CHRISTOPHER B. SKINNER

Environmental, Earth and Atmospheric Sciences
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EDUCATION

2014 **Ph.D. Environmental Earth System Science**, Stanford University

2008 **B.S. Atmospheric Science**, Cornell University

APPOINTMENTS

2026 – present **Associate Professor**, University of Massachusetts Lowell

2019 – 2025 **Assistant Professor**, University of Massachusetts Lowell

2017 – 2018 **Assistant Research Scientist**, University of Michigan

2014 – 2016 **Turner Postdoctoral Fellow**, University of Michigan

TEACHING EXPERIENCE

ATMO.1410. *Weather and Climate*
-- Introductory course for non-majors

ENVI.1100. *Global Environmental Studies*
-- Introductory course for non-majors

ATMO.4080/5080. *The Climate System*
-- Upper-level course for undergraduate and graduate students

ATMO.5050. *Atmospheric Measurements and Data Analysis*
-- Upper-level course for undergraduate and graduate students

ATMO.5100. *Regional Weather and Climate Modeling*
-- Upper-level course for undergraduate and graduate students

ENVI.5500. *Earth System Science*
-- Upper-level course for graduate students

RESEARCH GRANTS

2024 – 2028 Quantification of biophysical, physiological, and phenological vegetation contributions to future climate, NSF EMBRACE-AGS Program; **Christopher Skinner, UMass Lowell (PI)**, Mathew Barlow, UMass Lowell (co-PI); $398,984 to UMass Lowell.

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

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; **Christopher Skinner, UMass Lowell (PI)**, Juan Lora, Yale University (PI); $224,310 to UMass Lowell.

PUBLICATIONS

*****Denotes paper lead by graduate student advisee

Arellano NL, Beverly EJ, **Skinner CB** (2026), Triple oxygen isotopes in Texas precipitation reveal variability in the nature and timing of secondary evaporation, *Journal of Hydrology*, 669, https://doi.org/10.1016/j.jhydrol.2025.134859.

*****Fallah A, Barlow M, Basara J, Kooperman GJ, Kohane C, **Skinner CB** (2025), The impact of CO2-driven vegetation changes on the future of flash drought in the Northern Hemisphere, *Journal of Geophysical Research: Atmospheres*, 130, e2025JD043882, https://doi.org/10.1029/2025JD043882.

Skinner CB, Touma D, Barlow M, Singh D, King T (2025), The spatial extent of heat waves has changed over the past four decades, *Communications Earth and Environment*, 6, 662, https://doi.org/10.1038/s43247-025-02661-y.

Baek H, Lora JM, **Skinner CB**, Fu M, Zhu J (2025), Atmospheric and oceanic energy transport during North Atlantic freshening events: influences of moisture transport and hydrologic cycle feedbacks, *Climate Dynamics*, 63, 301, https://doi.org/10.1007/s00382-025-07761-1.

Cornish AE, Kooperman GJ, Grundstein AJ, **Skinner CB**, Swann ALS (2025), The impacts of plant physiological responses to rising CO2 on humidity driven extreme heat, *npj Climate and Atmospheric Sciences*, 8(1), 167, https://doi.org/10.1038/s41612-025-01018-8 .

Agel L, Barlow M, **Skinner CB**, Karmalkar A (2025), Drought weather in the Northeast U.S., *Journal of Climate*, https://doi.org/10.1175/JCLI-D-24-0280.1.

Swain DL, Abatzoglou JT, Albano C, Brunner M, Diffenbaugh NS, Kolden C, Prein A, Singh D, **Skinner CB**, Swetnam T, Touma D (2025), Increasing hydroclimate whiplash can amplify wildfire risk in a warming climate, *Global Change Biology*, 31(2), e70075, https://doi.10.1111/gcb.70075.

Swain DL, Prein AF, Abatzoglou JT, Albao C, Brunner M, Diffenbaugh NS, Singh D, **Skinner CB**, Touma D (2025), Hydroclimate volatility on a warming Earth, *Nature Reviews Earth and Environment*, 6(1), http://doi.org/10.1038/s43017-024-00624-z.

Rush W, Lora JM, **Skinner CB**, et al. (2025), Atmospheric river detection under changing seasonality and mean-state climate: ARTMIP Tier 2 Paleoclimate Experiments, *Journal of Geophysical Research: Atmospheres,* 130(1), e2024JD042222, https://doi.org/10.1029/2024JD042222.

Arellano NL, Beverly EJ, Riavo Voarintsoa N, **Skinner CB**, Schauer AJ, Steig EJ (2024), Triple oxygen isotope variability of precipitation in a tropical mountainous region, *Geochimica et Cosmochimica Acta*, 385, https://doi.org/10.1016/j.gca.2024.09.024.

***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, Macarewich 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.10.1029/2022JD037290.

-- Highlighted as top 10% most viewed article one year after publication in JGR: Atmospheres

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.

***Harrrington 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.

Research Computing Awards

2025 – 2028 Quantification of biophysical, physiological, and phenological vegetation contributions to future climate, NCAR CISL Computing Allocation (14,829,500 core hours).

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

2025 Department of Physics/Applied Physics, University of Massachusetts Lowell, Lowell, MA

2022 American Geophysical Union Fall Meeting, Session: Atmospheric Rivers: Processes, Impacts, and Uncertainties, Chicago, IL

2022 NOAA Drought and Heatwave Event Attribution Workshop: The Science and Its Potential Applications, (virtual)

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 (virtual)

2021 National Academies of Science Engineering and Medicine: Identifying New Community-Driven Science Themes for NSF's Support of Paleoclimate Research: A Workshop (virtual)

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.

ACADEMIC ADVISEES

PhD Students

In progress	Nanditha Subhash – University of Massachusetts Lowell
2026	Ali Fallahmaraghi – University of Massachusetts Lowell

MS Students

2026	Joseph Guaragno – MS, Atmo Sci, University of Massachusetts Lowell
2023	Ali Fallahmaraghi – MS, Atmo Sci, 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

Graduate Student Committee Membership

2026	Jordin Hubbard – MS, Atmo Sci, University of Massachusetts Lowell
2025	Courtney Kinzel – MS, Atmo Sci, University of Massachusetts Lowell
2024	David Coe – PhD, Marine Sciences, University of Massachusetts Lowell
2024	Nicky Arellano – PhD, Geological and Earth Sciences, University of Houston
2023	Robbie Hansen – MS, Atmo Sci, University of Massachusetts Lowell
2023	Ashely Cornish – MS, Geography, University of Georgia
2021	Alex Thompson – PhD, Earth and Environmental Science, University of Michigan

PROFESSIONAL SERVICE

2025	Proposal Review Panelist, NASA
2024	Proposal Review Panelist, NSF
2023 - 2025	Review Committee Member, AGU Student and Early Career Travel Grants
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	Committee Member, NOAA Drought Task Force
2019, 2021	Judge, Outstanding Student Presentation Awards, AGU Fall Meeting
2019	Convener and Session Chair, AGU Fall Meeting

UNIVERSITY AND DEPARTMENT SERVICE

2024 –	Chair, EEAS Diversity, Equity, and Inclusion Committee
2024	Lead successful application for AGU Bridge Program membership
2023 –	Planned, built, and now manage the UMass Lowell campus weather station
2022/26	Lead Organizer, UMass Lowell Kennedy College of Sciences Conversation Starter
2022 – 2026	Committee Member, UMass Lowell Kennedy College of Sciences Research Council
2022	Mentor, UMass Lowell New Faculty Launch Team
2022 – 2024	Committee Member, UMass Lowell Kennedy College of Sciences IT Council
2021 –	Faculty Advisor, UMass Lowell Chapter of the American Meteorological Society
2021 –	Committee Member, EEAS Graduate Committee
2021 – 2024	Committee Member, EEAS Diversity, Equity, and Inclusion Committee
2021 –	Established UMass Lowell as participating member in the NWS SCOuT Internship Program. Now serve as Faculty Advisor to the program

OUTREACH

2025/26	Volunteer, weather observer for the Boston Marathon
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 – 21,25	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

Journals

Atmosphere, Atmospheric Chemistry and Physics, Climate Dynamics, Climate of the Past, Earth's Future, Geophysical Research Letters, Journal of the Atmospheric Sciences, Journal of Climate, Journal of Geophysical Research - Atmospheres, Meteorology and Atmospheric Physics, Nature, Nature Climate Change, Nature Communications, Nature Communications Earth and Environment, Nature Geoscience, npj Climate and Atmospheric Sciences, Proceedings of the National Academy of Sciences, Water Resources Research

MEMBERSHIPS

2008 – Present American Meteorological Society
2008 – Present American Geophysical Union

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