Jianzhao Bi

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EDUCATION

Emory University	August 2020
Doctor of Philosophy in Environmental Health Sciences (GPA: 3.96/4.00)	*Atlanta, Georgia*
Tsinghua University	July 2016
Master of Science in Atmospheric Science (GPA: 3.70/4.00)	*Beijing, China*
Wuhan University	June 2014
Bachelor of Engineering in Remote Sensing Science and Technology (GPA: 3.80/4.00)	*Wuhan, China*

RESEARCH EXPERIENCE

DEOHS, University of Washington — August 2020 – present
Postdoctoral Scholar — *Seattle, Washington*

- Improve wildfire smoke prediction and cardiovascular health analysis with advanced statistical algorithms
- Incorporate low-cost sensor data into indoor/outdoor air pollution exposure assessment
- Hindcast historical long-term $PM_{2.5}$ exposure based on advanced statistical methods
- Analyze associations between $PM_{2.5}$ exposure and respiratory disease outcomes

Department of Environmental Health, Emory University — August 2016 – August 2020
Research Assistant — *Atlanta, Georgia*

- Evaluated impacts of snow and cloud covers on satellite-derived $PM_{2.5}$ concentration levels
- Assessed added value of low-cost sensor data to high-resolution $PM_{2.5}$ exposure prediction
- Examined the effects of short-term exposure to $PM_{2.5}$ on renal disease outcomes
- Analyzed temporal changes in acute response of cardiorespiratory diseases to $PM_{2.5}$

Center for Earth System Science, Tsinghua University — September 2014 – July 2016
Research Assistant — *Beijing, China*

- Estimated NO_x emission and lifetime in metropolitan areas and industrial centers

HONORS AND AWARDS

• **JESEE Young Investigator Meeting Award,** *2021 ISES Annual Conference*	2021
• **ISEE 33rd Annual Conference Registration Award,** *Virtual*	2021
• **ISEE 32nd Annual Conference Travel Award,** *Virtual*	2020
• **ISES-ISIAQ 2019 Joint Conference Travel Award,** *Kaunas, Lithuania*	2019
• **China National Scholarship**, *Wuhan University, China*	2013
• **Georgia Alumni Association Scholarship**, *Wuhan University, China*	2012
• **First Prize Scholarship for Academic Excellence**, *Wuhan University, China*	2011 – 2013

PUBLICATIONS

* indicates (co-)corresponding author

27. (Under Review) Kim, S-Y., Blanco, M., **Bi, J.**, Larson, T. V., & Sheppard, L. (2022). New monitoring paradigms and designs for air pollution exposure assessment and epidemiology. *Environmental Health Perspectives*.

26. (Under Review) **Bi, J.***, D'Souza, R. R., Moss, S., Senthilkumar, N., Russell, A. G., Scovronick, N. C., Chang, H. H., & Ebelt, S. (2022). Acute effects of ambient air pollution on asthma emergency department visits in 10 U.S. states. *Environmental Health Perspectives*.

25. (Under Review) Gupta, S., **Bi, J.**, Liu, Y., & Wildani, A. (2022). Boosting for regression transfer via importance sampling. *International Journal of Data Science and Analytics*.

24. (Under Review) **Bi, J.***, Zuidema, C., Clausen, D., Kirwa, K., Young, M. T., Gassett, A. J., Sampson, P. D., Larson, T. V., Szpiro, A. A., Sheppard, L., & Kaufman, J. D., (2022). Within-city variation in ambient carbon monoxide concentrations: Leveraging low-cost monitors in a spatiotemporal modeling framework. *Environmental Health Perspectives*.

23. Zhu, Q., **Bi, J.**, Liu, X., Li, S., Wang, W., Zhao, Y., & Liu, Y., (2022). Satellite-based long-term spatiotemporal patterns of surface ozone concentrations in China: 2005-2019. *Environmental Health Perspectives*, 130(2), 027004.

22. Vu, B., **Bi, J.**, Wang, W., Huff, A., Kondragunta, S., & Liu, Y. (2022). Application of geostationary satellite and high-resolution meteorology data in estimating hourly $PM_{2.5}$ levels during the Camp Fire episode in California. *Remote Sensing of Environment*, 271, 112890.

21. **Bi, J.***, Knowland, K. E., Keller, C. A., & Liu, Y. (2022). Combining machine learning and numerical simulation for high-resolution $PM_{2.5}$ concentration forecast. *Environmental Science & Technology*, 56(3), 1544–1556.

20. Gladson, L., Garcia, N., **Bi, J.**, Hyung, J-L., Liu, Y., & Cromar, K. (2022). Evaluating the utility of high-resolution spatiotemporal air pollution data in estimating local $PM_{2.5}$ exposures in 92 California cities from 2015-2018. *Atmosphere*, 13(1), 85.

19. Wang, W., Liu, X., **Bi, J.**, & Liu, Y. (2022). A machine learning model to estimate ground ozone concentrations in California using TROPOMI data and high-resolution meteorology. *Environment International*, 158, 106917.

18. **Bi, J.***, Carmona, N., Blanco, M. N., Gassett, A. J., Seto, E., Szpiro, A. A., Larson, T. V., Sampson, P. D., Kaufman, J. D., & Sheppard, L. (2022). Publicly available low-cost sensor measurements for $PM_{2.5}$ exposure modeling: Guidance for monitor deployment and data selection. *Environment International*, 158, 106897.

17. Zhang, D., Du, L., Wang, W., Zhu, Q., **Bi, J.**, Scovronick, N., Naidoo, M., Garland, R. M., & Liu, Y. (2021). A machine learning model to estimate ambient $PM_{2.5}$ concentrations in industrialized highveld region of South Africa. *Remote Sensing of Environment*, 266, 112713.

16. He, M., Do, V., Liu, S., Kinney, P. L., Fiore, A., Jin, X., DeFelice, N., **Bi, J.**, Liu, Y., Insaf, T. Z., & Kioumourtzoglou, M-A. (2021). Short-term $PM_{2.5}$ and cardiovascular admissions in NY State: Assessing sensitivity of exposure model choice. *Environmental Health*, 20(1), 93.

15. Wu, N., Geng, G., Yan, L., **Bi, J.**, Li, Y., Tong, D., Bo, Z., & Zhang, Q. (2021). Improved spatial representation of a highly resolved emission inventory in China: Evidence from TROPOMI measurements. *Environmental Research Letters*, 16(8), 084056.

14. **Bi, J.***, Barry, V., Weil, E. J., Chang, H. H., & Ebelt, S. (2021). Short-term exposure to fine particulate air pollution and emergency department visits for kidney diseases in the Atlanta metropolitan area. *Environmental Epidemiology*, 5(4), e164.

13. Wallace, L., **Bi, J.**, Ott, W. R., Sarnat, J., & Liu, Y. (2021). Calibration of low-cost PurpleAir outdoor monitors using an improved method of calculating $PM_{2.5}$. *Atmospheric Environment*, 256, 118432.

12. **Bi, J.**, Wallace, L. A., Sarnat, J. A., & Liu, Y. (2021). Characterizing outdoor infiltration and indoor contribution of $PM_{2.5}$ with citizen-based low-cost monitoring data. *Environmental Pollution*, 276, 116763.

11. Xiao, Q., Liang, F., Ning, M., Zhang, Q., **Bi, J.**, He, K., Lei, Y., & Liu, Y. (2021). The long-term trend of $PM_{2.5}$-related mortality in China: The effects of source data selection. *Chemosphere*, 263, 127894.

10. Wang, L., **Bi, J.**, Meng, X., Geng, G., Huang, K., Li, J., Tang, L., & Liu, Y. (2020). Assessment of the long-term efficacy of $PM_{2.5}$ pollution control policies across the Taiwan Strait. *Remote Sensing of Environment*, 251, 112067.

9. Stowell, J., **Bi, J.**, Al-Hamdan, M., Lee, H-J., Lee, S-M., Freedman, F., Kinney, P., & Liu, Y. (2020). Estimating $PM_{2.5}$ in Southern California using satellite data: Factors that affect model performance. *Environmental Research Letters*, 15(9), 094004.

8. **Bi, J.***, D'Souza, R. R., Rich, D. Q., Hopke, P. K., Russell, A. G., Liu, Y., Chang, H. H., & Ebelt, S. (2020). Temporal changes in short-term associations between cardiorespiratory emergency department visits and $PM_{2.5}$ in Los Angeles, 2005 to 2016. *Environmental Research*, 190, 109967.

7. **Bi, J.**, Wildani, A., Chang, H. H., & Liu, Y. (2020). Incorporating low-cost sensor measurements into high-resolution $PM_{2.5}$ modeling at a large spatial scale. *Environmental Science & Technology*, 54(4), 2152-2162.

6. **Bi, J.**, Stowell, J., Seto, E. Y. W., English, P. B., Al-Hamdan, M. Z., Kinney, P. L., Freedman, F. R., & Liu, Y. (2020). Contribution of low-cost sensor measurements to the prediction of $PM_{2.5}$ levels: A case study in Imperial County, California, USA. *Environmental Research*, 180, 108810.

5. She, Q., Choi, M., Belle, J. H., Xiao, Q., **Bi, J.**, Huang, K., Meng, X., Geng, G., Kim, J., He, K., Liu, M., & Liu, Y. (2020). Satellite-based estimation of hourly $PM_{2.5}$ levels during heavy winter pollution episodes in the Yangtze River Delta, China. *Chemosphere*, 239, 124678.

4. Huang, K., **Bi, J.**, Meng, X., Geng, G., Lyapustin, A., Lane, K. J., Gu, D., Kinney, P. L., & Liu, Y. (2019). Estimating daily $PM_{2.5}$ concentrations in New York City at the neighborhood-scale: Implications for integrating non-regulatory measurements. *Science of The Total Environment*, 697, 134094.

3. Jin, X., Fiore, A. M., Civerolo, K., **Bi, J.**, Liu, Y., van Donkelaar, A., Martin, R. V., Al-Hamdan, M., Zhang, Y., Insaf, T. Z., & Kioumourtzoglou, M-A. (2019). Comparison of multiple $PM_{2.5}$ exposure products for estimating health benefits of emission controls over New York State, USA. *Environmental Research Letters*, 14(8), 084023.

2. Vu, B. N., Sánchez, O., **Bi, J.**, Xiao, Q., Hansel, N. N., Checkley, W., Gonzales, G. F., Steenland, K., & Liu, Y. (2019). Developing an advanced $PM_{2.5}$ exposure model in Lima, Peru. *Remote Sensing*, 11(6), 641.

1. **Bi, J.**, Belle, J. H., Wang, Y., Lyapustin, A. I., Wildani, A., & Liu, Y. (2019). Impacts of snow and cloud covers on satellite-derived $PM_{2.5}$ levels. *Remote Sensing of Environment*, 221, 665-674.

GRANTS

Pending Proposal

- **NIH Pathway to Independence Award (K99/R00)**
  Principal Investigator: Jianzhao Bi
  Title of Project: Improved estimation of wildfire smoke exposures: Characterizing cardiovascular disease risk
  Funding Organization: National Institute of Environmental Health Sciences
  Estimated Amount Awarded: $20,000 per year (K phase); $249,000 per year (R phase)

INVITED TALKS

5. "Studies of air quality exposures and acute kidney diseases", *Renal Grand Rounds*, School of Medicine, Emory University, Atlanta, Georgia, April 2022

4. "Publicly available low-cost sensor measurements for $PM_{2.5}$ exposure modeling: guidance for monitor deployment and data selection", *Sensor and Technology Fair*, ISES 2021 Annual Meeting, Virtual, September 2021

3. "Short-term effects of air pollution on asthma emergency department visits and hospital admissions in multiple U.S. states: a pooled analysis", *CDC Asthma and Community Health Branch Lecture Series*, Centers for Disease Control and Prevention, Atlanta, Georgia, June 2021

2. "Characterizing infiltration and indoor contribution of $PM_{2.5}$ based on volunteer-generated monitoring data at large spatial and temporal scales", *Work in Progress Seminar Series (WIPS)*, University of Washington, Seattle, Washington, October 2020

1. "Improvement of $PM_{2.5}$ exposure assessment and its application in health research", School of Civil and Environmental Engineering, Georgia Institute of Technology, Atlanta, Georgia, November 2019

PRESENTATIONS

24. (Oral) "Acute effects of ambient air pollution on asthma emergency department visits in 10 U.S. states", *ISEE 2022 Conference*, Athens, Greece, September 2022

23. (Poster) "Within-city variation in ambient carbon monoxide concentrations: Leveraging low-cost monitors in a spatiotemporal modeling framework", *ISEE 2022 Conference*, Athens, Greece, September 2022

22. (Oral) "Within-city variation in ambient carbon monoxide concentrations: Leveraging low-cost monitors in a spatiotemporal modeling framework", *ISES 2022 Annual Meeting*, Lisbon, Portugal, September 2022

21. (Oral) "Combining machine learning and numerical simulation for high-resolution $PM_{2.5}$ concentration forecast", *ISES 2022 Annual Meeting*, Lisbon, Portugal, September 2022

20. (Poster) "Within-city variation in ambient carbon monoxide concentrations: Leveraging low-cost monitors in a spatiotemporal modeling framework", *NIEHS EHSCC Annual Meeting*, New York, New York, July 2022

19. (Poster) "Publicly available low-cost sensor measurements for $PM_{2.5}$ exposure modeling: Guidance for monitor deployment and data selection", *2022 Air Sensors International Conference*, Pasadena, California, May 2022

18. (Oral) "Openly accessible low-cost measurements for PM$_{2.5}$ exposure modeling: Guidance for monitor deployment with a similarity metric", *39th AAAR Annual Conference*, Virtual, October 2021

17. (Oral) "Openly accessible low-cost measurements for PM$_{2.5}$ exposure modeling: Guidance for monitor deployment with a similarity metric", *Meteorology and Climate Modeling for Air Quality Conference (MAC-MAQ 2021)*, Virtual, September 2021

16. (Oral) "Openly accessible low-cost measurements in PM$_{2.5}$ exposure modeling: Guidance for monitor deployment", *ISES 2021 Annual Meeting*, Virtual, September 2021

15. (Lightning Talk) "Openly accessible low-cost measurements in PM$_{2.5}$ exposure modeling: Guidance for monitor deployment", *ISEE 2021 Conference*, Virtual, August 2021

14. (Lightning Talk) "Characterizing infiltration and indoor contribution of PM$_{2.5}$ based on volunteer-generated monitoring data at large spatial and temporal scales", *AGU Fall Meeting 2020*, Virtual, December 2020

13. (Oral) "Characterizing infiltration and indoor contribution of PM$_{2.5}$ based on volunteer-generated monitoring data at large spatial and temporal scales", *38th AAAR Annual Conference*, Virtual, October 2020

12. (Poster) "Characterizing infiltration and indoor contribution of PM$_{2.5}$ based on volunteer-generated monitoring data at large spatial and temporal scales", *ISES 2020 Annual Meeting*, Virtual, September 2020

11. (Poster) "Short-Term Exposure to Fine Particulate Air Pollution and Emergency Department Visits for Renal Diseases in the Atlanta Metropolitan Area", *ISEE 2020 Conference*, Virtual, August 2020

10. (Lightning Talk) "Temporal changes in short-term associations between cardiorespiratory emergency department visits and PM$_{2.5}$ in Greater Los Angeles, 2005 to 2016", *ISEE 2020 Conference*, Virtual, August 2020

9. (Poster) "Integration of Low-Cost Sensor Measurements into High-Resolution PM$_{2.5}$ Exposure Modeling", *ISEE 2020 Conference*, Virtual, August 2020

8. (Poster) "Incorporating low-cost sensor measurements into high-resolution PM$_{2.5}$ modeling at a large spatial scale", *Exposome Symposium 2020*, New York City, New York, March 2020

7. (Poster) "Incorporating low-cost sensor measurements into high-resolution PM$_{2.5}$ modeling at a large spatial scale", *2nd Annual Clinical Climate Change Conference*, New York City, New York, January 2020

6. (Poster) "Incorporating low-cost sensor measurements into high-resolution PM$_{2.5}$ modeling at a large spatial scale", *AGU Fall Meeting 2019*, San Francisco, California, December 2019

5. (Oral) "Contribution of low-cost sensor measurements to the prediction of PM$_{2.5}$ levels", *ISES-ISIAQ 2019 Joint Annual Meeting*, Kaunas, Lithuania, August 2019

4. (Poster) "Impacts of snow and cloud covers on satellite-derived PM$_{2.5}$ concentrations", *AGU Fall Meeting 2018*, Washington, D.C., December 2018

3. (Poster) "Combining low-cost sensor measurements and satellite aerosol optical depth to enhance the full-coverage PM$_{2.5}$ prediction in Imperial County, CA", *AGU Fall Meeting 2018*, Washington, D.C., December 2018

2. (Oral) "Incorporating snow and cloud fractions in Random Forest to estimate high-resolution PM$_{2.5}$ exposures in New York State", *ISES-ISEE 2018 Joint Annual Meeting*, Ottawa, Canada, August 2018

1. (Poster) "Citywide validation and improvement of the MAIAC aerosol product in Lima, Peru", *ISES 2017 Annual Meeting*, Research Triangle Park, North Carolina, October 2017

MENTORING

Doctoral Dissertation Committee Member   2022 – present
Laura Gladson, M.S.   *New York University*

- Addressing disparities in air quality monitoring using advanced high-resolution exposure data

Doctoral Research Project Mentor   2022 – present
Yunhan Wu, B.S.P.H.   *University of Washington*

- Contribution of R-LINE traffic pollution dispersion model to high-resolution NO$_2$ prediction

Doctoral Research Project Co-Mentor   2021 – present
Victoria Knutson, B.A.   *University of Washington*

- U.S. national prediction models for spatiotemporal PM$_{2.5}$ component exposures

Teaching

- **Teaching Assistant** — 2018 – 2019
  Introduction to Environmental Remote Sensing (EH 587) — *Emory University*

- **Teaching Assistant** — 2019
  Perspectives in Environmental Health (EH 500) — *Emory University*

- **Teaching Assistant** — 2018
  Fundamentals of Exposure Science (EH 510) — *Emory University*

Service

- **Guest Editor** — 2022
  Special Issue: "Satellite-Based Air Quality Monitoring" — *Atmosphere*

- **Session Co-Chair** — 2021
  Use of (Low-Cost) Sensors in Environmental Epidemiology – Opportunities and Challenges — *ISEE Annual Conference*

- **Committee Member** — 2020
  General Scientific Meetings Committee — *ISES Annual Conference*

- **Conference Volunteer** — 2015
  Scientific Steering Committee — *Global Emissions InitiAtive (GEIA) Conference*

Peer Reviews

- **Environment International** (23)
- **Environmental Research** (10)
- **Atmosphere** (9)
- **Air Quality, Atmosphere and Health** (7)
- **Environmental Health Perspectives** (4)
- **IJERPH** (3)
- **International Journal of Epidemiology** (3)
- **Remote Sensing of Environment** (3)
- **Scientific Reports** (3)
- **Atmospheric Environment** (2)
- **Atmospheric Pollution Research** (2)
- **Building and Environment** (2)
- **Environmental Health** (2)
- **Environmental Pollution** (2)
- **JA&WMA** (2)
- **npj Climate and Atmospheric Science** (2)
- **BMJ Open** (1)
- **Environmental Science & Technology Letters** (1)
- **Journal of Environmental Management** (1)

Skills and Languages

- **Programming:** R, Matlab, IDL, SAS, Bash, C, Java, SQL, HTML/CSS, Javascript
- **Tools & Software:** QGIS, ArcGIS, Keras, ERDAS, ENVI, Plotly, HighCharts, ECharts, LaTeX
- **Languages:** Mandarin (Native), English (Proficient), Japanese (Proficient)