

# Joshua B. Russell

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Lamont-Doherty Earth Observatory  
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## EDUCATION

**Columbia University, Graduate School of Arts and Sciences**, New York, NY  
*Ph.D.* in progress, Seismology Expected 2020  
*M.Phil.*, Seismology 2019  
*M.A.*, Seismology 2017  
*Master's Thesis: Constraints on radial and azimuthal anisotropy in the central Pacific upper mantle from the NoMelt OBS array*

**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*

## RESEARCH EXPERIENCE

Graduate Research Fellow, Columbia University 2015–Present

UNAVCO RECESS Summer Intern 2014  
*Project: Using GPS signal-to-noise ratio (SNR) observations to detect and characterize the volcanic plume associated with the 2003 Soufrière Hills Volcano dome collapse*

IRIS Summer Intern 2013  
*Project: Crustal structure beneath the Ozark Plateau and Illinois Basin using the OIINK Flexible Array*

IMSD EXPRESS Research Fellow, University of Missouri 2011–2015  
*Project: Earthquake detection near the Central Anatolian Fault Zone using continuous data from the CD-CAT experiment*

## FELLOWSHIPS & AWARDS

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

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

### Submitted:

- Maurer, J.M., J.M. Schaefer, **J.B. Russell**, S. Rupper, N. Wangdi, A. Putnam, N. Young. Remote seismic observations of a glacier lake outburst flood in the Himalayas. *Science Advances*.

### 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 D-type olivine fabric in Pacific lithosphere.
- **Russell, J.B.**, J.B. Gaherty, Z. Eilon, D.W. Forsyth, G. Ekström. Surface-wave constraints on upper mantle fabric beneath the south Pacific: Evidence for pressure-driven flow associated with the Superswell [*Tentative Title*].
- **Russell, J.B.**, J.B. Gaherty. Surface-wave anisotropy of the Eastern North American Margin (ENAM) [*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 2019*, 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 Soufriere 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

Online Lecturer, EI LIVE K-12: <a href="#">A Deep Dive into Earthquake Sonification (Grades 10-12)</a>	2020
Online Lecturer, EI LIVE K-12: <a href="#">Data Storytelling in Python (Grades 10-12)</a>	2020
Session Convener, AGU Fall Meeting	2019
Reviewer, <i>Geophysical Journal International</i> ; <i>Journal of Geophysical Research</i>	
Organizing Committee, <a href="#">Seismology Student Workshop</a>	2019
Organizing Committee, <a href="#">Research as Art at the Lamont-Doherty Earth Observatory</a>	2016–2018
Alumni Speaker, <a href="#">IRIS Diversity Recruitment Lecture Series</a>	2017–2019
Guest Speaker, “Coding Quakes” Brown Scholars, American Museum of Natural History	2017–2020
Volunteer/Contributor, <a href="#">Seismic Sound Lab</a> , 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

<a href="#">Old Pacific ORCA OBS Deployment</a> , South Pacific	November 2019 (3 weeks)
<a href="#">Young Pacific ORCA OBS Deployment</a> , 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, L<sup>A</sup>T<sub>E</sub>X

*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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