

## XIANG LIU

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

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### EDUCATION

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#### Nanjing University (NJU)

*Master of Science in Atmospheric Science*

Nanjing, CN

2021.09 - 2024.06 (Expected)

#### University of Wisconsin-Madison (UW-Madison)

*Visiting Undergraduate in Atmospheric Science*

Madison, US

2020.01 - 2020.08

#### China University of Mining and Technology (CUMT)

*Bachelor of Engineering in Environmental Engineering*

Xuzhou, CN

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, and Atmospheric Aerosols

### PUBLICATION

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- Liu, X., Sun, H.Z., Wang, H. (2023). Inflated negative impacts of temperature on global agricultural yields due to ozone omission. *Nature Sustainability*, submitted.
- Liu, X., Chu, B., Tang, R., Liu, Y., Qiu, B., Gao, M., Li, X., Xiao, J., Sun, H.Z., Huang, X., Desai, A.R., Ding, A., Wang, H. (2023). Air quality improvements can strengthen China's food security. *Nature Food*, accepted.
- Sun, H.Z., Zhao, J., Liu, X., Qiu, M., Shen, H., Wang, H., He, K., Liu, H., Guo, Y., Archibald, A. (2023). Antagonism between ambient ozone increasing and urbanization-oriented population migration on Chinese cardiopulmonary mortality. *The Innovation*, 4(6), 100517.
- Zhu, Y., Liu, Y., Liu, X., & Wang, H. (2023). Carbon mitigation and health effects of fleet electrification in China's Yangtze River Delta. *Environment International*, 108203.
- 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.
- 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.

### RESEARCH EXPERIENCE

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#### NJU, Nanjing, China

2021.09 - present

*Master's Thesis (preliminary): 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, ozone, 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 mitigation

**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 datasets 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 conditions to initiate the model simulation
- Used a new online atmospheric chemical transport model (WRF-GC) to forecast air quality in China
- Generated daily forecasting results on WRF-GC model through Python and NCL scripts

**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

**SEMINAR & CONFERENCE**

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Oral presentation in Graduate Student Research Seminar at School of Atmospheric Sciences	Nanjing, CN, 2023.11
<b>Best oral presentation</b> in Academic Innovative Forum of "Interdisciplinary Modern Earth Science"	Nanjing, CN, 2023.10
Poster in Fifth Workshop on Prevention and Control of Atmospheric Ozone Pollution	Wuhan, CN, 2023.05

**HONOR & AWARD**

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• Dongliang Distinguished Scholarship for Research and Innovation	NJU, 2023
• Master's First-Class Scholarship	NJU, 2023
• Yingcai Scholarship	NJU, 2023
• Master's Second-Class Scholarship	NJU, 2022
• Guorui Scholarship, School of Atmospheric Sciences	NJU, 2022
• Master's First-Class Freshman Scholarship	NJU, 2021
• Undergraduate Study Abroad Scholarship	CUMT, 2019
• National Undergraduate Encouragement Scholarship	CUMT, 2019
• Undergraduate Third-Class Scholarship	CUMT, 2018
• The First Prize of New Year Mathematical Modeling Competition	CUMT, 2018
• The Third Prize of Regular Mathematical Modeling Competition	CUMT, 2018
• The Third Prize of Boxue Mathematical Modeling Competition	CUMT, 2018

**TECHNICAL SKILL**

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Coding skills: R, Latex, Python

Chemical transport models: GEOS-Chem, WRF-Chem

Languages: Chinese (mandarin), English

*Latest updated: 20 November 2023*