Mary Grace Albright

Preferred name: Mary Grace (she/her/hers)
Curriculum Vitae
Last update: January 30th, 2025

Email: marygrace.albright@uconn.edu
GitHub: https://github.com/mg-albright
Website: www.marygracealbright.com/
ORCiD: https://orcid.org/0009-0007-5756-7189

EDUCATION

PhD Candidate, Geological Sciences (anticipated conferral May 2026) — **Storrs, CT**
University of Connecticut — *Aug. 2021-present*
Committee Members: Ran Feng (advisor), Clay Tabor, Chris Fielding, Jiang Zhu, Colin Zarzycki
Dissertation: *Hydroclimatic and Thermal Changes Across Cenozoic Warm Intervals: Implications for Future Climate*

B.S., Applied Mathematics — **Greenville, SC**
Furman University — *Aug. 2017-May 2021*
Minor, Environmental Studies
Advisor: John Harris

PEER-REVIEWED PUBLICATIONS

3. **Albright, M.G.**, Feng, R., Bhattacharya, T., Zarzycki, C., Molina, M., Tabor, C., Zhu, J., Otto-Bliesner, B., Rosenbloom, N., Sun, C., Greater North American Monsoon Precipitation Brought by Enhanced Storm Activity in a Warm Climate. *Nat. Comm.* In revision.
2. Feng, Z., Prein, A., Kukulies, J., Fiolleau, T., Jones, W. K., Maybee, B., Moon, Z. L., Núñez Ocasio, K. M., Dong, W., Molina, M. J., **Albright, M. G.,** Feng, R., Song, J., Song, F., Leung, L. R., Varble, A. C., Klein, C., and Roca, R. (2025). Mesoscale Convective Systems tracking Method Intercomparison (MCSMIP): Application to DYAMOND Global km-scale Simulations. J. Geophys. Res. Atmos., 130(8), e2024JD042204, doi: 10.1029/2024JD042204.
1. **Mary Grace Albright,** Caroline Vickery, Roy Bower & John E. Quinn (2023) Patterns of land use change, land governance, and the supply of ecosystem services in a multifunctional landscape: A case study from Upstate SC, USA, Journal of Land Use Science, 18:1, 284-295, DOI: 10.1080/1747423X.2023.2234903.

MANUSCRIPTS IN PREPARATION

2. Rubbelke, C., Bhattacharya, T., **Albright, M.G.**, Feng, R., Zhu, J., Tabor, C., Otto-Bliesner, B., Brady, E., Impact of Ocean Resolution on Mid-Pliocene Warm Period Simulations in Southern Africa. Draft in-hand. (for *Paleoceanogr. Paleoclimatology*)
1. **Albright, MG,** Feng R, Molina, M J, Zhu, J, Tabor, C, Otto-Bliesner, B L, Brady E C, Sun, C, Macarewich, S, Poleward Expansion and Intensification of Mesoscale Convective Systems in Warmer Climates. In prep. (for *AGU Adv.*)

ORAL PRESENTATIONS (* indicates invited)

11. **Albright, MG,** Bower, E, Chenard, M, Klein, M, Unraveling Flash-Flood Environments: An Ingredients-Based Examination of Heavy Rainfall Events, AGU Annual Meeting 2025, New Orleans, LA, 14-19 Dec 2025.
10. **Albright, MG,** Feng R, Molina, M J, Zhu, J, Tabor, C, Otto-Bliesner, B L, Brady E C, Sun, C, Macarewich, S, A Global Climatology of Mesoscale Convective Systems in an Unprecedented Set of Ultra-High Resolution Simulations of Key Climatic Intervals, AGU Annual Meeting 2024, Washington, DC, 9-13 Dec 2024.
9. **Albright, M.G.,** Molina, M. J., Feng, R., Zhu, J., Otto-Bliesner, B., Brady, E., Tabor, C.: A Global Climatology of Mesoscale Convective Systems in Ultra High-Resolution Simulations of Key Cenozoic Intervals, Climate Evolution from Early Eocene to mid-Pliocene Workshop, Storrs, CT, 19-21 Aug 2024.

8. **Albright, M. G**., Weitzel, N., Inglis, G. N., Steinig, S., Renoult, M., Reichgelt, T., Fletcher, T., Tindall, J., and Feng, R.: Quantifying the State Dependency of Climate Sensitivity Across Cenozoic Warm Intervals, EGU General Assembly 2024, Vienna, Austria, 14–19 Apr 2024, EGU24-13307, https://doi.org/10.5194/egusphere-egu24-13307, 2024.
7. ***Albright, M.G.,** Feng, R., Bhattacharya, T., Otto-Bliesner, B., Zarzycki, C., Zhu, J., Li, H.: Insights from Weather Resolving Coupled Simulations on the Mid-Pliocene North American Monsoon, MIT-WHOI Climate & Paleo Seminar Series, 28 March 2024.
6. **Albright, M. G.,** Feng, R., Bhattacharya, T., Li, H., Otto-Bliesner, B., Zarzycki, C., Zhu, J.: Mid-Pliocene North American Monsoon in Weather Resolving Coupled Simulations, AGU Fall Meeting 2022, Chicago, Illinois, 12-16 Dec. 2022.
5. **Albright, M.G.**, Feng, R., Bhattacharya, T., Li, H., Otto-Bliesner, B., Zarzycki, C., Zhu, J.: Mid-Pliocene North American monsoon in weather resolving coupled simulations, CESM Paleoclimate Working Group Workshop, Online, June 2022.
4. **Albright, M. G.,** Feng, R., Zhu, J., Otto-Bliesner, B., Li, H., and Bhattacharya, T.: Mid-Pliocene North American Monsoon in Weather Resolving Coupled Simulations, EGU General Assembly 2022, Vienna, Austria, 23–27 May 2022, EGU22-5586, https://doi.org/10.5194/egusphere-egu22-5586, 2022.
3. **Albright, M.G.**, Feng, R., Zhu, J., Otto-Bliesner, B., Li, H., Bhattacharya, T.: Mid-Pliocene North American monsoon in weather resolving coupled simulations, University of Connecticut Geoscience Day Research Symposium, Storrs, Connecticut, April 2022.
2. **Albright, M.G.**, Feng, R., Zhu, J., Otto-Bliesner, B., Li, H., Bhattacharya, T.: Mid-Pliocene North American monsoon in weather resolving coupled simulations, CESM Paleoclimate Working Group Winter Workshop, Online, February 2022.
1. **Albright, M.G.,** Quinn, J., Bower, R.: Diminishing Local Farmland: An assessment of the rise of development in Greenville County, South Carolina, Furman Engaged, Online, 2021

POSTERS

7. **Albright, MG,** Weitzel, N., Inglis, G. N., Steinig, S., Renoult, M., Reichgelt, T., Fletcher, T., Tindall, J., Feng, R.: Constraining State-Dependent Climate Sensitivity Using Emergent Constraints Across Cenozoic Warm Intervals, AGU Annual Meeting 2025, New Orleans, LA, 14-19 Dec 2025.
6. **Albright, M.G.,** Feng, R., Molina, M. J., Zhu, J., Tabor, C., Otto-Bliesner, B., Brady, E., Sun, C., Macarewich, S., Mesoscale convective systems from the Cenozoic into the future: Insights from high-resolution community earth system model simulations, Young Scientist Meeting & Open Science Meeting, Shanghai, China, 19-24 May 2025.
5. **Albright, MG,** Weitzel, N., Inglis, G. N., Steinig, S., Renoult, M., Reichgelt, T., Fletcher, T., Tindall, J., Feng, R.: Insights from Deep Time: Quantifying the State Dependency of Climate Sensitivity Across Cenozoic Warm Intervals, Graduate Climate Conference, Pack forest, WA, 31 Oct. – 2 Nov. 2024.
4. **Albright, M.G.**, Weitzel, N., Inglis, G. N., Steinig, S., Renoult, M., Reichgelt, T., Fletcher, T., Tindall, J., Feng, R.: Quantifying the State Dependency of Climate Sensitivity Across Cenozoic Warm Intervals, AGU Fall Meeting 2023, San Francisco, CA, 11-15 Dec. 2023.
3. **Albright, M. G.**, Feng, R., Bhattacharya, T., Li, H., Otto-Bliesner, B., Zarzycki, C., and Zhu, J.: Contributions of Resolved Mesoscale Systems to the North American Monsoon in High Resolution Simulations of the Mid-Pliocene, Graduate Climate Conference, Woods Hole, MA, 2-4 Nov. 2023.
2. **Albright, M. G.**, Feng, R., Zhu, J., Otto-Bliesner, B., Li, H., and Bhattacharya, T.: Mid-Pliocene North American Monsoon in Weather Resolving Coupled Simulations, The warm Pliocene: Bridging the geological data and modelling communities, Leeds, United Kingdom, 23–26 Aug 2022, GC10-Pliocene-6, https://doi.org/10.5194/egusphere-gc10-pliocene-6, 2022.
1. **Albright, M.G.,** Quinn, J., Bower, R.: Diminishing Local Farmland: An assessment of the rise of development in Greenville County, South Carolina, Furman Engaged, 2021.

RESEARCH EXPERIENCE

Graduate Assistant **Aug. 2021-present**

University of Connecticut, Department of Earth Sciences

Dissertation explores the use of high resolution simulations and machine learning to understand hydroclimate changes throughout the past ~65 million years. Interested in determining how weather systems change under warmer intervals in the Earth's history. Current participant in multiple international collaborative efforts for larger-scale projects, such as MCSMIP and Miocene GMST reconstructions.

William M. Lapenta – NOAA Student Intern **June 2025-Aug. 2025**

National Weather Service, Weather Prediction Center (NWS/WPC)

Completed a project called, "*Ingredients-based Diagnosis of Significant Rainfall Events,*" which identified meteorological variables and thresholds that precede flash flooding events across the country. Final product is being used in current forecasting efforts for WPC's MetWatch and ERO desks and will be included in training new forecasters.

Mentors: Mark Klein, Marc Chenard, and Erica Bower

Visiting Graduate Student **Summer 2023**

University of Tübingen, SPACY group led by Prof. Dr. Kira Rehfeld

Worked collaboratively to estimate global mean surface temperature during Cenozoic warm intervals to better constrain equilibrium climate sensitivity using a Bayesian framework.

Undergraduate Research Assistant **May 2020-Dec.2020**

Furman University, Department of Mathematics, Department of Biology

Used statistical analysis and GIS data to assess urban development's effect on farmland loss in Greenville and Spartanburg counties in South Carolina.

HARD SKILLS

- **Programming and analysis:** Python (Xarray, pandas, numpy, statsmodels, scikit-learn, PyTorch), Bash
- **Climate data processing:** NCO, CDO, NetCDF-based workflows
- **High-performance workflows:** Linux/Unix, high-performance computing, Git/GitHub
- **Statistical modeling and evaluation:** MET/METPlus, ensemble analysis, uncertainty quantification
- **Machine learning:** Supervised deep learning for geospatial segmentation (U-Net architectures)
- **Climate and geospatial tools:** Community Earth System Model (CESM), ArcGIS products, QGIS
- **Visualization and reporting:** Data visualization, R, MATLAB, Julia, Microsoft Office Suite

SERVICE & OUTREACH

Head UConn Earth Science Mentor **Fall 2023-present**

Established and organized a new mentorship program between UConn Earth Science graduate and undergraduate students. Currently mentoring one undergraduate student within the Earth Science Department. Matched all other mentor/mentee pairs for the past two years and currently organize/run all trainings and larger mentoring program meetings.

Girls Who Code Club Facilitator **Fall 2023-present**

Head volunteer at East Hartford High School, a Title I school in Connecticut. Teaching female students with little to no coding experience how to use Python for creating simple games, data visualization, and music composition.

Geoscience Education & Mentor Support (GEMS) Mentor **Fall 2023-May 2024**

Mentored one undergraduate student from Arizona State University.

GRANTS, FELLOWSHIPS, SCHOLARSHIPS, & ALLOCATIONS

Travel Funding, Young Scientist Meeting, Past Global Changes (PAGES) **May 2025**
Data Analysis Allocation, NSF National Center for Atmospheric Research **Sept. 2024**
Casper GPU: 500 GPU hours; Casper: 80,000 Core-hours
Conference Participation Award, University of Connecticut **Aug. 2024**
PhD Fellowship, University of Connecticut **Summer 2023/2024**
Early Career Scientist Travel Grant, Galileo Conference, European Geoscience Union **Aug. 2022**
Travel Funding, CESM Tutorial, National Center for Atmospheric Research **Aug. 2022**
Pre-Doctoral Fellowship, University of Connecticut **Summer 2022**
Bell Tower Scholarship, Furman University **Aug. 2017-May 2021**
L.H. Bowen Memorial Scholarship, Furman University Department of Mathematics **Aug. 2019-May 2021**
Summer Mathematics Undergraduate Research Fellow, Furman University **May 2020-July 2020**
Professional Athletes Foundation Family Scholarship, NFL Players Association **Aug. 2017-May 2018**
Charlie Harville Memorial Scholarship, Community Foundation of Greater Greensboro **Aug. 2017-May 2018**
Earle Scholarship, Walter Hines Page High School **Aug. 2017-May 2018**

TEACHING EXPERIENCE

Lab Instructor, Earth's Dynamic Environment (GSCI/ERTH 1050/1052) **Fall 2021/Spring 2023**
Department of Geosciences, University of Connecticut, Storrs
Instructed 20-25 undergraduate students per section in introductory level geology labs.

Teaching Assistant, Creating and Sustaining National Parks (ERTH 2310E) **Spring 2023/Spring 2024**
Department of Geosciences, University of Connecticut, Storrs
Assisted with grading for 150 undergraduates and provided study assistance during office hours. Topics included plate tectonics, climate and biotic change, natural hazards, Earth materials and resources, environmental conservation, and the interactions between human society and the natural world. Guest lectured once.

AWARDS

Nalwalk Award for Excellence in Research, UConn Earth Sciences Department **April 2024**
Outstanding Oral Presentation Award, UConn Geoscience Day Research Symposium **April 2022 & 2023**
Excellence in Environmental Studies, Furman University **May 2021**

PROFESSIONAL DEVELOPMENT

PaleoCAMP **June 2024**
2-week summer school for graduate students: Paleoclimate Training in Climate Archives, Models, and Proxies

Paleoclimate Data Assimilation Workshop **Aug. 2023**
Virtual workshop led by Michael Erb on data assimilation in Python for paleoclimate data

Community Earth System Model Tutorial **Aug. 2022**
Tutorial by the National Center for Atmospheric Research on the usage of the Community Earth System Model with the Cheyenne supercomputer.

Thompson Field Forum **June 2022**
Field forum by the Geological Society of America led by Elizabeth Cassel, Chris Henry, Craig Jones, and John Wakabayashi. Took place in Nevada and California and discussed the topic: Old or Young? The Topographic Evolution of the Sierra Nevada.

PROFESSIONAL EXPERIENCE

Information Technology Staff **Aug. 2019-May 2021**
Furman University
Provided technical support for Furman students, staff, alumni, and faculty

Mathematics Tutor **Jan. 2019-Aug. 2020**
Furman University
Tutored Furman students in calculus and statistics

LEADERSHIP AND COMMITTES

Secretary, UConn Geoscience Graduate Group **Aug. 2025-Present**
Graduate Student Advisory Committee, UConn College of Liberal Arts and Sciences **Aug. 2024-Present**
President, UConn Geoscience Graduate Group **May 2024-May 2025**
Co-Chair of Advertising and Communications, Graduate Climate Conference **Jan. 2024- Nov. 2024**
A/V Committee Member, Graduate Climate Conference **Jan. 2024-Nov. 2024**
Vice President, UConn Geoscience Graduate Group **May 2023-May 2024**
Events Coordinator, UConn Geoscience Graduate Group **Aug. 2022-May 2023**
Faculty Search Committee Member, UConn Earth Science Department **Aug. 2022-May 2023**

OTHER ACTIVITIES

Student Athlete **Aug. 2017-May 2019**
Furman University
Practiced 20 hours/week and traveled for games (~55 games per season in spring) for the NCAA Division I Women's Softball Team in addition to other team activities throughout the academic year while carrying a full course load.