

HOLLY C OLIVAREZ

505-203-5823

holly.olivarez@colorado.edu

<http://instaar.colorado.edu/people/holly-olivarez/>

EDUCATION

PhD	University of Colorado Boulder, Environmental Studies <i>in Progress</i>	Expected May 2024
BS	University of New Mexico, Earth and Planetary Sciences, Magna Cum Laude	July 2019
AS	Central New Mexico Community College, Mathematics	July 2017

RESEARCH EXPERIENCE

University of Colorado Boulder, Environmental Studies Department, Institute of Arctic and Alpine Research, Advisor: Nicole Lovenduski. PhD Student. August 2019 – present.

Project 2: *How does the Pinatubo eruption influence our understanding of long-term changes in ocean biogeochemistry?*

Project 1: *A synthetic ensemble for air-sea CO₂ flux observations.*

University of Colorado Boulder, Department of Atmospheric and Oceanic Sciences, Institute of Arctic and Alpine Research. Mentor: Nicole Lovenduski. **Significant Opportunities in Atmospheric Research and Science (SOARS)** Protégé. May 2019 – August 2019.

An observational large ensemble for air-sea CO₂ flux.

University of New Mexico, Department of Earth & Planetary Sciences. Mentors: Yemane Asmerom and Victor Polyak. **Senior thesis project.** March 2018 – June 2019.

Uranium-series analysis of two coralloidal stalagmite samples as evidence of the driest interval of the Middle Holocene in the southwest United States.

University of Colorado Boulder, Department of Atmospheric and Oceanic Sciences, Institute of Arctic and Alpine Research. Mentor: Nicole Lovenduski. **Significant Opportunities in Atmospheric Research and Science (SOARS)** Protégé. May 2018 – August 2018.

The impact of volcanic eruptions on surface ocean pH in the Community Earth System Model Large Ensemble.

University of New Mexico, Department of Earth & Planetary Sciences, Mentors: Yemane Asmerom and Victor Polyak. August 2017 – May 2018.

Comparison of speleothem data with tree ring data in the southwestern United States for the purpose of determining increased magnitude of climate variability in the region between 500 BCE to the Medieval Climate Anomaly.

University of New Mexico, Summer Community College Opportunity for Research Experience (SCCORE) Internship, Alliance for Minority Participation (AMP), Mentors: Yemane Asmerom and Victor Polyak. June 2017.

Time series analysis of a data set from samples obtained from a stalagmite in a cave in southeastern New Mexico. Results showed sea surface temperature variability (Pacific Decadal Oscillation or PDO - Atlantic Meridional Oscillation or AMO) and some solar variability were the prominent climate modulators for the region prior to 600 CE.

PUBLICATIONS

Olivarez, H. C., N. S. Lovenduski, Y. Eddebbar, A. R. Fay, G. A. McKinley, M. N. Levy, M. C. Long (*in prep*) How does the Pinatubo eruption influence our understanding of long-term changes in ocean biogeochemistry?

Fay, A. R., McKinley, G.A., Lovenduski, N. S., Eddebbar, Y., Levy, M. N., Long, M. C., **Olivarez, H. C.**, Rustagi, R. R. (2023) Immediate and long-lasting impacts of the Mt. Pinatubo eruption on ocean oxygen and carbon inventories. *Global Biogeochemical Cycles*, 37, e2022GB007513. <https://doi.org/10.1029/2022GB007513>.

Olivarez, H. C., N. S. Lovenduski, R. X. Brady, A. R. Fay, M. Gehlen, L. Gregor, P. Landschützer, G. A. McKinley, K. A. McKinnon, and D. R. Munro (2022) Alternative Histories: Synthetic Large Ensembles of Sea-Air CO₂ Flux. *Global Biogeochemical Cycles*, 36, e2021GB007174. <https://doi.org/10.1029/2021GB007174>.

Coupe, J., S. Stevenson, N. S. Lovenduski, T. Rohr, C. S. Harrison, A. Robock, **H. Olivarez**, C. G. Bardeen, and O.B. Toon (2021) Nuclear Niño response observed in simulations of nuclear war scenarios. *Nature Communications Earth and Environment*, 2(1), 18, doi:10.1038/s43247-020-00088-1.

Lovenduski, N. S., C. S. Harrison, **H. Olivarez**, C. G. Bardeen, O. B. Toon, J. Coupe, A. Robock, T. Rohr, and S. Stevenson (2020) The potential impact of nuclear conflict on ocean acidification. *Geophysical Research Letters*, 47, e2019GL086246, doi:10.1029/2019GL086246.

RELEVANT COURSEWORK

Mathematics	Calculus I, Calculus II, Linear Algebra, Differential Equations
Physics	Physics I, Physics II
Programming	MATLAB, Statistics and Data Analysis in Earth Science, Objective Data Analysis
Chemistry	General Chemistry I, General Chemistry II
Modeling	Climate and Hydrologic Forecasting, Global Carbon Cycle, Ocean Biogeochemical Cycles
Communication	Scientific Writing, Environmental Journalism, Conflict Resolution and Management in Human-Environment Systems, Global Climate Change

Earth Sciences

Earth History, Mineralogy, Igneous Metamorphic Petrology, Sedimentology and Stratigraphy, Structural Geology, Paleoclimatology, Exploring the Solar System

SOFTWARE/PROGRAMMING SKILLS

Computer Languages
Python Packages

Python, MATLAB
XArray, numpy, matplotlib, pandas, cartopy, seaborn, proplot, dask

ACADEMIC POSITIONS

Primary Laboratory Assistant, Radiogenic Isotope Laboratory, Department of Earth and Planetary Sciences, University of New Mexico. *Duties include running a computer-guided drill to mill into central growth-axes of stalagmite samples, dissolving and spiking the resulting powder, and performing standard column chemistry in order to isolate uranium and thorium fractions.* August 2017 – May 2019.

English and Mathematics Tutor, Assistance Centers for Education, Central New Mexico Community College. April 2017 – August 2017.

AWARDS, HONORS, SCHOLARSHIPS

- Dissertation Completion Fellowship Award**, University of Colorado Boulder. 8/23
- SOARS Protégé**, University Corporation for Atmospheric Research (UCAR), Boulder, Colorado, \$7,600. *Ten-week research internship resulting in a ten-page paper, poster, 15-minute oral presentation, and an abstract submitted to a national conference.* 5-8/23
5-8/18
6-8/19
- DEI Summer Scholarship**, Institute of Arctic and Alpine Research (INSTAAR), University of Colorado Boulder. 8/23
- Women Who Make a Difference Award**, University of Colorado Boulder. 12/21
- Environmental Studies Program Graduate Student Service Award**, \$500 5/21
- National Science Foundation Graduate Research Fellowship Program (GRFP)**, a three-year annual stipend of \$34,000 along with a \$12,000 cost of education allowance for tuition and fees, and opportunities for international research and professional development. 9/19
- Significant Opportunities in Atmospheric Research and Science (SOARS)** academic scholarship, University Corporation for Atmospheric Research (UCAR), Boulder, Colorado, \$1,900 for 2019-2020. 9/19
- 2019 Graduate School Diversity Fellowship**, University of Colorado Boulder, \$6,000. 8/19

Harry and Mabel Leonard Scholarship , University of New Mexico, \$300.	6/19
Stuart A. Northrop Award , Department of Earth & Planetary Sciences, University of New Mexico, Brunton compass.	5/19
2019 Featured Inspirational Graduate , University of New Mexico, video profile. https://youtu.be/liG1bH6H_QQ	5/19
UNM Leadership and Involvement Award for contributions to the UNM campus and surrounding communities, University of New Mexico Student Activities Center	2/19
Leonard Undergraduate Research Fellowship , Department of Earth & Planetary Sciences, University of New Mexico, \$2,000 per semester.	Spr 19 Fall 18 Spr 18
University Research Scholarship Assistantship , Alliance for Minority Participation (AMP), University of New Mexico, \$2,000 each semester.	Spr 19 F-Sp 18 Fall 17
Significant Opportunities in Atmospheric Research and Science (SOARS) academic scholarship, University Corporation for Atmospheric Research (UCAR), Boulder, Colorado, \$4,000 for 2018-2019.	9/18
J.P. Fitzsimmons Award in recognition of superior academic record and service to department in 2017-2018, Department of Earth & Planetary Sciences, University of New Mexico.	5/18
Lucille H. Pipkin Senior Scholarship , New Mexico Geological Society (NMGS), \$500.	4/18
Outstanding Student Award , Association for Women Geoscientists (AWG), Laramide Chapter.	4/18
Udall Undergraduate Scholarship Honorable Mention, Environmental category.	4/18
Ronald E. McNair Scholars Program and Research Opportunities Program (declined).	9/17
Summer Community College Opportunity for Research Experience (SCCORE) Internship, Alliance for Minority Participation (AMP), University of New Mexico, \$1500.	6/17
Trythall Family Scholarship for Excellence in Education, \$1000.	6/17
Sussman-Miller Educational Assistance Fund Award, \$1250.	6/17
John Boydston Scholarship recipient, a CNM Foundation scholarship awarded to Mathematics majors with a high GPA and financial need, \$850.	5/17

Women in Non-Traditional Careers Student of the Year Honorable Mention, Central New Mexico Community College.	4/17
Suncat Scholar , Central New Mexico Community College Scholarship provided tuition, book and course fees, assigned advisor and academic coach, \$300 per semester, and two semesters of bi-weekly college success seminars. Result: associate degree in six semesters.	8/15- 7/17

PROFESSIONAL DEVELOPMENT

SOARS Scientific Communication Workshop, *Ten-week program including the process of preparing scientific presentations, posters, and papers, while developing the confidence to speak about research with a wide variety of audiences. Instructor-led and peer-led sessions.* May 2018 – August 2018, May 2019-August 2019, May 2023-August 2023.

SOARS Computational Thinking and Data Science Workshop, *Ten-week program including developing advanced strategies and working knowledge of platforms, tools, and workflows (Jupyter, Python libraries, Anaconda, GitHub, Slack, Figshare, Zenodo, Hugo).* May 2018 – August 2018, May 2019-August 2019, May 2023-August 2023.

Reclaiming STEM, *A science communication and policy workshop open to scientists with diverse backgrounds. Four half days. September 2021.*

Graduate Climate Conference, *An interdisciplinary climate conference run by graduate students, for graduate students. October 2020.*

Reclaiming STEM, *A science communication and policy workshop open to scientists with diverse backgrounds. Four half days. September 2019.*

Engaged Scientist Workshop, *designed to target early-career STEM researchers across campus and provides perspectives and resources intended to facilitate their positive engagement with partners beyond the university setting. November 2019.*

PRESENTATIONS

Olivarez, H. C., Lovenduski, N.S., Eddebbbar, Y.A, Fay, A.R., Levy, M., Long, M., and McKinley, G. *How does the Pinatubo eruption influence our understanding of long-term changes in ocean biogeochemistry?* AGU Fall Meeting 2022. December 2022. **Oral presentation.**

Olivarez, H.C., Lovenduski, N.S., Eddebbbar, Y.A, Fay, A.R., Levy, M., Long, M., and McKinley, G. *The impact of the Mt. Pinatubo climate perturbation on global ocean carbon and biogeochemistry.* Ocean Sciences Meeting 2022, Zoom. March 2022. **Oral presentation.**

Invited: Olivarez, H. *A synthetic ensemble for air-sea CO₂ flux observations.* School of Oceanography, University of Washington-Seattle, Zoom. January 2022. **Oral presentation.**

Olivarez, H. *A synthetic ensemble for air-sea CO₂ flux observations.* Environmental Studies Program colloquium, CU Boulder, Zoom. November 2020. **Oral presentation.**

Olivarez, H. *A synthetic ensemble for air-sea CO₂ flux observations.* Graduate Climate Conference, Zoom. October 2020. **Oral presentation.**

Olivarez, H. *A synthetic ensemble for air-sea CO₂ flux observations.* Nikki Lovenduski/Galen McKinley annual meeting, Zoom. August 2020. **Oral presentation.**

Olivarez, H., Lovenduski, N., Brady, R., McKinnon, K., Landschützer, P., and McKinley, G. *A synthetic ensemble for air-sea CO₂ flux observations.* Ocean Sciences Meeting 2020, San Diego Convention Center, San Diego CA. February 2020. **Poster.**

Olivarez, H., Lovenduski, N., Landschützer, P., and McKinley, G. *A synthetic ensemble for air-sea CO₂ flux observations.* Earth System & Space Science Poster Conference, University of Colorado Boulder, Boulder CO. December 2019. **Poster.**

Olivarez, H., Lovenduski, N., Landschützer, P., and McKinley, G. *An observational large ensemble for air-sea CO₂ flux.* SOARS Joint Internship Poster Session, National Center for Atmospheric Research, Boulder CO. August 2019. **Poster.**

Olivarez, H., Lovenduski, N., Landschützer, P., and McKinley, G. *An observational large ensemble for air-sea CO₂ flux.* SOARS Colloquium, National Center for Atmospheric Research, Boulder CO. July 2019. **Oral presentation.**

Olivarez, H., Lovenduski, N., Landschützer, P., and McKinley, G. *An observational large ensemble for air-sea CO₂ flux. Session: The Evolving Ocean Carbon Sink: Processes and Impacts.* The Large Ensembles Workshop, Climate Variability and Predictability Program (CLIVAR), Boulder CO. July 2019. **Poster and lightning talk.**

Olivarez, H., Lovenduski, N. *The impact of volcanic eruptions on ocean pH. Session: Ocean Model Working Group.* 24th Annual Community Earth System Model Workshop, Boulder CO. June 2019. **Poster.**

Olivarez, H., Lovenduski, N. *The impact of volcanic eruptions on ocean pH. Session: UROC 180 where research is presented in three minutes or less with no visual aid.* Undergraduate Research Opportunities Conference, University of New Mexico, Albuquerque NM. April 2019. **Oral presentation.**

Olivarez, H., Lovenduski, N. *The impact of volcanic eruptions on ocean pH in the CESM Large Ensemble. Session: Large Ensemble Climate Model Simulations: Exploring Natural Variability, Climate Change Signal, Extremes, and Compound Events at Various Spatiotemporal Scales.* American Geophysical Union Fall Meeting, Washington DC. December 2018. **Poster.**

Olivarez, H., Polyak, V., Asmerom, Y. *Driest Interval of the Holocene in the Southwestern United States from Coralloidal Stalagmite Growth.* Leonard Undergraduate Research Fellowship Colloquium. December 2018. **Oral presentation.**

Olivarez, H., Lovenduski, N. *The impacts of volcanic eruptions on ocean pH.* Undergraduate Research Conference, New Mexico Alliance for Minority Participation, NM State University, Las Cruces NM. October 2018. **Poster.**

Olivarez, H., Lovenduski, N. *The impacts of volcanic eruptions on ocean pH.* Uncertainty in predictions of 21st century ocean biogeochemical change, 3rd annual project meeting, Institute for Arctic and Alpine Research, Colorado University Boulder, Boulder CO. August 2018. **Oral presentation.**

Olivarez, H., Lovenduski, N. *The impacts of volcanic eruptions on ocean pH.* SOARS Joint Internship Poster Session, National Center for Atmospheric Research, Boulder CO. August 2018. **Poster.**

Olivarez, H., Lovenduski, N. *The impacts of volcanic eruptions on ocean pH.* SOARS Colloquium, National Center for Atmospheric Research, Boulder CO. July 2018. **Oral presentation.**

Olivarez, H., Polyak, V., Asmerom, Y. *Climate Variability in the Southwest United States.* Leonard Undergraduate Research Fellowship Colloquium. May 2018. **Oral presentation.**

Olivarez, H., *Climate Variability Over the Past 2,500 Years in the Southwest United States.* Undergraduate Research Opportunity Conference (UROC), University of New Mexico, Albuquerque NM. 180 seconds or less with no visual aids. April 2018. **Oral presentation.**

First place, Undergraduate category. \$100.

Olivarez, H., Polyak, V., Asmerom, Y. *Driest Interval of the Holocene in the Southwestern United States from Coralloidal Stalagmite Growth.* New Mexico Geological Society Spring Meeting, New Mexico Tech, Socorro NM. April 2018. **Poster.**

First place, Undergraduate category. \$150.

Olivarez, H., Asmerom, Y. & Polyak, V. *Climate Variability Over the Past 2,500 Years in the Southwest United States.* New Mexico Academy of Science Research Symposium, NM EPSCoR, Albuquerque NM. November 2017. **Poster.**

First place, Community College category. \$100.

Olivarez, H., Asmerom, Y. & Polyak, V. *Climate Variability Over the Past 2,500 Years in the Southwest United States.* Undergraduate Research Conference, New Mexico Alliance for Minority Participation, NM State University, Las Cruces NM. October 2017. **Poster.**

ENGAGEMENT AND OUTREACH PRESENTATIONS

Invited: 20th GLOBE Earth System Science Annual Meeting Climate Panel. Estes Park, Colorado. In person. July 2022. **Panelist.**

Invited: *Worldwide Climate Teach-In for Climate/Justice.* National Center for Atmospheric Research (NCAR), Zoom. March 2022. **Panel moderator.**

2020's Common Thread: COVID-19, Racism and Climate Change. Boulder County Arts Alliance, Zoom. September 2020. **Oral presentation.**

Creating the Intersection of the Arts and Climate Change Communication. Boulder County Arts Alliance, Zoom. June 2020. **Oral presentation.**

Invited: *The Connection Between Climate Change and COVID-19.* Significant Opportunities in Atmospheric Research and Science (SOARS), Zoom. June 2020. **Oral presentation.**

Invited: *NCAR's Expert for the Day: Climate Change and Our Ocean.* National Center for Atmospheric Research (NCAR), Zoom. May 2020. **Oral presentation.** <https://youtu.be/DvAZ2T6YL6E>

Invited: *The Connection Between Climate Change and COVID-19.* University Corporation for Atmospheric Research (UCAR) Center for Science Education, Zoom. May 2020. **Oral presentation.**

The Connection Between Climate Change and COVID-19. 350 Boulder County, Zoom. April 2020. **Oral presentation.**

Graduate Climate Conference, Zoom. October 2020. Workshop title: *Connecting COVID-19, Racism and Climate Change.* **Speaker/host.**

Invited: *Connecting COVID-19, Racism and Climate Change.* Colorado Ocean Coalition, CU Boulder. October 2020. **Oral presentation.**

Invited: *A Discussion of Institutional Racism in STEM,* Colorado Local Science Engagement (COLSEN), University of Colorado Boulder. September 2020. **Panelist.**

Invited: Olivarez, H. *Using social media to communicate climate change.* New Mexico Alliance for Minority Participation, New Mexico State University, Las Cruces NM. October 2019. **Oral presentation.**

Olivarez, H., Fawcett, P., Ronchetti, M. *Talking to Family and Friends about Climate Change.* University of New Mexico, Albuquerque NM. March 2019. **Oral presentation.**

Invited: Olivarez, H. *Talking to Family and Friends about Climate Change.* Solar Energy Association of New Mexico, Albuquerque NM. March 2019. **Oral presentation.**

Invited: Olivarez, H. Undergraduate Research Conference, New Mexico Alliance for Minority Participation (AMP), NM State University, Las Cruces, NM. October 2018. Workshop title: *Identifying Yourself as a Scientist.* **Speaker/host.**

LEADERSHIP

Graduate mentor, McNair Scholars Program, CU Boulder.

10/22 – 5/24

Active member , Justice, Equity, Diversity and Inclusion Community of Practice Committee, College of Arts & Sciences, CU Boulder.	8/22 - present
Active member , Justice, Equity, Diversity and Inclusion Task Force, Institute for Arctic & Alpine Research, CU Boulder.	5/20 – 5/21 3/23-present
Active member , Justice, Equity, Diversity and Inclusion Action Group, Environmental Studies Department, CU Boulder.	10/20 – 4/22
Graduate Student Representative , Justice, Equity, Diversity and Inclusion Task Force, Environmental Studies Department, CU Boulder. <i>Duties include attendance, participation, and leadership of various task force initiatives, as well as communicating task force activities and seeking graduate student input.</i>	10/20 – 8/21
Organizer , diversifyCUnow. <i>Duties include organizing students, staff, faculty and administration to take action to eradicate systemic racism at the University of Colorado.</i>	6/20 – 5/21
Co-President , UNM Advancing Women in Science Student Organization. <i>Duties include organizing and running leadership meetings and general meetings, managing list serve of 285 members, planning ticketed events and informal luncheons with visiting speakers.</i>	5/18-5/19
Communications and Outreach Officer , UNM Geology and Environmental Science Student Organization. <i>Duties include organizing graduate school preparation workshops, coordinating shared events with likeminded student groups, planning STEM community outreach events.</i>	4/18-5/19
Active member , Environment New Mexico UNM Student Chartered Club. <i>Duties include assistance in organizing a task force to build a proposal for all buildings on university campus to use 100% renewable energy, getting petitions signed.</i>	6/17-5/19
Active member , 350NM UNM Student Chartered Club. <i>Duties include attending regular meetings and organizing campus events.</i>	4/18-5/19
Founder and Past Board Member , Sane Society Student Organization, Central New Mexico Community College. <i>Organized and facilitated bi-monthly discussions and lectures, coordinated the purchase and donation of \$1,000 of philosophical topic books to community college satellite campus library.</i>	8/16-9/17
Past Board Member , Executive Council of Students, Central New Mexico Community College. <i>Duties included organizing campus-wide events such 'Paws Up for College,' a day of the college experience, including the graduation walk, for children undergoing cancer treatments.</i>	2/16-9/17

VOLUNTEER EVENTS

Computational mentor to Alysa Dallmann, Significant Opportunities in Atmospheric

2021

Research and Sciences (SOARS), University Corporation for Atmospheric Research (UCAR)	
<i>Computational mentor to Shana Egan, Research Experiences in Solid Earth Sciences for Students (RESESS), UNAVCO</i>	2021
<i>Ice on Fire</i> HBO documentary INSTAAR booth, CU Boulder	10/17/19
Alumni Event, Department of Earth & Planetary Sciences, poster presentation	9/27/18
Colorado WeatherFest, University Corporation for Atmospheric Research	7/1/18
<i>This Beautiful Earth</i> arts and sciences campus event, University of New Mexico, Albuquerque NM, poster presentation	4/25/18
Tour guide, The Mars Event, UNM Alumni, Department of Earth & Planetary Sciences, University of New Mexico	2/8/18
ABQ the Plan City of Albuquerque committee, City Council District 1 representative. <i>Current focus: 50-Mile Activity Loop</i>	5/11-8/2019
No Fracking Way! local organization member	2015-2018
Paws Up for College, Central New Mexico Community College	2016-2017

PROFESSIONAL SOCIETY MEMBERSHIPS

The Oceanography Society (TOS)	12/19-present
American Association for the Advancement of Science (AAAS)	12/17-present
American Geophysical Union (AGU)	7/18-present
Association for the Sciences of Limnology and Oceanography (ASLO)	7/19-7/20
Association for Women Geoscientists (AWG)	7/18-7/20
Phi Theta Kappa Honor Society (PTK)	2/16-present
New Mexico Geological Society (NMGS)	3/18-2/20
Geological Society of America (GSA)	11/17-11/19