Jeena Yun

Distinguished Postdoctoral Fellow
Institue for Geophysics, The University of Texas at Austin
jeena.yun@austin.utexas.edu | Google Scholar | Webpage | Github | LinkedIn
ROC 2.116A, 10601 Exploration Way Building 196, Austin, TX 78758

Research Interests

I am interested in understanding earthquake source physics using HPC-empowered physics-based numerical simulations. My research focuses on the physical mechanisms underlying earthquake triggering and the sources of slip complexity. By bridging physics-based numerical models across different time scales, from a single dynamic rupture to seismic cycles, I explore interactions between slow- and fast fault slip and their implications on seismic hazards.

Education

2026 **Ph.D., Earth Sciences**
Scripps Institution of Oceanography, University of California, San Diego, CA, USA
Thesis: *Physics-Based Assessment of Earthquake Triggering Mechanisms: Methodological Improvements and Applications*
Advisors: Prof. Yuri Fialko & Prof. Alice-Agnes Gabriel

2021 **M.Sc., Earth and Environmental Sciences**
Seoul National University, Seoul, South Korea
Thesis: *Spatial variation and frequency dependence of Lg wave attenuation with site response correction along the CCSE array in central California, US*
Advisor: Prof. YoungHee Kim

2019 **B.Sc., Earth and Environmental Sciences** (*Summa Cum Laude*)
Seoul National University, Seoul, South Korea

Research & Fieldwork Experiences

2026 – **UTIG Distinguished Postdoctoral Fellow**, UT Austin

2021 – 2026 **Graduate Student Researcher**, UC San Diego

- Investigated earthquake triggering interactions at various tectonic regimes
- Preformed physics-based, HPC-enabled numerical simulations: sequences of earthquakes and aseismic slip (SEAS) simulation and dynamic rupture simulations
- Investigated the effects of frictional/stress heterogeneities and loading methods on modeled slip complexity
- Development team member of the open-source SEAS software *Tandem*

2022 – 2026 **MTMOD: Megathrust Modeling Framework** [Link]

- 2026 Research retreat: Effects of splay faults in earthquake rupture and cycle in Cascadia
- 2025 NNW-MTMOD workshop and field trip in New Zealand: Discussed physics-based seismic hazard models for the Alpine Fault and visited paleotsunami deposits in New Zealand

- 2024 Research retreat: Reevaluated effects of static and dynamic stress change of the 2016 M_w7.8 Kaikōura earthquake on the Hikurangi subduction zone
- 2023 Summer school: Explored relationship between deep locking and the along-strike variation of shallow slow earthquakes at the Japan trench
- 2022 Summer school: Predicted probability of M $\geq$ 8 Earthquakes in the Hikurangi subduction zone, based on seismicity rate forecast and synthetic magnitude-frequency distribution

2024 – 2026 **Quakeworx: A science gateway for seismic simulations** [Link]
Development team for software *Tandem* and *SeisSol*

Jul. 2025 **2nd *Tandem* Hackathon - Supercomputing of the Seismic Cycle (Organizer)**
Implementation of linking between quasi-dynamic and fully-dynamic solvers

Nov. 2024 **1st *Tandem* Hackathon - Supercomputing of the Seismic Cycle (Organizer)**
Improved documentation and test the new version

2018 **Shipboard scientist - Pacific Array project**
Ocean bottom seismometer deployment (Oldest-1 array); RV Isabu

2018 **Undergraduate Thesis Research**
Seismology, Geophysics & Tectonophysics Lab, Seoul National University (Prof. YoungHee Kim)
Thesis: Lateral variations of crustal seismic attenuation in Central California from Lg Q inversion

2017 **Undergraduate Research Internship**
Satellite Geophysics Lab, Seoul National University (Prof. Duk-jin Kim)
Topic: InSAR imaging of the crustal deformation following the 2017 Mw. 5.4 Pohang earthquake

2017 **Undergraduate Research Program**
Resource Geology Lab, Seoul National University (Prof. Insung Lee)
Topic: Origin of Sulfur in Sulfide Minerals in Precambrian Strata: Based on Multiple Sulfur Isotopes

Publications

Peer-Reviewed

5. Gabriel, A.-A., P. Karki, Y. Magen, B. Oryan, T. Ulrich, **J. Yun**, and D. A., May (2026), Tandem: An Open-Source High-Performance Computing Volumetric Software to Model Sequences of Earthquakes and Aseismic Slip Across Complex Fault Systems, *Seismological Research Letters*. (in press) [Preprint]
4. **Yun, J.**, A.-A. Gabriel, D. A. May, and Y. Fialko (2025), Controls of dynamic and static stress changes and aseismic slip on delayed earthquake triggering: Application to the 2019 ridgecrest earthquake sequence, *Journal of Geophysical Research: Solid Earth*, *130*(12), e2025JB031,271, doi: https://doi.org/10.1029/2025JB031271 [PDF]
3. **Yun, J.**, A.-A. Gabriel, D. A. May, and Y. Fialko (2025), Effects of stress and friction heterogeneity on spatiotemporal complexity of seismic and aseismic slip on strike-slip faults, *Journal of Geophysical Research: Solid Earth*, *130*(12), e2025JB031,270, doi: https://doi.org/10.1029/2025JB031270 [PDF]
2. Lambert, V. R., B. A. Erickson, J. Jiang, E. M. Dunham, T. Kim, ..., and **J. Yun** (2025), Community-driven code comparisons for simulations of fluid-induced aseismic slip, *Journal of Geophysical Research: Solid Earth*, *130*(4), e2024JB030,601, doi: https://doi.org/10.1029/2024JB030601 [PDF]
1. **Yun, J.**, Y. Kim, and R. W. Clayton (2022), Spatial variation and frequency dependence of Lg wave attenuation with site response correction along the CCSE array in Central California, US, *Geochemistry, Geophysics, Geosystems*, *23*(1), e2021GC010,149, doi: https://doi.org/10.1029/2021GC010149 [PDF]

Under Review

- **Yun, J.**, Y. Fialko, D. A. May, A.-A. Gabriel, C. A. Williams and D. Liu, Effects of loading schemes in volumetric simulations of sequences of earthquakes and aseismic slip (SEAS) in subduction zones, submitted to *Journal of Geophysical Research: Solid Earth.* (in rev.) [Preprint]

In Preparation

- **Yun, J.**, J. W. C. Wong, Y. Fialko, A.-A. Gabriel, D. A., May, L. M. Wallace, and C. A. Williams, The 2016 M_w 7.8 Kaikōura, New Zealand, Earthquake Triggers Slow Slip Events and Delays Megathrust Earthquakes in Rate-and-State Friction Simulations of the Hikurangi Subduction Zone.

Invited Talks

Jan. 2025 **Special Seminar**, Korea Institute of Geoscience and Mineral Resources
"Controls of Dynamic and Static Stress Changes and Aseismic Slip on Delayed Earthquake Triggering: Application to the 2019 Ridgecrest Earthquake Sequence"

Nov. 2024 **Lithosphere Dynamics Seminar**, University of Southern California
"Controls of Dynamic and Static Stress Changes and Aseismic Slip on Delayed Earthquake Triggering in Rate-and-State Simulations of the 2019 Ridgecrest Earthquake Sequence"

Academic Honors, Awards & Scholarships

2026 **UTIG Distinguished Postdoctoral Fellowship**, UT Austin

2025 **Student Presentation Award**, Seismological Society of America (SSA)

Paul Andrew Spudich Travel Grant ($2,190), Seismological Society of America (SSA)
International Joint Workshop on Slow-to-Fast Earthquakes 2025, Kochi, Japan

Outstanding Student Presentation Award, American Geophysical Union (AGU)

2023 **SIO Department Student Award** ($3,000), Scripps Institution of Oceanography
Workshop on Mechanics of the Earthquake Cycle, Trieste, Italy

2021 **Outstanding Student Paper Award**, Korean Society of Earth and Exploration Geophysicists

2020 **Outstanding Student Paper Award**, Geological Society of Korea

2019 - 2020 **OK Bae-Jung Scholarship**

2019 - 2020 **Woosan Scholarship**

2019 **Best Teaching Assistant Award**, Faculty of Liberal Education, SNU

Kim Jong-On Scholarship

Brain Korea 21 Plus Fellowship, Korean Ministry of Education

Seoul National University Tuition Scholarship (Full Tuition)

Outstanding Graduate, Geological Society of Korea

Outstanding Graduate, Korean Society of Economic and Environmental Geology

Graduation with Honors (*Summa Cum Laude*), Seoul National University

2017 **Undergraduate Research Fellowship**, Faculty of Liberal Education, SNU

2016 - 2018 **TS Fellowship Foundation Scholarship** (Full Tuition)

2015 **Seoul National University Tuition Scholarship** (Full Tuition)

Teaching Experiences

Jun. 2026 **Instructor**
2026 SCEC Tandem Training Workshop: Modeling the Earthquake Cycle from Faults to Supercomputers [Link]

Spring 2026 **Teaching Assistant**, UC San Diego
SIO113 *Comp & Data Analysis in Geosci*

Spring 2025 **Teaching Assistant**, UC San Diego
SIO10 *The Earth*

Jan. 2025 ***Tandem* Software Training Instructor**
Quakeworx Kick-off: Advancing Earthquake Science and Cybertraining in Seismology [Link]

Spring 2020 **Teaching Assistant (Lecturer)**, Seoul National University
034.037 (001) *Earth and Environmental Science Laboratory*

Teaching Assistant, Seoul National University
034.036 (001) *Earth and Environmental Science*

Spring 2019 **Teaching Assistant (Lecturer)***, Seoul National University
034.041 (001) *Earth System Science Laboratory*
** Awarded as Best Teaching Assistant*

Participated Research Grants

2026 **SCEC Award 26020**
Tandem Workshop: Modeling the Earthquake Cycle from Faults to Supercomputers
Investigators: Oryan, B., Gabriel, A.-A., **Yun, J.**, Magen, Y., May, D.A.

2025 **SCEC Award 25313**
Physics-based modeling of postseismic slip in the complex Ridgecrest fault system using tandem
Investigators: Gabriel, A.-A., Magen, Y., May, D.A., **Yun, J.**

Scientific Community Service

2026 **2026 AGU Fall Meeting Student Convener**
S007 - Data-Constrained Earthquake Source Modeling: Kinematic, Dynamic, and Analytical Approaches

2025 **2025 AGU Fall Meeting Student Convener**
T016 - Structural Evolution, Mechanics, and Hazards of Geometrically Complex and Multi-segment Fault Systems

2024 **2024 AGU Fall Meeting Session Chair**
T031 - Structure, Mechanics, and Hazards of Geometrically Complex Fault Systems

2023 - 2025 **Geophysics Seminar Organization Committee**, UC San Diego

2022 - 2024 **Geophysics Student Representative**, UC San Diego

2023 **2023 AGU Fall Meeting Student Convener**
S034 - Understanding the Variability in Earthquake Source Parameter Measurements

2022 - 2023 **SIO Editorial and Publications Committee**, UC San Diego

2016 - 2018 **Global Leadership Program, GLEAP (Honor Society)**, Seoul National University

Journal Reviews: *Journal of Geophysical Research: Solid Earth*, *Physics of the Earth and Planetary Interiors*, *EGUsphere*

Skills

- **Computing Languages and Scientific Software**:
  - Proficient: Python, Matlab, Unix, Lua, LaTeX, Gmsh, Tandem, SeisSol
  - Advanced: ParaView, GMT, HPC computing
  - Basic: PETSc, C++
- **Languages**: English (proficient), Korean (native)

Public Outreach

2023 **GLEAP Monthly News Letter, Vol.34** (in Korean), Author
Title: *Pray for Türkiye & Syria*

2021 - 2022 ***Popcorn Science*: A science podcast for public** (in Korean), Host

2017 **Science Topic Discussion Camp**, Principal Organizer
Topic: *How to improve accessibility in scientific education*

2017 ***Natural Science Concert*: A public talk for high school students**, Mentor

2016 ***Natural Science Concert*: A public talk for high school students**, Speaker
Talk title: *Geoscience in Movies: Truth or Dare?*

2016 - 2017 **Weekly science experiment program for high school students**, Mentor