Joshua B. Russell

Lamont-Doherty Earth Observatory
61 Route 9W PO Box 1000
Palisades, NY, 10964
jrussell@ldeo.columbia.edu
jbrussell.github.io

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 2020
Structure and Evolution of the Oceanic Lithosphere-Asthenosphere System from High-Resolution Surface-Wave Imaging
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 *summa cum laude* (minor Mathematics)
Senior Thesis: Crustal velocity structure beneath central Anatolia from double-difference travel-time tomography

FELLOWSHIPS & AWARDS

National Science Foundation EAR Postdoctoral Fellowship 2020
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

6. Maurer, J.M., J.M. Schaefer, **J.B. Russell**, S. Rupper, N. Wangdi, A. Putnam, N. Young. 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

PENDING MANUSCRIPTS

In Prep:

- **Russell, J.B.**, H.F. Mark, J.B. Gaherty, P.-Y. Lin, D. Lizarralde, J.A. Collins, G. Hirth, R.L. Evans. Seismic evidence for grain-size sensitive olivine deformation during mid-ocean ridge spreading.
- **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]*.

CONFERENCE PROCEEDINGS (* = talk)

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

19. 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.

18. **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.

17. **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.

16. **Russell, J.B.**, J.B. Gaherty (2019). Surface-wave anisotropy of the Eastern North American Margin (ENAM). *GeoPRISMS TEI 2019*, San Antonio, TX.

15. * **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.

14. 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.

13. **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.

12. **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.

11. 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.

10. 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.

9. **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.

8. 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.

7. **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.
6. * **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.
5. **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.
4. **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.
3. **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 Soufrire Hills Volcano dome collapse. *2014 GSA Annual Meeting*, Vancouver BC, Canada, Poster Abstract: T233.
2. **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.
1. **Russell, J.B.**, H.J. Gilbert, G. Pavlis (2013). Crustal Structure Beneath the Ozark Plateau and Illinois Basin using the OIINK Flexible Array. *American Physical Society (APS) Prairie Section*, University of Missouri, Poster Abstract F1.38.

TEACHING EXPERIENCE

Introduction to Seismology - Teaching Assistant — Spring 2019
Quantitative Methods of Data Analysis - Teaching Assistant — Fall 2017

FUNDING

- *Seismological Society of America & LDEO* – Seismology Student Workshop (SSW), Co-organizer *$17,200* (2019)
- *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

Virtual Lecture, EI LIVE K-12: A Deep Dive into Earthquake Sonification (Grades 10-12) — 2020
Virtual Lecture, EI LIVE K-12: Data Storytelling in Python (Grades 10-12) — 2020
Session Convener, AGU Fall Meeting — 2019
Reviewer, *Geophysical Journal International; Journal of Geophysical Research*
Organizing Committee, Seismology Student Workshop — 2019
Organizing Committee, Research as Art at the Lamont-Doherty Earth Observatory — 2016–2018

Alumni Speaker, IRIS Diversity Recruitment Lecture Series 2017–2019
Guest Speaker, "Coding Quakes" Brown Scholars, American Museum of Natural History 2017–2020
Volunteer/Contributor, Seismic Sound Lab, LDEO 2016–2019
Volunteer, Lamont Open House 2018, 2019
Co-organizer, New Student Orientation Camping Trip, Columbia University 2016
Volunteer, 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: Python, MATLAB, 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