

## Edwin S. Kite

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- Experience:** **Astera Institute**  
Resident, 2025 – 2027
- University of Chicago**  
Associate Professor (with tenure), 2022 –  
Assistant Professor, 2015-2021
- Princeton University**  
Harry Hess Fellow, 1/2014-12/2014. Joint postdoc, Astrophysics+Geoscience departments.
- California Institute of Technology**  
O.K. Earl Fellow, 1/2012-1/2014 (Divisional fellowship).
- Education:** **University of California, Berkeley (Ph.D., 2011)**  
Department of Earth and Planetary Science. Berkeley Fellowship.
- Cambridge University (M.Sci & B.A., 2007)**  
Natural Sciences Tripos. First Class.

### Awards and Distinctions:

Participating Scientist, Mars *Curiosity* rover 2022–  
Scialog Fellow 2020-2022.  
National Academy of Sciences - Committee on Astrobiology and Planetary Science  
2017–2022.  
American Geophysical Union - Greeley Early Career Award in Planetary Science 2016.  
Caltech O.K. Earl Postdoctoral Fellowship 2012-2013  
AAAS Newcomb Cleveland Prize 2009 (most outstanding *Science* paper; shared).  
High-school leaving examination results (A-levels) among the top five in England.

### Papers

- \_\_\_ = mentee or advisee  
citations ~7000, h-index 44, 22 publications in *Nature/Science/PNAS/Nature Geosci./  
Nature Astron./Science Advances* (12 as PI)
118. Turner, M., Banham, S., Hughes, E. B., Rivera-Hernandez, F., Rapin, W., Cowart, A., & **Kite, E.S.**, “GROUNDWATER ON MARS: POLYGONAL GROUND OBSERVED BY THE CURIOSITY ROVER”, submitted.
  117. Coy, B.P., Xue, Q., Weiner Mansfield, M., Eastman, J.D., Piette, A.A.A., Fairnington, T., Smith, C., Zhang, M., Kempton, E.M.R., Bean, J.L., Ji, X., Gao, P., Ih, J., Koll, D.D.B., Luque, R., Orell-Mquel, J., & **Kite, E.S.**, “AN ATMOSPHERE ON THE ULTRA-SHORT-PERIOD SUPER-EARTH HD 3167 B”, in review.
  116. Braude, A., **Kite, E.S.**, Richardson, M.I., Kling, A., & Mischna, M.A., “MODELLING THE LONG-TERM IMPACTS OF ARTIFICIAL WARMING ON THE MARTIAN WATER CYCLE AND SURFACE ICE DISTRIBUTION”, arXiv:2603.01539
  115. Hughes, E., and 21 others including **Kite, E.S.**, “EVIDENCE FOR SULFATE-RICH, WARM BRINES IN GALE CRATER, MARS,” in review
  114. Caracas, R., Chen, H., and **Kite, E.S.**, “LARGE-SCALE ATMOSPHERE DISSOLUTION IN MAGMA OCEANS IN EXOPLANETS,” resubmitted
  113. Davis, J.M., & 16 others including **Kite, E.S.**, LATE-STAGE DEBRIS FLOWS ERODED AEOLIS MONS IN GEDIZ VALLIS, GALE CRATER, MARS, resubmitted

112. Roberts, A.L., Gupta, S., Cowart, A., Edgar, L.A., Rapin, W., Dietrich, W.E., **Kite, E.S.**, Banham, S.G., & 20 others, “AN AEOLIAN DEPOSITIONAL SEQUENCE SHAPED BY NEAR-SURFACE WATER AT THE BASE OF THE LAYERED SULFATE UNIT, GALE CRATER, MARS,” minor revisions requested by *Journal of Geophysical Research*.
111. VanBommel, S.J., Berger, J.A., King, P.L., Dietrich, W.E., Gellert, R., Thompson, L.M., **Kite, E.S.**, and 16 others, “NATIVE SULFUR DISCOVERED IN GALE CRATER, MARS,” no further changes requested by reviewers at *Science*
110. Zieba, S., Kriedberg, L., Coy, B., Bello-Arufe, A., Paragas, K., Lyu, X., Hu, R., Iyer, A., **Kite, E.S.**, Koll, D., Wohlfarth, K., Whittaker, E., Knutson, H., Wordsworth, R., Morley, C., & Schaefer, L., JWST MID-INFRARED SPECTROSCOPY OF THE BARE ROCK LHS 3844 B REVEALS A DARK, FEATURELESS SURFACE,” in press at *Nature Astronomy* (2026)
109. Gasda, P.J., **Kite, E.S.**, Thompson, L.M., Mondro, C., Dietrich, W.E., Weitz, C.M., Tutolo, B., Farrand, W., Hausrath, E., Cowart, A., Lanza, N.L., Lewis, K.W., Gupta, S., Roberts, A., Goetz, W., & 53 others, “AMAPARI MARKER BAND METAL-ENRICHMENTS: POTENTIAL MECHANISMS AND IMPLICATIONS FOR SURFACE AND SUBSURFACE WATER AND WEATHERING IN GALE CRATER,” *Journal of Geophysical Research*, 131, e2025JE009153 (2026)
108. Richardson, M.I., Ansari, S., Fan, B., Ramirez, R., Mohseni, H., Mischna, M.A., Hecht, M.H., Steele, L.J., Sharipov, F., & **Kite, E.S.**, “ATMOSPHERIC DYNAMICS OF IR-ACTIVE PARTICLES RELEASED FROM MARS’ SURFACE,” *Geophysical Research Letters*, 53, e2025GL121051 (2026)
107. Turner, M. & **Kite, E.S.**, “PACING EARLY MARS SEDIMENTARY ROCK FORMATION,” *Geophysical Research Letters*, 53(4), e2025GL116530 (2026)
106. Ji, X., Chatterjee, R., Coy, B., & **Kite, E.S.**, THE COSMIC SHORELINE REVISITED: A METRIC FOR ATMOSPHERIC RETENTION INFORMED BY HYDRODYNAMIC ESCAPE,” *Astrophysical Journal*, 992, 198 (2025)
105. Xue, Q., Zhang, M., Coy, B. P., Brady, M., Ji, X., Bean, J. L., Radica, M., Seifahrt, A., Sturmer, J., Luque, R., Basant, R., Brown, N., Das, T., Kasper, D., Piaulet-Ghorayeb, C., Kempton, E. M.-R., and **Kite, E.S.**, “THE JWST ROCKY WORLDS DDT PROGRAM REVEALS GJ 3929B TO LIKELY BE A BARE ROCK,” *Astrophysical Journal Letters*, 995, L52 (2025)
104. Coy, B.P., Ih, J., **Kite, E.S.**, Koll, D., Tenthoff, M., Bean, J., Weiner Mansfield, M., Zhang, M., Xue, Q., Kempton, E. M.-R., Wohlfarth, K., Hu, R., Lyu, X., & Wöhler, C., “POPULATION-LEVEL HYPOTHESIS TESTING WITH ROCKY PLANET EMISSION DATA: A TENTATIVE TREND IN THE BRIGHTNESS TEMPERATURE OF M-EARTHS,” *Astrophysical Journal*, 987, 22 (2025)
103. **Kite, E.S.**, Tutolo, B.M., Turner, M., Franz, H., Burt, D.G., Bristow, T.F., Fischer, W.W., Milliken, R., Fraeman, A.A., & Zhou, D., “CARBONATE FORMATION AND FLUCTUATING HABITABILITY ON MARS,” *Nature* 643, 60-66 (2025)
102. **Kite, E.S.**, Gasda, P., Weitz, C., Thompson, L., Tutolo, B., Mondro, C., Farrand, W., Gupta, S., Schieber, J., Dietrich, W.E., Mangold, N., Lewis, K.W., & Sletten, R.S., “HYPOTHESES FOR THE WATER AND METAL FLUXES TO THE RIPPLED AMAPARI MARKER BAND, GALE CRATER, MARS,” *Earth & Planetary Science Letters*, 660, 119347 (2025).
101. Loftus, K., Luo, Y., Fan, B., & **Kite, E.S.**, “EXTREME WEATHER VARIABILITY ON HOT ROCKY EXOPLANET 55 CANCRI E EXPLAINED BY MAGMA TEMPERATURE-CLOUD FEEDBACK,” *Proceedings of the National Academy of Sciences*, 122(17), e2423473122 (2025)
100. DeBenedictis, E.A., **Kite, E.S.**, Wordsworth, R.D., Lanza, N.L., Cockell, C.S., Silver, P.A., Ramirez, R.M., Cumbers, J., Mohseni, H., Mason, C.E., Fischer, W.W., &

- McKay, C.P., “THE CASE FOR MARS TERRAFORMING RESEARCH,” *Nature Astronomy*, 9, 634-639 (2025)
99. Villette, J., Mangold, N., **Kite, E.S.**, Conway, S.J., and Le Deit, L., “THE SPORADIC FLUVIAL REGIME OF PLIVA VALLIS, THE OUTLET VALLEY OF JEZERO CRATER LAKE, MARS,” *Journal of Geophysical Research – Planets*, 130(5), e2024JE008862 (2025)
  98. Luque, R., Coy, B. P., Xue, Q., Feinstein, A.D., Ahrer, E.-A., Changeat, Q., Zhang, M., Moran, S.E., Bean, J.L., **Kite, E.S.**, Weiner Mansfield, M., & Pallé, E. “A DARK, BARE ROCK FOR TOI-1685 B FROM A JWST NIRSPEC G395H PHASE CURVE,” *Astronomical Journal*, 170, 49 (2025)
  97. Coy, B.P., & **Kite, E.S.**, & Graham, R.J., “THE ROLE OF TECTONIC LUCK IN LONG-TERM HABITABILITY OF ABIOTIC EARTH-LIKE PLANETS,” *Planetary Science Journal*, 6, 218 (2025).
  96. Turner, M.L., Khan, S.Y., Lewis, K.W., Noblet, A., and **Kite, E.S.**, “EARLY THINNING, LATE PERSISTENCE, DIACHRONOUS BOUNDARIES, AND A REGIONAL DICHOTOMY IN MARS’ YOUNG SEDIMENTARY ROCKS,” *Communications Earth & Environment*, 6, 869 (2025)
  95. Davis, J., Gupta, S., Grindrod, P., Banham, S., Rudolph, A., Wilson Purdy, S., Grant, J., Williams, R., **Kite, E.S.**, Roberts, A., Harris, E., and Paar, G., “LATE-STAGE AQUEOUS ACTIVITY AT GALE CRATER, MARS, RECORDED BY SEDIMENT FANS,” *Journal of Geophysical Research – Planets*, 130(3), e2024JE008808 (2025)
  94. Zhou, D.Y., Turner, M.L., Rapin, W., Schieber, J., Roberts, A.L., Cowart, A.C., Hoffman, M.E., Hallet, B., Banham, S.G., Fey, D., Lewis, K.W., Gupta, S., Newman, C.E., Vasavada, A.R., Sullivan, R.J., Weitz, C.M., Dietrich, W.E., Grant, J.A., Viúdez-Moreiras, D., & **Kite, E.S.**, “HOW DOES TOPOGRAPHY AFFECT ABRASIVE WIND FLOW ON MARS?”, *Icarus*, 437, 116605 (2025)
  93. Roberts, A., Gupta, S., Banham, S., Cowart, A., Edgar, L., Rapin, W., Davis, J., **Kite, E.S.**, and 12 others, “PALEO-SCOURS WITHIN THE LAYERED SULFATE-BEARING UNIT AT GALE CRATER, MARS: EVIDENCE FOR INTENSE WIND EROSION”, *Journal of Geophysical Research – Planets* 130(5), e2024JE008680 (2025)
  92. Barclay, T., & 34 others including **Kite, E.S.**, “THE TRANSMISSION SPECTRUM OF THE POTENTIALLY ROCKY PLANET L 98-59 C,” *Astronomical Journal*, 169, 241 (2025).
  91. Bryk, A.B., Dietrich, W.E., Bennett, K.A., Fox, V.K., Fedo, C.M., Lamb, M.P., **Kite, E.S.**, and 33 others, “PEDIMENT FORMATION AND SUBSEQUENT EROSION IN GALE CRATER: CLUES TO CLIMATE HISTORY OF MARS”, *Icarus*, 430, 116445 (2025)
  90. Mondro, C.A., and 21 others including **Kite, E.S.**, “DEPOSITIONAL ENVIRONMENT OF THE AMAPARI MARKER BAND: RISING WATER LEVELS FORMED KILOMETER-SCALE LAKE IN GALE CRATER, MARS”, *Journal of Geophysical Research - Planets*, 130(3), e2024JE008606 (2025)
  89. Mondro, C.A., and 14 others including **Kite, E.S.**, “WAVE RIPPLES FORMED IN ANCIENT, ICE-FREE LAKES IN GALE CRATER, MARS”, *Science Advances*, 11, eadr0010 (2025)
  88. Tutolo, B.M., Hausrath, E.M., **Kite, E.S.**, Rampe, E.B., Bristow, T.F., Downs, R.T., Peretyazhko, T., Thorpe, M.T., Grotzinger, J., Archer, D., Des Marais, D., Blake, D.F., Vaniman, D.T., Morrison, S.M., Chipera, S., Hazen, R.M., Morris, R.V., Tu, V.M., & 18 others, “CARBONATES IDENTIFIED BY THE CURIOSITY ROVER INDICATE A CARBON CYCLE OPERATED ON ANCIENT MARS,” *Science*, 388, 292-297 (2025)
  87. Ansari, S., **Kite, E.S.**, Ramirez, R., Steele, L.J., & Mohseni, H., “FEASIBILITY OF KEEPING MARS WARM WITH NANOPARTICLES,” *Science Advances* 10, eadn4650 (2024)
  86. Weiner Mansfield, M., Xue, Q., Zhang, M., Mahajan, A., Ih, J., Koll, D., Bean, J.K., Coy, B.P., Eastman, J.D., Kempton, E. M.-R., & **Kite, E.S.**, “NO THICK ATMOSPHERE

- ON THE TERRESTRIAL EXOPLANET GL 486B,” *Astrophysical Journal Letters*, 975, L22 (2024)
85. Warren, A.O., Wilson, S.A., Howard, A., Noblet, A., & **Kite, E.S.**, “MULTIPLE OVERSPILL FLOOD CHANNELS FROM YOUNG CRATERS REQUIRE SURFACE MELTING AND HUNDREDS OF METERS OF MID-LATITUDE ICE LATE IN MARS HISTORY,” *Planetary Science Journal*, 5, 174 (2024)
  84. Xue, Q., Bean, J.L., Zhang, M., Mahajan, A., Ih, J., Eastman, J.D., Lunine, J., Weiner Mansfield, M., Coy, B.P., Kempton, E., Koll, D., & **Kite, E. S.** “JWST THERMAL EMISSION OF THE TERRESTRIAL EXOPLANET GJ 1132B,” *Astrophysical Journal Letters*, 973, L8 (2024).
  83. D.G. Burttt, J.C. Stern, C.R. Webster, H.B. Franz, B. Sutter, M.T. Thorpe, **E.S. Kite**, J.L. Eigenbrode, A.A. Pavlov, C.H. House, B.M. Tutolo, D.J. Des Marais, E.B. Rampe, A.C. McAdam, C.A. Malespin, “HIGHLY ENRICHED CARBON AND OXYGEN ISOTOPES IN CARBONATE-DERIVED CO<sub>2</sub> AT GALE CRATER, MARS,” *Proceedings of the National Academy of Sciences*, 121 (42) e2321342121, (2024)
  82. A. Rudolph, B. Horgan, K. Bennett, C. Weitz, R. Sheppard, S. G. Banham, A. B. Bryk, **E. Kite**, A. Roberts, L. Scuderi, “AN ORBITAL COMPARISON OF A LATE MANTLING UNIT ON AEOLIS MONS WITH OTHER EROSION RESISTANT STRATA EXPLORED BY MARS SCIENCE LABORATORY IN GALE CRATER, MARS,” *Journal of Geophysical Research - Planets*, 129(8), e2023JE008242 (2024)
  81. Doyon, R., & 68 others including **Kite, E.S.**, “A ROADMAP FOR THE ATMOSPHERIC CHARACTERIZATION OF TERRESTRIAL EXOPLANETS WITH JWST”, *Nature Astronomy*, 8, 810-818 (2024)
  80. **Kite, E.S.**, & Conway, S., “GEOLOGIC EVIDENCE FOR MULTIPLE CLIMATE TRANSITIONS ON EARLY MARS,” *Nature Geoscience*, 17, 10-19 (2024)
  79. Dai, F., & 76 others including **Kite, E.S.**, “AN EARTH-SIZED PLANET ON THE VERGE OF TIDAL DISRUPTION”, *Astronomical Journal*, 168(3), 101 (2024)
  78. Meyer, M.J, Milliken, R. E., Stack, K. M., Edgar, L. A., Rampe, E. B., Turner, M.L., Lewis, K. W., **Kite, E.S.**, Caravaca, G., Vasavada, A.R., Dietrich, W.E., Bryk, A.B., Gasnault, O., Le Mouélic, S., Seeger, C.H., & Sheppard, R.Y., “THE GEOLOGICAL CONTEXT AND SIGNIFICANCE OF THE CLAY-SULFATE TRANSITION REGION IN MOUNT SHARP, GALE CRATER, MARS: AN INTEGRATED ASSESSMENT BASED ON ORBITER AND ROVER DATA,” *Geological Society of America Bulletin*, doi:10.1130/B37355.1 (2024)
  77. Gu, J., Peng, B., Ji, X., Zhang, J., Yang, H., Hoyos, S., Hirschmann, M.M., **Kite, E.S.**, & Fischer, R.A., “COMPOSITION OF EARTH’S INITIAL ATMOSPHERE AND FATE OF ACCRETED VOLATILES SET BY CORE FORMATION AND MAGMA OCEAN REDOX EVOLUTION,” *Earth & Planetary Science Letters*, 629, 118618 (2024)
  76. Hu, R., Gaillard, F., & **Kite, E.S.**, “NARROW LOOPHOLE FOR H<sub>2</sub>-DOMINATED ATMOSPHERES ON HABITABLE ROCKY PLANETS AROUND M DWARFS,” *Astrophysical Journal Letters*, 948, L20 (2023)
  75. Peterson, M., Benneke, B., Collins, K., Piaulet, C., Crossfield, I.J.M., Ali-Dib, M., Christiansen, J.L., Gagné, J., Faherty, J., **Kite, E.S.**, & 58 others, “A TEMPERATE EARTH-SIZED PLANET WITH TIDAL HEATING TRANSITING AN M6 STAR,” *Nature*, 617, 701-705 (2023).
  74. Fan, B., Jansen, M., Mischna, M.A., and **Kite, E.S.**, “WHY ARE MOUNTAINTOPS COLD? THE TRANSITION OF SURFACE LAPSE RATE ON DRY PLANETS,” *Geophysical Research Letters*, 50, 23, e2023GL106683 (2023)
  73. Butkus, C.R., Warren, A.O., **Kite, E.S.**, Torres, S., Naoz, S., & Glass, J.B., A NOTE ON GRAPHITE HYDROGENATION AS A SOURCE OF ABIOTIC METHANE ON ROCKY PLANETS: A CASE STUDY FOR MERCURY,” *Icarus*, 400, 115580 (2023)

72. Ji, X., Bailey, N., Fabrycky, D., **Kite, E.S.**, Jiang, J.H., & Abbot, D.S., “INNER HABITABLE ZONE BOUNDARY FOR ECCENTRIC EXOPLANETS,” *Astrophysical Journal Letters*, 943, 1 (2023)
71. Rapin, W., Dromart, G., Clark, B.C., Schieber, J., **Kite, E.S.**, Kah, L.C., Thomson, L.M., Meslin, P-Y., Gasnault, O., Gasda, P.J., & Lanza, N.L., “IN SITU EVIDENCE FOR SUSTAINED WET-DRY CYCLING ON EARLY MARS,” *Nature*, 620, 299-302 (2023)
70. Warren, A.O., & **Kite, E.S.**, “NARROW RANGE OF EARLY HABITABLE VENUS SCENARIOS PERMITTED BY MODELING OF OXYGEN LOSS AND RADIOGENIC ARGON DEGASSING,” *Proceedings of the National Academy of Sciences*, 120(11), e2209751120 (2023)
69. Zaki, A.S., Edgett, K.S., Pajola, M., **Kite, E.S.**, Davis, J.M., Madof, A.S., Grindrod, P., Gupta, S., Hughes, C.M., Sangwang, K., Thomas, N., Cremonese, G., & Castellort, S., “PROLONGED RECORD OF HYDROCLIMATIC CHANGES AT ANTONIADI CRATER, MARS”, *Journal of Geophysical Research – Planets*, 128, e2022JE007606 (2023)
68. Jansen, M.F., Kang, W., **Kite, E.S.**, & Zeng, Y., “ENERGETIC CONSTRAINTS ON OCEAN CIRCULATIONS OF ICY OCEAN WORLDS,” *Planetary Science Journal*, 4, 117 (2023)
67. Brinkman, C.L., Weiss, L.M., Dai, F., Huber, D., **Kite, E. S.**, & 21 others, “TOI-561 B: A LOW DENSITY ULTRA-SHORT PERIOD “ROCKY” PLANET AROUND A METAL-POOR STAR”, *Astronomical Journal*, 165, 88 (2023)
66. **Kite, E.S.**, & Noblet, A., “HIGH AND DRY: BILLION-YEAR TRENDS IN THE ARIDITY OF RIVER-FORMING CLIMATES ON MARS,” *Geophysical Research Letters*, 49(24), e2022GL101150 (2022)
65. Whittaker, E.A., Malik, M., Ih, J., Kempton, E. M.-R., Mansfield, M., Bean, J.L., **Kite, E.S.**, Koll, D.D.B., Cronin, T.W., & Hu, R., “THE DETECTABILITY OF ROCKY PLANET SURFACE AND ATMOSPHERE COMPOSITION WITH JWST: THE CASE OF LHS 3844B”, arXiv:2207.08889, *Astronomical Journal*, 164, 258 (2022)
64. Damiano, M., & 22 others including **Kite, E.S.**, “A TRANSMISSION SPECTRUM OF THE SUB-EARTH PLANET L98-59 B IN 1.1 - 1.7  $\mu\text{m}$ ,” *Astronomical Journal* 164, 225 (2022)
63. Li, A., **Kite, E.S.**, & Keating, K.A., “THE AGE AND EROSION RATE OF YOUNG SEDIMENTARY ROCK ON MARS,” *Planetary Science Journal*, 3, 246 (2022)
62. **Kite, E.S.**, Mischna, M.A., Fan, B., Morgan, A.M., Wilson, S.A., & Richardson, M.A., “CHANGING SPATIAL DISTRIBUTION OF WATER FLOW CHARTS MAJOR CHANGE IN MARS GREENHOUSE EFFECT,” *Science Advances*, 8, eabo5894 (2022)
61. **Kite, E.S.**, & Schaefer, L., “WATER ON HOT ROCKY EXOPLANETS,” *Astrophysical Journal Letters* 909:L22 (2021)
60. Holo, S.J., **Kite, E.S.**, Wilson, S.A., & Morgan, A.M. “THE TIMING OF ALLUVIAL FAN FORMATION ON MARS,” *Planetary Science Journal*, 2, 210 (2021)
59. Fan, B., Shaw, T.A., Tan, Z., & **Kite, E.S.**, “REDUCING SURFACE WETNESS LEADS TO TROPICAL HYDROLOGICAL CYCLE REGIME TRANSITION,” *Geophysical Research Letters*, 48(8), e2020GL090746 (2021)
58. Stucky de Quay, G., Goudge, T.A., **Kite, E.S.**, Fassett, C.I., & Guzewich, S.D., “LIMITS ON RUNOFF EPISODE DURATION FOR EARLY MARS: INTEGRATING LAKE HYDROLOGY AND CLIMATE MODELS,” *Geophysical Research Letters*, 48(15), e2021GL093523 (2021)
57. **Kite, E.S.**, Steele, L.J., Mischna, M.A., & Richardson, M.I., “WARM EARLY MARS SURFACE ENABLED BY HIGH-ALTITUDE WATER ICE CLOUDS,” *Proceedings of the National Academy of Sciences*, 118(18), e2101959118 (2021)
56. Hu, R., Damiano, M., Scheucher, M., **Kite, E.S.**, Seager, S., & Rauer, H., “UNVEILING SHROUDED OCEANS ON TEMPERATE SUB-NEPTUNES VIA TRANSIT SIGNATURES OF SOLUBILITY EQUILIBRIA VS. GAS THERMOCHEMISTRY,” *Astrophysical Journal Letters*, 921:L8 (2021)

55. Liu, Z., Liu, Y., Pan, L., Zhao, J., **Kite, E.S.**, Wu, Y., & Zou, Y., “INVERTED CHANNEL BELTS AND FLOODPLAIN CLAYS TO THE EAST OF TEMPE TERRA, MARS: IMPLICATIONS FOR PERSISTENT FLUVIAL ACTIVITY ON EARLY MARS,” *Earth & Planetary Science Letters*, 562, 116854 (2021)
54. Ermakov, A., and 15 others including **Kite, E.S.**, “A RECIPE FOR GEOPHYSICAL EXPLORATION OF ENCELADUS,” *Planetary Science Journal*, 2, 157 (2021)
53. Warren, A.O., Holo, S., **Kite, E.S.**, & Wilson, S.A. “OVERSPILLING SMALL CRATERS ON A DRY MARS: INSIGHTS FROM BREACH EROSION MODELING,” *Earth & Planetary Science Letters*, 554, 116671, 11 pp. (2020)
52. **Kite, E.S.** & Barnett, M.N., 2020, “EXOPLANET SECONDARY ATMOSPHERE LOSS AND REVIVAL,” *Proceedings of the National Academy of Sciences*, 117(31), 18264-18271 (2020)
51. **Kite, E.S.**, Fegley, B., Schaefer, L., & Ford, E.B., “ATMOSPHERE ORIGINS FOR EXOPLANET SUB-NEPTUNES,” *Astrophysical Journal*, 891:111, 16 pp. (2020)
50. Heard, A., & **Kite, E.S.**, “A PROBABILISTIC CASE FOR A LARGE MISSING CARBON SINK ON MARS AFTER 3.5 BILLION YEARS AGO,” *Earth & Planetary Science Letters*, 531, 116001, 13 pp. (2020)
49. Holo, S., & **Kite, E.S.**, “THE SPATIAL SIGNATURE OF A CHANGING ANCIENT IMPACTOR POPULATION FOR MARS,” *Icarus*, 337, 113447, 6 pp. (2020)
48. **Kite, E.S.**, Mischna, M., Gao, P., Yung, Y., & Turbet, M., “METHANE RELEASE ON EARLY MARS BY ATMOSPHERIC COLLAPSE AND ATMOSPHERIC REINFLATION,” *Planetary & Space Science*, 181, 104820, 17 pp. (2020)
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46. **Kite, E.S.**, Mayer, D.P., Wilson, S., Davis, J., Lucas, A.S., & Stucky de Quay, G., “PERSISTENCE OF INTENSE, CLIMATE-DRIVEN RUNOFF LATE IN MARS HISTORY,” *Science Advances*, 5(3), eaav7710 (2019)
45. **Kite, E.S.**, Fegley, B., Schaefer, L., & Ford, E.B., “SUPERABUNDANCE OF EXOPLANET SUB-NEPTUNES EXPLAINED BY FUGACITY CRISIS,” *Astrophysical Journal Letters*, 887:L33 (2019)
44. **Kite, E.S.**, “GEOLOGIC CONSTRAINTS ON EARLY MARS CLIMATE,” *Space Science Reviews*, 215:10, 47 pp. (2019)
43. Warren, A.O., **Kite, E.S.**, Williams, J.-P., & Horgan, B., “THROUGH THE THICK AND THIN: NEW CONSTRAINTS ON MARTIAN PALEOPRESSURE HISTORY 3.8-4 GA FROM SMALL EXHUMED CRATERS,” *Journal of Geophysical Research – Planets*, 124, 2793-2818 (2019)
42. Stucky de Quay, G., **Kite, E.S.**, & Mayer, D.P., “PROLONGED FLUVIAL ACTIVITY FROM CHANNEL-FAN SYSTEMS ON MARS,” *Journal of Geophysical Research – Planets*, 124, 3119–3139 (2019)
41. **Kite, E.S.**, & Melwani Daswani, M., “GEOCHEMISTRY CONSTRAINS GLOBAL HYDROLOGY ON EARLY MARS,” *Earth & Planetary Science Letters*, 524, 115718, 10 pp. (2019)
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34. Seybold, H.J., **Kite, E.S.**, & Kirchner, J., “BRANCHING GEOMETRY OF VALLEY NETWORKS ON MARS AND EARTH AND ITS IMPLICATIONS FOR EARLY MARTIAN CLIMATE,” *Science Advances*, 4(6), eaar6692 (2018)
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31. Gabasova, L., & **Kite, E.S.**, “COMPACTION AND SEDIMENTARY BASIN ANALYSIS ON MARS,” *Planetary & Space Science*, 152, 86–106 (2018)
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29. **Kite, E.S.**, Gaidos, E., & Onstott, T.C., “VALUING LIFE DETECTION MISSIONS,” *Astrobiology*, 18, 834–840 (2018)
28. **Kite, E.S.**, Gao, P., Goldblatt, C., Mischna, M., Mayer, D.P., & Yung, Y., “METHANE BURSTS AS A TRIGGER FOR INTERMITTENT LAKE-FORMING CLIMATES ON POST-NOACHIAN MARS,” *Nature Geoscience*, 10, 737–740 (2017)
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26. Melwani Daswani, M., & **Kite, E.S.**, “PALEOHYDROLOGY ON MARS CONSTRAINED BY MASS BALANCE AND MINERALOGY OF PRE-AMAZONIAN SODIUM CHLORIDE LAKES: DEEP GROUNDWATER NOT REQUIRED”, *Journal of Geophysical Research – Planets*, 122, 1802–1823 (2017)
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23. **Kite, E.S.**, Fegley, B., Schaefer, L., & Gaidos, E., “ATMOSPHERE-INTERIOR EXCHANGE ON HOT ROCKY EXOPLANETS,” *Astrophysical Journal*, 828, 80, 20 pp (2016)
22. **Kite, E.S.**, Sneed, J., Mayer, D.P., Lewis, K.W., Michaels, T.I., Hore, A., & Rafkin, S.C.R., “EVOLUTION OF MAJOR SEDIMENTARY MOUNDS ON MARS,” *Journal of Geophysical Research – Planets*, 121, 2282–2324 (2016)
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17. Borlina, C., Ehlmann, B.L., & **Kite, E.S.**, “MODELING THE THERMAL AND PHYSICAL EVOLUTION OF MOUNT SHARP’S SEDIMENTARY ROCKS, GALE CRATER, MARS,” *Journal of Geophysical Research – Planets*, 120, 1396–1414 (2015)
16. **Kite, E.S.**, Williams, J.-P., Lucas, A., & Aharonson, O., “LOW PALAEOPRESSURE OF THE MARTIAN ATMOSPHERE ESTIMATED FROM THE SIZE DISTRIBUTION OF ANCIENT CRATERS,” *Nature Geoscience*, 7, 335–339 (2014)
15. **Kite, E.S.**, Lewis, K.W., Lamb, M.P., Newman, C.E., & Richardson, M.I., “GROWTH AND FORM OF THE MOUND IN GALE CRATER, MARS: SLOPE-WIND ENHANCED EROSION AND TRANSPORT,” *Geology*, 41, 543–546 (2013) (Science “Highlight of the Meeting”: Science, 338, 1522).
14. **Kite, E.S.**, Halevy, I., Kahre, M.A., Manga, M., & Wolff, M., “SEASONAL MELTING AND THE FORMATION OF SEDIMENTARY ROCKS ON MARS,” *Icarus*, 223, 181–210 (2013a)
13. **Kite, E.S.**, Lucas, A., & C.I. Fassett, “PACING EARLY MARS RIVER ACTIVITY,” *Icarus*, 225, 850–855 (2013b)
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11. Mangold, N., **Kite, E.S.**, Kleinhans, M., Newsom, H.E., Ansan, V., Hauber, E., Kraal, E., Quantin-Nataf, C. & K. Tanaka, “THE ORIGIN AND TIMING OF FLUVIAL ACTIVITY AT EBERSWALDE CRATER, MARS,” *Icarus*, 220, 530–551 (2012)
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8. **Kite, E.S.**, Gaidos, E. & M. Manga, “CLIMATE INSTABILITY ON TIDALLY LOCKED EXOPLANETS,” *Astrophysical Journal*, 743, 41, 12 pp. (2011)
7. **Kite, E.S.**, Rafkin, S.C.R., Michaels, T.I., Dietrich, W.E., & Manga, M., “CHAOS TERRAIN, STORMS, AND PAST CLIMATE ON MARS,” *Journal of Geophysical Research – Planets*, 116, E10002, 26 pp. (2011)
6. **Kite, E.S.**, Michaels, T.I., Rafkin, S.C.R., Manga, M., & W.E. Dietrich, “LOCALIZED PRECIPITATION AND RUNOFF ON MARS,” *Journal of Geophysical Research – Planets*, 116, E07002, 20 pp. (2011)
5. Chiang, E., **Kite, E.**, Kalas, P., Graham, J. R., & Clampin, M., “FOMALHAUT’S DEBRIS DISK AND PLANET: CONSTRAINING THE MASS AND ORBIT OF FOMALHAUT B USING DISK MORPHOLOGY,” *Astrophysical Journal*, 693, 734–749 (2009)
4. **Kite, E.S.**, Matsuyama, I., Manga, M., Perron, J.T., & Mitrovica, J.X., “TRUE POLAR WANDER DRIVEN BY LATE-STAGE VOLCANISM AND THE DISTRIBUTION OF PALEOPOLAR DEPOSITS ON MARS,” *Earth Planet. Sci. Lett.*, 280, 254–267 (2009)

3. **Kite, E.S.**, Manga, M., & Gaidos, E., “GEODYNAMICS AND RATE OF VOLCANISM ON MASSIVE EARTH-LIKE PLANETS,” *Astrophysical Journal*, 700, 1732–1749 (2009)
2. Kalas, P., Graham, J. R., Chiang, E., Fitzgerald, M. P., Clampin, M., **Kite, E. S.**, Stapelfeldt, K., Marois, C., & Krist, J., “OPTICAL IMAGES OF A PLANET 25 LIGHT YEARS FROM EARTH,” *Science*, 322, 1345–1348 (2008) (*Science* #2 “Breakthrough of the Year”).
1. **Kite, E.S.**, & R.C.A. Hindmarsh, “DID ICE STREAMS SHAPE THE LARGEST CHANNELS ON MARS?,” *Geophysical Research Letters*, 34, L19202, 5 pp. (2007)

## Advising

Ph.D. program advisor for:

Samuel Holo (Ph.D. 2021)

Alexandra (Sasha) Warren (Ph.D. 2023)

Bowen Fan (Ph.D. 2025)

Brandon Coy (2027 - anticipated).

Postdoctoral advisor for:

Mohit Melwani Daswani (Jun 2015–Apr 2017), Liam Steele (Jan 2017–Aug 2018),

& Madison (Maddy) Turner (Oct 2023–Dec 2025).

Visiting graduate student advisor for:

Gaia Stucky de Quay (Imperial College London) (3/2018–9/2018) & Martin Turbet (U. Paris) (9/2018–12/2018; advising jointly with D. Abbot), Gwenaël Van Looveren (U. Vienna) (9/2023–10/2023), & Justine Villette (U. Nantes) (9/2024–12/2024).

Senior thesis advisor for: An Li (2021), and James Hu (2022).

Summer project / visiting student advisor for:

Bowen Fan (Peking U. senior, 2017) & Leila Gabasova (U. Paris predoc, 2015).

Ph. D. or MSci thesis advisory committee for:

Nathan Baskin (MSci, 2016), Andrew Malone (Ph.D., 2017), Matouš Ptáček (MSci, 2018), Predrag Popovic (Ph.D., 2020), Adrien Sy (MSci, 2020), Megan Mansfield (Ph.D., 2021; I was the primary advisor for Mansfield’s M.Sci thesis), Jade Checlair (Ph.D. 2021), Jennika Greer (Ph.D. 2022), Jisheng Zhang (Department of Astronomy & Astrophysics, Ph.D. 2023), Xinyi (Camilla) Liu (on committee 2019–2022, Ph.D. 2024), Daniel Zhou (MSci, 2025), Xuan Ji (Ph.D. 2026 - anticipated), Yaoxuan Zeng (Ph.D. 2026 - anticipated), and Qiao Xue (Ph.D. 2028 - anticipated).

## Former lab members and former visitors:

Mohit Melwani Daswani, postdoc Jun 2015–Mar 2017

(*now Associate Professor at Institute of Science Tokyo*).

Liam Steele, postdoc Feb 2017–Aug 2018 (*now Research Scientist at ECMWF*).

Sam Holo, graduate student 2016–2020 (*now at McKinsey & Company*).

Megan Mansfield, graduate student (co-advised) 2016–2018

(*now Assistant Professor at University of Maryland*).

Sasha Warren, graduate student 2018–2023 (*now at World Wide Technology*).

Gaia Stucky de Quay, visiting graduate student Mar–Sep 2018

(*now Assistant Professor at MIT*).

Bowen Fan, graduate student 2019–2025

(*now Skinner Postdoctoral Fellow at Yale*).

Jonathan Sneed, full-time Mars research assistant 2016–2018

(*now in the Planetary Science Ph.D. program at UCLA*).

David Mayer, planetary GIS/data specialist 2015–2017

(*now at US Geological Survey Astrogeology Program, Flagstaff, AZ*).

An Li, 2020–2021 senior thesis student.

(*now in the Planetary Science Ph.D. program at the University of Washington*).

**Invited talks** Gordon Conference (Climate Engineering, 2026); U. Washington (2026, 2015); UC Santa Cruz (2026, 2020\*, 2011, 2009); FISO (2026); Harvard (2025); MIT (2025, 2021); Stanford (2025); Princeton University (2025, 2021, 2013); Institute for Advanced Study (2025); Berkeley Space Sciences Lab (2025); U. Arizona (2025, 2013); Peking University (2024), NASA Goddard Sellers Exoplanet Environments Collaboration (2024, 2019), Chinese University of Geosciences Wuhan (2024), Zhejiang University (2024), U. Vienna (2024), Foresight Institute (2024, twice), Laboratoire de Météorologie Dynamique, Institut Pierre Simon Laplace, Paris (2023), U. Notre Dame (2023), Freie Universität Berlin (2023); Northwestern (2023), Université de Nantes (2022, keynote); U. Texas at Austin (2022, 2018, 2012); NASA Jet Propulsion Laboratory (2022, 2012, 2010); Stony Brook (2021); Queens College, CUNY (2021); 9th Joint Workshop on High Pressure, Planetary and Plasma Physics, Münster (keynote) (2021, keynote); UC Berkeley (2021); UCLA (2021, 2012); Caltech (2021); Rice (2021, 2014); Penn State (2018); U. Minnesota (2018); U. Bern (2017); Arizona State University (2016); National Academy of Sciences / Chinese Academy of Sciences Forum for New Leaders in Space Science, Shanghai (2015); McGill University (2015); Planetary and Space Sciences Research Institute (UK) (2015); Kavli Institute of Theoretical Physics (2015); U. Illinois Chicago (2026, 2015), NOAA Geophysical Fluids Dynamics Laboratory (2014); Columbia University / Earth Institute (2014); Weizmann Institute of Science (2013); Johns Hopkins (2013); University of Chicago (2013); iPLEX (2012); Purdue (2012); Space Sciences Laboratory (2010); SETI Institute (2009). \* = *postponed*.

**Funding:** PI, NASA Solar System Workings grant,  
*Wind erosion of layered sediments on Mars: the role of terrain* (NNX15AH98G)

PI, NASA Exoplanet Research Program grant,  
*Origin of the volatile envelopes of small-radius exoplanets* (NNX16AB44G)

PI, NASA Solar System Workings grant,  
*Quantifying the effect of Mars obliquity on the intermittency of surface liquid water* (NNX16AG55G)

PI, NASA Mars Data Analysis Program grant,  
*Unscrambling Noachian crater degradation on Mars* (NNX16AJ38G)

PI, NASA Solar System Workings grant,  
*Modeling the drying-out of Mars* (80NSSC20K0144)

PI, NASA Future Investigators (FINESST) grant awarded to Alexandra (Sasha) Warren,  
*Small exit breach craters as probes of Martian climate since 3.5 Ga* (80NSSC20K1382)

PI, NASA Mars Science Laboratory Participating Scientist,  
*Linking rover observations with models of timing and flow of surface and subsurface waters at Gale crater* (80NSSC22K0731)

PI, NASA Mars Data Analysis Program grant,  
*Mars sedimentation in space and time* (80NSSC22K1084)

PI, NASA Mars Data Analysis Program grant,  
*Mars lakes in space and time* (80NSSC25K0087)

Co-I, NASA Mars Data Analysis Program grant,  
*Environment and evolution of Martian alluvial fans* (NNX15AM49G)

Co-I, NASA Mars Data Analysis Program grant,  
*Assessing a cold-icy vs. warm-wet climate for Early Mars with valley network morphometry and landscape evolution* (80NSSC18K1476)

Administrative Co-I, Space Telescope Science Institute grant,  
*Searching for Signatures of Surface-Atmosphere Interaction on a small planet in its magma era* (PI = graduate student Brandon Coy)

+ Co-PI on two Scialog seed grants, Co-I on seven James Webb Space Telescope grants, additional private foundation funding (Asteria Institute).

**Reviewing:** *Science, Nature, Proceedings of the National Academy of Sciences, Astrophysical Journal Letters*, and >20 other journals.

American Geophysical Union Editor's Citation for Excellence in Refereeing 2017

Panelist for NASA (12 panels including Habitable Worlds, Emerging Worlds, Mars Data Analysis Program, 3 NASA mission selection evaluation teams, and one NASA mission senior review). Panelist for NSF.

**Teaching:**

*As instructor:*

GEOS 28600, Earth and Planetary Surface Processes (with Death Valley field trip): 2024.  
GEOS 13100, Physical geology: 2023 (twice), 2024.

GEOS 28600, Earth and Planetary Surface Processes: 2017, 2018, 2020, 2021, 2022.

GEOS 22060 / GEOS 32060 / ASTR 45900, Planetary habitability: 2016, 2018, 2019, 2020, 2021, 2022, 2023, 2025.

*Undergraduate & Predoctoral Researchers:*

Complete list (22 total): Wen Bo, Vespera Luo, Ev Sun, Brandon Coy, James Hu, Courtney Leung, Charlie Willard, Eric Blom, An Li, Katarina Keating, Samantha Baker, Deirdre Edward, Thomas Cortellesi, Daniel Eaton, Julian Marohnic, Shane Coffield, William Misener, Leila Gabasova, Chuan Yin, Emily Thompson, Edward Warden, James Andrew Billingsley.

14 former undergrads have gone on to grad school.

*Other/Outreach:*

Instructor + team mentor at Rossbypalooza (climate science summer school), 2018 & 2022.

Invited senior participant and team mentor at CIDER (Cooperative Institute for Dynamic Earth Research) summer school, UC Berkeley, 2022.

Published 7 introductory-level science outreach / education articles in *Asterisk, Astronomy Now, Chemistry Review, Spaceflight Now*, and *Earth Space Review*.

Invited speaker at public events for Adler Planetarium, etc.

**Service:**

*External:*

Member of NASA-Decadal Astrobiology Research and Exploration Strategy (NASA-DARES) Task Force 2, 2026

Committee for Astrobiology and Planetary Science, National Academy of Sciences, 2017–2023.

(supports scientific progress in astrobiology and planetary science by providing advice to the federal government on the implementation of Decadal Survey recommendations).

Mars Concurrent Exploration Science Analysis Group (MCE-SAG), 2022

Admissions Committee, Summer Science Program (high-school planetary science summer program nonprofit of which I am an alumnus; <10% admissions rate), 2018 & 2021.

Led advocacy articles in *Asterisk* (2025), *EoS: Trans. AGU* (2021), & *Physics Today* (2013).

Lead convener of AGU Fall Meeting session “Creating sustainable habitats and biospheres beyond Earth”, 2025

*Internal:*

Chair of Department Chamberlin Fellowship committee: 2018/19  
Co-Chair of Department Code of Conduct committee: 2021  
Committee to Write The Department Expansion Plan: 2021/22  
Lead of ad-hoc committee on Postdoc Recruiting and Professional Development: 2019  
Department Graduate Admissions committee: 2015/16, 2020/21, 2022/23  
Department Postdoctoral Fellowship (Chamberlin) committee: 2017/18, 2019/20  
Department Colloquium committee: 2015/16  
Time Allocation Committee, U. Chicago Research Computing Center: 2018/19.

**Field experience:**

Greece, England, Scotland, California, Hawaii, Spain, Central India, NW Australia, Utah, Arizona (field trip leader), California/Nevada (field trip leader).

**Selected research experience at locations other than college or graduate school:**

NASA Jet Propulsion Laboratory: Visiting Associate, 2012-2015.  
Weizmann Institute, Israel: Visiting scholar, summer 2013.  
Hubble Space Telescope: Co-I on General Observer Programs 11818 & 16448.  
James Webb Space Telescope: Co-I on Programs 01743, 01846, 03263, 04818, 07875, and 08004. I am Administrative Co-I on JWST Program 06284, for which graduate student Coy is PI.