**Megan E. Elwood Madden**

Dept. Earth and Environmental Sciences [meem@msu.edu](mailto:meem@msu.edu)

Michigan State University ORCID iD [0000-0002-](https://orcid.org/0000-0002-6735-4554)6735-4554 207 Natural Sciences Bldg.

East Lansing, MI 48824

2025-present Professor, Earth and Environmental Sciences, Michigan State University (MSU)

2020-2025 Director, Center for Faculty Excellence, University of Oklahoma (OU)

2019-2025 Professor, School of Geosciences, OU Robert E. and Doris Klabzuba Chair in Geology and Geophysics Core Affiliate Faculty, Women’s and Gender Studies, OU

2013-2025 Stubbeman-Drace Presidential Professor, OU

2013-2019 Associate Professor, School of Geology and Geophysics, OU

2007-2013 Assistant Professor, School of Geology and Geophysics, OU

2005-2007 Wigner Fellow, Oak Ridge National Laboratory

2005 Ph.D., Geochemistry, Virginia Tech

2000 B.S. Geology, University of Illinois, Urbana-Champaign

**Current Grant Funding:**

Salts and Clays- Investigating clay formation and alteration in high salinity brines, $574k (PI, Co-Is A. Elwood Madden and Caitlin Hodges). NASA Solar System Workings, 2022-2026.

Efficiency Of Geophysical Methods for Assessment of Biogeochemical and Mineralogical Subsurface Variation in Extreme Redox Gradients - Advancing Tools to Predict Habitability in the Subsurface, $596k (Co-I, PI Saneiyan). NASA Habitable Worlds, 2023-2026

Characterizing Ammonium-Bearing Materials to Constrain Ammonium in the Regoliths of Rocky Bodies in our Solar System, $75K (Co-I, PI Janice Bishop, SETI) (2024-2027)

**Past Grant Funding:**

SQM Raman Brines partnership, $200K (PI)

ADVANCE IT: OU-ELEVATE: Assessing and Re-envisioning Faculty Evaluations and Workload Distributions $3M (PI L. Snyder, Co-I Elwood Madden). NSF ADVANCE (2022-2025).

EAGER GOLD-EN Rewards: Removing barriers and supporting geoscience diversity leaders by revising evaluation and reward systems $300K (PI Elwood Madden). NSF Geopaths Program (2021-2023)

Characterizing the Geochemical Conditions Governing Formation and Reaction of Jarosite and Alunite Outcrops on Mars in the Context of Lab Experiments and Field Observations $75k to OU (PI Bishop- SETI NASA Ames, Co-I Elwood Madden). NASA MDAP (2019-2022)

Quantifying Surface Area in Muds from the Antarctic Dry Valleys: Implications for Weathering in Glacial Systems $352k (PIs: Soreghan and Elwood Madden) NSF Polar Programs (2016-2021)

Raman Spectral Database of Aqueous Solutions for Planetary Science $380k (PI Elwood Madden) NASA PDART (2018-2021).

Mars Brine Attacks: Investigating mineral weathering reactions in near-eutectic brines, $280K (PI, A. Madden and B. Pritchett Co-I) NASA Mars Fundamental Research (2013-2017)

Assessing Weathering as a Climatic Indicator in Proximal Alluvial Sediments

$240 K (Co-I, L. Soreghan PI) NSF Sedimentary Geology and Paleobiology (2012-2016)

**MRI: Acquisition of a High Resolution Mapping Raman Microprobe for Research and Teaching (PI, L. Soreghan, A. Callaghan, M. Nanny, J. Volz Co-Is) NSF Major Research Infrastructure program $230K from NSF (2014-2016)**

Pathways to Mars analogue hematite through nanoparticle aggregation, $368 K (Co-I, A. Madden PI) NASA Mars Fundamental Research Program

Measuring jarosite dissolution rates: Constraints on the duration of aquoeus processes on Mars. $235K (PI, A.Madden Co-I) NASA Mars Fundamental Research Program

Pilot: Development of Quantitative Weathering Indicators in Proximal Alluvial Sediments to Assess Glacial Activity in the Rock Record. $77K (Co-I, L. Soreghan PI) NSF Geology-Paleo / Low-Temp Geochemistry / OPP

Calcium-Based Stabilizer Induced Heave in Oklahoma Sulfate-Bearing Soils.

$204 K (Co-I, PI A. Cerato) ODOT

Water and Carbon Reservoirs: Combining thermodynamics and kinetics to develop geologic models of gas hydrate distribution and flux on Mars. $237K (PI) NASA Planetary Geology and Geophysics

# Publications *Italics indicate student authors*

55. *Apalara, I. T.,* Hodges, C., Sabisch, J. E., Elwood Madden, M. E., Larson, P. R., & Elwood Madden, A. S. (2025). [Understanding the Impact of a Modern Euxinic Spring on Sediment Using Bulk Sediment and Smectite Clay-Preserved Proxies](https://doi.org/10.1021/acsearthspacechem.4c00269). *ACS Earth and Space Chemistry*, *9*(2), 265-276.

54. *Barbre KSR,* Elwood Madden AS, Hodges CA, Elwood Madden ME (2025) [Characterizing Ferrihydrite Transformation Products in Near-Saturated Brines](https://doi.org/10.1029/2024JE008650), Journal of Geophysical Research – Planets.

53. *Tomlinson, Z. D.,* Dee, K. T., Madden, M. E. E., & Madden, A. S. E. (2025). [Applying the Quadrant Method for Pumping‐Trace Metal Correlations in Variable Time, Low‐Data Systems.](doi:%2010.1111/gwat.13458) *Groundwater*, *63*(2), 256-264.

52. Geyer, C., A. Elwood Madden, P. Larson, & M. Elwood Madden (2024) [Microscopic](https://www.cambridge.org/core/journals/clays-and-clay-minerals/article/microscopic-observations-of-smectite-cation-exchange-in-the-absence-of-free-water-implications-for-the-evolution-of-mars-sediments/F6BF58AAB241CECE82A015097C147739)

[Observations of smectite Cation Exchange in the Absence of Free Water: Implications for the](https://www.cambridge.org/core/journals/clays-and-clay-minerals/article/microscopic-observations-of-smectite-cation-exchange-in-the-absence-of-free-water-implications-for-the-evolution-of-mars-sediments/F6BF58AAB241CECE82A015097C147739)

[Evolution of Mars Sediments.](https://www.cambridge.org/core/journals/clays-and-clay-minerals/article/microscopic-observations-of-smectite-cation-exchange-in-the-absence-of-free-water-implications-for-the-evolution-of-mars-sediments/F6BF58AAB241CECE82A015097C147739) *Clays and Clay Minerals*

51. *Demirel-Floyd, C*., G.S. Soreghan, J. G. Floyd and M. E. Elwood Madden (2024). [Limited bioweathering by cyanobacteria in cold, nutrient-limited conditions: Implications for microbe-mineral interactions and aquatic chemistry in cold environments.](https://www.tandfonline.com/doi/full/10.1080/01490451.2024.2372283) Geomicrobiology.

50. *Demirel-Floyd C,* Soreghan GS, *Webb NDS, Roche A,* Joo YJ,  Hall B, Levy JS, Elwood Madden AS, and Elwood Madden ME (2023). [Investigating weathering signatures in terrestrial muds: Can climatic signatures be separated from provenance?](https://doi.org/10.1130/B36888.1) *GSA Bulletin.*

49. *Bonar AL*, Soreghan GS, and Elwood Madden ME, (2023) [Assessing silt generation and origins in granitoid-hosted soils: implications for loess formation](https://doi.org/10.1029/2023JF007095), *Journal of Geophysical Research: Earth Surface Processes*.

48. *Geyer C.,* Elwood Madden A., *Rodriguez A.,* Bishop J., *Mason D.,* Elwood Madden, M. (2023). [The role of sulfate in cation exchange reactions: applications to clay-brine interactions on Mars](https://iopscience.iop.org/article/10.3847/PSJ/acba97). *Planetary Science Journal.*

47. *Westrop, J.P., Tomlinson, Z.D., Maples, B.M.,* Dee, K.T., Swindle, A.L., Elwood Madden, M.E., Hu, Q. and Elwood Madden, A.S.2 (2022). [Dissolution of Mn-bearing dolomite drives elevated Cr (vi) occurrence in a Permian redbed aquifer.](https://pubs.rsc.org/en/content/articlelanding/2022/em/d2em00395c)*Environmental Science: Processes & Impacts*, *24*(12), 2419-2436.

*46. Rodriguez, A.,* Elwood Madden A.S., Phillips-Lander, C.M., and Elwood Madden, M.E. (2022) [Mars analogous basalt dissolution in near-saturated brines and the observation of secondary mineral precipitation with Raman spectroscopy](https://www.sciencedirect.com/science/article/pii/S0019103522002184). *Icarus.*

45. *Webb, N.,* N. Regmi,, G. Soreghan, A. Elwood Madden, *Sylvester, J.; Cartagena Colon, F.; Demirel-Floyd, C.*; Elwood Madden, M.E. (2022) [Effects of mass wasting on fluvial sediments in Puerto Rico following Hurricane Maria.](http://dx.doi.org/10.1029/2021JF006509) *JGR- Earth Surface Processes*,

44. Joo, Y.J. Sim, M.S., Elwood Madden, M.E., Soreghan, G.S. [Significance of the terrestrial sink in the biogeochemical sulfur cycle.](https://agupubs.onlinelibrary.wiley.com/doi/pdfdirect/10.1029/2021GL097009) (2022) *Geophysical Research Letters*, e2021GL097009.

43. *Mason, D*. and Elwood Madden, M. (2022) [Raman Spectroscopy of High Salinity Brines and Ices,](https://doi.org/10.1016/j.icarus.2021.114759) *Icarus*,

42. *Demirel-Floyd, C.,* G. Soreghan, M. Elwood Madden (2021)[Cyanobacterial weathering in warming periglacial sediments: implications for nutrient cycling and potential biosignatures.](http://doi.org/10.1002/ppp.2133) *Permafrost and Periglacial Processes*,

41. *Cullen, M.* Elwood Madden A.S., Phillips-Lander, C.M., and Elwood Madden, M.E. (2021) [Siderite Dissolution in Mars-Analog Brines: Kinetics and Reaction Products.](https://doi.org/10.3847/PSJ/ac13a3) *Planetary Science Journal*, *2*, p. 169

40. Phillips-Lander, C., *Miller, J.,* and Elwood Madden, M. (2021) [Albite dissolution rates in brines: Implications for weathering on Mars](https://doi.org/10.1016/j.icarus.2021.114478). Icarus,

39. Phillips-Lander, C.M., Madden, A.S.E., Hausrath, E.M. and Madden, M.E.E., 2019. [Aqueous alteration of pyroxene in sulfate, chloride, and perchlorate brines: Implications for post-Noachian aqueous alteration on Mars.](https://doi.org/10.1016/j.gca.2019.05.006) *Geochimica et Cosmochimica Acta*, *257*, pp.336-353.

38. *McGraw LM, McCollom NM,* Phillips-Lander CM, Elwood Madden ME (2018) [Measuring Sulfate and Perchlorate in High Salinity Planetary Waters using Raman Spectroscopy](doi:%2010.1021/acsearthspacechem.8b00082), *ACS Earth and Space Chemistry*, 2 (10), 1068-1074.

37. Joo, Y. J., Elwood Madden, M. E., & Soreghan, G. S. (2018). [Anomalously low chemical weathering in fluvial sediment of a tropical watershed (Puerto Rico).](https://doi.org/10.1130/G40315.1) *Geology*, *46*(8), 691-694.

36. Joo, Y. J., Soreghan, A. M., Madden, M. E. E., & Soreghan, G. S. (2018). [Quantification of particle shape by an automated image analysis system: a case study in natural sediment samples from extreme climates.](https://doi.org/10.1007/s12303-018-0025-0) *Geosciences Journal*, 22, [4](file:///C:\Users\elwo2924\Documents\Administrative\CV\4),  525–532.

1. Phillips-Lander CM, *Parnell SR, McGraw LE,* Elwood Madden ME (2018) [Carbonate dissolution rates in high salinity brines: Implications for post-Noachian chemical weathering on Mars](https://doi.org/10.1016/j.icarus.2017.10.024) *Icarus, 307, 281-293.*
2. *Legett C, Pritchett BN,* Elwood Madden AS, Phillips-Lander CM, Elwood Madden, ME (2018). [Jarosite dissolution rates in perchlorate brine,](doi.10.1016/j.icarus.2017.06.031) *Icarus*.
3. Phillips-Lander CM, *Legett C*, Elwood Madden AS, Elwood Madden ME. (2017) [Can we use pyroxene weathering textures to interpret aqueous alteration conditions? Yes and No.](https://doi.org/10.2138/am-2017-6155) *American Mineralogist 102, 1915-1921.*
4. *Marra K,* Elwood Madden M, Soreghan G, Hall B (2017) [Chemical Weathering Trends in Fine-Grained Ephemeral Stream Sediments of the McMurdo Dry Valleys, Antarctica](http://doi.org/10.1016/j.geomorph.2016.12.016) *Geopmorphology 281, 13-30.*
5. *Sexton MR,* Elwood Madden ME, Swindle AL, Hamilton VE, Bickmore BR, Elwood Madden AS (*2017*) [Considering the formation of hematite spherules on Mars by freezing aqueous hematite nanoparticle suspensions](http://doi.org/10.1016/j.icarus.2016.10.014), *Icarus*.
6. *Steiner MH,* Hausrath EM, Elwood MaddenME, Ehlmann BL, Olsen AA, Gainey SR (*2016*) [Dissolution of Nontronite in Low Water Activity Brines and Implications for the Aqueous History of Mars,](https://doi.org/10.1016/j.gca.2016.08.035) *Geochimica et Cosmochimica Acta 195,* 259-276*.*
7. YJ Joo, ME Elwood Madden, GS Soreghan (2016) [Chemical and physical weathering in a hot-arid, tectonically active alluvial system of Anza-Borrego Desert, CA](doi:%2010.1111/sed.12249). *Sedimentology 63*, 1065–1083.
8. *Miller, J. L.*, Madden, A. E., Phillips-Lander, C. M., Pritchett, B. N., & Madden, M. E. (2016). [Alunite dissolution rates: Dissolution mechanisms and implications for Mars.](https://doi.org/10.1016/j.gca.2015.10.001) *Geochimica et Cosmochimica Acta*, *172*, 93-106.

27. Gerilyn Soreghan, Young Ji Joo, Megan E Elwood Madden, *Sarah VanDeventer* (*2016*). [Silt production as a function of climate and lithology under simulated comminution.](https://doi.org/10.1016/j.quaint.2015.05.010) *Quaternary International*, 399, 218-227.

1. *Munasinghe PS,* Elwood Madden ME, Brooks SC, Elwood Madden AS (*2015*) [Dynamic interplay between uranyl phosphate precipitation, sorption, and phase evolution,](https://doi.org/10.1016/j.apgeochem.2015.04.008) *Applied Geochemistry, 58*, 147-160.
2. *Dixon E*, Elwood Madden AS, Hausrath E, Elwood Madden ME, (2015) [Assessing hydrodynamic effects on jarosite dissolution rates, reaction products, and particle lifetimes](https://agupubs.onlinelibrary.wiley.com/doi/pdf/10.1002/2014JE004779), *JGR-Planets*

*24. Marra, KR,* Elwood Madden, ME, Soreghan, GS, Hall, BL (2015) [BET surface area distributions in polar stream sediments: implications for silicate weathering in a cold-arid environment](https://doi.org/10.1016/j.apgeochem.2014.11.005), *Applied Geochemistry* 52, 31-42.

*23.* *Ambuehl D,* Elwood Madden ME (2014) [CO2 Hydrate formation and dissociation rates: Application to Mars.](https://doi.org/10.1016/j.icarus.2014.01.037) Icarus, v. 234, 45-52*.*

*22. Marra KR*, Soreghan GS, Elwood Madden ME, *Keiser LJ*, Hall BL (2014) [Trends in Grain Size and Surface Area in Cold-Arid vs Warm Semi-Arid Fluvial Systems](https://doi.org/10.1016/j.geomorph.2013.10.018). Geomorphology, v. 206, 483-491.

21. *Kendall MR,* Madden AS, Elwood Madden ME, Hu Q (2013) [Rates and products of arsenic jarosite dissolution](https://doi.org/10.1016/j.gca.2013.02.019)¸ Geochimica et Cosmochimica Acta, v.112, 192-207.

*20. Zahrai SK*, Elwood Madden ME, Madden AS, Rimstidt JD, *Miller MA* (2013) [Na-jarosite dissolution rates: The effect of mineral composition on jarosite lifetimes.](https://doi.org/10.1016/j.icarus.2012.12.020) Icarus, v. 223 438-443.

19. Mousis O, Chassefiere E, Chevrier V, Elwood Madden ME, Lakhlifi A, Lunine JI, Montmessin F, Picaud S, Schmidt F, and Swindle TD (2013) [Volatile trapping in Martian clathrates.](https://doi.org/10.1007/s11214-012-9942-9) Space Science Reviews v. 173, 213–250.

18. *Lin B.,* Cerato, A.B., Madden, A.S., and Elwood Madden, M.E. (2013) [Effect of Fly Ash on the Behavior of Expansive Soils: Microscopic Analysis](https://pubs.geoscienceworld.org/aeg/eeg/article-abstract/19/1/85/60489/Effect-of-Fly-Ash-on-the-Behavior-of-Expansive). *Environmental & Engineering Geoscience*, v. 19, p. 85-94,

*17. Miller MA*, Madden AS, Elwood Madden ME, Elmore RD (2012) [Laboratory synthesis of iron-rich 10Å clays from nontronite: implications for magnetite authigenesis](https://www.cambridge.org/core/journals/clays-and-clay-minerals/article/laboratorysimulated-diagenesis-of-nontronite/7286AC5F1B98763D9F249ECB9C3D29D7), Clays and Clay Minerals V. 60, 616-632.

*16.* *Pritchett BN,* Elwood Madden ME, Madden AS (2012) [Jarosite dissolution rates and maximum lifetimes in high salinity brines: Implications for Earth and Mars](https://doi.org/10.1016/j.epsl.2012.09.011). Earth and Planetary Science Letters, v. 357–358, 327–336.

15.*Stumpf AR*, Elwood Madden ME, Soreghan GS, Hall BL, *Keiser LJ, Marra KR* (2012) [Glacier meltwater stream chemistry in Wright and Taylor Valley, Antarctica: Significant roles of drift, dust, and biological processes in chemical weathering in a polar climate](https://doi.org/10.1016/j.chemgeo.2012.06.009). Chemical Geology, 322-323, 79-90.

14. Elwood Madden ME, Madden AS, Rimstidt JD, *Zahrai SK, Kendall MR, and Miller MA* (2012) [Jarosite dissolution rates and nanoscale mineralogy](http://dx.doi.org/10.1016/j.gca.2012.05.001), Geochimica et Cosmochimica Acta, 91, 306-321.

13.*Gainey SR* and Elwood Madden ME (2012) [Kinetics of Methane Clathrate Formation and Dissociation Under Mars Relevant Conditions](https://doi.org/10.1016/j.icarus.2011.12.019). Icarus, 218, 513-524.

12. *Root MJ* and Elwood Madden ME (2012) [Potential Effects of Obliquity Change on Gas Hydrate Stability Zones on Mars](https://doi.org/10.1016/j.icarus.2011.12.024). Icarus, 218, 534-544.

11. *Leeman JR,* Rawn CJ, *Alford J*, Phelps TJ, Elwood Madden ME (2012) [Interpreting Temperature Strain Data from Meso-Scale Clathrate Experiments](https://doi.org/10.1016/j.cageo.2011.05.004), Computers and Geosciences, v. 38, 62-67.

10. Elwood Madden ME, *Leeman JR., Root MJ, Gainey SR* (2011) [Reduced sulfur-carbon- water systems on Mars may yield shallow methane hydrate reservoirs](https://www.sciencedirect.com/science/article/pii/S0032063310001546). Planetary and Space Science,

9. Rawn CJ, *Leeman JR, Alford JE*, Phelps TJ, Elwood Madden ME, *Ulrich SM* (2011) [Fiber Optic Sensing Technology for Detecting Gas Hydrate Formation and Decomposition](https://doi.org/10.1063/1.3514983). Review of Scientific Instruments, v. 59, 203-206.

8. Madden AS, Hamilton VE, Elwood Madden MEE, Larson PR, *Miller MA* (2010) [Low-temperature mechanism for formation of coarse crystalline hematite through nanoparticle aggregation](https://doi.org/10.1016/j.epsl.2010.08.014), Earth and Planetary Science Letters, 298: 377-384.

7. Elwood Madden ME, Madden AS, Rimstidt JD (2009) [How long was Meridiani Planum wet? Applying a jarosite stopwatch to constrain the duration of diagenesis.](https://doi.org/10.1130/G25639A.1) Geology v. 37; no. 7; p. 635-638

6. Elwood Madden ME, *Szymcek P, Ulrich SM, McCallum* *S,* Phelps TJ (2009) [Experimental formation of massive hydrate deposits from accumulation of CH4 gas bubbles within synthetic and natural sediments.](https://doi.org/10.1016/j.marpetgeo.2008.04.002) Marine and Petroleum Geology*,* v. 26, p 369-378.

5. Elwood Madden ME, *Ulrich SM,* Onstott TC, Phelps TJ (2007) [Salinity-induced hydrate dissociation: a mechanism for recent CH4 release on Mars.](https://doi.org/10.1029/2006GL029156) Geophysical Research Letters 34, Issue 11.

4. Elwood Madden ME, Kring DA, Bodnar RJ (2006) [Shock re-equilibration of fluid inclusions in crystalline basement rocks from the Ries Crater, Germany](https://doi.org/10.1111/j.1945-5100.2006.tb00208.x). Meteoritics and Planetary Sciences 41, n. 2, 247-262.

3. Elwood Madden ME, Kring DA, Bodnar RJ (2006) [Shock reequilibration of fluid inclusions in Coconino Sandstone from Meteor Crater, Arizona.](https://doi.org/10.1016/j.epsl.2005.10.008) Earth and Planetary Science Letters 241, 32-46.

2. Elwood Madden ME, Bodnar RJ, Rimstidt JD (2004) [Jarosite as geochemical indicator of water-limited chemical weathering on Mars. Nature*,* 431, 821-823](https://www.nature.com/articles/nature02971).

1. Elwood Madden ME, Horz F, Bodnar R J (2004) [Experimental simulation of shock reequilibration of fluid inclusions during meteorite impact](https://doi.org/10.2113/gscanmin.42.5.1357). Canadian Mineralogist,42, 1357-1368.

**Invited talks**

1. Elwood Madden ME (2024) Michigan State University
2. Elwood Madden ME (2024) Ohio State University
3. Elwood Madden ME (2023) U Mass Lowell
4. Elwood Madden ME (2022) Sam Noble Museum and School of Geosciences
5. Invited Panelist: Exploring Challenges to Diversifying Faculty AGU Workshop (2020)
6. Elwood Madden ME (2020) Sam Noble Museum of Natural History.
7. Elwood Madden ME (2019) University of Oklahoma, Women’s and Gender Studies; School of Geosciences
8. Elwood Madden ME (2015) Penn State
9. Elwood Madden ME (2013) University of Kansas
10. Elwood Madden ME (2012) Gas hydrates on Mars: potential reservoirs for water and carbon. Natural Gas Hydrate Systems, Gordon Research Conference, Ventura, Ca. March 2012.
11. Elwood Madden ME, *Leeman JR, Guttery B* (2009) Methane hydrates: A source for slow methane release on Mars? Workshop on Methane on Mars: Current Observations, Interpretation and Future Plans, November 2009.
12. Elwood Madden ME (2009) Water on Mars, Sam Noble Museum of Natural History, Year of Astronomy.

6-10. University of Texas, Arlington (2009), University of Nevada, Las Vegas (2012), Oklahoma State University (2008, 2012), Indiana University (2012).

>125 Presentations and Abstracts 2002-present, full list available upon request

**Courses Taught at University Of Oklahoma**

Physical Geology for Science and Engineering Majors, GEOL1114

Deep Space, Deep Time, Honors Colloquia

Exploring Planetary Worlds, GEOL 3063

Principles of Geochemistry, GEOL 4223/5223

Geowriting, GEOL 3333

Exploring Planetary Geology, GEOL 4970/6970

History of Water on Mars, GEOL 6970

Planetary Geology in the Field, GEOL 4970

Gender and Identity in STEM, WGS 3393

**Advising:**

*Former Graduate Students (14):*

Seth Gainey (OU MS 2011) Kinetics of methane hydrate formation and dissociation Margaret Root (OU MS 2011) Effects of Mars obliquity change on gas hydrate stability

Allison Stumpf (OU MS 2011) Chemical weathering in glacial meltwater streams, Antarctica

Brittany Pritchett (OU MS 2012) Effects of activity of water on the dissolution of jarosite

Dan Ambuehl (OU MS 2013) Carbon Dioxide Clathrate Kinetics

Emily Dixon (OU MS 2014) Hydrologic effects jarosite dissolution

Debajyoti Basu Sarkar (OU MS 2014) Clathrates on Titan

Kayla Miller (OU MS 2017) Anhydrite formation in high salinity brines

Kristen Marra (OU PhD 2015) Weathering of Antarctic fluvial sediments

Andrew Rodriguez (OU MS 2020) Basalt-brine interactions

Daniel Mason (OU MS 2020) Raman spectra of ice-brine-sediment mixtures

Nina Webb (OU MS 2020) Effects of hurricane-induced landslides on fluvial sediments

Bailey Abney (OU MS 2022) Effects of pH on the Raman spectra of Mars-analog brines

Cansu Demirel (OU PhD 2022) Chemical & Biological Weathering in Glacial Drifts

Christopher Geyer (OU PhD 2024) Clay alteration in brines

Former Postdocs (6):

Young Ji Joo (OU postdoc 2013-2016) Chemical weathering of fluvial sediments

Charity Lander (OU postdoc 2014-2016) Mineral alteration in high salinity brines

Joyeeta Bhattacharya (OU Postdoc 2021) Faculty DEI Evaluations and Rewards

Akintunde Olorunfemi (OU 2021-2022) Chemical weathering in fluvial sediments

AK Kotash (OU 2022-2023) Faculty engagement with DEI work within the Geosciences

Christopher Geyer (OU 2024-2025)- Aluminum mobility in high salinity brines

*Current Graduate Students (3):*

Kaydra Barbre (OU MS 2023, MSU PhD expected 2026) Brine weathering & clays

Kyle Fakhrshafaei (OU MS expected 2026) Mineral-Ammonium interactions

Katherine Sluder (MSU PhD expected 2026) Colloidal mineralogy in a euxinic spring

*Current Postdocs (1)*

Jill McDonald (OU 2024-present)- Analyzing solutes in high salinity leachate brines

*Undergraduate Researchers (25):*

*OU:* Shayda Zahrai (2008-2012), John Leeman (2008-2012), John Guest (2007-2008), Brandon Guttery (2009), Tiffany Legg (2009-2011), Emma Baker (2011), Virginia Priegnitz (2011), Jamie Miller (2012-2014), Carey Legett (2013-2014), Rebecca Funderburg (2013-2016), S. VanDeventer (2014-2015), Lauren McGraw (2015-2016), Sheriee Parnell (2015- 2016), Jordan Sylvester 2015-2018), James Johnson (2015-2017), Mason Cullen (2016- 2018), Nina McCollom (2016-2019), Jackey Guan (2018), Madison Grubbs (2019) Jeremy Colburn (2019-2020), Cecilia Baker (2019-2023), Nicholas Wood (2020), Ben Matsumura (2023-present), Em Elder (2023), Bryson Robertson (2025).

*MSU:* Linus Resek (2025-present)

*Service on other MS/PhD committees (29):*

*OU:* Michaella Campbell (Civil Engineering MS 2010), Sumudu Munasinghe (MS 2010), Stacey Evans (MS 2011), Earl Manning (MS 2011), Elisheva Patterson (MS 2011), Kerry Paul (MS 2011), Matt Kendall (MS 2012), Matt Miller (MS 2012), Sarah Fradepoir (MS 2012), Botao Lin (Civil Engineering, PhD 2012), James Maner (MS 2013), Leslie Keiser (PhD 2013), Andrew Swindle (PhD 2013) , Sayantan Gosh (Petroleum Engineering, MS 2014), Curtis Smith (MS 2016), Molly Sexton (MS 2016), Steven Adams (MS 2018, PhD 2024), Lily Pfeiffer (PhD 2020), Matthew Clement (Astronomy, PhD 2019), Yali Zhang (Microsystems Engineering PhD, RIT, 2020), Nicholas Reynolds (Astronomy, PhD 2023), Jill McDonald (U of Arkansas, PhD expected 2025), Alicia Bonar (PhD 2023), Kaylee Anderson (Astronomy, PhD expected 2025), Caitlin Porterfield (Educational Psychology, PhD expected 2025), Elizabeth Ellithorpe (Astronomy, PhD expected 2025), Rebecca Ulrich (CBME, expected 2025),

Delaney Cooley (Anthropology, PhD expected 2025)

*MSU:* Katie Quinlan (MS expected 2025)

**Honors and Awards:**

*Professional Societies*

* Elected GSA Fellow (2023)

*at Michigan State*

*at University of Oklahoma*

* Robert E. and Doris Klabzuba Chair in Geology and Geophysics (2019)
* Stubbeman-Drace Presidential Professor (2013)
* OU Junior Faculty Research Program ($6K- 2008)
* ORAU Powe Junior Faculty Award ($10K-2008)

*at ORNL*

* Eugene P. Wigner Fellowship, 2005-2007

**Administrative Leadership experience:**

* Director, Center for Faculty Excellence (2020-present)
* Faculty Senate Chair (2018-2019)
* Faculty Senate Executive Committee (2015-2020)
* Chair, Committee on Committees (2017-2018)
* Faculty Senate Representative for Dean’s Council (2017-2019)
* Provost’s Advisory Committee for Women’s Issues (2010-2012, Co-Chair 2010-2011, Faculty Senate liaison 2016-2018)
* School of Geosciences Committee A (2013-2014, 2019-present)

**Professional Development and Service:**

* Faculty Awards and Honors Committee (2023-2026)
* Co-led NAGT Webinar “Developing evaluation systems that value diversity, equity, and inclusion efforts: an active workshop for the geosciences” (May 2023)
* OU Writing Center Committee A (2020-2022, 2023-present)
* CIMER Faculty Entering Mentoring Facilitator Training, week-long training workshop (November 2022)
* Advancing IDEA in Planetary Science- conference participant and speaker (April 2022)
* Faculty Senate-Provost Office Teaching Evaluation Working Group (2018-2022)
* URGE participant- OU Geosciences pod member (2021)
* Chair, Critical Zone Geoscience faculty search committee (2020-2021)
* Member, College of Fine Arts Assoc. Dean search committee (2021-2022)
* Member, Law School Dean search committee (2020-2021)
* Vice President for Research and Partnerships Strategic Planning Committee (2019-2020)
* Co-Chair OU Writing Center Director Search (2019-2020)
* Committee on Committees member (2019-present)
* Diversity, Equity, and Inclusion in the Earth and Environmental Sciences: Supporting the Success of All Students Workshop participant (2019)
* Summit on Improving Geoscience Graduate Student Preparedness for the Future Workforce Department Head, Chairs& Graduate Program Directors (2019)
* OU’s representative to the Universities Space Research Association (USRA, 2016-2018)
* Faculty Senate Geology and Geophysics elected representative (2015-2018)
* Inclusive Teaching in STEM, workshop organizer (2017)
* Faculty Diversity Ally Program, pilot program participant (2016-2017)
* Provost’s Advisory Committee for STEM (2014-2015)
* Becoming an Inclusive Teacher, Faculty Learning Group (2014)
* Undergraduate Research Advisory Council (2013-2015)
* Associate editor for Geosphere (2008-2013)
* How People Learn, Faculty Learning Group (2013)
* CPSGG Graduate Affairs Committee (2007-2013, Chair 2009-2013)

# AACU **Next Generation STEM Learning: Investigate, Innovate, Inspire (2012)**

* Mentor for five middle school teachers, Creating Critical Connections in Math and Science project at OU <http://www.c3ms.org/> (summer 2011)
* CPSGG Graduate Liaison (2008-2011) CPSGG
* CPSGG Graduate Affairs Committee (2007-2013)
* AWG Faculty Advisor (2007-2009)
* Co-Convener for Gas Hydrates Session at Goldschmidt 2010 Conference
* Panel member for NASA 2009, 2011, 2016, 2017, 2018; NSF 2017
* Reviewer for NASA Planetary Sciences Program, NASA Mars Fundamental Research Program, NSF Biogeochemistry program.
* Manuscript reviewer for Science, Astrobiology, Geochimica et Cosmochimica Acta, Chemical Geology, Journal of Crystallography, Earth Interactions, Energy and Fuels, Energies, Marine and Petroleum Geology, Geofluids. Earth and Planetary Science Letters, Icarus, Journal of Geophysical Research, ACS Earth and Space Chemistry
* Invited Presentationon Dual Career Job Search for Cutting Edge pre-faculty workshop (2008)
* Selected Participant in the Earth Science Women’s Network Leadership Workshop (2008)
* Selected Participant Planetary Science Summer School, 2006 JPL

**Media Interviews:**

Chronicle of Higher Education (2018, 2019)

Norman Transcript (2018, 2019)

The Oklahoman (2018)

The Tulsa World (2019)

Planetary Radio Podcast with Bill Nye (2019)

Science (2020)