

Robert 'Robby' Goldman

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EDUCATION

PhD in Geology

Anticipated May 2023

University of Illinois at Urbana-Champaign, Urbana, IL

Dissertation title: "An interdisciplinary approach toward improving volcanic risk management"

Advisor: Patricia M. Gregg

BA in Geology, Minor in Physics, *magna cum laude*

May 2015

Pomona College, Claremont, CA

Bachelor's thesis title: "Assessing volcanic caldera formation using elastic finite element models"

Advisor: Eric B. Grosfils

RESEARCH INTERESTS

Forecasting volcanic eruptions using field, petrologic, geophysical and numerical methods.

Investigating how stresses within a volcanic system influence eruption location.

Improving volcano hazard mitigation and disaster response.

PhD RESEARCH

NSF Graduate Research Intern

January 2020 – Present

USGS Volcano Hazards Program

- Conducted in-person interviews with residents of Hawaii's Big Island in January 2020 to learn about which sources of information were most widely available and helpful to people affected by the 2018 lower East Rift Zone eruption and summit collapse of Kīlauea volcano.
- Currently analyzing Facebook and Twitter posts by the USGS Volcanoes group from the 2018 eruption to provide an independent analysis of the effectiveness of those posts in educating the public and addressing misinformation about eruption hazards.

NSF Graduate Research Fellow

January 2017 – Present

Department of Geology, University of Illinois

- Developed and compared temperature-dependent elastic and viscoelastic finite element models (FEMs) of the Akaroa Volcanic Complex to constrain the geometry of its magma plumbing system and provide a foundation for simulating flank eruptions on active volcanoes.
- Currently developing a project that will utilize FEMs improve our understanding of the volcano-tectonic interplay between Hawaii's Kīlauea and Mauna Loa volcanoes.
- Began research as a Graduate College Fellow (GCF) in January 2017.
- Awarded National Science Foundation (NSF) Graduate Research Fellowship in March 2017.

Fulbright Graduate Student Fellow

February – December 2016

University of Canterbury, Christchurch, New Zealand

- Conducted a multifaceted investigation of the extinct Akaroa Volcanic Complex in the South Island of New Zealand to reconstruct the system's paleo-stress field.
- Utilized field and petrographic observations, seismic models, and elastic numerical simulations to map Akaroa's ancient stress field.
- Revised the location of a stress barrier necessary for the deflection of dikes emplaced in radial orientations around Akaroa's erosional crater rim.
- Discovered that a downward sloping boundary along the base of the Akaroa volcano is required to produce a stress barrier consistent with field and petrographic dike flow orientation observations.

PUBLICATIONS

BLOG POSTS

Goldman, R. (2021, March 2). Social Science, Social Media, and Serendipity. *The Plainspoken Scientist, AGU*. <https://blogs.agu.org/sciencecommunication/2021/03/02/social-science-social-media-and-serendipity/>

IN PREPARATION

Goldman, R.T., Albright, J.A., Gravley, D.M., Grosfils, E.B., Gregg, P.M., & Hampton, S.J. (*in prep*). *Stress control of dike deflection and flank eruption at Akaroa Volcano, New Zealand*.

Goldman, R.T., Stovall, W.K., Damby, D.E., & McBride, S.K. (*in prep*). *Evaluating Public Perception of Hazard Communication Effectiveness during Kīlauea's 2018 eruption*.

SELECTED CONFERENCE ABSTRACTS

ORAL PRESENTATIONS

Goldman, R.T., Stovall, W.K., Damby, D.E., & McBride, S.K. (2020). *Evaluating Public Perception of Communication Effectiveness by USGS Volcanoes Social Media Accounts During Kīlauea's 2018 Eruption*. AGU Fall Meeting (virtual).

Goldman, R.T. (2020). *Making it Easier to Keep People Safe when Hot, Tall Rock Things Burst (Up-Goer V talk)*. AGU Fall Meeting (virtual).

POSTER PRESENTATIONS

*Dykstra, B.A., **Goldman, R.T.**, Zhan, Y. & Gregg, P.M. (2020). *Promoting Basal Slide and Flank Eruptions due to Edifice Relaxation in the Mauna Loa-Kīlauea Volcanic System, Hawai'i*. AGU Fall Meeting (virtual).

Goldman, R.T., Albright, J.A., Gravley, D.M., Grosfils, E.B., Gregg, P.M., & Hampton, S.J. (2018). *Characterization of Flank Eruptions using Paleo-stress Fields: Akaroa, New Zealand*. AGU Fall Meeting, Washington, DC.

Goldman, R.T., Albright, J.A., Gravley, D.M., Grosfils, E.B., Gregg, P.M., & Hampton, S.J. (2018). *Characterization of Flank Eruptions using Paleo-stress Fields: Akaroa, New Zealand*. GSA Annual Meeting, Indianapolis, Indiana.

Goldman, R.T., Gravley, D.M., Grosfils, E.B., & Gregg, P.M. (2017). *Reconstructing the paleo-stress field of New Zealand's Akaroa Volcano: Insights from field, petrographic, seismic and numerical methods*. IAVCEI Scientific Assembly, Portland, Oregon.

Goldman, R.T., Albright, J.A., & Grosfils, E.B. (2015). *Ring Fault and Caldera Formation: Insights Provided by Three-Dimensional Elastic Finite Element Models*. 46th Lunar and Planetary Science Conference, Houston, Texas.

*undergraduate mentee

FELLOWSHIPS

NSF Graduate Research Fellow

September 2017 – 2022

National Science Foundation

- Awarded to outstanding graduate students in STEM disciplines pursuing research-based Master's and doctoral degrees at accredited U.S. institutions, who have demonstrated the potential to make significant contributions to American research, teaching, and innovations in science and engineering.
- Provides financial support for three years (consecutive or non-consecutive) of graduate study.
- Offers federal and international research collaboration opportunities over a five-year period.

Graduate College Fellow

August 2017 – 2023

University of Illinois at Urbana-Champaign

- Awarded to exceptional applicants to the University of Illinois Graduate College.
- Provides financial support for up to three years (consecutive or non-consecutive) of graduate study.

Evergreen Endowed Fellowship

January – July 2017

Department of Geology, University of Illinois at Urbana-Champaign

- Awarded to meritorious geology graduate students with an interest in developing an interdisciplinary background, combining their area of expertise with other areas in geoscience or other disciplines, and applying geoscience knowledge to address problems facing society.
- Provided financial support for several months of graduate study.

Fulbright U.S. Graduate Student Fellowship

February – December 2016

Fulbright New Zealand

- Awarded to American graduate students to conduct research at a New Zealand institution, and promote mutual understanding between people of both nations through educational and cultural exchanges.
- Grantees are chosen based on their high academic achievement, leadership potential, and ambassadorial qualities.
- Provided financial support for two semesters of graduate study and research.

VOLUNTEER AND OUTREACH EXPERIENCE

President, U.S. West Coast Chapter

November 2020 – Present

Fulbright Prism

- Founding member of the first U.S.-based regional chapter of the Fulbright Prism, a non-profit organization led by grantees and alumni of the U.S. Department of State's Fulbright international exchange program.
- Hosted a one-hour happy hour Zoom event in February 2021 to connect LGBTQ+ Fulbrighters in the U.S. states of California, Oregon and Washington.
- Chapter will host additional community-building events once to twice monthly basis.

North-Central Representative, GPPC

January 2019 – Present

Geological Society of America

- North-Central Section Representative of the Geological Society of America's (GSA) Geology and Public Policy Committee (GPPC).
- Provide advice on public policy matters to the GSA Council and leadership, specifically by working with other volunteers to revise GSA's position statements, which are discussed and approved at biannual Committee meetings for recommendation to the GSA Council for publication on the Society's website.
- Attended biannual GPPC meetings held from February 2019 through February 2021.
- Participated in Capitol Hill visits in Washington, DC on February 25, 2019 to advocate for sustained federal science funding for Fiscal Year 2020.

VOLUNTEER AND OUTREACH EXPERIENCE CONTINUED

AGU Voices for Science Advocate

March 2018 – Present

American Geophysical Union; University of Illinois at Urbana-Champaign

- Selected by the American Geophysical Union (AGU) to participate in their inaugural Voices for Science initiative. Participated in a year-long collaboration with AGU staff to organize monthly science policy activities, and attended two AGU-sponsored workshops in Washington, DC.
- Currently part of the Western (U.S.) Coalition of current and past Voices for Science advocates.

Volunteer and Co-convenor for “AGQ” Events

November – December 2020

American Geophysical Union 2020 Fall Meeting

- Advertised and co-convened a poster session on LGBTQ+ inclusivity in Earth and space sciences.
- Advertised and co-hosted a one-hour happy hour Zoom event with over 100 LGBTQ+ AGU meeting attendees to promote networking opportunities and help AGU learn how it can better support its LGBTQ+ members.

Participant and Discussion Leader, DEI Reading Group

September – November 2020

Department of Geology, University of Illinois at Urbana-Champaign

- Led discussions on incorporating Indigenous perspectives into geoscience research and promoting LGBTQ+ inclusivity in geoscience research and instruction for Diversity, Equity and Inclusion (DEI) discussions within the Department of Geology at the University of Illinois.
- Participated in weekly DEI discussions during the Fall 2020 semester.

Panelist, Physics Society Graduate Student Panel

October 2020

University of Illinois at Urbana-Champaign

- Shared my experiences as a geoscience graduate student with undergraduate physics students as part of a virtual panel hosted by UIUC’s student-led Physics Society.

Participant, AGU Virtual Advocacy Days

June – July 2020

American Geophysical Union

- Participated in a one-day workshop in June 2020 to learn about three geoscience-related policies under legislative consideration in the U.S. Congress that would provide funding for research into sexual harassment in higher educational institutions, funding for research into the current demographics of the STEM pipeline and workforce, and funding for research and development of high-quality STEM teaching in rural schools.
- Scheduled and held phone conversations with the staff of my Oregon Congressional representatives in support of the three aforementioned geoscience policies.

Moderator, 2020 Pride Panel

June 2020

Fulbright Prism

- Moderated a discussion with four Fulbright alumni regarding their experiences as LGBTQ+ people teaching or conducting research projects in foreign countries.
- Recording available on YouTube under the title “Prism Global Pride Panel 2020.”

Volunteer – Hawaiian Ocean View Estates Community Meeting

January 2020

USGS Hawaiian Volcano Observatory (HVO)

- Assisted Hawaiian Volcano Observatory staff with setting up, photographing, and cleaning up a community meeting held in Ocean View, a town located on the slope of Mauna Loa volcano.
- This meeting informed the 100 residents in attendance about the current behavior of Mauna Loa volcano, hazards that an eruption from this volcano would pose to Ocean View, and necessary actions to take in preparation for those hazards.

VOLUNTEER AND OUTREACH EXPERIENCE CONTINUED

Chair, Advocacy Committee – Science Policy Group at UIUC **January 2018 – April 2019**

University of Illinois at Urbana-Champaign

- Lead role in organizing science advocacy activities for the University of Illinois community.
- Organized a panel discussion on national science policy featuring the Democratic candidate for Illinois' 13th House District and three science professors (October 2018).
- Organized and moderated a renewable energy panel featuring Champaign's state senator and three subject-matter experts (September 2018).
- Organized a trip to Springfield, IL, in collaboration with the Northwestern Science Policy and Outreach Taskforce, to lobby for scientifically-sound and environmentally-sustainable policy (April 2018).
- Co-hosted a Congressional letter-writing workshop on campus with a Union of Concerned Scientists policy advocate (March 2018).

TRASHCANO Exhibitor – Engineering Open House 2019 **March 2019**

University of Illinois at Urbana-Champaign

- Volunteer for the "TRASHCANO" exhibit at the 2019 Engineering Open House.
- Coordinated liquid nitrogen supply with Physics Dept.
- Second year of volunteering (was lead exhibitor in 2018).

Chair – 2019 SESE Research Review Committee **July 2018 – February 2019**

University of Illinois at Urbana-Champaign

- Lead role in organizing the 2019 School of Earth, Society, and Environment (SESE) Research Review held on February 15, 2019.
- Recruited and led committee of 10 other student volunteers.
- Managed logistics for event venue and catering, poster and photo contests, event photography, lightning talks, and awards ceremony.
- Instrumental in soliciting poster submissions and RSVPs.

AAAS CASE Workshop Participant **March 2018**

University of Illinois at Urbana-Champaign

- Sole representative for the College of Liberal Arts and Sciences at the 2018 Catalyzing Advocacy for Science and Engineering (CASE) Workshop hosted by the American Association for the Advancement of Science (AAAS) in Washington, DC from March 18-21.

TRASHCANO Lead Exhibitor – Engineering Open House 2018 **January – March 2018**

University of Illinois at Urbana-Champaign

- Lead organizer for the "TRASHCANO" exhibit at the 2018 Engineering Open House.
- Our exhibit simulated explosive volcanic eruptions using a trash can, water, and liquid nitrogen.
- Ensured that we had the proper equipment and sufficient liquid nitrogen for our demonstrations.

Volunteer and MC – 2018 SESE Research Review Committee **Nov. 2017 – March 2018**

University of Illinois at Urbana-Champaign

- Proposed guidelines and solicited student and faculty nominations for 5-minute lightning talks given at the 2018 School of Earth, Society, and Environment (SESE) Research Review on March 2.
- Organized lightning talk schedule, welcome and closing addresses, and awards presentations in coordination with School Head and Department Chairs.
- Met with IT Coordinator to ensure that audio-visual media ran smoothly.
- As Master of Ceremonies, coordinated transitions between all presentations.

VOLUNTEER AND OUTREACH EXPERIENCE CONTINUED

Project Manager – Science Policy Group at UIUC

May – December 2017

University of Illinois at Urbana-Champaign

- As a member of the student-led Science Policy Group, helped organize two events.
- Coordinated an invited talk and Beckman Institute lab tour for IL State Senator Scott Bennett.
- Organized and participated in a student trip to Springfield, IL to meet and network with state policymakers, including Senator Scott Bennett and Representative Carol Ammons.

Geological Society of America Representative, 2017 Geo-CVD

September 2017

Geological Society of America

- Representative of the North-Central Section of the Geological Society of America (GSA) at the Geosciences Congressional Visits Days (Geo-CVD) workshop held from September 12-13, 2017.
- Briefed on federal geoscience funding, legislation, and communication strategies.
- Met with Congressional staff to vouch for the importance of sustained federal geoscience funding.

HONORS AND AWARDS

NSF Graduate Research Internship Project

January 2020 – Present

University of Illinois at Urbana-Champaign; United States Geological Survey

- Awarded a \$5,000 travel and research stipend in support of a research project at the USGS Cascades Volcano Observatory (Vancouver, WA) and Hawaiian Volcano Observatory (Hilo, HI).
- Award also supported travel to Hawaii to interview residents about hazard communications they received during the 2018 eruption of Kīlauea volcano, discuss volcano geology and geophysics research with HVO scientists, and volunteer with HVO staff to hold a community meeting.
- (Travel funding has been extended for an additional year due to the COVID-19 pandemic.)

Harriet Wallace Geology Graduate Student Service Award

April 2018

University of Illinois at Urbana-Champaign

- Conferred to a graduate student in recognition of their contributions to the geology department through participation in Research Review, Engineering Open House, and outreach to the community.

Graduate College Award for Academic Excellence

March 2018

University of Illinois at Urbana-Champaign

- Selected by the Department of Geology to receive campus-wide recognition for outstanding academic achievement.

Research Live! 2017 People's Choice Award

November 2017

University of Illinois at Urbana-Champaign

- 3-minute research talk voted most engaging by audience of the Graduate College's 2017 *Research Live!* competition.

Elected to the Pomona College Chapter of Phi Beta Kappa

May 2015

Pomona College

Donald B. McIntyre – H. Stanton Hill Award

May 2015

Pomona College

- Given to an outstanding student in any field of geological sciences, at the discretion of the department faculty.

HONORS AND AWARDS CONTINUED

Pomona College Scholar

2011 – 2014

Pomona College

- GPA within top 25% of graduating class.

Elected to the Claremont Colleges Chapter of Sigma Xi, the Scientific Research Society

May 2014

Pomona College

TEACHING, MENTORSHIP AND INVITED TALKS

Undergraduate Thesis Project Advisor

September 2020 – Present

Department of Geology, University of Illinois at Urbana-Champaign

- Advising UIUC undergraduate geology major Brooke Dykstra on her senior thesis investigating how stresses within Hawaiian volcanoes promote or inhibit flank eruptions.

Invited Presenter for GYPSUM

February 2021

GeodesY and geoPhysics Seminar of the Upper Midwest

- Gave a 45-minute talk, followed by a 15-minute Q&A, for the GYPSUM seminar group on my research of public perceptions of on-the-ground and social media communications in Hawai'i during Kīlauea Volcano's 2018 eruption.

Guest Lecturer for Joint Undergraduate Science Class

February 2021

Eastern Kentucky University

- Gave a 45-minute talk, followed by Q&A, to a joint meeting of two undergraduate classes in geographic data techniques and petrology on the variety of data methods I have used in both Earth and social sciences to study and communicate hazards associated with terrestrial volcanoes.

Guest Lecturer for Undergraduate Volcanology Class

October 2020

Department of Geology, University of Illinois at Urbana-Champaign

- Gave a 45-minute talk, followed by Q&A, on the U.S. Geological Survey's on-the-ground and social media communications during Kīlauea Volcano's 2018 eruption.

Mentor, Summer Undergraduate Research Opportunities Program

June – July 2020

Department of Geology, University of at Illinois Urbana-Champaign

- Helped my PhD advisor, Trish Gregg, devise one of eight summer undergraduate research projects to be conducted over an intensive six-week period from June through July 2020.
- Mentored an undergraduate student (Brooke Dykstra) in conducting and submitting an abstract for this project to the American Geophysical Union's 2020 Fall Meeting.

Guest Lecturer for Undergraduate Volcanology Class

April 2019

Department of Geology, University of Illinois at Urbana-Champaign

- Led an in-class exercise on U.S. volcano monitoring and implementing a National Volcano Early Warning System, which was authorized for federal funding by the U.S. Congress in March 2019.

High School Physics Guest Instructor

April 2018

University of Illinois Laboratory High School

- Organized and taught two exploration geophysics lessons to three high school physics classes.

SKILLS

- Programming languages and mathematical packages: Matlab, Python
- Numerical modeling package: COMSOL Multiphysics
- Qualitative thematic analysis software: NVivo
- Geographic information system: ArcGIS
- Computer graphic design: Adobe Illustrator
- Communicating science-related policy priorities to congressional, state and local policymakers

ADDITIONAL RESEARCH EXPERIENCE

LPI Summer Intern

June – August 2015

Lunar and Planetary Institute, Houston, TX

- Analyzed lunar free-air gravity anomaly data to probe the Moon's interior.
- Helped my mentor develop code in Fortran to generate free-air gravity anomaly models of the Moon that would apply values of lithospheric thickness and crustal density to calculations predicting lithospheric flexure in response to overlying surface topography.
- Compared models with data from NASA's GRAIL mission to constrain the lithospheric thermal gradient and gain insight into the Moon's thermal and volcanic history.

FIELD EXPERIENCE

Frontiers Abroad Geology Field Camp

January – February 2016

Taupo Volcanic Zone

- Mapped lava flows on Mt. Ngauruhoe, reconstructed the sequence of events resulting in hydrothermal, intrusive and extrusive deposits found on Mt. Ruapehu, inferred fault-induced changes in water table location at the Orakei Korako geothermal springs by comparing locations of freshwater ponds and mud pools, formulated research questions for Taupo caldera ignimbrite deposits observed in the field, and articulated a plan to answer those questions by writing a mock-grant-proposal.

Akaroa Volcanic Complex

- Mapped primary volcanic features (dikes, scoria cones, lava domes, lava flows, ash falls) in several localities of the extinct Akaroa volcano of New Zealand's Banks Peninsula, as part of an overarching, multi-year research initiative to decipher the eruptive history of the entire 50-km-wide volcanic system

PROFESSIONAL AND ACADEMIC HONOR SOCIETY MEMBERSHIPS

American Geophysical Union (AGU)	2014 – Present
Geological Society of America (GSA)	2013 – Present
International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI)	2017 – Present
Phi Beta Kappa, Pomona College Chapter	2015 – Present
Sigma Xi, the Scientific Research Society	2014 – Present

REFERENCES

Patricia M. Gregg, Ph.D., Assistant Professor

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Wendy K. Stovall, Ph.D., Deputy Scientist-in-Charge

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