

LILY ZHANG

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EDUCATION

University of Washington

PhD Student in Atmospheric Sciences

Present

Massachusetts Institute of Technology

Bachelor of Science in Earth, Atmospheric, and Planetary Sciences

2022

Bachelor of Science in Physics**Minor in Public Policy****AWARDS**AMS Annual Meeting 1st Place Oral Presentation Award

2024

UW Atmospheric Sciences Graduate Student Distinguished Service Award

2023

NSF Graduate Research Fellowship

2022

AMS Graduate Fellowship

2022

EAPS Christopher Goetze Prize for Undergraduate Research

2022

Barry Goldwater Scholarship

2021

EAPS Community Builder Award (with TIDE)

2021

ASF Astronaut Scholarship

2020 - 2021

NOAA Ernest F. Hollings Undergraduate Scholarship

2020

MIT Outstanding New Leader Award

2019

AMS Freshman Undergraduate Scholarship

2018

AccuWeather Earth Science Award

2017

RELATED EXPERIENCE

University of Washington Department of Atmospheric Sciences

Sep. 2022 – Present

Graduate Research Assistant

Using a combination of climate models, observations, and simple models to understand the soil moisture influence on Western US climate variability.

MIT Department of Civil and Environmental Engineering | Entekhabi Group

Sep. 2021 – Aug. 2023

Research Scientist

Determining the effect of land surface conditions on weather through the relationship between soil moisture and convective available potential energy (CAPE). Results will be used to understand the weather system response to climate change. Principal author of paper under review.

NOAA Pacific Marine Environmental Laboratory | Ocean Climate Research Division

Jun. 2021 – Aug. 2021

Hollings Intern

Investigated controls on diurnal variability in Arctic sea surface temperature using meteorological data collected from autonomous surface vehicles (Saildrones). Research presented at AGU 2021, AMS 2022, and OSM 2022.

MIT Department of Earth, Atmospheric, and Planetary Science | Solomon Group

May 2020 – Jun. 2021

Undergraduate Researcher

Developed a methodology for reconstructing missing data in the Halley Antarctic Ozone Record, a dataset crucial to the discovery of the ozone hole and future climate studies. Principal author of paper published in Atmospheric Chemistry and Physics.

Head of the Charles Regatta

Oct. 2019 – Oct. 2021

Weather Forecaster

Provides expert guidance to the race operations team of the largest two-day regatta in the world.

MIT Center for Global Change Science | Woosley Lab

Jun. 2019 – Sep. 2021

Undergraduate ResearcherAnalyzed seasonal and spatial trends for fugacity of carbon dioxide ($f\text{CO}_2$) in seawater using multiple datasets totaling over 500,000 observations in MATLAB. Evaluated climatological trends in seawater

fCO_2 to examine the effects of anthropogenic carbon invasion. Principal author of paper accepted for publication in *Continental Shelf Research*.

MIT Department of Earth, Atmospheric, and Planetary Science | Emanuel Group

Assistant Researcher

Oct. 2018 – Jun. 2019

Developed a probabilistic wind speed model using an intensity model in tandem with a physically based wind speed equations for tropical cyclones using Python. Model provides potentially life-saving information to those living in at risk area--intended to be implemented on a large scale.

Penn State Center for Advanced Data Assimilation and Predictability Techniques

Assistant Researcher

Jul. 2017 - Apr. 2019

Analyzed and plotted data from the European Centre for Medium-Range Weather Forecasts (ECMWF) to analyze trends and variabilities of CO_2 concentration over North America using Python.

Validated ECMWF MACC and NOAA CarbonTracker Near-Real Time CO_2 products against ACT-America measurements using Python. Second author of paper published in *Journal of Geophysical Research - Atmospheres*

Penn State Department of Meteorology and Atmospheric Science

Assistant Researcher

Jul. 2016 - Mar. 2018

Represented precipitation ice species with both spherical and non-spherical particles for radiative transfer modeling of microphysics-consistent cloud microwave scattering properties. Contributing author of a paper published in *Journal of Advances in Modeling Earth Systems*.

PUBLICATIONS AND PAPERS

Varagas Zeppetello, L. R., **Zhang, L. N.**, Battisti, D. S., Laguë, M. M. (2024). How Much Does Land–Atmosphere Coupling Influence Summertime Temperature Variability in the Western United States?. *Journal of Climate*, **37**, 3457–3478.

Zhang, L. N., Short Gianotti, D. J., Entekhabi, D. (2023). Land Surface Influence on Convective Available Potential Energy (CAPE) Change during Interstorms. *Journal of Hydrometeorology*, **24**, 1365–1376.

Zhang, L. N., Woosley, R. J. (2021). Seasonal trends in the Southeast Florida current and shelf CO_2 fluxes. *Continental Shelf Research*, **229**, 104566.

Zhang, L. N., Solomon, S. Stone, K. A., Shanklin, J. D., Eveson, J. D., Colwell, S., et al. (2021). On the use of satellite observations to fill gaps in the Halley station total ozone record. *Atmospheric Chemistry and Physics*, **21**, 9829–9838.

Chen, H. W., **Zhang, L. N.**, **Zhang, F.**, Davis, K. J., Lauvaux, T., Pal, S., et al. (2019). Evaluation of regional CO_2 mole fractions in the ECMWF CAMS real-time atmospheric analysis and NOAA CarbonTracker near-real-time reanalysis with airborne observations from ACT-America field campaigns. *Journal of Geophysical Research: Atmospheres*, **124**, 8119–8133.

Sieron, S. B., **Zhang, F.**, Clothiaux, E. E., **Zhang, L. N.**, & Lu, Y. (2018). Representing precipitation ice species with both spherical and nonspherical particles for radiative transfer modeling of microphysics-consistent cloud microwave scattering properties. *Journal of Advances in Modeling Earth Systems*, **10**, 1011–1028.

INVITED TALKS

Washington State University-Vancouver Interdisciplinary Science Seminar

2024

CONFERENCE PRESENTATIONS

AMS Annual Meeting, Graduate Climate Conference, AGU Fall Meeting

2023

AMS Annual Meeting, Ocean Sciences Meeting, Graduate Climate Conference, AGU Fall Meeting

2022

EGU General Assembly, Global Monitoring Annual Conference (eGMAC), Astronaut Scholarship Technical Conference, Quadrennial Ozone Symposium (QOS), AGU Fall Meeting

2021

EAPS Undergraduate Research Symposium, Astronaut Scholarship Technical Conference, AGU Fall Meeting

2020

TEACHING

<i>Climate and Climate Change (ATM S 211)</i>	
Graduate Teaching Assistant	2024
<i>Electricity and Magnetism (8.02)</i>	
Undergraduate Teaching Assistant	2022
<i>Classical Mechanics (8.01)</i>	
Undergraduate Teaching Assistant	2021
<i>Science and Economics of Climate Change: Understanding Environmental Successes and Failures</i>	
MIT Summer HSSP, MIT Splash, MIT Spark Teacher	2020 – 2022
<i>The Art and Science of Negotiation (11.111)</i>	
MIT Teaching Assistant	2020
<i>How Does Global Warming Work? An Introduction to The Greenhouse Effect and Other Mechanisms</i>	
MIT Splash Teacher	2018, 2020

LEADERSHIP AND OUTREACH

Graduate Climate Conference	
Co-Chair (2024), Organizer (2023)	2023-Present
Identity, Belonging and Inquiry in Science (IBIS)	
Graduate Student Mentor	2023 – Present
UW Atmospheric Sciences	
Graduate Student Distinguished Visiting Lecturer Host (2024), Graduate Student Representative (2023-25), AMS Co-President (2023-2024), Prospective Student Visit Weekend Organizer (2022-2023), Outreach Coordinator (2022-2023)	2022 – Present
UW Atmospheric Sciences Graduate-Undergraduate Mentorship Program (GUMP)	
Mentor and Organizer	2022 – Present
MIT School of Science Assistant Dean of Diversity, Equity, and Inclusion (DEI) Hiring Committee	
Undergraduate Representative	2021
Los Altos High School Women in STEM	
Mentor	2020 – Present
MIT EAPS Diversity, Equity, and Inclusion Committee (DEI-C)	
Undergraduate Representative	2020 – 2021
MIT EAPS Let's INvest in K12 (LINK12)	
Organizer, Teacher	2020 – 2022
Towards Inclusion and Diversity in EAPS (TIDE)	
Reading Group Participant, Member	2020 – 2022
askEAPS Youtube Channel	
Owner	2019 – 2021
MIT EAPS Student Advisory Committee	
Undergraduate President	2019 – 2022
MIT Educational Studies Program (ESP)	
Splashcon Director, Splash Subdirector, Spark Subdirector, Publicity Officer, Treasurer, Teacher	2018 - 2022

TECHNICAL SKILLS

MATLAB
Python
Java