Yudong Sun

Department of Geophysics, Stanford University, CA
Email: yudongs@stanford.edu

Education

09/2020~12/2025 **Massachusetts Institute of Technology**
Department of Earth, Atmospheric and Planetary Sciences
Ph.D. in Geophysics and Seismology
Advisor: Camilla Cattania
Ph.D. Thesis: Modeling Complex Evolution of Slow to Fast Earthquakes on Simple and Heterogeneous Faults

09/2017~07/2020 **University of Science and Technology of China**
School of Earth and Space Sciences
Master of Geophysics
Advisor: Wei Leng

09/2013~07/2017 **University of Science and Technology of China**
School of the Gifted Young
B.A. in Geophysics
Honor Graduate Student in Zhao Jiuzhang Talent Program

Professional Experience

01/2026~now **Stanford University**
Postdoctoral Scholar
Advisor: Paul Segall
Project: Earthquake simulator on 3D geometrically complex faults with applications to induced seismicity

05/2024~08/2024 **BP, Houston**
Seismic Technology Group
Subsurface Geophysical Specialist Intern
Advisor: Xukai Shen
Project: Multiparameter seismic full-waveform inversion with Vp, Vs and density

09/2022~12/2022 **Massachusetts Institute of Technology**
Teaching assistant
Course 12.421 “Principles of Remote Sensing”

Publications

In preparation

Song J. Y., **Sun Y.**, Cattania C., McLaskey G. C. Experimental and Numerical Modeling of Earthquake Rupture Interactions Across Multiple Asperities and Barriers

Sun Y., Cattania C. Propagation of Slow Slip Events on Rough Faults: Slow Forward Propagation and Fast Back Propagation.

2026

Sun Y., Cattania C. Back-propagating Earthquakes on Simple Faults. ***AGU Advances***.

2025

Sun Y, Cattania C. Propagation of slow slip events on rough faults: Clustering, back propagation, and re-rupturing. ***Journal of Geophysical Research: Solid Earth***.

2023

Sun, Y., Riel, B., & Minchew, B. Disintegration and Buttressing Effect of the Landfast Sea Ice in the Larsen B Embayment, Antarctic Peninsula. ***Geophysical Research Letters***.

Erickson, B. A., Jiang, J., Lambert, V., Abdelmeguid, M., Almquist, M., Ampuero, J. P., Ando, R., Barbot, S., Cattania, C., Chen, A., Dal Zilio, L., Dunham, E. M., Elbanna, A., Gabriel, A., Harvey, T., Huang, Y., Kaneko, Y., Kozdon, J., Lapusta, N., Li, D., Li, M., Liang, C., Liu, Y., Ozawa, S., Pranger, C., Segall, P., **Sun, Y.**, Thakur, P., Uphoff, C., van Dinther, Y. & Yang, Y. Incorporating Full Elastodynamic Effects and Dipping Fault Geometries in Community Code Verification Exercises for Simulations of Earthquake Sequences and Aseismic Slip (SEAS). ***Bulletin of the Seismological Society of America***.

Patent

Shen, X., **Sun Y.** Systems and Methods for Providing Shear Wave Models of Subsurface Ace Regions Using Elastic Full-Waveform Inversion.

Invited Talks

12/07/2026

Earthquake Cycle Simulations on Complex Three-Dimensional Fault Geometries Using Curved Boundary Elements, AGU Fall Meeting, San Francisco, CA

03/18/2026

Experimental and Numerical Modeling of Earthquake Rupture Interactions Across Multiple Asperities and Barriers, US Geological Survey, CA

12/13/2026

When Machine Learning Meets Radar: New Opportunities for Environmental Monitoring, PassionU Lab, Online

07/30/2025

Earthquake simulation code FDRA2C Hackathon. MIT, MA

02/20/2025

Unraveling Complex Propagation of Earthquakes and Slow Earthquakes. Stanford University, CA

10/25/2024

Propagation of Slow Slip Events on Rough Faults. École normale supérieure, Paris

08/29/2024

Back-propagating Earthquakes on a Simple Fault. Tongji University, Shanghai

06/26/2024

Evolution of the Antarctic Landfast Sea Ice from Synthetic Aperture Radar. BP, Houston

12/22/2023

Dynamics of Earthquakes and Slow Slip Events on Rough Faults: Nucleation Location, Back Propagation, and Clustering. Peking University, Beijing

Conferences

2025/2026

Sun Y., Song J. Y., Cattania C., McLaskey G. C. Numerical Modeling of Rupture Interactions Across Multiple Asperities: Comparison with Laboratory Earthquake Cycles
Southern California Earthquake Center Annual Meeting, Palm Spring, CA
AGU Fall Meeting, New Orleans, LA
SCEC Parkfield 2.0 Workshop, Mountain View, CA
SCEC Tandem Workshop, San Diego, CA

2024

Sun Y., Cattania C. Back-propagating Earthquakes on a Simple Fault.
SCEC Annual Meeting, Palm Spring, CA
Cargèse international workshop on earthquakes, Cargèse, Corsica, France
AGU Fall Meeting, Washington DC

2023

Sun, Y., Riel, B., & Minchew, B. Disintegration and Buttressing Effect of the Landfast Sea Ice in the Larsen B Embayment, Antarctic Peninsula.
Poster exhibition for John H. Carlson Lecture, the Simons Theatre of the New England Aquarium, Boston, MA
MIT Energy and Climate Night, MIT Museum, Cambridge, MA

Sun Y., Cattania, C. Boomerang Earthquakes and Rapid Tremor Reversals: Exploring the Role of Fault Roughness on the Back Propagation of Earthquakes and Slow Slip Events
Southern California Earthquake Center Annual Meeting, Palm Spring, CA

2022

Sun Y., Riel B., Minchew B. Buttressing Effect and Disintegration of the Landfast Sea Ice Pack in the Larsen B Embayment, Antarctic Peninsula.
AGU Fall Meeting, Chicago, IL

Sun Y., Cattania C. Fault Roughness Promotes Re-rupturing and Back Propagation.
Slow-to-fast Earthquake Workshop, Nara, Japan
AGU Fall Meeting, New Orleans, LA

2021

Sun Y., Cattania C. Propagation of Slow Slip Events on a Rough Fault.
AGU Fall Meeting, online

Southern California Earthquake Center Annual Meeting, online

2019

Sun Y., Leng W. A Geodynamic Deformation Model of Southeastern Tibet: Constraints from GPS data, Faults and Low Shear Wave Velocity Zones.
AGU Fall Meeting, San Francisco, CA

Awards and Fundings

06/2026 Travel grant for 2026 SCEC Tandem Training Workshop

02/2026 Editor's Highlights, AGU Advances

01/2023~09/2023 MathWorks Science Fellow (competitive, $107,000)

09/2021~05/2022 Sven Treitel Fellow, MIT EAPS

09/2020~09/2021 Fellowship, MIT EAPS

09/2017~07/2020 Scholarship for Postgraduates, University of Science and Technology of China

01/2019 Outstanding Academic Presentation Award, the 1st Annual Meeting of Earth and Space Sciences, University of Science and Technology of China

09/2013~07/2017 Scholarship for Undergraduates, University of Science and Technology of China

06/2017 Outstanding Research Award, National Innovative Science Program for Undergraduates

12/2016 Honor Graduate Student in Zhao Jiuzhang Talent Program, University of Science and Technology of China

Computer Skills

Language: Matlab, C, C++, Python, Fortran

Software: GMT, QGIS, Paraview, OpenMP, MPI, ISCE, GMTSAR, FDRA, UGUCA

Professional Activities

Journal Reviewer: Geophysical Research Letters, Geophysical Journal International, Seismological Research Letters, Scientific Reports.

SCEC Sequences of Earthquakes and Aseismic Slip (SEAS) Project: Participated in community code benchmark comparisons.