

Kara Lamantia

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RESEARCH INTERESTS

I am a climate scientist interested in cryospheric change, mountain glacier snowlines and mass balance, optical remote sensing, geospatial analysis, mountain glacier mass balance, and ice core science.

EDUCATION

2021 - 2025 | **Ph.D. in Earth Sciences**

School of Earth Sciences, Ohio State University, Columbus, OH

Dissertation: Interpreting Past and Present Climate Changes in Peruvian Glaciers from the Holocene to Present Day

Adviser: Dr. Lonnie Thompson

Funding: 4-year funded teaching and research scholarship from Ohio State School of Earth Sciences

2016 - 2018 | **M.S. in Earth Science**

School of Earth Sciences, Ohio State University, Columbus, OH

Thesis: Comparison of glacier loss on Qori Kalis, Peru and Mt. Kilimanjaro, Tanzania over the last decade using digital photogrammetry and stereo analysis

Adviser: Dr. Lonnie Thompson

Funding: 2-year funded teaching and research scholarship from Ohio State School of Earth Sciences

2012 - 2016 | **B.S. in Geology (Cum Laude) & Graduate Certificate in GIS**

Department of Geology, University of Dayton, Dayton, OH

Thesis: Satellite Imagery Surface Temperature Analysis of Peruvian Glaciers

Advisers: Dr. Daniel Goldman and Dr. Umesh Haritashaya

POSITIONS HELD

School of Geographical Sciences, University of Bristol, Bristol, UK

2026 – Present | Royal Society Newton International Fellow

Byrd Polar and Climate Research Center, Ohio State University, Columbus, OH

2025 | Post Doctoral Researcher

School of Earth Sciences, Ohio State University, Columbus, OH

2021 - 2025 | Graduate Research Assistant, Head Teaching Assistant, Laboratory Teaching Assistant

McGraw Hill, Remote

2022 - 2023 | Part-time | Editor of Climate Science Textbook Chapters

BBJ Group, Inc, Pittsburgh, PA

2018 - 2021 | Staff Scientist, Environmental Consultancy

School of Earth Sciences, Ohio State University, Columbus, OH

2016 - 2018 | Graduate Teaching Assistant

Geology Department, University of Dayton, Dayton, OH

2013 - 2016 | Teaching Assistant, Lab Assistant, Lecture Grader, Research Assistant

PUBLICATIONS

Lamantia, K.A., Thompson, L.G., Davis, M.E., Riddell-Young, B., Beaudon, E., Strawson, I., Mosley-Thompson, E., Nguyen, N., & Brook, E.J. (2026) A Global Atmospheric Methane Record from a Tropical Ice core (in review, *Nature*).

Lamantia, K. A., Larocca, L., Aberle, R., Maussion, F., & Lea, J. M. (2026). A Google Earth Engine Tool for Mapping Key Metrics of Glacier Health from Space (pre-print, in review *Journal of Glaciology*).

Lamantia, K. A., Larocca, L. J., Thompson, L. G., & Mark, B. G. (2024). El Niño enhances snow-line rise and ice loss on the Quelccaya Ice Cap, Peru, *The Cryosphere*, 18(10), 4633–4644, [DOI: 10.5194/tc-18-4633-2024](https://doi.org/10.5194/tc-18-4633-2024)

Larocca, L. J., Lea, J. M., Erb, M. P., McKay, N. P., Phillips, M., **Lamantia, K. A.**, & Kaufman, D. S. (2024). Arctic glacier snowline altitudes rise 150 m over the last 4 decades. *The Cryosphere*, 18(8), 3591-3611. [DOI: 10.5194/tc-18-3591-2024](https://doi.org/10.5194/tc-18-3591-2024).

Lamantia, K.A., Thompson, L., Davis, M., Mosley-Thompson, E., & Stahl, H. (2023). Unique Collections of 14C-Dated Vegetation Reveal Mid-Holocene Fluctuations of the Quelccaya Ice Cap, Peru. *Journal of Geophysical Research: Earth Surface*, 128(11), e2023JF007297, [DOI: 10.1029/2023JF007297](https://doi.org/10.1029/2023JF007297)

Saup, C., **Lamantia, K.A.**, Chen, Z., Bell, B., Schulze, J., Alsdorf, D., & Sawyer, A. H. (2022). On-campus field experiences help students to learn and enjoy water science during the COVID-19 pandemic. *Frontiers in Environmental Science*, 10, 877327. [DOI: 10.3389/fenvs.2022.877327](https://doi.org/10.3389/fenvs.2022.877327)

RESEARCH EXPERIENCE

Glacier Remote Sensing: Developed an automated Earth observation workflow to detect the snowline of a glacier or ice cap, discovering new links between ENSO and ice loss through non-visible spectra (published in *Cryosphere*)

Historical Methane Emissions Modeling: Created a global box model to estimate latitudinal historical methane emissions using ice core data for the last 2,000 years.

Paleo margin Reconstruction: Created a comprehensive assessment of the Quelccaya Ice Cap's Holocene era fluctuations, filling in previous temporal gaps with a new suite of radiocarbon data (published in *JGR*). Currently involved in using IGM to reconstruction paleo margin fluctuations

Ice Core Paleoclimate Analysis: Performed novel ice core analysis for the interpretation of the only global methane record captured within an ice core from the tropics and a second core considered to contain regional signals of methane production (publication in development)

TECHNICAL SKILLS

Remote Sensing & GIS | Optical Satellite Analysis, Snowline Analysis, Spatiotemporal Greenhouse Gas Analysis, Google Earth Engine, Paleo-Margine Tracking, Photogrammetry, Stereo Analysis

Numerical Modeling: *Python*: methane model for global emissions, diffusion/transport across mountainous terrain, and firn to ice methane smoothing model

Software | *Geospatial*: QGIS, ArcMap, Google Earth Engine Tools, ERDAS Imagine; *Programming*: Python and JavaScript

Lab experience | Cold-room (-3°C & -30°C) procedures for handling, cutting, prepping, and cataloging ice cores maintained within a freezer system.

SELECTED PRESENTATIONS

Talks

Lamantia, K.A., Thompson, L.G., Davis, M., Brook, E. Mosley-Thompson, E., & Beaudon, E. The First Global Methane Record from Low Latitude Ice Cores. *Ice Core Community Meeting, University of Minnesota, 14 May 2025.*

Lamantia, K.A., Thompson, L.G., Davis, M., Brook, E. Mosley-Thompson, E., & Beaudon, E. Low Latitude Ice Cores Reconstruct Global Methane Emissions. *Ohio State University 2025 Edward F. Hayes Advanced Research Forum. 28 February 2025.*

Lamantia, K.A., Thompson, L.G., Davis, M., Brook, E. Mosley-Thompson, E., & Beaudon, E. Global and Regional Signals Preserved in Ice Cores from Nevado, Huascarán, Peru. *Quaternary Research Association, Newcastle University, United Kingdom, 7 January 2025.*

Lamantia, K.A. Guest Speaker (Invited), Ice Cores, Paleoclimate, and Climate Science Research at OSU. *Ohio State University Undergraduate Student Government Workshop, 21 November 2024.*

Lamantia, K.A. Guest Speaker (Invited), Climates of the Past. *Ohio State University Social and Ecological Systems Undergraduate Course, January 2024 & 2025.*

Lamantia, K.A., Thompson, L.G., Larocca L.J., & Mark., B.G. El Niño Enhances Snowline Rise and Ice Loss on the World's Largest Tropical Ice Cap. *Ohio State University 2024 Edward F. Hayes Advanced Research Forum. 1 March 2024.*

Lamantia, K.A., Thompson, L.G., Davis, M., Mosley-Thompson, E., & Beaudon, E. Global Methane Concentrations Preserved in Ice Cores from Nevado, Huascarán, Peru, *AGU Fall Meeting 2023. 14 December 2023.*

Posters

Lamantia, K.A., Thompson, L.G., Davis, M., Mosley-Thompson, E., & Beaudon, E. Ice Core Methane Records from Nevado Huascarán, Peru Contain Regional and Global Signals, *AGU Fall Meeting 2024. December 2024.*

Lamantia, K.A., Aberle, R., Larocca, L.J., & Lea, J., An Open, Automated Method for Mapping Key Metrics of Glacier Health from Space, *AGU Fall Meeting 2024. December 2024.*

Lamantia, K.A., Kutuzov, S., & Thompson, L.G., Using Google Earth Engine to track El Niño Influenced Snowline Retreat of the Quelccaya Ice Cap, *2023 Byrd Center Symposium October 2023.*

Lamantia, K.A., Thompson, L.G., Davis, M., Mosley-Thompson, E., & Stahl, H. Unique Collection of Recently Exposed ¹⁴C Dated Tropical Wetland Vegetation Documents Quelccaya Ice Cap Margin Mid-Holocene Fluctuations, *AGU Fall Meeting 2022, PP12E-0672, 12 December 2022.*

Lamantia, K.A., Thompson, L.G., Davis, M., Mosley-Thompson, E., & Stahl, H. Exposed Vegetation Documents Quelccaya Ice Cap Margin Fluctuations, *2022 Byrd Center Symposium October 2022.*

Lamantia, K.A., & Thompson, L.G. Comparison of Glacier Loss on Qori Kalis, Peru and Mt. Kilimanjaro, Tanzania Over the Last Decade Using Digital Photogrammetry and Stereo Analysis, *AGU Fall Meeting 2017*, C33D-1239, 13 December 2017.

HONORS

Spieker Book Award | April 2025 | Ohio State University School of Earth Sciences | Distinguished Senior PhD Graduate Student

2025 OSU Graduate Associate Teaching Award | March 2025 | Ohio State University Award for exceptional teaching and course development as a graduate student

Most Outstanding Student Oral Presentation | January 2025 | Quaternary Research Association | 2025 Annual Meeting, Newcastle University, United Kingdom

Outstanding Student Presentation Award | December 2024 | American Geophysical Union Fall Meeting

First Prize Oral Presentations | February 2024 | Edward F. Hayes Advanced Research Forum, Ohio State University *Math and Physical Science Section* | El Niño Enhances Snowline Rise and Ice Loss on the World's Largest Tropical Ice Cap

Editors Highlight | January 2024 | [JGR Earth Surface](#) | [AGU Advances Digest](#) | Plants Reveal the History of the Earth's Largest Tropical Ice Cap (Lamantia, et al, 2023)

Outstanding Graduate Teaching Assistant | May 2018 & 2021 | Ohio State University School of Earth Sciences | For most highly regarded teaching performance

Undergraduate Research Award | 2016 | University of Dayton Department of Geology | Most promising undergraduate research project

Undergraduate Academic Award | 2016 | University of Dayton Department of Geology | Highest academic performance

GRANTS

Royal Society Newton International Fellowship

Friends of Orton Hall AGU Travel Grant | Travel Grant | \$2000 | 2024

Friends of Orton Hall Ice Core Early Career Researchers Workshop | Workshop Grant | \$500 | 2024

Friends of Orton Hall AGU Travel Grant | Travel Grant | \$1800 | 2023

Friends of Orton Hall AGU Travel Grant | Travel Grant | \$900 | 2022

TEACHING EXPERIENCE

Ohio State University

2024 | **Teaching Assistant** | Earth Science Introductory Lab

2023 | **Teaching Assistant** | Geomorphology and Geomorphology Lab

2021 - 2023 | **Course Developer & Head Teaching Assistant** | Earth Science Introductory Lab

2016 - 2018 | **Teaching Assistant** | Earth Science Introductory Lab, The Dynamic Earth Lab, and Earth Through Time

University of Dayton

2014 - 2016 | **Teaching Assistant** | Earth and the Environment Lab
2013 - 2014 | **Grader** | Physical Geology

LEADERSHIP ACTIVITIES

Ice Core Early Career Researchers Workshop (ICECReW) Organizing Committee

2024 - 2026 | Graduate Student Organizer for the ICECReW 2025 Meeting

School of Earth Sciences Graduate Studies Committee

2022 - 2024 | Graduate Representative for Water, Climate, and Environment Division

School of Earth Sciences Graduate Student Club

2022 - 2023 | Vice President, Fundraising Committee Leader

SERVICE AND OUTREACH

Media Interview | November 2024 | [NBC4 Local Ohio](#) for Lamantia *et al.*, 2024 (Cryosphere).

Westerville Central Earth Science Day | December 2023, 24, 25 | Organize with local teachers to discuss research and career options with high school students.

Press Coverage | October 2024 | [University Press Release](#) | Ohio State News Interview for Lamantia *et al.*, 2024 (Cryosphere).

McGraw Hill California Reveal Math® Scientist | 2024 - 2025 | Collaborate with McGraw Hill Publishing to create a 30-minute video about research and data analysis for middle school-aged students.

Byrd Outreach Volunteer | 2021 – 2025 | Regularly (~bimonthly) presentations, aid with tours and hands-on activities with visiting tour groups aged from elementary to upper-level undergraduates.

Climate Science Interactive | November 2024 | OSU Undergraduate Student Government | Guest Speaker/Presenter for Ice Core and Climate Science Research.

Ohio State Summer Data Camp Presenter and Activity Developer | June/July 2024 | Develop data-based activities for middle and high school aged students.

Ohio State SELF Program Activity Organizer | March 2023 | Organized and led an activity for first- and second-year minority undergraduate students about ice cores and climate science.

BBC Consultant | 2023 | Consultant for Andean glacier analysis and projection information for the upcoming documentary 'The Americas.'

GHRO STEM Learning Day | November 2022 | Organized and led an immersive learning day low-income middle and high school aged girls to experience different STEM career opportunities.

Van Buren Middle School STEAM Learning Day | February 2022 | Virtual outreach event to speak with middle school aged students about research and career paths.

Bexley High School STEM Day | September 2021 | Speak to high school students about research and career path options.

REVIEWER ACTIVITY

Science (2025 – Present)

Journal of Geophysical Research-Atmospheres (2024 - Present)

El Sevier- Quaternary Science Reviews (2025 - Present)

PROFESSIONAL AFFILIATIONS

American Geophysical Union (2017-2018 & 2022 – Present)