

Curriculum Vitae

Daniel J. Rasmussen

Graduate Fellow, Dept. of Earth and Envi. Sciences

Lamont-Doherty Earth Observatory, Columbia University

PO Box 1000 • 61 Route 9W • Palisades, NY 10964

(845) 365-8454 • danielr@ldeo.columbia.edu • danieljrasmussen.com

Updated: June 2018

Research Interests

I have broad interests in the fields of volcanism, magmatism, and tectonics. My work in these fields covers several topics that largely fit into two areas. First, I examine the P-T-X-t path of magmas prior to eruption, which I approach using solubility barometers, crystal-melt thermometers, and diffusion chronometers. Second, I investigate the origin and role of volatiles in magmatic systems. My favorite tool is melt inclusions, which provide a unique means for directly measuring the pre-eruptive volatile contents of magma. Central to my work is the chemical and textural analysis of macrocrysts, at both the individual crystal and population scales, and integrating my results with those of other disciplines (e.g., seismology, remote sensing).

Education

2019 (expected)	Columbia University , PhD in Earth & Envi. Sci.
2018	Columbia University , MPhil in Earth & Envi. Sci.
2014	New Mexico Tech , MS in Geology
2012	University of Oregon , BS with Honors in Geology

Research Experience

2014-Present	PhD Dissertation – Advised by Dr. Terry Plank <i>The Aleutian arc through and through: Generation, transport, and eruption of volatile-bearing magmas</i>
2012-2014	Master of Science Thesis – Advised by Dr. Philip Kyle <i>Understanding Magmatic and Volcanic Processes at Ross Island, Antarctica Using Olivine-Hosted Melt Inclusions</i>
2011-2012	Undergraduate Honors Thesis – Advised by Dr. Paul Wallace <i>Cascade Arc Magma Genesis: Volatile and Major Element Indicators in Primitive Basalts from the Lassen Region</i>
2011-2012	Laboratory Technician – Dr. Paul Wallace and UO CAMCOR facility

Teaching Experience

Fall 2016, 2017	TA for Geochemistry for a Habitable Planet (UN3101) at Columbia University
Spring 2016	TA for Igneous Petrology (W4701) at Columbia University
Spring 2015	TA for Solid Earth (W2200) at Columbia University
Fall 2013	TA for Earth Processes (ERTH 101L) at New Mexico Tech
Spring 2013	TA for Earth's Crust (ERTH 203L) at New Mexico Tech

Field Studies

Sample collection and reconnaissance – Quizapu, Chile (2016); Aleutian Islands, Alaska (2016, 2015); Ross Island, Antarctica (2012); Valles Caldera, New Mexico (2012); Lassen Peak area, California (2011); North Sister, Oregon (2011)

Geologic mapping – Four Craters, Oregon; Frying Pan Gulch and Block Mountain near Dillon, Montana

Honors and Awards

2017	Outstanding student presentation award , IAVCEI General Assembly 2017
2017, 2016	Outstanding student presentation awards , AGU Fall Meeting
2017	Chevron Initiative Research Grant , Columbia University
2017	Sara F. Langer Book Prize , Columbia University
2016	GeoPRISMS student prize for best poster
2016	Kleinman Volcanological Research Grant , United States Geological Survey
2015	Don Richter Memorial Scholarship , Alaska Geological Society
2015	SOTA Travel Grant , SOTA Organizers
2014	Dean's Fellow , Columbia University
2014	Eugene Cota-Robles Fellowship , University of California, Santa Barbara (<i>declined</i>)
2014	Goldschmidt Travel Grant , Geochemical Society
2012	James Stovall Fellowship , University of Oregon

Professional Development

2017	CIDER 2017 Summer Program , focus on Subduction Processes
2016	Workshops on Volcanoes , Guatemala
2016	Quizapu workshop , Chile
2014	SIMS workshop , Arizona State University

Outreach and Service

2015-present	VolcanoSecrets.wordpress.com founder and writer – Outreach blog with articles on volcanology and igneous petrology in addition to resources for earth science educators
2014-present	Education demonstrations leader – Lamont's Open House and Columbia's Girls' Science Day
2015-2017	Colloquium steering committee – Schedule and host speakers for the Lamont-wide weekly colloquium
2015-2016	Geochemistry seminar organizer – Schedule and host speakers for the weekly Geochemistry Division seminar at Lamont
2015	Founder and trip leader for NSOW Trip – Initiate and lead a trip for incoming Earth Science graduate students at Columbia University
2015	Organizer and moderator for First Year Symposium – Organize a day of talks for first year graduate students at Columbia University, moderate morning session
2015	Moderator at SOTA 2015 conference
2013-2015	Science Fair Judge – New Mexico Tech STEM Fair, NYSEF
2013-2014	Volcano Lunch President – Organize volcano-related seminars, community service

References

Excellent references are available upon request.

Peer-Review Publications

Google Scholar profile: <https://goo.gl/cLqoMN>

Delph, J., K. Shimizu, **D. Rasmussen**, B. Ratschbacher, X. Pu (*in review*). A geochemical and seismic search for deep, active MASH zones.

- Phillips, E.H., K. W. W. Sims, J. Blichert-Toft, R. C. Aster, G. A. Gaetani, P. R. Kyle, P. J. Wallace, **D. J. Rasmussen** (2018). The nature and evolution of mantle upwelling at Ross Island, Antarctica. *Earth and Planetary Science Letters*, 498, 38-53.
- Rasmussen, D. J.**, T. A. Plank, D. C. Roman, J. A. Power, R. J. Bodnar, E. H. Hauri (2018). When does eruption run-up begin? Multidisciplinary insight from the 1999 eruption of Shishaldin volcano. *Earth and Planetary Science Letters*, 486, 1-14.
- Rasmussen, D. J.**, P. R. Kyle, P. J. Wallace, K. W. W. Sims, G. A. Gaetani, E. H. Phillips (2017). Understanding degassing and transport of CO₂-rich alkali magmas at Ross Island, Antarctica using olivine-hosted melt inclusions. *Journal of Petrology*, 58 (5), 841-861.
- Walowski, K. J., P.J. Wallace, M. A. Clynnne, **D. J. Rasmussen**, D. Weis (2016). Slab melting and magma formation beneath the southern Cascade arc. *Earth and Planetary Science Letters*, 446, 100-112.

Conference Abstracts

- Rasmussen, D. J.**, T. Plank, D. Roman, M. Zimmer (2018). The link between magmatic water content and geophysically determined magma storage depth. *Cities on Volcanoes 10 Abstracts*, Naples, Italy.
- Delph, J., K. Shimizu, **D. J. Rasmussen**, B. Ratschbacher, X. Pu (2018). A geochemical and seismic search for deep, active MASH zones. *Goldschmidt 2018 Abstracts*, Boston, MA.
- Lopez, T., T. Fischer, T. Plank, A. Rizzo, **D. J. Rasmussen**, E. Cottrell, C. Werner, C. Kern, T. Ilanko, L. Buff, J. Andrys, K. Kelley (2017). New constraints on subduction inputs and volatile outputs along the Aleutian arc. *AGU 2017 Fall Meeting Abstracts*, New Orleans, LA.
- Pu, X., J. Delph, K. Shimizu, **D. J. Rasmussen**, B. Ratschbacher (2017). Where do arc magmas differentiate? A seismic and geochemical search for active, deep crustal MASH zones. *AGU 2017 Fall Meeting Abstracts*, New Orleans, LA.
- Rasmussen, D. J.**, T. Plank, D. Roman (2017). The run-up to volcanic eruption unveiled by forensic petrology and geophysical observations (*invited*). *AGU Fall Meeting Abstracts*, New Orleans LA.
- Rasmussen, D. J.**, T. Plank (2017). Double, double toil and trouble: The melt inclusion bubble. *AGU 2017 Fall Meeting Abstracts*, New Orleans, LA.
- Rasmussen, D. J.**, T. A. Plank, D. C. Roman, J. A. Power, R. J. Bodnar, E. H. Hauri (2017). When does eruption run-up begin? Multidisciplinary insight from the 1999 eruption of Shishaldin volcano. *VolcaNYC 2017 abstracts*, New York, NY.
- Phillips, E.H., K. W. W. Sims, J. Blichert-Toft, R. C. Aster, P. R. Kyle, G. A. Gaetani, P. J. Wallace, **D. J. Rasmussen** (2017). The nature and evolution of mantle upwelling at Ross Island, Antarctica. *GSA 2017 Fall Meeting Abstracts*, Seattle, WA.
- Plank, T. A., **D. J. Rasmussen**, L. Buff, E. Lev, D. Roman, E. Hauri, K. Nicolaysen, P. Izbekov (2017). The role of slab depth in the magma input to volcanic arcs. *IAVCEI 2017 General Assembly Abstracts*, Portland, OR.
- Rasmussen, D. J.**, T. Plank, D. Roman, P. Izbekov (2017). Multidisciplinary insight into petrological indicators of eruption run-up. *IAVCEI 2017 General Assembly Abstracts*, Portland, OR.
- Werner, C., C. Kern, D. Coppola, **D. J. Rasmussen**, P. Kelly, J. Lyons, K. Wallace, D. Schneider, R. Wessels, T. Lopez (2017). Linking gas emissions, lava extrusion, and melt S contents for a better understanding of shallow magmatic processes at Mount Cleveland volcano, Alaska. *IAVCEI 2017 General Assembly Abstracts*, Portland, OR.
- Rasmussen, D. J.**, T. Plank, D. Roman, A. Lough, P. Stelling, R. Bodnar, E. Hauri (2016). Run-up to the 1999 sub-Plinian eruption of Shishaldin volcano unveiled using petrologic and seismic approaches. *AGU 2016 Fall Meeting Abstracts*, San Francisco, CA.
- Roman, D. C., T. Plank, E. Hauri, D. Rasmussen, J. Power, J. Lyons, M. Haney, C. Werner, C. Kern, T. Lopez, P. Izbekov, P. Stelling (2016). From slab to surface: Origin, storage, ascent, and eruption

of volatile-bearing magmas in the Aleutian arc. *AGU 2016 Fall Meeting Abstracts*, San Francisco, CA.

- Werner, C., C. Kern, D. Coppola, P. Kelly, **D. J. Rasmussen**, D. Schneider, K. Wallace, R. Wessels (2016). Linking surface and subsurface: Gas emission, lava extrusion, and inferred melt S contents from Mount Cleveland, Alaska. *AGU 2016 Fall Meeting Abstracts*, San Francisco, CA.
- Rasmussen, D. J.**, T. Plank, A. Lough, P. Stelling, D. Roman (2016). Petrologic chronology of the 1999 sub-Plinian eruption of Shishaldin Volcano. *JKASP 2016 Abstracts*, Fairbanks, AK.
- Phillips, E. H., K. W. W. Sims, J. Blichert-Toft, P. R. Kyle, G. A. Gaetani, P. W. Wallace, **D. J. Rasmussen** (2015). Sr-Nd-Hf isotopes reveal the nature and evolution of mantle upwelling at Ross Island, Antarctica. *Goldschmidt 2015 Abstracts*, Prague, CZ.
- Rasmussen, D. J.**, P. R. Kyle, P. J. Wallace, K. W. W. Sims, G. A. Gaetani, E. H. Phillips (2015). Volatile variations in olivine-hosted melt inclusions: Insight into the assembly, transport, and degassing of CO₂-rich magmas. *SOTA 2015 Abstracts*, Montserrat.
- Rasmussen, D. J.**, P. R. Kyle, P. J. Wallace, K. W. W. Sims, E. H. Phillips, G. A. Gaetani (2014). Magmatic plumbing of Ross Island, Antarctica uncovered by melt inclusions from alkalic CO₂-rich magmas. *Goldschmidt 2014 Abstracts*, Sacramento, CA.
- Rasmussen, D. J.**, P. R. Kyle, P. J. Wallace (2013). Using melt inclusions to trace the evolution of primitive alkalic magmas from Ross Island, Antarctica. *AGU 2013 Fall Meeting Abstracts*, San Francisco, CA.
- Walowski, K.J., P. J. Wallace, E. H. Hauri, M. A. Clynne, J. Rea, **D. J. Rasmussen** (2013). Magma formation in hot-slab subduction zones: Insights from hydrogen isotopes in Cascade Arc melt inclusions. *AGU 2013 Fall Meeting Abstracts*, San Francisco, CA.
- Walowski, K., P. Wallace, M. Clynne, I. Wada, **D. J. Rasmussen** (2013). Magma Formation in Hot-Slab Subduction Zones: Insights from Volatile Contents of Melt Inclusions from the Southern Cascade Arc. *Mineralogical Magazine*, 77(5) 2441.
- Walowski, K. J., **D. J. Rasmussen**, P. J. Wallace, M. Clynne (2012). Understanding magma formation and mantle conditions in the Lassen segment of the Cascade Arc: Insights from volatile contents of olivine-hosted melt inclusions. *AGU 2012 Fall Meeting Abstracts*, San Francisco, CA.

Other Talks

2018	Dissertation proposal – Lamont-Doherty Earth Observatory
2017	Geodynamics seminar – Lamont-Doherty Earth Observatory
2016	Certifying exam – Lamont-Doherty Earth Observatory
2016	Melt inclusions in volcanic systems – Chile workshop
2015	First-year Symposium – Lamont-Doherty Earth Observatory
2014	MS Defense – New Mexico Tech
2014	Graduate Seminar – New Mexico Tech
2013	EES Brown Bag seminar – New Mexico Tech
2013	Volcano Lunch Seminar – New Mexico Tech
2012	Volcano Lunch Seminar – New Mexico Tech
2012	Undergraduate Thesis Presentation – University of Oregon