

CHRISTOPHER B. SKINNER

Environmental, Earth and Atmospheric Sciences
University of Massachusetts Lowell
301B Olney Hall, 265 Riverside St, Lowell, MA 01854
christopher_skinner@uml.edu · (978) 934-3901 · umlclimatesystemdynamics.com

EDUCATION

- 2014 **Ph.D. Environmental Earth System Science**, Stanford University
2008 **B.S. Atmospheric Science**, Cornell University

APPOINTMENTS

- 2019 – Present **Assistant Professor**, University of Massachusetts Lowell
2017 – 2018 **Assistant Research Scientist**, University of Michigan
2014 – 2016 **Turner Postdoctoral Fellow**, University of Michigan

PUBLICATIONS

*Denotes paper lead by graduate student advisee

Published

*Fallah A, Barlow M, Agel L, Kim J, Mankin J, Mocko DM, **Skinner CB** (2024), Impact of vegetation assimilation on flash drought characteristics across the continental United States. *Journal of Hydrometeorology*, <https://doi.org/10.1175/JHM-D-23-0219.1>.

Oster J, Macarewicz S, Lofverstrom M, de Wet C, Montañez I, Lora JM, **Skinner CB**, Tabor C (2023), North Atlantic meltwater during Heinrich Stadial 1 drives wetter climate with more atmospheric rivers in western North America. *Science Advances*, 9(46), eadj2226, <https://doi.org/10.1126/sciadv.adj2225>.

Skinner CB, Harrington TS, Barlow M, Agel L (2023), The contribution of precipitation recycling to North American wet and dry precipitation extremes. *Environmental Research: Climate*, 2(4), 045010, <https://doi.org/10.1088/2752-5295/acffea>.

Lora JM, **Skinner CB**, Rush W, Baek S (2023), The hydrologic cycle and atmospheric rivers in CESM2 simulations of the Last Glacial Maximum. *Geophysical Research Letters*, 50(18), e2023GL104805, <https://doi.org/10.1029/2023GL104805>.

*Harrington T, Nusbaumer J, **Skinner CB** (2023), The contribution of transpiration, ground evaporation, and canopy evaporation to local and remote precipitation across North America, *Journal of Geophysical Research: Atmospheres*, 128, <https://doi.org/10.1029/2022JD037290>.

Skinner CB, Lora JM, Tabor C, Zhu J (2023), Atmospheric river contributions to ice sheet hydroclimate at the Last Glacial Maximum, *Geophysical Research Letters*, 50(1), e2022GL101750, <https://doi.org/10.1029/2022GL101750>.

Thompson AJ, Zhu J, Poulsen CJ, Tierney J, **Skinner CB** (2022), Northern hemisphere vegetation drives a Holocene thermal maximum, *Science Advances*, <https://www.science.org/doi/10.1126/sciadv.abj6535>.

Singh J, Ashfaq M, **Skinner CB**, Anderson WB, Mishra V, Singh D (2022), Enhanced risk of concurrent regional droughts with increased ENSO variability and warming, *Nature Climate Change*, <https://doi.org/10.1038/s41558-021-01276-3>.

Pagsuyoin SA, Salcedo G, Santos JR, **Skinner CB** (2022), Pandemic wave trends in COVID-19 cases, mobility reduction, and climate parameters in major metropolitan areas in the United States, *Environment Systems and Decisions*, 42 (3), 350-361, <https://doi.org/10.1007/s10669-022-09865-z>.

Coe D, Barlow M, Agel L, Colby F, **Skinner CB**, Qian JH (2021), Clustering analysis of autumn weather regimes in the Northeast U.S., *Journal of Climate*, 34, 18, <https://doi.org/10.1175/JCLI-D-20-0243.1>.

*Harrington T, Zhu J, **Skinner CB** (2021), Terrestrial sources of summer Arctic moisture and the implication for Arctic temperature patterns, *npj Climate and Atmospheric Science*, 4, 25, <https://doi.org/10.1038/s41612-021-00181-y>.

Agel L, Barlow M, **Skinner CB**, Colby F, Cohen J (2021), Four distinct northeast US heat wave circulation patterns: associated mechanisms, trends, and electric usage, *npj Climate and Atmospheric Science*, 4, 31, <https://doi.org/10.1038/s41612-021-00186-7>.

Singh J, Ashfaq M, **Skinner CB**, Anderson WB, Singh D (2021), Amplified risk of spatially compounding droughts during co-occurrences of modes of natural ocean variability. *npj Climate and Atmospheric Science*, <http://doi.org/10.1038/s41612-021-00161-2>

Thompson AJ, Tabor CR, Poulsen CJ, **Skinner CB** (2021), Water isotopic constraints on the enhancement of the mid-Holocene West African monsoon. *Earth and Planetary Science Letters*, <http://doi.org/10.1016/j.epsl.2020.116677>

Skinner CB, Lora JM, Payne AE, Poulsen CJ (2020) Atmospheric river changes shaped mid-latitude hydroclimate since the mid-Holocene. *Earth and Planetary Science Letters*, 541, <https://doi.org/10.1016/j.epsl.2020.116293>.

Thompson AJ, **Skinner CB**, Poulsen CJ, Zhu J (2019) Modulation of mid-Holocene African rainfall by dust aerosol direct and indirect effects. *Geophysical Research Letters*, 46, 3917 – 3926, doi:10.1029/2018GL081225.

Skinner CB, Poulsen CJ, Mankin JS (2018) Amplification of heat extremes by plant CO₂ physiological forcing. *Nature Communications*, doi:10.1038/s41467-018-03472-w.

Chadwick R, Douville H, **Skinner CB** (2017) Timeslice experiments for understanding regional climate projections: applications to the tropical hydrological cycle and European winter circulation. *Climate Dynamics*, doi:10.1007/s00382-016-3488-6.

Webb MJ, Andrews T, Bodas-Salcedo A, Bony S, Bretherton CS, Chadwick R, Chepfer H, Douville H, Good P, Kay JE, Klein SA, Marchand R, Medeiros B, Siebesma AP, **Skinner CB**, Stevens B, Tselioudis G, Tsushima Y, Watanabe M (2017) The Cloud Feedback Model Intercomparison Project (CFMIP) contribution to CMIP6. *Geoscientific Model Development Discussion*, 10(1), 359-384, doi:10.5194/gmd-10-359-2017.

Skinner CB, Poulsen CJ, Chadwick R, Diffenbaugh NS, Fiorella RP (2017) The role of plant CO₂ physiological forcing in shaping future daily-scale precipitation. *Journal of Climate*, 30, 2319-2340, doi:10.1175/JCLI-D-16-0603.1.

Skinner CB, Poulsen CJ (2016) The role of fall season tropical plumes in enhancing Saharan rainfall during the African Humid Period. *Geophysical Research Letters*, 43, 349-358, doi:10.1002/2015GL066318.

Horton DE, **Skinner CB**, Singh D, Diffenbaugh NS (2014) Occurrence and persistence of future atmospheric stagnation events. *Nature Climate Change* 4(8), 698-703.

Skinner CB, Diffenbaugh NS (2014) Projected changes in African easterly wave intensity and track in response to greenhouse forcing. *Proceedings of the National Academy of Sciences* 111, 6882-6887.

-- Highlighted article, Nowcast News and Notes, *BAMS*.

Skinner CB, Diffenbaugh NS (2013) The contribution of African easterly waves to monsoon precipitation in the CMIP3 ensemble. *Journal of Geophysical Research – Atmospheres* 118(9), 3590–3609.

Skinner CB, Ashfaq M, Diffenbaugh NS (2012) Influence of 21st century atmospheric and sea surface temperature forcing on West African climate. *Journal of Climate* 25(2), 527-542.

Ashfaq M, **Skinner CB**, Diffenbaugh NS (2010) Influence of SST biases on future climate change projections. *Climate Dynamics* 36(7-8), 1303-1319.

Skinner CB, DeGaetano A, Chabot B (2010) Implications of 21st century climate change on northeastern United States maple syrup production: impacts and adaptations. *Climatic Change* 100(3-4), 685-702.

AWARDS

2022 Teaching Excellence Award, University of Massachusetts Lowell

Turner Postdoctoral Fellowship, University of Michigan

Graduate Student Award for Scholarly and Research Achievement, Stanford University

Centennial Teaching Assistant Award, School of Earth Sciences, Stanford University

RESEARCH GRANTS

Funded

2024 – 2028 Quantification of biophysical, physiological, and phenological vegetation contributions to future climate, NSF EMBRACE-AGS Program, \$398,984 to UMass Lowell (PI).

2020 – 2024 Observed and modeled interactions between droughts and heat waves for the Northeast US, NOAA MAPP Program, \$478,414 to UMass Lowell (co-PI).

2019 – 2023 Collaborative Research -- Elucidating the drivers and consequences of changes in atmospheric rivers from the last glacial maximum to the present day, NSF Paleoclimate Program, \$224,310 to UMass Lowell (PI).

RESEARCH COMPUTING AWARDS

2019 – 2023 Elucidating the drivers and consequences of changes in atmospheric rivers from the last glacial maximum to the present day, NCAR CISL Computing Allocation (10,913,000 core hours).

INVITED TALKS

- 2022 American Geophysical Union Fall Meeting, Session: Atmospheric Rivers: Processes, Impacts, and Uncertainties, Chicago, IL
- 2021 American Geophysical Union Fall Meeting, Session: Bridging the Gap from Climate to Extreme Weather, New Orleans, LA
- 2021 Department of Geosciences, University of Connecticut, Storrs, CT
- 2021 American Meteorological Society *Weather Band* Webinar
- 2021 National Academies of Science Engineering and Medicine: Identifying New Community-Driven Science Themes for NSF's Support of Paleoclimate Research: A Workshop
- 2019 Lowell Center for Space Science and Technology, University of Massachusetts Lowell, Lowell, MA
- 2018 Department of Geography and Environmental Sciences, University of Colorado Denver, Denver, CO
- 2018 Department of Earth and Environmental Sciences, Vanderbilt University, Nashville, TN
- 2018 Department of Earth and Environmental Sciences, University of Illinois at Chicago, Chicago, IL
- 2018 Department of Environmental, Earth and Atmospheric Sciences, University of Massachusetts Lowell, Lowell, MA
- 2018 School of Earth and Environment, Rowan University, Glassboro, NJ
- 2017 Department of Earth and Planetary Sciences, Northwestern University, Evanston, IL
- 2017 School of the Environment, Washington State University, Vancouver, WA
- 2017 Department of Earth and Environmental Sciences, University of Michigan, Ann Arbor, MI
- 2014 Department of Earth and Environmental Sciences, University of Michigan, Ann Arbor, MI
- 2013 Department of Civil and Environmental Engineering, Stanford University, Stanford, CA

CONTRIBUTED TALKS (FIRST AUTHOR ONLY)

Skinner CB, Lora JM, Atmospheric river contributions to ice sheets at the Last Glacial Maximum, International Atmospheric Rivers Conference, Oct 11, 2022

Skinner CB, Harrington T, Zhu J, Tracing the origins of Arctic vapor and clouds, American Geophysical Union Fall Meeting, Dec 16, 2020.

Skinner CB, Lora JM, Payne AE, Poulsen CJ, Atmospheric river changes shaped mid-latitude hydroclimate since the mid-Holocene, International Atmospheric Rivers Conference, Oct 9, 2020.

Skinner CB, Lora JM, Payne AE, Poulsen CJ, Changes in atmospheric rivers shaped mid-latitude hydroclimate since the mid-Holocene, American Geophysical Union Fall Meeting, Dec 10, 2019, San Francisco, CA.

Skinner CB, Poulsen CJ, The impact of CO₂-driven vegetation changes on wildfire risk, American Geophysical Union Fall Meeting, Dec 14, 2017, New Orleans, LA.

Skinner CB, Poulsen CJ, Amplification of heat extremes by CO₂ physiological forcing, American Meteorological Society Annual Meeting, Jan 22-26, 2017, Seattle, WA.

Skinner CB, Chadwick R, Douville H, Diffenbaugh NS, A process-based understanding of regional climate responses to CO₂ forcing, CFMIP Meeting on Cloud Processes and Climate Feedbacks, June 8-11, 2015, Monterey, CA.

Skinner CB, Diffenbaugh NS, African easterly waves in CMIP5: Response to enhanced radiative forcing and implications for Atlantic tropical cyclone activity, 4th International Summit on Hurricanes and Climate Change, June 13-18, 2013, Kos, Greece.

Skinner CB, Ashfaq M, Diffenbaugh NS, The influence of convective and land surface processes on the variability of the West African Monsoon, American Geophysical Union Fall Meeting, Dec 13-17, 2010, San Francisco, CA.

POSTER PRESENTATIONS (FIRST AUTHOR ONLY)

Skinner CB, Touma D, Singh D, Poulsen CJ, The impact of rising CO₂ on the spatial footprint of extreme heat events, AGU Fall Meeting, Dec 10-14, 2018, Washington DC.

Skinner CB, Poulsen CJ, The role of CO₂ physiological forcing in driving future precipitation variability and precipitation extremes, AGU Fall Meeting, Dec 14-18, 2015, San Francisco, CA.

Skinner CB, Poulsen CJ, The role of regional atmospheric circulation changes in shaping climate reorganization in Africa, AGU Fall Meeting, Dec 15-19, 2014, San Francisco, CA.

Skinner CB, Diffenbaugh NS, The impact of projected changes in monsoon season circulation and African easterly waves on Saharan dust transport, AGU Fall Meeting, Dec 9-13, 2013, San Francisco, CA.

Skinner CB, Diffenbaugh NS, African easterly waves in CMIP5: future changes for West African

precipitation and Atlantic tropical cyclone activity, AGU Fall Meeting, Dec 3-7 2012, San Francisco, CA.

Skinner CB, Diffenbaugh NS, The response of African easterly waves and associated precipitation to enhanced radiative forcing, AGU Fall Meeting, Dec 5-9, 2011, San Francisco, CA.

Skinner CB, Ashfaq M, Diffenbaugh NS, High resolution climate modeling: a case study of West African summer climate, Department of Energy Office of Biological and Environmental Research Climate and Earth System Modeling PI Meeting, Sept 19-22, 2011, Washington, D.C.

Skinner CB, Ashfaq M, Diffenbaugh NS, The response of African easterly waves and associated precipitation to enhanced radiative forcing, African Weather and Climate Colloquium, July 25 - Aug 5, Boulder, CO.

Skinner CB, Ashfaq M, Diffenbaugh NS, The influence of convective and land surface processes on the West African Monsoon, Berkley Atmospheric Sciences Center Symposium, Feb 11, 2011, Berkley, CA.

Skinner CB, Ashfaq M, Diffenbaugh NS, A quantification of GHG and SST forcing in West African climate change, AGU Fall Meeting, Dec 14-18, 2009, San Francisco, CA.

Skinner CB, Ashfaq M, Diffenbaugh NS, A quantification of GHG and SST forcing in African climate change, 14th Annual CCSM Workshop, Jun 15-18, 2009, Breckenridge, CO.

ACADEMIC ADVISEES

2021 – Ali Fallahmaraghi – MS, PhD, University of Massachusetts Lowell
2023 Troy King – MS, Atmo Sci, University of Massachusetts Lowell
2022 Allison Hannigan – MS, Atmo Sci, University of Massachusetts Lowell
2021/2 Tyler Harrington – MS, Atmo Sci; MS, Math, University of Massachusetts Lowell

PROFESSIONAL AND ACADEMIC SERVICE

2023 – Review Committee Member, AGU Student and Early Career Travel Grants
2022 Lead Organizer, UMass Lowell Kennedy College of Sciences Conversation Starter
2022 – Member, UMass Lowell Kennedy College of Sciences Research Council
2022 Mentor, UMass Lowell New Faculty Launch Team
2022 – Member, UMass Lowell Kennedy College of Sciences IT Council
2021 – Committee Member, EEAS Nominating Committee
2021 – Faculty Advisor, UMass Lowell Chapter of the American Meteorological Society
2021 – Committee Member, EEAS Graduate Committee

- 2021 – Committee Member, EEAS Diversity, Equity, and Inclusion Committee
- 2021 – Faculty Advisor, National Weather Service SCOUT Internship Program
- 2021 Panelist, National Academies of Science Engineering and Medicine: Identifying New Community-Driven Science Themes for NSF’s Support of Paleoclimate Research
- 2021 Advising member, NCAR High Performance Computing User Group
- 2020 – 2024 Member, NOAA Drought Task Force
- 2019, 2021 Judge, Outstanding Student Presentation Awards, AGU Fall Meeting, San Francisco, CA
- 2019 Convener and Session Chair, AGU Fall Meeting, San Francisco, CA
- 2015 Judge, Michigan Geophysical Union Conference, Ann Arbor, MI

OUTREACH

- 2023 Invited speaker, Cool Science Art Exhibition Celebration and Award Ceremony, Chelmsford, MA
- 2022 Panelist, Colombian Cultural Committee of Merrimack Valley, virtual
- 2022 Panelist, The Loading Dock Art Gallery, Lowell, MA
- 2022 Invited speaker, Mashpee Public Library, Mashpee, MA
- 2021 – 2022 Advisor, Innovation Academy Charter School Internship Program
- 2021 Invited speaker, Peabody Institute Library, Danvers, MA
- 2019 – 2021 Instructor, K-12 Teachers Professional Development Workshop, Integrating Climate Change into the Classroom, Lowell, MA
- 2019 Invited speaker, REACT Grant Seminar Series, Chelmsford Library, Chelmsford, MA
- 2018 Invited speaker, Lions Club International, Royal Oak Library, Royal Oak, MI
- 2017 Invited speaker, 350.org Southeast Michigan Chapter, Ann Arbor, MI
- 2017 Instructor, University of Michigan Wolverine Pathways Program, Ypsilanti, MI
- 2016 – 2017 Museum Science Communication Fellow, University of Michigan Museum of Natural History, Ann Arbor, MI
- 2016 – 2017 Instructor, University of Michigan Earth Camp, Ann Arbor, MI
- 2005 – 2008 Instructor, Cornell University Teach to Reach Program, Ithaca, NY

WORK EXPERIENCE

- 2007 Research Assistant, Northeast Regional Climate Center
- 2006 – 2007 Official Weather Observer, Game Farm Road Weather Station, Ithaca, NY

JOURNAL REVIEW

Atmosphere, Climate Dynamics, Climate of the Past, Geophysical Research Letters, Journal of the Atmospheric Sciences, Journal of Climate, Journal of Geophysical Research - Atmospheres, Meteorology and Atmospheric Physics, Nature Climate Change, Nature Communications, Nature Geoscience, Proceedings of the National Academy of Sciences, Water Resources Research

MEMBERSHIPS

2008 – Present American Meteorological Society

2008 – Present American Geophysical Union

Last Updated: August 2023