

Elisabeth Gallant, PhD

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Current Appointment

Research Associate | ERC IMAGINE (PI: Amy Donovan)

March 2020 | University of Cambridge

This transdisciplinary project involves working with scientists, officials, and local community members in Argentina, Chile, Peru, Kenya and Tanzania, all of which are subject to volcanic risk accompanied by the threat from flooding and debris flows (as a result of a changing climate). It combines human geographical theories of the earth with approaches from science, sociology, and technology studies to think about volcanic places and spaces undergoing rapid environmental change, and seeks to integrate new theoretical ideas with disaster risk reduction in developing contexts. We seek to interrogate the conceptual spaces between vulnerability and hazard in approaches to disasters, understanding that scientific imaginations and those of communities may differ over small spatial areas, with significant impacts on risk.

Education

PhD (Geology) | University of South Florida (2019)

Dissertation: Modelling & Assessing Lava Flow Hazards

MS (Geology) | University of South Florida (2016)

Thesis: Lava Flow Hazard Assessment for the Idaho National Laboratory (Idaho Falls & Pocatello, Idaho, USA)

BA (Geology) University of New York at Buffalo College | (2012)

With Highest Honours | Honours Thesis: Understanding the Eruptive History of Vulcan Santa Ana, El Salvador

BS (Electronic Media, Arts & Communications) | Rensselaer Polytechnic Institute (2009)

With Honours

Additional Professional Appointments

2018 - Present	Volcanology & Hazard Assessment Professional Consultant
2019	Adjunct Faculty University of South Florida (Tampa, FL)
2015-2019	Undergraduate Field Camp Coordinator University of South Florida
2013-2018	Graduate Teaching Assistant University of South Florida
2012-2013	Intern Hawaii Volcano Observatory (Volcano, HI)
2009-2011	Graphic Designer & Project Manager Clinical Support Services, (Buffalo, NY)
2008-2009	2008-2009: Web Content Manager GlobalSpec (Troy, NY, USA)
2006-2007	2006-2007: Executive Assistant Tyree Environmental Remediation (Albany, NY, USA)

Grants, Honours & Awards (Total: ~\$36,000/£33,800)

2020	NSF IUOE: GeoPaths: GP-GO, GeoScientists Promoting Accessible Collaborative Experiences in the field Listed Collaborator – allocated \$8,000 of \$437,000 total budget)
2020	US Geological Survey Support for ground penetrating radar, drone, and magnetic surveys in Hawai'i (\$8,000)
2019	NASA Goddard Instrument Field Team Travel assistance for Iceland field deployment (\$7,000)
2018	University of South Florida Fred L. and Helen M. Tharp Fellowship (\$600)
2018	University of South Florida Department of Geosciences Publication Funding (\$1,250)
2018	University of South Florida Libraries Publication Funding (\$1,250)
2017	University of South Florida Geology Graduate Student Whiskey Award (\$50)
2016	American Geophysical Union Outstanding Student Paper (\$250)

Grants, Honours & Awards (continued)

2016	University of South Florida Graduate Student Outstanding Research Presentation (\$500)
2015	American Geophysical Union Outstanding Student Paper (\$250)
2015	University of South Florida Presentation Travel Grant (\$500)
2012	SUNY College at Buffalo State Earth Sciences Award for Academic Excellence (\$500)
2012	Council on Undergraduate Research Posters on Capitol Hill (\$750)
2011	SUNY Buffalo State Undergraduate Summer Research Fellowship (\$4,250)
2011	SUNY Buffalo State Earth Sciences Departmental Award for Field Work (\$250)
2011	SUNY College at Buffalo State Small Grants Program (\$1,000)
2010	SUNY College at Buffalo State Small Grants Program (\$400)
2008	Psi Upsilon R. Timothy Leedy, Phi '57 Award (\$2,000)
2007	Psi Upsilon R. Timothy Leedy, Phi '57 Award (\$2,000)
2005	Rensselaer Polytechnic Institute Emily Roebling Scholarship (\$5,000)

Publications

10. Gallant, E., Connor, C., Wetmore, P., Molisee, D., Walshe, R., and Donovan, A., Modelling eruptive events in distributed volcanic fields (in prep, to be submitted Summer 2020)
9. LaFemina, P., Roman, D., Connor, C., Saballos, A., Gallant, E., Wauthier, C., Dixon, T.H., Tenorio, V., Strauch, W., Thompson, G., de Moor, M., Martinez, M., Feineman, M., and Longpré, M.A., Transition from effusive to explosive activity during the 2015-2016 eruption of Momotombo, Nicaragua (in prep, to be submitted Fall 2020)
8. Germa, A., Koebli, D., Wetmore, P., Arias, A., Savov, I., Gallant, E., Petrogenesis of the San Rafael subvolcanic field, Utah: implication for the in-situ crystallization and segregation of syenite in shallow sills. (in review)
7. Gallant, E., Deng, F., Zayac, J., Richardson, J., Connor, C., Saballos, J.A., Guitierrez, C., Myhre, D., Charbonnier, S., Thompson, G., Connor, L., Malservisi, R., LaFemina, P., and Dixon, T., (2020), Deep and rapid thermo-mechanical erosion by a small-volume lava flow: Earth and Planetary Science Letters. [cited by 1]
6. Connor, C.B., Connor, L.J., Germa, A., Richardson, J.A., Bebbington, M., Gallant, E., and Saballos, J.A., (2019), How to estimate the probable locations of future volcanic vents using kernel density estimation. Statistics in Volcanology, volume 4. [cited by 1]
5. Deng, F., Rodgers, M., Xie, S., Dixon, T., Charbonnier, S., Gallant, E., López-Velez, C., Ordoñez, M., Malservisi, R., Voss, N., Richardson, J., (2019), High-resolution DEM generation from multiple remote sensing data sources for improved volcano hazard assessment - a case study at Nevado del Ruiz, Colombia. Remote Sensing of Environment, vol. 233. [cited by 4]
4. Xie, S., Gallant, E., Wetmore, P., Owen, L., Figueroa, P., Malservisi, R., Rassmussen, C., and Dixon, T., (2019), A new geological slip rate estimate for the Calico Fault, eastern California: Implications for geodetic versus geologic rate estimates in the Eastern California Shear Zone: International Geology Review. vol. 61:13, p. 1613-1641. [cited by 2]
3. Gallant, E., Richardson, J., Connor, C., Wetmore, P., and Connor, L., (2018), A new approach to probabilistic lava flow hazard assessments, applied to the Idaho National Laboratory, eastern Snake River Plain, Idaho, USA: Geology, vol. 46:10, p. 895-898. [cited by 7]
2. Richardson, J.A., Connor, C., Wetmore, P.H., Connor, L., and Gallant, E. (2015) Role of sills in the development of volcanic fields: Insights from lidar mapping surveys of the San Rafael Swell, Utah: Geology, vol. 43:11, p. 1023-1026. [cited by 19]
1. George, O., McIlrath, J., Farrell, A., Gallant, E., Tavarez, S., Marshall, A., McNiff, C., Njoroge, M., Wilson, J., Connor, C., Connor, L., and Kruse, S. (2015): High-Resolution Ground-Based Magnetic Survey of a Buried Volcano Anomaly B, Amargosa Desert, NV: Statistics in Volcanology, vol. 1, p. 1-23. [cited by 9]

Computational Products

Paleotopography Reconstruction: MATLAB code that removes the topographic signals associated with channels and levees on conic surfaces.

https://github.com/elisabeth-gallant/USF_dissertation/tree/Momotombo_paleotopography

Event Modeling: MATLAB code that models events from point data in volcanic fields using cluster analysis.

https://github.com/elisabeth-gallant/USF_dissertation

Conference Oral Presentations

5. **Gallant, E.**, Connor, C., Richardson, J., Wetmore, P., and Connor, L., (**keynote**, rescheduled for May 2021 due to COVID-19), Assessment of Lava Flow Inundation Hazards Associated with the Opening of New Vents: AGU Chapman Conference on Distributed Volcanism, Flagstaff, AZ, USA.
4. **Gallant, E.**, (2019), Diversity and inclusion strategies for undergraduate field camp experiences: Fall Meeting, American Geophysical Union (AGU) - San Francisco, California, USA.
3. **Gallant, E.**, Richardson, J., Connor, C., Wetmore, P., and Connor, L., (2018), A new probabilistic lava flow hazard assessment for the Idaho National Laboratory, eastern Snake River Plain, USA: Cities on Volcanoes - Naples, Italy.
2. **Gallant, E.**, Deng, F., Xie, S., Saballos, J.A., Connor, C., Dixon, T., (2017), Exploring the thermal and mechanical contributions to lava channel erosion on Momotombo, Nicaragua: Fall Meeting, AGU - New Orleans, Louisiana, USA.
1. **Gallant, E.**, Deng, F., Xie, S., Saballos, A., Connor, C., Dixon, T., Myhre, D., (2017 - invited), Using terrestrial radar to explore lava channel erosion on Momotombo, Nicaragua: Fall Meeting, AGU - New Orleans, Louisiana, USA.

Conference Abstracts and Poster Presentations

22. Sutton, S., Richardson, J., Whelley, P., Hamilton, C., Scheidt, S., Young, K., Höskuldsson, A., Jónsdóttir, I., Thordarson, T., and **Gallant, E.**, (2020), The onset of degradation of a large spatter rampart in Iceland: Lunar and Planetary Science Conference.
21. **Gallant, E.**, Deng, F., Zayac, J., Richardson, J., Connor, C., Saballos, J.A., Guitierrez, C., Myhre, D., Charbonnier, S., Thompson, G., Connor, L., Malservisi, R., LaFemina, P., and Dixon, T., (2019) Deep and rapid thermo-mechanical erosion by a small-volume lava flow: Fall Meeting, AGU - San Francisco, California, USA.
20. Roman, D., La Femina, P., Connor, C., Wauthier, C., Feineman, M., **Gallant, E.**, Saballos, J.A., Strauch, W., Tenorio, V., and Navarro, M., (2019), Coordinated Rapid Response to the 2015-16 Eruption of Volcan Momotombo, Nicaragua: AGU - San Francisco, California, USA.
19. Wetmore, P., Hastings, M., Fallon, T., **Gallant, E.**, Mack, B., Nassif, R., Connor, C., Connor, L., and Malservisi, R., (2019) Testing potential fault and basin geometries for the Lost River Fault Zone, Idaho: Fall Meeting, AGU - San Francisco, California, USA.
18. Richardson, J., Miller, D., and **Gallant, E.**, (2020), Erupted volumes of Venus low shield volcano clusters: Lunar and Planetary Science Conference - Houston, Texas, USA.
17. Connor, C., Connor, L., Richardson, J., **Gallant, E.**, Miller, D., (2018) Using MOLASSES, a Lava Flow Simulation Code, to Interpret the Morphology of Volcanoes: Example of Olympus Mons (Mars): Lunar and Planetary Science Conference - Houston, Texas, USA.
16. Richardson, J., Connor, L., Connor, C., **Gallant, E.**, (2017), Probabilistically modelling lava flows with MOLASSES: Fall Meeting, AGU - New Orleans, Louisiana, USA.
15. Wetmore, P., Xie, S., **Gallant, E.**, Owen, L., Dixon, T., (2017), A New Geological Slip Rate Estimate for the Calico Fault, Eastern California: Implications for Geodetic Versus Geologic Rate Estimates in the Eastern California Shear Zone: Fall Meeting, American Geophysical Union New Orleans, Louisiana, USA.
14. **Gallant, E.**, Connor, C., Connor, L., Richardson, J., and Wetmore, P. (2017). Probabilistic lava flow hazard assessment for the Idaho National Laboratory. International Association of Volcanology and Chemistry of the Earth's Interior - Portland, Oregon, USA.
13. Deng, F., Rodgers, M., Xie, S., Dixon, T., Charbonnier, S., **Gallant, E.**, López-Velez, C., Ordoñez, M., Malservisi, R., Voss, N., Richardson, J., (2017), High-resolution DEM generation from multiple remote sensing data sources for improved volcanic hazard assessment- a case study from Nevado del Ruiz, Colombia: European Geophysical Union - Vienna, Austria.
12. **Gallant, E.**, Deng, F., Xie, S., Saballos, J., Connor, C., Dixon, T., Myhre, D., (2016), Terrestrial Radar Survey of Momotombo volcano, Nicaragua: Fall Meeting, AGU - San Francisco, California, USA.
11. Richardson, J.A., Connor, L.J., **Gallant, E.**, Connor, C.B., Charbonnier, S.J., (2016) Probabilistically modeling lava flow hazard using the MOLASSES lava flow simulator: Fall Meeting, AGU - San Francisco, California, USA.

Conference Abstracts and Presentations (continued)

10. Kruse, S., Robinson, J.E., Bacon, C.R., **Gallant, E.**, and McIlrath, J., (2016), Integrating ground penetrating radar, lidar, and geologic mapping to image fault displacements at Mount Mazama (Crater Lake), Oregon: Fall Meeting, AGU - San Francisco, California, USA.
9. Richardson, J., Connor, L., **Gallant, E.**, Connor, C., Charbonnier, S., (2016) Probabilistically modeling lava flow hazard using the MOLASSES lava flow simulator: Cities on Volcanoes - Puerto Varas, Chile.
8. Xie, S., Wetmore, P., Owen, L., **Gallant, E.**, Dixon, T., (2016), Evidence for a high slip rate of the Calico fault in the Eastern California Shear Zone: Fall Meeting, AGU - San Francisco, California, USA.
7. Roman, D., La Femina, P., Connor, C., Connor, L., Dixon, T., Feineman, M., **Gallant, E.**, Geirsson, H., Glover, C., Rinehart, J., Ruiz, G., Saballos, A., Strauch, W., Tenorio, V., Wauthier, C., Webley, P., Wnuk, K. (2016), Multidisciplinary Studies of the 2015-2016 Eruption of Momotombo Volcano, Nicaragua: Fall Meeting, AGU - San Francisco, California, USA.
6. **Gallant, E.**, Richardson, J., Connor, C., Wetmore, P., and Connor, L., (2015), Lava Flow Hazard Assessment for the Idaho National Laboratory: A Probabilistic Approach to Modeling Lava Flow Inundation with MOLASSES: Fall Meeting, AGU - San Francisco, California, USA.
5. Richardson, J., Connor, L., Charbonnier, S., Connor, C., **Gallant, E.**, (2015), Validating Cellular Automata Lava Flow Emplacement Algorithms with Standard Benchmarks: Fall Meeting, AGU - San Francisco, California, USA.
4. **Gallant, E.**, Richardson, J., Connor, C., Wetmore, P., and Connor, L., (2014), Sills of the San Rafael Volcanic Field, Utah: Fall Meeting, AGU - San Francisco, California, USA.
3. **Gallant, E.**, Martinez-Hackert, B. (2012) Understanding the Eruptive History of Ilamatepec. Posters on the Hill (Meeting with US Congress Members) - Washington D.C., USA.
2. **Gallant, E.** and Martinez-Hackert, B. (2011) Unearthing The Eruptive Personality Of El Salvador's Santa Ana (Ilamatepec) Volcano Through In-depth Stratigraphic Analysis of Pre-1904 Deposits: Fall Meeting, AGU - San Francisco, California.
1. **Gallant, E.**, Martinez-Hackert, B., Bajo, J., Escobar, D., Gutierrez, E. (2011) Monitoring of Thermal and Hydrothermal Activity of Santa Ana (Ilamatepec) Volcano post-2005 Eruption, International Union of Geodesy and Geophysics General Assembly - Melbourne, Australia.

Field Methods and Research Experience

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| 2019 | Disaster risk perception surveying of hurricane evacuees Florida, USA |
| 2019 | Lidar, ground penetrating radar, and drone surveys - NASA GIFT expedition Bárðarbunga, IS |
| 2018, 2019 | Ground penetrating radar survey of cinder cones Craters of the Moon, USA |
| 2018 | Ground penetrating radar survey of cinder cones Medicine Lake, California, USA |
| 2018 | Structure-from-Motion mapping and cosmogenic nuclide age sampling Death Valley, California, USA |
| 2018 | Stratigraphy of pyroclastic density currents and lahars Martinique |
| 2017, 2018 | Gravity and GPS survey of extensional basins Basin and Range, Idaho, USA |
| 2016 | Ground penetrating radar survey of Mazama ignimbrite Crater Lake, Oregon, USA |
| 2015, 2016 | Terrestrial radar survey Momotombo, Masaya, San Cristóbal Volcanoes, Nicaragua |
| 2015 | Structure-from-Motion mapping and GPS survey Nevado del Ruiz, Colombia |
| 2015 | Cosmogenic nuclide age sampling of alluvial fans Calico Fault, California, USA |
| 2015 | Surface and Shallow Seismic survey Blackfoot Volcanic Field, Idaho, USA |
| 2014 | Field mapping dike and sill networks San Rafael Volcanic Field, Utah, USA |
| 2014 | Magnetic survey of buried cinder cones Amargosa Valley, Nevada, USA |
| 2013 | Gravity survey Mauna Loa, Hawai'i, USA |
| 2013 | ¹⁴ C and paleomagnetic sampling of Mauna Loa lava flows Hawai'i, USA |
| 2012-2013 | Petrologic Mapping Mauna Loa Summit, Hawai'i, USA |
| 2012-2013 | Visits to the active lava flow field of Kīlauea for sample collection Hawai'i, USA |
| 2011 | Tephrastratigraphy Santa Ana-Ilamatepec, El Salvador |

Classroom Teaching Experience

2019	History of Life Instructor of Record (USF)
2019	Structural Geology and Tectonics Instructor of Record (USF)
2017, 2018	Dynamic Earth: Introduction to Earth Sciences Grader (USF)
2017, 2018	Structural Geology and Tectonics Laboratory Instructor (USF)
2015, 2016	Introduction to Geology Laboratory Laboratory Instructor (USF)
2015	Sedimentary Processes Laboratory Instructor (USF)
2014	Geology for Engineers Grader (USF)
2013, 2014	Mineralogy and Petrology Laboratory Instructor (USF)
2011	Introduction to Geology Laboratory Teaching Assistant (SUNY Buffalo State)

Field-based Teaching Experience

2014-2019	Volcanology, Structure Mapping, Geophysics field camps Idaho, USA (USF)
2018, 2019	Basic Geology of Death Valley California, USA (Lee Academy Secondary School)
2018	Structural Geology and Tectonics of Death Valley California, USA (USF)
2016	Structures and Geomorphology of the Grand Tetons Idaho, USA (USF)
2015	Introduction to Basin-and-Range Structures and Stratigraphy Idaho, USA (USF)
2013, 2014	Mineralogy and Petrology of Appalachia North Carolina, USA (USF)
2013	Geologic Mapping Hawai'i, USA (Center for Study of Active Volcanism)

Technical and Communication Skills

Technical	MatLab (transitioning to Python), familiarity with: Perl, Bash/C shell, and R
Software	GIS Software (QGIS and ArcGIS), MOLASSES (numerical lava flow model), MELTS (thermodynamic phase equilibria in magmatic systems), Agisoft (SfM software), Tephra2 (tephra dispersal), Titan2D (mass flow), Spatial Density Modelling
Laboratory	Optical microscopy, scanning electron microscopy, thin section creation, grain size analysis (sieving and laser diffraction), analogue modelling of volcanic processes (ballistic distribution using liquid nitrogen explosions, molten glass lava flows, bubble ascent in syrups, and ink/gelatin dyke injections)
Surveying	Qualtrics, Survey quality assurance, Online survey design and administration
Language	Conversational Spanish (Puerto Rican), familiarity with te reo and Hawaiian
Design	Visual Design, Inclusive design practices, Colour theory, Print and web design principles, Visual communication theory, Adobe Creative Suite

Invited Speaking Engagements

Assessing hazards from distributed volcanic fields | University of Cambridge (2020)
Modelling volcanic hazards | Central Washington University (2020)
Modelling lava flow hazards | University of Florida (2019)
Lava flow and vent opening hazards of the eastern Snake River Plain, Idaho, USA | Dept. of Energy Sponsored (2018)
Modelling lava flow hazards | Tampa Taste of Science (formerly Pint of Science) (2017)
Monitoring Volcanic Hazards in Hawai'i | SUNY Buffalo State (2013)

Additional Qualifications

Human Research - Social/Behavioural Investigators training
Helped perform life saving CPR + AED deployment on an individual in cardiac arrest
Mental Health First Aid: National Council for Behavioral Health (expires in 2022)

Outreach

- 2020 - 2022?** Various Guest lectures for high school and university students during COVID-19
- 2016 - 2019** Organiser, speaker liaison, event emcee for the Tampa Taste of Science Festival
- 2017, 2019** Preparing for a Career in Geology panel member, USF Geosciences
- 2016 - 2019** Great American Teach-In Participant
- 2006 - 2008** Nature and Science Program Director (Girl Scouts, ages 5-17)

Professional Service

- 2020 - Present** Geological Society of America's Diversity, Equity, and Inclusion Cultural Taskforce
- 2020 - Present** Volcanology Seminar Coordinator, University of Cambridge
- 2020** "What to do when a pandemic derails your plans" panelist (SACNAS)
- 2019 - Present** Reviewer for; NASA proposals, Natural Hazards, Earth and Planetary Science Letters, Volcanica, and Journal of Applied Volcanology
- 2017 - Present** 2017-present: Social media manager for IAVCEI's Commission on Volcanic Hazard and Risk

Media Attention

Inaugural Speaker for the USF Library's Geoscience themed podcast, Calling Earth!
<http://callingearth.libsyn.com/calling-earth-001-lis-gallant-volcanologist>

2016 Interviewed by Nicaraguan press on response to 2015-2016 Momotombo eruption
<https://www.el19digital.com/articulos/ver/titulo:40689-ariban-a-nicaragua-expertos-de-eeuu-para-continuar-analizando-el-volcan-momotombo>

2016 Interviewed by University of South Florida press about the Momotombo eruption
<http://www.usforacle.com/news/view.php/1016302/USF-research-team-witnesses-historic-eru>

Workshop Participation

- Inclusive and Effective College Science Classrooms | AGU (2019)
- Fostering Diverse, Inclusive, and Equitable Communities in Field Experiences | AGU (2019)
- Volcanic Hazard Assessment for Critical Facilities | Cities on Volcanoes (2018)
- Social Media Utility in Volcano + Hazard Communications | Cities on Volcanoes (2018)
- Probabilistic Hazard Assessment at Lassen Volcano | IAVCEI (2017)
- Volcanic Crisis Awareness | National Disaster Preparedness Training (2014)
- Volcanic Hazard Assessment | University of South Florida (2014)
- Secondary Ion Mass Spectrometry | Arizona State University (2014)
- Conversing with Pelehonuamea | Hawai'i Volcanoes National Park (2013)
- Modelling Volcanic Hazards | IUGG (2011)
- Ground-Based and Remote Sensing of Volcanic Unrest | IUGG (2011)

Additional Qualifications

GeoLatinas, American Geophysical Union, Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS), Geological Society of America, Sigma Xi, IAVCEI, Association of Women Geoscientists

Additional Qualifications

Tim Fallon, Masters Committee Member (University of South Florida)