Jianzhao Bi

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EDUCATION

Ph.D. Candidate, Environmental Health Sciences
Emory University, Atlanta, USA 08/2016 – Present
Research Interest: Air pollution modeling, Air pollution health effects

Master of Science, Atmospheric Remote Sensing
Tsinghua University, Beijing, China 09/2014 – 07/2016
Thesis: NO_x emission retrieval and lifetime estimation in European metropolitan areas
Major GPA: 91/100

Bachelor of Engineering, Photogrammetry and Remote Sensing
Wuhan University, Wuhan, China 09/2010 – 06/2014
Major GPA: 3.81/4.00

RESEARCH EXPERIENCES

Department of Environmental Health, Emory University, Atlanta, USA

Contribution of low-cost sensor measurements to $PM_{2.5}$ prediction 06/2018 – Present
Co-reseachers, Advisors: Dr. Yang Liu, Dr. Howard Chang, Dr. Avani Wildani

- Evaluated the extent to which low-cost sensor measurements can provide new information about $PM_{2.5}$ pollution
- Proposed calibration and down-weighting strategies to mitigate the adverse influence of the large uncertainty in sensor measurements in $PM_{2.5}$ modeling

Associations between air pollution exposure and ED visits for renal diseases 02/2018 – Present
Co-reseachers, Advisors: Dr. Stefanie Sarnat, Dr. Vaughn Barry

- Estimated the relationships between air pollution exposure (criteria gases and PM components) and renal diseases in Atlanta, USA with a time-series Poisson generalized linear model

Impacts of snow and cloud covers on satellite-derived $PM_{2.5}$ concentrations 09/2016 – 06/2018
Advisor: Dr. Yang Liu

- Estimated missing values in MAIAC AOD by considering snow and cloud cover in New York State, USA and Lima, Peru
- Developed a random forest model to predict 1-km $PM_{2.5}$ with complete coverage in New York State

Center for Earth System Science, Tsinghua University, Beijing, China

NO_x emission retrieval and lifetime estimation 09/2015 – 06/2016
Advisor: Dr. Qiang Zhang

- Combined OMI NO_2 data and ECMWF wind field to estimate NO_2 lifetimes and retrieve NO_x emissions for megacities in China and Europe with an advanced Exponentially-Modified Gaussian (EMG) method

School of Remote Sensing and Information Engineering, Wuhan University, Wuhan, China

Quality-adaptive image enhancement 11/2013 – 03/2014

Research Leader: Dr. Yuchun Huang

- Designed a quality-adaptive image enhancement algorithm based on the Visible Edge method and Poisson Image Editing algorithm for the low-quality street-view photos from Mobile Mapping System (MMS) of Wuhan University
- Implemented the enhancement algorithm in the MFC platform and enhanced 300k+ low-quality street-view photos automatically

GPS positioning based on Epoch-difference 03/2012 – 04/2013

Research Leader: Dr. Jianhong Fu

- Implemented a positioning algorithm for Global Positioning System (GPS) based on the Carrier Phase Epoch-difference, which satisfied the positioning requirements for civilian use

PROFESSIONAL ACTIVITIES

MAKE Environment Science & Technology Co., Ltd., Beijing, China

A website for ground-based real-time air quality data visualization 09/2015 – 11/2015

Front-end web developer

- Developed a website with interactive charts to display *in-situ* air quality data using HTML, Javascript, and ECharts

Center for Earth System Science, Tsinghua University, Beijing, China

Air quality improving measures 08/2015 – 09/2015

Key member of the team

- Provided technical support for the emission inventory data processing and visualization of air quality improving measures in Hebei Province for the commemoration of the 70^{th} anniversary of the end of World War II

School of Remote Sensing and Information Engineering, Wuhan University, Wuhan, China

A visualization system for regional ambient air quality monitoring 02/2014 – 06/2014

Java developer

- Analyzed the OMI data, developed a platform-independent software with an interactive user interface, and visualized the spatial distribution of NO_2, SO_2, O_3 and aerosol in selected spatial range and time period in a Java platform.

ACADEMIC HONORS AND AWARDS

- **The ISES-ISIAQ 2019 Joint Conference Travel Award**, *Kaunas, Lithuania*, 2019
- **China National Scholarship**, *Wuhan University, Wuhan, China*, 2013
- **First Prize Scholarship for Academic Excellence**, *Wuhan University, Wuhan, China*, 2011 – 2013
- **Georgia State Alumni Scholarship**, *Wuhan University, Wuhan, China*, 2012

POSTERS AND PRESENTATIONS

- **Contribution of Low-Cost Sensor Measurements to the Prediction of $PM_{2.5}$ Levels**, *The ISES-ISIAQ 2019 Joint Annual Meeting*, Kaunas, Lithuania, August 2019 (Oral and Poster)
- **Incorporating Snow and Cloud Fractions in Random Forest to Estimate High-Resolution $PM_{2.5}$ Exposures in New York State**, *The ISES-ISEE 2018 Joint Annual Meeting*, Ottawa, Canada, August 2018 (Oral and Poster)

- **Citywide validation and improvement of the MAIAC aerosol product in Lima, Peru**, *The ISES 2017 Annual Meeting*, Research Triangle Park, North Carolina, USA, Octobor 2017 (Poster)

PUBLICATIONS

- (Submitted) **Bi, J.**, Wildani, A., Chang, H. H., & Liu, Y. (2019). Incorporating Low-Cost Sensor Measurements into High-Resolution $PM_{2.5}$ Modeling at a Large Spatial Scale.
- **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. doi: doi.org/10.1016/j.envres.2019.108810
- **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. doi: 10.1016/j.rse.2018.12.002
- 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. doi: 10.1016/j.chemosphere.2019.124678
- 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. doi: 10.1016/j.scitotenv.2019.134094
- 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. doi: 10.1088/1748-9326/ab2dcb
- Vu, B. N., Snchez, 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. doi: 10.3390/rs11060641

SKILLS AND LANGUAGES

Programming:	R, MATLAB, IDL, SAS, Bash, LaTeX, Git, C, Java, SQL, HTML/CSS, Javascript
Tools & Software:	QGIS, ArcGIS, ERDAS, ENVI, HighCharts, ECharts
Languages:	Mandarin (native), English (professional), Japanese (professional)