Tristan H. Abbott
Department of Earth, Atmospheric, and Planetary Sciences (EAPS)
Massachusetts Institute of Technology
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Education

2016-present **Massachusetts Institute of Technology**
Ph.D. in Atmospheric Science (advisor: Tim Cronin)
Expected graduation: 2021

2012-2016 **University of Wisconsin - Madison**
B.S. in Computer Science with Honors in the Major

Spring 2015 **Aarhus University, Denmark**
Exchange student

Expertise and Interests

Atmospheric dynamics, cloud physics, climate dynamics and climate change, high-performance computing

Research Experience

2016-present **Cronin Group,** Department of Earth, Atmospheric, and Planetary Sciences, MIT
Ph.D. thesis work on cloud dynamics and cloud-climate interactions.
Thesis committee: Tim Cronin, Larissa Back, David McGee, Paul O'Gorman, Sharon Sessions

Fall 2018 **RELAMPAGO-CACTI Field Campaign,** Cordoba, Argentina
Deployed instruments and analyzed observations during an international field campaign to study severe thunderstorms in central Argentina.

2016 **Climate Systems Interaction Group,** Department of Atmospheric and Oceanic Sciences, UCLA
Developed parallel simulations of multi-column models of tropical water vapor and precipitation.

2014-2016 **Stechmann Group,** Department of Mathematics, University of Wisconsin - Madison
Investigated statistical properties of stochastic precipitation models through simulations on distributed computing networks; applied spectral analysis and least-squares techniques to compare reanalysis data sets and radiosonde records.

2013-2014 **Behavioral and Experimental Economics Lab,** University of Wisconsin - Madison
Developed Java-based interest visualization software for behavioral economics experiments.

2013 **Jin Group,** Department of Chemistry, University of Wisconsin - Madison
Refined synthesis processes for lead selenide nanoparticles used in photovoltaics; identified a ligand whose concentration controls nanoparticle size.

2012 **Weibel Group,** Department of Biochemistry, University of Wisconsin - Madison
Investigated interactions between the RecA protein and *E. Coli* lipid membranes.

Publications and Preprints

Abbott and Cronin (2020): "Aerosol invigoration of atmospheric convection through increases in humidity". arxiv.org/abs/2002.06056. Under review at *Science*.

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:0.1175/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

Dec. 2019 **AGU Fall Meeting** (San Francisco, CA)
"A Humidity-Entrainment Mechanism for Aerosol Invigoration of Convection" (poster).

June 2019 **AMS Atmospheric and Oceanic Fluid Dynamics Conference** (Portland, ME)
"Large-Scale Tropical Dynamics Enable Microphysical Invigoration of Convection" (poster)
"How do Changes in Convective Dynamics Impact Tropical Precipitation Extremes in a Warming World?" (poster).

June 2019 **Northeast Tropical Meteorology Workshop** (Dedham, MA)
"Large-Scale Tropical Dynamics Enable Microphysical Invigoration of Convection" (talk)

Dec. 2018 **AGU Fall Meeting** (Washington, DC)
"How do Changes in Convective Dynamics Impact Tropical Precipitation Extremes in a Warming World?" (talk)

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

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

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

Teaching

2019 **Teaching Assistant,** MIT
Courses: Introduction to Atmosphere, Ocean, and Climate Dynamics (Prof. Tim Cronin) and Atmospheric Radiation and Convection (Prof. Tim Cronin)
Designed and led discussion sections and office hours; gave a guest lecture on radar meteorology.

2012-2014 **Volunteer Tutor,** University of Wisconsin - Madison
Tutored fellow university students in calculus and physics.

Awards

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

2017 DOE Computational Sciences Graduate Fellowship Honorable Mention
NSF Graduate Research Fellowship Honorable Mention

2016 NSF Graduate Research Fellowship Honorable Mention

Service

2019-present **Peer reviewer for *Journal of the Atmospheric Science*, *Climate Dynamics***

2017-present **Program in Atmospheres, Oceans, and Climate Colloquium Organizing Committee**
Nominated, selected, and invited faculty speakers for a weekly colloquium.

2016-present **EAPS Student Advisory Council**
Organized social and community-building activities for students, staff, and faculty in EAPS.

2017, 2019 **Graduate Climate Conference Organizing Committee**
Reviewed and selected abstracts, coordinated logistics, and organized sessions for a conference for graduate students in climate science.

2016-2017 **EAPS Graduate Student Retreat Coordinator**
Secured funding, rented cabins, and organized food and transportation for the annual EAPS student retreat.

Outreach

2017 **DayCon Seminar Series**
20 minute talk to a general audience on Earth's energy budget and the runaway greenhouse.

2017 **Beacon Hill Seminar**
30 minute talk to a general audience on Earth's energy budget and the runaway greenhouse.