

## KEVIN JOSEPH SMART

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### **Academic History:**

Ph.D. in Geology, University of Tennessee, Knoxville, Tennessee	1996
<i>Kinematic Analysis and Mechanical Modeling of Roof Sequence Response to Blind Thrusting</i>	
M.S. in Geology, University of New Orleans, New Orleans, Louisiana	1992
<i>Deformational History of the Border Ranges Fault System, Glacier Bay National Park, Alaska</i>	
B.S. (Honors) in Geology (Math minor), Allegheny College, Meadville, Pennsylvania	1989
<i>Strain Analysis of the Upper Paleozoic Olean Sandstone, Appalachian Plateau of Northwestern Pennsylvania</i>	

### **Professional Experience:**

Manager, Earth Science Section, Space Science & Engineering Division, Southwest Research Institute	2017 to present
Manager, Department of Earth, Material, & Planetary Sciences, Geosciences & Engineering Division, Southwest Research Institute	2015 to 2017
Staff Scientist, Department of Earth, Material, & Planetary Sciences, Geosciences & Engineering Division, Southwest Research Institute	2013 to 2015
Principal Scientist, Department of Earth, Material, & Planetary Sciences, Geosciences & Engineering Division, Southwest Research Institute	2009 to 2013
Senior Research Scientist, Department of Earth, Material, & Planetary Sciences, Geosciences & Engineering Division, Southwest Research Institute	2005 to 2009
Senior Research Scientist, Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute	2004 to 2005
Research Scientist, Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute	2003 to 2004
Assistant Professor, School of Geology & Geophysics, University of Oklahoma	1997 to 2003

### **Professional Registrations and Affiliations:**

Certified Professional Geologist (CPG-10826), American Institute of Professional Geologists	2004 to present
Licensed Professional Geoscientist #2368, Texas Board of Professional Geoscientists	2003 to present
American Association of Petroleum Geologists	1989 to present
American Geophysical Union	1991 to present
American Institute of Professional Geologists	2004 to present
American Rock Mechanics Association	2003 to present
Geological Society of America	1991 to present
Houston Geological Society	2015 to present
Society of Petroleum Engineers	2011 to present

### **External Publications:**

1. Ferrill, D.A., Evans, M.A., McGinnis, R.N., Morris, A.P., Smart, K.J., Lehrmann, D., Gulliver, K.D.H., Sickmann, Z. (2019) Fault zone processes and fluid history in Austin Chalk, southwest Texas. *American Association of Petroleum Geologists Bulletin*, in press.
2. Smart, K.J., Ferrill, D.A. (2018) Discrete element modeling of extensional fault-related monocline formation. *Journal of Structural Geology* **115**, 82–90.
3. Ferrill, D.A., Morris, A.P., McGinnis, R.N., Smart, K.J., Ward, W.C. (2018) Fault zone deformation and displacement partitioning in mechanically layered carbonates: the Hidden Valley fault, central Texas. *Bulletin of the South Texas Geological Society* **LVIII**(8), 41-56.

4. Ferrill, D.A., McGinnis, R.N., Morris, A.P., Smart, K.J., Gulliver, K.D.H., Lehrmann, D., Evans, M.A. (2017) Mechanical stratigraphic and tectonic controls on natural fracturing in the Eagle Ford Formation, south-central Texas. *Gulf Coast Association of Geological Societies Transactions* **67**, 121–131.
5. Morris, A.P., Ferrill, D.A., Walter, G.R., Price, A.M., Smart, K.J., Skoumal, R.J., Brudzinski, M.R., Currie, B.S. (2017) Lessons learned from the Youngstown, Ohio induced earthquake sequence January 2011 to January 2012. *Journal of Rock Mechanics and Geotechnical Engineering* **9**(5), 783–796.
6. Ferrill, D.A., Smart, K.J., McGinnis, R.N., Morris, A.P., Gulliver, K.D.H. (2017) Influence of structural position on fracturing in the Austin Chalk. *Gulf Coast Association of Geological Societies (GCAGS) Journal* **6**, 189–200.
7. Ferrill, D.A., Evans, M.A., McGinnis, R.N., Morris, A.P., Smart, K.J., Wigginton, S.S., Gulliver, K.D.H., Lehrmann, D., de Zoeten, E., Sickmann, Z. (2017) Fault zone processes in mechanically layered mudrock and chalk. *Journal of Structural Geology* **97**, 118–143.
8. McGinnis, R.N., Ferrill, D.A., Morris, A.P., Smart, K.J., Lehrmann, D. (2017) Mechanical stratigraphic controls on natural fracture spacing and penetration. *Journal of Structural Geology* **95**, 160–170.
9. Ferrill, D.A., Morris, A.P., McGinnis, R.N., Smart, K.J., Wigginton, S.S., Hill, N.J. (2017) Mechanical stratigraphy and normal faulting. *Journal of Structural Geology* **94**, 275–302.
10. Ferrill, D.A., Morris, A.P., McGinnis, R.N., Smart, K.J., Watson-Morris, M.J., Wigginton, S.S. (2016) Observations on normal-fault scarp morphology and fault system evolution of the Bishop Tuff in the Volcanic Tableland, Owens Valley, California, U.S.A. *Lithosphere* **8**(3), 238–253.
11. Ferrill, D.A., Morris, A.P., McGinnis, R.N., Smart, K.J. (2016) Myths about normal faulting. In *The Geometry and Growth of Normal Faults* (eds. C. Childs, R.E. Holdsworth, C.A.-L. Jackson, T. Manzocchi, J.J. Walsh, G. Yielding). *Geological Society of London Special Publication* **439**.
12. Ferrill, D.A., Morris, A.P., Wigginton, S.S., Smart, K.J., McGinnis, R.N., Lehrmann, D. (2016) Deciphering thrust fault nucleation and propagation and the importance of footwall synclines. *Journal of Structural Geology* **85**, 1–11.
13. McGinnis, R.N., Ferrill, D.A., Morris, A.P., Smart, K.J. (2016) Insight on mechanical stratigraphy and subsurface interpretation. In *3-D Structural Interpretation: Earth, Mind, and Machine* (eds. B. Krantz, C. Ormand, and B. Freeman). *American Association of Petroleum Geologists Memoir* **111**, 111–120.
14. McGinnis, R.N., Ferrill, D.A., Smart, K.J., Morris, A.P., Higuera-Diaz, C., Prawica, D. (2015) Pitfalls of using entrenched fracture relationships: Fractures in bedded carbonates of the Hidden Valley Fault Zone, Canyon Lake Gorge, Comal County, Texas. *American Association of Petroleum Geologists Bulletin* **99**(12), 2221–2245.
15. Smart, K.J., Ofoegbu, G.I., Morris, A.P., McGinnis, R.N., Ferrill, D.A. (2014) Geomechanical modeling of hydraulic fracturing: Why mechanical stratigraphy, stress state, and pre-existing structure matter. *American Association of Petroleum Geologists Bulletin* **98**(11), 2237–2261.
16. Ferrill, D.A., McGinnis, R.N., Morris, A.P., Smart, K.J., Sickmann, Z., Bentz, M., Lehrmann, D., Evans, M.A. (2014) Control of mechanical stratigraphy on bed-restricted jointing and normal faulting: Eagle Ford Formation, south-central Texas, U.S.A. *American Association of Petroleum Geologists Bulletin* **98**(11), 2477–2506.
17. Ferrill, D.A., Morris, A.P., Smart, K.J., McGinnis, R.N. (2012) Stress management: Applications of structural geology and geomechanics to energy exploration and production. *Journal of Petrotech* **VII**(7), 32–40.
18. Smart, K.J., Ferrill, D.A., Morris, A.P., McGinnis, R.N. (2012) Geomechanical modeling of stress and strain evolution in contractional fault-related folding. *Tectonophysics* **576-577**, 171-196.
19. Ferrill, D.A., McGinnis, R.N., Morris, A.P., Smart, K.J. (2012) Hybrid failure: Field evidence and influence on fault refraction. *Journal of Structural Geology* **42**, 140–150.
20. Smart, K.J., Ofoegbu, G., Das, K., Basu, D. (2012) Geomechanical modeling of hydraulic fracture initiation and propagation in a mechanically stratified geologic system. *46<sup>th</sup> U.S. Rock Mechanics/Geomechanics Symposium*, ARMA Paper **12-275**.
21. Morris, A.P., Smart, K.J., Ferrill, D.A., Reish, N.E., Cowell, P.F. (2012) Fault compartmentalization in clastic reservoirs. *American Association of Petroleum Geologists Bulletin* **96**(6), 1001–1015.
22. Smart, K.J., Wyrick, D.Y., Ferrill, D.A. (2011) Discrete element modeling of Martian pit formation in response to extensional fracturing and dilational normal faulting. *Journal of Geophysical Research – Planets* **116**, E04005.
23. Ferrill, D.A., Wyrick, D.Y., Smart, K.J. (2011) Coseismic, dilational-fault and extension-fracture related pit chain formation in Iceland: Analog for pit chains on Mars. *Lithosphere* **3**(2), 133–142.

24. Ferrill, D.A., Morris, A.P., McGinnis, R.N., Smart, K.J., Ward, W.C. (2011) Fault zone deformation and displacement partitioning in mechanically layered carbonates: the Hidden Valley fault, central Texas. *American Association of Petroleum Geologists Bulletin* **95**(8), 1383–1397.
25. Smart, K.J., Ferrill, D.A., Morris, A.P., McGinnis, R.N. (2010) Geomechanical modeling of a reservoir-scale fault-related fold: the Bargo anticline, France. *44<sup>th</sup> U.S. Rock Mechanics Symposium*, ARMA Paper **10-201**.
26. Smart, K.J., Ferrill, D.A., Morris, A.P., Bichon, B.J., Riha, D.S., Huyse, L. (2010) Geomechanical modeling of an extensional fault-propagation fold: Big Brushy Canyon monocline, Sierra Del Carmen, Texas. *American Association of Petroleum Geologists Bulletin* **94**(2), 221–240.
27. Smart, K.J., Ferrill, D.A., Morris, A.P. (2009) Impact of interlayer slip on fracture prediction from geomechanical models of fault-related folds. *American Association of Petroleum Geologists Bulletin Special Issue on Fractured Reservoirs* **93**(11), 1447–1458.
28. Wyrick D.Y., Smart, K.J. (2009) Dike-induced deformation and Martian graben systems. *Journal of Volcanology and Geothermal Research* **185**(1-2), 1–11.
29. Smart, K.J., Busetti, S., Scott, K., Slatt, R.M. (2008) Outcrop fracture characterization of Pennsylvanian Jackfork Group sandstones, Ouachita Mountains, southeastern Oklahoma. In *Stratigraphic and Structural Evolution of the Ouachita Mountains and Arkoma Basin, southeastern Oklahoma and west-central Arkansas: Applications to Petroleum Exploration: 2004 Field Symposium* (eds. N.H. Suneson, I. Cemen, R.M. Slatt). *Oklahoma Geological Survey Circular* **112B**, 63–72.
30. Ofoegbu, G.I., Smart, K.J., Dasgupta, B. (2008) Assessing effects of thermal loading on the stability of emplacement drifts. *Nuclear Technology* **163**, 24–30.
31. Ferrill, D.A., Smart, K.J., Necsoiu, M. (2008) Displacement-length scaling for single-event fault ruptures: Insights from Newberry Springs Fault Zone and implications for fault zone structure. In *The Internal Structure of Fault Zones: Implications for Mechanical and Fluid-Flow Properties* (eds. C.A.J. Wibberley, W. Kurz, J. Imber, R.E. Holdsworth, C. Collettini). *Geological Society of London Special Publication* **299**, 113–122.
32. Ferrill, D.A., Morris, A.P., Smart, K.J. (2007) Stratigraphic control on extensional fault propagation folding: Big Brushy Canyon monocline, Sierra Del Carmen, Texas. In *Structurally Complex Reservoirs* (eds. S.J. Jolley, D. Barr, J.J. Walsh, R.J. Knipe). *Geological Society of London Special Publication* **292**, 203–217.
33. Smart, K.J., Ferrill, D.A., Sims, D.W., Franklin, N.M., Ofoegbu, G.I., Morris, A.P. (2004) Integrated structural analysis and geomechanical modeling: an aid to reservoir exploration and development. *Gulf Rocks 2004–6<sup>th</sup> North American Rock Mechanics Symposium (NARMS): Rock Mechanics Across Borders & Disciplines*. Houston, Texas, June 5-9, 2004. ARMA/NARMS Paper **04-470**.
34. Combs-Scott, K.D., Smart, K.J. (2002) Surface fracture characterization of Jackfork Group turbidite sandstones in the Ouachita Mountains, Oklahoma. *Shale Shaker* **52**, 71–78.
35. Dodson, J.M., Young, R.A., Smart, K.J. (2002) Interpreting seismic data from the Wichita Mountains Frontal Zone with the help of ray-trace modeling. In *Revisiting Old and Assessing New Petroleum Plays in the Southern Midcontinent, 2001 Symposium* (ed. B.J. Cardott). *Oklahoma Geological Survey Circular* **107**, 109–111.
36. Miller, G.W., Smart, K.J. (2002) Remote sensing of geologic structures in highly vegetated areas: Digital mapping in the Potato Hills, southeastern Oklahoma. In *Revisiting Old and Assessing New Petroleum Plays in the Southern Midcontinent, 2001 Symposium* (ed. B.J. Cardott). *Oklahoma Geological Survey Circular* **107**, 81–86.
37. Smart, K.J., Couzens-Schultz, B.A. (2001) Mechanics of blind thrusting: Comparison of numerical and physical modeling. *Journal of Geology* **109**, 771–779.
38. Miller, G.W., Smart, K.J. (2001) Geologic map of the Western Potato Hills, Latimer and Pushmataha Counties, Southeast Oklahoma. *Oklahoma Geological Survey Open-File Report* **OF4-2001**.
39. Dodson, J.M., Young, R.A., Smart, K.J. (2001) An overview of ray trace modeling with an example from the Wichita Mountain Front in southern Oklahoma. *Shale Shaker* **52**(3), 65–73.
40. Miller, G.W., Smart, K.J. (2000) Geologic mapping of the western and central Potato Hills, Ouachita Mountains, Southern Oklahoma. *United States Geological Survey EDMAP Technical Report*, 6 p. + map.
41. Smart, K.J., Krieg, R.D., Dunne, W.M. (1999) Deformation behavior during blind thrust translation as a function of fault strength. *Journal of Structural Geology* **21**, 855–874.
42. Smart, K.J., Dunne, W.M., Krieg, R.D. (1997) Roof sequence response to emplacement of the Wills Mountain duplex: The roles of forethrusting and scales of deformation. *Journal of Structural Geology* **19**, 1443–1459.

43. Ofoegbu, G.I., Ferrill, D.A., Smart, K.J., Stamatakos, J.A. (1997) Uncertainties in earthquake magnitudes from surface fault displacement based on finite element modeling. In *Proceedings of the 1997 U.S. Symposium on Rock Mechanics. International Journal of Rock Mechanics & Mining Science* **34**(3-4), 489.
44. Smart, K.J., Pavlis, T.L., Sisson, V.B., Roeske, S.M., Snee, L.W. (1996) The Border Ranges fault system in Glacier Bay National Park, Alaska: Evidence for major Early Cenozoic dextral strike-slip motion. *Canadian Journal of Earth Sciences* **33**, 1268–1282.

**Technical Reports (Non-Proprietary):**

1. McGinnis, R.N., Morris, A.P., Ferrill, D.A., Smart, K.J., Stamatakos, J., Juckett, M. (2016) Independent evaluation of the Hosgri Fault slip rate based on a structural analysis of the pull-apart basin linking the Hosgri and San Simeon Fault systems. Center for Nuclear Waste Regulatory Analyses (CNWRA), San Antonio, Texas. *Administrative Item AI 19941.01.001.100*. August 2016.
2. Ofoegbu, G.I., Smart, K.J. (2013) Rock Mechanics – Confidence of SKB’s models for predicting the occurrence of a damage zone around the excavations. *Swedish Radiation Safety Authority (SSM) Technical Note 2013:35*.
3. Ofoegbu, G.I., Smart, K.J. (2012) Shear movement of near-field rock due to large earthquakes. *Swedish Radiation Safety Authority (SSM) Technical Note 2012:57*.
4. Morris, A.P., Ferrill, D.A., Smart, K.J., McGinnis, R.N., Wyrick, D.Y. (2011) Stress, Faults, Fractures, and High-Level Waste Disposal. Center for Nuclear Waste Regulatory Analyses (CNWRA), San Antonio, Texas. *Intermediate Milestone IM 14005.02.001.210*. September 2011.
5. Winterle, J., Ofoegbu, G., Pabalan, R., Manepally, C., Mintz, T., Percy, E., Smart, K., McMurry, J., Pauline, R., Fedors, R. (2011) Regulatory perspectives on geologic disposal of high-level radioactive waste in salt formations. Center for Nuclear Waste Regulatory Analyses (CNWRA), San Antonio, Texas. *Intermediate Milestone IM 14005.02.001.120*. April 2011.
6. McKague, H.L., Ferrill, D., Smart, K., Stamatakos, J., Waiting, D. (2010) Synthesis Report for Yucca Mountain Region Tectonic Models. *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, San Antonio, Texas. *Intermediate Milestone IM 14002.01.441.102*. November 2010.
7. Wyrick D.Y., Fedors, R., Smart, K.J., McGinnis, R. (2007) Field Examination of Fractures and Talus from Lithophysal Tuffs at a Rubble Analog Site, South End of Fran Ridge, Yucca Mountain, Nevada held at Yucca Mountain, Nevada, February 5--8, 2007. *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, Southwest Research Institute, San Antonio, Texas. *Administrative Items AI 20.06002.01.262.706* and *20.06002.01.342.704*. April 2007.
8. Wyrick D.Y., Smart, K.J. (2006) Statistical Characterization of Fracture Patterns from Borehole Logs – Deliverable 2 of “Development of Geologic and Hydrologic Models for Areas Near the Horonobe Underground Research Laboratory and Explanation Regarding Application of Models.” Prepared for *Research Center for Deep Geological Environments, National Institute for Advanced Industrial Science and Technology*. January 2007.
9. Smart, K., Fedors, R. (2006) Field Examination of Lithophysal Rocks at Yucca Mountain. *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, Southwest Research Institute, San Antonio, Texas. *Administrative Item AI 20.06002.01.262.609*. August 2006.
10. Ofoegbu, G.I., Fedors, R., Grossman, C., Hsiung, S., Ibarra, L., Manepally, C., Myers, J., Nataraja, M., Pensado, O., Smart, K., Wyrick, D. (2006) Summary of Current Understanding of Drift Degradation and Its Effects on Performance at a Potential Yucca Mountain Repository. *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, Southwest Research Institute, San Antonio, Texas. *Intermediate Milestone IM 20.06002.01.342.650*. August 2006. **CNWRA 2006-02**.
11. Manepally, C., Bradbury, K., Colton S., Dinwiddie C., Green, R., McGinnis, R., Sims, D., Smart, K., and Walter, G. (2006) The Nature of Flow in the Nonwelded Paintbrush Hydrogeologic Unit. *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, Southwest Research Institute, San Antonio, Texas. *Intermediate Milestone IM 20.06002.01.262.640*. August 2006.
12. Pickett, D., Smart, K. (2006) Site Visit During the U.S. Department of Energy (DOE) Contractor Activities at the Nopal I Natural Analog Site. *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, Southwest Research Institute, San Antonio, Texas. *Administrative Item AI 20.06002.01.222.606*. July 2006.

13. Gonzalez, S., Morris, A.P., Ofoegbu, G.I., Smart, K.J., Stamatakos, J. (2006) Review of “Peak Ground Velocities for Seismic Events at Yucca Mountain, Nevada, ANL-MGR-GS-000004, Rev. 00.” *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, Southwest Research Institute, San Antonio, Texas. May 2006.
14. McKague, H.L., Ferrill, D.F., Smart, K.J., Stamatakos, J., Waiting, D., Hill, B. (2006) Tectonic Model Synthesis Report for the Yucca Mountain Region. *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, San Antonio, Texas. *Intermediate Milestone IM 20.06002.01.292.600*. March 2006.
15. Smart, K.J., Wyrick, D.Y., Landis, P.S., Waiting, D.J. (2006) Summary and Analysis of Subsurface Fracture Data from the Topopah Spring Tuff Upper Lithophysal, Middle Nonlithophysal, Lower Lithophysal, and Lower Nonlithophysal Zones at Yucca Mountain, Nevada. *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, San Antonio, Texas. **CNWRA 2005-04**.
16. Smart, K.J., Wyrick, D.Y., Landis, P., Waiting, D. (2005) Summary and Analysis of Subsurface Fracture Data for the Proposed High-Level Nuclear Waste Repository at Yucca Mountain, Nevada. *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, San Antonio, Texas. *Intermediate Milestone IM 20.06002.02.292.510*. September 2005.
17. Ofoegbu, G.I., Smart, K.J., Stamatakos, J., Morris, A.P. (2005) Review of Bechtel SAIC Company, LLC. Report Titled “Peak Ground Velocities for Seismic Events at Yucca Mountain, Nevada, ANL-MGR-GS-000004, Rev. 00.” *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, Southwest Research Institute, San Antonio, Texas. August 2005.
18. Hsiung, S., Gonzalez, S.H., Smart, K.J., Chowdhury, A.H. (2005) Soil-Structure Interaction – Progress Report: Site Response Analyses. *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, Southwest Research Institute, San Antonio, Texas. *Intermediate Milestone IM 20.06002.02.322.560*. August 2005.
19. Smart, K.J. (2005) Review by the Office of Nuclear Material Safety and Safeguards of the Department of Energy’s Responses to Key Technical Issue Agreements SDS.3.03 for a Potential Geologic Repository at Yucca Mountain, Nevada, Project No. WM-011. *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, San Antonio, Texas. *Intermediate Milestone IM 20.06002.01.291.512*. January 2005.
20. Smart, K.J., Bertetti, P., Winterle, J. (2004) Review by the Office of Nuclear Material Safety and Safeguards of the Department of Energy’s Responses to Key Technical Issue Agreements SDS.3.01 AIN-1, RT.3.05, and USFIC.6.03 for a Potential Geologic Repository at Yucca Mountain, Nevada, Project No. WM-011. *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, San Antonio, Texas. *Intermediate Milestone IM 20.06002.01.291.511*. December 2004.
21. Pabalan, R., Bertetti, P., Cragolino, G., Dinwiddie, C., Fedors, R., Hill, B., Jain, V., Ofoegbu, G., Pan, Y.-M., Percy, E., Read, R., Smart, K., Walter, G., Winterle, J. (2004) Performance confirmation activities under 10 CFR Part 63 with emphasis on activities potentially significant to waste isolation. *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, San Antonio, Texas. CNWRA 2004-06. *Intermediate Milestone IM 20.06002.01.192.430*.
22. Ofoegbu, G.I., Dasgupta, B., Smart, K.J. (2004) Thermally induced rock stress and implications for degradation of emplacement drifts at the proposed Yucca Mountain nuclear waste repository. *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, San Antonio, Texas. *Intermediate Milestone IM 20.06002.01.101.441*. April 2004.
23. Smart, K.J. (2004) Examination of effects of geologic features on thermally induced stress at Yucca Mountain, Nevada. *Center for Nuclear Waste Regulatory Analyses (CNWRA)*, San Antonio, Texas. *Intermediate Milestone IM 20.06002.01.051.470*. February 2004.

#### Presentations:

1. Smart, K.J., Ferrill, D.A., McGinnis, R.N., Morris, A.P., Gulliver, K.D.H. (2019) Mechanical stratigraphy and barriers to hydraulic fracture growth: Insights from geomechanical models. *American Association of Petroleum Geologists annual meeting*, San Antonio, TX, May 19-22, 2019, accepted.
2. Ferrill, D.A., Evans, M.A., McGinnis, R.N., Morris, A.P., Smart, K.J., Lehrmann, D., Gulliver, K.D.H., Sickmann, Z.T. (2019) Fault zone oil migration pathways in Austin Chalk, southwest Texas. *American Association of Petroleum Geologists annual meeting*, San Antonio, TX, May 19-22, 2019, accepted.
3. Ferrill, D.A., Smart, K.J., McGinnis, R.N., Morris, A.P., Wigginton, S.S., Gulliver, K.D.H. (2018) Influence of tectonic setting on small-scale deformation around the Permian Basin (Texas, USA). *SEPM Permian Basin Section meeting*, Midland, TX, April 17, 2018.

4. Ferrill, D.A., Smart, K.J., McGinnis, R.N., Morris, A.P., Gulliver, K.D.H. (2018) Influence of structural position on fracturing in the Austin Chalk. *South Texas Geological Society*, San Antonio, TX, April 11, 2018.
5. Smart, K.J., Ferrill, D.A. (2018) Discrete element modeling of extensional fault-related monocline formation and fault zone evolution. *American Association of Petroleum Geologists annual meeting*, Salt Lake City, UT, May 23, 2018.
6. Ferrill, D.A., McGinnis, R.N., Morris, A.P., Smart, K.J., Gulliver, K.D.H., Evans, M., Lehrmann, D. (2018) Fault zone deformation and fluid history in mechanically layered Eagle Ford Formation and Austin Chalk. *American Association of Petroleum Geologists annual meeting*, Salt Lake City, UT, May 22, 2018.
7. Wigginton, S.S., Evans, J.P., Petrie, E.S., Janecke, S., Smart, K.J., Ferrill, D.A. (2018) The influence of mechanical stratigraphy on thrust-ramp nucleation and thrust fault propagation: outcrop data, cross section reconstructions, and finite element models of thrust structures in Utah. *American Association of Petroleum Geologists annual meeting*, Salt Lake City, UT, May 22, 2018.
8. Ferrill, D.A., McGinnis, R.N., Morris, A.P., Smart, K.J., Gulliver, K.D.H., Evans, M., Lehrmann, D. (2017) Fault zone deformation and fluid history in mechanically layered mudrock and chalk. *Geological Society of London meeting on Handling Fault Seals, Baffles, Barriers, and Conduits*, November 16, 2017.
9. Ferrill, D.A., McGinnis, R.N., Morris, A.P., Smart, K.J., Gulliver, K.D.H., Lehrmann, D. (2017) Mechanical stratigraphic and tectonic controls on natural fracturing in the Eagle Ford Formation. *Gulf Coast Association of Geological Societies (GCAGS) annual meeting*, San Antonio, TX, November 2, 2017.
10. Ferrill, D.A., Smart, K.J., McGinnis, R.N., Morris, A.P., Gulliver, K.D.H. (2017) Influence of structural position on fracturing in the Austin Chalk. *Gulf Coast Association of Geological Societies (GCAGS) annual meeting*, San Antonio, TX, November 2, 2017.
11. McGinnis, R.N., Stamatakos, J.A., Morris, A.P., Ferrill, D.A., Smart, K.J., Juckett, M.R. (2017) Slip rate of the Hosgri Fault based on the sedimentary record of Plio-Quaternary sediments within a right-stepping extensional pull-apart. *Seismological Society of America Annual Meeting*, presented in special session on *Integrated and Geophysical Investigations for Site Characterization of Critical Facilities and Infrastructure*, Denver, Colorado, April 18-20, 2017.
12. McGinnis, R.N., Ferrill, D.A., Morris, A.P., Smart, K.J., Lehrmann, D. (2017) Mechanical stratigraphic controls on natural fracture spacing and penetration. *American Association of Petroleum Geologists annual meeting*, Houston, Texas, April 2-5, 2017.
13. Wigginton, S.S., Ferrill, D.A., Morris, A.P., Smart, K.J., McGinnis, R.N., Lehrmann, D. (2016) Thrust fault nucleation and propagation and the importance of footwall synclines. *Geological Society of America Abstracts with Programs* **48**(7), invited presentation for session on *Folds and Folding: Form, Process, and Consequences*.
14. Smart, K.J., Walter, G.R., Ofoegbu, G.I., Hill, N.J. (2016) Gravity-assisted solution mining of trona: Numerical modeling of overburden fracturing and roof failure. *Solution Mining Research Institute (SMRI) Spring 2016 Technical Conference*, Galveston, Texas, 13 p.
15. Ferrill, D.A., Wigginton, S., Smart, K.J., McGinnis, R.N., Morris, A.P. (2016a) Influence of Tectonic Setting on Borehole-Scale Deformation around the Margins of the Permian Basin (Texas, USA). *American Association of Petroleum Geologists annual meeting*, Calgary, Alberta, Canada, June 19-22, 2016.
16. Ferrill, D.A., Morris, A.P., Smart, K.J., McGinnis, R.N. (2016b) Mechanical stratigraphy and normal faulting. *American Association of Petroleum Geologists Distinguished Lecture*, January 25, 2016, Central Michigan University, Mount Pleasant, Michigan.
17. Ferrill, D.A., Morris, A.P., Smart, K.J., McGinnis, R.N., (2016c) Mechanical stratigraphy and normal faulting. *American Association of Petroleum Geologists Distinguished Lecture*, January 26, 2016, University of Minnesota - Duluth, Duluth, Minnesota.
18. Ferrill, D.A., McGinnis, R.N., Morris, A.P., Smart, K.J., Sickmann, Z.T., Bentz, M., Lehrmann, D., Evans, M.A., (2016d) Mechanical Stratigraphic Controls on Fracturing (Jointing) and Normal Faulting in the Eagle Ford Formation, South-Central Texas, U.S.A. *American Association of Petroleum Geologists Distinguished Lecture*, January 28, 2016, State University of New York - Binghamton, Binghamton, New York.
19. Ferrill, D.A., McGinnis, R.N., Morris, A.P., Smart, K.J., Sickmann, Z.T., Bentz, M., Lehrmann, D., Evans, M.A. (2016e) Mechanical Stratigraphic Controls on Fracturing (Jointing) and Normal Faulting in the Eagle Ford Formation, South-Central Texas, U.S.A. *American Association of Petroleum Geologists Distinguished Lecture*, January 29, 2016, Central Connecticut State University, New Britain, Connecticut.

20. Ferrill, D.A., McGinnis, R.N., Morris, A.P., Smart, K.J., Sickmann, Z.T., Bentz, M., Lehrmann, D., Evans, M.A. (2016f) Mechanical Stratigraphic Controls on Fracturing (Jointing) and Normal Faulting in the Eagle Ford Formation, South-Central Texas, U.S.A. *American Association of Petroleum Geologists Distinguished Lecture*, April 4, 2016, Wyoming Geological Society, Casper, Wyoming.
21. Ferrill, D.A., McGinnis, R.N., Morris, A.P., Smart, K.J., Sickmann, Z.T., Bentz, M., Lehrmann, D., Evans, M.A. (2016g) Mechanical Stratigraphic Controls on Fracturing (Jointing) and Normal Faulting in the Eagle Ford Formation, South-Central Texas, U.S.A. *American Association of Petroleum Geologists Distinguished Lecture*, April 5, 2016, Montana Geological Society, Billings, Montana.
22. Ferrill, D.A., McGinnis, R.N., Morris, A.P., Smart, K.J., Sickmann, Z.T., Bentz, M., Lehrmann, D., Evans, M.A. (2016h) Mechanical Stratigraphic Controls on Fracturing (Jointing) and Normal Faulting in the Eagle Ford Formation, South-Central Texas, U.S.A. *American Association of Petroleum Geologists Distinguished Lecture*, April 6, 2016, Canadian Society of Petroleum Geologists, Calgary, Alberta, Canada.
23. Ferrill, D.A., Morris, A.P., Smart, K.J., McGinnis, R.N. (2016i) Mechanical stratigraphy and normal faulting. *American Association of Petroleum Geologists Distinguished Lecture*, April 7, 2016, Grand Junction Geological Society, Grand Junction, Colorado.
24. Ferrill, D.A., McGinnis, R.N., Morris, A.P., Smart, K.J., Sickmann, Z.T., Bentz, M., Lehrmann, D., Evans, M.A. (2016j) Mechanical Stratigraphic Controls on Fracturing (Jointing) and Normal Faulting in the Eagle Ford Formation, South-Central Texas, U.S.A. *American Association of Petroleum Geologists Distinguished Lecture*, February 25, 2016, Edwards Aquifer Philosophical Society, San Antonio, Texas.
25. Ferrill, D.A., McGinnis, R.N., Morris, A.P., Smart, K.J., Sickmann, Z.T., Bentz, M., Lehrmann, D., Evans, M.A. (2016k) Mechanical Stratigraphic Controls on Fracturing (Jointing) and Normal Faulting in the Eagle Ford Formation, South-Central Texas, U.S.A. *American Association of Petroleum Geologists Distinguished Lecture*, March 22, 2016, *South Texas Geological Society and San Antonio Geophysical Society joint meeting*, San Antonio, Texas
26. Basu, D., Das, K., Smart, K.J., Ofoegbu G.I. (2015) Comparison of Eulerian-granular and discrete element models for simulation of proppant flows in fractured reservoirs. *International Mechanical Engineering Congress & Exposition, IMECE 2015 Technical Paper Series IMECE2015-50050*, Houston, Texas, November 2015.
27. Das, K., Basu, D., Smart, K.J., Ofoegbu G.I. (2015) Numerical modeling and parametric assessment of proppant flow in fractured reservoirs. *International Mechanical Engineering Congress & Exposition, IMECE 2015 Technical Paper Series IMECE2015-50051*, Houston, Texas, November 2015.
28. Ferrill, D.A., Wigginton, S., Smart, K.J., McGinnis, R.N., Morris, A.P. (2015) Influence of tectonics and mechanical stratigraphy on borehole-scale deformation in the Permian Basin (Texas, USA). *West Texas Geological Society annual meeting*, Midland, TX, October 7-9, 2015.
29. Smart, K.J., Ofoegbu, G.I., Morris, A.P., McGinnis, R.N., Ferrill, D.A. (2015) Geomechanical modeling of hydraulic fracturing: Importance of mechanical stratigraphy, stress state, and pre-existing structures. Invited presentation at *Applied Geoscience Conference: Geomechanics of Unconventionals*, Houston Geological Society, May 18, 2015.
30. Walter, G., Smart, K., Ofoegbu, G. (2015) Analysis of potash solution mining horizontal cavity stability with a non-aqueous cap. *Solution Mining Research Institute (SMRI) Spring 2015 Technical Conference*, Rochester, New York, 22 p.
31. Smart, K.J., Ofoegbu, G.I., Morris, A.P., McGinnis, R.N., Ferrill, D.A. (2015) Geomechanical modeling of hydraulic fracturing: Importance of mechanical stratigraphy, stress state, and pre-existing structures. Invited presentation at *Fourth Annual Eagle Ford Shale Geosciences Technology Workshop*, American Association of Petroleum Geologists, San Antonio, TX, March 9-11, 2015.
32. Ferrill, D.A., McGinnis, R.N., Morris, A.P., Smart, K.J., Sickmann, Z.T., Bentz, M., Lehrmann, D., Evans, M.A. (2015) Mechanical stratigraphic controls on bed-restricted jointing and normal faulting in the Eagle Ford Formation, South-Central Texas, U.S.A. *Applied Geoscience Conference: Integrated Approaches to Unconventional Reservoir Assessment and Optimization*, Houston Geological Society, February 16-17, 2015.
33. Ferrill, D.A., Morris, A.P., McGinnis, R.N., Smart, K.J. (2014) Mechanical stratigraphy and normal faulting. Invited presentation for *Geometry and Growth of Normal Faults*, The Geological Society of London, Burlington House, London, June 23-25, 2014.
34. Smart, K.J., Wyrick, D.Y., Miller, M. (2014) Integrated Physical Analog and Numerical Modeling of Hydraulic Fracturing. *American Association of Petroleum Geologists Annual Meeting*, Houston, TX, April 6-9, 2014.

35. Smart, K.J., Ofoegbu, G., Morris, A.P., Ferrill, D.A., McGinnis, R.N. (2013) Geomechanical modeling of hydraulic fracturing: Importance of mechanical stratigraphy, stress state, and pre-existing structures. *Geological Society of America Abstracts with Programs* **45**(7), p.447.
36. McGinnis, R.N., , Ferrill, D.A., Morris, A.P., Smart, K.J. (2013) Do subsurface models accurately represent the rock? Insights from outcrop on the often overlooked importance of mechanical stratigraphy. *3D Structural Geologic Interpretation: Earth, Mind, and Machine*, AAPG Hedberg Research Conference, June 23-27, 2013 – Reno, Nevada, USA.
37. Smart, K.J., Ofoegbu, G., Morris, A.P., Ferrill, D.A., McGinnis, R.N. (2013) Geomechanical modeling of hydraulic fracturing: Why mechanical stratigraphy and stress state matter. *American Association of Petroleum Geologists Annual Meeting*, Pittsburgh, PA, May 19-22, 2013.
38. McGinnis, R.N., Ferrill, D.A., Smart, K.J., Morris, A.P. (2013) Pitfalls of using entrenched fracture relationships: Fracture system within bedded carbonates of the Hidden Valley Fault Zone, Canyon Lake Gorge, Comal County, Texas. *American Association of Petroleum Geologists Annual Meeting*, Pittsburgh, PA, May 19-22, 2013.
39. Smart, K.J. (2013) Application of continuum damage mechanics to simulations of hydraulic fracturing. *Rheology, Creep and Viscoplasticity: It's About Time*. ARMA Forum, March 18-20, 2013, Salt Lake City, UT.
40. Smart, K.J., Hooper, D.M. (2013) Discrete element modeling of Martian landslides. *Lunar and Planetary Science Conference* **44**, Lunar and Planetary Institute, no. 1609.
41. Hooper, D.M., Smart, K.J. (2013) Characterization of landslides on Mars and implications for possible failure mechanisms. *Lunar and Planetary Science Conference* **44**, Lunar and Planetary Institute, no. 1795.
42. Morris, A.P., Smart, K.J., McGinnis, R.N., Ferrill, D.A. (2013) Integrating outcrop analogs and geomechanical modeling – insights into induced hydraulic fractures. *Applied Geoscience Conference: Integrated Approaches to Unconventional Reservoir Assessment and Optimization*, Houston Geological Society, Feb. 18-19, 2013.
43. Hooper, D.M., Smart, K.J. (2012) Morphometric analysis of a subset of landslides in Valles Marineris, Mars. *Lunar and Planetary Science Conference* **43**, Lunar and Planetary Institute, no. 2323.
44. Hooper, D.M., Dinwiddie, C.L., McGinnis, R.N., Smart, K.J., Roberts, M.M. (2012) Observations of debris flows at the Great Kobuk Sand Dunes, Alaska: Implications for analogous features on Mars. *Lunar and Planetary Science Conference* **43**, Lunar and Planetary Institute, no. 2040.
45. Smart, K.J., Ofoegbu, G., Das, K., Basu, D. (2012) Geomechanical modeling of hydraulic fracture initiation and propagation in a mechanically stratified geologic system via coupled stress-pore pressure analyses. *46<sup>th</sup> U.S. Rock Mechanics/Geomechanics Symposium*, Chicago, IL – June 24-27, 2012.
46. Smart, K.J., Ferrill, D.A., Morris, A.P., McGinnis, R.N. (2012) Geomechanical modeling of stress and strain evolution in fault-related folding. *American Association of Petroleum Geologists Annual Meeting*, Long Beach, CA, April 22-25, 2012.
47. Morris, A.P., Smart, K.J., Ferrill, D.A., Reish, N.E., Cowell, P.F. (2012) Fault compartmentalization in a mature clastic reservoir: Analysis of the Elk Hills Field. *American Association of Petroleum Geologists Annual Meeting*, Long Beach, CA, April 22-25, 2012.
48. McGinnis, R.N., Morris, A.P., Ferrill, D.A., Smart, K.J., (2012) Stress and strain analysis of a Laramide induced Cretaceous fold: Persimmon Gap, Big Bend National Park, west Texas. *American Association of Petroleum Geologists Annual Meeting*, Long Beach, CA, April 22-25, 2012.
49. Hooper, D.M., Dinwiddie, C.L., McGinnis, R.N., Smart, K.J., Roberts, M.M. (2011) Debris flow gullies at the Great Kobuk Sand Dunes, Alaska: Implications for analogous features on Mars. *EOS Transactions of the American Geophysical Union* **92**, Fall Meeting Supplement, abstract **P23A-1696**.
50. Ferrill, D.A., Morris, A.P., Smart, K.J., McGinnis, R.N. (2011) Faulting in carbonate rocks. Invited presentation at ExxonMobil Fault Workshop, March 9, 2011, New Braunfels, TX.
51. Smart, K.J., Hooper, D.M., Sims, D.W. (2010) Discrete element modeling of landslides in Valles Marineris, Mars. *EOS Transactions of the American Geophysical Union* **91**, Fall Meeting Supplement, abstract P51B-1430.
52. Smart, K.J., Ferrill, D.A., Morris, A.P., McGinnis, R.N. (2010) Geomechanical modeling of a reservoir-scale fault-related fold: the Bargy anticline, France. *44<sup>th</sup> U.S. Rock Mechanics Symposium*, Salt Lake City, UT, June 27-30, 2010.



53. Ferrill, D.A., Morris, A.P., McGinnis, R.N., Smart, K.J. (2010) Field tests of geomechanical models of natural rock deformation: Insights from the Bargy anticline, France. *American Association of Petroleum Geologists Annual Meeting*, presented in theme session on *Complex Structural Modeling in Honor of Ted Apotria*, New Orleans, Louisiana, April 11-14, 2010.
54. McGinnis, R., Ferrill, D., Morris, A., Smart, K., Walter, G., Bertetti, P., Roberts, M. (2010) Influence of fault zone deformation on the permeability of the Glen Rose Formation: Hidden Valley fault zone, Comal County, Texas. *American Association of Petroleum Geologists Annual Meeting*, presented in theme session on *Fractured Reservoirs: From Fundamental Processes to Technological Advancements*, New Orleans, Louisiana, April 11-14, 2010.
55. Ferrill, D.A., Morris, A.P., Smart, K.J., McGinnis, R.N., Bertetti, F.P., Walter, G.R (2009) Novel geological approaches for understanding fractured carbonate reservoirs. *SPE Applied Technology Workshop on Upscaling of Fractured Carbonate Reservoirs: Best Practices and Workflows*, June 29 to July 1, 2009, Diar Lemdina, Yasmine Hammamat, Tunisia.
56. Smart, K.J., Ferrill, D.A., Morris, A.P. (2009) Impacts of mechanical stratigraphy in geomechanical models of reservoir-scale extensional fault-propagation folds. *American Association of Petroleum Geologists Annual Meeting 18*.
57. Wyrick, D.Y., Smart, K.J. (2009) Discrete element modeling of dike-induced deformation. *Lunar and Planetary Science Conference 40*, Lunar and Planetary Institute, no. 1647.
58. Wyrick, D.Y., Smart, K.J. (2008) Numerical modeling of dike-induced deformation and graben formation on Mars. *EOS Transactions of the American Geophysical Union 89*.
59. Ferrill, D.A., Wyrick, D.Y., Smart, K.J. (2008) Coseismic pit crater, normal fault, and extensional fissure formation in unconsolidated sediment and basalt in Northern Iceland. *EOS Transactions of the American Geophysical Union 89*, Fall Meeting Supplement, abstract T24A-05.
60. Sims, D.W., Smart, K.J., Hooper, D.M. (2008) Distinct element modeling of landslides in mechanical multilayers on Mars. *EOS Transactions of the American Geophysical Union 89*, Fall Meeting Supplement, abstract P33B-1448.
61. Smart, K.J. (2008) What can you do without site-specific, ancient-adjusted mechanical properties? Invited presentation at *AAPG Hedberg Conference on The Geologic Occurrence and Hydraulic Significance of Fractures in Reservoirs*, Casper, Wyoming, July 14-18, 2008.
62. Smart, K.J., Morris, A.P., Ferrill, D.A., Bichon, B.J., Riha, D.S., Huyse, L., Waldhart, C.J. (2008) Geomechanical modeling of an extensional fault-tip fold: Big Brushy Canyon monocline, Sierra Del Carmen, Texas. Invited presentation at *AAPG Hedberg Conference on The Geologic Occurrence and Hydraulic Significance of Fractures in Reservoirs*, Casper, Wyoming, July 14-18, 2008.
63. Morris, A.P., Takagi, T., Sims, D.W., Smart, K.J., Wyrick, D.Y., Stamatakos, J. (2008) Stress analysis and fracture-based fluid transmissivity at the Underground Research Laboratory site at Horonobe, Hokkaido, Japan. *Geological Society of America Annual Meeting 40*.
64. Huyse, L., Smart, K.J., Waldhart, C.J., Riha, D.S., Bichon, B.J., Morris, A.P., Ferrill, D.A. (2008) Quantification of uncertainty in reservoir-scale extensional fault-propagation folds, Part 2: Probabilistic modeling results. *American Association of Petroleum Geologists Annual Meeting 17*.
65. Smart, K.J., Huyse, L., Morris, A.P., Ferrill, D.A., Riha, D.S., Waldhart, C.J. (2008) Quantification of uncertainty in reservoir-scale extensional fault-propagation folds, Part 1: Finite element modeling results. *American Association of Petroleum Geologists Annual Meeting 17*.
66. Wyrick, D.Y., Ferrill, D.A., Morris, A.P., Smart, K.J. (2008) Utilizing Earth-based resource exploration approaches on Mars. *American Association of Petroleum Geologists Annual Meeting 17*.
67. Smart, K.J., Morris, A.P., Ferrill, D.A. (2007) Kinematic analyses and geomechanical modeling of an extensional fault-propagation fold. *Geological Society of America Annual Meeting 39*(6), 128.
68. Wyrick, D.Y., Smart, K.J. (2007) The influence of mechanical stratigraphy on dike-induced deformation. *Seventh International Conference on Mars*, Pasadena, California, July 9-13, 2007, abstract #3301.
69. Green, R., Manepally, C., Fedors, R., Gwo, J., Smart, K. (2006) A model for understanding flow processes and moisture distribution in rock rubble. *EOS Transactions of the American Geophysical Union 87*(52), Fall Meeting Supplement, abstract H21C-1390.
70. Fedors, R., Smart, K.J., Parrott, J. (2006) Hydrological and geological features contributing to a seepage event at Yucca Mountain. *EOS Transactions of the American Geophysical Union 87*(36), Joint Spring Assembly Supplement, abstract H43A-03.

71. Smart, K.J., Ferrill, D.A., Colton, S.L. (2006) En echelon segmentation of wrinkle ridges in Solis Planum, Mars, and implications for counter-clockwise rotation of shortening direction. *Lunar and Planetary Science Conference 37*, Lunar and Planetary Institute, no. 1966.
72. Colton, S.L., Smart, K.J., Ferrill, D.A. (2006) Wrinkle ridge detachment depth and undetected shortening at Solis Planum, Mars. *Lunar and Planetary Science Conference 37*, Lunar and Planetary Institute, no. 1729.
73. Ofoegbu, G.I., Dasgupta, B., Smart, K.J. (2006) Assessing effects of thermal loading on the stability of emplacement drifts. *Global Progress Toward Safe Disposal*. Proceedings of the 11<sup>th</sup> International High-Level Radioactive Waste Management Conference (IHLRWM), Las Vegas, Nevada, April 30-May 4, 2006. La Grange Park, Illinois: *American Nuclear Society*, 542-550.
74. Smart, K.J., Morris, A.P. Ferrill, D.A. (2006) Strain in extensional monoclines: insights from numerical models. *American Association of Petroleum Geologists Annual Meeting Abstracts with Programs 15*, Houston, Texas.
75. Ferrill, D.A., Morris, A.P. Smart, K.J. (2006) Heterogeneous deformation in an extensional fault-tip monocline: Insights from field analysis and numerical modeling. *American Association of Petroleum Geologists Annual Meeting Abstracts with Programs 15*, Houston, Texas.
76. Necsoiu, M., Smart, K.J., Ferrill, D.A. (2006) High-resolution ground-rupture mapping using SAR data and public domain interferometric software. *American Society of Photogrammetry and Remote Sensing Annual Conference*, Reno, Nevada.
77. Smart, K.J., Wyrick, D.Y., Landis, P., Waiting, D. (2005) Synthesis of subsurface fracture characteristics at Yucca Mountain, Nevada. *EOS Transactions of the American Geophysical Union 86*(52), Fall Meeting Supplement, abstract T23B-0545.
78. Colton, S., Ferrill, D.A., Smart, K.J. (2005) Depth and morphology of wrinkle ridge detachments at Solis Planum, Mars. *EOS Transactions of the American Geophysical Union, 86*(52), Fall Meeting Supplement, abstract P23A-0175.
79. Ferrill, D.A., Necsoiu, M., Smart, K.J. (2005) Earthquake-induced ground-rupture mapping with InSAR-derived displacement gradiometry. *EOS Transactions of the American Geophysical Union, 86*(52), Fall Meeting Supplement, abstract S51D-1042.
80. Wyrick, D.Y., Ferrill, D.A., Morris, A.P., Smart, K.J. (2005) Resource exploration on Mars using multidisciplinary Earth-based techniques. *EOS Transactions of the American Geophysical Union, 86*(52), Fall Meeting Supplement, abstract P31C-0222.
81. Leslie, B., Smart, K., Percy, E. (2005) Characterization of fractures at the Nopal I site and comparison to fracture characteristics of Yucca Mountain, Nevada. *Geological Society of America Abstracts with Programs 37*.
82. Smart, K.J., Ferrill, D.A., Green, R.T. (2005) Approaches to quantifying fault-controlled permeability and flow characteristics of the Edwards and Trinity Aquifers. *Geological Society of America Abstracts with Programs—South-Central Section (39<sup>th</sup>) Meeting 37*(3), 8.
83. Smart, K.J., Ferrill, D.A., Ofoegbu, G.I., Sims, D.W., Franklin, N.M, Morris, A.P. (2005) Integration of structural analyses with numerical modeling: Analysis of stress and strain evolution to aid reservoir exploration and development. *American Association of Petroleum Geologists Annual Meeting Abstracts with Programs 14*, A130.
84. Smart, K.J., Busetti, S., Scott, K., Slatt, R.M. (2004) Outcrop fracture characterization of Pennsylvanian Jackfork Group sandstones, Ouachita Mountains, southeastern Oklahoma. Invited presentation for field symposium on *Stratigraphic and Structural Evolution of the Ouachita Mountains and Arkoma Basin: Applications to Petroleum Exploration*, Poteau, Oklahoma, October 21-23, 2004.
85. Baylor, N.D., Gilbert, M.C., Smart, K.J. (2004) Aspects of mapping the Quanah Granite. *Geological Society of America Abstracts with Programs—South-Central Section (38<sup>th</sup>) Meeting 36*(1), 8-9.
86. Smart, K.J., Ferrill, D.A., Sims, D.W., Franklin, N.M, Ofoegbu, G.I., Morris, A.P. (2004) Integrated structural analysis and geomechanical modeling: an aid to reservoir exploration and development. *Gulf Rocks 04—Rock Mechanics Across Borders & Disciplines*, 6<sup>th</sup> North American Rock Mechanics Symposium (NARMS), Houston, Texas, June 4-6, 2004.
87. Busetti, S., Smart, K.J., Slatt, R.M. (2003) Fracture characterization of the Pennsylvanian Jackfork Group, Ouachita Mountains, southeastern Oklahoma. *Geological Society of America Abstracts with Programs 35*(6), 641.
88. Dodson, J.M., Young, R.A, Smart, K.J. (2003) An alternative interpretation of linear dipping events on 2D seismic data from the Wichita Mountains frontal zone. *American Association of Petroleum Geologists Mid-Continent Section Meeting*, Tulsa, Oklahoma, October 12-14, 2003.

89. Baylor, N.D., Smart, K.J., Gilbert, M.C. (2003) Geologic mapping of the Quanah Granite, Wichita Mountains, southwestern Oklahoma. *Geological Society of America Abstracts with Programs—South-Central Section (37<sup>th</sup>) Meeting and Southeastern Section Meeting (52<sup>nd</sup>)* **35**(1), 59.
90. Smart, K.J., Abousleiman, Y., Pan, J. (2003) Finite element modeling of inversion tectonics: application to the Elgin-Franklin field, North Sea. *American Association of Petroleum Geologists Annual Meeting Abstracts with Programs* **12**, A159.
91. Combs, K.D., Smart, K.J. (2002) Outcrop fracture characterization of Pennsylvanian Jackfork Group sandstones in the central Ouachita Mountains, Southeastern Oklahoma. *Geological Society of America Abstracts with Programs—South-Central Section Meeting* **34**, A36-A37.
92. Combs, K.D., Smart, K.J., Slatt, R.M. (2002) Surface fracture characterization of Jackfork Group turbidite sandstones in the Ouachita Mountains, Oklahoma: Implications for gas exploration. *American Association of Petroleum Geologists Annual Meeting Abstracts with Programs* **11**, A33-A34.
93. Mai, K., Smart, K.J. (2002) Deformation history and structural kinematics of a quartzite-schist sequence: Implications for Proterozoic tectonics in the Southern Rocky Mountains. *Geological Society of America Abstracts with Programs* **34**, 181.
94. Smart, K.J., Abousleiman, Y., Onaisi, A. (2002) Applications of non-linear finite element modeling to problems in structural geology and tectonics. *Geological Society of America Abstracts with Programs* **34**, 325.
95. Currie, J.W., Smart, K.J. (2001a) Three-dimensional deformation analysis of quartz arenites: Implications for Ouachita Mountains tectonic development. *Geological Society of America Abstracts with Programs—Joint Rocky Mountain (53<sup>rd</sup>) and South-Central (35<sup>th</sup>) Section Meeting* **33**(5), A19.
96. Currie, J.W., Smart, K.J. (2001b) Microstructural analysis of Pennsylvanian sandstones: Implications for the Ouachita Mountains kinematic development. *American Association of Petroleum Geologists Annual Meeting Abstracts with Programs* **10**, A46.
97. Currie, J.W., Smart, K.J. (2001c) Microstructural analysis in the Ouachita frontal zone and Arkoma Basin: southeastern Oklahoma. *Oklahoma Geological Survey 14<sup>th</sup> Annual Southern Midcontinent Workshop proceedings*.
98. Currie, J.W., Smart, K.J. (2001d) Tectonic evolution of the Ouachita Mountains frontal zone and Arkoma Basin: Insights from microstructural analyses. *Geological Society of America Abstracts with Programs* **33**, A-82.
99. Dodson, J.M., Smart, K.J., Young, R.A. (2001) Ray-trace modeling as a tool for interpreting seismic data. *Geological Society of America Abstracts with Programs—Joint Rocky Mountain (53<sup>rd</sup>) and South-Central (35<sup>th</sup>) Section Meeting* **33**(5), A45.
100. Dodson, J.M., Young, R.A., Smart, K.J. (2001a) Interpreting seismic data from the Wichita Mountains Frontal Zone with the help of ray-trace modeling. *Oklahoma Geological Survey 14<sup>th</sup> Annual Southern Midcontinent Workshop proceedings*.
101. Dodson, J.M., Young, R.A., Smart, K.J. (2001b) Ray trace modeling can enhance seismic interpretation of complex subsurface structures: An example from the Wichita Mountains frontal zone, southern Oklahoma. *Oklahoma Geological Survey 14<sup>th</sup> Annual Southern Midcontinent Workshop proceedings*.
102. Dodson, J.M., Young, R.A., Smart, K.J. (2001c) How seismic ray trace modeling can enhance the interpretation of seismic data from complex subsurface structures: An example from the Wichita Mountains frontal zone, southern Oklahoma. *American Association of Petroleum Geologists Mid-Continent Section Meeting*, Amarillo, Texas, September 30-October 2, 2001.
103. Miller, G.W., Smart, K.J. (2001a) Structural development of the Potato Hills: How meso- and macro-scale studies aid in the understanding of the development of the Ouachita Orogeny, southeastern Oklahoma. *Geological Society of America Abstracts with Programs—Joint Rocky Mountain (53<sup>rd</sup>) and South-Central (35<sup>th</sup>) Section Meeting* **33**(5), A19.
104. Miller, G.W., Smart, K.J. (2001b) Tectonic development of the Central Ouachita mountains: Structural analyses in the Potato Hills, Oklahoma. *Oklahoma Geological Survey 14<sup>th</sup> Annual Southern Midcontinent Workshop proceedings*.
105. Smart, K.J., Miller, G.W., Ahern, J.L. (2001) Assessing the role of deep structures on shallow deformation in the Potato Hills, central Ouachita Mountains, Oklahoma. *Geological Society of America Abstracts with Programs* **33**, A-447.
106. Dodson, J.M., Smart, K.J., Young, R.A. (2000) Seismic modeling as a tool for interpreting complex subsurface structures: An example from the Wichita Mountain Front, southern Oklahoma. *Geological Society of America Abstracts with Programs* **32**(3), A8.

107. Miller, G.W., Smart, K.J. (2000a) The Potato Hills revisited: Exploration potential aided by mesoscale structural studies. *American Association of Petroleum Geologists Annual Meeting Abstracts with Programs* **9**, A99.
108. Miller, G.W., Smart, K.J. (2000b) Ouachita mountains tectonic development: Insights from meso- and macroscale structural analyses in the Potato Hills, southeastern Oklahoma. *Geological Society of America Abstracts with Programs* **32**(7), A384.
109. Miller, G.W., Smart, K.J. (2000c) Structural interpretation and exploration potential of the Potato Hills: Surface mapping aided by new well data. *Geological Society of America Abstracts with Programs* **32**(3), A36.
110. Smart, K.J. (2000) Advancing our understanding of deformation mechanics. Effects of mechanical anisotropy on thrust deformation. *Geological Society of America Abstracts with Programs* **32**(7), A99.
111. Smart, K.J., Miller, G.W., Dewers, T.A. (2000) Integration of digital techniques into traditional geologic mapping: Case studies of teaching and research applications. *Geological Society of America Abstracts with Programs* **32**(7), A515.
112. Smart, K.J. (2000) Advances in structural geology: Applications of finite element analyses to problems in structural geology. *Geological Society of America Abstracts with Programs* **32**(3), A41.
113. Smart, K.J., Dewers, T.A. (1999) Integrating digital technology into the traditional geologic field experience: Example from the University of Oklahoma fieldcamp. *Geological Society of America Abstracts with Programs* **31**, A247.
114. Smart, K.J. (1999) Thrust-related folds and mechanical anisotropy: Insights from finite element analyses. *American Association of Petroleum Geologist Annual Meeting Abstracts with Programs* **8**, A131.
115. Smart, K.J., Dunne, W.M., Krieg, R.D. (1999) The role of mechanical anisotropy on thrust sheet deformation: Insights from finite element analyses. *Thrust Tectonics 1999*, Royal Holloway University, London, England, April 26-29, 1999.
116. Smart, K.J. (1998) Applications of finite element analyses to problems in structural geology. *Oklahoma Academy of Science*, 87<sup>th</sup> Annual Technical Meeting, Tahlequah, Oklahoma, November 14, 1998.
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