

# JAMIE I. FARQUHARSON

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I'm an experimental and computational geoscientist with a passion for volcanology. I use multimethod approaches to investigate volcanic processes across scales to shed light on complex natural phenomena. I have a background in experimental rock deformation and numerical modelling, coupled with hands-on machine engineering and programming experience. Past and current research topics include (1) Micro- to meso-scale rock deformation and fluid flow; (2) Reactive fluid flow in geologic systems; (3) Eruption triggers and dynamics; and (4) The response of volcanic systems to past and future climate change. I'm a firm believer in open scholarship, cross-disciplinary science, and international collaboration.

## PROFESSIONAL EXPERIENCE

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<b>Niigata University</b> Specially appointed Professor	<b>Sep 2023 – present</b> <i>Japan</i>
<b>Université de Strasbourg</b> Journal manager	<b>Jul 2022 – Jun 2023</b> <i>France</i>
<b>Lancaster University</b> Honorary Researcher	<b>Jun 2021 – Sep 2021</b> <i>UK</i>
<b>Stallard Scientific Editing</b> Freelance Scientific Editor	<b>Apr 2021 – Jul 2022</b> <i>NZ</i>
<b>University of Miami</b> Post-doctoral Research Associate	<b>Apr 2018 – Apr 2021</b> <i>USA</i>
<b>Université de Strasbourg</b> Course Lecturer	<b>Nov 2017 – Apr 2018</b> <i>France</i>
<b>Université de Strasbourg</b> Post-doctoral Research Associate	<b>Nov 2016 – Apr 2018</b> <i>France</i>
<b>Universidad de Colima</b> Research Assistant	<b>Nov 2011 – Mar 2012</b> <i>Mexico</i>

## EDUCATION

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<b>Université de Strasbourg</b> PhD., Geophysics (Experimental Volcanology); <i>Exceptional</i>	<b>2013 – 2016</b> <i>France</i>
<b>Lancaster University</b> M.Sc., Volcanology and Geological Hazards; <i>Distinction</i>	<b>2012 – 2013</b> <i>UK</i>
<b>University of Stirling</b> B.Sc.(Hon.), Environmental Geography; <i>First class</i>	<b>2007 – 2011</b> <i>UK</i>

## AWARDS AND HONOURS

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<b>Award for Outstanding Editorial or Publishing Contribution</b> Association of Earth Science Editors	<b>2023</b> <i>USA</i>
<b>Zeiss Post-doctoral Keynote Award</b> Volcanic and Magmatic Studies Group	<b>2021</b> <i>UK</i>
<b>Prix de thèse [Thesis prize]</b> Société des Amis des Universités de l'Académie de Strasbourg	<b>2017</b> <i>France</i>
<b>"Best Dissertation" prize</b> Lancaster Environment Center	<b>2013</b> <i>UK</i>
<b>University Medal</b> Royal Scottish Geographical Society	<b>2011</b> <i>UK</i>

## RECENT FUNDED PROPOSALS

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<b>“Understanding reactive fluid transport mechanisms for predicting explosive eruptions”</b>	<b>2024</b>
¥14.2M; Japan Society for the Promotion of Science Fundamental research (B) (~94,000 US\$ equivalent)	<i>Japan</i>
<b>“Investigating reactive fluid transport in volcanic systems”</b>	<b>2023</b>
£720k; UKRI NERC Independent Research Fellowship [ <i>declined by applicant</i> ] (~909,000 US\$ equivalent)	<i>UK</i>
<b>“Growing an innovative community open access testbed in the Earth Sciences”</b>	<b>2021</b>
€45k; Fonds National pour la Science Ouverte [ <i>National Funds for Open Science</i> ] (~49,000 US\$ equivalent)	<i>France</i>

## RECENT KEYNOTES AND INVITED TALKS

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<b>“Climate change, extreme weather events, and volcanic hazards”</b>	<b>June 2023</b>
University of Edinburgh EPS Geoscience seminar	<i>UK</i>
<b>“An open science testbed for volcanology”</b>	<b>Dec 2021</b>
American Geophysical Union Fall meeting	<i>USA</i>
<b>“Fluid transport in volcanoes: from micro- to macro-scale”</b>	<b>Oct 2021</b>
Paris École normale supérieure, Geosciences invited seminar	<i>France</i>
<b>“Rainfall-induced volcanic hazard in a changing climate”</b>	<b>May 2021</b>
University of East Anglia Atmospheres, Oceans and Climate seminar series	<i>UK</i>
<b>“Pore fluid pressure evolution in volcanic environments: the role of rainfall”</b>	<b>Apr 2021</b>
European Geosciences Union meeting	<i>Austria</i>
<b>“Assessing rainfall-induced volcanic hazard”</b>	<b>Jan 2021</b>
Volcanic and Magmatic Studies Group Zeiss Keynote	<i>UK</i>
<b>“Fire and rain: exploring the links between weather, climate, and volcanism”</b>	<b>Jan 2021</b>
Leicester Literary and Philosophical Society Winter Seminar Series	<i>UK</i>

## SERVICE TO THE COMMUNITY

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- Founder and Editor-in-Chief of [Volcanica](#)
- Secretary of the [Free Journal Network](#)
- Co-organiser & panellist of the International Union of Geodesy and Geophysics [Early Career Scientists forum](#)
- Co-organiser & moderator of the European Geoscience Union [Great Debate on Open Science](#)
- Senior Advisory Council member for [EarthArXiv](#)
- Elective member of the [IAVCEI ECR-Net](#) working group
- Reviewer for 20+ scholarly journals
- Outreach initiatives, such as the [Scientist in Every Florida School](#) program.

## SELECT PUBLICATIONS

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**Farquharson, J. I.**, H. Tuffen, F. B. Wadsworth, J. M. Castro, H. Unwin, and C. I. Schipper, 2022. In-conduit capture of sub-micron volcanic ash particles via turbophoresis and sintering. *Nature Communications*. DOI: [10.1038/s41467-022-32522-7](https://doi.org/10.1038/s41467-022-32522-7).

**Farquharson, J. I.** and F. Amelung, 2022. Volcanic hazard exacerbated by future global warming–driven increase in heavy rainfall. *Royal Society Open Science*. DOI: [10.1098/rsos.220275](https://doi.org/10.1098/rsos.220275).

Aubry, T., **J. I. Farquharson**, et al., 2022. Impact of climate change on volcanic processes: current understanding and future challenges. *Bulletin of Volcanology*. DOI: [10.1007/s00445-022-01562-8](https://doi.org/10.1007/s00445-022-01562-8).

**Farquharson, J. I.**, & F. Amelung, 2020. Extreme rainfall triggered the 2018 rift eruption at Kīlauea Volcano. *Nature*. DOI: [10.1038/s41586-020-2172-5](https://doi.org/10.1038/s41586-020-2172-5). [[Cover feature](#)]

**Farquharson, J. I.**, B. Wild, A. R. L. Kushnir, M. J. Heap, P. Baud, & B. Kennedy, 2019. Acid-induced dissolution of andesite: evolution of permeability and strength. *JGR: Solid Earth*. DOI: [10.1029/2018JB016130](https://doi.org/10.1029/2018JB016130).

**Farquharson, J. I.**, M. J. Heap, N. Varley, P. Baud, & T. Reuschlé, 2015. Permeability and porosity relationships of edifice-forming andesites: A combined field and laboratory study. *J. Volcanol. Geoth. Res.* DOI: [10.1016/j.jvolgeores.2015.03.016](https://doi.org/10.1016/j.jvolgeores.2015.03.016).

All (34) publications can be accessed via my website: <https://jifarquharson.github.io #publications>, either as a downloadable PDF (green open-access) or a link to an open-access version via the publisher (gold or diamond open-access). Code associated with various publications are openly available via Zenodo, GitHub, or Figshare.

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## PROFESSIONAL MEMBERSHIPS

- American Geophysical Union (AGU)
- European Geosciences Union (EGU)
- The American Ceramic Society (ACerS)
- Association of Earth Science Editors (AESE)
- Asia Ocean Geosciences Society (AOGS)
- International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI).
- Volcanological Society of Japan (日本火山学会)

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## TEACHING EXPERIENCE

### M.Sc. level

- Petrophysics
- Brittle microstructure
- Applied rock physics

- Geophysical laboratory measurements.

### Ph.D. level

- Geological Hazards
- Physical Volcanology.

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## RESEARCH TECHNIQUES AND EXPERTISE

### Laboratory techniques

- Experience conducting mechanical deformation experiments.
- Experience measuring rock physical properties (e.g. permeability, porosity).
- Experience with analytical imaging techniques such as scanning electron microscopy.
- Experienced at design, construction, and operation of fluid flow apparatus, including apparatus using gases, aggressive acids, elevated temperatures, and high pressures.
- Experience designing and building data acquisition systems, to allow sensors to communicate with computers.

### Fieldwork

- Experience installing monitoring apparatus, including infrasound and seismometer stations, in rugged and remote volcanic environments.
- Experience field-testing gas monitoring systems (including radon, CO<sub>2</sub>, and multi-gas apparatus).
- Experience conducting suites of permeability and sample density measurements using field-appropriate methods.

### Computer skills

- Numerical modelling in Python and MATLAB.
- Statistics and data analytics.
- Analysis of satellite-based remote sensing datasets.
- Analysis of large ensemble climate model datasets.
- Open-source plugin development.
- Data visualisation.
- L<sup>A</sup>T<sub>E</sub>X and typesetting.

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## METRICS AND IMPACT

- [h-index: 22](#)
- [i10-index: 27](#)
- [citations: 1619](#)
- My research featured in [90+ news articles in 2020](#), including *NPR*, *New York Times*, *New Scientist*, and *VICE*. See more via Impactstory: [0000-0003-4933-2607](https://www.impactstory.org/0000-0003-4933-2607).
- My work on permeability of volcanic material has seen uptake in [official policy documentation](#); for example, multiple of my research articles are cited in Rural Water Supply Network Forum policy documents.
- My research and development of a [diamond open access publishing model](#) has provided a blueprint for new open access initiatives across the Earth sciences, including [seismology](#), [tectonics](#), and [sedimentology](#). My publications and outreach efforts have been cited in each case, highlighting the wider community and societal benefit of my open access advocacy and praxis.