Joshua B. Russell

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 RESESS 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

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

- **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. doi:10.1785/0220180336. PDF
- **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. doi:10.1029/2018JB016598. PDF

PENDING MANUSCRIPTS

Submitted:

- Menke, W. **J.B. Russell**. Explosive and Compensated Linear Vector Dipole Components of the Moment Tensor of a Fault in a Transversely Isotropic Medium. *Bulletin of the Seismological Society of America*.
- Ma, Z., C.A. Dalton, **J.B. Russell**, J.B. Gaherty, G. Hirth, D.W. Forsyth. Shear attenuation and anelastic mechanisms in the central Pacific upper mantle. *Earth & Planetary Science Letters*.
- N.J. Accardo, J.B. Gaherty, D.J. Shillington, E. Hopper, A.A. Nyblade, C.J. Ebinger, C.A. Scholz, **J.B. Russell**, B.K. Holtzman, C. Havlin, C. Class, P. Chindindali, R. Wambura-Ferdinand, G. Mbgoni. Thermo-chemical modification of the Upper Mantle beneath the Northern Malawi Rift Constrained from Shear Velocity Imaging. *Geochemistry, Geophysics, Geosystems*.
- 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.

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 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

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 — 2017–2019
Volunteer/Contributor, Seismic Sound Lab, LDEO — 2016–2019
Volunteer, Lamont Open House — 2018
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