

Ally Peccia (she/her/hers)

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CURRICULUM VITAE

EDUCATION

2021–present – Ph.D. Candidate – Columbia University – Earth and Environmental Sciences

Advisor: Terry Plank

Dissertation: *Hellfire and Brimstone: Sulfur recycling at subduction zones and the interplay between volcanoes and climate*

2021 – B.A. – Earth Science – Columbia University

Undergraduate Thesis: *Quantifying the Sulfur Load of the Okmok II Caldera-Forming Eruption*

RESEARCH INTERESTS

I am broadly interested in volcano-climate interactions with a focus on: explosive volcanic eruptions and their related impacts; climatic drivers of volcanism on geologic timescales; and cycling of volatiles through subduction zones.

PAPERS AND PUBLICATIONS

- Peccia, A., Plank, T., Ding, S., Bolge, L., Aiuppa, A., Vizzini, S., et al. (2025). Solving the sulfur isotope discrepancy in Central America. *Chemical Geology*, 691, 122901.
- Peccia, A., Moussallam, Y., Plank, T., DallaSanta, K., Polvani, L., Burgisser, A., ... & Schaefer, J. (2023). A New Multi-Method Assessment of Stratospheric Sulfur Load From the Okmok II Caldera-Forming Eruption of 43 BCE. *Geophysical Research Letters*, 50(21).
- Moussallam, Y., Georgeais, G., Ding, S... Peccia, A., et al. (in revision). On the oxidation state of arc magmas. *Geochemical Perspectives Letters*.
- Metcalfe, A., Druitt, T., Pank, K... Peccia, A., et al. (2025b). Tectonic modulation of caldera volcanism on the South Aegean Volcanic Arc. *Earth and Planetary Science Letters*, 671, 119633.
- Peltier, C., Kaplan, M. R., Soteres, A... Peccia, A., et al. (2025). Holocene glacier-climate history of the Calluqueo glacier and Monte San Lorenzo, central Patagonia. *Quaternary Science Reviews*, 366, 109482.
- Manga, M., Wright, V., Cadena, T... Peccia, A. et al. (2025b). Contrasting Seismic Velocity and Compaction of Marine Calcareous Oozes and Volcaniclastic Deposits on the South Aegean Volcanic Arc. *Geochemistry, Geophysics, Geosystems*, 26(9).
- Metcalfe, A., Druitt, T., Pank, K... Peccia, A., et al. (2025a). Submarine ash megabed fed by far-traveled, shoreline-crossing pyroclastic currents from a large explosive volcanic eruption. *Science Advances*, 11(33).
- Manga, M., Tominaga, M., Preine, J... Peccia, A., et al. (2025a). Low Heat Flow in the Anhydros Basin, Aegean Sea, Recorded by Deep Subsurface Temperatures. *Geophysical Research Letters*, 52(13).
- FUTURE 2024 PI-team, Applegate, B., Dugan, B... Peccia, A., et al. (2025). The FUTURE of the US Marine Seafloor and Subseafloor Sampling Capabilities. *AGU Advances*, 6(3).
- Preine, J., Karstens, J., Hübscher, C... Peccia, A., et al. (2024). Hazardous explosive eruptions of a recharging multi-cyclic island arc caldera. *Nature Geoscience*, 17, 323–331

Druitt, T., Kutterolf, S., Ronge, T.A. ... **Peccia, A.**, et al. (2024) Giant offshore pumice deposit records a shallow submarine explosive eruption of ancestral Santorini. *Communications Earth and Environment*, 5, 24

Burgisser, A., **Peccia, A.**, Plank, T., & Moussallam, Y. (2024). Numerical simulations of the latest caldera-forming eruption of Okmok volcano, Alaska. *Bulletin of Volcanology*, 86(9), 77.

Moussallam, Y., Lee, H., Ding, S... **Peccia, A.**, et al. (2023) Temperature of the Villarrica lava lake from 1963 to 2015 constrained by phase-equilibrium. *Journal of Petrology*.

Manuscripts in Preparation

Peccia, A., Plank, T., Ding, S., Bolge, L., Aiuppa, A., Vizzini, S., et al. (*in prep* for EPSL). Sulfur recycling and the redox budget of subduction zones.

Peccia, A., & Plank, T. (*in prep* for Geology). Element recycling puts an upper limit on arc magma flux.

Peccia, A., Tramontano, S., Holmberg, K., Caro, F., Basso, E. (*in prep* for MET Education Program). Volcanologist's Guide to the Metropolitan Museum of Art.

SELECTED PRESENTATIONS, POSTERS AND ABSTRACTS - * indicates mentee

Upcoming

Peccia, A., Invited Talk for IAVCEI Ash-vances Seminar: "Submarine drill cores fill key gaps in our understanding of volcanoes past, present, and future." February 2026.

Peccia, A., American Museum of Natural History [SciCafe Public Lecture Series](#): "The Pulse of a Restless Planet." May 2026.

Peccia, A., Keynote Speaker for Volcanic Impacts on Climate and Society (VICS) Workshop: Past, present and future perspectives. June 2026.

2025

Peccia, A., Invited Talk at the University of Oxford: "How Volcanoes Shape the World: Multidisciplinary Insights from the 43 BCE Eruption of Okmok Volcano, Alaska"

Peccia, A., Invited Talk at the University of St. Andrews: "The Fate of S at Subduction Zones and the Interplay between Volcanoes and Climate"

Peccia, A., Plank, T., Ding, S., et al., Goldschmidt Conference: "Sulfur isotopes at subduction zones: sediment heterogeneity and arc homogeneity" – Oral presentation by Terry Plank

Peccia, A., Invited Talk: Lamont75 Symposium on Earth Hazards: "“The sun of Rome is set!” Is an Alaskan volcano to blame?"

Peccia, A., GEOMAR Tephra Workshop: "Melt inclusion evidence from the ~760 kyr Archaeos Tuff and 726 CE eruption of Kameni". – Oral presentation

*Marostica, M., Lee, D., Peccia, A., et al., AGU2025: "First Insights into Volatiles and Magma Storage beneath Poás Volcano: A Shallow Phreatomagmatic System" – Poster

2024

Peccia, A., Exp. 398 Post-Cruise Meeting: "Estimating Magmatic Water Contents in Hellenic Arc Magmas via Pyroxene Hygrometry" – Oral presentation

Peccia, A., AVERT Poás Volcano Workshop: "S Recycling in Central America" – Oral presentation

Peccia, A., Magma Supply from the Mantle Workshop: "Limiting nutrient method of determining arc magma flux" – Lightning talk

*Molz, E., Pitcher, B., Peccia, A., et al., AGU2024: “Using Melt Inclusions in the Archaeos Tuff to Determine Magma Storage and Processes Leading to the Earliest Caldera-Forming Eruption at Santorini” – Poster

2023

Peccia, A., Plank, T., Ding, S., Aiuppa, A., et al., AGU2023: “Sulfur Recycling at Subduction Zones: Reduced Sedimentary Input Supplies Oxidized Arcs” – Oral presentation

2022

Peccia, A., Moussallam, Y., Plank, T., et al., Cities on Volcanoes: “Petrologic estimate of sulfur outgassed from the 43 BCE eruption of Okmok Volcano, Alaska” –Oral Presentation

2021

Peccia, A., NENSIC 29: Climates and Societies of the Past: “Could an Alaska volcano be responsible for the demise of the Roman Republic?”– Oral Presentation

STUDENTS MENTORED

2024-present: Megan Marostica, Undergraduate Research Intern and Thesis: *Timescales of Volcanism and Volatile Budget of Poás Volcano, Costa Rica*

2024-present: Elliot Molz, Undergraduate Research Intern: *Magma Storage Conditions of the Earliest Caldera-Forming Eruption at Santorini*

2024: Violet Thompson, Undergraduate Research Work-Study

2021 – 2022: Sharothy Mahmud: Undergraduate Thesis: *Diffusion Chronometry Analysis of Fe-Mg Zonation in Olivine Crystals from the 2016 Cleveland Volcanic Eruption*

SUCCESSFUL PROPOSALS

2025 – Stanford Synchrotron Radiation Lightsource Beamtime, “Key Role of Fe speciation in Controlling the Global Redox Budget of Subducted Sediments”

2023 – International Ocean Discovery Program Post Expedition Award, “Calibration of the Pyroxene Hygrometer using the Minoan Eruption of Santorini and Application to the Christiana Ignimbrite”, Amount: \$20,000

CRUISE AND FIELD EXPERIENCE

Poás Volcano, Costa Rica: Hot Spring Sampling Assistant, March 2025

Death Valley, CA: Graduate Teaching Assistant for Field Geology Course, March 2025

R/V JOIDES Resolution IODP Expedition 398: Hellenic Arc Volcanic Field, December-February 2022-2023, Igneous Petrologist, Scientific Party

TEACHING EXPERIENCE

2025: Geochemistry for a Habitable Planet: Lead TA for upper-level Earth Sciences Course

2025: LDEO Summer REU Lecturer, “How catastrophic volcanic eruptions shape the world”

2025: Geological Excursion to Death Valley: Instructional and Field TA for introductory Earth Sciences Field Course

2023: Guest Lecturer, Keele University, “Volcanoes and the Environment”

2021: Solid Earth Systems: Lead TA for foundational Earth Sciences Course

2020: Solid Earth Systems: TA for foundational Earth Sciences Course

SERVICE POSITIONS

LDEO Colloquium Committee Member: 2022-2025

LDEO Executive Committee Member: 2022-2023, 2024-2025

LDEO Research as Art Committee Member: 2024-2025

Graduate Student Council Member: 2022-2025

OUTREACH

ReComposition: Art + Science for Earth, Exhibition in the Undercroft Gallery, Summer 2025

Presenter and Panelist, Earth Observations, Conversations with Lamont Scientists: “*Volcanoes!*”

Research as Art Exhibition at LDEO, 2024-2025

Author and Trip Lead: *Volcanologist’s Guide to the Metropolitan Museum of Art*, 2024-2025

LDEO Open House: Volcano World, 2022-2024

Women in Science at Columbia: Girls’ Science Day Host, 2021, 2022

PRESS

[Women in Science: Volcano Researcher Ally Peccia](#) – LDEO Profile

[Research as Art 2024](#) – LDEO Social Media

[Night shifts, drill cores, and sunrises](#) – IAVCEI Volcanic & Igneous Plumbing Systems Blog Post

[Fieldwork Rocks: Marooned on purpose](#) – Third Pod From the Sun

[“A Volcanic Explosion 520,000 Years Ago Dwarfed One That Devastated the Minoan](#)

[Civilization”](#) – State of the Planet

[“The Santorini Code”](#) – K22 Documentary Film

[“IODP | The Library of Earth’s History”](#) – One World Network

[“Meet Ally and Her Very Special Color Chart”](#) – Reach the World

[“Solving Riddles to Make an Impact”](#) – Columbia Engineering Student Profile