

Kayla Iacovino, Ph.D.

Curriculum Vitae

Arizona State University
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EDUCATION

2014 Ph.D, University of Cambridge

An unexpected journey: Experimental insights into magma and volatile transport beneath Erebus volcano, Antarctica

Supervisor: Dr. Clive Oppenheimer

2010 B.S., Arizona State University, Cum Laude

Geological Sciences (minor in Geography)

Undergraduate research supervisor: Dr. Gordon Moore

PROFESSIONAL EXPERIENCE

- 2016 – present Post-doctoral Research Scientist, School of Earth and Space Exploration, Arizona State University
- 2014 – 2016 NSF Post-doctoral Fellow, U.S. Geological Survey, Menlo Park, CA
NSF EAR Grant (PI): [Quantifying total volatile budgets of explosive volcanic eruptions](#)
- 2015 – 2016 Visiting Scholar, Dept. of Geological & Environmental Sciences, Stanford University
- 2010 – 2014 Graduate Researcher, Dept. of Geography, University of Cambridge
- 2007 – 2010 Undergraduate NASA/Space Grant Research Intern, School of Earth and Space Exploration, Arizona State University
- 2007 Undergraduate Research Intern, Research Experience for Undergraduates Summer Program, Dept. of Earth Sciences, University of Minnesota

PEER REVIEWED PUBLICATIONS

h-index: 3 Citations: 27 (via Google Scholar)

- Iacovino K**, Till C, Lange R (submitted) DensityX: A program for calculating the densities of hydrous magmatic liquids from 327-1,727 °C and up to 30 kbar, *Computers in Geosciences*.
- Lowenstern JB, van Hinsberg V, Berlo K, Liesegang M, **Iacovino K**, Bindeman I, Wright H (submitted) Opal-A in Glassy Pumice, Acid Alteration, and Triggers to the 1817 Phreatomagmatic Eruption at Kawah Ijen (Java), Indonesia, *Frontiers in Volcanology*.
- Iacovino K**, Kim JS, Sisson T, Lowenstern J, Ri KH, Jang JN, Song KH, Ham HH, Oppenheimer C, Hammond JOS, Donovan A, Weber-Liu K, Ryu KR (2016) Quantifying gas emissions from the ‘Millennium Eruption’ of Paektu volcano, Democratic People’s Republic of Korea/China. *Science Advances*. doi: [10.1126/sciadv.1600913](https://doi.org/10.1126/sciadv.1600913)
- Ri KS, Hammond JOS, Ko CN, Kim H, Yun YG, Pak GJ, Ri CS, Oppenheimer C, Weber-Liu K, **Iacovino K**, Ryu KR (2016) Evidence for partial melt in the crust beneath Mt. Paektu (Changbaishan), Democratic People’s Republic of Korea/China. *Science Advances* doi: [10.1126/sciadv.1501513](https://doi.org/10.1126/sciadv.1501513)
- Iacovino K**, Oppenheimer C, Scaillet B & Kyle PR (2016) Storage and evolution of mafic and intermediate alkaline magmas beneath Ross Island, Antarctica. *Journal of Petrology* doi:[10.1093/petrology/egv083](https://doi.org/10.1093/petrology/egv083)

2. **Iacovino K** (2015) Linking subsurface to surface degassing at active volcanoes: A thermodynamic model with applications to Erebus volcano. Earth and Planetary Science Letters doi:[10.1016/j.epsl.2015.09.016](https://doi.org/10.1016/j.epsl.2015.09.016)
1. **Iacovino K**, Moore GM, Roggensack K, Oppenheimer C & Kyle PR (2013) H₂O-CO₂ solubility in mafic alkalic magmas: Applications to volatile sources and degassing behavior at Erebus volcano, Antarctica. Contributions to Mineralogy and Petrology doi:[10.1007/s00410-013-0877-2](https://doi.org/10.1007/s00410-013-0877-2)

NON-PEER REVIEWED PUBLICATIONS

1. Hicks K, **Iacovino K**, Ilanko T, Moussallam Y, Peters N (2012) "Field Measurements of Active Volcanoes in the Southern Chilean Andes" Royal Geographical Society.

SELECTED ABSTRACTS

16. **Iacovino K**, Till, C (2017) Oral Presentation. "Fluid-mediated redox transfer in subduction zones: Measuring the intrinsic fO₂ of slab fluids in the lab" AGU Fall Meeting, New Orleans, LA.
15. Lowenstern JB, Van Hinsberg V, Berlo K, Wright H, **Iacovino K**, Liesegang M, Bindeman I (2017) "Multiple origins of opal in pumice: A case study from the 1817 phreatomagmatic event at Kawah Ijen, Java (Indonesia)" IAVCEI Scientific Assembly, Portland, OR.
14. Hamilton J, **Iacovino K**, Fischer T, Saballos JA (2017) "Application of a Thermodynamic Model for Resolving Volatile Concentration Differences Between Melt Inclusions and Surface Degassing" IAVCEI Scientific Assembly, Portland, OR.
13. Ort M, **Iacovino K**, Zanella E, Isaia R (2017) "Emplacement Temperatures as Evidence for Atmospheric Incorporation in Dilute Pyroclastic Density Currents" IAVCEI Scientific Assembly, Portland, OR.
12. Fullerton K, Barry P, Battaglia A, Beaudry P, Bini G, Cascante M, de Moor M, Giovannelli D, Gonzalez G, Hummer D, **Iacovino K**, Martinez M, Miller H, Turner S, Pratt K, Ramirez C, Sequra YA, Lloyd K (2017) "Biology Meets Subduction: Exploration of microbial diversity of Costa Rican convergent margin" Southeastern Biogeochemical Society meeting.
11. **Iacovino K**, Kim JS, Sisson T, Lowenstern J, Jan JN, Song KH, Ham HH, Ri KH, Donovan A, Oppenheimer C, Hammond J, Liu KS, Ryu KR (2016) Oral Presentation. "Quantifying gas composition and yield from the 946 CE Millennium Eruption of Paektu volcano, DPRK/China" Goldschmidt Conference, Yokohama, Japan. ([abstract](#))
10. **Iacovino K**, Kim JS, Sisson T, Lowenstern J, Jan JN, Song KH, Ham HH, Ri KH, Donovan A, Oppenheimer C, Hammond J, Liu KS, Ryu KR (2015) Poster Presentation. "New Constraints on the Geochemistry of the Millennium Eruption of Mount Paektu (Changbaishan), Democratic People's Republic of Korea/China" AGU Fall Meeting, San Francisco, CA. ([abstract](#))
9. **Iacovino K**, Sisson T, Lowenstern J (2014) Oral Presentation. "Evidence of a pre-eruptive fluid phase for the Millennium Eruption, Paektu volcano, North Korea" AGU Fall Meeting, San Francisco, CA. ([abstract](#))
8. **Iacovino K**, Peters N, Oppenheimer C (2013) Poster Presentation. "Toward a unified method for the quantification of volatiles in magmas via FTIR" Goldschmidt Conference, Florence, Italy. ([abstract](#))
7. **Iacovino K**, Oppenheimer C, Scaillet B, Kyle P.R (2013) Oral Presentation. "Experimental constraints on the storage conditions and evolution of alkaline lavas at Erebus volcano, Antarctica: A case for CO₂-dominated volcanism" IAVCEI Scientific Assembly, Kagoshima, Japan. ([abstract](#))
6. Un Y.G, Ju U.O, Kim M.S, Ri G.S, Ri K.N, Hammond J.O.S, Oppenheimer C, Whaler K, Park S, Dawes G, **Iacovino**

K (2013) Poster Presentation. "The Mt. Paektu Geoscientific Experiment" IAVCEI Scientific Assembly. Kagoshima, Japan. ([abstract](#))

5. **Iacovino K**, Oppenheimer C, Scaillet B, Kyle PR (2012) Oral Presentation. "Experimental constraints on the evolution of alkaline magmas from Ross Island, Antarctica: A case for CO₂-dominated volcanism" Goldschmidt Conference, Montreal, Canada. ([abstract](#))
4. **Iacovino K**, Oppenheimer C, Scaillet B, Kyle PR (2012) Oral Presentation. "Constraints on primitive magma evolution beneath Erebus" Le Studium Erebus Conference, Orléans, France.
3. **Iacovino K**, Oppenheimer C, Scaillet B, Kyle PR (2011) Poster Presentation. "Experimental constraints on the crystallization and evolution of primitive magmas from Erebus volcano, Antarctica" AGU Fall Meeting, San Francisco, CA. ([abstract](#))
2. **Iacovino K** (2010) Oral Presentation. "H₂O-CO₂ solubility in basanite: Applications to volatile sources and degassing behavior at Erebus volcano, Antarctica" Arizona Space Grant Consortium, Tucson, AZ.
1. **Iacovino K**, Moore GM, Roggensack K, Oppenheimer C, Kyle PR (2009) Oral Presentation. "H₂O-CO₂ solubility in basanite: Applications to volatile sources and degassing behavior at Erebus volcano, Antarctica" AGU Fall Meeting, San Francisco, CA. ([abstract](#))

CURRENT PROJECTS

Physical and chemical constraints on large-volume pyroclastic blasts: The Campanian Ignimbrite eruption, Italy (Recommended for funding, work begins 2018)

Investigation of the Campanian Ignimbrite (Italy) to constrain physical and chemical parameters associated with gas release and ignimbrite emplacement of large-volume pyroclastic blasts. Proposed work includes: 1) detailed field investigations to better characterize the Campanian Ignimbrite stratigraphy to link distal and proximal deposits and to define the relative timing of volcanic events; and 2) a detailed petrologic study of CI products, notably by performing complete volatile analysis (H₂O, CO₂, S, F and Cl) of melt inclusions and apatite microphenocrysts.

EPIC/FESD Post-doctoral Fellowship

Experimental investigation using piston-cylinder apparatuses to measure the oxygen fugacity of slab fluids released by the dehydration of hydrous minerals during subduction. Such fluids are thought to be the catalysts for sub-arc mantle melting with a general consensus that a geochemical slab component is detectable in arc magmas. There is much debate, however, as to whether redox signatures may be transferred from slab to mantle in subduction zones. These experiments are the first to reproduce and measure the redox state of slab fluids in the lab and will thus represent the first experimental measure of slab fluid oxygen fugacity.

Nyiragongo (DR Congo) Field and Documentary Expedition, BBC

Member of the science and documentary teams as part of an expedition to Nyiragongo and Nyamulagira volcanoes in the DR Congo. Objectives include working with local volcanologists to improve volcano monitoring capabilities at the volcano and collecting data to understand the current state of the volcanic activity in the East African Rift. Specific science roles include multi-gas geochemical measurements of the volcanic plumes and collection of rock samples for petrological analysis from each volcano. Documentary roles include taking part in production of [Expedition: Volcano](#), a two-part science documentary that aired on BBC2 in November, 2017.

[Biology Meets Subduction](#), Deep Carbon Observatory (Collaborator)

Initiative designed to develop novel connections between microbiology, volcanic systems, and the cycling of living and dead (biotic and abiotic) carbon as Earth's plates move and subduct past each other.

Fieldwork included sampling of gases, waters, biological mats, and tephra in the Costa Rican arc and forearc. Subsequent analysis of all sample types will be used in the development of a thermodynamic model (led by Iacovino) to track the movement of carbon and other volatile species in subduction zones, from subducting slab to arc and forearc output.

GRANTS, HONORS, AND AWARDS

- 2017 "Physical and Chemical Constraints on Large-volume Pyroclastic Blasts: The Campanian Ignimbrite Eruption, Italy", NSF GEO-NEC 1761713, Awarded to M. Ort. I worked on development of project and writing the proposal and am a named post-doc on the project. (\$290,655)
- 2016 EPIC/FESD Post-doctoral Fellowship (\$114,000)
- 2016 AAAS Research Grant (\$5,000)
- 2014 "Quantifying total volatile budgets of explosive volcanic eruptions: An experimental investigation of C-O-H-S-F-Cl in Silicic Peralkaline Magma from Paektu volcano, North Korea and China", NSF Post-doctoral Fellowship Grant EAR-1349486 (PI, \$174,000)
- 2013 Software Sustainability Institute Fellowship (£3,000)
- 2013 Volcanofiles Chile Expedition, Antofagasta (£10,000)
- 2012 Volcanofiles Chile Expedition, Antofagasta (£14,000)
- 2011 US Antarctica Service Medal
- 2010-13 Philip Lake Fund Research Grant
- 2010-13 William Vaughan Lewis Research Grant
- 2010 Cum Laude graduation honors, Arizona State Univ.
- 2010 Outstanding Teaching Assistant Award, Arizona State Univ.

TEACHING EXPERIENCE

- 2017 Petrology (Guest Lecturer), Arizona State University
- 2016 Petrology (Guest Lecturer), Arizona State University
- 2013 Volcanic Hazards, Part IB (Supervisor), University of Cambridge
- 2013 Magma Chambers, Part II (Supervisor), University of Cambridge
- 2012 Contributing scientist to the [Royal Geographical Society From the Field Programme](#)
- 2012 Developed A-levels (Grades 9-12 US equiv.) science curricula focused on volcanology
- 2010 Field Geology II (Teaching Assistant), Arizona State University
- 2009 Petrology Laboratory (Lecturer), Arizona State University
- 2009 Petrology (Teaching Assistant), Arizona State University
- 2009 Earth, Solar System, and Universe (Teaching Assistant), Arizona State University
- 2009 Introduction to Geology (Teaching Assistant), Arizona State University

LABORATORY EXPERIENCE

- 2016-18 Post-doc researcher in EPIC Lab at Arizona State University
- 2017 Set up hydrothermal cold-seal pressure vessel laboratory at Arizona State University
- 2014-16 Post-doc researcher in experimental petrology lab at USGS Menlo Park, CA
- 2014 Restored hydrothermal cold-seal pressure vessel laboratory at Stanford University
- 2013 Set up non-end-loaded piston cylinder laboratory at Università di Camerino
- 2010-14 Graduate researcher at Institut des Science de la Terre d'Orleans
- 2007-10 Undergraduate researcher in Depths of the Earth Laboratory

FIELD EXPERIENCE

- 2017 Sample collection, gas monitoring, documentary production in DR Congo
- 2017 Sample collection and gas monitoring in Costa Rica arc and forearc
- 2014 Tephra stratigraphy and sample collection at Newberry volcano, OR
- 2014 Sample collection at Paektu volcano, DPRK Korea (North Korea)
- 2013 Gas monitoring campaign in Costa Rica
- 2013 Gas monitoring campaign in central Chilean Andes

- 2012 Gas monitoring campaign in central and northern Chilean Andes
- 2010 Sample collection at Erebus volcano, Antarctica
- 2010 Mapping in northern Arizona, Geology Field Camp (Teaching Assistant)
- 2009 Mapping in northern Arizona, Geology Field Camp (student)

MEDIA EXPERIENCE

- 2017 Contributor to BBC Documentary "[Expedition: Volcano](#)"
- 2016 New York Times "[Only a Rumbling Volcano Could Make North Korea and the West Play Nice](#)"
- 2016 NPR Morning Edition, "[North Korean Volcano Provides Rare Chance For Scientific Collaboration](#)"
- 2016 Earth Magazine Profile "[Down to Earth With: Volcanologist Kayla Iacovino](#)"
- 2016 CNN Profile "[Meet the Trekkie who became a real-life volcanologist](#)"
- 2016 Physics Today cover story "[Volcano research flows from North Korea](#)"
- 2015 Korea Econ Inst podcast "[Seismology and Mt. Baekdu: Science Diplomacy in North Korea](#)"
- 2014 Essay, SinoNK.com "[Of Eruptions and Men: Science Diplomacy at North Korea's Active Volcano](#)"
- 2014 Profile for [Medium.com](#)
- 2014 Profile for [Tested.com](#)
- 2014 Interviewed for [de Volkskrant](#) newspaper
- 2014 Radio New Zealand "[Kayla Iacovino: volcanoes and North Korea](#)"
- 2013 NPR Science Friday "[World's Largest Volcano Discovered on Pacific Seafloor](#)"
- 2011 NPR Science Friday "[Exploring Science at the End of the Earth](#)"
- 2010 NPR Science Friday "[A Visit To Antarctica](#)"

INVITED TALKS

- 2018 UCLA Colloquium
- 2018 UT Texas Austin Colloquium
- 2015 Peninsula Geological Society seminar ([abstract](#))
- 2014 Stanford Univ. Chain Gang Lecture Series
- 2014 San Jose State University
- 2014 USGS Volcano Science Center ([archived](#))
- 2014 Gangplank Brown Bag, Chandler, AZ
- 2014 PyData Conference, London, England (talk, [archived](#))
- 2013 Mt. Paektu Group Meeting, Pyongyang, DPRK
- 2013 Cambridge Univ. Expeditions Society
- 2012 Darwin College Lunchtime Seminar Series

PUBLIC SERVICE and CONTRIBUTIONS TO DIVERSITY

Outreach Activities

- 2017 AGU Fall Meeting OSPA Mentor
- 2017 Collaborator with the BBC on [Expedition: Volcano](#) documentary and fieldwork in the DR Congo
- 2017 [Featured](#) as part of the BBC's #100WomenWiki project to add important and inspirational women of the world to the pages of Wikipedia
- 2016 STEM outreach member, [Advisory Committee](#) to the Aircraft Carrier Industrial Base Coalition for National U.S. Navy Aircraft Carrier Month
- 2015 Creator of web series "[Science at the Survey](#)", a series of videos featuring women in geoscience.
- 2015 Created materials aimed at inspiring girls to consider a career in volcanology for the [Curiosity Science Program](#), developed for late elementary and middle school-aged girls from low-income immigrant families
- 2015 Featured in the "[Mighty Women of Science Alphabet Book](#)"
- 2015 Developed outreach activities such as the "What controls a volcano's eruptive style?" exhibit showcased at multiple events in the Bay Area in 2014-2016
- 2010-2014 Public outreach through radio appearances on National Public Radio's Science Friday and Morning Edition programs, Radio New Zealand and professional writing for NPR Science Friday (2010-

2012) and GEEK Magazine (2012-2014)

Convener/Session Chair

2018 Goldschmidt Meeting
2017 AGU Fall Meeting
2016 AGU Fall Meeting
2013 Software and Research Town Hall, AGU Fall Meeting

Participant in Scientific Community Workshops

2017 [ENKI](#) Datathon
2017 [ENKI](#) User Workshop
2016 [Subduction Zone Observatory workshop](#)
2013 Software Sustainability Institute Fellows Meeting
2012 Royal Geographic Society Explore event
2011 Sulfur in Magmas and Melts GSA workshop
2011 Afar Rift Consortium workshop

Peer Reviewer

Science Advances	Earth and Planetary Science Letters
Bulletin of Volcanology	Chemical Geology
Journal of Petrology	Contributions to Mineralogy and Petrology
Journal of Volcanology and Geothermal Research	Geology
Journal of Mineralogy and Geochemistry	NSF Division of Earth Sciences