

Anna Colvin

Dept. of Geological and Mining Engineering and Sciences
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EDUCATION

Master of Science, Michigan Technological University, Houghton, MI, expected 2008.

Thesis: Eruption precursors to the 2005 eruption of Santa Ana volcano, El Salvador.

Advisors: Dr. Matthew R. Patrick and Dr. William I. Rose

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 "Joop" Varekamp

TEACHING EXPERIENCE

Earth Materials II: Rocks and Mineral Resources, Michigan Technological University, MI, 1/2007-4/2007

Graduate Teaching Apprentice

Taught the laboratory portion and developed original course laboratory materials on introductory petrology.

Understanding the Earth, Michigan Technological University, MI, 9/2006-12/2006

Graduate Teaching Apprentice

Taught one laboratory section of introductory geology course.

Environmental Geochemistry, Wesleyan University, CT, 9/2003-12/2003

Undergraduate Teaching Apprentice

Assisted in preparing and facilitating weekly labs and field trips; completed chemical analyses for class coursework.

RESEARCH EXPERIENCE

Masters Thesis, Costa Rica and El Salvador, 6/2007-7/2007

Eruption precursors to the 2005 eruption of Santa Ana volcano, El Salvador.

Integrate computer-based remote sensing with geochemical modeling and fieldwork. Delivered 3 workshops on "Satellite Remote Sensing of Active Volcanoes" at Universidad de Costa Rica, Universidad de El Salvador and SNET. Supported by NSF PIRE "Remote Sensing for Hazard Mitigation and Resource Protection."

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

Volunteer and EHaz Participant

Carried out a research project on satellite and ground-based thermal infrared monitoring of Volcan de Colima, Mexico, with support from the NSF-funded EHaz University Exchange program.

Eastern Mineral Resources Team, US Geological Survey, Reston, VA, 1/2005-2/2006

ECO Research Associate

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). Drafted and prepared illustrations for publication using Adobe applications. Created and managed geochemistry databases.

BA Thesis, Wesleyan University, CT, 9/2003-5/2004

Trace element and isotope geochemistry of the Caviahue-Copahue volcanic complex, Argentina

Completed honors thesis in chemical volcanology. 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 chemical data and synthesized geochemistry, field relations, and regional tectonics. Presented research and results to department faculty and peers.

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

Mellon Research Fellow

Prepared and analyzed sediments in cores from Long Island Sound for biogenic silica as part of a larger study addressing anoxic conditions in the bottom waters of the Sound. Biogenic silica data was obtained by analysis of time-sequential extracts using an

inductively coupled plasma-atomic emission spectrometer (ICP-AES).

FIELD EXPERIENCE

Masters Thesis, El Salvador, 6/2007-7/2007

Eruption precursors to the 2005 eruption of Santa Ana volcano, El Salvador.

Carried out fieldwork at Santa Ana, Izalco and San Miguel volcanoes measuring fumarole temperatures at all three volcanoes and sampling the Santa Ana crater lake.

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

Conducted fieldwork at Volcan de Colima, Mexico, and Isla de Socorro, Mexico, 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 concentrations, and water sampling.

Bachelors Thesis, Neuquen, Argentina, March 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.

RELEVANT COURSEWORK

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

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

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

TECHNICAL SKILLS

Computer: Erdas IMAGINE, ENVI, MATLAB, ArcGIS, GoldenSoftwareSURFER, Igp2000, Kaleidagraph, Windows 98/2000/XP operating systems, Illustrator, Photoshop, PowerPoint, Access, Excel, Word, Internet research

Lab: Automated, nine-collector Finnigan-MAT 262 thermal ionization mass spectrometer (TIMS), Micromeritics ASAP2020 Surface Area Analyzer (SAA), Bruker Nonius X-ray generator and Philips spectrometer (XRF), Philips X-ray diffraction (XRD), PE-Plasma400 ICP-AES, polarizing light microscope

Field: Brunton compass, hand-held and post-processing GPS, Worder gravimeter, Geometrics G-856AX proton procession magnetometer, digital camera

Foreign language: Conversant in Spanish

ACADEMIC DISTINCTIONS

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

Awarded prize 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.

PUBLICATIONS

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*, xx(xx), Fall Meet. Suppl., Abstract xxxxxx-xx.

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

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.

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.

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.

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.

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.