

Sarah Weidman

Department of Earth and Planetary Science

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EDUCATION

Harvard Department of Earth and Planetary Science

2021 - Present

Ph.D. candidate in Atmospheric Science

Massachusetts Institute of Technology

2017 - 2021

B.S. in Atmospheric Science and in Physics

RESEARCH

Subseasonal Weather Forecasting and the MJO

2021 - Present

Advisor: Zhiming Kuang, Harvard

Improving subseasonal weather forecasts using novel computational techniques, with a focus on the Madden-Julian Oscillation (MJO) and MJO teleconnections.

Energetic Constraints on Precipitation over Land

2019 - 2021

Advisor: Paul O’Gorman, MIT

Researched a simple physical theory for how precipitation will change over wet and dry land due to warming using the energy budget equation. Project developed into an undergraduate senior thesis.

Temperature Extremes over Alaska

2020 - 2021

Mentors: Tom Delworth, Sarah Kapnick, NOAA GFDL

Quantified likelihoods of extreme temperature events based on a notable extreme temperature event over Alaska in July 2019.

TEACHING

Undergraduate research mentor, Harvard

Fall 2024 - present

Mentor to a Harvard undergraduate on a senior thesis project examining the connection between the MJO and atmospheric rivers.

Mathematical Modeling (AM 115), Harvard

Spring 2023, 2025, 2026

Teaching fellow for undergraduate applied math course.

Climate Crossroads (GENED 1167), Harvard

Fall 2023

Teaching fellow for undergraduate general education course.

Solving Complex Problems (12.000), MIT

Fall 2018, 2019, 2020

Undergraduate teaching assistant for first-year seminar.

Physics II (8.02), MIT

Spring 2020

Undergraduate teaching assistant for general institute requirement in physics.

PAPERS

Weidman, S., Kuang, Z. (2023). Potential Predictability of the Madden-Julian Oscillation in a Superparameterized Model. *Geophysical Research Letters*, 50, e2023GL105705. <https://doi.org/10.1029/2023GL105705>

Weidman, S., Kleiner, N., Kuang, Z. (2022). A rotation procedure to improve seasonally varying Empirical Orthogonal Function bases for MJO indices. *Geophysical Research Letters*, 49, e2022GL099998. <https://doi.org/10.1029/2022GL099998>

Weidman, S., Delworth, T. L., Kapnick, S. B., Cooke, W. F. (2021). The Alaskan summer 2019 extreme heat event: The role of anthropogenic forcing, and projections of the increasing risk of occurrence. *Earth's Future*, 9. <https://doi.org/10.1029/2021EF002163>

PRESENTATIONS

NCAR S2S Predictability Workshop Poster Presentation *Jun 2025*
Title: Correcting Surface Temperature Biases over the Central US during Boreal Summer

AGU Oral Presentation *Dec 2024*
Title: Accounting for Fast Convective Errors when Correcting the Model Mean State Using the Tendency Bias Correction Method in CESM

AOFD Poster Presentation *Jun 2024*
Title: Effects of State-Independent Tendency Bias Correction on Mean State and Tropical Convection

Northeast Tropical Workshop Oral Presentation *Jun 2023*
Title: Potential Predictability of the MJO in SPCAM

AGU Poster Presentation *Dec 2022*
Title: Rotation Procedure to Improve Seasonally Varying Empirical Orthogonal Function Bases for MJO Indices

Alaska Center for Climate Assessment and Policy Webinar *Jul 2020*
Title: Detecting, Projecting, and Attributing Changes in Extreme Events in Alaska

AGU Oral Presentation *Dec 2020*
Title: Detecting and Projecting Changes in Extreme Temperature Events over Alaska

AWARDS AND FELLOWSHIPS

Harvard Bok Center Teaching Certificate	<i>2025</i>
NSF Graduate Research Fellowship Program	<i>2022 - 2025</i>
MIT EAPS Undergraduate Teaching Award	<i>2021</i>
Ernest F. Hollings Undergraduate Scholarship	<i>2019 - 2021</i>
MIT EAPS Student Achievement Award	<i>2020</i>

SERVICE AND EXTRACURRICULARS

Harvard ClimaTea Seminar organizer, Harvard *2024*

Graduate Student Seminar organizer, Harvard *2022 - 2023*

Harvard Graduate Student Union Finance and Benefits Committee *2021 - present*
Co-chair, 2024 - 2025

WxChallenge forecasting competition *2018 - present*
Team member at MIT, then Local Manager at Harvard

Reviewer, Geophysical Research Letters, Journal of Climate