

## CURRICULUM VITAE

### Joseph I. Satterfield

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#### Professional Experience

Angelo State University (Fall 2014 – present): Professor of Geology

Angelo State University (Fall 2008 – Spring 2014): Associate Professor of Geology

Angelo State University (Fall 2003 – Spring 2008): Assistant Professor of Geology

San Jacinto College North (Fall 1996 – Spring 2003): Geology Instructor

Rice University (Spring 1996): Part-time Lecturer

Lee College (Fall 1994 - Spring 1996): full- and part-time geology instructor

Lamar University (Fall 1993 – Fall 1994): Lecturer in Geology

Marathon Oil Company (1982 – 1986): Exploration Geologist

#### Education

Rice University (1987 – 1995): Ph.D., Geology, May 1995  
Dissertation: Mesozoic Geology of the Sand Springs Range, West-central Nevada

University of Missouri-Columbia (1980 – 1982): M.A., Geology, August 1982  
Thesis: Geology of a portion of the Trap Mountains, Arkansas

Rice University (1976 – 1980): B.A., Geology, May 1980

University of Houston (Fall 1986)

#### Teaching Background

Geology courses I teach at ASU: Field Geology (Summer Field Camp), Structural Geology, Mineralogy and Petrology, Field Methods in Geology, Physical Geology, Historical Geology, and Research (Geology).  
I also teach Introductory Physical Science Labs and Solar System Astronomy

At ASU I have organized and led several weekend geology field trips each semester to central and West Texas localities, including Big Bend National Park, Enchanted Rock, and the Davis Mountains. I also organize field trips run during lab times at San Angelo State Park and at several other local outcrops.

**Teaching  
Interests**

Approaches I like to use: a) involving students in my structural geology and mapping research, b) solving geologic problems on field trips, c) using West Texas examples and examples from my own research in courses, d) including group, lab-style projects in my “lecture” classes, d) making and showing computer-drafted figures.

**Current  
Research  
Projects**

*Easternmost Laramide and younger folds and faults in the Big Bend region, Texas (2006 – present)*

Collaborators: James Ward and Heather Lehto, Angelo State University, Richard Ashmore, University of Colorado Denver, Chris Barker, Stephen F. Austin State University

Folds and faults in Mesozoic rocks in Sierra del Carmen have been interpreted to be caused by a regional strike-slip fault zone. To test this model and alternatives my students and I have made 1:12,000-scale geologic maps and collected outcrop-scale fold and fault orientations within a northern Sierra del Carmen in the eastern part of Big Bend National Park and adjacent Black Gap Wildlife Management Area. Future mapping by ASU students and myself will extend the area currently mapped. Jim Westgate and Richard Ashmore will identify fossils found. Chris Barker and I are correlating folds we have measured in different localities. One paper describing our preliminary results was published in 2007. A second paper describing the regional setting was published in January 2009.

Mapping began in the southern Marathon uplift, northeast of the National Park in March 2007. Much of this large area had not been visited by geologists since 1937, has never been mapped in detail, and includes the same types of structures we are mapping within the national park. The southern Marathon uplift contains a “mirror image” of Sierra del Carmen folds and faults: Sierra del Carmen contains the western margin of a large Laramide uplift that extends well into Mexico while the southeastern Marathon uplift contains the eastern margin. Work has been funded by grants from the Texas Academy of Science, the Southwest Section, American Association of Petroleum Geologists, and Chesapeake Energy Corporation

Glass Mountains mapping, in the northern Marathon uplift, began August 2013.

*Mesozoic structure and stratigraphy of the Sand Springs lithotectonic assemblage, west-central Nevada (1988 – 2002, 2011- present )*

Collaborator: John Oldow, University of Texas at Dallas

Well-exposed but little-studied Mesozoic rocks in western Nevada contain Mesozoic folds and faults that may be caused by regional forces related to plate interaction at western boundary of the North American plate or by local forces exerted by the intrusion of abundant Mesozoic granitoid plutons. To test these models I made 1:4000- to 1:24:000-scale maps, measured orientations of outcrop scale folds, collected samples for isotopic dating, and described structures and minerals observed under the polarizing microscope. Portions of the Sand Springs Range, northern Gillis Range, and Copper Mountain were mapped. Mapping shows that these ranges contain correlative folds and a consistent stratigraphy, supporting the interpretation that structures are related to regional, plate-tectonic forces and that a large block, the Sand Springs terrane, is bounded by large faults. A geologic map of the southern Sand Springs Range was published in 2002. In 2017 I will revise and submit for publication a paper describing the structure and stratigraphy of this terrane.

**Grants  
Received**

National Science Foundation Grant to J.I. Satterfield, J.W. Ward, C. Purkiss, K.P. Blount, C. Youker, and S. Minzenmayer: OEDG Track 1: Pathways for Inspiring, Educating, and Recruiting West Texans in the Geosciences (PIER): September 2011 – 2014 (\$164,839)

Angelo State University Research Enhancement Grant to J.I. Satterfield  
Geologic Map of Sierra del Carmen, January 2011- August 2012 (\$11,000)

Chesapeake Energy Corporation Grant to J.I. Satterfield: Geologic mapping in the southern Marathon uplift: June 2010 – September 2010 (\$16,475)

Chesapeake Energy Corporation Grant to J.I. Satterfield: Geologic mapping of a portion of the Marathon uplift: July 2009 - 2010 (\$12,000)

Angelo State University Research Enhancement Grant to J.I. Satterfield: Geologic mapping in the Slaughter Ranch, Big Bend region January 2009 – August 2009. (\$9000.00)

Angelo State University Research Enhancement Grant to J.I. Satterfield and C.A. Poppeliers: Geologic mapping in Sierra del Carmen, Big Bend National Park, January 2007 – August 2007. (\$9645.00)

Angelo State University Research Enrichment and President's Circle Grants to J.I. Satterfield: Research Enrichment and President's Circle Grant: Mapping folds in Sierra del Carmen, Big Bend National Park: A project involving an undergraduate Earth Science Minor, April 2006 – August 2007. (\$4000.00)

National Science Foundation grant to Christian Poppeliers, J.I. Satterfield, and G.P. Blount: MRI: Acquisition of a High Performance Computing System for Undergraduate Geoscience Research (\$51,000.00; awarded 2007, transferred to Augusta State University, September 2007)

National Science Foundation grant to J.I. Satterfield and John Oldow, University of Idaho: Collaborative Research, RUI: Geodetic and geologic study of the kinematics of late Cenozoic displacement transfer, central Walker Lane, western Great Basin, 2002-2006 (\$29,719.25; Grant transferred to ASU March 2004; No Cost extension granted December 2004)

**Student  
Research  
Projects  
Advised**

Taylor Newton (Spring 2017 – present), GEOL 4391, Western Nevada Metamorphism

William White (Fall 2016 - present): GEOL 4191, Western Nevada Igneous Petrography and Geochemistry

Darren Garcia (Fall 2016 - present): GEOL 4191, Big Bend Geologic Mapping

Turner Doggett (Spring 2016 – Spring 2017): GEOL 4191, Turner Ranch Geology

Sean Czarnecki (Spring 2015 – Fall 2016): GEOL 4391, Western Nevada Mapping, ASU Undergraduate Research Project, research supported by SW AAPG Research Grant

Jacob Jarvis (Spring 2015 – Spring 2016): GEOL 4391, Western Nevada Mapping, ASU Undergraduate Research Project, research supported by SW AAPG Research Grant

Travis Sparks (Spring 2015 – Spring 2016): GEOL 4391, Llano Uplift Mapping, ASU Undergraduate Research Project

Laiza Valeria Vera-Lopez (Fall 2014 – Spring 2015): GEOL 4391, Big Bend Geologic mapping. ASU Undergraduate Research Scholarship Project.

Travis Williams (Fall 2014 – Spring 2015): GEOL 4391, Big Bend Geologic mapping. ASU Undergraduate Research Scholarship Project.

Bailey Welch (Fall 2013 – Fall 2014): GEOL 4191, 4391, Big Bend Geologic Mapping. Research Supported by South Section, AAPG Research Grant.

Leslie Williams (Fall 2013 – present): GEOL 4191, Glass Mountains Geologic Mapping

Paul Gully (Fall 2013 – Spring 2014): GEOL 4191, Glass Mountains Geologic Mapping

Jessica Bernal (Fall 2012 – Spring 2013): GEOL 4191, 4291, Tracing Prospects in West Texas

Taylor Ewald (Fall 2012 – Spring 2013): GEOL 4191 4291, Wilcox Formation Field Study

Miguel Rodriguez (Fall 2012 – Spring 2013): GEOL 4391, Marathon uplift mapping. ASU Undergraduate Research Scholarship Project

Jacob Crouch (Fall 2012 – Spring 2013): GEOL 4391, Marathon uplift mapping. ASU Undergraduate Research Scholarship Project

Jeff Cullen (Fall 2011 – Spring 2012): GEOL 4191, 4391, Big Bend Igneous Petrography

Jeremiah Bihl (Spring 2011 – Spring 2012): GEOL 4191, 4291, 4391, West Texas Joint Study

Justin Cartwright (Spring 2012): GEOL 4191, Big Bend Geologic Mapping

Trent Bieberly (Spring 2012): GEOL 4191, Big Bend Geologic Mapping

Ryan Bullock (Fall 2010): GEOL 4391, Big Bend Geologic Mapping

Ruben Sayavedra (Spring 2010 – Fall 2010): GEOL 4291, 4391, Geologic mapping of San Angelo State Park

Robert Raney (Spring 2010 – Fall 2011): GEOL 4191, 4291, Geology of Susan Peak Oil Field, Tom Green County

Travis Barnett (Spring 2010 – Fall 2011): GEOL 4391: Big Bend Geologic Mapping, XRF. Carr Research Scholarship Project (David Bixler co-advisor)

Victor Siller (Fall 2009 – Spring 2011): GEOL 4391, Petrography of Big Bend region igneous rocks. Carr Research Scholarship Project

Mason Brownlee (Spring 2009 – Spring 2010): GEOL 4291, Big Bend Geologic Mapping

Dominick Percoco (Spring 2009 – Spring 2010): GEOL 4291, Big Bend Geologic Mapping

Amanda Williams (Spring 2009 – Spring 2010): GEOL 4191, Big Bend Geologic Mapping

Kendall Clark (Summer 2009), GEOL 4391 USGS Hydrology Research

Juan Carlos Carranco (Fall 2009), GEOL 4391: Geologic mapping of San Angelo State Park

Henry Schreiner (Spring 2008 – Fall 2009), GEOL 4391: Dagger Mtn Mapping, GIS, Carr Research Scholarship project

Ryan Sonntag (Spring 2007 – Spring 2009): GEOL 4191, 4291: Big Bend Geologic Mapping

Justin Cartwright (Fall 2008): Geologic and topographic mapping of proposed disc golf course, San Angelo State Park

Jonathan Thomas (Fall 2008) PHYS 4391: USGS Geophysics Research

Juliana Meadows (Summer 2008), GEOL 4391: USGS Hydrology Research

Andrew Garcia (Summer 2007), GEOL 4191: Big Bend Geologic Mapping

Jonathan Dyess (Summer 2006 – May 2007), GEOL 4391: Big Bend Geologic Mapping, Carr Research Scholarship project

Jenny Blaylock (Fall 2006, Spring 2007), GEOL 4391: Water Research at USGS

Jason Payne (Fall 2006): GEOL 4391: Water Research at USGS

Cherise Montgomery (Summer 2005), GEOL 4191: Geologic Mapping in W. Nevada

Kieran O’Callaghan, Angelo State University (Summer 2005), GEOL 4191: Geologic Mapping in W. Nevada

Landa Cason (Spring 2005), PHYS 4391: Regional Setting / Geologic Map of San Angelo State Park

Sadler Mahan (Summer 2004 – 2005), Geologic Mapping in W. Nevada

Darren Garcia (Summer 2004), Geologic Mapping in W. Nevada

Karen Robertson (Summer 2004), Geologic Mapping in W. Nevada

## Publications

- Sparks, T.A., and Satterfield, J.I., 2017, New mapping of late Paleozoic faults and local Precambrian aquifers, Llano uplift: West Texas Geological Society Bulletin, v. 56, p. 7 - 18.
- Satterfield, J.I., editor, 2016, Eastern Shelf Sandstones and Carbonates: Surface Exposures and Subsurface Applications: Field Trip Guidebook for Southwest Section of the American Association of Petroleum Geologists 2016 Annual Meeting, 111 p.
- Vera-Lopez L.V., Welch, B.L., and Satterfield, J.I., 2015, Map-scale folds in Big Brushy Canyon, Northern Sierra del Carmen, Big Bend Region, Texas: Crius, v. 3, p. 1 – 15. <https://crius-ojs-asu.tdl.org/crius/index.php/crius/article/view/35>
- Cullen, J., Knox, N.K., Crouch, J., and Satterfield, J.I., 2013, Polyphase Laramide Structures and Possible Folded Tertiary(?) Sills at Dagger mountain, Big Bend National Park, Texas, The Compass: Earth Science Journal of Sigma Gamma Epsilon, v. 85, <http://digitalcommons.csbsju.edu/compass/vol85/iss3/3>
- Cullen, J.D., Knox, N.K., Crouch, J., and Satterfield, J.I., 2013, Geology of Dagger Mountain, Big Bend National Park, Texas: Crius, v. 1, p. 67-83.
- Satterfield, J.I., and Ashmore, R.A., 2009, Overview of recent mountain-building events in the Big Bend region, West Texas and northern Mexico: Journal of Borderland Studies, 35 p.
- Satterfield, J.I., and Dyess, J.E., 2007, Polyphase folds and faults in a wrench fault zone, northern Big Bend National Park: West Texas Geological Society Bulletin, v. 46, p. 8 – 19.
- Satterfield, J.I., 2002, Geologic map of the southern Sand Springs Range, Churchill and Mineral Counties, Nevada: Nevada Bureau of Mines and Geology Map 133, scale 1:24,000.
- Manuszak, J.D., Satterfield, J.I., and Gehrels, G.E., 2000, Detrital zircon geochronology of Upper Triassic strata in western Nevada, *in* Soreghan, M.J. and Gehrels, G.E., eds., Paleozoic and Triassic paleogeography and tectonics of western Nevada and northern California: Geological Society of America Special Paper 347, p. 109-118.
- Oldow, J.S., Satterfield, J.I., and Silberling, N.J., 1993, Jurassic to Cretaceous transpressional deformation in the Mesozoic marine province of the northwestern Great Basin, *in* Lahren, M.M., Trexler, J.H., Jr., and Spinoza, C., eds., Crustal evolution of the Great Basin and Sierra Nevada: Cordilleran/Rocky Mountain Section, Geological Society of America Guidebook, Department of Geological Sciences, University of

Nevada, Reno, p. 129-166.

**Recent  
Abstracts**

- Doggett, T.A., and Satterfield, J.I., 2017, Geology of T\* Ranch, Tom Green and Irion Counties, West Texas: Southwest Section American Association of Petroleum Geologists Annual Convention, p. 107-108.
- Czarnecki, S.M., Jarvis, J.C., Garcia, D.G., and Satterfield, J.I., 2016, Slate Mountain and northern Sand Springs Range, Nevada geologic maps clarify key cross-cutting relations in the Cordilleran hinterland: Geological Society of America Abstracts with Programs, v. 48.
- Thomas, W.A., Gehrels, G.E., Satterfield, J.I., and Romero, M.C., 2016, Detrital zircons and sediment dispersal across the Marathon foreland, West Texas, USA: Geological Society of America Abstracts with Programs, v. 48.
- Satterfield, J.I., and Poppeliers, C., 2014, West Texas sills emplaced by magma inflation folded in post-32.5 Ma Laramide folds?: Geological Society of America Abstracts with Programs, v. 46, p. 562.
- Satterfield, J.I., and Ward, J.W., 2014, Angelo State University field camp emphasizes geologic mapping and problem solving: Southwest Section American Association of Petroleum Geologists Annual Convention, p. 7.
- Gully, P., and Satterfield, J.I., 2014, Detailed mapping in the NE Glass Mountains reveals angular unconformities which constrain timing of deformation events: Southwest Section American Association of Petroleum Geologists Annual Convention,
- Satterfield, J.I., Ward, J.W., Lehto, H.L., and Bixler, D.L., 2013, New undergraduate geoscience program at Angelo State University: What we are learning after three years: Geological Society of America Abstracts with Programs, v. 45.
- Knox, N., Cullen, J., and Satterfield, J.I., 2013, Dagger Mountain, Big Bend National Park, Texas, contains three phases of Laramide through Basin and Range folds: Geological Society of America Abstracts with Programs, v. 45, p. 67.
- Satterfield, J.I., and Oldow, J.S., 2013, Pitfalls and challenges of dating deformations: Changing timing interpretations in the Sand Springs Range, western Nevada: 116th Annual Meeting of the Texas Academy of Science Program and Abstracts, p. 86.



- Ward, J.W., and Satterfield, J.I., 2013, What we have learned: Field experiences in West Texas: 116th Annual Meeting of the Texas Academy of Science Program and Abstracts, p. 86.
- Crouch, J.C., Rodriguez, M., and Satterfield, J.I., 2013, New geologic mapping in the southern Marathon uplift: 116th Annual Meeting of the Texas Academy of Science Program and Abstracts, p. 85.
- Cullen, J., Knox, N., and Satterfield, J., 2013, Well-exposed Tertiary sills inflate Cretaceous Boquillas Formation: SE Brewster County, Big Bend National Park: 116th Annual Meeting of the Texas Academy of Science Program and Abstracts, p. 86.
- Satterfield, J.I., and Oldow, J.S., 2012, Sand Springs lithotectonic assemblage, west-central Nevada: Possible link between Sierra Nevada and Luning-Fencemaker thrust belt: Geological Society of America Abstracts with Programs, v. 44, p. 3.
- Bihl, J.I., Sayavedra, C.R., and Satterfield, J.I., 2012, Permian Strata in the San Angelo area contain systematic fracture sets: Geological Society of America Abstracts with Programs, v. 44, p. 5.
- Cullen, J.D., Siller, V.P., and Satterfield, J.I., 2012, Petrology of Black Hills and Dagger Mountain intrusions, Big Bend region: Determining emplacement styles from magmatic foliations and compositions: Geological Society of America Abstracts with Programs, v. 44, p. 7.
- Satterfield, J.I., Dyess, J.E., Barker, C.A., and Nielson, L., 2012, New sequence of polyphase Laramide and younger folding recognized throughout Big Bend region: 115th Annual Meeting of the Texas Academy of Science Program and Abstracts, p. 84.
- Knox, N.K., Satterfield, J.I., and Schreiner, H.F. III, 2012, Folds and sills south and east of Dagger Mountain, Big Bend National Park and Black Gap Wildlife Management Area: 115th Annual Meeting of the Texas Academy of Science Program and Abstracts, p. 84.
- Cartwright, M.J., Bieberly, T.R., Satterfield, J.I., and Miggins, D.P., 2012, Detailed mapping of Mariscal Mountain anticline, Big Bend National Park: 115th Annual Meeting of the Texas Academy of Science Program and Abstracts, p. 85.
- Raney, R.L., and Satterfield, J.I., 2012, Field study of the Susan Peak oil field, Eastern Shelf of the Permian basin, Tom Green County, Texas: Geological Society of America Abstracts with Programs, v. 44, p. 5.

Raney, R.L., and Satterfield, 2011: Field study of the Susan Peak Oil Field, eastern shelf of the Permian basin, Tom Green County, Texas: 114th Annual Meeting of the Texas Academy of Science Program and Abstracts, p. 91.

Satterfield, J.I., Ward, J.W., Wallace, A.B., and Blount, G.P., 2011, New geoscience BS degree at Angelo State University: 114th Annual Meeting of the Texas Academy of Science Program and Abstracts, p. 91-92.

Sayavedra, C.R., and Satterfield, J.I., 2011, Permian strata of the San Angelo area contain systematic fracture sets: 114th Annual Meeting of the Texas Academy of Science Program and Abstracts, p. 91.

Siller, V.P., and Satterfield, J.I., 2011, Petrography of intrusions in northern Big Bend National Park supports passive emplacement mechanism: 114th Annual Meeting of the Texas Academy of Science Program and Abstracts, p. 91.

Satterfield, J.I., Schreiner, H.F. III, Brownlee, M., Percoco, D., Williams, A., and Barnett, T., 2010, Polyphase structures and passively emplaced plutons in northern Sierra del Carmen, Big Bend Region, Texas: 113th Annual Meeting of the Texas Academy of Science Program and Abstracts, p. 160 – 161.

**Recent  
Invited Talks**

San Angelo Geological Society, February 2017, Proposed Fall 2017 field trip: Potential Big Bend analogs to Permian basin geology

San Angelo West Rotary Club, February 2017, ASU teaches geology outside: Big Bend, West Texas, and beyond

Abilene Geological Society, January 2017, Four field trip stops in Sierra del Carmen, Big Bend region: Potential Permian basin analogs?

Society of Independent Professional Earth Scientists, Midland Chapter, August 2016, Recent mapping in the Big Bend region: What I have learned that applies to petroleum geology

Sul Ross State University, September 13, 2013: Western Nevada Structures link foreland (Big Bend region) and hinterland (Sierran arc) of Cordilleran orogen.

Baylor University Department of Geology, October 1, 2010: Distinguishing local deformation events from orogen-wide events in Sierra del Carmen, Big Bend National Park, Texas

**Membership  
in  
Professional  
Organizations** Texas Academy of Science: Academic Director, 2011 – 2013  
Chair of Geosciences Section 2003, 2004, 2009  
Geological Society of America  
American Association of Petroleum Geologists: Active Member, Advisor to  
GEO AAPG Student Chapter  
West Texas Geological Society: member  
San Angelo Geological Society: member

**Awards** 2016 Faculty Excellence in Teaching Award, Angelo State University  
2016 Distinguished Service Award, West Texas Geological Society  
2015 Distinguished Educator, Southwest Section of the American Association  
of Petroleum Geologists  
2015 Professorial Award for Excellence in the Teaching of Natural Resources  
in the Earth Sciences, American Association of Petroleum Geologists  
Foundation  
2013 President’s Award for Faculty Excellence in Service, Angelo State  
University

**References**

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