

Elizabeth M. Herndon

Staff Scientist, Environmental Sciences Division, Oak Ridge National Laboratory
email: herndonem@ornl.gov; phone: (865) 341-0330

Professional Employment

- 2019 – present** **Staff Scientist**, Environmental Sciences Division, Oak Ridge National Laboratory
Joint Faculty, Earth & Planetary Sciences, University of Tennessee – Knoxville
- 2014 – 2019** **Assistant Professor**, Department of Geology, Kent State University
- 2013 – 2014** **Postdoc Researcher**, Environmental Sci. Division, Oak Ridge National Laboratory
- Fall 2012** **Instructor**, Department of Geosciences, The Pennsylvania State University

Education

- 2012** **Ph.D., Geosciences and Biogeochemistry, Pennsylvania State University**
Biogeochemistry of manganese contamination in a temperate forested watershed
PhD Dissertation advisor: Susan Brantley
- 2007** **B.A., Earth & Planetary Sciences; Chemistry: Biochemistry concentration**
(double major), Washington University in Saint Louis (*magna cum laude*)
Honors thesis: *Microbial arsenic processes in shallow marine hydrothermal systems*

Awards and Honors

Postgraduate Awards

- Outstanding New Faculty Research and Scholarship Award, Kent State University
- Kavli Frontiers of Science Fellow – 2019 U.S. symposium sponsored by National Academy of Sciences
- National Science Foundation CAREER Award winner

Student Awards

- Donald B. and Mary E. Tait Scholarship in Microbial Biogeochemistry, Penn State University
- Arnulf I. Muan Graduate Fellowship in Earth and Mineral Sciences, Penn State University
- University Graduate Fellowship, Penn State University
- Courtney Werner Memorial Prize in Earth & Planetary Sciences, Washington University in Saint Louis
- Compton Fellowship in Natural Sciences, Washington University in Saint Louis

Publications

Peer-reviewed Journal Articles

*indicates student author

1. Herndon E. M., Kinsman-Costello L., Di Domenico N.*, Duroe K.*, Barczok M.*, Smith C.*, and Wullschleger S. D. (2020) Iron and iron-bound phosphate accumulate in surface soils of ice-wedge polygons in arctic tundra. *Environmental Science: Processes & Impacts*.
<https://doi.org/10.1039/D0EM00142B>.

2. Shaw M.*, Yazbek L.*, Singer D., Herndon E. (2020) Seasonal mixing from intermittent flow drives concentration-discharge (C-Q) behavior in a stream affected by coal mine drainage. *Hydrological Processes*. <https://doi.org/10.1002/hyp.13822>
3. Singer D., Herndon E., Cole K.*, Koval J.*, Perdrial N. (2020, *in revision*) Formation of secondary mineral coatings and the persistence of reduced metal-bearing phases in soils developing on historic coal mine spoil. *Accepted to Applied Geochemistry*.
4. Singer D., Herndon E., Cole K.*, Burkey M.*, Morrison S.*, Cahill M.*, Bartucci M. (2020) Micron-scale distribution controls metal(loid) release during simulated weathering of a Pennsylvanian coal shale. *Geochim. Cosmochim. Acta*. <https://doi.org/10.1016/j.gca.2019.10.034>
5. Herndon E., Kinsman-Costello L., and S. Godsey (2020) Biogeochemical cycling of redox-sensitive elements in permafrost-affected ecosystems. In "Biogeochemical cycles: Ecological Drivers and Environmental Impacts." K. Dontsova, Z. Balogh-Brunstad, G. Le Roux (eds). John Wiley and Sons, Inc. *Invited and peer-reviewed*. <https://doi.org/10.1002/9781119413332.ch12>
6. Herndon E., Yarger, B.*, Frederick, H.*, and Singer, D. (2019) Iron and manganese biogeochemistry in forested coal mine spoil. *Soil Systems* 3(1), 13. <https://doi.org/10.3390/soilsystems3010013>
7. Herndon E., Kinsman-Costello L., Duroe K.*, Mills J.*, Kane E., Sebestyen S., Thompson A., and Wullschleger S. (2019) Iron (oxyhydr)oxides serve as phosphate traps in tundra and boreal peat soils. *Journal of Geophysical Research Biogeosciences*. <https://doi.org/10.1029/2018JG004776>
8. Brantley S., White T., West N., Williams J., Forsythe B., Shapich D., Kaye J., Lin H., Shi Y., Kaye M., Herndon E., Davis K., He Y., Eissenstat D., Weitzman J., DiBiase R., Li L., Reed W., Brubaker K., and Gu X. (2018) Susquehanna Shale Hills Critical Zone Observatory: Shale Hills in the Context of Shaver's Creek Watershed. *Vadose Zone Journal* 17(1). [doi:10.2136/vzj2018.04.0092](https://doi.org/10.2136/vzj2018.04.0092)
9. Sak P., Murphy M., Ma, L., Gaillardet J., Herndon E., Brantley S., and Daniel C. (2018) From unweathered core to regolith in a single weathering andesitic clast: rates and trends of in situ chemical weathering on a tropical volcanic island (Basse Terre Island, French Guadeloupe). *Chemical Geology*. doi.org/10.1016/j.chemgeo.2018.08.015
10. Herndon E., Steinhofel G., Dere ALD, and P. Sullivan (2018) Perennial flow through convergent hillslopes explains chemodynamic solute behavior in a shale headwater catchment. *Chemical Geology* 493, 413-425. doi.org/10.1016/j.chemgeo.2018.06.019
11. Herndon EM, Havig JR, Singer DM, McCormick M, and LR Kump (2018) Manganese and iron geochemistry in sediments underlying the redox-stratified Fayetteville Green Lake. *Geochimica et Cosmochimica Acta* 231, 50-63. doi.org/10.1016/j.gca.2018.04.013
12. Herndon EM, AlBashaireh AB*, Singer DM, Roy Chowdhury T, Gu B, Graham DE (2017) Influence of iron redox cycling on organo-mineral associations in Arctic tundra soil. *Geochimica et Cosmochimica Acta* 207, 210-231. doi.org/10.1016/j.gca.2017.02.034
13. Chambers LG, Chin Y, Filippelli GM, Gardner CB, Herndon EM, Long DT, Lyons WB, Macpherson GL, McElmurry SP, McLean CE, Moore J, Moyer RP, Nezat CA, Soderberg K, Teutsch N, and E Widom (2016) Developing the scientific framework for urban geochemistry. *Applied Geochemistry* 67, 1-20. [doi:10.1016/j.apgeochem.2016.01.005](https://doi.org/10.1016/j.apgeochem.2016.01.005)
14. Herndon EM, Yang Z, Bargar J, Janot N, Regier T, Graham D, Wullschleger S, Gu B, and L Liang (2015) Geochemical drivers of organic matter decomposition in Arctic tundra soils. *Biogeochemistry* 126(3), 397-414. [doi:10.1007/s10533-015-0165-5](https://doi.org/10.1007/s10533-015-0165-5)

15. Herndon EM, Mann BF, Roy Chowdhury T, Yang Z, Graham DE, Wulschleger SD, Liang L, and Gu B (2015) Pathways of anaerobic organic matter decomposition in tundra soils from Barrow, Alaska. *Journal of Geophysical Research – Biogeosciences* 120, 2345-2359. [doi:10.1002/2015JG003147](https://doi.org/10.1002/2015JG003147)
16. Herndon EM, Dere AL, Sullivan PL, Norris D, Reynolds B, and Brantley SL (2015) Landscape heterogeneity drives contrasting concentration-discharge relationships in shale headwater catchments. *Hydrology and Earth Systems Science* 19, 3333-3347. [doi:10.5194/hess-19-3333-2015](https://doi.org/10.5194/hess-19-3333-2015)
17. Mann BF, Chen H, Herndon EM, Chu RK, Tolic N, Portier E, Roy Chowdhury T, Robinson EW, Callister SJ, Wulschleger SD, Graham D, Liang L, and Gu B (2015) High-resolution molecular profiling of permafrost soil organic carbon composition and degradation under warming. *PLoS One* 10(6), e0130557. [DOI: 10.1371/journal.pone.0130557](https://doi.org/10.1371/journal.pone.0130557)
18. Herndon EM, Jin L, Andrews DM, Eissenstat DM, and Brantley SL (2015) Importance of vegetation for manganese cycling in temperate forested watersheds. *Global Biogeochemical Cycles* 29(2), 160-174. [DOI: 10.1002/2014GB004858](https://doi.org/10.1002/2014GB004858)
19. Newman BD, Throckmorton HM, Graham DE, Gu B, Hubbard SS, Liang L, Wu Y, Heikoop JM, Herndon EM, Phelps TJ, Wilson CJ, and Wulschleger SD (2015) Microtopographic and depth controls on active layer chemistry in Arctic polygonal ground. *Geophys. Res. Lett.* 42, 1808-1817. [DOI: 10.1002/2014GL062804](https://doi.org/10.1002/2014GL062804)
20. Kraepiel A, Dere AL, Herndon EM and Brantley SL (2015) Natural and anthropogenic processes contributing to metal enrichment in surface soils of central Pennsylvania. *Biogeochemistry* 123, 265-283. [DOI: 10.1007/s10533-015-0068-5](https://doi.org/10.1007/s10533-015-0068-5)
21. Roy Chowdhury T, Herndon EM, Phelps TJ, Elias DA, Gu B, Liang L, Wulschleger S, and Graham DE (2015) Stoichiometry and temperature sensitivity of methanogenesis and CO₂ production from saturated polygonal tundra in Barrow, Alaska. *Global Change Biology* 21(2), 722-737. [DOI: 10.1111/gcb.12762](https://doi.org/10.1111/gcb.12762)
22. Herndon EM, Martínez CE, and Brantley SL (2014) Spectroscopic (XANES/XRF) characterization of contaminant manganese cycling in a temperate watershed. *Biogeochemistry* 121, 505-517. [DOI: 10.1007/s10533-014-0018-7](https://doi.org/10.1007/s10533-014-0018-7)
23. Ma L, Konter J, Herndon E, Jin L, Steinhofel G, Sanchez D, and Brantley SL (2014) Quantifying an early signature of the industrial revolution from lead concentrations and isotopes in soils of Pennsylvania, USA. *Anthropocene* 7, 16-29. [doi:10.1016/j.ancene.2014.12.003](https://doi.org/10.1016/j.ancene.2014.12.003)
24. Herndon EM and Brantley SL (2011) Movement of manganese contamination through the Critical Zone. *Appl. Geochem* 26, S40-S43. [doi:10.1016/j.apgeochem.2011.03.024](https://doi.org/10.1016/j.apgeochem.2011.03.024)
25. Brantley SL, ..., Herndon E, ..., Yoo K (2011) Twelve testable hypotheses on the geobiology of weathering. *Geobiology* 9(2), 140-165. [10.1111/j.1472-4669.2010.00264.x](https://doi.org/10.1111/j.1472-4669.2010.00264.x)
26. Herndon EM, Jin L, and Brantley SL (2011) Soils reveal widespread manganese enrichment from industrial inputs. *Environ. Sci. Technol.* 45(1), 241-247. [DOI: 10.1021/es102001w](https://doi.org/10.1021/es102001w)

Editor-reviewed Publications

1. Herndon, E.M. (2018) News and Views: Permafrost slowly exhales methane. *Nature Climate Change* 8, 273-274. [doi:10.1038/s41558-018-0129-6](https://doi.org/10.1038/s41558-018-0129-6). *Invited*.
2. Herndon, E.M. (2016) Perspectives: Tips to help chemists achieve a work-life balance. *Chemical and Engineering News* 94(27): 30-31. *Invited*.

Published Datasets

- Herndon E, Kinsman-Costello L, Di-Domenico N, Duroe K, Barczok M, Wulschleger CS. (2020) Iron and Phosphorus Geochemistry in High-Centered and Low-Centered Polygon Soils from the Barrow Environmental Observatory, Utqiagvik, Alaska, 2015. Next Generation Ecosystem Experiments Arctic Data Collection. Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. DOI: 10.5440/1618325
- Zheng, J., Roy Chowdhury, T., Herndon, E., Yang, Z., Gu, B., Wulschleger, S., and Graham, D. (2018) Synthesis of soil geochemical characteristics and organic carbon degradation in Arctic polygon tundra, Barrow, Alaska. DOI: 10.5440/1440029
- Herndon, E., Yang, Z., and Gu, B. (2017) Soil organic carbon degradation during incubation, Barrow, Alaska. DOI: 10.5440/1168922
- Graham, D., Gu, B., Herndon, E., Wulschleger, S., Yang, Z., and Liang, L. (2016) Surface and active layer pore water chemistry from ice wedge polygons, Barrow, Alaska (2013-2014). DOI: 10.5440/1226245
- Roy Chowdhury T, Herndon E, Graham D, Gu B, Liang L (2013) Soil physicochemical characteristics from low-centered polygon in Barrow, Alaska. DOI: 10.5440/1109232.
- Susquehanna Shale Hills Critical Zone Observatory Stream Water Chemistry (2008-2010). EarthChem. [DOI: 10.1594/IEDA/100241; DOI: 10.1594/IEDA/100242; DOI: 10.1594/IEDA/100243]
- Susquehanna Shale Hills Critical Zone Observatory Porewater Chemistry (2008-2010). EarthChem. [DOI: 10.1594/IEDA/100235; DOI: 10.1594/IEDA/100236; DOI: 10.1594/IEDA/100237]

Research Grants

Active Research Grants

- | | |
|-------------|---|
| 2020 – 2022 | Geochemical regulation of ecosystem carbon storage
PI: Elizabeth Herndon (ORNL)
Funding Agency: Department of Energy/Laboratory Directed R & D
Amount: \$1,191,400 |
| 2019 – 2022 | Collaborative Proposal: Biological and geochemical controls on phosphorus bioavailability in arctic tundra
PI: Elizabeth Herndon (ORNL/UTK)
Co-Is: Lauren Kinsman-Costello (Kent State); Michael Weintraub (U. of Toledo)
Funding Agency: National Science Foundation: OPP/Arctic Natural Sciences
Amount to UTK: \$907,462 |

Completed Research Grants

- | | |
|-------------|---|
| 2018 – 2019 | CAREER: Manganese biogeochemistry and impacts on carbon storage in plant-soil systems
PI: Elizabeth Herndon (Kent State)
Funding Agency: National Science Foundation: EAR/Geobiology and Low-Temperature Geochemistry
Amount to KSU: \$487,222 (amended to \$112,143 following move to ORNL) |
|-------------|---|

2018 – 2019 Designing a sensor network to investigate how redox regimes control iron and phosphorus biogeochemistry
 PI: Elizabeth Herndon
 Co-PI: Lauren Kinsman-Costello
 Funding Agency: KSU/Environmental Science and Design Research Initiative
 Amount: \$12,000

2018 – 2019 Colloid generation and transport in stream sediments impacted by acid mine drainage
 PI: Elizabeth Herndon
 Funding Agency: Kent State University, University Research Council
 Amount: \$3,425

2016 – 2018 Iron geochemistry and controls on phosphorus bioavailability in northern peatlands
 PI: Elizabeth Herndon
 Co-I: Lauren Kinsman-Costello
 Funding Agency: National Science Foundation: EAR/Geobiology and Low-Temperature Geochemistry
 Amount to KSU: \$100,567

2017 – 2018 Acquisition of an X-ray diffractometer for environmental mineralogy and geochemistry
 PI: David Singer (Kent State)
 Co-Is: Elizabeth Herndon, Jeremy Williams
 Funding Agency: National Science Foundation: EAR/Instrumentation & Facilities
 Amount to KSU: \$126,459

2017 – 2018 Concentration-discharge behavior of dissolved and particulate metals in a mining impacted stream
 PI: Elizabeth Herndon (Kent State)
 Funding Agency: Ohio Water Resources Center (OWDA)
 Amount to KSU: \$63,096 (50% cost-shared)

2017 – 2018 Impacts of manganese cycling on carbon storage in plant-soil systems
 PI: Elizabeth Herndon
 Funding Agency: Kent State University, University Research Council
 Amount: \$9,538

2015 – 2018 Impact of vegetation on metal release from soils developed on coal mine waste
 PI: Elizabeth Herndon
 Funding Agency: Kent State University, Farris Family Innovation Award
 Amount: \$24,000

- 2015 Evaluating the impact of vegetation on water and metal transport through coal mine waste
 PI: Elizabeth Herndon
 Funding Agency: Kent State University, University Research Council
 Amount: \$2,469
- 2014 Investigating inorganic and organic-mediated cation transport from soils to streams
 PI: Elizabeth Herndon
 Funding Agency: National Science Foundation/Penn State University
 Amount to KSU: \$9,902

Synchrotron User Proposals Awarded (PI)

Advanced Photon Source, Argonne National Laboratory

Beamline 12-BM-B

General User Proposal; #60689 (10/2018) – 9 shifts

General User Proposal #54760 (3/2018) – 12 shifts

Beamline 13-ID-E

General User Proposal #41616 (02/2015) – 9 shifts

General User Proposal #45047 (12/2015) – 9 shifts

General User Proposal #26055 (10/2011) – 9 shifts

Beamline 13-BM-D, GUP 22644 (10/2010)

Beamline 20-BM-XOR, GUP 11893 (08/2009)

Canadian Light Source

Beamline SXRMB: 9 shifts (12/2019)

Presentations

Invited Seminars

- 2020 Oak Ridge National Laboratory, ORPA Research Seminar Series
- 2019 Oak Ridge National Laboratory, Energy Talks
 Kent State University, Environmental Science and Design Research Symposium
 Kent State University, Department of Physics
- 2018 Stockholm University, Department of Geological Sciences
- 2017 Cleveland State University, Department of Biological, Geological, and Environmental Sciences
- 2016 Ohio State University, Department of Earth Sciences
 Kent State University, Kent State Environmental Society
 Case Western Reserve University, Dept. of Earth, Environmental and Planetary Sciences
- 2015 Kent State University, Kent State Biological Sciences
 Smithsonian Institution, National Museum of Natural History; Mineral Sciences Division
 Towson University; Department of Physics, Astronomy and Geosciences
- 2013 The Pennsylvania State University; Dept. of Geosciences, *Peter Deines Memorial Lecture*

Conference Presentations

- 2020 Herndon, E. M., Kinsman-Costello, L., Michaud, A., Emerson, D., Bowden, W. (2020) X-ray vision in the arctic tundra: exploring how redox biogeochemistry influences ecosystem processes. *30th V. M. Goldschmidt conference*, Honolulu, HI, *Keynote*.
- Herndon, E.M., Laubscher, S., Sulman, B., and Rosenfeld, C. (2020) Effects of biological manganese cycling on carbon storage in the critical zone. *30th V. M. Goldschmidt conference*, Honolulu, HI, *Invited*.
- 2019 Herndon, E.M., Laubscher, S., and Rosenfeld, C. (2019) Manganese cycling and associated impacts on carbon storage in plant-soil systems. *ASA-CSSA-SSSA International Annual Meeting*, San Antonio, TX. *Invited*.
- Herndon, E.M. (2019) Iron oxides as carbon and nutrient traps in soils. *Toolik Field Station All Scientists Meeting*, Portland, OR. *Invited*.
- Herndon, E.M. (2019) Manganese mobilization from forested soils developed on coalmine waste. *Soil Science Society of America meeting*, San Diego, CA. *Invited*.
- 2018 Herndon, E.M., Barczok, M., Thompson, A., Kinsman-Costello, L., and Smith C. (2018) Iron speciation across redox regimes in arctic tundra soil. *American Geophysical Union Fall Meeting B31G-2575*, Washington D.C.
- Herndon, E.M., Duroe, K., Kinsman-Costello, L., Mills, J., Thompson, A., Kane, E., Sebestyen, S., and Wullschleger, S. (2018) Iron accumulation promotes phosphate retention at redox interfaces in arctic and boreal soils. *28th V.M. Goldschmidt conference*, Boston, MA. *Invited*.
- Herndon E.M. (2018) Iron geochemistry and controls on phosphorus bioavailability in tundra and boreal soils. *Iron Geochemistry Workshop*, Lech, Austria. *Invited*.
- 2017 Herndon, E.M., Steinhoefel, G., Dere, A.L.D., Sullivan, P.L. (2017) Perennial flow through convergent hillslopes explains chemodynamic solute behavior in a shale headwater catchment. *American Geophysical Union Fall Meeting B54A-02*, New Orleans, LA, USA
- Herndon, E.M., Duroe, K., Mills, J., Kinsman-Costello, L., Wullschleger, S., Sebestyen, S., Kane, E. (2017) Iron-phosphorus interactions across redox transitions in tundra and boreal wetlands. *27th V.M. Goldschmidt conference*, Paris, France.
- 2016 Herndon, E.M., AlBashaireh A., Duroe, K., Singer, D. (2016) Influence of iron redox cycling on organo-mineral associations in arctic tundra soils. *American Geophysical Union Fall Meeting B41D-0458*, San Francisco, CA, USA.
- Herndon E.M., Havig, J., Singer, D., McCormick, M., Kump, L. (2016, *invited*) Investigating Fe and Mn geochemistry in sediments of a redox-stratified lake. *Geological Society of America Fall Meeting 93-7*, Denver, CO, USA.
- Herndon E.M., Steinhoefel, G., Dere A.L.D. (2016) Investigating inorganic and organic solute transport in the Shale Hills catchment. *Susquehanna Shale Hills CZO All Hands Meeting*, State College, Pennsylvania, USA.
- Herndon E.M., Singer, D.M., and Zemanek, L. (2016) Metal(loid) leaching from soils developing on coal mine waste. *American Chemical Society Spring Meeting*, San Diego, CA, USA.
- 2015 Herndon E.M. (2015) Importance of vegetation for manganese cycling in forested watersheds. *Geological Society of America Fall Meeting 172-4*, Baltimore, MD, USA.

- Herndon E.M., Roy Chowdhury T., Yang Z., Graham D., Gu B., and Liang L. (2015) Iron biogeochemistry in arctic tundra soils. *25th V.M. Goldschmidt conference*, Prague, Czech Republic.
- 2014 Herndon E.M., Roy Chowdhury T., Mann B., Graham D., Wulschleger S.D., Gu B., Liang L. (2014) Geochemical drivers of anaerobic organic matter decomposition in the active layer of arctic tundra. *AGU Fall Meeting GC11B-0554*, San Francisco, CA, USA.
- Herndon E.M., Roy Chowdhury T., Mann B., Graham D., Wulschleger S.D., Gu B., Liang L. (2014) Geochemical drivers of anaerobic organic matter degradation in Arctic tundra. *24th V.M. Goldschmidt conference*, Sacramento, CA, USA.
- 2013 Herndon E.M., Roy Chowdhury T., Mann B., Graham D., Bargar J., Gu B., Liang L. (2013) Chemical and spectroscopic analyses of organic matter transformation in warming tundra soils. *AGU Fall 2013*.
- 2012 Herndon E.M., Kubicki J. and Brantley S.L. (2012) Micro- to macro-scale investigations of manganese in soil-plant systems. *22nd V.M. Goldschmidt conference*, Montreal, Canada.
- 2011 Herndon E.M., Eissenstat D., Martinez C.E., and Brantley S.L. (2011, oral) Biogeochemical characterization of contaminant Mn sequestration. *21st V.M. Goldschmidt conference*, Prague, Czech Republic.
- Herndon, E.M., and Brantley, S.L. (2011, poster) Movement of manganese contamination through the Critical Zone. *Geochemistry of the Earth's Surface (GES-9)*, Boulder, CO, USA. *IAGC Faure Award for best student presentation
- 2010 Brantley S.L., Herndon E.M., Jin L., Eissenstat D., Raymond P. (2010, *invited*) Vegetation: A natural capacitor for contaminant metals input into the Critical Zone. *EOS Trans. AGU 91*, Fall Meet. Suppl., Abstract B23K-01.
- 2010 Herndon E.M. and Brantley S.L. (2010, *poster*) Role of biotic cycling in determining the soil residence time of industrial pollutants. *20th V.M. Goldschmidt conference*, Knoxville, TN.
- 2009 Herndon E.M., Jin L., and Brantley S.L. (2009, *poster*) Impact of aeolian deposition on Mn cycling in soils. *19th V.M. Goldschmidt conference*, Davos, Switzerland.
- 2008 Herndon E.M., Jin L., and Brantley S.L. (2008, *poster*) Mn enrichment in surface soils: a signal for dust? *EOS Trans. AGU 89(53)*, Fall Meet. Suppl., Abstract A43A-0278.

Advisee-led Conference Presentations

- 2020 Barczok, M., Smith, C., Kinsman-Costello, L., and Herndon, E. (2020) Iron (oxyhydr)oxide crystallinity and redox conditions as a function of permafrost thaw in Abisko, Sweden. *Environmental Science and Design Research Symposium* (Graduate poster award – 2nd place). Kent State University.
- 2019 Laubscher, S., and Herndon, E. (2019) Manganese dissolution kinetics and uptake rates by red maple trees in soils. *Environmental Science and Design Research Symposium* (Graduate poster award – 1st place) and *Graduate Research Symposium* (Graduate poster award – 1st place in division), Kent State University.
- Barczok, M., Smith, C., Kinsman-Costello, L., and Herndon E. (2019) Influence of iron (oxyhydr)oxide crystallinity on phosphate bioavailability in contrasting redox and hydrological conditions. *Environmental Science and Design Research Symposium*

- (Graduate poster award – 2nd place) and *Graduate Research Symposium*, Kent State University.
- Yazbek, L., Singer, D., Herndon, E. (2019) Metal speciation and transport in a stream impacted by coal mine drainage. *Environmental Science and Design Research Symposium and Graduate Research Symposium* (Graduate oral award – 1st place in division), Kent State University.
- Di Domenico, N., Barczok, M., and Herndon, E. (2019) Using sequential extractions to measure potentially bioavailable phosphate in soil systems with poorly crystalline iron-oxides. *Undergraduate Research Symposium* (Poster award – 1st place in division), Kent State University.
- Crowell, M., Laubscher, S., and Herndon, E. (2019) Optimizing Soil Grinding to Measure Soil Manganese Content. *Undergraduate Research Symposium*, Kent State University.
- 2018 Barczok, M., Smith, C., Kinsman-Costello, L., and Herndon E. (2018) Influence of iron (oxyhydr)oxide crystallinity on phosphorus bioavailability in fluctuating redox conditions. *American Geophysical Union Fall Meeting B31G-2577*, Washington D.C.
- Laubscher, S., and Herndon, E. (2018) Geochemical constraints on manganese uptake by red maple trees. *American Geophysical Union Fall Meeting*, Washington D.C.
- Yazbek, L., Singer, D., Herndon, E. (2018) Particle, nanoparticle, and dissolved metal speciation and transport in an acid mine drainage impacted system in Northeastern Ohio. *American Geophysical Union Fall Meeting*, Washington D.C.
- Shaw, M.E., Klein, M., and Herndon, E. (2018) Concentration-discharge behavior of contaminants in a stream impacted by acid mine drainage. *28th V.M. Goldschmidt conference*, Boston, MA. *Graduate presenter*.
- Klein, M., Herndon, E. (2018) Developing a protocol for extracting mineral-associated organic matter in soils developed from coal mine waste. *Kent State Undergraduate Research Symposium*, Kent State University, Kent, OH. *Undergraduate presenter*.
- 2017 Shaw, M.E., Klein, M., and Herndon, E. (2017) Concentration-discharge behavior of contaminants in a stream impacted by acid mine drainage. *American Geophysical Union Fall Meeting*, New Orleans, LA, USA. *Graduate presenter*.
- Mills, J., Duroe, K., Kinsman-Costello, L., Herndon, E. (2017) Evaluating phosphorus solubility in tundra and boreal peatlands. *GSA Joint Northeastern/North Central Section Meeting*, Pittsburgh, PA, USA. *Undergraduate Poster Award – Honorable Mention*
- Frederick, H., Yarger, B., Herndon, E. (2017) Geochemical evaluation of weathering processes in coal mine spoil. *GSA Joint Northeastern/North Central Section Meeting*, Pittsburgh, PA, USA. *Best Undergraduate Poster Award*.
- Duroe, K., Mills, J., Kinsman-Costello, L., Herndon, E. (2017) Iron redox cycling and impacts on phosphorus solubility in tundra and boreal ecosystems. *GSA Joint Northeastern/North Central Section Meeting*, Pittsburgh, PA, USA. *Graduate presenter*.
- Yarger, B., Frederick, H., Zemanek, L., Singer, D., Herndon, E. (2017) Getting to the root of nonpoint source pollution in abandoned mine lands: biogeochemical cycling of manganese in forested coal mine spoil. *GSA Joint Northeastern/North Central Section Meeting*, Pittsburgh, PA, USA. *Graduate presenter*.

- Shaw, M. and Herndon, E. (2017) Investigation of trace metal transport in an AMD-impacted stream and treatment system in northeastern Ohio. *GSA Joint Northeastern/North Central Section Meeting*, Pittsburgh, PA, USA. *Graduate presenter.*
- 2016 Mills, J., Duroe, K., Kinsman-Costello, L., Herndon, E. (2016) Evaluating phosphorus bioavailability and sorption to iron oxyhydroxides in tundra and boreal peatlands. *Kent State Water and Land Symposium*, Kent State University, Kent OH. *Undergraduate presenter.*
- Frederick, H., Yarger, B., Herndon, E. (2016) Geochemical evaluation of weathering processes in coal mine spoil. *Kent State Water and Land Symposium*, Kent State University, Kent OH. *Undergraduate presenter.*
- Duroe, K., Mills, J., Wullschleger, S., Sebestyen, S., Kinsman-Costello, L., Herndon, E. (2016) Iron redox cycling and impacts on phosphorus solubility in tundra and boreal ecosystems. *Geological Society of America Fall Meeting 93-3*, Denver, CO, USA. *Graduate presenter.*
- Yarger, B., Frederick, H., Zemanek, L., Singer, D., Herndon, E. (2016) The impact of vegetation on manganese biogeochemistry in abandoned mine spoil. *Geological Society of America Fall Meeting 151-5*, Denver, CO, USA. *Graduate presenter.*
- 2015 AlBashaireh, A.B., Singer, D.M., and Herndon E.M. (2015) Geochemical analysis of iron and phosphorus in arctic tundra soils. *Geological Society of America Fall Meeting 210-85*, Baltimore, MD, USA. *Undergraduate presenter.*

Teaching and Mentoring

Courses Taught

Graduate/Advanced Undergraduate courses (Kent State University)

Hydrogeochemistry	Fall 2014, 2016, 2018
Environmental Soil Science	Fall 2015, 2017
Critical Zone Processes	Spring 2019

Undergraduate and Core Courses (Kent State University)

Environmental Earth Science	Fall 2016
How the Earth Works	Spring 2016, 2017; Fall 2018
How the Earth Works – Distance learning	Fall 2017
Introductory Geology Seminar	Spring and Fall 2015

Graduate/Advanced Undergraduate courses (Penn State University)

Techniques in Environmental Geochemistry	Fall 2012
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PhD Advisees

Fernanda Santos	Environmental Sciences Division, ORNL	2020 – present
Sumant Avsarala	Earth & Planetary Sciences, UT-Knoxville	2020 – present
Hui Li	Environmental Sciences Division, ORNL	2019 – present

Theses/Dissertations Advised

Sydney Laubscher	M.S. Geology, Kent State University, 2019 <i>Manganese uptake in red maples in response to mineral dissolution rates in soil</i>
Kiersten Duroe	M.S. Geology, Kent State University, 2019 <i>Iron redox cycling and impacts of phosphorus solubility in tundra and boreal ecosystems</i>
Lindsey Yazbek	M.S., Geology, Kent State University, 2019 <i>Hydrogeochemical factors influencing metal transport and transformation in a stream impaired by acid mine drainage</i>
Meaghan Shaw	M.S., Geology, Kent State University; 2018 <i>Concentration-discharge behavior of contaminants in a stream impacted by acid mine drainage</i>
Hannah Frederick	B.S., Biochemistry/Honors Thesis, Kent State; 2017 <i>Geochemical evaluation of weathering processes and metal uptake by vegetation in coal mine spoil</i>
Kristen Butler	Ph.D. Geology, University of Tennessee – Knoxville, <i>in progress</i>
Max Barczok	Ph.D. Applied Geology, Kent State University, <i>in progress</i>

Graduate Committee Membership

Chelsea Smith	Ph.D. Biological Sciences, Kent State University, <i>in progress</i>
Anthony Minerovic	M.S. Biological Sciences, Kent State University, <i>in progress</i>
Megan Smith	M.S. Biological Sciences, Kent State University, <i>in progress</i>
Raihan Chowdhury	Ph.D. Geology, Kent State University, <i>in progress</i>
Nicholas Santoro	M.S. Geology, Kent State University, <i>in progress</i>
Laura Zemanek	M.S. Geology, Kent State University, <i>in progress</i>
Taylor Judice	M.S. Geology, Kent State University, 2019
Hayley Buzulencia	M.S. Geology, Kent State University, 2019
Mary Plauche	M.S. Geology, Kent State University, 2019
Alescia Roberto	Ph.D. Biological Sciences, Kent State University, 2018
Dulci Avouris	Ph.D. Applied Geology, Kent State University, 2018
Daniel Wood	M.S. Geology, Kent State University, 2018
Laura Sugano	M.S. Geology, Kent State University, 2018
Eric Traub	M.S. Geology, Kent State University, 2016

Undergraduate Laboratory Researchers and Assistants

Nicolle Di Domenico	Kent State, undergraduate lab assistant, 2018 – 2019; ORNL HERE intern, 2020
Devin Starr	Kent State, undergraduate lab assistant, 2019
Michael Crowell	Kent State, undergraduate lab assistant, 2018 – 2019
Shannon Joseph	Kent State, undergraduate lab assistant, 2018
Mallory Klein	Kent State, undergraduate researcher, 2017 – 2018
Bryan Agee	Kent State, undergraduate lab assistant, 2016 – 2017
Jonathan Mills	Kent State, undergraduate researcher, 2016 – 2017
Hannah Frederick	Kent State, undergraduate researcher, 2015 – 2017
Roman Waked	Kent State, undergraduate lab assistant, 2016
Amineh AlBashaireh	College of Wooster/KSU REU, undergraduate researcher, 2015
Allison Reynolds	Kent State, undergraduate lab assistant, 2015
Paul Panehal	Kent State, undergraduate lab assistant, 2014 – 2015
Mitchell Ladig	Kent State, undergraduate lab assistant, 2014

Service Activities

Professional Service

Manuscript Reviewer

Nature Climate Change; Geochimica et Cosmochimica Acta; Journal of Geophysical Research – Biogeosciences; Chemical Geology; Environmental Science and Technology; Geophysical Research Letters; Biogeochemistry; Biogeosciences; Hydrology and Earth Systems Science; Geobiology; Water Resources Research; Science of the Total Environment; Environmental Geochemistry and Health; Aquatic Geochemistry; PloS One; Environmental and Engineering Geoscience; Frontiers in Earth Science; Geomicrobiology; Geochemistry, Geophysics, and Geosystems; CLEAN – Soil, Air, Water; Journal of the American Society of Mining and Reclamation

Proposal Reviewer

- NSF Arctic Observation Network, ad-hoc reviewer, 2015 – present
- NSF Geobiology and Low-temperature Geochemistry, ad-hoc reviewer, 2014 – present
- Canadian Light Source Beamline Proposals, 2013 – present
- Stanford Synchrotron Light Source, *ad hoc*, 2015 – present
- Chilean Antarctic Institute, 2019
- Czech Science Foundation, 2018
- American Geophysical Unions Publications (book proposal), 2016
- University of Nebraska – Omaha Carter Award for Excellence, 2016
- NSF Geobiology and Low-temperature Geochemistry Panel, 2014 – 2015
- Water Resources Research Institute (WRRI) of North Carolina, 2015

Session Convener

- Soil Pores to River Corridors: Hydrobiogeochemical Processes at Critical Interfaces, Goldschmidt Conference, 2020
- Biogeochemical Cycling Across Redox Regimes in Arctic and Subarctic Ecosystems, American Geophysical Union Fall Meeting, 2018
- Redox transitions and impacts on biogeochemical cycling of carbon, nutrients, and contaminants, Goldschmidt Conference, 2018
- Environmental Consequences of Resource Development, American Chemical Society Spring Meeting, 2016
- Tracing biogeochemical and hydrological processes in urban landscapes, Geological Society of America Fall Meeting, 2015
- Investigating biogeochemical cycling using micro-scale techniques, 22nd V.M. Goldschmidt Conference; 2012

Oak Ridge National Laboratory

- Earth Sciences Postdoc Round-Table Series; co-organizer; 2019 – 2020
- Committee for selecting Environmental Sciences Division Outstanding Post-Grad and Research Support Awards; 2020

Kent State University

- Environmental Science and Design Research Symposium, Poster Session Chair, 2018 – 2019
- University Research Council, Reviewer for Summer Research Leave/Farris Award
- Hydrogeology faculty search committee, 2016 – 2017
- Water and Land Symposium organizing committee, 2016 – present
- Faculty Advisory Committee, 2016 – present
- Graduate studies committee, Kent State University, 2014 – 2017
- Coordinator, Palmer Lecture Series, Kent State University, 2014 – 2015

Educational Outreach

- Interviewed for NPR WKSU Exploradio: [Cities Step Up to the Challenge of Climate Change](#)
- Panelist, “Advancing Understanding of Climate Change: The Role of Science and Global Communication,” Global Issues Forum hosted by Kent State School of Communication, March 2018, approximately 120 attendees.
- Presentation to K-12 Earth Systems Science teachers (~30) through Kent State School of Teaching, Learning, and Curriculum Studies, Fall 2016 and 2017
- Interviewee for “The Adventures of Meg A. Mole – Future Chemist” article in American Chemical Society’s “Celebrating Chemistry” brochure for 4-6th graders, 2016
- Donated “Soil as a filter” hands-on activity to Educator Resource Center at Cleveland Museum of Natural History (Fall 2016); activity was subsequently utilized by K-12 educators in the Cleveland metro area and by museum employees for special events (e.g., 2017 World Water Day)
- Demonstrated “Soil as a filter” hands-on activity to K-12 educators at the *Wade into Wetlands* workshop at the Cleveland Museum of Natural History, Summer 2016
- Judge, Kent State Scientista Women in STEM Symposium, Spring 2016

Workshops and Other Activities

- Spallation Neutron Source workshop, ORNL; September 2019
- ModEx Approaches to Research on Shorelines (MARSh) workshop; ORNL; September 2019
- Concentration-discharge working group; Pocatello ID; March 2018
- Critical Zone Science: Current Advances and Future Opportunities; Arlington, VA; June 2017
- Early Career Geoscience Faculty, *On the Cutting Edge*; Williamsburg VA; July 2015
- SAVI Early Career Workshop on Critical Zone Resiliency, University of New Hampshire; June 2015
- Urban Geochemistry Working Group Meeting, International Association of Geochemistry, Ohio State University; August 2014
- Advanced Tools in Environmental Biogeochemistry – Opportunities and Limitations, European Association of Geochemistry course; Tübingen, Germany; August 2011
- International Critical Zone Student Symposium, GES-9 course; Boulder, CO, USA; June 2011
- Thermodynamics and Kinetics of Fluid-Rock Interaction, Mineralogical Society of America course; Davos, Switzerland; August 2009
- Frontiers in Exploration of the Critical Zone II: Geobiology of Weathering and Erosion, NSF workshop; Smithsonian Institute, Washington D.C.; October 2009
- Worldwide University Network/Critical Zone collaboration, University of Sheffield, UK; February 2009

- Techniques in Molecular Biology Workshop, Penn State University, June 2008
- Field Geology in the Rocky Mountains, Indiana University; 2007
- Pathfinder Program in Environment Sustainability, Washington University; 2003-2007

Professional affiliations (*current*)

Geochemical Society; United States Permafrost Association; Soil Science Society of America, American Geophysical Union