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 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

Climate Crossroads (GENED 1167), Harvard *Fall 2023*
Teaching fellow for undergraduate general education course.

Mathematical Modeling (AM 115), Harvard *Spring 2023, 2025*
Teaching fellow for undergraduate applied math course.

Undergraduate research mentor, Harvard *Fall 2024 - present*
Mentor to a Harvard junior on a project examining the connection between the MJO and atmospheric rivers using model bias correction techniques.

Undergraduate research mentor, Harvard *Summer 2022*
Mentored a rising sophomore on a 3-week project to improve Python tools for MJO analyses.

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.

Women's Technology Program *Summer 2018*
Residential tutor for discrete math class at high school summer program.

SERVICE AND EXTRACURRICULARS

WXChallenge forecasting competition *2018 - Present*
Team member at MIT, then Local Manager at Harvard
Winner (best forecasts over two weeks): KATL, Spring 2023
Winner (best forecasts over two weeks): KRAP, Fall 2023

Harvard ClimaTea seminar, Harvard *2024*
Organizer

Graduate student seminar, Harvard *2022 - 2023*
Organizer

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

Forecaster for Head of the Charles *2021-2024*
Volunteer weather forecaster for annual regatta
Invited speaker on "Weather 101" for US Rowing Referee College, 2023

MIT EAPS Undergraduate Council *2020 - 2021*
President

MIT EAPS Diversity, Equity, and Inclusion Committee *2020 - 2021*
Undergraduate representative

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

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

Kerry Emanuel Symposium Poster Presentation *Jun 2022*
Title: Modification of the OMI for MJO characterization

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

NSF GRFP *2022 - 2025*
EAPS Undergraduate Teaching Award *2021*
Ernest F. Hollings Undergraduate Scholarship *2019 - 2021*
EAPS Student Achievement Award *2020*