

Research Interests

Geophysics: seismology, volcanology, geodynamics, subsurface imaging, inverse theory, renewable energy

Kaisa R. Autumn

PhD Candidate

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Education

- University of Oregon, PhD candidate in Geophysics, 2022-present.
- University of Oregon, Bachelor of Science in Physics with Earth Science minor, 2020-2022. Graduated Cum Laude with Departmental Honors.
- University of Colorado Boulder, Astrophysics major and Math minor, 2018-2020.

Publications

Isken, M.P., Karstens, J., Nomikou, P., ... **Autumn, K.R.**, ... *et al.* Volcanic crisis reveals coupled magma system at Santorini and Kolumbo. *Nature* 645, 939–945 (2025).
<https://doi.org/10.1038/s41586-025-09525-7> [Consulted on integration and interpretation of velocity model with seismic and deformation data; contributed to Figure 4; assisted with manuscript editing.]

Autumn, K. R., Hooft, E. E. E., & Toomey, D. R. (2025). Exploring mid-to-lower crustal magma plumbing of Santorini and Kolumbo volcanoes using PmP tomography. *Geochemistry, Geophysics, Geosystems*, 26, e2025GC012170. <https://doi.org/10.1029/2025GC012170>

Presentations

AGU Oral Presentation (2024): “Exploring Anisotropic Mantle Imaging Capabilities of a Bayesian Inversion Method at the Galápagos Plume-Ridge System”. *Oceanic Magmatism and Dynamics: Multidisciplinary Perspectives on Hot Spots and Seamounts III oral session in Volcanology, Geochemistry, and Petrology*.

SSA Oral Presentation (2024): “Investigating the Seismic Signature of Galápagos Mantle Flow Models”. *Translating Seismic Imaging into Geodynamic Understanding I oral session*.

AGU Poster Presentation (2023): “Seismic Tomography Reveals a Shared Lower-Crustal Magma Source for Proximal Santorini and Kolumbo Volcanoes”. *Geophysical Imaging of Magma Storage and Transport at Volcanoes I poster session in Volcanology, Geochemistry, and Petrology*.

AGU Poster Presentation (2022): “Imaging the Deep Crustal Magma System Below Santorini Using P-wave Moho Reflections”. *The Storage, Transport, and Eruption of Magma using Field Observations, Laboratory Approaches, and Modeling V poster session in Volcanology, Geochemistry, and Petrology.*

Research Experience

Skilled in programming (Matlab, Python, Unix, Julia), mathematical methods (inverse theory and Bayesian probabilistic theory), and seismology (analysis and modeling of direct seismic phases, reflections, and receiver functions). Experience with multibeam bathymetry processing using MB-System.

- Tomographic inversion of amphibious seismic data with [Prof. Emilie Hooft](#) at University of Oregon: *Focused on modeling the deep structure below the Santorini volcano and Galapagos Islands. 2020-present.*
- Science team member of Marine IGUANA ocean-bottom seismometer experiment: *Assisted in deployment April-March 2023 aboard the R/V Marcus G. Langseth, and the instrument recovery June-July 2024 aboard the R/V Sally Ride.*
- Team member of [Cascadia2021](#) seismic experiment: *Completed “Seismic Bootcamp” training to learn how to deploy and recover seismometers on land. Participated in the planning and organization of seismic field research. Recovered seismic instruments. Wrote [The Cascadia Subduction Zone](#) for the project blog. July 2021.*
- IRIS Seismology Skill Building [Workshop](#) for Undergraduates, 2021.

Teaching Experience

Teaching Assistant at UO (2022-present): *Taught lab sections for EARTH 102 & 202 (Earth Surface and Environment), EARTH 363 (Computational Tools), and EARTH 201 (Dynamic Planet Earth)*

Math and physics tutor with UO Services for Student-Athletes (2021-2022).

Outreach

Planning Committee Member and Early Career Committee Chair for [ISIC](#) (Island Systems Integration Consortium) All-Hands 2 meeting: *Assisted in planning a conference for interdisciplinary science. I also helped plan and organize a workshop for early career scientists, with a focus on interdisciplinary work between Biology, Earth Science, and Climate Science.*

[UO ADSE](#) (University of Oregon Alliance for Diversity in Science and Engineering): *Guest speaker for Lane Community College seminar “Science by the Slice”, and volunteer for local K-12 STEM night (2025).*

IgDEAS (Inclusivity and gender Diversity in Earth and Atmospheric Sciences) grad student mentor (2024-present): *I provide mentorship for early-stage graduate students in the UO Earth Sciences.*

Awards

UO Division of Graduate Studies Recruitment Fund Award (2022)

UO Lokey Graduate Science Award (2022)