Tristan Abbott

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CURRENT POSITION

Postdoctoral Research Associate, Princeton University/NOAA GFDL 2022-present
Hosted by Nadir Jeevanjee (NOAA GFDL)

EDUCATION

Program in Atmospheres, Oceans and Climate (PAOC) 2016-2021
Department of Earth, Atmospheric and Planetary Sciences (EAPS), MIT
Doctor of Philosophy in Atmospheric Science
Thesis advisor: Timothy W. Cronin

University of Wisconsin-Madison 2012-2016
Bachelor of Science in Computer Sciences with Honors in the Major
Thesis advisor: Samuel N. Stechmann

EMPLOYMENT AND RESEARCH EXPERIENCE

Postdoctoral Associate, Cronin Group 2021-2022
Department of Earth, Atmospheric and Planetary Sciences, MIT

Graduate Research Assistant, Cronin Group 2016-2021
Department of Earth, Atmospheric and Planetary Sciences, MIT

Staff Research Associate, Climate Systems Interactions Group 2016
Department of Atmospheric and Oceanic Sciences, UCLA

Undergraduate Research Assistant, Stechmann Group 2014-2016
Department of Mathematics, University of Wisconsin-Madison

Undergraduate Research Assistant, Behavioral and Experimental Economics Lab 2013-2014
School of Human Ecology, University of Wisconsin-Madison

Undergraduate Research Assistant, Jin Group 2013
Department of Chemistry, University of Wisconsin-Madison

Undergraduate Research Assistant, Weibel Group 2012
Department of Biochemistry, University of Wisconsin-Madison

AWARDS

Carl-Gustaf Rossby Award 2021
Best doctoral thesis completed in the Program in Atmospheres, Oceans and Climate

MIT School of Science John W. Jarve (1978) Seed Fund for Innovation 2020
$110,000 grant for postdoctoral work at MIT

Outstanding Student Poster Award 2019
AMS Conference on Atmospheric and Oceanic Fluid Dynamics

PUBLICATIONS

Abbott and Cronin (2021): "Aerosol invigoration of atmospheric convection through increases in humidity". *Science* 371. doi:10.1126/science.abc5181

Abbott, Cronin, and Beucler (2020): "Convective Dynamics and the Response of Precipitation Extremes to Warming in Radiative-Convective Equilibrium". *Journal of the Atmospheric Sciences* 77. doi:10.1175/JAS-D-19-0197.1

Hausfather, Drake, **Abbott**, and Schmidt (2020): "Evaluating the performance of past climate model projections". *Geophysical Research Letters* 46. doi:10.1029/2019GL085378

Beucler, **Abbott**, Cronin, and Pritchard (2019): "Comparing Convective Self-Aggregation in Idealized Models to Observed Moist Static Energy Variability Near the Equator". *Geophysical Research Letters* 46. doi:10.1029/2019GL084130

Abbott, Stechmann, and Neelin (2016): "Long Temporal Autocorrelations in Tropical Precipitation Data and Spike Train Prototypes". *Geophysical Research Letters* 43. doi:10.1002/2016GL071282

PRESENTATIONS

Seminars and invited talks

Batsheva de Rothschild Seminar on Cloud-Climate Interactions Across Scales, February 2023 (Eilat, Israel): "Assessing drivers of the land-ocean contrast in convective intensity with global cloud-resolving models".

AGU Fall Meeting, December 2021 (virtual, hybrid with New Orleans, LA): "A Humidity-Entrainment Mechanism for Aerosol Invigoration of Convection".

MIT Sack Lunch Seminar Series, December 2020 (virtual): "Interactions between Convection and its Environment: Microphysical Invigoration and Multiple Equilibria of Idealized Land-Atmosphere Systems".

GFDL Lunchtime Seminar Series, October 2020 (virtual): "Aerosol Invigoration of Convection through Changes in Atmospheric Humidity".

Contributed talks

Abbott, Jeevanjee, Harris, Zhou, and Cheng: "Do global cloud-resolving models reproduce the observed land-ocean contrast in convective intensity?". AGU Fall Meeting, December 2022 (Chicago, IL).

Abbott and Cronin: "A Humidity-Entrainment Mechanism for Aerosol Invigoration of Convection". AMS Conference on Hurricanes and Tropical Meterology, May 2021 (virtual).

Abbott and Cronin: "Large-Scale Tropical Dynamics Enable Microphysical Invigoration of Convection". Northeast Tropical Meterology Workshop, June 2019 (Dedham, MA).

Abbott, Cronin and Beucler: "How do Changes in Convective Dynamics Impact Tropical Precipitation Extremes in a Warming World?". AGU Fall Meeting, December 2018 (Washington, DC).

Abbott and Cronin: "Toward a Simultaneous Scaling for Mean and Extreme Precipitation". AMS Conference on Hurricanes and Tropical Meteorology, April 2018 (Ponte Vedra, FL).

Contributed posters

Abbott and Cronin: "Multiple Equilibria in Weak Temperature Gradient Simulations over a Land Surface". AGU Fall Meeting, December 2020 (virtual).

Abbott and Cronin: "A Humidity-Entrainment Mechanism for Aerosol Invigoration of Convection". AGU Fall Meeting, December 2019 (San Francisco, CA).

Abbott and Cronin: "Large-Scale Tropical Dynamics Enable Microphysics Invigoration of Convection". AMS Conference on Atmospheric and Oceanic Fluid Dynamics, June 2019 (Portland, ME).

Abbott, Cronin and Beucler: "How do Changes in Convective Dynamics Impact Tropical Precipitation Extremes in a Warming World?". AMS Conference on Atmospheric and Oceanic Fluid Dynamics, June 2019 (Portland, ME).

Abbott, Cronin and Beucler: "Understanding the Scaling of Tropical Precipitation Extremes with Warming". Lorenz Center Workshop on Water and Climate Change, June 2018 (Dedham, MA).

Abbott and Cronin: "Precipitation Extremes and Convective Dynamics". AMS Conference on Atmospheric and Oceanic Fluid Dynamics, June 2017 (Portland, OR).

TEACHING

Lead Instructor, MIT Department of Earth, Atmospheric and Planetary Sciences
Weather and Climate Laboratory (co-instructor: Glenn Flierl) Spring 2022

Teaching Assistant, MIT Department of Earth, Atmospheric and Planetary Sciences
Weather and Climate Laboratory (instructors: Lodovica Illara and John Marshall) Spring 2021
Introduction to Atmosphere, Ocean and Climate Dynamics (instructor: Tim Cronin) Fall 2019
Atmospheric Radiation and Convection (instructor: Tim Cronin) Spring 2019

Curriculum Assistant, MIT Department of Mathematics 2021
Wrote climate-related problem sets for first year math courses

Instructor, Practical Computing Tutorials for Earth Scientists 2021
Led workshops on compilers and high-performance computing for fellow graduate students

Graduate Assistant, "Discover EAPS" first-year pre-orientation program 2017-2019
5 day program for incoming first-year students, including weekend trip to Mt. Washington, NH

FIELD EXPERIENCE

NCAR Advanced Study Institute, RELAMPAGO-CACTI field campaign — Fall 2018
Intensive field research studying severe thunderstorms in central Argentina

SERVICE

Peer reviewer for *Journal of the Atmospheric Sciences*, *Climate Dynamics*, *Journal of Advances in Modeling Earth Systems*, *Geophysical Research Letters*, *Atmospheric Chemistry and Physics*

GFDL Global Cloud-Resolving Model Reading Group — 2022-present
Biweekly GFDL journal club focused on research related to global cloud-resolving modeling
Created the group in September 2022 and currently serve as lead organizer

PAOC Colloquium Committee — 2017-2022
Seminar organizing committee for the Program in Atmospheres, Ocean and Climate, MIT
Served as committee chair during Spring 2019 and Spring 2021

MIT Unlearning Racism in Geoscience (URGE) pod — Spring 2021
National journal-reading and diversity, equity and inclusion policy design program for geoscientists

Towards Inclusion and Diversity in EAPS (TIDE) — Spring 2021
Student-led organization dedicated to advancing diversity, equity and inclusion in EAPS

EAPS Graduate Student Advisory Council — 2016-2021
Graduate student government and advocacy group in the Department of Earth, Atmospheric and Planetary Sciences, MIT

EAPS Peer Mentoring Program — 2018-2021
Peer mentor to first- and second-year graduate students

Graduate Climate Conference Executive Committee — 2017, 2019
Organizing committee for NSF-funded conference for graduate students in climate science

EAPS Graduate Student Retreat Coordinator — 2016-2017
Fundraiser for and organizer of weekend retreat for EAPS graduate students

OUTREACH

Massachusetts STEM Week classroom visit — 2021
Interactive lecture and interview with middle school students during two class sessions

MIT Museum Girls Day — 2019
Rotating tank fluid demonstrations for temporary exhibits

RELAMPAGO-CACTI Field Campaign community outreach — 2018
Small group presentations to secondary school students in Cordoba, Argentina

Beacon Hill Seminar Series — 2017
Half-hour lecture on climate science open to general public in Boston, MA

DayCon Seminar Series 2017
Half-hour lecture on climate science open to general public in Cambridge, MA