

# Elizabeth M. Spiers, PhD

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## Education

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### Georgia Institute of Technology

Ph.D. Earth & Atmospheric Sciences 2023

Advisor: Prof. Britney Schmidt

Thesis: *Habitable Ocean World Box (HOWBox) Model: Linking  
Europa's Thermal-Geochemical Evolution*

Doctoral Minor: *Geochemical Modeling*

Astrobiology Graduate Certificate 2022

### Purdue University

B.S. Applied Physics 2017

B.S. Planetary Science 2017

## Professional Affiliations

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### The University of Texas at Austin, Institute for Geophysics

Research Associate 2023 – Present

### Woods Hole Oceanographic Institution, Department of Geology & Geophysics

Guest Investigator 2025 – Present

Weston Howland Jr. Postdoctoral Scholar 2024 – 2025

Advisors: Drs. Christopher German & Jeffrey Seewald

### NASA Europa Clipper Science Team, Radar for Europa Assessment & Sounding: Ocean to Near-surface (REASON)

Professional Affiliate 2024 – Present

Graduate Student Affiliate 2018 – 2024

## Journal Publications *(total citations = 167; h-index = 5)*

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- Schroeder, D. M., Wolfenbarger, N. S., Steinbrügge, G. B., Culberg, R., Howell, S. M., **Spiers, E.M.**, & Styczinski, M. (2024). Constraining the thickness of the conductive portion of Europa's ice shell using sparse radar echoes. *Geophysical Research Letters*. 51 (20), e2024GL110635. <https://doi.org/10.1029/2024GL110635>
- Vance S. D., Craft K., Shock E., et al. (incl. **Spiers E. M.**) (2023). Investigating Europa's Habitability with the Europa Clipper. *Space Science Reviews*. 219 (8), 81. <https://doi.org/10.1007/s11214-023-01025-2>
- Spiers E. M.** & Schmidt B. E. (2023). Variable Salinity and Hydrogen Production in Europa's Ocean. *Journal of Geophysical Research – Planets*. 128 (11), e2023JE008028. <https://doi.org/10.1029/2023JE008028>
- Roberts J.H., McKinnon W.B., Elder C., et al. (incl. **Spiers E. M.**) (2023). Investigating the Interior of Europa with the Europa Clipper. *Space Science Reviews*. 219 (6), 46. <https://doi.org/10.1007/s11214-023-00990-y>
- Lawrence, J., Mullen, A., Bryson, F., Chivers, C., Hanna, A., Plattner, T., **Spiers, E.M.**, .... & Schmidt, B. E. (2023). Subsurface science and search for life in ocean worlds. *The Planetary Science Journal*, 4(2), 22. <https://doi.org/10.3847/PSJ/ACA6ED>

2. **Spiers E. M.**, et al. (2021). Tiger: Concept Study for a New Frontiers Enceladus Habitability Mission. *Planetary Science Journal*, 2(5), 195. <https://doi.org/10.3847/PSJ/ac19b7>
1. Bryson F. E., Nassif, M., Szot, P. A., et al. (incl. **Spiers E. M.**) (2020). Vertical Entry Robot for Navigating Europa (VERNE): Mission concept and system design. In *AIAA ASCEND 2020* (p. 4061) <https://doi.org/10.2514/6.2020-4061>

### Journal Publications - Submitted or In Prep

3. **Spiers, E. M.**, Robinson, K., & Schmidt, B. E. Episodic Oxidation Events within Europa's Ocean: Implications for Habitability and Metabolic Energy Supplies. *Submitted*
2. **Spiers E.M.**, Jakuba M., Michel A., & German C.R. Accessing the Alien Abyss: Charting a Course for Ocean Exploration on Europa & Enceladus. *In prep*
1. **Spiers, E. M.** & Chan, K. Europa's Porous Upper Ice Shell Enhances Ocean Habitability. *In prep*

### Other Published Works (e.g., Book Chapters, Community White Papers)

4. **Spiers, E. M.** et al. (2025). Cultivating Long-Term Planning, Collaboration, and Mission Continuity in Astrobiology through Support of Early Career Researchers. *White Paper for NASA Decadal Astrobiology Research and Exploration Strategy 2025*. *arXiv:2504.09015*
3. Stockton, A. M., et al. (incl. **Spiers E. M.**) (2023). The Fermi Paradox and Astrobiology. In L. Johnson & K. Roy (Eds.), *Interstellar Travel: Purpose and Motivations* (pp. 209–266). Elsevier.
2. Schmidt B. E., et. al. (incl. **Spiers E. M.**) (2021). Dive, dive, dive: Accessing the Subsurface of Ocean Worlds. *Bulletin of the American Astronomical Society* 53 (4), 246
1. Schmidt B. E., et. al. (incl. **Spiers E. M.**) (2021). Enabling progress towards life detection on NASA missions. *Bulletin of the American Astronomical Society* 53 (4), 260

### Grants & Research Fellowships

	TOTAL AMOUNT	DATE/DURATION
<b>Working Models Risk-Reduction for Europa</b> NASA Europa Clipper Role: PI Title: <i>Europa's Ocean Carbon System and it's Expressions: Subsurface to Surface</i>	\$210,000	2025-2027
<b>Weston Howland Jr. Postdoctoral Scholarship</b> Woods Hole Oceanographic Institution Role: PI	\$94,000	2024-2025

### Fieldwork & Professional Training

<b>National Deep Submergence Facility (NDSF) New User Program Workshop</b> UNOLS Deep Submergence Science Committee (DeSSC)	Dec. 2025
<b>Early Career Deep-Sea Expedition Leadership Fellow - \$2,000</b> Crustal Ocean Biosphere Research Accelerator (COBRA) Advisors: Drs. A. Fischer, J. Huber, B. Orcott, R. Rotjan, & G. Wheat	Jan. – April 2025
<b>R/V Atlantis Expedition AT50-28 with ROV JASON</b> Juan De Fuca Ridge, USA Chief Scientists: Drs. Jeffrey Seewald & Geoffery Wheat	July 2024
<b>Planetary Science Summer School</b> NASA Jet Propulsion Laboratory Advisors: Drs. Jennifer Scully, Karl Mitchell, & Alfred Nash	June – Aug. 2020

## Awards & Honors

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<b>New User Program Travel Award - \$500</b> UNOLS Deep Submergence Science Committee (DeSSC)	2025
<b>Early Career Accelerator Award - \$2,500</b> Crustal Ocean Biosphere Research Accelerator (COBRA)	2025
<b>Future Leaders of Ocean Worlds Fellow - \$1,000</b> NASA Network for Ocean Worlds	2025
<b>Early Career Travel Award - \$1,000</b> Outer Planets Assessment Group (OPAG) Meeting	2023
<b>Schmidt Science Fellow Nominee</b> Georgia Institute of Technology	2023
<b>Early Career Travel Award - \$1,000</b> Outer Planets Assessment Group (OPAG) Meeting	2022
<b>Best Poster Presentation - \$50</b> Georgia Tech Space Innovations Symposium	2019
<b>2<sup>nd</sup> Place Oral Presentation</b> Georgia Tech EAS Graduate Student Seminar	2019
<b>Science Communication Fellow - \$600</b> Atlanta Science Festival	2018
<b>Lijuan Wang Memorial Award - \$500</b> Purdue University, Department of Physics & Astronomy	2017
<b>Summer Stay Scholar</b> Purdue University, College of Science	2016
<b>Alan and Sharon Levy Scholarship - \$1,000</b> Purdue University, College of Science	2016
<b>Jandos Scholar - \$5,000</b> Purdue University, College of Science	2016
<b>Margie and Don Bottorff Physics Scholarship - \$1,000</b> Purdue University, Department of Physics & Astronomy	2015
<b>Gianni Ascarelli Student Award - \$2,000</b> Purdue University, Department of Physics & Astronomy	2014
<b>Purdue Presidential Scholarship - \$40,000</b> Purdue University	2013 - 2017

## Teaching Experience

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<b>Grader, EAS 4307/6307 – “Physics of Planets”</b> <i>Georgia Institute of Technology</i>	Spring 2023
<b>Teaching Assistant, EAS 1601 - “Habitable Planet”</b> <i>Georgia Institute of Technology</i>	Fall 2022
<b>Lecture TA, EAS 1601 - “Habitable Planet”</b> <i>Georgia Institute of Technology</i>	Fall 2020
<b>Tutor, EAS 1601 - “Habitable Planet”</b> <i>Georgia Tech Athletics</i>	Fall 2019
<b>Substitute Lecturer, EAS 1601 - “Habitable Planet”</b> <i>Georgia Institute of Technology</i>	Sept. 2018
<b>Teaching Assistant, EAS 1601 - “Habitable Planet”</b> <i>Georgia Institute of Technology</i>	Fall 2018
<b>Teaching Assistant, EAS 1601 - “Habitable Planet”</b> <i>Georgia Institute of Technology</i>	Spring 2018

## Invited Talks

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1. Woods Hole Oceanographic Institution, Marine Chemistry & Geochemistry Seminar – “Oceans Beyond Earth: The Chemical Energy Budget within Jupiter’s moon Europa” (February 2025)
2. Ocean Science Meeting NASA Hyperwall - “*Ocean Sciences & Ocean Worlds: Anticipating the launch of The Europa Clipper Mission*” (February 2024)
3. UTIG Discussion Hour - “*Quantifying Oxidant Delivery to Europa’s Ocean via Basal Melt*” (October 2023)
4. NASA Jet Propulsion Laboratory - “*Quantifying Oxidant Delivery to Europa’s Ocean via Basal Melt*” (June 2023)
5. Georgia Tech Planetary Science and Astrobiology Seminar– “*How to Apply to Planetary Science PhD Programs*” (October 2022)
6. Georgia Tech Explorigins Student Group – “*How to Apply to Planetary Science PhD Programs*” (September 2022)

## Selected Conference Presentations

*\*denotes oral presentation by E. Spiers*

1. Schmidt, B., et al. (incl. **Spiers, E.M.**) (2024, May). Beyond the Borehole: Technology and Science Recommendations for Ocean World Missions Based on Antarctic Robotic Campaigns. *Astrobiology Science Conference*. AGU.
2. **\*Spiers, E. M.**, and Schmidt, B. E. (2023, March) “Quantifying Oxidant Flux to Europa’s Ocean via Basal Melt.” *54th Lunar and Planetary Science Conference*. No. 2987
3. **\*Spiers, E. M.**, and Schmidt, B. E. (2022, May) “Using a Thermally-Linked Box Model to Examine Europa’s Ocean Evolution.” *Astrobiology Science Conference*. AGU.
4. Schmidt, B.E., et al. (incl. **Spiers, E.M.**) (2022, May) “Vertical Entry Robot for Navigating Europa (VERNE): An ice- and ocean-profiling thermomechanical mission to search for life on Europa.” *Astrobiology Science Conference*. AGU.
5. **\*Spiers, E. M.**, and Schmidt, B. E. (2022, February) “Variability in Europa’s Ocean Composition due to Oscillatory Orbital Eccentricity.” *Ocean Sciences Meeting*. No. 8440.
6. **\*Spiers, E. M.**, and Schmidt, B. E. (2021, March) “Water Activity of Europa’s Ocean: Temporal Variability and Implications.” *52nd Lunar and Planetary Science Conference*. No. 2548.
7. **Spiers, E. M.**, et al. (2021, March) “TIGER: JPL PSSS Architecture and Feasibility Study for a New Frontiers 5 Mission Concept to Enceladus.” *52nd Lunar and Planetary Science Conference*. No. 2548.
8. **Spiers, E. M.**, et al. (2020, December) “VERNE Sample Intake and Processing (SIP): Investigation and Development of Liquid Water Sampling for Subsurface Probe on Europa.” *AGU Fall Meeting Abstracts*. Vol. 2020.
9. **\*Spiers, E.M.** and Szot, P. (2020, November) “Vertical Entry Robot for Navigating Europa (VERNE) Mission and System Design.” *Georgia Tech Explorigins Colloquium*

## Professional Service

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**Journal Reviewer:** Journal of Geophysical Research: Planets

**Proposal Reviewer:** NASA NSPIRES Solicitations

**Co-Lead - Europa Clipper Sunrise Group**  
NASA Europa Clipper

2025

**Session Chair – “Chemical Cycling in Ocean Worlds”**  
Astrobiology Science Conference, AGU

May 2024

<b>Session Chair</b> – “Building a Cross-Disciplinary Understanding of Ocean Worlds: Habitability at the Dawn of the Europa Clipper Mission” Astrobiology Science Conference, AGU	May 2024
<b>Session Chair</b> – “Comparative Planetary Oceanography: Ocean Science & Technology Across the Solar System” Ocean Sciences Meeting, AGU	Feb. 2024
<b>Social &amp; Conference Chair, Future Leaders of Ocean Worlds</b> Network for Ocean Worlds, NASA	2024
<b>Module Co-lead</b> – “Biogeochemical Cycles of Earth & Ocean Worlds” Network for Ocean Worlds 1st Annual Retreat, NASA	Aug. 2023
<b>Workshops Chair, Future Leaders of Ocean Worlds</b> Network for Ocean Worlds, NASA	2023
<b>Lead, Future Leaders of Ocean Worlds</b> Network for Ocean Worlds, NASA	2022
<b>Conference Committee</b> Astrobiology Graduate Conference	2018

## Media & Public Outreach

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- Presenter** – Woods Hole Oceanographic Institution Science Stroll, “Exploring Jupiter’s Ocean World – NASA’s Europa Clipper Mission” (Aug. 2025)
- Presenter** – WHOI ‘Behind-the-Scenes’ Donor Tour, “Exploring Oceans Beyond Earth” (July 2025)
- Featured Scientist** – Oceanus Magazine, “Grits, storms, and cosmic patience” (May 2025).  
<https://www.whoi.edu/oceanus/feature/europa-clipper-mission-elizabeth-spiers-jupiter-ocean-worlds/>
- Panelist** – Ocean Encounters: “Ice! Insights from frozen frontiers on Earth & Beyond” (Jan. 2025).  
[https://www.youtube.com/live/9\\_M5hwYGobs?si=Ei7SGExggXScZ6Yo](https://www.youtube.com/live/9_M5hwYGobs?si=Ei7SGExggXScZ6Yo)
- Expert Interview** – “Is there life on Jupiter’s moon Europa? NASA launches mission to find hints.” (2024) *Nature*, 634(8035), 760-761. <https://www.nature.com/articles/d41586-024-03225-4>
- Co-host** – Georgia Tech Astrobiology, “Mars Perseverance Landing Watch Party” (Feb. 2021).
- Speaker** – Atlanta Science Tavern, “Searching for Habitable Planets: Europa” (Nov. 2019).
- Author** – Science ATL Blog, “Atlanta’s Living History: - Old Growth Forests in the City” (Oct. 2019).  
<https://scienceatl.org/atlantas-old-growth-forests/>
- Presenter** – Science Showcase at Ponce City Farmer’s Market, “Light Pollution in Atlanta” (Oct. 2018).