Dr. Amy P.I. Hagen
New Haven, CT, USA
amyhagen@vt.edu

Education

Virginia Tech — Blacksburg, VA, USA
Ph.D. in Geosciences, Sedimentary Geochemistry — May 2026

Smith College — Northampton, MA, USA
B.A. in Geosciences with Highest Honors, *magna cum laude* — May 2021

Employment

Yale University — New Haven, CT, USA
Department of Earth and Planetary Sciences — September 2026–present
Postdoctoral Associate

Peer Reviewed Publications

Hagen, A.P.I., Gill, B.C., Pruss, S.B., Brezinski, D., and Kang, J. (*in revision*) Sedimentological and paleontological variability during the Cambrian SPICE event linked to sea level change as recorded in the southern Appalachians. *Palaeogeography, Palaeoclimatology, Palaeoecology.*

Hagen, A.P.I., Moore, K.R., Pruss, S.B., Xiao, S., Vayda, P.J., and Gill, B.C. (2026) Taphonomy and paleoenvironmental significance of silicified cyanobacterial fossils in the early Cambrian Harkless Formation, Nevada, USA. *Palaios*, v. 41, pp. 59-73, https://doi.org/10.2110/palo.2025.035

Farrell, U.C., and **SGP members** (2026) The Sedimentary Geochemistry and Paleoenvironments Project Phase 2 Data Release: An open data resource for the study of Earth's environmental history. *Chemical Geology*, https://doi.org/10.1016/j.chemgeo.2026.123311

Hagen, A.P.I., DeNunzio, M., Kroehler, C.J., Chen, S., Goh, Y.-X., Burke, K.L., Oyedele, E.O., Hockman, C., Vayda, P., Bracci, N., Pagani, M., Good, D.J., Pfeiffer, D.G., Allen, E., and Raun, P. (2026) Tapping into the success of Science on Tap New River Valley: Lessons Learned from Eight Years of a Community-Centered Science Outreach Program. *Journal of Community Engagement and Scholarship*, v. 19, i. 1, https://doi.org/10.54656/hpj1dw58

Vayda, P.J., Xiao, S., Keller, N., **Hagen, A.P.I.,** Strauss, J., Hagadorn, J., Lonsdale, M., Selly, T., and Schiffbauer, J. (2025) A Cnidarian affinity for *Salterella* and *Volborthella* and implications for the evolution of shells. *Journal of Paleontology*, pp. 1-24, https://doi.org/10.1017/jpa.2025.10164

Hupp, B.N., Hashim, M.S., Bryant, R., Kinsley, C.W., Villa, A., Nana Yobo, L., Ajayi, J.O., and the **Participants of the Establishing Early-Career Scientific Ocean Drilling Learning Communities Workshop** (2025) Perspectives on developing a diverse, knowledgeable, and inclusive scientific community in the shifting landscape of U.S. scientific ocean drilling. *Earth Science, Systems, and Society,* v. 5, esss2024-002, https://doi.org/10.1144/esss2024-002

Hagen, A.P.I., Gill, B.C., Vayda, P.J., and Pruss, S.B. (2024) Reconstructing the redox environment of the Cambrian Harkless Formation, Nevada, USA: Navigating the effects of iron-rich clay minerals on the iron speciation redox proxy. *Chemical Geology*, v. 670, 122453, https://doi.org/10.1016/j.chemgeo.2024.122453

Hagen, A.P.I., Jones, D.S., Fike, D.A., Tosca, N.J., and Pruss, S.B. (2022) Sedimentary mercury as a proxy for redox oscillations during the Cambrian SPICE event in western Newfoundland, Canada. *Canadian Journal of Earth Sciences*, v. 59, i. 8, pp. 504-520, https://doi.org/10.1139/cjes-2021-0108

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Other Published Work

Hagen, Amy, 2026. Geochemical, Paleontological, and Sedimentological Exploration of the Co-Evolution of Life and Environment during the Cambrian Period. PhD Dissertation, Virginia Tech, Blacksburg, VA.

Webster, J.M., Ravelo, A.C., Grant, H.L.J., and the **Expedition 389 Scientists**, 2025. Hawaiian Drowned Reefs. Proceedings of the International Ocean Discovery Program, 389: College Station, TX (International Ocean Discovery Program). https://doi.org/10.14379/iodp.proc.389.2025

Webster, J.M., Ravelo, A.C., Grant, H.L.J., and the **Expedition 389 Scientists**, 2024. Expedition 389 Preliminary Report: Hawaiian Drowned Reefs. IODP. https://doi.org/10.14379/iodp.pr.389.2024

Hagen, Amy, 2021. Evaluating redox conditions during the Cambrian SPICE event, western Newfoundland, Canada. Honors Project, Smith College, Northampton, MA.

Awards and Honors

PhD Student of the Year, Virginia Tech	2026
Graduate Outstanding Service Award, VT Geosciences	2026
Best Talk, VT Geosciences Student Research Symposium	2023, 2025, 2026
Student Talk Award, GBGM Division at GSA Connects	2024
Scholarship to attend ANZIC Geoscience Masterclass ($4,000)	2023
Best Paper of 2022 Award, Canadian Journal of Earth Science ($1,000)	2023
Scholarship to attend Urbino Summer School in Paleoclimatology ($2,000)	2023
Conference participation grant to support inclusion ($1,000)	2021
Marshall Schalk Prize for Achievements in Geological Research, Smith College ($1,000)	2021
Academic All-Conference, Rowing	2019-2021
Academic All-Conference, Volleyball	2018-2021
Marly Pineda Sportsmanship Award, Volleyball	2021
Dean's List, Smith College	2018-2021
Summer Undergraduate Research Fellow, Smith College ($12,000)	2019, 2021
Student Research in Departments (STRIDE) Scholar, Smith College ($84,800)	2017-2021

Grants (total = $73,843)

Pete Henika Memorial Fund, VA Museum of Natural History ($3,700) 2025
"Constraining the demise of the first animal reef-builders in North America"

GSA Graduate Student Research Grant ($3,000) 2025
"Temporally constraining the rise of bryozoans in the southwestern US using U-Pb geochronology"

Schlanger Ocean Drilling Fellowship ($30,000, 1-year fellowship) 2025
"Understanding influences on the marine phosphorus budget during Quaternary glacial-interglacial cycles: Insights from Hawaiian fossil corals"

AGeS-Grad award ($10,000 – cancelled by NSF) 2025
"Out with the old, in with the new: Constraining the pace of biotic turnover during the Cambrian Explosion as recorded in the Harkless Formation, Nevada"

Post-Expedition Activity Award, U.S. Science Support Program ($19,018) 2024
"Stable nitrogen isotopes in Hawaiian fossil corals as a proxy for reef ecosystem health during Quaternary climate and sea level changes"

IODP Expedition 389 support, U.S. Science Support Program ($4,859) 2024
For participation in 4-week onshore core sampling party in Bremen, Germany

GSA Graduate Student Research Grant ($2,266) 2022
"Assessing environmental (in)stability from Cambrian through Ordovician in carbonates

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from Clear Spring, MD"

Cooper Memorial Geology Scholarship ($1,000) 2022
For fieldwork in western Maryland and measurement of I/Ca to assess redox conditions

Professional Talks and Posters (*=mentee presentation, †= invited, ‡= won award)

Hagen, A.P.I. †, Gill, B.C., and Exp. 389 Scientists, Understanding influences on the marine phosphorus budget during Quaternary glacial-interglacial cycles: Insights from Hawaiian fossil corals, oral presentation, Scientific Ocean Drilling Coordination Office Advisory Board Meeting, New York, NY, August 2026.

Hagen, A.P.I. ‡ and Gill, B.C., What happens when tropical coral reefs get cold? New insights from Hawaiian fossil coral nitrogen isotopes, oral presentation, Virginia Tech Geosciences Student Research Symposium, Blacksburg, VA, March 2026

Hagen, A.P.I., Moore, K.R., Pruss, S.B., Xiao, S., Vayda, P.J., and Gill, B.C. Taphonomy and paleoenvironmental significance of silicified cyanobacteria fossils in the early Cambrian Harkless Formation, Nevada, USA, oral presentation, GSA Annual Meeting, San Antonio, TX, October 2025.

Hermosillo, N.G., Gill, B.C., **Hagen, A.P.I.,** Tarhan, L., and Pruss, S.B. Carbon and sulfur isotope records of Cambrian end-Sunwaptan extinction from Lawson Cove, Utah point to an expansion of marine anoxia, oral presentation, GSA Annual Meeting, San Antonio, TX, October 2025.

Gadsby, J.T.*, Gill, B.C., Hermosillo, N.G., **Hagen, A.P.I.,** and Pruss, S.B. Carbon and sulfur isotope records of the Ordovician Stairsian extinction from Western Maryland reveal global changes to the marine carbon and sulfur cycles, oral presentation, GSA Annual Meeting, San Antonio, TX, October 2025.

Hagen, A.P.I. †, Gill, B. C., and Pruss, S.B. Why the long facies? Factors controlling the expression of the SPICE event in the southern Appalachians, oral presentation, Virginia Geological Symposium, Charlottesville, VA, April 2025

Hagen, A.P.I. ‡ and Gill, B.C., Patterns of life and death during the Cambrian SPICE event preserved in Appalachia, oral presentation, Virginia Tech Geosciences Student Research Symposium, Blacksburg, VA, April 2025

DeNunzio, M., and **Hagen, A.P.I.**, Science on Tap New River Valley: A successful outreach program since 2017, poster presentation, Science Talk, Raleigh, NC, April 2025.

Hermosillo, N., **Hagen, A.,** and Gill, B., Carbon and sulfur isotope records across the Cambrian Skullrockian extinction event from Lawson Cove, UT, oral presentation, GSA Southeastern Section Meeting, Harrisonburg, VA, March 2025.

Harris, B.*, Gill, B., and **Hagen, A**., Geochemical evidence for ocean deoxygenation during the Cambrian end-Pterocephaliid extinction at Lawson Cove, Utah, poster presentation, GSA Southeastern Section Meeting, Harrisonburg, VA, March 2025.

Vayda, P., Xiao, S, Gill, B., **Hagen, A**., Smith, E.F., and Lonsdale, M.C., Life at the limits: New data from southwestern Mongolia shed light on the role of redox in the early diversification of animals in the Cambrian, oral presentation, GSA Southeastern Section Meeting, Harrisonburg, VA, March 2025.

Hagen, A.P.I., Gill, B.C., Pruss, S.B., and Harris, B., Patterns of life and death during the Cambrian SPICE event in Appalachia, oral presentation, Mid-Atlantic Geobiology Symposium, Baltimore, MD, February 2025.

Boston, B., Jorry, S., Rydzy, M., Le-Ber, E., McIntyre, A., McNeil Chutcharavan, P., Mortlock, R.A., Webster, J., Ravelo, A.C., Grant, H., Allison, N., Asami, R., Braga, J.C., Brenner, L.D., Chen, X., Dutton, A., Felis, T., Fukuyo, N., Gischler, E., Greve, S., **Hagen, A.,** Hamon, Y., Hathorne, E., Humblet, M., Khanna, P., McGregor, H.V., Nohl, T., Potts, D.C., Prohaska, A., Prouty, N.,

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Renema, W., Rubin, K.H., Westphal, H., and Yokoyama, Y., Physical properties of the Hawaiian drowned reefs and basalts recovered by IODP Expedition 389, oral presentation, AGU Annual Meeting, Washington, DC, December 2024.

Gill, B.C., Marroquin, S.M., McCabe, K., Aberhan, M., Caruthers, A.H., Golding, M.L., Goodin, J., **Hagen, A.,** Owens, J.D., Palfy, J., Them, T.R., Trabucho-Alexandre, J.P., Veenma, J., Long-term oxygen minimum zone dynamics during the late Triassic to early Jurassic in the equatorial Panthalassic Ocean, oral presentation, AGU Annual Meeting, Washington, DC, December 2024.

Hagen, A.P.I. ‡, Gill, B.C., and Pruss, S.B., Why the long facies? Factors controlling the expression of the SPICE event in the southern Appalachians, oral presentation, GSA Annual Meeting, Anaheim, CA, September 2024

Goodin, J. Them II, T., Caruthers, A., **Hagen, A.,** Marroquin, S., McCabe, K., Adiatma, Y., Grocke, D., Trabucho Alexandre, J., Gill, B., and Owens, J., A brief period of marine oxygenation during the End-Triassic mass extinction -- A thallium isotope modeling approach, oral presentation, GSA Annual Meeting, Anaheim, CA, September 2024.

Hagen, A.P.I., Gill, B.C., Vayda, P.J., and Pruss, S.B., The impact of unusual mineralogy on the iron speciation redox proxy: A case study from the Cambrian Harkless Formation, oral presentation, Goldschmidt Conference, Chicago, IL, August 2024.

Hagen, A.P.I., Pruss, S.B., and Gill, B.C., Trouble on a 500-million-year-old beach: A detailed record of the SPICE event at C & O Canal National Park, oral presentation, Spotlight on National Park Resources in the National Capitol Region, Shepherdstown, WV, April 2024.

Wood, C., Goldsmith, E., DePaolis, J., and **Hagen, A**., Piloting a low-cost student-organized scientific art exhibition: GS(art)S, oral presentation, AGU Annual Meeting, San Francisco, CA, December 2023.

Hagen, A.P.I., Gill, B.C., Pruss, S.B., and Vayda, P.J., Unusual iron cycling and redox conditions in the lower Cambrian Harkless Formation, oral presentation, GSA Annual Meeting, Pittsburgh, PA, October 2023.

Vayda, P., Xiao, S., Keller, N., Strauss, J., Lonsdale, M., and **Hagen, A.,** Was Earth's oldest mineral collector a cnidarian? Morphological, mineralogical, and microstructural analysis of Salterella, oral presentation, GSA Annual Meeting, Pittsburgh, PA, October 2023.

Goodin, J., Them II, T., Newby, S., Caruthers, A., **Hagen, A**., Marroquin, S., McCabe, K., Trabucho Alexandre, J., Gill, B., and Owens, J., Expansions of oceanic anoxia following the end-Triassic mass extinction revealed by Tl isotopes, oral presentation, GSA Annual Meeting, Pittsburgh, PA, October 2023.

Gill, B., Marroquin, S., Caruthers, A., Goodin, J., Grocke, D., **Hagen, A**., McCabe, K., Owens, J., Them II, T., and Trabucho Alexandre, J., A long-term record of the late Triassic through early Jurassic carbon cycle, oral presentation, GSA Annual Meeting, Pittsburgh, PA, October 2023.

Hagen, A.P.I. ‡ and Gill, B.C., Iodine to calicum ratios (I/Ca) reveal water column oxygen trends and delineate a minimum atmospheric oxygen concentration during the Cambrian SPICE event, Virginia Tech Geosciences Student Research Symposium, Blacksburg, VA, February 2023

Hagen, A.P.I., Gill, B.C., Pruss, S.B., Kozik, N.K., McGuire, T.E., Olsen, A.E., and Young, S.A., Iodine to calcium ratios (I/Ca) suggest increased shallow water deoxygenation during the later Cambrian SPICE event, oral presentation, GSA Annual Meeting, Denver, CO, October 2022.

Hagen, A.P.I., Gill, B.C., and Pruss, S.B., Finding a geological needle in a haystack: the SPICE event at C and O Canal National Park, Spotlight on National Park Resources in the National Capitol Region, Online, April 2022.

Hagen, A.P.I., Gill, B.C., and Pruss, S.B., SPICEy results from western Maryland: Implications for tracking Cambrian-Ordocian redox and biodiversity trends, Virginia Tech Geosciences Student Research Symposium, Blacksburg, VA, March 2022.

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Hagen, A.P.I., Jones, D.S., Fike, D.A., Tosca, N.J., and Pruss, S.B., Sedimentary mercury as a proxy for redox oscillations during the Cambrian SPICE event in western Newfoundland; oral presentation, GSA Annual Meeting, Portland, OR, October 2021.

Hagen, A.P.I., Jones, D.S., Fike, D.A., Tosca, N.J., and Pruss, S.B., New insights on redox conditions during the Cambrian SPICE Event, western Newfoundland, Canada; poster, Northeast Geobiology Symposium, Online, April 2021.

Hagen, A.P.I. ‡, Jones, D.S., Fike, D.A., Tosca, N.J., and Pruss, S.B., Evaluating redox conditions during the Cambrian SPICE Event, western Newfoundland, Canada; poster, GSA Annual Meeting, Online, October 2020

Invited Seminars

Lamont-Doherty Earth Observatory Departmental Seminar (2026)
Smith College Departmental Seminar (2025)

Teaching Experience

Teaching Assistant

Environmental Geochemistry (VT, Professor Ben Gill)	2025
Evolution of the Earth-Life System (VT, Professor Ben Gill)	2023
Elements of Geology (VT)	2021
Mineralogy (Smith College, Professor Mark Brandriss)	2020
Invertebrate Paleontology and the History of Life (Smith College, Professor Sara Pruss)	2019
Oceanography (Smith College, Professor Kinuyo Kanamaru)	2019

Teaching Professional Development

Future Professoriate Certificate (VT Graduate School)	2025
Associate Teaching Program (VT Center for the Integration of Research, Teaching, and Learning)	2025
Graduate Teaching Assistant Certificate (VT CIRTL)	2022

Field Assistant

Field studies of the Desert Southwest (Smith College, Professor Sara Pruss)	2019, 2026

Mentoring Experience

Undergraduate students

Julia Gadsby (VT; independent research project)	2024–2026
Brooklyn Harris (VT; independent research project)	2021–2026
Jackson Rider (VT; project assistant)	2025
Chloe Blaz (VT; project assistant)	2025
Gracie Litsinger (VT; independent research project)	2023–2024
Julio Montenegro (VT; independent research project)	2023–2024
Teagan McGuire (Smith College; summer research project at VT)	2022

Outreach

Letters to a Pre-Scientist program 2022–present
Correspond with K-12 student pen pals about STEM careers, higher education, and overcoming obstacles.

Science on Tap New River Valley organizing team 2022–2026

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Worked in a team to organize monthly events where scientists share knowledge with the local community in a fun, accessible talk format.

Outreach with the C & O Canal Trust 2024
Gave a virtual presentation about the geology of the C & O Canal and my active research there
Led a hike along the Canal and pointed out interesting features (30 attendees)

Science on Tap New River Valley presentation 2024
Spoke with a local audience about my research in the Blacksburg area
Designed and led an audience activity interpreting paleoenvironment of carbonate rocks

Roanoke Valley Mineral and Gem Society 2024
Spoke about my research on local Virginia rocks
Discussed local rock samples with the audience

Virginia Tech Hokie BugFest 2023-2024
Manned a table with fossil arthropods and insects
Answered questions about fossils and Earth history

Geologic time presentations at local middle schools 2023
Created a presentation about Earth history to fit middle school curriculum
Designed and led an activity where students placed important events on a geologic timeline

Virginia Tech Explore Science camp 2022, 2024
In 2022, assisted Prof. Rachel Reid with an activity on radiometric dating
In 2024, designed and led Earth history timeline activity

Professional & Departmental Service

Session chair, GSA Southeastern Section Meeting 2025
Associate Editor, Journal of Emerging Investigators, 2024-2025
Session chair, GSA Connects 2024
Conference chair, VT Geosciences Student Research Symposium 2023-2024
Graduate representative, VT Geosciences Inclusion, Diversity, Equity, and Accessibility Committee
Reviewer for *Nature Geoscience*
Reviewer for *Global and Planetary Change*
Committee member, VT Geosciences Student Research Symposium 2021-2023
Geology Club president, Smith College 2019

Skills

• Wet lab geochemistry techniques: iron speciation, phosphorus speciation, carbonate-associated phosphorus extraction, trace element digestion, and decarbonation
• IRMS mass spectrometry sample preparation, instrument operation, and data processing
• ICP-MS and ICP-OES sample preparation, basic instrument operation, and data processing
• Preparation of samples for $\delta^{15}N$ analysis using the denitrifier method
• Core logging and sampling
• Scanning Electron Microscope (SEM) and Energy Dispersive X-Ray Spectroscopy (EDS) and data processing
• Raman spectroscopy and data processing
• X-ray diffraction (XRD) analysis and data processing, including quantification
• X-ray fluorescence spectrometry (XRF) and data processing
• Extraction, isolation and analysis of microfossil samples
• Measuring, logging, and sampling outcrops in the field

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References

1. Benjamin Gill, Professor of Sedimentary Geochemistry, Virginia Tech
Email: bcgill@vt.edu

2. Lidya Tarhan, Associate Professor, Yale University
Email: lidya.tarhan@yale.edu

3. Sara Pruss, Esther Cloudman Dunn Professor of Geosciences, Smith College
Email: spruss@smith.edu

4. Shuhai Xiao, Professor of Geobiology, Virginia Tech
Email: xiao@vt.edu

5. Jeremy Owens, Professor of Geology and Environmental Science, Florida State University
Email: jdowens@fsu.edu