

CURRICULUM VITAE

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Post-Doctoral Researcher

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Work Experience

2020 – present

Post-Doctoral Researcher, Assistant Researcher

School of Optics and Photonics, Beijing Institute of Technology

Cooperation Advisor: Prof. Siying Chen, Prof. Yinchao Zhang

Education Background

2015 – 2020

Ph.D. in Atmospheric Physics and Atmospheric Environment

Minor: Atmospheric Radiation and Remote Sensing

Department of Atmospheric and Oceanic Sciences, Peking University

Research Advisor: Prof. Chengcai Li

Dissertation title: *Research on the retrieval methods of aerosol optical and microphysical properties based on multimavelength polarization Raman-Mie lidar*

2011 – 2015

B.S. in Atmospheric Sciences

Department of Atmospheric and Oceanic Sciences, Peking University

Research Interests

Lidar remote sensing of atmosphere

Aerosol optical and radiative properties

Aerosol-cloud-radiation interactions

Remote sensing and in situ observations of aerosols and clouds

Microphysics processes in clouds

Global climate change

Peer-Reviewed Publications

First author or corresponding author publications:

- [1] Zhang, Y.; Zheng, Y.; **Tan, W.***; Guo, P.; Xu, Q.; Chen, S.; Lin, R.; Chen, S.; Chen, H., Two practical methods to retrieve aerosol optical properties from coherent Doppler lidar. *Remote Sensing* **2022**, *14*, (11), 2700, 10.3390/rs14112700.
- [2] Zhang, Y.; Chen, S.; **Tan, W.***; Chen, S.; Chen, H.; Guo, P.; Sun, Z.; Hu, R.; Xu, Q.; Zhang, M.; Hao, W.; Bu, Z., Retrieval of water cloud optical and microphysical properties from combined multiwavelength lidar and radar data. *Remote Sensing* **2021**, *13*, (21), 4396, 10.3390/rs13214396.
- [3] **Tan, W.**; Yu, Y.; Li, C.; Li, J.; Kang, L.; Dong H.; Zeng L.; Zhu, T., Profiling aerosol liquid water content using a polarization lidar. *Environmental Science & Technology* **2020**, *54*, (6), 3129-3137, 10.1021/acs.est.9b07502.
- [4] **Tan, W.**; Li, C.; Liu, Y.; Meng, X.; Wu, Z.; Kang, L.; Zhu, T., Potential of polarization lidar to profile urban aerosol phase state during haze episodes. *Environmental Science & Technology Letters* **2020**, *7*, (2), 54-59, 10.1021/acs.estlett.9b00695.
- [5] **Tan, W.**; Zhao, G.; Yu, Y.; Li, C.; Li, J.; Kang, L.; Zhu, T.; Zhao, C., Method to retrieve cloud condensation nuclei number concentrations using lidar measurements. *Atmospheric Measurement Techniques* **2019**, *12*, (7), 3825-3839, 10.5194/amt-12-3825-2019.

Co-author publications:

- [6] Chen, S.; Jia, Y.; Chen, H.; Yang, W.; Luo, Y.; Li, Z.; Deng, Y.; **Tan, W.**; Guo, P.; Zhang, Y.; Guo, J.; Hu, L.; Lv, M., Dual-wavelength-excitation aerosol fluorescence spectra

- detection using combined spectrometer with Czerny-Turner design. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* **2022**, 277, 121260, 10.1016/j.saa.2022.121260.
- [7] Chen, H.; Sun, Y.; Wang, L.; Chen, S.; Guo, P.; **Tan, W.**; Deng, Y.; Zhang, Y.; Jiang, Y.; Bu, Z., Simulation and misalignment analysis of the gain ratio of a Raman–Mie lidar. *Applied Optics* **2022**, 61, (10), 2881-2887, 10.1364/AO.453852.
- [8] Ren, J.; **Tan, W.**; Tian, X.; Wu, Z.; Li, C.; Li, J.; Zhao, C.; Liu, D.; Kang, L.; Zhu, T., Retrieval of aerosol liquid water content from high spectral resolution lidar. *Science of the Total Environment* **2021**, 799, 149423, 10.1016/j.scitotenv.2021.149423.
- [9] Chen, S.; Cao, R.; Xie, Y.; Zhang, Y.; **Tan, W.**; Chen, H.; Guo, P.; Zhao, P., Study of the seasonal variation in Aeolus wind product performance over China using ERA5 and radiosonde data. *Atmospheric Chemistry and Physics* **2021**, 21, (15), 11489-11504, 10.5194/acp-21-11489-2021.
- [10] Qiu, J.; **Tan, W.**; Zhao, G.; Yu, Y.; Zhao, C., New correction method for the scattering coefficient measurements of a three-wavelength nephelometer. *Atmospheric Measurement Techniques* **2021**, 14, (7), 4879-4891, 10.5194/amt-14-4879-2021.
- [11] Zhao, W.; **Tan, W.**; Zhao, G.; Shen, C.; Yu, Y.; Zhao, C., Determination of equivalent black carbon mass concentration from aerosol light absorption using variable mass absorption cross section. *Atmospheric Measurement Techniques* **2021**, 14, (2), 1319-1331, 10.5194/amt-14-1319-2021.
- [12] Chang, L.; Li, J.; Chu, Y.; Dong, Y.; **Tan, W.**; Xu, X.; Ren, J.; Tian, X.; Li, C.; Liu, Z., et al., Variability of surface aerosol properties at an urban site in Beijing based on two years of in-situ measurements. *Atmospheric Research* **2021**, 256, 105562, 10.1016/j.atmosres.2021.105562.
- [13] Xu, X.; Jiang, Z.; Li, J.; Chu, Y.; **Tan, W.**; Li, C., Impacts of meteorology and emission control on the abnormally low particulate matter concentration observed during the winter of 2017. *Atmospheric Environment* **2020**, 255, 117377, 10.1016/j.atmosenv.2020.117377.
- [14] Su, T.; Li, Z.; Li, C.; Li, J.; Han, W.; Shen, C.; **Tan, W.**; Wei, J.; Guo, J., The significant impact of aerosols vertical structure on lower- atmosphere stability and its critical role

in aerosol-PBL interaction. *Atmospheric Chemistry and Physics* **2020**, *20*, (6), 3713-3724, 10.5194/amt-12-3825-2019.

- [15] Chu, Y.; Li, J.; Li, C.; **Tan, W.**; Su, T.; Li, J., Seasonal and diurnal variability of planetary boundary layer height in Beijing: Intercomparison between MPL and WRF results. *Atmospheric Research* **2019**, *227*, 1-13, 10.1016/j.atmosres.2019.04.017.
- [16] Li, J.; Li, C.; Guo, J.; Li, J.; **Tan, W.**; Kang, L.; Chen, D.; Song, T.; Liu, L., Retrieval of aerosol profiles by Raman lidar with dynamic determination of the lidar equation reference height. *Atmospheric Environment* **2019**, *199*, 252-259, 10.1016/j.atmosenv.2018.11.048.
- [17] Bian, Y.; Zhao, C.; Xu, W.; Kuang, Y.; Tao, J.; Wei, W.; Ma, N.; Zhao, G.; Lian, S.; **Tan, W.**; Barnes, J. E., A novel method to retrieve the nocturnal boundary layer structure based on CCD laser aerosol detection system measurements. *Remote Sensing of Environment* **2018**, *211*, 38-47, 10.1016/j.rse.2018.04.007.
- [18] Zhao, G.; Zhao, C.; Kuang, Y.; Tao, J.; **Tan, W.**; Bian, Y.; Li, J.; Li, C., Impact of aerosol hygroscopic growth on retrieving aerosol extinction coefficient profiles from elastic-backscatter lidar signals. *Atmospheric Chemistry and Physics* **2017**, *17*, (19), 12133-12143, 10.5194/acp-17-12133-2017.

Manuscripts Submitted

- [1] To be updated...

Selected Conference Presentations

- [1] *Method to Retrieve Cloud Condensation Nuclei Number Concentrations Using Multiwavelength Raman Lidar*, **10th International Aerosol Conference**, St. Louis, MO, USA, September 2018.

Hosted Grants

- [1] Research on vertical distribution of aerosol hygroscopicity based on polarization lidar 2023.01-2025.12, CNY 300,000

National Natural Science Foundation of China, 42205136

[2] Uncertainty and improvement of the lidar retrieval of aerosol microphysical properties

2020.11-2023.7, CNY 80,000

China Postdoctoral Science Foundation, 2020M680369

Academic Awards

[1] *Tang Xiaoyan Environmental Science and Innovation Scholarships, 2020.*

Journal Roles

Peer Reviewer

Aerosol Science and Engineering

Atmosphere

Remote Sensing

Frontiers in Environmental Science

Climate

Academic Skills

Programming

Python, Fortran, C, Linux System, Machine Learning

Models

BHMIE, BHCOAT, MSTM, T-MATRIX, SBDART, MONORTM, RRTM,

ISORROPLA-II, MEGAN

Instruments

MPL, MWRL, Sun Photometer (CE-318), DMA, CPC, APS, AE33, AE51, MAAP,

SP2, PASS-3, TEOM, CPMA, Humidified Nephelometer System, Microwave Wind Profiler,

Cloud Radar

Publications in Chinese

- [1] Zhang, Y.; Wang, L.; Wang, C.; Sun, Y.; Chen, S.; Guo, P.; **Tan, W.**; Jiang, Y.; Chen, H., Analysis and research on influencing factors of non-coaxial lidar overlap factor based on ray tracing. *Transactions of Beijing Institute of Technology* **2023**, 43, (2), 213-220, 10.15918/j.tbit1001-0645.2022.049.
- [2] Zhang, Y.; Chen, S.; **Tan, W.***; Chen, S.; Chen, H.; Guo, P.; Bu, Z.; Hu, R.; Xu, Q.; Zheng, Y., An algorithm for retrieving aerosol backscatter coefficient using water cloud backscatter coefficient as boundary value. *Acta Optica Sinica* **2022**, 42, (24), 2428002, 10.3788/AOS202242.2428002.
- [3] Zhang, Y.; Ma, Y.; Chen, S.; Chen, H., Guo, P.; **Tan, W.**; Li, D.; Yang, X., A calibration method for system constants of horizontal detection fluorescence lidar. *Acta Optica Sinica* **2022**, 42, (18), 1828006, 10.3788/AOS202242.1828006.
- [4] Chen, H.; Sun, Y.; **Tan, W.***; Chen, S.; Zhang, Y.; Guo, P.; Wang, L.; Jiang, G.; Li, X., Optical design of multi-stage confocal parabolic reflection laser beam expander. *Acta Optica Sinica* **2022**, 42, (13), 1322001, 10.3788/AOS202242.1322001.
- [5] Guo, P.; Deng, Y.; Wang, L.; Chen, S.; **Tan, W.**; Zhang, Y.; Sun, Y.; Zhang, J.; Yang, W.; Chen, H., Optical spectrometer design of combined unfolded Czerny-Turner spectrometer sharing one common linear-array detector. *Acta Photonica Sinica* **2022**, 51, (6), 0622002, 10.3788/gzxb20225106.0622002.
- [6] Wang, Y.; Li, C.; Chu, Y.; **Tan, W.**; Ren, J., Estimating the daily atmospheric maximum mixing height with 1-second sounding data over Beijing Area. *Acta Scientiarum Naturalium Universitatis Pekinensis* **2020**, 56, (2), 223-230, 10.13209/j.0479-8023.2019.129.
- [7] Song, J.; **Tan, W.**; Li, C.; Yu, Y.; Li, J., Identification of supercooled water clouds by using micro pulse lidar. *Acta Scientiarum Naturalium Universitatis Pekinensis* **2018**, 54, (5), 961-969, 10.13209/j.0479-8023.2018.022.
- [8] Wang, C.; Chu, Y.; **Tan, W.**; He, Q.; Li, C., Characteristics of atmospheric mixing layer height over the Tibetan Plateau with lidar and radiosonde data. *Chinese Journal of Atmospheric Sciences (in Chinese)* **2018**, 42, (5), 1133-1145, 10.3878/j.issn.1006-9895.1711.17218.
- [9] Wang, C.; Li, C.; He, Q.; **Tan, W.**; Chu, Y.; Li, J., An assessment with lidar on the

applicability of radiosonde data in retrieving the mixing height in Tibetan Plateau. *Acta Scientiarum Naturalium Universitatis Pekinensis* **2017**, *53*, (3), 579-587, 10.13209/j.0479-8023.2016.102.

- [10] Wu, M.; **Tan, W.**; Li, C., Application of satellite remote sensing on assessment of air quality station positioning. *Environmental Science and Management* **2016**, *41*, (9), 125-129.