

XIAOTIAN XU

School of Atmospheric Science, Nanjing University

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PROFESSIONAL EXPERIENCE

Nanjing University, China

Dec.2019 – present

Research Assistant, School of Atmospheric Science

Supervisor: Prof. Yanxu ZHANG

EDUCATION

The Hong Kong University of Science and Technology

Sep. 2018 – Nov.2019

M.Sc., Environmental Science and Managements

Supervisor: Prof. Jianzhen YU

Shanxi University

Sep. 2014 – Jun. 2018

B.Eng., Environmental Engineering

PUBLICATIONS

- **Xu, X. T.**, Feng, X., Lin, H. P., Fu, T. M., Zhang, Y. X.*, Modeling the high mercury wet deposition in Southeastern US by WRF-GC, in preparation to submit to *Atmospheric Chemistry and Physics*.
- Zhao, Y. B., Zhang, K. *, **Xu, X. T.**, Shen, H. Z.*, Zhang, Y. X., Shen, G. F., Substantial changes in Nitrogen Dioxide and Ozone after excluding meteorological impacts during the COVID-19 Outbreak in mainland China, *Environmental Science & Technology Letters*, 2020. DOI: 10.1021/acs.estlett.0c00304.
- Geng, H.*, Jin, C. S., Zhang, D. P., Wang, S. R., **Xu, X. T.**, Wang, X. R., Zhang, Y., Wu, L., Ro, C. U., Characterization of Size-resolved Urban Haze Particles Collected in Summer and Winter at Taiyuan city, China Using Quantitative Electron Probe X-Ray Microanalysis, *Atmospheric Research*, 2017. DOI: 10.1016/j.atmosres.2017.02.005.
- Zhang, Y., Geng, H. *, Zhang, D. P., **Xu, X. T.**, Wang, S. R., Wang, X. R., Wang, D. W., Ro, C. U., Influences of Biomass and Coal Burning on Ambient Fine Particulate Matter over Taiyuan City, *Journal of Anhui Agriculture Science*, 2016, 4(5):109-112, 18. (In Chinese)

* indicates professor author

RESEARCH EXPERIENCES

High-resolution modeling of Atmospheric Mercury in the Southeast US

Dec. 2019 - present

Independent Research Assistant Program

Supervisor: Prof. Yanxu ZHANG

- Improved of the coupled WRF-GEOS-Chem by building a comprehensive library of codes of mercury species (Hg^0 , Hg^{II} , Hg^{P} , HgBr and HgCl) and its simulation processes (heterogeneous reaction, partition and transport) in Standard mechanism, which enables WRF-GEOS-Chem run mercury concentration and deposition simulation at a customized higher resolution and period that GEOS-Chem cannot realize.
- Conducted extensive model benchmarking by comparison of WRF-GEOS-Chem to standard coarse spatial resolution GEOS-Chem output: firstly, to prove WRF-GEOS-Chem simulation results were reasonable; secondly, analyzed mercury wet deposition, concentration, precipitation and its relationship for each site.
- Confirmed that deep convection caused enhanced mercury wet deposition in the southeastern US.
- Fully responsible for conducting this project, including write this paper and prepare for publishing it to *Atmospheric Chemistry and Physics*.
- Manuscript planned for submission to *Atmospheric Chemistry and Physics* by January 2021.

Research of Changes of Air Quality during COVID-19 Outbreak Period

Jan. 2020 – Mar. 2020

Independent Research Assistant Program

Supervisor: Prof. Yanxu ZHANG

- Fast response research conducted in collaboration with researchers from Peking University.

- Combined high-resolution atmospheric chemistry models with surface observations to assess the impact of meteorology on air pollution during the dramatic reduction in anthropogenic activity due to the pandemic.
- Used correlation analysis to determine relationship between changes in air pollutant concentrations and meteorology before and after the First-Level Public Health Emergency Response in China.
- Identified the only increase of O₃ was caused by precursor emission but not meteorological condition.
- Published an academic article in *Environmental Science & Technology Letters* within 2 months from data collection, analysis, model simulation to publication.

Dynamics of Atmospheric Water-Soluble Inorganic Ions at Hong Kong Supersite *Sep. 2018 - May. 2019*

Independent MSc Research Project

Supervisor: Prof. Jianzhen YU

- Analyzed concentrations of water-soluble inorganics in PM_{2.5} and PM₁₀ and precursor gases from a continuous monitor at the Hok Tsui supersite station.
- Discovered significant difference of chemical composition between PM_{2.5} and PM_{coarse} samples.
- Characterized temporal variation of the water-soluble inorganics and precursor gases.
- Provided the Great Bay Area for Environmental Protection Department with background concentrations of water-soluble inorganic ions that they require for future air quality monitoring.

Pollution Characteristics of Particles in a North China Megacity

Sep. 2016 - May. 2017

Environmental Public Welfare Program (group work)

Supervisor: Prof. Hong GENG

- Employed single particle analysis to characterize size-resolved ambient particles in terms of size, mixing state, morphology, and chemical composition in different environmental conditions.
- Results published in *Atmospheric Research*.

Seasonality and Variability of Atmospheric Particles in Taiyuan, China

Sep. 2015 - May. 2016

National Undergraduate Training Program (group work)

Supervisor: Prof. Hong GENG

- Conducted bulk analysis of collected samples to determine concentrations of water-soluble inorganic ions, heavy metals, and organic and elemental carbon.
- Determined via single particle analysis the morphology and elemental composition of size-resolved particles.
- One of two projects selected to represent Shanxi University at the 10th “National Undergraduate Training Program Innovation and Entrepreneurship” Symposium.

PRIZES AND AWARDS

- Independent Research Project Funding, School of Atmospheric Science, Nanjing University *Jun. 2019*
- First Prize, Publication of *Research on Chemical Composition Characteristics of Particulate Matters with Different Size in Haze of Winter and Summer of Taiyuan by Applying Quantitative Electron Probe Microanalysis* in 15th Shanxi Challenge Cup Extracurricular Academic Science and Technology Competition, Shanxi *Jun. 2017*
- Poster Award, 2016 China-Canada Analytical Chemistry Conference, Chongqing *May. 2016*
- Excellence Prize, National Undergraduate Innovation & Entrepreneurship Training Program *May. 2016*

SKILLS

Operating Systems: Linux, Unix, Windows, Mac OS

Programming and Scripting Languages: FORTRAN, NCL, Python, MATLAB, shell, CDO, NCO,

Computer Software: GEOS-Chem, WRF-Chem, WRF-GC, MITgcm, Hysplit, OriginLab, SSPS

Laboratory Instruments: SEM, TEM, ICP-AES, GC-MS, HPLC

BEng Cumulative GPA: 82.4, Major: 85.5; MSc Cumulative GPA: 3.53