# Edwin S. Kite

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**Appointments:**

**University of Chicago: January 2015 –**
Assistant Professor.

**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), Division of Geological & Planetary Sciences

**Education:**

*Ph.D.* **University of California, Berkeley: December 2011**
Berkeley Fellowship. Advisor: M. Manga.

*M.Sci & B.A.* **Cambridge University: June 2007**
M.Sci Natural Sciences Tripos (Geological Sciences). First Class.
B.A. Natural Sciences Tripos (Geological Sciences). First Class.

**Awards and Distinctions:**

National Academy of Sciences - Committee on Astrobiology and Planetary Science 2017–
American Geophysical Union - Greeley Early Career Award in Planetary Science 2016.
Caltech O.K. Earl Postdoctoral Fellowship 2012-2013 (Division-wide fellowship).
AAAS Newcomb Cleveland Prize 2009 (most outstanding *Science* paper; shared).

**Papers** ___ = *mentee*

63. 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," (in review)
62. **Kite, E.S.**, Mischna, M.A., Morgan, A.M., Wilson, S.A., & Richardson, M.A., "Changing Spatial Distribution of Water Flow On Mars Indicates That Average $pCO_2$ Had Already Declined Before The End of Mars' River-Forming Era," (in revision)
61. Holo, S.J., **Kite, E.S.**, Wilson, S.A., & Morgan, A.M. "The Timing of Alluvial Fan Formation on Mars," (in revision)
60. 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," (in review)
59. Ermakov, A., and 15 others including **Kite, E.S.**, "A Recipe For Geophysical Exploration of Enceladus," (in revision)
58. Fan, B., Shaw, T.A., Tan, Z., & **Kite, E.S.**, "Reducing Surface Wetness Leads to Tropical Hydrological Cycle Regime Transition," *Geophysical Research Letters*, doi:10.1029/202GL090746 (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. **Kite, E.S.**, & Schaefer, L., "Water on Hot Rocky Exoplanets," *Astrophysical Journal Letters* 909:L22 (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. **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)

53. **Kite, E.S.**, Fegley, B., Schaefer, L., & Ford, E.B., "Atmosphere Origins for Exoplanet Sub-Neptunes," *Astrophysical Journal*, 891:111, 16 pp. (2020)

52. 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)

51. 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)

50. Holo, S., & **Kite, E.S.**, "The Spatial Signature of a Changing Ancient Impactor Population for Mars," *Icarus*, 337, 113447, 6 pp. (2020)

49. **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)

48. Archer, D., **Kite, E.S.**, & Lusk, G., "The Ultimate Cost of Carbon," *Climatic Change*, 162, 2069–2086 (2020)

47. **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)

46. **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)

45. **Kite, E.S.**, "Geologic Constraints on Early Mars Climate," *Space Science Reviews*, 215:10, 47 pp. (2019)

44. 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)

43. 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)

42. **Kite, E.S.**, & Melwani Daswani, M., "Geochemistry Constrains Global Hydrology on Early Mars," *Earth & Planetary Science Letters*, 524, 115718, 10 pp. (2019)

41. 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)

40. 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)

39. 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)

38. Malik, M., Kempton, E. M.-R., Koll, D.B., Mansfield, M., Bean, J.L., & **Kite, E.S.** "Thermal Emission Spectra and Atmospheric Temperatures of Rocky Planets Around M-Dwarfs," *Astrophysical Journal*, 886:142, 13 pp. (2019)

37. 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)

36. **Kite, E.S.**, & Ford, E., "Habitability of Exoplanet Waterworlds," *Astrophysical Journal*, 864:75, 28 pp. (2018)

35. 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)

34. 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)

33. 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)

32. Gabasova, L., & **Kite, E.S.**, "Compaction and Sedimentary Basin Analysis on Mars," *Planetary & Space Science*, 152, 86–106 (2018)

31. 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)

30. **Kite, E.S.**, Gaidos, E., & Onstott, T.C., "Valuing Life Detection Missions," *Astrobiology*, 18, 834-840 (2018)

29. **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)

28. **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)

27. 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)

26. **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)

25. **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)

24. **Kite, E.S.**, Fegley, B., Schaefer, L., & Gaidos, E., "Atmosphere-Interior Exchange on Hot Rocky Exoplanets," *Astrophysical Journal*, 828, 80, 20 pp (2016)

23. **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)

22. 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 Cosmochima Acta*, 182, 1–23 (2016)

21. 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)

20. **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)

19. **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)

18. 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)

17. **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)

16. **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).

15. **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)

14. **Kite, E.S.**, Lucas, A., & C.I. Fassett, "Pacing Early Mars river activity," *Icarus*, 225, 850–855 (2013b)

13. 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)

12. 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)

11. 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)

10. 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)

9. **Kite, E.S.**, Gaidos, E. & M. Manga, "Climate Instability on Tidally Locked Exoplanets," *Astrophysical Journal*, 743, 41, 12 pp. (2011)

8. **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)

7. **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)

6. 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)

5. **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)

4. **Kite, E.S.**, Manga, M., & Gaidos, E., "Geodynamics and Rate of Volcanism on Massive Earth-Like Planets," *Astrophysical Journal*, 700, 1732–1749 (2009)
3. 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").
2. **Kite, E.S.**, & R.C.A. Hindmarsh "Did Ice Streams Shape the Largest Channels on Mars?," *Geophysical Research Letters*, 34, L19202, 5 pp. (2007)
1. **Kite, E.S.**, "Jupiter Exploration: High Risks and High Rewards," *EoS: Trans. AGU*, 85(50), 544 (2004)

**Advising**

Ph.D. program advisor for:
Samuel Holo (2016–2020, Ph.D. 2021),
Alexandra (Sasha) Warren (2023 - anticipated), & Bowen Fan (2024 - anticipated).

Postdoctoral advisor for:
Mohit Melwani Daswani (Jun 2015–Apr 2017), Liam Steele (Jan 2017–Aug 2018),
& Darryl Seligman (Chamberlin Fellow; hosting Sep 2020–Sep 2023).

Senior thesis advisor for:
An Li (2021 - anticipated). (Second reader for undergraduate senior thesis of Sabrina Tecklenberg, 2017).

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).

Summer project advisor for:
Bowen Fan (Peking U., 2017) & Leila Gabasova (U. Paris, 2015).

Ph. D. or MSci thesis advisory committee for:
Nathan Baskin (MSci, 2016), Andrew Malone (Ph.D., 2017), Matouš Ptácek (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), Jennika Greer (Ph.D. 2021 - anticipated), Jade Checlair (Ph.D. 2021 - anticipated), Megan Barnett (Ph.D. 2023 - anticipated), Jisheng Zhang (Department of Astronomy & Astrophysics, Ph.D. 2023 - anticipated), Xinyi (Camilla) Liu (Ph.D. 2024 - anticipated), Xuan Ji (Ph.D. 2025 - anticipated), and Eric Van Camp (Ph.D. 2025 - 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 Postdoc at JPL*).
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.*).
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*)
Gaia Stucky de Quay, visiting graduate student Mar–Sep 2018
(*now moving to a Postdoc position at Harvard*).
Leila Gabasova, 2015 summer student.
(*Now a Ph.D. student at Institut de Planétologie et Astrophysique de Grenoble*).

**Invited talks**

MIT (5/2021); NYU Abu Dhabi (5/2021); UC Berkeley Planetary (4/2021); Caltech Planetary (4/2021); UCLA (3/2021); Princeton (4/2020* & 3/2013); 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); Northwestern (5/2020*); AGU Fall Meeting (12/2019 & 12/2016); NASA Goddard Sellers Exoplanet Environments Collaboration (10/2019); University of Texas at Austin (6/2018 & 10/2012); 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); NASA Jet Propulsion Laboratory (7/2012 & 11/2010); Purdue (4/2012); Space Sciences Laboratory (11/2010); SETI Institute (5/2009).
* = *postponed.*

**Major external grant support obtained while at the University of Chicago:**

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)

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)

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)

**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,* *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. (* = within the past year, total: 14).

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

NASA (panelist for 7 SMD panels including Habitable Worlds, Emerging Worlds, & Mars Data Analysis Program; NASA Postdoctoral Program; HEOMD; NAI).

**Teaching:**

*As instructor:* 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. GEOS 28600/38600 is a new class.*

*Undergraduate & Predoctoral Researchers:*

An Li (University of Chicago senior; currently supervising senior thesis), 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 and team mentor at Rossbypalooza 2018 (climate science summer school).

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

TV interviews on science topics (e.g. Fox 32)

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

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

Lead author of advocacy articles in
*EoS: Trans. AGU* (w/ L. Kreidberg, L. Schaefer, R. Caracas & M. Hirschmann) (accepted)
& *Physics Today* (w/ A. Howard) (2013),

∼400 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, Abscicon 2019.

*To the Department and the University:*

Served on the advisory committees for 14 students (*named under "Mentoring"*)
Chair of Department Chamberlin Fellowship committee 2018–2019
Co-Chair of Department Conduct Committee 2021
Lead of ad-hoc committee on Postdoc Recruiting and Professional Development 2019
Department Graduate Admissions Committee, 2015–2016 & 2020–2021
Department Postdoctoral Fellowship (Chamberlin) Committee, 2017–2018 & 2019–2020
Department Website Committee, 2015–2016 & 2020–2021
Department Colloquium Committee, 2015–2016

Participant in Undergraduate Orientation *Terrarium* Project, 2019

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

**Field experience:**

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

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

NASA Jet Propulsion Laboratory: Visiting Associate, 2012-2015.
Hubble Space Telescope: Co-I on General Observer Programs 11818 & 16448.
James Webb Space Telescope: Co-I on Cycle 1 Programs 01846 & 01743.
Weizmann Institute, Israel: Visiting scholar, summer 2013.

**Presentations at conferences, workshops, etc.:**

Approximately 136 (82 first-authored). 26 first-authored talks since 2015.