

# Hunter P. Hughes, PhD

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## EDUCATION

<b>Doctor of Philosophy, Earth, Marine, and Environmental Science</b> University of North Carolina at Chapel Hill, Chapel Hill, NC	August 2020 – August 2025
<b>Master of Science, Earth and Ocean Sciences</b> University of Maryland, Solomons Island, MD	August 2017 – December 2020
<b>Post-Baccalaureate, Geology / Oceanography</b> Northern Virginia Community College, Annandale, VA	January 2014 – May 2017
<b>Bachelor of Arts, Writing Literature and Publishing (Minor in Journalism)</b> Emerson College, Boston, MA	August 2007 – August 2011

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## WORK EXPERIENCE

Postdoctoral Research Scientist, Columbia University, Lamont-Doherty Earth Observatory  
.....September 2025 – Present

*Pallisades, NY, USA*

- Leading development of high-resolution hydroclimate reconstructions in sub-Saharan Africa
- Expanding and refining methodologies established during doctoral research
- Developing independent research proposals and pursuing major external funding (e.g., NSF)
- Presenting ongoing work at national and international scientific conferences

Doctoral Fellow, University of North Carolina at Chapel Hill, Department of Earth, Marine and Environmental Science..... August 2020 – August 2025

*Chapel Hill, NC, USA*

- Published advanced data analyses on paleoclimate data derived from biogenic carbonates
- Performed high resolution sampling of coral skeletal material for geochemical analyses
- Performed climate field reconstructions using advanced statistical techniques
- Head teaching assistant and co-developer for new Marine Science 101 lab section
- Co-created and instructed a first-year seminar on epistemology and climate change

Graduate Research Assistant, University of Maryland Center for Environmental Sciences Chesapeake Biological Laboratory.....June 2017 – August 2020

*Solomons Island, MD, USA*

- Organized/conducted lab and marine field work to collect samples for geochemical analysis
- Executed qualitative and quantitative analysis on a wide range of environmental data

- Optimized instrumental methods for highly accurate and precise analyses (RSD < 0.1%)
- Presented findings at international conferences and through local outreach venues

Research Technician, Central Caribbean Marine Institute.....June 2015 – June 2016

*Little Cayman, Cayman Islands*

- Field & logistics Technician on long-term ecological monitoring programs and research projects
- Engaged with citizen scientists to create studies presented at international conferences
- Drafted and posted weekly PR pieces for institution’s website during summer activities.
- Repaired and maintained field research equipment
- Conducted more than 200 scientific dives, many acting as lead diver

Learning Assistant, Northern Virginia Community College.....January 2015 – May 2017

*Annandale, VA, USA*

- Fortified personal knowledge of oceanography through re-exposure of material and teaching to students
- Helped students master learning concepts through one-on-one and group tutoring
- Collaborated with professor to devise and implement intellectually stimulating lesson plans
- Attended in-services, workshops and seminars, as well as lectured when professor was absent

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## **ACADEMIC DISTINCTIONS, FUNDING & AWARDS**

- Roy Ingram Award for Excellence in Graduate Research: Spring 2025
- Lamont Doherty Earth Observatory Postdoctoral Fellowship: Spring 2025
- National Association of Geoscience Teachers Outstanding TA Award: Summer 2023
- EMES Wheeler Award for Excellence in Teaching: Spring 2023
- First Place for Student Poster Presentations at the 6<sup>th</sup> ISC: Spring 2023
- Sigma Xi Grant in Aid of Research: Summer 2022
- Inaugural paleoCAMP cohort member: Summer 2022
- Martin Travel Award: Summer 2021, Spring 2022, Fall 2022, Spring 2023
- Martin Supplemental Research Award: Spring 2021
- Royster Society of Fellows 5-year Doctoral Fellowship: 2020 - 2025
- Limnology and Oceanography Research Exchange (LOREX): 2020 Cohort
- Geological Society of America’s Graduate Student Research Grant Recipient: 2019, 2021
- Jacob K. Goldhaber Travel Award: 2019
- UMCES Graduate Education Committee Travel Award: 2018, 2019
- Cove Point Natural Heritage Trust Scholarship Grant Recipient: 2017
- Northern Virginia Mineralogy Club Scholarship Recipient: 2017
- Presidential Scholar Recipient at Northern Virginia Community College: 2016
- Student Achievement Award Recipient at Northern Virginia Community College: 2016
- Northern Virginia Community College Dean’s List Honoree: 2014, 2016, 2017

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## **JOURNAL PUBLICATIONS**

**Hughes, H. P., Schijf, J., Kilbourne, K. H. (2025).** “High-resolution annual cycles of the Sr/Ca ratios in Florida Bay seawater samples with osmotic pumps.” *Paleoceanogr. Paleoclimatol.* 40, e2025PA005168

- Hughes, H. P.**, Thompson, D. M., Foster, G. L., Lees, J., Surge, D. (2024). "Synthetic and Practical Reconstructions of SST and pH Using the Novel Multiproxy SMITE Method." *PLOS ONE* 19(6), e0305607.
- Hughes, H. P.**, Surge, D., Orland, I. J., Zettler, M. L., Moss, D. K. (2023). "Seasonal SIMS  $\delta^{18}\text{O}$  record in *Astarte borealis* from the Baltic Sea tracks regime shift in the NAO." *Front. Mar. Sci.* 10.
- Khare, A., **Hughes, H. P.**, Schijf, J., Kilbourne, K. H. (2023). "Apparently seasonal variations of the seawater Sr/Ca ratio across the Florida Keys Reef Tract." *Geochem. Geophys. Geosyst.* 24, e2022GC010728.
- Cziesielski, M. J., **Hughes, H. P.**, Love, C., Rosa Marín, A., Nowakowski, C., and Wilkins, K. W. (2021). "Channeling Hope for Reefs: A Series of Perspectives from Young Coral Reef Scientists." *Limnol. Oceanogr. Bulletin* 30: 12-19.
- Hughes, H. P.**, Cziesielski, M. J., Love, C., Nowakowski, C., Rosa Marín, A., and Wilkins, K. W. (2021). "Looking to the Future: Perspectives from the Next Generation of Coral Scientists." *Limnol. Oceanogr. Bulletin* 30: 18-19.
- Khare, A., **Hughes, H. P.**, Kilbourne, K. H., and Schijf, J. (2021). "An ICP-AES method for routine high-precision measurement of seawater Sr/Ca ratios to validate coral paleothermometry calibrations." *Limnol. Oceanogr. Methods* 19: 416-430.
- Love, C., Cziesielski, M. J., **Hughes, H. P.**, Nowakowski, C., Rosa Marín, A., and Wilkins, K. W. (2021). "Rethinking collaboration for coral reef science." *Limnol. Oceanogr. Bulletin* 30: 16-18.
- Nowakowski, C., **Hughes, H. P.**, Love, C., Rosa Marín, A., Wilkins, K. W., and Cziesielski, M. J. (2021). "Communicating Hope for Coral Reefs." *Limnol. Oceanogr. Bulletin* 30: 15-16.
- Wilkins, K. W., Rosa Marín, A., Cziesielski, M. J., **Hughes, H. P.**, Love, C., and Nowakowski, C. (2021). "Short- and Long-Term Visions for Protecting Coral Reefs." *Limnol. Oceanogr. Bulletin* 30: 13-15.
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## **CONFERENCE ABSTRACTS AND PROCEEDINGS**

- Arney, T., Standish, C. D., **Hughes, H. P.**, Zinke, J., Foster, G. L., (2026, February 22 – 27). *Optimising Laser Ablation-Based Methods for Long Sea Surface Temperature Proxy Reconstructions from Coral Skeletons* [TBD]. Ocean Sciences Meeting, Glasgow, Scotland.
- Hughes, H. P.**, Foster, G. L., Standish, Surge, D., Lees, J. M. (2024, December 9 – 13). *Warped and SMITen: New Prospects for Coral-based Paleoclimatology Using Laser Ablation* [Poster Presentation]. One-Hundred-and-Fifth American Geophysical Union Fall Meeting, Washington, D.C., United States.
- Braniecki, G., Bost, M., **Hughes, H. P.** (2024, April 15 – 16). *Paleoclimatology, Paleoecology, and Conservation Paleobiology: Old Tools and New Tricks for Unraveling the Past and Informing the Future* [Conference session]. Southeastern Geological Society of America Sectional Meeting, Asheville, NC, United States.
- Hughes, H. P.**, Foster, G. L., Thompson, D. M., Surge, D. (2023, December 11 – 15). *ALLSMITE: Towards a Universal Equation for Reconstructing Sea Surface Temperature from Coral Skeletal Geochemistry* [Oral presentation]. One-Hundred-and-Fourth American Geophysical Union Fall Meeting, San Francisco, CA, United States.
- Kilbourne, K. H., Schijf, J., **Hughes, H. P.**, Vélez-Galiano, A. (2023, December 11 – 15). *Seawater Sr/Ca Variability in the Florida Keys Affects Coral Sr/Ca: Implications for Paleoclimate Reconstructions* [Poster presentation]. One-Hundred-and-Fourth American Geophysical Union Fall Meeting, San Francisco, CA, United States.
- Hughes, H. P.**, Thompson, D. M., Foster, G. L., Lees, J. M., Surge, D. (2023, May 22 – 25) *Extracting Signals from Coral Proxies: A Demonstration of the Multivariate SMITE Method* [Poster Presentation]. Sixth International Schlerochronology Conference, Tokyo, Japan.
- Hughes, H. P.**, Surge, D., Orland, I. J., Zettler, M. J., Moss, D. K. (2022, December 12 – 16). *A New Multi-Decadal Climate Bio-Archive Using Oxygen Isotope Ratios in Baltic Sea Astarte borealis (Bivalvia) Shells Measured by*

*Secondary Ion Mass Spectrometry* [Poster Presentation]. One-Hundred-and-Third American Geophysical Union Fall Meeting, Chicago, IL, United States.

**Hughes, H. P.**, Surge, D., Thompson, D. M., Lees, J. M., Foster, G. L., Standish (2022, April 13). *SMITE: A Novel Method for Estimating Sea Surface Temperature Using Scleractinian Corals* [Poster Presentation]. First UNC CH EMES PerkinElmer Student Research Symposium, Chapel Hill, NC, United States.

**Hughes, H. P.**, Surge, D., Thompson, D. M., Lees, J. M., Foster, G. L., Standish, C., Chalk, T. B. (2022, April 7 – 8). *SMITE: A Novel Method for Estimating Sea Surface Temperature Using Scleractinian Corals* [Oral Presentation]. Geological Society of America Joint North-Central & Southeastern Section Meeting, Cincinnati, OH, United States.

**Hughes, H. P.**, Whitney, N. M., Chalk, T. B., and Reed, E. V. (2022, February 24 – March 4). *Advancing Paleoclimate Studies of Global Change: Novel Proxies, Methods, and Insights* [Conference session]. Ocean Sciences Meeting, Virtual.

**Hughes, H. P.**, Surge, D., Thompson, D. M., Lees, J. M., Foster, G. L., Standish, C., Chalk, T. B. (2022, February 24 – March 4). *SMITE: A Novel Method for Estimating Sea Surface Temperature Using Scleractinian Corals* [Oral Presentation]. Ocean Sciences Meeting, Virtual.

**Hughes, H. P.**, Kilbourne, K. H., and Schijf, J. (2019, December 9 – 13). *Seasonal and Episodic Variability in Seawater Strontium-Calcium Ratios on the Coral Reefs of the Western Hemispheric Warm Pool: A Confounding Variable for Coral Paleoclimate Reconstructions* [Poster presentation]. One-Hundredth American Geophysical Union Fall Meeting, San Francisco, CA, United States.

**Hughes, H. P.**, Kilbourne, K. H., and Schijf, J. (2018, December 10 – 14). *Seawater Sr/Ca and  $\delta^{18}O$  variability in the Florida Keys and Virgin Islands demonstrate the importance of location in choosing sites for coral paleoclimate studies* [Poster presentation]. Ninety-Ninth American Geophysical Union Fall Meeting, Washington, D.C., United States.

Kilbourne, K. H., Perez Delgado, Z. P., **Hughes, H. P.**, Khare, A., and Hobbs, E. (2018, December 10 – 14). *Exploring the relationships of North Atlantic sea surface temperature anomalies at high and low latitudes with North Atlantic Oscillation variability over recent centuries from paleoclimate proxy data* [Poster presentation]. Ninety-Ninth American Geophysical Union Fall Meeting, Washington, D.C., United States.

**Hughes, H. P.** (2016, March 16 – 19). *Hot, But Not Bothered: Resilience of Little Cayman Corals during the 2015 ENSO* [Oral presentation]. Forty-Fifth Annual Benthic Ecology Meeting, Portland, ME, United States.

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## **MAGAZINE / BLOG ARTICLES**

**Hughes, H.P.** “The ‘Caves and Corals of Curaçao’ Expedition of 2024.” *The Pipettepen*, the Science Writing and Communication Club at the University of North Carolina at Chapel Hill. 3/20/2024.

<http://www.thepipettepen.com/the-caves-and-corals-of-curacao-expedition-of-2024/>

**Hughes, H.P.** “How Coral Reefs ‘Escape’ Climate Change.” *The Pipettepen*, the Science Writing and Communication Club at the University of North Carolina at Chapel Hill. 10/31/2022.

<https://www.thepipettepen.com/how-coral-reefs-escape-climate-change/>

**Hughes, H.P.** “Caring for Coral Reefs Comes Naturally.” *The Pipettepen*, the Science Writing and Communication Club at the University of North Carolina at Chapel Hill. 7/22/2022.

<https://www.thepipettepen.com/caring-for-coral-reefs-comes-naturally/>

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## **BROAD SKILLS**

- **Computational Skills:** R Statistical Programming (Expert); Microsoft Office: Excel, Word, PowerPoint, OneNote (Expert); Adobe Creative Cloud: Acrobat, Illustrator, Photoshop (Intermediate); HTML (Intermediate), OceanDataView (Intermediate); Python (Intermediate); Matlab (Novice)
  - **Teaching:** Classroom Lecturing, Individual Mentoring, Lesson Plan Development & Assessment, Sakai, Canvas, Blackboard
  - **Writing, Communication & Outreach:** Scientific Publication, Grant Proposal, Perspective, Science Communication (K-12, General Public, Expert), Website Development (HTML), Blogging, Persuasive, Creative
  - **Field Work:** Scientific Diving (AAUS), Rescue / Advanced / Open Water Diving (PADI), Oxygen Provider (DAN), Diving First Aid (DAN)
  - **Laboratory:** Laser Ablation Inductively Coupled Plasma Mass Spectrometry, Inductively Coupled Plasma Optical Emission Spectroscopy, Sample Preparation for Geochemical Analysis of Biogenic Carbonates, Laboratory Bench, Microscale, Acid Cleaning, Pipetting
  - **Languages:** English (Native), Spanish (Intermediate)
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### **PUBLIC SERVICE AND OUTREACH**

- Guest Lecturer at Carolina Meadows' Biweekly Philosophy Seminar (Spring 2024)
  - President of the Committee for Graduate Advocacy (Fall 2023, Spring 2024)
  - Lead Organizer for the UNC EMES Student/Postdoc Brownbag (Spring 2022, Fall 2022)
  - Author for the Science Writing and Communication Club's *Pipettepen* (Summer 2022, Fall 2022)
  - Editor for the Science Writing and Communication Club's *Pipettepen* (Spring 2022, Summer 2022, Fall 2022)
  - Undergraduate Research Mentor (Fall 2020, Spring 2021, Spring 2022, Fall 2022)
  - Interviewed with the North Carolina Coastal Review regarding corals and climate (Spring 2022)
  - Guest Lecturer for ENVR 575, "Global Climate Change: Science, Impacts, Solutions" (Spring 2022)
  - Featured Student Researcher at UNC Chapel Hill's Geology 101 Lecture Series (Fall 2021)
  - Convener for the 2021 Royster Global Conference *Tenacity in Turbulent Times* (Spring 2021)
  - Mentor for NSF PROGRESS (Spring 2021)
  - Featured Student Researcher at the Chesapeake Biological Laboratory Science 4 Citizens Seminars (Fall and Spring, 2017 – 2020)
  - Speaker for the annual Oceanography field trip to the Chesapeake Biological Laboratory from Northern Virginia Community College (2018, 2019)
  - Speaker at the Millbrook Middle School Career Day (2019, 2020)
  - Booth attendee at the annual Chesapeake Biological Laboratory Open House (2017, 2018)
  - Volunteer at the annual U.S. Oyster Festival in St. Mary's County, MD. (2018, 2019)
  - Treasurer of the NVCC Geology Club (Spring 2017; Organized fully-funded student excursion to 2017 Southeastern GSA Conference)
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### **REFERENCES**

Available upon request