Minghao Qiu

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updated: September, 2023

EMPLOYMENT

Postdoctoral Fellow in Planetary Health and Human health, Department of Earth System Science and Center for Innovation in Global Health, Stanford University (Advisor: Marshall Burke) Oct 2022 - present

Postdoctoral Scholar, Department of Earth System Science, Stanford University Oct 2021 - Sep 2022

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA Sep 2016 - Sep 2021

Ph.D., Institute for Data, Systems, and Society (Focus: Environmental Science and Policy)

Thesis committee: Noelle E. Selin (advisor), Valerie J. Karplus, Corwin M. Zigler, Colette L. Heald

Thesis title: Impacts of Energy and Environmental Policies on Air Quality: Bridging Observational Data, Statistical, and Atmospheric Models

Peking University, Beijing, China Sep 2012 - Aug 2016

B.S., Environmental Sciences, and B.A., Economics

RESEARCH INTERESTS

Air quality – climate interactions; Energy and climate policy evaluations; Climate change and air pollution impacts.

PUBLICATIONS

Under review, submitted, in preparation

Minghao Qiu, Jessica Li, Jeff Wen, Marissa Childs, Marshall Burke. Impacts of climate change on wildfire smoke exposure over the continental US at the census tract level. *(in preparation)* [AGU abstract]

Minghao Qiu, Makoto Kelp, Marshall Burke. How to estimate $PM_{2.5}$ attributable to wildfire smoke: comparison between estimates from chemical transport models and satellite-derived machine learning methods. *(in preparation)*

Peer Reviewed

* denotes equal contribution

12. Maja Schlter, Christa Brelsford, Paul J Ferraro, Kirill Orach, **Minghao Qiu**, Martin D Smith. Unraveling complex causal processes that affect sustainability requires more integration between empirical and modeling approaches. *accepted,* ***Proceedings of the National Academy of Sciences***

11. Haitong Sun et al. Antagonism between ambient ozone increasing and urbanisation-oriented population migration on Chinese cardiopulmonary mortality. *accepted,* ***The Innovation***

10. Marshall Burke, Marissa L. Childs, Brandon de la Cuesta, **Minghao Qiu**, Jessica Li, Carlos F. Gould, Sam Heft-Neal, Michael Wara. (2023). Wildfire influence on recent US pollution trends. ***Nature*** [Link]

    Press coverage: WSJ, NYTimes

9. Paul Picciano*, **Minghao Qiu***, Sebastian Eastham, Mei Yuan, John Reilly, Noelle E. Selin. (2023). Air Quality Related Equity Implications of U.S. Decarbonization Policy. ***Nature Communications****, 14, 5543* [Link]

8. **Minghao Qiu**, Nathan Ratledge, Ines Azevedo, Noah Diffenbaugh, Marshall Burke. (2023). Drought impacts on the electricity system, emissions, and air quality in the western US. ***Proceedings of the National Academy of Sciences****, 120(28), e2300395120.* [Link]

    Press coverage: Stanford News, the Hill, AGU Eos, The Seattle Times, New Scientist, Grist

7. **Minghao Qiu**, Cory Zigler, Noelle Selin. (2022). Impacts of wind power on air quality, premature mortality and exposure disparities in the US. ***Science Advances***, 8(48), eabn8762 [Link]

    Press coverage: MIT News, US News & World Report, HealthDay, The Verge

6. Marissa Childs, Jessica Li, Jeff Wen, Anne Driscoll, Sherrie Wang, Carlos Gould, **Minghao Qiu**, Jen Burney & Marshall Burke. (2022). Daily local-level estimates of ambient wildfire smoke $PM_{2.5}$ for the contiguous US. ***Environmental Science and Technology***, 56(19), 13607-13621 [Link]

    Press coverage: NYTimes, Guardian, SFChronicle

5. **Minghao Qiu**, Cory Zigler, Noelle Selin. (2022). Statistical and machine learning methods for evaluating trends in air quality under changing meteorological conditions. ***Atmospheric Chemistry and Physics***, 22(16), 10551-10566 [Link]

4. **Minghao Qiu**, Jens Borken-Kleefeld. (2022). Using snapshot measurements to identify high-emitting vehicles. ***Environmental Research Letters***, 17(4), 044045 [Link]

3. **Minghao Qiu***, Yangqin Weng*, Jing Cao, Noelle Selin, Valerie Karplus. (2020). Improving evaluation of energy policies with multiple goals: Comparing *ex ante* and *ex post* approaches ***Environmental Science and Technology***, 54(24), 15584-15593 [Link]

2. Haozhe Yang, Wei Tao, Ying Liu, **Minghao Qiu**, Junfeng Liu, Kejun Jiang, Kan Yi, Yao Xiao, Shu Tao. (2018). The contribution of the Beijing, Tianjin and Hebei region's iron and steel industry to local air pollution in winter. ***Environmental Pollution***, 245, 1095-1106 [Link]

1. Kai Wei, **Minghao Qiu**, Rongfei Zhang, Liantong Zhou, Ting Zhang, Maosheng Yao, and Chunxiong Luo. (2017). Single Living yEast PM Toxicity Sensor (SLEPTor) System. ***Journal of Aerosol Science***, 107, 65-732 [Link]

GRANTS AND AWARDS

Atmospheric Chemistry Colloquium for Emerging Senior Scientists (ACCESSS XVII)	2023
Planetary Health Fellowship, Stanford and London School of Hygiene & Tropical Medicine ($150,000)	2022
Outstanding Student Presentation Awards (OSPA), American Geophysical Union Fall Meeting	2021

MIT Martin Family Society of Fellows for Sustainability ($50,000) 2020
Young Scientists Summer Program at IIASA (€3,000) 2019
MISTI Global Research Summer Fund ($3,100) 2019
National Merit Scholarship, Ministry of Education, China 2014 - 2015

CONFERENCE AND SEMINAR PRESENTATIONS

13. Impacts of historical and future drought on the energy system and air quality in the western US. *AGU Fall Meeting*, oral presentation, 2022
12. Impacts of climate change on wildfire smoke exposure over the continental US at the census tract level. *AGU Fall Meeting*, poster presentation, 2022
11. Statistical and machine learning methods for evaluating trends in air quality under changing meteorological conditions. *AGU Atmospheric Science Section Early Career Seminar*, invited speaker, 2022
10. Challenges and opportunity in managing air pollution under a changing climate. *Peking University*, invited speaker, 2022
9. Impacts of energy and environmental policy on air quality: empirical data, statistical models, and atmospheric models. *Tsinghua University*, invited speaker, 2022
8. Statistical and machine learning methods for evaluating emissions reduction policies under changing meteorological conditions. *AGU Fall Meeting*, invited speaker, 2021
7. Assessing impacts of energy and environmental policies on air quality in the real world. *Brandeis University*, invited speaker, 2021
6. Impacts of energy and environmental policies on air quality in the real world. *MIT Joint Program on the Science and Policy of Global Change*, invited speaker, 2021
5. Statistical and machine learning methods for evaluating emissions reduction policies under changing meteorological conditions. *AGU Fall Meeting*, 2020
4. Evaluating quantitative techniques to assess policy impacts on air quality in changing meteorological conditions. *1st GEOS-Chem Europe Meeting*, 2020
3. Effectiveness of renewable energy policy for air pollution reductions: evidence from wind power in the US. *American Meteorological Society Annual Meeting*, Boston, 2020
2. Effectiveness of US state level climate policies: Evidence from plant level data in power sector. *Harvard/MIT ACE Center Science Advisory Committee Meeting*, Boston, 2018
1. Air Quality Co-benefits of Energy Policy: Evidence from industrial firms in China. *AGU Fall Meeting*, New Orleans, poster presentation, 2017

TEACHING AND MENTORING

Course contributor, MIT 6.419x *Data Analysis: Statistical Modeling and Computation in Applications* 2021
Lecturer, Public lecture on *Tools to reach climate targets*, Science in the News Network 2021
Lecturer, Public course on *Climate Change Policy 101*. MIT Joint Program on the Science and Policy of Global Change. 2017

Mentoring: summer research (1 undergrad, 2 master students), graduate school application assistance program (5 undergrads)

SERVICE AND PROFESSIONAL DEVELOPMENT

Session chair and organizer: American Geophysical Union Fall Meeting, 2021
Journal and conference referee: *ACS Environmental Au, Environmental Development and Sustainability, Environmental Health Perspectives, Environmental Pollution, Environmental Research Letters, Environmental Research: Health, Environmental Research Communications, Environmental Science and Technology, Geohealth, Nature Communication, PNAS, Science Advances, Science of the Total Environment, NeurIPS.*

MIT Social and Engineering Systems Doctoral Seminar, Coordinator 2019 - 2020
MIT Energy for Human Development, Co-President 2017 - 2019

PROFESSIONAL EXPERIENCE

World Resource Institute, Research Analyst, Beijing, China January 2016 - July 2016
Analyzed China's decarbonization strategy under Paris Agreement for energy supply, building, industry and transportation sectors; Drafted research report "China's CO_2 Emissions Pathways and Reduction Strategies under Paris Agreement".

TECHNICAL EXPERTISE

Atmospheric modeling: GEOS-Chem, Community Earth System Model (CESM)
Statistical causal inference, **Machine learning**
Coding and software: R, Python, Matlab, STATA, ArcGIS

REFERENCES

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Massachusetts Institute of Technology
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