Chaopeng Hong

Postdoctoral Researcher
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RESEARCH INTERESTS

Coupled human–environment systems and sustainable systems analysis, including the complex interactions between coupled systems (such as climate change, air quality, agriculture, and human health).

EDUCATION

2017 **Ph.D., Environmental Science and Engineering**
Tsinghua University, Beijing, P. R. China
Dissertation: Future climate-chemistry interactions in China
Advisor: Kebin He

2012 **B.E., Environmental Engineering**
Tsinghua University, Beijing, P. R. China

ACADEMIC EXPERIENCE

2018.05–present **Postdoctoral Researcher**
University of California, Irvine, USA
Collaborator: Steven Davis

2017.09–2018.05 **Research Assistant**
Tsinghua University, Beijing, P. R. China
Advisor: Qiang Zhang

2015.05–2016.04 **Visiting Scholar**
North Carolina State University, USA
Advisor: Yang Zhang

JOURNAL REVIEW

Nature Food, One Earth, Environmental Science & Technology, Atmospheric Chemistry and Physics, Environmental Research Letters, Journal of Cleaner Production, Atmospheric Environment, Environmental Science and Pollution Research

PUBLICATIONS

Published papers as the first/corresponding authors:

1. **Hong, C. P.**, Burney, J. A., Pongratz, J., Nabel, J., Mueller, N. D., Jackson, R. B. and Davis, S. J., Global and regional drivers of land-use emissions 1961-2017. ***Nature***. (**in press**)

2. **Hong, C. P.**, Zhang, Q., Zhang, Y., Davis, S. J., Zhang, X., Tong, D., Guan, D. B., Liu, Z. and He, K. B., Weakening aerosol direct radiative effects mitigate climate penalty on Chinese air quality. ***Nature Climate Change***, **10**, 845-850, 2020.
3. **Hong, C. P.**, Mueller, N. D., Burney, J. A., Zhang, Y., AghaKouchak, A., Moore, F. C., Qin, Y., Tong, D. and Davis, S. J., Impacts of ozone and climate change on yields of perennial crops in California. ***Nature Food***, 1, 166-172, 2020. (**Front cover picture paper**)
4. **Hong, C. P.**, Zhang, Q., Zhang, Y., Davis, S. J., Tong, D., Zheng, Y. X., Liu, Z., Guan, D. B., He, K. B. and Schellnhuber, H. J., Impacts of climate change on future air quality and human health in China. ***Proc. Natl. Acad. Sci. U.S.A.***, 116, 17193-17200, 2019.
5. **Hong, C. P.**, Zhang, Q., Zhang, Y., Tang, Y. H., Tong, D. and He, K. B., Multi-year downscaling application of two-way coupled WRF v3.4 and CMAQ v5.0.2 over east Asia for regional climate and air quality modeling: model evaluation and aerosol direct effects. *Geosci. Model. Dev.*, 10, 2447-2470, 2017.
6. **Hong, C. P.**, Zhang, Q., He, K. B., Guan, D. B., Li, M., Liu, F. and Zheng, B., Variations of China's emission estimates: response to uncertainties in energy statistics. *Atmos. Chem. Phys.*, 17, 1227-1239, 2017.

Published papers as a co-author:

7. Liu, J., Zheng, Y. X., Geng, G. N., **Hong, C. P.**, Li, M., Li, X., Liu, F., Tong, D., Wu, R. L., Zheng, B., He, K. B. and Zhang, Q., Decadal changes in anthropogenic source contribution of PM2.5 pollution and related health impacts in China, 1990-2015. *Atmos Chem Phys*, **20**, 7783-7799, 2020.
8. Tong, D., Cheng, J., Liu, Y., Yu, S., Yan, Liu., **Hong, C. P.**, Qin, Y., Zhao, H. Y., Zheng, Y. X., Geng, G. N., Li, M., Liu, F., Zhang, Y. X., Zheng, B., Clarke, L. and Zhang, Q., Dynamic projection of anthropogenic emissions in China: methodology and 2015–2050 emission pathways under a range of socio-economic, climate policy, and pollution control scenarios, *Atmos. Chem. Phys.*, 20, 5729–5757, 2020.
9. Qin, Y., Abatzoglou, J. T., Siebert, S., Huning, L. S., AghaKouchak, A., Mankin, J. S., **Hong, C. P.**, Tong, D., Davis, S. J., Mueller, N. D., Agricultural risks from changing snowmelt. ***Nature Climate Change***, 10, 459–465, 2020.
10. Zhang, Q., Zheng, Y. X., Tong, D., Shao, M., Wang, S. X., Zhang, Y. H., Xu, X. D., Wang, J. N., He, H., Liu, W. Q., Ding, Y. H., Lei, Y., Li, J. H., Wang, Z. F., Zhang, X. Y., Wang, Y. S., Cheng, J., Liu, Y., Shi, Q. R., Yan, L., Geng, G. N., **Hong, C. P.**, Li, M., Liu, F., Zheng, B., Cao, J. J., Ding, A. J., Gao, J., Fu, Q. Y., Huo, J. T., Liu, B. X., Liu, Z. R., Yang, F. M., He, K. B. and Hao, J. M., Drivers of improved PM2.5 air quality in China from 2013 to 2017. ***Proc. Natl. Acad. Sci. U.S.A.***, 116, 24463-24469, 2019.
11. Tong, D., Geng, G. N., Jiang, K. J., Cheng, J., Zheng, Y. X., **Hong, C. P.**, Yan, L., Zhang, Y. X., Chen, X. T., Bo, Y., Lei, Y., Zhang, Q. and He, K. B., Energy and emission pathways towards PM2.5 air quality attainment in the Beijing-Tianjin-Hebei region by 2030. *Sci. Total Environ.*, 692, 361-370, 2019.
12. Wu, R. L., Liu, F., Tong, D., Zheng, Y. X., Lei, Y., **Hong, C. P.**, Li, M., Liu, J., Zheng, B., Bo, Y., Chen, X. T., Li, X. and Zhang, Q., Air quality and health benefits of China's emission control policies on coal-fired power plants during 2005-2020. *Environ. Res. Lett.*, 14, 2019.
13. Tong, D., Zhang, Q., Zheng, Y. X., Caldeira, K., Shearer, C., **Hong, C. P.**, Qin, Y. and Davis, S. J., Committed emissions from existing energy infrastructure jeopardize 1.5 degrees C climate target. ***Nature***, 572, 373-377, 2019.

14. Zhang, Y. X., Li, M., Cheng, Y. F., Geng, G. N., **Hong, C. P.**, Li, H. Y., Li, X., Tong, D., Wu, N. N., Zhang, X., Zheng, B., Zheng, Y. X., Bo, Y., Su, H. and Zhang, Q., Modeling the aging process of black carbon during atmospheric transport using a new approach: a case study in Beijing. *Atmos. Chem. Phys.*, 19, 9663-9680, 2019.
15. Li, M., Zhang, Q., Zheng, B., Tong, D., Lei, Y., Liu, F., **Hong, C. P.**, Kang, S. C., Yan, L., Zhang, Y. X., Bo, Y., Su, H., Cheng, Y. F. and He, K. B., Persistent growth of anthropogenic non-methane volatile organic compound (NMVOC) emissions in China during 1990-2017: drivers, speciation and ozone formation potential. *Atmos. Chem. Phys.*, 19, 8897-8913, 2019.
16. Qin, Y., Mueller, N. D., Siebert, S., Jackson, R. B., AghaKouchak, A., Zimmerman, J. B., Tong, D., **Hong, C. P.** and Davis, S. J., Flexibility and intensity of global water use. ***Nature Sustainability***, 2, 515-523, 2019.
17. Tong, D., Zhang, Q., Liu, F., Geng, G. N., Zheng, Y. X., Xue, T., **Hong, C. P.**, Wu, R. L., Qin, Y., Zhao, H. Y., Yang, L. and He, K. B., Current Emissions and Future Mitigation Pathways of Coal-Fired Power Plants in China from 2010 to 2030. *Environ. Sci. Technol.*, 52, 12905-12914, 2018.
18. Zheng, B., Tong, D., Li, M., Liu, F., **Hong, C. P.**, Geng, G. N., Li, H. Y., Li, X., Peng, L. Q., Qi, J., Yan, L., Zhang, Y. X., Zhao, H. Y., Zheng, Y. X., He, K. B. and Zhang, Q., Trends in China's anthropogenic emissions since 2010 as the consequence of clean air actions. *Atmos. Chem. Phys.*, 18, 14095-14111, 2018.
19. Zhang, Y. X., Li, X., Li, M., Zheng, Y. X., Geng, G. N., **Hong, C. P.**, Li, H. Y., Tong, D., Zhang, X., Cheng, Y. F., Su, H., He, K. B. and Zhang, Q., Reduction in black carbon light absorption due to multi-pollutant emission control during APEC China 2014. *Atmos. Chem. Phys.*, 18, 10275-10287, 2018.
20. Zheng, B., Zhang, Q., Davis, S. J., Ciais, P., **Hong, C. P.**, Li, M., Liu, F., Tong, D., Li, H. Y. and He, K. B., Infrastructure Shapes Differences in the Carbon Intensities of Chinese Cities. *Environ. Sci. Technol.*, 52, 6032-6041, 2018.
21. Zhang, X., Zhang, Q., **Hong, C. P.**, Zheng, Y. X., Geng, G. N., Tong, D., Zhang, Y. X. and Zhang, X. Y., Enhancement of PM2.5 Concentrations by Aerosol-Meteorology Interactions Over China. *J. Geophys. Res. Atmos.*, 123, 1179-1194, 2018.
22. Tong, D., Zhang, Q., Davis, S. J., Liu, F., Zheng, B., Geng, G. N., Xue, T., Li, M., **Hong, C. P.**, Lu, Z. F., Streets, D. G., Guan, D. B. and He, K. B., Targeted emission reductions from global super-polluting power plant units. ***Nature Sustainability***, 1, 59-68, 2018.
23. Li, M., Liu, H., Geng, G. N., **Hong, C. P.**, Liu, F., Song, Y., Tong, D., Zheng, B., Cui, H. Y., Man, H. Y., Zhang, Q. and He, K. B., Anthropogenic emission inventories in China: a review. ***National Science Review***, 4, 834-866, 2017.
24. Song, H. Q., Wang, K., Zhang, Y., **Hong, C. P.** and Zhou, S. H., Simulation and evaluation of dust emissions with WRF-Chem (v3.7.1) and its relationship to the changing climate over East Asia from 1980 to 2015. *Atmos. Environ.*, 167, 511-522, 2017.
25. Li, M., Zhang, Q., Kurokawa, J., Woo, J. H., He, K. B., Lu, Z. F., Ohara, T., Song, Y., Streets, D. G., Carmichael, G. R., Cheng, Y. F., **Hong, C. P.**, Huo, H., Jiang, X. J., Kang, S. C., Liu, F., Su, H. and Zheng, B., MIX: a mosaic Asian anthropogenic emission inventory under the international collaboration framework of the MICS-Asia and HTAP. *Atmos. Chem. Phys.*, 17, 935-963, 2017.

26. Zheng, B., Zhang, Q., Tong, D., Chen, C. C., **Hong, C. P.**, Li, M., Geng, G. N., Lei, Y., Huo, H. and He, K. B., Resolution dependence of uncertainties in gridded emission inventories: a case study in Hebei, China. *Atmos. Chem. Phys.*, 17, 921-933, 2017.
27. Zhang, Y., **Hong, C. P.**, Yahya, K., Li, Q., Zhang, Q. and He, K. B., Comprehensive evaluation of multi-year real-time air quality forecasting using an online-coupled meteorology-chemistry model over southeastern United States. *Atmos. Environ.*, 138, 162-182, 2016.
28. Jiang, X. J., **Hong, C. P.**, Zheng, Y. X., Zheng, B., Guan, D. B., Gouldson, A., Zhang, Q. and He, K. B., To what extent can China's near-term air pollution control policy protect air quality and human health? A case study of the Pearl River Delta region. *Environ. Res. Lett.*, 10, 2015.
29. Liu, Z., Guan, D. B., Wei, W., Davis, S. J., Ciais, P., Bai, J., Peng, S. S., Zhang, Q., Hubacek, K., Marland, G., Andres, R. J., Crawford-Brown, D., Lin, J. T., Zhao, H. Y., **Hong, C. P.**, Boden, T. A., Feng, K. S., Peters, G. P., Xi, F. M., Liu, J. G., Li, Y., Zhao, Y., Zeng, N. and He, K. B., Reduced carbon emission estimates from fossil fuel combustion and cement production in China. ***Nature***, 524, 335-338, 2015.
30. Liu, F., Klimont, Z., Zhang, Q., Cofala, J., Zhao, L. J., Huo, H., Nguyen, B., Schopp, W., Sander, R., Zheng, B., **Hong, C. P.**, He, K. B., Amann, M. and Heyes, C., Integrating mitigation of air pollutants and greenhouse gases in Chinese cities: development of GAINS-City model for Beijing. *J. Clean Prod.*, 58, 25-33, 2013.

SELECTED PRESENTATIONS

1. Hong C, et al. Impacts of ozone and climate change on California perennial crops, 2019 AUG Fall Meeting, San Francisco, December 2019.
2. Hong C, et al. Modeling future air pollution and climate interactions in China, 2018 AUG Fall Meeting, Washington, D.C., December 2018.
3. Hong C, et al. Potential impacts of future climate change on regional air quality and public health over China, 2017 AUG Fall Meeting, New Orleans, December 2017.
4. Hong C, et al. Potential impacts of future climate change on regional air quality and public health over China, 14th International Conference on Atmosphere Sciences and Application to Air Quality, Strasbourg, May 2017.
5. Hong C, et al. Studying the impacts of future climate and emission changes on air quality in China using the two-way coupled WRF-CMAQ, 96th AMS Annual Meeting, New Orleans, January 2016.
6. Hong C, et al. Comprehensive evaluation of WRF/Chem-MADRID for real-time air quality forecasting for multiple years over the Southeastern united states using observations from surface networks and satellites, 2015 CMAS Conference, Chapel Hill, October 2015.
7. Hong C, et al. Impacts of apparent uncertainties in energy statistics on China’s emission estimates, 2014 AUG Fall Meeting, San Francisco, December 2014.