

Walter W. Shen

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EDUCATION

Harvard University

Ph.D. Student, Department of Earth and Planetary Sciences (EPS)
Advisor: Prof. Zhiming Kuang

Aug. 2022 – present
Cambridge, M.A., U.S.A.

Imperial College London

BSc Mathematics with Applied Mathematics/Mathematical Physics, First Class Honours

Sept. 2019 – July 2022
London, U.K.

Harvard Extension and Summer Schools

Non-Degree Secondary School Candidate

Sept. 2017 – Aug. 2019
Cambridge, M.A., U.S.A.

CURRENT INTERESTS

- Project 1: Study of mixing in oceanic shallow cumuli using in situ data collected during the EUREC4A (Elucidating the Role of Clouds-Circulation Coupling in Climate) field campaign, and Lagrangian tracking in simulated Large-Eddy Simulation (LES) cases
- Project 2: Investigation of sub-grid scale parameterization performance in LES using **aphros** and **microhh** fluid solvers, with goal to implement machine learning to improve performance

RESEARCH

Graduate Research Assistant

Harvard University Department of Earth and Planetary Sciences

Sept. 2022 – Present

Undergraduate Research Assistant

Harvard University Department of Earth and Planetary Sciences
Supervised by Prof. Zhiming Kuang

June 2021 – Sept. 2021

- Simulated turbulent atmospheric flows using the System for Atmospheric Modeling (SAM) on the Harvard FAS Research Computing supercomputer to represent ocean conditions observed in the BOMEX field campaign
- Performed statistical analysis of turbulence intensity of SAM simulation output; reviewed literature on atmosphere turbulent flow

Second Year Group Research Project

Imperial College London Department of Mathematics
Supervised by Dr. Henrique Helfer Hoeltgebaum

May 2021 – June 2021

- Conducted independent and group research in identifying, analyzing, and forecasting time series and time series models
- Established statistical tests for auto-correlation, white noise, and stationary; investigated applications in applied sciences, finance and statistics

Undergraduate Research Assistant

Harvard University Department of Earth and Planetary Sciences
Supervised by Prof. Zhiming Kuang

June 2020 – Sept. 2020

- Interpreted field study datasets from the EUREC4A field campaign, including flight and dropsonde data from the ATR-42 and HALO aircrafts
- Created and analyzed Paluch mixing diagrams of conserved water and thermodynamic variables, to understand cloud entrainment processes

First Year Research Poster Project

Imperial College London Department of Mathematics
Supervised by Dr. David Whitney & Dr. Takoua Jendoubi

May 2020 – June 2020

- Established statistical relationship between income inequality (Gini Index) and COVID-19 mortality in the United States using a multiple linear regression model
- Parsing and collating of county-level Gini Index inequality and COVID-19 death-to-case ratio from several data sources

Undergraduate Research Assistant

June 2019 – Sept. 2019

Harvard University Department of Earth and Planetary Sciences

Supervised by Prof. Zhiming Kuang

- Explored the application of machine learning in weather forecasting using Harvard supercomputer, including reproducing results from the USBR/NOAA Subseasonal Climate Forecast Rodeo
- Identified the potential of Soil Moisture Active Passive (SMAP) satellite soil moisture data as a weather predictor variable over the continental United States

TEACHING

Teaching Fellow | *Harvard College*

- **GENED 1094: Confronting Climate Change** Fall 2023

Teaching Assistant | *Harvard Summer School*

- **CSCI S-5A: Programming in R** | *Student Evaluation: 4.56/5.0* Summer 2021
- **ISMT S-161: Computational Bayesian Inference** | *Student Evaluation: 4.73/5.0* Summer 2020

POSTERS

Dec. 2023 American Geophysical Union Fall Meeting, *San Francisco, C.A.*

[In Prep] Study of mixing in oceanic shallow cumuli using in situ and simulated data of the EUREC4A field campaign

June 2020 Imperial College London Department of Mathematics Research Poster Project, *London, U.K. (Virtual)*

COVID-19: Influence of Income Inequality on Mortality in the United States

AWARDS

2022 Harvard EPS Merit Award

2022 Imperial Award

2019 U.S.A. National Merit Scholarship Finalist

2018-19, 2017-18 Harvard Extension School Lowell Student Scholarship

2018 American Statistical Association Project Competition Honorable Mention

COMMUNITY ENGAGEMENT

Social Fellow | *Student Center at Harvard Griffin GSAS* Aug. 2023 – Present

Environmental Awareness Officer | *Harvard GSAS Graduate Residence Halls Council* Aug. 2023 – Present

Violinist | *Harvard GSAS Student Center Orchestra* Sept. 2022 – Present

Resident Dean | *Harvard Summer School* June 2023 – Aug. 2023

President's Award | *Royal College of Science Union* 2022

Deputy *Broadsheet* Magazine Editor | *Royal College of Science Union* Aug. 2020 – July 2021

TECHNICAL SKILLS

Experienced with Python, MATLAB, R, Java, Mathematica programming; LaTeX, Fusion 360, Excel, InDesign tools.

Languages: English (native), Mandarin (fluent), Latin (proficient)