

Matthew A. Massey

Title: Geologist IV, Geologic Mapping Section

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Joined KGS in 2011

Education:

Ph.D., University of Kentucky, 2010
M.S., University of Kentucky, 2003
B.S., University of Tennessee, 2000

Responsibilities

Perform field mapping, collect new surficial geologic and geomorphologic data, compile existing geologic, geotechnical, and image data, and collectively interpret datasets to create surficial geologic maps and digital products.

Professional Organizations

- Geological Society of America
- American Geophysical Union

Publications

Published Maps

- Massey, M.A., and Alvord, D. (2011), Progress map of the preliminary bedrock geologic map of the Billerica quadrangle, Massachusetts: Massachusetts Geological Survey Open File Report, 11-03, Scale 1:24,000. 1 sheet and digital product: Adobe PDF and ESRI ArcGIS database.
- Massey, M.A., and Moecher, D.P. (2008), Preliminary bedrock geologic map of the Palmer quadrangle, Massachusetts: Office of the Massachusetts State Geologist Open File Report, 08-02, Scale 1:24,000. 1 sheet and digital product: Adobe PDF and ESRI ArcGIS database.

Refereed Journal Articles

- Massey, M.A., Moecher, D.P., Walker, T.B., O'Brien, T.M., and Rohrer, L.P. (2016), The role and extent of dextral transpression and lateral escape on the post-Acadian tectonic evolution of south-central New England: *accepted by American Journal of Science*.
- Massey, M.A., and Moecher, D.P. (2013), Transpression, extrusion, partitioning, and lateral escape in the middle crust: significance of structures, fabrics, and kinematics in the Bronson Hill zone, southern New England, U.S.A.: *Journal of Structural Geology*, 55, pg. 62-78.
- *Massey, M.A., Prior, D.J., and Moecher, D.P. (2011), Microstructure and crystallographic preferred orientation of microgarnet aggregates developed during progressive creep, recovery, and grain boundary sliding: *Journal of Structural Geology*, 33, pg. 713-730.
- Massey, M.A., and Moecher, D.P. (2005), Structural and metamorphic evolution of the Western Blue Ridge-Eastern Blue Ridge terrane boundary, southern Appalachian Orogen: *Tectonics*, 24, 5, pg. 1-18.
- Stewart, A.K., Massey, M., Padgett, P.L., Rimmer, S.M., and Hower, J.C. (2005), Influence of a basic intrusion on the vitrinite reflectance and chemistry of the Springfield (No. 5) coal, Harrisburg, IL: *International Journal of Coal Geology*, 63, 1-2, pg. 58-67.

*Journal of Structural Geology, Student Author of the Year Award, 2011

Field Trip Guides

- Massey, M.A., Walker, T.B., Rohrer, L.P., O'Brien, T.M., McCulla, J., and Moecher, D.P. (2015), The role of Carboniferous mid-crustal transpression and lateral escape in the tectonic development of south-central New England: insights from bedrock mapping, structural analysis, and geochronology, in, Martha S. Gilmore and Phillip G. Resor (editors), 107th Annual New England Intercollegiate Geological Conference, Middletown, Connecticut.
- Massey, M.A., and Moecher, D.P. (2008), Dextral transpression and heterogeneous ductile extrusion of the Monson orthogneiss, New England Appalachians, in, Mark Van Balen (editor), 100th Annual New England Intercollegiate Geological Conference, Westfield, Massachusetts.
- Massey, M.A., and Moecher, D.P. (2005), Stop 1-4, Structural and metamorphic evolution of the Western- Central Blue Ridge boundary exposed at Woodfin Valley overlook, in R.D. Hatcher, Jr. and A.J. Merschat (editors), *Blue Ridge geology geotraverse east of the Great Smoky Mountains National Park, western North Carolina*, Carolina Geological Society Annual Field Trip, pg. 121-124.
- Moecher, D.P., Massey, M.A., and Tracy, R.J. (2005), Timing and Pattern of Metamorphism in the Western and Central Blue Ridge, TN and NC: Status and Outstanding Problems, in R.D. Hatcher, Jr., and A.J. Merschat (editors), *Blue Ridge geology geotraverse east of the Great Smoky Mountains National Park, western North Carolina*, Carolina Geological Society Annual Field Trip, pg. 57-66.

Presentations

- Massey, M.A., Moecher, D.P., McCulla, J.K., Draper, K.P.J., Young, J., Rohrer, L.P., Walker, T.B., and O'Brien, T.M. (2015), Using multi-scale structural and petrological analysis coupled with zircon and monazite SIMS and in-situ EPMA geochronology to document the evolution of a mid-crustal transpression system: a case study from the Northern Appalachians, U.S.A.: AGU Fall meeting, Abstract V33D-3146.
- Massey, M.A. and Moecher, D.P. (2015), Pennsylvanian to Permian lateral escape of the Bronson Hill arc and Central Maine basin in southern New England: significance of sinistral kinematics along the western Bronson Hill shear system: GSA Annual Meeting, 47, 7, pg. 862.
- McCulla, J., Massey, M., Moecher, D., Young, J., and Draper, K. (2015), Dating deformation in the Palmer zone of transpression, central Massachusetts: temporal constraints on models for progressive deformation in the middle crust: GSA Annual Meeting, Abstracts with Programs, 47, 7, pg. 862.
- Kopera, J.P., and Massey, M.A. (2013), A structural framework for the Nashoba terrane in eastern Massachusetts, GSA Northeastern Section Annual Meeting, Abstracts with Programs, 45, 1, pg. 107.
- Massey, M.A. (2012), Transpression, extrusion, and lateral escape in southern New England and scale dependent response of strain partitioning, GSA Annual Meeting, Abstracts with Programs, 44, 7, pg. 332.
- Massey, M.A., and Moecher, D.P. (2012), Microstructure and crystallographic preferred orientation of polycrystalline microgarnet aggregates developed during flattening, grain boundary sliding, and diffusion creep: GSA Northeastern Section Annual Meeting, Abstracts with Programs, 44, 2, pg. 106.
- Massey, M.A., and Moecher, D.P. (2012), Transpression and extrusion in south-central New England resulting from Late Paleozoic oblique collision: GSA Northeastern Section Annual Meeting, Abstracts with Programs, 44, 2, pg. 38.
- Massey, M.A., and Moecher, D.P. (2010), Carboniferous transpression and scale-dependent strain heterogeneity in the southern Bronson Hill zone, New England as a result of dextral oblique convergence with the Central Maine zone: GSA Northeastern Section Annual Meeting, Abstracts with Programs, 42, pg. 127.
- Massey, M.A. (2008), Microstructural evolution of garnet in a transpression zone: Microbeam Analysis Society, Electron Backscatter Diffraction Workshop, May 20-22.
- Massey, M.A., and Moecher, D.P. (2008), Late Paleozoic dextral transpression driven by oblique convergence, southern Bronson Hill terrane, Massachusetts: GSA Northeastern Section Annual Meeting, Abstracts with Programs, 40, pg. 2.
- Massey, M.A., and Moecher, D.P. (2008), New, detailed mapping in the Palmer 1:24,000 quadrangle, south-central Massachusetts: constraints on post-Acadian evolution of the Bronson Hill terrane: GSA Northeastern Section Annual Meeting, Abstracts with Programs, 40, pg. 2.
- Massey, M.A., and Moecher, D.P. (2007), Late Paleozoic partitioned transpression and heterogeneous extrusion of granitic Monson orthogneiss, Appalachian orogen, southern New England, USA: American Geophysical Union, Eos, Transactions, 88, pg. 52.

- Massey, M.A., Prior, D.J., and Moecher, D.P. (2007), Microstructural evolution of garnet in a greenschist facies transpression zone: American Geophysical Union, Eos, Transactions, 88, pg. 52.
- Moecher, D.P., Anderson, E.D., Clemons, K., and Massey, M.A. (2007), The pattern of tectonic overprinting in the western-central Blue Ridge by deformation propagating from eastern Blue Ridge-Inner Piedmont convergence: GSA Southeastern Section Annual Meeting, Abstracts with Programs, 39, 2, pg. 79.
- Massey, M.A., and Moecher, D.P. (2006), Heterogeneous flow of an extruded granitic dome in the Bronson Hill terrane, Massachusetts, USA: evidence for oblique convergence and indentation, and the Alleghanian orogeny: American Geophysical Union, Eos, Transactions, 87, pg. 52.
- Massey, M.A., and Moecher, D.P. (2006), Syn-tectonic garnet microstructures in a greenschist facies high strain zone, central Massachusetts: affects of strain, reaction, and pre-existing chemical/physical heterogeneities: ISeS Rheology of Earth Materials, August 5-12.
- Anderson, E.D., Massey, M.A., and Moecher, D.P. (2005), Disparate pressure conditions for Ky-grade metapelites and high-pressure amphibolite (not retrograde eclogite) near the EBR-WBR terrane boundary, Dellwood, NC: GSA Southeastern Section Annual Meeting, Abstracts with Programs, 37, 2, pg. 40.
- Massey, M.A., and Moecher, D.P. (2005), High-grade extrusion to low-grade extension as mechanisms of Late Paleozoic terrane modification in the southern Bronson Hill terrane, New England, U.S.A.: GSA Annual Meeting, Abstracts with Programs, 37, 7, pg. 20.
- Massey, M.A., and Moecher, D.P. (2005), Late Paleozoic extrusion and elongation as important mechanisms in the tectonic evolution of the southern Bronson Hill terrane: GSA Northeastern Section Annual Meeting, Abstracts with Programs, 37, 1, pg. 32.
- Stewart, A.K., Massey, M., Padgett, P.L., Rimmer, S.M., and Hower, J.C. (2004), Influence of a basic intrusion on the vitrinite reflectance and chemistry of the Springfield (No. 5) coal, Harrisburg, IL, in, 20th Annual Meeting of The Society for Organic Petrology, 59 pp., USGS Open File Report.
- Massey, M.A., and Moecher, D.P. (2003), Metamorphic and structural evolution of the Eastern Blue Ridge-Western Blue Ridge Boundary as exposed between Soco and Balsam gaps, Western NC: GSA Southeastern Section Annual Meeting, Abstracts with Programs, 35, 1, pg. 20.
- Massey, M.A., and Moecher, D.P. (2002), Metamorphic and structural evolution of the eastern Blue Ridge western Blue Ridge boundary ("the Hayesville Fault") along the Blue Ridge Parkway, western NC: GSA Annual Meeting, Abstracts with Programs, 34, 6, pg. 377.
- Moecher, D.P., Tracy, R.J., and Massey, M.A. (2002), Monazite chemical ages reveal more than one "Great Smoky Group" in southern Blue Ridge, Appalachian Orogen: GSA Annual Meeting, Abstracts with Programs, 34, 6, pg. 69.