

CURRICULUM VITAE

Li (Alex) Zhang

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Education:

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- 2017 *Ph.D. in Atmospheric Environment, Hong Kong Polytechnic University, Hong Kong*
(Hong Kong PhD Fellowship Awardee)
- 2012 *M.S. in Atmospheric Physics and Environment, Nanjing University, China*
- 2009 *B.S. in Atmospheric Sciences, Nanjing University, China*

Work Experience:

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- 2023- *Air Quality Specialist, South Coast Air Quality Management District, CA, U.S.*
- 2020-2023 *Assistant Research Professor, Penn State University, PA, U.S.*
- 2017-2019 *Postdoctoral Research Associate, Princeton University, NJ, U.S.*

Research Interest:

Emissions, transport, chemical formations, and health impacts of air pollutants at global and regional scales, boundary layer meteorology, satellite measurements of trace gases

Publications

Peer-reviewed papers

- 1) **Zhang, L.**, Davis, K.J., Oda, T., et al., Evaluating JAXA/GOSAT two-layer XCO₂ with intensive aircraft measurements and OCO-2 MIP simulations, under preparation
- 2) **Zhang, L.**, Davis, K.J., et al., Improving land-surface energy flux and boundary layer mixing modeling with land-surface remote sensing, under preparation
- 3) **Zhang, L.**, Davis, K.J., Liu, J., et al., Anomalies of surface CO₂ fluxes in the western U.S. in 2015-2020, under preparation
- 4) **Zhang, L.**, Davis, K. J., et al., (2023), Impacts of transport uncertainty on CO₂ over North America: insights from assessments of two global models with ACT-America aircraft measurements, submitted to *Journal of Geophysical Research: Atmospheres*
- 5) Becker, J., Delang, M., Chang, K.L., **Zhang, L.**, et al., (2023), Using Regionalized Air Quality Model Performance and Bayesian Maximum Entropy data fusion to map global surface ozone concentration, *Elementa: Science of the Anthropocene*, 11(1), <https://doi.org/10.1525/elementa.2022.00025>
- 6) Cui, Y. Y., **Zhang, L.**, Davis, K.J., et al., (2022), Evaluating global atmospheric inversions of terrestrial net ecosystem exchange CO₂ over North America on seasonal and sub-continental scales, *Geophysical Research Letters*, 49, e2022GL100147. <https://doi.org/10.1029/2022GL100147>
- 7) **Zhang, L.** and Cui, Y. Y. (2022). Tropospheric ozone inter-annual variabilities, trends, and extremes in CCMI models, *Atmospheric Environment*, 269(15), 118841. <https://doi.org/10.1016/j.atmosenv.2021.118841>
- 8) **Zhang, L.**, Davis, K. J., Schuh, A. E., Jacobson A. R., et al., (2022). Multi-Season Evaluation of CO₂ Weather in OCO-2 MIP Models. *Journal of Geophysical Research: Atmospheres*, 127(2), e2021JD035457. <https://doi.org/10.1029/2021JD035457>
- 9) Langford, A. O., Senff, C. J., and **Zhang, L.** (2022). The Fires, Asian, and Stratospheric

- Transport-Las Vegas Ozone Study (FAST-LVOS), *Atmospheric Chemistry and Physics*, 22, 1707–1737. <https://doi.org/10.5194/acp-22-1707-2022>
- 10) Cui, Y. Y., Jacobson, A. R., Feng, S., Wesloch, D., Barkley, Z. R., **Zhang, L.**, et al. (2021), Evaluation of CarbonTracker's Inverse Estimates of North American Net Ecosystem Exchange of CO₂ from Different Observing Systems Using ACT-America Airborne Observations, *Journal of Geophysical Research: Atmospheres*, 126(12), e2020JD034406. <https://doi.org/10.1029/2020JD034406>
 - 11) DeLang, MN, Becker, J.S., Chang, K.L., ... **Zhang, L.**, et al., (2021). Mapping Yearly Fine Resolution Global Surface Ozone through the Bayesian Maximum Entropy Data Fusion of Observations and Model Output for 1990–2017, *Environmental Science & Technology*. 2021, 55, 8, 4389–4398. <https://doi.org/10.1021/acs.est.0c07742>
 - 12) **Zhang, L.**, Lin, M., Langford, A.O., Horowitz, L.W., et al., (2020). Characterizing sources of high surface ozone in the Southwest U.S. with intensive field measurements and two global models, *Atmospheric Chemistry and Physics*, 20, 10379–10400. <https://doi.org/10.5194/acp-20-10379-2020>
 - 13) Li, Q., Badia, A., Wang, T., Sarwar, G., Fu, X., **Zhang, L.**, et al. (2020). Potential effect of halogens on atmospheric oxidation and air quality in china. *Journal of Geophysical Research: Atmospheres*, 125, e2019JD032058. <https://doi.org/10.1029/2019JD032058>
 - 14) Fu, X., Wang, T., **Zhang, L.**, et al., (2019). Significant contribution of HONO to secondary pollutants during a severe winter pollution event in southern China. *Atmospheric Chemistry and Physics*, 19: 1–14. <https://doi.org/10.5194/acp-19-1-2019> (**top 1% most-cited article published in Geosciences in 2019.**)
 - 15) Li, Q., **Zhang, L.**, Wang, T., et al., (2018). “New” Reactive Nitrogen Chemistry reshapes the relationship of Ozone to Its Precursors. *Environmental Science & Technology*, 52 (5): 2810–2818. <https://doi.org/10.1021/acs.est.7b05771>
 - 16) Lefohn, A.S., Malley, C.S., Mills, G., Smith, L., Hazucha, M., Naik, V., Schultz, M.G., Simon, H., Wells B., De Marco, A., Xu, X., **Zhang, L.**, et al., (2018). Tropospheric ozone assessment report: Global ozone metrics for climate change, human health, and crop/ecosystem research, *Elementa: Science of the Anthropocene*, 6(1). <https://doi.org/10.1525/elementa.279> (**top 1% most-cited article published in Geosciences in 2018**)
 - 17) **Zhang, L.**, Li, Q., Wang, T., Ahmadov, R., Zhang, Q., et al., (2017). Combined impacts of nitrous acid and nitryl chloride on lower-tropospheric ozone: new module development in WRF-Chem and application to China. *Atmospheric Chemistry and Physics*, 17, 9733–9750. <https://doi.org/10.5194/acp-17-9733-2017>
 - 18) Yun, H., Wang, Z., Zha, Q., Wang, W., Xue, L., **Zhang, L.**, et al., (2017). Nitrous acid in a street canyon environment: Sources and contributions to local oxidation capacity. *Atmospheric Environment*, 167: 223–234. <https://doi.org/10.1016/j.atmosenv.2017.08.018>
 - 19) Wang, T., Xue, L., Brimblecombe, P., Lam, Y.F., Li L., **Zhang, L.**, (2017). 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> (**top 0.10% most-cited article in Geosciences in 2017**)
 - 20) Lefohn, A.S., Malley, C.S., Simon, H., Wells B., Xu, X., **Zhang, L.**, et al., (2017). Responses of human health and vegetation exposure metrics to changes in ozone concentration distributions associated with changing emissions patterns in the European Union, United States, and China. *Atmospheric Environment*, 152:123–145. <https://doi.org/10.1016/j.atmosenv.2016.12.025>
 - 21) Wang, T., Liang, Y., Zha, Q., **Zhang, L.**, et al. (2017), Photochemical Smog in Southern China: A Synthesis of Observations and Model Investigations of the Sources and Effects of Nitrous Acid, in *Air Pollution in Eastern Asia: An Integrated Perspective*, edited by I. Bouarar, Wang, X. & Brasseur, G. P., pp. 69–85, Springer, https://doi.org/10.1007/978-3-319-59489-7_4

- 22) **Zhang, L.**, Wang, T., Zhang, Q., et al., (2016). Potential sources of nitrous acid (HONO) and their impacts on ozone: A WRF-Chem study in a polluted subtropical region. *Journal of Geophysical Research: Atmospheres*, 121: 3645-3662. <https://doi.org/10.1002/2015JD024468> (**top 1% most-cited article published in Geosciences in 2016**)
- 23) Li, Q., **Zhang, L.**, Wang, T., et al., (2016). Impacts of heterogeneous uptake of dinitrogen pentoxide and chlorine activation on ozone and reactive nitrogen partitioning: Improvement and application of WRF-Chem model in southern China, *Atmospheric Chemistry and Physics*, 16: 1-16. <https://doi.org/10.5194/acp-16-14875-2016>
- 24) **Zhang, L.**, Wang, T., Lv, M., Zhang, Q., (2015). On the severe haze in Beijing during January 2013: Unraveling the effects of meteorological anomalies with WRF-Chem. *Atmospheric Environment*, 104: 11-21. <https://doi.org/10.1016/j.atmosenv.2015.01.001> (**top 1% most-cited article published in Geosciences in 2015**)
- 25) Liu, H. and **Zhang, L.**, (2012). Climate effects of anthropogenic aerosols over China under different emissions scenarios, *Chinese Journal of Geophysics*, 55(6): 1867-1875. <https://doi.org/10.6038/j.issn.0001-5733.2012.06.007>
- 26) **Zhang, L.**, Liu, H. and Zhang, N., (2011). Impacts of internally and externally mixed anthropogenic sulfate and carbonaceous aerosols on East Asian climate, *Acta Meteorologica Sinica*, 25(5): 639-658. <https://doi.org/10.1007/s13351-011-0508-7>
- 27) Liu, H., **Zhang, L.** and Wu, J., (2010). A modeling study of climate effect of sulfate and carbonaceous aerosols over China, *Advances in Atmospheric Sciences*, 27(6): 1276-1288. <https://doi.org/10.1007/s00376-010-9188-y>

Ongoing Research Projects

- 1) Improving air quality state implementation plans using land-surface remote sensing (2022-2025), Co-PI, funded by NASA
- 2) Evaluating the GOSAT two-layer GHG satellite measurements (2022-2023), Co-PI, funded by the Japan Aerospace Exploration Agency (JAXA)
- 3) Preparing the NASA global CMS-Flux system for inventory applications (2021-2024), collaborator, funded by NASA

Professional Societies and Community Service:

AGU member; EGU member; Reviewer for *Atmos. Chem. Phys.*, *J. Geophys. Res.*, *Environ. Sci.&Technol.*, *Atmos. Environ.*, *Scientific Reports*, etc.

Professional Conferences and Seminars

- 1) 2022 AGU Fall Meeting, Chicago, U.S., oral presentation
- 2) 2022 OCO2/3 Science Team meeting, Colorado, U.S., oral presentation
- 3) 2021 AGU Fall Meeting, New Orleans, U.S., oral presentation
- 4) GMAC annual meeting, NOAA, U.S., 2021, oral presentation
- 5) GFDL Seminar, Princeton, U.S., 2019, oral presentation
- 6) 2018 AUG Fall Meeting, Washington DC., poster presentation
- 7) 2018 GFDL Poster Expo., Princeton, U.S., poster presentation
- 8) 2018 Young Scholar Forum, Nanjing University, Nanjing, China, invited talk
- 9) 2017 Guanghua Young Scholar Forum, Fudan University, Shanghai, China, invited talk
- 10) 18th Annual WRF User's Workshop, Boulder, Colorado, U.S., 2017, oral presentation
- 11) 2016 Annual Conference on Atmos. Environ. Sci. & Technol. of China, Shanghai, Keynote talk
- 12) Invited talk, Nanjing University of Information Science and Technology, Nanjing, China, 2016
- 13) 12th AOGS Annual Meeting, Singapore, 2015, oral presentation

14) 2014 EGU General Assembly, Vienna, Austria, poster presentation

Awards

- 1) *Hong Kong PhD Fellowship, 2012-2015*
 - 2) *First Prize of Guanghua Scholarship (Top 1/32), Nanjing University, 2011*
 - 3) *Outstanding Graduate Scholarship (Top 3/32), Nanjing University, 2010*
 - 4) *Renmin Scholarship, Nanjing University, 2006 (Top 10%), 2007 (Top 5%), 2008 (Top 5%)*
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