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CURRENT POSITION

Fulbright-NSF Postdoctoral Fellow *fall 2016 – 2017*
Arctic Research Scholar; Institute of Earth Sciences, *University of Iceland*,
Reykjavik, Iceland
*Blasting through time: the past and future of gas emissions emitted from Icelandic
volcanoes*; Advisor: Thorvaldur Thordarson

EDUCATION

Ph.D. Oregon State University, Corvallis, OR 2014
College of Earth, Ocean, and Atmospheric Sciences
Dissertation: *Magma dynamics and evolution in continental arcs: Insights from the
Central Andes*; Advisors: Shanaka de Silva and Elizabeth Cottrell

B.A. Colby College, Waterville, Maine 2009
Geology Department, Magna Cum Laude
Thesis: *Textural Analysis of the South Pond Phase of the Waldoboro Pluton in
Friendship, Maine*; Advisor: Valerie Reynolds

POSITIONS HELD

Smithsonian/GVP Postdoctoral Fellow, Washington D.C. 2014 – 2016
Department of Mineral Sciences, National Museum of Natural History,
Smithsonian Institution, Washington, D.C.
*Petrological and experimental constraints on the magmatic systems feeding the largest
explosive eruptions on Earth*; Advisor: Benjamin Andrews

Graduate Research Assistant 2009 – 2012; 2013 – 2014
Graduate Teaching Assistant Summer 2011
Oregon State University, College of Earth, Ocean, and Atmospheric Sciences

Pre-Doctoral Fellow 2012 – 2013
Department of Mineral Sciences, National Museum of Natural History,
Smithsonian Institution, Washington, D.C.

Research Intern in Science and Engineering (RISE Program) Summer 2007
Institute for Coastal Research, GKSS Research Center, Geesthacht, Germany
Deutscher Akademischer Austausch Dienst (DAAD)

Undergraduate Teaching Assistant 2006 – 2009
Colby College, Geology Department, Waterville, ME

HONORS, AWARDS, FELLOWSHIPS & RESEARCH GRANTS

Waite Grant, *National Geographic*, \$15,000 2016
Fulbright-NSF Arctic Research Scholarship (*University of Iceland*) 2016

CGS/ProQuest Distinguished Dissertation Award, *Oregon State University*, \$1,000 2014
 Smithsonian Postdoctoral Fellowship, *Smithsonian Institution* 2014
 Lance Forsythe Memorial Fellowship, *Oregon State University* 2014
 Women's Center Student Leader Award, *Oregon State University* 2014
 AGU Presentation Student Prize Honorable Mention, *GeoPRISMS* 2014
 Young Explorer's Grant, *National Geographic*, \$5,000 2013
 Goldschmidt Travel Grant, Florence, Italy, *Geochemical Society* 2013
 Smithsonian Pre-Doctoral Buck Fellowship, *Smithsonian Institution* 2012 – 2013
 Mineralogy Geochemistry Petrology Volcanology (MGPV) Research Grant
 Award, *Geological Society of America (GSA)*, \$1,000 2011
 Graduate Student Research Grant, *Geological Society of America (GSA)*, \$5,000 2011
 Jess Johnson Student Writing Award, *Oregon State University* 2011
 National Science Foundation Graduate Research Fellowship Honorable Mention 2011
 Marden Prize in Earth Science, *Colby College* 2009
 Dean of Faculty Travel Grant, *Colby College* 2008
 Junior Geology Student Award, *Colby College* 2008
 Research Internship in Science and Engineering (RISE),
Deutscher Akademischer Austausch Dienst (DAAD) 2007
 Estwing Prize for Mineralogy, *Colby College* 2007
 Sophomore Geology Student Award, *Colby College* 2007
 Undergraduate Teaching Assistantship, Department of Geology, *Colby College* 2006

FIELD EXPERIENCE/PROFESSIONAL WORKSHOPS

National Geographic Storytelling Bootcamp 2016
 Served as a senior grant recipient at a workshop on communicating science through public speaking and various media outlets

Workshops on Volcanoes (WOP); Volcan Santiaguito, Guatemala 2016
 Principle scientist; deployed and demonstrated ground-based, time-lapse photogrammetry techniques used to monitor changes in lava dome surface morphology

National Geographic Storytelling Bootcamp 2015
 Workshop on communicating science through public speaking and various media outlets

Cerro Galan Volcanic Complex, NW Argentina 2015
 Independent fieldwork for post-doctoral fellowship: mapping of volcanic deposits

EarthCube Workshop in Petrology and Geochemistry, Smithsonian Institution 2013
 National Museum of Natural History, Washington D.C.
 Appointed note taker for breakout sessions

Curso Internacional de Volcanologia en los Andes Centrales, Instituto Geonorte; UNSA Salta, Argentina 2011

Cerro Galan Volcanic Complex, NW Argentina 2011
 Independent fieldwork for PhD: mapping of volcanic deposits, sample collection

Workshop on Secondary Ion Mass Spectrometry (SIMS); Arizona State University 2010

- Altiplano-Puna Volcanic Complex, Chile 2009
 Independent fieldwork: mapping of volcanic deposits, sample collection, and reconnaissance
- Oregon State Field Camp, Mitchell, Oregon 2009
 GEO495, *Advanced Field Geology*
 Mapping of Permian metamorphic rocks, Cretaceous marine sediments, and Tertiary volcanic rocks
- Center for the Study of Active Volcanoes (CSAV), University of Hawai'i at Hilo 2008
 GEOL471, *Field Methods in Volcanology*
 Exposure to volcano monitoring methods, including volcanic gas sampling techniques, GPS and EDM ground deformation monitoring, and installing seismic stations and interpreting seismic signals
- Semester Abroad, University of Otago, Dunedin, New Zealand 2008
 GEOL252, *Field Studies & New Zealand Geology*
 Bedrock mapping of Mesozoic basement

LABORATORY EXPERIENCE

- Synchrotron-based X-ray Micro-Tomography (Lawrence Berkeley Laboratory, Advanced Light Source) – 3D imaging of experimental and natural samples
- Cold-Seal Waspaloy Pressure Vessel Experimental Petrology
- Microcolorimetry – determination of Fe speciation in whole rocks
- Fourier Transform Infrared Spectroscopy – H₂O and CO₂ analyses of melt inclusions and matrix glass
- Secondary Ion Mass Spectrometry (Arizona State University, Cameca 6f) – H₂O and trace element analysis
- Electron Microprobe (Oregon State University, Cameca; National Museum of Natural History, Smithsonian Institution, JEOL) – mineral chemistry and glass analysis
- Synchrotron-based micro X-ray Absorption Near Edge Structure (Brookhaven National Laboratory) – determination of Fe speciation in glasses
- Laser-Ablation Inductively Coupled Plasma Mass Spectrometry (Oregon State University) – trace element and REE analysis
- Sample Preparation – experience preparing thin sections, doubly intersected melt inclusions hosted in quartz and olivine, and experimental run products

TEACHING EXPERIENCE

- Graduate Teaching Assistant *Summer 2011*
 College of Earth, Ocean, and Atmospheric Sciences, Oregon State University
 GEO495 'Advanced Field Geology'
- Undergraduate Teaching Assistant *2006 – 2009*
 Department of Geology, Colby College
 GEO101 'Introduction to Geology'

PUBLICATIONS

- Grocke, S.B.,** E. Cottrell, S.L. de Silva, K.A. Kelley (2016). The role of crustal and eruptive processes versus source variations in controlling the oxidation state of iron in Central Andean magmas. *Earth and Planetary Science Letters*, 440, 92-104.

<http://dx.doi.org/10.1016/j.epsl.2016.01.026>.

Grocke, S.B., S.L. de Silva, R. Iriarte, J.M. Lindsay, E. Cottrell (in review). Magmatic heterogeneity and eruption dynamics in catastrophic caldera-forming (CCF) monotonous intermediate magma reservoirs I: Petrological and geochemical evolution of the 3.49 Ma Tara Supereruption, Guacha II Caldera, SW Bolivia. *Journal of Petrology*.

PUBLICATIONS IN PREPARATION

Grocke, S.B., S.L. de Silva, P.J. Wallace, E. Cottrell, A.L. Schmitt (in prep). Magmatic heterogeneity and eruption dynamics in catastrophic caldera-forming (CCF) monotonous intermediate magma reservoirs II: Constraints from volatiles in melt inclusions from the 3.49 Ma Tara Supereruption, Guacha II Caldera, SW Bolivia. *Journal of Petrology*.

Grocke, S.B., B.J. Andrews (in prep). Petrological and experimental constraints on the pre- to post-climactic magmatic evolution of the Cerro Galan caldera, NW Argentina. *Journal of Volcanology and Geothermal Research*.

CONFERENCE PRESENTATIONS

Arctic Circle; Reykjavik, Iceland 2016
Blasting through time: the past and future of gas emissions emitted from Icelandic volcanoes
Grocke, SB

American Geophysical Union Fall Meeting 2015
Magma Mixing Chronometry: Quantitative 3D Tomographic Analysis of Biotite Breakdown in Heating Experiments
Grocke, SB, Andrews, BJ, Manga, M, Quinn, A. V11F-08.

American Geophysical Union Fall Meeting 2014
Storage Conditions of Large Silicic Magmatic Systems: Gauging Melt Evolution from Melt Inclusions Hosted in Different Phenocryst Phases
Grocke, SB, de Silva, SL, Wallace, P, Kent, AJR, Hervig, RL, Andrews, BJ, Cottrell, E. V51A-4721.

American Geophysical Union Fall Meeting 2013
Storage conditions and temporal signals for the Tara supervolcanic magma system; insights from geothermobarometry and quartz chemistry.
Grocke, SB, de Silva, SL, Cottrell, E, Andrews, BJ, Lindsay, JM. 52B-02.

Goldschmidt Conference 2013
The role of crustal assimilation on the oxidation state of arc magmas.
Grocke, SB, Cottrell, E, de Silva, SL, Andrews, BJ, Kelley, KA, 2013. Gold2013:abs2743.

International Association of Volcanology and Chemistry of the Earth's Interior 2013
Evaluating the role of crustal assimilation on the oxidation state of arc magmas.
Grocke, SB, Cottrell, E, de Silva, SL, Andrews, BJ, Kelley, KA. 1P1_1C-O13.

American Geophysical Union Fall Meeting 2012
Magma Evolution During a Single Caldera Cycle: Insights from Melt Inclusions of the 3.49 Ma Tara Supereruption, Guacha Caldera, SW Bolivia.
Grocke, SB, de Silva, SL, Wallace, PJ, Iriarte, R. V12B-05.

American Geophysical Union Fall Meeting 2012
Thermal influences on the development and evolution of large catastrophic caldera-forming magmatic systems.
De Silva, SL, Gregg, PM, **Grocke, SB**, Kern, JM, Kaiser, JF, Iriarte, R, Burns, DH, Tierney, C, Schmitt, AK, Gosnold, WD. V42A-04.

American Geophysical Union Fall Meeting 2010
Eruption and Degassing Processes in a Supervolcanic System: The Volatile Record Preserved in Melt Inclusions from the 3.49Ma Tara Ignimbrite in the Central Andes.
Grocke, SB, de Silva, SL, Schmitt, AK, Wallace, PJ. V53C-2267.

Geological Society of Maine Spring Meeting 2009
Textural Analysis of Selected Enclaves within the South Pond Phase of the Waldoboro Pluton, Friendship, Maine. **Grocke, SB**, and Reynolds, VS.

Geological Society of America Meeting 2008
Taphonomic and paleoecologic aspects of the Early Devonian (Pragian) Tarrantine Formation near Jackman, Maine.
Smith, AM, Colin, ED, Daly, RG, Delano, CL, **Grocke, SB**, Hunt, CG, Kilian, TM, Newbury, SS, and Gastaldo, RA. 249-6.

INVITED TALKS

Smithsonian Institution, National Museum of Natural History, Department of Mineral Sciences 2015
Magma dynamics and evolution in continental arcs: Insights from the Central Andes

Cascades Volcano Observatory, USGS 2014
Continental caldera-forming magma systems: Insights from the 3.49 Ma Tara eruption Guacha II Caldera, SW Bolivia

Smithsonian Institution, National Museum of Natural History, Department of Mineral Sciences 2012
Magma Evolution During a Single Caldera Cycle: Insights from Melt Inclusions of the 3.49 Ma Tara Supereruption, Guacha Caldera, SW Bolivia

PROFESSIONAL AFFILIATIONS

Geological Society of America
Mineralogical Society of America
American Geophysical Union
Geochemical Society
Geological Society of Washington

PROFESSIONAL SERVICE

Scientist Is In, Q?rius, Smithsonian Institution, NMNH 2016
Educate the public about the field of experimental petrology and how scientists simulate magmatic conditions in laboratories to assess pre-eruptive processes

“30 year anniversary of Mount St. Helens”, Q?rius, Smithsonian Institution, NMNH 2015
Inform and interact with the public about the history of the Mount St Helens 1980 explosive eruption, monitoring efforts at the Cascade volcanoes, and potential future activity from US volcanoes

Oregon State University, Outreach 2009 – 2014
Lead live demonstrations of explosive volcanism to the public and children in elementary school

Volcano World Website, Webmaster 2009 – 2014
The “Volcano World” website (<http://volcano.oregonstate.edu>) educates all ages about how volcanoes work and what risks they pose. Website allows community to ask questions and learn through virtual fieldtrips and volcano factoids. As webmaster of a volcano website geared at higher education, K-12, and general public outreach, I generated and revised web pages, optimized page content and website performance, and replied to user comments and requests.

PUBLIC MEDIA OUTREACH & EDUCATION

2016 Guest speaking for a “Facebook Live”, *National Geographic Kids*

“Today I Learned” [YouTube video](#), *National Geographic*

Shea, R.H. “On the Road to a Supervolcano”
National Geographic Magazine. February, 2016, Field Notes

Invited Guest Lecturer, ANTY 330: *'People's and Cultures of South Asia'*
University of Montana, Spring Semester.

2015 Presentation to the Washington Youth Summit on the Environment, “*Exploring a supervolcano in the Central Andes*”, National Geographic Society

Lightning Talk, Smithsonian Institution, Senate of Scientists’, “*Magma Storage Conditions that Precede the Largest Volcanic Eruptions on Earth*”
[Magma storage conditions that precede the largest volcanic eruptions on Earth \(YouTube\)](#)
[Magma storage conditions that precede the largest volcanic eruptions on Earth \(iTunes\)](#)