

EDUCATION**Harvard University, John A. Paulson School of Engineering and Applied Sciences (SEAS)** 09/2018-05/2024

Ph.D. in Environmental Science & Engineering, Secondary Field in Computational Science & Engineering

- Thesis: *New Insights into Aerosol Properties, Perturbations, and Radiative Effects in the Stratosphere and Upper Troposphere* (Advisor: Frank Keutsch)

M.S. in Environmental Science & Engineering 05/2022

Peking University, College of Environmental Sciences and Engineering (CESE) 09/2014-06/2018

B.S. in Environmental Science (with honor, class rank: 1/28), and B.A. in Economics

- Thesis: *Development and Application of Drone-based VOC Monitoring Platform* (Advisor: Qi Chen)

PROFESSIONAL EXPERIENCE**NOAA Climate & Global Change Postdoctoral Fellow, MIT & Caltech** 08/2024-present

Hosts: Susan Solomon (MIT) & Paul Wennberg (Caltech)

Postdoctoral Fellow, Harvard University 05/2024-08/2024

Advisor: Frank Keutsch

Graduate Research Assistant, Harvard University 09/2018-05/2024

Advisor: Frank Keutsch

Summer Undergraduate Research Assistant, Harvard University 06/2017-09/2017

Advisor: Scot Martin

Undergraduate Research Assistant, Peking University 01/2016-06/2018

Advisor: Qi Chen

GRANTS & FUNDS

- FY 2024 EMSL Large-Scale Research Funding (as an Investigator), US Department of Energy 2023-2025
- AAAR 41st Annual Conference Student Travel Grant, American Association for Aerosol Association 2023
- GSAS Professional Development Fund, Harvard University 2022
- Clare Marie Doris Innovation Fund in Engineering and Applied Sciences, Harvard University 2018-2019
- Chen Shouren Overseas Research Summer Fund, Peking University 2017

AWARDS & HONORS

- NOAA Climate & Global Change Postdoctoral Fellowship, UCAR 2024-2026
- Foster and Coco Stanback Postdoctoral Fellowship, Division of GPS at Caltech Extended to 2026
- Houghton Postdoctoral Fellowship, Department of EAPS at MIT (declined) 2024
- NASA Group Achievement Award for the DCOTSS Airborne Mission 2024

- AMS 2024 Best Student Presentation Award, American Meteorological Society 2024
- AGU 2022 Outstanding Student Presentation Award (OSPA), American Geophysical Union 2023
- Certificate of Distinction in Teaching, Harvard University 2020
- Beijing Outstanding Graduate Award (Highest honor for graduate set by the government of Beijing) 2018
- Tang Xiaoyan Environmental Science and Innovation Scholarship 2018
- Best Poster Award, 5th International Conference on Environment Simulation and Pollution Control 2017
- National Scholarship, Chinese Ministry of Education 2016 & 2017
- Chongto Environmental Science Scholarship, Peking University 2016
- Robin Li Scholarship, Peking University 2015
- First Prize Spark Scholarship, Peking University 2015, 2016, 2017

PUBLICATIONS (Google Scholar)

Under review, submitted, & in preparation

1. An, Z., Yin, R., Zhao, X., Li, X., Yuan, Y., Guo, J., Li, Y., Li, X., Li, D., **Li, Y.**, Wang, D., Yan, C., He, K., Worsnop, D. R., Keutsch, F. N., Jiang, J., “Molecular and seasonal characteristics of organic vapors in urban Beijing: insights from Vocus-PTR measurements.” (*under review*)
2. Zhang, J., Zhu, T., Catena, A., **Li, Y.**, Schwab, M., Liu, P., Asa-Awuku, A., Schwab, J., “A simple optical scatter monitor system quantifying organic aerosol subsaturated hygroscopicity.” (*under review*)
3. **Li, Y.**, Dykema, J., Allen, N., Litchfield, M., Greenberg, M., Rivero, M., Mascarenhas, C., Yang, D., Dhaniyala, S., Keutsch, F. N., et al., “Airborne Portable Optical Particle Spectrometer (POPS) for particle concentration and size distribution measurements in the stratosphere and upper troposphere.” (*in preparation*)

Peer reviewed

11. Barber, V., LeMar, L., **Li, Y.**, Zhang, J., Keutsch, F. N., Kroll, J. H. (2024). “Enhanced organic nitrate formation from peroxy radicals in the condensed phase.” *Environmental Science & Technology Letters*, DOI: 10.1021/acs.estlett.4c00473.
10. **Li, Y.**, Pedersen, C., Dykema, J., Vernier, J. P., Vattioni, S., Pandit, A. K., Stenke, A., Asher, E., Thornberry, T., Todt, M. A., Bui, T. P., Dean-Day, J., Keutsch, F. N. (2023). “In situ measurements of perturbations to stratospheric aerosol and modeled ozone and radiative impacts following the 2021 La Soufrière eruption.” *Atmospheric Chemistry and Physics*, 23, 15351–15364, DOI: 10.5194/acp-23-15351-2023.
9. Barber, V. P., Goss, M. B., Franco Deloya, L. J., LeMar, L. N., **Li, Y.**, Helstrom, E., Canagaratna, M., Keutsch, F. N., Kroll, J. H. (2023). “Indoor air quality implications of germicidal 222 nm light.” *Environmental Science & Technology*, 57(42), 15990-15998. DOI: 10.1021/acs.est.3c05680
8. **Li, Y.**, Bai, B., Dykema, J., Shin, N., Lambe, A. T., Chen, Q., Kuwata, M., Ng, N. L., Keutsch, F. N., Liu, P. (2023). “Predicting real refractive index of organic aerosols from elemental composition.” *Geophysical Research Letters*, 50(12), e2023GL103446. DOI: 10.1029/2023GL103446
7. Zheng, Y., Miao, R., Zhang, Q., **Li, Y.**, Cheng, X., Liao, K., Koenig, T. K., Ge, Y., Tang, L., Shang, D., Hu, M., Chen, S., Chen, Q. (2023). “Secondary formation of submicron and supermicron organic and inorganic aerosols in a highly polluted urban area.” *Journal of Geophysical Research: Atmospheres*, 128(4), e2022JD037865. DOI: 10.1029/2022JD037865
6. Ye, Q., Goss, M. B., Krechmer, J. E., Majluf, F., Zaytsev, A., **Li, Y.**, Roscioli, J. R., Canagaratna, M., Keutsch, F. N., Heald, C. L., Kroll, J. H. (2022). “Product distribution, kinetics, and aerosol formation from the OH oxidation of dimethyl sulfide under different RO₂ regimes.” *Atmospheric Chemistry and Physics*, 22(24), 16003-16015. DOI: 10.1029/2022JD037865

10.5194/acp-22-16003-2022

5. **Li, Y.**, Dykema, J., Deshler, T. and Keutsch, F., (2021). “Composition dependence of stratospheric aerosol shortwave radiative forcing in northern midlatitudes.” *Geophysical Research Letters*, 48(24), e2021GL094427. DOI: 10.1029/2021GL094427
4. **Li, Y.**, Liu, B., Ye, J., Jia, T., Khuzestani, R. B., Sun, J. Y., Cheng, X., Zheng, Y., Li, X., Wu, C., Xin, J., Wu, Z., Tomoto, M. A., McKinney, K. A., Martin, S. T., Li, Y. J., Chen, Q. (2021). “Unmanned aerial vehicle measurements of volatile organic compounds over a subtropical forest in China and implications for emission heterogeneity.” *ACS Earth and Space Chemistry*, 5(2), 247-256. DOI: 10.1021/acsearthspacechem.0c002713
3. Ye, Q., Krechmer, J.E., Shutter, J.D., Barber, V.P., **Li, Y.**, Helstrom, E., Franco, L. J., Cox, J. L., Hrdina, A. I. H., Goss, M. B., Tahsini, N., Canagaratna, M., Keutsch, F. N., Kroll, J. H. (2021). “Real-time laboratory measurements of VOC emissions, removal rates, and byproduct formation from consumer-grade oxidation-based air cleaners.” *Environmental Science & Technology Letters*, 8(12), 1020-1025. DOI: 10.1021/acs.estlett.1c0077
2. Zheng, Y., Cheng, X., Liao, K., **Li, Y.**, Li, Y. J., Huang, R. J., Hu, W., Liu, Y., Zhu, T., Chen, S., Zeng, L., Worsnop, D. R., Chen, Q. (2020). “Characterization of anthropogenic organic aerosols by TOF-ACSM with the new capture vaporizer.” *Atmospheric Measurement Techniques*, 13(5), 2457-2472. DOI: 10.5194/amt-13-2457-2020
1. Liu, B., Wu, C., Ma, N., Chen, Q., **Li, Y.**, Ye, J., Martin, S. T., Li, Y. J. (2020). “Vertical profiling of fine particulate matter and black carbon by using unmanned aerial vehicle in Macau, China.” *Science of the Total Environment*, 709, 136109. DOI: 10.1016/j.scitotenv.2019.136109

INVITED TALKS

- Environmental Molecular Sciences Laboratory (EMSL) Seminar, Richland, WA, July 2024
- 2024 AMS Annual Meeting, Baltimore, MD, January 2024
- Engineering Special Seminar, School of Engineering at Westlake University, Hangzhou, January 2024
- College of Environmental Sciences and Engineering at Peking University, Beijing, January 2024
- The Department of Atmospheric Sciences at Zhejiang University, Virtual, December 2023
- VolImpact Seminar, DFG (German Research Foundation) Research Unit, Virtual, November 2023
- Earth, Atmospheric, and Planetary Sciences (EAPS) Seminar at Purdue University, West Lafayette, IN, April 2023
- The Department of Atmospheric Sciences at Texas A&M University, College Station, TX, January 2023

CONFERENCE PRESENTATIONS

- **Li, Y.**, et al., Apr. 2024, Variations in stratospheric aerosol layer and aerosol microphysical processes following the 2021 La Soufrière eruption: insights from in situ and satellite observations. **EGU General Assembly 2024**, Vienna, Austria (Poster)
- **Li, Y.**, et al., Jan. 2024, *In situ* measurements of perturbations to stratospheric aerosol and modeled ozone and radiative impacts following the 2021 La Soufrière eruption. **AMS Annual Meeting 2024**, Baltimore, MD (Talk)
- **Li, Y.**, et al., Dec. 2023, Radiative impacts of pyrocumulonimbus smoke in the upper troposphere: insights from *in-situ* aircraft observations and microphysical modelling. **AGU Fall Meeting 2023**, San Francisco, CA (eLightning talk)
- **Li, Y.**, et al., Nov. 2023, Morphological and chemical properties of stratospheric aerosols from *in situ* and offline measurements. **NASA DCOTSS 2023 Science Team Meeting**, Norman, OK (Talk)
- **Li, Y.**, et al., Oct. 2023, Predicting Real Refractive Index of Organic Aerosols from Elemental Composition. **AAAR 41st Annual Conference**, Portland, OR (Talk)
- **Li, Y.**, et al., Oct. 2023, Aerosol Perturbations in the Upper Troposphere and Lower Stratosphere due to Volcanic and Wildfire Injections: Insights from the DCOTSS Airborne Mission. **AAAR 41st Annual Conference**, Portland, OR

(Talk)

- Li, Y., et al., Aug. 2023, Organic-containing Aerosols in the Upper Troposphere and Lower Stratosphere (UT/LS): Climate and Chemical Impacts. **Atmospheric Chemistry Gordon Research Conference 2023**, Newry, ME (Poster)
- Li, Y., et al., Jan. 2023, Aircraft measurements of aerosol microphysics in 2021 La Soufrière volcanic plumes and their stratospheric impacts. **NASA DCOTSS 2022 Science Team Meeting**, College Station, TX (Talk)
- Li, Y., et al., Dec. 2022, Microphysical and Chemical Characterization of Aerosols in the Stratosphere and Upper Troposphere: Influence of Biomass Burning. **AGU Fall Meeting 2022**, Chicago, IL (Poster)
- Li, Y., et al., Oct. 2022, Volcanic and Wildfire Perturbations of Aerosols in the Stratosphere and Upper Troposphere during the NASA DCOTSS Airborne Mission. **the 7th SPARC General Assembly**, Boulder, CO (Poster)
- Li, Y., et al., Dec. 2021, Estimation of the Elemental Composition of Organic Aerosols in the Mid-latitude Lower Stratosphere over the Continental US. **AGU Fall Meeting 2021**, Virtual (Poster)
- Li, Y., et al., Apr. 2021, DPOPS: 2021 science operations, data products, updates for 2022. **NASA DCOTSS 2021 Science Team Meeting**, Virtual (Talk)
- Li, Y., et al., Apr. 2021, Composition Dependence of Stratospheric Aerosol Radiative Forcing. **EGU General Assembly 2021**, Virtual (Talk)
- Li, Y., et al., Dec. 2020, Unmanned Aerial Vehicle Measurements of Volatile Organic Compounds over a Subtropical Forest in China and Implications for Emission Heterogeneity. **AGU Fall Meeting 2020**, Virtual (Talk)
- Li, Y., et al., Dec. 2019, Measurements of α -Pinene Ozonolysis Products Uptake to Submicron Aerosols at A Broad Range of Tropospheric Temperatures. **AGU Fall Meeting 2019**, San Francisco, CA (Talk)
- Li, Y., et al., Nov. 2017, Detection of Non-refractory PM_{2.5} chemical composition by Time-of-Flight Aerosol Chemical Speciation Monitor equipped with a Capture Vaporizer. **the 5th International Conference on Environmental Simulation and Pollution Control**, Beijing, China (Poster)
- Goss, M., Ye, Q., Li, Y., et al., Dec. 2022, Chamber studies of the oxidation of DMS, DMDS, and DMSO: Mechanism and aerosol formation. **The 2022 Atmospheric Chemical Mechanisms Conference**, Davis, CA (Talk)
- Franco Deloya, L., Li, Y., et al., Sep. 2022, Simulated long-term atmospheric aging of organic carbon in a laboratory chamber. **the 11th International Aerosol Conference**, Athens, Greece

TEACHING & MENTORING EXPERIENCE

Teaching Fellow / Teaching Assistant:

- GENED 1137 - The Challenge of Human Induced Climate Change: Transitioning to a Post Fossil Fuel Future (Spring 2023, Harvard University)
- EPS/ESE 162 - Hydrology (Fall 2020, Harvard University)
- 12730070 - China's Energy and Environmental Challenges (Spring 2016, Peking University)

Guest Lecturer:

- ESE/EPS 166 - State-of-the-Art Harvard Climate Observatory and Associated Instrumentation (Spring 2024, Harvard University)
- SEE 3201 - Atmospheric Science – An Introductory Survey (Spring 2024, City University of Hong Kong)
- PUM 6306 - Energy, Climate Change and Sustainable Development in China (Spring 2023, Shanghai Jiao Tong University)

Teaching Certificate from Harvard Derek Bok Center for Teaching & Learning (2024)

Student Mentor:

- Research mentor for 4 undergraduate students: Brahm Erdmann, Emmanuel Rassou, Bella Nesti, Ploy Assawaphadungsit
- Research mentor for 2 graduate students: Sophie Abou-Rizk, Michael Gee
- Graduate Qualifying Exam mentor for 2 graduate students: Mona Dai, Lucas Estrada
- Graduate School Application mentor for 2 students: Yi Xia, Daniel Adjei

PROFESSIONAL ACTIVITIES & SERVICE

- **Committee member:** AGU Atmospheric Science Section Early Career Committee-DEI Subcommittee 2024-present
- **Organizing committee** of the AMS 22nd Conference on Middle Atmosphere 2023-2024
- **Committee member:** AMS Middle Atmosphere committee 2023-present
- **Instrument Co-PI** (mini-MOUDI instrument) for NOAA SABRE airborne mission 2022-present
- **Instrument Co-PI** (DPOPS & mini-MOUDI instruments) for NASA DCOTSS airborne mission 2019-present
- **Session chair** for AAAR 2023 Annual Conference 2023
- **Session chair** for NASA DCOTSS Science Team Meetings 2021, 2023
- **Organizer** of the Harvard Stratospheric Supergroup Meeting series 2021-2022
- **Host** for the Harvard Atmospheric & Environmental Chemistry (AEC) Seminar series 2019-present
- **Conference student presentation judge/reviewer:** AGU (2023), AAAR (2023)
- **Proposal reviewer** for *NASA Earth Science ROSES Program (2024)*
- **Peer reviewer** for *JGR-Atmosphere, Atmospheric Chemistry and Physics, Environmental Health Perspectives, Atmospheric Environment, Urban Climate, Meteorological Applications*
- **Professional Memberships:** AGU, AMS, AAAR, EGU
- **Research collaborations:** Daniel Cziczo Group (Purdue), Qi Chen Group (Peking University), Swarup China Group (PNNL), Terry Deshler (CU Boulder), Suresh Dhaniyala Group (Clarkson), Jesse Kroll Group (MIT), Alexander Laskin Group (Purdue), Pengfei Liu Group (Georgia Tech), Scot Martin Group (Harvard), David Peterson and Michael Fromm (NRL), Jeffrey Pierce Group (Colorado State University), Jean-Paul Vernier Group (NASA Langley), Jianhuai Ye (SUSTech), Yue Zhang Group (Texas A&M), DCOTSS Science Team, SABRE Science Team, and others

FIELD EXPERIENCE

- **Instrument Lead** in Munich Urban Air Quality Campaigns (ground station) 2023-present
- **Instrument Co-PI** in NOAA SABRE WB-57 aircraft mission 2022-present
- **Instrument Co-PI** in NASA DCOTSS ER-2 aircraft mission 2019-present
- AIRLESS campaign in Beijing on air pollution and human health (ground station) 2017

OUTREACH

- **Speaker** at Harvard SEAS Lightning Talks on Sustainability and Climate 2024
- **Mentor** in Harvard SEAS Research Mentorship Program (RMP) for undergraduate students 2024
- **Mentor** in Harvard Graduate Admissions Assistance Program (GAAP) 2023
- **Presenter** at Harvard Undergraduate Research Opportunities (HUROS) Fair 2023

- **Scientific instrument showcase** at the 4th Annual Harvard Nexus Event 2023
- **Science outreach interview participant** at Superheroes of Science 2022
- **Vice President** of the Harvard Chinese Students and Scholars Association (HCSSA) 2021-2022
- **Student Group Leader** at Harvard Graduate School of Arts and Sciences (GSAS) 2021-2022
- **Judge** of the National Collegiate Research Conference 2021
- **Member of the Standing Committee**, 35th Student Union, Peking University 2017-2018
- **President** of the Youth Volunteer Association in College of Environmental Sciences and Engineering (CESE), Peking University 2015-2016
- **STEM Class Tutor** in a K-12 school, Hebei, China 2014-2017