

JOHN M. ZAYAC

Earth and Environmental Sciences

Emphasis in Environmental and Geological Sciences

The Graduate Center, CUNY

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EDUCATION

The Graduate Center, CUNY, New York, NY

Ph.D. Earth and Environmental Sciences (*Advanced to Candidacy, August, 2018*)

M.Phil. Earth and Environmental Sciences (2018)

Eruptive History, Magma Systematics, and Trigger Dynamics of Arc Volcanoes

Advisor: Marc-Antoine Longpré

Committee: Benjamin Black, Kennet Flores, Adrian Fiege

University of California, Santa Barbara, CA

M.S. Geological Sciences (2006)

The Volcano in the Laboratory: Experimental Investigations into Momentum Transport in Magmas

Advisor: Frank Spera

Committee: Bradley Hacker, James Mattinson

University of California, Santa Cruz, CA

B.S. Earth Sciences (2001)

A High Pressure Spectroscopic Study of Ikaite ($\text{CaCO}_3 \cdot 6\text{H}_2\text{O}$)

Advisor: Quentin Williams

Modesto Junior College, Modesto, CA

A.A. General College (1998)

ACADEMIC EXPERIENCE

Adjunct Instructor of Earth Science (2020 – Present)

Vassar College, Poughkeepsie, NY

Adjunct Instructor – School of Earth and Environmental Sciences (2015 – Present)

Queens College, CUNY, Flushing, NY

Teaching and Learning Center Fellow (2019 – 2020)

The Graduate Center, CUNY, New York, NY

CAUSE Environmental Science Instructor (2014 – 2015)

Henry Street Settlement, New York, NY

Associate/Assistant Professor of Geology (2007 – 2013)

Los Angeles Pierce College, Woodland Hills, CA

ENCORE/Older Adult Instructor (2009 – 2012)

Los Angeles Pierce College, Woodland Hills, CA

Adjunct Instructor, Geology (2007)

Los Angeles Pierce College, Woodland Hills, CA

Teaching Associate/Lecturer – Department of Earth Sciences (2005 – 2007)

University of California, Santa Barbara, CA

Teaching Assistant – Department of Earth Sciences (2001 – 2005)

University of California, Santa Barbara, CA

RESEARCH EXPERIENCE

Graduate Research Assistant – Volcano Laboratory (2015 – Present)

School of Earth and Environmental Sciences, Queens College, CUNY

P.I. Professor Marc-Antoine Longpré

Graduate Research Assistant – Magma Dynamics Laboratory (2001 – 2006)

Department of Earth Science, University of California, Santa Barbara

P.I. Professor Frank Spera

Research Assistant – Mineral Physics Laboratory (1999 – 2001)

Department of Earth and Planetary Sciences

University of California, Santa Cruz

P.I. Professor Quentin Williams

ADMINISTRATIVE EXPERIENCE

Earth and Environmental Sciences Program Curriculum Committee (2019 – Present)

The Graduate Center, CUNY, New York, NY

Earth and Environmental Sciences Program Executive Committee (2015 – 2019)

The Graduate Center, CUNY, New York, NY

Vice President for Academic Policy – Academic Senate (2012 – 2013)

Los Angeles Pierce College, Woodland Hills, CA

Vice Chair of Curriculum – Academic Senate (2010 – 2013)

Los Angeles Pierce College, Woodland Hills, CA

Chair, Department of Physics and Planetary Sciences (2011 – 2013)

Los Angeles Pierce College, Woodland Hills, CA

PUBLICATIONS

Gallant, E., Deng, F., Connor, C., Dixon, T. H., Xie, S., Saballos, J. A., Guitierrez, C., Myhre, D., Connor, L., **Zayac, J.**, LaFemina, P., Charbonnier, S., Richardson, J., Maslervisi, R., and Thompson, G. (2020) “Deep and rapid thermo-mechanical erosion by a small-volume lava flow.” *Earth and Planetary Science Letters* 537, 116163.

Yanchilina, A., Yelisetti, S., Wolfson-Schwehr, M., Voss, N., Kelly, T., Coakley, B., Pockalny, R., Brizzolara, J., Brown, K., **Zayac, J.**, Fung, M., and Guerra, M. (2017). The 2016 UNOLS Chief Scientist Training Cruise: Exploring methane gas seepage in the California Borderlands," EOS.

Petermann, M., Whittington, A., Hofmeister, A., Spera, F., **Zayac, J.** (2008) “Transport Properties of Low-Sanidine Single-Crystals, Glasses and Melts at High Temperatures.” *Contributions to Mineralogy and Petrology* 155 (6) 689-702.

Zhao, J., Sullivan, J., **Zayac, J.**, Bennett, T. (2004) “Structural Modification of Silica Glass by Laser Scanning.” *Journal of Applied Physics* 95 (10) 61-68.

CONFERENCE ABSTRACTS

Zayac, J., Longpré, M.-A. (2020) “A Geochemical and Textural Cross-Section of a Compositionally Zoned Magma Reservoir.” *Goldschmidt Virtual 2020*.

Tramontano, S., **Zayac, J. M.**, Aldebot, S., Espinoza, E., Longpré, M.-A. (2020) “Assembly of Monotonous Basaltic Andesite Magmas at Momotombo Volcano, Nicaragua, and the 2015-2016 Eruption.” *Goldschmidt Virtual 2020*.

Gallant, E., Connor, C., Deng, F., Dixon, T., Saballos, A., Xie, S., Gutiérrez, C., Myhre, D., Connor, L., **Zayac, J.**, Charbonnier, S., Richardson, J., Thompson, G., Malservisi, R., La Femina, P., (2019) “Deep and rapid thermo-mechanical erosion by a small-volume lava flow.” 2019 AGU Fall Meeting, San Francisco, CA. *Abstract V31H-0106*.

Zayac, J.M., Longpré, M.-A. (2019) “The Momotombo-Monte Galán Volcanic System, Nicaragua: Stratigraphic and Geochemical Investigation of Overlapping Eruption Centers.” VolcaNYC Symposium, Lamont-Doherty Earth Observatory, Palisades, NY.

Karaduzovic, S., **Zayac, J.M.**, Longpré M.-A. (2019) “Vesicularity Measurements Across Compositionally-Zoned Pyroclastic Fall Deposits at Cosigüina Volcano (Nicaragua): Insights Into Pre- and Syn-Eruptive Magma Degassing.” VolcaNYC Symposium, Lamont-Doherty Earth Observatory, Palisades, NY.

Zayac, J.M., Longpré, M.-A., Ocampo Cardona, N. (2018) “Fine-Scale Textural and Geochemical Stratigraphy of a Compositionally Zoned Eruption at Cosigüina Volcano, Nicaragua: Insights Into the Eruption Trigger Mechanism?” 2018 AGU Fall Meeting, Washington D.C. *Abstract V33D-0274*.

Longpré, M.-A., **Zayac, J.M.**, Stix, J. (2018) “Cyclic Compositionally Zoned Explosive Eruptions at an Arc Volcano (Cosigüina, Nicaragua): Implications for Magma Reservoir Processes.” 2018 AGU Fall Meeting, Washington D.C. *Abstract V33D-0268*.

Zayac, J.M., Longpré, M.-A., Ocampo Cardona, N. (2018) “Fine-Scale Textural Analysis of a Compositionally Zoned, Explosive Eruption, Volcán Cosigüina, Nicaragua: Preliminary Results and Implications.” VolcaNYC Symposium, City College, CUNY, New York, NY.

Zayac, J.M., Longpré, M.-A., Espinoza, E., and Saballos, A. (2017) “Eruptive History and Mafic-Silicic Magma Interaction, Monte Galán and Momotombo Volcanoes, Nicaragua.” 2017 IAVCEI Scientific Assembly, Portland, OR. *Abstract VH43C-184*.

Zayac, J.M., and Longpré, M.-A. (2017) “Volcanic Stratigraphy of Nested Eruption Centers: The Monte Galán Caldera-Forming Eruption, Nicaragua.” VolcaNYC Symposium, Queens College, CUNY, Queens, NY.

Zayac, J.M., Longpré, M.-A., Espinoza, E., and Saballos, A. (2017) “Eruptive History and Mafic-Silicic Magma Interaction, Monte Galán and Momotombo Volcanoes, Nicaragua.” 2017 Sigma Xi Research Day, Queens College, CUNY, Queens, NY.

Zayac, J.M., Anderson, B., Davies, A. (2013) “Scheduling for Completion.” Association of California Community College Administrators (ACCCA) Annual Conference, Monterey, CA.

Petermann, M., Hofmeister, A.M., Whittington, A.G., Spera, F.J., and **Zayac, J.** (2005) “High-Temperature Thermal Diffusivity Measurements of Silicate Glasses.” AGU Fall Meeting, San Francisco, CA. *Abstract MR13A-0072*.

Zhao, J., Sullivan, J., **Zayac, J.**, Bennett, T. (2003) “Thermophysical Modeling of CO₂ Laser-Silica Glass Interaction.” ASME International Mechanical Engineering Congress and Exposition, Washington D.C.

Zayac, J.M., Spera, F.J. “Thermal Conductivity of Amorphous Geomaterials at Magmatic Temperatures: Review, Theory, and New Experimental Results.” AGU Fall Meeting, San Francisco, CA. *Abstract V72B-1323*.

PUBLIC TALKS

Zayac, J.M. (2018) “Fine-Scaled Stratigraphic Investigation of an Explosive, Compositionally Zoned Eruption at Volcán Cosigüina, Nicaragua.” School of Earth and Environmental Science Colloquium, Queens College, CUNY, Flushing, N.Y.

Zayac, J.M. (2017) “Eruptive History and Mafic-Silicic Magma Interaction, Monte Galán and Momotombo Volcanoes, Nicaragua” School of Earth and Environmental Science Colloquium, Queens College, CUNY, Flushing, NY.

Zayac, J.M. (2016) “Explosive Volcanic Eruption Triggers: Potential Insights from Prehistoric, Chemically Zoned Eruptions at Volcán Cosigüina, Nicaragua.” Earth and Environmental Sciences Program Student Research Day, The Graduate Center, CUNY, New York, NY.

Zayac, J.M. (2011) “California’s Supervolcano: The Long Valley Caldera and the Birth of Mammoth Mountain.” Friends of the Platt Library Professor Lecture Series, Los Angeles Public Library, Platt Branch, Woodland Hills, CA.

Zayac, J.M. (2009) “Earthquake Science: Focus on Los Angeles.” Encore Professor’s Lecture Series, Los Angeles Pierce College, Woodland Hills, CA.

Zayac, J.M. (2006) “The Volcano in the Lab: Experimental Investigation into Magmatic Transport Properties.” Department of Earth Science Speaker Series, UCSB, Santa Barbara, CA.

TEACHING

Workshops Developed and Facilitated

The Graduate Center, CUNY

Summer Teaching Institute – Seminar
Leader
Increasing Scientific Literacy Across the
Curriculum
Writing in the Quantitative Disciplines

Bridging Lectures and Labs
Teaching Science to Students Outside the
Pipeline
Teaching as a T.A.

Courses as Instructor of Record

Vassar College

Earth History w/Laboratory

Volcanology

Queens College, CUNY

Natural Disasters
Methods in Geoscience
Planet Earth: Resources (and Hazards) for
the 21st Century

Earthquakes, Volcanoes, and Moving
Continents
Physical Geology Laboratory

Los Angeles Pierce College

Physical Geology
Physical Geology Laboratory
Historical Geology
Historical Geology Laboratory

Geology of California
Energy and Power
Geomorphology
Geological Field Studies

University of California, Santa Barbara

Introduction to Physical Geology

Geological Catastrophes

Courses as a Teaching Assistant

University of California, Santa Barbara

Igneous Petrology Laboratory
The Solar System
Antarctica

Geological Catastrophes
Introduction to Physical Geology

University of California, Santa Cruz

Earth As a Chemical System

TRAINING

Magmas, Melts, and Glasses (July 2020)

Virtual – Ludwig-Maximilians-Universität München, Munich, Germany
Organizers: Donald Dingwell (LMU) and Ulrich Küppers (LMU).

Best Practices for Teaching Online (July, 2020)

Center for Teaching and Learning, Queens College, CUNY, New York, NY.

Virtual Diffusion Workshop (July 2020)

Post-Goldschmidt Virtual 2020 Workshop – Hosted by University of Hawaii, SOEST.
Organizers: Thomas Shea (University of Hawaii), Sumit Chakraborty (Ruhr-Universität Bochum), Kendra Lynn (University of Delaware), Shah Wali Faryad (Charles University), and Ralf Dohmen (Ruhr-Universität Bochum).

Statistics in Volcanology: The Hazards of Lassen Volcano (August, 2017).

Post-IAVCEI Meeting Workshop, Lassen Volcanic National Park, CA
Leaders: Mark Bebbington (Massey University), Chuck Connor (University of South Florida), Sarah Ogburn (USGS/USAID Volcano Disaster Assistance Program), and Patrick Whelley (NASA Goddard Space Flight Center).

UNOLS/NSF Chief Scientist Training Cruise (December, 2016).

R/V Sikuliaq – Honolulu to San Diego.
Chief Scientists: Bernard Coakley (University of Alaska, Fairbanks) and Robert Pockalny (University of Rhode Island).

UCLA Secondary Ion Microscopy (SIMS) Workshop (February, 2016).

UCLA Dept. of Earth, Planetary, and Space Sciences, Los Angeles, CA.
Organizers: Matthew Wielicki (University of Alabama), Kevin McKeegan (UCLA), and Mark Harrison (UCLA).

Introduction to Online Teaching and Learning (Summer, 2013).

@One Project, Menifee, CA.

RECENT FIELD EXPERIENCE

Coso Volcanic Field, Eastern Sierra, Long Valley Caldera, Mono Craters
ESCI 351 (Volcanology) Class Field Trip – Vassar College.

Northwestern Nicaragua Field Work (*January, 2017*).
Momotombo and Monte Galán Volcanoes.

Northwestern Nicaragua Field Work (*October, 2016*).
Cosigüina, Momotombo, and Monte Galán volcanoes.

Volcanoes and Climate Field Trip, NW Nicaragua (*October, 2016*).
Mombacho, Masaya, Apoyo, Apoyeque, Cosigüina, and Momotombo volcanoes.
Leaders: Marc-Antoine Longpré (Queens College) and John Stix (McGill).

Rocks of the Central Atlantic Magmatic Province (*September, 2016*)
Leader: Paul Olsen (Lamont-Doherty Earth Observatory).

AWARDS AND FUNDING

Graduate Center Dissertation Year Award (2019-2020).
Fine-Scale Textural and Geochemical Stratigraphy of an Explosive, Compositionally Zoned Eruption at Cosigüina Volcano, Nicaragua: Insights into the Eruption Trigger Mechanism
Total Funded: \$10,000

Geological Society of America Graduate Student Research Grant (2018)
Eruptive History of the Momotombo – Monte Galán Volcanic System, Nicaragua
Total Funded: \$2500

Division of Math and Natural Sciences Adjunct Teaching Award Nominee (2018)
School of Earth and Environmental Sciences, Queens College, CUNY

Golden Apple Award for Excellence in Teaching (2010, 2011, 2013)
Alpha Gamma Sigma Honors Society
Los Angeles Pierce College, Woodland Hills, CA

NASA Cal-Space Fellowship (2001)
Role of Giant Collisions in Melt Formation
University of California, Santa Barbara, CA
Total Funded: \$1000

SERVICE TO ORGANIZATIONS AND PROFESSION

Curriculum Committee Member - Earth and Environmental Sciences (2019 – Present)
The Graduate Center, CUNY

Executive Committee Member – Earth and Environmental Sciences (2016 – 2019)

The Graduate Center, CUNY

Convener – Morning Session – VolcaNYC Symposium (October, 2017)
Queens College, CUNY.

Lead Convener – Session III.3 - Multidisciplinary constraints on volcanic eruption triggers
IAVCEI 2017 Scientific Assembly, Portland, OR, USA
Co-conveners: Marc-Antoine Longpré (Queens College), Adam Kent (Oregon State University), Thomas Giachetti (University of Oregon), Fidel Costa (Nanyang Technical University) , Helge Gonnermann (Rice University).

Participating Scientist, UCSB Science Line (2001 – 2007)
University of California, Santa Barbara, CA

PROFESSIONAL AFFILIATIONS

American Geophysical Union (AGU)
Geochemical Society (GS)
Geological Society of America (GSA)
International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI)
Mineralogical Society of America (MSA)
National Association of Geoscience Teachers (NAGT)
New York Academy of Sciences (NYAS)