SUNYOUNG (SUNNY) PARK

Assistant Professor
Department of the Geophysical Sciences
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EDUCATION

Harvard University, Cambridge, MA
Ph.D., Earth and Planetary Sciences 2018
- Thesis: "Earth's Internal Processes and Structure Based on Novel Seismological Approaches"

Seoul National University, Seoul, South Korea
M.S., Energy Systems Engineering 2012
- Thesis: "Convergence of Full Waveform Inversion in the Complex-Frequency Domain"

B.S., *summa cum laude*, Energy Resources Engineering 2010
B.A., *summa cum laude*, Economics 2010

PROFESSIONAL APPOINTMENTS

The University of Chicago, Chicago, IL Jun 2021−present
Assistant Professor, Department of the Geophysical Sciences

California Institute of Technology, Pasadena, CA Oct 2018−May 2021
Texaco Postdoctoral Scholar, Division of Geological and Planetary Sciences

Harvard University, Cambridge, MA Jun 2018−Aug 2018
Postdoctoral Fellow, Department of Earth and Planetary Sciences

Purdue University, West Lafayette, IN Jan 2011−Jul 2012
Visiting Scholar, Geo-Mathematical Imaging Group (GMIG), Department of Mathematics

TOTAL, Pau, France Jan 2010−Feb 2010
Visiting Researcher, le Centre Scientifique et Technique Jean Féger (CSTJF), Department of "Methodes et Techniques Sismique"

Seoul National University, Seoul, South Korea Jan 2009−Jan 2010
Research Assistant, Geophysical Prospecting Laboratory, Department of Energy Resources Engineering

RESEARCH INTERESTS

- Seismic and rheological structure of the Earth (Moon & Mars) − near surface, mantle, and core
- Earthquake rupture processes – deep (300+ km) earthquakes in particular
- New seismic modeling & imaging techniques, inverse problems – e.g., "3D Printing Seismology"
- Earthquake/landslide/volcano hazards
- Environmental seismology

AWARDS AND HONORS

- Southern California Earthquake Center (SCEC) Award "Lab-Based Ground Motion Simulation Using a 3D-Printed Physical Model of the Los Angeles Basin" (#22033; $25,191), Feb 2022 – Apr 2023
- Texaco Postdoctoral Fellowship, Division of Geological and Planetary Sciences at California Institute of Technology, Oct 2018−Sep 2020
- NSF EAR program "Near-Surface Structure of the Continental United States Using Distant Earthquakes" (#1735960); Prepared the proposal and executed the work, Sep 2017−Aug 2018
- Merit Research Fellowship, Harvard University, Feb 2018−Jun 2018

- Conference Grant, Graduate Student Council of Harvard University, Feb 2018
- Distinction in Teaching Award, Derek Bok Center for Teaching and Learning at Harvard University, 2017 & 2018
- Student Presentation Award, Seismological Society of America, 2017
- Seismological Society of America Travel Grant, Seismological Society of America, Apr 2017
- James Mills Peirce Fellowship, Harvard University, Sep 2012−Aug 2015
- Samsung Scholarship, Samsung Group, Sep 2012−Jun 2017
- Brain Korea 21 Scholarship, Korean Ministry of Education, Mar 2010−Jan 2011 & Sep 2011−Aug 2012
- Scholarship for Energy Resources Development, Korean Ministry of Knowledge Economy, Mar 2009−Dec 2009
- Presidential Science Scholarship, Korea Student Aid Foundation, Mar 2006−Feb 2010
- "Dream Tree" Scholarship, College of Engineering, Seoul National University, Sep 2006
- Samsung Human Tech Paper Award, Samsung Electronics, 2005
- Gold Medal in Korean Earth Science Olympiad, The Korean Earth Science Society, 2004
- Special Award for Earth Science Exhibition in Korean Science Fair, Korean Minister of Science and Technology, 2004

PUBLICATIONS (* denotes mentees)

(in preparation)

- Chen, J-C. F.*, **Park, S.**, and MacAyeal, D. R., Tracking Multiyear Sea-Ice Variation in the Arctic Ocean over Decades Using Microseism, *in prep.*
- Neely, J. S.*, **Park, S.**, and Baltay, A. S., The Impact of Source Time Function Complexity on Stress Drop Estimates, *in prep.*
- Ruelas, A., **Park, S.**, and Sanchez-Sesma, F. J., Array Analysis of Body-Wave Polarization Data: a Robust Approach to Constrain Near-Surface Shear Wave Speeds, *submitted to Geophysical Journal International.*
- Li, Y.* and **Park, S.**, Topographic Effect on Body-Wave Polarization and Near-Surface Wave Speed Estimation, *submitted to Geophysical Journal International.*
- Chen, S.* and **Park, S.**, A Standard Preprocessing Workflow for Lab-Based Seismic Data Using 3D-Printed Earth Models, *submitted to Geophysical Journal International.*

(published)

- **Park, S.**, Avouac J.-P., Zhan Z., and Gualandi, A., 2023, Weak Base of Upper Mantle Revealed by Postseismic Deformation of a Deep Earthquake, *Nature,* 615, 455–460, https://doi.org/10.1038/s41586-022-05689-8.
- **Park, S.**, Shin, C., Kim, Y., and Clayton, R.W., 2022, Seismic Wave Simulation Using a 3D Printed Model of the Los Angeles Basin, *Scientific Reports,* 12, 4613, https://doi.org/10.1038/s41598-022-08732-w.
- **Park, S.,** Tsai, V. C., and Ishii, M., 2019, Frequency-Dependent P-Wave Polarization and its Sub-Wavelength Near-Surface Depth Sensitivity, *Geophysical Research Letters, 46,* 24, 14377−14384, https://doi.org/10.1029/2019GL084892.
- **Park, S.** and Ishii, M., 2018, Detection of Instrument Gain Problems Based on Body-Wave Polarization: Application to the Hi-net Array, *Seismological Research Letters,* 90, 2, 692−698, https://doi.org/10.1785/0220180252.
- **Park, S.**, 2018, *Earth's Internal Processes and Structure Based on Novel Seismological Approaches*, Ph.D. Thesis, Harvard University.
- **Park, S.** and Ishii, M., 2018, Near-Surface Compressional and Shear Wave Speeds Constrained by Body-Wave Polarization Analysis, *Geophysical Journal International,* 213, 3, 1559−1571,

https://doi.org/10.1093/gji/ggy072.

- **Park, S.** and Ishii, M., 2015, Inversion for Rupture Properties Based Upon Three-Dimensional Directivity Effect and Application to Deep Earthquakes in the Sea of Okhotsk Region, *Geophysical Journal International,* 203, 2, 1011−1025, https://doi.org/10.1093/gji/ggv352.
- **Park, S.**, Qiu, L., De Hoop, M. V., and Shin, C., 2012, On Time-Harmonic Seismic Data and Blending in Full Waveform Inversion, *Proceedings of the Project Review, Geo-Mathematical Imaging Group*, 1, 305−318, https://gmig.science.purdue.edu/pdfs/2012/12-17.pdf.
- **Park, S.**, 2012, *Convergence of Full Waveform Inversion in the Complex-Frequency Domain*, M.S. Thesis, Seoul National University.
- **Park, S.**, De Hoop, M. V., Calandra, H., and Shin, C., 2011, Full Waveform Inversion: A Diffuse Optical Tomography Point of View, *Society of Exploration Geophysicists Expanded Abstracts,* 30, 2471−2475, https://doi.org/10.1190/1.3627705.
- **Park, S.**, Ha, W., Shin, C., Pyun, S., and Calandra, H., 2010, A Strategy for Selecting the Laplace Damping Constants in the Laplace-Domain Inversion, Based on the Relationship Between the Laplace Damping Constant and the Detectable Depth of a High-Velocity Structure, *Society of Exploration Geophysicists Expanded Abstracts,* 29, 993−997, https://doi.org/10.1190/1.3513943.

Published Data Sets

- **Park, S.** and Shin, C., 2022, Experimental Seismic Data Obtained Using a 3D-Printed Model of the Los Angeles Basin Structure [Data set], *Zenodo.* https://doi.org/10.5281/zenodo.6350691.

CONFERENCE PRESENTATIONS (* denotes mentees)

Conference Talks

- **Park, S.**, Avouac J.-P., Zhan Z., and Gualandi, A., 2023, Weak Base of Upper Mantle Revealed by Postseismic Deformation of a Deep Earthquake, *AGU Annual Meeting 2023, San Francisco, CA.* **(invited)** *(expected)*
- **Park, S.**, Kanamori, H., Rivera, L., 2023, The Near-Source ScS Phase from the 2011 Tohoku-Oki Earthquake Might Have Triggered a Relatively Slow Slip on the Megathrust Boundaries Beneath the Broad Area of Japan, *AGU Annual Meeting 2023, San Francisco, CA. (expected)*
- Chen, S.* and **Park, S.**, 2023, Basin Effect on Ground Motion Examined Using Laboratory Seismic Data Based on 3D-Printed Los Angeles Basin Structure, *AGU Annual Meeting 2023, San Francisco, CA. (expected)*
- Chen, S.* and **Park, S.**, 2023, Deep Earthquakes Can Generate Larger Co-Seismic Displacements Than Shallow Events, *AGU Annual Meeting 2023, San Francisco, CA. (expected)*
- Chen, J-C.F.*, **Park, S.**, and MacAyeal D.R., 2023, Tracking Multiyear Sea-Ice Variation in the Arctic Ocean over Decades with Microseism, *AGU Annual Meeting 2023, San Francisco, CA. (expected)*
- **Park, S.**, Avouac J.-P., Zhan Z., and Gualandi, A., 2023, Post-Seismic Deformation Following a Deep (~560-km) Earthquake Reveals Weak Base of the Upper Mantle, *SSA Annual Meeting 2023, San Juan, Puerto Rico* **(invited)**.
- Neely, J.S.*, **Park, S.**, and Baltay, A.S., 2023, Assessing the Accuracy of Earthquake Stress Drop Estimation Methods for Complex Ruptures Using Synthetic Earthquakes, *SSA Annual Meeting 2023, San Juan, Puerto Rico* **(invited)**.
- **Park, S.**, Avouac J.-P., Zhan Z., and Gualandi, A., 2023, Weak Base of the Upper Mantle Revealed by Postseismic Deformation Following a Deep (~560 km) Earthquake, *2023 GAGE/SAGE Community Science Workshop, Pasadena, CA* **(invited plenary)**.
- **Park, S.**, Kanamori, H., Rivera, L., 2022, Step-Like Motion Associated with the Near-Source ScS Phase from the 2011 Tohoku-Oki Earthquake, *AGU Annual Meeting 2022, Chicago, IL.*
- Chen, S.* and **Park, S.**, 2022, Predicting Co-Seismic Deformation Following Intermediate and Deep Earthquakes: Toward Accurate GNSS Break Estimates and Improved Understanding of Deep Rupture Processes, *AGU Annual Meeting 2022, Chicago, IL.*

- Chen, S.* and **Park, S.**, 2022, Phase Identification and Denoising Methods for Laboratory Seismic Data Based on 3D-Printed Earth Models, *AGU Annual Meeting 2022, Chicago, IL.*
- Neely, J.S.*, Baltay, A., and **Park, S.**, 2022, Assessing the Accuracy of Earthquake Stress Drop Estimation Methods for Complex Ruptures Using Synthetic Earthquakes, *AGU Annual Meeting 2022, Chicago, IL.*
- Wang, J.* and **Park, S.**, 2022, Effects of the Los Angeles Basin on Ground Motion Studied Using Lab Experiments on a 3D-Printed Model, *SSA Annual Meeting 2022, Seattle, WA.*
- Wang, J.* and **Park, S.**, 2022, A New Approach for Simulating Sound Wave Propagation Based on Lab Experiments Using 3D-Printed Models, *SSA Annual Meeting 2022, Seattle, WA.*
- **Park, S.**, Shin, C., Kim, Y., and Clayton, R.W., 2021, Ground Motions Simulated on a 3D Printed Model of the Los Angeles Basin, *AGU Annual Meeting 2021, New Orleans, LA.*
- **Park, S.**, Avouac J.-P., Zhan Z., and Gualandi, A., 2021, A Low-Viscosity Layer at the Bottom of the Mantle Transition Zone Inferred from the Post-Seismic Deformation Following a 600-km Deep Earthquake, *AGU Annual Meeting 2021, New Orleans, LA.*
- **Park, S.**, Shin, C., Kim, Y., and Clayton, R.W., 2021, Ground Motions Simulated on 3D Printed Earth Models, *SSA Annual Meeting 2021, Online.*
- **Park, S.**, Avouac J.-P., Zhan Z., and Gualandi, A., 2020, New Insights into Upper-Mantle Rheology from the Post-Seismic Deformation Following Deep Earthquakes, *AGU Annual Meeting 2020, Online.*
- Ruelas, A., **Park, S.**, and Sanchez-Sesma, F. J., 2020, Array Analysis of Body-Wave Polarization Data: Application to Mexico City Seismic Networks, *AGU Annual Meeting 2020, Online.*
- **Park, S.**, Avouac J.-P., Zhan Z., and Gualandi, A., 2019, Post-Seismic Deformation from Deep Earthquakes−Insights into Mantle Rheology and Existence of Afterslip, *AGU Annual Meeting 2019, San Francisco, CA.*
- Sanchez-Sesma, F. J., Cruz-Jimenez, H., Ruelas-Urias, J. A., Ortega-Rodriguez, M. A., Meza-Fajardo, K. C., Nagashima, F., **Park, S.**, Ordaz, M., and Lermo, J. F., 2019, Towards a deep understanding of the seismic response of the Mexico City Valley: A study based on diverse spectral ratios and numerical simulations, *AGU Annual Meeting 2019, San Francisco, CA.*
- **Park, S.**, Ishii, M., and Tsai, V. C., 2019, Site Characterization Based Upon Body-Wave Polarization, *SSA Annual Meeting 2019, Seattle, WA.*
- **Park, S.** and Ishii, M., 2018, Frequency-Dependent Body-Wave Polarization for Constraining Local 1-D Near-Surface Structure, *AGU Fall Meeting 2018, Washington, D.C.*
- **Park, S.** and Ishii, M., 2018, Near-Surface P- and S-Wave Speeds Estimated Based upon Body-Wave Polarization (Invited), *SSA Annual Meeting 2018, Miami, FL.*
- **Park, S.** and Ishii, M., 2018, Detailed Structure of the Upper-Mantle Discontinuities Using a Novel Approach and High-Frequency Triplication Data, *SSA Annual Meeting 2018, Miami, FL.*
- **Park, S.** and Ishii, M., 2018, Three-Dimensional Directivity Analysis for Resolving Source Parameters and Rupture Complexities, *SSA Annual Meeting 2018, Miami, FL.*
- Ishii, M. and **Park, S.**, 2017, Local Variations in the Upper-Mantle Transition Zone Structure from a Novel Approach Using High-Frequency Triplication Data, *AGU Fall Meeting 2017, New Orleans, LA.*
- **Park, S.** and Ishii, M., 2017, A New Approach to Constrain Near-Surface Seismic Structure Based Upon Body-Wave Polarization, *SSA Annual Meeting 2017, Denver, CO.*
- **Park, S.** and Ishii, M., 2016, A Novel Approach to Constrain Near-Surface Seismic Wave Speed Based on Polarization Analysis, *AGU Fall Meeting 2016, San Francisco, CA.*
- Ishii, M. and **Park, S.**, 2016, Constraining Seismic Structure of Upper-Mantle Discontinuities: A New Approach Using High-Frequency Triplication Data, *AGU Fall Meeting 2016, San Francisco, CA.*
- **Park, S.** and Ishii, M., A New Approach to Study the Upper-Mantle Seismic Discontinuities Based on Triplication Data: Application to the Kuril Subduction Zone Using Hi-net Array, *AGU Fall Meeting 2015, San Francisco, CA.*

- **Park, S.**, De Hoop, M. V., Calandra, H., and Shin, C., 2011, Full Waveform Inversion: A Diffuse Optical Tomography Point of View, *SEG Annual Meeting 2011, San Antonio, TX*.
- **Park, S.**, De Hoop, M. V., Calandra, H., and Shin, C., 2011, Very Low Frequencies vs. Diffuse Optical Tomography, *Geo-Mathematical Imaging Group Project Review Meeting, West Lafayette, IN*.
- **Park, S.**, Ha, W., Shin, C., Pyun, S., and Calandra, H., 2010, A Strategy for Selecting the Laplace Damping Constants in the Laplace-Domain Inversion, Based on the Relationship Between the Laplace Damping Constant and the Detectable Depth of a High-Velocity Structure, *SEG Annual Meeting 2010, Denver, CO*.

Conference Posters

- Neely, J.S.*, **Park, S.**, and Baltay, A.S., 2023, Using Earthquake Source Time Function Complexity to Assess the Accuracy of Stress Drop Estimates, *AGU Annual Meeting 2023, San Francisco, CA. (expected)*
- Zhang, C.* and **Park, S.**, 2023, Role of Slab in Postseismic Deformation Following Deep Earthquakes, *AGU Annual Meeting 2023, San Francisco, CA. (expected)*
- **Park, S.**, and Li, Y.*, Topographic Effect on Body-Wave Polarization and Near-Surface Wave Speed Estimation, *AGU Annual Meeting 2023, San Francisco, CA. (expected)*
- Chen, J-C.F.*, Antropova, Y., Bonneau, J., Crawford, A. J., Brideau, B. L., Steiner, O. S., Mueller, D., **Park, S.**, and MacAyeal D. R., Small-scale, Short-term Seismic Field Survey on Milne Ice Shelf, *AGU Annual Meeting 2023, San Francisco, CA. (expected)*
- Neely, J.S.*, **Park, S.**, and Baltay, A.S., 2023, Assessing the Accuracy of Earthquake Stress Drop Estimation Methods for Complex Ruptures Using Synthetic Earthquakes, *SSA Ground Motion 2023, Vancouver, BC*.
- Chen, J-C.F.*, **Park, S.**, and MacAyeal D.R., 2023, Tracking Summer Arctic Sea-Ice Extent Using Microseism Observation, *2023 International Glaciological Society Symposium on Sea Ice, Bremerhaven, Germany* **(honorable mention)**.
- **Park, S.**, Kanamori, H., and Rivera, L., 2023, Step-Like Motion Associated with Near-Source ScS Phase From the 2011 Tohoku-Oki Earthquake: Potential Triggering by ScS, *SSA Annual Meeting 2023, San Juan, Puerto Rico*.
- Chen, S.* and **Park, S.**, 2023, Predicting Co-Seismic Deformation Following Intermediate and Deep Earthquakes, *2023 GAGE/SAGE Community Science Workshop, Pasadena, CA*.
- Morioka, T.*, Wang, J.*, and **Park, S.**, 2022, Simulating Acoustic Wave Propagation Using 3D-Printed Topographic Models, *AGU Annual Meeting 2022, Chicago, IL*.
- Chen, S.*, Wang, J.*, and **Park, S.**, 2022, Investigating the Basin Effect on Ground Motions Using Laboratory Seismic Data Based on 3D-Printed Los Angeles Basin Structure. *SCEC Annual Meeting 2022, Palm Springs, CA*.
- **Park, S.**, Shin, C., Kim, Y., Kim D., Clayton, R.W., Shin, S., and Chung, W., 2020, Seismic Experiments on 3D Printed Earth Models, *AGU Annual Meeting 2020, Online*.
- **Park, S.,** Shin, C., Kim, Y., and Clayton R.W., 2020, Physical Velocity Models for Southern California by 3D Printing, *SCEC Annual Meeting 2020, Online Program*.
- **Park, S.**, Tsai, V. C., and Ishii, M., 2019, Seismic Site Characterization Using Body-Wave Polarization, *AGU Annual Meeting 2019, San Francisco, CA*.
- **Park, S.,** Tsai, V. C., and Ishii, M., 2019, Near-Surface Structure Constrained Using Body-Wave Polarization, *SCEC Annual Meeting 2019, Palm Springs, CA*.
- Ishii, M. and **Park, S.**, 2018, Detection of Instrument Gain Problems Based on Body-Wave Polarization: Application to the Hi-net Array, *AGU Fall Meeting 2018, Washington, D.C*.
- **Park, S.** and Ishii, M., 2018, Three-Dimensional Directivity Analysis for Resolving Source Parameters and Complex Rupture Processes, *Workshop on Modeling Earthquake Source Processes, Pasadena, CA*.
- **Park, S.** and Ishii, M., 2017, P- and S-Wave Speeds of the Very Upper Crust Estimated by a New

Technique Based Upon Body-Wave Polarization, *AGU Fall Meeting 2017, New Orleans, LA.*

- **Park, S.** and Ishii, M., 2017, Three-Dimensional Multi-Episode Directivity Analysis for Complex Ruptures, *SSA Annual Meeting 2017, Denver, CO.*
- Montenegro, D.M., Bogiatzis, P., **Park, S.**, and Ishii, M., 2016, An Automated Method for Determining Seismic Anisotropy: Application to Laterally Varying Anisotropy at the Japan Subduction Zone, *AGU Fall Meeting 2016, San Francisco, CA.*
- **Park, S.** and Ishii, M., 2016, A New Approach to Study the Upper-Mantle Seismic Discontinuities Based on High-Frequency Triplication Data: Application to the Kuril Subduction Zone Using the Hi-net Array, *CIDER 2016 Summer Program, Santa Barbara, CA.*
- **Park, S.** and Ishii, M., 2016, 3-D Directivity Analysis of Deep Earthquakes in the Sea of Okhotsk Region, *IRIS Workshop 2016, Vancouver, WA.*
- **Park, S.**, Ökeler, A., and Ishii, M., 2015, Upper-mantle seismic structure beneath a region northeast of Japan based on Hi-net array triplication data, *Gordon Research Conference – Interior of the Earth 2015, South Hadley, MA.*
- **Park, S.**, Ökeler, A., and Ishii, M., 2014, Upper-mantle seismic structure beneath a region northeast of Japan based on Hi-net array triplication data, *AGU Fall Meeting 2014, San Francisco, CA.*
- **Park, S.** and Ishii, M., 2013, Inversion for Rupture Properties Based Upon Three-Dimensional Directivity Effect, *AGU Fall Meeting 2013, San Francisco, CA.*

OTHER RESEARCH EXPERIENCES

- Experiences in Field Based Seismology
  - Putting together seismic sensors (low-cost 3-axis MEMs accelerometers with Raspbery-Pi_3b micro-computer) for the community seismic network that are deployed at the Los Angeles Unified School District, Nov 2018
  - 3-Component seismic node deployment along a line in the San Gabriel Basin for studying the basin structure, May 2019 & Nov 2019
- Sharpness of Earth's inner-core boundary inferred from reflected P waves
- Seismic waveform modeling and imaging techniques including full waveform inversion and migration

INVITED TALKS

- Northern Illinois University, Earth, Atmosphere & Environment Department Colloquium, Oct 2023
- TimeMan Project Group (Université de Lille), TimeMan Seminar Series, May 2023
- Seismological Society of America 2023 Annual Meeting, Apr 2023
- The University of Chicago, Eckhardt and Neubauer Scholars speaker series, Apr 2023
- GAGE/SAGE 2023 Community Science Workshop, Plenary Talk, Mar 2023
- California Institute of Technology, "Envisioning the Future of Geophysics" Symposium, Nov 2022
- Saint Louis University, Earth and Atmospheric Sciences Department seminar, Nov 2022
- University of Illinois Chicago, Earth and Environmental Sciences Department seminar, Feb 2022
- Northwestern University, EPS Department seminar, Jan 2022
- Kangwon National University, BK21 Seminar at the Geophyscis Department, Dec 2021
- GYPSUM (GeodesY and geoPhysics Seminar of the Upper Midwest) seminar, Nov 2021
- Purdue University, EAPS Department seminar, Oct 2021
- ETH Zurich, Geophysical Institutes Colloquium, Jun 2021
- University of California, Berkeley, EPS Seminar, Apr 2021
- University of Utah, SeismoTea, Mar 2021
- University of Michigan, Smith Lecture, Mar 2021
- University of Cambridge, Bullard Laboratories Seminar, Nov 2020
- University of Memphis, Center for Earthquake Research and Information, Department Seminar, Oct 2020

- Korea Institute of Geoscience and Mineral Resources, KERC Seminar, Oct 2020
- U.S. Geological Survey Menlo Park Science Center, Earthquake Seminar, Sep 2020
- University of Washington, Earth and Space Sciences Department Colloquium, Apr 2020
- University of California, San Diego, Scripps Institute of Oceanography, Department Seminar, Mar 2020
- The University of Chicago, Department of the Geophysical Sciences Seminar, Jan 2020
- The University of Texas at Austin, DeFord Lecture, Nov 2019
- University of Southern California, Earthquake Physics Seminar, Sep 2019
- National Autonomous University of Mexico (UNAM), Institute of Engineering, Sep 2019
- Massachusetts Institute of Technology, Department of Earth, Atmospheric and Planetary Sciences, Special Seminar, Apr 2019
- University of California, San Diego, Scripps Institute of Oceanography, Geophysics Seminar, Apr 2019
- Columbia University, Lamont-Doherty Earth Observatory, MGG/SGT Seminar, Sep 2018
- Seismology of the Americas (SSA Annual Meeting, Miami, FL), May 2018
- University of Toronto, Geophysics Seminar, Apr 2018
- California Institute of Technology, Seismolab Seminar, Apr 2018
- Massachusetts Institute of Technology, Earth Resources Laboratory, FISH Seminar, Sep 2017
- Brown University, Geophysics Seminar, May 2017
- U.S. Geological Survey Menlo Park Science Center, Earthquake Seminar, Mar 2017
- University of California, Berkeley, Berkeley Seismological Laboratory Seminar, Mar 2017
- Seoul National University, Department of Energy and Resources Engineering, Jul 2015
- Boston University, Seismology Group Seminar, Nov 2014

Selected Media Coverage

- *"Deep earthquakes could reveal secrets of the Earth's mantle"* by Louise Learner, *UChicago News*, Feb 2023
- *"Lasers, 3D printing reveal how the ground shakes following earthquakes"* by Louise Learner, *UChicago News*, May 2022
- *"Earthquakes Ripple Through 3D Printed Models of Los Angeles"* by K. Kornei, *Eos*, Dec 2021 (doi: 10.1029/2021EO210657)
- *"Researchers leverage 3d printing to better understand earthquake hazards"*, by H. Everett, *3D Printing Industry*, Dec 2021
- *On the seminar given at the SNU Forum* (in Korean), *Seattle N*, Oct 2021
- *"3D Printed Models Provide Clearer Understanding of Ground Motion"*, *Seismological Society of America*, Apr 2021
- *On the Aftershock Sequence Following the 2019 Ridgecrest Earthquake* (in Korean), Radio Korea, Oct 2019
- *On the 2019 Ridgecrest Earthquake* (in Korean), Radio Korea, Jul 2019

Advising

Postdocs

- James S. Neely, NSF postdoctoral fellow, Sep 2022–present
- Jiong Wang, Postdoctoral scholar, Oct 2021–Jun 2022, now Catastrophe Modeler at Safety National

Graduate Students

- Chao Zhang, Ph.D. student in Geophysical Sciences, Main Advisor, Sep 2022–present
- Jui-Chun (Freya) Chen, Ph.D. student in Geophysical Sciences, Co-Advisor, Sep 2022–present
- Sifang Chen, Ph.D. student in Geophysical Sciences, Main Advisor, Mar 2022–present
- Emma Stoutenburg, Ph.D. candidate in Geophysical Sciences, Thesis Committee, Jun 2022–present

- Andrea Bryant, Ph.D. candidate in Physics, Thesis Committee, Dec 2021–present
- Taiga Morioka, M.S. in Statistics, Academic & Research Advisor, Jun 2022–Jun 2023, now Ph.D. student in geophysics at UCSD
- Yuan Shen Li, Ph.D. in Physics, Research Collaboration, Nov 2021–Jun 2023, now Applications Engineer at COMSOL, Inc.

Undergraduate Students

- Nathalie Lai, Geophysical Sciences, Research Collaboration, Nov 2021–present

TEACHING

The University of Chicago, Chicago, IL

- *Instructor*, GEOS 31250: "Topics in Seismology", Spring 2023
- *Instructor*, GEOS 21205/31205: "Introduction to Seismology, Earthquakes, and Near-Surface Earth Seismicity", Winter 2023
- *Co-Teacher*, GEOS 21205/31205: "Introduction to Seismology, Earthquakes, and Near-Surface Earth Seismicity", Winter 2022

Harvard University, Cambridge, MA

- *Teaching Fellow*, "GeoSciFi Movies: Real vs. Fiction" in Freshman Seminar Program, Fall 2016 & Fall 2017
  - Developed a hands-on exercise for students to learn how to strengthen a building to be resilient to earthquakes and understand its societal impact.
- *Teaching Fellow*, "The Dynamic Earth: Geology and Tectonics Through Time" in Department of Earth and Planetary Sciences, Fall 2013
  - Led a weekly lab section and two field trips to Boston Bay and Appalachian basin (Mohawk Valley and Connecticut River Valley).

Seoul National University, Seoul, South Korea

- *Teaching Assistant*, "Geophysical Engineering" in Department of Energy Resources Engineering, Fall 2011
  - Conducted field experiments (electrical and seismic surveys) with students to image subsurface structure around the campus.
- *Teaching Assistant*, "Engineering Mathematics" in Department of Energy Resources Engineering, Spring 2010
  - Lectured on PDE, Fourier analysis, and complex analysis.
- *Student Lecturer*, "Basic Calculus" in Department of Mathematical Science, Spring 2008 & Fall 2008
  - Officially lectured the course as a junior, for freshmen to take for credit.

OUTREACH

- *Interviewee*, Live Science, Oct 2023
  - On the Earth's internal structure (https://www.livescience.com/planet-earth/geology/whats-inside-earth)
- *Speaker*, "Art of Science" Outreach Series, Jun 2023
  - Outreach lecture "Listening to the Vibrating Earth: In Nature and in the Lab" to public in an art gallery
- *Mentor*, Seismological Society of America, Mar 2023
  - Served as a mentor for "How to Present Your Work and Communicate Effectively" session.
- *Interviewee*, TED science curator & author David Biello, Mar 2023
  - On the recent work on using deep earthquakes for inferring the mantle viscosity structure
- *Interviewee*, Middle East Broadcasting Networks, Inc., Mar 2023

  - On the devastating 2023 Türkiye earthquake sequence and the recent work on using deep earthquakes for inferring the mantle viscosity structure
- *Interviewee*, WIRED magazine, Feb 2023
  - On earthquake early warning, specifically by using fiber optic cables (https://www.wired.com/story/how-fiber-optic-cables-could-warn-you-of-an-earthquake/)
- *Interviewee*, DePaul University student newspaper *The DePaulia*, Jan 2023
  - Phone interview on California's recent earthquakes (article published)
- *Speaker*, Society of Women in Physics (at the University of Chicago) Speaker Series, Oct 2022
  - Outreach lecture "Introduction to Seismology" to undergraduate students
- *Interviewee*, "The Course" Podcast, Oct 2022
- *Interviewee*, Media interview for a science article for K-12 students, Feb 2022
  - Phone interview, on the resonant frequencies of mountains (article published in *Science News for Students*)
- *Speaker*, SNU Forum, Oct 2021
  - Outreach lecture "Introduction to Seismology" to the public and the Seoul National University Alumni in America.
- *Mentor*, Seismological Society of America, Sep 2021
  - Served as a mentor at the Ground Motion Mentoring session.
- *Interviewee*, Media Interview, Jul 2019 & Oct 2019
  - Phone interview with *"RadioKorea"* on the consequences of the M6.4 and M7.1 Searles Valley Sequence on 7/4/19.
- *Lecturer*, Caltech Outreach Session, May 2019
  - Outreach lecture "Introduction to Seismology" to Ulsan Science High School students during their visit to Caltech.
- *Presenter*, Seismological Laboratory Booth at "Science for March" Public Outreach Event, Mar 2019
  - Demonstrated a non-Newtonian fluid to help K-12 students understand the behavior of Earth's mantle.

PROFESSIONAL SERVICE

- EarthScope Consortium Nominating Committee, 2023−present
- EarthScope Consortium Member Representative, 2022−present
- Colloquium Committee, The University of Chicago, 2022−2023 & 2023−2024
- Chamberlin Search and Postdoc Advising Committee, The University of Chicago, 2021−2022 & 2022−2023
- Graduate Application Screening Committee, The University of Chicago, 2021−2022
- Proposal Reviewer for *National Science Foundation* & *C3.ai Digital Transformation Institute*
- Reviewer for *Nature Communications, Nature Astronomy, IEEE Transactions on Geoscience and Remote Sensing, Earth and Planetary Science Letters, Geophysical Research Letters, Journal of Geophysical Research, Geophysical Journal International, Bulletin of the Seismological Society of America & Seismological Research Letters*
- Organizer of Brown Bag Seminar, Seismological Laboratory, California Institute of Technology, 2019−2020
- Judge for the AGU Outstanding Student Paper Award, 2018−2022
- Co-Leader of a Discussion Session "Observational constraints, their uncertainty, and ways to improve them" at Workshop on Modeling Earthquakes Source Processes, 2018
- Organizer of Agassiz Visiting Lecturer Series, Department of Earth and Planetary Sciences, Harvard University, 2017
- Organizer of Graduate Student Solid Earth Seminar, Department of Earth and Planetary Sciences, Harvard University, 2014−2015

MEMBERSHIPS

- AGU (American Geophysical Union)
- SSA (Seismological Society of America)
- SCEC (Southern California Earthquake Center)