

Julia A. Baldwin

CONTACT INFORMATION

Department of Geosciences
University of Montana
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EDUCATION

Massachusetts Institute of Technology, Cambridge, Massachusetts

Ph.D., Geology, 2003

- Thesis Title: Petrological and geochronological constraints on the metamorphic evolution of high-pressure granulites and eclogites of the Snowbird tectonic zone, Canada
- Advisor: Sam Bowring

University of North Carolina, Chapel Hill, North Carolina

B.S. with Highest Honors and Distinction, Geology, 1996

- Senior Honors Thesis: Petrology of North Cascades granulites associated with the Skymo layered mafic intrusion, Ross Lake fault zone
- Advisor: Donna Whitney

HONORS AND AWARDS

- Helen and Winston Cox Educational Excellence Award for superior teaching, advising, mentoring, and accessibility to students beyond office hours and class time, 2008
- Merit Award for outstanding faculty performance, 2008, 2009, 2011
- National Science Foundation Graduate Research Fellowship, 1998-2001
- Mineralogical Society of America Research Grant in Petrology, 2000
- Sigma Xi Research Grant, 1996
- UNC Undergraduate Research Award, 1996
- UNC Undergraduate Science Opportunity Fellowship, 1995
- Department of Energy Science and Engineering Research Semester Intern, 1995

RESEARCH AND PROFESSIONAL EXPERIENCE

University of Montana, Missoula, Montana

Assistant Professor of Geology

August 2005 - present

University of Maryland, College Park, Maryland

Post-doctoral Research Associate

September 2003 - August 2005

Research on the petrology and mineral equilibria of ultrahigh-temperature granulites in the Brasília Fold Belt: Goiás, Brazil. Chemistry of accessory phases in metamorphic rocks.

Massachusetts Institute of Technology, Cambridge, Massachusetts

Research Assistant

September 1997 - August 2003

Research combined field, petrological, and geochemical studies in order to constrain the metamorphic evolution of high-pressure granulites and eclogites in the western Canadian Shield. Tools included high-precision U-Pb geochronology, quantitative thermobarometry, petrological modeling, and isotope geochemistry.

Secondary project for qualifying exams involved bedrock channel modeling in order to understand the persistence of topography in ancient orogens and the timescale and geomorphic processes involved in evolution of orogenic decay (advised by Kelin Whipple).

Kentucky Geological Survey, Lexington, Kentucky

Geologist, Coal and Minerals Section

October 1996 - August 1997

Compiled database of historical coal mining records for eastern Kentucky as part of the United

States Geological Survey National Coal Assessment initiative. Analyzed data to produce mineable coal seam thickness maps using ArcView GIS software.

- FUNDING HISTORY
- National Science Foundation, EAR-OIA #112717, 2011-2014, “MRI: Acquisition of an SEM-EDS-CL for interdisciplinary research and training in materials imaging and chemical analysis”, PI, \$420,698 (NSF \$295,424, UM \$125,274)
 - NSF EPSCoR Undergraduate Research Grant, 2010-2011, “U-Pb geochronology of the Bass Creek anorthosite and associated rocks near Florence, Montana : Implications for the evolution of the Bitterroot Range”, \$1,500
 - U.S.G.S. EDMAP, 2011-2012, “Documenting the eastern boundary of Eocene extension in the Clearwater complex, northern Idaho, by geologic mapping of selected portions of the Bathub Mountain, Peggy Peak, Mallard Peak, and Pole Mountain quadrangles”, \$9,395
 - Faculty Instructional Development Grant, Spring 2011, “Support for pedagogical workshop: Teaching Mineralogy, Petrology, and Geochemistry in the 21st Century”, \$1,128
 - Student Instructional Equipment Fees, 2010-2011 Purchased petrographic microscopes for teaching mineralogy, \$16,500
 - National Science Foundation, EAR-Tectonics #1019669, 2010-2013, “Metamorphic Core Complexes in Context: Incorporating Gravitational Collapse into the Orogenic Cycle”, PI, \$362,031
 - National Science Foundation, DUE-Math and Science Partnership Program #0634587, 2006-2011, “Big Sky Science Partnership”, co-PI (UM lead PI since 2009), subcontracted amount for 2009-2010, \$364,977, subcontracted amount for 2010-2011, \$290,044
 - Student Instructional Equipment Fees, 2009-2010, Purchased petrographic microscope for teaching mineralogy, \$5,500
 - Faculty Instructional Development Grant, Spring 2008, “Support for pedagogical workshop: Teaching Introductory Geosciences in the 21st Century”, \$880
 - University Grants Program, 2008-2009, “Carbonation of Serpentinites as a Natural Analog for Carbon Sequestration”, \$3,500
 - PACE Mentoring Grant for travel to Melbourne, Australia, 2008, \$6,000
 - Faculty Instructional Development Grant, Spring 2007, “Support for pedagogical workshop: Teaching about the Early Earth”, \$944
 - Student Instructional Equipment Fees, 2007-2008, Purchased petrographic microscope for teaching mineralogy, \$5,000
 - University Grants Program, 2007-2008, “Flow of the Lower Continental Crust in the Snowbird Tectonic Zone, Canada”, \$1,650
 - NSF EPSCoR Undergraduate Research Grant, 2006-2007, “Metamorphism in the Skalkaho region of the southern Sapphire Range, Montana”, \$1,200
 - Student Instructional Equipment Fees, 2006-2007, Purchased petrographic microscope with digital camera for teaching mineralogy, \$12,000
 - University Grants Program, 2006, “Building the North American continent: Investigating the nature of tectonic boundaries in the Tobacco Root Mountains, southwest Montana”, \$2,000
 - U.S.G.S. EDMAP, 2006-2007, “Investigating interactions between magmatism and metamorphism in the Bitterroot core complex and adjacent plutons by mapping selected portions of the Carlton Lake, Dick Creek, and West Fork Butte USGS 7.5' Quadrangles”, \$10,700
 - Mineralogical Society of America Research Grant in Petrology, 2000, \$3,500

DIRECTION OF STUDENT RESEARCH

Graduate Dissertations approved as Primary Advisor

Connie Brown, M.S. 2008, The construction of a plutonic complex in a continental arc setting: The Skookum Butte Stock, western Montana

Erin Haney, M.S. 2008, Pressure-Temperature evolution of metapelites within the Anaconda metamorphic core complex, southwestern Montana

Graduate Dissertations approved as Committee Member

Emily Geraghty Ward, Ph.D. 2007 (defense committee member)
Johnny Maclean, Ph.D. 2007 (chair of written and oral comps, defense committee member)
Julian McCune, M.S. 2008 (committee member)
Michelle Kotler, Ph.D. 2009 (chair of written comps, oral comps member)
Barry Reno, Ph.D. 2009, University of Maryland (external member for comps)
Doc Richardson, Ph.D. 2009 (committee chair of written comps, orals)
Lewis Kogan, M.S. 2010 (committee member)
Warren Roe, M.S. 2010 (committee member)
Matthew DePaoli, Ph.D. 2011, University of Sydney (external reader)

Science Reader for capstone project for M.S. in Science Education (at MSU):

Mary Maier, M.S.S.E., 2010
Paige Price, M.S.S.E., 2010
Catherine Schuck, M.S.S.E., 2010

Advisor for Undergraduate Senior Thesis Research

John Dye, B.S., 2007, Metamorphism of pelitic schists in the Skalkaho region, Montana

Joel DesOrmeau, B.S., 2011, Sedimentary record and detrital zircon provenance of the Eocene-Oligocene Renova Formation, Bitterroot Valley, western Montana

Amity Graham, B.S., 2011, U-Pb geochronology of meta-anorthosite and associated rocks in the Bass Creek Canyon near Florence, Montana

Matt Ruskey, B.S., 2011, Pressure-temperature modeling of metapelites from the Clearwater metamorphic core complex, northern Idaho

Carly Osborne, B.S., expected 2012, Precambrian low-pressure metamorphism in northern Yellowstone National Park

Other Graduate Committees - Committee Member or Chair

Whitney Bausch, M.S. expected 2013 (primary advisor)
Victor Guevara, M.S. expected 2012 (primary advisor)
David Reieux, M.S. expected 2012 (primary advisor)
Liane Stevens, Ph.D. expected 2014 (primary advisor)
Zackary Wall, M.S. expected 2012 (committee member)
Joel Cubley, Ph.D. expected 2012, University of Calgary (external member)

Student grants

Connie Brown - 2007 Geological Society of America Research Grant, \$1000

Erin Haney - 2006 Geological Society of America Research Grant, \$1500; 2006 Tobacco Root Geological Society Grant, \$500

Joel DesOrmeau - 2008 Davidson Honors College Watkins Scholar, \$2000; AAPG research grant, \$500

Carly Osborne - 2010 Davidson Honors College Watkins Scholar, \$2977; NSF REU Yellowstone participant

David Reieux- 2010 Geological Society of America Research Grant, \$3400; Tobacco Root Geological Society, \$500; Charles Vitaliano Research Grant (Indiana University), \$2000; Wyoming Geological Society, \$500; Colorado Scientific Society, \$526

Liane Stevens - 2010 Tobacco Root Geological Society, \$500

Victor Guevara - 2011 Geological Society of America Research Grant, \$4000; Tobacco Root Geological Society, \$500; Colorado Scientific Society, \$1000; Belt Association, \$400

Matt Ruskey - 2011 AAPG research grant, \$500

COURSES TAUGHT Spring 2004 and Spring 2005

Geol 120 - Environmental Geology (University of Maryland) - 3 cr (115 students)

Fall 2005

Geol 226 - Mineralogy and Petrology - 4 cr (18 students)

Spring 2006

Geol 100N - General Geology - 2 cr (204 students)

Geol 395 - Igneous and Metamorphic Petrology - 4 cr (5 students)

Geol 597 - Advanced Problems - 4, 3 cr (2 students)

Fall 2006

Semester with Modified Teaching Duties

Geol 499 - Undergraduate Thesis - 3 cr (1 student)

Spring 2007

Geol 306 - Igneous and Metamorphic Petrology - 4 cr - (8 students)

Geol 499 - Undergraduate Thesis - 3 cr (1 student)

Geol 522 - Metamorphic Terrain Analysis - 3 cr - (4 students)

Geol 597 - Advanced Problems - 4 cr (1 student)

Summer 2007

Geos 495 - Introduction to the Geosciences for K-8 Teachers - 4 cr (37 students)

Course for the NSF-funded Big Sky Science Partnership program

Fall 2007

Geos 226 - Earth Materials - 4 cr (24 students)

Geos 582 - Miocene Tectonics of the Western U.S. - 3 cr (6 students)

Spring 2008

Geos 100N - General Geology - 2 cr (206 students)

Geos 101N - General Geology Lab - 1 cr (supervised TAs for 13 sections of the lab)

Geos 306 - Igneous and Metamorphic Petrology - 4 cr - (13 students)

Fall 2008

Semester with Modified Teaching Duties

Geos 496 - Independent Study - 1cr (1 student)

Geos 499 - Undergraduate Thesis - 3 cr (1 student)

Spring 2009

Geos 226 - Earth Materials - 4 cr (31 students)

Geos 499 - Undergraduate Thesis - 3 cr (1 student)

Fall 2009

- Geo 226 - Rocks, Minerals, and Resources - 4 cr (30 students)
- Geo 491 - Geosciences Colloquium - 1 cr (32 students)

Spring 2010

- Geo 305 - Igneous and Metamorphic Petrology - 4 cr (25 students)
- Geo 522 - Metamorphic Terrane Analysis - 3 cr (7 students)

Summer 2010

- Geo 495 - Introduction to the Geosciences for K-8 Teachers - 4 cr (17 students)
Course for the NSF-funded Big Sky Science Partnership program

Fall 2010

- Geo 499 - Undergraduate Thesis - 3 cr (2 students)
- Geo 580 - Topics in Mineralogy and Petrology - 3 cr (11 students)
- Geo 595/C&I 595 - Geosciences Instruction and Professional Learning Communities for K-8 Teachers - 4 cr (17 students) *Course for the NSF-funded Big Sky Science Partnership program*

Spring 2011

- Geo 226 - Rocks, Minerals, and Resources - 4 cr (48 students)
- Geo 499 - Undergraduate Thesis - 3 cr (3 students)
- Geo 595/C&I 595 - Geosciences Instruction and Professional Learning Communities for K-8 Teachers - 4 cr (17 students) *Course for the NSF-funded Big Sky Science Partnership program*

Summer 2011

- Geo 429 - Field Geology (taught 1 week out of 5 weeks) - 6 cr (32 students)

INVITED TALKS

- University of Montana, October 2010
- University of North Dakota, October 2007
- North Dakota State University, October 2007
- Boise State University, April 2006
- Montana State University, March 2006
- Washington State University, March 2006
- University of Montana Chemistry Department, February 2006
- University of Montana Women in Science Seminar, November 2005
- Montana Tech, October 2005
- Geological Society of Washington, May 2004
- University of Montana, April 2004
- University of Brasília, June 2003
- Federal University of Rio de Janeiro, June 2003
- University of Maryland, December 2002
- GSA Penrose Conference: Precambrian high-pressure/high-temperature granulite facies metamorphism: a key to understanding the lower crust and reconstruction of Precambrian plate tectonics, Beijing, China, September 2002
- Boston Bay Group, Cambridge, MA, November 2001

PROFESSIONAL DEVELOPMENT WORKSHOPS

- Teaching Mineralogy, Petrology, and Geochemistry in the 21st Century, August 2011, University of Minnesota
- Theriak-Domino Phase Equilibria Modeling Software, May 2010, University of Calgary
- Teaching Introductory Geoscience in the 21st Century, July 2008, Carleton College
- Teaching about the Early Earth, April 2007, University of Massachusetts

Developed strategies and methods for integrating the latest research on early Earth into the undergraduate curriculum. Developed key questions and web teaching activities related to teaching about the evolution of Earth's early atmosphere, life, and rocks:

(<http://serc.carleton.edu/NAGTWorkshops/earlyearth/activities/17846.html>)

- Teaching Phase Equilibria Working Group, March 2007, Montana State University
Invited participant (10 member working group). Developed web-based teaching materials for mineralogy and petrology curricula (http://serc.carleton.edu/research_education/equilibria/index.html)
- EarthScope in the Northern Rockies, September 16–18, 2005, Montana State University, Workshop included an overview of the EarthScope program and its facilities and small-group discussion and writing sessions to identify new research and educational initiatives.
- On the Cutting Edge Early Career Faculty Workshop, College of William and Mary, June 2005.
- 21st Century Women in Science and Engineering Workshop, sponsored by NSF and GWIS, Washington, D.C., April 2004.
- Where are the Women Geoscience Professors Workshop, sponsored by the Association for Women Geoscientists and the NSF ADVANCE Program, Washington, D.C., September 2003.
- Preparing for an Academic Career in the Geosciences: A Workshop for Graduate Students and Post-doctoral Fellows, NAGT/NSF, Stanford University, August 2003.
- THERMOCALC: Calculating metamorphic phase equilibria, R. Powell, Virginia Tech, May 2001.

SERVICE

Professional Service

- NSF Tectonics panel review member, April 2012, Washington, D.C.
- NSF Tectonics panel review member, April 2011, Washington, D.C.
- Geological Society of America Graduate Student Research Grant Committee, 2009-2012
Reviewed approximately 50 grant proposals per year and made funding decisions on the allocation of over \$600,000 in grant funding
- NSF Petrology and Geochemistry panel review member, March 2008, Washington, D.C.
- Lithos editorial board member, 2008-2011
- Teaching Phase Equilibria working group, 2007, Invited participant (10 member working group).
Developed web-based teaching materials for mineralogy and petrology curricula: http://serc.carleton.edu/research_education/equilibria/index.html
- Guest co-editor, Lithos Special Issue: Compositional Variation in Metamorphic Accessory Phases: A Multi-Faceted Petrogenetic Recorder, with Joe Pyle (RPI)
- Co-convener, Spring 2004 AGU meeting, Compositional Variation in Metamorphic Accessory Phases: A Multi-Faceted Petrogenetic Recorder, with Joe Pyle (RPI)
- Reviewer for over 60 manuscripts, proposals, and textbooks:
 - Austrian Research Council (1)
 - NSF Tectonics, Petrology and Geochemistry, Instrumentation & Facilities, and Education & Human Resources (16)
 - Canadian Journal of Earth Sciences (2)
 - Chemical Geology (2)
 - Contributions to Mineralogy and Petrology (2)
 - Earth and Planetary Science Letters (3)
 - European Journal of Mineralogy (1)
 - Geochimica Cosmochimica Acta (2)
 - Geological Society of America Special Paper (1)
 - Geology (9)
 - GSA Bulletin (1)
 - Gondwana Research (1)
 - Journal of Metamorphic Geology (8)
 - Journal of Petrology (3)
 - Lithos (3)
 - Mineralogical Magazine (1)
 - Tectonics (2)
 - Washington State Geology Special Issue (1)

Textbooks: Exploring Earth by Steve Reynolds, Essential Earth by Grotzinger and Jordan, Zumberge Laboratory Manual for Physical Geology

University Service

- Faculty Evaluation Committee, 2010-2013
- Intermountain Junior Science Symposium Reader, 2009
- Helen and Winston Cox Award selection committee, 2009
- Chair, Department Curriculum Committee, 2007-2009
- Department Curriculum Committee, 2010
- Faculty Advisor, Geology Club, 2007-2008
- Departmental Undergraduate Advisor, 2005-2010
- Search Committee, Near Surface Processes, 2006

K-12 Outreach

- Big Sky Science Partnership (BSSP) Higher-Ed Science Faculty Partner and co-PI, Feb. 2007 - present
NSF-funded 5-year Math & Science Partnership program. The BSSP partners K-8 teachers, tribal communities, and higher education faculty to improve elementary and secondary science education in Montana <http://www.umt.edu/bssp/>.
- Served as sciences reader for M.S.S.E. (Montana State University) capstone projects for three K-12 teachers, June 2010
- MCPS Gifted Ed Groundwater Workshop, Spring 2009, 2010
- Invited speaker for Clark Fork School preschool (Rocks & Minerals), Fall 2009
- Invited speaker for 8th grade science class at C.S. Porter Middle School, January 2008
- Invited speaker for 4th and 5th grade class at Rattlesnake Elementary School, November 2007
- Led geology field trip for teacher and students from Big Sky High School, Fall 2006
- Geosciences presentation to 8th graders, Hamilton Middle School, Spring 2006
- Careers in Geosciences presentation to 11th and 12th graders, Big Sky High School, Spring 2006

PROFESSIONAL
MEMBERSHIPS

Geological Society of America
American Geophysical Union
Mineralogical Society of America
National Association of Geoscience Teachers

PEER REVIEWED
PUBLICATIONS

Stipska, P., Powell, R., White, R.W., and Baldwin, J.A., 2010, Using calculated chemical potential relationships to account for coronas around kyanite: an example from the Bohemian Massif, *Journal of Metamorphic Geology*, **28**, 97-116.

Bendick, R., and Baldwin J.A., 2009, Dynamic models for metamorphic core complex formation and scaling: the role of unchannelized collapse of thickened continental crust, *Tectonophysics*, **477**, 93-101.

Baldwin, J.A., and Brown, M., 2008, Age and duration of ultrahigh-temperature metamorphism in the Anápolis-Itaçu Complex, Southern Brasília Belt, central Brazil – constraints from U-Pb geochronology, mineral rare-earth element chemistry and trace element thermometry, *Journal of Metamorphic Geology*, **26**, 213-233.

White, R.W., Powell, R., and Baldwin, J.A., 2008, Calculated phase equilibria involving chemical potentials to investigate the textural evolution of metamorphic rocks, *Journal of Metamorphic Geology*, **26**, 181-198.

Moraes, R., Fuck, R., Brown, M., Piccoli, P., Baldwin, J., Dantas, E.L., Laux, J.H., and Junges, S.L., 2007, Wollastonite-scapolite-clinopyroxene marble of the Anápolis-Itaçu Complex, Goiás: more evidence of ultrahigh-temperature metamorphism, *Revista Brasileira de Geociências*, **37**, 11-17.

Baldwin, J.A., Powell, R., Williams, M.L., and Goncalves, P., 2007, Formation of eclogite and reaction during exhumation to mid-crustal levels, Snowbird tectonic zone, western Canadian Shield, *Journal of Metamorphic Geology*, **25**, 953-974.

Baldwin, J.A., Brown, M., and Schmitz, M.D., 2007, First application of titanium-in-zircon thermometry to ultrahigh-temperature metamorphism, *Geology*, **35**, 295-298.

Mahan, K.H., Williams, M.L., Flowers, R.M., Jercinovic, M.J., Baldwin, J.A., Bowring, S.A., 2006, Geochronological constraints on the Legs Lake shear zone with implications for regional exhumation of lower continental crust, western Churchill Province, Canadian Shield, *Contributions to Mineralogy and Petrology*, **152**, 223-242.

Baldwin, J.A., Bowring, S.A., Williams, M.L., and Mahan, K.M., 2006, Geochronological constraints on the evolution of high-pressure felsic granulites from an integrated electron microprobe and ID-TIMS geochemical study, *Lithos*, **88**, 173-200.

Pyle, J.M. and Baldwin, J.A., 2006, Compositional variation in accessory phases: A multi-faceted petrogenetic indicator, *Lithos*, **88**, vii-ix. (Preface to Special Issue)

Baldwin, J.A., Powell, R., Brown, M., Moraes, R., and Fuck, R.A., 2005, Mineral equilibria modeling of ultrahigh-temperature metamorphism: an example from the Anápolis-Itaçu Complex, central Brazil, *Journal of Metamorphic Geology*, **23**, 511-531.

Baldwin, J.A., Bowring, S.A., Williams, M.L., and Williams, I.S., 2004, Eclogites of the Snowbird tectonic zone: petrological and U-Pb geochronological evidence for Paleoproterozoic high-pressure metamorphism in the western Canadian Shield, *Contributions to Mineralogy and Petrology*, **147**, 528-548.

Baldwin, J.A., Bowring, S.A., and Williams, M.L., 2003, Petrological and geochronological constraints on high pressure, high temperature metamorphism in the Snowbird tectonic zone, Canada, *Journal of Metamorphic Geology*, **21**, 81-98.

Baldwin, J.A., Whipple, K.X., and Tucker, G.E., 2003, Implications of the shear stress river incision model for the timescale of postorogenic decay of topography, *Journal of Geophysical Research*, **108**, 2158, doi:10.1029/2001JB000550.

Mahan, K.M., Williams, M.L., and Baldwin, J.A., 2003, Contractional uplift of deep crustal rocks along the Legs Lake shear zone, western Churchill Province, Canadian Shield, *Canadian Journal of Earth Sciences*, **40**, 1085-1110.

Baldwin, J.A., Whitney, D.L., and Hurlow, H.A., 1997, Metamorphic and structural evidence for significant vertical displacement along the Ross Lake fault zone, a major orogen-parallel shear zone in the Cordillera of western North America, *Tectonics*, **16**, 662-681.

FIELD TRIP GUIDE Moraes, R., Baldwin, J.A., Fuck, R., and Brown, M., The Ultrahigh-Temperature Granulites of the Barro Alto and Anápolis-Itaçu Complexes, Brasília, Brazil, Granulites and Granulites conference, July 13-17, 2006.

Lewis, R.S., Brewer, R.A., Jansen, A.C., Guevara, V.E., Vervoort, J.D., and Baldwin, J.A., Below the Belt: a road log of Archean and Paleoproterozoic rocks in the eastern Clearwater complex, Idaho, Tobacco Root Geological Society, July 31, 2011.

MAPS & REPORTS Brown, C., Fitzpatrick, C., Baldwin, J.A., 2009, Geologic map of parts of the Carlton Lake, Dick

Creek and West Fork Butte 7.5' quadrangles, western Montana, Montana Bureau of Mines and Geology, 14 p., 2 sheet(s), 1:24,000.

CONFERENCE
PRESENTATIONS

Baldwin, J.A., and Crowley, J.L., 2011, Integrating U-Pb geochronology with trace element geochemistry of zircon to constrain the provenance, metamorphic, and magmatic histories of rocks in the Bitterroot core complex, western Montana, *Geol. Soc. Amer. Abstr.*, 43, p. 652.

Baldwin, J.A., Graham, A., and DesOrmeau, J.W., 2011, U-Pb zircon geochronology of meta-anorthosites in the Bitterroot Range, western Montana: Implications for metamorphism and anatexis during core complex formation, *Geol. Soc. Amer. Abstr.*, 43, p. 76.

Osborne, C., Baldwin, J., Henry, D., Mogk, D., Mueller, P., and Foster, D., 2011, Evolution of Precambrian rocks of Yellowstone National Park (YNP): Low-pressure metamorphism of the Jardine Metasedimentary Sequence, *Geol. Soc. Amer. Abstr.*, 43, p. 62.

Baldwin, J.A., Covitt, B., Sievert, R., Olson, T., Baldwin, B., and Windell, C., 2010, Improving elementary geoscience education in Montana: the Big Sky Science Partnership teacher professional development program, *Geol. Soc. Amer. Abstr.*, 42, p. 589.

Baldwin, J.A., and Powell, R., 2009, Using calculated chemical potential relationships to account for corona and symplectite textures in granulites, *Geol. Soc. Amer. Abstr.*, 41, p. 237.

DesOrmeau, J.W., Baldwin, J., and Sears, J., 2009, Sedimentary record and detrital zircon provenance of the Eocene-Oligocene Renova Formation, Bitterroot Valley, western Montana, *Geol. Soc. Amer. Abstr.*, 41, p. 49.

Baldwin, J.A., Sievert, R., Kem, S., and Finley, V., 2008, Big Sky Science Partnership: A Tribal College and Montana University System Teacher Development Program to Transform Earth Science Education for K-8 Students, *Geol. Soc. Amer. Abstr.*, 40, p. 270.

Dye, J.H., Baldwin, J.A., Crowley, J., and Schmitz, M., 2008, Late Cretaceous amphibolite facies metamorphism in the Sapphire Mountains, southwestern Montana constrained by U-Pb dating of monazite, *Geol. Soc. Amer. Abstr.*, 40, p. 35.

Baldwin, J.A., and Brown, M., 2007, Evidence from U-Pb geochronology, mineral rare-earth element chemistry and trace element thermometry for short-lived ultrahigh-temperature metamorphism in the Anápolis-Itaçu Complex, Southern Brasília Belt, *EOS Transactions*, 88 (52).

Perkins, D., Mogk, D., Baldwin, J., Brady, J., Davidson, C., Hirsch, D., Koziol, A.M., Teasdale, R., Wirth, K., and Whitney, D., 2007, Web-based resources for teaching phase equilibria, *Geol. Soc. Amer. Abstr.*, 39, p. 558.

Whipple, K.X., Ouimet, W.B., and Baldwin, J.A., 2006, Topographic expression of deep crustal and mantle processes, *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract H13G-04.

Baldwin, J.A., Brown, M., and Schmitz, M.D., 2006, Zircon thermometry provides constraints on peak- to post-peak temperatures during ultrahigh-temperature metamorphism, *Granulites and Granulites 2006, Brasilia, Brazil* (presented by M. Brown), p. 13.

Dumond, G., Goncalves, P., Mahan, K.H., Williams, M.L., Jercinovic, M.J., and Baldwin, J.A., 2006, "White Gneiss" of the Snowbird tectonic zone, western Canadian Shield: Neoproterozoic UHT-HP melting in lowermost continental crust, *Granulites and Granulites 2006, Brasilia, Brazil*, p. 28.

Moraes, R., Fuck, R.A., Brown, M., Baldwin, J.A., Dantas, E.L., Laux, J.H., and Junges, S.L., 2006,

UHT Wollastonite + Scapolite calc-silicate rocks from Goianira, Anápolis-Itaçu Complex, Goiás, Brazil, *Granulites and Granulites 2006*, Brasilia, Brazil, p. 56.

Baldwin, J.A., and Powell, R., 2006, Reaction texture development in granulites: a chemical potential approach, *Eos Trans. AGU*, 87(36), Jt. Assem. Suppl., Abstract U21A-03.

Brown, M., Baldwin, J.A., Moraes, R., Reno, B.L., Fuck, R.A., Piccoli, P.M., Trouw, R.A., 2006, Tectonic Implications of Ultrahigh-Temperature and High-Pressure Granulite Metamorphism in the Neoproterozoic Brasiliano Belts of SE Brazil, *Eos Trans. AGU*, 87(36), Jt. Assem. Suppl., Abstract U44A-02.

Baldwin, J.A., Brown, M., and Schmitz, M.D., 2005, Trace element accessory-phase thermometry in ultrahigh-temperature granulites: An evaluation and assessment of potential for robust temperature-time points along the P-T path, *Geol. Soc. Amer. Abstr.*, 37, p.345.

Baldwin, J.A., Brown, M., McDonough, W.F., Piccoli, P.M., and Timpa, S., 2005, Zircon paragenesis and timing of UHT metamorphism in the Anápolis-Itaçu Complex, Brazil, *Geochimica et Cosmochimica Acta* 69 (10): A23 Suppl.

Baldwin, J.A., Powell, R., Brown, M., Moraes, R., and Fuck, R.A., 2004, Phase equilibria modeling of mineral assemblages and reaction microstructures in ultrahigh-temperature granulites, Anápolis-Itaçu Complex, Brazil, *International Workshop on the Petrogenesis of Granulites and Related Rocks*, Namest, Czech Republic, October 2004.

Baldwin, J.A., Powell, R., Brown, M., Moraes, R., and Fuck, R.A., 2004, Constraining the metamorphic evolution of aluminous ultrahigh-temperature granulites by phase equilibria modeling of mineral assemblages and reaction microstructures in the FMAS(H) system, *Geoscience Africa 2004*, Johannesburg, South Africa, July 2004.

Baldwin, J.A., Bowring, S.A., Williams, M.L., and Mahan, K.M., 2004, U-Pb and Sm-Nd systematics of monazite in high-pressure felsic granulites: an example from the Snowbird tectonic zone, northern Saskatchewan, Canada, *Eos Trans. AGU*, 85(17), Jt. Assem. Suppl., Abstract V23C-08.

Baldwin, J.A., Brown, M., Moraes, R., Fuck, R.A., Piccoli, P.M., 2003, Modeling peak T and retrograde evolution of ultra-hot granulites from Brazil, *Eos Trans. AGU*, 84(46), Fall Meet. Suppl., Abstract V42F-02.

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