Ryley G. Hill

ryleyghill@gmail.com , (702)-682-3373
6655 La Jolla Blvd. #2, San Diego, CA 92037

Education

2023 Ph.D. in Geophysics
Scripps Institution of Oceanography, UC San Diego / San Diego State University
Dissertation: *Physics-based hydrogeologic models of fluid-fault interactions: implications of natural and anthropogenic poroelastic effects on induced seismicity*.
Advisor: Dr. Matthew Weingarten

2018 M.S. in Geophysics
University of Nevada, Reno
Thesis Title: *How Future Hyperspectral Satellite Spectrometer Systems Can Improve Fractional Snow-covered Area and Grain Size*.
Advisor: Dr. Wendy Calvin

2015 B.S. in Geophysics, Physics, and Applied Math
University of Nevada, Reno
Westfall Scholar: highest GPA from Earth Sciences & Engineering students

Publications (Preparation and Review)

Hill, R.G., Weingarten, M., Langenbruch, C., Fialko, Y.: Mitigation and optimization of induced seismicity using physics-based forecasting, *submitted*.

Hill, R.G., Trugman, D., Weingarten, M.: Deciphering earthquake triggering mechanisms with a fully coupled poroelastic model and machine learning analysis: application to the case of Paradox Valley Unit, Colorado, in *prep*.

Publications (Peer-reviewed)

Hill, R.G., Weingarten, M., Rockwell, T.K., Fialko, Y. (2023). Major southern San Andreas earthquakes modulated by lake-filling events. Nature 618, 761–766
https://doi.org/10.1038/s41586-023-06058-9

Conference & Invited Presentations; *Upcoming

Hill, R.G., Weingarten, M., Rockwell, T. K., & Fialko, Y. (**Invited** - 2023). Major southern San Andreas earthquakes modulated by lake-filling events. American Geophysical Union, Fall Meeting, San Francisco, CA. Dec. 11-15.

Hill, R.G., Weingarten, M., Langenbruch, C., Fialko, Y., 2023. Mitigation and optimization of induced seismicity using physics-based forecasting. Journal of Geophysical Research: Solid Earth. American Geophysical Union, Fall Meeting, San Francisco, CA. Dec. 11-15.

Hill, R.G., Trugman, D., Weingarten, M., 2023. Deciphering earthquake triggering mechanisms with a fully coupled poroelastic model and machine learning analysis: application to the case of Paradox Valley Unit, Colorado. American Geophysical Union, Fall Meeting, San Francisco, CA. Dec. 11-15.

***Hill, R.G.**, Weingarten, M., Rockwell, T. K., & Fialko, Y. (**Invited; delayed** - 2023). Major southern San Andreas earthquakes modulated by lake-filling events. Caltech, CA.

Hill, R.G., Weingarten, M., Rockwell, T. K., & Fialko, Y. (**Invited** - 2023). Major southern San Andreas earthquakes modulated by lake-filling events. USGS Earthquake Science Center, Moffett Field, CA. (https://earthquake.usgs.gov/contactus/menlo/seminars/1442)

Hill, R.G., Weingarten, M. (2022). Testing machine learning techniques for forecasting induced seismicity with a fully coupled poroelastic model: application to the Paradox Valley Unit, Colorado, USA. American Geophysical Union, Fall Meeting, Chicago, IL. Dec. 12-16.

Hill, R.G., Weingarten, M., Rockwell, T. K., & Fialko, Y. (2022). Large Events on the Southern San Andreas Fault Modulated by Lake Filling Events. American Geophysical Union, Fall Meeting, Chicago, IL. Dec. 12-16.

Hill, R.G., Weingarten, M., Rockwell, T. K., & Fialko, Y. (2022). Large Events on the Southern San Andreas Fault Modulated by Lake Filling Events. Poster Presentation at 2022 SCEC Annual Meeting, Palm Springs, CA. Sept. 11-14.

Hill, R.G., Weingarten, M., Rockwell, T. K., & Fialko, Y. (2020 - Virtual). Can the Lack of Lake Loading Explain the Earthquake Drought on the Southern San Andreas Fault? The Geological Society of America.

Hill, R.G., (2019). Can the Lack of Lake Loading Explain the Earthquake Drought on the Southern San Andreas Fault? American Geophysical Union, Fall Meeting, San Francisco, CA. Dec. 9-13.

Hill, R.G., Calvin, W., Harpold, A. (2016). Next Generation Snow Cover Mapping: Can Future Hyperspectral Satellite Spectrometer Systems Improve Subpixel Snow-covered Area and Grain Size in the Sierra Nevada? American Geophysical Union, Fall Meeting, New Orleans, LA. Dec. 11-15.

Kostadinov, T., Harpold, A., **Hill, R.G.**, McGwire, K. (2017). High-resolution LIDAR and ground observations of snow cover in a complex forested terrain in the Sierra Nevada – implications for optical remote sensing of seasonal snow. American Geophysical Union, Fall Meeting, New Orleans, LA. Dec. 11-15.

Calvin, W., **Hill, R.G.** (2016). Imaging Spectroscopy Techniques for Rapid Assessment of Geologic and Cryospheric Science Data from future Satellite Sensors. American Geophysical Union, Fall Meeting, San Francisco, CA. Dec. 12-16.

Hill, R.G., Calvin, W., Harpold, A. (2016). Subpixel Snow-covered Area Including Differentiated Grain Size from AVIRIS Data Over the Sierra Nevada Mountain Range. American Geophysical Union, Fall Meeting, San Francisco, CA. Dec. 12-16.

Hill, R.G., Soule, D., Wilcock, W., Toomey, D., Hooft, E., Weekly, R. (2014). Crustal Thickness and Lower

Crustal Velocity Structure Beneath the Endeavour Segment of the Juan de Fuca Ridge. American Geophysical Union, Fall Meeting, San Francisco, CA. Dec. 15-19.

Research & Teaching Experience

2018-23	Teaching Assistant, San Diego State University *Hydrogeology, Geology, Oceanography, Natural Hazards*
2016-18	Teaching Assistant, University of Nevada, Reno *Geology, Applied Geophysical Methods*
2016	Letter of Appointment, University of Nevada Seismological Lab
2014	IRIS [now URISE] Seismology Internship

Selected Media Outreach

"Why hasn't L.A. seen a big San Andreas quake recently?" *Los Angeles Times,* Jun. 9 2023.

"Nearby body of water may affect San Andreas Fault, study says" *CBS News,* Jun. 8 2023.

"How the Salton Sea may be delaying California's next giant earthquake" *NPR Morning Edition,* Jun. 8 2023.

"Researchers find why San Andreas fault hasn't caused a big earthquake in L.A. — yet" *Washington Post,* Jun. 7 2023.

"San Andreas Fault Earthquakes May Be Triggered by Ancient Rising Lakes" *Newsweek,* Jun. 7 2023.

"The San Andreas Fault Is Sleepy Near Los Angeles. Researchers Have an Idea Why" *The New York Times,* Jun. 7 2023.

"Off The Beaten Path Episode 1: Salton Secrets" *PBS,* Jun. 14 2022.

Honors, Grants, & Scholarships

2023	Michael H. Freilich Data Visualization Competition Runner-Up Award
2022	Shepard Foundation Fund Grant Winner
2022	Southern California Earthquake Center (SCEC) Science Plan Award
2021	San Diego Association of Geologists Outstanding Student Research Award
2020	Geological Society of America (GSA) Best Student Presentation Award

Service

2019-22	UCSD Geophysics Curricular Group Mentor Program
2020-21	UCSD Geophysics Curricular Group Student Representative Leader
2019-20	UCSD Geophysics Curricular Group Student Representative
2019	Earth Section Hire Student Committee
2016-18	Coach of UNR Men's Ultimate Frisbee
2021-23	San Diego Growlers Professional Ultimate Frisbee Practice Player

Professional Skills

Programming: Matlab, Python, R, C++, Machine/Deep Learning, Fortran, Mathematica, Maple, Unix/Linux, vi, High Performance Computing (HPC) - Slurm and PBS.

Modeling Software: Abaqus, MODFLOW, GMTSAR, Agisoft Metashape, AutoCAD, ArcGIS.