

Shawn William Salley

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EDUCATION

Ph.D.	Soil Science, Colorado State University; Fort Collins, Colorado <i>Emphasis: Pedology</i>	2015
M.Sc.	Physical Science, Emporia State University; Emporia, Kansas <i>Emphasis: Geology/Earth Science</i>	2007
G.Cert.	Geospatial Analysis, Emporia State University	2005
B.Sc.	Earth Science, Emporia State University; Emporia, Kansas <i>Minor: Geospatial Analysis</i>	2003

RESEARCH EXPERTISE

Application of soil genesis, morphology, and classification for programs & practices of USDA-Soil Survey. Applications of geospatial analysis and machine learning techniques to predict site specific management of ecosystem functions and services.

PROFESSIONAL EXPERIENCE

USDA-NRCS-SPSD, National Soil Survey Center, Ecological Sites Branch, Soil Scientist	2020–Present
New Mexico State University, Affiliated Faculty	2015–Present
USDA-ARS, Jornada Experimental Range, Postdoctoral Research Scientist	2014–2020
Colorado State University, Department of Soil & Crop Science, Doctoral Research Assistant	2010–2014
New Mexico State University, Jornada Experimental Range, GIS Specialist	2007–2010
Emporia (Kansas) State University, Research Assistant	2003–2006
Lyon County (Kansas) Appraisers Office, GIS Technician	2002–2003

PUBLICATIONS

Peer-Reviewed Articles

- Martinez, P., J.R. Brehm, A.M. Nafus, A. Laurence-Traynor, **S.W. Salley**, S.E. McCord. Accepted. Leveraging ecological monitoring programs to collect soil and geomorphology data across the Western United States. *Journal of Soil and Water Conservation*.
- Salley, S.W.** 2023. Review of: *Soil Science American: Chronicles and Progressions 1860-1960*: by Alfred E Hartemink, Cham, Springer Nature Switzerland. doi:/10.1016/j.rala.2023.08.003
- Herrick, J.E., J.M., Maynard, B.T. Bestelmeyer, C.J. Carey, **S.W. Salley**, K. Shepard, Z.P. Stewart, S.A. Wills, F.M. Ziadat. 2023. Practical guidance for deciding whether to account for soil variability when managing for land health, agricultural production, and climate resilience. *Journal of Soil and Water Conservation*. 78(6): 125A-133A. doi:10.2489/jswc.2023.0706A.
- Hansen, F.A., D.K. James, J. Anderson, C. Meredeith, A.J. Dominguez, N. Pombubpa, J.E. Stajich, A.L. Romero-Olivares, **S.W. Salley**, N. Pietrasiak. 2023. Landscape characteristics shape surface soil microbiomes

- in the Chihuahuan Desert. *Frontiers in Microbiology-Terrestrial Microbiology*. 14-2023. doi: 10.3389/fmicb.2023.1135800.
13. Brungard, C., T. Nauman, M. Duniway, K. Veblen, K. Nehring, D. White, **S.W. Salley**, J. Anchang. 2021. Regional ensemble modeling reduces uncertainty for digital soil mapping. *Geoderma*. 397(114998): 1-15. doi:10.1016/j.geoderma.2021.114998.
 12. J. J. Maynard, **S.W. Salley**, D. E. Beaudette, J. E. Herrick. 2020. Numerical soil classification supports soil identification by citizen scientists using limited, simple soil observations. *Soil Science Society of America-Journal*. doi:10.1002/saj2.20119.
 11. Whiting M., **S.W. Salley**, D. James, J.W. Karl, C. Brungard, 2020. Rapid Bulk Density Measurement Using Mobile Device Photogrammetry. *Soil Science Society of America-Journal*, doi:10.1002/saj2.20063.
 10. A. Quandt, J.E. Herrick, G. Peacock, J. Neff, **S.W. Salley**, C.C. Mkalawa, 2020. A Standardized Land Capability Classification System for Land Evaluation Using Mobile Phone Technology. *Journal Soil Water Conservation*.
 9. Herrick, J., J. Neff, A. Quandt, **S.W. Salley**, J. Maynard, A. Ganguli, and B. Bestelmeyer. 2019. Prioritizing land for investments based on short- and long-term land potential and degradation risk. *Environmental Science and Policy*. (96) 52–58, doi.org/10.1016/j.envsci.2019.03.001.
 8. **Salley, S.W.** 2019. Training and Calibration Key for Accurate Hand Textures. *CSA News*. 64(2):11. doi:10.2134/csa2019.64.0211. Popular publication.
 7. Maynard, J.M., T.W. Nauman, **S.W. Salley**, B.T. Bestelmeyer, M.C. Duniway, C.J. Talbot, J.R. Brown. 2019. Digital mapping of ecological land units using a nationally scalable modeling framework. *Soil Science Society of America-Journal*. 38(3):666–686. doi:10.2136/sssaj2018.09.0346.
 6. Bergstrom, R.M., T. Borch, P.H. Martin, S. Melzer, C.C. Rhoades, **S.W. Salley**, E.F. Kelly, et al. 2019. The generation and redistribution of soil cations in high elevation catenas in the Fraser Experimental Forest, Colorado, US. *Geoderma* 333(1): 135–144. doi:10.1016/j.geoderma.2018.07.024.
 5. **Salley, S.W.**, J.E. Herrick, C.V. Holmes, J.W. Karl, M.R. Levi, S.E. McCord, C. van der Wall, J.W. Van Zee. 2018. A comparison of soil texture-by-feel estimates: implications for the citizen soil scientist. *Soil Science Society of America-Journal*. 82(6):1526–1537. doi:10.2136/sssaj2018.04.0137.
 4. **Salley, S.W.**, H.C. Monger, J.R. Brown, 2016. Completing the Land Resource Hierarchy, *Rangelands*. 38(6):313–317. doi:10.1016/j.rala.2016.10.003.
 3. **Salley, S.W.**, R.O. Slezzer, R.M. Bergstrom, P.H. Martin, E.F. Kelly, 2016. A Long-term Analysis of the Historical Dry Boundary for the Great Plains of North America: Implications of Climatic Variability and Climatic Change on Temporal and Spatial Patterns in Soil Moisture, *Geoderma*. 274: 104–113. doi:10.1016/j.geoderma.2016.03.020.
 2. **Salley, S.W.**, C.T. Talbot, J.R. Brown, 2016, The Natural Resources Conservation Service Land Resource Hierarchy and Ecological Sites, *Soil Science Society of America-Journal*. 80(1): 1–9. doi:10.2136/sssaj2015.06.0219.
 1. Brown, J., Angerer, J., **Salley, S.W.**, Blaisdell, B., Stuth, J.W., 2010, Improving estimates of rangeland carbon sequestration potential in the U.S. Southwest, *Rangeland Ecology & Management*, 63(1): 147–154. doi:10.2111/08-089.1.

Government Publications and Book Chapters

5. Land resource regions and major land resource areas of the United States, the Caribbean and the Pacific Basin, USDA - Agriculture Handbook #296, USDA-NRCS, 2022, Contributor & Reviewer.
4. Lynn, L., **S.W. Salley**, Ping, C. 2021. Addition of the Limnic Subgroup to Histels. U.S. Soil Taxonomy.
3. National Ecological Site Handbook, Part 631, USDA-NRCS, July 2019, Contributor & Reviewer

2. Land Resource Areas, Soil Survey Handbook, Part 649, USDA-NRCS, Nov. 2017, Contributor & Reviewer.
1. National Ecological Site Handbook Part 630, USDA-NRCS, February 2017, Contributor.

Technical Reports

2. **Salley, S.W.**, R.O. Sleezer, 2005 Aerial Photography of Salina, Kansas 1973 and 1983. Historical Aerial Photography Resource Project. Bureau of Environmental Remediation, Kansas Department of Health and Environment Topeka, Kansas. KDHE Internal Report.
1. **Salley, S.W.**, Morales, M., Sleezer, R.O., 2005, *Surficial Geology of the Hamilton Quarry Area, Greenwood County, Kansas*: Kansas Geological Survey, Open-file Report no. 2005-13, 20 p.

PRESENTATIONS

Invited Talks

- Salley, S.W.**, J.E. Herrick, C.V. Homes. LandPKS Research and tools, 2018 Jornada Symposium, July 2018.
- Salley, S.W.**, C.T. Talbot, J.R. Brown, Historical Perspectives and Recommendations for revision of the Agricultural Handbook 296, NCSS-NRCS webinar series, March 2015, <y2u.be/uVTegM8vk5I>.
- Salley, S.W.**, J.R. Brown, West National Technology Support Center - NRCS, Oil and gas infrastructure development impacts in the San Juan Basin, NM. Portland, OR, March 2010.
- Salley, S.W.**, J.R. Brown, Symposium of Energy Production - Infrastructure and Development at Annual Meeting of the Society for Range Management, Oil and gas infrastructure development impacts in the San Juan Basin, NM. Denver, CO, February 2010.

Select Talks and Posters

- Salley, S.W.**, Maynard, J., Herrick, J. Quantifying Data Quality in Citizen Soil Science. Soil Science Society of America Annual Meeting, San Antonio, TX, November 2019.
- Salley, S.W.**, Maynard, J., Herrick, J., LandPKS and Citizen Science, National Cooperative Soil Survey Biennial Meeting, Narragansett, R.I. July 2019.
- Salley, S.W.**, Maynard, J., Nauman, T., Ecological Site Groups, Reno, NV. Society for Range Management February 2018.
- Salley, S.W.**, Herrick, J.E., Hand Texture Accuracy, Soil Science Society of America – Annual Meeting, November 2017, Tampa, FL.
- Salley, S.W.**, J.R. Brown, H.C. Monger, Completing the Land Resource Hierarchy. Soil Science Society of America – Annual Meeting, Phoenix, AZ, October 2016. Link: goo.gl/MCmB1f
- Salley, S.W.**, J.R. Brown, From Landscape to Domain: Soils Role in Landscape Classifications, International Soil Modeling Consortium (ISMC) – Inaugural Workshop, Austin, TX, March 2016. DOI: 10.13140/RG.2.1.1676.0728
- Salley, S.W.**, C.J Talbot, J.R. Brown, A Method for Testing Land Resource Area Concepts, Society for Range Management - Annual Meeting, Corpus Christi, TX, January 2016.
- Salley, S.W.**, P. Gronemeyer, C.J Talbot, J.R. Brown, Historical Perspectives and Recommendations for revision of Agricultural Handbook 296, National Cooperative Soil Survey – Biennial Meeting, Duluth, MN, June 2015.
- Salley, S.W.**, A.K. Knapp, P.K. Martin, E.F. Kelly, *Great Plains Soil Moisture: Contemporary Record and Climate Change Forecasts*, Center for Great Plains Studies: Drought Symposium, Lincoln, NE, April 2014.

- Salley, S.W.**, P.K. Martin, E.F. Kelly, A.K. Knapp, *Soil Landscape Development in the Short-Grass Steppe Ecosystem-Assessing the Vulnerability of Soils to Climate Change*, Ecological Society of America – Annual meeting, Portland, OR, August 2012.
- Salley, S.W.** and C.M. Garton-Salley, *Role of Historic Aerial Photography in Understanding Effects of Oil and Gas Infrastructure in the San Juan Basin*, Joint Meeting of the American Society for Environmental History and the National Council on Public History, Portland, OR, March 2010.
- Salley, S.W.** and Brown, J.R., Symposium of Energy Production - Infrastructure and Development at Annual Meeting of the Society for Range Management, *Oil and gas infrastructure development impacts in the San Juan Basin, NM*. Denver, CO, February 2010.
- Salley, S.W.** and Brown, J.R., *Effects of Oil and Gas Infrastructure on Carbon Dynamics in La Manga Canyon, NM*, International Symposium on Soil Organic Matter Dynamics: Land Use, Management and Global Change, Colorado Springs, CO, July 2009.
- Salley, S.W.** and Brown, J.R., *Impact of oil and gas infrastructure development in La Manga Canyon, NM*: Abstract and Poster Presentation at the Annual Meeting of the Society for Range Management, Albuquerque, NM, February 2009.
- Salley, S.W.**, *Terrestrial Carbon Sequestration in the Chihuahuan Desert Shrublands Across four Ecological Sites*. Jornada / ARS / LTER Seminar. September 2008.
- Salley, S.W.** and Brown, J.R., *Watershed-scale analysis of terrestrial carbon sequestration potential, potential, La Manga Canyon, NM*: Abstract and Poster Presentation at the Annual Meeting of the Soil and Water Conservation Society, Tucson, AZ, July 2008.
- Salley, S.W.**, *Three-Dimensional GIS Modeling of Confined Oil Reservoirs with Examples in the Bartlesville Shoe-string Sands*: Abstract and Poster Presentation at the Mid-continent Sectional Meeting of the Amer. Assoc. of Petroleum Geologists, Oklahoma City, OK, September 2005.
- Salley, S.W.**, Michael Morales, and Richard Sleezer, *A Geologic Investigation of the Hamilton Quarry Area*. ESU Research and Creativity Forum, Emporia, KS, April 2005.
- Laird, Patrick, **Salley, S.W.**, and Richard Sleezer, *Three-Dimensional Modeling of Bedrock Topography in the Arkansas and Cimarron River Drainage Basins Using Geographic Information Systems (GIS)*. ESU Research and Creativity Forum, Emporia, KS, April 2005.
- Jacobson, W., Aber, J., and **Salley, S.W.**, *Glaciotectonic Structural Analysis of Devils Lake, North Dakota*: Abstract and Poster Presentation at the National Meeting of Geological Society of America, Denver, CO, September 2004.

Proposals

- Co-I, Soil Survey Research Grants. *Geospatially, Functionally, and Temporally Scalable Soil Survey Data: Developing and Testing a Scalable Soil Landscape Framework in MLRA 147 and MLRA 127*. 2015. With H. Lin (PI), S. Waltman (Co-PI), A. Sattler (Co-I), and K. Yoast (Co-I). \$99,308. (Unfunded)
- PI, Soil Survey Research Grants. *Integrating Soils with Landforms to Assess Landscape Vulnerability to Global Change Drivers*. 2011. with Gene Kelly and Steve Park. \$40,743. (Unfunded)

PROFESSIONAL SERVICE

Member: Soil Science Society of America (SSSA), National Cooperative Soil Survey (NCSS).

Division Chair: Soil Mineralogy (SSSA) 2020

Journal Reviewer: Ad hoc reviewer for Soil Science Society of America-Journal, Geoderma, Ecosystems, Rangelands, Rangeland Ecology and Management, Journal of Undergraduate Research.

Miscellaneous:

- NCSS, National Meeting, Boise, ID, Abstract Reviewer. 2017
- Spanish Peaks Staff Association, Nonprofit Alumni Organization Secretary 2006–2020
- Rock Climbing Program Managing Director, Spanish Peaks Scout Ranch 2009-2015
- Science Technical Advisor, Sally Cauble for Kansas State Board of Education 2006

AWARDS & HONORS

Emporia State University, Laurence C. Boylan Scholar Award, outstanding master's thesis, 2007

Emporia State University, Lanier Award of Excellence, outstanding student in the Earth Science Dept. 2007

Emporia State University, Best Collaborative Presentation, Research and Creativity Forum 2005

PARTICIPATING GRANTS

San Lucia Observatory, Ecological Site Mapping, Research Associate 2019–2020

DOI-BLM, Assessment Inventory Monitoring Soil Analysis, North Slope, Alaska 2015–2020

US-AID, Land Potential Knowledge System (LandPKS), Research Associate 2017–2019

USDA-NRCS, Major Land Resource Area update, Research Associate 2015–2017

NSF-LTER, Short-Grass Steppe Long Term Ecological Research, Ph.D. student 2010–2014

US-DOE, Southwest Regional Carbon Sequestration Partnership, Research Assistant 2007–2010

Kansas Dept. of Health & Environment, Mosaic Historical Aerial Photography, M.S. student 2005–2006

NASA Kansas Space Grant, Geologic analysis, M.S. student 2005

Kansas Geological Survey, Geologic mapping, M.S. student 2003–2005

TEACHING

Instructor

- CSU, Introductory Soil Science Lab, SOCR 240 Fall 2013

University Guest Lectures

- NSMU, SOIL 472, Morphology & Classification, Soil Analysis with R Fall 2019
- NMSU, RGSC 325, Intro Range Management, Rangeland Remote Sensing Fall 2018
- NMSU, SOIL 252, Soil Science, New tools to estimate soil color Fall 2017
- NMSU, SOIL 252, Soil Science, Soil Hand Texturing (2 lectures) Fall 2015, Fall 2016
- NSMU, SOIL 472, Morphology & Classification, Long-term Soil Moisture Dynamics Fall 2015
- CSU, SOCR 440, Pedology, Toposequences Fall 2012
- ESU, ES 110, Intro Earth Science, Fossilization Spring 2006

Agency Partnership Lectures

- NM State Engineers office, Las Cruces, NM, Soil Survey and Soil Data Dec 2018
- NM Interagency Ecological Site Core Group, Hierarchical Landscape Classifications Jan 2017
- BLM, AIM training, Las Cruces, NM, Intro to Soils & Ecological Sites Fall 2016
- BLM, Ecological Site Description Workshop, Ecological Sites and Soil Fall 2009

Field Trips

- ESU Natural Areas, Hamilton Quarry Geology, Leader Spring 2007

- Shawn W. Salley -

Graduate Teaching Assistant

- CSU, LAND 220, Fundamentals of Ecology Fall 2010
- ESU, ES 111, Intro to Earth Sciences Spring 2005, Fall 2005, Spring 2006
- ESU, GO 569, Invertebrate Paleontology Spring 2006
- ESU, GO 547, Field Geology Summer 2005

Community Teaching

- Boy Scouts, Rock Climbing and Mountaineering (June-July) 2000-2006

REFERENCES

- Dr. Joel Brown, *Colleague*, Past National Leader Ecological Site Program, USDA-NRCS, Las Cruces, NM, (575) 646-2854, joelbrown@nmsu.edu.
- Dr. Gene Kelly, *Colleague & Ph.D. Advisor*, Dept. Head and Professor of Pedology, Department of Soil & Crop Science Colorado State University, Fort Collins, CO, (970) 491-6517, eugene.kelly@colostate.edu
- Dr. Rich Sleezer, *Colleague & M.Sc. Advisor*, Dept Chair and Professor of Earth Sciences, Emporia State University, Emporia, KS, (620) 341-5278, rsleezer@emporia.edu
- Dr. Brandon Bestelmeyer, *Research Leader*, Jornada Experimental Range, USDA-ARS, Las Cruces, NM, (575) 646-4842, Brandon.Bestelmeyer@usda.gov

- C.V. END -