Ke Li (李柯)

John A. Paulson School of Engineering and Applied Sciences, Harvard University

107E Pierce Hall, 29 Oxford St., Cambridge, MA 02138

(857)-756-2584 • keli@seas.harvard.edu

EDUCATION

2017 Ph.D., Atmospheric Physics and Atmospheric Environment, University of Chinese Academy of Sciences (UCAS), Beijing, China

2012 B.Sc., Atmospheric Sciences, Nanjing University of Information Science Technology (NUIST), Nanjing, China

RESEARCH INTERESTS

• Sources, secondary formation, and transport of air pollutants

• Modeling and remote sensing of atmospheric pollutants

• Effect of climate variability and change on air quality

• Environmental impacts of air pollutants

RESEARCH EXPERIENCE

Postdoctoral Fellow *Harvard University, Cambridge* Feb. 2018–present

• Drivers of recent surface ozone trends in China

• Develop two-pollutant strategy to improve ozone and $PM_{2.5}$ pollution in China

Research Associate *Institute of Atmospheric Physics, CAS, Beijing* Aug.2017–Jan.2018

• Anthropogenic climate change on recent extreme haze events over eastern China

Visiting Graduate *CSIRO Oceans and Atmosphere, Melbourne* Nov. 2015–Apr. 2016 & Feb. 2017–Jun. 2017

• Role of future climate change on wintertime haze pollution in China

Graduate Research Assistant *Institute of Atmospheric Physics, CAS, Beijing* Sep. 2012–Jul. 2017

• Simulation of aerosols and their climate radiative forcing over China

PUBLICATIONS

2020

16. Xiao Lu, Lin Zhang, Xiaolin Wang, Meng Gao, Ke Li, Yuzhong Zhang, Xu Yue, and Yuanhang Zhang. Rapid increases in warm-season surface ozone and resulting health impact over China since 2013. ***Environmental Science & Technology Letters***. *In press*

15. Shah V., D.J. Jacob, **K. Li**, R.F. Silvern, S.X. Zhai, M.Y. Liu, J.T. Lin, and Q. Zhang (2020) Effect of changing NO_x lifetime on the seasonality and long-term trends of satellite-observed tropospheric NO_2 columns over China. ***Atmospheric Chemistry and Physics*** doi.org/10.5194/acp-20-1483-2020

14. Gu Y.X., **K. Li**, J.M. Xu, H. Liao, and G.Q. Zhou. (2020). Observed dependence of surface ozone on increasing temperature in Shanghai, China. ***Atmospheric Environment*** doi.org/10.1016/j.atmosenv.2019.117108

2019

13. **Li K.**, D.J. Jacob, H. Liao, J. Zhu, V. Shah, L. Shen, K.H. Bates, Q. Zhang, and S. X. Zhai. (2019). A two-pollutant strategy for improving ozone and particulate air quality in China. ***Nature Geoscience*** doi.org/10.1038/s41561-019-0464-x.

12. **Li K.**, D.J. Jacob, H. Liao, L. Shen, Q. Zhang, and K.H. Bates. (2019). Anthropogenic drivers of 2013-2017 trends in summer surface ozone in China. ***Proceedings of the National Academy of Sciences***

doi.org/10.1073/pnas.1812168116.

11. Zhai S.X., D.J. Jacob, X. Wang, L. Shen, **K. Li**, Y. Z. Zhang, K. Gui, T. L. Zhao, and H. Liao. (2019). Fine particulate matter ($PM_{2.5}$) trends in China, 2013–2018: separating contributions from anthropogenic emissions and meteorology, ***Atmospheric Chemistry and Physics*** doi.org/10.5194/acp-19-11031-2019.
10. Lu X., L. Zhang, Y.F. Chen, M. Zhou, B. Zheng, **K. Li**, Y.M. Liu, J.T. Lin, T.M. Fu, and Q. Zhang. (2019). Exploring 2016-2017 surface ozone pollution over China: source contributions and meteorological influences, ***Atmospheric Chemistry and Physics*** doi.org/10.5194/acp-19-8339-2019.
9. Shen L., D.J. Jacob, X. Liu, G. Huang, **K. Li**, H. Liao, and T. Wang. (2019). An evaluation of the ability of the Ozone Monitoring Instrument (OMI) to observe boundary layer ozone pollution across China: application to 2005–2017 ozone trends, ***Atmospheric Chemistry and Physics*** doi.org/10.5194/acp-19-6551-2019.
8. Shen L., D.J. Jacob, L. Zhu, Q. Zhang, B. Zheng, M.P. Sulprizio, **K. Li**, I. De Smedt, G. Gonzalo Abad, H. Cao, T.-M. Fu, and H. Liao. (2019). 2005-2016 trends of formaldehyde columns over China observed by satellites: increasing anthropogenic emissions of volatile organic compounds and decreasing agricultural fire emissions, ***Geophysical Research Letters*** doi.org/10.1029/2019GL082172.
7. Qiu Y.L., W.L. Lin, **K. Li**, L. Chen, Q. Yao, Y.X. Tang, and Z.Q. Ma. (2019). Vertical characteristics of peroxyacetyl nitrate (PAN) from a 250m tower in northern China during September 2018, ***Atmospheric Environment*** doi.org/10.1016/j.atmosenv.2019.05.066.
6. Qiu Y.L. Z.Q. Ma, and **K. Li.** (2019). A modeling study of the peroxyacetyl nitrate (PAN) during a wintertime haze event in Beijing, China, ***Science of the Total Environment*** doi.org/10.1016/j.scitotenv.2018.09.253.

2018

5. **Li K.**, H. Liao, W.J. Cai, and Y. Yang. (2018). Attribution of anthropogenic influence on atmospheric patterns conducive to recent most severe haze over eastern China, ***Geophysical Research Letters*** doi.org/10.1002/2017GL076570.
4. Zhang Y., H. Liao, X. Ding, D. Jo, and **K. Li**. (2018). Implications of RCP emissions on future concentration and direct radiative forcing of secondary organic aerosol over China, ***Science of the Total Environment*** doi.org/10.1016/j.scitotenv.2018.05.274.

2017 and before

3. Cai W.J., **K. Li**, H. Liao, H.J. Wang, and L.X. Wu (2017) Weather conditions conducive to Beijing severe haze more frequent under climate change, ***Nature Climate Change*** doi.org/10.1038/nclimate3249. (**Journal cover**)
2. **Li K.**, H. Liao, J. Zhu, and J. Moch. (2016). Implications of RCP emissions on future $PM_{2.5}$ air quality and direct radiative forcing over China, ***Journal of Geophysical Research-Atmospheres*** doi.org/10.1002/2016JD025623.
1. **Li K.**, H. Liao, Y.H. Mao, and D.A. Ridley. (2016). Source sector and region contributions to concentration and direct radiative forcing of black carbon in China, ***Atmospheric Environment*** doi.org/10.1016/j.atmosenv.2015.06.014.

PRESENTATIONS

Li K. et al., Ozone Suppression in China Under High $PM_{2.5}$ Conditions: A Two-Pollutant Control Strategy. 2020 AMS Annual Meeting, January 2020, Boston, USA. Oral.

Li K. et al., Suppression of summer ozone formation under high aerosol conditions. The 9th international GEOS–Chem Meeting (IGC9), May 2019, Harvard University, Boston, USA. Oral.

Li K. *et al*., Anthropogenic drivers of 2013–2017 trends in summer surface ozone in China. AGU Fall Meeting. December 2018, Washington D.C. Poster.

Li K. *et al*., Occurrence of severe air pollution events over eastern China under climate change. Air Pollution Extremes Workshop. November 2018, Columbia University, New York, USA. Poster.

Li K. *et al*., Anthropogenic and meteorological drivers of 2013-2017 variability in summer surface ozone in China, The First Regional GEOS-Chem Asia Meeting. May 2018, NUIST, Nanjing, China. Oral.

Li K. *et al*., Attributed anthropogenic influence on atmospheric patterns conductive to recent extreme haze over eastern China, Asian Conference on Meteorology 2017 (ACM 2017), October 2017, Busan, Korea. Oral.

Li K., *et al*., Weather conditions conducive to Beijing severe haze more frequent under climate change. The 8th international GEOS–Chem Meeting (IGC8), May 2017, Harvard University, Boston, USA. Poster.

Li K., *et al*., Source sector and region contributions to concentration and direct radiative forcing of black carbon in China, The 7th international GEOS–Chem Meeting (IGC7), May 2015, Harvard University, Boston, USA. Oral.

Li K., Source sector and region contributions to concentration and direct radiative forcing of black carbon in China, The 31th annual meeting of Chinese meteorological society, November 2014, Beijing, China. Oral.

PROFESSIONAL SKILLS

Numerical model: Experienced with the global chemical transport model (GEOS-Chem) and the regional chemistry-climate model (WRF-Chem).

Computer proficiency: skillful with for software packages and coding languages: UNIX, FORTRAN, MATLAB, NCL, IDL, and CDO. Familiar with data formats: Binary, NC, HDF, BPCH, and MAT.

Language: native in Chinese, good written and oral skills in English.

PROFESSIONAL SERVICE

Journal reviewer: *Atmosphere, Atmos. Chem. and Phys., Atmos. Environ., Atmos. Res., Clim. Dyn., Earth's Future, Environ. Pollut., Environ. Res. Lett., J. Geophys. Res., Geophys. Res. Lett., Int. J. Climatol., One Earth, Sustainability*

Proposal reviewer*: NOAA Atmospheric Chemistry, Carbon Cycle and Climate (AC4) Program*

Member: *American Geophysical Union, American Meteorological Society*

AWARDS AND HONOURS

Travel Grants, University of Chinese Academy of Sciences	2015
Excellent Student, University of Chinese Academy of Sciences	2015
Graduate Scholarship, IAP/CAS	2012–2017
Excellent Student, NUIST	2009–2011
National Encouragement scholarship, NUIST	2009–2011