

Anna Colvin

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EDUCATION

Master of Science, Michigan Technological University, Houghton, MI, expected September 2008.
Thesis: Phreatic and phreatomagmatic hazard assessment of Santa Ana volcano, El Salvador.
Advisors: Dr. William I. Rose and Dr. Matthew R. Patrick.

Bachelor of Arts (Honors), Wesleyan University, Middletown, CT, 2004.
Thesis: Trace element and isotope geochemistry of the Caviahue-Copahue Volcanic Complex, Argentina.
Advisor: Dr. Johan C. Varekamp.

TEACHING EXPERIENCE

Earth Materials II: Rocks and Mineral Resources, Michigan Technological University, MI, 1/2007-4/2007
Graduate Teaching Apprentice
Instructed the laboratory portion and developed original teaching materials for introductory petrology.

Understanding the Earth, Michigan Technological University, MI, 9/2006-12/2006
Graduate Teaching Apprentice
Instructed the laboratory portion of introductory geology (one section).

Environmental Geochemistry, Wesleyan University, CT, 9/2003-12/2003
Undergraduate Teaching Apprentice
Assisted in instruction of weekly labs and field trips, including chemical analysis for class coursework.

RESEARCH EXPERIENCE

Graduate Research Assistant, Michigan Technological University, 9/2007-present
Project: “Remote Sensing for Hazard Mitigation and Resource Protection in Pacific Latin America,” supported by an NSF PIRE (Partnership in International Research and Education).
Carried out hazard assessment at Santa Ana volcano, El Salvador by integrated thermal remote sensing, crater lake chemistry, seismicity and SO₂ fluxes (MSc thesis project). Managed and developed ASTER imagery resources. Actively contributed to “Hazard Watchers,” a graduate student forum for remote sensing. Organized workshops on “Satellite Remote Sensing of Active Volcanoes” at the Universidad de El Salvador (July 2007), Servicio Nacional de Estudios Territoriales, El Salvador (July 2007), LAGEO, Salvadoran geothermal company (March 2008), and the Universidad de Costa Rica (June 2007).

EHaz Participant, Centre of Research and Exchange in Volcanology, University of Colima, México, 3/2006-8/2006
Project: “Thermal infrared monitoring of lava effusion at Volcán de Colima, México.”
Carried out a research project on satellite (AVHRR & MODIS) and ground-based (thermal camera) thermal infrared monitoring of lava effusion during 2004 at Colima volcano, México.

Research Assistant (contractor), Eastern Mineral Resources Team, US Geological Survey, Reston, VA, 1/2005-2/2006
Characterized isotopic, geochemical, and petrographic properties of rock, soil, and sediment samples. Prepared geologic samples for isotopic analysis in a clean lab. Analyzed samples for isotopic composition using an automated, nine-collector Finnigan-MAT 262 thermal ionization mass spectrometer (TIMS). Prepared documents and illustrations for publication. Created and managed geochemistry databases.

BA Thesis, Wesleyan University, CT, 9/2003-5/2004
Completed honors thesis in geochemistry of volcanic rocks. Prepared rock samples for major element, trace element, and radiogenic isotope analysis. Performed analysis on samples for major element compositions by X-ray fluorescence (XRF). Interpreted and synthesized geochemical data, field relations, and regional tectonics.

Mellon Research Fellow, Mellon Environmental Studies Summer Research Program, Wesleyan University, CT, 6/2003-7/2003

Project: "History of Eutrophication in Long Island Sound."

Prepared sediment cores from Long Island Sound for study of biogenic silica. Analyzed time-sequential extracts of biogenic silica by inductively coupled plasma-atomic emission spectrometer (ICP-AES).

FIELD EXPERIENCE

MSc Thesis, El Salvador, 6/2007-7/2007, 3/2008

Carried out FLIR (airborne and ground-based) and thermocouple surveys of fumaroles at Santa Ana, Izalco and San Miguel volcanoes. Collected water samples at Santa Ana crater lake.

Centre of Research and Exchange in Volcanology, University of Colima, Mexico, 3/2006-8/2006

Conducted fieldwork at Colima volcano and Isla de Socorro, México, in geophysical and geochemical field techniques, including videotaping explosions, thermal imaging, VLF and magnetics transects, measuring self-potential, measuring SO₂ flux with COSPEC and mini-DOAS, measuring Rn, CO₂, and CH₄ soil gas concentrations, and water spring sampling.

BA Thesis, Neuquén, Argentina, 3/2004

Conducted fieldwork on pyroclastic flow deposits associated with the Caviahue caldera, southern Andes, Argentina.

University of Pennsylvania, Yellowstone Bighorn Research Association, Red Lodge, MT, 2003

Attended summer field camp in geologic field methods. Mapped sedimentary, volcanic, and metamorphic terrains in southwestern Montana and Wyoming.

Geophysics of the Earth, University of Otago, Dunedin, New Zealand, 2002

Participated in a geophysical study of the Dunedin Volcano using gravitational and magnetic field techniques.

Field Trips: Arenal, Miravalles, and Rincón de la Vieja volcanoes, Costa Rica (June, 2007); Debris Avalanches and Landslides, US and Canadian Cascades (August, 2007).

RELEVANT COURSEWORK

Michigan Technological University: Geology of Central America, Applications in Remote Sensing, Digital Image Processing, Computational Geosciences (programming in MATLAB®), Global Geophysics and Tectonics, Geographic Information Systems (GIS), Photogrammetry.

Wesleyan University: Volcanology, Mineralogy, Isotope Geochemistry, Environmental Geochemistry, Sedimentology & Stratigraphy.

University of Otago, New Zealand: Igneous Petrology, Geophysics of the Earth, Climate Change.

TECHNICAL SKILLS

Computer: Erdas IMAGINE, ENVI, MATLAB, ArcGIS, GoldenSoftware SURFER, Igp2000, Kaleidagraph, Adobe Illustrator, Adobe Photoshop, CorelDraw, PowerPoint, Access, Excel, Word.

Lab: basic experience in thermal ionization mass spectrometer (TIMS), X-ray fluorescence (XRF), X-ray diffraction (XRD), scanning electron microscope (SEM), inductively coupled atomic emission spectrometer (ICP-AES), petrographic microscope.

Field: Brunton compass, GPS, gravimeter, proton precession magnetometer, thermal camera, correlation spectrometer (COSPEC and mini-DOAS), soil gas measurements.

Foreign language: Spanish (advanced level).

ACADEMIC DISTINCTIONS

John and Mary Sease Prize, Wesleyan University, Middletown, CT, 2004

Awarded in recognition for outstanding work in environmental science.

Millhauser Graduate Student Fellows in Science, The Park School, Baltimore, MD, 2007

Invited to present research, conduct workshops, and give seminars over the course of 2 days to high school and middle school students.

PROFESSIONAL AFFILIATIONS

American Geophysical Union (AGU), member.

Geophysical Research Letters (GRL), reviewer.

PEER-REVIEWED PUBLICATIONS

Colvin, A., Patrick, M., Rose, W.I., Escobar, D., Gutierrez, E., Montalvo, F., Varekamp, J.C., in prep., Phreatic and phreatomagmatic hazard assessment of Santa Ana volcano, El Salvador.

Ayuso, R.A., Karl, S.M., Slack, J.F., Haeussler, P.J., Bittenbender, P.E., Wandless, G.A., and **Colvin, A.S.**, 2007, Oceanic Pb-Isotopic Sources of Proterozoic and Paleozoic Volcanogenic Massive Sulfide Deposits on Prince of Wales Island and Vicinity, Southeastern Alaska, U.S. Geological Survey Professional Paper 1732-E.

Varekamp, J.C., deMoor, J.M., Merrill, M.D., **Colvin, A.S.**, Goss, A.R., Vroon, P.Z., and Hilton, D.R., 2006, Geochemistry and isotope characteristics of the Caviahue-Copahue volcanic complex, Province of Neuquen, Argentina, GSA Special Paper 407, 317–342.

Ayuso, R.A., Foley, N.K., Wandless, G., Dillingham, J.L., and **Colvin, A.**, 2005, Lead isotopic compositions of soil and near-surface till profiles from a watershed containing arsenic-enriched groundwater in coastal Maine: U.S. Geological Survey Scientific Investigations Report 2005-5112, 25 p.

CONFERENCE ABSTRACTS

Colvin, A., Patrick, M., Rose, W.I., Escobar, D., Montalvo, F., Gutierrez, E., Olmos, R., 2007, Precursory activity of the 2005 eruption of Santa Ana volcano, El Salvador, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., Abstract V41D-0810.

Colvin, A., Patrick, M., Escobar, D., Pullinger, C., Olmos, R., Rose, W.I., 2007, Monitoring thermal activity at Santa Ana volcano, El Salvador, MARGINS meeting, Heredia, Costa Rica.

Colvin, A. S., Varley, N. R, Galindo Estrada, I., Patrick, M., 2006, Thermal infrared monitoring of lava effusion at Volcán de Colima, México, *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract V51A16-61.

Ayuso, R.A., Haeussler, P.J., Bradley, D.C., Farris, D.W., and **Colvin, A.S.**, 2005, The effects of ridge subduction on chemical and isotopic zoning of the Kodiak batholith, southern Alaska. Abstracts with Programs - Geological Society of America, v. 37, n. 7, p. 80.

Varekamp, J.C., deMoor, M., Merrill, M., Goss, A., **Colvin, A.**, Vroon, P., and Hilton, D.R., 2004, Geochemistry of the Caviahue-Copahue volcanic zone, Argentina. IAVCEI General Assembly, Pucón Chile. November 2004.

Colvin, A., Merrill, M., deMoor, M.J., Goss, A. and Varekamp, J.C., 2004, The Riscos Bayos ignimbrites of the Caviahue-Copahue volcanic complex, Southern Andes, Argentina. *Eos Trans. AGU*, 85(17), Jt. Assem. Suppl., Abstract V43A-16. May 2004.

DeMoor, M., Varekamp, J., Goss, A., Merrill, M., **Colvin, A.**, Vroon, P., 2004, Magmatic evolution of the Copahue-Caviahue volcanic complex. Abstracts with Programs - Geological Society of America, v. 36, no. 4, p. 69, May 2004.

WORKSHOP PRESENTATIONS

“Satellite Thermal Infrared Remote Sensing.” LAGEO (private geothermal company), El Salvador. March 2008. Presented in Spanish.

“Satellite Remote Sensing of Volcanoes.” Universidad de El Salvador. June 2007. Presented in Spanish.

“Satellite Remote Sensing of Volcanoes.” Servicio Nacional de Estudios Territoriales (SNET), El Salvador. July 2007. Presented in Spanish.

“High Resolution Information from Seven Years of ASTER Data.” Universidad de Costa Rica. June 2007. Presented in English.

“Exploring the World’s Volcanoes.” The Park School (K-12), Baltimore, Maryland. March 2007. Presented in English.

REPORTS

Report to Smithsonian Institution, 2007, Santa Ana volcano, El Salvador. *Bulletin of the Global Volcanism Network*, 32 (7).