XIANG LIU
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EDUCATION

Nanjing University (NJU) **Nanjing, CN**
Master of Science in Atmospheric Science *2021.09 - 2024.06 (Expected)*

University of Wisconsin-Madison (UW-Madison) **Madison, US**
Visiting Undergraduate in Atmospheric Science *2020.01 - 2020.08*

China University of Mining and Technology (CUMT) **Xuzhou, CN**
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, and Atmospheric Aerosols

PUBLICATIONS

1. **Liu, X.**, Wang, H. (2023). Inflated negative impacts of temperature on global agricultural yields due to ozone omission. *Environmental Science & Technology*, in preparation.
2. **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). Strengthening China's food security through air quality improvements. *Nature Food*, under review.
3. 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.
4. 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.
5. **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.
6. **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

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

HONORS & AWARDS

- GuoRui Scholarship, School of Atmospheric Sciences NJU, 2022
- Master's Second-Class Scholarship 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 SKILLS

Coding skills: R, Latex, Python

Chemical transport models: GEOS-Chem, WRF-Chem

Languages: Chinese (mandarin), English

Latest updated: 20 September 2023