

# Xin Zhang

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## EDUCATION

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### Royal Netherlands Meteorological Institute (KNMI)

2021 - 2022

*Joint Ph.D. in Satellite Observations*

Advisor: Ronald van der A

- Field of study: Emission estimates from satellite data

### Nanjing University of Information Science & Technology (NUIST)

2017 - present

*M.S. & Ph.D. in Atmospheric Physics & Environment*

Advisor: Yan Yin

- Dissertation: "The Impacts of Convective Transport and Lightning on the Vertical Distribution of Trace Gases"

### Nanjing University of Information Science & Technology (NUIST)

2013 - 2017

*B.S. in Environmental Science*

Advisor: Yan Yin

- Dissertation: "The Impacts of Deep Convection on the Vertical Distribution of Ozone"

## RESEARCH EXPERIENCE

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### KNMI

2021 - 2022

*Intern*

Advisor: Ronald van der A

- Identification of lightning  $\text{NO}_2$  using satellite observations (TROPOMI, VIIRS) and ground lightning datasets.
- Estimating the lightning  $\text{NO}_2$  lifetime and production efficiency in the Arctic.
- Evaluating  $\text{NO}_x$  emissions from different sectors in the Arctic.

### NUIST

2017 - present

*Graduate Researcher*

Advisor: Yan Yin

- Developing the OMI lightning  $\text{NO}_x$  retrieval algorithm based on a high-resolution chemical model (WRF-Chem).
- Diagnosing the upper-tropospheric  $\text{O}_3$  and  $\text{NO}_x$  budget affected by convection in southeastern China through the combination of a field campaign (ground-based radar, lightning networks, and ozonesondes), satellite data, and models.
- Analyzing the relationship among lightning activity, cloud top height, and vertical velocity using geostationary satellite observations (GOES-16 ABI & GLM).

### NUIST

2016 - 2017

*Undergraduate Researcher*

Advisors: Yan Yin

- Evaluating the effects of deep convection on  $\text{O}_3$  profiles using satellite observations (MLS, FY-2) and reanalysis data.

- Investigating the ecotoxicological effects of nano-titanium nitride (TiN) with dissolved organic matter.

## HONORS & AWARDS

2021	<b>Open Science Award</b> , EO Dashboard Hackathon	ESA, JAXA, NASA
2021	<b>National Scholarship for Studying Abroad</b> , China Scholarship Council	CSC, China
2020	<b>Certificate</b> , the International AI Training Program for Chinese Universities	NCEPU, China
2018	<b>Scholarship of the Postgraduate Research &amp; Practice Innovation Program</b> , Grant no. KYCX20_0922	Jiangsu, China
2017	<b>New-student First Prize Award</b> , University	NUIST, China
2014–2021	<b>Merit-based Scholarship</b> , University	NUIST, China

## PUBLICATIONS

- 2022 **Zhang, X.**, van der A, R., Ding, J., Eskes, H., van Geffen, J., Yin, Y., Anema, J., Vagasky, C., Lapierre, J.L.. (2022). *Spaceborne observations of lightning NO<sub>2</sub> in the Arctic*. in preparation for *Environmental Science & Technology*.
- 2022 **Zhang, X.**, Yin, Y., van der A, R., Eskes, H., van Geffen, J., Li, Y., Kuang, X., Lapierre, J.L., Chen, K., Zhen, Z., Hu, J. (2022). *Influence of convection on the upper-tropospheric O<sub>3</sub> and NO<sub>x</sub> budget in southeastern China*. *Atmospheric Chemistry and Physics*. 22(9), 5925-5942, doi: 10.5194/acp-22-5925-2022.
- 2021 **Zhang, X.**, Yin, Y., Kukulies, J., Li, Y., Kuang, X., He, C., Lapierre, J.L., Jiang, D., Chen, J. (2022). *Revisiting Lightning Activity and Parameterization Using Geostationary Satellite Observations*. *Remote Sensing*, 13(19), 3866, doi: 10.3390/rs13193866.
- 2021 Zhen, Z., Yin, Y., Chen, K., Zhen, X., **Zhang, X.**, Jiang, H., Wang, H., Kuang, X., Cui, Y., Dai, M., He, C. (2021). *Concentration and atmospheric transport of PM<sub>2.5</sub>-bound polycyclic aromatic hydrocarbons at Mount Tai, China*. *Science of The Total Environment*, 786, 147513, doi: 10.1016/j.scitotenv.2021.147513.
- 2020 **Zhang, X.**, Yin, Y., van der A, R., Lapierre, J.L., Chen, Q., Kuang, X., Yan, S., Chen, J., He, C., Shi, R. (2020). *Estimates of lightning NO<sub>x</sub> production based on high-resolution OMI NO<sub>2</sub> retrievals over the continental US*. *Atmospheric Measurement Techniques*, 13(4), 1709-1734, doi: 10.5194/amt-13-1709-2020.
- 2019 Zhen, Z., Yin, Y., Chen, K., **Zhang, X.**, Kuang, X., Jiang, H., Wang, H., Cui, Y., He, C., Ezekiel, A.O. (2019). *Phthalate esters in atmospheric PM<sub>2.5</sub> at Mount Tai, north China plain: Concentrations and sources in the background and urban area*. *Atmospheric Environment*, 213, 505-514., doi: 10.1016/j.atmosenv.2019.06.039.
- 2016 **Zhang, X.**, Wang, Z., Wang, S., Fang, H., Zhang, F., Wang, D.G. (2017). *Impacts of dissolved organic matter on aqueous behavior of nano/micron-titanium nitride and their induced enzymatic/non-enzymatic antioxidant activities in *Scenedesmus obliquus**. *Journal of Environmental Science and Health, Part A*, 52(1), 23-29, doi: 10.1080/10934529.2016.1221219.

## PRESENTATIONS

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- 2022 (poster) Lightning NO<sub>2</sub> in the Arctic, *2022 Dragon 5 Mid-term Results Symposium*, online, October 2022.
- 2022 (invited oral) Processing EO satellite data with Pytroll, *Lunch Talk*, KNMI, De Bilt, the Netherlands, July 2022.
- 2022 (oral) Arctic lightning and anthropogenic NO<sub>x</sub> emissions estimated from TROPOMI observations, *EGU General Assembly 2022*, Vienna, Austria, May 2022.
- 2021 (invited oral) Python for meteorology, *Atmospheric Physics & Environment Workshop*, NUIST, Nanjing, China, October 2021.
- 2021 (oral) Influence of convection on the upper-tropospheric O<sub>3</sub> and NO<sub>x</sub> budget in southeastern China, *Aerosols, Clouds, Precipitation and Climate (ACPC) Workshop*, online, May 2021.
- 2021 (invited oral) Git tutorial, *Atmospheric Physics & Environment Workshop*, NUIST, Nanjing, China, May 2021.
- 2020 (oral) Estimates of lightning NO<sub>x</sub> production based on high-resolution OMI NO<sub>2</sub> retrievals over the continental United States, *100th American Meteorological Society Annual Meeting*, Boston, MA., USA, January 2020.
- 2019 (poster) Estimates of lightning NO<sub>x</sub> production based on high-resolution OMI NO<sub>2</sub> retrievals over the continental United States, *EGU General Assembly 2019*, Vienna, Austria, April 2019.

## Extracurricular Activity

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### Pytroll (Python framework for processing earth observation satellite data)

Remote

Maintainer

2018 – present

- Contributed to satellite (FY-4A, TROPOMI, ENTLN, etc) data readers.
- Applied Pytroll to a hacking competition (EO Dashboard) and won the open science award.
- Helped scientists and meteorologists use and improve the framework for non-profit.

### HPC (School of Atmospheric Physics, NUIST)

NUIST

Administrator

2017 – 2021

- Installed and fixed libraries/models for teachers and students.
- Set up a website for teaching and collecting user applications automatically (<https://hpc-nuist-ap.github.io/>).
- Organized workshops for non-profit.

## SKILLS

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<b>Journal Reviewer</b>	Environmental Research Letters
<b>Programming</b>	Python, Fortran, MATLAB, C, $\text{\LaTeX}$
<b>Models</b>	WRF-Chem, CMAQ, HYSPLIT
<b>Writing</b>	Personal blog for academic notes and poetry
<b>Front-end</b>	Hugo, HTML5
<b>Languages</b>	Chinese, English