

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 megabeds 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, Appelgate, 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