Anant Hariharan

EXPERIENCE

Scripps Institute of Oceanography, La Jolla, CA — 10/1/2025-Present
Green Foundation Postdoctoral Fellow

UC Santa Barbara, Santa Barbara, CA — 8/1/2023-7/31/2025
Postdoctoral Researcher

EDUCATION

Brown University, Providence, RI — 5/28/2023
Doctor of Philosophy, Geophysics

Brown University, Providence, RI — May 2020
Master of Science, Earth Sciences

Cornell University, Ithaca, NY — May 2018
Bachelor of Arts, Summa Cum Laude,
Double Majors in Physics and Geological Sciences, and *Distinction in All Subjects*

PUBLICATIONS

Hariharan, A, Z. Eilon, G. Laske. Novel Constraints on Upper Mantle Heterogeneity Beneath the Hawaiian Archipelago from Diffracted Surface Waves, *In Preparation* for *Geophysical Journal International.*

Joshua B. Russell, C. A. Dalton, Z. Eilon, J. B. Gaherty, C. Havlin, B. Holtzman, J H. Phillips, **A. Hariharan**, D. W. Forsyth. Seismic attenuation reveals large viscosity variations in a melt-poor oceanic asthenosphere, *Submitted* to *Nature.*

Hariharan, A., Eilon, Z., Gaherty, J., Russell, J., Phillips, J., Forsyth, D. (2025). Observations of small-scale heterogeneity in the upper mantle beneath old oceanic lithosphere. *Journal of Geophysical Research: Solid Earth*, 130, e2025JB032002. https://doi.org/10.1029/2025JB032002

Hariharan, A., & Dalton, C. A. (2025). Radial Anisotropy Beneath the Continental U.S. from Surface Wave Phase Velocities. Geochemistry, Geophysics, Geosystems, 26, e2025GC012483. https://doi.org/10.1029/2025GC012483

Hariharan, A., & Dalton, C.A. (2025) On the Vulnerability of Teleseismic Surface-Wave Group Measurements to Overtone Interference. Geophysical Journal International, ggaf454, https://doi.org/10.1093/gji/ggaf454.

Huang, Y., Dalton, C. A., & **A. Hariharan** (2025). A new approach to constrain crustal Vp/Vs from Rayleigh wave phase velocity and local amplification: Application to the western US. Geophysical Research Letters, 52, e2024GL111980. https://doi.org/10.1029/2024GL111980

Hariharan, A, Porritt, Robert William, & Conley, Andrea C. (2023). A Catalog of Temporally Localized Systematic Deviations in Global Body Wave Travel-Time Measurements. https://doi.org/10.2172/2431462

Hariharan, A., C.A. Dalton. Love Wave tomography of the United States. Geophysical Research Letters, 49, e2022GL101374. https://doi.org/10.1029/2022GL101374, 2022

Hariharan, A., C.A. Dalton, J.C. Babikoff, & G. Ekström. Controls on surface wave overtone interference. Geophysical Journal International, 228, 1665-1683, https://doi.org/10.1093/gji/ggab424, 2021.

Nathan, E.M., **Hariharan, A.**, D. Florez, & K.M. Fischer. Multi-Layer Seismic Anisotropy Beneath Greenland. Geochemistry, Geophysics, Geosystems, 22(5), e2020GC009512, https://doi.org/10.1029/2020GC009512, 2021.
**The first two authors contributed equally.*

Hariharan, A., Dalton, C. A., Ma, Z., Ekström, G. (2020). Evidence of overtone interference in fundamental-mode rayleigh wave phase and amplitude measurements. Journal of Geophysical Research: Solid Earth, 125, e2019JB018540. https://doi.org/10.1029/2019JB018540

Mookherjee, M., J. Tsuchiya, & **A. Hariharan**. Crystal structure, equation of state, and elasticity of hydrous aluminosilicate phase, topaz-OH (Al_2SiO_4 $(OH)_2$) at high pressures. Physics of the Earth and Planetary Interiors, 251, 24-35, https://doi.org/10.1016/j.pepi.2015.11.006, 2016.

Mookherjee, M., D. Mainprice, K. Maheshwari, O. Heinonen, D. Patel, & **A. Hariharan**. Pressure induced elastic softening in framework aluminosilicate-albite ($NaAlSi_3O_8$). Scientific reports, 6(1), 1-10, https://doi.org/10.1038/srep34815, 2016.

Grant Proposals to External Agencies

- Cecil H. and Ida M. Green Foundation for Earth Sciences – Green Scholarship
  Funded
- National Science Foundation; EAR-Geophysics, "Exploring Heterogeneity in the Pacific Mantle using Surface Wave Arrival Angles"
  Not Funded; Ranked Competitive
- National Science Foundation – DGE 16-44760, Graduate Research Fellowship
  Funded
- Incorporated Research Institutions for Seismology - Remote Online Sessions for Emerging Seismologists Sustainability Funding. David Simpson Fund. Collaborative proposal
  Funded

AWARDS

- *GJI Outstanding Reviewer Recognition* 2025
  Geophysical Journal International
- *Joukowsky Outstanding Dissertation Prize* 2023
  Brown University Graduate School
- *Outstanding Student Presentation Award* 2021
  American Geophysical Union
- *Hunter R. Rawlings III Cornell Presidential Research Scholar* 2016 - 2018
  Cornell University
- *Chester Buchanan Memorial Award* 2018
  Department of Earth and Atmospheric Sciences, Cornell University
- *Tanner Dean's Scholar of the College of Arts and Sciences* 2014 - 2018
  Cornell University, College of Arts and Sciences
- *Dean's List* 2014 - 2017
  Cornell University
- *Michael William Mitchell Memorial Fund Award* 2017
  Department of Earth and Atmospheric Sciences, Cornell University
- *Category Winner for Best Presentation* 2017
  Spring Research Forum, Cornell Undergraduate Research Board.
- *SEG Scholarship* 2017
  Society of Exploration Geophysicists

INVITED TALKS

- *High-Resolution Imaging of Strain in the Crust & Mantle Beneath the Continental U.S.*
  Northern Arizona University 2025

- *Imaging Deformation in the Crust & Upper Mantle Beneath the Continental U.S.*
  Center for Earthquake Research and Information, University of Memphis 2024

- *Towards A High-Resolution Model of Radial Anisotropy in the Crust and Lithospheric Mantle Beneath the Continental U.S.* 2024
  University of California, Santa Barbara

- *New Developments in Seismic Imaging Enabled by Novel Paradigms for Higher-Mode Interference* 2022
  Arizona State University

- *Eliminating Overtone Interference to Obtain High-Resolution Constraints on Strain in the North American Lithosphere* 2022
  American Geophysical Union

RELEVANT EXPERIENCE

Co-Chief Scientist Summer 2025
MGL2510 Ocean-Bottom Seismometer Deployment, Galapagos Triple Junction

- Co-led an expedition on the R.V. Marcus Langseth, deploying 44 broadband seismometers at the Galapagos Triple Junction to study mid-ocean ridge dynamics

Internship Summer 2022
Sandia National Laboratories, Ground-Based Nuclear Detonation Detection Group, Albuquerque, NM

- Eliminated redundancy in global datasets of body-wave arrival times and inverted these datasets for global wavespeed models
- Identified systematic timing errors in global datasets of body-wave arrival times

Research Experience Jan 2016 - May 2018
Cornell Earthquake Seismology Group, Ithaca, NY

- Processed body wave data recorded by seismometers deployed adjacent to the Main Ethiopian Rift to understand the impact of nearby rifting on crustal and upper mantle deformation.

Summer Internship Summer 2017
University of Maryland College Park, College Park, MD

- Developed a wavelet-based approach to quantify geographic variations in the spectra of heterogeneity present within global and regional tomographic models.

Research Experience May 2014 - May 2015
Cornell Mineral Physics Group, Ithaca, NY

- Used crystallographic methods to interpret *ab initio* simulations and study the behavior of hydrous mineral phases occurring at high temperatures and pressures.

SERVICE & LEADERSHIP

*Editorial Team for open-access journal **Seismica**:* 2023-present

- Handling Editor, in charge of assessing, soliciting reviews for, and evaluating articles in Structural Seismology

- Copy-editor, managing the entire publishing workflow that takes an article from acceptance to publication.

Reviewer for:

- **Nature Communications** 2025-present
- **Communications Earth & Environment** 2024-present
- **Mechanical Systems and Signal Processing** 2021-present
- **Geophysical Journal International** 2022-present
- **Journal of Open Source Software** 2023-present
- **Geophysical Research Letters** 2023-present
- **Seismica** 2023-present

Student Representative
American Geophysical Union Seismology Section 2020 - 2022
- Served on the executive committee for the Seismology Section. Helped curate and keep section website up-to-date and participated in section meetings and activities.

Writer and Editor, "The Research Paper" Science Literary Magazine
Cornell University 2014 - 2018
- Wrote articles about Cornell University research for a broad audience. I was also selected to serve on the editorial board of this student-run publication for three years.

Co-President, Earth and Atmospheric Sciences Student Association
Cornell University 2015 - 2018
- Managed undergraduate student group finances and outreach activities, as well as organized multiple research symposia to showcase undergraduate research.

TEACHING & MENTORING

GEMS Mentor Spring 2022-present
- Advise undergraduate students in the geosciences through the process of graduate school applications.

Research Mentor Summer 2024-present
University of California Santa Barbara, Santa Barbara, CA
- Supervised an undergraduate student through a project involving body-wave imaging of a region in the central pacific beneath old and stable oceanic lithosphere.
- Supervised an undergraduate student through a project involving imaging anisotropy beneath the North Anatolian Fault system

Research Mentor Spring 2020-2023
Brown University, Providence, RI
- Supervised an undergraduate student through a research project aimed at improving the quality of Rayleigh wave phase velocity measurements. Project resulted in a poster at the American Geophysical Union Fall Meeting 2021. Also advised the student on a project focused on seismic imaging of the Rivera subduction zone.

Teaching Assistant Fall 2021
Brown University, Providence, RI

- Solid Earth Geophysics, EEPS 1610
- Responsible for grading all problem sets and answering student questions in thrice-weekly remote and in-person office hours, as well as asynchronously via Slack. I led two lab sessions, one of which I developed from scratch on surface-wave seismic tomography.

Course Assistant Spring 2021
Brown University, Providence, RI
- Natural Disasters, EEPS 0160M
- Created lectures on seismology and volcanology. Held weekly office hours.

Guest Lecturer Spring 2024
textbfUniversity of California Santa Barbara, Santa Barbara, CA

  – Single-Station Seismology, GEOL 1610