

Brayden Noh, 노상원

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<https://braydennoh.github.io> [GitHub](#)

Education

Harvard University

Cambridge, MA

- Ph.D., Earth and Planetary Science.

Expected 2030

California Institute of Technology (Caltech)

Pasadena, CA

- B.S. Geological & Planetary Sciences

2025

Experience

Caltech, Arthur R. Adams SURF Fellow, Saul and Joan Cogen Memorial SURF Fellow Dec 2021 – Jul 2025

- **River migration hazard forecasting:** Built Bayesian models and Monte Carlo simulations for river migration, delivering probabilistic hazard forecasts with quantified uncertainty for infrastructure risk assessment; presented at [2022](#) and [2024](#) American Geophysical Union (AGU) Annual Meeting; [“Geomorphic risk maps for river migration using probabilistic modeling – a framework.”](#)
- **Floc structure quantification:** Developed and validated a stratified image analysis framework that infers 3D fractal dimensions of mud flocs from 2D imaging, revealing that conventional data aggregation overestimates structural density, enabling more accurate modeling and prediction of sediment transport in coastal and riverine environments; [“Constraining the Distribution of 3D Fractal Structures in Mud Flocs.”](#)

TECHtonics Research Group, Georgia Tech, NSF REU Researcher

May 2023 - Jul 2023

- **Sediment transport analysis:** Developed UAV-based remote sensing and sediment transport modeling techniques to infer paleo-discharge in mountainous tropical rivers, advancing quantitative methods for reconstructing past river flows and hydrologic variability; presented at [2023](#) AGU Annual Meeting.

Mechanics of Materials Laboratory, Auburn University, Researcher

Aug 2020 - Nov 2021

- **Impact crater simulation and visualization:** Modeled asteroid atmospheric entry and crater formation with iSALE hydrocode, visualizing how porosity and asteroid properties control breakup and surface impact; produced award-winning Python visualizations recognized by the [2021 AGU Michael H. Freilich Student Visualization Competition](#); presented at [2022 Europlanet Science Congress \(EPSC\)](#).

Awards and Grants

- 2025 NSF Graduate Research Fellowship Program (GRFP).
- 2025 Joel & Marcella Bonsall SURF Technical Writing Prize (3rd place).
- 2025 Doris S. Perpall SURF Speaking Competition Semi-Finalist.
- 2024 ThinkSwiss Summer School Travel Grant: Awarded by the Swiss Embassy to attend EAWAG’s Summer School in Environmental System Analysis.
- 2024 Caltech James Michelin Scholarship: Recognizes undergraduate student for their contributions to the field of geology or geophysics.
- 2023 Caltech Howard Reynolds Memorial Prize: Awarded to a student who demonstrates the potential to excel in the field of geology and who actively contributes to the quality of Caltech student life.
- 2021 NASA Michael H. Freilich Student Visualization: Awarded the Grand Prize, which includes travel grant and presenting on the NASA Hyperwall at the 2021 AGU Annual Meeting.
- 2018, 2019, 2020, 2021 International Science and Engineering Fair (ISEF) Finalist: Awarded the Grand Prize (2nd place) in Energy in 2019.