Chase Chivers

Postdoctoral Scholar
Applied Ocean Physics & Engineering
Woods Hole Oceanographic Institution
Woods Hole, MA 02543

EDUCATION

2022 **Ph.D., Earth and Atmospheric Science**
Georgia Institute of Technology, Atlanta, GA
Dissertation: *Europa's surface and shallow water: Ice shell activity and implications for habitability*
Advisor: Prof. Britney Schmidt

2017 **B.S. Physics**, Minor: Mathematics,
University of Idaho, Moscow, ID
Advisor: Prof. Jason Barnes

EXPERIENCE

Professional

2022 – 2023 **Postdoctoral Scholar,** Woods Hole Oceanographic Institution
Host: Dr. Catherine Walker
2020 – 2021 **Future Leaders in Ocean Worlds,** Organizer
2018 – 2022 **Affiliate Member**, REASON on NASA Europa Clipper
2018 **NASA Summer Intern**, Johns Hopkin's Advance Physics Laboratory
Advisor: Dr. Wes Patterson
2017 – 2022 **Graduate Research Assistant**, Georgia Institute of Technology
2015 – 2017 **Undergraduate Research Assistant**, University of Idaho
Advisor: Prof. Jason Barnes
2010 – 2013 **Quality Control, Customer Service**, Scentsy, Inc., Boise, Idaho

Teaching

2019 EAS 2600 "**Earth Processes**." Georgia Tech. Lab TA, 200+ Students
2017 – 2018 EAS 1601 "**Habitable Planet**." Georgia Tech. Lecture & Lab TA, 200+ Students

PROFESSIONAL SERVICE

2023 **Grant Proposal reviewer**: NASA Habitable Worlds
2022-2023 **Undergraduate Recruitment Working Group,** Woods Hole Oceanographic Institution
2022-2023 **Convener.** AGU Fall, Session P014 "Ice and Ocean Worlds: Geology, Oceanography, Chemistry, Habitability"
2021 **Grant Proposal Executive Secretary**: NASA Habitable Worlds

Referee: Planetary Science Journal

2019 – 2022 **ExplOrigins Colloquium Organization Committee**: Exploration and Origins Group, Georgia Tech, Atlanta, GA

2019 **Student Faculty Search Committee Co-Chair**, Earth and Atmospheric Science, Georgia Tech

2018 **Conference Organization Committee**: Astrobiology Graduate Conference, Georgia Tech, Atlanta, GA

2017 – 2018 **Treasurer**, Graduates in Earth and Atmospheric Sciences (GEAS)

PUBLICATIONS

1. **C.J. Chivers,** J.J. Buffo, B.E. Schmidt (2023) "Stable brine layers beneath Europa's Chaos." The Planetary Science Journal. https://doi.org/10.3847/PSJ/acea75
2. J.H. Roberts et al. (2023) "Integrated Interior Science with Europa Clipper." Space Science Reviews. https://doi.org/10.1007/s11214-023-00990-y
3. J.J Buffo, C.R. Meyers, **C.J. Chivers,** C.C. Walker, C. Huber, J.R.G. Parkinson, B.E. Schmidt (2023) "Geometry of Freezing Impacts Ice Composition: Implications for Icy Satellites." Journal of Geophysical Research: Planets. https://doi.org/10.1029/2022JE007389
4. J.D. Lawrence, A.M. Mullen, F.E. Bryson, **C.J. Chivers**, et al. (2023) "SubSurface Search for Life in Ocean Worlds." The Planetary Science Journal. https://doi.org/10.3847/PSJ/aca6ed
5. J.J Buffo, et al. (2022) "The Bioburden and Ionic Composition of Hypersaline Lake Ices: Novel Habitats on Earth and Their Astrobiological Implications." Astrobiology. https://doi.org/10.1089/ast.2021.0078
6. J.E. Hedgepeth, J.J. Buffo, **C.J. Chivers,** C.D. Neish, B.E. Schmidt (2022) "Modeling the Distribution of HCN in Impact Crater Melt on Titan." The Planetary Science Journal. doi:10.3847/PSJ/ac4d9c
7. **C.J. Chivers,** J.J. Buffo, B.E. Schmidt (2021) "Thermal and chemical evolution of small, shallow water bodies in Europa's ice shell." Journal of Geophysical Research: Planets, 126. https://doi.org/10.1029/2020JE006692

IN-REVIEW AND IN-REVISION PUBLICATIONS

8. B.E. Schmidt, F.E. Bryson, **C.J. Chivers**, et al. (in revision) "Vertical Entry Robot for Navigating Europa (VERNE): an ocean-profiling thermo-mechanical subsurface mission concept for searching for life." The Planetary Science Journal.
9. I.J. Daubar et al. (submitted) "Planned Geologic Investigations from the Europa Clipper Mission." Space Science Reviews.
10. S.D. Vance et al. (submitted) "Europa Clipper's Habitability Assessment Board." Space Science Reviews.
11. T. Becker et al. (in revision) "Planned Composition Investigations from the Europa Clipper Mission." Space Science Reviews.
12. J.D. Lawrence, B.E. Schmidt, J.J. Buffo, P.M. Washam, **C.J. Chivers**, S. Miller (in revision) "Melting and Freezing Driven by below: Ocean World Ice Shell Topography." Journal of Geophysical Research: Planets.

PUBLICATIONS IN PREPARATION

13. **C.J. Chivers** and A.A. Robel (expected 2023) "Saddle Collapse in the Greenland Ice Sheet." *in prep*.
14. **C.J. Chivers,** P.O. Hayne, B.E. Schmidt (expected 2023) "Detection of shallow water in Europa's ice shell with E-THEMIS." *in prep*.
15. **C.J. Chivers,** M. Babcock, G.W. Patterson, B.E. Schmidt. (expected 2023) "Europa's torturous ridges and fractures." *in prep*.
16. **C.J. Chivers** and C.C. Walker (in prep.) "The 50-Year Observational History of an Ice Doline on Amery Ice Shelf, Antarctica."
17. **C.J. Chivers** and C.C. Walker (in prep.) "Survey of ice dolines on Antarctic Ice Shelves."

WHITE PAPERS

1. B. Schmidt, K. Craft, T. Cwik, K. Zacny, M. Smith, V. Singh, B. Stone, F. Bryson, **C. Chivers**, …, A. Spears (2021). "Dive, Dive, Dive: Accessing the Subsurface of Ocean Worlds". Bulletin of the AAS, 53(4). https://doi.org/10.3847/25c2cfeb.ffef076e
2. B. Schmidt, S. Som, E. Quartini, J. Buffo, **C. Chivers,** K. Soderlund, …, J. Bowman (2021). "Diversity in action: Solutions for a more diverse and inclusive decade of planetary science and astrobiology." Bulletin of the AAS, 53(4). https://doi.org/10.3847/25c2cfeb.f220b3a3
3. B. Schmidt, S.S. Johnson, T. Hoehler, H. Graham, J. Bowman, S. Som, …, J. Buffo (2021). "Enabling Progress Towards Life Detection on NASA Missions." Bulletin of the AAS, 53(4). https://doi.org/10.3847/25c2cfeb.77a5ad8e

TALKS, PRESENTATIONS, SEMINARS

1. (Invited) *Talk* C.J. Chivers "Shells, Shelves, and Sheets: Ice Dynamics and Melt Interactions Across the Solar System." Boise State University, Geosciences Seminar 2023, Boise, ID.
2. *Talk* **C.J. Chivers** and A.A. Robel "The potential for Meltwater Pulses from Greenland Ice Saddle Collapse under Future and Past Climate Change." AGU Fall Meeting 2022, Chicago, IL.
3. *Poster* **C.J. Chivers** and A.A. Robel "The potential for Meltwater Pulses from Greenland Ice Saddle Collapse under Future and Past Climate Change." Northwest Glaciologists Meeting, Moscow, ID
4. *Talk* **C.J. Chivers** "Europa's Surface and Shallow Water Reservoirs: Recent Ice Shell Activity and Implications for Habitability." Applied Ocean Physics and Engineering Seminar, Woods Hole Oceanographic Institution, Woods Hole, MA
5. *Talk* **C.J. Chivers,** J.J. Buffo, B.E. Schmidt "Persistent Brine Layers Beneath Europa's Chaos Terrain and Their Implications for Near-Surface Habitability." Astrobiology Science Conference 2022, Abstract #104-05. Atlanta, GA

6. *Talk* **C.J. Chivers,** J.J. Buffo, B.E. Schmidt "Are There Stable Brine Layers Beneath Europa's Chaos Terrain?" 53rd Lunar and Planetary Science Conference, Abstract #2194. Houston, TX
7. M. Babcock, **C.J. Chivers,** G.W. Patterson, B.E. Schmidt (2021) "Europa's torturous ridges." Division of Planetary Sciences Meeting 53.
8. J.E. Hedgepeth, J.J. Buffo, **C.J. Chivers**, C.D. Neish, B.E. Schmidt (2021) "Modeling the Emplacement of Amino Acids in Impact Melt on Titan." Division of Planetary Sciences Meeting 53.
9. *Poster* **C.J. Chivers**, J.J. Buffo, B.E. Schmidt (2021c) "Thermal and Chemical Evolution of Small, Shallow Water Bodies on Europa." 52nd Lunar and Planetary Science Conference, Abstract #2761.
10. J.E. Hedgepeth, J.J. Buffo, C.D. Neish, B.E. Schmidt, **C.J. Chivers** (2020) "Tracking HCN Molecules in Crater Melt Ponds on Titan." AGU Fall 2020.
11. Frances E. Bryson, Matthew E. Meister, Justin Burnett, **C.J. Chivers**, … and the VERNE Team (2020) "Vertical Entry Robot for Navigating Europa (VERNE) - A Mission Concept and Identification of Technologies Needed to Access Europa's Ocean." AGU Fall 2020.
12. Elizabeth M. Spiers, Frances E. Bryson, Andrew D. Mullen, **C.J. Chivers,** … and the VERNE Team (2020) "VERNE Sample Intake and Processing (SIP): Investigation and Development of Liquid Water Sampling for Subsurface Probe on Europa." AGU Fall 2020
13. Frances E. Bryson, Mohamed Nassif, Phillip A. Szot, **Chase J. Chivers**, Nathan L. Daniel, Bridget E. Wiley, Taylor Plattner, Ashley Hanna, Yashvardhan Tomar, Samuel Rapoport, Elizabeth M. Spiers, Sara Pierson, Amoree Hodges, Justin D. Lawrence, Andrew D. Mullen, Daniel Dichek, Kynan Hughson, Matthew R. Meister, Glenn E. Lightsey, Britney E. Schmidt (2020) "Vertical Entry Robot for Navigating Europa (VERNE): Mission Concept and System Design." ASCEND 2020. https://doi.org/10.2514/6.2020-4061
14. *Poster* **C.J. Chivers,** A. Hanna, C.G. Raj, E. Spiers, Y. Tomar, B.E. Schmidt (2020) "Science System for Vertical Entry Robot for Navigating Europa (VERNE)." Exploration and Origins Colloquium. Georgia Institute of Technology, Atlanta, GA.
15. *Poster* **C.J. Chivers,** A. Hanna, C.G. Raj, E. Spiers, Y. Tomar, B.E. Schmidt (2019) "Science System for Vertical Entry Robot for Navigating Europa (VERNE)." Symposium on Space Innovations. Georgia Institute of Technology, Atlanta, GA.
16. *Talk* **C.J. Chivers,** Patterson, G.W., B.E. Schmidt. (2019). "Europa's Tortured Ridges: A Case Study. 50th Lunar and Planetary Sciences Conference." Abstract #2474. Houston, TX.
17. *Talk* **C.J. Chivers,** G.W Patterson, B.E. Schmidt. (2018). "Tortuous Ridges: Investigating Possible Ridge and Lenticulae Interactions on Europa." Division of Planetary Sciences 50. University of Tennessee, Knoxville, Knoxville, TN.
18. *Poster* **C.J. Chivers,** S. MacKenzie, J. Barnes (2016). "Searching for change in Titan's north polar lakes." Division of Planetary Sciences 48 / European Planetary Science Congress 11. Pasadena, CA.

19. *Talk* **C.J. Chivers,** S. MacKenzie, J. Barnes (2016). "Titan's Evaporites: Investigating Surface-Atmosphere Interactions in Time." Rocky Mountain Section 68th, Geological Society of America. University of Idaho, Moscow, ID.
20. *Poster* **C.J. Chivers,** S. MacKenzie, J. Barnes (2016). "Mapping Titan's Dynamic Surface: Finding a baseline for change." Undergraduate Research Symposium, University of Idaho, Moscow, ID.

AWARDS & RECOGNITION

2021 **Stephen E. Dwornik Planetary Geoscience Award, Best Graduate Poster Presentation.** 52nd Lunar and Planetary Science Conference, Houston, TX
2019 **1st Place, Best Poster,** Symposium on Space Innovations. Georgia Tech, Atlanta, GA
3rd Place, Best Talk, EAS Graduate Student Symposium. Georgia Tech, Atlanta, GA
2017 **Undergraduate Research Award, Physics Department**. University of Idaho, Moscow, ID

OUTREACH

2021 **STEM Professional School Partnership (Atlanta Science Festival), Career Panel & Programming Lesson,** Stone Mountain Middle School, Atlanta, Georgia
Mars 2020 Perseverance Landing Party, Georgia Tech, Atlanta, GA
2020 **Titan @ Tech Week**, Georgia Tech, Atlanta, GA
2018 **Science Showcase, Ponce City Market**, Atlanta, GA

SKILLS & TRAINING

Software	QGIS, LaTeX, Microsoft Office suite, Google suite, Adobe Illustrator
Coding Languages	Python, Matlab, R