



## Publications

**Frost, Daniel A.**; Romanowicz, Barbara: On the orientation of the fast and slow directions of anisotropy, *Phys. Earth Planet. Int.*, 2019, 286, p. 101-110

**Frost, Daniel A.**; Garnero, Edward J.; Rost, Sebastian, Dynamical links between small- and large-scale mantle heterogeneity: seismological evidence, *Earth Planet. Sci. Lett.*, 2018, 482, p. 135-146

**Frost, Daniel A.**; Romanowicz, Barbara, Constraints on Inner Core anisotropy using array observations of  $P'P'$ , *Geophys. Res. Lett.*, 2017, 44, p. 10,878-10,886

**Frost, Daniel A.**; Rost, Sebastian; Garnero, Edward J.; Li, Mingming; Seismic evidence for Earths crusty deep mantle, *Earth Planet. Sci. Lett.*, 2017, 470, p. 54-63

Rader, Erika; Emry, Erica; Schmerr, Nicholas; **Frost, Daniel A.**; Cheng, Cheng; Menard, Julie; Yu, Chunquan; Geist, Dennis, Characterization and Petrological Constraints of the Midlithospheric Discontinuity, *G-Cubed*, 2015, p. 3484-3504

Rost, Sebastian; Earle, Paul S.; Shearer, Peter M.; **Frost, Daniel A.**; Selby, Neil D; Seismic Detections of small-scale heterogeneities in the deep Earth, Springer Monograph, 2015, in *The Earths Heterogeneous Mantle*, c. 12, p. 367-390

**Frost, Daniel A.**; Rost, Sebastian; The P-wave Boundary of the Large-Low Shear Velocity Province beneath the Pacific, *Earth Planet. Sci. Lett.*, 2014, 403, p. 380-392

**Frost, Daniel A.**; Rost, Sebastian; Selby, Neil D.; Stuart, Graham W., Detection of a tall ridge at the core-mantle boundary from scattered PKP energy, *Geophys. J. Int*, 2013, 195, p. 558-574

## Publications - in preparation

**Frost, Daniel A.**; Romanowicz, Barbara; Lasbleis, Marine; Chandler, Brian: Inner core dynamics from patterns of seismic anisotropy

**Frost, Daniel A.**; Garnero, Edward J.: The influence of lower mantle structure on resolution of the Earths core

**Frost, Daniel A.**; Rost, Sebastian: Physical properties of scattering heterogeneities throughout the mantle

## Non-peer reviewed work

**Frost, Daniel A.**; Romanowicz, Barbara: On the different flavours of seismic reference models, <https://escholarship.org/uc/item/7wb6377n>

## Invited Presentations

2017 European Geophysical Association General Assembly Vienna

**Frost, Daniel A.\***; Rost, Sebastian; Garnero, Edward J.; Romanowicz, Barbara; The dynamic connection between small and large-scale mantle heterogeneity

2015 American Geophysical Union Fall Meeting San Francisco

**Frost, Daniel A.\***; Rost, Sebastian; Garnero, Edward J.; Seismic detection of oceanic crust in Earths lower mantle and its relation to large-scale mantle structure

2013 European Geophysical Association General Assembly Vienna

**Frost, Daniel A.\***; Rost, Sebastian; Selby, Neil D.; A global study of the lowermost mantle using scattered PKKP waves (PK●KP)

2012 Faculty of Environment Conference Leeds

**Frost, Daniel A.\***; Rost, Sebastian; Selby, Neil D.; Stewart, Graham W.; The Earth in detail: Seismology as a tool for studying the Earth's fine-scale structure

2012 Congres de Doctorants IPGP, Paris

**Frost, Daniel A.\***; Rost, Sebastian; Selby, Neil D.; Stuart; PKP Scattering: Detecting a Heterogeneous Ridge Above the Core-Mantle Boundary

### **Campus Presentations**

2019 Seismology and Tectonics Seminar UCLA

**Frost, Daniel A.\***; Inner core dynamics from patterns of seismic anisotropy

2018 Seismological Laboratory Seminar California Institute of Technology

**Frost, Daniel A.\***; Seismological evidence of the dynamical links between small- and large-scale mantle structure

2018 Department of Physics Colloquium New Mexico State University

**Frost, Daniel A.\***; The dynamical links between small- and large-scale mantle structures: seismological evidence

2016 Deep Thoughts Earth and Life Science Institute, Tokyo

**Frost, Daniel A.\***; Seismically mapping kilometre-scale structures throughout the mantle

2016 Berkeley Seismological Lab Seminar University of California, Berkeley

**Frost, Daniel A.\***; Seismically mapping kilometre-scale structures throughout the mantle

### **Proposals - funded**

2018 National Science Foundation Geophysics program

Value: \$152,142 *Resolving the influence of mantle heterogeneity on estimates of inner core anisotropy*

Co-authored with Barbara Romanowicz. Named researcher.

2014 National Science Foundation Cooperative Studies Of The Earth's Deep Interior program

Value: \$550,121 *Deep Mantle Cycling of Oceanic Crust*

This proposal was authored by PIs at ASU, but the seismological investigations (one third of the proposed activities) were built around my skill base, to specifically fund my involvement in the multidisciplinary research

2014 Preparatory Commission for the Comprehensive Nuclear Test-ban Treaty Organization (CTBTO) Young Scientist Research Award

Value: 9 months *Characterisation of small-scale heterogeneities beneath IMS arrays for improved source location and magnitude estimation*

Authored proposal and the project was awarded, but I turned this down to accept a postdoctoral position at Arizona State University

### **Proposals - in preparation**

2018 National Science Foundation Geophysics program  
*Combining global tomographic inversions with geodynamical growth models to constrain the origins of Earth's inner core features*

Co-authored with PIs at New Mexico State University and Wayne State University. Named researcher supporting seismic analysis.

### **Teaching Experience**

University of California, Berkeley

Guest lectures: Physics of the Earth's Interior EPS122 (2017)

Arizona State University

Undergraduate student pitching workshop (2015)

The University of Leeds

Teaching assistant: Global Seismology (2011, 2012, 2013)

Guest lecture on graduate research: Global Seismology (2013)

Teaching assistant: Computing (2011, 2012, 2013)

Teaching assistant: Geological fieldwork courses (2011, 2012, 2013)

Teaching assistant: Petrology (2013)

Teaching assistant: Inverse theory (2012)

Teaching assistant: Geological map skills (2012)

Teaching assistant: Applied geophysics (2011)

Teaching assistant: Geophysical data acquisition field course (2011)

### **Multidisciplinary Research Experience**

2018 CIDER Summer School UC Santa Barbara, California

"Relating geophysical and geochemical heterogeneity in the deep Earth" (attendant)

Worked to constrain the nature of the thermal boundary layer at the core-mantle boundary from a multidisciplinary approach

2017 MEXT Shin-Gakujutsu Winter school Kusatsu, Japan

"Origin and Evolution of Deep Primordial Reservoirs" (attendant)

2016 CIDER Summer School UC Santa Barbara, California

"Flow in the Deep Earth" (attendant)

Worked on integrating multidisciplinary observations and experiments of the lower mantle to understand its chemical and thermal structure

2014 ELSI Summer School Earth and Life Sciences Institute, Tokyo

"Computational Tools for Planetary Formation and Earth Evolution" (attendant)

2013 Seismic network deployment

Assisted in decommissioning Faultlab Dense Array in Northern Anatolia in Turkey

2013 CIDER Summer School UC Berkeley, California

"From mantle to crust: continental formation and destruction" (attendant)

Worked on the nature, prevalence, and possible explanations for observations of the Mid-Lithospheric Discontinuity

2010, 2012 Research Scientist AWE Blacknest, UK

Analysed seismic scattering using CTBTO data

2009 Volunteer Research Scientist Centre of Exchange and Research in Volcanology, Colima University, Mexico  
Volunteered as a research assistant for 2 months working with seismic data and thermal camera images to analyse volcanic activity at Volcan de Colima. Took part in several field trips to observe and sample Volcan de Colima

### **Scientific Service**

**Reviewer:** Earth and Planetary Science Letters, Journal of Geophysical Research, Geophysical Journal International, Geophysical Research Letters

2016-2018 Maintaining CIDER's online presence  
2015-2018 American Geophysical Union Fall Meeting OSPA Judge  
2018 Volunteered as an undergraduate mentor at the American Geophysical Union Fall Meeting  
2018 Organised CIDER pre-AGU workshop  
2018 Supported the running and organisation of CIDER summer program  
2017 Volunteered as an undergraduate mentor at the American Geophysical Union Fall Meeting  
2017 Co-organised CIDER pre-AGU workshop  
2017 Assisted with running CIDER summer program  
2016 Organised student pitching competition at Arizona State University  
2012 Assisted with delegate services for the SEDI 2012 meeting held in Leeds  
2012 Co-organised the British Geophysical Association Postgraduate Research in Progress Meeting held in Leeds

### **Service to University**

2018 Co-organised Berkeley Seismological Lab seminar series  
2018 Organised lab-wide discussion meetings on recent seismicity and professional development  
2017 Postdoc representative on UC Berkeley Seismological Lab web design committee  
2016 Co-organised Berkeley Seismological Lab seminar series  
2015 Organised research group-wide social meetings at Arizona State University  
2013 Postgraduate student representative at both the research institute and school level at University of Leeds

### **Outreach**

2018 Engaged with the public at a question and answer session at The Bay Area Science Festival  
2018 Presented on behalf of UC Berkeley Seismological Lab at the City of Berkeley ShakeOut  
2018 Presented at UC Berkeley Compass to advertise geophysics research across campus  
2018 Presented at UC Berkeley CalDay on Earth's core to advertise geophysics research to public  
2018 Supported Berkeley Seismological Laboratory at UC Berkeley CalDay

- 2018 Taught statistical analysis to students for science fair projects in a Bay Area middle school
- 2018 STEM mentor for Be A Scientist program in a Bay Area middle school
- 2017 Taught seismology to 6th grade students with Bay Area Science in Schools
- 2017 Presented on behalf of UC Berkeley Seismological Lab at the Bay Area Science Festival

### **Professional Development**

- 2018 University of California, Beyond Diversity lectures  
Discussion of inclusion in STEM education
- 2016 University of California, Berkeley Postdoctoral Development Courses  
Management and Python programming
- 2015 Arizona State University Postdoctoral Development Course  
Pitching and application writing
- 2015 IRIS Webinars  
Programming skills and career development

### **Presentations**

- 2018 American Geophysical Union Fall Meeting Washington D.C.  
**Frost, Daniel A.\***; Romanowicz, Barbara; Lasbleis, Marine; Chandler, Brian; Inner Core Dynamics From Patterns of Seismic Anisotropy
- 2018 American Geophysical Union Fall Meeting Washington D.C.  
Roecker, Steven; **Frost, Daniel A.\***; Romanowicz, Barbara; Structure of the Crust and Upper Mantle beneath Alaska Determined from the Joint Inversion of Arrival Times and Waveforms of Regional and Teleseismic Body Waves
- 2018 American Geophysical Union Fall Meeting Washington D.C.  
Mingda Lv, Margaret S Avery, Xiaoran Chen, Bethany Chidester, Jie Deng, Benjamin J Farcy, **Frost, Daniel A.\***, Zhi Li, Joshua F Martin, Bruce A Buffett, Susannah Dorfman, and Lijun Liu: ; A multidisciplinary assessment of heat flux at the core mantle boundary
- 2018 American Geophysical Union Fall Meeting Washington D.C.  
Waszek, Lauren; Burdick, Scott; Lasbleis, Marine; **Frost, Daniel A.\***; Anandawansa, Rashni; Combining global tomographic inversions with geodynamical growth models to constrain the origins of Earth's inner core features
- 2018 Study of Earth's Deep Interior Edmonton  
**Frost, Daniel A.\***; Romanowicz, Barbara; Axially dependent Inner Core anisotropy from low order inner core convection
- 2018 Dynamics and evolution of Earth's coupled core-mantle system Royal Astronomical Society  
**Frost, Daniel A.\***; Romanowicz, Barbara; Axially dependent Inner Core anisotropy from low order inner core convection
- 2017 American Geophysical Union Fall Meeting New Orleans  
**Frost, Daniel A.\***; Romanowicz, Barbara; Investigating the source of anomalous PKP travel times on South-Sandwich to Alaska paths
- 2017 Gordon Research Conference: Interior of the Earth Mount Holyoke

**Frost, Daniel A.\***; Romanowicz, Barbara; Constraints on Inner Core structure from P'P' array-based observations

2017 Gordon Research Seminar: Interior of the Earth Mount Holyoke  
**Frost, Daniel A.\***; Romanowicz, Barbara; Constraints on Inner Core structure from P'P' array-based observations

2017 European Geophysical Association General Assembly Vienna  
**Frost, Daniel A.\***; Romanowicz, Barbara; Constraints on Inner Core structure from P'P' array-based observations

2016 American Geophysical Union Fall Meeting San Francisco  
**Frost, Daniel A.\***; Romanowicz, Barbara; Constraints on Inner Core structure from P'P' array-based observations

2016 American Geophysical Union Fall Meeting San Francisco  
Ko, Byeongkwan; Holt, Adam; Gao, Chao; **Frost, Daniel A.\***; Karaoglu, Haydar; Lai, Hongyu; Yuan, Kaiqing; Li, Mingming; Campbell, Siobhan M.; Shim, Sang-Heon; Irving, Jessica C. E.; Kellogg, Louise H.; Miller, Samantha M.; Probing the lower mantle composition and thermal structure: Insights from D''

2016 Study of Earths Deep Interior Nantes  
**Frost, Daniel A.\***; Garnero, Edward J.; Rost, Sebastian; Connection across scales of seismic heterogeneity throughout the mantle

2015 American Geophysical Union Fall Meeting San Francisco  
**Frost, Daniel A.\***; Garnero, Edward J.; TA sub-array measurements of SmKS ray parameters to determine lower mantle influence

2014 American Geophysical Union Fall Meeting San Francisco  
**Frost, Daniel A.\***; Rost, Sebastian; Garnero, Edward J.; A dynamical context for small-scale heterogeneity throughout the mantle beneath subduction

2014 Study of Earth's Deep Interior Kanagawa, Japan  
**Frost, Daniel A.\***; Rost, Sebastian; Selby, Neil D.; A global study of the lowermost mantle using short and long period scattered PKKP waves (PK●KP)

2013 American Geophysical Union Fall Meeting San Francisco  
**Frost, Daniel A.\***; Rost, Sebastian; Selby, Neil D.; A global study of the lowermost mantle using short and long period scattered PKKP waves (PK●KP)

2013 American Geophysical Union Fall Meeting San Francisco  
**Frost, Daniel A.\***; Rost, Sebastian; Constraining lower mantle anomalies using USArray

2013 American Geophysical Union Fall Meeting San Francisco  
Rost, Sebastian; **Frost, Daniel A.\***; The distribution of small-scale heterogeneity at the core-mantle boundary

2013 BGA Postgraduate Research in Progress Meeting Cambridge  
**Frost, Daniel A.\***; Rost, Sebastian; Selby, Neil D.; A global study of the lowermost mantle using scattered PKKP waves (PK●KP)

2013 Gordon Research Conference: Interior of the Earth Mount Holyoke  
**Frost, Daniel A.\***; Rost, Sebastian; Selby, Neil D.; A global study of the lowermost mantle using scattered PKKP waves (PK●KP)

2013 Gordon Research Seminar: Interior of the Earth Mount Holyoke

**Frost, Daniel A.\***; Rost, Sebastian; Selby, Neil D.; Stewart, Graham W.; PKP Scattering: Detecting a Heterogeneous Ridge Above the Core-Mantle Boundary

2012 Structure and Dynamics of Earth's Deep Mantle College de France

**Frost, Daniel A.\***; Rost, Sebastian; Selby, Neil D.; PKKP Scattering: A tool for the global study of the Core-Mantle Boundary

2012 BGA Postgraduate Research in Progress Meeting Leeds

**Frost, Daniel A.\***; Rost, Sebastian; Selby, Neil D.; PKKP Scattering: A tool for the global study of the Core-Mantle Boundary

2012 Study of Earth's Deep Interior Leeds

**Frost, Daniel A.\***; Rost, Sebastian; Selby, Neil D.; PKKP Scattering: Towards a global study of the Core-Mantle boundary

2011 American Geophysical Union Fall Meeting San Francisco

**Frost, Daniel A.\***; Rost, Sebastian; Selby, Neil D.; Stuart, Graham W., PKP Scattering: Detecting a heterogeneous ridge about the Core-Mantle boundary

2011 BGA Postgraduate Research in Progress Meeting Oxford

**Frost, Daniel A.\***; Rost, Sebastian; Selby, Neil D.; Stuart, Graham W., PKP Scattering: Detecting a heterogeneous ridge about the Core-Mantle boundary