

Gilles Seropian

VOLCANOLOGIST

French-Lebanese based in Christchurch, NZ

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Education

University of Canterbury

Christchurch, New Zealand

PHD GEOLOGY | B. KENNEDY, A. NICHOLS, I. SCHIPPER

2017 - 2021

- Experimental, theoretical, modelling and field study of seismically-triggered eruptions.
- High temperature experiments with natural obsidian focusing on bubble processes under oscillatory stresses.
- Collection, bubble texture analysis and thermodynamic modelling of pumice samples from Cordón Caulle volcano, Chile.

University of Bristol

Bristol, UK

MSc VOLCANOLOGY | A. RUST

2016 - 2017

- Experimental study of confined Rayleigh-Taylor Instabilities and applications to igneous systems.
- Numerical linear stability analysis of the problem.

McGill University

Montreal, Canada

BSc HONOURS PHYSICS | J. STIX

2013 - 2016

- Characterising fault nucleation and propagation during caldera collapses using sandbox analogue experiments.

Research Experience

University of Liverpool

Liverpool, UK

VISITING DOCTORAL RESEARCHER | Y. LAVALLÉE, J. KENDRICK

2019

- Experimental investigation of bubble nucleation and growth processes in rhyolitic melt.
- High temperature, pressure-oscillating experiments using obsidian from Krafla, Iceland.

Ludwig-Maximilians-Universität München

Munich, Germany

DEUTSCHER AKADEMISCHER AUSTAUSCHDIENST FELLOW

2019

- Thermomechanical characterization of obsidian from Krafla, Iceland.
- High temperature dilatometry experiments.

Woods Hole Oceanographic Institution

Woods Hole, USA

SUMMER STUDENT FELLOW | J. MCGUIRE, M. BEHN

2015

- Numerical modelling of the dynamics of the Greenland ice sheet following drainage of supraglacial lakes.

McGill University

Montreal, Canada

RESEARCH ASSISTANT | Y. LIU

2015

- Numerical modelling and comparison of seismicity on symmetrical and asymmetrical normal faults along mid-ocean ridges.

Institut de Physique du Globe de Paris

Paris, France

RESEARCH ASSISTANT | J.P. VALET, C. TANTY

2014

- Measuring natural remanent magnetism of marine sediment cores, settling sediment experiments under controlled magnetic fields, focus on magnetic signatures of turbidites.

Skills

Software	Python, Matlab, Unix, Rhyolite-MELTS, Arc/QGIS, Fortran, R, HTML/CSS, C, Perl, \LaTeX .
Laboratory skills	SEM, EPMA, FTIR, MultiGAS, dilatometry, thermomechanical analysis, rheometry, pycnometry, permeametry, paleomagnetism, high temperature and analogue experiments.
Field	Extensive experience, particularly remote, challenging, technical locations. Proficient rope access techniques. Driver's license, PADI certification, basic avalanche training.
Languages	●●●● French, English. ●●●○ Spanish, German, Levantine Arabic.
Communication	Taught scientific communication to undergraduate and graduate levels. Experience communicating with NZ media. Experience introducing volcanology to local elementary schools (NZ, UK).

Honours & Awards

2021	Hatherton Award , Royal Society Te Apārangi	New Zealand
2020	Honourable mention - Best PhD oral presentation , NZ Geosciences Conference	Christchurch, NZ
2019	Deutscher Akademischer Austauschdienst Fellowship , Ludwig-Maximilians-Universität	Munich, Germany
2016	First Class Honours in Physics , McGill University	Montreal, Canada
2016	Dean's Honour List and Dean's Multidisciplinary Undergraduate Research List , McGill University	Montreal, Canada
2015	Richard and Mary Shaw Scholarship , McGill University	Montreal, Canada
2013	James McGill Scholarship , McGill University	Montreal, Canada

Teaching Experience

University of Canterbury

Christchurch, NZ

DEMONSTRATING (LAB SESSIONS, MARKING, OCCASIONAL LECTURING, FIELD TRIPS)

2018 - Present

Undergraduate and graduate petrology, mineralogy, volcanology and scientific communication. Field trips to the Tongariro Volcanic Zone and other New Zealand areas.

McGill University

Montreal, Canada

TUTORING

2015 - 2016

First and second year maths and physics.

Hobbies

- Sports and culture** Experienced funambulist and avid rock climber. Improvisational theatre comedian and funk saxophone player.
- Volunteering** >14 years with the Scouts, 1 year with APF France handicap (association helping people with disabilities).

Publications

Peer-reviewed journal articles

1. Patton, N.R., Shulmeister, J., Ellerton, D., & **Seropian, G.** (2022) Measuring landscape evolution from inception to maturity: insights from a coastal dune system, *Earth and Planetary Science Letters*, 584, 117448. <https://doi.org/10.1016/j.epsl.2022.117448>
2. **Seropian, G.**, Kennedy, B.M., Kendrick, J.E., Lavallée, Y., Nichols, A.R.L., von Aulock, F.W., Dingwell, D.B., Hess, K.U., Lamur, A., Schaefer, J., Vasseur, J., & Wadsworth, F.B. (2022) Vesiculation of rhyolitic melts under oscillatory pressure, *Frontiers in Earth Science*, 10, 812311. <https://doi.org/10.3389/feart.2022.812311>
3. **Seropian, G.**, Schipper, C.I., Smithies, S.L., Harmon, L.J., Kennedy, B.M., Castro, J.M., Alloway, B.V., & Forte, P. (2021) A century of ongoing silicic volcanism at Cordón Caulle, Chile: New constraints on the magmatic system involved in the 1921–1922, 1960 and 2011–2012 eruptions, *Journal of Volcanology and Geothermal Research*, 420, 107406. <https://doi.org/10.1016/j.jvolgeores.2021.107406>
4. **Seropian, G.**, Kennedy, B.M., Walter, T.R., Ichihara, M., & Jolly, A.D. (2021) A review framework of how earthquakes trigger volcanic eruptions, *Nature Communications*, 12, 1004. <https://doi.org/10.1038/s41467-021-21166-8>
5. Schipper, C.I., Castro, J.M., Kennedy, B.M., Tuffen, H., Whattam, J., Wadsworth, F.B., Paisley, R., Fitzgerald, R., Rhodes, E., Schaefer, L., Ashwell, P., Forte, P., **Seropian, G.**, & Alloway, B. (2021) Silicic conduits as supersized tuffites: Clastogenic influences on shifting eruption styles at Cordón Caulle volcano (Chile), *Bulletin of Volcanology*, 83(11). <https://doi.org/10.1007/s00445-020-01432-1>
6. Schipper, C.I., Castro, J., Kennedy, B.M., Christenson, B., Aiuppa, A., Alloway, B.V., Forte, P.B., **Seropian, G.**, & Tuffen, H. (2019) Halogen (Cl, F) release during explosive, effusive, and intrusive phases of the 2011 rhyolitic eruption at Cordón Caulle volcano (Chile), *Volcanica*, 2(1), 73-90. <https://doi.org/10.30909/vol.02.01.7390>
7. Wadsworth, F., Unwin, H., Vasseur, J., Kennedy, B., Holzmueller, J., Scheu, B., Witcher, T., Adolf, J., Cáceres, F., Casas, A., Cigala, V., Clement, A., Colombier, M., Cronin, S., Cronin, M., Dingwell, D., Guimarães, L., Höltgen, L., Kueppers, U., **Seropian, G.**, Stern, S., Teissier, A., Vossen, C., & Weichselgartner, N. (2018) Trashcano: Developing a quantitative teaching tool to understand ballistics accelerated by explosive volcanic eruptions, *Volcanica*, 1(2), 107-126. <https://doi.org/10.30909/vol.01.02.107126>
8. **Seropian, G.**, Rust, A.C., & Sparks, R.S.J. (2018) The gravitational stability of lenses in magma mushes: Confined Rayleigh-Taylor instabilities, *Journal of Geophysical Research*, 123, 3593–3607. <https://doi.org/10.1029/2018JB015523>

9. **Seropian, G.**, & Stix, J. (2018) Monitoring and forecasting fault development at actively forming calderas: An experimental study, *Geology*, 46(1), 23-26. <https://doi.org/10.1130/G39551.1>

Invited talks

- New Zealand Volcanology Seminar Series, May 2020
- Ludwig-Maximilians-Universität München, June 2019
- GeoForschungsZentrum Potsdam, May 2019
- University of Canterbury, Dec 2018
- University of Canterbury, Mar 2018
- Ludwig-Maximilians-Universität München, Nov 2017
- Woods Hole Oceanographic Institution, July 2015

Conference oral presentations

- Shaky volcanology: how do bubbles respond to seismic waves in the laboratory?, *Geosciences Society of New Zealand Annual Conference*, Christchurch, Nov 2020.
- New classification and global approach to seismically-triggered volcanic eruptions, *IUGG General Assembly*, Montreal, July 2019.

Conference poster presentations

- Evidence of seismic triggering from bubble textures at Cordón Caulle volcano, Chile, *EGU General Assembly*, Vienna, Apr 2019.
- Magma-shaking: high-temperature, oscillating-pressure experiments with rhyolitic melt, *Materials@UC*, Christchurch, Dec 2018.
- Double boom: seismic triggering at Cordón Caulle volcano, Chile, *GSNZ Annual Meeting*, Napier, Nov 2018.
- Monitoring and forecasting fault development at actively forming calderas, *IAVCEI General Assembly*, Portland, Aug 2017.

Media coverage

- Tech Explorist: *How earthquake triggers volcanic eruptions?*, Mar 2021
- Scoop: *Can earthquakes trigger volcanic eruptions?*, Mar 2021
- University of Canterbury News: *Can earthquakes trigger volcanic eruptions?*, Mar 2021
- UC Minds: *Cordón Caulle volcano, Chile*, Sep 2018