Tao WANG (Curriculum Vitae)

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Education

1992	Ph.D. (Atmospheric Chemistry), Georgia Institute of Technology
1985–1986	Graduate course study (Environmental Chemistry), Peking University, China, 1985
1985	B.Sc. (Chemistry), Nankai University, Tianjin, China

Employment

2013-	Chair Professor of Atmospheric Environment, Department of Civil and Environmental Engineering, the Hong Kong Polytechnic University
1995–2013	Professor (2005–2013), Associate Professor (2001–2005), Assistant Professor (1995–2001), Department of Civil and Structural Engineering, the Hong Kong Polytechnic University
1992–1995	Research Fellow, Department of Atmospheric, Oceanic and Space Sciences, University of Michigan, Ann Arbor

Research Interest

Atmospheric chemical and dynamical processes related to tropospheric composition and air quality; troposphere ozone trend, ozone-precursor relationships, sources and chemical processes of reactive nitrogen and halogens and their impacts on the atmospheric oxidative capacity; cloud chemistry; soil emissions; air pollution by ground-level ozone, haze and acid rain; meso-scale dynamic processes in relation to air pollution, instrument and model development; integration of field, laboratory and modeling techniques; background air monitoring

Selected Professional Services

Editorial

- Editor, Atmospheric Chemistry Physics (2022-)
- Associate editor, Journal of Geophysical Research-Atmospheres (2008-2017)
- Guest editor, Atmospheric Chemistry Physics, Atmospheric Environment, and Science of the Total Environment
- Editorial board member, Atmospheric Environment, Journal of Atmospheric Chemistry, Atmosphere

Selected Committees/Panels

- Member, Engineering Panel (Joint Research Scheme) of the Research Grant Council of Hong Kong (2023-2025)
- Member, Scientific Steering Committee of International Global Atmospheric Chemistry Project (IGAC, https://igacproject.org/) (2013-2017)
- Vice Chair of Atmospheric Environment Section of China Environmental Association (2015-)
- Vice Chair of Commission on Ozone Pollution Control of China Environmental Association (2019-)
- Vice Chair of Commission on Atmospheric Composition of China Meteorological Association (2014-)
- Member, Atmospheric Science Assessment Panel of the National Natural Science Foundation of China (2018)
- Member, Engineering Panel (General Research Scheme) of the Research Grant Council of Hong

Kong (2006-2011)
- Member, Air Science and Health Task Force for the Review of the Air Quality Objectives 2030 (Environment Bureau of Hong Kong Government, 2022-)
- Member, Sub-group on Air Science & Health of the Working Group for the Review of Air Quality Objectives 2020, (2016-2019)
- Scientific advisor to the Hong Kong Observatory (2008-)
- Board member, China-Australia Air Science and Management Consortium (2014-)
- Founding Fellow, Hong Kong Institute of Qualified Environmental Professionals (2015-)
- Member of Academic/Advisory Committee of multiple key research laboratory in China

Selected Presentations
- Session invited speaker, Asian Aerosol Conference (2022)
- Session invited speaker, 102th American Meteorological Society Annual Meeting (2022)
- Session invited speaker, Atmospheric Chemical Mechanisms Conference (2020, UC-Davis)
- Invited speaker, Forth Asian Monsson and Atmospheric Composition (ACAM) Workshop, 26-28 June 2019 (160 attendees), Bangi, Malaysia
- Session invited speaker at China Atmospheric Environment Annual Conferences
- Keynote speaker, The 5th and 6th International Symposium on Regional Air Quality Management in Rapidly Developing Economic Regions (Guangzhou, 2017 and Hong Kong, 2020)
- Session speaker at American Geophysical Union Fall Meeting (2015 and 2016), San Francisco
- Session invited speaker, Asia Oceania Geosciences Society Annual Meeting (2017)
- Session invited speaker, European Geosciences Union Annual Meeting, 2016, Vienna, Austria
- European Research Course on Atmosphere (ERCA), Grenoble, France, (2014-2018)
- Sino-Europe School on Atmospheric Chemistry, Shanghai, 2013, 2015, 2017, 2019

Awards and Honors
- Natural Science Award (2nd class) for research "Atmospheric chemistry of reactive nitrogen oxides and its impacts on regional atmospheric environment", Ministry of Education of China, 2022
- Science and Technology Award (2nd class) for research " Development of explicit atmospheric chemical box model and its applications in secondary air pollution control", Ministry of Ecology and Environment of China, 2022
- PolyU President's Awards for Excellent Performance/Achievement in Research and Scholarly Activities (2019)
- Faculty Award for Outstanding Performance/Achievement (2017)
- Dean's Award for Outstanding Achievement in Research Funding (2015, 2016, 2018)
- Dean's Award for Highly cited papers (2017, 2018, 2019)
- Science and Technology Award (2nd class) for research "The formation mechanism of particulate pollution and haze in the Bohai Sea Ring Regions", Ministry of Environmental Protection of China, 2010
- Natural Science Award (2nd class) for research "Tropospheric ozone pollution and processes in China", Ministry of Education of China, 2009
- PolyU President's Awards for Outstanding Performance /Achievement in Research and Scholarly Activities, 2002

Courses Taught
- Environment and Climate Change (CE633)
- Environmental Chemistry (CSE371)
- Introduction to Environmental Sciences (CSE370)
- Global Climate Change and Society Response (CSE548)
- Land Use & Sustainable Environment (CE114)

- Construction for Better Living (CE1000)
- Environmental Planning and Sustainable Development
- Air & Noise Pollution Studies (CSE331)

Selected Recent Projects

- Hydrochloric acid in the polluted coastal atmosphere of South China: abundances, sources, and impacts, HK$ 983,500, General Research Fund, Research Grants Council of Hong Kong, 2023-2025
- Field and laboratory investigations of reactive bromine gases and their impact on winter air quality, HK$759,431, General Research Fund, Research Grants Council of Hong Kong, 2022-2024
- Photochemical air pollution in highly urbanized subtropical regions: from micro environments to urban-terrestrial-oceanic interactions, $33,330,000, Theme-based Research Scheme, Research Grants Council of Hong Kong, Project Coordinator (co-PIs: Prof. Guy Brasseur, Prof. Hai Guo, Dr Kin-fai Ho, Prof. Alexis Lau, Prof. Shuncheng Lee, Dr Chun-ho Liu, Dr Peter Louie, Prof. Xinming Wang, and Dr Zhe Wang), 2018-2023
- Impact of air-sea exchanges on air quality in coastal megacities, $2,503,500, ANR-RGC Joint Research Scheme, Research Grants Council of Hong Kong, 2017-2020. (Co-I, Dr. Z. Wang)
- Heterogeneous processes of reactive nitrogen oxides and impact on atmospheric oxidative capacity and regional air pollution in North China, Grand Research Scheme, National Natural Science Foundation of China, RMB3,100,000, 2016-2019
- Tropospheric ozone trend in 1994-2017 in Hong Kong, southern China: quantifying the driving force of emission and climate, Research Grants Council of Hong Kong, HK$695,788, 2015-2017
- Heterogeneous chemistry of atmospheric reactive nitrogen oxides: an integrative programme for cutting-edge science, HK$4,925,180, Collaborative Research Fund, Research Grants Council of Hong Kong, 2015-2017, Project Coordinator, (C-Is: Prof. S.C. Lee, Dr Hai Guo, Prof. Alexis Lau, Dr. Peter Louie, Dr. K.F. Ho, and Dr. Z Wang)

Selected Recent Publications (*corresponding author)

Peng, X., Wang, T.*, Wang, W., Ravishankara, A. R., George, C., Xia, M., Cai, M., Li, Q., Salvador, C. M., Lau, C., Lyu, X., Poon, C. N., Mellouki, A., Mu, Y., Hallquist, M., Saiz-Lopez, A., Guo, H., Herrmann, H., Yu, C., Dai, J., Wang, Y., Wang, X., Yu, A., Leung, K., Lee, S., and Chen, J.: Photodissociation of particulate nitrate as a source of daytime tropospheric Cl_2, Nat Commun, 13, 939, https://doi.org/10.1038/s41467-022-28383-9, 2022.

Peng, X., Wang, W., Xia, M., Chen, H., Ravishankara, A. R., Li, Q., Saiz-Lopez, A., Liu, P., Zhang, F., Zhang, C., Xue, L., Wang, X., George, C., Wang, J., Mu, Y., Chen, J., and Wang, T.*: An unexpected large continental source of reactive bromine and chlorine with significant impact on wintertime air quality, National Science Review, 8, nwaa304, https://doi.org/10.1093/nsr/nwaa304, 2021.

Wang, Y., Fu, X., Wu, D., Wang, M., Lu, K., Mu, Y., Liu, Z., Zhang, Y., and Wang, T.*: Agricultural Fertilization Aggravates Air Pollution by Stimulating Soil Nitrous Acid Emissions at High Soil Moisture, Environ. Sci. Technol., 55, 14556–14566, https://doi.org/10.1021/acs.est.1c04134, 2021.

Liu, Y. and Wang, T.*: Worsening urban ozone pollution in China from 2013 to 2017 – Part 1: The complex and varying roles of meteorology, Atmos. Chem. Phys., 20, 6305–6321, https://doi.org/10.5194/acp-20-6305-2020, 2020.

Liu, Y. and Wang, T.*: Worsening urban ozone pollution in China from 2013 to 2017 – Part 2: The effects of emission changes and implications for multi-pollutant control, Atmos. Chem. Phys., 20, 6323–6337, https://doi.org/10.5194/acp-20-6323-2020, 2020.

Fu, X., Wang, T.*, Gao, J., Wang, P., Liu, Y., Wang, S., Zhao, B., and Xue, L.: Persistent heavy winter nitrate pollution driven by increased photochemical oxidants in northern China, Environ. Sci. Technol., 54, 3881–3889, https://doi.org/10.1021/acs.est.9b07248, 2020.

Wang, T.*, Dai, J., Lam, K. S., Nan Poon, C., and Brasseur, G. P.: Twenty-five years of lower tropospheric ozone observations in Tropical East Asia: The influence of emissions and weather patterns, Geophysical Research Letters, 46, 11463–11470, https://doi.org/10.1029/2019GL084459, 2019.

Wang, T.*, Xue, L., Brimblecombe, P., Lam, Y. F., Li, L., and Zhang, L.: Ozone pollution in China: A review of concentrations, meteorological influences, chemical precursors, and effects, Science of The Total Environment, 575, 1582–1596, https://doi.org/10.1016/j.scitotenv.2016.10.081, 2017.

Tham, Y. J., Wang, Z., Li, Q., Yun, H., Wang, W., Wang, X., Xue, L., Lu, K., Ma, N., Bohn, B., Li, X., Kecorius, S., Größ, J., Shao, M., Wiedensohler, A., Zhang, Y., and Wang, T.*: Significant concentrations of nitryl chloride sustained in the morning: investigations of the causes and impacts on ozone production in a polluted region of northern China, Atmospheric Chemistry and Physics, 16, 14959–14977, https://doi.org/10.5194/acp-16-14959-2016, 2016.

Wang, T.*, Tham, Y. J., Xue, L., Li, Q., Zha, Q., Wang, Z., Poon, S. C. N., Dubé, W. P., Blake, D. R., Louie, P. K. K., Luk, C. W. Y., Tsui, W., and Brown, S. S.: Observations of nitryl chloride and modeling its source and effect on ozone in the planetary boundary layer of southern China, Journal of Geophysical Research: Atmospheres, 121, 2476–2489, https://doi.org/10.1002/2015JD024556, 2016.