Alexander J. Turner

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Atmospheric Sciences-Geophysics (ATG) Building, Office 706, University of Washington, Seattle, WA 98195

Education

Ph.D., Harvard University 2012 – 2017
Atmospheric Chemistry, Advisor: Daniel J. Jacob

B.S., University of Colorado at Boulder 2008 – 2012
Mechanical Engineering, Advisor: Daven K. Henze

Professional Experience

Calvin Professor of Atmospheric Science, University of Washington 2022 – 2024
Assistant Professor, University of Washington 2021 –
Research Affiliate, NASA Jet Propulsion Lab 2018 – 2021
Miller Postdoctoral Fellow, University of California at Berkeley 2017 – 2020
Graduate Research Assistant, Harvard University 2012 – 2017

Awards and Fellowships

UW Atmospheric and Climate Science Annual Teaching Award 2022, 2023
AGU James R. Holton Junior Scientist Award 2020
Miller Fellowship at UC Berkeley 2017 – 2020
Atmospheric Chemistry Colloquium for Emerging Senior Scientists (ACCESS XIV) 2017
DOE Computational Science Graduate Fellowship (CSGF) 2013 – 2017
National Defense Science and Engineering Graduate (NDSEG) fellowship, *declined* 2013
CU Boulder College of Engineering's "Outstanding Graduate for Research" 2012
NOAA Ernest F. Hollings Scholar 2010 – 2012

Publications (group member, *submitted, ⋆contributed equally)

h-index = 30, total citations = 3,840 *(as of July 8, 2025: scholar.google.com/citations?user=tfmVgv0AAAAJ)*

*55. Mei, E. J., G. J. Hakim, M. Taniguichi-King, D. Stiller, and **A. J. Turner** (submitted), Emulating chemistry-climate dynamics with a linear inverse model, *submitted*.

*54. Rao, M. P., A. Pacheco-Solana, R. Li, B. Oryan, J. E. Jensen, M. R. Rodriguez-Caton, L. Klinek, Z. A. Pierrat, S. Ruehr, R. Oelkers, K. L. Griffin, L. M. McCormack, X. Yang, J. Verfaillie, D. Baldocchi, J. Hise, **A. J. Turner**, T. M. Scanlon, L. Andreu-Hayles, J. U. H. Eitel, N. Pederson, D. Griffin, D. Stahle, J. Maxwell, S. Voelker, S. A. Kannenberg, J. Penuelas, and T. S. Magney (submitted), Aridity dispersion decouples carbon assimilation and growth in temperate deciduous oaks, *submitted*.

*53. Manchanda, C., R. C. Cohen, R. A. Alvarez, T. M. Thompson, M. H. Harris, **A. J. Turner**, J.D. Marshall, R. A. Harley, and J. S. Apte (submitted), Hyperlocal sensing and inversion reveal community impacts of urban air pollutant emissions, *submitted*.

*52. Yoon, J. Y. S., K. Wells, D. B. Millet, A. L. S. Swann, J. A. Thornton, and **A. J. Turner** (submitted), Impacts of interannual isoprene variations on methane lifetimes and trends, *submitted*.

*51. Liu, A. X., C. M. Zarakas, B. G. Buchovecky, L. R. Hawkins, A. Cordak, A. Cornish, M. Haagsma, G. J. Kooperman, C. J. Still, C. D. Koven, **A. J. Turner**, D. S. Battisti, J. T. Randerson, F. M. Hoffman, A. L. S. Swann (submitted), Photosynthesis responses to intrinsic water use efficiency depend on atmospheric feedbacks and modify the magnitude of response to elevated CO_2, *submitted*.

*50. Johnson, M. S., S. D. Hamilton, S. Jeong, Y. Cui, D. Wu, **A. J. Turner**, and M. L. Fischer (submitted), Statewide California 2020 Carbon Dioxide Budget Estimated with OCO-2 and OCO-3 satellite data, *submitted*.

49. Asimow, N. G., M. Y. Patel, Y. Zhu, A. R. Winter, K. R. Gurney, W. M. Berelson, **A. J. Turner**, and R. C. Cohen (2025), Differences in regional home heating behaviour in three U.S. cities revealed by ground-based sensor network, *Geophys. Res. Lett.*, *52*, e2025GL115772, doi:10.1029/2025GL115772.

48. N. Dadheech⋆, T. He⋆, and **A. J. Turner** (2025), High-resolution greenhouse gas flux inversions using a machine learning surrogate model for atmospheric transport, *Atmos. Chem. Phys.*, *25*, 5159–5174, doi:10.5194/acp-25-5159-2025.

47. Liu, G., L. Shen, P. Ciais, X. Lin, D. Hauglustaine, X. Yi, X. Lan, **A. J. Turner**, and S. Peng (2025), Increased Arctic natural emissions and tropical tropospheric hydroxyl radicals explain changes in seasonal amplitude of atmospheric CH_4, *Nature*, *641*, 660–665, doi:10.1038/s41586-025-08900-8.

46. He, T.*, G. M. Oomen*, W. Tang, I. Bouarar, K. Chance, C. Clerbaux, D. Edwards, H. Eskes, B. Gaubert, C. Granier, M. Guevara, D. Jacob, J. Kaiser, J. Kim, S. Kondragunta, X. Liu, E. Marais, K. Miyazaki, R. Park, V. H. Peuch, G. Pfister, A. Richter, T. Stavrakou, R. M. Suleiman, **A. J. Turner**, B. Veihelmann, Z. C. Zeng, and G. Brasseur (2025), Challenges and opportunities offered by geostationary space observations for air quality research and emission monitoring, *Bull. Am. Meteorol. Soc.*, *106*, E939–E963, doi:10.1175/BAMS-D-23-0145.1.

45. He, T.*, N. Dadheech*, T. M. Thompson, and **A. J. Turner** (2025), FootNet v1.0: Development of a machine learning emulator of atmospheric transport, *Geosci. Mod. Dev.*, *25*, 1661–1671, doi:10.5194/gmd-18-1661-2025.

44. Jeong, S., S. D. Hamilton, D. Wu, M. S. Johnson, **A. J. Turner**, and M. L. Fischer (2025), Applying Gaussian Process Machine Learning and Modern Probabilistic Programming to Satellite Data to Infer CO_2 Emissions, *Env. Sci. Technol.*, *59*, 4376–4387, doi:10.1021/acs.est.4c09395.

43. Hamilton, S. D., D. Wu, M. S. Johnson, **A. J. Turner**, M. L. Fischer, N. Dadheech, and S. Jeong (2024), Estimating carbon dioxide emissions in two California cities using Bayesian inversion and satellite measurements, *Geophys. Res. Lett.*, *e2024GL111150*, doi:10.1029/2024GL111150.

42. Dressel, I., S. Zhang, M. A. G. Demetillo, S. Yu, K. Fields, L. M. Judd, C. R. Nowlan, K. Sun, A. Kotsakis, **A. J. Turner**, and S. E. Pusede (2024), Neighborhood-level nitrogen dioxide inequalities contribute to surface ozone in Houston, Texas, *Env. Sci. Technol. Air*, *1*, 973–988, doi:10.1021/acsestair.4c00009.

41. Manchanda, C., R. Harley, J. D. Marshall, **A. J. Turner**, and J. S. Apte (2024), Integrating Mobile and Fixed-Site Black Carbon Measurements to Bridge Spatiotemporal Gaps in Urban Air Quality, *Env. Sci. Technol.*, 58, 12563-12574, 10.1021/acs.est.3c10829.

40. Lee, B. H., J. M. Munger, S. C. Wofsy, L. V. Rizzo, J. Y. S. Yoon, **A. J. Turner**, J. A. Thornton, and A. L. S. Swann (2024), Sensitive response of atmospheric oxidative capacity to the uncertainty in the emissions of nitric oxide (NO) from soils in Amazonia, *Geophys. Res. Lett.*, *e2023GL107214*, doi:10.1029/2023GL107214.

39. Asimow, N. G., **A. J. Turner**, and R. C. Cohen (2024), Sustained reductions of Bay Area CO_2 emissions 2018-2022, *Env. Sci. Technol.*, 58, 6586-6594, doi:10.1021/acs.est.3c09642.

38. He, T., R. J. Boyd, D. J. Varon, and **A. J. Turner** (2024), Increased methane emissions from oil and gas following the Soviet Union's collapse, *Proc. Natl. Acad. Sci.*, *121*, doi:10.1073/pnas.2314600121.

37. Moon, A., U. Jongebloed, K. K. Dingilian, A. J. Schauer, Y. C. Chan, M. Cesler-Maloney, W. R. Simpson, R. J. Weber, L. Tsiang, F. Yazbeck, S. Zhai, A. Wedum, **A. J. Turner**, S. Albertin, S. Bekki, J. Savarino, K. Gribanov, K. A. Pratt, E. J. Costa, C. Anastasio, M. O. Sunday, L. M. D. Heinlein, J. Mao, and B. Alexander (2023), Primary Sulfate Is the Dominant Source of Particulate Sulfate During Winter in Fairbanks, Alaska, *Env. Sci. Technol. Air*, *1*, 139–149, doi:10.1021/acsestair.3c00023.

36. Yu, X., D. B. Millet, D. K. Henze, **A. J. Turner**, A. L. Delgado, A. A. Bloom, and J. Sheng (2023), A high-resolution satellite-based map of global methane emissions reveals missing wetland, fossil fuel, and monsoon sources, *Atmos. Chem. Phys.*, *23*, 3325–3346, doi:10.5194/acp-23-3325-2023.

35. Hajny, K. D., C. Floerchinger, I. Lopez-Coto, J. Pitt, C. Gately, K. Gurney, L. Hutyra, T. Jayarathne, R. Kaeser, G. Roest, M. Sargent, B. H. Stirm, J. Tomlin, **A. J. Turner**, P. B. Shepson, and S. Wofsy (2022), Measurements of anthropogenic CO_2 emissions from New York City compared to inventories, *Elem. Sci. Anth.*, *10*:1, doi:10.1525/elementa.2021.00121.

34. Kim, J., **A. J. Turner**, H. Fitzmaurice, E. Delaria, C. Newman, P. J. Wooldridge, and R. C. Cohen (2022), Observing annual trends in vehicular CO_2 emissions, A gridded national inventory of US methane emissions, *Env. Sci. Technol.*, *56*, 3925–3931, doi:10.1021/acs.est.1c06828.

33. Gensheimer, J., **A. J. Turner**, P. Köhler, C. Frankenberg, and J. Chen (2022), A convolutional neural network for spatial downscaling of satellite-based solar-induced chlorophyll fluorescence (SIFnet), *Biogeosci.*, *19*, 1777-1793, doi:10.5194/bg-19-1777-2022.

32. Fitzmaurice, H., **A. J. Turner**, J. Kim, K. Chan, E. Delaria, C. Newman, P. J. Wooldridge, and R. C. Cohen (2022), Assessing vehicle fuel efficiency using a dense network of CO_2 observations, *Atmos. Chem. Phys.*, *22*, 3891–3900, doi:10.5194/acp-22-3891-2022.

31. Wang, X., J. A. Biederman, J. F. Knowles, R. L. Scott, **A. J. Turner**, M.P. Dannenberg, P. Köhler, C. Frankenberg, M. E. Litvak, G. N. Flerchinger, B. E. Law, H. Kwon, S. C. Reed, W. J. Parton, G. A. Barron-Gafford, and W. K. Smith (2022), Satellite solar-induced chlorophyll fluorescence and near-infrared reflectance observations capture complimentary aspects of dryland vegetation dynamics, *Remote Sens. Environ.*, *270*, 112858–112869, doi:10.1016/j.rse.2021.112858.

30. **Turner, A. J.**, P. Köhler, T. S. Magney, C. Frankenberg, I. Fung, and R. C. Cohen (2021), Extreme events driving year-to-year differences in gross primary productivity across the US, *Biogeosci.*, *18*, 6579–6588, doi:10.5194/bg-18-6579-2021.

29. Delaria, E. R., B. K. Place, **A. J. Turner**, Q. Zhu, X. Jin, and R. C. Cohen (2021), Development of a solar induced fluorescence-canopy conductance model and its application to stomatal reactive nitrogen deposition, *ACS Earth Space Chem.*, *5*, 3414–3428, doi:10.1021/acsearthspacechem.1c00260.

28. Laughner, J. L., J. L. Neu, D. Schimel, P. O. Wennberg, K. Barsanti, K. Bowman, A. Chatterjee, B. Croes, H. Fitzmaurice, D. K. Henze, J. Kim, E. A. Kort, Z. Liu, K. Miyazaki, **A. J. Turner**, S. Anenberg, J. Avise, H. Cao, D. Crisp, J. de Gouw, A. Eldering, J. Fyfe, D. L. Goldberg, K. R. Gurney, S. Hasheminassab, F. Hopkins, C. E. Ivey, D. B. A. Jones, J. Liu, N. S. Lovenduski, R. V. Martin, G. A. McKinley, L. Ott, B. Poulter, M. Ru, S. P. Sander, N. Swart, Y. L. Yung, Z. Zeng, and KISS COVID-19 workshop team (2021), Societal shifts due to COVID-19 reveal large-scale complexities and feedbacks between atmospheric chemistry and climate change, *Proc. Natl. Acad. Sci.*, *118*, doi:10.1073/pnas.2109481118.

27. Gensheimer, J., **A. J. Turner**, A. Shekhar, A. Wenzel, F. N. Keutsch, and J. Chen (2021), What are different measures of mobility changes telling us about emissions during the COVID-19 pandemic?, *J. Geophys. Res.*, *126*, doi:10.1029/2021JD034664.

26. **Turner, A. J.**, J. Kim, H. Fitzmaurice, C. Newman, K. Worthington, K. Chan, P. J. Wooldridge, P. Köhler, C. Frankenberg, and R. C. Cohen (2020), Observed impacts of COVID-19 on urban CO_2 emissions, *Geophys. Res. Lett.*, *47*, doi:10.1029/2020GL090037.

25. **Turner, A. J.**, P. Köhler, T. S. Magney, C. Frankenberg, I. Fung, and R. C. Cohen (2020), A double peak in the seasonality of California's photosynthesis as observed from space, *Biogeosci.*, *17*, 405–422, doi:10.5194/bg-17-405-2020.

24. Nguyen, N., **A. J. Turner**, Y. Yin, M. Prather, and C. Frankenberg (2020), Effects of chemical feedbacks on decadal methane emissions estimates, *Geophys. Res. Lett.*, *47*, doi:10.1029/2019GL085706.

23. **Turner, A. J.***, C. Frankenberg*, and E. A. Kort* (2019), Interpreting contemporary trends in atmospheric methane, *Proc. Natl. Acad. Sci.*, *116*, 2805–2813, doi:10.1073/pnas.1814297116.

22. Cusworth, D. H., D. J. Jacob, J. X. Sheng, J. Benmergui, **A. J. Turner**, J. Brandman, L. White, and C. A. Randles (2018), Detecting high-emitting methane sources in oil/gas fields using satellite observations, *Atmos. Chem. Phys.*, *18*, 16885–16896, doi:10.5194/acp-18-16885-2018.

21. **Turner, A. J.**, I. Fung, V. Naik, L. W. Horowitz, and R. C. Cohen (2018), Modulation of hydroxyl variability by ENSO in the absence of external forcing, *Proc. Natl. Acad. Sci.*, *115*, 8931–8936, doi:10.1073/pnas.1807532115.

20. Sheng, J. X., D. J. Jacob, **A. J. Turner**, J. D. Maasakkers, J. Benmergui, A. A. Bloom, C. Ardnt, R. Gautam, D. Zavala-Araiza, H. Boesch, and R. J. Parker (2018), 2010–2016 methane trends over Canada, the United States, and Mexico observed by the GOSAT satellite: contributions from different source sectors, *Atmos. Chem. Phys.*, *18*, 12257–12267, doi:10.5194/acp-18-12257-2018.

19. **Turner, A. J.**, D. J. Jacob, J. Benmergui, J. Brandman, L. White, and C. A. Randles (2018), Assessing the capability of different satellite observing configurations to resolve the distribution of methane emissions at kilometer scales, *Atmos. Chem. Phys.*, *18*, 8265–8278, doi:10.5194/acp-18-8265-2018.

18. Sheng, J. X., D. J. Jacob, **A. J. Turner**, J. D. Maasakkers, M. P. Sulprizio, A. A. Bloom, A. E. Andrews, and D. Wunch (2018), High-resolution inversion of methane emissions in the Southeast US using SEAC^{4}RS aircraft observations of atmospheric methane: anthropogenic and wetlands sources, *Atmos. Chem. Phys.*, *18*, 6483–6491, doi:10.5194/acp-18-6483-2018.

17. Bloom, A. A., K. Bowman, M. Lee, **A. J. Turner**, R. Schroeder, J. R. Worden, R. J. Weidner, K. McDonald, and D. J. Jacob (2017), A global wetland methane emissions and uncertainty dataset for atmospheric chemical transport models (WetCHARTs version 1.0), *Geosci. Mod. Dev*, *10*, 2141–2156, doi:10.5194/gmd-10-2141-2017.

16. Buchwitz, M, O. Schneising, M. Reuter, J. Heymenn, S. Krautwurst, H. Bovensmann, J. P. Burrows, H. Boesch, R. J. Parker, P. Somkuti, R. G. Detmers, O. P. Hasekamp, I. Aben, A. Butz, C. Frankenberg, and **A. J. Turner** (2017), Satellite-derived methane hotspot emission estimates using a fast data-driven method, *Atmos. Chem. Phys.*, *17*, 5751–5744, doi:10.5194/acp-17-5751-2017.

15. **Turner, A. J.**, C. Frankenberg, P. O. Wennberg, and D. J. Jacob (2017), Ambiguity in the causes for decadal trends in atmospheric methane and hydroxyl, *Proc. Natl. Acad. Sci.*, *114*, 5367–5372, doi:10.1073/pnas.1616020114.

14. Tzompa-Sosa, Z. A., E. V. Fischer, E. Mahieu, B. Franco, C. A. Keller, **A. J. Turner**, D. Helmig, A. Fried, D. Richter, P. Weibring, J. Walega, T. I. Yacovitch, S. C. Herndon, D. R. Blake, F. Hase, J. Hannigan, S. Conway, K. Strong, and M. Schneider (2017), Revisiting global fossil fuel and biofuel emissions of ethane, *J. Geophys. Res.*, *122*, 2493–2512, doi:10.1002/2016JD025767.

13. Bader, W., B. Bovy, S. Conway, K. Strong, D. Smale, **A. J. Turner**, T. Blumenstock, C. Boone, M. C. Coen, A. Coulon, O. Garcia, D. W. T. Griffith, F. Hase, P. Hausmann, N. Jones, P. Krummel, I. Murata, I. Morino, H. Nakajima, S. O'Doherty, C. Paton-Walsh, J. Robinson, R. Sandrin, M. Schneider, C. Servais, R. Sussmann, and E. Mahieu (2017), The recent increase of atmospheric methane from 10 years of ground-based NDACC FTIR observations since 2005, *Atmos. Chem. Phys.*, *17*, 2255–2277, doi:10.5194/acp-17-2255-2017.

12. Maasakkers, J. D., D. J. Jacob, M. Sulprizio, **A. J. Turner**, M. Weitz, T. Wirth, C. Hight, M. DeFigueiredo, M. Desai, R. Schmeltz, L. Hockstad, A. A. Bloom, K. W. Bowman, S. Jeong, and M. L. Fischer (2016), A gridded national inventory of US methane emissions, *Env. Sci. Technol.*, *50*, 13123–13133, doi:10.1021/acs.est.6b02878.

11. Jacob, D. J., **A. J. Turner**, J. D. Maasakkers, J. Sheng, K. Sun, X. Liu, K. Chance, I. Aben, J. McKeever, and C. Frankenberg (2016), Satellite observations of atmospheric methane and their application to constrain emissions, *Atmos. Chem. Phys.*, *16*, 14371–14396, doi:10.5194/acp-16-14371-2016.

10. **Turner, A. J.**, A. A. Shusterman, B. C. McDonald, V. Teige, R. A. Harley, and R. C. Cohen (2016), Network design for quantifying urban CO_2 emissions: assessing trade-offs between precision and network density, *Atmos. Chem. Phys.*, *16*, 13465–13475, doi:10.5194/acp-16-13465-2016.

9. Shusterman, A. A., V. Teige, **A. J. Turner**, C. Newman, J. Kim, and R. C. Cohen (2016), The BErkeley Atmospheric CO_2 Observation Network: Initial Evaluation, *Atmos. Chem. Phys.*, *16*, 13449–13463, doi:10.5194/acp-16-13449-2016.

8. Tan, Z., Q. Zhuang, D. K. Henze, C. Frankenberg, E. Dlugokencky, C. Sweeney, **A. J. Turner**, M. Sasakawa, and T. Machida (2016), Inverse modeling of pan-Arctic methane emissions at high spatial resolution: What can we learn from assimilating satellite retrievals and using different process-based wetland and lake biogeochemical models?, *Atmos. Chem. Phys.*, *16*, 12649–12666, doi:10.5194/acp-16-12649-2016.

7. Bousserez, N., D. K. Henze, B. Rooney, A. Perkins, K. J. Wecht, **A. J. Turner**, V. Natraj, and J. R. Worden (2016), Constraints on methane emissions in North America from future geostationary remote sensing measurements, *Atmos. Chem. Phys.*, *16*, 6175–6190, doi:10.5194/acp-16-6175-2016.

6. **Turner, A. J.**, D. J. Jacob, J. Benmergui, S. C. Wofsy, J. D. Maasakkers, A. Butz, O. Hasekamp, and S. C. Biraud (2016), A large increase in U.S. methane emissions over the past decade inferred from satellite data and surface observations, *Geophys. Res. Lett.*, *43*, doi:10.1002/2016GL067987.

5. Worden, J. R., **A. J. Turner**, A. Bloom, S. S. Kulawik, J. Liu, M. Lee, R. Weidner, K. Bowman, C. Frankenberg, R. J. Parker, and V. H. Payne (2015), Quantifying Lower Tropospheric Methane Concentrations Using Near-IR and Thermal IR Satellite Measurements: Comparison to the GEOS-Chem model, *Atmos. Meas. Tech.*, *8*, 3433–3445, doi:10.5194/amt-8-3433-2015.

4. **Turner, A. J.**, D. J. Jacob, K. J. Wecht, J. D. Maasakkers, E. Lundgren, A. E. Andrews, S. C. Biraud, H. Boesch, K. W. Bowman, N. M. Deutscher, M. K. Dubey, D. W. T. Griffith, F. Hase, A. Kuze, J. Notholt, H. Ohyama, R. Parker, V. H. Payne, R. Sussmann, C. Sweeney, V. A. Velazco, T. Warneke, P. O. Wennberg, and D. Wunch (2015), Estimating global and North American methane emissions with high spatial resolution using GOSAT satellite data, *Atmos. Chem. Phys.*, *15*, 7049–7069, doi:10.5194/acp-15-7049-2015.

3. **Turner, A. J.** and D. J. Jacob (2015), Balancing aggregation and smoothing errors in inverse models, *Atmos. Chem. Phys.*, *15*, 7039–7048, doi:10.5194/acp-15-7039-2015.

2. **Turner, A. J.**, A. M. Fiore, L. W. Horowitz, and M. Bauer (2013), Summertime cyclone frequencies over the Great Lakes Storm Track from 1860–2100: variability, trends, and association with ozone pollution, *Atmos. Chem. Phys.*, *13*, 565–578, doi:10.5194/acp-13-565-2013.

1. **Turner, A. J.**, D. K. Henze, R. V. Martin, and A. Hakami (2012), The spatial extent of source influences on modeled column concentrations of short-lived species, *Geophys. Res. Lett.*, *39*, L12806, doi:10.1029/2012GL051832.

Invited Seminars

2025 Massachusetts Institute of Technology (MIT)
2025 University of California at Berkeley
2025 University of Southern California (USC)
2024 NASA Ames Research Center
2023 California Institute of Technology (Caltech)

2023 University of Utah
2022 NASA Ames Research Center
2022 MIT Frontiers in Atmospheric Chemistry Seminar Series (FACSS)
2022 Stanford University
2022 NASA Goddard Space Flight Center
2022 NASA Ames Research Center
2022 University of Rochester
2021 Environment and Climate Change Canada
2021 University of Toronto
2021 UC Berkeley Climate and Impacts Group
2021 Imperial College London
2020 NASA Jet Propulsion Laboratory (JPL)
2020 University of California at Berkeley
2020 University of Washington
2019 Bay Area Air Quality Management District (BAAQMD)
2019 OneNOAA Science Seminar
2018 Stanford University
2018 University of California at Berkeley
2018 Technical University of Munich (TUM), Germany
2018 NASA Ames Research Center
2018 NOAA Geophysical Fluid Dynamics Laboratory (GFDL)
2018 University of Washington
2017 Japanese Aerospace Exploration Agency (JAXA)
2017 California Institute of Technology (Caltech)

Oral Conference Presentations (†invited)

2025† Urban greenhouse gas seminar series, virtual
2024† AGU Fall Meeting: Session on Tropospheric Oxidative Capacity, Washington, DC
2024† AGU Fall Meeting: Session on Vintage Atmospheric Chemistry, Washington, DC
2024† EPA Methane Inverse Modeling Technical Workshop, Durham, NC
2024† Schmidt Sciences Cross-VESRI Convening, University of Cambridge, Cambridge, UK
2024† Summer School for Inverse Modeling of Greenhouse Gases, Colorado State University (CSU)
2023† AGU Fall Meeting: Session on Data-driven Methods, San Francisco, CA
2023† Gordon Conference on Atmospheric Chemistry, Sunday River, ME
2023† Telluride Science Workshop: Mapping Urban Air, Telluride, CO
2023† Canadian Society for Chemistry (CSC) Symposium on Atmospheric Organics, Vancouver, Canada
2022 AGU Fall Meeting: Session on Ice Cores, Chicago, IL
2022 OCO-2 Science Team Meeting, virtual
2021† Telluride Science Workshop: Mapping Urban Air, Telluride, CO
2020† AGU Fall Meeting: James R. Holton Award talk in the Frontiers of Atmospheric Science session, virtual
2020† AGU Fall Meeting: Union Session on COVID-19 in the Earth system, virtual
2020 AGU Fall Meeting: Session on Solar-Induced Chlorophyll Fluorescence, virtual
2020 Air Sensors International Conference (ASIC) Fall series, virtual
2020† COVID-19: Identifying Unique Opportunities for Earth Science, Keck Institute for Space Studies, virtual
2019 AGU Fall Meeting: Session on Solar-Induced Chlorophyll Fluorescence, San Francisco, CA
2019† CO_2-Urban Synthesis and Analysis (CO_2-USA) Workshop, Boston University
2019† Frontiers of Atmospheric Science and Chemistry (FASCINATE 2019), NCAR, Boulder, CO
2019† Global Air Quality Sensing Forum, Berkeley, CA
2017 AGU Fall Meeting: Session on Remote-sensing of CO_2 and CH_4, New Orleans, LA
2017† UN Climate Change Conference (COP23), Bonn, Germany
2017 Atmospheric Chemistry Colloquium for Emerging Senior Scientists (ACCESS) XIV, Brookhaven National Lab
2017† DOE Computational Science Graduate Fellowship Program Review, Washington, DC

Teaching Experience

University of Washington: *Received the annual department teaching award in 2022 & 2023*

- ATMOS 340 (Atmospheric Thermodynamics, *undergraduate*): Winter 2023
- ATMOS 358 (Atmospheric Chemistry, *undergraduate*): Spring 2021, 2022, 2023, 2024, 2025
- ATMOS 501 (Atmospheric Physics & Chemistry, *graduate*): Autumn 2021, 2022, 2023, 2024, 2025
- ATMOS 532 (Atmospheric Radiation, *graduate*): Winter 2022
- Climate & Environmental Justice Faculty Development Workshop: Winter 2022, 2023

Mentoring

Postdocs:

- Dr. Tai-Long He (UW ATMOS), 2022 – 2024. Next position: Postdoc at Harvard

Graduate students:

- Eliot Kim (UW ATMOS), 2024 – *present*
- Iana Ferguson (UW ATMOS), 2024 – *present*
- Eric Mei (UW ATMOS), 2023 – *present*
- James Yoon (UW ATMOS), 2022 – *present*
- Nikhil Dadheech (UW ATMOS), 2021 – *present*
- Johannes Gensheimer (M.S. at TUM), 2020 – 2021. Next position: PhD student at MPI Jena

Postbac Researchers:

- Sydney Vernon (UW ATMOS), 2025 – *present*

Undergraduates:

- Coco Lipe (UW ATMOS), 2024 – *present*
- Alyssa Tou (UW ATMOS), 2024 – 2025. Next position: Air Quality Consultant at Ramboll
- Max Taniguichi-King (UC Berkeley), Summer 2024. Next position: Software eng at Center for Data Sci & Env
- Lauren Yarrington (UW CS), 2023 – *present*
- Laura Pong (UW ATMOS), 2023 – *present*
- Simon Zhang (UW AMATH), 2022 – 2023. Next position: PhD student at U. Minnesota
- Ryan Boyd (UW ATMOS), 2021 – 2023. Next position: PhD student at Princeton

Service Activities

Departmental committees and duties:

- UW ATMOS advancement committee member, 2025 – *present*.
- UW ATMOS computing committee member, 2024 – *present*.
- UW ATMOS assistant computing director search committee member, 2024.
- UW ATMOS committee on graduate studies, 2023 – 2025.
- UW ATMOS faculty search committee member, 2023 – 2024.
- UW ATMOS strategic planning committee member, 2023.
- UW ATMOS teaching schedule committee member, 2022 – 2023.
- UW ATMOS graduate curriculum committee member, 2021 – 2023.

College/University committees and duties:

- College scholarship committee member, 2024 – *present*.
- Co-Director of UW "Computing for the Environment" Initiative, 2022 – 2025.
- Facilitator of UW Climate & Environmental Justice Faculty Development Workshop, 2022 – 2023.
- UW faculty senator, 2021 – 2023.

National committees and duties:

- Science team member for the NASA Carbon-I satellite mission concept, 2024 – *present*.
- Science team member for the NASA STRIVE satellite mission concept, 2024 – *present*.
- Committee member, National Academies Panel on *"Atmospheric Methane Removal"*, 2023 – 2024.
- Co-organizer, Telluride Science Research Conference on *"Mapping Urban Air: Linking Observations and Processes"*, 2021 & 2025.
- Team Lead, NASA Keck Institute for Space Sciences workshop on *"COVID-19 and the Earth System"*, 2021.
- Co-author, white paper from Microsoft Research workshop on Urban Futures: *"Why all cities should have 'Clean Air as a City Service'"*, 2020.

International committees and duties:

- Project lead for $FETCH_4$, an international collaboration of scientists focused on improving our understanding of the past and modern methane cycle (28 institutions across 8 countries), 2023 – *present*.
- External referee for the Dutch Research Council's Stevin Prize, one of the Netherlands' highest honors, 2025.
- Lead chapter author, Japanese National Institute for Environmental Studies report: *"A guidebook on the use of satellite greenhouse gases observation data to evaluate and improve greenhouse gas emission inventories"*, 2018.
- Co-chair, session at AGU Fall Meeting, 2019, 2020.
- Guest editor for *PNAS*.
- Proposal reviewer for *NSF*, *NASA*, *NOAA*, *Schmidt Sciences*, *Deutsche Forschungsgemeinschaft*, and *Stanford Sustainability Accelerator*.
- Peer reviewer for 15 scientific journals: *Science*, *Nature*, *PNAS*, *Science Advances*, *Nature Geoscience*, *Nature Climate Change*, *Geophysical Research Letters*, *Atmospheric Chemistry and Physics*, *Biogeosciences*, *Atmospheric Measurement Techniques*, *Geoscientific Model Development*, *Environmental Science & Technology*, *Earth's Future*, *Journal of Geophysical Research*, and *GeoHealth*.