

Edwin S. Kite

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Appointments:

University of Chicago: January 2015 –
Associate Professor (with tenure) 2022 –
Assistant Professor 2015-2021

Princeton University: January 2014 – December 2014
Harry Hess Fellow. Joint postdoc, Astrophysics and Geosciences departments.

California Institute of Technology: January 2012 – January 2014
O.K. Earl Fellow (Divisional fellowship).

Education:

Ph.D. **University of California, Berkeley: December 2011**
Department of Earth and Planetary Science. Berkeley Fellowship.

M.Sci & B.A. **Cambridge University: June 2007**
M.Sci & B.A. 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
2017–2023.
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*

86. 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., et al., “IN SITU EVIDENCE OF AN ACTIVE CARBON CYCLE ON ANCIENT MARS,” (in preparation)
85. D.G. Burt, 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 CO₂ AT GALE CRATER, MARS” (submitted to *PNAS*)
84. 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,” (in review)
83. 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,” (in review)

82. Ansari, S., **Kite, E.S.**, Ramirez, R., Steele, L.J., & Mohseni, H., “WARMING MARS WITH NANORODS,” (in review). I conceived this study, wrote the paper, and am the corresponding author.
81. Coy, B.P. & **Kite, E.S.**, “DISKORLD: MODELLING THE LIMITED SENSITIVITY OF LONG-TERM PLANETARY HABITABILITY TO TECTONIC NOISE,” (in revision)
80. Warren, A.O., Wilson, S.A., Howard, A., Noblet, A., & **Kite, E.S.**, “MULTIPLE EXIT BREACHES FROM YOUNG CRATERS REQUIRE SURFACE MELTING AND HUNDREDS OF METERS OF MID-LATITUDE ICE LATE IN MARS HISTORY,” minor revisions requested by *Planetary Science Journal*
79. Gu, J., Peng, B., Ji, X., Zhang, J., Yang, H., Hoyos, S., Hirschmann, M.M., **Kite, E.S.**, & Fischer, R.A., “COMPOSITION OF EARTHS INITIAL ATMOSPHERE AND FATE OF ACCRETED VOLATILES SET BY CORE FORMATION AND MAGMA OCEAN REDOX EVOLUTION,” *Earth & Planetary Science Letters*, in press (2024)
78. **Kite, E.S.**, & Conway, S., “GEOLOGIC EVIDENCE FOR MULTIPLE CLIMATE TRANSITIONS ON EARLY MARS,” *Nature Geoscience*, 17, 10-19 (2024)
77. Hu, R., Gaillard, F., & **Kite, E.S.**, “NARROW LOOPHOLE FOR H₂-DOMINATED ATMOSPHERES ON HABITABLE ROCKY PLANETS AROUND M DWARFS,” *Astrophysical Journal Letters*, 948, L20 (2023)
76. 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)
75. 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)
74. 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).
73. 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)
72. 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)
71. Barclay, T., & 34 others including **Kite, E.S.**, “THE TRANSMISSION SPECTRUM OF THE POTENTIALLY ROCKY PLANET L 98-59 C,” (in review)
70. 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)
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 μm ,” *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. **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)
57. 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)
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. 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)
53. Ermakov, A., and 15 others including **Kite, E.S.**, “A RECIPE FOR GEOPHYSICAL EXPLORATION OF ENCELADUS,” *Planetary Science Journal*, 2, 157 (2021)
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)
47. Archer, D., **Kite, E.S.**, & Lusk, G., “THE ULTIMATE COST OF CARBON,” *Climatic Change*, 162, 2069–2086 (2020)
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*, 121, 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)
40. Mansfield, M., **Kite, E.S.**, Hu, R., Koll, D.B., Malik, M., Bean, J.L., & Kempton, E. M.-R., “IDENTIFYING ATMOSPHERES ON ROCKY EXOPLANETS THROUGH INFERRED HIGH ALBEDO,” *Astrophysical Journal* 886:141, 11 pp. (2019)
39. de Kleer, K., Nimmo, F., & **Kite, E.S.**, “VARIABILITY IN IO’S VOLCANISM ON TIMESCALES OF PERIODIC ORBITAL CHANGES,” *Geophysical Research Letters*, 46, 6327–6332 (2019)
38. Koll, D., Malik, M., Mansfield, M., Kempton, E. M.-R., **Kite, E.S.**, Abbot, D., & Bean, J.L. “IDENTIFYING CANDIDATE ATMOSPHERES ON ROCKY M-DWARF PLANETS VIA EMISSION PHOTOMETRY,” *Astrophysical Journal* 886:140, 13 pp. (2019)
37. Malik, M., Kempton, E. M.-R., Koll, D.B., Mansfield, M., Bean, J.L., & **Kite, E.S.** “ANALYZING ATMOSPHERIC TEMPERATURE PROFILES AND SPECTRA OF M DWARF ROCKY PLANETS,” *Astrophysical Journal*, 886:142, 13 pp. (2019)
36. Mansfield, M., **Kite, E.S.**, & Mischna, M., “EFFECT OF MARS ATMOSPHERIC LOSS ON SNOW MELT POTENTIAL IN A 3.5-GYR CLIMATE EVOLUTION MODEL,” *Journal of Geophysical Research – Planets*, 123, 794–806 (2018)
35. **Kite, E.S.**, & Ford, E., “HABITABILITY OF EXOPLANET WATERWORLDS,” *Astrophysical Journal*, 864:75, 28 pp. (2018)
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)
33. Holo, S.J., **Kite, E.S.**, & Robbins, S.J., “MARS OBLIQUITY HISTORY CONSTRAINED BY ELLIPTIC CRATER ORIENTATIONS,” *Earth & Planetary Science Letters*, 496, 206–214 (2018)
32. Steele, L., **Kite, E.S.**, & Michaels, T.I., “CRATER MOUND FORMATION BY WIND EROSION ON MARS,” *Journal of Geophysical Research – Planets*, 123, 113–130 (2018)
31. Gabasova, L., & **Kite, E.S.**, “COMPACTION AND SEDIMENTARY BASIN ANALYSIS ON MARS,” *Planetary & Space Science*, 152, 86–106 (2018)

30. Spencer, J., Nimmo, F., Ingersoll, A., Hurford, T.A., **Kite, E.S.**, Rhoden, A., Schmidt, J., & Howett, C.J.A., “PLUME ORIGINS AND PLUMBING (OCEAN TO SURFACE),” pp. 163-174 in Schenk, P., et al., eds., *Enceladus and the Icy Moons of Saturn*, University of Arizona Press (2018)
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)
27. **Kite, E.S.**, Sneed, J., Mayer, D.P., & Wilson, S.A., “PERSISTENT OR REPEATED SURFACE HABITABILITY ON MARS,” *Geophysical Research Letters*, 44, 3991–3999 (2017)
26. Melwani Daswani, M., & **Kite, E.S.**, “PALEOHYDROLOGY ON MARS CONSTRAINED BY MASS BALANCE AND MINEROLOGY OF PRE-AMAZONIAN SODIUM CHLORIDE LAKES: DEEP GROUNDWATER NOT REQUIRED”, *Journal of Geophysical Research – Planets*, 122, 1802–1823 (2017)
25. **Kite, E.S.**, & Mayer, D.P., “MARS SEDIMENTARY ROCK EROSION RATES CONSTRAINED USING CRATER COUNTS, WITH APPLICATIONS TO ORGANIC-MATTER PRESERVATION AND TO THE GLOBAL DUST CYCLE,” *Icarus*, 286, 212–222 (2017)
24. **Kite, E.S.**, & Rubin, A., “SUSTAINED ERUPTIONS ON ENCELADUS EXPLAINED BY TURBULENT DISSIPATION IN TIGER STRIPES,” *Proceedings of the National Academy of Sciences*, 113, 3972–3975 (2016)
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)
21. Richter, F., Chaussidon, M., Mendybaev, R., & **Kite, E.S.**, “REASSESSING THE COOLING RATE AND GEOLOGIC SETTING OF MARTIAN NAKHLITE METEORITES, WITH SPECIAL EMPHASIS ON MIL 03346 AND NWA 817,” *Geochimica et Cosmochimica Acta*, 182, 1–23 (2016)
20. Ehlmann, B., and 46 others including **Kite, E.S.**, “THE SUSTAINABILITY OF HABITABILITY ON TERRESTRIAL PLANETS,” *Journal of Geophysical Research – Planets*, 121, 1927–1961 (2016)
19. **Kite, E.S.**, Howard, A., Lucas, A., & Lewis, K.W., “RESOLVING THE ERA OF RIVER-FORMING CLIMATES ON MARS USING STRATIGRAPHIC LOGS OF RIVER-DEPOSIT DIMENSIONS,” *Earth & Planetary Science Letters*, 420, 55–65 (2015)
18. **Kite, E.S.**, Howard, A., Lucas, A., Armstrong, J.C., Aharonson, O., & Lamb, M.P., “STRATIGRAPHY OF AEOLIS DORSA, MARS: STRATIGRAPHIC CONTEXT OF THE GREAT RIVER DEPOSITS,” *Icarus*, 253, 223–242 (2015)
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)
12. Šrámek, O., McDonough, W., **Kite, E.S.**, Lekić, V., Zhong, S.T., & Dye, W.F., “GEOPHYSICAL AND GEOCHEMICAL CONSTRAINTS ON GEONEUTRINO FLUXES FROM EARTH’S MANTLE,” *Earth & Planetary Science Letters*, 361, 356–366 (2013)
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)
10. Manga, M., Patel, A., Dufek, J., & **Kite, E.S.**, “WET SURFACE AND DENSE ATMOSPHERE ON EARLY MARS INFERRED FROM THE BOMB SAG AT HOME PLATE, MARS,” *Geophysical Research Letters*, 39, L01202, 5 pp. (2012)
9. Rappaport, S., Levine, A., Chiang, E., El Mellah, I., Jenkin, J., Kalomeni, B., **Kite, E.S.**, Kotson, M., Nelson, L., Rousseau-Nepton, & Tran, K., “POSSIBLE DISINTEGRATING SHORT-PERIOD SUPER-MERCURY ORBITING KIC 12557548,” *Astrophysical Journal*, 752:1, 13 pp. (2012)
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 (2016–2020, Ph.D. 2021), Alexandra (Sasha) Warren (2018–2023, Ph.D. 2023), Bowen Fan (2025 - anticipated), Brandon Coy (2027 - anticipated), & Daniel Zhou (2028 - anticipated).

Postdoctoral advisor for:

Mohit Melwani Daswani (Jun 2015–Apr 2017), Liam Steele (Jan 2017–Aug 2018), & Madison (Maddy) Turner (Oct 2023 –)

Senior thesis advisor for:

An Li (2021), and James Hu (2022).

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).

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 - anticipated), Xuan Ji (Ph.D. 2025 - anticipated), Eric Van Camp (Ph.D. 2025 - anticipated), and Yaoxuan Zeng (Ph.D. 2026 - anticipated).

Former lab members and former visitors:

Mohit Melwani Daswani, postdoc Jun 2015–Mar 2017 (*now Research Scientist at JPL*).

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 NASA Hubble Fellowship / Sagan Fellow at University of Arizona*).

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

(*now Assistant Professor at MIT*).

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*).

Leila Gabasova, 2015 summer student.

(*Now a Ph.D. student at Institut de Planétologie et Astrophysique de Grenoble*).

An Li, 2020–2021 senior thesis student.

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

Invited talks

U. Vienna (1/2024), Foresight Institute (1/2024), Laboratoire de Météorologie Dynamique, Institut Pierre Simon Laplace, Paris (10/1023), U. Notre Dame (10/1023), Freie Universität Berlin (6/2023); Northwestern (2/2023 CIERA, & 5/2020* EPS), Université de Nantes (12/2022, winter school, keynote); University of Texas at Austin (11/2022, & 6/2018, & 10/2012); NASA Jet Propulsion Laboratory (5/2022, & 7/2012, & 11/2010); Princeton (11/2021, & 3/2013); Stony Brook (12/2021); Queens College, CUNY (11/2021); 9th Joint Workshop on High Pressure, Planetary and Plasma Physics, Münster (keynote) (9/2021); MIT (5/2021); NYU Abu Dhabi (5/2021); UC Berkeley Planetary (5/2021); Caltech Planetary (4/2021); UCLA (3/2021); Université de Paris (Institut de Physique du Globe de Paris) (12/2020*); Rice University (4/2021 & 9/2014); UC Santa Cruz (5/2020* & 10/2011 & 5/2009); AGU Fall Meeting (12/2019 & 12/2016); NASA Goddard Sellers Exoplanet Environments Collaboration (10/2019); Kavli AAS-AGU Exoplanets Workshop, Reykjavík (8/2019); Penn State (4/2018); University of Minnesota (4/2018); University of Bern (4/2017); Enceladus Focus Group (Berkeley, 6/2016); Arizona State University (2/2016); National Academy of Sciences / Chinese Academy of Sciences Forum for New Leaders in Space Science, Shanghai (10/2015); McGill University (10/2015); Northern Illinois University (9/2015); University of Washington (5/2015); Planetary and Space Sciences Research Institute (UK) (2/2015); Kavli Institute of Theoretical Physics (2/2015); University of Illinois (1/2015), NOAA Geophysical Fluids Dynamics Laboratory (12/2014); Columbia University / Earth Institute (3/2014); Weizmann Institute of Science (6/2013); University of Arizona

(4/2013); Johns Hopkins (3/2013); University of Chicago (3/2013); University of California, Los Angeles (11/2012); iPLEX (10/2012); Purdue (4/2012); Space Sciences Laboratory (11/2010); SETI Institute (5/2009).

* = *postponed*.

Major external grant support obtained while at the University of Chicago: (* = current funding)

total \$2.4 M

PI, NASA Solar System Workings grant,
Wind erosion of layered sediments on Mars: the role of terrain (NNX15AH98G) (\$314 K)

PI, NASA Exoplanet Research Program grant,
Origin of the volatile envelopes of small-radius exoplanets (NNX16AB44G) (\$268 K)

PI, NASA Solar System Workings grant,
Quantifying the effect of Mars obliquity on the intermittency of surface liquid water (NNX16AG55G) (\$374 K)

PI, NASA Mars Data Analysis Program grant,
Unscrambling Noachian crater degradation on Mars (NNX16AJ38G) (\$251 K)

PI, NASA Solar System Workings grant,
Modeling the drying-out of Mars (80NSSC20K0144) (\$307 K)

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) (\$134 K)

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) (\$201 K)

PI, NASA Mars Data Analysis Program grant, (*)
Mars sedimentation in space and time (80NSSC22K1084) (\$318 K)

Co-I, NASA Mars Data Analysis Program grant,
Environment and evolution of Martian alluvial fans (NNX15AM49G) (\$66 K)

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) (\$69K)

+ Co-PI on two Scialog seed grants (total \$110 K) (*), and Co-I on three small James Webb Space Telescope grants (*)

Pending: PI on one NASA NIAC Phase I application.

Reviewer for: *Science, Nature, Proceedings of the National Academy of Sciences, Astrophysical Journal Letters, Nature Geoscience, Geophysical Research Letters, Earth & Planetary Science Letters, Astrophysical Journal, Nature Communications,, Nature Communications Earth and Environment, Science Advances, Geology, Journal of Geophysical Research, Icarus, Physics of the Earth & Planetary Interiors, Meteoritics & Planetary Science, Geochemistry Geophysics Geosystems, Planetary & Space Science, Earth and Space Science, Aeolian Research, Astrobiology, Journal of Maps, Intl. Journal of Astrobiology, Planetary Science Journal, Oxford University Press, European Research Council, Science and Technology Facilities Council (United Kingdom), Austrian Science Fund, Hungarian Science Agency, Polish National Science Center, Fonds de recherche du Québec, Swiss National Science Foundation, Branco Weiss Fellowship, NSF Petrology & Geochemistry.*

American Geophysical Union Editor's Citation for Excellence in Refereeing for *JGR-Planets*, 2017

NASA (panelist for 8 SMD panels including Habitable Worlds, Emerging Worlds, Mars Data Analysis Program, and 3 NASA mission selection evaluation teams; NASA Postdoctoral Program; HEOMD; NAI). External reviewer for James Webb Space Telescope observation proposals.

Teaching:

As instructor: Winter 2024. GEOS 28600, Earth and Planetary Surface Processes (including field trip to Death Valley).
Fall 2023. GEOS 13100, Physical geology.
Spring 2023. GEOS 22060 / GEOS 32060 / ASTR 45900, Planetary habitability.
Winter 2023. GEOS 13100, Physical geology.
Spring 2022. GEOS 28600 / GEOS 38600, The Science of Landscapes.
Winter 2022. GEOS 22060 / GEOS 32060 / ASTR 45900, Planetary habitability.
Spring 2021. GEOS 28600 / GEOS 38600, The Science of Landscapes.
Winter 2021. GEOS 22060 / GEOS 32060 / ASTR 45900, Planetary habitability.
Winter 2020. GEOS 22060 / GEOS 32060 / ASTR 45900, Planetary habitability.
Winter 2020. GEOS 28600 / GEOS 38600, The Science of Landscapes.
Spring 2019. GEOS 22060 / GEOS 32060 / ASTR 45900, Planetary habitability
Fall 2018. GEOS 28600 / GEOS 38600, Earth and Planetary Surface Processes.
Spring 2018. GEOS 32060 / GEOS 22060 / ASTR 45900,
What makes a planet habitable?
Winter 2017. GEOS 38600, Earth and Planetary Surface Processes.
Winter 2016 GEOS 22060 / GEOS 32060 / ASTR 45900,
What makes a planet habitable?

GEOS 22060/32060 is an entirely revamped class. The lectures in GEOS 13100 are entirely new. GEOS 28600 is a new class. In 2024, I added a one-week end-of-quarter field trip to Death Valley to GEOS 28600.

Undergraduate & Predoctoral Researchers:

Wen Bo (University of Chicago PSD), numerical modeling
Vespera Luo (University of Chicago sophomore → junior), Mars data analysis
Ev Sun (University of Chicago summer student), Mars data analysis
Brandon Coy (University of Chicago PSD MS student), Mars data analysis
James Hu (University of Chicago senior; senior thesis student, 2021-2022), Mars data analysis
Courtney Leung (University of Chicago junior), Earth analog literature compilation / analysis
Charlie Willard (University of Chicago junior), multiple Mars projects
Eric Blom (University of Chicago senior), Mars data analysis
An Li (University of Chicago senior; senior thesis student, 2020-2021), Mars modeling
Katarina Keating (University of Chicago sophomore + junior), multiple Mars projects
Samantha Baker (University of Chicago sophomore), Mars outflow channels
Deirdre Edward (University of Chicago junior; College Research Fellow),
3D outcrop reconstruction from Earth drone data.
Thomas Cortellesi (University of Chicago freshman), lab support
Daniel Eaton (University of Chicago, summer project), Mars landscape evolution
Julian Marohnic (University of Chicago, summer project), Mars landscape evolution
Shane Coffield (University of Chicago sophomore), multiple Mars projects
William Misener (University of Chicago, summer project), Mars landscape evolution
Leila Gabasova (University of Paris), geophysics

Chuan Yin (University of Chicago), Mars landscape evolution
Igor Vasiljevic (first-year graduate student @TTI-Chicago),
neural networks for planetary image analysis
Emily Thompson (University of Chicago, summer project), Mars landscape evolution
Edward Warden (University of Chicago, summer project), Mars landscape evolution
James Andrew Billingsley (University of Chicago post-graduation), ArcGIS scripting

Other/Outreach:

Instructor + team mentor at Rossbypalooza (climate science summer school), 2018 & 2022 & 2024.

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

Published 6 introductory-level science outreach / education articles in *Astronomy Now*, *Chemistry Review*, *Spaceflight Now*, and *Earth Space Review*.

TV interviews (e.g. Fox 32, Voice of America News).

Invited speaker at public events for University of Chicago Physical Science Division, Adler Planetarium, etc.

Service:

To the community:

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

EoS: Trans. AGU (w/ L. Kreidberg, L. Schaefer, R. Caracas & M. Hirschmann) (2021) & *Physics Today* (w/ A. Howard) (2013).

>500 images acquired based on my suggestions, Mars Reconnaissance Orbiter High Resolution Imaging Science Experiment (HiRISE).

(1.7% of Mars Reconnaissance Orbiter HiRISE images over the past year were acquired based on my suggestions).

Session Chair at Lunar & Planetary Science Conference (×3), American Astronomical Society Division for Planetary Sciences Annual Meeting, Astrobiology Science Conference, Ninth International Mars Conference. Session Co-Convener, Abscon 2019.

To the Department and the University:

Served on the advisory committees for 13 students (*named under “Mentoring”*)

Chair of Department Chamberlin Fellowship committee 2018–2019

Co-Chair of Department Conduct Committee 2021

Committee to Write The Department Expansion Plan, 2021–2022

Lead of ad-hoc committee on Postdoc Recruiting and Professional Development 2019

Department Graduate Admissions Committee, 2015–2016, 2020–2021, 2022–2023

Department Postdoctoral Fellowship (Chamberlin) Committee, 2017–2018 & 2019–2020

Department Website Committee, 2015–2016 & 2020–2021 & 2022–2024

Department Colloquium Committee, 2015–2016
Second reader for senior theses of Sabrina Tecklenberg, 2017, Charlie Willard (Astrophysics), 2023, and Kly Suquino, 2024.

Participant in Undergraduate Orientation *Terrarium* Project, 2019

Time Allocation Committee, Research Computing Center, University of Chicago, 2018–9.

Field experience:

Greece, S Spain, England, Scotland, California, Hawaii (fieldwork, mapping courses). N Spain (independent mapping project, 6 weeks). Central India, NW Australia (Precambrian field workshops). Utah (as graduate student instructor; and for terrestrial-analog fieldwork). Arizona (field trip leader). California & Nevada (field trip leader).

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

James Webb Space Telescope: Co-I on Cycle 1 Programs 01846 & 01743, and on Cycle 2 Program 03263.

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.