Sean P. Cohen

Phone: [301-202-0948] **Email:** [sean.cohen@columbia.edu] **LinkedIn:** [https://www.linkedin.com/pub/sean-cohen/104/386/514]

RESEARCH INTERESTS

- Idealized modeling, tropical convection, atmospheric radiation, hydrological sensitivity

EDUCATION

Columbia University
PhD in Applied Math and Atmospheric Science **Graduated August 2024**
Dissertation Topic: Idealized Models of Rainfall GPA: 4.00/4.00

University of Pennsylvania
Masters in Mechanical Engineering and Applied Mechanics **Graduated December 2017**
Concentration: Heat Transfer, Fluid Mechanics, and Energy Science and Engineering GPA: 4.00/4.00
Honors: Rachleff Scholar | 2018 Honorable Mention Outstanding Academic Award

Bachelors in Mechanical Engineering and Applied Mechanics **Graduated May 2017**
Honors: Rachleff Scholar | 2017 Hugo Otto Wolf Memorial Prize | Dean's List 2013-2017 GPA: 4.00/4.00

EXPERIENCE

Lamont-Doherty Earth Observatory
Researcher in Dr. Robert Pincus' Clouds, Radiant Energy, and Water Group **August 2024 - Present**

- Investigated changes in the stratospheric lapse rate with increases in atmospheric CO_2

Columbia University
Researcher in Dr. Adam Sobel's Tropical Meteorology Group **August 2020 - August 2024**

- Implemented parameterizations of large-scale dynamics into NCAR's single column model
- Modified a dynamics parameterization to account for boundary layer effects
- Created an analytical model for spectrally resolved radiative cooling sensitivity

Ball Aerospace & Technologies
Associate Thermal Engineer **February 2018 - June 2020**

- Supported various space and RF programs via thermal analysis and testing:
  - Created FEA, CFD and reduced dimensionality models (ANSYS, TD, MATLAB)
- Pursued personal research projects on the cooling of pin fin arrays

University of Pennsylvania
Researcher in Dr. Katherine Kuchenbecker's Haptics Lab **Summer 2015**

- Designed a system that allows surgeons to tactically sense the steady-state forces they apply during practice surgical tasks on the *Da Vinci* Surgical System

Researcher in Dr. Dani Bassett's Complex Systems Group **Summer 2014**

- Analyzed how sound propagated through two-dimensional force chains in granular materials

PUBLICATIONS

- **S. Cohen**, R. Pincus, "A spectroscopic theory for how mean rainfall changes with surface temperature", *Science Advances*, 2025
- **S. Cohen**, "Using Single Column Models to Understand the Mechanisms Controlling Rainfall", *Columbia University ProQuest Dissertations and Theses*, 2024.
- **S. Cohen**, A. Sobel, M. Biasutti, S. Wang, I. Simpson, A. Gettelman, I. Hu, "Implementation and Exploration of Parameterizations of Large-Scale Dynamics in NCAR's Single Column Atmospheric Model SCAM6", *Journal of Advances in Modeling Earth Systems*, 2024.
- **S. Cohen**, K. Weed, J. Lambert, "An Analytical Approximation for Temperature Distributions in Micro Pin Fin Arrays", *AIAA SciTech Forum and Exposition*, 2020.

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- J. D. Brown, J. N. Fernandez, **S. P. Cohen**, K. J. Kuchenbecker, "A Wrist-Squeezing Force-Feedback System for Robotic Surgery Training", *World Haptics Conference (WHC)*, pp. 107-112, 2017.
- **Cohen S.P.** (2014). Research Methods in Educational Equity and Educational Policy. *3808: A Journal of Critical Writing*, 9, 78-82.

In Review:

- **S. Cohen**, A. Sobel, M. Biasutti, "Modeling Tropical Precipitation in a Single Column with a Boundary Layer Forcing", *Journal of the Atmospheric Sciences*, In Review

AWARDS

- Honorable Mention Outstanding Academic Award (2018)
- Hugo Otto Wolf Memorial Prize (2017)
- Rachleff Scholarship (2013-2017)
- Dean's List (2013-2017)

CONFERENCE PRESENTATIONS

- "Modifying a Weak Temperature Gradient Parameterization to Include a Boundary Layer Mass Flux Forcing", **Oral.** AGU Fall Meeting; San Francisco, CA; December 2023
- "The Spectral Roots of Hydrological Sensitivity", **Oral.** AGU Fall Meeting; San Francisco, CA; December 2023
- "The Spectral Roots of Hydrological Sensitivity", **Poster.** WCRP Open Science Conference; Kigali, Rwanda; October 2023
- "The Water Vapor Continuum Creates Nonlinearities in the Sensitivity of Mean Precipitation to Surface Temperature", **Oral.** CERES Team Meeting; New York, NY; October 2023
- "Implementation and Exploration of Parameterizations of Large-Scale Dynamics in NCAR's Single Column Atmospheric Model SCAM6", **Oral.** AMS Tropical Meeting; New Orleans, LA; June 2022

TEACHING

Columbia University

Teaching Assistant for Numerical Methods **Fall 2022**

- Held weekly recitations, graded midterms, projects, and assignments

University of Pennsylvania

Chair of Local Committee of Engineers Without Borders **Fall 2015 - Fall 2017**

- Taught weekly lessons at Saul High School in Philadelphia
- Aided students in SAT prep and college applications

Teaching Assistant for Direct Energy Conversion **Fall 2017**

- Held weekly recitations, graded assignments

Teaching Assistant for Statics and Mechanics of Materials **Fall 2016**

- Held weekly recitations, graded assignments

Teaching Assistant for Thermodynamics **Spring 2016**

- Held weekly recitations, graded assignments

Teaching Assistant for Energy Systems **Fall 2015**

- Held weekly recitations, graded assignments

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OUTREACH

National Council of Jewish Women New York Hunger Program
Volunteer **Spring 2021 - Present**

- Served food, translated for Spanish speakers

Metropolitan Detention Center, Brooklyn
Volunteer **Spring 2025**

- Presented a course on climate sensitivity and the carbon cycle

Boulder Homeless Shelter
Volunteer **Spring 2017 - Spring 2020**

- Prepared and served food