Emily (Emmy) Frances Smith

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Education   
Ph.D., Department of Earth and Planetary Sciences, Harvard University, September 2015

A.M., Department of Earth and Planetary Sciences, Harvard University, May 2012

B.A., with honors in Geology and Comparative Religion, Amherst College, May 2008

Additional Educational Training

Harvard University Center for the Environment Consortium Certificate

Indiana University Geologic Field Station, Cardwell, MT, Summer 2007

Appointments

Assistant Professor, Earth and Planetary Sciences, Johns Hopkins University, July 2017 –

Faculty Fellow, Hopkins Extreme Materials Institute (HEMI), March 2018 –

Peter Buck Postdoctoral Fellow, Smithsonian NMNH, September 2015 – 2017

ESL Professor, Kunming University, China, 2009 – 2010

Fulbright Scholar, Kalimantan, Indonesia, 2008 – 2009

Research Assistant, US Geological Survey, Seattle, WA, June – August 2008

Awards, Honors and Fellowships

Geological Society of Washington Bradley Award for scientific talk, 2018

Smithsonian Institution Peter Buck Postdoctoral Fellowship, 2015 – 2017

Harvard Bok Excellence in Teaching Award (for all 5 classes TAed), 2011 – 2015

Harvard University Center for the Environment Graduate Fellowship, 2013 – 2014

Shaler Teaching Award, Harvard University EPS Department, 2014

NSF Graduate Research Fellowship, 2010 – 2013

Amherst College Post-Graduate John M. Clarke Fellowship, 2010 – 2013

Most Outstanding Foreign Professor Award, Kunming University, China, 2008 – 2009

Fulbright Grant Recipient, Indonesia, 2008 – 2009

Amherst College Doelling Undergraduate Research Award, Amherst College, 2007, 2008

NAGT-USGS Summer Geosciences Award for IUGFS field camp performance, 2007

E.J. Murphy Scholarship, Five-College Consortium of Marine Sciences, 2007

Dean of Faculty Summer Research Fellowship, Amherst College, 2007

Refereed Publications (Smith mentee - \*graduate, \*\*undergraduate)

*Submitted*

23. Pruss, S.B., **Smith, E.F.,** Leadbetter, O., Nolan, R.A., Hicks, M., Fike, D.A., *in review,* Paleoecology of the uppermost archaeocyathan reefs in the western United States and their extinction: New evidence from the Harkless Formation, southern Nevada: *Paleogeography, Paleoclimatology, Paleoecology*.

22. Newman, S.A., Daye, M., Fakra, S.C., Marcus, M.A., Pajusalu, M., Pruss, S.B., **Smith, E.F.,** Bosak, T., *in review*, Experimental Preservation of Muscle Tissue in Siliciclastic Sand and Kaolinite: *Palaios*.

21. Tarhan, L.G., Myrow, P.P., **Smith, E.F.,** Nelson, L.L.\*, Sadler, P.M., *in review*, Infaunal Augurs of the Cambrian Explosion: An Ediacaran Trace Fossil Assemblage from Nevada, USA: *Geology*.

20. Nelson, L.L.\* and **Smith, E.F.**, *in review*, An Ediacaran puzzle: Death beds of macrofossils or microbially induced sedimentary structures?: *Geology*.

19. Darroch, S.A.F., Praekelt, H.E., Iten, H.V., **Smith, E.F**., Nelson, L.L.\*, Nel, R. Jakata, K., Racicot, R.A., Germs, G.J., *in review*, A new skeletonized eumetazoan from the Neoproterozoic Cango Caves Group, South Africa, *Palaeontology*.

18. Schiffbauer, J.D., Selly, T., Jacquet, S.M., Nelson, L.L.\*, Strange, M.A., and Cai, Y.P., **Smith, E.F.,** *in review*, Tube-dwelling animals of the terminal Ediacaran reveal the Earth’s first guts: *PNAS*.

*Published or in press*

17. Selly, T., Schiffbauer, J.D., Jacquet, S.M., **Smith, E.F.,** Nelson, L.L.\*, Andreasen, B.D., Huntley, J.W., Strange, M.A., O'Neil, G.R., Thater, C.A., Bykova, N., Steiner, M., Yang, B, and Cai, Y.P., *in press*, A new cloudinid fossil assemblage from the terminal Ediacaran of Nevada, USA: *Journal of Systematic Paleontology*.

16. Darroch, S.A.F., **Smith E.F.,** Laflamme, M., Erwin, D.H., 2018. Ediacaran extinction and Cambrian explosion. *Trends in Ecology and Evolution*.

15. Rooney, A.D., Austermann, J., **Smith, E.F.**, Yang, L., Selby, D., Dehler, C.M., Schmitz, M.D., Karlstrom, K.E., Macdonald., F.A., 2017. A coupled Re-Os and U-Pb geochronological update of the late Tonian Chuar Group, Grand Canyon. *GSA Bulletin.*

14. **Smith, E.F.,** Nelson, L.L.\*,Zeng, H., Tweedt, S.M. Workman, J.B., 2017. A cosmopolitan late Ediacaran (~550-541 Ma) fossil assemblage: New fossils from Nevada and Namibia provide link between latest Ediacaran assemblages globally. *Proc. of the Royal Society of London B.*

13. Pruss, S.B., Dwyer, C.H.\*\*, **Smith, E.F**., Macdonald, F.A., 2017. Phosphatized early Cambrian archaeocyaths and small shelly fossils (SSFs) of southwestern Mongolia. *Palaeogeography, Palaeoclimatology, Palaeoecology.*

12. **Smith, E.F.,** Macdonald, F.A., Petach, T.A.\*\*, Bold, U.B., 2017. Reply: Integrated stratigraphic, geochemical, and paleontological late Ediacaran to early Cambrian records from southwestern Mongolia. *GSA Bulletin,* v. 129.

11. Bold, U., Crowley, J.L., **Smith, E.F.,** Sambuu, O., Macdonald, F.A., 2016. The Neoproterozoic to early Paleozoic Tectonic Evolution of the Zavkhan Terrane of Mongolia and its implications for the initiation of the Central Asian Orogenic Belt. *Lithosphere*.

10. **Smith, E.F.,** Nelson, L.L.\*\*, Strange, M.A., Eyster, A.E., Rowland, S.M., Schrag, D.P., Macdonald, F.A., 2016. The last of the Ediacara Biota: two exceptionally preserved body fossil assemblages from Mt. Dunfee, Nevada. *Geology.*

9. Bold, U., **Smith, E.F.,** Rooney, A.D., Buchwaldt, R., Ramezani, J., Bowring, S., Schrag, D.P., Macdonald, F.A., 2016, Neoproterozoic stratigraphy of the Zavkhan Terrane of Mongolia: The backbone for Cryogenian and early Ediacaran chemostratigraphic records. *American Journal of Sciences.*

8. **Smith, E.F.,** Macdonald, F.A., Schrag, D.P, Petach, T.A.\*\*, Bold, U.B., 2016. Integrated stratigraphic, geochemical, and paleontological late Ediacaran to early Cambrian records from southwestern Mongolia. *Geological Society of America Bulletin*: p. B31248-1.

7. **Smith, E.F.,** Macdonald, F.A., Crowley, J.L., Hodgin, E.B., Schrag, D.P., 2016. Tectonostratigraphic evolution of the ~780-730 Ma Beck Spring Dolomite: Basin Formation in the core of Rodinia. *Journal of the Geological Society of London,* v. 424: SP424-6.

6. Macdonald, F.A., Prave, A.R., Petterson, R., **Smith, E.F**., Pruss, S.B., Oates, K., Waechter, F., Trotzuk, D., and Fallick, A.E., 2013. The Laurentian record of Neoproterozoic glaciation, tectonism, and eukaryotic evolution in Death Valley, California. *Geological Society of America Bulletin*, v. 125, no. 7-8: p. 1203-1223.

5. Bold, U., Macdonald, F.A., **Smith, E.F.,** Crowley, J.L., and Minjin, C., 2013. Elevating the Neoproterozoic Tsagaan-Olom Fm to a Group. *Mongolian Geoscientist*, v. 39, no. 5.

4. Macdonald, F.A., Halverson, G.P., Strauss, J.V., **Smith, E.F.,** Cox, G.M., Sperling, E.A., and Roots, C.F., 2012. Early Neoproterozoic basin formation in the Yukon*.* *Geoscience Canada, Paul Hoffman Series, 2011*. 39: p. 77-99.

3. Halverson, G.P., Macdonald, F.A., Strauss, J.V., **Smith, E.F.,** Cox, G.M., and Hubert-Theou, L., 2012. Updated definition and correlation of the lower Fifteenmile Group in the central and eastern Ogilvie Mountains. *Yukon Exploration Geology 2011*, MacFarlane, K.E., and Sack, P.J., eds., p. 75-90.

2. Macdonald, F.A., **Smith, E.F.,** Strauss, J.V., Cox, G.M., Halverson, G.P., Roots, C.F., 2011c. *Yukon Exploration Geology 2010,* MacFarlane, K.E., and Sack, P.J., eds., p. 161-182.

1. **Smith, E.F.** and Gomberg, J., 2009. A Search in Strainmeter Data for Slow Slip Associated with Triggered and Ambient Tremor near Parkfield, California. *Journal of Geophysical Research,* v. 114, no. b12.

Field Guides (Smith mentee - \*graduate, \*\*undergraduate)

3. **Smith, E.F.,** Tarhan, L. G., and Nelson, L.L.\*, 2019. Ediacaran-Cambrian Transition of the Southwestern USA. NAPC Field Trip. *Palaios*.

2. **Smith, E.F.** and Nelson., L.L.\*, 2018. Ediacaran-Cambrian Stratigraphy of the Great Basin, Southwest USA Field Guide: Mt. Dunfee, Montgomery Hills, Nopah Range, and Kingston Range. Ediacaran Subcommission Field Trip.

1. Macdonald, F.A. and **Smith, E.F.,** 2014. Saddle Peak Hills, Death Valley, Field trip guidebook: Death Valley, California. NASA Astrobiology MIT-node.

Awarded research funding

American Center for Mongolian Studies (ACMS) Field Research Fellowship. *The Mongolian record of environmental change during early animal evolution*. **E. Smith** and M. Lonsdale (JHU PhD student). $8,000, 2019.

NSF EAR Sedimentary Geology and Paleobiology (NSF #ID: 1827669). *Collaborative Research: Calibrating the end-Ediacaran extinction with U-Pb geochronology & chemostratigraphy at a new Precambrian-Cambrian Boundary site in Namibia & South Africa.* **Lead PI E. Smith (JHU)** with PI J. Ramezani (MIT). $604,950 total, $304,338 to JHU, 2018-2021.

NSF EAR Instrumentation and Facilities (NSF #ID: 1831766). *Acquisition of a Laser-Ablation system for trace element mapping and large-n geochronology by inductively-coupled-plasma mass spectrometry (ICP-MS)*. PI D. Viete (JHU) with Co-Is **E. Smith (JHU),** M. Gomes (JHU), W. Nelson (Towson), and M. Harrower (JHU). $216,504 to JHU, 2018.

Hopkins Extreme Materials Institute MEDE FY19 Congressional Plus-up Funds for microbalance. **E. Smith (JHU),** $17,000, 2018.

Palaeontological Association Research Grant (#PA-RG201703). *Pyritization of soft tissue at the Precambrian-Cambrian Boundary in the Southwest USA*. PI **E.** **Smith (JHU),** $12,100, 2017-2019.

National Geographic Research and Exploration Program (NGS# 9968-16). *The rise of animals and first mass extinction of complex life*. S. Darroch (Lead PI, Vanderbilt Univ.) with Co-Is **E. Smith (JHU)** M. Laflamme (Univ. of Toronto Mississauga), J. Schiffbauer (Univ. of Missouri) and H. Mocke (Geological Survey of Namibia), $20,960, 2017-2018.

NASA Astrobiology Institute Lewis and Clark Fund for Exploration and Field Research in Astrobiology. *The last of the Ediacara at Mt. Dunfee, Nevada.* **E. Smith** **(Smithsonian Institution NMNH),** $5,000, 2016.

Invited Seminars and Colloquia

Lamont-Doherty Earth Observatory Geodynamics Seminar, May 2019

Berkeley University EPS Department Seminar, April 2019

Stanford University Geological Sciences Department Seminar, Jan 2019

Geological Society of Washington Meeting, April 2018

JHU Applied Physics Laboratory Brown Bag Lunch Seminar, March 2018

Carnegie DTM Weekly Seminar, Feb 2018

University of Texas at Austin Paleontology Seminar, Nov 2017

Virginia Tech Department of Geosciences Seminar, Nov 2017

Princeton University Environmental Geology and Geochemistry Seminar, April 2017

Smith College Department of Geosciences Seminar, March 2017

Lafayette College Geology and Environmental Geosciences Department, Nov 2016

University of Maryland Geochemistry Seminar, Nov 2016

George Mason University AOES Department Seminar, Feb 2016

Smithsonian NMNH Paleobiology Department Seminar, Feb 2016

Oregon State University CEOAS Departmental Seminar, March 2015

Johns Hopkins University E&PS Bromery Lecture, Feb 2015

Colorado College Geology Department Senior Seminar, December 2012

Harvard University Archaeology Department Lecture, November 2012

Mongolian University of Science and Technology Seminar, June 2012

Invited Conference Presentations

GSA Annual Meeting, Indianapolis, IN, Nov 2018

Gordon Geobiology Research Conference, Galveston, TX, Jan 2018

Geobiology Society Conference, Banff, BC, June 2017

AGU Annual Meeting, San Francisco, CA, Dec 2014

Professional service

**National and International**

Upper Ediacaran Series Working Group of the Ediacaran Subcommission, Voting Member, Jan 2019 –

Co-Leader (with L. Tarhan) for North American Paleontological Convention (NAPC) field trip “Ediacaran-Cambrian transition to the southwestern USA” – organized and led 4-day trip for ~20 international geoscientists to sites in CA and NV, June 2019.

Co-Leader (with L. Nelson) for Southwest USA field trip for Ediacaran Subcommission – organized and led 6-day trip for ~30 international geoscientists to Ediacaran-Cambrian sites in CA and NV, April 2018.

Co-Leader (with F. Macdonald) for field trip for NASA Astrobiology MIT-node to Death Valley, CA, January 2014.

Reviewer for journals including:

*Canadian Journal of Earth Sciences, EPSL, Geobiology, Geologic Magazine, Geology, Integrative and Comparative Biology, Journal of Asian Earth Sciences, Nature Ecology and Evolution, PNAS, Precambrian Research, Scientific Reports, Sedimentary* *Geology, South African Journal of Geology, Terra Nova*

Reviewer for funding agencies including:

Canada Foundation for Innovation, Deutsche Forschungsgemeinschaft (German Research Foundation), Lewis and Clark Fund for Exploration and Field Research, National Geographic Society Grant, Natural Environment Research Council (NERC) Standard Grant, Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant

**Johns Hopkins University**

E&PS Undergraduate Curriculum Development Committee 2017 –

E&PS Mineral and Rock Collection Committee 2017 –

E&PS Senior Thesis and Honors Committee Fall 2017 –

E&PS Hiring Committee, 2016 – 2017

External Committee Member for Doctoral Board Oral (DBO) Examination

Catherine Llera (Center for Functional Anatomy and Evolution), May 2019

Aneila Hogan (Center for Functional Anatomy and Evolution), June 2018

Deanna Goldstein (Center for Functional Anatomy and Evolution), June 2018

Teaching experience

**Johns Hopkins University** (\*indicates course is team taught)

AS.270.220: The Dynamic Earth: An introduction to Geology\* (Fall 2017; 2018)

AS.270.221: The Dynamic Earth Laboratory\* (Fall 2017; 2018)

Guest lectures in AS.270.335: Planets, Life, & the Universe (2; Fall 2016; 2017; 2018)

AS.270.400: The Carbon Cycle: Past, present and future\* (Fall 2017)

AS.270.504: Independent Research for undergraduates (Spring 2018; Fall 2018)

AS.270.380/680: Seminar in Regional Field Geology\* (Fall 2018)

AS.270.381/681: Seminar in Field Geology (Spring 2018)

AS.270.668: Geobiology Seminar\* (Fall 2018)

**Harvard University Teaching Fellow**

EPS182: Sedimentology and Stratigraphy (Spring 2013)

EPS74: Field Geology of Death Valley (Spring 2011; 2012; 2013; 2015)

EPS21: The Dynamic Earth (Fall 2011)

**ESL Teaching Experience**

Kunming University ESL Professor, Kunming, Yunnan, China, 2009–2010

English Writing Tutor, Kunming, Yunnan, China, 2009–2010

Advising and mentoring

***Johns Hopkins University***

*Graduate students*

Lyle Nelson, Ph.D. student, (primary advisor; 1/2018 – )

NSF-GRFP recipient

Mary Lonsdale, Ph.D. student (primary advisor; 9/2018 – )

*Undergraduate students*

Lucy Webb, class of 2020 (primary advisor)

Nicole Stevens, class of 2020 (primary advisor)

***Harvard University***

Lyle Nelson (class of 2015; advised 2015 – 2017)

Co-supervised Harvard Booth Scholarship and National Geographic Young Explorer Grant on Neoproterozoic geology in Death Valley

Tanya Petach (2011 – 2015, co-advised undergraduate thesis)

Sarah Moon (2014 – 2015, co-advised undergraduate thesis)

***Harvard Adams House Resident Science Tutor/Advisor, Harvard College 2012-2015***

Lived in an undergraduate dormitory as a residential science tutor. Primary academic advisor for 6 sophomore science students each year; hosted weekly dorm-wide science tutoring sessions; organized annual science symposiums and senior presentations.

***Smith College***

Rhiannon Nolan (2018 – 2019, undergraduate thesis reader)

Olivia Leadbetter (2018 – 2019, undergraduate thesis reader)

Tessa McGann (2015 – 2016, undergraduate thesis reader)

Camille Dwyer (2013 – 2014, co-advised undergraduate thesis)

Outreach

Maryland Science Olympiad Exam Writer for regional and national exams, 2019

Maryland Science Olympiad Coaches Clinic Co-organizer at JHU, 12/2018

AGU Outstanding Student Presentation Awards Judge, 12/2018

GSA Geobiology and Geomicrobiology Division Student Presentation Judge, 11/2018

JHU Sigma Gamma Epsilon Honor Society Panelist, 11/2018

Ingenuity Project Mentor for high school student who works in lab 12/week, Baltimore Polytechnic Institute, 2018 – 2019

Women Serious About Science Speaker Series, Baltimore Polytechnic Institute, Baltimore City’s science magnet high school, February 2018.

Smithsonian Q?rius *The Scientist Is In: Searching for Ancient Sea Life in Death Valley*, Smithsonian National Museum of Natural History, May 2016

NASA Astrobiology Institute Social Media Representative, MIT Node, 2014 – 2015

Speaker for “Earth Rocks Museum Festival” at Harvard Natural History Museum, 2014

Cambridge Science Festival, “Walk Through Geologic Time” Tour Guide, 2010 – 2013

Science Club for Girls Mentor, MA, 5 hr/wk during academic year, 2010 – 2011