

## Zhongjing Jiang

Research Scientist at the Institute for Sustainability, Energy, and Environment, University of Illinois Urbana-Champaign (UIUC); Center for Advanced Bioenergy and Bioproducts Innovation (CABBI)  
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### RESEARCH INTERESTS

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**Climate dynamics:** Climate variability, Ocean-atmosphere interaction, Chemistry-climate interaction

**Modeling & Methods:** Earth system modeling, AI for climate, Uncertainty Quantification, Bayesian Inference

**Land-atmosphere processes:** Land-atmosphere interaction, Agroecosystem modeling

**Sustainability Applications:** Bioenergy, Nature-based climate solutions, Sustainability

### RESEARCH EXPERIENCE

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2024.08-present      **Research Scientist, University of Illinois Urbana-Champaign** PI: Prof. [Kaiyu Guan](#)  
2022.09-2024.08      **Postdoctoral Research Associate, Brookhaven National Laboratory**  
Supervisor & PI: [Chongai Kuang](#) co-PIs: [Shawn Serbin](#), [Nathan Urban](#)  
2018.09-2022.08      **Graduate Research Assistant, Peking University** Advisor: Prof. [Jing Li](#)  
2017.09-2020.03      **Graduate Research Assistant, Peking University** Advisor: Prof. [Tzung-May Fu](#)  
2018.08-2018.09      **Visiting Ph. D. Student, University of Edinburgh** Advisor: Prof. [Paul Palmer](#)

### EDUCATION

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2017/09-2022/06      **Ph.D. in Atmospheric Physics and Atmospheric Environment, Peking University**  
2017/07-2017/08      **Student in Summer Institute for China's Green Innovators, Tsinghua University**  
2013/09-2017/06      **B.S. in Mathematics and Applied Mathematics, Beijing Normal University**

### HONORS & AWARDS

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2023      **Second Place in 2023 BNL Research SLAM Competition**  
2022      **Outstanding Graduates of Peking University**  
2021      Merit Student of Peking University, Tung Scholarship  
2021      **Outstanding Student Presentation Awards (OSPA)** in the Fall 2020 AGU meeting  
2020      Pacemaker to Merit Student of Peking University, Doctoral President Scholarship of Peking University  
2020      **Second prize** for 2020WAIC Hackathon  
2019      Merit Student of Peking University, Founder Scholarship  
2019      **Third prize** for “Shenqi” challenge algorithm and application competition  
2018      **Second prize** “Huawei Cup” The 15th China Post-Graduate Mathematical Contest in Modeling

### PUBLICATIONS

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#### **In preparation:**

**Jiang Z.**, Guan K., Zhou L., Li Z., Grant R., Qin R., Hartman T., Jia M., Peng B., Heaton E., VanLoocke A., Bernacchi C.: Modeling the major bioenergy crop Miscanthus in an agroecosystem model (Ecosys)  
**Jiang, Z.**, Subba, T., Isenberg, N., Gasparik J., Urban, N., Serbin, S., Kuang, C., Towards Model–Observing System Co-Design: An OSSE-Based Bayesian Framework for Prioritizing Earth System Measurements

## Preprint:

- Jiang, Z.**, Isenberg, N., Subba, T., Urban, N., Serbin, S., Kuang, C., Woo, H.: A framework for parametric and predictive uncertainty quantification in the E3SM Land Model: Assessing the impact of site and observable heterogeneity. ESS Open Archive. March 08, 2025. (submitted to JAMES, In revision)
- Zhu, F., Torbunov, D., Ren, Y., **Jiang, Z.**, Zhao, T., Yogarathnam, A. and Yue, M., 2024. Mitigating Parameter Degeneracy using Joint Conditional Diffusion Model for WECC Composite Load Model in Power Systems. *arXiv preprint arXiv:2411.10431*. (submitted to Commun. Eng., In revision)

## Submitted:

- Qin Z., Guan K., Li Y., ..., **Jiang Z.**: Reducing uncertainty in cradle-to-farmgate Carbon Intensity for feedstock using Model-Data Fusion. (submitted to ES&T, under review)

## Peer-reviewed publications:

- Jiang, Z.**, Li, J., Liu, G., and Zhang, C.: Impact of the Indian Ocean Dipole Mode on Planetary Boundary Layer Ozone in China, *Geophys Res Lett*, 51, <https://doi.org/10.1029/2024GL110108>, 2024.
- Ye, X., Zhang, L., Wang, X., Lu, X., **Jiang, Z.**, Lu, N., Li, D., and Xu, J.: Spatial and temporal variations of surface background ozone in China analyzed with the grid-stretching capability of GEOS-Chem High Performance, *Science of the Total Environment*, 914, <https://doi.org/10.1016/j.scitotenv.2024.169909>, 2024.
- Ying, T., Li, J., **Jiang, Z.**, Liu, G., Zhang, Z., Zhang, L., Dong, Y., and Zhao, C.: Increased aerosol scattering contributes to the recent monsoon rainfall decrease over the Gangetic Plain, *Sci. Bull.*, <https://doi.org/10.1016/j.scib.2023.08.052>, 2023.
- Dong, Y., Li, J., Yan, X., Li, C., **Jiang, Z.**, Xiong, C., Chang, L., Zhang, L., Ying, T., and Zhang, Z.: Retrieval of aerosol single scattering albedo using joint satellite and surface visibility measurements, *Remote Sens. Environ.*, 294, <https://doi.org/10.1016/j.rse.2023.113654>, 2023.
- Zhang, C., **Jiang, Z.**, Liu, M., Dong, Y., and Li, J.: Relationship between summer time near-surface ozone concentration and planetary boundary layer height in Beijing, *Atmos. Res.*, 293, 106892, <https://doi.org/10.1016/j.atmosres.2023.106892>, 2023.
- Liu, G., Li, J., **Jiang, Z.**, and Li, X.: Impact of Sea Surface Temperature Variability at Different Ocean Basins on Dust Activities in the Gobi Desert and North China, *Geophys. Res. Lett.*, 49, <https://doi.org/10.1029/2022GL099821>, 2022.
- Zhang, L., Li, J., **Jiang, Z.**, Dong, Y., Ying, T. and Zhang, Z.: Clear-Sky Direct Aerosol Radiative Forcing Uncertainty Associated with Aerosol Optical Properties Based on CMIP6 models, *J. Clim.*, 35(10), 3007–3019, <https://doi.org/10.1175/jcli-d-21-0479.1>, 2022a.
- Zhang, L., Li, J., **Jiang, Z.**, Dong, Y., Ying, T. and Zhang, Z.: Clear-Sky Direct Aerosol Radiative Forcing Uncertainty Associated with Aerosol Vertical Distribution Based on CMIP6 models, *J. Clim.*, 35(10), 3021–3035, <https://doi.org/10.1175/jcli-d-21-0480.1>, 2022b.
- Jiang, Z.** and Li, J.: Impact of eastern and central Pacific El Niño on lower tropospheric ozone in China, *Atmos. Chem. Phys.*, 22, 7273–7285, <https://doi.org/10.5194/acp-22-7273-2022>, 2022.
- Jiang, Z.**, Li, J., Lu, X., Gong, C., Zhang, L., and Liao, H.: Impact of western Pacific subtropical high on ozone pollution over eastern China, *Atmos. Chem. Phys.*, 21, 2601–2613, <https://doi.org/10.5194/acp-21-2601-2021>, 2021.
- Jiang, Z.**, Jolleys, M. D., Fu, T.-M., Palmer, P. I., Ma, Y., Tian, H., Li, J., and Yang, X.: Spatiotemporal and probability variations of surface PM<sub>2.5</sub> over China between 2013 and 2019 and the associated changes in health risks: An integrative observation and model analysis, *Sci. Total Environ.*, 723, 137896, <https://doi.org/10.1016/j.scitotenv.2020.137896>, 2020.

- Dong, Y., Li, J., Guo, J., **Jiang, Z.**, Chu, Y., Chang, L., Yang, Y., and Liao, H.: The impact of synoptic patterns on summertime ozone pollution in the North China Plain, *Sci. Total Environ.*, 735, 139559, <https://doi.org/10.1016/j.scitotenv.2020.139559>, 2020.
- Xu, X., **Jiang, Z.**, Li, J., Chu, Y., Tan, W., and Li, C.: Impacts of meteorology and emission control on the abnormally low particulate matter concentration observed during the winter of 2017, *Atmos. Environ.*, 225, 117377, <https://doi.org/10.1016/j.atmosenv.2020.117377>, 2020.

## CONFERENCE & PRESENTATIONS

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- 2025/12 (Upcoming) American Geosciences Union 2025 (AGU), New Orleans, US**  
**Poster:** Towards Model–Observing System Co-Design: An OSSE-Based Bayesian Framework for Prioritizing Earth System Measurements
- 2025/12 (Upcoming) American Geosciences Union 2025 (AGU), New Orleans, US**  
**Oral:** Modeling the major bioenergy crop *Miscanthus* in an agroecosystem model (Ecosys)
- 2025/03 2025 ARM/ASR PI meeting, UQ and OSSE breakout session**  
**Oral (invited):** A Novel Computational Framework for Model Uncertainty Quantification (UQ) and Observing System Simulation Experiments (OSSE)
- 2024/10 Micro2Macro Workshop, University of Wyoming, Laramie, WY**  
**Oral:** A Novel Computational Framework for Optimal Experimental Design for Climate Prediction
- 2023/12 American Geosciences Union 2023 (AGU), San Francisco, US**  
**Poster:** A Novel Computational Framework for Optimal Experimental Design for Climate Prediction
- 2023/07 Gordon Research Seminar & Conference (GRC), Radiation and Climate, Maine, US**  
**Poster:** A Novel Computational Framework for Optimal Experimental Design for Climate Prediction
- 2022/07 The 19th Annual Meeting Asia Oceania Geosciences Society (AOGS), Online**  
**Oral:** Impact of Eastern and Central Pacific El Niño on Lower Tropospheric Ozone in China
- 2021/12 American Geosciences Union 2021 (AGU), Online**  
**Poster:** Impact of East and Central Pacific El Niño on Lower Tropospheric Ozone in China  
**eLightning:** Impact of Western Pacific Subtropical High on Ozone Pollution in China (Invited)  
**eLightning:** Response of surface ozone concentration in China under different anthropogenic emission scenarios in future climate (Invited)
- 2020/12 American Geosciences Union 2020 (AGU), Online**  
**Poster:** Impact of Western Pacific Subtropical High on Ozone Pollution in China (OSPA)
- 2020/11 Graduate Forum of Global Alliance of Universities on Climate, Beijing, China**  
**Poster:** Spatiotemporal and probability variations of surface PM<sub>2.5</sub> over China between 2013 and 2019 and the associated changes in health risks: An integrative observation and model analysis
- 2020/09 The 1st GEOS-Chem Europe meeting (GCE1), online**  
**Oral:** Spatiotemporal and probability variations of surface PM<sub>2.5</sub> over China between 2013 and 2019 and the associated changes in health risks: An integrative observation and model analysis
- 2019/12 Symposium on atmospheric science of universities across the Taiwan Strait (Zhu Kezhen Forum), Taipei, Taiwan, China**  
**Oral:** Impact of Western Pacific Subtropical High on Ozone Pollution in China
- 2019/06 The 16th Annual Meeting Asia Oceania Geosciences Society (AOGS), Singapore**  
**Oral:** Impact of Meteorology and Western Pacific Subtropical High on Ozone Pollution in China
- 2018/12 American Geosciences Union 2018 (AGU), Washington D.C., US**  
**Poster:** Interpreting the spatial and temporal variation of PM<sub>2.5</sub> over China during 2013 to 2018: an integrative data and regional 3-D model analysis

## TEACHING EXPERIENCE

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- Instructor Watershed Hydrology** (Course for undergraduate & graduate students), Department of Natural Resources and Environmental Sciences, University of Illinois Urbana-Champaign (2025/09-2026/01)
- Teaching assistant Introduction to Atmospheric Science** (Course for undergraduate students), Department of Atmospheric and Oceanic Sciences, Peking University (2018/09-2019/01)

**Teaching assistant** *Numerical Weather Prediction* (Course for undergraduate & graduate students), Department of Atmospheric and Oceanic Sciences, Peking University (2021/09-2022/01)  
**Software training lecturer** *MATLAB* (training for undergraduate & graduate students) School of Physics, Peking University (2021/03)

## ACTIVITIES & SERVICES

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**Primary Convener& Session Chair** of AGU25- GC004: Advances in Approaches for Earth System Model Uncertainty Quantification: Integrating Models and Observations to Enhance Predictability (Co-conveners: Greg Elsaesser, Die Wang, Duncan Watson-Parris)

**Vice President** of the Brookhaven National Laboratory Association of Students & Postdocs (2023/01-2024/08)

**Panelist** of Brookhaven OEP's Speaker Series Panel (2023/07) and Career and Graduate Discussion Panel (2024/07)

**Chair** of the "Azure Space" Graduate Student Forum of the Department of Atmospheric and Oceanic Sciences, Peking University (2018/09-2020/09)

## SKILLS

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**Programming:** Python, Julia, MATLAB, NCL, Fortran

**Modeling:** Ecosys, E3SM land model (ELM), CESM, GEOS-Chem, WRF-Chem

## Links

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**Website:** <https://zhongjingjiang.github.io>

**Google Scholar:** [https://scholar.google.com/citations?user=73N\\_824AAAAJ](https://scholar.google.com/citations?user=73N_824AAAAJ)

**ResearchGate:** <https://www.researchgate.net/profile/Zhongjing-Jiang>