

Dr. Joshua B. Russell

Department of Earth and Environmental Sciences – Syracuse University
222 Heroy Geology Laboratory
Syracuse, NY 13244
jbrussel@syr.edu
jbrussell.github.io

APPOINTMENTS

Assistant Professor <i>Dept. of Earth and Environmental Sciences, Syracuse University</i>	2023–Present
NSF EAR Postdoctoral Research Fellow <i>Dept. of Earth, Environmental and Planetary Sciences, Brown University</i>	2021–2022
Graduate Research Fellow <i>Dept. of Earth and Environmental Sciences, Columbia University</i>	2015–2021

EDUCATION

Columbia University, Graduate School of Arts and Sciences, New York, NY <i>Ph.D., Seismology, 2021</i> (Thesis advisor: James B. Gaherty) Structure and Evolution of the Oceanic Lithosphere-Asthenosphere System from High-Resolution Surface-Wave Imaging <i>M.Phil., Seismology, 2019</i> <i>M.A., Seismology, 2017</i>	2015–2021
University of Missouri, College of Arts and Sciences, Columbia, MO <i>B.S., Physics, 2015 summa cum laude</i> (minor: Mathematics)	2011–2015

AWARDS AND FELLOWSHIPS

National Science Foundation EAR Postdoctoral Fellowship	2021–2022
AGU Outstanding Student Presentation Award	2019
National Science Foundation Graduate Research Fellowship	2015–2018
Dean’s Diversity Fellowship, Columbia University	2015
Award for Academic Distinction, University of Missouri	2014
On To the Future (OTF) GSA travel grant	2014
Newell S. Gingrich Physics Scholarship	2013

FUNDING

- *National Science Foundation* – [OCE #2409161](#), “Collaborative Research: A seismic experiment to investigate mantle dynamics during the early stages of seafloor spreading in the Atlantic”, \$277,048 (11/24 – 10/27)
- *National Science Foundation* – [PHY #2308989](#), “Collaborative Research: Identifying and Evaluating Sites for Cosmic Explorer”, \$362,159 (8/23 – 7/26)
- *National Science Foundation* – [EAR #1952702](#), “EAR-PF Discerning the nature of the oceanic lithosphere-asthenosphere boundary through integration of seismological-scale and laboratory-scale observations”, \$174,000 (Science mentor: Colleen Dalton, Brown University, 1/21 – 12/22)
- *Seismological Society of America & LDEO* – Seismology Student Workshop (SSW), Co-organizer \$17,200 (2019, 2020)
- *LDEO* – Research as Art at the Lamont-Doherty Earth Observatory, Co-organizer \$500 (2016, 2017, 2018)
- *National Science Foundation* – DGE #16-44869, Graduate Research Fellowship (8/15 – 8/18)

PUBLICATIONS

18. Hariharan, A., Z. Eilon, J. Gaherty, **J.B. Russell**, J. Phillips, D.W. Forsyth (2025). [New Observations of Small-Scale Heterogeneity in the Oceanic Upper Mantle Beneath Old Oceanic Lithosphere](#). *Journal of Geophysical Research – Solid Earth*, (Submitted).
17. Dannberg, J., Z. Eilon, **J.B. Russell**, R. Gassmüller (2025). [Understanding Sub-Lithospheric Small-Scale Convection By Linking Models of Grain Size Evolution, Mantle Convection and Seismic Tomography](#). *Geochemistry, Geophysics, Geosystems*, (in press).
16. Janiszewski, H., **J.B. Russell** (2025). [Ambient Noise Analyses at Broadband Ocean Bottom Seismometers: Data Quality and Transfer Function Corrections](#). *Seismological Research Letters*, (in press).
15. Smith, J.R., K.J. Daniel, W. Bristol, A. Effler, M. Evans, J. Hoover, M. Landry, G. Lovelace, C. Lukinbeal, V. Mandic, K. Pham, **J.B. Russell**, F. Schiettekatte, R. Schofield, C. Scholz, D. Shoemaker, P. Sledge, A. Strunk (2025). [Criteria for identifying and evaluating locations that could potentially host the Cosmic Explorer observatories](#). *Review of Scientific Instruments*, 96(1).
14. Adimah, N.I., Y.J. Tan, **J.B. Russell** (2024). [Shear-wave velocity structure of the Blanco oceanic transform fault zone](#). *Geophysical Journal International*, 239, 1287–1312.
13. Lee, M., Y.J. Tan, **J.B. Russell**, M. Tolstoy, F. Waldhauser (2024). [Relative seismic velocity variations at Axial Seamount observed with ambient seismic noise capture transition point in volcanic inflation](#). *Geophysical Research Letters*, 51, e2024GL108883.
12. Janiszewski, H.A., Z.C. Eilon, **J.B. Russell**, B. Brunsvik, J.B. Gaherty, S. Mosher, W. Hawley, S. Coats (2023). [Broadband Ocean Bottom Seismometer Noise Properties](#). *Geophysical Journal International*, 233, 297–315.
11. **Russell, J.B.**, C.A. Dalton (2022). [Rayleigh wave attenuation and amplification measured at ocean-bottom seismometer arrays using Helmholtz tomography](#). *Journal of Geophysical Research – Solid Earth*, 127, e2022JB025174. [PDF](#)
10. **Russell, J.B.**, J.B. Gaherty, H.F. Mark, G. Hirth, L. Hansen, D. Lizarralde, J.A. Collins, R.L. Evans (2022). [Seismological evidence for girdled olivine lattice-preferred orientation in oceanic lithosphere and implications for mantle deformation processes during seafloor spreading](#). *Geochemistry, Geophysics, Geosystems*, 23, e2022GC010542. [PDF](#)
9. Eilon, Z.C., L. Zhang, J.B. Gaherty, D.W. Forsyth, **J.B. Russell** (2022). [Sub-Lithospheric Small-Scale Convection Tomographically Imaged Beneath the Pacific Plate](#). *Geophysical Research Letters*, 49, e2022GL100351. [PDF](#)
8. **Russell, J.B.**, J.B. Gaherty (2021). [Lithosphere structure and seismic anisotropy offshore eastern North America: Implications for continental breakup and ultra-slow spreading dynamics](#). *Journal of Geophysical Research – Solid Earth*, 126, e2021JB022955. [PDF](#)
7. Eilon, Z.C., J.B. Gaherty, L. Zhang, **J.B. Russell**, S. McPeak, J. Phillips, D. W. Forsyth, G. Ekström (2021). [The Pacific OBS Research into Convecting Asthenosphere \(ORCA\) Experiment](#). *Seismological Research Letters*, 93, 477–493. [PDF](#)
6. Maurer, J.M., J.M. Schaefer, **J.B. Russell**, S. Rupper, N. Wangdi, A. Putnam, N. Young (2020). [Seismic observations, numerical modeling, and geomorphic analysis of a glacier lake outburst flood in the Himalayas](#). *Science Advances*, 6 (38), eaba3645. [PDF](#)
5. N.J. Accardo, J.B. Gaherty, D.J. Shillington, E. Hopper, A.A. Nyblade, C.J. Ebinger, C.A. Scholz, P. Chindindali, R. Wambura-Ferdinand, G. Mbgoni, **J.B. Russell**, B.K. Holtzman, C. Havlin, C. Class (2020). [Thermo-chemical modification of the Upper Mantle beneath the Northern Malawi Rift Constrained from Shear Velocity Imaging](#). *Geochemistry, Geophysics, Geosystems*, 21, e2019GC008843. [PDF](#)
4. Menke, W. **J.B. Russell** (2020). [Non-Double-Couple Components of the Moment Tensor in a Transversely Isotropic Medium](#). *Bulletin of the Seismological Society of America*, 110 (3), 1125–1133. [PDF](#)

3. Ma, Z., C.A. Dalton, **J.B. Russell**, J.B. Gaherty, G. Hirth, D.W. Forsyth (2020). [Shear attenuation and anelastic mechanisms in the central Pacific upper mantle](#). *Earth & Planetary Science Letters*, 536, 116148. [PDF](#)
2. **Russell, J.B.**, Z. Eilon, S. Mosher (2019). [OBSrange: A new tool for the precise remote location of ocean-bottom seismometers](#). *Seismological Research Letters*, 90 (4), 1627-1641. [PDF](#)
1. **Russell, J.B.**, J.B. Gaherty, P.-Y. Lin, D. Lizarralde, J.A. Collins, G. Hirth, R.L. Evans (2019). [High-resolution constraints on Pacific upper mantle petrofabric inferred from surface-wave anisotropy](#). *Journal of Geophysical Research - Solid Earth*, 124, 631–657. [PDF](#)

Manuscripts In Preparation

- Russell, J.B.**, C.A. Dalton, C. Havlin, B. Holtzman, Z. Eilon, J.B. Gaherty, J. Phillips, A. Hariharan, D.W. Forsyth. Rheological heterogeneity and dynamics of oceanic asthenosphere from seismic attenuation. (in prep for Nature)
- Russell, J.B.**, Carchedi, C. Estimating Great Lakes Ice Cover from Seismic Noise Observations. (in prep for GRL)
- Phillips, J., **J.B. Russell**, J.B. Gaherty, Z. Eilon, D.W. Forsyth, G. Ekström. Spatial Variation in Anisotropic Shear Velocity of Oceanic Lithosphere-Asthenosphere in the Pacific. (in prep for JGR)
- Lee, M., Y.J. Tan, **J.B. Russell**, M. Tolstoy, F. Waldhauser. Observations of apparent annual seismic velocity variation at Axial Seamount driven by variation in ambient noise source (In Preparation for GRL)
- Arya, L., S.-H. Hung, **J.B. Russell**. Characterizing Microseismic Noise Sources in the Central Pacific Ocean: Insights from the NoMelt Ocean Bottom Seismometer Experiment. (in prep)

INVITED SEMINARS AND TALKS

(Upcoming) AGU Fall Meeting 2025, New Orleans, LA, 12/15/25
 University of Pittsburgh, DGES Colloquium, 3/27/25
 University of Utah, Seismo Tea, 2/18/25
 University of Rochester, Department Colloquium, 2/14/25
 WashU in St. Louis, EEPS Colloquium, 11/21/24
 VBRc Virtual Workshop, 7/16/24
 LDEO Columbia University, MPG/SGT Seminar, 4/17/24
 SUNY Binghamton, Department Colloquium, 4/12/24
 2023 MSROC Early Career Workshop, San Francisco, CA, 12/9/23
 Interior of the Earth – GRC 2023, Mount Holyoke, MA, 6/19/23
 Princeton University, Solid Earth Brown Bag Seminar, Princeton, NJ, 2/9/23
 AGU Fall Meeting 2022 (x2), Chicago, IL, 12/12/22
 University of Rhode Island GSO, Marine Geology & Geophysics Lecture Series, 9/30/22
 Brown University, Geophysics Seminar, 5/17/22
 Syracuse University, Department Seminar, 2/15/22
 Brown University, Department Colloquium, 9/23/21
 Brown University, Geophysics Seminar, 3/30/21
 University of Texas Institute for Geophysics, Department Seminar, 3/2/21
 LDEO Columbia University, Public Thesis Defense, 12/3/20
 Rutgers University - Newark, IRIS Recruitment Lecture Series, 10/30/19
 NYC College of Technology, IRIS Recruitment Lecture Series, 10/18/18

TEACHING EXPERIENCE

Syracuse University, Dept. of Earth and Environmental Sciences

EAR 105: Earth Sciences (~300 students)	Spring 2025
EAR 201: Introduction to Data Analysis (~20 students)	Spring 2024
EAR 431/631: Plate Tectonics (~10 students)	Fall 2024
EAR 435/635: Geophysics (~15 students)	Spring 2024
EAR 600: Foundations of Geoscience (~10 students)	Fall 2024

Columbia University, Dept. of Earth & Environmental Sciences – Teaching Assistant

EESC 4949: Introduction to Seismology (undergraduate and graduate)

Spring 2019

EESC 6908: Quantitative Methods of Data Analysis (graduate)

Fall 2017

UNIVERSITY SERVICE

<i>Committee Member</i> , EES Analytical Facilities	2023–Present
<i>Committee Member</i> , EES Critical Minerals Search Committee	2025–2026
<i>Committee Member</i> , EES Cryosphere Search Committee	2023–2024
<i>Committee Member</i> , EES System Admin & Field Support Search Committee	2023–2024
<i>Committee Member</i> , EES Visioning Committee	2023

PROFESSIONAL SERVICE

<i>Committee Member</i> , Marine Seismic Research Operations Committee	2024–2027
<i>Plenary Session Co-chair</i> , NSF GAGE/SAGE Community Science Workshop	
- Geophysics in the Global Oceans: Big Experiments, Big Data, Collaborative Science	2025
<i>Session Co-convenor</i> , Seismological Society of America (SSA) Annual Meeting	
- Seismology in the Oceans: Pacific Hemisphere and Beyond – Anchorage, AK	2024
- Frontiers in Marine Seismology – Bellevue, WA	2022
<i>Organizing Committee</i> , Pacific Array Workshop (Virtual)	2021
<i>Organizing Committee</i> , Seismology Student Workshop – Lamont-Doherty Earth Observatory	2019–2021
<i>Session Convener</i> , American Geophysical Union (AGU) Fall Meeting	
- Geophysics in the Oceans: Observations, Modeling, and New Frontiers – New Orleans, LA	2025
- Bridging the Observational Gap: Integrating Laboratory, Field, and Geophysical Data Sets to Quantify Mantle Properties and Processes – Chicago, IL	2022
- Interdisciplinary Studies of the Lithosphere-Asthenosphere System – New Orleans, LA	2021
- Formation, Evolution, and Destruction of the Oceanic Lithosphere – San Francisco, CA	2019
<i>Proposal Referee</i> , NSF OCE – Marine Geology & Geophysics; NSF EAR – Geophysics; NERC	
<i>Journal Referee</i> , Science Advances; Nature Geoscience; Geophysical Journal International; Journal of Geophysical Research; Bulletin of the Seismological Society of America; Seismological Research Letters; Geochemistry, Geophysics, Geosystems; Earth and Planetary Science Letters; Seismica	

OUTREACH AND LEADERSHIP

<i>Activities Promoting Diversity, Equity, and Inclusion</i>	
<i>Volunteer</i> , DEEPS CORES (Career Opportunities and Research in Earth Sciences)	2021–2022
<i>Alumni Speaker</i> , IRIS Diversity Recruitment Lecture Series	2018–2019
<i>Instructor</i> , “Coding Quakes” for girls in STEM Brown Scholars , AMNH, NYC	2017–2020
<i>Volunteer</i> , Girls’ Science Day at Columbia University	2015
<i>Education Outreach and Science Communication</i>	
<i>Speaker</i> , EI LIVE K-12: A Deep Dive into Earthquake Sonification (Grades 10-12)	2020
<i>Speaker</i> , EI LIVE K-12: Data Storytelling in Python (Grades 10-12)	2020
<i>Volunteer</i> , Lamont Open House, LDEO	2017–2019
<i>Organizing Committee</i> , Research as Art at the Lamont-Doherty Earth Observatory	2016–2018
<i>Volunteer/Contributor</i> , Seismic Sound Lab , LDEO	2016–2020
<i>Co-organizer</i> , New Student Orientation Camping Trip, Columbia University	2016

FIELD EXPERIENCE

(Upcoming) Co-Chief: Active Source and SPOBS, <i>R/V Marcus G. Langseth</i> , Western Atlantic	Fall 2026 (5 weeks)
(Upcoming) Chief: Galapagos Triple Junction, <i>R/V Marcus G. Langseth</i> , Eastern Pacific	Fall 2025 (4 weeks)
Old Pacific ORCA OBS Deployment , <i>R/V Kilo Moana</i> , Southwest Pacific	Nov. 2019 (3 weeks)
Young Pacific ORCA OBS Deployment , <i>R/V Kilo Moana</i> , South-central Pacific	Apr. 2018 (4 weeks)
CD-CAT Broadband Seismology Experiment, Central Anatolia, Turkey	June 2015 (2 weeks)
OIINK Broadband Seismology Experiment, Western Kentucky	July 2013 (2 weeks)
IRIS-PASSCAL Instrumentation Short Course, Socorro, NM	May 2013 (1 week)

SELECTED CONFERENCE PROCEEDINGS (§ = student, * = talk, † = invited)

- 27.*† **Russell, J.B.**, C.A. Dalton, C. Havlin, B. Holtzman, Z.C. Eilon, J.B. Gaherty, J. Phillips, A. Hariharan, D. Forsyth (2025). Rheological Heterogeneity and Dynamics of Oceanic Asthenosphere from Seismic Attenuation. *AGU Fall Meeting 2025*, New Orleans, LA.
26. § Rotimi, B.I., **J.B. Russell**, A. García-Jerez (2024). Toward combining microtremor HVSr, Rayleigh wave ellipticity, and multimode phase velocities to constrain Atlantic Coastal Plain sediment structure. *AGU Fall Meeting 2024*, Washington, D.C.
25. § Rameez, S., **J.B. Russell** (2024). Ambient noise Rayleigh wave phase velocity and coda-Q imaging of the Yellowstone region. *AGU Fall Meeting 2024*, Washington, D.C.
24. * **Russell, J.B.**, C. Carchedi (2024). Great Lakes Microseism: Toward Estimating Lake Ice Cover from Seismic Noise Observations. *AGU Fall Meeting 2024*, Washington, D.C.
23. **Russell, J.B.**, C.A. Dalton, C. Havlin, B. Holtzman, Z.C. Eilon, J.B. Gaherty, D. Forsyth (2024). Reduced Grain Size in Oceanic Asthenosphere and Implications for Mantle Dynamics. *AGU Fall Meeting 2024*, Washington, D.C.
- 22.*† **Russell, J.B.**, C.A. Dalton, C. Havlin, B. Holtzman, Z.C. Eilon, J.B. Gaherty (2023). Anelasticity and thermodynamic state of oceanic asthenosphere: New insights from ocean-bottom seismology. *Interior of the Earth GRC 2023*, Mount Holyoke College.
- 21.*† **Russell, J.B.**, J.B. Gaherty, H.F. Mark, G. Hirth, L. Hansen, D. Lizarralde, J.A. Collins, R.L. Evans (2022). Seismological Evidence for Girdled Olivine Fabric in Oceanic Lithosphere and Implications for Mantle Deformation Processes During Seafloor Spreading. *AGU Fall Meeting 2022*, Chicago, IL.
- 20.*† **Russell, J.B.**, J.B. Gaherty (2022). Continental Breakup and Incipient Seafloor Spreading Dynamics in the Atlantic: Insights from Lithospheric Structure Offshore Eastern North America. *AGU Fall Meeting 2022*, Chicago, IL.
19. **Russell, J.B.**, C.A. Dalton, C. Havlin, B. Holtzman (2022). Quantifying Asthenospheric Temperature and Partial Melt in the Pacific using Ocean-Bottom Observations of Shear Attenuation and Velocity. *AGU Fall Meeting 2022*, Chicago, IL.
18. **Russell, J.B.**, C.A. Dalton (2022). Pacific upper-mantle shear attenuation and velocity from ocean-bottom observations and implications for asthenospheric temperature and melt. *SAGE/GAGE 2022*, Pittsburgh, PA.
17. **Russell, J.B.**, C.A. Dalton (2022). Upper-mantle shear attenuation and velocity from ocean-bottom observations in the Pacific. *SSA Annual Meeting 2022*, Bellevue, WA.
16. **Russell, J.B.**, J.B. Gaherty, Z. Eilon, D.W. Forsyth, G. Ekström (2021). Heterogeneous Mantle Flow and Deviations from Half-Space Cooling Observed Beneath the Central Pacific. *AGU Fall Meeting 2021*, New Orleans, LA.
- 15.* **Russell, J.B.**, C.A. Dalton, A. Hariharan (2021). Array-Based Observations of Rayleigh-Wave Attenuation in the Pacific. *AGU Fall Meeting 2021*, New Orleans, LA.
14. **Russell, J.B.**, J.B. Gaherty (2021). Lithospheric structure and anisotropy of the Eastern North American Margin. *GAGE/SAGE 2021*, Virtual.
13. **Russell, J.B.**, J.B. Gaherty, Z. Eilon, D.W. Forsyth, G. Ekström (2021). Age dependence of mantle shear velocity and anisotropy in the central Pacific: Implications for thermal evolution of the lithosphere and small-scale convection. *Marine Seismology Symposium 2021*, Virtual.
12. **Russell, J.B.**, H.F. Mark, J.B. Gaherty, P.-Y. Lin, D. Lizarralde, J.A. Collins, G. Hirth, R.L. Evans (2020). Anisotropy across length scales: Reconciling seismic constraints with natural and laboratory petrofabrics. *International Conference on Ophiolites and the Oceanic Lithosphere 2020*, Muscat, Oman.
11. **Russell, J.B.**, J.B. Gaherty, Z. Eilon, D.W. Forsyth, G. Ekström (2019). Surface-wave constraints on upper mantle petrofabric and flow beneath ~40 Ma seafloor in the south Pacific. *AGU Fall Meeting 2019*, San Francisco, CA.

10. Holtzman, B.K., C. Havlin, E. Hopper, C. Bellis, **J.B. Russell**, H.C.P. Lau, P.Y. Lin (2019). The Very Broadband Rheology Calculator: a tool for inference of thermodynamic state of the upper mantle from frequency-dependent mechanical behavior. *AGU Fall Meeting 2019*, San Francisco, CA.
9. **Russell, J.B.**, H.F. Mark, J.B. Gaherty, P.-Y. Lin, D. Lizarralde, J.A. Collins, G. Hirth, R.L. Evans (2019). Anisotropy across length scales: Reconciling seismic constraints with natural and laboratory petrofabrics. *Interior of the Earth GRC 2019*, Mount Holyoke College.
8. **Russell, J.B.**, J.B. Gaherty (2019). Surface-wave anisotropy of the Eastern North American Margin (ENAM). *GeoPRISMS TEI 2019*, San Antonio, TX.
7. * **Russell, J.B.**, H.F. Mark, J.B. Gaherty, P.-Y. Lin, D. Lizarralde, J.A. Collins, G. Hirth, R.L. Evans (2018). Comprehensive *in situ* constraints on LPO fabric of fast-spreading oceanic lithosphere from seismic anisotropy. *AGU Fall Meeting 2018*, Washington, D.C.
6. **Russell, J.B.**, J.B. Gaherty, P.-Y. Lin, D. Lizarralde, J.A. Collins, G. Hirth, R.L. Evans (2017). NoMelt Experiment: High-resolution constraints on Pacific upper mantle fabric inferred from radial and azimuthal anisotropy. *AGU Fall Meeting 2017*, New Orleans, LA. Poster Abstract: DI43B-0361.
5. Rabinowitz, H.S., A. Barth, J.B. Russell, K. Frischkorn, M. Yehudai (2017). Research as Art: Using figures to make science approachable. *AGU Fall Meeting 2017*, New Orleans, LA. Poster Abstract: ED11C-0140.
4. * **Russell, J.B.**, J.B. Gaherty, P.-Y. Lin, M. Zebker (2016). Constraints on radial anisotropy in the central Pacific upper mantle from the NoMelt OBS array. *AGU Fall Meeting 2016*, Abstract: S14A-05.
3. **Russell, J.B.**, S.L. Beck, N. Turkelli, D. Kalafat, A.A. Ozacar, E.A. Sandvol (2014). Earthquake detection near the Central Anatolian Fault Zone using continuous data from the CDCAT experiment. *AGU Fall Meeting 2014*, Poster Abstract: S13D-4492.
2. **Russell, J.B.**, J.J. Braun, G.S. Mattioli (2014). Using GPS signal-to-noise ratio (SNR) observations to detect and characterize the volcanic plume associated with the 2003 Soufrière Hills Volcano dome collapse. *2014 GSA Annual Meeting*, Vancouver BC, Canada, Poster Abstract: T233.
1. **Russell, J.B.**, H.J. Gilbert, G. Pavlis (2013). Crustal Structure Beneath the Ozark Plateau and Illinois Basin using the OIINK Flexible Array. *AGU Fall Meeting 2013*, Poster Abstract: T23B-2582.