

Minghao Qiu

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School of Marine and Atmospheric Science and Program in Public Health

125 Discovery Hall, Stony Brook University

updated: September, 2024

EMPLOYMENT

Assistant Professor, School of Marine and Atmospheric Science and Program in Public Health,
Stony Brook University, NY, USA Sep 2024 - present

Postdoctoral Fellow in Planetary Health and Human health, Doerr School of Sustainability and Center for
Innovation in Global Health, Stanford University (Advisor: Marshall Burke) Oct 2021 - Aug 2024

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; Wildfire and air quality; Climate and health; Energy and climate policy
evaluations; Climate change and air pollution impacts.

PUBLICATIONS

Under review, submitted, in preparation

Minghao Qiu, Christopher W. Callahan, Noah S. Dittenbach, Marshall Burke. Estimating the social cost
of carbon in climate-induced wildfire smoke damages. (*in preparation*)

Emma Krasovich Southworth, **Minghao Qiu**, Carlos F. Gould, Ayako Kawano, Jeff Wen, Sam Heft-Neal, Kara
Kilpatrick Voss, Alandra Lopez, Scott Fendorf, Jennifer Burney, Marshall Burke. Quantifying the chemical
composition and health implications of wildfire smoke PM_{2.5} in the contiguous US. (*under review*)

Arpita Biswas, **Minghao Qiu**, Danielle Braun, Francesca Dominici, Daniel Mork. Quantifying Effects of Solar
Power Adoption on CO₂ Emissions Reduction. (*under review*)

Qingyang Wu, Linshuang Yang, Xinyu Dou, **Minghao Qiu**. Carbon Capitalism in China: Does Carbon
Emission Trading Widen the Divide of Carbon Emission Inequality? (*under review*)

Peer Reviewed

* denotes equal contribution

19. Ayako Kawano , Makoto Kelp, **Minghao Qiu**, Kirat Singh, Eeshan Chaturvedi, Ines Azevedo, Marshall Burke. Improved daily PM2.5 estimates in India reveal inequalities in recent enhancement of air quality. *(revise & resubmit)* [\[preprint\]](#)
18. Renzhi Jing, Sam Heft-Neal, Zetianyu Wang, Jie Chen, **Minghao Qiu**, Isaac M. Oppen, Zachary Wagner, Eran Bendavid. Loss of Schooling from Tropical Cyclones: Evidence from 13 Low- and Middle-income Countries. *(revise & resubmit)*
17. **Minghao Qiu**, Gang He, Peter Marcotullio. Health and climate benefits of power generation from imported solar photovoltaic in the United States. *(revise & resubmit)*
16. **Minghao Qiu**, Makoto Kelp, Sam Heft-Neal, Xiaomeng Jin, Carlos F. Gould, Daniel Tong, Marshall Burke. Evaluating wildfire smoke estimation methods and their implications for health effects: comparing chemical transport models with a machine learning approach. *(revise & resubmit)* [\[preprint\]](#)
15. **Minghao Qiu**, Jessica Li, Carlos Gould, Renzhi Jing, Makoto Kelp, Marissa Childs, Jeff Wen, Yuanyu Xie, Meiyun Lin, Mathew Kiang, Sam Heft-Neal, Noah S Diffenbaugh, Marshall Burke. Wildfire smoke exposure and mortality burden in the US under future climate change. *(revise & resubmit)* [\[preprint\]](#) [\[NBER Working Paper\]](#)
14. Shan Niu*, **Minghao Qiu***, Li Li, Chenfei Qu, Da Zhang. Climate Actions, Persistent Pollutants, and Human Health: A Call for Integrated Assessments *Environmental Science and Technology VIEWPOINT (2024)* [\[Link\]](#)
13. Guochao Chen, **Minghao Qiu**, Peng Wang, Yuqiang Zhang, Drew Shindell, Hongliang Zhang. Continuous wildfires threaten public and ecosystem health under climate change across continents. *Front. Environ. Sci. Eng. (FESE)*, 18(10): 130 (2024) [\[Link\]](#)
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. *Proceedings of the National Academy of Sciences*, 120(41), e2215676120. (2023) [\[Link\]](#)
11. Haitong Sun et al. Antagonism between ambient ozone increasing and urbanisation-oriented population migration on Chinese cardiopulmonary mortality. *The Innovation* (2023) [\[Link\]](#)
10. Marshall Burke, Marissa L. Childs, Brandon de la Cuesta, **Minghao Qiu**, Jessica Li, Carlos F. Gould, Sam Heft-Neal, Michael Wara. Wildfire influence on recent US pollution trends. *Nature* (2023) [\[Link\]](#)
Press coverage: [WSJ](#), [NYTimes](#) [Stanford News](#)
9. Paul Picciano*, **Minghao Qiu***, Sebastian Eastham, Mei Yuan, John Reilly, Noelle E. Selin. Air Quality Related Equity Implications of U.S. Decarbonization Policy. *Nature Communications*, 14, 5543 (2023) [\[Link\]](#)
Press coverage: [MIT News](#)
8. **Minghao Qiu**, Nathan Ratledge, Ines Azevedo, Noah Diffenbaugh, Marshall Burke. Drought impacts on the electricity system, emissions, and air quality in the western US. *Proceedings of the National Academy of Sciences*, 120(28), e2300395120. (2023) [\[Link\]](#)
[Young Professional Best Paper Award](#), US Association for Energy Economics 2023
Press coverage: [Stanford News](#), [the Hill](#), [AGU Eos](#), [The Seattle Times](#), [New Scientist](#), [Grist](#)
7. **Minghao Qiu**, Cory Zigler, Noelle Selin. Impacts of wind power on air quality, premature mortality and exposure disparities in the US. *Science Advances*, 8(48), eabn8762 (2022) [\[Link\]](#)

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. Daily local-level estimates of ambient wildfire smoke PM_{2.5} for the contiguous US. *Environmental Science and Technology*, 56(19), 13607-13621 (2022) [\[Link\]](#)

Press coverage: [NYTimes](#), [Guardian](#), [SFChronicle](#)

5. **Minghao Qiu**, Cory Zigler, Noelle Selin. Statistical and machine learning methods for evaluating trends in air quality under changing meteorological conditions. *Atmospheric Chemistry and Physics*, 22(16), 10551-10566 (2022) [\[Link\]](#)
4. **Minghao Qiu**, Jens Borken-Kleefeld. Using snapshot measurements to identify high-emitting vehicles. *Environmental Research Letters*, 17(4), 044045 (2022) [\[Link\]](#)
3. **Minghao Qiu***, Yangqin Weng*, Jing Cao, Noelle Selin, Valerie Karplus. Improving evaluation of energy policies with multiple goals: Comparing *ex ante* and *ex post* approaches *Environmental Science and Technology*, 54(24), 15584-15593 (2020) [\[Link\]](#)
2. Haozhe Yang, Wei Tao, Ying Liu, **Minghao Qiu**, Junfeng Liu, Kejun Jiang, Kan Yi, Yao Xiao, Shu Tao. 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 (2018). [\[Link\]](#)
1. Kai Wei, **Minghao Qiu**, Rongfei Zhang, Liantong Zhou, Ting Zhang, Maosheng Yao, and Chunxiong Luo. Single Living yEast PM Toxicity Sensor (SLEPTor) System. *Journal of Aerosol Science*, 107, 65-732 (2017). [\[Link\]](#)

GRANTS AND AWARDS

Young Professional Best Paper Award, US Association for Energy Economics	2023
Winner of Poster Competition, Meteorology and Climate - Modeling for Air Quality (MAC-MAQ) Conference	2023
Atmospheric Chemistry Colloquium for Emerging Senior Scientists (ACCESS 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

20. Harvard Radcliffe Science Symposium on Alternative Energies, *Harvard University*, invited panelist, 2024 (scheduled)
19. Wildfire smoke exposure and mortality burden in the US under future climate change. *U.S. Environmental Protection Agency, NCEE*, invited speaker, 2024
18. Wildfire smoke exposure and mortality burden in the US under future climate change. *the University of New Mexico*, invited speaker, 2024
17. Wildfire smoke PM_{2.5} exposure and health burdens over the US under future climate. *AGU Fall Meeting*, oral presentation, 2023
16. How to estimate PM_{2.5} attributable to wildfire smoke: comparison between estimates from chemical transport models and satellite-derived machine learning methods. *AGU Fall Meeting*, poster presentation, 2023

15. Climate change impacts on air quality and human health: energy system and wildfire. *Brookhaven National Lab*, invited speaker, 2023
14. *US Association for Energy Economics*, award winner, 2023
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, 2024)

Journal and conference referee: *ACS Environmental Au*, *Earth's Future*, *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
MIT Energy for Human Development, Co-President

2019 - 2020
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 CO₂ 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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