

SARAH L. MORTON RUPERT

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RESEARCH EXPERIENCE

Graduate Research Assistant, Aug 2014 - Present
Kansas Geological Survey (KGS), Exploration Services
Currently developing and implementing seismic methods for advancing void detection and imaging techniques in support of a Department of Defense grant with Princeton, MIT, and the Army Corps of Engineers. Responsible for managing field crews, facilitating research meetings, ensuring that project objectives are met, and reporting data results to clients. Other work includes applying active and passive seismic techniques to environmental and engineering investigations with local government institutions and industry firms.

Pathways Intern, Student Trainee (Civil Engineering), June - Aug 2018
U.S. Army Corps of Engineers, Eng. Research & Development Center
Collected and processed active seismic data using diffraction enhancement and surface wave processing techniques in support of an ongoing research investigation.

Senior Research Scientist, March – Aug 2014
Kansas Geological Survey, Exploration Services
In charge of optimizing data acquisition, ensuring quality control, and instituting acquisition procedures for seismic surface wave and reflection methods for environmental and engineering investigations in California, Kansas, and Jamaica. Performed data processing and data interpretation using KGS proprietary software (i.e. *SurfSeis*, *KGSUtilities*).

Pathways Intern, Student Trainee (Hydrology), April 2012 – May 2014
U.S. Geological Survey, Office of Groundwater, Branch of Geophysics
Collected, maintained, processed, and interpreted all seismic surface wave datasets in support of the senior scientists' ongoing hydro-geophysical investigations across the Northeast US, Southwest US, and Alaska. Assisted with electrical resistivity, ground penetrating radar, and nuclear magnetic resonance field research. Performed seismic field method demonstrations and software short courses (i.e. *Geopsy*) for local universities and served as a mentor to undergraduate students.

National Science Foundation Grad. Research Fellow, June – Aug 2012
National Center for Research on Earthquake Engineering (NCREE)
Conducted passive single-station seismic surveys to measure soil resonance information throughout the Taipei Basin and generate seismic hazard and liquefaction models that identified areas of increased susceptibility to ground shaking. This work was in collaboration with the ongoing Strong Ground Motions project at NCREE in Taipei, Taiwan (NSF Award #1209512).

OTHER RESEARCH POSITIONS

Environmental Protection Resource Assistant, Feb 2012 – 2013
Connecticut Geological Survey,
Volunteer for Science, Dec 2010 – April 2012
U.S. Geological Survey, Office of Groundwater, Branch of Geophysics,
Summer Undergraduate Research Experience Intern, May – July 2010
Southern California Earthquake Center,

EDUCATION

Exp. 2020 **Ph.D. Civil Engineering**
University of Kansas (KU)
Exp. 2020 **M.S. Geology**
University of Kansas
2014 **M.S. Civil Engineering**
University of Connecticut (UConn)
2011 **B.S. Geoscience**
University of Connecticut

AWARDS AND HONORS

KGS Graduate Research Assistantship, 2014-2020
Student Best Paper Award for Oral Presentation,
International Conference on Eng. Geophysics, 2019
Lee C. & Darcy Gerhard Field Research Student Award, 2019
3rd Place, GeoCongress National GeoPoster Student
Competition, 2019
Society of Exploration Geophysicists (SEG) Technical
Program Travel Grant, 2018
KGS Director's Award, Student Award of Excellence, 2018
1st Place, Kansas City Geotechnical Engineering Student
Poster Competition, 2018
Waldo G. Bowman Scholarship, 2017, 2018
Graduate Engineering Association Travel Award, 2017, 2019
AWG Osage Graduate Research Scholarship, 2017
Chi Epsilon National Civil Engineering Honor Society, 2017
KU Graduate Scholarly Presentation Travel Fund, 2016
William W. Hambleton Student Award for Excellence in
Research, 2016
Sean S. Thomson Graduate Service Award, 2016
Best Student Chapter Near-Surface Geophysics Newsletter
Article, 2015
James and Rowena Peoples Scholarship, 2015
Joseph M. Patterson Geology Scholarship, 2014, 2015
Geometrics Student Travel Grant, 2015
Best Teaching Assistant Award, 2013
National Science Foundation East Asia and Pacific Summer
Institute (EAPSI) Fellowship, 2012
Silver Award, Girl Scouts of America, 2003

TEACHING EXPERIENCE

SurfSeis Short Course Teaching Assistant, 2014 - Present

Kansas Geological Survey, University of Kansas

Graduate Teaching Assistant, Aug 2013 – Dec 2013

Dept. of Civil and Environmental Engineering, University of Connecticut

Responsible for preparing, teaching, and evaluating two upper-level undergraduate Soil Mechanics Laboratory sections.

Geophysics Field Experience Co-Instructor, June 2013

U.S. Geological Survey, Office of Groundwater, Branch of Geophysics

Undergraduate Teaching Assistant, Sept 2008 – May 2011

Center for Integrative Geosciences, University of Connecticut

SERVICE ROLES - items in **bold** indicate current positions, items in *italics* indicate upcoming roles

Vice-Chair of Committees (elected), Society of Exploration Geophysicists (SEG) Near-Surface Technical Section, 2019 - Present

Co-Chairman for "Novel Methods" Poster Session, SEG Annual Meeting 2019, San Antonio, TX

Moderator, "Solving Near-Surface Problems with Geophysics and Engineering," SEG Annual Meeting 2019, San Antonio, TX

Moderator, "Pioneering the New Normal: The Women Leading Today's GeoSocieties", Lawrence, KS, 2019

President (elected), KU Graduate Engineering Association, 2018 - 2019

Race Committee Organizer, Run with GEAK5 Fun Run/Walk, 2019

Near-Surface Geophysics San Antonio Planning Subcommittee, 2019 SEG Annual Meeting

Moderator, "Near Surface Technical Section Student Career Panel," SEG Annual Meeting 2018, Anaheim, CA, 2018

Co-Chairman for "Surface Wave Studies and Applications" Oral Session, SEG Annual Meeting 2018, Anaheim, CA

Mentor, Mentoring365, 2018 - Present

Interviewer, KU Undergraduate Self Engineering Leadership Fellows Program, 2018

Near-Surface Geophysics Anaheim Planning Subcommittee for the 2018 SEG Annual Meeting

Ambassador, KU Graduate Engineering Association, 2017 - 2019

Co-Chairman for "Characterization" Poster Session, SEG Annual Meeting 2017, Houston, TX

Southcentral Regional Delegate (elected), Association for Women Geoscientists, 2017 - Present

Communications Lead (appointed), SEG Near-Surface Technical Section, 2017 - 2019

Vice President (elected), KU Geotechnical Society, 2017 - 2018

Co-Chairman for "Surface Waves" Oral Session, SEG Annual Meeting 2016, Dallas, TX

Osage Chapter Past-President, Association for Women Geoscientists, 2016 - 2017

Student Program Lead (appointed), SEG Near-Surface Technical Section, 2015 - 2019

Co-Chairman for "NS Case Studies" Poster Session, SEG Annual Meeting 2015, New Orleans, LA

Student Representative, American Geophysical Union Near-Surface Geophysics Section, 2014 - 2017

Mentor, KU Geology Mentor Program, 2014 - 2017

Scholarship Application Committee, AWG Osage Chapter, 2015 - 2018

President (elected), Osage Chapter of the Association for Women Geoscientists, 2014 - 2016

EAPSI Resource Advisor (elected), National Science Foundation, 2013

Treasurer (elected), UConn Geology Club, 2010 - 2011

PUBLICATIONS AND CONFERENCE PROCEEDINGS

Refereed Publications

1. **Morton, S. L.**, Peterie, S. L., Ivanov, J., Miller, R., and Sloan, S., (in preparation) "Feasibility of multi-component surface wave data for void detection."
2. **Morton, S. L.**, Ivanov, J., Peterie, S. L., Miller, R. D., and Livers-Douglas, A. J., (in preparation) "Passive Seismic Imaging Using a 2-D Grid for Source Azimuthal Control."
3. Ivanov, J., Miller, R.D., Feigenbaum, D., **Morton S. L. C.**, Peterie, S.L., and Dunbar, J.B., (2017) "Revisiting levees in southern Texas using Love-wave multi-channel analysis of surface waves (MASW) with the high-resolution linear radon transform (HRLRT)." *Interpretation*, 5(3), T287-T298.

- Ivanov, J., Tsoflias, G., Miller, R.D., Peterie, S., and **Morton S.** (2016). "Impact of density information on Rayleigh surface wave inversion results." *Journal of Applied Geophysics*, 135, pp. 43-54.

Minor Publications and Conference Expanded Abstracts

- Morton, S. L.**, Ivanov, J., Miller R. D., and Parsons, R. L., (2019), "Effects of Tension-Dome Height on Surface-Wave Behavior using Numerical Seismic Modeling." Proceedings for the Fifth International Conference on Engineering Geophysics (ICEG) 2019: (accepted).
- Ivanov, J., Miller, R. D., **Morton S. L.**, and Peterie, S. L., (2019), "Detecting and delineating voids and mines using surface wave methods in Southeastern Kansas." Proceedings for the Fifth ICEG 2019: (accepted).
- Morton-Rupert, S.**, Whitesell, L., Grobde, N., and Arce, J., (2019), "The view from the near surface." *The Leading Edge*, 28(6), 424-426.
- Morton, S. L.**, Ivanov, J., and Miller R. D., (2019), "Selective-window processing for optimized surface wave imaging of passive data." SEG Technical Program Expanded Abstracts 2019: (accepted).
- Ivanov, J., Miller, R. D., Hoch, A. M., Peterie, S. L., and **Morton S. L.**, (2019), "Surface wave analysis sensitivity to a-priori information assumptions." SEG Technical Program Expanded Abstracts 2019: (accepted).
- Morton-Rupert, S.**, Malecek, S., Legg, M., (2019). "Near-Surface Geophysics Technical Section holds first-ever panel discussions at 2018 Annual Meeting." *The Leading Edge*, 38(1), 67-68.
- Morton, S. L. C.**, Miller, R. D., Ivanov, J., Peterie, S. L., Parsons, R. L., and Livers-Douglas, A. J. (2018). "Time-lapse monitoring of subsidence features within the Hutchinson Salt in Kansas." SEG Technical Program Expanded Abstracts 2018: pp. 2642-2646.
- Morton, S. L. C.**, Lane Jr., J. W., Thomas, M. A., and Liu, L. (2018). "Seismic Hazard Classifications and VS30 in Connecticut using MASW and HVSR Methods." SEG Technical Program Expanded Abstracts 2018: pp. 2521-2525.
- Morton, S. L. C.**, Peterie, S.L., Ivanov, J., Miller, R.D., and Sloan, S.D. (2017). "Joint interpretation of multicomponent surface-wave data for tunnel detection." SEG Technical Program Expanded Abstracts 2017: pp. 5458-5464.
- Morton, S. L. C.**, Peterie, S.L., Ivanov, J., Miller, R.D., Feigenbaum, D., Sloan, S., Moran, M., and Cudney, H. (2016). "Feasibility study using surface wave attenuation and seismic quality factor for tunnel detection at the Yuma proving ground, AZ." SEG Expanded Abstracts 2016: pp. 2351-2356.
- Feigenbaum, D., Ivanov, J., Miller, R.D., Peterie, S.L., and **Morton S. L. C.** (2016). "Near-surface Qs estimations using multi-channel analysis of surface waves (MASW) and the effect of non-fundamental mode energy on Q-estimation: An example from Yuma proving ground, Arizona." SEG Expanded Abstracts 2016: pp. 4971-4976.]
- Peterie, S.L. Miller, R.D., **Morton S. L. C.**, and Wang Y. (2016). "Tunnel detection using SH-wave diffraction imaging." SEG Expanded Abstracts 2016: pp. 5006-5010.
- Morton S. L. C.**, Ivanov, J., and Miller, R.D. (2015). "Enhancing fundamental mode interpretation in heterogeneous media: An example from Canoga Park, California." SEG Expanded Abstracts 2015: pp. 2224-2229.
- Morton S. L.**, Ivanov, J., and Miller, R.D. (2015). "A Modified F-K Filter for Removing the Effects of Higher-Mode Dispersion Patterns from Surface Wave Data." Symposium on the Application of Geophysics to Engineering and Environmental Problems (SAGEEP) Expanded Abstracts 2015: pp. 445-451.
- Ivanov, J., Miller, R. D., Tsoflias, G., **Morton S. L.**, and Peterie, S. (2015). "Density Sensitivity of surface wave inversion using Multichannel Analysis of Surface Waves (MASW) Method." SAGEEP Expanded Abstracts 2015.
- Ivanov, J., Miller, R. D., **Morton S. L.**, and Peterie, S. (2015). "Dispersion-curve imaging considerations when using Multichannel Analysis of Surface Wave (MASW) Method." SAGEEP Expanded Abstracts 2015: pp. 556-566.
- Morton S. L. C.**, "Comparison of Geophysically-derived and Surficial Sediment-based Estimates of Seismic Risk in Hartford County, Connecticut" (2014). Master's Theses. Paper 588 http://digitalcommons.uconn.edu/g_s_theses/588
- Johnson, C.D., White, E.A., LeBlanc, D.R., **Morton S. L.**, and Lane, J.W. (2014). "Use of Time-Domain Electromagnetics (TEM) and passive seismic methods to characterize the subsurface in East Falmouth, Massachusetts." SAGEEP Expanded Abstracts 2014: pp. 143.
- Peterie, S.L., Bennett, B., Miller, R.D., and **Morton S. L. C.** (2014). "Downhole geophone modification for horizontal signal optimization." SEG Expanded Abstracts 2014: pp. 5102-5106.

Technical Reports

1. **Morton, S. L.**, Peterie, S.L., Ivanov, J., Burke, K., Miller, R.D., Bennett, B., Farwell, M., Gonzales, C., Knippel, E., and Wedel, B., (in publication). Passive Seismic Characterization of High Priority Salt Jugs Near Hutchinson, Kansas: December 2018, Kansas Geological Survey Open-file Report.
2. **Morton, S. L.**, Peterie, S.L., Ivanov, J., Miller, R.D., Bennett, B., Farwell, M., Knippel, E., Lawler, J., and Wedel, B., (in publication). Passive Seismic Characterization of High Priority Salt Jugs Near Hutchinson, Kansas: October 2018, Kansas Geological Survey Open-file Report.
3. **Morton, S. L.**, Peterie, S.L., Ivanov, J., Miller, R.D.; Anderson, J.; Bennett, B.B.; Farwell, M.; Fishburn, J.; Intfen, J.W.; Scobee, J.R.; Wedel, B., (2017). Passive Seismic Characterization of High Priority Salt Jugs Near Hutchinson, Kansas: November 2017, Kansas Geological Survey Open-file Report no. 2018-16, 28 p.
4. Peterie, S.L., **Morton, S. L.**, Livers, A.J., Nolan, J.J., Hoch, A., Judy, B., Wang, Y., Ivanov, J., and Miller, R.D., Surface wave characterization of wind turbine sites in Jamaica using the MASW and side scatter methods: Final report to Barr Engineering Company, February 2015, Kansas Geological Survey Open-file Report 2015-27, 75 p.
5. Peterie, S., Ivanov, J., Miller, R., Livers, A., Bennett, B., Brooks, B., Fontana, J., Judy, B., **Morton, S.**, Nelson, R., Nolan, J., Wedel, B., and Wang, Y., 2015, Passive seismic characterization of high priority salt jugs near Cargill, Inc. in Hutchinson, Kansas: Final report to Burns & McDonnell Engineering Company, March 2015, Kansas Geological Survey Open-file Report 2015-28, 16 p.
6. Peterie, S., Ivanov, J., Miller, R., Livers, A., Bennett, B., Brooks, B., Fontana, J., Judy, B., **Morton, S.**, Nolan, J., Wedel, B., and Wang, Y., 2015, Passive seismic characterization of salt jugs near Irisk & Doll Elevators in Hutchinson, Kansas: Preliminary report to Burns & McDonnell Engineering Company, May 2015, Kansas Geological Survey Open-file Report 2015-29, 17 p.
7. Peterie, S., **Morton, S.**, Livers, A., Rupert, Y., Bennett, B., Anderson, J., Brooks, B., Fontana, J., Graham, B., Scobee, J., Wedel, B., Wang, Y., Ivanov, J., and Miller, R., 2015, Passive seismic characterization of high priority salt jugs near the Irisk & Doll Elevator in Hutchinson, Kansas: Preliminary report to Burns & McDonnell Engineering Company, August 2015, Kansas Geological Survey Open-file Report 2015-30, 15 p.
8. Peterie, S., Livers, A., **Morton, S.**, Graham, B., Bennett, B., Wedel, B., Brooks, B., Fontana, J., Wang, Y., Rupert, Y., Ivanov, J., and Miller, R., 2015, Passive seismic characterization of high priority salt jugs near the V&S Railroad right-of-way in Hutchinson, Kansas: Preliminary report to Burns & McDonnell Engineering Company, August 2015, Kansas Geological Survey Open-file Report 2015-31, 14 p.

Conference Abstracts and Poster Presentations

1. **Morton, S. L.**, Ivanov, J., Miller, R.D., and Parsons, R.L. (2018). "Time-lapse Monitoring of Stress-field Variations within the Hutchinson Salt in Kansas" [Poster]. Annual Kansas City Geotechnical Conference, Overland Park, KS, USA.
2. Miller, R.D., Ivanov, J., Peterie, S.L., **Morton S. L. C.**, Livers, A., and Wang, Y., (2015). "Cutting the Seismic Wavefield Deck of Cards for Optimized Characterizations." Novel Methods for Subsurface Characterization and Monitoring: From Theory to Practice, [Invited Oral]. Lawrence, KS, USA.
3. **Morton, S. L. C.**, Ivanov, J., and Miller, R.D. (2015). "Advantages and Disadvantages of Passive Multichannel Analysis of Surface Waves (MASW) for Observing Subsurface Discontinuities" [Poster]. American Geophysical Union, San Francisco, CA, USA.
4. **Morton, S. L. C.**, Miller, R.D., Vander Velde, E.T., Bower, M.O., and Tsoflias, G. (2014). "Case Study in the Santa Susana Mountains: Observing Discontinuities Using Non-invasive Surface Wave Methods" [Poster]. American Geophysical Union, San Francisco, CA, USA.
5. **Morton, S. L. C.**, Lane, J.W., Liu, L., and Thomas, M.A. (2013). "Comparison of active and passive seismic methods for calculating shear-wave velocity profiles: an example from Hartford County, Connecticut" [Oral]. American Geophysical Union, San Francisco, CA, USA.
6. **Morton, S. L. C.**, Thomas, M.A., Lane, J.W. Jr., and Liu, L. (2013). "Using passive single-station data for shear-wave velocity profiling and seismic hazard assessment in Hartford County, Connecticut" [Oral]. Northeast Geological Society of America, Bretton Woods, NH, USA.

7. **Morton, S. L. C.**, Liu, L., Lane, J.W. Jr., and Voytek, E.B. (2012). "Near-surface site characterization of the Fenton River wellfield in east central Connecticut using multiple geophysical techniques" [Poster]. Northeast Geological Society of America, Hartford, CT, USA.
8. **Morton, S. L. C.**, Funning, G.J., and Floyd, M. (2010). "Using GPS to measure fault slip-rates of the San Jacinto Fault in Riverside County" [Poster]. Southern California Earthquake Center Annual Meeting, Palm Springs, CA, USA.

PROFESSIONAL AFFILIATIONS

Student Member, Society of Exploration Geophysicists, 2014-present
Student Member, Association for Women Geoscientists, since 2014
Student Member, American Society of Civil Engineers, since 2011
Lifetime Member, Girl Scouts of America, 2007

EDITORIAL DUTIES - number indicates total submissions reviewed to date

Referee for:

Engineering Geology, Elsevier Publication - 1
Geophysics, SEG Publication - 3
Interpretation, SEG Publication - 2
The Leading Edge, SEG Publication - 4
Annual Meeting Expanded Abstracts, SEG Publication - 25
ICEG Expanded Abstracts, SEG Publication - 44
Near Surface Geophysics, EAGE Publication - 1
Surveys in Geophysics, Springer - 1
GeoCongress Conference Proceedings, ASCE Geo-Institute Publication - 2

TRAINING AND CERTIFICATIONS

Hazardous Waste Operations and Emergency Response 24-Hour, Genesis Environmental Solutions, 2014 - Present

Short Courses Attended:

SurfSeis 3, Multichannel Analysis of Surface Waves, KGS, Lawrence, Kansas, August 22-23, 2013.
Using Ambient Vibration Array Techniques for Site Characterization and Seismic Microzonation, Las Vegas, Nevada, Feb. 6-12, 2012.
Geophysics Field Experience, U.S. Geological Survey, East Haddam, Connecticut, June 2011.