Brendan C. Wallace

Email: bcwallace94@gmail.com
bc-wallace.github.io

Research Interests: *Numerical modeling, climate dynamics, climate change, land surface-atmosphere interactions*

Education

University at Albany, State University of New York ····· Sep 2016 - Nov 2022
Ph.D. Atmospheric Science ····· Nov 2022
M.S. Atmospheric Science ····· May 2019
Advisor: Dr. Justin Minder

Western Illinois University ····· Aug 2012 - May 2016
B.Sc. Meteorology
Minor: Mathematics, Geographic Information Systems (GIS)

Research Experience

Climate Data Scientist ····· *Mar 2024 - present*
Leidos

- Perform data analysis and build applied scientific tools for the purposes of managing and analyzing climate data from remote sensing observations and numerical model output.

Joint Appointee Postdoctoral Fellow ····· Sep 2022 - *Mar 2024*
Dept. of Earth, Atmosphere, and Environment - Northern Illinois University & Argonne National Lab
Supervisors: Dr. Alex Haberlie (NIU) & Dr. Scott Collis (ANL)

- Analyzed the cause and characteristics of the end-of-century extreme precipitation response in continental scale convection-permitting regional climate simulations and how they differed from coarser scale models
- Optimized storage formats and analysis workflows for large climate datasets totalling ~1 PB in size

Graduate Research Assistant ····· Jan 2022 - Jan 2023
Research Foundation - University at Albany, SUNY
Supervisor: Dr. Scott Miller

- Applied regression analysis for the purpose of calibrating air pollution monitoring sites for NYSERDA

Graduate Research Assistant ····· Jun 2017 - Jan 2022
Research Foundation - University at Albany, SUNY
Supervisor: Dr. Justin Minder

- Performed and analyzed decadal convection-permitting regional climate simulations with WRF to assess the regional impacts of climate change over complex terrain
- Isolated the contribution of land-surface features such as snow cover, soil moisture, and sea surface temperature towards the overall climate response and tested the sensitivity of the response to model configuration

Climatologist Intern ····· May 2015 - Aug 2015
Midwestern Regional Climate Center

- Digitized historical climate records and reassessed long-term climatological trends of key surface variables

Undergraduate Student Researcher ····· May 2014 - May 2016
Dept. of Geography - Western Illinois University

- Used GIS and output from the UW-NMS to calculate bulk statistics of tornado formation environments in the Midwestern United States

Teaching Experience

Graduate Teaching Assistant
Dept. of Atmospheric and Environmental Sciences, University at Albany SUNY

- TATM 110 - Weather and Climate Issues ····· Fall 2016
- ENV 327 - Meteorological and Environmental Measurements ····· Spring 2017
- ATM 505 - Introduction to Atmospheric Physics II ····· Spring 2021

Publications

- **Wallace, B.**, & Minder, J.R. (*In Preparation*). Investigating the response of rainfall and precipitation recycling to grid spacing for the North American Monsoon.
- **Wallace, B.**, Haberlie, A.M., Ashley, W.S., Gensini, V.A., & Michaelis, A.C. *(In Preparation)*. Cause and Characteristics of Changes in Mesoscale Convective Systems within a Convection Permitting Regional Climate Model.
- Haberlie, A. M., **Wallace, B.**, Ashley, W.S., Gensini, V.A., Michaelis, A.C. *(Submitted)*. Mesoscale Convective System Activity in the United States Under Intermediate and Extreme Climate Change Scenarios.
- **Wallace, B.**, & Minder, J. R. (2024). The sensitivity of the North American Monsoon to Gulf of California Sea surface temperatures. In Climate Dynamics. Springer Science and Business Media LLC. https://doi.org/10.1007/s00382-023-07057-2
- **Wallace, B.**, Haberlie, A. M., Ashley, W. S., Gensini, V. A., & Michaelis, A. C. (2023). Decomposing the Precipitation Response to Climate Change in Convection Allowing Simulations Over the Conterminous United States. In Earth and Space Science (Vol. 10, Issue 12). American Geophysical Union (AGU). https://doi.org/10.1029/2023ea003094
- **Wallace, B.**, & Minder, J. R. (2023). The North American Monsoon precipitation response to climate warming at convection-permitting scales. In Climate Dynamics. Springer Science and Business Media LLC. https://doi.org/10.1007/s00382-023-06920-6
- **Wallace, B.**, & Minder, J. R. (2021). The impact of snow loss and soil moisture on convective precipitation over the Rocky Mountains under climate warming. Climate Dynamics (Vol. 56, Issues 9–10, pp. 2915–2939). https://doi.org/10.1007/s00382-020-05622-7
- Deng, Y., **Wallace, B.**, Maassen, D., Werner, J. (2016). A Few GIS Clarifications on Tornado Density Mapping. Journal of Applied Meteorology and Climatology, 55(2), 283-296.

Selected Presentations

- **Wallace, B.,** Haberlie, A.M., Ashley, W.S., Gensini, V.A., Michaelis, A.C. (2024). Characteristics and Cause of Changes in Mesoscale Convective Systems within a Convection Permitting Regional Climate Model. *American Meteorological Society 104th Annual Meeting.* [oral]
- **Wallace, B.,** Minder, J. (2021). Diagnosing Changes in North American Monsoon Precipitation and Moisture Sources in Response to Climate Warming using Convection Permitting Models. *The Fifth Convection-Permitting Climate Modeling Workshop 2021 (virtual).* [poster]
- **Wallace, B.,** Minder, J. (2020). Orographic Convection during the North American Monsoon in Convection Permitting Simulations under Climate Warming. *AMS 19th Conference on Mountain Meteorology (virtual).* [oral]

- **Wallace, B.,** Minder, J. (2019). The Simulated Impact of Snow Loss on Convective Precipitation over the Rocky Mountains under Climate Warming. *13th Graduate Climate Conference, Woods Hole, MA.* [oral]
- **Wallace, B.,** Minder, J. (2019). The Simulated Impact of Snow Loss on Convective Precipitation over the Rocky Mountains under Climate Warming. *18th Conference on Mesoscale Processes, Savannah, GA.* [oral]
- **Wallace, B.,** Minder, J. (2018). The Simulated Impact of the Snow-Albedo and Soil Moisture Feedbacks on Convective Precipitation within the Rocky Mountains under Climate Warming. *GEWEX Convection-Permitting Climate Modeling Workshop II, Boulder, CO.* [poster]
- **Wallace, B.,** Minder, J. (2018). The Simulated Impact of the Snow-Albedo and Soil Moisture Feedbacks on Convective Precipitation within the Rocky Mountains under Climate Warming. *18th Conference on Mountain Meteorology, Santa Fe, NM.* [oral]
- **Wallace, B.**, Bosart, L.F. (2017). An Examination of Three Challenging to Predict Mesoscale Convective Events during May 2016. *17th Conference on Mesoscale Processes, San Diego, CA.* [poster]

Workshops

NCAR ASP Summer Colloquium; The Interaction of Precipitation with Orography ····· 2017

- Technical training with CESM and WRF to test sensitivity of orographic precipitation to terrain height, grid spacing, and snow cover.
- Attended talks from guest lecturers on topics pertaining to precipitation over complex terrain

Awards

2023-2024 Narayan R. Gokhale Distinguished Research Scholarship Award ····· 2024
University at Albany Distinguished Doctoral Dissertation Award 2022-2023 ····· 2023
1st place Student Oral Presentation, *18th Conference on Mountain Meteorology* ····· 2018
Arthur G. Tillman Scholarship, *Western Illinois University, Dept. of Geography* ····· 2015
Presidential Scholarship, *Western Illinois University* ····· 2012-2016

Technical Skills

Programming: Python (jupyter, zarr, dask, xarray, numpy, pandas, scipy), FORTRAN, LaTeX, UNIX Shell Scripting

Software: ESRI Products (ArcMap, ArcCatalog, etc.)

Computing: Mesoscale atmospheric modeling (Weather Research and Forecasting Model; WRF), High-performance computing environments (NCAR Yellowstone & Cheyenne, Argonne National Laboratory Polaris & Theta), Portable Batch System [PBS] job queuing and submission, Slurm Workload Manager

Professional Affiliations

American Meteorological Society