CAILEY B. CONDIT – Curriculum Vitae

Department Earth Science
Rice University
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Rice University – Houston, TX July, 2017-present
Wiess Postdoctoral Research Associate
Collaborating with Melodie French and Cin-Ty Lee

EDUCATION

University of Colorado Boulder – Boulder, CO 2011-2017
PhD, Geological Sciences
Advisor: Kevin H. Mahan, Dissertation: *Fluid enhanced deformation and metamorphism in exhumed lower crust from the Northern Madison Range, Southwestern Montana*

Middlebury College – Middlebury, VT 2007-2011
BA, Geology, *Cum Laude*

GRANTS and AWARDS

2017 NSF-EAR Postdoctoral Fellowship, accepted, starting July, 2018 *to work with Dr. Matej Pec at MIT's Rock Deformation Laboratory*
2017 Wiess Postdoctoral Research Fellowship, Rice University
2016 Graduate Dissertation Completion Fellowship, Graduate School, University of Colorado
2014 Spetzler Award for Research, CU Department of Geological Sciences
2012 Waldrop Memorial Scholarship, CU Department of Geological Sciences
2012 Geological Society of America Student Research Grant Award
2012 Stone-Holberg Scholarship for Excellence in Structural Geology, Rocky Mountain Association of Geologists
2012 Harrison Scholarship, Tobacco Roots Geological Society
2012 Colorado Scientific Society Research Grant
2012 NSF Graduate Research Fellowship Honorable Mention
2011 Vermont Geological Society Annual Meeting – Award for Excellence in Geological Sciences presentation

PUBLICATIONS

Brownlee, S., Schulte-Pelkum, V., Raju, A., Mahan, K., **Condit, C**., Orlandini, O., (In Press) Characteristics of deep crustal seismic anisotropy from a compilation of rock elasticity tensors and their expression in receiver functions. *Tectonics*

Condit, C.B., Mahan, K. H., Schulte-Pelkum, V. Orlandini, O., (2017) Seismic anisotropy from the core of an amphibole-rich shear zone: implications for deep crustal seismic anisotropy and the importance of deformation mechanisms. *In Prep.*

Condit, C.B., Mahan, K.H (In Review) Fracturing, fluid flow, and shear zone development: relationship between chemical and mechanical processes in Proterozoic mafic dikes from southwestern Montana, USA. *Journal of Metamorphic Geology*

Condit, C.B., Mahan, K.H., Ault, A.K., Flowers, R.M., (2015). Foreland-directed propagation of high-grade tectonism in the deep roots of a Paleoproterozoic collisional orogen, SW Montana, USA. *Lithosphere* 7, 603–610. doi:10.1130/L460.1

Johnson, J. E., West, D.P., **Condit, C.B.,** Mahan, K.H. (2014) Strain localization in the Spanish Creek mylonite, Northern Madison Range, SW Montana. *Rocky Mountain Geology*, 49, 2, 25-48

INVITED TALKS

Sonoma State University, Feb. 2017: Exploring the relationship between metamorphism, deformation, and fluid flow: observations from exhumed lower crustal rocks

Rice University, Jan. 2017: Investigating the feedbacks between deep crustal deformation, fluid flow, and metamorphism: observations from exhumed lower crustal rocks

University of Northern Colorado, Oct. 2016: Using geology to understand seismic signals from the lower crust: seismic anisotropy and deep crustal deformation

Middlebury College, Sept. 2014: Thermotectonic space-time patterns within the Proterozoic Big Sky orogeny: new constraints from the N. Madison Range, SW Montana

THESES AND FIELD TRIP GUIDES

Condit, C. B, (2017) Fluid Enhanced Deformation and Metamorphism in Exhumed Lower Crust from the Northern Madison Range, Southwestern Montana, USA. University of Colorado Boulder PhD dissertation. p. 324

West, D.P., Jr., and **Condit, C. B**., (2016), Stratigraphy, structure, and plutonism in the Wiscasset-Dresden region of mid-coastal Maine: in Berry, Henry N., IV, and West, David P., Jr., editors, Guidebook for field trips along the Maine coast from Maquoit Bay to Muscongus Bay: New England Intercollegiate Geological Conference, p. 165-182.

Condit, C.B. (2011). Igneous petrogenesis and superimposed deformation of the Blinn Hill plutonic complex, East-Central Maine. Middlebury College Undergraduate Thesis. p. 76.

MEETING ABSTRACTS

Schulte-Pelkum, V., **Condit, C.B.,** Brownlee, S., Mahan, K.H., Raju, A., (2016) Expression of Lithospheric shear zones in rock elasticity tensor and in anisotropic receiver functions and interferences on the roots of faults and lower crustal deformation. *AGU Annual Meeting*.

Condit, C.B., Mahan, K.H., (2016) Fracturing, fluid flow, and deep crustal shear zone nucleation in Paleoproterozoic Metagabbro, SW Montana. *GSA Annual Meeting.*

Condit, C.B., Orlandini, O.F., Mahan, K.H., Schulte-Pelkum, V., Rattanasith, D. (2015) The role of hornblende in deep crustal seismic anisotropy: an investigation of the importance of deformation mechanisms. *AGU Fall Meeting*.

Condit, C.B., Mahan, K.H., Orlandini, O.F., Rattanasith, D. (2015) Competing chemical and mechanical processes producing gneissic layering in a deep crustal shear zone: an example from SW Montana. *GSA National Meeting*.

Mahan, K.H., Schulte-Pelkum, V., **Condit, C.B.,** Baird, G.B., Allaz, J.M., Kelly, N.M. (2015). Localized shear zones versus distributed tectonic fabrics: an example from geologic and seismic observations in Proterozoic Colorado Basement. *GSA National Meeting*.

Allaz, J.M., Pritekel, C., **Condit, C.B.,** Rattanasith, D., Mahan, K.H., Kelley, N.M., Baird, G.B. (2015) Pressure-temperature and temporal constraints on regional metamorphism near Big Thomson Canyon, Colorado, USA. *GSA National Meeting*.

Allaz, J.M., Pritekel, C., **Condit, C.B.,** Rattanasith, D., Mahan, K.H., Kelley, N.M., Baird, G.B., (2015) Investigating the P-T conditions and temporal constraints on regional metamorphism near Big Thompson Canyon, Colorado, USA. GSA *Rocky Mountain Section Meeting.*

Condit, C.B., Mahan, K. H. (2014). Zircon textures and U-Pb evidence for syn-orogenic crustal melting in the Paleoproterozoic Big Sky orogen, SW Montana. *GSA National Meeting.*

Condit, C.B., Mahan, K. H. (2014). Investigating the age and significance of peraluminous leucogranites in the N. Madison Range, southwest Montana. *GSA Rocky Mountain Section Meeting*.

Condit, C. B. Mahan, K. H., Ault, A.K., Flowers, R.M., (2013). New evidence for an exhumed crustal section from the Paleoproterozoic Big Sky orogeny, N. Madison Range, SW Montana. *GSA National Meeting.*

Condit, C.B., Mahan K.H., Ault. A. K., Flowers R.M, Johnson. J. E. (2013) New Petrologic and geochronological constrains on Paleoproterozoic tectonometamorphism along the NW margin of the Wyoming Craton, N. Madison Range, SW Montana. GSA *Rocky Mountain Section Meeting.*

Condit, C. B., Mahan, K.H., Ault, A. K., Flowers R.M, Johnson. J. E. (2012) Integrating petrology, structure, and geochronology to evaluate a possible crustal cross-section on the NW margin of the Wyoming province, SW Montana. *GSA National Meeting.*

Thompson R. A., Dungan, M. A., Pantea M.P., **Condit C.B., (**2012). Reconstructed stratigraphic and structural controls on the eruptive history of the Tatara-San Pedro volcanic complex in the Southern Volcanic Zone of the Chilean Andes. *AGU Fall Meeting*.

Thompson R. A., Cosca, M. A., Turner, K.J., **Condit, C.B.,** Lee. J., Budahn, J.R. Drenth, B. (2011). Pliocene volcanism of the Taos Plateau, Rio Grande Rift—New constraints on eruptive cycles, compositional trends and links to rift tectonism. *AGU Fall Meeting.*

Condit, C.B., West D. P. (2011) Igneous petrogenesis and subsequent deformation of the Blinn Hill plutonic complex, East-Central Maine. *GSA National Meeting.*

Condit, C. B. (2011) Bedrock Geology of Blinn Hill Plutonic complex, east-central Maine. *Vermont Geological Society Annual Meeting*.

Condit, C. B., Bleamaster, L.F., Crown D., Mest S. C., (2010) Spatial Analyses of Impact Craters around Hellas Planitia, Mars: Implications for Fluvial and Lacustrine Environments. *AGU Fall Meeting.* (Poster)

Condit, C. B., Eveleth R., Cotter J. (2010). The multi-stage formation of the Big Stone Moraine, west central Minnesota: Geomorphologic analysis of the ice marginal glacial Chippewa River. *GSA Northeast Section Meeting.*

RESEARCH EXPERIENCE

PhD Research, University of Colorado Summer 2011-present
Deep crustal processes and exhumation in the Precambrian rocks of SW Montana
Metamorphic petrology and thermobarometry
Field and microstructural fabric analysis
Deformation mechanisms, strain localization and seismic anisotropy
Monazite, zircon and rutile *in situ* geochronology
Zircon separates geochronology

USGS Student Intern, Lakewood CO Summer 2011 – Spring 2012

NASA Planetary Geology and Geophysics Undergraduate Research Program Summer 2010

NSF REU Glacial geology, Univ. of Minn. Morris & Paraná, Brazil Summer 2009

TEACHING EXPERIENCE

Course Instructor, University of Colorado
Structural Geology (GEOL3120) Fall 2016

Teaching Assistant, University of Colorado
Introduction to Field Geology (GEOL2700) Spring 2015, 2016 and Fall 2015
Structural Geology (GEOL3120) Fall 2011 and Fall 2012
Petrology (GEOL3020) Spring 2012

Teaching Assistant, Middlebury College
Mineralogy (GEO210) Fall 2009

MENTORING, LEADERSHIP and OUTREACH

Mentoring

Research Mentor, University of Colorado, Boulder CO Fall 2016- Present
Science mentor for undergraduate researcher Marie Northington working on domainal structural analysis of multiply deformed rocks from the Northern Madison Range.

RESESS Communications Mentor, UNAVCO, Boulder CO Summers 2015-2016
Communications mentor for Enrique Chon, a Research Experience in Solid Earth Science for Students (RESESS) internship student at UNAVCO. Aided in writing, presentations, and verbal communications. RESESS is aimed at increasing diversity within the geosciences starting at the undergraduate level.

RESESS Graduate Assistant, UNAVCO, Boulder CO Summer 2014
General mentor for RESESS internship program at UNAVCO. Mentored minority students with research while serving as a resource for future opportunities.

RESESS Research Mentor, UNAVCO, Boulder CO Summer 2014
Informal research mentor for Diana Rattanasith in her RESESS internship project at UNAVCO. Assisted Rattanasith with monazite textural characterization from the Big Thompson Metamorphic Suite, CO.

Field Research Mentor, Northern Madison Range, SW MT Summers 2012, 2013, 2015
Mentor to undergraduate field assistants Joshua Johnson (2012), Kevin Teonenboehn, Jason Rosenthal, Diana Rattanasith (Summer 2013), and Craig Peterson (2015). Exposed these undergraduates to field methods, basement mapping and structural analysis. Continued mentoring with Johnson on his senior thesis at Middlebury College and resulting publication (Johnson et al., 2014).

Leadership

Women in Science and Engineering Group (WiSE), CU 2015-2017
Grant Writing and Leadership Committees Member

Graduate Seminar Organizer, CU 2013-2015
Organized and ran the Geological Sciences department's bi-weekly Graduate Seminar series

Advisory Board Graduate Research Poster Session Organizer, CU 2013-2015
Organized and ran the Geological Sciences Department's Advisory Board poster session exhibiting current graduate student research to our department's advisory board

Outreach

Contributor to the CU Women in Science and Engineering Field Blog 2016
Social Media outreach via Instagram account @geologyinaction 2016-present
RESESS poster evaluator, UNAVCO, Boulder CO 2013, 2014
RESESS Field trip co-leader, Boulder CO 2013, 2014, 2015, 2016

FIELD, LABORATORY and MODELING EXPERIENCE

Field Experience

Precambrian rocks of Southwest Montana Summers 2011, 2012, 2013, 2015
Backcountry basement rock field mapping, structural analysis and sample collection, PhD research

Rio Grande Rift, Taos Plateau, S Colorado and N New Mexico Summer 2011
Mapping and sample collection of Pliocene volcanics from the Rio Grande Rift, USGS research

Norumbega fault system and Blinn Hill plutonic complex, Maine Summer 2010
Basement rock field mapping, and sample collection, Undergraduate thesis research

Paraná Basin, Brazil Summer 2009
Mapping of Carboniferous and Permian diamictites and sandstones, REU research

Glacial deposits of the Laurentide Ice Sheet, Western Minnesota Summer 2009
Mapping and sediment analysis of Quaternary glacial till and river terraces, REU research

Laboratory Experience

University of Colorado Electron Microprobe Laboratory Fall 2011-present
Qualitative and quantitative element analysis, standardization, and sample prep, PhD research

University of Mass. Amherst Electron Microprobe Laboratory Spring 2012 – present
Quantitative monazite U-Th-total Pb geochronology on the Cameca SX-100 (Ultrachron), PhD research

University of Kansas LA-ICP-MS laboratory Summer 2014
Separates and *in situ* zircon and rutile U-Pb geochronology and trace element geochemistry, PhD research

University of California Los Angeles SIMS student workshop participant Spring 2014

USGS X-Ray Fluorescence facility, Lakewood CO 2011-2012
Preparation and running of samples for trace and major element bulk rock geochemistry, USGS internship

Middlebury College Thermo Elemental IRIS 1000 DUO spectrometer 2010-2011
Major and trace element geochemistry of granitoids, Senior Thesis and undergraduate research project

Modeling Experience

Win TWQ Thermobarometry
Perple_X phase assemblage diagram (pseudosection) modeling
Simple numerical models and plotting in Matlab, python
MTEX EBSD Matlab Package
Channel 5 software – EBSD data processing and plotting

PROFESSIONAL ORGANIZATIONS

Geological Society of America
American Geophysical Union