

Gustavo Villarruel

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EDUCATION

PhD in Earth and Planetary Sciences • McGill University • Aug 2023 – present

Thesis: Drone applications in natural and anthropogenic hazards.

Advisor: Prof. Dr. John Stix (john.stix@mcgill.ca)

MS in Geology • Fulbright Scholar in State University of New York at Binghamton • Jan 2021 – Dec 2022

GPA: 4.0 (0-4 scoring scale).

Thesis: Detailed sedimentology and chemostratigraphy of the Trenton Group limestones in the Mohawk Valley of New York

Advisor: Prof. Dr. Jeffrey T. Pietras (jpietras@binghamton.edu)

BS in Geology • National University of Cordoba, Argentina • Mar 2012 – Mar 2018

GPA: 9.41 (0-10 scoring scale).

Thesis: Water repellency in soils affected by fire and comparison with heating experiments.

Advisor: Prof. Dr. Gabriela Sacchi (gsacchi@unc.edu.ar)

PROFESSIONAL EXPERIENCE

Teaching Assistant at McGill University • Montréal, Canada • Aug 2023 - present.

- EPSC530 – Volcanology – Starting Fall 2025. Reference: Prof. John Stix (john.stix@mcgill.ca)
- EPSC201 – Understanding Planet Earth – Winter 2025. Reference: Prof. Isabela Moreno (isabela.morenocordeirodesousa@mcgill.ca)
- EPSC 221 - General Geology – Fall 2024 / Fall 2023. Reference: Prof. Jeanne Paquette (jeanne.paquette@mcgill.ca)
- ESYS 104 – The Earth System – Winter 2024. Reference: Prof. William Minarik (william.minarik@mcgill.ca)

Junior Geologist at Represas Patagonia (Patagonia Dams) • Santa Cruz, Argentina • Sep 2020 – Jan 2021.

Performed slope stability and landslide risk analysis, geotechnical logging, description of trial pits and well supervision.

Reference: Geologist Diana Boero (dboero@represaspatagonia.com.ar)

Laboratory Analyst at CEPROCOR • Cordoba, Argentina • Apr 2019 – Mar 2020

Determined trace elements in soils and aqueous samples by spectroscopic techniques: ICP-MS and FAAS. Acquired training in the use of gas chromatography, XRF and FTIR. Reference: MS. Marcela Inga (marcela.inga@cba.gov.ar)

Geologist Internship at Environmental Mining Department of Cordoba • Argentina • Jun 2017 – Dec 2017

Evaluated environmental impact reports from mines and quarries and collaborated on the field inspections thereof. Wrote technical reports for the issue of environmental license for mining companies. Reference: Geologist David Palacio

(davidhpalacio@gmail.com)

Teaching Assistant in Igneous and Metamorphic Petrology at National University of Cordoba • Argentina • Mar

2016- Dec 2016. Reference: Dr. Alina Guerreschi (alina.guerreschi@unc.edu.ar)

CERTIFICATIONS AND TRAINING

- **Certification in first aid** in wilderness & CPR/AED Level C. Canadian Red Cross. May 2024.

- **European drone pilot license.** A1/A3 open sub category. Issued by EASA: European Union Aviation Safety Agency. Feb 2024.
- **Canadian drone pilot license.** Small Remotely Piloted Aircraft System (RPAS), Visual line-of-sight (VLOS). Issued by Transport Canada. Jan 2024
- **Environmental Resilience: Protecting the Natural Environment of San Diego and Beyond.** Fulbright Enrichment Seminar. Sep 2022.
- **Bartle Field Trip: Volcanology, Glaciology and Climate Change in Iceland.** Professors: Tim Lowenstein, Howard Naslund and Kennie Leet. Jun 2022.
- **Geospatial Applications for Disaster Risk Management.** Massive Online Open Course (MOOC) imparted by the Centre for Space Science and Technology Education for Asia and the Pacific and the United Nations. Aug 2021.
- **Energy Transition: Innovation Towards a Low-Carbon Future.** MOOC offered by IFP School with the support of Total Energies. Feb 2020.

HONORS AND AWARDS

- **Fonds de Recherche du Québec – Nature and Technologies (FRQNT)** doctorate scholarship. Jun 2024.
- **Best presentation** at McGill University Earth and Planetary Science Symposium. Apr 2024.
- **GREAT Travel Award and Graduate Mobility Award:** research travel awards from McGill University to conduct fieldwork in Campi Flegrei volcano, Italy. Mar 2024.
- **Kenneth N. Weaver Student Travel Award** of the Northeastern Section of the Geological Society of America (GSA). Travel award for research presented in the GSA annual meeting. Oct 2022.
- Scholarship granted by the **Fulbright Commission and the Ministry of Education of Argentina** to pursue graduate studies in the U.S. Jun 2019.
- Recognition of the National University of Cordoba for achieving the **highest GPA** out of all natural sciences candidates in the class of 2018. Jun 2019.

PUBLICATIONS

- Villarruel, G., Stix, J., Aiuppa, A., Caliro, S., and Salas-Navarro, J. 2025. CO₂ fluxes at Campi Flegrei volcano, Italy, measured by drone in near-real time. *In press*.
- Villarruel, G., Sacchi, G.A., and Zampar, V.P. 2022. Water repellency in soils affected by fire and comparison with heating experiments. *Journal of the School of Exact, Physical and Natural Sciences from the National University of Cordoba*, 9(2), 69-76.

CONFERENCES AND PRESENTATIONS

- **ComSciCon Québec.** Poster presentation « Le métier de volcanologue : entre la science et le danger ». Montreal, Canada. Jun 2025.
- **Geotop Meeting.** Oral presentation “CO₂ fluxes and gas ratios at Campi Flegrei supervolcano, Italy, measured by drone”. Montreal, Canada. Mar 2025.
- **McGill University Earth and Planetary Science Symposium.** Oral presentation “UAS deployment to study the vertical distribution of greenhouse gases (GHG) in Montreal”. Apr 2024.
- **Geological Society of America Annual Meeting.** Oral presentation “Water repellency in soils affected by wildfires: a case study in Calamuchita Valley, Argentina” and poster presentation “Hardground formation in the Rust Formation of the Trenton Group in the Taconic foreland basin, New York”. Denver, USA. Oct 2022.
- **Houston Geological Society Student Expo.** Oral Presentation “Sedimentology and Geochemistry of the Trenton carbonates in the Taconic foreland basin, New York”. Houston, USA. Sep 2022.

- **XIII Argentine Congress of Mineralogy, Igneous and Metamorphic Petrology and Metallogensis.** Student attendee. Cordoba, Argentina. Aug 2019.
- **3rd Argentine Congress of Aggregates.** Cordoba, Argentina. Assistant and member of the organization committee. Nov 2017.

PROFESSIONAL ASSOCIATIONS

- International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI). Oct 2024 – present.
- Geological Society of America (GSA). Aug 2021 – present.
- President of the Student Chapter of Binghamton University. Aug 2021 – Dec 2022.

LANGUAGES

English: Proficient • Spanish: Native • French: Proficient

COMPUTER SKILLS

Python • ArcGIS PRO • Microsoft Office • Adobe Illustrator
• QGIS • Global Mapper • Surfer • Petrel • GeoGraphix

VOLUNTEERING

- **REZO.** Nonprofit organization promoting activities for the mental, physical, and social well-being of the members of the LGBT+ community in Montréal. Jan 2025 – present.
- **Masters Argentina.** Organization of Argentinean graduate students from foreign universities aimed to contribute to the development of their home country through a network of professionals and policy makers. Oct 2021 – Apr 2022.
- **Education program “Nunca Es Tarde (NET)”.** Tutored children and teenagers from low-income families. May 2018 – Mar 2020.
- **Ñuke Mapu Asociación Civil.** Guided museum tours on academic exhibitions about responsible use and management of water and energy resources. Aug 2014 – Nov 2014