

JENNIFER S FEHRENBACHER

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EDUCATION

2010, PhD: Paleoceanography, University of Chicago, Dept. of Geophysical Sciences

2003, MS: University of Chicago, Dept. of Geophysical Sciences

1997, BS: Geology, Northern Illinois University,

ACADEMIC POSITIONS

2023 – Present, Associate Professor, Oregon State University, Corvallis, OR

2016 – Present, Assistant Professor, Oregon State University, Corvallis, OR

2015 – 2016, Research Scientist, University of California – Davis, Davis, CA

2011 – 2015, Postdoctoral Scholar, University of California – Davis, Davis, CA

2003 – 2010, Research and Teaching Assistant, University of Chicago, Chicago, IL

NON-ACADEMIC POSITIONS

1999 – 2001, Senior Consultant, Bond Technologies, Chicago, IL

1998 – 1999, Consultant, EnterAct Corporation, Chicago, IL

1996 – 1998, Scientific Assistant, Argonne National Laboratory, Darien, IL

TEACHING

OREGON STATE UNIVERSITY (Average teaching eval rating: 5.7/6.0)	
OC 201: Introduction to Oceanography	F23
OC 660: Paleoceanography	S22
OC 201: Introduction to Oceanography	F22
OC 295: Field oceanography (Faculty cruise participant)	W22
OC 465: Cenozoic Paleoceanography (newly developed course, 8 students)	W22, W24
GEO 484: Introduction to Biogeochemical Cycles	W18, W19, W20, W21
OC 407/507/607 (12 students; seminar style course)	W16
UNIVERSITY OF CALIFORNIA – DAVIS	
GEL 16: The Oceans	F12, F15
GEL 1: Introduction to Earth Science	W14
NORTHEASTERN ILLINOIS UNIVERSITY	
Environmental Geology	W07

Non-credit courses/workshops

Summer 2015 SCOR Workshop on Planktic Foraminifera Culturing, 18 Participants, Santa Catalina Island, CA

GRANTS

Title	Role	Agency	Duration
mCDR 2023: Determining the Influence of Ocean Alkalinity Enhancement on Foraminifera Calcification, Distribution, and CaCO ₃ Production (Lead: L. Haynes, Vassar; with Co-I E. Osborne, NOAA-AOML)	Co-PI	NOAA OA- Program	8/23 – 7/26
Improving High Latitude Foraminiferal Paleoproxies: Insights from Northern California Current Modern and Historical Records (Lead PI: B. Hupp* (*post-doc))	Co-PI	NSF-MGG	8/22 – 7/25

Collaborative Research: Establishing an environmental baseline for the Pacific Northwest: 12,000 years of climate and Columbia River discharge (Lead PI: M. Walczak; Co-PIs: A. Mix, S. Praetorius)	Co-PI	NSF-MGG	1/22-12/24
NSF-DEB-NERC Collaborative Research: The Blueprint for Marine Biomineralization in a Changing Climate (Lead PI: Clare Bird (U of Stirling); CO-PIs: Susan Fitzer (U of Stirling), Mike Allen (Plymouth Mar. Lab), Huabing Yin (U of Glasgow), Kate Darling (U of Edinburgh)	Lead OSU-PI Project Co-PI	NERC – DEB/NSF	8/22 - 7/25
A two for one: Understanding Cascadia earthquakes and marine heatwaves from short sediment cores. (Co-PIs: V. Sahakian (U of OR) and M. Walczak (OSU))	Co-PI	OR State Ship Days	06/21 - 05/22
Collaborative Research: Foraminiferal Ecological Response to Ocean Conditions in the Northwest Pacific Ocean (Co-PI Claudia Benitez-Nelson, U of S. Carolina)	Lead PI	NSF	04/21 - 3/24
Supplement (Taiwan Field Season 2): Barium/calcium ratios in non-spinose planktic foraminifera: a novel proxy for reconstructing paleo-productivity	Sole PI	NSF	04/20 - 07/21
Dept. of Energy proposal for *instrument time at the Pacific NW National Lab.	Sole PI	DOE	02/19-02/20
Supplement (Taiwan Field Season 1): Barium/calcium ratios in non-spinose planktic foraminifera: a novel proxy for reconstructing paleo-productivity	Sole PI	NSF	04/19 - 03/20
OSU Learning Innovation Grant	Sole PI	OSU	02/20 – 12/21
Barium/calcium ratios in non-spinose planktic foraminifera: a novel proxy for reconstructing paleo-productivity	Sole PI	NSF	08/17 - 07/20
Trace metal proxies in planktonic foraminifera: Environmental calibrations and incorporation processes (Lead PI: Ann Russell; Co-PIs: Tessa Hill and Alexander Gagnon, UC. Davis) (Prior to OSU)	Co-PI	NSF	06/13 - 4/16

PUBLICATIONS *Students mentees are underlined, *OSU grad. student, **undergrad. student, ^Post-doc mentee*
2024 In Review

40. ^Hupp, B., **Fehrenbacher, J.S.**, Intrashell trace element variability in polar and subpolar planktic foraminifer: insights into vital effects, Ontogeny, and Biomineralization processes, In Review, Journal of Foraminiferal Research, Special Theme
39. *Lane, M.K., **Fehrenbacher, J.S.**, Hoenisch, B., Haynes, L., Crump B., Advancing individual foraminifera analysis by combining molecular, morphometric, and trace element geochemistry, In Review, Journal of Foraminiferal Research, Special Theme
38. Doherty, S., Davis, C.V., **Fehrenbacher, J.S.**, Planktic foraminifera record the succession of anaerobic metabolisms in particle microenvironments across a pelagic oxygen gradient, In review, GCA

2024 Accepted

37. Farmer, J.R., **Fehrenbacher, J.S.**, Horner, T.J., Kast, E.R., Tools to trace past productivity and ocean nutrients, Treatise on Geochemistry, 3rd Edition.

2023 Published

36. [^]Hupp, B., **Fehrenbacher, J.S.**, Geochemical differences between alive, uncrusted and dead, crusted shells of *Neoglobobulimina pachyderma*: Implications for paleo-reconstructions, (In review, Paleooceanography)
35. ^{*}Lane, M.K., **Fehrenbacher, J.S.**, Fisher, J., Fewings, M., Crump, B, C. Risien, ^{**}F. Schell, ^{**}G. Meyer, Marine heatwaves reshape planktic foraminifera communities, Frontiers in Marine Science – Marine Ecosystem Ecology, Vol 10.
34. Davis, C.V., Doherty, S., **Fehrenbacher, J.S.**, Wishner, K, Trace element composition of modern planktic foraminifera from an oxygen minimum zone: Potential proxies for an enigmatic environment, Frontiers in Marine Science – Marine Biogeochemistry, Vol. 10

2022

33. ^{*}Fritz-Enders, T., **Fehrenbacher, J.S.**, Russell, A.D., ^{*}Haley, C., Increased productivity in the equatorial Pacific during the deglaciation inferred from the Ba/Ca ratios of non-spinose planktic foraminifera Paleooceanography and Paleoclimate)
32. Richey, J., **Fehrenbacher, J.S.**, Reynolds, C., Spero, H.J., Barium enrichment in the planktic foraminifera *Globobulimina truncatulinoides*: evidence for a particulate microhabitat, GCA
31. Morard, R., Weinkauf, M.F.G., Brombacher, A., Fenton, I., **Fehrenbacher, J.S.**, Rillo, M.C, EDITORIAL for a special topic in Frontiers in Marine Science, Protists as Model Ecological and Evolutionary Study Systems: Emerging methodologies of the 21st century

2021

30. Honisch, B., ^{*}Fish, C.R., Phelps, S., Haynes, L.L., Dyez, K., Holland, K., **Fehrenbacher, J.S.**, Allen, K.A., Eggins, S.M, and Goes, J.I., 2021, Symbiont photosynthesis competency and its effect on boron proxies in planktic foraminifera, Paleooceanography and Paleoclimat
29. Balestra, B., Rose, T., **Fehrenbacher, J.S.**, Knobelspiess, K.S., Huber, B.T., Gooding, T., Paytan, A., 2021, In situ Mg/Ca measurements on foraminifera: comparison between Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS) and Wavelength-Dispersive X-Ray Spectroscopy by electron probe microanalyzer (EPMA), Geochemistry, Geophysics, Geosystems
28. ^{*}Fritz-Enders, T. and **Fehrenbacher, J.S.**, 2021, Preferential loss of high trace element bearing inner calcite in foraminifera during physical and chemical cleaning, Geochem., Geophys., Geosyst.

2020

27. Bird, C., LeKieffre, C., Jauffrais, T., Meibom, A., Geslin, E., Filipsson, H.L., **Fehrenbacher, J.S.**, Russell, A.D., 2020, Heterotrophic foraminifera capable of inorganic nitrogen assimilation, Frontiers in Mar. Sci., *In Press*
26. **Fehrenbacher, J.S.**, Marchitto, T.M. and Spero H.J., 2020. Comparison of laser ablation and solution based ICP-MS results for individual foraminifer Mg/Ca and Sr/Ca analyses. Geochemistry, Geophysics, Geosystems,
25. Smith, C.W., **Fehrenbacher, J.S.** and Goldstein, S.T., 2020. Incorporation of heavy metals in experimentally grown foraminifera from Sapelo Island, Georgia and Little Duck Key, FL, USA. Marine Micropaleo: 101854.
24. Holland, K., Branson, O., Haynes, L.L., Honisch, B., Allen, K.A., Russell, A.D., **Fehrenbacher, J.S.**, Spero, H.J. and Eggins, S.M., 2020. Constraining multiple controls on planktic foraminifera Mg/Ca. Geochimica et Cosmochimica Acta, 273: 116-136.
23. LeKieffre, C., Spero, H.J., **Fehrenbacher, J.S.**, Russell, A.D., Ren, H., Geslin, E. and Meibom, A., 2020. Ammonium is the preferred source of nitrogen for planktonic foraminifer and their dinoflagellate symbionts. Proceedings of the Royal Society B, 287(1929): 20200620.
22. Davis, C.V., **Fehrenbacher, J.S.**, Benitez-Nelson, C. and Thunell, R.C., 2020. Trace Element Heterogeneity Across Individual Planktic Foraminifera from the Modern Cariaco Basin. Journal of Foraminiferal Rsch, 50(2)

2019

21. Branson, O., **Fehrenbacher, J.S.**, Vetter, L., Sadekov, A.Y., Eggins, S.M. and Spero, H.J., 2019. LAtools: A data analysis package for the reproducible reduction of LA-ICPMS data. Chemical Geology, 504: 83-95.
20. Bonnin, E.A. ^{*}, Zhu, Z., **Fehrenbacher, J.S.**, Russell, A.D., Honisch, B., Spero, H.J. and Gagnon, A.C., 2019. Submicron sodium banding in cultured planktic foraminifera shells. Geochim. et Cosmochim. Acta, 253
19. Fritz-Endres, T. ^{*}, Dekens, P.S., **Fehrenbacher, J.**, Spero, H.J. and Stine, A., 2019. Application of individual foraminifera Mg/Ca and $\delta^{18}\text{O}$ analyses for paleoceanographic reconstructions in active depositional environments. Paleooceanography and Paleoclimatology, 34(10): 1610-1624.

18. Mitra, R., Marchitto, T., Ge, Q., Zhong, B., Kanakiya, B., Cook, M., **Fehrenbacher, J.**, Ortiz, J., Tripathi, A. and Lobaton, E., 2019. Automated species-level identification of planktic foraminifera using convolutional neural networks, with comparison to human performance. *Marine Micropaleontology*, 147: 16-24.

2018

17. **Fehrenbacher, J.S.**, Russell, A.D., Davis, C.V., Spero, H.J., Chu, E.** and Hönisch, B., 2018. Ba/Ca ratios in the non-spinose planktic foraminifer *Neogloboquadrina dutertrei*: Evidence for an organic aggregate microhabitat. *Geochimica et Cosmochimica Acta*, 236: 361-372.
16. Bird, C., Darling, K.F., Russell, A.D., **Fehrenbacher, J.S.**, Davis, C.V., Free, A. and Ngwenya, B.T., 2018. 16S rRNA gene metabarcoding and TEM reveals different ecological strategies within the genus *Neogloboquadrina* (planktonic foraminifer). *PloS one*, 13(1): e0191653.
15. Reynolds, C.E., Richey, J.N., **Fehrenbacher, J.S.**, Rosenheim, B.E. and Spero, H.J., 2018. Environmental controls on the geochemistry of *Globorotalia truncatulinoides* in the Gulf of Mexico: Implications for paleoceanographic reconstructions. *Marine Micropaleontology*, 142: 92-104.
14. LeKieffre, C., Spero, H.J., Russell, A.D., **Fehrenbacher, J.S.**, Geslin, E., Meibom, A., 2018. Assimilation, translocation, and utilization of carbon between photosynthetic symbiotic dinoflagellates and their planktic foraminifera host. *Marine Biology*, 165(6): 104.

2017

13. **Fehrenbacher, J.S.**, Russell, A.D., Davis, C.V., Gagnon, A.C., Spero, H.J., Cliff, J.B., Zhu, Z. and Martin, P., 2017. Link between light-triggered Mg-banding and chamber formation in the planktic foraminifera *Neogloboquadrina dutertrei*. *Nature communications*, 8(1): 1-10.
12. Davis, C.V., **Fehrenbacher, J.S.**, Hill, T.M., Russell, A.D. and Spero, H.J., 2017. Relationships between temperature, pH, and crusting on Mg/Ca ratios in laboratory-grown *Neogloboquadrina* foraminifera. *Paleoceanography*, 32(11): 1137-1152.
11. Bird, C., Darling, K.F., Russell, A.D., Davis, C.V., **Fehrenbacher, J.**, Free, A., Wyman, M. and Ngwenya, B.T., 2017. Cyanobacterial endobionts within a major marine planktonic calcifier (*Globigerina bulloides*, Foraminifera) revealed by 16S rRNA metabarcoding. *Biogeosciences*, 14(4).

2016

10. Branson, O., Bonnin, E.A., Perea, D.E., Spero, H.J., Zhu, Z., Winters, M., Hönisch, B., Russell, A.D., **Fehrenbacher, J.S.** and Gagnon, A.C., 2016. Nanometer-scale chemistry of a calcite biomineralization template: Implications for skeletal composition and nucleation. *Proceedings of the Nat'l Academy of Sciences*, 113(46): 12934-12939.
9. Gibson, K.A., Thunell, R.C., Machain-Castillo, M.L., **Fehrenbacher, J.**, Spero, H.J., Wejnert, K., Nava-Fernández, X. and Tappa, E.J., 2016. Evaluating controls on planktonic foraminiferal geochemistry in the Eastern Tropical North Pacific. *Earth and Planetary Science Letters*, 452: 90-103.
8. Wheeler, S.G., Russell, A.D., **Fehrenbacher, J.S.** and Morgan, S.G., 2016. Evaluating chemical signatures in a coastal upwelling region to reconstruct water mass associations of settlement-stage rockfishes. *Marine Ecology Progress Series*, 550: 191-206.

Prior to 2015

7. **Fehrenbacher, J.S.**, Spero, H.J., Russell, A.D., Vetter, L. and Eggins, S., 2015. Optimizing LA-ICP-MS analytical procedures for elemental depth profiling of foraminifera shells. *Chemical Geology*, 407: 2-9.
6. Paris, G., **Fehrenbacher, J.S.**, Sessions, A.L., Spero, H.J. and Adkins, J.F., 2014. Experimental determination of carbonate-associated sulfate $\delta^{34}\text{S}$ in planktonic foraminifera shells. *Geochimica et Cosmochimica Acta*, 15(4).
5. **Fehrenbacher, J.S.** and Martin, P.A., 2014. Exploring the dissolution effect on the intrashell Mg/Ca variability of the planktic foraminifer *Globigerinoides ruber*. *Paleoceanography*, 29(9): 854-868.
4. Vetter, L., Spero, H.J., Russell, A.D. and **Fehrenbacher, J.S.**, 2013. LA-ICP-MS depth profiling perspective on cleaning protocols for elemental analyses in planktic foraminifera. *Geochimica et Cosmochimica Acta*, 14(8).
3. **Fehrenbacher, J.** and Martin, P., 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(2).
2. **Fehrenbacher, J.** and Martin, P., 2010. Mg/Ca variability of the planktonic foraminifera *G. ruber* ss and *N. dutertrei* from shallow and deep cores determined by electron microprobe image mapping. *Earth Environ. Sci*, 9(012018): 1755-1315.

1. **Fehrenbacher, J.,** Martin, P.A. and Eshel, G., 2006. Glacial deep-water carbonate chemistry inferred from foraminiferal Mg/Ca: a case study from the western tropical Atlantic. *Geochem., Geophys., Geosys.*, 7(9).

OUTREACH/SERVICE

Oregon State University

CEOAS Committees and Boards:

College Leadership Team Representative for OEB discipline group – June 2023 - Present
 Academic Faculty Senator – January 2023 - Present
 Stable Isotope Facility Board Member – January 2017 – Present
 Keck Collaboratory Advisory Board – August 2017 – Present
 College of Science SEM Facility Advisory Board – August 2023 – Present
 CEOAS DEI Committee Member – Sept 2021 – August 2023
 Climate Science Academic Advisory Committee –2018 – 2020
 POD Leader for CEOAS Unlearning Racism in Geoscience (URGEoscience) (40 members) 2020-2021
 OEB DEI Vision Group – Aug. 2020 - 2022
 Discipline Exam Committee – 2018 – 2022
 Safety Advisory Group Member, August 2016 – August 2020
 Speaker Committee Member, October 2017 – October 2018

Graduate student advisees/committees:

Major professor:

Alexandra (Lexi) Thomas, CEOAS – OEB (MS)	2022 – Present
Chandra Schulte, Marine Resources Management (MRM) (MS)	2022 – Present
M. Kelsey Lane, CEOAS-OEB (PhD)	2020 – Present
Grace Meyer, CEOAS – OEB (MS)	2021 – 2023
M. Kelsey Lane, MRM (MS conferred 2020), CEOAS-OEB (PhD)	2018 – 2020
Theresa Fritz-Enders, CEOAS-OEB (PhD)	2017 – 2021

Committee member:

Abby Hudak -, CEOAS – MGG (PhD)	2023 – Present
Jonas Donnenfield, CEOAS – MGG (PhD)	2022 – Present
Saray Valdez, CEOAS – MGG (PhD)	2021 – Present
Erin Tully, CEOAS-OEB (MS)	2021 – Present
Tristan Meyer, CEOAS-OEB (MS)	2021 – 2023
Anna Gleuder, CEOAS (PhD)	2018 – 2023
Sarah Seabrook, CEOAS-OEB (PhD)	2019

Dissertation reader (International Students)

Winnie Feng, National Taiwan University (MS),	2019
Eveline Mezger, Netherlands Institute of Ocean Sciences (PhD)	2019

Undergraduate research/lab advisor and/or committees:

Sean Banker, Undergraduate research assistant	2022 – Present
Shannon Olson, Undergraduate Lab Manager	2022 – Present
Grace Holmes, Honors College Undergraduate, Sr. Thesis Advisor	2021 – Present
Faith Shell – Undergraduate research assistant	2019 – Present
Grace Meyer – Undergraduate research assistant, OSU REU student	2018 – 2021
James Kelly – Undergraduate research assistant	2019 –2020
Julia Fontana (Ocean Science Major)	2017 –2019
Radhika Shah – Senior thesis committee member	2018
REU Mentor to Elizabeth Davidson, Sacramento State	Summer 2018
REU Mentor to Clay Clarkson, Texas Tech	Summer 2018
Brenna McBride (Honors college, Geology)	2017 –2018
URSA Engage advisor to Michael Felix	Spring 2018
URSA Engage mentor to Grace Meyer	Spring 2018

Service to the Profession/Scientific community:

American Geophysical Union:

Secretary for the Paleoceanography/Paleoclimate Section, 2021-Present

Emiliani Award Committee, PP Section, 2021-2022

Elderfield Student Paper Award Committee, PP Section, Chair: 2018 – 2020, Committee member 2021-2022

Paleoceanography/Paleoclimate Editor-in-Chief Search Committee Member, 2019

Session Organizer and Chair, AGU Fall Meeting, PP Section, 2018, 2021, 2023

SCOR Working Group planning committee chair (Proposal in review 2023), collaborators include Drs. Clare

Bird (U of Stirling, Kate Darling (U of Edinburgh), Babette Hoogakker (Heriot-Watt University), Catherine Davis

(Yale), Nikolas Glock (Marum), Jorge Cardich (Univ. Peruana Cayetano Heredia), and Raphael Morard (Marum)

Panel Chair: Feb 2021 Micropaleontology Society Workshop: Learning from microfossils on the microscale

Co-editor for special theme for Frontiers in Marine Science (2021-2022)

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

National Science Foundation, NERC (UK), Israeli Science Foundation, Netherlands Science Foundation, Nature,

Nature Geoscience, Nature Scientific Reports, Paleoceanography and Paleoclimate, Earth and Planetary Science

Letters, Marine Micropaleontology, Biogeosciences, Chemical Geology, Journal of Foraminiferal Research,

Marine Chemistry, G-cubed, GCA, Geology, Frontiers in Marine Science

Educational/Public Outreach:

Foraminarium 3D Foram Models: Outreach for foraminifera identification and teaching website

launched March 2021 (www.foraminarium.com)

Science-a-thon Leadership Team, 2019 – 2022

OMSI Science Communication Fellow: May 2017 – Present

Public talk: Tap Talks, Feb 2, 2021

Da Vinci Days: Paleotemperature reconstruction demonstration, July 2018

Created a 4-8 Grade NGSS activity with OSU SMILE: "Taking the temperature of ancient oceans"

Public talk: Paleoclimate perspectives on climate change, a view from the seafloor; ExplorIt Science Center,

Davis, CA, June 9, 2016

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

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

FIELD EXPERIENCE / RESEARCH CRUISES (~400 field/sea days)

(*upcoming; **cancelled/postponed due to pandemic)

Date	Research Vessel/Field Location	Project	Role
*May 2025 and 2026 (4-6 weeks)	Bermuda, BIOS	mCDR Foram Calcification	Co-PI
*September 2024	Sikuliaq, Coastal OR	Foraminifera Ecology in the PNW	--
*April 2024	Sikuliaq, Coastal OR	Foraminifera Ecology in the PNW	--
Sept 2023 (6 days)	Sproul, Coastal OR	Foraminifera Ecology in the PNW	Chief Sci
July-Aug 2023 (38 days)	Catalina Island, CA	Blueprint for Biomineralization and I/Ca calibrations	Lead PI
May 2023 (6 days)	Sally Ride, Coastal OR	Foraminifera Ecology in the PNW	Chief Sci
Sept 2022 (6 days)	Sproul, Coastal OR	Foraminifera Ecology in the PNW	Chief Sci
July 2022 (20 days)	Catalina Island, CA	Foraminifera Ecology in the NCC	Lead PI
May 2022 (12 days)	NOAA Shimada, Coastal OR	N. Cal. Current Sampling	Science Party

April 2022 (6 days)	Sikuliaq, Coastal OR	Foraminifera Ecology in the PNW	Chief Sci
March 2022 (4 days)	Sally Ride, San Pedro Basin	Field Oceanography Class	Co-Chief
Aug 2021 (5 days)	Oceanus, Coastal OR and WA	Sediment coring	Chief Sci
Sept 2021 (7 days)	Oceanus, Coastal OR	Foraminifera Ecology in the PNW	Chief Sci
Oct 2021 (10 days)	NOAA Bell M. Shimada	N. Cal. Current Sampling	Science Party
<i>**Oct 2021</i>	<i>Green Island, Taiwan</i>	<i>Foraminifera culturing</i>	Co-PI
<i>**Sept 2020</i>	<i>NOAA Bell M. Shimada</i>	<i>N. Cal. Current Sampling</i>	Science Party
<i>**May 2020</i>	<i>Green Island, Taiwan</i>	<i>Foraminifera culturing</i>	Co-PI
<i>**Oct 2020</i>	<i>Green Island, Taiwan</i>	<i>Foraminifera culturing</i>	Co-PI
Sept 2019 (10 days)	NOAA Bell M. Shimada	N. Cal. Current Sampling	Science Party
May 2019 (5 weeks)	Green Island, Taiwan	Foraminifera culturing	Co-PI
Oct 2018 (3 days)	Oceanus, Coastal OR	Field sampling	Science Party
Oct 2017 (3 days)	Oceanus, Coastal OR	Field sampling	Science Party
June 2017 (6 days)	Oceanus, Coastal OR	Field sampling	Science Party
April 2017 (2 weeks)	Wrigley Marine Science Center,	Foraminifera culturing	Co-PI
July-Aug 2015 (6 weeks)	Catalina Is., CA		Co-PI
July-Aug 2014 (8 weeks)			Co-PI
July-Aug 2013 (8 weeks)			Co-PI
June-Aug 2011 (8 weeks)			Science Party

INVITED TALKS/CONFERENCES/PRESENTATIONS

2023

Invited speaker, Department Colloquium, University of South Carolina, Department of Earth Sciences, April 6, 2023

Invited speaker, LDEO Colloquium, Columbia University, February 17, 2023

2022

Invited Speaker, International Conference on Paleoclimate 2022, Bergen, Norway

Invited Speaker, Geological Society of America, Annual Meeting 2022, Denver, CO

Invited Speaker, AMQUA 2022 (declined due to prior engagement)

Prior to 2022

Keynote Speaker, Goldschmidt, July 7, 2021, Title: Exploring controls on the geochemistry of non-spinose planktic foraminifera via culture experiments, plankton tow specimens, and micron-scale analyses.

Seminar speaker, Yale: Re-evaluating the utility of non-spinose foraminifera in paleoceanographic reconstructions, Yale, October 7, 2021.

Invited Panel Chair, Feb 2021 Micropaleontology Society Workshop: Learning from microfossils on the microscale

Invited, TapTalks, How the ghosts of climate pasts inform our climate future, Sponsored by 500 Women Scientists Corvallis and Block 15, Corvallis, OR, Feb 2, 2021

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

Invited talk, Core top confirmation of the carbonate ion effect in multiple species of planktic foraminifera and a reassessment of the upper water column equatorial Pacific $\delta^{13}\text{C}$ records, AGU Fall Meeting, Dec. 2017

Keynote Speaker, HiRes2017 Workshop, University of Wisconsin, Madison, 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*, June 19, 2017

Invited, Seminar speaker, How do foraminifera build their shells and why does it matter? Hatfield Marine Science Center, March 23, 2017

Invited, International Conference on Paleoceanography, Individual Foraminifera Workshop, Co-authors: T. Marchitto, T., Spero, H., Invited, Comparison of Mg/Ca ratios obtained from paired laser ablation vs. solution-based individual foraminifera analyses, Aug. 2016

Invited, International Conference on Paleoceanography, Individual foraminifera workshop, Co-authors: 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*, Aug. 2016.

Invited Seminar Speaker: How to build a foram: Insight from culture experiments and application to paleoceanographic reconstructions, University of California – Santa Cruz, February 12, 2016

Invited, Co-authors: 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 2015

Invited, Co-authors: A.D. Russell, C.V. Davis, E. Chu, A. Gagnon, Using Laser Ablation-ICP-MS to generate culture-based foraminiferal calibration relationships for *N. dutertrei*, AGU Fall Meeting, Dec. 2014.

Invited, UC Davis Department Colloquium, Advancements in understanding controls on trace metal uptake in the planktic foraminifer *Neogloboquadrina dutertrei*, Dec. 2014.

Invited Seminar speaker, Foraminiferal calcite proxies in paleoceanographic reconstructions: Insights from the deep dwelling species, University of the Pacific, Geology Department, November 14, 2013.

Invited Seminar speaker, Exploiting the dissolution effect on the Mg/Ca ratio of foraminiferal calcite: Reconstructing carbonate ion concentration in the deep ocean, University of S. Carolina, Marine Sci. Program, March 18, 2011

2022-2023 CONFERENCE PRESENTATIONS

Total: >50 Lead or Co-author presentations since 2016

2023 Conference Presentation List:

Invited speaker, LDEO Colloquium, Columbia University, February 17, 2023

Invited speaker, Department Colloquium, University of South Carolina, Department of Earth Sciences, April 6, 2023

Haynes L., Fehrenbacher, J.S., Lane, M.K., Hoenisch, B., Determining the Influence of Ocean Alkalinity Enhancement (OAE) on Foraminifera Calcification via MicroCT Imaging, AGU Fall Meeting 2023

Donnenfield, J.T., Cargill, S., Walczak, M., Mix, A.C., Filipsson, H., Fehrenbacher, J.S., Padman, J., Disentangling mechanisms of persistent benthic hypoxia in the NE Pacific from the late Pleistocene to late Holocene, AGU Fall Meeting 2023

Vetter, L., Thirumalai, K., Fehrenbacher, J.S., Investigating the Link between Shell Crusting, Trace Element Ratios, and Ontogeny in Thermocline-Dwelling *Menardiiform* Planktic Foraminifera, AGU Fall Meeting 2023

Lane, M.K., Fehrenbacher, J.S., Hoenish, B., Haynes, L., Crump, B., Combining molecular, morphometric, and trace element geochemical analysis for a single foraminifera shell: a promising workflow for species with cryptic diversity, AGU Fall Meeting 2023

Thompson, A., Fehrenbacher, J.S., Benitez-Nelson C., Tappa, E., Schulte, C., Examining the Geochemistry and Assemblages of Planktic Foraminifera Obtained from a Yearlong Sediment Trap Deployment in the NEP, AGU Fall Meeting 2023

Schell, F., Fehrenbacher, J.S., Davis, C.V., Investigating changes in foraminiferal shell chemistry with increasing water depth in a sediment trap time series from the Panama Basin, AGU Fall Meeting 2023

2022 Conference Presentation List:

Invited Speaker, International Conference on Paleoclimate 2022, Bergen Norway, Title TBD

Invited Speaker, Geological Society of America, Annual Meeting 2022, Denver, CO

Fehrenbacher, J.S., Fritz-Enders, T., Lane, M.K., Ren, H., Russell, A.D., Spero, H.J.; AGU Fall Meeting 2022, Expanding the Utility of Non-Spinose Foraminifera in Paleoceanographic Reconstructions, Insight from Laboratory Experiments and Observations

Saenger, C., Fehrenbacher, J.S., Gagnon, A.C., AGU Fall Meeting 2022, Calibrating a proxy for North Pacific marine heatwaves from individual foraminifera oxygen isotope composition

Vetter, L., Fehrenbacher, J.S., Thirumalai, K., AGU Fall Meeting 2022, Characterizing Variability in the Tropical Ocean Mixed Layer and Thermocline: Insights from Core-top Multi-species Individual Foraminiferal Analysis (IFA)

Schell, F., Fehrenbacher, J.S., Davis, C.V., AGU Fall Meeting 2022, Investigating changes in single shell trace element chemistry of *Neogloboquadrina dutertrei* with increasing water depth in sediment traps from the Panama Basin

Burke, J., Fehrenbacher, J.S., Hardisty, D., AGU Fall Meeting 2022, Experimental and Diagenetic Assessment of the Foraminiferal Iodine-to-Calcium Proxy

Meyer, G.M., Mix, A., Fehrenbacher, J.S., Ross, A., AGU Fall Meeting 2022, Pushing the Limits of Precise Small Sample Analysis of Stable Oxygen and Carbon Isotopes in Calcium Carbonate via Isotope Ratio Mass Spectrometry

Doherty, S., Davis, C.V., Fehrenbacher, J.S., AGU Fall Meeting 2022, Intrashell trace element ratios in the foraminifera *Globorotaloides hexagonus* record anaerobic microbial metabolisms in an oxygen minimum zone

Doherty, S., Davis, C.V., Fehrenbacher, J.S., AGU Fall Meeting 2022, Proxy Potential of Trace Element/Calcium Ratios in Planktic Oxygen Minimum Zone Foraminifer *Globorotaloides hexagonus*

Hupp, B., Fehrenbacher, J.S., AGU Fall Meeting 2022, To be crusted or not to be crusted: Differences in trace element geochemistry between shells of living and dead planktic foraminifera

MEMBERSHIPS: American Geophysical Union, The Oceanographic Society, Geological Society of America, Cushman Foundation for Foraminiferal Research