

Junjie Yu

junjie.yu@postgrad.manchester.ac.uk/yjj1997@live.cn

<https://junjieyu-uom.github.io>

Manchester, UK

Education

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| 2023–26* | Ph.D. , Environmental Sciences, The University of Manchester |
| 2020-23 | M.S. , Environmental Engineering, Research Center for Eco-Environmental Sciences |
| 2016-20 | B.Eng. , Environmental Engineering, China University of Mining and Technology-Beijing |

Awards & Honors

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| 2025.06 | The University of Manchester Open Research Award 2025 |
| 2024.11 | Travel funding to attend Transforming Urban Living with AI and Digital Twins |
| 2023.09 | Significant Contributor in City Brain Open Research - Open Data Computing Workshop on Urban Climate |
| 2022.06 | National Scholarship for Graduate Students (the highest honor for postgraduates in China, 3%) |
| 2020.06 | Excellent Graduates in Beijing (5%) |
| 2019.06 | Special-Class Award in Beijing Energy and Water Conservation Low Carbon Emission Reduction Social Practice and Technology Competition |
| 2018.12 | Second Prize in Beijing Chemistry Experiment Competition |
| 2017.11 | First Prize in National University Student Mathematics Competition |

Projects

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| 2025.07 | Cloud-based Platform for Democratizing Urban Climate Modeling, funded by Amazon Web Services, Inc. (\$5000 cloud computing credit), Co-investigator |
| 2025.04 | Co-developed the research proposal of the UKRI Impact Acceleration Account Scheme Funding (£10000), funded by UKRI, Research & Innovation Research Assistant |
| 2023.10 | Unpacking the Dual Impacts of Dynamic Urban Land Change and Internal Climate Variability on Local Urban Climate, funded by UK ARCHER2, Co-investigator |

*Expected.

Engineering

Urban Climate Simulation Cloud-based Platform

- Developed full-stack application for running urban climate simulations driven by ERA5 data, using **FastAPI** (backend) and **HTML/JavaScript** (frontend UI).
- Designed and implemented cloud deployment on **AWS ECS/Fargate**, with containerized services, **Application Load Balancer (ALB)**, and secure networking configuration.
- Integrated **S3**-based data storage for model input/output (e.g., **Zarr**, NetCDF results), ensuring scalable and efficient data access.
- Configured domain, CNAME, Target Groups, and health checks, optimizing system performance and troubleshooting network bottlenecks.

Publications

 [Google Scholar](#)

† → Equal contribution

Journal Articles

- J1. **Yu, Junjie**, Schreck, J. S., Gagne, D. J., Oleson, K. W., Li, J., Liang, Y., Liao, Q., Sun, M., Topping, D. O. & Zheng, Z. Reinforcement Learning (RL) Meets Urban Climate Modeling: Investigating the Efficacy and Impacts of RL-Based HVAC Control. *ArXiv Preprint* (2025).
- J2. **Yu, Junjie**, Sun, Y., Lindley, S., Jay, C., Topping, D. O., Oleson, K. W. & Zheng, Z. Integration and execution of Community Land Model Urban (CLMU) in a containerized environment. *Environmental Modelling Software* **188**, 106391 (2025).
- J3. **Yu, Junjie**, Zheng, Z., Lindley, S., Zhao, L., Wang, C., Wu, Q., Li, L., Topping, D., Schreck, J. S., Gagne, D. J. & Oleson, K. Leveraging Automated Machine Learning (AutoML) for Urban Climate Emulation. *EarthArXiv Preprint* (2025).
- J4. Sun, H., Jiao, R., **Yu, Junjie** & Wang, D. Combined effects of particle size and humic acid corona on the aggregation kinetics of nanoplastics in aquatic environments. *Science of the Total Environment* **901** (2023).
- J5. Sun, H., Jiao, R., Yang, Q., **Yu, Junjie** & Wang, D. Aggregation and settling characteristics of particulate matter and DOM in a southern China reservoir: Influence of hydraulic conditions and dosing methods. *Process Safety and Environmental Protection* **166**, 500–511 (2022).
- J6. Wang, Z., Xu, H., **Yu, Junjie**, Zhao, C. & Wang, D. Effect of particulate matter on coagulation process and ultrafiltration membrane contamination. *Zhongguo Huanjing Kexue/China Environmental Science* **42**, 4621–4630 (2022).
- J7. **Yu, Junjie**, Jiao, R., Sun, H., Xu, H., He, Y. & Wang, D. Removal of microorganic pollutants in aquatic environment: The utilization of Fe(VI). *Journal of Environmental Management* **316** (2022).
- J8. **Yu, Junjie**, Xu, H., Sun, H., Jin, Z.-Y. & Wang, D.-S. Mechanism on the effects of floc aging and pH adjustment on reflux feed water and coagulation. *Zhongguo Huanjing Kexue/China Environmental Science* **42**, 4612–4620 (2022).

- J9. **Yu, Junjie**, Xu, H., Wang, D., Sun, H., Jiao, R., Liu, Y., Jin, Z. & Zhang, S. Variations in NOM during floc aging: Effect of typical Al-based coagulants and different particle sizes. *Water Research* **218** (2022).
- J10. **Yu, Junjie**, Xu, H., Yang, X., Sun, H., Jin, Z. & Wang, D. Floc formation and growth during coagulation removing humic acid: Effect of stirring condition. *Separation and Purification Technology* **302** (2022).
- J11. Li, M., Xu, H., Wang, D., Wang, X. & **Yu, Junjie**. Comparison of the effect of AlCl₃ and Al₁₃ on sludge conditioning in water supply plant. *Chinese Journal of Environmental Engineering* **15**, 1075–1082 (2021).

Tools & Software

Data sciences

[Google Colab](#): AutoML for observational weather data.

[obswx](#): A Python package for accessing observational meteorological data ([PyPi](#) | [GitHub](#)).

Climate modeling

[pyclmuapp](#): Integration and Execution of Community Land Model Urban (CLMU) in a Containerized Environment ([PyPi](#) | [GitHub](#)).

[CLMU-App](#): Enabling Operating System Independent Urban Climate Simulations ([GitHub](#)).

Presentations

Talks

- T1. **Junjie Yu**. *Integration and Execution of Community Land Model Urban (CLMU) in a Containerized Environment* 12th International Conference on Urban Climate. July 2025.
- T2. **Junjie Yu**. *Integration and Execution of Community Land Model Urban (CLMU) in a Containerized Environment* 30th Annual CESM Workshop. June 2025.
- T3. **Junjie Yu**. *Integration and Execution of Community Land Model Urban (CLMU) in a Containerized Environment* Centre for Atmospheric Science seminar. Jan. 2025.
- T4. **Junjie Yu**. *Pyclmuapp: A Python Package for Quick Use of Community Land Model Urban*. NERC's Digital Gathering 2024. Aug. 2024.
- T5. **Junjie Yu**. *Towards urban climate digital twins: a containerized urban climate model. (Travel funded)*. Transforming Urban Living with AI and Digital Twins. Nov. 2024.
- T6. **Junjie Yu**. *Reinforcement Learning for Earth and Environmental Sciences*. The Group Meeting of Machine Integration and Learning for Earth Systems of Computational Information Systems Laboratory (CISL) of The National Center for Atmospheric Research (NCAR). Nov. 2023.

Posters

- P1. Zhonghua Zheng **Junjie Yu**, K. O. & Zhao, L. *Projections of Global Urban Heat Waves Empowered by Machine Learning*. 4th UK National Climate Impacts Meeting. Aug. 2024.
- P2. Kuang Wang **Junjie Yu**, Z. L. & Zheng, Z. *Leverage a Cloud-based Big Data Processing Platform for Climate Extremes Research*. AGU Fall Meeting 2023 Abstract. Dec. 2023.

Teaching

The University of Manchester

- 2025.08 Lecturer, **Urban climate modeling and automated machine learning for weather data modeling** for the exchange program of undergraduate students from the School of Earth Sciences, Zhejiang University, China and the College of Earth Sciences, Jilin University, China
- 2025.01 Graduate Teaching Assistant, **EART11200 The Natural Scientists Toolkit**
- 2025.01 Graduate Teaching Assistant, **EART60702 Earth and Environmental Data Science 2023-24 2nd Semester**
- 2024.08 Lecturer, **Observational weather data processing and automated machine learning for weather data modeling** for the exchange program of undergraduate students from the School of Earth Sciences, Zhejiang University, China

Academic Advising

Postgraduates

- 2025 Mengqi Hu, The University of Manchester (Data Science, School of Social Science, Faculty of Humanities)

Undergraduates

- 2025 Xinpeng Xu, Zhejiang University (Atmospheric Sciences)
- 2023 Kuang Wang, Zhejiang University (Biosystems Engineering) -> PhD (Computer Science) at The Chinese University of Hong Kong, Shenzhen

Academic Service

Event Organizations

- 2025.05 Coordinator of [Urban Climate Resilience Workshop](#), at The University of Manchester, founded by UKRI IAA Starter Fund & UoM-CUHK Joint Research Fund.
- 2025-2026 Coordinator of [Seminar of Centre for Atmospheric Science 2025](#), at The University of Manchester.

Event Supports

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| 2025.03 | Assistance of the exchange program of undergraduate students from the School of Environmental Sciences and Engineering, Peking University, China |
| 2024.02 | Assistance of the exchange program of undergraduate students from the School of Environmental Sciences and Engineering, Peking University, China |

Training

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| 2025 | 2025 Winter WRF Tutorial (provided by Mesoscale and Microscale Meteorology Laboratory National Center for Atmospheric Research), Online |
| 2025 | AWS Workshop on Cloud Research & Teaching Tools, The University of Manchester, Manchester, UK |
| 2023 | Training of SQL and cloud computing, Yunqi Academy of Engineering, Hangzhou, China |

Last updated: September 4, 2025