Stanford



Mia Maria Pique

Ph.D. Student in Earth and Planetary Sciences, admitted Autumn 2026

Curriculum Vitae available Online

Bio

BIO

I grew up outside Chicago and moved west to attend Northern Arizona University in Flagstaff, Arizona. Through NAU's Interdisciplinary Global Program and Honors College, I earned a Bachelor of Science degrees in Geology and a Bachelor of Art in Spanish, with an emphasis in Global Science and Engineering. Studying geology among the landscapes of the American Southwest first inspired me to think deeply about Earth processes and the relationships among geology, communities and the environments in which we live.

My undergraduate education extended far beyond Flagstaff. I lived in Tucumán, Argentina, where I studied geology in Spanish at the Universidad Nacional de Tucumán. I then completed an internship at the Instituto Geofísico of Ecuador's Escuela Politécnica Nacional, where I studied the eruptive behavior of Reventador Volcano and conducted fieldwork in the Amazon Basin. I later continued my research through the University of Queensland's School of Earth and Environmental Sciences in Australia, studying diamonds as a tool to understand mantle behavior. These experiences taught me the importance of understanding science through international, interdisciplinary and cross-cultural perspectives.

Before coming to Stanford, I moved to San Francisco and worked in geotechnical engineering, where I applied my geologic background to real-world challenges involving Earth materials and infrastructure.

My M.S. research in Professor Vanorio's lab investigated how carbon-rich byproducts from methane pyrolysis can be incorporated into cementitious materials, creating a productive use for an emerging industrial byproduct.

As I develop my Ph.D research, I am interested in expanding my knowledge of rare earth elements (REEs) and critical minerals, including their occurrence as primary deposits in rocks and minerals, their behavior within mineral structures and their importance to emerging energy technologies. I hope to explore how geology, geophysics and engineering can contribute to the responsible characterization and use of these critical resources. More broadly, I hope to strengthen resource security by reducing dependence on geographically concentrated supply chains.

Beyond my research, I love thinking about how science, mentorship, creativity, communication and people all fit together. I am interested not only in asking, "How do we conduct meaningful and impactful research?" but also, "How do we build better scientists and strong scientific communities? How can we use education and knowledge as tools for a better world? " I believe scientific progress is strongest when it is interdisciplinary, collaborative, creative and grounded in care for both people and the planet.

LINKS

- My Website: https://miapique.github.io
- My LinkedIn: https://www.linkedin.com/in/mia-pique-821a27133/
- My page on my advisor's Lab Site: Rock Physics and Geomaterials Lab: https://rgl.stanford.edu/people/mia-pique

Research & Scholarship

LAB AFFILIATIONS

- Tiziana Vanorio (6/29/2024)

Publications

PUBLICATIONS

- **Unravelling eruption dynamics at El Reventador, Ecuador: linking the physiochemical properties of volcanic ash with geophysical, geochemical and satellite remote sensing data** *BULLETIN OF VOLCANOLOGY*
  Gaunt, H., Pique, M. M., Hernandez, S., Hidalgo, S., Cordova, M. D., Ramon, P., Bernard, B.
  2024; 86 (11)
- **Eruption type probability and eruption source parameters at Cotopaxi and Guagua Pichincha volcanoes (Ecuador) with uncertainty quantification** *BULLETIN OF VOLCANOLOGY*
  Tadini, A., Roche, O., Samaniego, P., Azzaoui, N., Bevilacqua, A., Guillin, A., Gouhier, M., Bernard, B., Aspinall, W., Hidalgo, S., Eychenne, J., De' Michieli Vitturi, M., Neri, et al
  2021; 83 (5)