

Dr Laura Wainman PhD, MSci (Cantab), BA (Cantab)

Postdoctoral Research Fellow,
Centre for Natural Hazards and Disaster Science (CNDS)
Department of Earth Sciences
Uppsala University, Sweden
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Primary Area of research: Volcanic Gas Geochemistry.

Sub-fields: Environmental Pollution | Air Quality | Heavy Metals | Climate Impacts of Large Eruptions | Atmospheric Chemistry | Volcanic Hazards | Disaster Risk Reduction | Critical Resources and the Green Transition.

Positions

Postdoctoral Research Fellow August 2026 - Ongoing
Centre for Disaster Science and Natural Hazards (CNDS)
Department of Earth Sciences, Uppsala University, Sweden
PI: *Volcanic-Anthropogenic Pollutants and Urban Health Resilience (VAPOUR)*.
PI: *Serious games for Disaster Risk Reduction Education in Nepal (Disaster Ready!)*

Education

- **Doctor of Philosophy** October 2022 – May 2026
Department of Earth Science, Environment, and Sustainability
University of Leeds UK
Thesis Title: “*Volcanic Emissions of Environmentally Reactive Trace Elements at the Fagradalsfjall 2021-2023 eruptions*”. Supervised by Dr Evgenia Ilyinskaya, Dr Melissa Pfeffer, Dr Penny Wieser. CASE partnership with the Icelandic Meteorological Office.
 - **MSci Earth Sciences (First Class)** October 2021 – June 2022
Department of Earth Sciences
University of Cambridge (Newnham College), UK
Dissertation Title: “*Investigating the Climatic Impact of the 1257 Samalas Eruption*”. Supervised by Prof Anja Schmidt, Dr Lauren Marshall, Dr Oli Shorttle.
 - **BA (Hons) Natural Sciences (First Class)** October 2018 – June 2021
Department of Earth Sciences
University of Cambridge (Newnham College), UK
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Publications

2026: Wainman. L, Karki. N, Gregory. L, Quinn. C, Geary. M. Disaster Ready! *Developing a board game for Disaster Risk Reduction education in Nepal through co-creation methods*, Earth Science, Systems, and Society. <https://doi.org/10.1144/esss2025-0>

2026: Wainman, L., Ilyinskaya, E., Pfeffer, M.A., Wieser, P.E., Damby, D., McQuaid, J.B., Mandon, C., Bali, E., Sepulveda-Araya, J., Walshaw, R. and Hall, C., *Hybrid particulate matter generated by lava-ignited wildfires at the Litli-Hrútur 2023 eruption, Iceland*. Science of The Total Environment, 1022, p.181622. <https://doi.org/10.1016/j.scitotenv.2026.181622>

2024: Wainman. L, Ilyinskaya. E, Pfeffer. M, Mandon. C, Bali. E, Edwards. B, Kleine-Marshall. B, Gudjonsdottir. S, Cotterill. A, Scott. S, Wieser. P, Stefánsson. A, Nicholson. E, Sepulveda-Araya. J, Hammond. S, Kunz. B, Jenner. F, Gunnarsson. J, Aiuppa. A, Burton. M, Mather. A. *Trace element emissions vary with lava flow age and thermal evolution during the Fagradalsfjall 2021-2023 eruptions, Iceland*. Geochemistry, Geophysics, Geosystems.
<https://doi.org/10.1029/2024GC011822>

2024: Wainman, L. *Using drones to sample volcanic plumes*. Nature Reviews Earth Environment, Tools of the Trade, 2024. <https://doi.org/10.1038/s43017-024-00570-w>.

2024: Wainman. L, Marshall. L, Schmidt. A. *Utilizing a Multi-Proxy Model Comparison to Constrain the Season and Regionally Heterogeneous Impacts of the Mt. Samalas 1257 Eruption*. Climate of the Past, <https://doi.org/10.5194/cp-20-951-2024>.

In review: Wainman. L, Ilyinskaya. E, Pfeffer. M, Mandon. C, Bali. E, Wieser. P, Edwards. B, Voigt. M, Kleine-Marshall. B, Guðjónsdóttir. S, Symons. A, Cotterill. A, Hammond. S, Kunz. B, Jenner. F, Schmidt. A, Stefánsson. A, Nicholson. E, Halldórsson. S, Gunnarsson. J, Aiuppa. A, Burton. M, Mather. T. *Heterogeneous Trace Element Deposition from an Effusive Volcanic Plume*.

Reviewer for: Science of the Total Environment – 2025, Bulletin of Volcanology – 2025, Nature Communications Earth and Environment – 2024.

Awards and Grants

2026 : CNDS Postdoctoral Research Fellowship Grant “Volcanic-Anthropogenic Pollutants and Urban Health Resilience (VAPOUR)” - (Total Value € 180,000)

Soroptimist International Leeds Continuing Outreach Grant - (£3,500)

PANORAMA DTP Accelerator Outreach Grant - (£3,500)

2025: European Association of Geochemistry Research Scholarship - (£830)

Institute of Geophysics and Tectonics Award - (£400)

PANORAMA RTSG Top-Up for Research Innovation - (£500)

2024: Geochemistry Research Group Travel Bursary - (£500)

OMET EDI/Outreach Fund for “Disaster Ready!” - (£1500)

Contributor to NERC Urgency Grant “Chemistry of emissions at lava-urban interfaces” - (£67,000)

2023: COMET Travel Bursary - (£500)

European Association of Geochemistry Ambassador - (£1200)

Institute of Geophysics and Tectonics Award - (£500)

2022: New Researchers Award, The Geologists Association - (£510)

Geoff Brown Honourable Mention, VMSG Student Poster Prize.

2021: Sparke Fourth-Year Scholarship and L.M. Mott Prize, Newnham College (£600)

2018: Achievement Award, Department of Earth Sciences (£100)

Invited Talks

(2026) *Volcanic emissions of environmentally reactive trace elements at the 2021-2023 Fagradalsfjall Eruptions, Iceland.* Department of Earth Sciences Seminar Series, University of Iceland, Online.

(2026) *A Community Co-Created Boardgame for Disaster Risk Reduction (DRR) Education in Nepal.* Lives on Mountains Research Symposium, Panel Keynote Speaker. University of Leeds, UK.

(2025) *Hidden Hazards: The emission of environmentally reactive trace elements at the 2021-2023 Fagradalsfjall Eruptions, Iceland.* CONVERSE Early Career Emerging Researcher Webinar Series, Online.

(2025) *Hybrid Particulate Matter generated by Lava-Ignited Wildfires at the Litli-Hrútur 2023 Eruption, Iceland.* Wolfson Atmospheric Chemistry Laboratories, University of York, UK.

Conference Presentations

(2025) *Hybrid Particulate Matter generated by Lava-Ignited Wildfires at the Litli-Hrútur 2023 Eruption, Iceland.* **Wainman, L. et al.**, University of Iceland, Department of Earth Sciences PhD Showcase Talk. Reykjavik, Iceland.

(2024) *Disaster Risk Reduction (DRR) Education in Nepal: "Serious Games" for earthquake preparedness, resilience, and response.* **Wainman, L.** COMET Annual Meeting 2024. Huddersfield, UK.

(2024) *Lateral variation in the trace element emissions of degassing lava flows, with implications for trace metal exposure.* **Wainman, L.** Ilyinskaya, E. et al. Cities on Volcanoes 12, Antigua, Guatemala.

(2023) *A Multi-Proxy Model Comparison to Constrain the Eruption Season of the Mt. Samalas 1257 Eruption.* **Wainman, L.** Marshall, L. Schmidt, A. IAVCEI International Conference 2023, Virtual Attendance.

(2022) *Constraining the Samalas 1257 Eruption: A Model and Multi-Proxy Approach.*

Wainman, L. Marshall, L. Schmidt, A. Cities on Volcanoes 11, Crete, Greece.

+ 6 First Author Poster Presentations.

Outreach, Engagement, and Media

- Founder of the Disaster Ready! project. Using serious games for Disaster Risk Reduction Education in Nepal to enhance community resilience to natural hazards.
 - Participated in scientific emergency response campaigns and civil defence discussions during volcanic unrest on the Reykjanes Peninsula, Iceland.
 - Producer for short-film on volcanic-wildfire hazards for the UNDRR International Day for Disaster Risk Reduction 2025.
 - Interviewed by ABC News Radio Australia on volcanic air pollution impacts across Europe.
 - Quoted in online news articles by BBC Travel, NASA Earth Observatory, and Live Science on the Litli-Hrutur 2023 eruption.
 - Outreach Ambassador for Priestley International Centre for Climate Change, including being interviewed for the Royal Geographical Society Podcast.
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Teaching Experience

- Associate Fellowship of the UK Higher Education Academy (FHEA). Awarded for sustained commitment to teaching and development of teaching practice evaluated against the Professional Standards Framework (PSF).
- Invited Guest Lecturer on “Earthquake Hazards and Societal Challenges” for Geology and Society module.
- Seminar Co-ordinator for 2nd Year Undergraduate Geography Seminar Series on Natural Hazards.
- 100 hrs + demonstrating undergraduate modules: 3D Earth, Geology and Society, Our Habitable Planet, Computational inverse theory and Pembrokeshire Field Course.
- Lead Host for the In2scienceUK Summer Internships within the Volcanic Gas Group at University of Leeds. Developed week-long internship project for two A-level students.
- Student Ambassador of Geology for Global Development. Promoting the UN SDGs.
- Volunteer Tutor with RefuNet teaching A-level Science to refugee students in the UK.

Key Research Skills

Laboratory Experience. 100 hrs+ in ISO 7 clean labs performing wet chemistry extractions. HF trained. Operation of ICP-MS/MS Agilent 8000 (Solution + Laser Ablation modes). 50 hrs+ independent operation of Scanning Electron Microscope (SEM).

Computer Skills. Competent in Python (incl Pandas, Seaborn, NumPy, Iris), LaTeX, QGIS (map-making), Microsoft Office. Beginner competency in MatLab and GitHub.

Modelling. HSC Chemistry Thermochemical Modelling (Gibbs Free Energy minimisation for element equilibrium speciation, used across multiple projects). UK Earth System Model (UKESM; worked with global climate simulation outputs). Completed Introductory Courses for the UKCA (UK Chemistry and Aerosol Scheme; NCAS) and NAME Model (UK Met Office).

Fieldwork. Experienced in air quality monitoring and volcanic gas sampling, including use of UAV platforms. Confident operating in extreme environments.

- Participated in Operational monitoring activities at Grimsvötn, Kverkfjöll, Bárðarbunga and Askja volcanoes in Iceland as a field assistant for the Icelandic Meteorological Office.
 - Led a 6-week trip to Okhaldhunga, Nepal, to deliver workshops in schools on multi-hazard resilience using serious games, collaborating with international NGO's and local educators.
 - Three multi-week long field campaigns as part of PhD data collection and monitoring efforts, reporting to national civil defence agencies. *Sundhnúkur Dike Intrusion* (2024), *Litli-Hrútur Eruption* (2023), *Meradalir Eruption* (2022).
 - Attended multiple field courses and workshops: *In-Situ Measurements and Sampling of Volcanic Gases INGV Summer School*, Vulcano (2023). *NERC BGS MINEX Advanced Short Field Course*, Milos, Greece (2022). *Commission on the Chemistry of Volcanic Gases (CCVG) Field Meeting*, Sabancaya and Ubinas volcanoes, Peru (2022).
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Service and External Positions

- Member of the executive committee of the International Volcanic Health Hazard Network (IVHHN). ECR Lead responsible for building ECR community engagement. (2026 – Ongoing)
 - Chartered Associate at Satarla Ltd. Providing consulting on Environmental and Social Governance in the Mining Industry (2023-2025).
 - Student member of IAVCEI, The International Association of Geoethics, UKADRR, The Geochemical Society, and The European Association of Geochemistry.
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