Clare Singer
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August 2022
1200 E. California Blvd., MC C1-221
Pasadena, CA 91125

Education

- **California Institute of Technology** — Pasadena, CA
  Department of Environmental Science and Engineering — *October 2018 - Present*
  - M.S. June 2020; Ph.D. expected June 2023
- **University of Chicago** — Chicago, IL
  BA Physics, BS Mathematics — *September 2014 - June 2018*

Research Experience

- **Caltech, Department of Environmental Science & Engineering** — Pasadena, CA
  Advisor: Dr. Tapio Schneider — *October 2018 - Present*
  - I work on cloud feedbacks, understanding how cloud dynamics and interactions with aerosols and radiation are important for climate, using high-resolution simulations and pencil-and-paper theory.
- **University of Chicago, Department of the Geophysical Sciences** — Chicago, IL
  Advisor: Dr. Liz Moyer — *January 2017 - Present*
  - Helped test, calibrate, and operate the Chicago Water Isotope Spectrometer (ChiWIS) that flew in the StratoClim campaign in July/August 2017 over the Asian monsoon. Processed and analyzed data from the StratoClim campaign.

Selected Publications

1. **C.E. Singer**, B. Clouser, E.J. Moyer, et al., "Intercomparison of UTLS water vapor measurements over the Asian Summer Monsoon." *Atmospheric Measurement Techniques*, 15, 4767-4783, 2022.
2. P. Bartman, et al., "PySDM v1: particle-based cloud modeling package for warm-rain microphysics and aqueous chemistry." *Journal of Open Source Software*, 7(72), 3219, 2022.
3. S. Khaykin, et al., "Persistence of moist plumes from overshooting convection in the Asian monsoon anticyclone." *Atmospheric Chemistry and Physics*, 22, 3169-3189, 2022.
4. **C.E. Singer**, I. Lopez-Gomez, X. Zhang, T. Scheneider, "Top-of-atmosphere albedo bias from neglecting three-dimensional cloud radiative effects." *Journal of Atmsopheric Science*, 78(12), 4053-4069, 2021.
5. Y. Ming, et al., "Assessing the influence of COVID19 on the shortwave radiative fluxes over the East Asian Marginal Seas." *Geophysical Research Letters*, e2020GL091699, 2020.

Selected Awards, Fellowships, and Honors

CFMIP Outstanding Early Career Presentation Award 2022
Richard H. Jahns Teaching Award 2021
NSF Graduate Research Fellowship 2018-2021
John Haeseler Lewis Prize (top graduating physics major) 2018
Barry M. Goldwater Scholarship 2017
David W. Grainger Fellowship (top rising senior in physics) 2017
Astronaut Scholarship 2017
Phi Beta Kappa (top 2% by GPA) 2017

Teaching and Mentoring

- **Teaching Assistant** — Caltech
  ESE 101 (Fall 2019), ESE 130 (Winter 2021), ESE 134 (Spring 2022) — *2019-2022*
  - ESE 101 (Earth's Atmosphere): I developed weekly quizzes, hosted office hours, and graded homework assignments.

- ESE 130 (Atmosphere and Ocean Dynamics, an introductory GFD course): I hosted office hours, graded homework assignments, and created short videos for asynchronous learning.
- ESE 134 (Cloud and Boundary Layer Dynamics): I wrote and graded homework assignments, hosted weekly office hours, prepared two 90-minute lectures on stratocumulus-topped boundary layers and cloud microphysics, and graded student final presentations and written reports.

- **SURF mentor** Caltech
  Summer Undergraduate Research Fellow program *Summer 2022*
  - I am mentoring a summer undergraduate research fellow (SURF) student in summer 2022. We are working together on a project looking at subtropical relative humidity in the CMIP6 archive.
  - The scientific goals of this project are to characterize subtropical humidity in the present climate, how it changes under future emissions scenarios, and the spread across the model ensemble in these predictions. We hope to identify possible sources of intermodel spread that will elucidate further understanding of what sets subtropical humidity.
  - Personal goals for my mentee are to develop her coding ability, her familiarity with climate science concepts, climate models, model output, and generally how to analyze geospatial data, and how to work with big data.

Outreach and Leadership Activities

- **Women in GPS student group** Caltech
  President (2021-2022); Vice President (2019-2021) *2018 - Present*
  - Manages and oversees club activities – including journal club discussions, workshops, and social events – communicates with faculty, and recruiting new members.

- **ESE Department Seminar** Caltech
  Co/student-organizer and sole organizer [Fall 2021] *2019-2022*
  - Organized logistics of soliciting invitations and inviting seminar speakers. Oversaw transition of seminar to a virtual format during the early part of the COVID-19 pandemic and the subsequent transition to a hybrid format.

- **Title IX Student Leadership Team** Caltech
  Giving Voice script writer (2019-2020); Title IX Council member (2019-) *2019 - Present*
  - My work on the Student Advisory Council and with Giving Voice creates awareness around Title IX issues and provides resources for students, staff, and faculty.