Zhou Zang

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Education

Beijing Normal University **Sep. 2019 – June 2022 (expected)**

Master of Science in Global Environment Change (Supervisor: Dr. Xing Yan) *Beijing, China*

- Research interest: Atmospheric remote sensing, Deep learning, Spatiotemporal analysis
- Dissertation: Improving global land fine-mode aerosol optical depth by combing physical and deep learning models

Lanzhou University **Sep. 2015 – June 2019**

Bachelor of Science in Atmospheric Science *Lanzhou, China*

- Dissertation: The impact of $PM_{2.5}$ concentrations on infectious diseases in China (in Chinese), (selected as Excellent Thesis)
- Supervisor: Prof. Siyu Chen
- GPA:4.57/5

Research Experience

Near surface pollutant retrievals by deep learning models **August 2019 – August 2021**

Supervisor: Dr. Xing Yan and Prof. Zhanqing Li *Beijing Normal University*

- $PM_{2.5}$ near-real time monitoring over China and spatiotemporal interpretation by a new interpretable deep learning model EntityDenseNet.
- Improving $PM_{2.5}$ prediction and spatiotemporal interpretation at national and urban scale of China using the newly proposed Spatial-Temporal Interpretable Deep Learning Model (SIDLM).
- Proposing an improved ensemble model (semi-SILDM) to realize accurate surface O_3 prediction and interpretation at national and urban scale of China.
- **My contribution**: Investigation, Validation, Formal analysis, Visualization, Writing - original draft.

Improving global fine-mode aerosol retrievals over land **September 2019 – May 2021**

Supervisor: Dr. Xing Yan, Prof. Zhanqing Li and Prof. Chuanfeng Zhao *Beijing Normal University*

- Improving the global long-term land Fine-Mode Fraction (FMF) and fine-mode Aerosol Optical Depth (fAOD) data using the physical method and MODIS retrievals.
- Investigating the spatiotemporal changes behind the global fine-mode aerosols and its associates using statistical methods and deep learning approach.
- **My contribution**: Investigation, Validation, Formal analysis, Visualization, Writing - original draft.

Improving $PM_{2.5}$ retrievals in machine learning models **December 2020 – June 2021**

Supervisor: Dr. Xing Yan *Beijing Normal University*

- Demonstrating the importance of including FMF to improve $PM_{2.5}$ estimations and more accurate FMF product enables superior $PM_{2.5}$ retrievals in deep and classical machine learning models.
- **My contribution**: Conceptualization, Investigation, Validation, Formal analysis, Visualization, Writing - original draft.

Field Works **June 2019 – June 2021**

Supervisor: Dr. Xing Yan and Prof. Zhanqing Li *Beijing Normal University*

- **My contribution**: In-situ aerosol components observation in metropolitan cities of China (Beijing, Shanghai and Guangzhou) using 3-D Lidar

Publications

- **Zang, Z.**, Guo, Y., Jiang, Y., Chen, Z., Li, D., Shi, W. and Yan, X. (2021). Tree-Based Ensemble Deep Learning Model for Spatiotemporal Surface Ozone (O_3) Prediction and Interpretation. Int. J. Appl. Earth. Obs. 103, 102516
- **Zang, Z.**, Li, D., Guo, Y., Shi, W. and Yan, X. (2021). Superior $PM_{2.5}$ estimation by intergrating aerosol fine mode data from the himawari-8 satellite in deep and classical machine learning models. Remote. Sen. 13(14), 2779.
- Yan, X., **Zang, Z.**, Zhao, C., Husi, L., 2021. Understanding global changes in fine-mode aerosols during 2008-2017 using statistical methods and deep learning approach. Environ. Int. 149, 106392.
- Yan, X., **Zang, Z.**, Liang, C., Luo, N., Ren, R., Cribb, M., Li, Z., 2021. New global aerosol fine-mode fraction data over land derived from MODIS satellite retrievals. Environ. Pollut. 276, 116707.
- Yan, X., **Zang, Z.**, Jiang, Y., Shi, W., Guo, Y., Li, D., Zhao, C., Husi, L., 2021. A Spatial-Temporal Interpretable Deep Learning Model for improving interpretability and predictive accuracy of satellite-based $PM_{2.5}$. Environ. Pollut. 273, 116459.

- Liang, C., **Zang, Z.**, Li, Z., Yan, X., 2020. An improved global land anthropogenic aerosol product based on satellite retrievals from 2008 to 2016. IEEE Geosci. Remote Sens. Lett. 1–5.
- Yan, X., **Zang, Z.**, Luo, N., Jiang, Y., Li, Z., 2020. New interpretable deep learning model to monitor real-time $PM_{2.5}$ concentrations from satellite data. Environ. Int. 144.
- Yan, X., Liang, C., Jiang, Y., Luo, N., **Zang, Z.**, Li, Z., 2020. A Deep Learning Approach to Improve the Retrieval of Temperature and Humidity Profiles From a Ground-Based Microwave Radiometer. IEEE Trans. Geosci. Remote Sens. 58, 8427–8437.

Conference

- Poster presentation: Superior $PM_{2.5}$ estimation by integrating aerosol fine mode data from the Himawari-8 satellite in deep and classical machine learning models (in Chinese). Quantitive Remote Sensing Forum, 2021, Wuhan, China.

Skills

Programming: *proficient with* MATLAB, R, NCAR Command Language (NCL); *familiar with* Python, FORTRAN
Software: ArcGIS, MS Office/PowerPoint/Excel, Visio, Endnote
Language: Chinese (native language), English (IELTS 7.5)

Honors and Awards

- The First Prize Scholarship Beijing Normal University, 2020
- The First Prize Scholarship (once) and The Third Prize Scholarship (twice) Lanzhou University, 2016-2018