Kirsten L. Siebach, Ph.D.

Assistant Professor at Rice University
317 Keith-Weiss Geological Laboratory | Houston, TX 77005
ksiebach@rice.edu | kirstensiebach.com

EDUCATION

Ph.D. in Geology, California Institute of Technology, June 2016, Advisor: John Grotzinger, Thesis: Formation and Diagenesis of Sedimentary Rocks in Gale Crater, Mars.

B. A. in Earth & Planetary Science and Chemistry, Washington University in St. Louis, minor in English Literature, *summa cum laude*, May 2011, Advisor: Raymond Arvidson.

PROFESSIONAL EXPERIENCE

Assistant Professor *Dept of Earth, Environmental, and Planetary Sci., Rice University*	2018 – present
Visiting Assistant Professor, *McDonnell Center for Space Sciences, Wash U in St. Louis*	2021 – present
Mars 2020 Perseverance Science and Operations Team *NASA*	2020 – present
Mars Science Laboratory Science and Operations Team Collaborator *NASA*	2011 – present
Mars Exploration Rover Science and Operations Team Collaborator *NASA*	2010, 2012 – 2019
Postdoctoral Associate *Department of Geosciences, Stony Brook University*	2016 – 2017
Graduate Research Assistant *Division of Geological and Planetary Sci., Caltech*	2011 – 2016
NASA Student Airborne Research Program Intern *NASA Airborne Science Program*	2011
Undergraduate Research Assistant *Washington University in St. Louis*	2007 – 2011
Undergraduate Research Intern *Smithsonian Air and Space Museum*	2010
Mars Phoenix Lander Science and Operations Team Collaborator *University of Arizona*	2008
Science and Engineering Apprenticeship Program Intern *Naval Research Laboratory*	2006 – 2007

HONORS AND AWARDS

- NASA Group Achievement Award: Mars 2020 Campaign Planning Team (2025)
- NASA Group Achievement Award: Mars 2020 Jezero Western Fan & Margin units Team (2025)
- Rice University Outstanding Undergraduate Research Mentor Award (2020, 2024)
- American Association of Petroleum Geologists Harrison Schmitt Award (2023)
- Rice University Natural Sciences Award for Excellence in Outreach (2022)
- Editors' Citation for Excellence in Refereeing - JGR-Planets (2020)
- New Orleans Geological Society Best Presentation Award (2019)
- Early Career Scholarship from NASA Astrobiology Institute for partial support to attend Astrobiology Grand Tour in Western Australia (2018)
- NASA Group Achievement Award: MSL Extended Mission-1 Science and Operations Team (2017)
- NASA Group Achievement Award: MSL Prime Mission Science and Operations Team (2015)
- ExxonMobil/GSA Student Science Award (2014)
- NASA Group Achievement Award: MER Science Development and Operations Team (2014)
- NASA Group Achievement Award: MSL Science Development and Operations Team (2013)
- National Science Foundation Graduate Research Fellowship Honorable Mention (2013)
- Washington University "Outstanding Graduate" recognition (Fall 2011)
- Courtney A. Werner Memorial Prize for outstanding academic achievement in the Earth and Planetary Sciences at Washington University in St. Louis (Fall 2011)
- NASA Group Achievement Award: Phoenix Mission Team (2008)

- Washington University Dean's list 5 semesters (2007-2011)
- Deans Honorary Scholarship at Washington University (2007-2011)
- Fossett Fellowship: annual funding for research activities (2008-2011)

TEACHING EXPERIENCE

University Courses for Undergraduate and/or Graduate Students

- **EEPS 111** ***Inhabiting Planet Earth,*** developed "flipped classroom" introductory course about why Earth is habitable from formation to climate change, part online, co-taught with Prof. Dee in F20 and F22, taught F21, F25
- **EEPS 114** ***Discoveries in EEPS Seminar,*** different faculty introduce themselves and their labs each week for undergraduate students. Participated F21, S22, F22, S23, F23, S24, S25, F25, Taught F24
- **EEPS 203** ***Undergraduate Field Trip Seminar***, co-taught undergraduate field trip to Portland, Oregon with Prof. Melodie French S25
- **EEPS 425/625** ***Planetary Surface Processes***, developed course on the processes responsible for the formation and modification of solar system surfaces, Rice University, S19, S23, S25
- **EEPS 435/635** ***Remote Sensing***, developed course on using electromagnetic radiation to learn about Earth, life, and other planets via satellite, airborne, and other remote sensing datasets, F22, S24, S26
- **EEPS 537** ***Sedimentology Seminar***, graduate student reading seminar covering planetary and sedimentology papers, S22, F22, S23, S24, F24, S25, F25, S26
- **EEPS 334** ***Geological Field Techniques*** undergraduate course covering field methods and geologic mapping with a spring break trip to NM. Helped with trip and GIS teaching in S19 with Prof. Gonnermann, co-taught course in S20 with Prof. Lee but field trip cancelled for COVID, used ArcGIS remotely to visualize and map the field site
- **EEPS 536** ***Type Locale Field Trip*****,** graduate student enrichment course with an early summer field trip to NM, CO, UT, AZ (field trip cancelled due to COVID-19), S20
- **EEPS 557** ***Special Topics: Water on Mars*****,** graduate student reading seminar covering water on Mars from accretion to surface water, atmospheric escape, and to the present, S20
- **Guest Lectures** in BIOS/HIST Astrobiology, PHYS 145 Traces of Life, Fort Lewis College Sedimentology

Non-traditional Additional Teaching Experience

- **Glasscock School of Continuing Studies at Rice University**
  - ***Driving Curiosity: The Evolution of Martian Science***, recorded lectures and activity session for Lifelong University initiative, F25
  - ***Missions to Mars: Exploration of the Red Planet***, online short course for continuing education students, F21, S22, F22
  - ***Midweek Medley***, in-person lecture for continuing education students, F19, S22
- **Instructor of Record** ***Exploring Mars***, NASA Endeavor Online Teaching Program (8 week online course for K-12 teachers), S18
- **Instructor of Record** ***Eyes on Earth***, NASA Endeavor Online Teaching Program (8 week online course for K-12 teachers), Summer 2017
- **Geology Teacher** ***Schooling for Life American Frontiers Trip***, 2 week field trip for home-schooled high school students, Summer 2016
- ***Martian Explorations*** Institute for Educational Advancement, developed and taught 8 week after-school classes for gifted elementary school students in Spring 2014, Fall 2014, and Winter 2015

Teaching Assistant Experience

- **Field and Teaching Assistant** ***Ireland Geological Field Course***, James Madison University, 2 weeks, Summer 2015

- **Teaching Assistant *Remote Sensing***, Caltech Graduate Course, Spring 2013 and Spring 2015
- **Teaching and Lab Assistant *Intro to Geology***, Caltech Undergraduate Course, Fall 2014
- **Teaching and Lab Assistant *Land Dynamics***, Washington University in St. Louis, Spring 2008, Spring 2009, and Spring 2010

STUDENT ADVISING

Current Advisees

- **Undergraduate:**
  - Nat Pujet (expected graduation 5/2027)
- **PhD Students:**
  - Audrey Putnam (started Fall 2020, passed qualifying exam 11/2022, defended PhD 12/9/2025) Thesis title: Investigating geological evidence of lava-water interaction in outcrop, alteration stoichiometry, and downstream sedimentary detritus
  - Eleanor Moreland (started Fall 2021, passed qualifying exam 4/2023)
  - Jack Henry (started Fall 2022, passed qualifying exam 5/2024)
  - Daniel Sikes (started Fall 2025)
- **Postdoctoral Scholars:**
  - Christina Seeger (started November 2025)

Past Advisees

- **Summer Students:**
  - Abigail Mebane (2023, Rice Planetary Habitability REU Program)
- **Undergraduate:**
  - Seunggyu Shin (Fall 2024)
  - Ariaan Ghatate (Spring 2024)
  - Marlo Wilcox (2021-2024, now Masters student at Cambridge)
    - Senior Honors Thesis: Vikings, Volcanoes, and Satellites: An Analysis of Icelandic NDVI Trends and the Problem of Scale in Vegetation Remote Sensing
  - Sarah Preston (2020- 2023, now PhD student at UCLA)
    - Senior Honors Thesis: Differences between modern and ancient Martian grain size distributions may reveal different paleoatmospheric conditions and provenance
  - Bavan Rajan (2023, now PhD student at WashU)
    - Senior Honors Thesis (Environmental Science): Report on Degradation of "Scholar's Way" for the Museum of Fine Arts, Houston
  - Astra Burke (Spring 2021)
  - Jessica Sheldon (2018-2021, now Flood Resilience Planner at Arcadis)
    - Senior Honors Thesis: When is Drone Photogrammetry Useful for Flood Risk Assessment?
  - Madison Morris (2019-2021, now PhD student at Stony Brook University)
    - Senior Honors Thesis: Characterizing Multiple Episodes of Fluid Alteration within Stimson Fracture Halos, Gale Crater, Mars
- **Graduate Students:**
  - Rostislav Kovtun (Spring 2020-Fall 2021, now researcher at NASA-JSC)
- **Postdoctoral Scholars:**
  - Valerie Payre (2018-2020, now Assistant Professor at University of Iowa)
  - Michael Thorpe (2018-2020, now Mars Scientist at NASA-Goddard)

Current Thesis Committee Member for

- Amelia Bettati (Rice, EEPS, PhD, advisor Bidong Zhang)

- Thembi Chaza (Rice, EEPS, PhD, advisor Carrie Masiello)
- Jiale Mou (Rice, EEPS, PhD, advisor Rajdeep Dasgupta)

Past Thesis Committee Member for

- Rahul Sudhakar, Masters, Spring 2019 (Rice, EEPS, advisor Andre Droxler)
- Leah Hall, Masters, Spring 2019 (University of Houston)
- Trevor Cole, Masters, Spring 2020 (Rice, EEPS, advisor Mark Torres)
- Chenliang Wu, PhD, Spring 2020 (Rice, EEPS, advisor Jeffrey Nittrouer)
- Tanyel Baykut, Masters, Fall 2020 (Rice, EEPS, MS, advisor Andre Droxler)
- Anthony Giljum Spring 2020 (Rice, Applied Physics/Electrical Engineering, Masters, advisor Kevin Kelly)
- Emily Falkson, Masters, Spring 2021 (Rice, EEPS, MS, advisor Rajdeep Dasgupta)
- Eric Barefoot, PhD, Spring 2021 (Rice, EEPS, advisor Jeffrey Nittrouer)
- Alison Farrish, PhD, Spring 2021 (Rice, Physics & Astronomy, advisor David Alexander)
- Laura Flagg, PhD, Spring 2021 (Rice, Physics & Astronomy, advisor Christopher Johns-Krull)
- Haolin Zhao Fall 2022 (Rice, EEPS, qualifying exam committee member, advisor Mark Torres)
- Maria Rodriguez, Fall 2023 (Rice, EEPS, MS, advisor Rajdeep Dasgupta)

STUDENT AWARDS

- 2025 Douglas and Martha Lou Broussard Fellowship to Eleanor Moreland
- 2024-2025 Texas Space Grant Consortium Graduate Fellowship to Eleanor Moreland
- 2024 Wagoner Foreign Study Scholarship to Marlo Wilcox
- 2022-2023 Allison Henning Teaching Award in EEPS to Eleanor Moreland
- 2022-2023 Peter Vail Fellowship in Earth, Environmental, and Planetary Sciences to Audrey Putnam
- 2021-2022 Outstanding Undergraduate Student Award to Sarah Preston
- 2021 AGU Soffen Memorial Fund Travel Grant to Sarah Preston
- 2021 Top 10% of presentations at Rice Undergraduate Research Symposium to Sarah Preston

PEER-REVIEWED PUBLICATIONS – SUBMITTED AND IN REVISION

Symbols denote ◊***undergraduate, *graduate student*** *or* †***postdoctoral*** *author in my group*

Gwizd, S., K. Stack, M. P. Lamb, L. R. Ives, S. Gupta, A. Vaughan, S. F. Sholes, R. E. Kronyak, N. Randazzo, J. I. Simon, L. S. Crumpler, J. Rice, B. H. Horgan, L. C. Kah, N. Cavallo, N. R. Williams, R. Barnes, O. Cianciolo, C. Quentin-Nataf, O. Beyssac, V. Z. Sun, D. Shuster, J. R. Voigt, J. F. Bell III, J. N. Maki, **K. L. Siebach**, M. Nachon, (submitted) Depositional history of the Otis Peak formation, Western fan, Jezero crater, Mars.

***Moreland, E. L.**, M. S. Bramble, **K. L. Siebach**, A. C. Pascuzzo, M. M. Morris, S. J. VanBommel, M. W. Jones, S. Siljeström, A. Shrivastava, A. H. Treiman, J. A. Hurowitz, (in review) Alteration of a mantle-derived dunite boulder in Jezero Crater, Mars.

***Putnam, A. R.**, **K. L. Siebach**, M. T. Thorpe, V. Tu, E. B. Rampe, C. C. Bedford, G. Costin, J. Tamborski, (in review) Testing the Limits of Provenance Analysis from Basaltic Fluvial Sediment near Sandvatn, Iceland, as a Mars Analog.

Tamborski, J. S. Rahman, M. T. Thorpe, M. O. Sarker, D. Burdige, **A. Putnam*, M. Wilcox◊**, **K. L. Siebach**, E. B. Rampe, (submitted) A novel approach to determining chemical weathering rates and secondary phase formation in groundwater-surface water mixing zones.

Caravaca, G., N. Mangold, R. Williams, S. Gupta, **K. Siebach**, and 23 additional coauthors, (in review), Forced regression in Lake Jezero (Mars), recorded by downstepping deltaic geometries observed by Perseverance rover.

PEER-REVIEWED PUBLICATIONS – ACCEPTED

2026

49. Orenstein, B. J., D. T. Flannery, M. W. M. Jones, **E. L. Moreland***, **K. L. Siebach**, M. M. Tice, A. H. Treiman, B. Horgan, B. Kamber, A. Klidaras, L. Nothdurft, Y. Liu, E. Cloutis, A. C. Allwood, S. VanBommel, (2026) Igneous and sedimentary origins of Jezero crater units from X-ray crystal mapping on Mars. *Communications Earth & Environment*, DOI: 10.1038/s43247-026-03227-2.
48. ***Moreland, E. L.**, S. K. Dee, Y. Jiang, G. Bischof, M. Mischna, N. Hartigan, J. Russell, J. Moores, **K. L. Siebach**, (2026) Seasonal ice cover could allow liquid lakes to persist in a cold Mars paleoclimate. *AGU Advances*, 7,1, e2025AV001891. DOI: 10.1029/2025AV001891.

2025

47. Ives, L. R. W., K. M. Stack, E. C. Geyman, S. Gupta, G. Caravaca, **K. L. Siebach**, S. Gwizd, J. P. Grotzinger, M. P. Lamb, N. Mangold, O. Kanine, R. Barnes, P. Russell, J. Núñez, J. I. Simon, B. P. Weiss, A. Yingst, S. Sharma, S. Le Mouélic, J. Huggett, A. Pascuzzo, B. Wogsland, W. W. Fischer, N. Randazzo, (2025) Sedimentology and stratigraphy of the fluvial-deltaic Skrinkle Haven member, Tenby formation, Jezero Crater, Mars. *Journal of Sedimentary Research* 95(6): 1080–1113. DOI: 10.2110/jsr.2025.019.
46. ***Henry, J. D.**, **K. L. Siebach**, M. D. Dyar, K. H. Lepore, C. R. Ytsma, (2025) Predicting Geochemistry in Geological Samples Using Laser-Induced Breakdown Spectroscopy (LIBS): Effects of Compositional and Textural Outliers. *Spectrochimica Acta Part B: Atomic Spectroscopy*, 235. DOI: 10.1016/j.sab.2025.107376.
45. ***Moreland E. L.**, **K. L. Siebach**, G. Costin, M. M. Tice, J. A. Hurowitz, A. H. Treiman, J. I. Simon, Y. Liu, Y. Jiang, A. Udry, and E. Dehouck, (2025) Multiple Episodes of Fluid Alteration in Jezero Crater Indicated by MIST Mineral Identifications in PIXL XRF Data From the First 1100 Sols of the Mars 2020 Mission. *Journal of Geophysical Research: Planets,* 130(9). DOI: 10.1029/2024JE008797.
44. Hurowitz, J. A., M. M. Tice, A. C. Allwood, M. L. Cable, K. P. Hand, A. E. Murphy, K. Uckert, J. F. Bell, 3rd, T. Bosak, A. P. Broz, E. Clave, A. Cousin, S. Davidoff, E. Dehouck, K. A. Farley, S. Gupta, S. E. Hamran, K. Hickman-Lewis, J. R. Johnson, A. J. Jones, M. W. M. Jones, P. S. Jorgensen, L. C. Kah, H. Kalucha, T. V. Kizovski, D. A. Klevang, Y. Liu, F. M. McCubbin, **E. L. Moreland***, G. Paar, D. A. Paige, A. C. Pascuzzo, M. S. Rice, M. E. Schmidt, **K. L. Siebach**, S. Siljestrom, J. I. Simon, K. M. Stack, A. Steele, N. J. Tosca, A. H. Treiman, S. J. VanBommel, L. A. Wade, B. P. Weiss, R. C. Wiens, K. H. Williford, R. Barnes, P. A. Barr, A. Bechtold, P. Beck,…Z. U. Wolf. (2025) Redox-Driven Mineral and Organic Associations in Jezero Crater, Mars. *Nature*, 645, 332-340. DOI: 10.1038/s41586-025-09413-0.
43. **Siebach, K. L.**, **E. L. Moreland***, G. Costin, Y. Jiang, (2026) MIST: An Online Tool Automating Mineral Identification by Stoichiometry. *Computers & Geosciences*, 206, 106021. DOI: 10.1016/j.cageo.2025.106021.
42. Kizovski, T. V., M. E. Schmidt, L. O'Neil, M. W. M. Jones, N. J. Tosca, D. A. Klevang, J. A. Hurowitz, C. T. Adcock, E. M. Hausrath, **K. L. Siebach**, Z. U. Wolf, S. Sharma, S. J. VanBommel, F. M. McCubbin, E. Cloutis, M. L. Cable, Y. Liu, B. C. Clark, A. H. Treiman, M. M. Tice, D. C. Catling, J. Maki, T. J. Bosak, B. P. Weiss, A. G. Fairén, J. R. Christian, A. L. Knight, N. R. Randazzo, P. S. Jørgensen, P. Lawson, L. Wade, C. Heirwegh, W. T. Elam, A. C. Allwood. (2025) Fe-phosphates in Jezero Crater: Chemical, Structural, and Spectral Evidence for an Ancient Habitable Environment on Mars. *Nature Communications*, 16(1), 6470. DOI: 10.1038/s41467-025-60026-7.
41. Jones, M. W. M., D. T. Flannery, J. A. Hurowitz, M. T. Tice, C. E. Schrank, A. C. Allwood, N. J. Tosca, D. C. Catling, S. J. VanBommel, A. L. Knight, B. Ganly, **K. L. Siebach**, K. C. Benison, A. P. Broz, M.-P. Zorzano, C. M. Heirwegh, B. J. Orenstein, B. C. Clark, K. P. Sinclair, A. O. Shumway, L. A. Wade, S. Davidoff, P. Nemere, A. P. Wright, A. E. Galvin, N. Randazzo, J.

Martinez-Frias, L. P. O'Neil. (2025) In-situ crystallographic mapping constrains sulfate deposition and timing in Jezero crater, Mars. *Science Advances*, 11(16), eadt3048. DOI: 10.1126/sciadv.adt3048.

40. Lee, C.-T., D. Keller, R. Dasgupta, **K. Siebach**, P. McGovern, J. Borchardt, J. Zhang. (2025) Crustal thickness effects on chemical differentiation and hydrology on Mars. *Earth and Planetary Science Letters,* 651. DOI: 10.1016/j.epsl.2024.119155.

2024

39. ◊**Preston, S. L., K. L. Siebach**, M. G. A. Lapôtre, S. Banham. (2024) Grain Size Measurements of the Eolian Stimson Formation, Gale Crater, Mars and Implications for Sand Provenance and Paleoatmospheric Conditions. *Journal of Geophysical Research: Planets,* 129(11). DOI: 10.1029/2024JE008369.
38. ***Putnam, A. R.**, **K. L. Siebach**, C. C. Bedford, S. Simpson, M. T. Thorpe, J. J. Tamborski, E. B. Rampe. (2024) Ice-marginal volcanic sequence in Iceland found on a nondescript gradual hillslope: An unexpected record of ice thickness late in deglaciation. *Journal of Volcanology and Geothermal Research*, 455. DOI: 10.1016/j.jvolgeores.2024.108195.
37. Blake, D., V. Tu, T. Bristow, E. Rampe, D. Vaniman, S. Chipera, P. Sarrazin, R. Morris, S. Morrison, A. Yen, R. T. Downs, R. M. Hazen, A. Treiman, D. Ming, G. Downs, C. Achilles, N. Castle, T. Peretyazhko, D. De Marais, P. Craig, B. Lafuente, B. Tutolo, E. Hausrath, S. Simpson, R. C. Walroth, M. Thorpe, J. Meusburger, A. Pandey, M. Gailhanou, P. Dera, J. Berger, L. Thompson, R. Gellert, A. McAdam, C. D. O'Connell-Cooper, B. Sutter, J. M. Morookian, A. Fraeman, J. Grotzinger, **K. Siebach**, S. Madsen, and A. Vasavada. (2024) The Chemistry and Mineralogy (CheMin) X-ray Diffractometer on the MSL Curiosity Rover: A Decade of Mineralogy from Gale Crater, Mars. *Minerals*, 14(6). DOI: 10.3390/min14060568.
36. Banham, S. G., A. L. Roberts, S. Gupta, J. M. Davis, L. M. Thompson, D. M. Rubin, G. Paar, **K. L. Siebach**, W. E. Dietrich, A. A. Fraeman, A. R. Vasavada, (2024) Ice? Salt? Pressure? Sediment deformation structures as evidence of late-stage shallow groundwater in Gale crater, Mars. *Geology*, 52(7), 492-496. DOI: 10.1130/G51849.1.

2022

35. Thorpe, M. T., T. F. Bristow, E. B. Rampe, N. J. Tosca, J. P. Grotzinger, K. A. Bennett, C. N. Achilles, D. F. Blake, S. J. Chipera, G. Downs, R. T. Downs, S. M. Morrison, V. Tu, N. Castle, P. Craig, D. J. D. Marais, R. M. Hazen, D. W. Ming, R. V. Morris, A. H. Treiman, D. T. Vaniman, A. S. Yen, A. R. Vasavada, E. Dehouck, J. C. Bridges, J. Berger, A. McAdam, T. Peretyazhko, **K. L. Siebach**, A. B. Bryk, V. K. Fox, and C. M. Fedo. (2022) Mars Science Laboratory CheMin data from the Glen Torridon region and the significance of lake-groundwater interactions in interpreting mineralogy and sedimentary history. *Journal of Geophysical Research: Planets,* 127(11). DOI: 10.1029/2021JE007099.
34. Liu, Y., M. M. Tice, M. E. Schmidt, A. H. Treiman, T. V. Kizovski, J. A. Hurowitz, A. C. Allwood, J. Henneke, D. A. K. Pedersen, S. J. VanBommel, M. W. M. Jones, A. L. Knight, B. J. Orenstein, B. C. Clark, W. T. Elam, C. M. Heirwegh, T. Barber, L. W. Beegle, K. Benzerara, S. Bernard, O. Beyssac, T. Bosak, A. J. Brown, E. L. Cardarelli, D. C. Catling, J. R. Christian, E. A. Cloutis, B. A. Cohen, S. Davidoff, A. G. Fairen, K. A. Farley, D. T. Flannery, A. Galvin, J. P. Grotzinger, S. Gupta, J. Hall, C. D. K. Herd, K. Hickman-Lewis, R. P. Hodyss, B. H. N. Horgan, J. R. Johnson, J. L. Jorgensen, L. C. Kah, J. N. Maki, L. Mandon, N. Mangold, F. M. McCubbin, S. M. McLennan, K. Moore, M. Nachon,… (incl. **K. L. Siebach**)… M. P. Zorzano (2022) An olivine cumulate outcrop on the floor of Jezero crater, Mars. *Science*, 377(6614), 1513-1519. DOI: 10.1126/science.abo2756.
33. †**Payre, V.**, **K. L. Siebach**, **M. T. Thorpe**†, P. Antoshechkina, E. B. Rampe. (2022) Tridymite in a Lacustrine Mudstone in Gale Crater, Mars: Evidence for an Explosive Silicic Eruption during the Hesperian. *Earth and Planetary Science Letters,* 594. DOI: 10.1016/j.epsl.2022.117694.

32. Gwizd, S., C. Fedo, J. Grotzinger, S. Banham, F. Rivera-Hernandez, K. Stack Morgan, **K. Siebach**, M. Thorpe, L. Thompson, C. O'Connell-Cooper, N. Stein, L. Edgar, S. Gupta, D. Rubin, D. Sumner, A. Vasavada. (2022) Sedimentological and geochemical perspectives on a marginal lake environment recorded in the Hartmann's Valley and Karasburg members of the Murray formation, Gale crater, Mars. *Journal of Geophysical Research: Planets,* 127(8). DOI: 10.1029/2022JE007280.
31. Watkins, J., J. P. Grotzinger, N. T. Stein, S. G. Banham, S. Gupta, D. M. Rubin, K. Stack Morgan, K. S. Edgett, J. Frydenvang, **K. L. Siebach**, M. P. Lamb, D. Y. Sumner, and K. W. Lewis. (2022) Burial and Exhumation of Sedimentary Rocks Revealed by the Base Stimson Erosional Unconformity, Gale Crater, Mars. *Journal of Geophysical Research: Planets*, 127(7). DOI: 10.1029/2022JE007293.
30. Smith, R. J., S. M. McLennan, B. Sutter, E. B. Rampe, E. Dehouck, **K. L. Siebach**, B. H. N. Horgan, V. Sun, A. McAdam, N. Mangold, D. Vaniman, M. Salvatore, M. T. Thorpe, and C. N. Achilles. (2022) X-Ray Amorphous Sulfur-Bearing Phases in Sedimentary Rocks of Gale Crater, Mars. *Journal of Geophysical Research: Planets,* 127(5). DOI: 10.1029/2021JE007128.
29. Lapôtre, M. G. A., J. L. Bishop, A. Ielpi, D. R. Lowe, **K. L. Siebach**, N. H. Sleep, and S. M. Tikoo. (2022) Mars as a Time Machine to Precambrian Earth. *Journal of the Geological Society,* jgs2022-047. DOI: 10.1144/jgs2022-047.

2021

28. Smith, R. J., S. M. McLennan, C. N. Achilles, E. Dehouck, B. H. N. Horgan, N. Mangold, E. B. Rampe, M. Salvatore, **K. L. Siebach**, and V. Sun. (2021) X-ray amorphous components in sedimentary rocks of Gale Crater, Mars: Evidence for ancient formation and long-lived aqueous activity. *Journal of Geophysical Research: Planets,* 126(3). DOI: 10.1029/2020JE006782.
27. †**Thorpe, M. T.**, J. A. Hurowitz, and **K. L. Siebach**. (2021) Source-to-Sink Terrestrial Analogs for the Paleoenvironment of Gale Crater, Mars. *Journal of Geophysical Research: Planets,* 126(2). DOI: 10.1029/2020JE006530.

2020

26. Edgett, K. S., S. G. Banham, K. A. Bennett, L. A. Edgar, C. S. Edwards, A. G. Fairen, C. M. Fedo, D. M. Fey, J. B. Garvin, J. P. Grotzinger, S. Gupta, M. J. Henderson, C. H. House, N. Mangold, S. M. McLennan, H. E. Newsom, S. K. Rowland, **K. L. Siebach**, L. Thompson, S. J. VanBommel, R. C. Wiens, R. M. E. Williams, and R. A. Yingst. (2020) Extraformational Sediment Recycling on Mars. *Geosphere*, 16 (6): 1508–1537. DOI: 10.1130/GES02244.1.
25. Fraeman, A. A., L. A. Edgar, E. B. Rampe, L. M. Thompson, J. Frydenvang, C. M. Fedo, J. G. Catalano, W. E. Dietrich, T. S. J. Gabriel, A. R. Vasavada, J. P. Grotzinger, J. L'Haridon, N. Mangold, V. Z. Sun, C. H. House, A. B. Bryk, C. Hardgrove, S. Czarnecki, K. M. Stack, R. V. Morris, R. E. Arvidson, S. G. Banham, K. A. Bennett, J. C. Bridges, C. S. Edwards, W. W. Fischer, V. K. Fox, S. Gupta, B. H. N. Horgan, S. R. Jacob, J. R. Johnson, S. S. Johnson, D. M. Rubin, M. R. Salvatore, S. P. Schwenzer, **K. L. Siebach**, N. T. Stein, S. M. R. Turner, D. F. Wellington, R. C. Wiens, A. J. Williams, G. David, and G. M. Wong. (2020) Evidence for a Diagenetic Origin of Vera Rubin Ridge, Gale Crater, Mars: Summary and Synthesis of Curiosity's Exploration Campaign. *Journal of Geophysical Research: Planets,* 125(12). DOI: 10.1029/2020JE006527.
24. †**Payre, V.,** **K. L. Siebach**, R. Dasgupta, A. Udry, S. Morrison, E. B. Rampe, (2020) Constraining ancient magmatic evolution on Mars using crystal chemistry of detrital igneous minerals in the sedimentary Bradbury group, Gale crater, Mars. *Journal of Geophysical Research: Planets,* 125(8). DOI: 10.1029/2020JE006467.
23. Rampe, E. B., T. F. Bristow, R. V. Morris, S. M. Morrison, C. N. Achilles, D. W. Ming, D. T. Vaniman, D. F. Blake, V. M. Tu, S. J. Chipera, A. S. Yen, T. S. Peretyazhko, R. T. Downs, R. M. Hazen, A. H. Treiman, J. P. Grotzinger, N. Castle, P. I. Craig, D. J. Des Marais, M. T. Thorpe, R. C. Walroth, G. W. Downs, A. A. Fraeman, **K. L. Siebach**, R. Gellert, B. Lafuente, A. C.

McAdam, P. Y. Meslin, B. Sutter, and M. R. Salvatore. (2020) Mineralogy of Vera Rubin Ridge from the Mars Science Laboratory CheMin Instrument. *Journal of Geophysical Research: Planets,* 125(9). DOI: 10.1029/2019JE006306.

22. Lapôtre, M. G. A., J. G. O'Rourke, L. K. Schaefer, **K. L. Siebach**, C. Spalding, S. M. Tikoo, and R. D. Wordsworth, (2020) Probing space to understand Earth. *Nature Reviews Earth & Environment*. 1, 170-181. DOI: 10.1038/s43017-020-0029-y.
21. Martin, P., K. A. Farley, P. D. Archer, J. V. Hogencamp, **K. L. Siebach**, J. P. Grotzinger, S. M. McLennan, (2020) Reevaluation of Perchlorate in Gale Crater Rocks Suggests Recent Perchlorate Addition. *Journal of Geophysical Research: Planets,* 125(2). DOI: 10.1029/2019JE006156.
20. Rampe, E. B., D. F. Blake, T. F. Bristow, D. W. Ming, D. T. Vaniman, R. V. Morris, C. N. Achilles, S. J. Chipera, S. M. Morrison, V. M. Tu, A. S. Yen, N. Castle, G. W. Downs, R. T. Downs, J. P. Grotzinger, R. M. Hazen, A. H. Treiman, T. S. Peretyazhko, D. J. Des Marais, R. C. Walroth, P. I. Craig, J. A. Crisp, B. Lafuente, J. M. Morookian, P. C. Sarrazin, M. T. Thorpe, J. C. Bridges, L. A. Edgar, C. M. Fedo, C. Freissinet, R. Gellert, P. R. Mahaffy, H. E. Newsom, J. R. Johnson, L. C. Kah, **K. L. Siebach**, J. Schieber, V. Z. Sun, A. R. Vasavada, D. Wellington, and R. C. Wiens. (2020) Mineralogy and geochemistry of sedimentary rocks and eolian sediments in Gale crater, Mars: A review after six Earth years of exploration with Curiosity. *Geochemistry*, 80(2), 125605. DOI: 10.1016/j.chemer.2020.125605.

2018

19. Stein, N., J. P. Grotzinger, J. Schieber, N. Mangold, B. Hallet, H. Newsom, K. M. Stack, J. A. Berger, L. Thompson, **K. L. Siebach**, A. Cousin, S. Le Mouélic, M. Minitti, D. Y. Sumner, C. Fedo, C. H. House, S. Gupta, A. R. Vasavada, R. Gellert, R. C. Wiens, J. Frydenvang, O. Forni, P. Y. Meslin, V. Payré, and E. Dehouck. (2018) Desiccation Cracks Provide Evidence of Lake Drying on Mars, Middle Murray Formation, Gale Crater. *Geology*, 46(6), pp.515-518. DOI: 10.1130/G40005.1.

2017

18. Ehlmann, B. L., K. S. Edgett, B. Sutter, C. N. Achilles, M. L. Litvak, M. G. A. Lapotre, R. Sullivan, A. A. Fraeman, R. E. Arvidson, D. F. Blake, N. T. Bridges, P. G. Conrad, A. Cousin, R. T. Downs, T. S. J. Gabriel, R. Gellert, V. E. Hamilton, C. Hardgrove, J. R. Johnson, S. Kuhn, P. R. Mahaffy, S. Maurice, M. McHenry, P. Y. Meslin, D. W. Ming, M. E. Minitti, J. M. Morookian, R. V. Morris, C. D. O'Connell-Cooper, P. C. Pinet, S. K. Rowland, S. Schröder, **K. L. Siebach**, N. T. Stein, L. M. Thompson, D. T. Vaniman, A. R. Vasavada, D. F. Wellington, R. C. Wiens, and A. S. Yen. (2017) Chemistry, Mineralogy, and Grain Properties at Namib and High Dunes, Bagnold Dune Field, Gale Crater, Mars: A Synthesis of Curiosity Rover Observations. *Journal of Geophysical Research: Planets,* 122, 2510-2543. DOI:10.1002/2017JE005267.
17. Rampe, E. B., D. W. Ming, D. F. Blake, T. F. Bristow, S. J. Chipera, J. P. Grotzinger, R. V. Morris, S. M. Morrison, D. T. Vaniman, A. S. Yen, C. N. Achilles, P. I. Craig, D. J. Des Marais, R. T. Downs, J. D. Farmer, K. V. Fendrich, R. Gellert, R. M. Hazen, L. C. Kah, J. M. Morookian, T. S. Peretyazhko, P. Sarrazin, A. H. Treiman, J. A. Berger, J. Eigenbrode, A. G. Fairén, O. Forni, S. Gupta, J. A. Hurowitz, N. L. Lanza, M. E. Schmidt, **K. L. Siebach**, B. Sutter, and L. M. Thompson. (2017) Mineralogy of an ancient lacustrine mudstone succession from the Murray formation, Gale crater, Mars. *EPSL*, 471, pp.172-185. DOI: 10.1016/j.epsl.2017.04.021.
16. Hurowitz, J. A., J. P. Grotzinger, W. W. Fischer, S. M. McLennan, R. E. Milliken, N. Stein, A. R. Vasavada, D. F. Blake, E. Dehouck, J. L. Eigenbrode, A. G. Fairen, J. Frydenvang, R. Gellert, J. A. Grant, S. Gupta, K. E. Herkenhoff, D. W. Ming, E. B. Rampe, M. E. Schmidt, **K. L. Siebach**, K. Stack-Morgan, D. Y. Sumner, and R. C. Wiens. (2017) Redox stratification of an ancient lake in Gale Crater, Mars. *Science*, 356, 6341. DOI: 10.1126/science.aah6849.
15. Bristow, T. F., R. M. Haberle, D. F. Blake, D. Des Marais, J. L. Eigenbrode, A. G. Fairen, J. P. Grotzinger, K. M. Stack, M. A. Mischna, E. B. Rampe, **K. L. Siebach**, B. Sutter, D. T. Vaniman,

A. R. Vasavada, (2017) Low Hesperian P_{CO2} constrained from in situ mineralogical analysis at Gale crater, Mars. *PNAS,* 114(9), 2166-2170. DOI: 10.1073/pnas.1616649114.

14. **Siebach, K. L.**, M. B. Baker, J. P. Grotzinger, S. M. McLennan, R. Gellert, L. Thompson, J. A. Hurowitz (2017) Sorting out Compositional Trends in Sedimentary Rocks of the Bradbury Group (Aeolis Palus), Gale Crater, Mars. *Journal of Geophysical Research: Planets,* 122(2), 295-328. DOI: 10.1002/2016JE005195.
13. Rice, M., S. Gupta, A. H. Treiman, K. M. Stack, F. Calef, L. A. Edgar, J. Grotzinger, N. Lanza, L. Le Deit, J. Lasue, **K. L. Siebach**, A. Vasavada, R. C. Weins, and J. Williams, (2017) Geologic Overview of the Mars Science Laboratory Rover Mission at The Kimberley, Gale Crater, Mars. *Journal of Geophysical Research: Planets,* 122(1), 2-20. DOI: 10.1002/2016JE005200.

2016

12. Mangold, N., L. M. Thompson, O. Forni, A. J. Williams, C. Fabre, L. Le Deit, R. C. Wiens, R. Williams, R. B. Anderson, D. L. Blaney, F. Calef, A. Cousin, S. M. Clegg, G. Dromart, W. E. Dietrich, K. S. Edgett, M. R. Fisk, O. Gasnault, R. Gellert, J. P. Grotzinger, L. Kah, S. Le Mouélic, S. M. McLennan, S. Maurice, P. Y. Meslin, H. E. Newsom, M. C. Palucis, W. Rapin, V. Sautter, **K. L. Siebach**, K. Stack, D. Sumner, and A. Yingst. (2016) Composition of conglomerates analyzed by the Curiosity rover: Implications for Gale crater crust and sediment sources. *Journal of Geophysical Research: Planets*, 121(3), 353-387. DOI: 10.1002/2015JE004977.

2015

11. Grotzinger, J. P., S. Gupta, M. C. Malin, D. M. Rubin, J. Schieber, **K. L. Siebach**, D. Y. Sumner, K. M. Stack, A. R. Vasavada, R. E. Arvidson, F. Calef, 3rd, L. Edgar, W. F. Fischer, J. A. Grant, J. Griffes, L. C. Kah, M. P. Lamb, K. W. Lewis, N. Mangold, M. E. Minitti, M. Palucis, M. Rice, R. M. Williams, R. A. Yingst, D. Blake, D. Blaney, P. Conrad, J. Crisp, W. E. Dietrich, G. Dromart, K. S. Edgett, R. C. Ewing, R. Gellert, J. A. Hurowitz, G. Kocurek, P. Mahaffy, M. J. McBride, S. M. McLennan, M. Mischna, D. Ming, R. Milliken, H. Newsom, D. Oehler, T. J. Parker, D. Vaniman, R. C. Wiens, and S. A. Wilson. (2015) Deposition, exhumation, and paleoclimate of an ancient lake deposit, Gale Crater, Mars. *Science*, 350, 6257. DOI: 10.1126/science.aac7575.

2014

10. Leveille, R. J., J. Bridges, R. C. Wiens, N. Mangold, A. Cousin, N. Lanza, O. Forni, A. Ollila, J. Grotzinger, S. Clegg, **K. L. Siebach**, G. Berger, B. Clark, C. Fabre, R. Anderson, O. Gasnault, D. Blaney, L. Deflores, L. Leshin, S. Maurice, and H. Newsom. (2014) Chemistry of fracture-filling raised ridges in Yellowknife Bay, Gale Crater: Window into past aqueous activity and habitability on Mars. *Journal of Geophysical Research: Planets,* 119(11), 2398-2415. DOI: 10.1002/2014JE004620.
9. Stack, K. M., J. P. Grotzinger, L. C. Kah, M. E. Schmidt, N. Mangold, K. S. Edgett, D. Y. Sumner, **K. L. Siebach**, M. Nachon, R. Lee, D. L. Blaney, L. P. Deflores, L. A. Edgar, A. G. Fairén, L. A. Leshin, S. Maurice, D. Z. Oehler, M. S. Rice, and R. C. Wiens. (2014) Diagenetic origin of nodules in the Sheepbed member, Yellowknife Bay formation, Gale crater, Mars. *Journal of Geophysical Research: Planets,* 119(7), 1637-1664. DOI: 10.1002/2014JE004617.
8. **Siebach, K. L.**, J. P. Grotzinger, L. C. Kah, K. M. Stack, M. Malin, R. Leveille, and D. Y. Sumner. (2014) Subaqueous Shrinkage Cracks in the Sheepbed Mudstone: Implications for Early Fluid Diagenesis, Gale Crater, Mars. *Journal of Geophysical Research: Planets,* 119(7), 1597-1613. DOI: 10.1002/2014JE004623.
7. **Siebach, K. L.**, and J. P. Grotzinger. (2014) Volumetric Estimates of Ancient Water on Mount Sharp Based on Boxwork Deposits, Gale Crater, Mars. *Journal of Geophysical Research: Planets,* 119(1), 189-198. DOI: 10.1002/2013JE004508.
6. Grotzinger, J. P., D. Y. Sumner, L. C. Kah, K. Stack, S. Gupta, L. Edgar, D. Rubin, K. Lewis, J. Schieber, N. Mangold, R. Milliken, P. G. Conrad, D. DesMarais, J. Farmer, **K. Siebach**, F. Calef, 3rd, J. Hurowitz, S. M. McLennan, D. Ming, D. Vaniman, J. Crisp, A. Vasavada, K. S. Edgett, M.

Malin, D. Blake, R. Gellert, P. Mahaffy, R. C. Wiens, S. Maurice, J. A. Grant, S. Wilson, R. C. Anderson, L. Beegle, R. Arvidson, B. Hallet, R. S. Sletten, M. Rice, J. Bell, 3rd, J. Griffes, B. Ehlmann, R. B. Anderson, T. F. Bristow, W. E. Dietrich, G. Dromart, J. Eigenbrode, A. Fraeman, C. Hardgrove, K. Herkenhoff, L. Jandura, G. Kocurek,…MSL Science Team. (2014) A Habitable Fluvio-Lacustrine Environment at Yellowknife Bay, Gale Carter, Mars. *Science,* 343, 6169. DOI: 10.1126/science.1242777.

2011

5. Grant, J., R. P. Irwin III, S. A. Wilson, D. Buczkowski, and **K. Siebach**. (2011) A Lake in Uzboi Vallis and Implications for Late Noachian-Early Hesperian Climate on Mars. *Icarus*, 212, 1, 110. DOI: 10.1016/j.icarus.2010.11.024.

2010

4. Arvidson, R. E., J. F. Bell, P. Bellutta, N. A. Cabrol, J. G. Catalano, J. Cohen, L. S. Crumpler, D. J. Des Marais, T. A. Estlin, W. H. Farrand, R. Gellert, J. A. Grant, R. N. Greenberger, E. A. Guinness, K. E. Herkenhoff, J. A. Herman, K. D. Iagnemma, J. R. Johnson, G. Klingelhöfer, R. Li, K. A. Lichtenberg, S. A. Maxwell, D. W. Ming, R. V. Morris, M. S. Rice, S. W. Ruff, A. Shaw, **K. L. Siebach**, P. A. de Souza, A. W. Stroupe, S. W. Squyres, R. J. Sullivan, K. P. Talley, J. A. Townsend, A. Wang, J. R. Wright, and A. S. Yen. (2010) Spirit Mars Rover Mission: Overview and selected results from the northern Home Plate Winter Haven to the side of Scamander crater. *Journal of Geophysical Research: Planets*, 115, E00F03. DOI:10.1029/2010JE003633.
3. Morris, R. V., S.W. Ruff, R. Gellert, D.W. Ming, R.E. Arvidson, B.C. Clark, D.C. Golden, **K. Siebach**, G. Klingelhöfer, C. Schröder, I. Fleischer, A.S. Yen, S.W. Squyres. (2010) Identification of Carbonate-Rich Outcrops on Mars by the Spirit Rover. *Science*, 329, 421-424. DOI: 10.1126/science.1189667.

2009

2. Arvidson, R. E., R. G. Bonitz, M. L. Robinson, J. L. Carsten, R. A. Volpe, A. Trebi-Ollennu, M. T. Mellon, P. C. Chu, K. R. Davis, J. J. Wilson, A. S. Shaw, R. N. Greenberger, **K. L. Siebach**, T. C. Stein, S. C. Cull, W. Goetz, R. V. Morris, D. W. Ming, H. U. Keller, M. T. Lemmon, H. G. Sizemore, and M. Mehta. (2009) Results from the Mars Phoenix Lander Robotic Arm experiment. *Journal of Geophysical Research: Planets*, 114, E00E02. DOI:10.1029/2009JE003408.
1. Imam, M. A., A. W. Fliflet, **K. L. Siebach**, A. David, R. W. Bruce, S. B. Qadri, and S. H. Gold. (2009) Continuous Microwave-driven Polyol Process for Synthesizing Ytterbium-doped Yttria Powder. *Processing and Properties of Advanced Ceramics and Composites: Ceramic Transactions*, 3. DOI: 10.1002/9780470522189.ch1.

PEER-REVIEWED REPORTS

3. National Academies of Sciences, Engineering, and Medicine (2025) A Science Strategy for the Human Exploration of Mars. *Washington, DC: The National Academies Press*. DOI: 10.17226/28594.
2. National Academies of Sciences, Engineering, and Medicine (2022) Origins, Worlds, and Life: Planetary Science and Astrobiology Decadal Survey 2023-2032. *Washington, DC: The National Academies Press*. DOI: 10.17226/26522.
1. National Academies of Sciences, Engineering, and Medicine (2020) Assessment of the Report of NASA's Planetary Protection Independent Review Board. *Washington, DC: The National Academies Press*. DOI: 10.17226/25773.

OTHER PUBLICATIONS

1. Siebach, K. L., (2016) Formation and Diagenesis of Sedimentary Rocks in Gale Crater, Mars. *Ph.D. Dissertation, California Institute of Technology,* DOI: 10.7907/Z97D2S4K.

PUBLISHED DATASETS

2025

Putnam, A., Siebach, K., Thorpe, M., Tu, V., Bedford, C., Rampe, E., Costin, G., & Tamborski, J. (2025). DIGMARS Datasets for Testing the Limits of Provenance Analysis from Basaltic Fluvial Sediment near Sandvatn, Iceland, as a Mars Analog [Data set]. Zenodo. DOI: 10.5281/zenodo.16886950.

Siebach, K. L., Moreland, E. L., Costin, G., & Jiang, Y. (2025). Compilation of GEOROC Mineral Compositions filtered by the MIST (Mineral Identification by Stoichiometry) Algorithm. GFZ Data Services. DOI: 10.5880/digis.e.2025.002 .

Siebach, K. L., Moreland, E. L., Costin, G., & Jiang, Y. (2025). MIST-v3.0 Mineral Identification by Stoichiometry Code. In Computers and Geosciences (MIST-v.3.0). Zenodo. DOI: 10.5281/zenodo.16756125.

Also available at: https://mist.rice.edu/ and https://github.com/SiebachLab/MIST

Eleanor Moreland, Siebach, K., Costin, G., Tice, M., Hurowitz, J., Treiman, A., Simon, J., Liu, Y., Jiang, Y., Udry, A., & Dehouck, E. (2025). Multiple Episodes of Fluid Alteration in Jezero Crater Indicated by MIST Mineral Identifications in PIXL XRF Data from the First 1100 Sols of the Mars 2020 Mission [Data set]. Zenodo. 10.5281/zenodo.13754476.

Moreland, E., Dee, S., Jiang, Y., Bischof, G., Mischna, M., & Hartigan, N. (2025). Data for LakeM2ARS Simulations [Data set]. Zenodo. DOI: 10.5281/zenodo.14927285.

2024

Preston, S. (2024). Supplementary Dataset for "Grain Size Measurements of the Eolian Stimson Formation, Gale Crater, Mars and Implications for Sand Provenance and Paleoatmospheric Conditions" [Data set]. Zenodo. DOI: 10.5281/zenodo.12572878.

2020

Payre, V., Siebach, K., Dasgupta, R., Udry, A., Rampe, E., & Morrison, S. (2020). Repository: Constraining ancient magmatic evolution on Mars using crystal chemistry of detrital igneous minerals in the sedimentary Bradbury group, Gale crater, Mars. DOI: 10.5281/zenodo.3890489.

PROFESSIONAL SERVICE

National Academy of Science Advisory Panels

- A Science Strategy for the Human Exploration of Mars: Panel on Geosciences (2024-2025)
- Decadal Survey for Planetary Science Mars Panel (2020-2021)
- Review of the Report of the NASA Planetary Protection Independent Review Board (2019-2020)

NASA Mission Leadership Roles

- Mars Science Laboratory: Campaign Science Leader for the “Boxwork” or “Fracture Townies” Campaign (2022-present)
- Mars 2020: Campaign Science Leader for “Upper Fan” Campaign (2022-2023)

NASA Advisory Panels

- Mars Sample Return: Ad-hoc Advisory sub-group to the Mars Sample Return Campaign Science Group called the “Rock Team” to identify and collect terrestrial analog samples as engineering analogs for Mars Sample Return samples; led field campaigns for sedimentary analogs (2022-2023)
- Mars Sample Return: Caching Strategy Steering Committee for the joint NASA-ESA Mars Sample Return Project (2020-2021)

Proposal Reviews

- Mission Proposal: Science Review Panel for NASA New Frontiers 4 Mission Selection Phase 2 (2019)

- Proposal Evaluation Panels: NASA Exobiology, NASA Solar System Workings, NASA Participating Scientist Selection Panel
- Individual Proposal Reviews: Leverhulme Foundation

Session Chair/Meeting Service

- LPSC 2018, 2026
- AGU 2022
- 9th International Conference on Mars, 10th International Conference on Mars

Manuscript Peer-Review

Nature, Nature Astronomy, Science Advances, Earth and Planetary Science Letters, GSA Bulletin, Journal of Geophysical Research-Planets, Icarus, Earth and Space Sciences, Canadian Journal of Earth Sciences

UNIVERSITY SERVICE

Department Committees

EEPS Field Trip Committee (2023-)

EEPS Liaison for Rice NTT Research Project (2022-)

EEPS Undergraduate Curriculum and Recruiting Committee member (2021-)

ENVS Curriculum Committee member (2018-)

EEPS Visualization Committee chair (2018-)

EEPS Computation and IT Committee member (2018-)

EEPS Ombudsperson (2020-2024)

EEPS Seminar Committee member (2018-2024)

EEPS Search Committee for Tenure-Track Planetary Science Professor (2022-23)

EEPS Search Committee for Assistant Teaching Professor (2021)

EEPS Co-chair for Search Committee for Data Scientist (2019)

Managed Restoration and Update of 3D Chevron Visualization Laboratory (2019)

Student Clubs

Faculty Sponsor for the Rice American Association of Petroleum Geologists (AAPG) Student Chapter (2021-)

Faculty Sponsor for the Rice American Women in Geoscience (AWG) Student Chapter (2024-)

Faculty Sponsor for the Rice Latter-Day Saint Student Association (LDSSA) (2018-2022)

University Institute Advisory Boards

Advisory Board Member for Boniuk Institute (2024-)

Advisory Board Member for Ken Kennedy Institute (2020-2023)

PENDING GRANTS

NSF Geoinformatics (Siebach PI): Innovative Resources: A Web Interface for Estimating Mineral Abundances in Geochemical Datasets, submitted 12/5/2025.

NSF GRFP (Daniel Sikes PI), submitted 11/7/2025.

ACTIVE FUNDED GRANTS

NASA JPL PIXL sub-award (Siebach Co-PI): M2020 PIXL: Mineral Identification by Stoichiometry. $192,500. Start date 1/5/2025, currently funded through 9/27/2026. Eligible for renewal.

NASA 80NSSC25K7052 (Siebach PI, Jack Henry FI): Textural Effects of Loose Powders on LIBS Measurements: Implications for ChemCam and SuperCam Analyses of Sand and Drilled Materials on Mars, 10/4/2024-10/3/2027. $149,120.

NASA 80NSSC21K1173 (sub-award): Lake Sediments in Basaltic Terrains: Implications for Early Diagenetic Processes on Mars, 10/1/2020-12/31/2026. $307,861 (Rice portion) (Lead PI: Elizabeth Rampe, NASA-JSC; Science PI: Michael Thorpe, NASA-JSC)

COMPLETED GRANTS

NASA 80NSSC21K0331 (Siebach PI): Deriving Mineralogical Data from PIXL using Machine Learning in order to Decipher Ancient Surface and Diagenetic Environments in a Source-To-Sink Framework and Optimize Mars Return Sample Selection, 1/4/2021-1/4/2025. $391,297.

Rice University Faculty Initiatives Fund (Siebach Co-PI, Lead PI Prof. Sylvia Dee): Planetary Water Cycles: Refining Climate Model Physics using Clues from Massive Lakes, 4/30/2021-8/31/2024. $49,960.

INVITED LECTURES

2026

NASA Office of Strategic Infrastructure GIS Community of Practice, virtual, February 23.
Boxwork on Mars: A GIS Study Ground-Truthed 14 Years Later

2025

Astronomy Society of Long Island, virtual, April 16.
Perseverance on Mars: Selecting the First Samples for Return to Earth

2024

Houston Philosophical Society, Houston, TX, September 19.
Perseverance on Mars: Selecting the First Samples for Return to Earth

Rice Alumni Volunteer Leadership Conference, Houston, TX, May 18.
Perseverance on Mars: Selecting the First Samples for Return to Earth

2023

Carnegie Earth and Planets Laboratory Seminar, Washington DC, October 5.
Sedimentary Systems on a Volcanic World: Exploring Mars with Curiosity and Perseverance

Chevron Social METwork Seminar, Houston, TX, July 13.
Perseverance on Mars: Selecting the First Samples for Return to Earth

University of Iowa, Department of Earth & Environmental Sciences, Department Seminar, Iowa City, IA, April 28.
Sedimentary Systems on a Volcanic World: Exploring Mars with Curiosity and Perseverance

University of Texas at Austin Soft Rock Seminar, virtual, April 10.
Sedimentary Systems on a Volcanic World: Exploring Mars with Curiosity and Perseverance

Rice ION: Innovation on Tap: Disruptive Technology, Houston, TX, March 23.
Perseverance on Mars: Selecting the First Samples for Return to Earth

2022

Houston Geological Society Environmental and Engineering Geology, Houston, TX, November 9.
Perseverance on Mars: Selecting the First Samples for Return to Earth

NASA Student Airborne Research Program interns, virtual, July 11.
Roving with Curiosity and Perseverance: Investigating Sedimentary Rocks on the Red Planet

Rice Natural Sciences Science Communication Symposium, Houston, TX, April 25.
Experiences with Science Communication

National Science Teaching Association Meeting Featured Presentation, Houston, TX, April 1.
Roving Mars with Curiosity and Perseverance

Lakeside Country Club's "Breakfast Club" Dinner, Houston, TX, January 19.

Roving Mars with Curiosity and Perseverance

2021

IMAGE Conference (AAPG and SEG Annual Meetings) Opening Session Keynote, Denver, CO, September 26. [KEYNOTE]

Exploring Mars with Curiosity and Perseverance

Harvard University, Department of Earth and Planetary Sciences, Department Seminar, virtual, September 20.

Roving with Curiosity and Perseverance: Investigating Sedimentary Processes on Mars

Steepest Descent Conference after the European Geophysical Union annual meeting, virtual, May 3. [KEYNOTE]

Roving with Curiosity and Perseverance: Investigating Sedimentary Rocks on the Red Planet

NASA Student Airborne Research Program interns, virtual, July 5.

Roving with Curiosity and Perseverance: Investigating Sedimentary Rocks on the Red Planet

AAPG Virtual Outcrop Field Trip, virtual, April 22.

My Favorite Martian Outcrop

Rice University Reach for the Stars STEM Festival, Houston, TX, April 17. [KEYNOTE]

Roving Mars with Curiosity and Perseverance

Houston Geological Society Environmental and Engineering Geology, virtual, April 14.

Roving Mars with Curiosity and Perseverance

Houston Retired Physicians Organization Luncheon, virtual, April 13.

Roving Mars with Curiosity and Perseverance

Rice "Science Café," virtual, March 22.

Roving Mars with Curiosity and Perseverance

AAPG "Lunch-n-Learn" with M. T. Thorpe*, virtual, March 18.

Perseverance and Mars Sample Return

University of New Mexico, Department of Earth and Planetary Sciences Seminar, virtual, January 22.

Source-to-Sink Processes in Gale Crater: Investigating Sedimentary Rocks on the Red Planet

Rice Alumni ROMEO Club Speaker, virtual, January 15.

Sedimentary records from another world: Exploring Gale crater with the Curiosity rover

2020

NASA Alumni Club, virtual, December 3.

Reading the Martian Rock Record: Stories from a Previously Habitable World

University of Rochester, Department of Earth and Environmental Sciences, Seminar, virtual, November 6.

Source-to-Sink Processes in Gale Crater: Investigating Sedimentary Rocks on the Red Planet

Northern Arizona University, Department of Astronomy and Planetary Science, Planetary Surfaces Brown Bag Seminar, virtual, November 3.

Source-to-Sink Processes in Gale Crater: Investigating Sedimentary Rocks on the Red Planet

Astronomy Society of Long Island, virtual, October 28.

Reading the Martian Rock Record: Stories from a Previously Habitable World

University of Maryland, Department of Geology Seminar, virtual, October 23.

Source-to-Sink Processes in Gale Crater: Investigating Sedimentary Rocks on the Red Planet

University of Colorado-Boulder, Geological Sciences Colloquium, virtual, October 14.

Source-to-Sink Processes in Gale Crater: Investigating Sedimentary Rocks on the Red Planet

SEG20 Gravity and Magnetics Luncheon Keynote Speaker, virtual, October 13. [KEYNOTE]

Sedimentary Records from Another World: Exploring Gale Crater Basin with the Curiosity Rover

Tulsa Geological Society and Foundation Awards Lunch Keynote Speaker, virtual, October 6. [KEYNOTE]

Reading the Martian Rock Record: Stories from a Previously Habitable World

NASA Student Airborne Research Program Interns, virtual, July 8.

Reading the Martian Rock Record: Stories from a Previously Habitable World

Houston Geological Society dinner lecture, virtual, Houston, TX, June 10.

Curiosity – the Science, the People, the Future of Mars Exploration

Houston Spaceport Frontier Lecture (virtual), Rice University, April 9.

Reading the Martian Rock Record: Stories from a Previously Habitable World

Washington University in St. Louis, Earth & Planetary Science Department Seminar, St. Louis, MO, February 13.

Source-to-Sink Processes in Gale Crater: Investigating Sedimentary Rocks on the Red Planet

Houston Philosophical Society Dinner, Houston, TX, January 16.

The Destination: What do we know about Mars?

2019

Brigham Young University Department of Geological Sciences, Provo, UT, October 31.

Sedimentary Records from Another World: Exploring Gale Crater Basin with the Curiosity Rover

Keynote at West Texas Geological Foundation Annual Luncheon, Midland, TX, April 11. [KEYNOTE]

Sedimentary Records from Another World: Exploring Gale Crater Basin with the Curiosity Rover

Industry-Rice Earth Science Symposium (IRESS) Dinner Keynote, Houston, TX, March 21. [KEYNOTE]

Understanding Earth through the Exploration of Other Planets: Mars 2020 and Rice's Planetary Future

Rice Visual Communication Symposium, Houston, TX, March 2.

Exploring Mars through the Eyes of Robots

2018

Chevron New Ventures Exploration Team, Houston, TX, December 7.

Sedimentary Records from Another World: Exploring Gale Crater Basin with the Curiosity Rover

Society for Rice University Women, Rice University, Houston, TX, October 22.

Stories from a Martian Geologist: Exploring Gale crater with the Curiosity Rover.

LDS Professional Women's Lecture Series, Houston, TX, October 3.

Stories from a Martian Geologist: Exploring Gale crater with the Curiosity Rover.

Rice Science Café, Houston, TX, October 2.

Reading the Martian Rock Record: Stories of a previously-habitable world.

Four Corners Geological Society, Durango, CO, September 20.

Sedimentary Records from Another World: Exploring Gale Crater Basin with the Curiosity Rover

Lunar and Planetary Institute Cosmic Explorations Series, Houston, TX, September 6.

Curiosity and our Evolving View of the Red Planet

New Orleans Geological Society New Orleans, LA, August 6.

Sedimentary Records from Another World: Exploring Gale Crater Basin with the Curiosity Rover

AAPG URTeC "Topical Breakfast," Houston, TX, July 23.

Sedimentary Records from Another World: Exploring Gale Crater Basin with the Curiosity Rover.

iPOLs Annual Biophysics Meeting, Houston, TX, June 26.

The Curiosity rover and the search for martian life

Lunar and Planetary Institute Research Seminar, Houston, TX, June 22.

Sedimentary Records from Another World: Exploring Gale Crater Basin with the Curiosity Rover

Sigma Xi Chapter Monthly Dinner, San Antonio, TX, May 24.

Sedimentary Records from Another World: Exploring Gale Crater Basin with the Curiosity Rover

Southwest Research Institute (SwRI) Research Seminar, San Antonio, TX. May 24.

Sedimentary Records from Another World: Exploring Gale Crater Basin with the Curiosity Rover

TEF Education Conference, Istanbul, Turkey, May 18, 2018.

Exploration and Discovery on Mars and in the Classroom: Stories from a NASA Geologist

Brown University Dept of Earth, Environmental, and Planetary Sciences Colloquium, Providence, RI, April 12.

Formation and Diagenesis of Sedimentary Rocks in Gale Crater, Mars

Houston Geological Society "Rice Night" Dinner Houston, TX, March 4.

Sedimentary Records from Another World: Exploring Gale Crater Basin with the Curiosity Rover

NASA Community College Aerospace Scholars, Johnson Space Center, Houston, TX, February 14.

Five Years of Roving on Mars with Curiosity

2017

University of South Alabama Seminar with Dr. Kathryn Stack, Mobile, AL, December 1.

Exploring Mars with the Mars Science Laboratory and Mars 2020 Rovers

Gulf Coast Exploreum Science Center Spark Talk with Dr. Kathryn Stack, Mobile, AL, November 30.

Exploring Mars with the Mars Science Laboratory and Mars 2020 Rovers

GEMS Modern School, Dubai, UAE, November 8.

Five Years of Exploring Mars with the Curiosity rover

AAPG-SEG ICE Opening Ceremony Keynote, London, UK, October 2017. [KEYNOTE]

Sedimentary Records from Another World: Exploring Gale Crater Basin with the Curiosity Rover

Lamont-Doherty Earth Observatory of Columbia University SGT-MGG seminar, Palisades, NY, October 4.

Formation and Diagenesis of Sedimentary Rocks in Gale Crater, Mars

Astronomical Society of Long Island, Centerport, NY, July 5.

Exploring Mars with Curiosity

Rice University Department of Earth, Environmental, and Planetary Sciences Seminar, Houston, TX, March 28.

Formation and Diagenesis of Sedimentary Rocks in Gale Crater, Mars

Industry-Rice Earth Science Symposium Dinner Keynote, Rice University, Houston, TX, February 23. [KEYNOTE]

Sedimentary Records from Another World: Exploring Gale Crater Basin with the Curiosity Rover

2016

Stony Brook University Geoscience Department Colloquium, Stony Brook, NY, September 22.

Formation and Diagenesis of Sedimentary Rocks in Gale Crater, Mars

Global Education Supplies & Solutions Conference, Dubai, UAE, March 3. [KEYNOTE]

The Process of Discovery, on Mars and in the Classroom

Los Angeles Valley College Planetarium, Valley Glen, CA, March 13.

Exploring Mars

Science Sunday Public Lecture at Caltech, Pasadena, CA, January 25.

Road Trips on Mars: Rovers Explore the Red Planet

2015

Rector's Tea at Yale-National University of Singapore, Singapore, September 14.
Exploring Mars with the Curiosity Rover

LEGO Education Conference, Singapore, Singapore, September 15. [KEYNOTE]
Exploring Mars with the Curiosity Rover

2014

Caltech Geological and Planetary Science Division "Geoclub" Seminar Series, Pasadena, CA, September 4.
Diagenesis of Martian Sediments in Gale Crater

Siemen's Competition Regional Finals held at Caltech, November 7.
Exploring Mars

2013

Caltech Kliegel Lectures in Planetary Science, Pasadena, CA, April.
Formation of Boxwork Structures on Mount Sharp, Gale Crater, Mars

TEAM MEETINGS, WORKSHOP, AND SYMPOSIUM PRESENTATIONS

Mars Science Laboratory Team Meeting, virtual, October 28, 2025.
Synthesis of Boxwork Campaign "Phase 3" and Current Formation Hypotheses

Workshop on Secondary Minerals on Earth and Mars, Houston, TX, December 3-4, 2024.
Automated Mineral Identification by Stoichiometry (MIST): A Tool for Geochemical Dataset Standardization

Mars Science Laboratory Team Meeting, Pasadena, CA (presented virtually), October 24, 2024.
Scientific Objectives of the Boxwork Investigation

Mars 2020 Perseverance Science Team Meeting, Pasadena, CA July 19, 2024.
Western Fan Update

Mars 2020 Perseverance Science Team Meeting, with Gwenael Caravaca and Libby Ives, Paris, France, June 27, 2023.
Upper Fan Sedimentology and Stratigraphy: Curvilinear Units

Mars Science Laboratory Team Meeting, Pasadena, CA, October 6, 2022.
Fracture Townies" Science Campaign to Visit Boxwork Structures on Mount Sharp

Mars Science Laboratory Team Meeting, virtual, October 21, 2021.
Boxwork Structures on Mount Sharp

Mars Science Laboratory Team Meeting, Columbia, MD, April 2, 2019.
Compositional and Sedimentary Trends throughout the Murray: how does Glen Torridon fit in?

ExxonMobil-Rice Workshop, The Woodlands, TX, February 22, 2019.
Constraining Source-to-Sink Characteristics of a Martian delta system from Mars Science Laboratory rover observations

IRESS Frontiers Seminar Day, Rice University, Houston, TX, February 21, 2018.
Expanding our horizons: Sedimentary and volatile cycling on Mars

Mars Science Laboratory Team Meeting, Pasadena, CA, April 2016.
APXS Geochemical Trends in the Mount Sharp Rocks: Overview

Mars Science Laboratory Team Meeting, Paris, France, June 2015.
Distinguishing Provenance, Sorting, and Diagenetic Effects in Sedimentary Rocks along Curiosity's Traverse

Mars Science Laboratory Team Meeting, Pasadena, CA, February 2015.

Correlations between Rock Chemistry, Texture, and Stratigraphic Position

Mars Science Laboratory Team Meeting, Pasadena, CA, September 2014.

Introduction to Cements at Gale

Mars Science Laboratory Team Meeting, Pasadena, CA, April 2014.

Sandstone Porosity along Curiosity's Traverse

NASA booth at the AGU Fall Meeting 92, December 2011.

Monitoring evapotranspiration of almond orchards using a METRIC model with MASTER imagery

OUTREACH EFFORTS

2026

- Houston Museum of Natural Science Docent Brown Bag Luncheon Series, 3-3-2026

2025

- Community College "Take Flight" Scholars at Rice, Houston, TX, 10-31-2025
- Houston Public Media "Houston Matters" Radio/Youtube Interview, Houston, 9-22-2025
- EEPS Open House booth with students, 5-3-2025
- "Owl Days" Presentation for potential students and parents, Houston, TX, 4-11-2025
- "Science Salon" with Rice alumni, Houston, TX, 3-27-2025
- HISD Teacher Training on Mars Exploration (virtual), 3-26-2025

2024

- "Traveling Owls" trip to Churchill, CA, two lectures, 10-28-2024 and 10-31-2024
- HISD Teacher Training on Mars Exploration (virtual), 4-24-2024
- "The Great Owl Eclipse," Bandera, TX, 4-7-2024 and 4-8-2024

2023

- Story Collider Astronomy Night, St. Louis, MO, 9-29-2023 (on national podcast 2-9-2024)

2022

- Serving on the Mars Advisory Council for Tinkering School, virtual, 2022+
- NASA-Rice 60th Anniversary of JFK Moonshot Speech, organized Mars booth materials, ~20 hours at a booth for the public and two short talks, Houston, TX, 9-10-2022 to 9-12-2022
- "Follow the Water" Teacher Development Workshop, Miami-Dade (virtual), 9-3-2022
- Rice REU Students in Earth, Environmental, and Planetary Sciences (virtual), 7-7-2022
- Rice Admitted Students, Panel on Opportunities with NASA (virtual), 3-28-2022

2021

- Rice REU Students in Earth, Environmental, and Planetary Sciences, Houston, TX, 7-14-2021
- Owls in Space Symposium, Panel on Space Education, Rice University (virtual), 3-6-2021
- Cosmic Companion Discussion of Perseverance Landing (virtual), 2-23-2021
- Perseverance Landing Party, Rice University (virtual), 2-18-2021
- Cosmic Companion Discussion about the Climate of Ancient Mars (virtual), 1-26-2021

2020

- Space Center Houston Thought Leaders Panel – Our Future on Mars (virtual) 10-29-2020
- Perseverance Launch Party, Rice and Houston Museum of Natural History (virtual), 7-30-2020
- STEM High School Girls Physics camp at Rice (virtual), 6-25-2020
- Astronomy on Tap St. Louis (virtual), 5-11-2020
- SEDS Panel Night on Academic Careers in the Space Industry, Rice University, 1-30-2020

2019

- STEM High School Girls Physics camp at Rice, 6-18-2019
- Assembly at Yes Prep North Forest High School, 5-30-2019

2018

- Guest speaker on "miniGeology" radio/podcast, 11-13-2018
- Guest speaker on "The Space Show" radio/podcast, 10-29-2018
- American Chemical Society "Program-In-A-Box": *Voyage to Mars: Red Planet Chemistry.* Online, October 23, 2018.
- STEM High School Girls Physics camp at Rice, lunchtime talks for 2 summer sessions, 2018
- Mars Exploration talks for two school assemblies in Istanbul, Turkey associated with LEGO Education, 2018
- Assembly for The Village School middle school students and on-campus visit for 2 classes, 2018

2008-2017

- Geology Open Night at Stony Brook University, 2017
- Invited Lecture for NASA Student Airborne Research Program 2012, 2013, 2014, 2015, 2016
- Finalist in 3 Minute Thesis Competition, Caltech, 2016
- *Reel Science* Caltech Outreach Program Talks, each to ~500 attendees 9-15 years old: 2013 – Rock my World: the Power of Volcanoes, 2014 – Trial by Fire, 2015 – Ultimate Mars Challenge
- Expert Reader for National Geographic Kids book, "*Mars*", Fall 2014 and Summer 2016
- Developed and ran a one-day seminar for gifted elementary students on William Smith and Geologic Mapping at the Huntington Gardens in Pasadena, November 2014
- Judge for American Geophysical Institute Award at Intel International Science Fair, 2014
- Organized and staffed Caltech "Exploration Station" booth at the 2013 AGU conference meeting
- High School Teacher Training Talk on Applications of Spectroscopy, DNP Conference 2012
- Caltech Classroom Connection Volunteer (2011-12); aid with school farm soil testing
- Invited Lecture at Central Methodist University Math and Science Competition, 2008
- Various outreach talks to public and school groups *in addition to those listed above*; over 50 talks reaching over 2000 people, and volunteer at 7 NASA booth events

DOCUMENTARIES

- History Channel's The UnXplained Mysteries of the Universe: Season 1 Episode 2 "*Alien Earthlings*" released May 10, 2024.
- History Channel's The UnXplained: Season 3 Episode 7 "*Mysteries of Mars*" released December 17, 2021.
- CuriosityStream Three Part Documentary Series "*Becoming Martian*" released August 26, 2021.
- Xploration Station Series "*Life 2.0*" Episode "*A New Species of Human Emerges on Mars*" released September 5, 2020.
- National Geographic Documentary "*Mars: One Day on the Red Planet*" released January 5, 2020.

PRESS RELEASES

- Rice News 1/5/2026: Thin ice may have protected lake water on frozen Mars [link]
- Rice News 9/17/2025: New Mars research reveals multiple episodes of habitability in Jezero Crater [link]
- Rice News 8/20/2025: Rice scientists launch powerful new online tool to streamline mineral identification [link]
- Rice News 12/2/2020: Rice scientist joins next Mars adventure [link]

CONFERENCE ABSTRACTS

*Symbols denote ◊**undergraduate, *graduate student** or †**postdoctoral author** in my group*

2026

165. Dietrich, W. E., **K. L. Siebach**, **C. Seeger†**, C. O'Connell-Cooper, L. M. Thompson, S. Schwenzer, P. Gasda, and C. A. Mondro. (2026) Evolution of a Boxwork Structure, Gale Crater, Mars: Hypothesis 2. *57th LPSC*, Houston, TX. Abstract 1400.
164. Hausrath, E. M., E. Martinez, A. H. Treiman, K. Ramo, M. W. M. Jones, **E. Moreland***, **K. L. Siebach**, M. M. Tice, J. A. Hurowitz, M. Cable, Y. Liu, A. C. Allwood, S. Benaroya, D. Cartwright Buitrago, B. C. Clark, D. Flannery, C. Heirwegh, V. Hoogland, A. Li,…G. White. (2026) A PIXL Examination of Potential Clay Minerals in the Crater Rim Region of Jezero Crater, Mars. *57th LPSC*, Houston, TX. Abstract 1499.
163. ***Henry, J. D.**, **K. L. Siebach**, M. D. Dyar, K. H. Lepore, and C. R. Ytsma. (2026) How Low Can You Go? Testing the Limits of LIBS Calibration Data with Respect to Laser Power, Texture, and Spectral Intensity. *57th LPSC*, Houston, TX. Abstract 1600.
162. Liu, Y., A. H. Treiman, M. A. Schmidt, M. M. Tice, M. W. Jones, S. J. VanBommel, O. Beyssac, A. Kildaras, D. Klevang, L. Mandon, V. Payré, A. Udry, H. Vannier, A. Allwood, J. Van Beek, M. Cable, J. A. Hurowitz, B. Clark, E. Cloutis,…A. Steele. (incl. **K. L. Siebach**) (2026) Discovery of Ancient Granitic Components Outside Jezero Crater, Mars. *57th LPSC*, Houston, TX. Abstract 1322.
161. ***Moreland, E. L. L.**, **K. L. Siebach**, M. M. Tice, M. Schmidt, S. J. VanBommel, and J. A. Hurowitz. (2026) Geochemical Diversity of Upper Fan Sedimentary Rocks from Mars 2020 PIXL. *57th LPSC*, Houston, TX. Abstract 1306.
160. O'Connell-Cooper, C. D., L. M. Thompson, **K. L. Siebach**, **C. H. Seeger†**, S. Schwenzer, C. A. Mondro, W. E. Dietrich, R. Gellert, J. G. Spray, J. Berger, N. I. Boyd, M. A. McCraig, S. J. VanBommel, A. Yen, and P. Gasda. (2026) APXS Geochemistry of the Boxwork Unit (Altadena Member), Gale Crater, Mars. *57th LPSC*, Houston, TX. Abstract 1953.
159. **◊Pujet, N. C.**, **J. D. Henry***, **K. L. Siebach**, M. D. Dyar, K. H. Lepore, and C. R. Ytsma. (2026) Experimental Laser-Induced Breakdown Spectroscopy of Mineral Powder Mixtures. *57th LPSC*, Houston, TX. Abstract 1601.
158. ***Putnam, A. R.**, **K. L. Siebach**, and G. Costin. (2026) Stoichiometric Clustering in Microprobe Measurements of the Microcrystalline Mars Analog Material Palagonite. *57th LPSC*, Houston, TX. Abstract 1633.
157. **†Seeger, C. H.**, **K. L. Siebach**, C. A. Mondro, C. D. O'Connell-Cooper, S. P. Schwenzer, P. Gasda, L. M. Thompson, W. E. Dietrich, S. G. Banham, J. P. Grotzinger, S. Gupta, and G. Caravaca. (2026) Sedimentology and Diagenesis of the Boxwork-Hosting Altadena Member, Gale Crater, Mars. *57th LPSC*, Houston, TX. Abstract 1829.
156. **Siebach, K. L.**, **C. Seeger†**, C. A. Mondro, C. O'Connell-Cooper, W. E. Dietrich, S. P. Schwenzer, P. Gasda, L. M. Thompson, L. A. Scuderi, and G. Caravaca. (2026) Overview of Curiosity's Exploration of the Boxwork Unit (Altadena Member), Gale Crater, Mars. *57th LPSC*, Houston, TX. Abstract 1716.

2025

155. Mangold, N., G. Caravaca, and Perseverance rover Mars 2020 Delta observation sub-team (incl. **K. L. Siebach**). (2025) Paleolake variations of Lake Jezero, Mars, recorded by the deltaic architecture of Jezero crater western fan. *EPSC-DPS Joint Meeting 2025*, Helsinki, Finland. Abstract EPSC-DPS2025-217.
154. Caravaca, G., E. Dehouck, W. Dietrich, F. Dimitracopoulos, G. Dromart, L. Edgar, C. Fedo, O. Gasnault, J. Grotzinger, S. Gupta, S. Gwizd, L. Kah, N. L. Lanza, L. Le Deit, S. Le Mouelic, N.

Mangold, S. Maurice, C. A. Mondro, W. Rapin,…A. R. Vasavada. (incl. **K. L. Siebach**) (2025) The lacustrine history of Gale crater, Mars. *3rd Paleolimnology & Limnogeology International Symposium*, Aix les Bains, France.

153. Mangold, N., G. Caravaca, S. Gupta, E. Dehouck, O. Gasnault, A. Cousin, W. Rapin, L. Le Deit, S. Le Mouélic, K. Stack, J. Grotzinger, R. M. E. Williams, E. Clavé, L. Kah, C. Fedo, W. Dietrich, **K. L. Siebach**, N. Randazzo, J. F. Bell III, and R. Wiens. (2025) What do the fluvio-lacustrine sedimentary records at Gale and Jezero craters tell us about the past climate of Mars? *Mars through Time Conference*, Paris, France.
152. ***Henry, J. D.,** **K. L. Siebach**, M. D. Dyar, K. Lepore, and C. R. Ytsma. (2025) How Low Can You Go: Testing the Limits of LIBS Calibration Data with Respect to Laser Power, Texture, and Spectral Intensity. *Texas Area Planetary Science Conference (TAPS)*, San Antonio, TX. Abstract TAPS2025-074.
151. ***Moreland, E. L.**, **K. L. Siebach**, G. Costin, M. Tice, J. Hurowitz, A. Treiman, J. Simon, Y. Liu, and Y. Jiang. (2025) Stoichiometric Minerals in PIXL Data from the Mars 2020 Mission. *Texas Area Planetary Science Conference (TAPS)*, San Antonio, TX. Abstract TAPS2025-060.
150. ◊**Ghatate, A.**, and **K. L. Siebach**. (2025) A Novel Hierarchical Monte Carlo Unmixing Approach for Complex Geochemical Datasets. *Natural Sciences Undergraduate Research Symposium*, Houston, TX. Abstract p. 51.
149. ◊**Shin, S. E.**, **E. L. Moreland***, and **K. L. Siebach**. (2025) Expanding a Hierarchical Monte Carlo Unmixing Approach for Complex Geochemical Datasets. *Natural Sciences Undergraduate Research Symposium*, Houston, TX. Abstract p. 53.
148. Hurowitz, J. A., M. M. Tice, A. C. Allwood, M. L. Cable, K. P. Hand, A. E. Murphy, K. Uckert, J. F. I. Bell, T. Bosak, A. P. Broz, E. Clave, A. Cousin, S. Davidoff, E. Dehouck, K. A. Farley, S. Gupta, S. E. Hamran, K. Hickman-Lewis, J. R. Johnson,…Z. U. Wolf (incl. **K. L. Siebach**). (2025) The Detection of a Potential Biosignature by the Perseverance Rover on Mars. *56th LPSC*, Houston, TX. Abstract 2581.
147. ***Moreland, E. L. L.**, **K. L. Siebach**, J. A. Hurowitz, C. C. Bedford, and A. H. Treiman. (2025) Stoichiometric Mineral Identifications and Uncertainties from Sols 900–1400 of the Mars 2020 Mission with PIXL and MIST. *56th LPSC*, Houston, TX. Abstract 2474.
146. ***Putnam, A. R.**, **K. L. Siebach**, M. T. Thorpe, V. M. Tu, C. C. Bedford, E. B. Rampe, G. Costin, and J. J. Tamborski. (2025) Do Coarse-Grained River Sediments Reflect the Chemistry and Mineralogy of Their Sources in a Mars Analog Watershed in Iceland? Sometimes! *56th LPSC*, Houston, TX. Abstract 2123.
145. Fraeman, A. A., W. Rapin, V. Tricaud, J. Bapst, J. Levy, L. Jones-Wilson, R. Brockers, B. L. Ehlmann, K. Sneeder, J. R. Espley, J. Flahaut, M. Golombek, M. G. A. Lapotre, R. J. Lillis, A. Mittelholz, V. Payre, C. Quantin Nataf, **K. L. Siebach**, A. Udry,…T. Tzanetos. (2025) Condor: A Mars Helicopter Mission Concept to Explore Planetary Formation and Early Evolution in Valles Marineris. *AGU Fall Meeting*, New Orleans, LA. Abstract P21C-2644.
144. Gasda, P. J., F. Willcocks, S. P. Schwenzer, C. C. Bedford, C. Mondro, **K. L. Siebach**, **C. Seeger†**, L. A. Scuderi, J. Bridges, N. Lanza, C. O'Connell-Cooper, L. M. Thompson, A. Fraeman, and A. R. Vasavada. (2025) The ChemCam Chemistry of the Boxwork Unit in Gale Crater on the Upper Flanks of Aeolis Mons. *AGU Fall Meeting*, New Orleans, LA. Abstract P21H-2689.
143. Mondro, C., S. P. Schwenzer, **C. Seeger†**, P. J. Gasda, **K. L. Siebach**, C. O'Connell-Cooper, L. M. Thompson, J. P. Grotzinger, L. Scuderi, G. Caravaca, A. A. Fraeman, and A. R. Vasavada. (2025) Depositional and stratigraphic context of the boxwork horizon, Mount Sharp group, Gale Crater. *AGU Fall Meeting*, New Orleans, LA. Abstract P21H-2688.
142. O'Connell-Cooper, C., L. M. Thompson, S. P. Schwenzer, C. Mondro, **K. L. Siebach**, P. J. Gasda, **C. Seeger†**, A. R. Vasavada, A. Fraeman, R. Gellert, J. G. Spray, J. A. Berger, N. Boyd, J. Christian, M. McCraig, S. VanBommel, and A. Yen. (2025) Preliminary APXS compositional

results from the Mars Science Laboratory "Boxworks" campaign: Evaluating the role of Mg-sulfate in ridge formation. *AGU Fall Meeting*, New Orleans, LA. Abstract P21H-VR8022.

2024

141. Gupta, S., Stack Morgan, K., Mangold, N., Ives, E., Gwizd, S., Caravaca, G., Williams, R., Barnes, R., Randazzo, N., Horgan, B., **Siebach, K.**, Tate, C., Núñez, J., Sholes, S., Kah, L., Paar, G., Le Mouélic, S., Maki, J., and Bell III, J. (2024) Landscape evolution on early Mars: insights from the Jezero western fan. *Europlanet Science Congress 2024*, Berlin, Germany. Abstract EPSC2024-873.
140. Gillies, J., ◊**B. Rajan**, **K. L. Siebach**, and G. Costin. (2024) Mechanisms of Decay: Rapid Weathering of Outdoor Basalt Sculptures. *American Institute for Conservation Annual Meeting*, Salt Lake City, UT. Abstract 25.
139. ***Putnam, A.**, **K. L. Siebach**, C. Bedford, S. Simpson, E. Rampe, J. Tamborski, and M. Thorpe. (2024) Ice-marginal lava delta in Iceland found on a nondescript shallow slope: An unexpected record of ice thickness late in deglaciation. *EGU General Assembly 2024*, Vienna, Austria. Abstract egu24-13612.
138. Thorpe, M. T., E. B. Rampe, J. J. Tamborski, **K. L. Siebach**, **A. Putnam***, M. C. Raith, C. N. Achilles, D. P. Archer, C. C. Bedford, K. L. Lynch, J. Lopez, and S. Rahman. (2024) Drilling Icelandic Lakes to Unravel the Sedimentary History of Mars. *Integrating Ocean Drilling and NASA Science Workshop 2024*, Washington DC. Abstract 6004.
137. Hurowitz, J., A. Allwood, M. L. Cable, D. Catling, B. Clark, W. Fischer, T. Kizovski, **K. L. Siebach**, M. M. Tice, and A. Treiman. (2024) A High Carbonate Alkalinity, Low Ph Lake in Jezero Crater, Mars. *GSA Annual Meeting*, Anaheim, CA.
136. Treiman, A., J. Hurowitz, M. M. Tice, **E. L. Moreland***, Y. Liu, B. J. Orenstein, D. M. Flannery, **K. L. Siebach**, L. P. O'Neil, and A. Allwood. (2024) Origin of Jezero Crater's Margin Unit: Textural and Chemical Constraints from the PIXL Instrument on M2020. *GSA Annual Meeting*, Anaheim, CA. Abstract 236-3.
135. Caravaca, G., N. Mangold, R. M. E. Williams, R. Barnes, L. S. Crumpler, G. Dromart, S. Gupta, L. C. Kah, L. R. W. Ives, K. M. Stack, O. Gasnault, S. Le Mouélic, J. Hurowitz, M. M. Tice, J. W. Rice, N. Randazzo, M. Nachon, **K. L. Siebach**, J. F. Bell,…R. C. Wiens. (2024) Surface Expression and Geometries of Deltaic Deposits of Jezero Western Fan Top (Mars). *55th LPSC*, Houston, TX. Abstract 1246.
134. Gupta, S., K. Stack Morgan, N. Mangold, L. R. W. Ives, S. Gwizd, G. Caravaca, R. M. E. Williams, N. Randazzo, A. J. Williams, P. Russell, B. H. N. Horgan, **K. L. Siebach**, M. M. Tice, J. Horowitz, R. Barnes, C. Tate, J. I. Núñez, S. Scholes, L. C. Kah,…N. M. S. Team. (2024) Going With the Flow: Sedimentary Evolution of the Jezero Western Fan, Mars. *55th LPSC*, Houston, TX. Abstract 2607.
133. Gwizd, S., K. M. Stack, L. Ives, S. Gupta, N. Randazzo, M. Lamb, N. Cavallo, N. Williams, L. Crumpler, J. Rice, B. Horgan, L. C. Kah, O. Cianciolo, C. Quentin-Nataf, O. Beyssac, A. Vaughan, J. I. Simon, **K. L. Siebach**, M. Nachon,…J. Bell. (2024) Depositional History of the Upper Sequence of the Western Fan: Evidence for Late-Stage Fluvial and Potential Igneous Activity, Jezero Crater, Mars. *55th LPSC*, Houston, TX. Abstract 2117.
132. ***Henry, J. D.,** **K. L. Siebach**, M. D. Dyar, K. H. Lepore, and C. R. Ytsma. (2024) Grain Size Effects on LIBS Measurements of Mineral Powders, Experimental Results and Applications to Martian Sands and Drilled Materials. *55th LPSC*, Houston, TX. Abstract 1759.
131. Hurowitz, J. A., D. T. Flannery, A. C. Allwood, M. L. Cable, M. M. Tice, B. C. Clark, B. H. Horgan, D. A. Klevang, M. E. Schmidt, **K. L. Siebach**, A. H. Treiman, and T. P. Team. (2024) PIXL Results from Jezero Crater's Margin Unit. *55th LPSC*, Houston, TX. Abstract 2541.

130. Hurowitz, J. A., M. M. Tice, A. C. Allwood, M. L. Cable, B. C. Clark, **K. L. Siebach**, and T. V. Kizovski. (2024) Modeling the Weathering of Ultramafic Rock: Constraints on the Origin of Sedimentary Rocks in the Jezero Fan. *55th LPSC*, Houston, TX. Abstract 2304.
129. Labrie, J., M. E. Schmidt, L. J. Hallis, N. E. Moore, A. L. Grunder, L. Shiraishi, J. A. Hurowitz, K. Ramo, D. A. Klevang, **K. L. Siebach**, **E. L. Moreland***, F. Thiessen, S. Cruz, T. V. Kizovski, A. C. Allwood, M. L. Cable, and M. M. Tice. (2024) PIXL Breadboard Analyses of Mars 2020/Mars Sample Return Jezero Crater Floor Analogue Rocks. *55th LPSC*, Houston, TX. Abstract 2115.
128. ***Moreland, E. L. L.**, **K. L. Siebach**, G. Costin, Y. Jiang, and B. C. Clark. (2024) How Does Instrument Uncertainty Affect Stoichiometric Identification of Minerals in the Jezero Crater Floor? *55th LPSC*, Houston, TX. Abstract 1987.
127. ***Moreland, E. L. L.**, **K. L. Siebach**, Y. Liu, A. H. Treiman, M. M. Tice, J. A. Hurowitz, P. J. Gasada, T. V. Kizovski, B. C. Clark, G. Costin, and A. Allwood. (2024) Falcon Lake: An Olivine-Rich Boulder in Jezero Crater, Mars. *55th LPSC*, Houston, TX. Abstract 2030.
126. Nachon, M., **K. L. Siebach**, S. Sholes, V. Z. Sun, T. Del Sesto, B. P. Weiss, K. M. Stack, K. A. Farley, CPSG, and E. Mars Science. (2024) Overview of the Mars 2020 Mission Perseverance Rover Third Science Campaign: Exploring Jezero Crater's Upper Fan. *55th LPSC*, Houston, TX. Abstract 2317.
125. **Siebach, K. L.**, M. M. Tice, J. A. Hurowitz, **E. L. Moreland***, J. K. Van Beek, T. V. Kizovski, M. Schmidt, L. P. O'Neil, A. H. Treiman, A. C. Allwood, M. L. Cable, M. Nachon, and S. Gupta. (2024) PIXL Analyses of Sedimentary Rocks in the Mars 2020 Perseverance Upper Fan Campaign in Jezero Crater. *55th LPSC*, Houston, TX. Abstract 2365.
124. Siljeström, S., K. A. Farley, T. Bosak, F. J. I. Calef, A. D. Czaja, B. Garcynski, E. M. Hausrath, C. D. K. Herd, B. Horgan, L. E. Mayhew, N. Randazzo, S. Sholes, D. L. Shuster, J. I. Simon, K. M. Stack, B. P. Weiss, M.-P. Zorzano, A. C. Alllwood, J. Bell,…A. Udry. (incl. **K. L. Siebach**) (2024) Sampling the Margin Unit of Jezero Crater, Mars for future Mars Sample Return. *55th LPSC*, Houston, TX. Abstract 1848.
123. Thiessen, F., C. Orgel, D. W. Beaty, L. Hallis, N. E. Moore, E. Rampe, M. E. Schmidt, and **K. L. Siebach**. (2024) Mars Sample Return Analogue Sample Collection Field Campaign 2023. *55th LPSC*, Houston, TX. Abstract 1208.
122. Thorpe, M. T., E. B. Rampe, J. Thieme, E. Dooryhee, S. Lee, R. Christoffersen, J. J. Tamborski, **K. L. Siebach**, C. N. Achilles, and Z. B. Jibrin. (2024) Combined High-Resolution Analysis of Secondary Alteration Products in Martian Analog Environments, Preparation for Analyzing the Mars Sample Return Cache. *55th LPSC*, Houston, TX. Abstract 1238.
121. Tice, M. M., J. A. Hurowitz, **K. L. Siebach**, **E. L. Moreland***, T. V. Kizovski, M. E. Schmidt, L. P. O'Neil, A. H. Treiman, B. C. Clark, M. W. M. Jones, A. C. Allwood, M. L. Cable, G. Caravaca, S. Siljestrom, N. Randazzo, and J. I. Simon. (2024) Regional Paleoenvironments Recorded in Sedimentary Rocks of the Western Fan-Delta, Jezero Crater, Mars. *55th LPSC*, Houston, TX. Abstract 2181.
120. Treiman, A. H., J. A. Hurowitz, B. C. Clark, Y. Liu, J. D. Hernandez-Montenegro, M. M. Tice, T. Kizovski, **E. L. Moreland***, **K. L. Siebach**, M. W. M. Jones, J. Henneke, C. D. K. Herd, and A. Allwooe. (2024) Mount Meeker: A Boulder of Aluminous Melt Rock in Jezero Crater, Mars. *55th LPSC*, Houston, TX. Abstract 1283.
119. Weiss, B. P., M. Nachon, **K. L. Siebach,** K. A. Farley, K. M. Stack, T. Bosak, J. F. I. Bell, K. C. Benison, A. D. Czaja, V. Debaille, E. M. Hausrath, C. D. K. Herd, K. Hickman-Lewis, L. E. Mayhew, M. A. Sephton, S. F. Sholes, D. L. Shuster, S. Siljëstrom, J. I. Simon,…M.-P. Zorzano. (2024) Perseverance Samples from the Jezero Upper Fan. *55th LPSC*, Houston, TX. Abstract 1843.

118. **Siebach, K.**, **E. Moreland***, G. Costin, and Y. Jiang. (2024) Automated Mineral Identification by Stoichiometry (MIST): A Tool for Geochemical Dataset Standardization. *Goldschmidt2024*, Chicago, IL. Abstract 23779.
117. Dehouck, E., O. Forni, C. Quantin-Nataf, P. Beck, N. Mangold, O. Beyssac, C. Royer, E. Clavé, J. R. Johnson, L. Mandon, F. Poulet, A. Udry, G. Lopez-Reyes, G. Caravaca, S. Maurice, R. C. Wiens, K. M. Stack, R. B. Anderson, S. Bernard,…A. J. Williams. (incl. **K. L. Siebach**) (2024) Chemostratigraphy and Mineralogy of the Jezero Western Fan as Seen by the SuperCam Instrument: Evidence for a Complex Aqueous History and Variable Alteration Conditions. *Tenth International Conference on Mars*, Pasadena, CA. Abstract 3364.
116. Fraeman, A. A., W. Rapin, J. Bapst, L. Matthies, B. L. Ehlmann, B. Langlais, R. Lillis, A. Mittelholz, B. Weiss, C. Quantin-Nataf, J. Flahaut, M. Golombek, **K. L. Siebach**, V. Payre, A. Udry, M. G. A. Lapotre, J. Espley, R. O. Green, P. Sullivan,…K. Sneeder. (2024) A Mars Science Helicopter Mission to Valles Marineris: Unlock Clues to Planetary Formation and Early Evolution. *Tenth International Conference on Mars*, Pasadena, CA. Abstract 3350.
115. Gupta, S., K. Stack Morgan, N. Mangold, L. R. W. Ives, S. Gwizd, G. Caravaca, R. M. E. Williams, N. Randazzo, A. J. Williams, P. Russell, B. H. N. Horgan, **K. L. Siebach**, M. M. Tice, J. Horowitz, R. Barnes, C. Tate, J. I. Núñez, S. Sholes, L. C. Kah,…K. A. Farley. (2024) Sedimentary Evolution of the Jezero Western Fan, Mars. *Tenth International Conference on Mars*, Pasadena, CA. Abstract 3370.
114. ***Henry, J. D.,** **K. L. Siebach**, M. D. Dyar, K. H. Lepore, and C. R. Ytsma. (2024) Textural Effects of Loose Powders on LIBS Measurements: Implications for ChemCam and SuperCam Analyses of Dust, Soil, and Drilled Materials on Mars. *Tenth International Conference on Mars*, Pasadena, CA. Abstract 3080.
113. Li, A. Y., J. A. Hurowitz, M. M. Tice, N. Tosca, T. V. Kizovski, S. J. VanBommel, A. L. Knight, **K. L. Siebach**, J. I. Simon, A. J. Brown, D. T. Flannery, K. Ramo, and U. Árting. (2024) Element Mobility and Alteration Styles as Recorded in Jezero Crater Floor Rocks by PIXL: Fine-Scale vs. Bulk Sum. *Tenth International Conference on Mars*, Pasadena, CA. Abstract 3538.
112. Mangold, N., G. Caravaca, S. Gupta, R. M. E. Williams, O. Gasnault, S. Le Mouélic, E. Dehouck, G. Dromart, A. Annex, J. Hurowitz, L. R. W. Ives, L. C. Kah, N. Randazzo, **K. L. Siebach**, J. I. Simon, K. M. Stack, M. M. Tice, J. F. Bell, A. Cousin,…R. C. Wiens. (2024) Constraints on Jezero Paleolake History from Its Fluvial Input. *Tenth International Conference on Mars*, Pasadena, CA. Abstract 3079.
111. ***Moreland, E. L. L.,** **K. L. Siebach**, G. Costin, Y. Jiang, M. M. Tice, J. A. Hurowitz, A. H. Treiman, J. I. Simon, Y. Liu, A. Udry, and E. Dehouck. (2024) Identifying Stoichiometric Minerals in PIXL Data from the First Three Years of the Mars 2020 Mission Using the MIST Algorithm. *Tenth International Conference on Mars*, Pasadena, CA. Abstract 3077.
110. ***Putnam, A. R.,** **K. L. Siebach**, C. C. Bedford, G. Costin, M. T. Thorpe, E. B. Rampe, J. J. Tamborski, and S. L. Simpson. (2024) Sorting Out Syn-Eruptive Hydrothermal Alteration of Volcaniclastic Rocks in a Mars Analog Basaltic Watershed in Iceland. *Tenth International Conference on Mars*, Pasadena, CA. Abstract 3358.
109. Russell, P. S., D. A. Paige, E. L. Cardarelli, S. E. Hamran, T. Berger, **K. L. Siebach**, and **E. L. Moreland***. (2024) Rimfax GPR Observations of the Jezero Crater Western Fan and Its Transition to the Margin Unit. *Tenth International Conference on Mars*, Pasadena, CA. Abstract 3298.
108. **Siebach, K. L.**, M. M. Tice, J. A. Hurowitz, **E. L. Moreland***, J. I. Simon, M. E. Schmidt, T. V. Kizovski, G. Caravaca, and A. Klidaras. (2024) Observations of Coarse-Grained Fluviodeltaic Rocks in the Jezero Western Fan and Gale Crater: Implications for Sedimentary Rock Formation and Mars Sample Return. *Tenth International Conference on Mars*, Pasadena, CA. Abstract 3076.
107. Stack, K. M., K. S. Edgett, S. Gupta, S. G. Banham, G. Caravaca, B. T. Cardenas, M. Day, L. A. Edgar, C. M. Fedo, A. A. Fraeman, T. A. Goudge, J. P. Grotzinger, S. Gwizd, L. R. W. Ives, E. S. Kite, M. P. Lamb, M. G. A. Lapôtre, N. Mangold, M. J. Meyer,…A. R. Vasavada. (incl. **K. L.**

Siebach) (2024) The Martian Sedimentary Rock Record: Recent Advances in Our Understanding of Depositional Processes and Environments. *Tenth International Conference on Mars*, Pasadena, CA. Abstract 3201.

106. Rahman, S., J. Tamborski, M. O. Sarker, D. Burdige, **K. L. Siebach**, E. B. Rampe, and M. Thorpe. (2024) Pro-glacial groundwater-surface water mixing zones: A novel approach to determining chemical weathering rates. *AGU Fall Meeting*, Washington, DC. Abstract EP43E-09.
105. Thorpe, M., J. Tamborski, E. Rampe, **K. L. Siebach**, **A. Putnam***, S. Rahman, C. Bedford, J. Lopez, K. Lynch, and V. Tu. (2024) Exploring the groundwater-surface water mixing zone of a pro-glacial lake in the basaltic terrains of southwest Iceland. *AGU Fall Meeting*, Washington, DC. Abstract EP52A-05.

2023

104. **Siebach, K. L.**, **S. L. Preston◊**, **J. D. Henry***, M. G. A. Lapotre, V. Payre, and S. Banham. (2023) Coarse grains in the lithified ancient Stimson dune field interpreted as recycled grains from eroding fluvial conglomerates in Gale crater, Mars. *ESA FAIRPLAY Conference*, Noordwijk, The Netherlands.
103. Gillies, J., **◊B. Rajan**, **K. L. Siebach**, and G. Costin. (2023) Mechanisms of Decay: Rapid Weathering of Outdoor Basalt Sculptures. *Western Association of Art Conservation*, Houston, TX.
102. Bridges, J., F. Thiessen, and the NASA-ESA MSR Rock Sampling Team (incl. **K. L. Siebach**). (2023) Mars Sample Return Rock Sampling: Post-landing Extraction of Solid-core Samples. *EGU General Assembly*, Vienna, Austria.
101. Gupta, S., J. F. Bell, G. Caravaca, N. Mangold, K. Stack, O. A. Kanine, C. Tate, M. M. Tice, A. J. Williams, P. Russell, J. I. Núñez, G. Dormant, R. M. E. Williams, S. Le Mouelic, R. Barnes, A. Annex, G. Paar, S. Holm-Alwmark, M. S. Rice,…K. A. Farley. (incl. **K. L. Siebach**) (2023) Fine-Scale Sedimentary Architecture of the Upper Part of the Jezero Western Delta Front. *54th LPSC*, Houston, TX. Abstract 2953.
100. Hurowitz, J. A., M. M. Tice, A. C. Allwood, M. L. Cable, T. Bosak, A. Broz, G. Caravaca, B. C. Clark, E. Dehouck, A. Fairen, F. Gomez, J. P. Grotzinger, S. Gupta, J. R. Johnson, L. C. Kah, H. Kalucha, J. Labrie, A. Y. Li, L. Mandon,…A. Yanchilina. (incl. **K. L. Siebach**) (2023) The Petrogenetic History of the Jezero Crater Delta Front from Microscale Observations by the Mars 2020 PIXL Instrument. *54th LPSC*, Houston, TX. Abstract 2301.
99. ***Moreland, E. L. L.**, K. S. Siebach, G. Costin, Y. Jiang, M. Tice, T. V. Kizovski, Y. Liu, and A. J. Brown. (2023) Crystal Chemistry of Primary and Secondary Minerals in the Jezero Crater Floor. *54th LPSC*, Houston, TX. Abstract 2196.
98. **◊Preston, S. L.**, **K. L. Siebach**, and M. G. A. Lapôtre. (2023) Was Ancient Windblown Sand Larger than Modern Windblown Sand on Mars? Grain Size Distributions in the Stimson Formation, Gale Crater, Mars, and Implications for Martian Paleoatmosphere. *54th LPSC*, Houston, TX. Abstract 2978.
97. **Siebach, K. L.**, **E. L. Moreland***, G. Costin, and Y. Jiang. (2023) MIST: An Online Tool Automating Mineral Identification by SToichiometry in Geochemical Datasets. *54th LPSC*, Houston, TX. Abstract 2253.
96. Thiessen, F. K., S. S. Russell, N. Dauphas, J. J. Barnes, L. Bonal, J. C. Bridges, T. Bristow, J. Eiler, L. Ferrière, T. Fornaro, J. Gattacceca, B. Hoffman, E. J. Javaux, T. Kleine, H. Y. McSween, M. Prasad, E. Rampe, M. E. Schmidt, B. Schoene,…D. Beaty (incl. **K. L. Siebach**). (2023) Options for Post-Landing Extraction of Solid-Core Samples from the NASA-ESA Mars Sample Return Mission. *54th LPSC*, Houston, TX. Abstract 2296.
95. Thorpe, M. T., E. B. Rampe, J. J. Tamborski, **K. L. Siebach**, **A. Putnam***, M. C. Raith, C. N. Achilles, D. P. Archer, P. Higley, D. Leeb, G. Gundjonsson, V. M. Tu, C. C. Bedford, K. L. Lynch, J. Lopez, R. C. Ewing, S. Rahman, and **R. Kovtun***. (2023) Sedimentation and Diagenesis

in the Basaltic Terrains of Iceland, an Update from the DIGMARS Team. *54th LPSC*, Houston, TX. Abstract 2512.

94. Hurowitz, J., M. Tice, A. Allwood, M. Cable, T. Bosak, A. Broz, G. Caravaca, B. Clark, E. Dehouck, A. Fairen, F. Gomez, J. Grotzinger, S. Gupta, J. Johnson, L. Kah, H. Kalucha, J. Labrie, A. Li, L. Mandon,…A. Yanchilina (incl. **K. L. Siebach**). (2023) Provenance and Diagenesis of Martian Sedimentary Rocks in the Jezero Crater Delta Front from Microscale Observations by the Mars 2020 PIXL Instrument. *Goldschmidt2023*, Lyon, France. Abstract 18487.
93. Gwizd, S., K. Stack, N. R. Williams, L. Ives, S. Gupta, L. Kah, O. Cianciolo, N. Cavallo, M. Lamb, J. Grotzinger, **K. L. Siebach**, J. I. Nunez, and N. Randazzo. (2023) Hydrology and depositional history of the blocky unit at Jezero crater. *AGU Fall Meeting*, San Francisco, CA. Abstract P41E-3233.
92. Ives, L., K. Stack, S. Gupta, J. P. Grotzinger, M. P. Lamb, R. Barnes, E. Geyman, **K. L. Siebach**, R. M. E. Williams, L. C. Kah, S. Gwizd, G. Paar, H. E. F. Amundsen, J. I. Núñez, J. I. Simon, W. W. Fischer, D. L. Shuster, and S.-E. Hamran. (2023) Reassessing the sedimentary depositional origin of the Jezero crater western fan's curvilinear unit: reconciling orbital and rover observations. *AGU Fall Meeting*, San Francisco, CA. Abstract P43A-04.
91. ***Moreland, E. L.**, S. Dee, Y. Jiang, G. Bischof, M. Mischna, J. M. Russell, N. Hartigan, and **K. L. Siebach**. (2023) An Intermediate-Complexity Model for Simulating Lacustrine Environments on Early Mars. *AGU Fall Meeting*, San Francisco, CA. Abstract EP53B-08.
90. **Siebach, K.**, M. Nachon, S. F. Sholes, V. Z. Sun, T. Del Sesto, B. P. Weiss, K. A. Farley, K. Stack, G. Caravaca, E. Dehouck, T. Fouchet, Y. Goreva, J. Hurowitz, L. Ives, L. C. Kah, J. Maki, N. Mangold, M. E. Minitti, J. I. Núñez,…Mars 2020 Science and Operations Team. (2023) Overview of Perseverance's Upper Fan Campaign. *AGU Fall Meeting*, San Francisco, CA. Abstract P41E-3232.
89. Tamborski, J., M. O. Sarker, S. Rahman, D. Burdige, **K. L. Siebach**, E. Rampe, and M. Thorpe. (2023) Evidence of secondary mineral formation in a pro-glacial groundwater-surface water mixing zone. *AGU Fall Meeting*, San Francisco, CA. Abstract H13E-03.

2022

88. **Siebach, K. L.**, G. Costin, **E. Moreland***, and Y. Jiang. (2022) MIST: An Algorithm for Automating Mineral Identification by SToichiometry. *International Mineralogical Association*, Lyon, France.
87. ◊**Preston, S. L.**, and **K. L. Siebach**. (2022) New Grain Size Measurements of Windblown Sand in the Stimson Sandstone, Gale Crater, Mars and Implications for the Climate of Ancient Mars. *Rice Undergraduate Research Symposium 2022*, Houston, TX. Abstract Poster Session B 267, p. 62.
86. Brown, A. J., R. C. Wiens, S. Maurice, K. Uckert, M. Tice, D. Flannery, R. G. Deen, A. H. Treiman, **K. L. Siebach**, L. W. Beegle, W. J. Abbey, J. F. Bell, L. E. Mayhew, J. I. Simon, O. Beyssac, P. A. Willis, R. Bhartia, R. J. Smith, T. Fouchet,…L. C. Kah. (2022) A Komatiite Succession as an Analog for the Olivine Bearing Rocks at Jezero. *53rd LPSC*, Houston, TX. Abstract 1406.
85. ***Putnam, A. R.**, M. T. Thorpe, C. C. Bedford, V. Tu, G. Costin, **M. Wilcox**◊, **R. Kovtun***, E. B. Rampe, J. J. Tamborski, K. Lynch, D. Leeb, G. Gundjonsson, and **K. L. Siebach**. (2022) Characterizing the Basaltic Igneous and Volcaniclastic Provenance at a Mars Analog Site in Iceland with the DIGMARS Team. *53rd LPSC*, Houston, TX. Abstract 1614.
84. Smith, R. J., S. M. McLennan, E. Dehouck, E. B. Rampe, B. Sutter, **K. L. Siebach**, B. H. N. Horgan, V. Sun, A. McAdam, N. Mangold, D. Vaniman, M. Salvatore, M. T. Thorpe, C. N. Achilles, T. S. J. Gabriel, and S. Czarnecki. (2022) X-Ray Amorphous Sulfur-Bearing Phases in Sedimentary Rocks of Gale Crater, Mars. *53rd LPSC*, Houston, TX. Abstract 1661.
83. Thorpe, M. T., E. B. Rampe, J. J. Tamborski, **K. L. Siebach**, **A. Putnam***, **R. Kovtun***, K. L. Lynch, D. Leeb, G. Gundjonsson, V. M. Tu, R. C. Ewing, and C. Bedford. (2022) Overview and

Initial Results of DIGMARS: Digging Iceland Geology for Mars Analog Research Science. *53rd LPSC*, Houston, TX. Abstract 1200.

82. Caravaca, G., N. Mangold, K. Stack, G. Dromart, C. Tate, S. Sholes, M. Nachon, J. Grotzinger, J. Simon, S. Le Mouelic, A. Williams, K. Farley, S. Gupta, J. I. Nunez, O. Kanine, M. Minitti, M. Tice, **K. L. Siebach**, D. Flannery,…P. Russell. (2022) Insights into the Sedimentary Record and Processes of the Western Delta of Jezero crater (Mars) as observed by the Mars 2020 rover Perseverance. *AGU Fall Meeting*, Chicago, IL. Abstract P55A-08.
81. Gupta, S., J. F. Bell III, G. Caravaca, O. Kanine, N. Mangold, K. Stack, C. Tate, M. Tice, A. Williams, P. Russell, J. I. Nunez, G. Dromart, R. Williams, S. Le Mouélic, R. Barnes, A. Annex, G. Paar, S. Holm-Alwmark, M. S. Rice,…K. Farley. (2022) Fine-Scale Sedimentary Architecture of the Jezero Western Delta Front. *AGU Fall Meeting*, Chicago, IL. Abstract P56A-05.
80. Li, A., J. Hurowitz, M. Tice, N. Tosca, T. Kizovski, **K. L. Siebach**, J. Simon, A. Brown, and D. T. Flannery. (2022) Fine-scale element mobility and alteration styles recorded in Jezero Crater floor rocks by PIXL. *AGU Fall Meeting*, Chicago, IL. Abstract P52C-1565.
79. ***Moreland, E. L.**, **K. L. Siebach**, G. Costin, Y. Jiang, S. J. VanBommel, T. Kizovski, J. Hurowitz, Y. Liu, and M. Tice. (2022) Stoichiometric Mineral Identifications in Mars 2020 Perseverance PIXL Data using the Automated MIST Algorithm. *AGU Fall Meeting*, Chicago, IL. Abstract P55A-06.
78. ***Putnam, A.**, **K. L. Siebach**, C. Bedford, S. Simpson, and M. Thorpe. (2022) Ice-dammed Lake Recorded by Basaltic Lava Deltas above Sandvatn, a Lake in Iceland. *AGU Fall Meeting*, Chicago, IL. Abstract EP33C-06.
77. Raith, M. C., M. Thorpe, J. Tamborski, **A. Putnam***, D. K. Lynch, G. Gundjonsson, R. Ewing, E. Rampe, **K. L. Siebach**, **R. Kovtun***, D. Leeb, V. Tu, and C. Bedford. (2022) Mineralogy and Geochemistry of Sediments from Basaltic Watershed of Lake Sandvatn, Iceland; Implications for Ancient Sedimentary Processes on Mars. *AGU Fall Meeting*, Chicago, IL. Abstract EP42D-1644.
76. Russell, P., A. Williams, R. Kronyak, V. Z. Sun, K. Farley, G. Caravaca, S. Gupta, D. Shuster, G. Pyrzak, K. Stack, **K. L. Siebach**, and J. I. Nunez. (2022) Perseverance's Delta-Front Campaign in Jezero Crater, Mars. *AGU Fall Meeting*, Chicago, IL. Abstract P55A-01.
75. **Siebach, K.**, G. Costin, **E. Moreland***, and Y. Jiang. (2022) MIST: an Online Tool Automating Mineral Identification by SToichiometry in Geochemical Datasets. *AGU Fall Meeting*, Chicago, IL. Abstract V42A-04.

2021

74. McLennan, S., C. Fedo, and **K. L. Siebach**. (2021) The CIA goes to Mars. *Geological Association of Canada-Mineralogical Association of Canada (GAC-MAC)*, London, Ontario.
73. **†Thorpe, M. T.**, J. A. Hurowitz, and **K. L. Siebach**. (2021) Weathering and Sedimentation in Basaltic Terrains on Earth; Implications for the Paleoclimate of Gale Crater, Mars. *Workshop on Terrestrial Analogs for Planetary Exploration*, Houston, TX. Abstract 8064.
72. **◊Preston, S. L.**, and **K. L. Siebach**. (2021) An Intuitive Method for Approximating Grain Sizes on Mars. *Rice Undergraduate Research Symposium 2021*, Houston, TX. Abstract NSCI 10, p. 29.
71. Brown, A. J., R. C. Wiens, S. Maurice, K. Uckert, M. Tice, D. Flannery, R. G. Deen, J. D. Tarnas, A. H. Treiman, **K. L. Siebach**, L. W. Beegle, W. J. Abbey, J. F. Bell, J. R. Johnson, L. E. Mayhew, J. I. Simon, J. A. Hurowitz, O. Beyssac, P. A. Willis,…C. Quantin-Nataf. (2021) Mars2020 In Situ Investigation of Alteration at Jezero Crater. *52nd LPSC*, Houston, TX. Abstract 1749.
70. **†Payre, V.**, **K. L. Siebach**, M. T. Thorpe, P. Antoshechkina, and E. B. Rampe. (2021) Is Tridymite a Witness of Explosive Volcanism in Early Mars? *52nd LPSC*, Houston, TX. Abstract 1707.
69. **Siebach, K. L.**, G. Costin, and Y. Jiang. (2021) Identifying Mineral Candidates in High-Resolution Geochemical Data with Application to PIXL on Mars 2020. *52nd LPSC*, Houston, TX. Abstract 1263.

68. Smith, R. J., S. M. McLennan, C. N. Achilles, E. Dehouck, B. N. Horgan, N. Mangold, E. B. Rampe, M. Salvatore, **K. L. Siebach**, and V. Sun. (2021) X-Ray Amorphous Sulfates in Gale Crater, Mars. *52nd LPSC*, Houston, TX. Abstract 1486.
67. ◊**Preston, S. L.**, **K. L. Siebach**, and M. G. A. Lapotre. (2021) New Constraints on Grain Size of Eolian Sediments in the Stimson Sandstone, Gale Crater, Mars and Implications for Paleoclimate. *AGU Fall Meetin*g, New Orleans, LA. Abstract EP15B-1333.
66. **Siebach, K.**, G. Costin, Y. Jiang, S. J. VanBommel, and A. J. Brown. (2021) Mineral Identification from SToichiometry (MIST) Model with Application to PIXL on Mars 2020 Perseverance. *AGU Fall Meeting*, New Orleans, LA. Abstract MR45A-0077.

2020

65. †**Payre, V.**, **K. L. Siebach**, M. T. Thorpe, P. Antoshechkina, and E. B. Rampe. (2020) Tridymite in Gale crater, Mars: Witness of explosive volcanism in Early Mars? *EPSC*, Virtual. Abstract EPSC2020-501.
64. ◊**Morris, M.**, and **K. L. Siebach**. (2020) Chemical Analysis of Altered Stimson Sandstones on Mars. *Rice Undergraduate Research Symposium 2020*, Houston, TX. Abstract NSCI 24.
63. ◊**Sheldon, J. L.**, and **K. L. Siebach**. (2020) Using Drone Photogrammetry to Detect Change over Time in Houston and Aid in Flood Mitigation. *Rice Undergraduate Research Symposium 2020*, Houston, TX. Abstract NSCI 25.
62. Fraeman, A. A., L. A. Edgar, E. B. Rampe, J. L'Haridon, N. Mangold, L. Thompson, J. Frydenvang, C. M. Fedo, J. P. Grotzinger, J. G. Catalano, V. Z. Sun, C. H. House, C. Hardgrove, T. S. J. Gabriel, S. Czarnecki, A. R. Vasavada, R. V. Morris, R. E. Arvidson, A. Bryk,…A. Williams. (incl. **K. L. Siebach**) (2020) The Origin of Vera Rubin Ridge: Overview and Results from Curiosity's Exploration Campaign. *51st LPSC*, Houston, TX. Abstract 1677.
61. †**Payre, V.**, **K. L. Siebach**, R. Dasgupta, A. Udry, E. B. Rampe, and S. M. Morrison. (2020) Investigation of Magmatic Activities on Early Mars Using Igneous Mineral Chemistry in Gale Crater, Mars. *51st LPSC*, Houston, TX. Abstract 2822.
60. Rampe, E. B., T. F. Bristow, R. V. Morris, S. M. Morrison, C. N. Achilles, D. W. Ming, D. T. Vaniman, D. F. Blake, V. M. Tu, S. J. Chipera, A. S. Yen, T. S. Peretyazhko, R. T. Downs, R. M. Hazen, A. H. Treiman, J. P. Grotzinger, N. Castle, P. I. Craig, D. J. Des Marais,…M. R. Salvatore. (incl. **K. L. Siebach**) (2020) Mineralogy of Vera Rubin Ridge in Gale Crater from the Mars Science Laboratory CheMin Instrument. *51st LPSC*, Houston, TX. Abstract 1601.
59. **Siebach, K. L.**, C. N. Achilles, R. J. Smith, S. M. McLennan, and E. Dehouck. (2020) Using Curiosity Drill Sites to Test the Chemical Index of Alteration. *51st LPSC*, Houston, TX. Abstract 3028.
58. Smith, R. J., S. M. McLennan, E. Dehouck, B. Horgan, S. Jacob, N. Mangold, F. Rivera-Hernandez, **K. L. Siebach**, and V. Sun. (2020) Exploring Silica Diagenesis in Gale Crater, Mars Using the Chemostratigraphy of X-Ray Amorphous Materials. *51st LPSC*, Houston, TX. Abstract 2708.
57. †**Thorpe, M. T.**, E. B. Rampe, **K. L. Siebach**, C. C. Bedford, R. C. Ewing, R. Christoffersen, P. Sinha, B. Horgan, M. Lapotre, M. Nachon, K. Mason, and E. Champion. (2020) Clay Sediments from Basaltic Terrains: Implications for Sedimentary Processes on Mars. *51st LPSC*, Houston, TX. Abstract 1566.
56. ***Kovtun, R.**, and **K. L. Siebach**. (2020) Constraining the Extent of Groundwater Alteration of Martian Sedimentary Deposits: An Investigation of Mg-sulfate Formation Mechanisms. *AGU Fall Meeting*, Virtual. Abstract P045-0003.
55. ◊**Morris, M.**, and **K. L. Siebach**. (2020) Characterizing Multiple Episodes of Fluid Alteration within Stimson Fracture Halos, Gale Crater, Mars. *AGU Fall Meeting*, Virtual. Abstract P028-07.
54. †**Payre, V.**, **K. L. Siebach**, M. Thorpe, P. Antoshechkina, and E. Rampe. (2020) Tridymite in Gale Crater: a Witness of Explosive Volcanism on Early Mars? *AGU Fall Meeting*, Virtual. Abstract P069-0011.

53. **Siebach, K.**, S. McLennan, K. Edgett, and S. Gupta. (2020) Provenance and Groundwater Lithification of the Stimson Sandstone, Gale crater, Mars. *AGU Fall Meeting*, Virtual. Abstract P038-06.
52. Smith, R. J., S. M. McLennan, C. Achilles, E. Dehouck, B. Horgan, N. Mangold, E. Rampe, M. Salvatore, **K. L. Siebach**, and V. Z. Sun. (2020) Evidence for Extensive Diagenesis in Gale Crater, Mars from X-ray Amorphous Component Compositions. *AGU Fall Meeting*, Virtual. Abstract P028-05.
51. †**Thorpe, M.** , T. Bristow, D. Blake, A. Yen, S. Chipera, D. Ming, S. Morrison, D. Des Marais, J. Grotzinger, A. Treiman, P. Craig, T. Peretyazhko, E. Rampe, D. Vaniman, C. Achilles, R. T. Downs, R. Morris, V. Tu, **K. L. Siebach**,…G. W. Downs. (2020) Mineralogy of the Glen Torridon Region as detailed by the Mars Science Laboratory CheMin Instrument. *AGU Fall Meeting*, Virtual. Abstract P070-03.

2019

50. ◊**Sheldon, J. L.**, **K. L. Siebach**, and M. T. Thorpe. (2019) How Drones can Enhance Visualization of Geological Data and Understanding of Environmental Processes. *Rice Undergraduate Research Symposium 2019*, Houston, TX. Abstract NSCI B65.
49. O'Connell-Cooper, C. D., L. M. Thompson, J. G. Spray, R. Gellert, J. A. Berger, N. I. Boyd, **K. L. Siebach**, S. J. VanBommel, and B. J. Wilhelm. (2019) Compositional Trends Within the Murray formation, from the Base of Pahrump Hills to the End of the VRR Campaign, as Determined by APXS. *50th LPSC*, Houston, TX. Abstract 3237.
48. †**Payre, V.**, **K. L. Siebach**, R. Dasgupta, and E. B. Rampe. (2019) Using Mineralchemistry in Gale Crater Sedimentary Rocks to Constrain Ancient Igneous Processes on Mars. *50th LPSC*, Houston, TX. Abstract 2562.
47. Rampe, E. B., R. E. Arvidson, L. A. Edgar, K. S. Edgett, C. M. Fedo, A. A. Fraeman, J. P. Grotzinger, S. M. McLennan, D. W. Ming, R. V. Morris, **K. L. Siebach**, and R. J. Sullivan. (2019) The Sedimentary History of Mars as Observed by Rovers. *50th LPSC*, Houston, TX. Abstract 1126.
46. **Siebach, K. L.**, C. M. Fedo, L. E. Edgar, K. Edgett, J. P. Grotzinger, A. A. Fraeman, L. M. Thompson, S. Gupta, C. H. House, and C. O'Connell-Cooper. (2019) Overview of Gale Crater Stratigraphy and Sedimentology from 6 Years of Roving with Mars Science Laboratory. *50th LPSC*, Houston, TX. Abstract 1479.
45. †**Thorpe, M. T.**, J. A. Hurowitz, and **K. L. Siebach**. (2019) Constraining the Climate of Ancient Mars Using Terrestrial Analogs. *50th LPSC*, Houston, TX. Abstract 1266.
44. Fraeman, A., R. Arvidson, L. Edgar, C. Fedo, W. Fischer, B. Horgan, J. L'Haridon, J. Grotzinger, N. Lanza, R. Milliken, R. ◊**Morris, M.** Salvatore, **K. L. Siebach, K.** Stack, L. Thompson, V. Sun, R. Wiens, and A. Williams. (2019) The Origin of Vera Rubin Ridge: Oxidative Weathering on Mars? *Goldschmidt2019*, Barcelona, Spain. Abstract 1030.
43. Fedo, C. M., J. P. Grotzinger, S. Gupta, S. Banham, K. Bennett, L. Edgar, V. Fox, A. Fraeman, C. House, K. Lewis, K. M. Stack, D. Rubin, **K. L. Siebach**, D. Sumner, V. Sun, and A. Vasavada. (2019) Evidence for Persistent, Water-Rich, Lacustrine Deposition Preserved in the Murray Formation, Gale Crater: A Depositional System Suitable for Sustained Habitability. *Ninth International Conference on Mars*, Pasadena, CA. Abstract 6308.
42. Fraeman, A. A., J. G. Catalano, L. A. Edgar, W. W. Fischer, J. P. Grotzinger, J. L'Haridon, N. Mangold, E. B. Rampe, K. M. Stack, A. R. Vasavada, R. E. Arvidson, C. M. Fedo, J. Frydenvang, B. Horgan, J. R. Johnson, S. S. Johnson, L. M. Thompson, R. E. Milliken, N. H. Thomas,…R. C. Wiens. (2019) Vera Rubin Ridge and Iron Oxide Bearing Sedimentary Rocks on Mars: The Integrated View from Curiosity and Orbital Data. *Ninth International Conference on Mars*, Pasadena, CA. Abstract 6237.

41. †**Payre, V.**, **K. L. Siebach**, R. Dasgupta, S. M. Morrison, E. B. Rampe, and A. Udry. (2019) Constraints on Martian Ancient Magmatic Processes Using Mineral Chemistry of Sedimentary Rocks in Gale Crater, Mars. *Ninth International Conference on Mars*, Pasadena, CA. Abstract 6231.
40. **Siebach, K. L.**, C. M. Fedo, E. B. Rampe, J. P. Grotzinger, L. M. Thompson, C. O'Connell-Cooper, L. E. Edgar, and A. A. Fraeman. (2019) Untangling Source-to-Sink Geochemical Signals in a ~3.5 Ga Martian Lake: Sedimentology and Geochemistry of the Murray Formation. *Ninth International Conference on Mars*, Pasadena, CA. Abstract 6048.
39. †**Payre, V.**, **K. L. Siebach**, R. Dasgupta, P. Antoshechkina, and E. Rampe. (2019) Explosive Volcanism on Early Mars: Explaining the Tridymite Layer in Gale Crater. *AGU Fall Meeting*, San Francisco, CA. Abstract P43D-3495.
38. †**Thorpe, M.** , E. Rampe, and **K. L. Siebach**. (2019) Clays and X-ray amorphous material in fine-grained basaltic sediments, Implications for the weathering history of Gale Crater, Mars. *AGU Fall Meeting*, San Francisco, CA. Abstract P51F-3420.

2018

37. Fedo, C. M., J. P. Grotzinger, J. Schieber, S. Gupta, C. H. House, K. S. Edgett, **K. L. Siebach**, A. A. Fraeman, L. A. Edgar, R. E. Kronyak, L. C. Kah, S. Gwizd, and A. Vasavada. (2018) Things Are Not Always as They Seem: Detangling Intersecting Planar and Curvi-Planar Veins and Fractures from Primary Bedding in the Vera Rubin Ridge Member, Murray Formation, Mars. *GSA Southeastern Section - 67th Annual Meeting*, Knoxville, TN. Abstract 5-5.
36. **Siebach, K. L.**, E. B. Rampe, and S. M. Morrison. (2018) Source Characteristics, Chemical Weathering, and Lithification of the Stimson Sandstone and Lessons for the Martian Sedimentary Record. *GSA Annual Meeting*, Indianapolis, Indiana. Abstract 15-9.
35. **Siebach, K. L.**, and S. M. McLennan. (2018) Re-Evaluating the CIA Paleoclimate Proxy on Mars at Curiosity's Drill Sites. *49th LPSC*, Houston, TX. Abstract 2694.
34. Rampe, E., T. Bristow, D. Blake, D. Vaniman, R. Morris, D. Ming, A. Yen, C. Achilles, S. Chipera, V. Tu, K. Edgett, J. Eigenbrode, R. Gellert, J. Grotzinger, S. Morrison, D. Des Marais, G. Downs, R. T. Downs, S. Gupta,…N. Lanza. (incl. **K. L. Siebach**) (2018) Evidence for Alteration and Diagenesis at Gale Crater, Mars from the Curiosity Rover (Invited). *AGU Fall Meeting*, Washington, DC. Abstract P43A-01.
33. Sun, V., K. Stack, L. Kah, A. Williams, L. Thompson, R. Wiens, S. J. VanBommel, S. S. Johnson, C. House, M. Nachon, W. W. Fischer, R. Kronyak, M. Minitti, **K. L. Siebach**, and D. Sumner. (2018) Diagenetic Concretions in the Murray Formation, Gale Crater, Mars. *AGU Fall Meeting*, Washington, DC. Abstract P43A-10.

2017

32. Hurowitz, J. A., J. P. Grotzinger, W. W. Fischer, S. M. McLennan, R. E. Milliken, N. Stein, A. R. Vasavada, D. F. Blake, E. DeHouck, J. L. Eigenbrode, A. G. Fairen, J. Frydenvang, R. Gellert, J. A. Grant, S. Gupta, K. E. Herkenhoff, D. W. Ming, E. B. Rampe, M. E. Schmidt,…R. C. Wiens. (incl. **K. L. Siebach**) (2017) Redox Stratification of an Ancient Lake in Gale Crater, Mars. *Fourth Conference on Early Mars: Geologic, Hydrologic, and Climatic Evolution and the Implications for Life*, Flagstaff, AZ. Abstract 3057.
31. **Siebach, K. L.**, M. B. Baker, J. P. Grotzinger, S. M. McLennan, R. Gellert, L. M. Thompson, and J. A. Hurowitz. (2017) Untangling Provenance Signals in Fluvio-Deltaic-Lacustrine Facies, Gale Crater, Mars. *SEPM Research Conference: Propagation of Environmental Signals within Source-to-Sink Stratigraphy*, Tremp & Ainsa, Spanish Pyrenees. Abstract p. 109-112.
30. Edgett, K. S., **K. L. Siebach, K.** M. Stack, L. A. Edgar, C. M. Fedo, N. T. Stein, F. Rivera-Hernandez, S. G. Banham, R. A. Yingst, and M. E. Minitti. (2017) Recognition and Observations of the Mafic Sandstones of Gale Crater, Mars, Using Curiosity's Mars Hand Lens Imager (MAHLI). *GSA Cordilleran Section - 113th Annual Meeting*, Hawaii.

29. Fedo, C. M., J. P. Grotzinger, S. Gupta, S. G. Banham, L. A. Edgar, K. Edgett, C. H. House, K. Lewis, M. E. Minitti, H. E. Newsom, F. Rivera-Hernandez, J. Schieber, **K. L. Siebach, K.** M. Stack, N. Stein, D. Y. Sumner, and A. Vasavada. (2017) Paleoenvironments and Stratigraphic Architecture of an Ancient Lake Basin, Gale Crater, Mars. *GSA Annual Meeting*, Seattle, WA. Abstract 232-8.
28. Fedo, C. M., J. P. Grotzinger, S. Gupta, N. T. Stein, J. Watkins, S. Banham, K. S. Edgett, M. Minitti, J. Schieber, **K. L. Siebach, K.** Stack-Morgan, H. Newsom, K. W. Lewis, C. House, and A. R. Vasavada. (2017) Facies Analysis and Basin Architecture of the Upper Part of the Murray Formation, Gale Crater, Mars. *48th LPSC*, Houston, TX. Abstract 1689.
27. Kronyak, R. E., L. C. Kah, C. M. Fedo, K. M. Stack, K. S. Edgett, and **K. L. Siebach**. (2017) Capping Units of the Murray Formation, Gale Crater, Mars: Salsberry Peak as a Pre-Stimson Formation Caprock. *48th LPSC*, Houston, TX. Abstract 1523.
26. **Siebach, K. L.**, S. M. McLennan, and C. M. Fedo. (2017) Geochemistry of the Stimson Sandstone, Gale Crater, Mars. *48th LPSC*, Houston, TX. Abstract 2499.
25. Ehlmann, B., K. Edgett, B. Sutter, C. Achilles, M. Litvak, M. Lapotre, R. Sullivan, A. Fraeman, R. Arvidson, D. Blake, N. Bridges, P. Conrad, A. Cousin, R. T. Downs, T. Gabriel, R. Gellert, V. Hamilton, C. Hardgrove, J. Johnson,…A. Yen. (2017) The Sands of the Bagnold Dunes, Mars and Volatiles in Mars Soils (Invited). *AGU Fall Meeting*, New Orleans, LA. Abstract P51H-10.
24. Lewis, K. W., C. Fedo, J. Grotzinger, S. Gupta, N. Stein, F. Rivera-Hernandez, J. Watkins, S. Banham, K. Edgett, M. Minitti, J. Schieber, L. Edgar, **K. L. Siebach,** K. Stack, H. Newsom, C. House, D. Sumner, and A. Vasavada. (2017) Paleo-environmental Setting of the Murray Formation of Aeolis Mons, Gale Crater, Mars, as Explored by the Curiosity Rover. *AGU Fall Meeting*, New Orleans, LA. Abstract P33F-01.
23. **Siebach, K.**, M. B. Baker, J. Grotzinger, S. McLennan, R. Gellert, L. M. Thompson, and J. Hurowitz. (2017) Mineral Fractionation during Sediment Comminution and Transport in Fluvio-Deltaic and Lacustrine Rocks of the Bradbury Group, Gale Crater, Mars (Invited). *AGU Fall Meeting*, New Orleans, LA. Abstract EP12B-05.

2016

22. **Siebach, K. L.**, S. M. McLennan, J. P. Grotzinger, R. Gellert, J. A. Hurowitz, and W. W. Fischer. (2016) Causes of Geochemical Diversity in Three Gale Crater Sedimentary Rock Formations. *GSA Annual Meeting*, Denver, CO. Abstract 20-12.
21. Hurowitz, J. A., J. P. Grotzinger, W. W. Fischer, R. E. Milliken, E. Dehouck, A. G. Fairen, J. Frydenvang, S. Gupta, S. M. McLennan, **K. L. Siebach,** K. Stack-Morgan, D. Y. Sumner, and R. C. Wiens. (2016) Dynamic Geochemical Conditions Recorded by Lakebed Mudstones in Gale Crater, Mars. *47th LPSC*, Houston, TX. Abstract 1751.
20. Mangold, N., L. M. Thompson, O. Forni, C. Fabre, L. Le Deit, R. C. Wiens, A. J. Williams, R. Williams, R. B. Anderson, D. L. Blaney, F. Calef, S. M. Clegg, A. Cousin, G. Dromart, W. E. Dietrich, K. S. Edgett, M. R. Fisk, O. Gasnault, R. Gellert,…A. Yingst. (2016) Chemistry of Conglomerates Analyzed by the Curiosity Rover. *47th LPSC*, Houston, TX. Abstract 1614.
19. Bristow, T., R. Haberle, D. Blake, D. Vaniman, J. Grotzinger, **K. L. Siebach**, D. Des Marais, E. Rampe, J. Eigenbrode, B. Sutter, A. Fairen, M. Mischna, and A. Vasavada. (2016) Constraining Hesperian Martian PCO2 from Mineral Analysis at Gale Crater. *Goldschmidt2016*, Yokohama, Japan. Abstract 306.
18. **Siebach, K.**, J. Grotzinger, J. Hurowitz, S. McLennan, W. Fischer, and R. Gellert. (2016) Sedimentary Petrology of the Murray Mudstone, Gale Crater, Mars. *Goldschmidt2016*, Yokohama, Japan. Abstract 2858.
17. Bristow, T., R. Haberle, D. Blake, D. Vaniman, J. Grotzinger, **K. L. Siebach**, D. Des Marais, E. Rampe, J. Eigenbrode, B. Sutter, A. Fairen, M. Mischna, and A. Vasavada. (2016) Constraining

Hesperian martian PCO2 from mineral analysis at Gale crater. *AGU Fall Meeting*, San Francisco, CA. Abstract P21C-2113.

16. Edgett, K., **K. L. Siebach**, J. Grotzinger, E. Heydari, G. M. Krezoski, M. R. Kennedy, and D. Fey. (2016) Curiosity Rover Mars Hand Lens Imager (MAHLI) Grain-Scale Observations of Silica-Enriched Fracture-Associated Halos in Stimson Formation Sandstones, Gale Crater, Mars. *AGU Fall Meeting*, San Francisco, CA. Abstract P11B-1859.

2015

15. **Siebach, K. L.**, J. P. Grotzinger, S. M. McLennan, M. B. Baker, R. Gellert, J. A. Hurowitz, and D. L. Blaney. (2015) Sorting out APXS Compositional Variations in Gale Crater Sedimentary Rocks, Mars. *GSA Annual Meeting*, Baltimore, MD. Abstract 94-2.
14. McLennan, S. M., E. Dehouck, J. P. Grotzinger, J. A. Hurowitz, N. Mangold, **K. L. Siebach**, and M. S. Team. (2015) Geochemical Record of Open-System Chemical Weathering at Gale Crater and Implications for Paleoclimates on Mars. *46th LPSC*, Houston, TX. Abstract 2533.
13. Rampe, E. B., R. V. Morris, D. L. Bish, S. J. Chipera, D. W. Ming, D. F. Blake, D. T. Vaniman, T. F. Bristow, P. Cavanagh, J. D. Farmer, S. M. Morrison, **K. L. Siebach**, A. H. Treiman, C. N. Achilles, D. Blaney, J. A. Crisp, D. J. Des Marais, R. T. Downs, K. Fendrich,…M. S. L. S. Team. (2015) Potential Cement Phases in Sedimentary Rocks Drilled by Curiosity at Gale Crater, Mars. *46th LPSC*, Houston, TX. Abstract 2038.
12. **Siebach, K. L.**, J. P. Grotzinger, S. M. McLennan, J. A. Hurowitz, D. W. Ming, D. T. Vaniman, E. B. Rampe, D. L. Blaney, L. C. Kah, and M. S. Team. (2015) Constraining the Texture and Composition of Pore-Filling Cements at Gale Crater, Mars. *46th LPSC*, Houston, TX. Abstract 2234.

2014

11. Williams, R. M. E., L. C. Kah, **K. L. Siebach**, J. P. Grotzinger, D. Y. Sumner, J. D. Farmer, R. A. Yingst, E. Heydari, D. Z. Oehler, and M. D. Dyar. (2014) Lithification of Sedimentary Rocks on Mars - A View from Curiosity. *GSA Annual Meeting*, Vancouver, British Columbia. Abstract 170-8.
10. Yingst, A. R., M. E. Minitti, K. S. Edgett, S. Gupta, E. Heydari, S. K. Rowland, and **K. L. Siebach**. (2014) Textures of Gale crater rocks as viewed by the Mars Hand Lens Imager (MAHLI): Mechanical aqueous alteration dominates. *GSA Annual Meeting*, Vancouver, British Columbia. Abstract 170-6.
9. **Siebach, K. L.**, and J. P. Grotzinger. (2014) Characterizing Sandstone Porosity Along Curiosity's Traverse Using MAHLI Imagery. *Eighth International Conference on Mars*, Pasadena, CA. Abstract 1466.
8. Yingst, R. A., M. E. Minitti, K. S. Edgett, E. Heydari, L. C. Kah, and **K. L. Siebach**. (2014) Textures of Gale Crater as Viewed by the Mars Hand Lens Imager (MAHLI). *Eighth International Conference on Mars*, Pasadena, CA. Abstract 1168.
7. Grotzinger, J., D. Blake, J. Crisp, K. Edgett, R. Gellert, S. Gupta, K. Lewis, P. Mahaffy, M. Malin, H. Newsom, T. J. Parker, M. Rice, D. Rubin, **K. L. Siebach, K.** Stack, D. Sumner, R. Wiens, and R. Williams. (2014) Geologic Framework for Aeolis Palus Bedrock, and Its Relationship to Mt. Sharp, Mars (Invited). *AGU Fall Meeting*, San Francisco, CA. Abstract P42C-01.
6. **Siebach, K.**, J. Grotzinger, S. McLennan, J. Hurowitz, L. Kah, K. Edgett, R. Williams, R. Wiens, and J. Schieber. (2014) Sandstone Diagenesis at Gale Crater, Mars, As Observed By Curiosity. *AGU Fall Meeting*, San Francisco, CA. Abstract P42C-07.

2013

5. Stack, K. M., J. P. Grotzinger, L. C. Kah, D. Y. Sumner, L. A. Edgar, M. S. Rice, D. Z. Oehler, A. Fairen, **K. L. Siebach**, and M. S. Team. (2013) The Distribution and Origin of Nodules and Minibowls within the Sheepbed Member: Implications for Early Diagenesis in Yellowknife Bay, Gale Crater, Mars. *GSA Annual Meeting*, Denver, CO. Abstract 227794.

4. **Siebach, K. L.**, and J. P. Grotzinger. (2013) Formation of Boxwork Structures on Mount Sharp, Gale Crater, Mars. *44th LPSC*, Houston, TX. Abstract 1875.

2010

3. Grant, J. A., D. Buczkowski, R. P. I. Irwin, and **K. L. Siebach**. (2010) A Lake in Uzboi Vallis and Implications for Late Noachian Climate on Mars. *41st LPSC*, Houston, TX. Abstract 1834.
2. **Siebach, K.**, R. Arvidson, N. Cabrol, and A. S. Team. (2010) Recent Spirit Results: Microscopic Imager Analysis of Particle Properties in Scamander Crater, West of Home Plate. *41st LPSC*, Houston, TX. Abstract 2548.

2009

1. Shaw, A., R. E. Arvidson, H. U. Keller, M. Lemmon, M. T. Mellon, A. Trebi-Ollennu, M. Robinson, **K. L. Siebach**, and R. Volpe. (2009) Phoenix Mission Trenching in Arctic Mars. *40th LPSC*, Houston, TX. Abstract 2097.

SCIENCE TEAM AND PROFESSIONAL MEMBERSHIPS

Mars 2020 Perseverance Rover Science and Operations Team Participating Scientist
Mars Science Laboratory Science and Operations Team Collaborator
Mars Exploration Rover Science and Operations Team
Phoenix Lander Geology Science and Operations Team
American Geophysical Union (AGU)
Geological Society of America (GSA)
American Association of Petroleum Geologists (AAPG)
Society for Sedimentary Geology (SEPM)
Houston Geological Society (HGS)
Ken Kennedy Institute (KKI)

FIELD AND TECHNICAL WORKSHOP EXPERIENCES

Gardnos Impact Crater, Norway with Mars 2020 Science Team	1 day, 6/2025
Portland, OR, Rice EEPS 203 Undergraduate Field Trip Seminar (teacher)	5 days, 2/2025
Churchill, CA with Rice Traveling Owls	5 days, 10/2024
Ridge Basin and Salton Sea, CA for Mars Analog Sampling	2 days, 5/2023
Iceland, Sandvatn and Apavatn, DIGMARS team	2 weeks, 6/2022
Iceland, Sandvatn Lake, Field work for SSW Proposal, DIGMARS team	9 days, 8/2021
Early Career Geoscience Faculty Workshop (virtual)	4 days, 7/2020
Albuquerque, NM, Rice ESCI 334 Geological Field Techniques Field Trip (TA)	4 days, 3/2019
Pix4D Software user workshop, Houston, TX	1 day, 1/2019
Belize Barrier Reef, Belize, Rice ESCI 516 Carbonates Field Trip	5 days, 10/2018
Western Australia, “Astrobiology Grand Tour”, NASA Astrobiology Institute	9 days, 7/2018
Mason, TX, Carbonate Reef trip led by Prof. Andre Droxler	3 days, 4/2018
Ainsa Basin, Spanish Pyrenees, SEPM Source-to-Sink Conference	5 days, 6/2017
Maine Bedrock, New England Intercollegiate Geological Conference	2 days, 9/2016
WY-MT-CO-SD, American Frontiers Trip, Schooling for Life (teacher)	2 weeks, 8/2016
Ireland Geological Field Camp, James Madison University (TA)	2 weeks, 6/2015
Mojave Desert, CA, Ge157 Remote Sensing Field Trip (TA)	2 days, 5/2015
Guadalupe Mountains, NM, ExxonMobil Geoscience Trip	7 days, 4/2015
Iceland, Geophysics and Planetary Surfaces Enrichment Trip, Caltech	2 weeks, 8/2014
Turks and Caicos, Ge110 Sedimentology Field Course, Caltech	10 days, 2/2014

Mojave Desert, CA, Ge151 Planetary Surfaces Field Trip, Caltech	2 days, 11/2013
Utah Sedimentology and Diagenesis GSA Field Trip, U. Nebraska	4 days, 10/2013
Greece, Geophysics Enrichment Course, Caltech	3 weeks, 9/2013
Belt Basin, MT, Agouron Field Course	10 days, 7/2013
Mojave Desert, CA, Ge157 Remote Sensing Field Trip (TA)	2 days, 5/2013
California Coast, CA, Ge136 Field Course, Caltech	3 days, 11/2012
Death Valley, CA, Ge110 Geomorphology Field Course, Caltech	9 days, 3/2012
Guadalupe Mountains, NM, Ge110 Sedimentology Field Course, Caltech	7 days, 3/2012
Baja Peninsula, Mexico, Ge136 Field Course, Caltech	3 days, 11/2011
Death Valley, CA, Ge112 Sedimentology, Caltech	3 days, 11/2011
White Sands NM, Pathfinder Program, Wash. U. St. Louis	7 days, 8/2010
The Big Island, HI, Volcano Seismology Field Camp, New Mexico Tech	2 weeks, 7/2010
Ireland Geological Field Camp, James Madison University	6 weeks, 5/2010
The Big Island, HI, Pathfinder Program, Wash. U. St. Louis	9 days, 1/2010
Ozarks, MO, Pathfinder Program, Wash. U. St. Louis	2 days, 10/2009
American Southwest, Survey Geological Trip, Wash. U. St. Louis	9 days, 5/2009
The Big Island, HI, Pathfinder Program, Wash. U. St. Louis	9 days, 1/2009
Mojave Desert, CA, Pathfinder Program, Wash. U. St. Louis	9 days, 3/2008

TECHNICAL SKILLS

Computer Programs: ArcGIS, ENVI, Matlab, Microsoft Office, NASA-MSLICE, NASA-MAESTRO, Tableau, Adobe Lightroom, Pix4D

Programming Languages: Matlab, IDL, some Java