

GAETANO FERRANTE

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SUMMARY AND PERSPECTIVE

I am a Ph.D. candidate at Rice University, where I research about magmatic processes. My research interests include physics-based numerical modeling of magma transport, and the experimental investigation of the rheology of magmas. I am interested in using numerical modeling to solve geoscience problems.

WORK EXPERIENCE

EEPS Explore Program Mentor, Rice University, Houston, USA August 2024 - Present
NSF Research Experience for Teachers (RET) Mentor, , Rice University, Houston, USA June - July 2024
Teaching Assistant for "EEPS 334: Earth Laboratory", , Rice University, Houston, USA January - May 2023

EDUCATION

Ph.D. in Earth, Environmental and Planetary Sciences, Rice University, Houston, USA January 2022 - Present
Thesis description: Simulating magma transport from mantle depths to the surface at Kīlauea Volcano, Hawai'i, and the resulting surface deformation and gas emissions.

M.S. in Physics of the Earth System, University of Bologna, Bologna, Italy September 2019 - October 2021
Thesis description: Analysis of the spatio-temporal evolution of rift-related volcanism as controlled by stress redistributions in the crust using a boundary element fracture propagation code.

B.S. in Physics, University of Bologna, Bologna, Italy. September 2016 - September 2019
Thesis Description: Investigating the fracturing conditions in a thermo-poro-elastic medium due to a degassing spherical magma chamber.

PUBLICATIONS AND CONFERENCE PRESENTATIONS

Ferrante, G., Rivalta, E., & Maccaferri, F. (2024). Spatio-temporal evolution of rift volcanism controlled top-down by a deepening graben. *Earth and Planetary Science Letters*, 629, 118593.

Ferrante, G., Rivalta, E., & Maccaferri, F. (2024). How developing grabens dictate volcanism shifts in rifts (No. EGU24-6331). *Copernicus Meetings*.

Ferrante, G., & Gonnerman, H. (2023, December). Magma transport to the shallow subsurface during the 2003-2007" surge" in magma supply at Kīlauea Volcano, Hawai'i. In *AGU Fall Meeting Abstracts* (Vol. 2023, No. 145, pp. V21D-0145).

Gonnermann, H. M., **Ferrante, G.**, Anderson, K. R., Foster, J. H., & Johanson, I. A. (2023, December). The Magma Plumbing System of Kīlauea Volcano, Hawaii, During its 2018 Eruption. In *AGU Fall Meeting Abstracts* (Vol. 2023, No. 191, pp. V23C-0191).

Ferrante, G. and Gonnermann, Helge M.: Magma transport processes leading to "surges" in magma supply at Kīlauea Volcano, Hawai'i, IAVCEI Scientific Assembly 2023, Rotorua, New Zealand, 30 January-3 February.

Ferrante, G., Rivalta, E., & Maccaferri, F. (2022, May). Spatio-temporal evolution of rift volcanism driven by progressive crustal unloading. In *EGU General Assembly Conference Abstracts* (pp. EGU22-8663).

AWARDS

Alison Henning Teaching Award, Rice University, Houston, USA April 2023
Best Thesis Award, University of Bologna, Bologna, Italy December 2021

SKILLS

• Numerical modeling (MATLAB, C++, FORTRAN) • Lab experience • Computational fluid dynamics • Hydrofracture modeling • Communication skills (Italian, English and French) • Team work • Teaching • Writing skills