LEAH E. JACKSON

Oklahoma Geological Survey
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EDUCATION

Doctor of Philosophy in Earth and Ecosystem Sciences, May 2021

Central Michigan University, Mount Pleasant, MI, 48859
Advisor: Dr. Lawrence D. Lemke
Dissertation: 1,4-Dioxane natural attenuation processes in a glacial aquifer system

Master of Science in Geoscience, August 2017

Western Kentucky University, Bowling Green, KY, 42101
Advisor: Dr. Jason S. Polk
Thesis: Epikarst hydrogeochemical processes in telogenetic karst systems in South-central Kentucky

Bachelor of Science in Geology, August 2013

Sam Houston State University, Huntsville, TX, 77341
Advisor: Dr. J. Patrick Harris
Emphasis: Expansive secondary mineral growth in gypsum heavy clay soils using synthetic materials

EMPLOYMENT HISTORY

Hydrogeologist II, Oklahoma Geological Survey, University of Oklahoma, Norman, OK, **July 2021-Present**

- Developed, implanted, and managed a new hydrogeochemical research program within existing OGS hydrogeological framework
- Spearheaded an update and installation of new state park hydrogeologic signage across the state of Oklahoma
- Assisted in the development of curriculum for educational outreach both with OU

Geoscience students and the general public
- Managed the operation and deployment of analytical geochemical laboratory and field-based monitoring equipment

Research Assistant, Department of Earth and Atmospheric Sciences, Central Michigan University, USA, **August 2017-June 2017**

- Hydrogeological site investigations carried out in chemical and computer laboratories to characterize sediment deposition and aquifer processes in glacial deposits
- Managed two analytical chemistry laboratories and associated personnel
- Development of instrument and data processing methods for analytical equipment Gas Chromatograph/Mass Spectrometer
- Operated and maintained Gas Chromatograph/Mass Spectrometer and Thermo Scientific water geochemistry meter
- Application of computer modeling and statistical software including Chromeleon 7, ArcGIS, Surfer, Rockworks, MAROS, SigmaPlot, Minitab, and MODFLOW
- Organized and led biweekly and monthly group research meetings
- Managed three undergraduate students in development of a research group and orchestration of continued research on Gelman Site near Ann Arbor

Research Assistant, Department of Earth, Environmental, and Atmospheric Sciences, Western Kentucky University, USA, **August 2015-August 2017**

- Hydrogeological field investigations to characterize regional and local karst aquifers in south-central Kentucky
- Use of field equipment including high-resolution data loggers such as EXOII, YSI 559 and 6000 Series, and HOBOware
- Experience operating chemical lab equipment such as Ion Chromatograph and Inductively Coupled Plasma Spectrometer
- Executed quantitative and qualitative geochemical and hydrological data interpretation on a weekly basis

Field Engineer III, Monitoring While Drilling/Logging While Drilling Product Line, Baker Hughes International, Houston, TX, USA**, August 2013-March 2015**

- Implemented and operated oil well logging while drilling equipment, and managed Monitoring While Drilling (MWD) personnel
- Generated oil well drilling deliverables for Houston based personnel over course of well drilling

- Developed methodologies and technologies for improved well site operations to reduce overhead costs
- Participated in continuing education courses via in-person and internet-based programs
- Promoted three times in 18 months of employment

Laboratory Assistant, Department of Geography and Geology, Sam Houston State University, TX USA, **July 2012-May 2013**

- Sample preparation of synthetic and natural soils containing proper ingredients necessary for Ettringite growth
- Analyzed samples for mineral content in X-Ray Diffractomer (XRD)
- Interpreted results of XRD analyses to determine the presence of synthetically grown Ettringite properties
- Presented initial results at an in-house undergraduate research symposium

TEACHING EXPERIENCE

Instructor, Department of Earth and Atmospheric Sciences, Central Michigan University, Spring 2019, **GEL 101: Physical Geology** *(Lectures: Introduction to Geology, Minerals and Rock Identification, Plate Tectonics, Weathering and Soils, Groundwater, Mountain Belts, Coastlines, Deserts and Wind, Glaciers and Glaciation).*

Teaching Assistant, Department of Earth and Atmospheric Sciences, Central Michigan University, Fall 2018 and Spring 2019, **ENS 101: Introduction to Environmental Science** *(Lectures: Population Development; Ecosystems of the Earth, Properties of Air, Water, and Soil).*

Teaching Assistant, Department of Earth and Atmospheric Sciences, Central Michigan University, Fall 2018, **GEL 380: Hydrogeology** *(Topics: Reservoir Mass Balance, Groundwater Geochemistry, Well Mechanics, Contaminant Fate and Transport).*

Instructor, Department of Earth, Environmental, and Atmospheric Sciences, Western Kentucky University, Fall 2016 and Spring 2017, **GEL 223: Natural Hazards: Our Dangerous Planet** *(Lectures: Volcanic Hazards, Layers of the Earth, Rivers and Flooding Hazards, Hurricanes and Storm Development, Climate Change, Wildfires, Mass Wasting).*

Lab Instructor, Department of Geography and Geology, Sam Houston State University, Summer 2011 through Spring 2013, **GEL 114: Historical Geology Laboratory** *(Example Topics: Fundamentals of Stratigraphy, Coastal and River Erosion).*

ARTICLE PUBLICATIONS

1. **Jackson, L.E.,** Robertson, W.R., Rohrssen, M.K., Chappaz, A., Lemke, L.D. (2022) Evaluation of 1,4-dioxane attenuation processes at the Gelman Site, Michigan, USA. ***Science of the Total Environment,*** 823. https://doi.org/10.1016/j.scitotenv.2022.153634
2. **Jackson, L.E.,** Rohrssen, M.K., Hlohowskyj, S.R., Lemke, L.D. (2021) Determination of 1,4-dioxane in water samples using Freeze-Assisted Liquid-Liquid Extraction and Gas Chromatography-Mass Spectrometry with Select Reaction Monitoring. ***Journal of Separation Science,*** pp. 1-10. https://doi.org/10.1002/jssc.202000925
3. **Jackson, L.E.,** Polk, J.S. (2020) Seasonal $\delta^{13}C_{DIC}$ sourcing and geochemical flux in telogenetic epikarst of south-central Kentucky. ***Earth Surface Processes and Landforms*****,** 45(4): 785-789. https://onlinelibrary.wiley.com/doi/abs/10.1002/esp.4768
4. **Jackson, L.E.,** Lemke, L.D. (2019) Evidence for natural attenuation of 1,4-dioxane in a glacial aquifer system. ***Hydrogeology Journal,*** 27(8): 3009-3024. https://doi.org/10.1007/s10040-019-02028-6
5. Harris, P., Harvey, O., **Jackson, L.E.,** DePugh, M., and Puppala, A. (2014) Killing the ettringite reaction in sulfate-bearing soils. ***Transportation Research Record: Journal of the Transportation Research Board,*** 2462(1): 109-116. https://doi.org/10.3141/2462-13

PRESENTATIONS

2021, Jackson, L.E.: Modeling 1,4-dioxane sorption at the Gelman Site, Ann Arbor, Michigan, USA. (Poster) *2021 American Geophysical Union Fall Meeting,* New Orleans, LA.

2020, Jackson, L.E.: Experimental determination of 1,4-dioxane sorption in glacial sediments. (Poster) *American Geophysical Union Fall Meeting,* online meeting.

2019, Jackson, L.E.: Evidence for 1,4-Dioxane natural attenuation in a glacial aquifer system. (Oral Presentation) *American Institute of Professional Geologists, Michigan Section, 9th Annual Workshop,* Roscommon, MI.

2019, Jackson, L.E.: Evidence for 1,4-Dioxane natural attenuation in a glacial aquifer system. (Poster) *CERM Molecules to Materials,* Midland, MI.

2019, Jackson, L.E.: The Case of the Missing 1,4-dioxane: Evidence for natural attenuation in a Complex Glacial Aquifer System. (Oral Presentation) *7th Annual Institute of Great Lakes Research Student Symposium,* Mount Pleasant, MI.

2018, Jackson, L.E.: Evidence for 1,4-Dioxane natural attenuation in a glacial aquifer system. (Poster) *Geological Society of America,* Indianapolis, IN.

2017, Jackson, L.E.: Epikarst Hydrogeochemical Processes in Telogenetic Karst Systems in South-Central Kentucky. (Oral Presentation) *Geological Society of America,* Seattle, WA.

2017, Jackson, L.E.: Epikarst Hydrogeochemical Processes in Telogenetic Karst Systems in South-Central Kentucky. (Oral Presentation) *WKU Graduate Research Symposium, Bowling*

Green, KY.

2016, Jackson, L.E.: Epikarst Hydrogeochemical Processes in Telogenetic Karst Systems in South-Central Kentucky. (Poster) *Geological Society of America,* Denver, CO.

2014, Jackson, L.E.: MWD Rig-Up Guide. (Oral Presentation) *Baker Hughes International, Drilling Services,* Midland, TX

2014, Jackson, L.E.: LWD/MWD Curriculum Reform. (Oral Presentation) *Baker Hughes International, Drilling Services,* Midland, TX

2013, Jackson, L.E.: Ettringite Formation in Clay Soils. (Poster) *6th Annual SHSU Undergraduate Research Symposium,* Hunstville, TX

GRANTS

2019, Central Michigan University Dissertation Research Grant, **$1,200**

2019, Central Michigan University Earth and Ecosystem Science Opportunity Grant, **$540**

2019, Geological Society of America Graduate Student Research Grant, **$1,250**

2017, Cleveland Grotto Science Fund, Masters Research, **$840**

2017, National Speleological Society, Masters Research, **$725**

2016, Western Kentucky Graduate Student Research Grant, **$1,996**

2016, National Speleological Society, Masters Research, **$625**

PROFESSIONAL AFFILIATIONS

- American Geophysical Union, 2018-present
- International Association of Hydrogeologists, 2018-present
- Geological Society of America, 2015-present

CERTIFICATIONS AND TRAINING

- HAZWOPER 40-Hr/8-Hr Refresher Training, 2018-present
- Thermo Scientific Gas Chromatography-Mass Spectrometry Training, 2020
- Log Quality Control and Tool Operations, 2015
- Baker Hughes International Management Competency, 2015
- AutoTrak eXpress and AutoTrak Curve Operations, 2015
- FEDP2, Multiple Management Styles, 2014
- MWD/LWD Academy, NG, and OnTrak Resistivity Tool Operations, 2013
- Basic Radioactivity Principles and Safe Operations, 2013
- FEDP1, Industry Specifics, and Teambuilding Workshops, 2013
- Health, Safety, and Environment Awareness, 2013

PROFESSIONAL SKILLS

- Critical Thinking
- Upward Management
- Field Methods
    - Hydrogeological site characterization
    - Stage and Discharge measurements
    - Stationery and Spot Geochemical Logger
    - Geologic Mapping
- Laboratory and Analytical Skills
    - Gas Chromatography-Mass Spectrometry
    - Ion Chromatography
    - Inductively Coupled Plasma Mass Spectrometry
- Computer Modeling
    - Rockworks
    - ArcGIS
    - MODFLOW
- Public Speaking
- Data Mining
- Grant, Technical, and Editorial Writing

ACCOMPLISHMENTS

- Basic and Advanced SCUBA certified, July 2019
- Passed CMU PhD qualifying exam, May 2019
- Passed WKU master's thesis defense, June 2017
- Passed WKU master's comprehensive exam, November 2016
- Participated in the Arctic Climate Research Council Summit, Iceland, May 2015
- Wrote and published a women's fiction novel, *Sweetwater Farm,* 2015