

# MATTHEW E. BRUESEKE

## CURRICULUM VITAE

Department of Geology/Geography  
Eastern Illinois University  
600 Lincoln Avenue  
Charleston, IL 61920-3099

Phone: (217)-581-2827  
Fax: (217)-581-6613  
Email: mebrueseke@eiu.edu  
<http://www.ux1.eiu.edu/~mebrueseke/>

---

### EDUCATION

2006: Ph.D. (Geology), Miami University, Oxford, OH

Dissertation: Mid-Miocene magmatic system development in the northwestern United States.

Ph.D. Advisor: Dr. William K. Hart

1997: A.B. (Geology, minor in Physical Geography), Miami University, Oxford, OH

Senior project: Chronostratigraphy and volcanic stratigraphy of Hagerman Fossil Beds National Monument, ID.

### TEACHING

#### Teaching Experience

##### *Instructor:*

August 2005 - present: Eastern Illinois University. Courses taught include introductory Weather and Climate, a Senior Seminar covering local/global environmental issues, introductory Earth Science (physical geology), Mineralogy, and Igneous/Metamorphic Petrology. Additionally, I will co-teach Tectonics in the spring 2007 semester and will also teach the Honors section of the environmental science Senior Seminar. Weather and Climate, Earth Science, Mineralogy, and Igneous/Metamorphic Petrology are all lecture-based and each has at least one additional laboratory section that I have taught/currently teach. I have also supervised undergraduate teaching assistants for Mineralogy, Igneous/Metamorphic Petrology, Earth Science, and Weather and Climate.

##### *Instructor:*

2001 - present: Miami University Geology Field Station ([www.muohio.edu/fieldgeology](http://www.muohio.edu/fieldgeology)). Primary duties include day-to-day teaching, supervision of graduate student teaching assistants, and assisting with the organization and planning (pre- and during course logistics and content) of Miami University's five-week geology field course. Course emphasis is placed on understanding the geologic history of western North America through the description, interpretation, and mapping of local/regional units, structures, and other geologic phenomena throughout the Snake River Plain-Yellowstone volcanic province, the northern Rocky Mountains of the United States and Canada, and the greater Yellowstone region/Wind River Basin, WY.

##### *Teaching Assistant:*

March 2003: Geology of the Rio Grande Rift (Field-based in New Mexico)

March 2002: Geology of Big Bend National Park (Field-based in Texas)

1998 - 2000: Courses taught were: Miami University Geology Field Station (field camp), Mineralogy, Igneous and Metamorphic Petrology, Geology of U.S. National Parks, Understanding the Earth (introductory geology laboratory), and the Dynamic Earth (introductory physical geology)

1998: Carbonate Depositional Systems (Field-based in San Salvador, Bahamas and Florida)

##### *Undergraduate Teaching Assistant:*

1997: Understanding the Earth

#### Academic Service

2006: Invited Speaker, Illinois State University Department of Geography-Geology (EIU)

2005-06: Guest lecturer, Department of Geology and Geography (EIU)

2005: Keynote Speaker, Earth Science Week 2005 (EIU)

2005: Member, Peer institutions and competitors committee (EIU)

2004 - 2005: Department representative at accepted student open houses (Miami University; MU)

1997 - 2005: Host, for prospective graduate students (MU)

1997 - 2005: Substitute lecturer for Dr. William K. Hart (MU)

1997 - 2005: Guide, local geological field trips for public outreach (MU)

2004: Graduate student member, Geophysics Assistant Professor search committee (MU)

2004: Judge, Miami University Science Fair (MU)

1998 - 2003: Department representative at Geological Society of America graduate student recruitment booth

2001: Judge, Miami University Science Fair (MU)

# MATTHEW E. BRUESEKE

## CURRICULUM VITAE

2000 - 2001: Graduate student representative to the faculty (MU)  
1997 - 1998: Graduate student representative to the faculty (MU)  
1996 - 1997: President, Miami University Geological Society (MU)

### RESEARCH

#### Interests

My primary interests lie in the broad fields of igneous petrology and volcanology. I use field, geochemical, chronologic, and isotopic data to better understand past volcanotectonic processes and the generation/evolution of magma. Other research interests include using tephrostratigraphy to solve chronologic and stratigraphic problems, the evolution of mountain belts, extensional tectonics, and mixed lacustrine-fluvial sedimentary systems.

#### Research Experience

##### *Research Associate:*

2004 - 2005: Department of Geology, Miami University. Primary duties included the field and laboratory investigation of western United States volcanic terrains. I worked closely with graduate and undergraduate students and other support staff to help prepare and perform chemical and Sr-Nd-Pb isotopic analyses of geologic materials by thermal ionization mass spectrometry (TIMS). I also prepared geologic materials for major (DCP-AES) and trace (DCP-AES, XRF, and ICP-MS) element geochemical analyses, helped maintain departmental equipment, and ordered supplies.

##### *Research Assistant:*

2000 - 2004: Department of Geology, Miami University. Principal duties included sample preparation of whole rock and purified glass separates for major and trace element geochemical analyses. This included the initial collection in the field and the subsequent rock crushing, thin section blank cutting, clean laboratory work necessary for analyses, and data collection. I also prepared whole rock samples for  $^{40}\text{Ar}/^{39}\text{Ar}$  geochronology, performed electron microprobe analyses on select phases (at the University of Kentucky), performed petrographic analysis of igneous materials, purchased laboratory supplies, and organized/purchased supplies for fieldwork and the laboratory.

##### *Research Assistant:*

1997 - 1998: Department of Geology, Miami University. Responsibilities included sample preparation of basalt and unconsolidated tephra for major and trace element analyses (DCP-AES). This involved concentrating/purifying bulk glass separates by magnetic/heavy liquid separation techniques, and clean laboratory techniques prior to analyses.

#### Advising of Student Research

*Jacob Knight*, Undergraduate Student, Department of Geology, Miami University, 2003-2005  
Topic: Characterization of ash flow volcanism in the Santa Rosa-Calico volcanic field, NV  
*Lauren Gilbert*, Undergraduate Student, Department of Geology, Miami University, 2001-2002  
Topic: Tephrostratigraphy of the Santa Rosa-Calico volcanic field, NV  
*Amy Maloy*, Undergraduate Student, Department of Geology, Miami University, 2001-2002  
Topic: Generation of intermediate magma in the Santa Rosa-Calico volcanic field, NV  
*Becki Witherow*, Undergraduate Student, Department of Geology, Miami University, 2001  
Topic: Sr isotopic analyses of late Cenozoic basalts from the Owyhee Plateau, OR/NV

#### Grants

2004: Geological Society of America, Cordilleran section student travel grant (\$500.00)  
2004: Miami University DUOS (Doctoral-Undergraduate Opportunities in Scholarship;  
<http://www.users.muohio.edu/shorec/DUOS/duos.htm>) program with Jacob Knight (\$1000.00)  
2003: Geological Society of America, Cordilleran section student travel grant (\$185.00)  
2002: Geological Society of America, Cordilleran section student travel grant (\$475.00)  
2001: Geological Society of America, Student Research Grant (\$1875.00)  
1999: Geological Society of America, Rocky Mt. section student travel grant (\$350.00)  
1999: Miami University Graduate Student Association Travel Assistance Award (\$150.00)  
1998: Geological Society of America, Student Research Grant (\$1500.00)

# MATTHEW E. BRUESEKE

## CURRICULUM VITAE

### FIELD EXPERIENCE

My experience lies mainly in the interpretation of Precambrian through Cenozoic geology in the western United States. This includes sampling units for geochemical analyses, identifying eruptive loci, interpreting igneous and sedimentary units for facies evaluation, detailed and regional geologic mapping of both contractional/extensional structural features and geologic formations in volcanic and sedimentary terranes, and dealing with logistical issues for fieldwork. I have experience with basic surveying techniques, plane table and alidade based geologic mapping, GPS/GIS use, Brunton transit use, collection of rock and sediment samples for paleomagnetism studies, and other geologic/hydrologic field sampling techniques. Additionally, I have led or co-led numerous local and regional field experiences as an Instructor or Teaching Assistant and will be co-leading trips to the Death Valley region, CA/NV (for Structural Geology) and the Rio Grande rift region, NM (for Tectonics) during the 2006-07 school year.

*1997 - Present:* Mapping, interpretation, and sampling of Cenozoic volcanic units in the northwestern United States. This includes my own research, in addition to working with other graduate and undergraduate students studying related issues of Cenozoic Pacific Northwest and Snake River Plain volcanism. Additionally, I have extensive field experience in northwestern WY and other regions in the Rocky Mountains of the United States and Canada.

*April 2006:* Precambrian geology of southeastern Missouri

*March 2003:* Mapping and interpretation of New Mexico geology

*March 2002:* Mapping and interpretation of southwestern Texas geology

*January 2000:* Mapping and interpretation of southern Arizona geology

*June 1998:* Modern carbonate deposition in the Florida Keys and Bahamas

*March 1998:* Interpretation of the geology in the vicinity of Guadalupe Mts. National Park

*January 1997:* Sedimentary and structural geology of Death Valley National Park

*June - July 1996:* Miami University Geology Field Station, Wyoming

*June 1996:* Sample collecting and interpretation of tephra sequences in a Cenozoic mixed-fluvial and lacustrine sedimentary package, Hagerman, Idaho.

### HONORS

*2002:* Brunton Award, Miami University Department of Geology. For outstanding contribution to field geology education

*1999:* Certificate of merit for research achievements, Miami University Department of Geology

*1997:* Dean's List, Miami University, fall and spring semesters

*1996:* H. Van der Veer Hilker Memorial Scholarship Recipient, Miami University Department of Geology  
Awarded to a junior geology major on basis of academic achievement and potential contribution to the community

### OTHER SKILLS

Proficiency/experience with MS-Office Suite, CorelDraw/Photo-Paint & related graphics software, ESRI ArcView 3.1, Grass 4.1 (UNIX based GIS), MapInfo (MS-Windows based GIS), WebCT course maintenance software, image reduction and interpretation via remote sensing software and aerial imagery, worldwide web page creation and maintenance, and college Spanish coursework equivalent to two years of study. I also just received the ESRI ArcGIS I Certification for ArcGIS software use. In addition to the analytical skills and instrumentation used during my graduate studies and time spent as a Research Associate, I have experience with powder X-ray diffraction, thin section making, and am currently learning how to separate melt inclusions from their crystal hosts.

### APPLICABLE EMPLOYMENT

*1995 - 1996:* Geotechnical Lab Technician: Shilts, Graves, and Associates, South Bend, IN. Hired for field soil sampling of Quaternary glacial sediment & other geologic material by split spoon-hollow stem drilling and hand auguring methods. I also characterized and tested sediment, concrete, asphalt, and other materials for regional engineering and environmental work, by both laboratory and field-based methods.

# MATTHEW E. BRUESEKE

## CURRICULUM VITAE

### PROFESSIONAL ORGANIZATIONS

- Member:* Geological Society of America (1994 - Present)  
*Member:* American Geophysical Union (1998 - Present)  
*Member:* Sigma Xi (1999 - Present)  
*Member:* The Geochemical Society (2005 - Present)  
*Member:* National Association of Geoscience Teachers (2005 - Present)

### PUBLICATIONS (published, accepted, currently in review)

- Brueseke, M.E., Heizler, M.T., Hart, W.K., and S.A. Mertzman (under review), Distribution and geochronology of Oregon Plateau (U.S.A.) flood basalt volcanism: The Steens Basalt revisited: Submitted to the Journal of Volcanology and Geothermal Research.
- Brueseke, M.E. and Hart, W.K. (in press) Geology and petrology of the mid-Miocene Santa Rosa-Calico volcanic field, northern Nevada. Accepted by the Nevada Bureau of Mines and Geology as a NBMG Bulletin (#112).
- Brueseke, M.E., Hart, W.K., and M.T. Heizler (in press), Chemical and physical diversity of mid-Miocene silicic volcanism in northern Nevada: Accepted by the Bulletin of Volcanology for a special issue on Yellowstone-High Lava Plains silicic volcanism, northwestern USA.
- Hughes, J.M., Cureton, F.E., Marty, J., Gault, R.A., Gunter, M.E., Campana, C.F., Rakovan, J., Sommer, A., and M.E. Brueseke, 2001, Dickthomssenite,  $Mg(V_2O_6) \cdot 7H_2O$ , a new mineral species from the Firefly-Pigmy mine, Utah: Descriptive mineralogy and arrangement of atoms: *The Canadian Mineralogist*, 39, 1691-1700.
- Hart, W.K. and M.E. Brueseke, 1999, Analysis and Dating of Volcanic Horizons from Hagerman Fossil Beds National Monument and a Revised Interpretation of Eastern Glenns Ferry Formation Chronostratigraphy, A Report of Work Accomplished and Scientific Results: Hagerman Fossil Beds National Monument, National Park Service, 37p. NPS Report No.: 1443-PX9608-97-003.

### ABSTRACTS (\*=undergraduate student mentee)

- Brueseke M.E. and W.K. Hart, 2006, The production of intermediate composition magmas in an intracontinental setting: *Geological Society of America National Meeting 2006*.
- Brueseke, M.E., Haley, J.C., and W.K. Hart, 2006, The use of a mapping assessment rubric to help students improve the creation and comprehension of geologic maps: *Geological Society of America National Meeting 2006*.
- Brueseke, M.E. and W.K. Hart, 2005, Mid-Miocene basalt driven volcanic field development in the Pacific Northwest, USA: *Geochimica et Cosmochimica Acta, Goldschmidt Conference Abstracts 2005*, V. 69, Issue 10, p. A144.
- Hart, W.K., Brueseke, M.E., Shoemaker, K.A., and N.R. Bondre, 2005, Revisiting the tectonomagmatic implications of Oregon Plateau basaltic volcanism: *Geochimica et Cosmochimica Acta, Goldschmidt Conference Abstracts 2005*, V. 69, Issue 10, p. A140.
- Brueseke M.E. and W.K. Hart, 2004, The physical and petrologic evolution of a multi-vent volcanic field associated with Yellowstone-Newberry volcanism: *EOS, Transactions, American Geophysical Union*, 85 (47), Suppl. Abstract V53A-0605.
- \*Knight, J. E., Brueseke, M.E., and W.K. Hart, 2004, Physical, petrographic, and geochemical characterization of ash flow volcanism: the mid-Miocene Cold Springs Tuff of the Santa Rosa Calico Volcanic Field, Nevada: *Geological Society of America Abstracts with Programs*, v. 36, p. 77.
- Brueseke, M.E., Hart, W.K., and K.A. Shoemaker, 2004, Re-evaluating the "Owyhee-Humboldt" eruptive center: Relationships between voluminous middle Miocene silicic volcanism and the Owyhee Plateau: *Geological Society of America Abstracts with Programs*, v. 36, p. 97. (INVITED)
- Hart, W.K., and M.E. Brueseke, 2004, Eruptive diversity and styles of silicic volcanism in the mid-Miocene Santa Rosa-Calico volcanic field, northern Nevada: *Geological Society of America Abstracts with Programs*, v. 36, p. 11. (INVITED)
- \*Knight, J. and M. Brueseke, 2004, Geochemical and petrographic characterization of ash flow volcanism: The Cold Springs tuff and its significance to the evolution of the Santa Rosa-Calico volcanic field, Nevada: *Miami University Undergraduate Research Forum*.
- Brueseke, M.E., and W.K. Hart, 2003, Compositional diversity in mid-Miocene mafic lavas from the southeastern Oregon Plateau: Geological Society of America Abstracts with Programs: *Geological Society of America Abstracts with Programs*, v. 35, p 549.

# MATTHEW E. BRUESEKE

## CURRICULUM VITAE

- Brueseke, M.E., Hart, W.K., Wallace, A.R., Heizler, M.T., and R.J. Fleck, 2003, Mid-Miocene volcanic field development in northern Nevada: New age constraints on the timing of Santa Rosa-Calico volcanism: *Geological Society of America Abstracts with Programs*, v. 35, p. 63.
- \*Gilbert, L.Y., Brueseke, M.E., Snyder, D.C., and W.K. Hart, 2003, A record of mid-Miocene explosive volcanism and rift basin development in the Santa Rosa-Calico volcanic field, Nevada: *Geological Society of America Abstracts with Programs*, v. 35, p. 7.
- \*Gilbert, L.Y., Brueseke, M.E., Snyder, D.C., and W.K. Hart, 2003, A record of mid-Miocene explosive volcanism and rift basin development in the Santa Rosa-Calico volcanic field, Nevada: *Miami University Undergraduate Research Forum*.
- \*Maloy, A.K., Brueseke, M.E., Minturn, C.B., and W.K. Hart, 2003, The generation of intermediate composition magmas in a bimodal setting: evidence from the Santa Rosa-Calico volcanic field, Nevada: *Geological Society of America Abstracts with Programs*, v. 35, p. 5.
- \*Maloy, A.K., Brueseke, M.E., Minturn, C.B., and W.K. Hart, 2003, The generation of intermediate composition magmas in a bimodal setting: evidence from the Santa Rosa-Calico volcanic field, Nevada: *Miami University Undergraduate Research Forum*.
- Brueseke, M.E. and W.K. Hart, 2002, Mid-Miocene flood basalt volcanism in southeastern Oregon: New insights on an old problem: *Geological Society of America Abstracts with Programs* v. 34, p. 364.
- Brueseke, M.E., Shoemaker, K.A., and W.K. Hart, 2002, New tectonic implications derived from southern Oregon Plateau basaltic volcanism: defining the Owyhee Block; *Geological Society of America Abstracts with Programs*, v. 34, p. 38.
- Brueseke, M.E. and W.K. Hart, 2001, Complex magma system development in northern Nevada and the role of episodic basalt injection into the crust: *Geological Society of America Abstracts with Programs*, v. 33, p. 302.
- Brueseke, M.E., and W.K. Hart, 2000, Re-evaluation and new age constraints on the eruptive history of the mid-Miocene Steens Basalt, southeastern Oregon; *Geological Society of America Abstracts with Programs*, v. 32, p. 147.
- Brueseke, M.E. and Hart, W.K., 1999, Stratigraphy and whole-rock chemistry of mid-Miocene lava flows in the vicinity of Steens MT, Southeastern Oregon: *Geological Society of America Abstracts with Programs, Rocky Mountain Section*, v. 31, p. 5. (INVITED)
- Hart, W.K., and Brueseke, M.E., Renne, P.R., and H.G. McDonald, 1999, Chronostratigraphy of the Pliocene Glens Ferry Formation, Hagerman Fossil Beds National Monument, ID: *Geological Society of America Abstracts with Programs, Rocky Mountain Section*, v. 31, p. 15. (INVITED)
- Brueseke, M. and K. Cooper, 1997, Benthic community classification of the Arnheim Formation based on limestone petrography. *Ninth Annual Undergraduate Research Conference, Butler University, Program and Abstracts*, p. 15.