

CURRICULUM VITAE

CHERYL WATERS-TORMEY

Dept. Geosciences and Natural Resources, Western Carolina University, NC, USA
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EDUCATION

- Ph.D., Structural Geology, University of Wisconsin (Minor: Geophysics) 1999-2004
Strain heterogeneity in lower continental crust: Mt. Hay region, Arunta Block, Central Australia
- M.S., Structural Geology, University of North Carolina 1997-1999
Mapping and related studies of pre-Alleghenian tectonic features within the Blue Ridge thrust complex of western North Carolina: Micaville Quadrangle
- B.S., Geology, Duke University 1991-1995
Senior thesis: Crystal Size Distribution Theory: Application to Chromitite from the Stillwater Complex, Montana

PROFESSIONAL EXPERIENCE

- Associate Professor (tenured), Western Carolina University 2004-present
Department Head, July 2016 – June 2019
- Collaborator, North Carolina Geological Survey 2019-present
- Collaborator, Northern Territory Geological Survey, Australia 2013-2015

PUBLICATIONS

- Fagan, A.L., *Turner, L., **Waters-Tormey, C.**, and Casale, G. 2019. Observations of Deformation in Orthopyroxene-rich SUBSAMPLE of Diogenite Northwest Africa 1877. Lunar and Planetary Science Conference 50th, extended abstract #2822.
- Waters-Tormey, C.**, Ashley, K.T., Tracy, R., Jones, D., 2016. The Mount Hay block, central Australia: An important puzzle piece for Paleo-Mesoproterozoic tectonic history. *Precambrian Research* 281, 537-565.
- Whelan, J.A., Beyer, E.E., Reno, B.L., Kraus, S., Kositcin, N., **Waters-Tormey, C.**, 2014. Building on the geological framework of the eastern Arunta Region: recent regional geological investigations in the Jervois Range area. In, Annual Geoscience Exploration Seminar (AGES), Extended Abstracts. Northern Territory Geological Survey, Record 2014-001, 45-51. <https://dpir.nt.gov.au/mining-and-energy/ages/past-events>
- Latham, R.S., Wooten, R.M., Billington, N., Witt, A.C., Gillon, K.A., Douglas, T.J., Fuemmeler, S.J., Bauer, J.B., Kinner, D., **Waters-Tormey, C.**, 2011, The Hunters Crossing weathered-rock slide, Haywood County, North Carolina, USA. In: Calcaterra, D. (Ed.), Weathering and landslides, *Geological Society of London Engineering Geology Special Publication* 23, 149-166.
- Waters-Tormey, C.**, Stewart, K., 2010. Heterogeneous wrench-dominated transpression in the deep crust recorded by the Burnsville fault and related structures, Blue Ridge, North Carolina: Implications for the Acadian orogeny in the Southern Appalachians. In: Tollo, R.P., Bartholomew, M.J., Hibbard, J.P., and Karabinos, P.M. (Eds.), From Rodinia to Pangea: The Lithotectonic Record of the Appalachian Region. *Geological Society of America Memoir* 206.
- Waters-Tormey, C.**, Goodwin, L.B., Tikoff, B., Staffier, K., Kelso, P., 2009. A granulite facies normal shear zone exposed in the Arunta Inlier of central Australia: Implications for deep crustal deformation during oblique divergence. In: Miller, R.B., and Snoke, A.W. (Eds.), Crustal cross sections from the western North American Cordillera and elsewhere: Implications for tectonic and petrologic processes. *Geological Society of America Special Paper* 456, p. 267–286.
- Waters-Tormey, C.**, Tikoff, B., 2007. Characteristics of a kilometer-scale high strain zone in the lower continental crust: Mt. Hay block, central Australia. *Journal of Structural Geology* 29, 562-582.
- Trupe, C.H., Stewart, K.G., Adams, M.G., **Waters, C.L.**, Miller, B.V., Hewitt, L.K., 2003. The Burnsville fault: Evidence for the timing and kinematics of Acadian dextral transform tectonics in the southern Appalachians. *Geological Society of America Bulletin* 115, 1365-1376.
- Waters, C.**, Tikoff, B., Goodwin, L.B., Little, T.A., 2002. Ductile instabilities and structural heterogeneity in the lower continental crust. In: Goff, J.A., Holliger, K. (Eds.), *Heterogeneity in the crust and upper mantle: nature, scaling and seismic properties*, Kluwer, pp. 1-36.
- Tikoff, B., Teyssier, C., **Waters, C.**, 2001. Clutch tectonics and the attachment of lithospheric layers. In: Bertotti, G., Schulmann, K., Cloetingh, S.A.P.L. (Eds.), Continental collision and the tectono-sedimentary evolution of forelands, *European Geosciences Union Stephan Mueller Special Publication Series* 1, pp. 57-73. (URL: <http://www.stephan-mueller-spec-publ-ser.net/1/index.html>)

- Waters, C. L.**, 1999. Mapping and related studies of pre-Alleghenian tectonic features within the Blue Ridge thrust complex of western North Carolina: Micaville Quadrangle. M.S. thesis *with 7.5' geological map*, University of North Carolina at Chapel Hill, 87 pp.
- Tivey, M.A., Johnson, H.P., Fleutelot, C., Hussenoeder, S., Lawrence, R.M., **Waters, C.**, Wooding, F.B., 1998. Direct measurement of magnetic reversal polarity boundaries in a cross-section of oceanic crust. *Geophysical Research Letters* 25, 3631.
- Waters, C.**, Boudreau, A.E., 1996, A reevaluation of crystal size distributions in chromite cumulates. *American Mineralogist* 81, 1452-1459.

PUBLICATIONS IN PREPARATION

**undergraduate researchers*

- Waters-Tormey, C.**, *Allen, K., *Hayes, I., Styers, D., Hill, J. Public domain airborne LiDAR ground model and geologic map data: an under-utilized resource for bedrock fracture characterization.
- Waters-Tormey, C.**, Kelso, P., Tikoff, B. Magnetic anisotropy fabric in transposed granulite-facies tectonites: A case study from the Capricorn Ridge Shear Zone, Central Australia.

PROPOSALS, last four years

- "Landslide Mapping in Hickory Nut Gorge (Buncombe, Henderson, Polk, and Rutherford Counties), western North Carolina". October, 2018. University of North Carolina Policy Collaboratory, \$51,884. *Funded*.
- "Louis Stokes New STEM Pathways Implementation-Only Alliance: Mountains to Sea North Carolina LSAMP" (Western Carolina University co-PIs were Waters-Tormey, C., Coen, H., Granda-Marulanda, N.). November, 2018. National Science Foundation Louis Stokes Alliances for Minority Participation (LSAMP), \$899,900. *Not funded but will be re-submitted*.

CONFERENCE PRESENTATIONS, last four years

**undergraduate researchers*

- Waters-Tormey, C.**, Hartman, C., Cottingham, K., *Moorer, S. T., Kinner, D., 2019. Relating LiDAR lineaments to bedrock structures in the Panthertown Valley and Hickory Nut Gorge areas of the Southwestern North Carolina Blue Ridge. Geological Society of America Abstracts with Programs. doi: 10.1130/abs/2019AM-339659
- Waters-Tormey, C.**, Styers, D., *Allen, K., *Hayes, I., 2019. Public domain airborne LiDAR ground model and geologic map data: an under-utilized resource for bedrock fracture network characterization. Geological Society of America Abstracts with Programs. doi: 10.1130/abs/2019SE-327067
- Waters-Tormey, C.**, Kinner, D., *Edwards, D., *Hartman, C., *Lewis, P., *Price, S., *Rudziewicz, M., *Shorter, N., *Silva, F., *Sujet, B., *Turner, L., *Willis, A. (presenter), 2019. Trail-scale slope failure risk maps: a pilot study in Great Smoky Mountains National Park. Geological Society of America Abstracts with Programs. doi: 10.1130/abs/2019SE-327129
- *Hartman, C., *Hurdling-Jones, H., *Pedigo, R., *Hurst, E., Tormey, B., **Waters-Tormey, C.**, Peek, K., Bilderback, E., Anderson, D., Hungerford, J., Young, R., 2018. Mapping landslide and rock fall hazards in Yellowstone National Park using the Unstable Slope Management Program's slope assessment mobile application. Geological Society of America Abstracts with Programs. Vol. 50, No. 6 doi: 10.1130/abs/2018AM-322674
- Waters-Tormey, C.**, Styers, D., *Pedigo, R., *Hurst, E., 2017. Combining outcrop, magnetic, and airborne LiDAR data in a course-based undergraduate research experience (CURE): interpretation of bedrock fracturing in the northeastern Deep River Basin and adjacent basement, North Carolina. American Geophysical Union Abstracts with Programs. <https://agu.confex.com/agu/fm17/meetingapp.cgi/Paper/291489>
- *Montoya, L., **Waters-Tormey, C.**, Casale, G., 2017. Repeated hydraulic (and coseismic?) fracturing forming m-scale dilational structures: a pilot study from the Jervis Range Region, Central Australia. Geological Society of America Abstracts with Programs 49, doi: 10.1130/abs/2017AM-307606.
- Waters-Tormey, C.**, Kelso, P., Tikoff, B., 2017. Which scale(s) of strain analysis best characterizes an overprinting "bulk" deformation? A case study from the Capricorn Ridge Shear Zone, Central Australia. Geological Society of America Abstracts with Programs 49, doi: 10.1130/abs/2017AM-307541.
- *Allen, K., **Waters-Tormey, C.**, Styers, D., 2017. Combining geological mapping and LiDAR data to analyze the contribution of "local" versus "regional" bedrock fracture sets in western North Carolina. Geological Society of America Abstracts with Programs 49, doi: 10.1130/abs/2017SE-290951.
- *Keever, Jr., M., **Waters-Tormey, C.**, Mills, R., 2016. Field and geochemical constraints on the origin of the Panthertown Valley felsic complex: western NC. Geological Society of America Abstracts with Programs 48, doi: 10.1130/abs/2016SE-273879.
- Waters-Tormey, C.**, Styers, D., *Allen, K., *Hayes, I., 2016. Combining geological mapping and LiDAR data to characterize fracture patterns in poorly exposed crystalline bedrock in the southern Appalachians,

western NC. Geological Society of America Abstracts with Programs 48, doi: 10.1130/abs/2016AM-286471.

*Allen, K., *Haddon, A., *Brazelton J., *Dodgin, L., *Gatlin, J., *Hartigan, S., *Howard, S., *Lilly, C., *Reiford, M., **Waters-Tormey, C.**, 2016. Using ductile strain patterns to infer development of fractures: an example from the Panthertown conservation area, NC. Geological Society of America Abstracts with Programs 48, doi: 10.1130/abs/2016SE-273402.

SHORT COURSES AND PROFESSIONAL DEVELOPMENT

- 2018 Council on Undergraduate Research, Broadening Participation (in STEM programs) Institute (1.5 days; with H. Coen, D. Kinner, A. Storm, J. Wallen at WCU): Bowie, MD [helped prepare proposal for group to attend, but could not attend due to scheduling conflict]
- 2018 UNC System Department Heads Workshop (1.5 days): Chapel Hill, NC
- 2016 SOCON Leadership Workshop: Spartanburg, SC (1.5 days)
- UNC Instructional Innovation Incubator workshop (i3@UNC): Winston-Salem, NC (1.5 days)
- WCU online teaching and learning academy: Cullowhee, NC (6 days, spring semester)
- 2015 Geological Mechanics on the Rocks: Stress, Deformation, and Rock Properties with Application to Reservoir Stimulation and Management: Casper, WY, AAPG ACE (4 days)
- 2014 Shale reservoir evaluation short course by Core Labs: Houston, TX, AAPG ACE (1 day)
- 2010 Field Safety Leadership short course by ExxonMobil Research Co.: Denver, CO, GSA (2 days)
- 2003 Integrated Basin Exploration Short Course, sponsored by ExxonMobil Upstream Research and Exploration Companies: Salt Lake City, UT (3 days)
- 1996-7 Analysis of Geological Data, Exploration Geophysics, Sequence Stratigraphy, Reflection Seismic Processing: graduate course work, Rice University, Houston, TX (2 semesters)
- 1995 Woods Hole Oceanographic Institution Summer Fellow (deep submersible vehicle ALVIN science team, Blanco Fracture Zone, Juan de Fuca mid-ocean Ridge, northeastern Pacific)

SELECTED SERVICE

- 2010-2015; 2016-present Western Carolina University Faculty Senate
- 2018-2019 WCU Research Council