

JENNIFER S. FEHRENBACHER

College of Earth, Ocean, and Atmospheric Sciences
Oregon State University
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CURRENT POSITION

Oregon State University – Assistant Professor August 2016-Present

PROFESSIONAL PREPARATION

University of California – Davis, Department of Earth & Planetary Sciences
Project Scientist November 2015 – August 2016
Postdoctoral Scholar June 2011 – October 2015
PhD, University of Chicago, Department of Geophysical Sciences 2010
MS, University of Chicago, Physical Sciences Division 2003
BS, Northern Illinois University, Department of Geology 1997

GRANT SUPPORT

National Science Foundation: Barium/calcium ratios in non-spinose planktic foraminifera: a novel proxy for reconstructing paleo-productivity \$469,827 (Sole PI) Aug 1 2017 – July 30, 2020

Environmental Molecular Sciences Laboratory, Pacific Northwest Nat’L Laboratory
Improving the accuracy and reliability of climate reconstructions by quantifying mechanisms that modulate sub-micron heterogeneity in marine calcifier. *DOE User Facility Proposal* in-kind support provided is approximately \$101,000 (Sole PI) August 1 2017 – July 31, 2019

National Science Foundation: *Trace metal proxies in planktonic foraminifera: Environmental calibrations and incorporation processes*, \$618,786
PI’s: Russell, Fehrenbacher, and Hill July 1 2013 – June 30, 2018

FIELD EXPERIENCE/RESEARCH CRUISES

Coastal Oregon field sampling June 8-13, 2017, Oct 27-Nov 1, 2017
Culturing planktonic foraminifers:
Bodega Marine Laboratory: Dec. 2013 – July 2015
Wrigley Marine Science Center, Catalina Island:
April 2017, July–Sept. 2015, July–Aug. 2014, July–Aug. 2013, June–Aug. 2011

TEACHING EXPERIENCE

Oregon State University
Biogeochemistry Winter, 2018, 2019, 2020
OC 407/507/608 Fall, 2019
University of California, Davis
Geology 1 – The Earth: an introduction to the study of the Earth Winter, 2015
Geology 16 - The Oceans: undergraduate oceanography course Spring 2015; Fall 2012

University of Chicago,
 Guest lecturer, Booth School of Business, Env. Policy Certificate Program Spring 2010
 Teaching Assistant 2004 – 2010
 Courses: Global Warming, Paleoceanography, Chemical Oceanography, Ice Age Earth,
 Chemistry of the Atmosphere, Physical Oceanography, Plate Tectonics
Northeastern Illinois University, *Adjunct Instructor* Fall, 2007
 Environmental Geology

OUTREACH/SERVICE

Oregon State University - CEOAS

CEOAS Committee and Boards

 Climate Science Advisory Committee - 2018
 Discipline Exam Committee – 2018 Cohort
 Speaker Committee Member, October, 2017 – October 2018
 Safety Advisory Group Member, August 2016 – Present
 Stable Isotope Facility Board Member – January 2017 to present
 Keck Laboratory Advisory Board – August 2017 – present

OSU undergraduate research advisor:

 Julia Fontana (Ocean Sciences), October 2017 – Present
 Grace Meyer (Ocean Sciences), June 2018 – Present
 Brenna McBride (Honors college, Geology), October 2017 – June 2018
 REU Mentor to Elizabeth Davidson, Sacramento State, Summer 2018
 REU Mentor to Clay Clarkson, Texas Tech, Summer 2018
 URSA Engage advisor to Michael Felix: January 2018 – September 2018
 URSA Engage mentor to Grace Meyer: January 2018 – June 2018
 Lauryn Moore (Political science), October 2017 – December 2017

Search committee member:

 Search Advocate for Science Documentary Producer, Sept-Oct 2018
 Search Advocate for Math Department Head, May, 2018
 Keck Manager, Sept. 2017
 ADAP, March – May 2017
 ADFRA Jr. Faculty committee member, Feb 2017

 Da Vinci Days: Paleotemperature reconstruction demonstration, July 2018

American Geophysical Union:

 Chair, Elderfield Student Paper Award Committee, PP Section, 2018
 Session Organizer and Chair, AGU Fall Meeting, PP Section, 2018

OMSI Science Communication Fellow:

 Participant in “Meet A Scientist”: May, 2017 - Present

Ad-hoc reviewer for journals and funding agencies (Ongoing):

 NSF, Nature Geoscience, Nature Scientific Reports, Nature, Paleoceanography, Earth
 and Planetary Science Letters, Marine Micropaleontology, Biogeosciences, Chemical
 Geology, Journal of Foraminiferal Research, Marine Chemistry, G-cubed, GCA

K-12 Outreach:

Working with OSU-SMILE to generate 4-12 HS activity about climate change, 2018-2019

Climate Science guest speaker at Davis Elementary School, 2012-2015

William H. Ray Elementary Chicago Public School Volunteer (2009-2011)

Guest Editor, PAGES 1st Young Scientists Mtg. Proceedings Issue (2009)

OTHER PROFESSIONAL TRAINING/WORKSHOPS

- GRC Biomin. Mtg. – Attendee and Discussion leader, July 29-Aug 3
- HiRes2017: High-resolution proxies of paleoclimate, University of Wisconsin, Madison
 - Workshop participant and keynote speaker, June 18-22, 2017
- OMSI Science Communications Fellow Training, January – May 2017
- Individual Forum Analysis Workshop at ICP, August 28th, 2016
- Search Advocate Training, October 2016
- Scientific Committee on Oceanic Research Planktic Foraminifera Workshop, August 2015
 - Workshop participant and member of the Culture Training Team – Cat. Island,
- North American Laser Ablation Workshop – UT Austin, May 27-28, 2015
- US DOI Motorboat Operator Training Course – Bodega Bay, CA, April 2014
- Climate Reality Project Climate Leader Training, June 2013
- Powerful Pedagogy Teaching Certification, University of California, Davis, March 2013
- UCLA SIMS Workshop Participant, UCLA, February 2010

PUBLICATIONS

*Denotes student lead author manuscript; **Denotes current CEOAS student

Submitted (In Review/In Revision)

R. Mitra, T. M. Marchitto, Q. Ge, B. Zhongc, Kanakiya, M. S. Cook, **J. S. Fehrenbacher**, J. D. Ortiz, A. Tripathi, E. Lobaton (2018) Automated species-level identification of planktic foraminifera using convolutional neural networks, with comparison to human performance (Submitted, Marine Micropaleontology)

Bonnin, E., Zhu, Z., Fehrenbacher, J.S., Russell, A.D., Hönisch, B., Spero, H.J.; Gagnon, A.C (2018) Submicron Sodium Banding in Cultured Planktic Foraminifera Shells (In Review, GCA)

Fritz-Endres, T., Dekens, P.S., **Fehrenbacher, J.S., Spero, H.J., Stine, A., Application of individual foraminifera Mg/Ca and $\delta^{18}O$ analyses for paleoceanographic reconstructions in active depositional environments (In Revision, Paleoceanography)

Branson, O., **Fehrenbacher, J.S.**, Vetter, L., Sadekov, A., Spero, H.J., Eggins, S.M., (2018) LAtools: A Data Analysis Package for the Reproducible Reduction of LA-ICPMS Data (In Revision, Chem. Geology)

Published

*Reynolds, C., Richey, J., **Fehrenbacher, J.S.**, Rosenheim, B., Spero, H., Environmental controls on the geochemistry of *Globorotalia truncatulinoides* in the Gulf of Mexico: Implications for paleoceanographic reconstructions, Marine Micropaleontology, May 2018

LeKieffre, C., Spero, H.J., Russell, A.D., **Fehrenbacher, J.S.**, Geslin, E., Meibom, A. Assimilation, translocation, and utilization of carbon between photosynthetic symbiotic dinoflagellates and their planktic foraminifera host, *Marine Biology*, April 2018

J.S. Fehrenbacher, A.D. Russell, C.V. Davis, H.J. Spero, E. Chu, A.C. Gagnon, B. Honisch, (March 2018) Evidence for an organic particulate calcification microenvironment for the non-spinose planktic foraminifer *Neogloboquadrina dutertrei*, 2017, *Geochimica et cosmochimica acta*, DOI:10.1016/j.gca/2018.03.008.

C. Bird, K.F. Darling, A.D. Russell, **J.S. Fehrenbacher**, C.V. Davis, A. Free, B.T. Ngwenya (January 2018), 16S rRNA gene metabarcoding reveals different ecological strategies within the genus *Neogloboquadrina* (planktonic foraminifer), *PlosOne*, DOI: 10.1371/journal.pone.0191653

*C.V. Davis, **J.S. Fehrenbacher**, T.M. Hill, A.D. Russell, H.J. Spero' (November 2017), Relationships between Temperature, pH, and Crusting on Mg/Ca in Laboratory-Grown *Neogloboquadrina* Foraminifera, *Paleoceanography*, doi:10.1002/2017PA003111

Fehrenbacher, J.S., Russell, A.D., Davis, C.V., Gagnon, A.G., Spero, H.J., Martin, P.A., Cilff, J., Zhu, Z. (May 2017), Link between light-triggered Mg-banding and chamber formation in the planktic foraminifera *Neogloboquadrina dutertrei*, *Nature Communications*, doi:10.1038/ncomms15441

Bird, C., Darling, K., Russell, A.D., Davis, C.V., **Fehrenbacher, J.S.**, Free, A., Wyman, M. and Ngwenya, B., (February 2017) Cyanobacterial endobionts revealed within a major marine planktonic calcifier (*Globigerina bulloides*, Foraminifera) by 16S rRNA metabarcoding, *Biogeosciences* doi:10.5194/bg-14-901-2017

Branson, O., E. Bonnin, D. Perea, H. Spero, Z. Zhu, M. Winters, B. Hönisch, A.D. Russell, **J.S. Fehrenbacher**, A.C. Gagnon, (September 2016) The Nanometer-Scale Chemistry of a Calcite Biomineralization Template: Implications for Skeletal Chemistry and Nucleation, *PNAS*, 113, doi: 10.1073/pnas.1522864113

*K.A. Gibson, R.C. Thunell, M.L. Machain Castillo, **J.S. Fehrenbacher**, H.J. Spero, K.E. Wejnert, X. Nava-Fernandez; E.J. Tappa, (July, 2016), Evaluating controls on planktonic foraminiferal geochemistry in the Eastern Tropical North Pacific, *EPSL*, Vol 452, doi:10.1016/j.epsl.2016.07.039.

*Wheeler, S.G., **J.S. Fehrenbacher**, A.D. Russell, S. Morgan (May, 2016), Evaluating chemical signatures in a coastal upwelling region to reconstruct movement of settlement-stage rockfishes, *Marine Ecology Progress Series*, doi:10.3354/meps11704

Fehrenbacher, J.S., H.J. Spero, A.D. Russell, L. Vetter, S. Eggins, (April, 2015) Optimizing LA-ICP-MS Analytical Procedures for Elemental Depth Profiling of Foraminifera Shells, *Chemical Geology* 04(2015), DOI:10.1016/j.chemgeo.2015.04.007.

Fehrenbacher, J.S., P.A. Martin (September, 2014), Exploring the dissolution effect on the intratest Mg/Ca variability in the planktonic foraminifera *Globigerinoides ruber*, *Paleoceanography*, 29, DOI: 10.1002/2013PA002571.

Paris, G., **J.S. Fehrenbacher**, A. Sessions, H. Spero, J. Adkins (April, 2014), Experimental determination of carbonate-associated sulfate $\delta^{34}\text{S}$ in planktonic foraminifer shells, *Geochem., Geophys., Geosys.*, DOI: 10.1002/2014GC005295.

*Vetter, L., H.J. Spero, A.D. Russell, and **J.S. Fehrenbacher** (2013), LA-ICP-MS Depth Profiling Perspective on Cleaning Protocols for Elemental Analyses in Planktic Foraminifers, *Geochem., Geophys., Geosys.*, 14, DOI: 10.1002/ggge.20163.

Fehrenbacher, J.S., and P. Martin (2011), Western equatorial Pacific deep water carbonate chemistry during the Last Glacial Maximum and deglaciation: Using planktic foraminiferal Mg/Ca to reconstruct sea surface temperature and seafloor dissolution, *Paleoceanography*, 26, DOI:10.1029/2010PA002035.

Fehrenbacher, J.S., P.A. Martin (2010), A comparison of intrashell Mg/Ca variability of the planktonic foraminifera *G. ruber*, *G. sacculifer*, and *N. dutertrei* determined by electron microprobe image mapping, 2010 *IOP Conf. Ser.: Earth Environ. Sci.* 9 012018 DOI: 101088/1755-1315/9/1/012018.

Fehrenbacher, J.S., P.A. Martin, G. Eshel (2006), Glacial Deep Water Carbonate Chemistry Inferred from Foraminiferal Mg/Ca: a case study from the Western Tropical Atlantic, 2006, *Geochem. Geophys. Geosyst.*, 7, Q09P16, DOI:10.1029/2005GC001156.

CONFERENCE/WORKSHOP/OTHER PRESENTATIONS

(Lead Author/Presenter only; * denotes invited)

***Fehrenbacher, J.S.**, Keynote Speaker, Controls on the geochemistry of *Neogloboquadrina dutertrei*: Lessons from culture experiments, FORAMS2018 Conference June 18, 2018,

Fehrenbacher, J.S., Russell, A.D., Davis, C.V., Chu, E., Spero, H.J., Ba/Ca ratios in the non-spinose planktic foraminifer *Neogloboquadrina dutertrei*: Evidence for a particulate organic microhabitat Ocean Sciences Meeting, Feb, 2018

* **Fehrenbacher, J.S.**, Spero, H.J., Core-top evidence for the carbonate ion effect on carbon isotopes in planktic foraminifera, *Invited*, American Geophysical Union Annual Meeting, December, 2017

* **Fehrenbacher, J.S.**, Keynote Speaker, Coauthors: Russell, A.D., Davis, C.V., Gagnon, A.S., Spero, H.J., Zhu, Z, Cliff, J, Martin, P., Link between light-triggered Mg-banding and chamber formation in the planktic foraminifera *Neogloboquadrina dutertrei*, HiRes2017 Workshop, University of Wisconsin, Madison, June 19, 2017 (Talk)

* **Fehrenbacher, J.S.**, A Tale of Two Forams: Refining paleoclimate proxies and climate reconstructions, Board of Advisors Meeting, College of Earth, Ocean, and Atmospheric Sciences, Oregon State University, April 21, 2017 (Talk)

* **Fehrenbacher, J.S.**, How do foraminifera build their shells and why does it matter? Hatfield Marine Science Center, March 23, 2017 (Talk)

Fehrenbacher, J.S., A.D. Russell, H.J. Spero, C.V. Davis, G. Gagnon, Mg-banding linked to the diurnal light cycle in the non-spinose planktic foraminifer *Neogloboquadrina dutertrei*, AGU Annual Meeting, December, 2016 (Poster)

Fehrenbacher, J.S., How do foraminifera build their shells and why does it matter? CEOAS QuatTea, October 21, 2016 (Talk)

* **Fehrenbacher, J.S.**, Marchitto, T., Spero, H., Comparison of Mg/Ca ratios obtained from paired laser ablation vs. solution-based individual foraminifera analyses, *International Conference on Paleoceanography*, Individual Foraminifera Workshop, August, 2016 (Talk)

* **Fehrenbacher, J.S.**, A.D. Russell, H.J. Spero, C.V. Davis, G. Gagnon, Diurnal light cycle modulates Mg-banding in the non-spinose planktic foraminifer *Neogloboquadrina dutertrei*, International Conference on Paleoceanography, Individual foraminifera workshop, Aug. 2016 (Talk)

Fehrenbacher, J.S., A.D. Russell, H.J. Spero, C.V. Davis, G. Gagnon, Diurnal light cycle modulates Mg-banding in the non-spinose planktic foraminifer *Neogloboquadrina dutertrei*, International Conference on Paleoceanography, August, 2016 (Poster)

* **Fehrenbacher, J.S.**, Paleoclimate perspectives on climate change, a view from the seafloor; ExplorIt Science Center, Davis, CA, June 9, 2016

* **Fehrenbacher, J.S.**, How to build a foram: Insight from culture experiments and application to paleoceanographic reconstructions, University of California – Santa Cruz, February 12, 2016

Fehrenbacher, J.S., A.D. Russell, H. J. Spero, and C.V. Davis; Experimental determination of the partition coefficient for Ba in *Neogloboquadrina dutertrei* suggests a unique calcifying environment, AGU Fall Meeting, December 2015 (TALK)

* **Fehrenbacher, J.S.**, Improving paleoclimate reconstructions with culture-based experiments and novel analytical techniques, Cal. State University, San Jose, November 9, 2015

Fehrenbacher, J.S., A.D. Russell, H. J. Spero, and C.V. Davis; Insights into the ecology and controls on trace metal geochemistry in the planktic foraminifer *Neogloboquadrina dutertrei* from culture experiments, SCOR Planktonic Foraminifera Workshop, Aug. 2015 (TALK)

* **Fehrenbacher, J.S.**, H.J. Spero, A.D. Russell, L. Vetter, S.M. Eggins; Optimizing LA-ICP-MS analytical procedures for Elemental Depth Profiling of Foraminiferal Shells, North American Laser Ablation Workshop, May 28, 2015

* **Fehrenbacher, J.S.**, A.D. Russell, C.V. Davis, E. Chu, A. Gagnon, Using Laser Ablation-ICP-MS to generate culture-based foraminiferal calibration relationships for *Neogloboquadrina dutertrei*, AGU Fall Meeting, December 2014.

Fehrenbacher, J.S., et al., The effect of light on the Mg/Ca ratio in the planktic foraminifer *Orbulina universa*: implications for a light driven vital effect on Mg incorporation into foraminiferal calcite, AGU Fall Meeting, December 2014 (TALK).

* **Fehrenbacher, J.S.**, Advancements in understanding controls on trace metal uptake in the planktic foraminifer *Neogloboquadrina dutertrei*, UC Davis Department Colloquium, December 2, 2014.

Fehrenbacher, J.S., H.J. Spero, C.V. Davis, J.M. Griffin, B.L. Grimm, P. Kercher, M. Kostlan, A.J. Menicucci, L. Santare, J. Starnes, L. Vetter, E. Wilbanks, M. Wildgoose, The Carbonate Ion Effect on the $\delta^{13}\text{C}$ Ratio of Planktic Foraminifers Revisited, PAGES iPODS-OC3 Workshop, Oct. 2014 (TALK).

Fehrenbacher, J.S., A.D. Russell, T.M. Hill, Effect of temperature on the trace element geochemistry of the planktic foraminifer *Neogloboquadrina dutertrei* determined by live culture experiments, Goldschmidt Conference, June 2014 (POSTER).

* **Fehrenbacher, J.S.**, P.A. Martin, H.J. Spero, A.D. Russell, Foraminiferal calcite proxies in paleoceanographic reconstructions: Insights from the deep dwelling species, University of the Pacific, Geology Department, November 14, 2013.

Fehrenbacher, J.S., H.J. Spero, C.V. Davis, J.M. Griffin, B.L. Grimm, P. Kercher, M. Kostlan, A.J. Menicucci, L. Santare, J. Starnes, L. Vetter, E. Wilbanks, M. Wildgoose, Reconstructing modern and LGM water column hydrography using stable isotopes of multiple planktic foraminifera species (Poster), AGU Fall Meeting, December 2013 (POSTER).

Fehrenbacher, J.S., H.J. Spero, A.D. Russell, A. Gagnon, L. Vetter, B. Grimm, E. Naumann, J. Snyder, and K. Holland, The effect of light on intrashell trace metal variability in the planktic foraminifer *O. universa*, 10th Int. Conf. on Paleoclimate, Barcelona, Spain, 2013 (POSTER).

Fehrenbacher, J.S., H.J. Spero, A.D. Russell, A. Gagnon, L. Vetter, B. Grimm, E. Naumann, J. Snyder, J. Wimpenny, Q. Uin, and K. Holland, The effect of light on intrashell trace metal variability in the planktic foraminifer *O. universa*, AGU Fall Meeting, Dec. 2012 (POSTER).

Fehrenbacher, J.S., Spero, H.J., C.V. Davis, J.M. Griffin, B.L. Grimm, P. Kercher, M. Kostlan, A.J. Menicucci, L. Santare, J. Starnes, L. Vetter, E. Wilbanks, M. Wildgoose, Reconstructing Water Column Hydrography Using Individual Shell Stable Isotope Data From Multiple Planktic Foraminifera Species, AGU Fall Meeting, Dec. 2012.

* **Fehrenbacher, J.S.**, P. Martin, Exploiting the dissolution effect on the Mg/Ca ratio of foraminiferal calcite: Reconstructing carbonate ion concentration in the deep ocean, University of South Carolina, Marine Science Program, March 18, 2011.

Co-Author (Last 5 years):

Spero, H.J., LeKieffre, C., Russell, A.D., **Fehrenbacher, J.S.**, Geslin, El., Meibom, A., Carbon and Nitrogen Uptake and Exchange Between a Symbiotic Dinoflagellate and its Planktonic Foraminifera Host, Ocean Science Meeting, Feb. 2018

Fritz-Endres, T., Dekens, P., **Fehrenbacher, J.S.**, Application of individual foraminifera Mg/Ca and $\delta^{18}\text{O}$ analyses for paleoceanographic reconstructions in the Bay of Bengal and other active depositional environments AGU Fall Meeting, Dec. 2017

Richey, J.N., Reynolds, K., **Fehrenbacher J.S.**, Environmental controls on barium incorporation into planktic foraminifer, *Globorotalia truncatulinoides* AGU Fall Meeting, Dec. 2017

Reynolds, C.E., Richey, J.N., **Fehrenbacher, J.S.**, Rosenheim, B., Spero, H.S., Environmental controls on the geochemistry of *Globorotalia truncatulinoides* in the Gulf of Mexico: Implications for paleoceanographic reconstructions AGU Fall Meeting, Dec. 2017

Fritz-Endres, T., Dekens, P.S., **Fehrenbacher J.S.**, IODP Expedition 354 Scientific Party, Sedimentary Controls on Foraminifera Deposition in the Bay of Bengal: Implications from Single Shell Mg/Ca and $\delta^{18}\text{O}$, AGU Fall Meeting, Dec. 2016 (Poster)

Branson, O., Vetter, L., **Fehrenbacher, J.S.**, Spero, H.J., Laurentide Ice Sheet Meltwater Geochemistry during the MIS3 Warm Phase from single-shell trace element and isotope measurements of foraminifera, Dec. 2016 (Poster)

Lekieffre, CMN, Spero, H.J.; Russell, A.D., **Fehrenbacher, J.S.**, Geslin, E; Meibom, Photosynthesis, carbon and nitrogen exchange between a symbiotic dinoflagellate and planktonic foraminifera host cell, Batsheva de Rothschild Workshop, Eilat, Israel, Sept. 10-16, 2016 (Poster)

Marchitto, T. M., **J. Fehrenbacher**, H. Spero, and A. van Geen, Greater ENSO activity during the late Little Ice Age inferred from Mg/Ca in individual planktonic foraminifera, 12th International Conference on Paleoceanography, Utrecht, Aug. 29-Sept 2, 2016 (Poster)

Marchitto, T. M., **J. Fehrenbacher**, H. Spero, and A. van Geen, Proof-of-concept for solution-based Mg/Ca on individual planktonic foraminifera: 250 years of ENSO variability, Workshop on Individual Foraminifer Analysis in Paleoceanography, Utrecht, August 28, 2016. (Talk)

Rivest, EB, TM Hill, B Gaylord, E Sanford, **JS Fehrenbacher**, AD Russell. "Coupling eco-physiology and shell geochemistry of California mussels: carry-over effects of larval exposure to upwelling and relaxation regimes," 2016 Ocean Global Change Biology Gordon Research Conference, Waterville Valley, NH. July 2016. (Poster)

Bonnin, E.A., Zhu, Z., Spero, J., Honisch, B., Russell, A.D., **Fehrenbacher, J.S.**, Gagnon, A.C., Systematic sub-micron Na/Ca banding in *Orbulina universa* and *bilobata*, Ocean Sciences Meeting, Feb. 2016 (Poster)

Davis, CV, EB Rivest, **JH Fehrenbacher**, AD Russell, B Gaylord, J Jahncke, TM Hill. "Response of upwelling region planktic foraminifera to future global change: inferences from seasonal abundances in central California and laboratory culture," 2016 Ocean Global Change Biology Gordon Research Seminar, Waterville Valley, NH. July 2016. (Talk)

Rivest, EB, TM Hill, B Gaylord, E Sanford, **JS Fehrenbacher**, AD Russell. "Coupling eco-physiology and shell geochemistry of California mussels: carry-over effects of larval exposure to upwelling and relaxation regimes, 2016 Ocean Global Change Biology Gordon Research Seminar, Waterville Valley, NH. July 2016. (Poster)

Rivest, EB, TM Hill, B Gaylord, E Sanford, **JS Fehrenbacher**, BE Davis. "Coupling eco-physiology and shell geochemistry of California mussels: carry-over effects of larval exposure to upwelling and relaxation regimes," AAAS Pacific Division, 97th Annual Meeting, San Diego, CA. June 2016. (Talk)

Marchitto, T. M., **J. Fehrenbacher**, H. Spero, and A. van Geen, Enhanced ENSO variability during the Little Ice Age based on Mg/Ca in individual planktonic foraminifera, Annual V. M. Goldschmidt Conference, Yokohama, June 26-July 1, 2016. (Talk)

Davis, C.V., **Fehrenbacher, J.S.**, Russell, A.D., Tuning the Mg/Ca Paleothermometer for high-latitude species and insights into intraspecific and intrashell variability, AGU Fall Meeting, Dec. 2015 (Poster)

Geochemical Proxy Distribution at the Atomic-Scale: Atom Probe Tomography of Foraminiferal Calcite O Branson, DE Perea, MA Winters, **JS Fehrenbacher**, AD Russell, AGU Fall Meeting, Dec. 2014 (Poster)

Paris, G., **Fehrenbacher, J.S.**, Russell, A.D., Bonnin, E.A., Sessions, A.L., Spero, H.J., Adkins, J.F., Assessing the influence of seawater sulfate, pH, and Mg/Ca on the sulfate concentration of foraminiferal calcite, AGU Fall Meeting, Dec., 2014 (Talk)

HJ Spero, **JS Fehrenbacher**, et al., Reconstructing Water Column Hydrography Using Individual Shell Stable Isotope Data From Multiple Planktic Foraminifera Species, AGU Fall Meeting, Dec., 2013 (Talk)

Paris, G., Adkins, J.F., Sessions, A.L., **Fehrenbacher, J.S.**, Spero, H.J, Fischer, W.W., Triple isotope composition of CAS on the MC ICP-MS-Neptune, AGU Fall Meeting, Dec., 2012 (Poster)

PROFESSIONAL MEMBERSHIPS

AAAS, Geological Society of America, American Geophysical Union, Cushman Foundation Sigma-Xi