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## Biography

Dr. Xuan Wang received his B.Eng. (Environmental Engineering) in 2009 from Nankai University and M.Sc. (Environmental Science) in 2012 from Tsinghua University. He obtained his Ph.D. in Environmental Chemistry from Massachusetts Institute of Technology in 2017. Prior to joining CityU, he was a postdoctoral researcher at Harvard University.

## Employment

**School of Energy and Environment**  
City University of Hong Kong  
4 Nov 2019 → present

## Research outputs

### **Global Impact of Lightning-Produced Oxidants**

Mao, J., Zhao, T., Keller, C. A., Wang, X., McFarland, P. J., Jenkins, J. M. & Brune, W. H., 16 Nov 2021, In: Geophysical Research Letters. 48, 21, e2021GL095740.

### **Understanding Sources of Atmospheric Hydrogen Chloride in Coastal Spring and Continental Winter**

Angelucci, A. A., Furlani, T. C., Wang, X., Jacob, D. J., VandenBoer, T. C. & Young, C. J., 16 Sep 2021, In: ACS Earth and Space Chemistry. 5, 9, p. 2507-2516 10 p.

### **Improved Mechanistic Model of the Atmospheric Redox Chemistry of Mercury**

Shah, V., Jacob, D. J., Thackray, C. P., Wang, X., Sunderland, E. M., Dibble, T. S., Saiz-Lopez, A. & 5 others, Černušák, I., Kellö, V., Castro, P. J., Wu, R. & Wang, C., 17 Aug 2021, (Online published) In: Environmental Science & Technology. 12 p. Scopus citations: 1

### **Anthropogenic Impacts on Tropospheric Reactive Chlorine Since the Preindustrial**

Zhai, S., Wang, X., McConnell, J. R., Geng, L., Cole-Dai, J., Sigl, M., Chellman, N. & 13 others, Sherwen, T., Pound, R., Fujita, K., Hattori, S., Moch, J. M., Zhu, L., Evans, M., Legrand, M., Liu, P., Pasteris, D., Chan, Y., Murray, L. T. & Alexander, B., 28 Jul 2021, In: Geophysical Research Letters. 48, 14, e2021GL093808. Scopus citations: 1

### **Control of particulate nitrate air pollution in China**

Zhai, S., Jacob, D. J., Wang, X., Liu, Z., Wen, T., Shah, V., Li, K. & 19 others, Moch, J. M., Bates, K. H., Song, S., Shen, L., Zhang, Y., Luo, G., Yu, F., Sun, Y., Wang, L., Qi, M., Tao, J., Gui, K., Xu, H., Zhang, Q., Zhao, T., Wang, Y., Lee, H. C., Choi, H. & Liao, H., Jun 2021, In: Nature Geoscience. 14, 6, p. 389-395. Scopus citations: 10

### **Heterogeneous Nitrate Production Mechanisms in Intense Haze Events in the North China Plain**

Chan, Y., Evans, M. J., He, P., Holmes, C. D., Jaeglé, L., Kasibhatla, P., Liu, X. & 6 others, Sherwen, T., Thornton, J. A., Wang, X., Xie, Z., Zhai, S. & Alexander, B., 16 May 2021, In: Journal of Geophysical Research: Atmospheres. 126, 9, e2021JD034688. Scopus citations: 2

### **Enhanced aerosol particle growth sustained by high continental chlorine emission in India**

Gunthe, S. S., Liu, P., Panda, U., Raj, S. S., Sharma, A., Darbyshire, E., Reyes-villegas, E. & 16 others, Allan, J., Chen, Y., Wang, X., Song, S., Pöhlker, M. L., Shi, L., Wang, Y., Kommula, S. M., Liu, T., Ravikrishna, R., McFiggans, G., Mickley, L. J., Martin, S. T., Pöschl, U., Andreae, M. O. & Coe, H., 25 Jan 2021, (Online published) In: Nature Geoscience. Scopus citations: 21

### **Global tropospheric halogen (Cl, Br, I) chemistry and its impact on oxidants**

Wang, X., Jacob, D. J., Downs, W., Zhai, S., Zhu, L., Shah, V., Holmes, C. D. & 13 others, Sherwen, T., Alexander, B., Evans, M. J., Eastham, S. D., Neuman, J. A., Veres, P. R., Koenig, T. K., Volkamer, R., Huey, L. G., Bannan, T. J., Percival, C. J., Lee, B. H. & Thornton, J. A., 2021, In: Atmospheric Chemistry and Physics. 21, 18, p. 13973-13996  
Scopus citations: 1

### **Relating geostationary satellite measurements of aerosol optical depth (AOD) over East Asia to fine particulate matter (PM<sub>2.5</sub>): insights from the KORUS-AQ aircraft campaign and GEOS-Chem model simulations**

Zhai, S., Jacob, D. J., Brewer, J. F., Li, K., Moch, J. M., Kim, J., Lee, S. & 22 others, Lim, H., Lee, H. C., Kuk, S. K., Park, R. J., Jeong, J. I., Wang, X., Liu, P., Luo, G., Yu, F., Meng, J., Martin, R. V., Travis, K. R., Hair, J. W., Anderson, B. E., Dibb, J. E., Jimenez, J. L., Campuzano-Jost, P., Nault, B. A., Woo, J., Kim, Y., Zhang, Q. & Liao, H., 2021, In: Atmospheric Chemistry and Physics. 21, 22, p. 16775-16791

### **Spatial and Temporal Variability of Brown Carbon in the United States: Implications for Direct Radiative Effects**

June, N. A., Wang, X., Chen, L. A., Chow, J. C., Watson, J. G., Wang, X., Henderson, B. H. & 2 others, Zheng, Y. & Mao, J., 16 Dec 2020, In: Geophysical Research Letters. 47, 23, e2020GL090332.Scopus citations: 4

### **Effects of Anthropogenic Chlorine on PM<sub>2.5</sub> and Ozone Air Quality in China**

Wang, X., Jacob, D. J., Fu, X., Wang, T., Le Breton, M., Hallquist, M., Liu, Z. & 2 others, McDuffie, E. E. & Liao, H., 18 Aug 2020, In: Environmental Science & Technology. 54, 16, p. 9908-9916Scopus citations: 10

### **Effects of Sea Salt Aerosol Emissions for Marine Cloud Brightening on Atmospheric Chemistry: Implications for Radiative Forcing**

Horowitz, H. M., Holmes, C., Wright, A., Sherwen, T., Wang, X., Evans, M., Huang, J. & 4 others, Jaeglé, L., Chen, Q., Zhai, S. & Alexander, B., 28 Feb 2020, In: Geophysical Research Letters. 47, 4, e2019GL085838.Scopus citations: 2

### **An adaptive method for speeding up the numerical integration of chemical mechanisms in atmospheric chemistry models: application to GEOS-Chem version 12.0.0**

Shen, L., Jacob, D. J., Santillana, M., Wang, X. & Chen, W., 2020, In: Geoscientific Model Development. 13, 5, p. 2475-2486Scopus citations: 1

### **Constraining remote oxidation capacity with ATom observations**

Travis, K. R., Heald, C. L., Allen, H. M., Apel, E. C., Arnold, S. R., Blake, D. R., Brune, W. H. & 25 others, Chen, X., Commane, R., Crouse, J. D., Daube, B. C., Diskin, G. S., Elkins, J. W., Evans, M. J., Hall, S. R., Hints, E. J., Hornbrook, R. S., Kasibhatla, P. S., Kim, M. J., Luo, G., McKain, K., Millet, D. B., Moore, F. L., Peischl, J., Ryerson, T. B., Sherwen, T., Thames, A. B., Ullmann, K., Wang, X., Wennberg, P. O., Wolfe, G. M. & Yu, F., 2020, In: Atmospheric Chemistry and Physics. 20, 13, p. 7753-7781Scopus citations: 14

### **Global modeling of cloud water acidity, precipitation acidity, and acid inputs to ecosystems**

Shah, V., Jacob, D. J., Moch, J. M., Wang, X. & Zhai, S., 2020, In: Atmospheric Chemistry and Physics. 20, 20, p. 12223-12245Scopus citations: 7

### **Lifecycle of light-absorbing carbonaceous aerosols in the atmosphere**

Liu, D., He, C., Schwarz, J. P. & Wang, X., 2020, In: npj Climate and Atmospheric Science. 3, 40.Scopus citations: 17

### **Effect of sea salt aerosol on tropospheric bromine chemistry**

Zhu, L., Jacob, D. J., Eastham, S. D., Sulprizio, M. P., Wang, X., Sherwen, T., Evans, M. J. & 8 others, Chen, Q., Alexander, B., Koenig, T. K., Volkamer, R., Huey, L. G., Le Breton, M., Bannan, T. J. & Percival, C. J., 2019, In: Atmospheric Chemistry and Physics. 19, 9, p. 6497-6507Scopus citations: 17

### **Fine particulate matter (PM<sub>2.5</sub>) trends in China, 2013-2018: separating contributions from anthropogenic emissions and meteorology**

Zhai, S., Jacob, D. J., Wang, X., Shen, L., Li, K., Zhang, Y., Gui, K. & 2 others, Zhao, T. & Liao, H., 2019, In: Atmospheric Chemistry and Physics. 19, 16, p. 11031-11041 11 p.Scopus citations: 185

**The role of chlorine in global tropospheric chemistry**

Wang, X., Jacob, D. J., Eastham, S. D., Sulprizio, M. P., Zhu, L., Chen, Q., Alexander, B. & 8 others, Sherwen, T., Evans, M. J., Lee, B. H., Haskins, J. D., Lopez-Hilfiker, F. D., Thornton, J. A., Huey, G. L. & Liao, H., 2019, In: Atmospheric Chemistry and Physics. 19, 6, p. 3981-4003 Scopus citations: 76

**Exploring the observational constraints on the simulation of brown carbon**

Wang, X., Heald, C. L., Liu, J., Weber, R. J., Campuzano-Jost, P., Jimenez, J. L., Schwarz, J. P. & 1 others, Perring, A. E., 2018, In: Atmospheric Chemistry and Physics. 18, 2, p. 635-653 19 p. Scopus citations: 67

**Deriving brown carbon from multiwavelength absorption measurements: method and application to AERONET and Aethalometer observations**

Wang, X., Heald, C. L., Sedlacek, A. J., de Sá, S. S., Martin, S. T., Alexander, M. L., Watson, T. B. & 3 others, Aiken, A. C., Springston, S. R. & Artaxo, P., 2016, In: Atmospheric Chemistry and Physics. 16, 19, p. 12733-12752 20 p. Scopus citations: 63

**Exploiting simultaneous observational constraints on mass and absorption to estimate the global direct radiative forcing of black carbon and brown carbon**

Wang, X., Heald, C. L., Ridley, D. A., Schwarz, J. P., Spackman, J. R., Perring, A. E., Coe, H. & 2 others, Liu, D. & Clarke, A. D., 2014, In: Atmospheric Chemistry and Physics. 14, 20, p. 10989-11010 22 p. Scopus citations: 138

**Top-down estimate of China's black carbon emissions using surface observations: Sensitivity to observation representativeness and transport model error**

Wang, X., Wang, Y., Hao, J., Kondo, Y., Irwin, M., Munger, J. W. & Zhao, Y., 16 Jun 2013, In: Journal of Geophysical Research Atmospheres. 118, 11, p. 5781-5795 15 p. Scopus citations: 14

**Black carbon and its correlation with trace gases at a rural site in Beijing: Top-down constraints from ambient measurements on bottom-up emissions**

Wang, Y., Wang, X., Kondo, Y., Kajino, M., Munger, J. W. & Hao, J., 27 Dec 2011, In: Journal of Geophysical Research Atmospheres. 116, D24, 15 p., 24304. Scopus citations: 35