

Joshua B. Russell

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RESEARCH APPOINTMENTS

NSF EAR Postdoctoral Research Fellow	2021–Present
Dept. of Earth, Environmental and Planetary Sciences, Brown University	
Graduate Research Fellow	2015–2020
Dept. of Earth and Environmental Sciences, Columbia University	

EDUCATION

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

FELLOWSHIPS & AWARDS

National Science Foundation EAR Postdoctoral Fellowship	2021
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) 2014 GSA travel grant	2014
Newell S. Gingrich Physics Scholarship	2013

PEER-REVIEWED PUBLICATIONS

- 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](#)
- 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](#)

PENDING MANUSCRIPTS

Submitted:

- **Russell, J.B.**, J.B. Gaherty, H.F. Mark, G. Hirth, L. Hansen, D. Lizarralde, J.A. Collins, R.L. Evans. Seismological evidence for grain-size sensitive olivine deformation during mid-ocean ridge spreading. *Submitted to Sci. Adv.*

In Prep:

- **Russell, J.B.**, J.B. Gaherty, Z. Eilon, D.W. Forsyth, G. Ekström. Surface-wave constraints on upper mantle petrofabric and flow beneath ~43 Ma seafloor in the south Pacific [*Tentative Title*].
- **Russell, J.B.**, J.B. Gaherty. Lithosphere structure and seismic anisotropy offshore eastern North America: Implications for early seafloor spreading dynamics [*Tentative Title*].

SELECTED CONFERENCE PROCEEDINGS (* = talk)

23. **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.
22. **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.
21. **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.
20. 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.

19. Ma, Z., C.A. Dalton, **J.B. Russell**, J.B. Gaherty, G. Hirth, D.W. Forsyth (2019). Shear Attenuation Beneath the Central Pacific and Implications for Anelasticity and Hydration in the Oceanic Upper Mantle. *AGU Fall Meeting 2019*, San Francisco, CA.
18. Maurer, J.M., J.M. Schaefer, **J.B. Russell**, S. Rupper, N. Wangdi, A. Putnam, N. Young (2019). Remote Seismic and Satellite Observations of a Himalayan Glacier Lake Outburst Flood. *AGU Fall Meeting 2019*, San Francisco, CA.
17. **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. *SAGE/GAGE Workshop 2019*, Portland, OR.
16. **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.
15. **Russell, J.B.**, J.B. Gaherty (2019). Surface-wave anisotropy of the Eastern North American Margin (ENAM). *GeoPRISMS TEI 2019*, San Antonio, TX.
14. * **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.
13. Gaherty, J.B., **J.B. Russell**, H.F. Mark, P.-Y. Lin, E.K. Sarafian, Z. Ma, D. Lizarralde, J.A. Collins, G. Hirth, R.L. Evans, C.A. Dalton (2018). A comprehensive portrait of the central Pacific lithosphere–asthenosphere system from NoMelt seafloor geophysical observations. *AGU Fall Meeting 2018*, Washington, D.C.
12. **Russell, J.B.**, J.B. Gaherty, P.-Y. Lin, D. Lizarralde, J.A. Collins, G. Hirth, R.L. Evans (2018). Seismic anisotropy of oceanic lithosphere from OBS noise correlations. *IRIS Workshop 2018*, Albuquerque, NM.
11. **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.
10. 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.
9. Hung S.-H., P.-Y. Lin, J.B. Gaherty, **J.B. Russell**, G. Jin, J.A. Collins, D. Lizarralde, R.L. Evans, G. Hirth (2017). Seismic Velocity Structure of the Pacific Upper Mantle in the NoMelt Region from Finite-Frequency Traveltime Tomography. *AGU Fall Meeting 2017*, New Orleans, LA. Abstract: S32C-02.
8. **Russell, J.B.**, J.B. Gaherty, P.-Y. Lin, M. Zebker (2017). Constraints on radial and azimuthal anisotropy in the central Pacific upper mantle from the NoMelt OBS array. *OBSIP Symposium 2017*, Portland, ME.

7. Gaherty, J.B., **J.B. Russell**, P.-Y. Lin (2017). Constraints on mantle flow in the oceanic upper mantle from a high-resolution estimate of seismic velocities in the central Pacific. *JpGU-AGU Joint Meeting 2017*, Poster Abstract: SIT25-P04.
6. **Russell, J.B.**, J.B. Gaherty, P.-Y. Lin, M. Zebker (2017). Constraints on radial and azimuthal anisotropy in the central Pacific upper mantle from the NoMelt OBS array. *Earthscope National Meeting 2017*, Anchorage, AK.
5. * **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.
4. **Russell, J.B.**, J.B. Gaherty, P.-Y. Lin, G. Jin (2016). Constraints on radial anisotropy in the central Pacific upper mantle from the NoMelt OBS array. *IRIS Workshop 2016*, Vancouver, WA.
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 CD-CAT 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.

INVITED TALKS

Brown University, Geophysics Seminar, 03/30/21

University of Texas Institute for Geophysics, Department Seminar, 03/2/21

TEACHING EXPERIENCE

EI LIVE K-12: A Deep Dive into Earthquake Sonification (Grades 10-12) - Interactive Lecture	2020
EI LIVE K-12: Data Storytelling in Python (Grades 10-12) - Interactive Lecture	2020
Introduction to Seismology - Teaching Assistant	Spring 2019
Quantitative Methods of Data Analysis - Teaching Assistant	Fall 2017
"Coding Quakes" for Brown Scholars, American Museum of Natural History	2017-2020

FUNDING

- *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)

SERVICE & OUTREACH

<i>Organizing Committee</i> , Pacific Array Workshop	2021
<i>Session Convener</i> , AGU Fall Meeting	2019
<i>Referee</i> , Geophysical Journal International; Journal of Geophysical Research; Bulletin of the Seismological Society of America; Seismological Research Letters; Geochemistry, Geophysics, Geosystems	
<i>Organizing Committee</i> , Seismology Student Workshop	2019, 2020
<i>Organizing Committee</i> , Research as Art at the Lamont-Doherty Earth Observatory	2016–2018
<i>Alumni Speaker</i> , IRIS Diversity Recruitment Lecture Series	2017–2019
<i>Volunteer/Contributor</i> , Seismic Sound Lab , LDEO	2016–2019
<i>Volunteer</i> , Lamont Open House	2018, 2019
<i>Co-organizer</i> , New Student Orientation Camping Trip, Columbia University	2016
<i>Volunteer</i> , Girls' Science Day at Columbia University	2015

FIELD EXPERIENCE

Old Pacific ORCA OBS Deployment , South Pacific	November 2019 (3 weeks)
Young Pacific ORCA OBS Deployment , South Pacific	April 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)

SKILLS

Programming: MATLAB, Python, FORTRAN, C, Perl, GMT, shell scripting, \LaTeX

Software: [git](#), SAC, LabVIEW, AutoCAD, Adobe Illustrator

Areas of focus: Seismology, Surface Waves and Normal Modes, Seismic Anisotropy, Seismic Tomography, Ocean Bottom Seismology, Geophysical Inverse Theory, Time-series Analysis.

PROFESSIONAL SOCIETIES

American Geophysical Union	2013–Present
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