**LULU CHEN** (陈璐璐)

College of Urban and Environmental Sciences, Peking University

h-index from ResearchGate: 12

**Email:** [luluchen@pku.edu.cn](mailto:luluchen@pku.edu.cn)

**Phone:** +86 18813107292

# Professional Experience

Oct 2024 - : The George Washington University

PI: Gaige Kerr

Jan 2022 – Dec 2023: College of Urban and Environmental Sciences, Peking University

Peking University Boya postdoctoral fellowship

Advisor: Shu Tao

July 2021 – Dec 2021: School of Physics, Peking University

Research assistant

Advisor: Jintai Lin

# Education

Sep 2019 – Aug 2020: Washington University in St. Louis (WUSTL)

Visiting scholar (sponsored by CSC and WUSTL)

Advisor: Randall V. Martin and Jintai Lin

Sep 2016 – Jun 2021: School of Physics, Peking University

Ph.D. of Atmospheric Physics and Atmospheric Environment

Advisor: Jintai Lin

Sep 2012 – Jun 2016: School of Atmospheric Sciences, Nanjing University

Bachelor of Atmospheric Sciences

overall GPA: 4.55/5.00; ranking: top 3%

# Research Interests

## Atmospheric chemistry and modeling

I use a chemical transport model GEOS-Chem to simulate the ambient air pollution, including ozone and PM2.5 pollutions, to study the impacts of anthropogenic emissions, chemical processes and other socioeconomic factors. Further implementations of simulation results are also included in my research, including public health impact assessment, retrieval of surface PM2.5 concentrations, the impacts to surface ecosystem etc.

## Globalizing air pollution through coupling of atmospheric transport and economic trade, as well as the embedded inequality issues

Inter-regional pollution flows due to economic trade, atmospheric transport, and their synergistic effects collectively exert significant impacts on air quality, pollution mitigation, pollution related premature deaths and climate, on global and regional scales. Moreover, the different regional emissions, together with complexities in the atmospheric processes and global supply chains, may have meant significant cross-regional inequality, since the transboundary impacts exerted by and imposed on each region may be very different. To explore this globalizing air pollution problem, I use a disciplinary approach which consists a computable general equilibrium model (CGE) and multiregional input-output (MRIO) table for economic analysis, a chemical transport model (GEOS-Chem) for pollution simulations, the human health exposure-response model (GEMM and IER) for pollution exposure analyses, an Earth system model (CESM2) for climate simulations, and the Yale Interactive Terrestrial Biosphere (YIBs) model for surface ecosystem assessments.

# Technical and Programming Skills

* **Model:** Chemical transport model (GEOS-Chem); Environmental extended Multi-Regional Input-Output model (MRIO); human health exposure-response model (IER and GEMM); the Yale Interactive Terrestrial Biosphere model (YIBS)
* **Programming:** Python,Fortran, IDL, MATLAB, C, Shell Script
* **Language:** English

# Honors and Awards

* Peking University Special Scholarship in 2020
* Peking University Individual Award - Social Work Award in 2018
* Peking University Special Scholarship in 2017
* Nanjing University Outstanding Graduates in 2016
* Nanjing University Outstanding Student in 2013, 2014 and 2015
* National Encouragement Scholarship in 2013, 2014 and 2015
* Tang Zhongying Moral Education Scholarship in 2012-2016

# Academic Activity

* Guest editor of *International Journal of Environmental Research and Public Health* Special issue "Air Pollution, Climate Change, and Their Role in Human Health", 2022.

# Meeting Organization

* Convener and Chair of AGU Fall Meeting Session “Air Pollution, Greenhouse Gases, and Emissions in Asia and Its Interactions with the World”, 2023.

# Presentations

* Chemically enhanced transboundary ozone pollution suppresses city-level emission control benefits, Oral presentation at AGU Fall Meeting, San Francisco, USA, 2023.
* Chemically enhanced transboundary ozone pollution suppresses city-level emission control benefits, Oral presentation at the 8th Youth Geoscience Forum, Wuhan, China, 2023.
* Inequality in Historical Transboundary Anthropogenic PM2.5 and Ozone Health Impacts, Oral presentation at AOGS Annual Meeting, Online, 2022.
* A historical assessment of global health impacts by regionally produced PM2.5 pollution, Poster presentation at AGU Fall Meeting, Online, 2020.
* Historical assessment of anthropogenic PM2.5 health impacts, Oral presentation at the 1th GEOS-Chem Europe User’s Meeting, Online, 2020.
* Changes in global surface ozone and health implications over the past decades, Poster presentation at the AGU Fall Meeting, San Francisco, USA, 2019.
* Changes in regions’ surface ozone and health implications over the past decades, Oral Presentation at EGU Meeting, Vienna, Austria, 2019.
* Changes in global surface ozone and health implications over the past decades, Poster presentation at the 11th International Symposium on Environmental Geochemistry, Beijing, China, 2019.
* Integrating satellite observations and modelling of air pollutants in the context of globalizing air pollution, Oral Presentation at AGU Fall Meeting, Washington D.C., USA, 2018.

# Publications

## Published papers as first author (#There authors contributed equally):

1. **Lulu Chen**, Jintai Lin, Ruijing Ni, Mingxi Du, Yingying Yan, Mengyao Liu, Jingxu Wang, Hongjian Weng, Hao Kong, Yuanhong Zhao, Chunjin Li, Randall V. Martin: Persistent linkage between regional affluence level and its ozone health impact, *Environmental Research Letters*, 17, 104014, doi:10.1088/1748-9326/ac9009, 2022.
2. **Lulu Chen**, Jintai Lin, Randall V. Martin, Mingxi Du, Hongjian Weng, Hao Kong, Ruijing Ni, Jun Meng, Yuhang Zhang, Lijuan Zhang, and Aaron van Donkelaar: Inequality in historical transboundary anthropogenic PM2.5 health impacts, *Science Bulletin*, doi:10.1016/j.scib.2021.11.007, 2021.
3. Jintai Lin#, Chunjiang Zhou#, **Lulu Chen**#, Gang Huang, J.‐F. Lamarque, Ji Nie, Jun Yang, Kaiming Hu, Peng Liu, Jingxu Wang, Yan Xia, Yang Yang, Yongyun Hu: Sulfur emissions from consumption by developed and developing countries produce comparable climate impacts, *Nature Geoscience*, doi:10.1038/s41561-022-00898-2, 2022.
4. Jintai Lin#, Mingxi Du#, **Lulu Chen#**, Kuishuang Feng, Yu Liu, Randall V. Martin, Jingxu Wang, Ruijing Ni, Yu Zhao, Hao Kong, Hongjian Weng, Mengyao Liu, Aaron van Donkelaar, Qiuyu Liu, and Klaus Hubacek: Carbon and health implications of trade restrictions, *Nature Communications*, 10, 4947, doi:10.1038/s41467-019-12890-3, 2019.
5. Mingxi Du#, **Lulu Chen**#, Jintai Lin, Yu Liu, Kuishuang Feng, Qiuyu Liu, Yawen Liu, Jingxu Wang, Ruijing Ni, Yu Zhao, Wei Si, Ying Li, Hao Kong, Hongjian Weng, Mengyao Liu, and Jamiu Adetayo Adeniran: Winners and losers of the Sino–US trade war from economic and environmental perspectives, *Environmental Research Letters*, 15, 094032, doi:10.1088/1748- 9326/aba3d5, 2020.

## Accepted or under review papers:

1. **Lulu Chen**, Jintai Lin, Junwei Xu, Hao Kong, Hongjian Weng, Yuhang Zhang, Xiao Yun and Shu Tao: Chemically enhanced transboundary ozone pollution suppresses city-level emission control benefits, under review*.*
2. Jintai Lin, **Lulu Chen**, Fangxuan Ren, Junwei Xu, Klaus Hubacek, Fabian Wagner, J.-F. Lamarque, David Streets, Dabo Guan, Qiang Zhang, Gregory Carmichael, Randall Martin and Ronald van der A: Globalizing air pollution through economic trade and atmospheric transport, under review in *Nature Reviews Earth and Environment.*
3. Jingxu Wang, Jintai Lin, Yu Liu, Ruijing Ni, **Lulu Chen**, and Mingxi Du: Direct and indirect consumption activities drive distinct urban-rural inequalities in air pollution-related mortality in China, *Science Bulletin*, in press.

## Published papers as coauthor:

### Transboundary pollution and model simulation:

1. Junwei Xu, Jintai Lin, Dan Tong, and **Lulu Chen**: The underappreciated role of transboundary pollution in future air quality and health improvements in China, *Atmospheric Chemistry and Physics*, 23, 10075-10089, doi:10.5194/acp-23-10075-2023, 2023.
2. Yingying Yan, Huang Zheng, Shaofei Kong, Jintai Lin, Liquan Yao, Fangqi Wu, Yi Cheng, Zhenzhen Niu, Shurui Zheng, Xin Zeng, Qin Yan, Jian Wu, Mingming Zheng, Mengyao Liu, Ruijing Ni, **Lulu Chen**, Nan Chen, Ke Xu, Dantong Liu, Delong Zhao, Tianliang Zhao, Shihua Qi: On the local anthropogenic source diversities and transboundary transport for urban agglomeration ozone mitigation, *Atmospheric Environment*, 245, 118005, doi:10.1016/j.atmosenv.2020.118005, 2021.
3. Delin Fang, Bin Chen, Klaus Hubacek, Ruijing Ni, **Lulu Chen**, Kuishuang Feng, and Jintai Lin: Clean air for some: Unintended spillover effects of regional air pollution policies, *Science Advances*, 5, eaav4707, doi:10.1126/sciadv.aav4707, 2019.
4. Lei Sun, Likun Xue, Yuhang Wang, Longlei Li, Jintai lin, Ruijing Ni, Yingying Yan, **Lulu Chen**, Juan Li, Qingzhu Zhang, and Wenxing Wang: Impacts of meteorology and emissions on summertime surface ozone increases over central eastern China between 2003 and 2015, *Atmospheric Chemistry and Physics*, 19, 1455-1469, doi:10.5194/acp-19-1455-2019, 2019.

### Inequalities embedded in environmental issues:

1. Chunjin Li, Jintai Lin, **Lulu Chen**, Qi Cui, Yu Liu, Erin McDuffie, Mingxi Du, Hao Kong, and Jingxu Wang: Inter-regional environmental imbalance under lasting pandemic exacerbated by residential response, *Science of The Total Environment*, 879, doi:10.1016/j.scitotenv.2023.163191, 2023.
2. Jingxu Wang, Jintai Lin, Kuishuang Feng, Peng Liu, Mingxi Du, Ruijing Ni, **Lulu Chen**, Hao Kong, Hongjian Weng, Mengyao Liu, Yu Zhao, Zhifu Mi, Jing Cao, Klaus Hubacek: Environmental taxation and regional inequality in China, *Science Bulletin*, 64, 1691-1699, doi:10.1016/j.scib.2019.09.017, 2019.
3. Jingxu Wang, Ruijing Ni, Jintai Lin, Xiaoxiao Tan, Dan Tong, Hongyan Zhao, Qiang Zhang, Zifeng Lu, David Streets, Da Pan, Yi Huang, Dabo Guan, Kuishuang Feng, Yingying Yan, Yongyun Hu, Mengyao Liu, **Lulu Chen**, and Peng Liu: Socioeconomic and atmospheric factors affecting aerosol radiative forcing: production-based versus consumption-based perspective, *Atmospheric Environment*, 200, 197-207, doi:10.1016/j.atmosenv.2018.12.012, 2019.

### Climate response to pollution:

1. Chunjiang Zhou, Peng Liu, Gang Huang, Jintai Lin, Kaiming Hu, **Lulu Chen**, Jingxu Wang, Sixuan Li, Su Wang, and Ruijing Ni: The impact of secondary inorganic aerosol emissions change on surface air temperature in the Northern Hemisphere, *Theoretical and Applied Climatology*, doi:10.1007/s00704-020-03249-6, 2020.

### Pollution and surface emissions retrieval:

1. Yuhang Zhang, Jintai Lin, Jhoon Kim, Hanlim Lee, Junsung Park, Hyunkee Hong, Michel Van Roozendael, Francois Hendrick, Ting Wang, Pucai Wang, Qin He, Kai Qin, Yongjoo Choi, Yugo Kanaya, Jin Xu, Pinhua Xie, Xin Tian, Sanbao Zhang, Shanshan Wang, Robert Spurr, **Lulu Chen**, Hao Kong, and Mengyao Liu: A Research Product for Tropospheric NO2 Columns from Geostationary Environment Monitoring Spectrometer, *Atmospheric Measurement Techniques*, doi: 10.5194/amt-2023-46, 2023.
2. Yuhang Zhang, Jintai Lin, Mengyao Liu, Hao Kong, **Lulu Chen**, Hongjian Weng, and Chunjin Li: High-resolution tropospheric NO2 Retrieval over Asia based on OMI POMINO v2.1 and quantitative comparison with other products (in Chinese), *National Remote Sensing Bulletin*, 26, 971-987, doi:10.11834/jrs.20221413, 2022.
3. Hao Kong, Jintai Lin, **Lulu Chen**, Yuhang Zhang, Yingying Yan, Mengyao Liu, Ruijing Ni, Zhu Liu, and Hongjian Weng: Considerable unaccounted local sources of NOx emissions in China revealed from satellite, *Environmental Science & Technology*, 56, 7131-7142, doi:10.1021/acs.est.1c07723, 2022.
4. Sixuan Li, **Lulu Chen**, Gang Huang, Jintai Lin, Yingying Yan, Ruijing Ni, Yanfeng Huo, Jingxu Wang, Mengyao Liu, Hongjian Weng, Yonghong Wang, Zifa Wang: Retrieval of surface PM2.5 mass concentrations over North China using visibility measurements and GEOS-Chem simulations, *Atmospheric Environment*, 222, 117121, doi:10.1016/j.atmosenv.2019.117121, 2020.
5. Hao Kong, Jintai Lin, Ruixiong Zhang, Mengyao Liu, Hongjian Weng, Ruijing Ni, **Lulu Chen**, Jingxu Wang, Yingying Yan, and Qiang Zhang: High-resolution (0.05°×0.05°) NOx emissions in the Yangtze River Delta inferred from OMI, *Atmospheric Chemistry and Physics*, 19, 12835- 12856, doi:10.5194/acp-19-12835-2019, 2019.
6. Mengyao Liu, Jintai Lin, K. Folkert Boersma, Gaia Pinardi, Yang Wang, Julien Chimot, Thomas Wagner, Pinhua Xie, Henk Eskes, Michel Van Roozendael, Francois Hendrick, Pucai Wang, Ting Wang, Yingying Yan, **Lulu Chen**, and Ruijing Ni: Improved aerosol correction for OM Itropospheric NO2 retrieval over East Asia: constraint from CALIOP aerosol vertical profile, *Atmospheric Measurement Techniques*, 12, 1-21, doi:10.5194/amt-12-1-2019, 2019.
7. Mengyao Liu, Jintai Lin, Yuchen Wang, Yang Sun, Bo Zheng, Jingyuan Shao, **Lulu Chen**, Yixuan Zheng, Jinxuan Chen, Tzung-May Fu, Yingying Yan, Qiang Zhang, and Zhaohua Wu: Spatiotemporal variability of NO2 and PM2.5 over Eastern China: observational and model analyses with a novel statistical method, *Atmospheric Chemistry and Physics*, 18, 12933-12952, doi:10.5194/acp-18-12933-2018.

### Anthropogenic emission datasets:

1. Xiao Liu, Xing Gao, Xinbin Wu, Weilin Yu, **Lulu Chen**, Ruijing Ni, Yu Zhao, Hongwei Duan, Fuming Zhao, Lilin Chen, Shengming Gao, Ke Xu, Jintai Lin, and Anthony Y. Ku: Updated hourly emissions factors for Chinese power plants showing the impact of widespread ultralow emissions technology deployment, *Environmental Science & Technology*, doi:10.1021/acs.est.8b07241, 2019.