JOSEPH GHILARDUCCI O'ROURKE — CURRICULUM VITAE

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RESEARCH INTERESTS

Interior dynamics in planetary bodies made of metal, rock, and ice
Applying Solar System discoveries to exoplanet characterization
Mission and instrument development for spacecraft exploration

EDUCATION

2017	Ph.D. in Planetary Science, California Institute of Technology
2014	M.S. in Planetary Science, California Institute of Technology
2012	B.S. in Astronomy & Physics and Geology & Geophysics, Yale University

UNIVERSITY APPOINTMENTS

2020–Present	Assistant Professor, School of Earth and Space Exploration, Arizona State University; Affiliated Faculty, Interplanetary Initiative (2021–Present)
2017–2019	SESE Exploration Postdoctoral Fellow, Arizona State University
2017	Postdoctoral Scholar in Planetary Science, California Institute of Technology
2012–2016	Graduate Research Fellow, California Institute of Technology

AWARDS, HONORS, & FELLOWSHIPS

2023	Navrotsky Early Career Award, Arizona State University
2022	Fellow, Scialog: Signatures of Life in the Universe, Research Corporation
2016	Outstanding Student Presentation Award, AGU Planetary Science
2016	Graduate Research Award, AGU Study of Earth's Deep Interior
2016	Antarctica Service Medal, National Science Foundation
2013	Hertz Foundation Fellowship Finalist
2013–2016	NSF Graduate Research Fellowship
2012	Beckwith Prize for excellence in astronomy, Yale University
2012	Belknap Prize for excellence in geological studies, Yale University
2012	Bateman Science Prize for academic excellence, Yale University
2012	Hammer Prize for excellent presentation of the senior thesis, Yale University
2011	Penfield Prize for proficiency in mineralogy, Yale University

PUBLICATIONS

Authorship: My place in the author list reflects my contribution(s) to the publication.

- First author: I was responsible for conducting the research and writing the paper.
- Second author with an advisee as first author: I provided mentoring, helped conduct the research, edited multiple drafts, and often conceived of (at least part of) the project.

- Other: Co-authors are alphabetized by last name if they contributed equally—or listed in order of contribution (i.e., from most to least) if there were notable disparities.

Formatting: In the lists below, my name is bolded and underlined. The names of people I supervise are underlined, with symbols used to denote *undergraduate student, ^graduate student, and †postdoctoral scholar advisees.

As of November 14, 2023, I have 1146 citations, an h-index of 18, and an i-10 index of 26. Data are from Google Scholar (https://scholar.google.com/citations?user=EVULpa8AAAAJ&hl=en).

Peer-Reviewed Publications

So far, I have authored 41 peer-reviewed publications, including 25 since I began my ASU faculty appointment in January 2020. Of those 25 as ASU faculty, 11 were led by me or an advisee as first author (2 by me, 1 by a postdoctoral researcher, 6 by a graduate student, and 2 by an undergraduate student). Before my faculty appointment, I published 12 studies as first author, meaning that I have a total of 23 publications led by me or one of my advisees.

Peer-reviewed, as ASU faculty

[41] 2023 T. Kim, **J. G. O'Rourke**, J. Lee, S. Chariton, V. Parakapenka, R. Husband, N. Giordano, H.-P. Liermann, S.-H. Shim, Lee, Y., "Possible formation of a hydrogen-rich layer in the topmost outer core by deeply subducted water," *Nature Geoscience*, https://doi.org/10.1038/s41561-023-01324-x

[40] 2023 ^Courville, S. W., J. C. Castillo-Rogez, M. Melwani Daswani, E. Gloesener, M. Choukroun, **J. G. O'Rourke**, "Timing and abundance of clathrate formation control ocean evolution in outer solar system bodies: Challenges of maintaining a thick ocean within Pluto," *The Planetary Science Journal*, 4(9), 179, https://doi.org/10.3847/PSJ/acf377

[39] 2023 *Blaske, C. H., **J. G. O'Rourke**, S. J. Desch, ^M. E. Borrelli, "Meteors may masquerade as lightning in the atmosphere of Venus," *Journal of Geophysical Research: Planets*, 128(9), e2023JE007914, https://doi.org/10.1029/2023JE007914

[38] 2023 Widemann, T., S. E. Smrekar, J. B. Garvin, A. G. Straume-Linder, A. C. Ocampo, M. D. Schulte, T. Voirin, S. Hensley, M. D. Dyar, J. L. Whitten, D. C. Nunes, S. A. Getty, G. N. Arney, N. M. Johnson, E. Kohler, T. Spohn, **J. G. O'Rourke**, C. Wilson, M. J. Way, C. Ostberg, F. Westall, D. Höning, S. Jacobson, A. Salvador, G. Avice, L. Carter, M. Gilmore, R. Ghail, J. Helbert, P. Byrne, R. R. Herrick, N. Izenberg, E. Marcq, T. Rolf, M. Weller, C. Gillmann, O. Korablev, L. Zelenyi, L. Zasova, D. Gorinov, G. Seth, C. V. N. Rao, N. Desai, "Venus Evolution Through Time: Key Science Questions, Selected Mission Concepts, and Future Investigations," *Space Science Reviews*, 219, 56. https://doi.org/10.1007/s11214-023-00992-w

[37] 2023 ^Trinh, K. T., †C. J. Bierson, **J. G. O'Rourke**, "Slow evolution of Europa's interior: Metamorphic ocean origin, delayed metallic core formation, and limited seafloor volcanism," *Science Advances*, 9, 24, https://doi.org/10.1126/sciadv.adf3955

[36] 2023 ^Hamid, S., **J. G. O'Rourke**, K. M. Soderlund, "A Long-Lived Lunar Magnetic Field Powered by Convection in the Core and a Basal Magma Ocean," *The Planetary Science Journal*, 4, 88. https://doi.org/10.3847/PSJ/accb99

[35] 2023 Herrick, R., E. Bjonnes, L. Carter, T. Gerya, R. Ghail, C. Gillmann, M. Gilmore, S. Hensley, M. Ivanov, N. Izenberg, N. Mueller, **J. G. O'Rourke**, T. Rolf, S. E. Smrekar, M. Weller, "Resurfacing History and Volcanic Activity of Venus," *Space Science Reviews*, 219, 29. https://doi.org/10.1007/s11214-023-00966-y

[34] 2023 **O'Rourke, J. G.**, C. F. Wilson, ^M. E. Borrelli, P. K. Byrne, C. Dumoulin, R. Ghail, A. J. P. Gülcher, S. A. Jacobson, O. Korablev, T. Spohn, M. J. Way, M. Weller, F. Westall, "Venus, the Planet: Introduction to the Evolution of Earth's Sister Planet," *Space Science Reviews*, 219, 10. https://doi.org/10.1007/s11214-023-00956-0

[33] 2023 Way, M., C. Ostberg, B. J. Foley, C. Gillmann, D. Höning, H. Lammer, **J. G. O'Rourke**, M. Persson, A.-C. Plesa, A. Salvador, M. Scherf, M. Weller, "Synergies between Venus and exoplanetary observations," *Space Science Reviews*, 219, 13. https://doi.org/10.1007/s11214-023-00953-3

[32] 2023 Smrekar, S. E., C. M. Ostberg, **J. G. O'Rourke**, "Evidence for active rifting and Earth-like lithospheric thickness and heat flow on Venus," *Nature Geoscience*, 16, 13–18, https://doi.org/10.1038/s41561-022-01068-0

[31] 2022 ^Courville, S., **J. G. O'Rourke**, J. Castillo-Rogez, R. R. Fu, R. Oran, B. Weiss, L. Elkins-Tanton, "Magnetization of carbonaceous asteroids by nebular fields and the origin of CM chondrites," *Nature Astronomy*, 6, 1387–1397. https://doi.org/10.1038/s41550-022-01802-z

[30] 2022 Rolf, T., M. Weller, A. Gulcher, P. Byrne, **J. G. O'Rourke**, R. Herrick, E. Bjonnes, A. Davaille, R. Ghail, C. Gillmann, A.-C. Plesa, S. Smrekar, "Dynamics and Evolution of Venus' mantle through time," *Space Science Reviews*, 218, 70, https://doi.org/10.1007/s11214-022-00937-9

[29] 2022 Gillmann, C., M. J. Way, G. Avice, D. Breuer, G. J. Golabek, D. Honing, J. Krissansen-Totton, H. Lammer, A.-C. Plesa, M. Persson, **J. G. O'Rourke**, A. Salvador, M. Scherf, M. Y. Zolotov, "The Long-Term Evolution of the Atmosphere of Venus: Processes and Feedback Mechanisms," *Space Science Reviews*, 218, 56. https://doi.org/10.1007/s11214-022-00924-0

[28] 2022 †Bierson, C. J., L. T. Elkins-Tanton, **J. G. O'Rourke**, "The Geologic Impact of 16 Psyche's Surface Temperatures," *The Planetary Science Journal*, 3, 196, https://doi.org/10.3847/PSJ/ac83a7

[27] 2022 Elkins-Tanton, L.T., E. Asphaug, J. F. Bell III, †C. J. Bierson, B. G. Bills, W. F. Bottke, ^S. W. Courville, S. D. Dibb, I. Jun, D. J. Lawrence, S. Marchi, T. J. McCoy, J. M. G. Merayo, R. Oran, **J. G. O'Rourke**, R. S. Park, P. N. Peplowski, T. H. Prettyman, C. A. Raymond, B. P. Weiss, M. A. Wieczorek & M. T. Zuber, "Distinguishing the Origin of Asteroid (16) Psyche," *Space Science Reviews*, 218, 17, https://doi.org/10.1007/s11214-022-00880-9

[26] 2022 Bercovici, H. L., L. T. Elkins-Tanton, **J. G. O'Rourke**, L. Schaefer, "The effects of bulk composition on planetesimal core sulfur content and size," *Icarus*, 380, 114976, https://doi.org/10.1016/j.icarus.2022.114976

[25] 2022 ^Hamid, S. & **J. G. O'Rourke**, "Modeling of the Lunar Magma Ocean," In: Cudnik, B. (ed) *Encyclopedia of Lunar Science*. Springer, Cham. https://doi.org/10.1007/978-3-319-05546-6_28-1

[24] 2022 Cutts, J., K. Baines, L. Dorsky, W. Frazier, J. Izraelevitz, S. Krishnamoorthy, M. Pauken, M. Wallace, **J. G. O'Rourke**, P. Byrne, S. Seager, C. Wilson, "Exploring the Clouds of Venus: Science Driven Aerobot Missions to our Sister Planet," *2022 IEEE Aerospace Conference*, https://doi.org/10.1109/AERO53065.2022.9843740

[23] 2021 *Blaske, C. H. & **J. G. O'Rourke**, "Energetic requirements for dynamos in the metallic cores of super-Earth exoplanets," *Journal of Geophysical Research: Planets*, 126, 7, e2020JE006739, https://doi.org/10.1029/2020JE006739

[22] 2021 ^Borrelli, M. E., **J. G. O'Rourke**, S. E. Smrekar, C. M. Ostberg, "A global survey of lithospheric flexure at steep-sided domical volcanoes on Venus reveals intermediate elastic thicknesses," *Journal of Geophysical Research: Planets*, 126, 7, e2020JE006756, https://doi.org/10.1029/2020JE006756

[21] 2021 AlHantoobi, A., J. Buz, **J. G. O'Rourke**, B. Langlais, C. Edwards, "Compositional enhancement of crustal magnetization on Mars," *Geophysical Research Letters*, 48, 6, 2020GL090379, https://doi.org/10.1029/2020GL090379

[20] 2020 **O'Rourke, J. G.**, "Venus: A thick basal magma ocean may exist today," *Geophysical Research Letters*, e2019GL08612, https://doi.org/10.1029/2019GL086126

[19] 2020 Laneuville, M., C. Dong, **J. G. O'Rourke**, and A. C. Schneider, "Magnetic fields on rocky planets," In *Planetary Diversity: Rocky Planet Processes and their Observational Signatures*. Tasker, E. J., C. Unterborn, M. Laneuville, Y. Fujii, S. J. Desch, and H. E. Hartnett (Eds.). IOP Publishing. https://doi.org/10.1088/2514-3433/abb4d9ch3

[18] 2020 Lapôtre, M. G. A., **J. G. O'Rourke**, L. K. Schaefer, K. L. Siebach, C. Spalding, S. M. Tikoo, R. D. Wordsworth, "Probing Space to Understand Earth," *Nature Reviews Earth & Environment*, 1, 170–181, https://doi.org/10.1038/s43017-020-0029-y

[17] 2020 Glaser, D., H. E. Hartnett, S. J. Desch, C. T. Unterborn, A. Anbar, S. Buessecker, T. Fisher, S. Glaser, S. R. Kane, C. M. Lisse, C. Millsaps, S. Neuer, **J. G. O'Rourke**, N. Santos, S. I. Walker, M. Zolotov, "Detectability of life on pelagic planets and water worlds," *The Astrophysical Journal*, 893, 2, https://doi.org/10.3847/1538-4357/ab822d

Peer-reviewed, prior to my faculty appointment

[16] 2019 **O'Rourke, J. G.**, and S.-H. Shim, "Suppressing the Martian dynamo with hydrogenation of the core by hydrated silicates," *Journal of Geophysical Research: Planets*, 124, 12, 3422–3441, https://doi.org/10.1029/2019JE005950

[15] 2019 **O'Rourke, J. G.**, J. Buz, R. R. Fu, and R. J. Lillis, "Detectability of remanent magnetism in the crust of Venus," *Geophysical Research Letters*, 46, 11, 5768–5777, https://doi.org/10.1029/2019GL082725

[14] 2018 **O'Rourke, J. G.**, C. Gillmann, and P. Tackley, "Prospects for an ancient dynamo and modern crustal remanent magnetism on Venus," *Earth and Planetary Science Letters*, 502, 46–56, https://doi.org/10.1016/j.epsl.2018.08.055

[13] 2018 **O'Rourke, J. G.**, and S. E. Smrekar, "Signatures of lithospheric flexure and elevated heat flow in stereo topography at coronae on Venus," *Journal of Geophysical Research: Planets*, 123, 369–389, https://doi.org/10.1002/2017JE005358

[12] 2017 **O'Rourke, J. G.**, J. Korenaga, and D. J. Stevenson, "Thermal evolution of Earth with magnesium precipitation in the core," *Earth and Planetary Science Letters*, 458, 263–272 https://doi.org/10.1016/j.epsl.2016.10.057

[11] 2017 Stefansson, G., S. Mahadevan, L. Hebb, J. Wisniewski, J. Huehnerhoff, B. Morris, S. Halverson, M. Zhao, J. Wright, **J. G. O'Rourke**, H. Knutson, S. Hawley, S. Kanodia, Y. Li, L. M. Z. Hagen, L. J. Liu, T. Beatty, C. Bender, P. Robertson, J. Dembicky, C. Gray, W. Ketzeback, R. Mcmillan, T. Rudyk, "Towards Space-Like Photometric Precision from the Ground with Beam Shaping Diffusers," *The Astrophysical Journal*, 848, 9, https://doi.org/10.3847/1538-4357/aa88aa

[10] 2016 **O'Rourke, J. G.**, and D. J. Stevenson, "Powering Earth's dynamo with magnesium precipitation from the core," *Nature*, 529, 387–389, https://doi.org/10.1038/nature16495

[9] 2016 MacKenzie, S. M., T. E. Caswell, C. M. Phillips-Lander, E. N. Stavros, J. D. Hofgartner, V. Z. Sun, K. E. Powell, C. J. Steuer, **J. G. O'Rourke**, J. K. Dhaliwal, C. W. S. Leung, E. M. Petro, J. J. Wynne, S. Phan, M. Crismani, A. Krishnamurthy, K. K. John, K. DeBruin, C. J. Budney, K. L. Mitchell, "THEO Concept Mission: Testing the Habitability of Enceladus's Ocean," *Advances in Space Research*, 58, 6, 1117–1137, https://doi.org/10.1016/j.asr.2016.05.037

[8] 2015 **O'Rourke, J. G.**, and J. Korenaga, "Thermal evolution of Venus with argon degassing," *Icarus*, 260, 128–140, https://doi.org/10.1016/j.icarus.2015.07.009

[7] 2014 **O'Rourke, J. G.**, A. S. Wolf, and B. L. Ehlmann, "Venus: Interpreting the spatial distribution of volcanically modified craters," *Geophysical Research Letters*, 41, 8252–8260, https://doi.org/10.1002/2014GL062121

[6] 2014 **O'Rourke, J. G.**, H. A. Knutson, M. Zhao, J. J. Fortney, A. Burrows, E. Agol, D. Deming, J.-M. Désert, A. W. Howard, N. K. Lewis, A. P. Showman, and K. O. Todorov, "Warm *Spitzer* and Palomar near-IR secondary eclipse photometry of two hot Jupiters: WASP-48b and HAT-P-23b," *The Astrophysical Journal*, 781, 109, https://doi.org/10.1088/0004-637X/781/2/109

[5] 2014 **O'Rourke, J. G.**, and D. J. Stevenson, "Stability of ice/rock mixtures with application to a partially differentiated Titan," *Icarus,* 227, 67–77, https://doi.org/10.1016/j.icarus.2013.09.010

[4] 2014 Zhao, M., **J. G. O'Rourke**, J. T. Wright, H. A. Knutson, A. Burrows, J. Fortney, H. Ngo, S. Hinkley, P. S. Muirhead, C. Baranec, R. Riddle, N. M. Law, B. J. Fulton, A. P. Showman, J. Curtis, and R. Burruss, "Characterization of the Atmosphere of the Hot Jupiter HAT-P-32Ab and the M-Dwarf Companion HAT-P-32B," *The*

Astrophysical Journal, 796, 115, https://doi.org/10.1088/0004-637X/796/2/115

[3] 2014 Shporer, A., **J. G. O'Rourke**, H. A. Knutson, G. M. Szabo, M. Zhao, A. Burrows, J. Fortney, E. Agol, N. B. Cowan, J.-M. Désert, A. W. Howard, H. Isaacson, N. A. Lewis, A. P. Showman, and K. A. Todorov, "Atmospheric Characterization of the Hot Jupiter Kepler-13Ab," *The Astrophysical Journal*, 788, 92, https://doi.org/10.1088/0004-637X/788/1/92

[2] 2012 **O'Rourke, J. G.**, and J. Korenaga, "Terrestrial planet evolution in the stagnant-lid regime: Size effects and the formation of self-destabilizing crust," *Icarus*, 221, 1043–1060, https://doi.org/10.1016/j.icarus.2012.10.015

[1] 2012 **O'Rourke, J. G.**, A. J. E. Riggs, C. A. Guertler, P. W. Miller C. M. Padhi, M. M. Popelka, A. J. Wells, A. C. West, J.-Q. Zhong, and J. S. Wettlaufer, "Mushy layer dynamics in micro and hyper gravity," *Physics of Fluids*, 24, https://doi.org/10.1063/1.4760256

Peer-reviewed, forthcoming

[2] Luo, H., **J. G. O'Rourke**, J. Deng, "Radiogenic heating sustains long-lived volcanism and magnetic dynamos in super-Earths," *Nature Geoscience,* submitted.

[1] Ghail, R., S. E. Smrekar, ^M. E. Borrelli, P. Byrne, A. Gülcher, R. F. Garcia, R. Herrick, T. Gerya, **J. G. O'Rourke**, A. Davaille, E. Mulyukova, T. Rolf, I. Plesa, G. Shellnutt, M. Ivanov, "Volcanic and Tectonic Constraints on the Evolution of Venus," *Space Science Reviews*, in revision.

Expert commentary, not peer-reviewed

[2] 2023 Dibb, S. D., E. Asphaug, J. F. Bell, R. P. Binzel, W. F. Bottke, S. Cambioni, J. M. Christoph, L. T. Elkins-Tanton, R. Jaumann, D. J. Lawrence, R. Oran, **J. G. O'Rourke**, C. Polansky, B. P. Weiss, M. Wieczorek, D. A. Williams, and the Psyche Team, "A Preflight Summary of the Science of NASA's Psyche Mission," *AGU Advances*, submitted.

[1] 2023 **O'Rourke, J. G.**, "Old impacts ignite young volcanism," *Nature Astronomy*, 7, 1152–1153, https://doi.org/10.1038/s41550-023-02097-4

Impact Factors: Here are the impact factors that are available for journals in which I publish.

Journal	*Impact Factor*
Nature	70
Nature Reviews Earth & Environment	42
Nature Geoscience	22
Nature Astronomy	16
Science Advances	14
AGU Advances	8.4
Space Science Reviews	8.0
The Astrophysical Journal	5.9
Earth and Planetary Science Letters	5.3
Physics of Fluids	5.0
Geophysical Research Letters	4.7

Journal of Geophysical Research: Planets	3.8
Icarus	3.5
The Planetary Science Journal	3.4
Advances in Space Research	2.6

RESEARCH GRANTS

I have participated in **10 funded grants** since the start of my faculty appointment at ASU in January 2020 (listed chronologically below). The total amount to ASU from all awards with my participation is **$8,622,214**—including **$1,565,381** for awards with me as PI and/or ASU lead. In total, ASU has attributed **$1,926,592 (REC)** to me from all awards so far.

Title	Funder	Total Funds to ASU	Duration	Role/Personnel	Status
[1] Plume-Induced Subduction and Dripping on Venus: Implications for Crustal Recycling, Resurfacing, and Requirements for Subduction	NASA SSW	$35,000 (100% O'Rourke)	12 months, 01/2020 – 12/2020	PI: Suzanne Smrekar (JPL) ASU Co-Is: **O'Rourke**	Complete
[2] Development of a Rugged Seismometer for Venus Surface Deployment	NASA PICASSO	$995,964 (20% O'Rourke)	36 months, 09/2020 – 09/2023	PI: Lenore Dai (ASU) ASU Co-Is: **O'Rourke**, E. Garnero	Funded, In Progress (No-Cost Extension Underway)
[3] The Structural, Thermal, and Magnetic History of Europa's Rock-Metal Interior with Implications for Seafloor Geochemistry	NASA FINESST	$135,000 (75% O'Rourke)	36 months, 09/2021 – 09/2024	PI: **O'Rourke** FI: K. Trinh ASU Co-Is: E. Shock, C. Bierson	Funded, In Progress
[4] Photogeologic study of Noachis Terra	NASA MDAP	$298,603 (2% O'Rourke)	48 months, 07/2022 – 6/2026	PI: Hannes Bernhardt ASU Co-Is: D. Wilson, D. Williams ASU Collaborator: **O'Rourke**	Funded, In Progress
[5] Volatile Reservoirs and the Habitability of M-Earths	Heising-Simons Foundation	$54,988 (100% O'Rourke)	24 months, 10/2022 – 09/2024	ASU PI: **O'Rourke** Co-Equal PIs: L. Rogers (U Chicago), N. Cowan (McGill), C. Sun (U Texas)	Funded, In Progress
[6] Magma Oceans in Rocky Exoplanets: Understanding Their Dynamic and	NASA XRP	$542,369 (50% O'Rourke)	36 months, 1/2023 – 12/2025	PI: **O'Rourke** Co-Is: S.-H. Shim (ASU), W. Mao	Funded, In Progress

Magnetic Evolution with New Models and Experiments				(Stanford), A. Gleason (Stanford)	
[7] Tracing Rocky Exoplanet Compositions	NASA ICAR	$5,762,266 (8% O'Rourke)	60 months, 7/2023 – 6/2028	PI: Desch ASU Co-Is: Jackson, Brugman, Hartnett, Nittler, **O'Rourke**, Simon, Till, Young Other Co-Is: S. Kane (UC Riverside), A. Wolf (U of Mich.), B. Foley (PSU), C. Unterborn (SwRI), N. Hinkel (SwRI), Mass (IU)	Funded, In Progress
[8] Meteor Airbursts on Venus: Geological Consequences and Implications for Resurfacing History	NASA FINESST	$150,000 (100% O'Rourke)	36 months, 8/2023 – 7/2026	PI: **O'Rourke** FI: T. Austin Non-ASU Co-Is: N. Izenberg (APL), E. Silber (Sandia)	Funded, In Progress
[9] Collaborative Research: GLOW: Basal magma ocean dynamos of early Earth, Venus, and the Moon	NSF Planetary Astronomy	$82,961 (100% O'Rourke)	36 months, 9/2023 – 8/2026	PI: O'Rourke Co-PI: K. Soderlund (UT Austin)	Funded, In Progress
[10] Impactor Airbursts in the Atmosphere of Venus: Geological Consequences and Implications for Resurfacing Histories	NASA Solar System Workings	$565,063 (100% O'Rourke)	36 months, 10/2023 – 9/2026	PI: **O'Rourke** Non-ASU Co-Is: N. Izenberg (APL), E. Silber (Sandia)	Funded, In Progress

INVITED RESEARCH PRESENTATIONS

Seminars and Colloquia

2023 Colloquium, Lunar and Planetary Laboratory, University of Arizona
2022 Colloquium, Department of Earth & Planetary Sciences, Yale University
2021 Seminar, Department of Geological Sciences, University of Florida
2021 Seminar, Lunar and Planetary Institute
2021 Planetary Science Seminar, Jet Propulsion Laboratory
2020 Guest Speaker, Earth and Planetary Sciences, University of California, Riverside
2020 Keynote Lecture, COMPRES Keynote Lecture Series

2020 IGPP Seminar, University of California, Santa Cruz
2020 Colloquium, School of Earth and Space Exploration, Arizona State University
2019 Seminar, Planetary Exploration Research Center, Chiba Institute of Technology, Japan
2019 Seminar, School of Earth and Space Exploration, Arizona State University
2019 Seminar, Department of Geological Sciences, University of Idaho
2019 Seminar, Department of Earth and Planetary Sciences, Rutgers University
2019 Seminar, Department of Earth and Atmospheric Sciences, University of Houston
2019 Seminar, Department of Earth and Atmospheric Sciences, Georgia Institute of Technology
2018 Geophysics Seminar, Scripps Institution of Oceanography
2017 Geophysical Fluid Dynamics Seminar, ETH Zurich
2017 iPLEX Lunch Seminar, University of California Los Angeles
2017 Special Planetary Science Seminar, Massachusetts Institute of Technology
2016 Planetary Science Seminar, University of California Los Angeles
2012 Yuk Lunch Seminar, California Institute of Technology

Invited Talks at Scientific Conferences & Meetings

2023 Venus Science Conference (online), Physical Research Laboratory, Ahmedabad, India
2022 NASA VEXAG Annual Meeting (declined, parental leave)
2022 Exoplanets in Our Backyard Workshop (declined, parental leave)
2022 NASA MAVEN Mission, Project Science Group Meeting
2021 IAGA-IASPEI, Joint Scientific Assembly, India
2020 EnVision Conference, Paris, France
2019 EPSC-DPS Joint Meeting, Geneva, Switzerland
2019 Goddard CubeSat Workshop, Greenbelt, MD
2017 American Geophysical Union Fall Meeting, New Orleans, LA
2017 Goldschmidt, Paris, France
2017 Accretion and Early Differentiation of the Earth and Terrestrial Planets (ACCRETE) Workshop, Nice, France
2017 Venus Modeling Workshop, Universities Space Research Association
2015 Early Planetary Dynamo Workshop, Tokyo Institute of Technology, Earth-Life Science Institute
2012 Titan Geophysics Workshop, California Institute of Technology

Invited Workshops

2023 Scialog: Search for Life in the Universe, Research Corporation, Tucson, AZ
2022 Venus In Situ Sample Capture Mission Workshop, Keck Institute for Space Studies, Pasadena, CA
2022 Scialog: Search for Life in the Universe, Research Corporation, Tucson, AZ
2022 Breakthrough Discuss, Santa Cruz, CA
2021 Planetary Geodesy Workshop, Keck Institute for Space Studies, Pasadena, CA
2021 Venus: Evolution Through Time Workshop, International Space Science Institute, Bern, Switzerland

2019 SmallSat Technical Interchange Meeting, NASA Ames
2015 NASA Planetary Science Summer School, Jet Propulsion Laboratory
2014 Venus Seismology Workshop, Keck Institute for Space Studies, Pasadena, CA

CONFERENCE ABSTRACTS & PRESENTATIONS

Contributed Talks as Lead Author (Including Advisees)

[35] 2023 ^Austin, T. J., **J. G. O'Rourke**, N. G. Izenberg, E. A. Silber, "Meteoroid Airburst Scars on Venus," EnVision International Venus Science Workshop.

[34] 2023 ^Braunisch, S. & **J. G. O'Rourke**, "A Basal Magma Ocean as a Hidden Reservoir of Noble Gases in Venus," EnVision International Venus Science Workshop.

[33] 2023 ^Austin, T. J., **J. G. O'Rourke**, N. Izenberg, E. Silber, "Venus Airbursts: Implications for Global Resurfacing," LPSC Abstracts #2534.

[32] 2022 ^Borrelli, M. E., †C. J. Bierson, **J. G. O'Rourke**, S. M. Howell, "Using Crater Statistics to Place Constraints on Resurfacing and Historic Heat Flux of Uranian Satellites Ariel and Miranda," AGU Fall Meeting #P23B-02.

[31] 2022 ^Trinh, K. T., †C. J. Bierson, **J. G. O'Rourke**, "Slow Evolution of Europa: Metamorphic Ocean Origin, Delayed Metallic Core Formation, and Limited Seafloor Volcanism," AGU Fall Meeting #P52B-01.

[30] 2022 ^Trinh, K. T., †C. J. Bierson, **J. G. O'Rourke**, "Europa's Metallic Core May Have Taken Billions of Years to Start Forming," LPSC Abstracts #2374.

[29] 2022 ^Courville, S. W., **J. G. O'Rourke**, J. C. Castillo-Rogez, R. R. Fu, R. Oran, B. P. Weiss, L. T. Elkins-Tanton, "Magnetic Field Measurements at 10 Hygiea and 24 Themis Could Constrain Models of their Formation and Evolution," LPSC Abstracts #1795.

[28] 2021 ^Braunisch, S. R., **J. G. O'Rourke**, "A Basal Magma Ocean in Venus May Be a Hidden Reservoir of Noble Gases," AGU Fall Meeting #P41B-04A.

[27] 2021 ^Hamid, S., **J. G. O'Rourke**, K. M. Soderlund, "A Lunar Magnetic Field Powered by Core Convection and a Basal Magma Ocean," AGU Fall Meeting #GP44A-03A.

[26] 2021 **O'Rourke, J. G.**, *C. H. Blaske, ^M. E. Borrelli, "Impactor Airbursts: Implications for the Present and Future of Venus Exploration," AGU Fall Meeting #P41B-08.

[25] 2021 ^Trinh, K. T., †C. J. Bierson, **J. G. O'Rourke**, "Europa's Metallic Core May Have Taken Billions of Years to Form," AGU Fall Meeting #P41A-04.

[24] 2021 ^Hamid, S., **J. G. O'Rourke**, K. M. Soderlund, "A Lunar Magnetic Field Powered by Core Convection and a Basal Magma Ocean," Lunar and Planetary Science Conference #2038.

[23] 2021 *Blaske, C. H., **J. G. O'Rourke**, "Energetic Requirements for Dynamos in the Metallic Cores of Super-Earth and Super-Venus Exoplanets," Lunar and Planetary Science Conference #2323.

[22] 2021 ^Borrelli, M. E., **J. G. O'Rourke**, S. E. Smrekar, C. M. Ostberg, "A Global Survey of Lithospheric Flexure at Pancake Domes on Venus Reveals Intermediate Elastic Thickness," Lunar and Planetary Science Conference #1250.

[21] 2021 ^Courville, S. W., **J. G. O'Rourke**, J. C. Castillo-Rogez, R. Oran, B. P. Weiss, R. R. Fu, "Magnetization of Large C-Type Asteroids: A Detectable Consequence of Pebble Accretion?" Lunar and Planetary Science Conference #2355.

[20] 2020 **O'Rourke, J. G.**, "Venus: A Thick Basal Magma Ocean May Exist Today," AGU Fall Meeting #DI026-06.

[19] 2020 ^Borrelli, M. E., **J. G. O'Rourke**, S. E. Smrekar, "Lithospheric Thickness and Heat Flow on Venus: Results from a Global Survey of Flexure at Steep-Sided Domes," AGU Fall Meeting #DI024-0001.

[18] 2020 **O'Rourke, J. G.**, J. Castillo-Rogez, & The Athena Science Team, "Athena: The First-Ever Encounter of a Main Belt Asteroid with a SmallSat," International Small Satellite Conference, Pasadena, CA.

[17] 2020 **O'Rourke, J. G.**, "Venus: A Thick Basal Magma Ocean May Exist Today," Lunar and Planetary Science Conference, #1669.

[16] 2020 ^Borrelli, M. E., **J. G. O'Rourke**, and S. E. Smrekar, "Venus: Are Elastic Thicknesses Inferred at Coronae Globally Representative?" Lunar and Planetary Science Conference.

[15] 2019 **O'Rourke, J. G.**, C. Gillmann, P. Tackley, J. Buz, R. R. Fu, and R. J. Lillis, "Detectability and scientific implications of crustal remanent magnetism on Venus," International Venus Conference.

[14] 2019 **O'Rourke, J. G.**, C. Gillmann, P. Tackley, J. Buz, R. R. Fu, and R. J. Lillis, "Detectability and scientific implications of crustal remanent magnetism on the surface of Venus," Lunar and Planetary Science Conference, #2222.

[13] 2018 **O'Rourke, J. G.**, C. Gillmann, P. Tackley, and S.-H. Shim, "Chemistry controls dynamos in metallic cores: New perspectives from Venus and Mars," AGU Fall Meeting #GP12A-01.

[12] 2018 **O'Rourke, J. G.**, S. E. Smrekar, "Signatures of lithospheric flexure and elevated heat flow in stereo topography at coronae on Venus," International Venus Conference.

[11] 2018 **O'Rourke, J. G.**, and S.-H. Shim, "Suppressing the Martian dynamo with ongoing hydrogenation of the core by hydrated mantle minerals," Lunar and Planetary Science Conference, #2390.

[10] 2017 **O'Rourke, J. G.**, S. E. Smrekar, and L.-N. Moresi, "Constraints on Lithospheric Rheology and Volatile Content from Observations of Coronae on Venus," Lunar and Planetary Science Conference, #2388.

[9] 2016 **O'Rourke, J. G.**, J. Korenaga, and D. J. Stevenson, "Sustaining a global magnetic field on Earth but not Venus with mantle dynamics," AGU Fall Meeting #P44B-05.

[8] 2016 **O'Rourke, J. G.**, and D. J. Stevenson, "Powering Earth's Dynamo with Magnesium Precipitation from the Core," Goldschmidt #198.

[7] 2015 **O'Rourke, J. G.**, and D. J. Stevenson, "Statistical Constraints from Siderophile Elements on Earth's Accretion, Differentiation, and Initial Core Stratification," AGU Fall Meeting #P13C-07.

[6] 2015 **O'Rourke, J. G.**, and J. Korenaga, "Constraints on the Geodynamical History of Venus from Argon Degassing and the Cratering Record," LPI: Comparative Tectonics and Geodynamics #5007.

[5] 2014 **O'Rourke, J. G.**, and D. J. Stevenson, "Thermochemical evolution of Earth's core with magnesium precipitation," AGU Fall Meeting #DI14A-01.

[4] 2012 **O'Rourke, J. G.**, and J. Korenaga, "Terrestrial planet evolution in the stagnant-lid regime: Size effects and the formation of self-destabilizing crust," AGU Fall Meeting #P13E-01.

[3] 2011 **O'Rourke, J. G.**, A. J. E. Riggs, C. A. Guertler, P. W. Miller, C. M. Padhi, M. M. Popelka, A. C. West, J.-Q. Zhong, and J. S. Wettlaufer, "Mushy layer dynamics in micro and hyper gravity," APS Division of Fluid Dynamics Meeting.

[2] 2011 **O'Rourke, J. G.**, and D. J. Stevenson, "Stability of ice/rock mixtures with application to Titan," Lunar and Planetary Science Conference, #1629.

[1] 2009 **O'Rourke, J. G.**, and K. K. M. Lee, "Melting curve of dense potassium," AGU Fall Meeting #MR34A-06.

Contributed Posters as Lead Author (Including Advisees)

[21] 2023 ^Courville, S., J. Castillo-Rogez, M. Melwani Daswani, E. Gloesener, M. Choukroun, **J. G. O'Rourke**, "Timing and Abundance of Clathrate Formation within Outer Solar System Bodies," LPSC Abstracts #1867.

[20] 2022 †C. J. Bierson, L. T. Elkins-Tanton, **J. G. O'Rourke**, "Thermal Fatigue on 16 Psyche Driven by a Combination of High Obliquity and Surface Composition," AGU Fall Meeting #P52D-2138.

[19] 2022 ^Courville, S.W., J.C. Castillo-Rogez, M.M. Daswani, M. Choukroun, E. Gloesener, J.G. O'Rourke, "Did Clathrate Layers Insulate Primordial Oceans in the Outer Solar System?" AGU Fall Meeting #P55G-1655.

[18] 2022 *Blaske, C. H., ^M.E. Borrelli, **J. G. O'Rourke**, S.J. Desch "Meteors Might Masquerade as Lightning in the Atmosphere of Venus," AGU Fall Meeting #P52E-1590.

[17] 2022 ^Borrelli, M. E., D. A. Williams, **J. G. O'Rourke**, "Investigating the Formation of Lava Channels on Venus with New Models and New Topography," LPSC Abstracts #1699.

[16] 2022 ^Borrelli, M. E., †C. J. Bierson, **J. G. O'Rourke**, "Crater Statistics on Ariel and Miranda Using Newly Processed Imagery and Topography," LPSC Abstracts #1649.

[15] 2021 *Blaske, C. H., **J. G. O'Rourke**, "Energetic Requirements for Dynamos in the Metallic Cores of Super-Earth and Super-Venus Exoplanets," AGU Fall Meeting #GP45E-0446E.

[14] 2021 ^Courville, S. W., **J. G. O'Rourke**, J. C. Castillo-Rogez, R. R. Fu, R. Oran, B. P. Weiss, "Magnetization of carbonaceous asteroids by nebular fields and the

origin of CM chondrites," AGU Fall Meeting #GP45E-0449.

[13] 2021 ^Trinh, K. T., †C. J. Bierson, **J. G. O'Rourke**, "Delayed Timing of Metal-Silicate Differentiation in Europa," Lunar and Planetary Science Conference #2394.

[12] 2021 †Bierson, C. J., L. T. Elkins-Tanton, **J. G. O'Rourke**, "Modeling the Surface Temperature of Asteroid 16 Psyche," Lunar and Planetary Science Conference #1603.

[11] 2020 **O'Rourke, J. G.** and S.-H. Shim, "Hydrogenation of the Martian Core by Hydrated Mantle Minerals with Implications for the Early Dynamo," Lunar and Planetary Science Conference, #2475.

[10] 2019 **O'Rourke, J. G.** and C. Dong, "Detectability of Crustal Remanent Magnetism on Venus from Orbital Magnetometer Measurements," VEXAG 17, #8028.

[9] 2019 **O'Rourke, J. G.**, C. Gillmann, and P. Tackley, "Prospects for an ancient dynamo and modern crustal remanent magnetism on Venus," EGU 2019, #18876.

[8] 2019 **O'Rourke, J. G.**, J. Castillo-Rogez, L. T. Elkins-Tanton, R. R. Fu, T. N. Harrison, S. Marchi, R. Park, B. E. Schmidt, D. A. Williams, C. C. Seybold, R. N. Schindhelm, J. D. Weinberg, "Athena: The First-Ever Encounter of (2) Pallas with a SmallSat," Lunar and Planetary Science Conference, #2225.

[7] 2018 **O'Rourke, J. G.**, "Detecting Crustal Remanent Magnetism on the Surface of Venus: Required Instrument Performance and Mission Design," VEXAG 16 #8053.

[6] 2018 **O'Rourke, J. G.**, C. Gillmann, and P. Tackley, "Prospects for an ancient dynamo and modern crustal remanent magnetism on Venus," International Venus Conference.

[5] 2018 **O'Rourke, J. G.**, C. Gillmann, and P. Tackley, "Prospects for an ancient dynamo and modern crustal remanent magnetism on Venus," Lunar and Planetary Science Conference, #2284.

[4] 2017 **O'Rourke, J. G.**, and D. J. Stevenson, "Influence of precipitating light elements on stable stratification below the core/mantle boundary," AGU Fall Meeting #287617.

[3] 2016 **O'Rourke, J. G.**, S. E. Smrekar, and L.-N. Moresi, "Constraints on Lithospheric Rheology and Volatile Content from Observations of Coronae on Venus," DPS 48/EPSC 11 #216.19.

[2] 2014 **O'Rourke, J. G.**, and D. J. Stevenson, "Magnesium Partitioning and Precipitation in Earth's Core?" Accretion and Early Differentiation of the Earth and Terrestrial Planets (ACCRETE) Workshop, Nice, France.

[1] 2014 **O'Rourke, J. G.**, H. A. Knutson, M. Zhao, J. J. Fortney, A. Burrows, E. Agol, D. Deming, J.-M. Désert, A. W. Howard, N. K. Lewis, A. P. Showman, and K. O. Todorov, "A Secondary Eclipse Survey of the Hottest Exoplanets with Palomar and Spitzer," Exoclimes III, Davos, Switzerland.

Selected Abstracts as Co-Author (2020–Present)

2022 Kim, T., **J. G. O'Rourke**, J. Lee, S. Chariton, V. B. Prakapenka, R. Husband, N. Giordano, H.-P. Liermann, Y. Lee, S.-H. Shim, "Possible link between deeply subducted water and the E' layer," AGU Fall Meeting

2022 Way, M., C. M. Ostberg, B. J. Foley, C. Gillmann, D. Höning, H. Lammer, **J. G. O'Rourke**, M. Persson, A.-C. Plesa, A. Salvador, M. Scherf, M. B. Weller, "Searching for Synergies between Venus and Exoplanetary Worlds," AGU Fall Meeting #P56B-08.

2022 Byrne, P. K., J. A. Cutts, K. H. Baines, L. I. Dorsky, A. S. Brecht, S. Curry, M. D. Dyar, J. G. O'Rourke, S. Seager, J. Izraelevitz, A. Austin, "Phantom: An Aerobot Mission to the Skies of Venus," AGU Fall Meeting #P56B-08.

2022 Baines, K. H., J. A. Cutts, P. Byrne, L. Dorsky, **J. G. O'Rourke**, S. Seager, C. Wilson, "Venus Cloud Explorer: A Long-Duration In-Situ New Frontiers Mission to Investigate the Habitability of Venus," LPSC Abstracts #1823.

2022 Smrekar, S. E., C. M. Ostberg, **J. G. O'Rourke**, "Venus Variable Lithospheric Thickness and Implications for Active Rifting and New Insights on Convective Regime," LPSC Abstracts #2884.

2021 Smrekar, S. E., C. M. Ostberg, **J. G. O'Rourke**, "Venus' Lithospheric Thickness and Geodyanmic Regime," AGU Fall Meeting #DI44A-01.

2020 Alhantoobi, A., J. Buz. **J. G. O'Rourke**, B. Langlais, C. S. Edwards, "Mineralogical enhancement of crustal magnetism on Mars," AGU Fall Meeting #GP015-04.

2020 Smrekar, S. E., C. M. Ostberg, **J. G. O'Rourke**, "Lithospheric Thickness: A Lens on Understanding the Evolution of Earth's Twin," AGU Fall Meeting #P022-06.

2020 Cutts, J. A., B. G. Bills, A. Komjathy, S. Krishnamoorthy, R. E. Grimm, M. Pauken, J. M. Jackson, D. Mimoun, **J. G. O'Rourke**, "Balloon-Based Geophysical Investigations at Venus," AGU Fall Meeting #P050-08.

2020 Cutts, J., D. Dyar, N. R. Izenberg, G. Hunter, **J. G. O'Rourke**, "Venus Exploration: Science Mission Roadmap and Technology," 43rd COSPAR Scientific Assembly

2020 Buz, J., A. Alhantoobi, **J. G. O'Rourke**, C. S. Edwards, and B. Langlais, "Potential correlation between composition and crustal magnetism in Terra Sirenum, Mars," Lunar and Planetary Science Conference, #2226.

2020 Byrne, P. K., E. A. Frank, M. D. Dyar, J. Helbert, P. Illsley, A. Komjathy, S. Krishnamoorthy, R. J. Lillis, **J. G. O'Rourke**, E. M. Royer, S. C. Solomon, C. Tsang, C. Voorhees, and C. F. Wilson, "Thalassa: A Mission to Follow the Water on Venus," Lunar and Planetary Science Conference, #2625.

TEACHING

Courses Taught at ASU

Fall 2023 SES 421/598: Foundations of Planetary Science
Upper-level survey course covering a range of topics in planetary science using quantitative methods.
Enrollment: ~10+ students.

Fall 2022, Fall 2020 SES 100: Introduction to Exploration
Basics of aerospace engineering applied to planetary exploration for undergraduates, including physics, ethics, and group projects.
Enrollment: ~55, 67 students.

Spring 2022	SES 494/598: Geology of Venus *New course about Venus for upper-level undergraduate and graduate students. Centered on Oxford-style debates about scientific controversies.* Enrollment: ~24 students.
Fall 2021	GLG 101: Introduction to Geology I (Physical) *General education class for undergraduates teaching basic principles of geology, geochemistry, and geophysics.* Enrollment: ~200 students.
Spring 2021	GLG 598: Geodynamics *Graduate-level geodynamics applied to Earth and other planets.* Enrollment: ~5 students.
Spring 2020	SES 598: Planetary Thermal Evolution *Graduate-level geodynamics applied to Earth and other planets.* Enrollment: ~3 students.
Spring 2020	SES 494: Wilderness Astronomy (co-taught with P. Loyd and M. Kao) *Physics that govern our universe, our planet, and our personal survival, featuring a 7-day backpacking trip near Sedona, AZ. Students ranged from undergraduates to university staff.* Enrollment: ~9 students.

Professional Development at ASU

2023	ASU Master Class for Teaching Online *Two-week, intensive online course*
2020–2021	ACUE Effective Teaching Practices Certificate *Mini graduate course with 25 modules over 2 semesters*

I aim to support **the ASU Charter and our mission of accessible excellence** in all my courses. Like the members of my research group, the students in my classes hail from a broad range of backgrounds. I design my courses to comport with SESE's list of helpful teaching activities:

- Creating new assignments that reflect on the ethical implications of the course material (e.g., discussing who owns a volcano in GLG 101 and Operation Paperclip in SES 100).
- Implementing low-stress and flexible grading procedures, especially in courses disrupted by the coronavirus pandemic (i.e., most of mine so far).
- Making special efforts to reach out to students who fall behind.
- Ensuring that course readings reflect the diversity of excellence among practitioners.
- Defining professional conduct/norms, as appropriate in lower- and upper-level courses.

STUDENT & POSTDOCTORAL SUPERVISION

I am currently, or have been, the primary research mentor for one postdoctoral fellow, four graduate students (all PhD), 5 graduate student second projects, and 2 undergraduate

researchers. One graduate student has earned a degree (Master's in Passing) so far. I have also served on 9 thesis committees for PhD students besides my primary and secondary advisees.

ASU Postdoc Advisees

1. Dr. Carver J. Bierson (SESE, 2017–Present, co-supervised with Lindy Elkins-Tanton)

ASU SESE Graduate Student Primary Advisees

1. Madison Borrelli (SESE, PhD Candidate in Geological Sciences, Fall 2019 – Present)
   Winner of the Amelia Earhart Fellowship (2022), Chateaubriand Fellowship (2022), NSF GRFP Honorable Mention (2021), and an ASU Nininger Student Travel Award (2021).
2. Samuel Courville (SESE, PhD Candidate in Geological Sciences, Fall 2020 – Present)
   Winner of the ASU SESE First Year Fellowship (2020).
3. Kevin Trinh (SESE, PhD Candidate in Geological Sciences, Fall 2020 – Present)
   Winner of an ASU Nininger Student Travel Award (2021). *ASU finalist for the 2023–24 ARCS Scholar Award (2023).*
4. Trevor Austin (SESE, PhD Student in Geological Sciences, Fall 2022 – Present)

ASU SESE Graduate Student Second Project Advisees

In SESE, all PhD students are required to conduct a secondary research project in their pre-candidacy period. These research projects can evolve into publications and/or dissertation chapters—and can be used to secure the degree of Masters in Passing.

1. Saira Hamid (SESE, PhD Candidate in Geological Sciences, Fall 2019 – Present)
   Winner of an NSF GRFP Award (2021). Earned a Masters in Passing (2022, Advisor: O'Rourke). Her PhD advisor is Amanda Clarke. Saira works with me on the Moon.
2. Sarah Braunisch (SESE, PhD Candidate in Geological Sciences, Fall 2020 – Present)
   Her PhD advisor is Phil Christensen. Sarah is working with me on Venus's geochemistry.
3. Jessica Norrell (SESE, PhD Student in Geological Sciences, Fall 2022–Present)
   Her PhD advisor is Katrina Bossert. Jessica is working with me on atmospheric signatures of geophysical activity at Venus.
4. Allyson Trussell (SESE, PhD Student in Geological Sciences, Fall 2022–Present)
   Her PhD advisor is Jim Bell. She is working with me on carbonatite magmatism on Venus.
5. Yoav Rotman (SESE, PhD Student in Astrophysics, Fall 2022–Present)
   His PhD advisor is Mike Line. Yoav is working with me on basal magma oceans in rocky exoplanets, specifically on their capacity to generate magnetospheres.

ASU SESE Undergraduate Research Advisees

1. Claire Blaske (SESE, BS in Astrophysics, Fall 2019 – Spring 2023)
   Now PhD student at Stanford. I was Claire's research mentor since her first semester. She won a few awards: the National Science Foundation Graduate Research Fellowship (2023); the SESE Dean's Medal (2023); the University Outstanding Undergraduate Award for The College of Liberal Arts and Sciences, Natural Sciences (2023); an Outstanding Research Award for Barrett, the Honors College (2023); a USRA Distinguished Undergraduate Award (2022); the Goldwater Scholarship (2022); a Dwornik Award for Outstanding Undergraduate Oral Presentation Honorable Mention at the Lunar and Planetary Science Conference (2021); and an ASU Nininger Student Travel Award (2021).
2. Sarah Lunetto (SESE, BS in Astrobiology, Spring 2023–Present)

I am advising Sarah on her honors thesis for SESE and Barrett, The Honors College.

3. Shivam Sadachar (SESE, BS in Astrophysics, Graduated 2022)
   I advised Shivam on his honors thesis for Barrett, The Honors College.

ASU SESE Graduate Student Thesis Committee Membership (excluding Advisees)

1. Krishna Kanumalla (SESE, PhD Student, Astrophysics)
2. Xuehui Wei (SESE, PhD Student, Geological Sciences)
3. Brendan Champman (SESE, MS Student, Geological Sciences)
4. Mara Karageozian (SESE, PhD Candidate, Geological Sciences)
5. Srinidhi Ravi (SESE, PhD in Geological Sciences, graduated 2023)
6. Kevin Hubbard (SESE, PhD Student, Geological Sciences, graduated 2023, now at Honeybee Robotics)
7. Aishwarya Iyer (SESE, PhD in Astrophysics, graduated 2023, now a NASA Postdoctoral Fellow at Goddard Space Flight Center)
8. Jonathon Hill (SESE, PhD in Geological Sciences, graduated 2022, now a mission planner at ASU's Mars Space Flight Facility)

External Graduate Student Committee Membership

1. Stephanie Menten (PhD Examination Committee, Purdue University)

SERVICE

I. Service to Arizona State University and the School of Earth and Space Exploration

Official SESE Committees

2023–Present	SESE Graduate Committee
2022–2023	SESE Undergraduate Committee
2021–2022	SESE Awards Nominations Committee

Junior faculty in SESE are typically exempt from committee service for their first two academic years and then expected to rotate through different committees (one committee per year).

Ad Hoc SESE Service Roles

2023–Present	SESE President's Postdoctoral Fellowship Search Committee
2023–Present	SESE Equity in Qualifying Exams Leadership (SEQEL) Team
2021–Present	Unlearning Racism in Geoscience (URGE), ASU SESE Pod, Co-Lead
2022–2023	Chair, SESE Planetary Certificate Working Group

II. Service to National Agencies

2023–Present	NASA/ESA Venus Science Coordination Group (VeSCoor) *I am one of six people appointed by NASA to this international group. Our task is to facilitate discussion about synergies between the upcoming missions to Venus—and to suggest studies to promote those synergies.*
2023–Present	National Academies, Committee on Astrobiology and Planetary Sciences *We are a standing committee to discuss issues in astrobiology and planetary science that are important to researchers, the federal government, and the*

public. When asked, we provide advice to the federal government about the implementation of recommendations from the decadal survey.

2020–2022 National Academies, Planetary Science and Astrobiology Decadal Survey 2023–2032, Panel on Venus
This service role has been a highlight of my career so far. As a panel member, I attended weekly meetings (~5 hours per week) to formulate priorities for the next decade of Venus science. I also served as Science Champion for a mission concept study (~10 hours/week for ~4 months) and co-led the writing group for the Exoplanets chapter (~5 hours/week for ~3 months).

2017–2021 NASA Venus Exploration and Analysis Group (VEXAG) Steering Committee
VEXAG is tasked with providing input about the scientific goals for Venus exploration and the technology development and programmatic activities needed to achieve those goals. I served on the Steering Committee and as a Co-Lead of the Early Career Scholars Group. In 2019, I co-chaired the group that updated our "Goals, Objectives, and Investigations for Venus Exploration" document (a few hours per week on average for ~4 years).

2012 Berkner Space Policy Intern, National Research Council, Washington, D.C.

III. Editorial Service

2017–Present Manuscript Reviewer for Nature Geoscience, Nature Communications, Earth and Planetary Science Letters, The Astrophysical Journal, The Planetary Science Journal, Acta Astronautica, Astrobiology, Physics of the Earth and Planetary Interiors, Geophysical Research Letters, Journal of Geophysical Research: Planets, G-Cubed, Elements, Icarus
Including 7 in 2023, 5 in 2022, 6 in 2021, and 9 in 2020.

IV. Grant Proposal and Panel Service

2017–Present NASA Review Panelist: Emerging Worlds, KPLO PSP, InSight PSP, DDAP/RDAP, DALI/MatISSE, LDAP, CDAP × 2, NPP
NSF Review Panelist: Planetary Astronomy
Swiss National Science Foundation
Including 3 ad hoc reviews in 2023; 3 ad hoc reviews in 2022; and 3 panels and 1 ad hoc review in 2020.

2017 NASA Executive Secretary: SSW

V. Selected Community Service/Outreach

1. June 2023, Volunteer for RealTimeSTEAM on three panels at Phoenix Fan Fusion
2. August 2022, Guest host on Mission: Interplanetary (podcast of the Interplanetary Initiative at Arizona State University) to discuss religion and the corporate space race.
3. April 2022, Guest on Mission: Interplanetary, "Mars vs. Venus," I was "Venus" and won.
4. June 2021, Appeared on Launch Pad Astronomy (YouTube show), "New missions to Venus!" (>6k views, https://www.youtube.com/watch?v=2VHTA-HQN4c&t=3s)

5. February 2021, Panelist for Planetfest ’21 organized by The Planetary Society (>300 attendees)
6. March 2020, Appeared on Planetary Radio (The Planetary Society) to discuss (“The Next 10 Years of Planetary Exploration,” https://www.planetary.org/planetary-radio/0325-2020-next-10-years)

VI. Selected Mentions in Press Coverage & Media

1. October 2023, “Billions of Years Ago, Venus May Have Had a Key Earthlike Feature,” *The New York Times*, https://www.nytimes.com/2023/10/26/science/venus-plate-tectonics-life.html
2. September 2023, “Flashes in Venus’ atmosphere might be meteors, not lightning,” *ScienceNews*, https://www.sciencenews.org/article/venus-atmosphere-meteor-lightning-space
3. July 2023, “The U.S. is about to open a new window into Earth’s mysterious insides,” *The Washington Post*, https://www.washingtonpost.com/science/2023/07/18/earth-layers-high-pressure-laboratory/
4. July 2023, “Exploring Jupiter’s Moon Europa,” *Arizona PBS.* https://azpbs.org/horizon/2023/07/exploring-jupiters-moon-europa/
5. July 2023, “ASU-led team awarded $5.7M NASA grant to predict range of rocky exoplanet compositions,” *ASU News*. https://news.asu.edu/20230731-asuled-team-awarded-nasa-grant-predict-range-rocky-exoplanet-compositions
6. July 2023, “2 ASU professors awarded inaugural Navrotsky Early Career Award,” *ASU News*. https://news.asu.edu/20230726-2-asu-professors-awarded-inaugural-navrotsky-early-career-award
7. June 2023, “ASU study: Jupiter’s moon Europa may have had a slow evolution,” *ASU News.*
8. May 2023, “Astrophysics major named Dean’s Medalist finds inspiration in the natural world.” *ASU News*.
9. April 2022, “Four ASU Students Awarded in Nationwide STEM Scholarship.” *The State Press.*
10. June 2021, “Venus Lacks Plate Tectonics. But It Has Something Much More Quirky.” *The New York Times*.
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