

Matthew P. McKay

Associate Professor

December 2022

Geography, Geology and Planning

Missouri State University

matthewmckay@missouristate.edu 256-225-4722

Tectonics • Field Geology • UAV mapping • Structural Geology • Stratigraphy • Geochronology

EDUCATION

West Virginia University (WVU), Morgantown, WV Aug 2011-Dec 2015

Doctor of Philosophy (Ph.D.), Geology, Advisor: Dr. Amy Weislogel

Cumulative WVU GPA: 4.00

Specialty: Tectonics, geochronology, stratigraphy, basin analysis, geochemistry,
volcanology, petrology, structural geology

University of Alabama (UA), Tuscaloosa, AL Jun 2007-Aug 2011

Master of Science (M.S.), Geology, Advisor: Dr. Harold H. Stowell August 2011

Metamorphic & igneous petrology, geochronology, structural geology

Bachelors of Science in Geology (B.S.G) August 2009

PROFESSIONAL EXPERIENCE

Missouri State University Fall 2016-Present

Assistant/Associate Professor in the Department of Geography and Geology

Teaching focus: Tectonics, field geology, geoscience modeling/computing, mapping

Educational and Product Development Consultant: Brunton, Inc 2016-Present

Geological Survey of Alabama October 2014-June 2016

Geologist-Geologic Investigations Division

Geologic mapping and geospatial information systems

National Cooperative Geologic Mapping Program-STATEMAP

Mineral Resource Information and Assessment

External Research & Internships:

Statoil *in residence* at Univ. Texas at Austin w./ Dr. D. Stockli and Dr. A Fildani 2014

Chevron Energy Technology Company-Hydrocarbon Charge Team 2013

Petroleum system modeling: West of Shetlands, offshore U.K.

Chevron Energy Technology Company-Hydrocarbon Charge Team 2012

Integrating seismic attributes, geochemistry, and basin modeling

Teaching, Research, and Advising experience:

GLG340: Structural Geology	Spring 2017-Present
GLG412: Field Methods	Spring 2017-Present
GLG413: Field Geology (summer field camp)	Summer 2018-Present
GLG676: Geologic computing (graduate course)	Spring 2019-present
GLG597/697: Geodynamics (graduate course)	Spring 2018
GLG110: Principles of Geology	Fall 2016-Present
NASA-Missouri Space Grant Consortium internship mentor	2017-Present
Missouri Louis Stokes Alliance for Minority Participation mentor	2020
Am. Association of Pet. Geologists Imperial Barrell Award advisor	2017
Proactive Advising Program advisor (for first-generation students)	2018-present
Research assistant, WVU	Spring 2013 to Fall 2014
Sed./Strat. (GEOL311) lab instructor, WVU	Spring 2012, Spring 2013
Field Course (GEOL404) graduate instructor, WVU	Summer 2013
Planet Earth (GEOL102) lab instructor, WVU	Fall 2011, Spring 2012
Earth Through Time (GEOL104) lab instructor, WVU	Fall 2012, Spring 2013
Mineralogy (GEO210) lab instructor, UA	Fall 2009, Fall 2010
Field Course (GEO495) graduate instructor, UA	Summer 2010
Research assistant/isotope lab manager, UA	Spring 2010 & 2011, Summer 2011

GRADUATE RESEARCH ADVISER (M.S. in geology)

Sourav Nandi	<i>Geologic mapping of the Purgatory Saddle quadrangle & gravity transects across an arc-continent suture zone</i>	2018
Sam DeYoung	<i>Geologic mapping of the Heaven's Gate quadrangle, Idaho</i>	2019
Sage Muttel	<i>How old is the North American Continental Divide?</i>	2020
Derek Spurgeon	<i>Unroofing signatures and orogenic timelines for North American mountain building events: Appalachian and Laramide orogenies</i>	2021
Adelie Ionescu	<i>Geologic mapping of the Clairmont Springs quadrangle, Alabama and geothermochronology from the Alabama Blue Ridge</i>	2021
Maddie Konopinski	<i>Mega-landslides in the Southern Appalachian Mountains</i>	2021
Mark Brown	<i>Geologic mapping of the Pollock Mountain 7.5 minute quadrangle</i>	
Jordan Cruzan	<i>Sediment dispersal models based on zircon U-Pb</i>	2022
Tessa Mills	<i>Geologic mapping of the Porters Gap quadrangle, Alabama</i>	exp. 2022
Colleen Rankin	<i>Exhumation of the Salmon River suture zone, Idaho</i>	exp. 2022
Thomas Byars	<i>Developing tools and protocols for lunar geologic mapping</i>	exp. 2022
Oren Redus	<i>Garnet growth zonation in megacrystic epidote pods</i>	exp. 2022

Birch Richardson	<i>Paleozoic paleoseismicity in the Ozarks</i>	exp. 2022
JZ Upp	<i>Internal shear zones within the Seven Devils Mtns, Idaho</i>	exp. 2023
Jon Cone	<i>Rutile and sphene thermometry and chronometry in ID</i>	exp. 2023
Kelly Frank	<i>Ouachita paleoseismicity in northwestern Alabama</i>	exp. 2023
Cecilia Kayser	<i>Mineral distribution patterns from Pacific active margins</i>	exp. 2023
Sarah Prost	<i>Multiphase geothermochronometry from the Rockies</i>	exp. 2023

UNDERGRADUATE RESEARCH ADVISER

Caitlin Sifuentes	1.) <i>A tectonic timeline for the Himalaya based on petrochronology</i>	2020
	2.) <i>Field-based geologic mapping development</i>	2020
Alyssa Slayton (Computer Science)	<i>Developing a geologic compass for Lunar exploration</i>	2019-2021
Cecilia Kayser	<i>Zircon rare-earth element patterns from the S. China Sea</i>	2018-present
Sarah Prost	<i>Appalachian detrital geochronology</i>	2018-present
Mo Holley	<i>Developing field-based smart phone apps</i>	2019
Jordan Cruzan	<i>Sediment dispersal patterns across North America</i>	2018-2019
Tessa Mills	<i>Quaternary tuffs in the Salmon River</i>	2018-2019
Derek Spurgeon	<i>How old are the Appalachian Mountains? A radioisotope study to date uplift of the Appalachian Valley and Ridge</i>	2016-2018
Simin Wu	<i>Radioisotopic dating of meteorite impacts in central Missouri</i>	2017-2018
Ashley Gerik	<i>Reconnaissance geologic mapping in the Glacier Peak Wilderness, Washington State</i>	2017
Dalton Breeding	<i>Characterizing the uncertainty in structural field measurements</i>	2017

STUDENT OUTCOMES, AWARDS, AND CURRENT POSITIONS (**M.S. & selected *B.S. students)

Adelie Ionescu**	Ph.D. student , Washington State University	2022-present
	Associate scientist , Environmental Works	2021-2022
Madeline Warner**	Ph.D. student , University of Memphis	Fall 2021-present
Caitlin Sifuentes*	M.S. student at Univ. of Indiana	2020-present
Dalton Breeding*	Professional sales and staff geologist at Brunton Outdoor	2017-2020
Sourav Nandi**	Senior project manager , Biofire Diagnostics	2021-present
	Hazards geologist at Shannon and Wilson	2018-2021
	<i>Society of Exploration Geophysicists grant recipient (\$2,300)</i>	2017
Sam DeYoung**	Staff geologist at Haley & Aldrich	
Derek Spurgeon**	Field geologist at the West Virginia Geologic Survey	

	Missouri Academy of Sciences research award	2019
Sage Mutterl**	Ph.D. student , West Virginia University	Fall 2020-present
	1st place research poster award at the AAPG Student Expo	2019
	1st place poster in “Tectonics research”, MO Geological Survey colloquium	
	Missouri Academy of Sciences research award	
	<i>Am. Association of Petroleum Geologists</i> grants-in-aid recipient (\$3,000)	

AWARDS, PROFESSIONAL SERVICE, & OUTREACH

GSA Northcentral Section Field Trip Chair	2021	Springfield
Alabama Geological Society annual field trip leader	Spring	2022
Session chair: <i>Applying petrochronology to tectonic provenance</i> : GSA Connects	2020	
Session chair: <i>Geologic Mapping in the Twenty-First Century</i> : GSA Indianapolis	2018	
Outstanding Graduate Mentor: Missouri State University	2018	
Ozark Science and Technology Fair judge	2018-present	
Missouri State Presidential Scholarship interview committee	2017-present	
Session chair: <i>Structure and stratigraphy of the mid-continent</i> : Southcentral GSA	2018	
Missouri State Am. Association. of Petroleum Geologists student advisor	2016-Present	
Session chair: <i>Adv. in Geochronology & Microanalysis</i> (V33D, 34A, 41A), A.G.U.	2014	
Chesapeake Energy Fellow	2011-2012; 2013-2014	
Session Chair: <i>Contractional Tectonics and Fold-Thrust Belt</i> , AAPG Pittsburgh	2013	
West. Virg. Univ. Milton T. & Doris E. Heald Promising Researcher Award	2013	
SEPM Wilson Medal Selection Committee Member	2013	
Grad Student Recruitment Coordinator, W.V.U. Dept. of Geology and Geography	2012	
Outstanding teaching award, Univ. Alabama Dept. of Geological Sciences	2009-2010	

PUBLICATIONS (peer-reviewed, as author):

***undergraduate student **graduate student**

1. Giles, K.D., Jackson, W.T., Jr., **McKay, M.P.**, Beebe, D.A., Larsen, D., Kwon, Y., Shaulis, B., (2022), Sediment input, alongshore transport, and coastal mixing in the northeastern Gulf of Mexico based on detrital-zircon geochronology, *Marine and Petroleum Geology*, vol. 148, doi: 10.1016/j.marpetgeo.2022.105997.
2. **McKay, M.P.**, Jackson, W.T., Jr., **Spurgeon, D****, **Ionescu, A.****, Shaulis, B., (2021), Detrital zircon geochronology reveals pre-Alleghanian exhumation of regional Mississippian sediment sources in the southern Appalachian Valley and Ridge Province, ***GEOSPHERE***.
3. Jackson, W.T., Jr., **McKay, M.P.**, Beebe, D.A., Mullins, C., **Ionescu, A.****, Shaulis, B., and Barbeau, D.L., (2021), Detrital zircon U-Pb ages and Th/U reveal a southern Appalachian Piedmont provenance along the eastern Gulf Coastal Plain (USA) during Late Cretaceous, ***Journal of Sedimentary Research***.

PUBLICATIONS (cont.)

4. Stowell, H., Bollen, E., **McKay, M.P.**, Thigpen, J.R., Dickson, H.F., Madden, J.R., Fiechtner, C., **Ionescu, A.****, (2021), Tectonism and metamorphism along a southern Appalachian transect across the Blue Ridge and Piedmont, USA, *in* Florsheim, J., Koeberl, C., McKay, M.P., Riggs, N., (eds), GSA Sectional Meeting Guides: *Geological Society of America Field Guide 61*, p. 1-38.
5. Rovey, C.W., Bassett, D.J., **McKay, M.P.**, (2021), Ordovician and Mississippian stratigraphy in southwestern Missouri, USA, *in* Florsheim, J., Koeberl, C., McKay, M.P., Riggs, N., (eds), GSA Sectional Meeting Guides: *Geological Society of America Field Guide 61*, p. 1-20.
6. Jackson, W.T., Jr., **McKay, M.P.**, Bartholomew, M.J., Allison, D.T., **Spurgeon, D.L.****, Shaulis, B., VanTongeren, J.A., Setera, J.B., (2019) Laramide tectonism recorded by Late Cretaceous paleoseismites in the northern Bighorn Basin, USA: Field indicators of an applied end load stress, *GEOLOGY*, vol. 47 (11), p. 1059-1063.
7. **McKay, M.P.**, Fildani, A., Jackson, W.T., Jr., Weislogel, A., Dean, J. (2018), Structural and magmatic controls on the turbidites of the Karoo Basin, South Africa, *in* Ingersoll, R.V., Graham, S.A., and Lawton, T.F., eds., Tectonics, Sedimentary Basins, and Provenance: A Celebration of William R. Dickinson's Career: *Geological Society of America Special Paper 540*, p. 689–705, [https://doi.org/10.1130/2018.2540\(29\)](https://doi.org/10.1130/2018.2540(29)).
8. Fildani, A., Hessler, A., Mason, C., **McKay, M.P.**, Stockli, D. (2018), Late Pleistocene glacial transitions in North America altered major river drainages, according to deep-sea sediment, *Scientific Reports*, volume 8 (1), 13839.
9. Jackson, W.T., Jr., Robinson, D.M., Weislogel, A.L., Jian, X., **McKay, M.P.**, (2018), Cenozoic development of the nonmarine Mula basin in the southern Yidun terrane: deposition and deformation in the eastern Tibetan Plateau associated with the India-Asia collision, *Tectonics*, v. 37, 20 p.
10. **McKay, M.P.**, Jackson, W.T., Jr., Hessler, A.M. (2018), Tectonic stress regime recorded in zircon Th/U, *Gondwana Research*, vol. 57C, p. 1-9.
11. **McKay, M.P.**, Stowell, H.H., Gray, K.D., Schwartz, J.J., Bollen, E., (2017) Metamorphism records thrust faulting during prolonged terrane accretion: Sm-Nd garnet and U-Pb zircon geochronology and P-T paths from the Salmon River suture zone, west-central Idaho, *Lithosphere*, vol. 9 (5), p. 683-701.
12. Fildani, A., **McKay, M.P.**, Stockli, D.F., Clark, J.D., Dykstra, M., Hessler, A., (2016) The ancestral Mississippi drainage archived in the late Wisconsin Mississippi deep-sea fan, *Geology*, vol. 44, 479-482.
13. **McKay, M.P.**, Coble, M., Hessler, A.M., Weislogel, A.L., Fildani, A. (2016), Petrogenesis and provenance of distal, airfall tuffs in the Permian-Triassic Karoo Basin, South Africa: a window into a dissected, magmatic province, *Geosphere*, v. 12 (1), p. 1-14.

PUBLICATIONS (cont.; in prep)

14. **McKay, M.P.**, Weislogel, A.L., Fildani, A., Brunt, R., Hodgson, D., Flint, S. (2015), U-Pb zircon tuff geochronology from the Karoo Basin, South Africa: implications of zircon recycling on stratigraphic age controls, *International Geology Review*, vol. 57 (4), pp. 393-410.
15. **McKay, M.P.**, Jackson, W.T., Jr., Osborne, W.E., Irvin, G.D. (*in prep*), Linking upper-crustal architecture, systematic joint patterns, and landslide susceptibility in the southern Appalachian fold and thrust belt, to be submitted to *Tectonophysics*.
16. **McKay, M.P.**, Bassett, D., Breeding, D.*, & others, (*in prep*), What is the uncertainty on a strike and dip? Characterizing errors in field data measurements; to be submitted to *GSA Today*.
17. **McKay, M.P.** (*in prep*), Big data solutions: zircon age distribution and sediment dispersal patterns in North America, to be submitted to *Geosphere*.
18. Muttel, S.** and **McKay, M.P.** (*in prep*), Th/U in zircon from the Mississippi-Missouri drainage basin distinguishes between coeval magmatic sources in the western U.S., to be submitted to *Geosphere*.

7.5-MINUTE GEOLOGIC MAPS (by USGS EDMAP/STATEMAP and National Park Service)

- Purgatory Saddle, Adams County, Idaho
- Howelton, Etowah County, Alabama
- Colvin Gap, Calhoun and Etowah counties, AL
- Wright, Colbert County, Alabama
- Porter Gap, Talladega County, Alabama
- Pollock Mtn, Adams and Idaho counties, ID
- Jacksonville East, Calhoun Co., Alabama
- Clairmont Springs, Talladega Co., Alabama
- Cherokee, Colbert County, Alabama

TECHNICAL PRESENTATIONS (updated to 2019):

***undergraduate student, **graduate student, ***completed graduate student**

- Muttel, S.**, **McKay, M.P.** (2019), Detrital petrochronology for provenance analysis: zircon U-Pb and REE compositions from the Mississippi River drainage basin, *GSA Abstracts with Programs*, vol. 51 (5).
- Spurgeon, D.L.**, **McKay, M.P.**, Jackson, W.T. (2019), Geologic map of the Jacksonville East 7.5-minute quadrangle, Alabama Valley and Ridge Province, *GSA Abstracts with Programs*, vol. 51 (5).
- McKay, M.P.** and Jackson, W.T. (2019), The role of joint-set orientations, upper-crustal architecture, and paleoseismicity in mega-landslide events in NE Alabama, *GSA Abstracts with Programs*, vol. 51 (5).
- Cruzan, J.D.* and **McKay, M.P.** (2019), Sediment dispersal heat maps for interpreting sedimentary provenance: insights into North American sedimentation, *GSA Abstracts with Programs*, vol. 51 (5).

TECHNICAL PRESENTATIONS (cont.):

- McKay, M.P.**, Runyon, K.D., (2018), Mapping the Moon: Challenges for future field-based planetary geologic mapping, *GSA Abstracts with Programs*, vol. 50 (6).
- McKay, M.P.**, Hessler, A.M., Mason, C., Stockli, D., Fildani, A., (2018) North American major river drainages modified at late Pleistocene glacial transitions: a tale from the deep-sea sediment, *GSA Abstracts with Programs*, vol. 50 (6).
- Nandi, S.K.***, **McKay, M.P.**, Mickus, K., (2018), Crustal architecture of the eastern Blue Mountains province and Salmon River suture zone resolved through integrated geologic mappings, geochronology, and geophysical surveys, *GSA Abstracts with Programs*, vol. 50 (6).

TECHNICAL PRESENTATIONS (cont.):

- DeYoung, S.** , **McKay, M.P.**, Cruzan , J.D.*, (2018), Geologic mapping and geochronology of the Heavens Gate 7.5-minute quadrangle, Idaho County, Idaho: Mesozoic deformation in the Salmon River suture zone, *GSA Abstracts with Programs*, vol. 50 (6).
- Cruzan, J.* , **McKay, M.P.**, (2018), North American detrital zircon age domains and sediment dispersal patterns, *GSA Abstracts with Programs*, vol. 50 (6).
- Jackson, W.T., **McKay, M.P.**, Spurgeon, D.L.** , (2018), Zircon U-Pb geochronology of Late Cretaceous strata in the Elk Basin anticline, northern Bighorn Basin: understanding the timing of paleoseismic development associated with Laramide deformation, *GSA Abstracts with Programs*, vol. 50 (6).
- Spurgeon, D.** , **McKay, M.P.**, Jackson, W.T., Fosdick, J.C., (2018), U-Pb and (U-Th)/He zircon double dating of Paleozoic Appalachian Valley and Ridge strata: sediment routing and orogenic uplift, *GSA Abstracts with Programs*, vol. 50 (6).
- Wu, S.* , **McKay, M.P.**, Evans, K.R., (2017), Meteorite impact structures as outcrop-scale analogues for mountain building events: Weaubleau and Decaturville, MO, AGU 2017 Abstract #295438.
- McKay, M.P.**, Weislogel, A.L., Jackson, W.T., Dean, J., Fildani, A., (2017), Structural and magmatic controls on the turbidites of the Karoo basin, South Africa, *GSA Abstracts with Programs*, vol. 49 (6).
- Nandi, S.K.** , Brown, M.** , Spurgeon, D.* , Breeding, D.* , Gerik, A.* , **McKay, M.P.**, (2017), Geologic map of the Purgatory Saddle 7.5-minute quadrangle, Adams County, Idaho, Western Idaho: Pre-accretionary deformation in the eastern Blue Mountains, *GSA Abstracts with Programs*, vol. 49 (6).
- McKay, M.P.**, Jackson, W.T., (2017), Tectonic stress regime recorded in zircon Th/U, *GSA Abstracts with Programs*, vol. 49 (6).
- Spurgeon, D.L.* , **McKay, M.P.**, Fosdick, J.C., Jackson, W.T., (2017), Assessing the age and sequence of thrust faulting in the southern Appalachians, *GSA Abstracts with Programs*, vol. 49 (6).

TECHNICAL PRESENTATIONS (cont.):

- Nandi, S.K.** , Mickus, K.L., **McKay, M.P.**, (2017), Gravity transects across the Salmon River suture zone, western Idaho, *GSA Abstracts with Programs*, vol. 49 (6).
- Brown, M.B.** , Nandi, S.K.** , Spurgeon, D.L.* , Gerik, A.* , Breeding, D.* , **McKay, M.P.**, (2017), Geologic map of the Pollock Mountain 7.5-minute quadrangle, west-central Idaho, *GSA Abstracts with Programs*, vol. 49 (6).
- Breeding, D.* , **McKay, M.P.**, Bassett, D.J., (2017), How long does it take to teach students to take a quality strike and dip?, *GSA Abstracts with Programs*, vol. 49 (6).
- Evans, K., **McKay, M.P.**, Sakidja, R., (2017), Matrix in carbonate impact breccias: communication and precipitation from supercritical water (SCW)?, *GSA Abstracts with Programs*, vol. 49 (6).
- **McKay, M.P.** (2017), Routing of synorogenic sediment in collisional orogens, GSA Cordilleran Section meeting, *GSA Abstracts with Programs*, vol. 49 (4).
- **McKay, M.P.**, Jackson, W.T., Jr., (2017), Tectonic stress regimes recorded in zircon geochemistry, GSA South-central Section meeting *GSA Abstracts with Programs*, vol. 49 (1).
- **McKay, M.P.**, Jackson, W.T., Jr., Osborne, W.E., (2016), Ramps and slides: the control of upper-crustal architecture on landslide susceptibility in the southern Appalachian fold and thrust belt, GSA Annual meeting, Denver, *GSA Abstracts with Programs*, vol 48 (7).
- **McKay, M.P.**, Jackson, W.T., Jr., Osborne, W.E., (2016), Continental-scale glaciation, sediment recycling, and unroofing signatures in detrital sediments of the late Pleistocene Mississippi deep-sea fan, GSA Annual meeting, Denver, *GSA Abstracts with Programs*, vol 48 (7).
- Nandi, S.K., **McKay, M.P.**, Mickus, K.L., (2016), Crustal architecture and timing of an accretionary orogen: Salmon River suture zone and Western Idaho shear zone, GSA Annual meeting, Denver, *GSA Abstracts with Programs*, vol 48 (7).
- Jackson, W.T., Jr., **McKay, M.P.**, Thomas, W.A., Irvin, G.D., Osborne, W.E., (2016), Exploring the relationship between lateral ramps and an orthogonal fault bends, Appalachian thrust belt, Alabama, GSA Annual meeting, Denver, *GSA Abstracts with Programs*, vol 48 (7).
- **McKay, M.P.**, Coble, M., Hessler, A., Weislogel, A., Fildani, A., (2015), Petrogenesis and provenance of distal volcanic tuffs in the Permian-Triassic Karoo Basin, South Africa: a window into a dissected, magmatic province, GSA Annual Meeting, Baltimore, *GSA Abstracts with Programs*, vol 47 (7).
- **McKay, M.P.**, Gray, K.D., Jackson, W.T., Jr., Thomas, W.A., (2015), Highway to the suture zone: A comparative study of terrane accretion between the Mesozoic Salmon River suture zone of the Northwestern U.S. Cordillera and the Cenozoic Penglai suture, Taiwan, GSA Annual Meeting, Baltimore, *GSA Abstracts with Programs*, vol 47 (7).
- Bollen, E.M., Stowell, H.H., **McKay, M.P.** (2015), Garnet growth, resorption, and compositional zoning as records of collisional events: Salmon River suture zone, Idaho, GSA Annual Meeting:

TECHNICAL PRESENTATIONS (cont.):

Baltimore; *GSA Abstracts with Programs*, vol 47 (7).

- **McKay, M.P.**, Weislogel, A.L., Fildani, A. (2014), Permian-Triassic Magmatism Along the Southern Gondwana Margin: Correlating Proximal and Distal Volcanic Deposits, *AGU 2014 Abstract* #27627.
- Fildani, A., **McKay, M.P.**, Stockli, D.F., Clark, J.D., Weislogel, A.L., Dykstra, M., Hessler, A.M., (2014), Insights into the ancient Mississippi drainage system from detrital zircons analyses of the modern Mississippi deep-sea fan, *AGU 2014 Abstract* #24921.
- Clark, J.D., Stockli, D.F., **McKay, M.P.**, Thomson, K., Puigdefabregas, C., Castelltort, S, Dykstra, M., Fildani, A. (2014), Using U-Pb Detrital Zircon to Identify Evolution of Sediment Drainage in the South Central Pyrenean Foreland Basin, Spain, *AGU 2014 Abstract* #30546.
- Bollen, E. M., Stowell, H. H., Schwartz, J. J., **McKay, M. P.** (2014), New P-T Paths for Metamorphism of Amphibolite from the Salmon River Suture Zone, Idaho, *GSA Abstracts with Programs*, vol. 46 (6).
- **McKay, M.P.**, Weislogel, A.L., Fildani, A. (2014a), Using zircon REE compositions to aid in U-Pb zircon volcanic ash age interpretation in the Karoo Supergroup of South Africa, *Goldschmidt 2014*.
- **McKay, M.P.** (2014b), Sedimentary perspectives on orogenesis: magmatism and deformation recorded in the Karoo Basin, South Africa, GSA 2014 Penrose Conference: Linkages and feedbacks in orogenic processes – a conference honoring the career of Robert D. Hatcher, Jr., Ashville, NC.
- Weislogel, A.L., **McKay, M.P.**, Dean, J., Fildani, A. (2013), Perspectives and perils of using U-Pb zircon geochronology to constrain stratigraphic age: lessons from the Permian-Triassic Karoo basin, South Africa, AGU 2013, abstract #V13D-2646.
- **McKay, M.P.**, Dean, J., Weislogel, A.L. (2013), The impact of high precision age controls in basin modeling for tectonic studies: Karoo Basin, South Africa, 2013 AAPG ACE Presentation.
- **McKay, M.P.** (2012), Resolving tectonic subsidence from quantitative basin modeling: Karoo Basin, South Africa, AAPG Search and Discovery article #90157.
- **McKay, M.P.**, Weislogel, A.L., Dean, J., Fildani, A. (2012), Integrating burial history and isostatic models to evaluate tectonic subsidence models: Karoo Basin, GSA Abstracts with Programs, 44 (7).
- Stowell, H.H., **McKay, M.P.**, Schwartz, J.J., Gray, K.D. (2011), Loading and metamorphism within the Salmon River suture zone, west-central Idaho. GSA Abstracts with Programs, Vol. 43, No. 5.
- **McKay, M.P.**, Weislogel, A.L., 4 others (2011a), Evolution and petrogenesis of Gondwanan volcanism from ashes within the Ecca & Beaufort Grps: Karoo Basin, A.G.U. Fall Meeting 2011, #V31F-2597.

- **McKay, M.P.**, Stowell, H.H., Schwartz, J.J. (2011b), P-T-t paths from the Salmon River suture zone, west-central Idaho: Continental growth by arc accretion, GSA Abstracts with Programs, Vol. 43 (4), p. 76.

INVITED TALKS

- **McKay, M.P.** (2017), Upper crustal structure controls landslide distribution, Southern Appalachian fold and thrust belt; Wichita State University; University of South Alabama
- **McKay, M.P.** (2013), Tectonic controls on turbidite distribution, Invited technical presentation given to: 1) Shell-Clastic Research Team, 2) Chevron-Clastic Stratigraphy R&D, 3) Chevron-Energy Tech. Company Geosciences Division Technical Talk

JOURNAL/PROPOSAL REVIEWER, REVIEWER BOARD, EDITORIAL ACTIVITY:

American Geophysical Union (AGU) books		2021
GSA Sectional Meeting Guides: Geological Society of America Field Guide 61		2021
NASA Postdoctoral Program (NPP) reviewer		2018-present
National Science Foundation (EAR) grant reviewer		2019
<i>Island Arc (Wiley Publishing)</i>		2019
American Chemical Society-Petroleum Research Fund grant reviewer		2019
<i>International Geology Review</i>		2020
<i>Geosciences (MDPI)</i>	Reviewer and reviewer board member	2019-2021
<i>Lithosphere (Geological Society of America)</i>	(multiple manuscripts)	2017-2018
<i>Journal of Geology (University of Chicago Press)</i>		2018
<i>Gondwana Research (Elsevier)</i>	(multiple manuscripts)	2018
<i>Minerals (MDPI)</i>		2018
<i>Journal of Sedimentary Research (Society for Sedimentary Geology-SEPM)</i>		2016
<i>Geology (Geological Society of America)</i>		2017; 2021
<i>Basin Research (Wiley Publishing)</i>	(multiple manuscripts)	2016-2017

HISTORY OF FUNDING

Missouri State (funded, final award amount shown or in review; MSU portion of award shown if collaborative; match not included in total fund amounts, only awarded funds)

National Park Service (contract award 2020-2024) (year 1=\$29,793)
\$92,903

Title: *Geologic mapping of the Natchez Trace National Parkway, NW Alabama, SW Tennessee*

Student involvement: +3 M.S. students

HISTORY OF FUNDING (cont.):

National Science Foundation EAR-Tectonics (collaborative)

\$122,964

Title: *Evaluating the drivers of exhumation during accretionary orogenesis: a field-based investigation in the Salmon River suture zone, Idaho*

US Geological Survey EDMAP Grant 2020-2021 **\$23,686**

Title: *Geologic mapping of the Clairmont Springs and Porter Gap quadrangles, Alabama*

Missouri State Faculty Research Grant 2019-2020 **\$7,125**

Title: *Can sedimentary source be determined with mineral age in the Sea of Japan*

NASA-Missouri Space Grant Internship 2019-2020 **\$12,000**

Title: *Development of a non-magnetic compass for Lunar exploration*

Student involvement: 4 senior undergraduates/NASA intern

Collaboration: with Dr. A. Clark in Missouri State Department of Computer Sciences

US Geological Survey EDMAP Grant 2019-2020 **\$11,036**

Title: *Fault sequencing along the trailing edge of the Appalachian fold and thrust belt*

Student involvement: 2 graduate students (M.S.), 1 undergraduate student

NASA-Missouri Space Grant Consortium Affiliate Award (2018) **\$9,000**

Title: *Linking distal volcanic deposits with specific eruptions in the western U.S.*

Student involvement: 2 senior undergraduate student

NASA-Missouri Space Grant Consortium Affiliate Award **\$6,634**

Title: *Dating Paleozoic impact structures in the Ozarks*

Student involvement: 1 senior undergraduate student

NASA-Missouri Space Grant Internship 2017-2018 **\$3,800**

Title: *Using bolide impacts as analogues for orogenic deformation*

Student involvement: 1 senior undergraduate/NASA intern

Missouri State Faculty Research Grant 2017-2018 **\$7,200**

Title: *How old are the Appalachian Mountains?*

Student involvement: 1 senior undergraduate student

US Geological Survey EDMAP Grant 2017-2018 **\$24,660**

Title: *Linking midcrustal metamorphic rocks with upper crustal units: western Idaho*

Student involvement: 2 graduate students (M.S.), 2 undergraduate students

BassPro Foundation Conservation Grant 2017 **\$2,500**

Title: *Teaching advanced geologic methods in the field*

US Geological Survey EDMAP Grant 2018-2019 **\$12,864**

Title: *Tracking down evidence for prolonged terrane accretion: geologic mapping in western Idaho*

West Virginia University (as Ph.D. student)

Chesapeake Energy Fellowship 2011-2012; 2013-2014	\$16,000
Richard W. Beardsley Grant: American Association of Petroleum Geologists 2013	\$3,000
Arthur A. Meyerhoff Grant: American Association of Petroleum Geologist 2012	\$3,000
Geological Society of America Grant in aid 2012	\$2,500
West. Virg. Univ. Milton T. & Doris E. Heald Promising Researcher Award 2013	\$2,000
Society for Sedimentary Geology Grant 2012	\$2,000
Society for Sedimentary Geology Grant 2013	\$1,200
West Virginia Univ. College and Departmental grants	\$2,550

Total MSU funding awarded (including multi-year NPS contract) \$336,372

Short Courses:

Chevron ETC Turbidite Field Course: Karoo Basin, S. Africa (as a graduate instructor)	2012
UCLA-NSF Secondary Ion Probe Microanalysis Workshop	2012
SEPM and UL-Lafayette 3-D seismic interpretation, Lafayette, La	2011
AAPG Imperial Barrel Award workshop, San Antonio, TX	2010

PROFESSIONAL MEMBERSHIPS:

Geological Society of America	American Association of Petroleum Geologists
Society for Sedimentary Geology (SEPM)	American Geophysical Union
Deep Time Institute, Board Member	Alabama Geological Society

Selected Field Experience/Study Areas:

Eastern U.S.	Western Cordillera
Appalachian Mountains	New Mexico and Colorado
Ouachita Mountains	Wyoming and Montana
Missouri bolide impacts	Idaho, Oregon, Washington
East Asia	Atlantic Canada
South China Sea	Pyrenees
Sea of Japan	South Africa
Taiwan	West of Shetlands and North Sea
Gulf of Mexico	

CERTIFICATIONS AND TRAINING

National Association of Underwater Instructors (NAUI) Certified Scuba Diver (Open Water)
High ropes course/repelling/mountaineering experience

FAA Part 107 Remote Pilot Certificate

issued 14MAY2021

MILITARY OPERATIONS/LOGISTICS/MANAGEMENT

During a four-year enlistment (May 2003-May 2007) in the United States Coast Guard I honorably attained the rank of Petty Officer Second-Class (E-5) in the Yeoman rating. Duties as an active duty NCO (non-commissioned officer) included:

- Deck Seaman (E-3), USCGC Decisive (Aug. 2003-Mar. 2004); Duties/qualifications included: deck, heavy machinery & small boat operation/maintenance, damage control & weapons qualified, helm/lookout, quartermaster, battle medic. Treaties and Law Enforcement (TLE) and anti-narcotic operations.

MILITARY OPERATIONS/LOGISTICS/MANAGEMENT (cont.)

- Yeoman (E-4; E-5), PSC Topeka (April 2004-May 2007); Support team Assistant Team Leader, NCO; supporting field, fleet, and in-theatre operational personnel.

Selected Awards & Commendations:

- Armed Forces Service Medal for meritorious service during Hurricane Katrina
- Commandants Letter of Commendation for outstanding performance of duty
- Presidential Unit Citation for Hurricane Katrina preparation, response, and recovery
- Good Conduct Medal
- Coast Guard "E" Ribbon
- Global War on Terrorism Medal
- Meritorious Unit Citation-Operations
- Pistol Marksmanship
- National Defense Medal

REFERENCES

Dr. Amy Weislogel	Position:	Associate Professor at West Virginia University
	Relationship:	Ph.D. advisor
	Email:	amy.weislogel@mail.wvu.edu
G. Daniel Irvin	Position:	Geologic Mapping Program manager
	Email:	dirvin@gsa.state.al.us
	Relationship:	Manager at Geological Survey of Alabama
Dr. William T. Jackson, Jr.	Position:	Assistant Professor at the University of Memphis
	Email:	wtjackson@memphis.edu
	Relationship:	Field mapping partner; research collaborator

Additional Reference Information and Supporting Documentation Furnished Upon Request