

XIANG LIU

Xianlin Campus, Nanjing University, 163 Xianlin Avenue, Qixia District, Nanjing, Jiangsu, China

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EDUCATION

Nanjing University (NJU)

Nanjing, Jiangsu

Master of Science in Atmospheric Science

2021.09 - 2024.06 (Expected)

University of Wisconsin-Madison (UW-Madison)

Madison, Wisconsin

Visiting Student in Atmospheric Science

2020.01 - 2020.08

China University of Mining and Technology (CUMT)

Xuzhou, Jiangsu

Bachelor of Engineering in Environmental Engineering

2017.09 - 2021.06

Related Courses: Bioclimatology, Weather and Climate, Big Data Analysis in Meteorology, Atmospheric Environment Theory and Model, Climate Change Impacts and Adaptations, Atmospheric Aerosols

RESEARCH INTERESTS

- ◆ Developing and optimizing machine learning algorithms to enhance air quality predictions and mitigate the impacts of climate change.
- ◆ Investigating and analyzing the effects of climate change on human health and agricultural productivity, with a focus on identifying adaptation and mitigation strategies.
- ◆ Exploring the processes and mechanisms that govern the interactions between air pollution and vegetation, and developing solutions for reducing the air pollution impacts on ecosystems.

PUBLICATIONS

1. **Liu, X.**, & Desai, A. R. (2021). Significant reductions in crop yields from air pollution and heat stress in the United States. *Earth's Future*, 9(8), e2021EF002000.
2. **Liu, X.**, Zhu, Y., Xue, L., Desai, A. R., & Wang, H. (2022). Cluster-enhanced ensemble learning for mapping global monthly surface ozone from 2003 to 2019. *Geophysical Research Letters*, 49(11), e2022GL097947.

RESEARCH EXPERIENCE

NJU, Nanjing, China

2021.09 - present

Master's Thesis: The Impacts of Air Pollution on Food Security Based on Statistical Inference

Mentor: Professor Haikun Wang, School of Atmospheric Sciences

Independent Research: Global Ozone Mapping

- ◆ Harmonized surface ozone measurements and multi-source data (e.g., satellite and reanalysis) to a modeling dataset
- ◆ Developed and validated the proposed cluster-enhanced ensemble learning algorithm for global ozone predictions
- ◆ Compared the results with other studies, demonstrating the highest accuracy of our data

Independent Research: Global Warming, Ozone omission, and Crop yields

- ◆ Used a fixed effect model to uncover the air pollution and meteorological impacts on global crop yields
- ◆ Estimated the marginal effects of ozone and temperature on 18 crops across the globe.
- ◆ Projected the future yield impacts from changes in ozone and warming levels.

Independent Research: China's Air Pollution & Crop Growth

- ◆ Assembled a panel dataset of myriad spaceborne remote sensing, such as SIF, and climate data
- ◆ Established a statistical crop model to analyze the relationships between crop growth and air pollution levels
- ◆ Evaluated the air quality-driven changes in crop yield and air pollution-attributed impacts on food security in China
- ◆ Explored the pathway to abate ozone and aerosol pollution, demonstrating that reducing ozone pollution benefits more than aerosols.

UW-Madison, Madison, U.S.

2020.01 - 2020.08

Research Assistant

Mentor: Professor Ankur R. Desai, Department of Atmospheric and Oceanic Sciences

Independent Research: U.S.'s Air Pollution, Heat Stress, and Crop Yields

- ◆ Performed and processed extensive data collection including USDA NASS agricultural statistics and GHCN weather data
- ◆ Conducted further analysis through an empirical model to analyze the air pollution impacts on historical crop yield
- ◆ Found that maize and soybean behave differently in response to combined air pollution and heat stress effects

NJU, Nanjing, China

2019.08 - 2020.01

Research Assistant (Summer Intern)

Mentor: Professor Yanxu Zhang, School of Atmospheric Sciences

- ◆ Modified and revised the MOZART boundary to initiate the model simulation
- ◆ Used WRF-GC, a new online atmospheric chemical transport model, to forecast air quality in China
- ◆ Generated daily results on WRF-GC model through Python and NCL scripts
- ◆ Maintained a website that provides a daily prediction of air quality in China

CUMT, Xuzhou, China

2019.05 - 2019.07

Research Assistant

Mentor: Associate Professor Ping Lou, School of Environment and Spatial informatics

- ◆ Prepared planktonic crustacean *daphnia magna* for experiment operation
- ◆ Designed and conducted experiments to explore the relationship between *daphnia magna* mortality and nano-silver concentration in water

HONORS & AWARDS

- ◆ Guorui Scholarship, School of Atmospheric Sciences, NJU, 2022
- ◆ Undergraduate Study Abroad Scholarship, CUMT, 2019
- ◆ National Undergraduate Encouragement Scholarship, CUMT, 2019
- ◆ Third Prize Scholarship, CUMT, 2018
- ◆ First Prize, New Year Mathematical Modeling Competition, CUMT, 2018
- ◆ Third Prize, Regular Mathematical Modeling Competition, CUMT, 2018
- ◆ Third Prize, BoXue Mathematical Modeling Competition, CUMT, 2018

TECHNICAL SKILLS

- ◆ **Coding languages:** R, Latex
- ◆ **Chemical transport models:** GEOS-Chem, WRF-Chem

Latest updated: July 24, 2023