communications in Mass Spectrometry*, 30, 199-208, doi: 10.1002/rcm.7438.

4. **Petersen, S. V.**, D. P. Schrag (2015), Antarctic ice growth before and after the Eocene-Oligocene Transition: New estimates from clumped isotope paleothermometry, *Paleoceanography*, 30 (10), 1305-1317, doi: 10.1002/2014PA002769.
3. **Petersen, S. V.**, D. P. Schrag (2014), Clumped isotope measurements of small carbonate samples using a high-efficiency dual-reservoir technique, *Rapid Communications in Mass Spectrometry*, 28, 2371-2381, doi: 10.1002/rcm.7022.
2. **Petersen, S. V.**, D. P. Schrag, and P. U. Clark (2013), A new mechanism for Dansgaard-Oeschger cycles, *Paleoceanography*, 28, 24-30, doi: 10.1029/2012PA002364.
1. Chapman, A. D., P. I. Luffi, J. B. Saleeby, and **S. Petersen** (2011), Metamorphic evolution, partial melting and rapid exhumation above an ancient flat slab: Insights from the San Emigdio Schist, southern California, *Journal of Metamorphic Geology*, 29: 601-626, doi: 10.1111/j.1525-1314.2011.00932.x.

CONFERENCE PRESENTATIONS and POSTERS

(*Author is my student)

29. de Winter, N.J., J. Vellekoop, A. Clark, **S.V. Petersen**, S.R. Scholz*, S. Goderis, M. Leermakers, R. Speijer, and P. Claeys, *Campanile* gastropods as recorders of Eocene hothouse climate: A multi-proxy study, *EGU General Assembly*, Vienna, Austria, April 2019 (to come)
28. Fiebig, J., Bajnai, D., Löffler, N., and **Petersen, S.**, Carbonate clumped isotope calibrations: kinetics matter, *7th International Clumped Isotope Workshop*, Los Angeles, California, January 2019 (talk)
27. Huntington, K.W., Kelson, J.R., Breecker, D.O., Hoke, G.D., Burgener, L.K., and **Petersen, S.**, Factors controlling seasonality of soil carbonate accumulation and the interpretation of terrestrial paleoclimate records, *7th International Clumped Isotope Workshop*, Los Angeles, California, January 2019 (talk)
26. Dawson, R.R., **Petersen, S.V.**, Hull, P.M., Ivany, L.C., and Affek, H.P., Cretaceous Temperature Estimates from Fossil Mollusk: An Interlaboratory Comparison, *7th International Clumped Isotope Workshop*, Los Angeles, California, January 2019 (poster)
25. **Petersen, S.V.**, W.F. Defliese, C. Saenger, M. Daëron, K.W. Huntington, C.M. John, J.R. Kelson, S.M. Bernasconi, A.S. Colman, T. Kluge, G.A. Olack, A.J. Schauer, D. Bajnai, M. Bonifacie, S.F.M. Breitenbach, J. Fiebig, A.B. Fernandez, G.A. Henkes, D. Hodell, A. Katz, S. Kele, K.C. Lohmann, B.H. Passey, M.Y. Peral, D.A. Petrizzo, B.E. Rosenheim, A.E. Tripathi, R. Venturelli, E.D. Young, and I.Z. Winkelstern, Effects of Improved 17O Correction on Inter-Laboratory Agreement in Clumped Isotope Calibrations, *7th International Clumped Isotope Workshop*, Los Angeles, California, January 2019 (talk)
24. **Petersen, S.V.**, S.R. Scholz*, R.C. Heaman*, N.J. de Winter, J. Vellekoop, J. Escobar, A. Hendy, and C. Jaramillo, Expanding the marine gastropod clumped isotope calibration and exploring the potential for Vital Effects in Δ_{47} , *7th International Clumped Isotope Workshop*, Los Angeles, California, January 2019 (poster)

23. Mohr, R.C., T.S. Tobin, A. Dutton, and **S.V. Petersen**, Sclerochronological Records of Carbonate Isotopes from Antarctic Bivalves Reveal Climate Warming and Variations in Seasonal Productivity Across the K-Pg Boundary, *GSA Annual Meeting*, Indianapolis, Indiana, November 2018 (talk)
22. *Scholz, S.R., **S.V. Petersen**, Esocbar, J., C. Jaramillo, A. Hendy, W. Allmon, F. Moreno, J. Curtis, B. Anderson, N. Hoyos, J.C. Restrepo, N. Perez, Isotope sclerochronology and tropical seasonality during the Mid Miocene Climatic Optimum, *Goldschmidt*, Boston, Massachusetts, August 2018 (talk)
21. *Oliphant, E., **S.V. Petersen**, A. Dutton, K.C. Lohmann, Interpreting lifecycle behavior of extinct bivalve species through stable and clumped isotopic variations, *GSA Annual Meeting*, Seattle, Washington, October 2017 (talk)
20. *Meyer, K.W., **S.V. Petersen**, J.D. Blum, K.C. Lohmann, S.J. Washburn, J.D. Gleason, G. Gehrke, Mercury concentrations and mercury stable isotope variations at the PETM: Volcanic loading signal of the North Atlantic Igneous Province?, *GSA Annual Meeting*, Seattle, Washington, October 2017 (talk)
19. *Meyer, K.W., **S.V. Petersen**, K.C. Lohmann, J. Blum, S. Washburn, I.Z. Winkelstern, Late Cretaceous volcanism and climate change inferred from THg in marine invertebrate fossils, *Goldschmidt*, Paris, France, August 2017 (talk)
18. **Petersen, S.V.**, M. Daëron, W.F. Defliese, C.M. John, S.M. Bernasconi, A.S. Colman, K.W. Huntington, J.R. Kelson, T. Kluge, G.A. Olack, C. Saenger, A.J. Schauer, D. Bajnai, M. Bonifacie, J. Fiebig, A.B. Fernandez, P. Garcia de Real, G.A. Henkes, A. Katz, S. Kele, K.C. Lohmann, B.H. Passey, D.A. Petrizzo, B.E. Rosenheim, J. Tang, A.E. Tripathi, R. Venturelli, E.D. Young, U. Wacker, I.Z. Winkelstern, Continued Efforts Towards a Universal Clumped Isotope Calibration: Updating Published Calibrations to *Brand et al.* (2010) Parameters, *6th Clumped Isotope Workshop*, Paris, France, August 2017 (poster)
17. Esocbar, J., A. Hendy, C. Jaramillo, **S.V. Petersen**, J. Curtis, F. Moreno, B. Anderson, W. Allmon, S. Scholz*, Isotope sclerochronology and clumped isotopes of Miocene molluscs from the Guajira Peninsula, Colombia, *XVI Congreso Colombiano de Geologia*, Santa Marta, Colombia, August 2017
16. *Meyer, K.W., **S.V. Petersen**, K.C. Lohmann, J. Blum, S. Washburn, I.Z. Winkelstern, Late Cretaceous volcanism and associated climate change inferred from elevated THg in marine invertebrate fossils, *13th International Conference on Mercury as a Global Pollutant*, Providence, Rhode Island, July 2017 (talk)
15. de Winter, N. J., J. Vellekoop, R. Vorsselmans, A. Golreihan, **S.V. Petersen**, K.W. Meyer*, R. P. Speijer, and P. Claeys, Cretaceous honeycomb oysters (*Pycnodonte vesicularis*) as palaeoseasonality records: A multi-proxy study, *EGU General Assembly*, Vienna, Austria, April 2017 (talk)
14. Winkelstern, I.Z., M.P. Rowe, K.C. Lohmann, W.F. Defliese, **S.V. Petersen**, A.W. Brewer, Deglacial Meltwater Pulse Recorded in Last Interglacial Mollusk Shells from Bermuda, *AGU Fall Meeting*, San Francisco, California, December 2016 (poster)

13. **Petersen, S.V.**, A. Dutton, and K.C. Lohmann, Climatic impacts of Deccan Traps volcanism recorded in mollusk shells from Seymour Island, Antarctica, *GSA Annual Meeting*, Denver, Colorado, September 2016 (talk)
12. **Petersen, S.V.**, A. Dutton, and K.C. Lohmann, End-Cretaceous extinction in Antarctica linked to both Deccan Traps volcanism and meteorite impact, *5th Clumped Isotope Workshop*, St. Petersburg, Florida, January 2016 (talk)
11. **Petersen, S.V.**, I.Z. Winkelstern, K.C. Lohmann, and K.W. Meyer*, The effects of PorapakTM trap temperature on $\delta^{18}\text{O}$, $\delta^{13}\text{C}$, and Δ_{47} in preparing samples for clumped isotope analysis, *5th Clumped Isotope Workshop*, St. Petersburg, Florida, January 2016 (poster)
10. *Meyer, K.W., **S.V. Petersen**, K.C. Lohmann, and I.Z. Winkelstern, Late Cretaceous Sea Surface Variability of the Southeast U.S., *5th Clumped Isotope Workshop*, St. Petersburg, Florida, January 2016 (poster)
9. Bassis, J.N., **S.V. Petersen**, and L.M. Cathles, Heinrich events driven by feedback between ocean forcing and glacial isostatic adjustment, *AGU Fall Meeting*, San Francisco, California, December 2015 (poster)
8. **Petersen, S.V.**, C.R. Tabor, K.W. Meyer*, K.C. Lohmann, C.J. Poulsen, and S.J. Carpenter, Equator To Pole in the Cretaceous: A comparison of clumped isotope data and CESM model runs, *AGU Fall Meeting*, San Francisco, California, December 2015 (talk)
7. **Petersen, S.V.**, C.R. Tabor, S.J. Carpenter, K.W. Meyer*, K.C. Lohmann, and C.J. Poulsen, A Fresh Look: Salinity and Temperature of the Western Interior Seaway using the Clumped Isotope Paleothermometer, *GSA Annual Meeting*, Baltimore, Maryland, November 2015 (talk)
6. *Meyer, K.W., K.C. Lohmann, and **S.V. Petersen**, Subtropical Warming in the Late Cretaceous Inferred from Clumped Isotope Paleothermometry. *Goldschmidt*, Prague, Czech Republic, August 2015 (talk)
5. **Petersen, S.V.** and D.P. Schrag, Reductions in sample size requirements using a dual-reservoir measurement technique and its application to foraminifera. *4th Clumped Isotope Workshop*, Zurich, Switzerland, August 2014 (talk)
4. **Petersen, S.V.** and D.P. Schrag, Temperature Change across the Eocene-Oligocene Transition using the Carbonate Clumped Isotope Paleothermometer on Foraminifera. *Goldschmidt*, Sacramento, California, June 2014 (poster)
3. **Petersen, S.V.**, D.P. Schrag, and P.U. Clark, Dansgaard-Oeschger cycles driven by ice-shelf break-up and regrowth. *AGU Fall Meeting*, San Francisco, California, December 2012 (poster)
2. Chapman, A.D., P Luffi, J.B. Saleeby, and **S. Petersen**, Partial melting, counterclockwise P-T path, and rapid exhumation above an ancient flat slab: Insights from the San Emigdio Schist, southern California. *GSA Annual Meeting*, Denver, Colorado, November 2010 (poster)

1. Ghosh, P, J. Eiler, and **S. Petersen**, Carbonate clumped isotope thermometry of Mollusks and Its applications to Pleistocene gastropod fossils from South Dakota, *Goldschmidt*, Cologne, Germany, August 2007 (talk)

INVITED SEMINARS

- University of Colorado – Boulder, Boulder, CO, Geosciences/INSTAAR/Geography, November 2017
- Northwestern University, Evanston, IL, Earth and Planetary Sciences, May 2017
- University of Michigan, Ann Arbor, MI, Earth & Environmental Sciences, March 2017
- Arizona State University, Tempe, AZ, School of Earth & Space Exploration, March 2017
- Michigan State University, Lansing, MI, Earth & Environmental Sciences, March 2017
- University of Exeter, Penryn, UK, Cambourne School of Mines, January 2017
- University of Washington, Seattle, WA, Earth and Space Sciences, January 2017
- Stony Brook University, Stony Brook, NY, Geosciences, April 2016
- University of Michigan, Ann Arbor, MI, Earth & Environmental Sciences, January 2016
- University of Florida, Gainesville, FL, Geological Sciences, January 2016
- Indiana University-Purdue University-Indianapolis (IUPUI), Indianapolis, IN, Earth Science, October 2015

TEACHING EXPERIENCE

University of Michigan

EARTH 222: Intro Oceanography	FALL 2018
EARTH 223: Intro Oceanography Lab	FALL 2018

Harvard University

EPS 22: The Fluid Earth (teaching fellow)	SPR 2012
SPU 26: Primitive Navigation (teaching fellow)	FALL 2012
EPS 8: History of the Earth (teaching fellow)	SPR 2011

California Institute of Technology

GE1: Earth and the Environment (teaching assistant)	SPR 2008, SPR 2009
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TEACHING AWARDS

Honored Instructor, U. Michigan	FALL 2018
Bok Center for Teaching & Learning “Teaching Certificate Program”	2014
Departmental Teaching Fellow, Earth & Planetary Sciences Department	2012 – 2014
White Prize for Excellence in Teaching, Harvard University	for SPU 26, FALL 2012
Certificate for Distinction in Teaching, Harvard University	for EPS 8, SPR 2011

SERVICE ACTIVITIES and PROFESSIONAL AFFILIATIONS

Session chair - 5th International Clumped Isotope Workshop (2016), Goldschmidt (2018)
 Peer reviewer for *Geology*, *Journal of Mass Spectrometry*, *Geophysical Research Letters*, *Science Advances*, *Quaternary Science Reviews*, *Geochimica Cosmochimica Acta*, *Cretaceous Research*, *Proceedings of the National Academy of Sciences*, *Paleoceanography*, *Global Planetary Change*

Proposal reviewer and panelist for NSF, proposal reviewer for American Chemical Society,
 Chilean Antarctic Institute, German Research Foundation
 Member of American Geophysical Union, Geochemical Society, Geological Society of America

LEADERSHIP POSITIONS, MENTORING, and OUTREACH

Leadership Positions:

Cretaceous Reading Group, organizer, University of Michigan	2015-2016
Geoclub Officer, Earth & Planetary Sciences Department, Harvard University	2009-2014
Field Trip Organizer, Graduate Student Field Trip, Harvard University	2013
Agassiz Visiting Lecturer Committee, Harvard University	2010, 2012
ClimaTea Seminar Series Organizer, Harvard University	2009-2010

Mentoring:

Association for Women in Science (AWIS), University of Michigan, faculty advisor	2017-pres.
Association for Women in Science (AWIS), University of Michigan, mentor	2016-2017
Caltech Alumni Women's Mentorship Program, mentor	2016-present

Current advisees (University of Michigan):

- Postdocs: Matthew M. Jones (2019-present)
- Graduate students: Jade Zhang (PhD, 2018-present)
- Undergraduates: Serena Scholz (2016-present), Rebecca Heaman (UROP program, 2018-present), Tianna Kilgore, (UROP program, 2018-present), Steve Wedel (2018-present), Jon Hoffman (2019-present)

Former advisees:

- U of M graduate students: Kyle Meyer (PhD student, 2014-2018)
- U of M undergraduates: Hector Ochoa (Henry Ford College, UROP Community College Summer Research Fellowship Program 2015), Liz Oliphant (senior thesis project, 2016-2018), Alberto Aguilar-Martinez (lab technician, 2018)
- Harvard University: Florence Chen (undergraduate, senior thesis project, 2013-2014)

Outreach:

Outstanding Student Poster Award, poster judge, AGU Fall 2017	2017
Outstanding Postdoctoral Fellow Award, selection committee, University of Michigan	2017
UROP Research Symposium, poster judge, University of Michigan	2017
Pioneer High School, Science Fair Judge, project mentor	2015-present
Michigan Geophysical Union (MGU), poster judge, University of Michigan	2015, 2017
National Ocean Science Bowl, Science Judge	2015, 2016
UROP Summer Research Symposium, poster judge, University of Michigan	2015
University of Michigan Earth Camp, activity leader	2015
FEMMES (Females Excelling More in Math, Engineering and the Science) Capstone event, activity leader, University of Michigan	2014
Scientist in the Classroom, Samuel Adams Webster Elem. Sch. (3 rd grade), Boston, MA	2012