

# Rebecca G Orrison

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Dept. of Atmospheric and Environmental Sciences  
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## EDUCATION

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**University at Albany; State University of New York** 9/2018 – present  
**Dept of Atmospheric and Environmental Sciences (DAES)**  
Ph.D. Candidate; Atmospheric Science, *in progress*  
Advisor: Dr. Mathias Vuille

**University of Minnesota; Twin Cities** 2016  
B.Sc.; Environmental Science, Policy and Management  
Emphasis: *Earth Systems and Atmospheric Science* Minor: *Climatology*

## PROFESSIONAL EXPERIENCE

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**Graduate Research Assistant** 9/2018 – present  
*Research Foundation for SUNY at the University at Albany*  
*Supervisor: Dr. Mathias Vuille*

- Investigating the last millennium South American Monsoon System variability using oxygen isotope proxies and isotope-enabled climate models.
- Establishing the role of Pacific Ocean variability in driving spatial and temporal variability of oxygen isotopes in South America.
- Measuring changes in regional Hadley circulation change over South America using oxygen isotopic observations and isotope-enabled models.
- Funded by NSF-Project for International Research and Education (PIRE)

**Guest Research Scientist** 9/2017 – 12/2017  
*Climate Dynamics Group, Max Planck Insitute for Meteorology; Hamburg, Germany*  
*Supervisor: Dr. Thorsten Mauritsen*

- Compared the Bjerknes feedback strength in reanalyses and observations across multiple data sets (surface and satellite) with estimates in current literature derived from CMIP model simulations.

**Undergraduate Research Assistant** 6/2014 – 10/2016  
*Dept of Soil, Water and Climate; University of Minnesota*  
*Supervisors: Dr. Peter Snyder, Dr. Stefan Liess*

- Evaluated the North American hydroclimate response to seasonal ocean-atmosphere interactions in the Pacific and Atlantic ocean basins in CESM simulations using reanalysis datasets.

## TEACHING EXPERIENCE

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**PIRE Academy Instructor** Spring 2022  
*SUNY Oswego*

- Helped to organize and facilitate weekend program focused on paleoclimatology for students from backgrounds under-represented in earth science.

**Guest Lecture** 7/27/2021  
*A Paleoclimatic Perspective on Climate Variability / Science and Activism; Grassroots Science class, STSH/S 4961; Rensselaer Polytechnic Institute*

- Gave a brief presentation on paleoclimatology and the climate crisis, my research, and had a guided Q&A about science and activism.

## PIRE Workshop Instructor

5/25/2021

*Introducción a la Dendrocronología en R (Introduction to Dendrochronology in R)*

- Helped to organize and facilitate a workshop on an introduction to R in Spanish for 20 students from all over the world, primarily Latin America.

## PIRE Academy Instructor

Spring 2019

*SUNY Purchase*

- Helped to organize and facilitate weekend program focused on paleoclimatology for students from backgrounds under-represented in earth science.

## Workshop Facilitator

11/2019

*Graduate Climate Conference 2019; Woods Hole, MA*

- Developed a 90 minute workshop for 30 conference participants entitled “Science and storytelling: The false dualism of the professional climate scientist and the individual living in a changing climate” to engage with the personal and political aspects of conducting science.

## Teaching Assistant

1/2018 – 5/2018

*Introduction to Weather and Climate; Department of Environmental Science, Policy, and Management  
University of Minnesota*

- Led weekly lab sessions, coordinated study sessions and office hours, managed course gradebook and graded student work.

## PUBLICATIONS

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**Orrison, R.**, Vuille, M., Smerdon, J. E., Apaéstegui, J., Azevedo, V., Campos, J. P. S., Cruz, F. W., Della Libera, M. E. and Stríkis, N. M., (2022), South American Summer Monsoon Variability over the Last Millennium in Paleoclimate Records and Isotope-enabled Climate Models, *Clim. Past.*, 18, 2045–2062, doi: 10.5194/cp-18-2045-2022.

**Orrison, R.**, Vuille, M., Smerdon, J. E., Apaéstegui, J., Azevedo, V., Campos, J. L. P. S., Cruz, F., W., Della Libera, M. E. and Stríkis, N. M., (2022), Last Millennium  $\delta^{18}O$ ,  $\delta^{13}C$  and U/Th ages of MV1 and MV30 stalagmite records from Mata Virgem cave (central Brazil). *PANGAEA*, doi: 10.1594/PANGAEA.948183.

**Orrison, R.**, (2022), SASM-MCEOF-v1.1.0, Zenodo [code, data set], <https://doi.org/10.5281/zenodo.6949234>.

Della Libera, M.E., Novello, V.F., Cruz, F.W., **Orrison, R.**, Vuille, M., Maezumi, S.Y., de Souza, J., Rodriguez, J.C., Campos, J.L.P.S., Ampuero, A., Utida, G., Strikis, N.M., Fernandes Stumpf, C., Azevedo, V., Zhang, H., Edwards, R.L. and Cheng H. (2022). Paleoclimatic and paleoenvironmental changes in Amazonian lowlands over the last three millennia and their implications for pre-Columbian populations. *Quaternary Sci. Rev.*, doi: 10.1016/j.quascirev.2022.107383.

## INVITED PRESENTATIONS

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**Orrison, R.**, Vuille, M., (2022), Modulation of South American Hydroclimate by Pacific Sea Surface Temperatures on High- and Low-frequency Timescales. *Smerdon Climate Lab; Lamont-Doherty Earth Observatory, Palisades, NY*

## PRESENTATIONS

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**Orrison, R.**, Vuille, M., (2022), Internal and External Drivers of South American Summer Monsoon Variability During the Current Warm Period. *American Geophysical Union Fall Meeting*. [poster]

**Orrison, R.**, Vuille, M., (2022), Last Millennium Trends in South American Summer Monsoon Variability Captured in Proxy Records and Isotope-enabled Climate Models. *Climate Change: The Karst Record IX (KR9); Innsbruck, AT*. [poster]

- Orrison, R.**, Vuille, M., Smerdon, J., Cruz, F. W., (2021). South American Monsoon Variability Over the Last Millennium Captured by Oxygen Isotope Paleorecords and Isotope-enabled Models. *American Geophysical Union Fall Meeting*. [oral]
- Orrison, R.**, Vuille, M., (2021). Mechanisms of South American Monsoon System response to external variability over the last millennium; *Geological Society of London, Climate change in the geological record; virtual*. [oral – ECR flash talk]
- Orrison, R.**, Vuille, M., (2020). Intercomparison of proxy data and model simulations as key to understanding internal variability of the South American Monsoon System. *American Geophysical Union Fall Meeting; virtual*. [poster]
- Skott, C. M., **Orrison, R.**, (2020). Reaching out to Policy Makers in the PIRE context. *PIRE-CREATE Annual Meeting; virtual*. [oral]
- Orrison, R.**, Vuille, M., (2020). Influences on South American Monsoon Variability over the Last Millennium. *PIRE-CREATE Annual Meeting; virtual*. [oral]
- Godoy, M., **Orrison, R.**, (2020). Last millennium climate reconstruction in the Amazon region based on speleothem isotope records and model simulations. *PIRE-CREATE Annual Meeting; virtual*. [oral]
- Orrison, R.**, Vuille, M., (2020). Dynamical Drivers of South American Monsoon Variability over the Last Millennium, PP003-0013 *American Geophysical Union Fall Meeting; San Francisco, CA*. [poster]
- Orrison, R.**, Vuille, M., Campos, J. L., Cruz, F. W., (2019). Intercomparison of proxy data and model simulations as key to understanding internal variability of the South American Monsoon System, GC43E-1448. *American Geophysical Union Fall Meeting; San Francisco, CA*. [poster]
- Orrison, R.**, Vuille, M., (2019). Spatio-temporal variability of the South American Monsoon over the past millennium. *Graduate Climate Conference, Woods Hole, MA*. [poster]
- Orrison, R.**, Vuille, M., (2019). Intercomparison of proxy data and model simulations as key to understanding internal variability of the South American Monsoon System. *US CLIVAR Water Isotopes and Climate Workshop, Boulder, CO*. [poster]
- Orrison, R.**, Vuille, M., (2019). Diagnosing spatiotemporal variability of the South American Monsoon System using speleothems and global climate models. *PIRE-CREATE Annual Meeting; University of São Paulo; São Paulo, Brazil*. [oral]

## OTHER EDUCATIONAL OPPORTUNITIES

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<b>Summer School on Speleothem Science, Innsbruck, AT</b>	July 2022
<b>American Meteorological Society Summer Policy Colloquium, virtual</b>	Summer 2020
<b>PIRE-CREATE Summer School, São Paulo, Brazil</b>	July 2019
<b>Unidata Regional Software Training Workshop, SUNY University at Albany</b>	May 2019
<b>Graduate courses audited, Universität Hamburg, DE</b>	Fall 2017

## SERVICE

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<b>Climate Group Organizer, DAES</b>	2022 – present
<b>Mentor, DAES Graduate Mentorship Program</b>	2019 – present
<b>Early Career Convener, AGU Fall Meeting</b>	2022
<b>Student Member, AMS Energy Committee</b>	2022
<b>Graduate Student Representative, DAES Graduate Program Committee</b>	2020 – 2022
<b>Student Representative, Departmental Roundtable</b>	Spring 2021
<b>President, DAES Graduate Student Organization</b>	2019 – 2020
<b>Member, DAES Graduate Handbook policy update committee</b>	Fall 2018

## OUTREACH

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### 2022

**Presenter**, Climate Change and Us; Beyond Individual Action *Osterhout Free Library, Wilkes-Barre, PA*  
**Panelist**, COP 26 Panel; *Democracy Matters Club, UAlbany, Albany, NY*  
**Presenter**, Climate Change and Us; Beyond Individual Action *Beverwyck Women's Luncheon, Albany, NY*

### 2021

**Volunteer**, Girls Inc., Eureka! summer camp department visit; *DAES Outreach, Albany, NY*  
**Volunteer**, Thatcher Park Cleanup; *DAES Outreach, Albany, NY*  
**Presenter**, "Paleoclimatología," online seminar on Paleoclimatology [Sp.]; *PIRE-CREATE*  
**Technical Editor**, *Racial Capitalism, 24(1); Science for the People Magazine*

### 2020

**Organizer**, A People's Green New Deal Teach-in series; *Science for the People*  
**Technical Editor, Translator**, *A People's Green New Deal, 23(2); Science for the People Magazine*  
**Volunteer**, UAlbany Science and Technology Entry Program; *DAES Outreach, Albany, NY*  
**Volunteer**, Earth Science Teacher workshop; *DAES, Albany, NY*  
**Presenter**, "Paleoclimatology: Understanding our climate through natural records," webinar; *PIRE-CREATE*  
**Member**, Family Earth Day planning committee; *DAES, Albany, NY (canceled due to covid-19)*

### 2019

**Organizer**, "Climate, Food Systems, and Social Justice," community panel and workshop; *Albany, NY*  
**Organizer**, "Science and Storytelling," invited workshop; *Graduate Climate Conference; Woods Hole, MA*  
**Presenter**, Poster session and discussion with Congressman Paul Tonko; *DAES, Albany, NY*  
**Presenter, volunteer**, NEPARS (Northeast Partnerships in Atmospheric and Related Sciences) REU department visit; *DAES, Albany, NY*  
**Volunteer**, Earth Science Teacher workshop; *DAES, Albany, NY*  
**Volunteer**, Girls Inc., Eureka! summer camp department visit, *DAES Outreach, Albany, NY*  
**Panelist**, Environmental Science Career Day; *Coxsackie-Athens School District; Hudson, NY*  
**Member**, Family Earth Day planning committee; *DAES, Albany, NY*  
**Narrator**, English voice-over for *Chasing Traces from the Past* Documentary

## AWARDS, FUNDING

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<b>Travel Support</b> , Climate Change, The Karst Record (KR9 Conference) (\$830)	2022
<b>Distinguished Service Award</b> , DAES, UAlbany (\$200)	2020
<b>AMS Science Policy Colloquium Support</b> , National Science Foundation (\$5300)	2020
<b>Excellence at the Intersection of Science and Life Essay Competition, second place winner</b> , Women in Health and Science Committee, UAlbany (\$50)	2020
<b>Travel Support</b> , US CLIVAR Water Isotopes and Climate Workshop (\$1,000)	2019
<b>PyCon Scholarship</b> , Python Software Foundation (\$700)	2015
<b>Undergraduate Research Opportunities Program Award</b> , University of Minnesota (\$1,400)	2014
<b>Charles and Myrtle Stroud Scholarship</b> , University of Minnesota (\$3,000)	2013

## SKILLS

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	<b>Programming</b>	NCAR Command Language (NCL), Python, Climate Data Operators (CDO), $\LaTeX$ , Git, R
Technical:	<b>Computing</b>	CESM1-CAM5 model, high-performance parallelized supercomputing, UNIX
	<b>Technical</b>	Tree coring, soil bulk density analysis, lake core splitting
Languages:	<b>English</b>	native
	<b>Spanish</b>	fluent
	<b>French</b>	proficient

## PROFESSIONAL AFFILIATIONS

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American Meteorological Association  
American Association for the Advancement of Science  
American Geophysical Union