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Education

Ph.D. in Earth and Planetary Sciences, Harvard University, June, 2003.

Thesis title: *Linking regional air pollution with global chemistry and climate: The role of background ozone*

A.B. in Environmental Geoscience, *magna cum laude*, Harvard College, June 1997.

Professional Experience

Peter H. Stone and Paola Malanotte Stone Professor, Department of Earth, Atmospheric and Planetary Sciences, MIT, Cambridge, MA, July 2021-present.

Adjunct Senior Research Scientist, Lamont-Doherty Earth Observatory (LDEO) of Columbia University, Palisades, NY, July 2022-present.

Affiliate Faculty Member, Center for Global Change Science and the Joint Program on the Science and Policy of Global Change, MIT, January 2022-present.

Professor, Department of Earth and Environmental Sciences and Lamont-Doherty Earth Observatory (LDEO) of Columbia University, Palisades, NY, 2016-2021; on leave July 2021 through June 2022.

Associate Faculty Member, The Earth Institute of Columbia University, New York, NY, 2018-2021.

Affiliate Faculty Member, Data Science Institute at Columbia University, New York, NY, 2021.

Associate Professor, Department of Earth and Environmental Sciences and Lamont-Doherty Earth Observatory of Columbia University, Palisades, NY, 2011-2016.

Visiting Scientist, National Center for Atmospheric Research Atmospheric Chemistry Division, Boulder, CO, July 2015.

Research Physical Scientist, Geophysical Fluid Dynamics Laboratory, NOAA, Princeton, NJ, 2004-2011.

Research Associate, Atmospheric and Oceanic Sciences Program, Princeton University, Princeton, NJ, 2003-2004.

Graduate Researcher, Harvard Atmospheric Chemistry Modeling Group, Harvard University, Cambridge, MA, 1998-2003.

Independent Consultant, to the Clean Air Task Force, Cambridge, MA, October, 1999, February, 2000.

Undergraduate Researcher, with Daniel J. Jacob, Harvard University, Cambridge, MA, 1995-1997.

Honors (since 2005)

National Center for Atmospheric Research Thompson Lecturer, July 2019.

13th Excellence in Mentoring Award from Lamont-Doherty Earth Observatory, September 2017.

American Geophysical Union James B. Macelwane Medal, December 2011.

Presidential Early Career Award for Scientists and Engineers (PECASE), July 2006.

American Geophysical Union James R. Holton Junior Scientist Award, December 2005.

Professional Activities (since 2005)

Principal Investigator, NASA Health and Air Quality Applied Sciences Team Member ([HAQAST3](#)), 2021-2025.

Member, Spark Climate Solutions Methane Removal Science Advisory Board, 2023-present.

Author, Fifth National Climate Assessment, Air Quality Chapter, 2021-2023.

Member, American Geophysical Union Atmospheric Sciences Canvassing Committee, 2023.

Member, Expert Advisory Board for Nepal's first residential college of liberal arts, science and technology, 2022.

Co-convener, [2nd Ozone Deposition Workshop](#), Virtual, March 2022.

Member, NCAR Climate Data Guide Board of Advisors, 2020-2022.

Member, **Steering Committee**, NCAR Multi-Scale Chemistry Modeling (MUSICA), 2020-present.

Member, Project Advisory Committee, Northeast States for Coordinated Air Use Management, 2020-2021.

Contributing Author, Royal Society report, Effects of climate change and net zero policies on air quality, 2020-2021.

Member, American Geophysical Union Atmospheric Sciences Section Fellows Committee, 2019-2022.

Member, US CLIVAR Working Group: Large "Initial-Condition" Earth System Model Ensembles, 2018-2021.

Member, NCAR Advisory Panel, January, 2018 and August 2019-2020.

Principal Investigator, NASA Health and Air Quality Applied Sciences Team (HAQAST2) Member, 2016-2020.

Member, Board on Atmospheric Sciences and Climate of the National Academy of Sciences, 2014-2020.

Member, **Steering Committee**, Air Pollution Extremes Workshop, Columbia University, November, 2018.

Committee Member, American Meteorological Society Statement on Atmospheric Ozone, 2017.

Member, **Steering Committee**, NYSERDA-sponsored NESCAUM Workshop on New York City Metro Area Energy and Air Quality Data Gaps, 2017.

Member, Scientific Steering Committee, IGAC/SPARC Chemistry-Climate Model Initiative, 2013-2018.
Local host, [NASA HAQAST3 Meeting](#), LDEO, November 28-29, 2017.
Co-host (with graduate student Olivia Clifton), [Ozone Dry Deposition Workshop](#), LDEO, October 5-6, 2017.
Member, AGU William Kaula Award Selection Committee, 2016.
Principal Investigator, NASA Air Quality Applied Sciences Team (AQAST; HAQAST1) Member, 2011-2016.
Invited Critical Review Author for Air & Waste Management Association, 2015.
American Geophysical Union EOS Editorial Advisory Board (Atmospheric Sciences), Jan. 2010-2015.
Co-chair, Community Climate System Model Chemistry-Climate Working Group, June 2010-2012.
Lead Author, Intergovernmental Panel on Climate Change Assessment Report 5 Working Group I Chapter 11, 2010-2013.
Contributing Author, Intergovernmental Panel on Climate Change Assessment Report 5 Working Group I Annex II and Summary for Policy Makers, 2011-2013.
Co-author, amicus brief to the U.S. Supreme Court on their review of EPA's Cross-State Air Pollution Rule, 2013.
Member, Scientific Organizing Committee, IGAC/SPARC Global Chemistry-Climate Modeling and Evaluation Workshop, May, 2012.
Contributing Author, U.S. EPA Integrated Science Assessment for Ozone, 2012.
Co-convenor of Session on Interactions between tropospheric composition and climate, American Geophysical Union Fall Meeting, San Francisco, CA, Dec. 2010.
Contributing Author, Global and regional modeling chapter, Task Force on Hemispheric Transport of Air Pollution (TF HTAP) 2010 Report, 2009-2010.
Participant in Airborne Data for Assessing Models User Group, College Park, MD, Aug., 2010.
Earth Science Women's Network Leadership Board, 2006-2010; co-organized Leadership Training Workshop, Dec. 2008.
Task Leader, Photooxidants Model Intercomparison of the TF HTAP, 2006-2008.
Participant in International Tropospheric Airborne Measurement Evaluation Panel, Baltimore, MD, Aug., 2008.
Coordinating Lead Author, Ozone modeling section of TF HTAP Interim Report, 2007.
Co-convenor of Session on Chemistry-Climate Interactions, American Geophysical Union, San Francisco, CA, Dec., 2006.
Contributing Author, U.S. EPA Air Quality Criteria Document for Ozone and Related Photochemical Oxidants, 2003-2005.
Co-convenor of Session on Biosphere-Atmosphere Exchange, American Geophysical Union, San Francisco, CA, Dec., 2005.
Reviewer, *J. Geophys. Res.-Atmospheres*, *Geophys. Res. Lett.*, *Atmos. Environ.*, *J. Air & Waste Management*, *Atmos. Chem. Phys.*, *ACS Earth and Space Chemistry*, *Earth Interactions*, *J. Atmos. Sci.*, *J. Appl. Meteorol. & Climatology*, *J. Quant. Spec. & Rad. Trans.*, *Environ. Sci. & Technol.*, *Environ. Res. Lett.*, *Nature*, *Nat. Climate Change*, *Nat. Geosci.*, *Proc. Natl. Acad. Sci.*, *Sci. Adv.*, *Geosci. Model Dev.*, *National Academy of Sciences National Research Council*, proposals for *National Science Foundation (NSF)*, *Environmental Protection Agency (EPA)*, *National Aeronautics and Space Agency (NASA)*, *National Oceanic and Atmospheric Administration (NOAA)*.
Member, American Geophysical Union (since 1999), American Meteorological Society (since 2001), Earth Science Women's Network (co-founder in 2002).

Outside Professional Activities

Independent Consultant, to Stratus Consulting on a project for the Environmental Protection Agency, less than 2 days, 2013.

Peer-Reviewed Publications

--2024--

1. Staehle, C., H. E. Rieder and **A.M. Fiore**, Technical note: An assessment of the performance of statistical bias correction techniques for global chemistry-climate model surface ozone fields, submitted to *Atmos. Chem. Phys.*, available at: egusphere-2023-2743.
2. **Fiore, A.M.**, L.J. Mickley, Q. Zhu, and C.B. Baublitz (2024), Climate and Tropospheric Oxidizing Capacity, *Annu. Rev. Earth Planet. Sci.* 52:11.1–11.29, <https://doi.org/10.1146/annurev-earth-032320-090307>.
3. Domingo, N., **A.M. Fiore**, J-F Lamarque, P.L. Kinney, L. Jiang, A. Gasparri, ..., A. Schneider, A.M. Vicedo-Cabrera, and K. Chen (2024), Ozone-related acute excess mortality projected to increase in the absence of climate and air quality controls consistent with the Paris Agreement, accepted at *One Earth*,

- <https://doi.org/10.1016/j.oneear.2024.01.001>.
4. Goldberg, D.L., M. Tao, G.H. Kerr, S. Ma, D.Q. Tong, **A.M. Fiore**, A.F. Dickens, Z.A. Adelman, S.C. Anenberg (2024), Evaluating the spatial patterns of U.S. urban NO_x emissions using TROPOMI NO₂, *Remote Sensing of Environment*, 300, <https://doi.org/10.1016/j.rse.2023.113917>.
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 5. Jin X, **Fiore A.M.**, Cohen R.C. (2023), Space-Based Observations of Ozone Precursors within California Wildfire Plumes and the Impacts on Ozone-NO(x)-VOC Chemistry, *Environ Sci Technol.*, 57(39):14648-14660, doi: 10.1021/acs.est.3c04411.
 6. Yang, B., F.C. Wiser, V.F. McNeill, **A.M. Fiore**, M. Tao, D.K. Henze, S. Sen, D.M. Westervelt (2023), Implementation and evaluation of the automated model reduction (AMORE) version 1.1 isoprene oxidation mechanism in GEOS-Chem, *Environ. Sci.: Atmos*, DOI: 10.1039/D3EA00121K.
 7. Baublitz, C.B., **A.M. Fiore**, S.M. Ludwig, J.M. Nicely, G.M. Wolfe, L.T. Murray, R. Commane, M.J. Prather, D.C. Anderson, G. Correa, B.N. Duncan, M. Follette-Cook, D.M. Westervelt, I. Bourgeois, W.H. Brune, T.P. Bui, J. P. DiGangi, G.S. Diskin, S.R. Hall, K. McKain, D.O. Miller, J. Peischl, A. Thames, C. Thompson, K. Ullman, S.C. Wofsy (2023). An observation-based, reduced-form model for oxidation in the remote marine troposphere, *Proc. Nat. Acad. Sci.* 120 (34) e2209735120, <https://doi.org/10.1073/pnas.2209735120>
 8. Previdi, M., J-F Lamarque, **A.M. Fiore**, D.M. Westervelt, D.T. Shindell, G. Correa, and G. Faluvegi (2023). Arctic warming in response to regional aerosol emissions reductions, *Environ. Res.: Climate* 2, 035011 <https://doi.org/10.1088/2752-5295/ace4e8>
 9. Bartusek, S., Wu, Y., Ting, M., Zheng, C., **Fiore, A.**, Sprenger, M., & Flemming, J. (2023). Higher-resolution tropopause folding accounts for more stratospheric ozone intrusions. *Geophysical Research Letters*, 50, e2022GL101690. <https://doi.org/10.1029/2022GL101690>.
 10. Zheng, Z., **Fiore, A. M.**, Westervelt, D. M., Milly, G. P., Goldsmith, J., Karambelas, A., Curci, G., Randles, C. A., Paiva, A. R., Wang, C., Wu, Q., and Dey, S. (2023). Automated machine learning to evaluate the information content of tropospheric trace gas columns for fine particle estimates over India: A modeling testbed. *Journal of Advances in Modeling Earth Systems*, 15, e2022MS003099.
 11. Wiser, F., Place, B., Sen, S., Pye, H. O. T., Yang, B., Westervelt, D. M., Henze, D. K., **Fiore, A. M.**, and McNeill, V. F. (2023), AMORE-Isoprene v1.0: A new reduced mechanism for gas-phase isoprene oxidation, *Geosci. Model Dev.*, 16, 1801-1821, <https://doi.org/10.5194/gmd-16-1801-2023>.
 12. Hancock, S. E., **A.M. Fiore**, D.M. Westervelt, G. Correa, J.-F. Lamarque, C. Venkataraman, A. Sharma (2023), Changing PM_{2.5} and related meteorology over India from 1950-2014: A new perspective from a chemistry-climate model ensemble, *Environ. Res.: Climate* 2, 015003, DOI 10.1088/2752-5295/acb22a.
 13. Guo, H., Flynn, C. M., Prather, M. J., Strode, S. A., Steenrod, S. D., Emmons, L., Lacey, F., Lamarque, J.-F., **Fiore, A. M.**, Correa, G., Murray, L. T., Wolfe, G. M., St. Clair, J. M., Kim, M., Crounse, J., Diskin, G., DiGangi, J., Daube, B. C., Commane, R., McKain, K., Peischl, J., Ryerson, T. B., Thompson, C., Hanisco, T. F., Blake, D., Blake, N. J., Apel, E. C., Hornbrook, R. S., Elkins, J. W., Hints, E. J., Moore, F. L., and Wofsy, S. C. (2023): Heterogeneity and chemical reactivity of the remote troposphere defined by aircraft measurements – corrected, *Atmos. Chem. Phys.*, 23, 99–117, <https://doi.org/10.5194/acp-23-99-2023>.
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 14. **Fiore, A.M.**, S.E. Hancock, J.-F. Lamarque, G.P. Correa, K.-L. Chang, M. Ru, O. Cooper, A. Gaudel, L.M. Polvani, B. Sauvage, J.R. Ziemke (2022), Understanding recent tropospheric ozone trends in the context of large internal variability: A new perspective from chemistry-climate models, *Environ. Res.: Climate* 1 025008 DOI 10.1088/2752-5295/ac9cc2.
 15. Karambelas, A., **Fiore, A. M.**, Westervelt, D. M., McNeill, V. F., Randles, C. A., Venkataraman, C., J.R. Pierce, K.R. Bilal, G.P. Milly (2022). Investigating drivers of particulate matter pollution over India and the implications for radiative forcing with GEOS-Chem-TOMAS15. *Journal of Geophysical Research: Atmospheres*, 127, e2021JD036195. <https://doi.org/10.1029/2021JD036195>
 16. Dressel, I.M., M.A.G. Demetillo, L.M. Judd, S.J. Janz, K.P. Fields, K. Sun, **A.M. Fiore**, B.C. McDonald, S.E. Pusede (2022), Daily Satellite Observations of Nitrogen Dioxide Air Pollution Inequality in New York City, New York and Newark, New Jersey: Evaluation and Application, *Environ. Sci. Technol.*, 56, 22, 15298–1531, <https://doi.org/10.1021/acs.est.2c02828>.
 17. **Fiore, A. M.**, Milly, G. P., Hancock, S. E., Quiñones, L., Bowden, J. H., Helstrom, E., J.-F. Lamarque, J. Schnell, J.J. West, Y. Xu (2022), Characterizing changes in eastern U.S. pollution events in a warming world. *Journal of Geophysical Research: Atmospheres*, 127, e2021JD035985. [doi: 10.1029/2021JD035985](https://doi.org/10.1029/2021JD035985)
 18. Tao, M., **A.M. Fiore**, X. Jin, L. Schiferl, R. Commane, L. Judd, S. Janz, J. Sullivan, P. Miller, A. Karambelas, S. Davis, M.; Tzortziou, L. Valin, A. Whitehill, K. Civerolo, Y. Tian (2022), Investigating changes in ozone formation chemistry during summertime pollution events over the Northeastern U.S., *Environ. Sci. Technol.* 56, 22, 15312–15327. <https://doi.org/10.1021/acs.est.2c02972>.

19. Thompson, C. R., and Coauthors (including **A.M. Fiore**), 2022: The NASA Atmospheric Tomography (ATom) Mission: Imaging the Chemistry of the Global Atmosphere. *Bull. Amer. Meteor. Soc.*, **103**, E761–E790, <https://doi.org/10.1175/BAMS-D-20-0315.1>.

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20. Bourgeois, I., J. Peischl, J.A. Neuman, S.S. Brown, C.R. Thompson, K.C. Aikin, H.M. Allen, H. Angot, E.C. Apel, C.B. Baublitz, J.F. Brewer, P. Campuzano-Jost, R. Commane, J.D. Crouse, B.C. Daube, J.P. DiGangi, G.S. Diskin, L.K. Emmons, **A.M. Fiore**, G.I. Gkatzelis, A. Hills, R.S. Hornbrook, L.G. Huey, J.L. Jimenez, M. Kim, F. Lacey, K. McKain, L.T. Murray, B.A. Nault, D.D. Parrish, E. Ray, C. Sweeney, D. Tanner, S.C. Wofsy, T.B. Ryerson (2021), Large contribution of biomass burning emissions to ozone throughout the global remote troposphere, *Proc. Nat. Acad. Sci.*, *118* (52), e2109628118; DOI: 10.1073/pnas.2109628118.
21. **Fiore, A.**, J. Bratburd, D. Miller (2021), Satellite Data for Use in the National Ambient Air Quality Process, *Environmental Manager (EM)*, Nov. issue.
22. Murray, L.T., **A.M. Fiore**, D.T. Shindell, V. Naik, L.W. Horowitz, Large uncertainties in global hydroxyl projections tied to fate of reactive nitrogen and carbon, *Proc. Nat. Acad. Sci.*, *118*(43), e2115204118; DOI: 10.1073/pnas.2115204118.
23. Holloway, T., D. Miller, S. Anenberg, M. Diao, B. Duncan, **A.M. Fiore**, D. Henze, J. Hess, P. Kinney, Y. Liu, J.L. Neu, S. O'Neill, M.T. Odman, R.B. Pierce, A. Russell, D. Tong, J.J. West, M. Zondlo (2021), Satellite monitoring for air quality and health, *Annual Reviews of Biomedical Data Science*, *4*:1, 417-447.
24. He, M.Z., V. Do, S. Liu, P.L. Kinney, **A.M. Fiore**, X. Jin, N. DeFelice, J. Bi, Y. Liu, T.Z. Insaf, M-A Kioumourtzoglou (2021), Short-term PM_{2.5} and cardiovascular admissions in NY State: assessing sensitivity to exposure model choice, *Environmental Health*, *20*:93.
25. Westervelt, D., **A.M. Fiore**, C.B. Baublitz, G. Correa (2021), Impact of northern hemisphere mid-latitude anthropogenic sulfur dioxide emissions on local and remote tropospheric oxidation, *Atmos. Chem. Phys.*, *21*, 6799-6810, <https://doi.org/10.5194/acp-21-6799-2021>.
26. Anderson, D.C., B.N. Duncan, **A.M. Fiore**, C.B. Baublitz, M.B. Follette-Cook, J.M. Nicely, G.M. Wolfe (2021), Spatial and temporal variability of the hydroxyl radical: Understanding the role of large-scale climate features and their influence on OH through its dynamical and photochemical drivers, *Atmos. Chem. Phys.*, *21*, 6481–6508, <https://doi.org/10.5194/acp-21-6481-2021>.
27. Naimark, J., **A.M. Fiore**, X. Jin, Y. Wang, E. Klovenski, C. Braneon (2021), Evaluating Drought Responses of Surface Ozone Precursor Proxies: Variations with Land Cover Type, Precipitation, and Temperature, *Geophys. Res. Lett.*, *48*, e2020GL091520. <https://doi.org/10.1029/2020GL091520>.
28. Liu, S., J. Xing, D.M. Westervelt, S. Liu, D. Ding, **A.M. Fiore**, P.L. Kinney, Y. Zhang, M.Z. He, H. Zhang, S. Sahu, F. Zhang, B. Zhao, S. Wang (2021), Role of emission controls in reducing the 2050 climate change penalty for PM_{2.5} in China, *Sci. Tot. Environ.*, *765*, 2021, 144338, SSN 0048-9697, <https://doi.org/10.1016/j.scitotenv.2020.144338>.

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29. Jaffe, D., **A.M. Fiore**, T.J. Keating (2020), Importance of Background O₃ for Air Quality Management (2020), *EM, Air & Waste Management Magazine*, November 2020.
30. Clifton, O.E., D. Lombardozzi, **A.M. Fiore**, F. Paulot, L.W. Horowitz (2020), Stomatal conductance influences interannual variability and long-term changes in regional cumulative plant uptake of ozone, *Environ. Res. Lett.*, *15*, 114059, <https://doi.org/10.1088/1748-9326/abc3f1>.
31. Pfister, G.G., S.D. Eastham, A.F. Arellano, B. Aumont, K.C. Barsanti, M.C. Barth, A. Conley, N.A. Davis, L.K. Emmons, J.D. Fast, **A.M. Fiore**, B. Gaubert, S. Goldhaber, C. Granier, G.A. Grell, M. Guevara, D.K. Henze, A. Hodzic, X. Liu, D.R. Marsh, J.J. Orlando, J.M.C. Plane, L.M. Polvani, K.H. Rosenlof, A.L. Steiner, D.J. Jacob, and G.P. Brasseur (2020), A Multi-Scale Infrastructure for Chemistry and Aerosols - MUSICA, *Bull. Amer. Met. Soc.*, *101* (10), E1743-E1760, <https://doi.org/10.1175/BAMS-D-19-0331.1>.
32. Anenberg, S.C., M. Bindl, M. Brauer, J.J. Castillo, S. Cavalieri, B.N. Duncan, **A.M. Fiore**... X. Jin... (2020), Using satellites to track indicators of global air pollution and climate change impacts: Lessons learned from a NASA-supported science-stakeholder collaborative, *GeoHealth*, *4*, e2020GH000270. <https://doi.org/10.1029/2020GH000270>.
33. Diffenbaugh, N.S., C.B. Field, E. Appel, I. Azevedo, D. Baldocchi, M. Burke, J. Burney, P. Ciais, S.J. Davis, **A.M. Fiore**, S. Fletcher, T. Hertel, D.E. Horton, S. Hsiang, R.B. Jackson, X. Jin, M. Levi, D. Lobell, G.A. McKinley, F.C. Moore, A. Montgomery, K.C. Nadeau, D. Pataki, J.T. Randerson, M. Reichstein, J. Schnell, S.I. Seneviratne, D. Singh, A. Steiner, G. Wong-Parodi (2020), The COVID-19 lockdowns: A window into the Earth System, *Nat. Rev. Earth Environ.* *1*, 470-481, <https://doi.org/10.1038/s43017-020-0079-1>.
34. Jin, X., **A. M. Fiore**, K. F. Boersma, I. De Smedt, L. Valin (2020), Inferring changes in summertime surface

ozone-NO_x-VOC chemistry over U.S. urban areas from two decades of satellite and ground-based observations, *Environ. Sci. & Technol.*, <https://doi.org/10.1021/acs.est.9b07785>

35. Clifton, O.E., F. Paulot, **A.M. Fiore**, L.W. Horowitz, G. Correa, C. B. Baublitz, S. Fares, I. Goded, A.H. Goldstein, C. Gruening, A.J. Hogg, B. Loubet, I. Mammarella, J.W. Munger, L. Neil, P. Stella, J. Uddling, T. Vesala, E. Weng (2020), Influence of dynamic ozone dry deposition on ozone pollution, *J. Geophys. Res.: Atmos.*, 125, e2020JD032398. <https://doi.org/10.1029/2020JD032398>.
36. Baublitz, C. B., **A.M. Fiore**, O.E. Clifton, J. Mao, J. Li, G. Correa, D. Westervelt, L.W. Horowitz, F. Paulot, A.P. Williams, Sensitivity of tropospheric ozone over the Southeast USA to dry deposition (2020), *Geophys. Res. Lett.*, 47, e2020GL087158. <https://doi.org/10.1029/2020GL087158>.
37. Deser, C., F. Lehner, K.B. Rodgers, T. Ault, T. Delworth, P.N. DiNezio, **A. Fiore**, C. Frankignoul, J.C. Fyfe, D.E. Horton, J.E. Kay, R. Knutti, N.S. Lovenduski, J. Marotzke, K.A. McKinnon, S. Minobe, J. Randerson, J.A. Screen, I.R. Simpson, M. Ting (2020), Insights from Earth system model initial-condition large ensembles and future prospects, *Nat. Clim. Change*, 10, 277-286, <https://doi.org/10.1038/s41558-020-0731-2>.
38. Westervelt, D.M., N.R. Mascioli, **A.M. Fiore**, A.J. Conley, J-F Lamarque, D.T. Shindell, G. Faluvegi, M. Previdi, G. Correa, L.W. Horowitz (2020), Local and remote mean and extreme temperature response to regional aerosol emissions reductions, *Atmos. Chem. Phys.*, 20, 3009-3027, <https://doi.org/10.5194/acp-20-3009-2020>.
39. Clifton, O.E., **A.M. Fiore**, W. J. Massman, C. B. Baublitz, M. Coyle, L. Emberson, S. Fares, D. K. Farmer, P. Gentine, G. Gerosa, A. Guenther, D. Helmig, D. L. Lombardozzi, J. W. Munger, E. G. Patton, S. E. Pusede, D. B. Schwede, S. J. Silva, M. Sörgel, A. L. Steiner, A. P. K. Tai (2020), Dry deposition of ozone over land: processes, measurement and modeling, *Reviews of Geophysics*, 58, e2019RG000670, <https://doi.org/10.1029/2019RG000670>.

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40. Diao, M., T. Holloway, S. Choi, S.M. O'Neill, M.Z. Al-Hamdan, A. Van Donkelaar, R.V. Martin, X. Jin, **A.M. Fiore**, D.K. Henze, F. Lacey, P.L. Kinney, F. Freedman, N. K. Larkin, Y. Zou, J.T. Kelly (2019), Methods, availability, and applications of PM_{2.5} exposure estimates derived from ground measurements, satellite, and atmospheric models, *J. Air & Waste Manag. Assoc.*, 69 (12), <https://doi.org/10.1080/10962247.2019.1668498>.
41. Jin, X., **Fiore, A. M.**, Civerolo, K., Bi, J., Liu, Y., van Donkelaar, A., and Martin, R. V., Al-Hamdan, M., Zhang, Y., Insaf, T., Kioumourtoglou, M., He, M., Kinney, P. (2019), Comparison of multiple PM_{2.5} exposure products for estimating health benefits of emission controls over New York State, USA, *Environ. Res. Lett.*, (14), 084023, <https://doi.org/10.1088/1748-9326/ab2dcb>.
42. Westervelt, D.M., C.T. Ma, M.Z. He, **A.M. Fiore**, P.L. Kinney, M-A Kioumourtoglou, S. Wang, J. Xing, D. Ding, G. Correa (2019), Mid-21st century ozone air quality and health burden in China under emissions scenarios and climate change, *Environ. Res. Lett.*, 14 (7), <https://doi.org/10.1088/1748-9326/ab260b>.
43. Previdi, M. and **A.M. Fiore** (2019), The importance of sampling variability in assessments of ENSO-PM2.5 relationships: A case study for the South Central U.S., *Geophys. Res. Lett.*, 46, <https://doi.org/10.1029/2019GL082250>.
44. Jin, X., **Fiore, A. M.**, Curci, G., Lyapustin, A., Civerolo, K., Ku, M., van Donkelaar, A., and Martin, R. V. (2019), Assessing uncertainties of a geophysical approach to estimate surface fine particulate matter distributions from satellite-observed aerosol optical depth, *Atmos. Chem. Phys.*, 19, 295-313, <https://doi.org/10.5194/acp-19-295-2019>.
45. Clifton, O.E., **Fiore, A.M.**, Munger, J.W., & Wehr, R. (2019), Spatiotemporal controls on observed daytime ozone deposition velocity over Northeastern U.S. forests during summer, *J. Geophys. Res.: Atmos.*, 124, <https://doi.org/10.1029/2018JD029073>.
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137. **Fiore, A.M.**, D.J. Jacob, R. Mathur, R.V. Martin, Application of empirical orthogonal functions to evaluate ozone simulations for the eastern United States with regional and global models, *J. Geophys. Res.*, 108, 4431, doi:10.1029/2002JD003151, 2003.
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152. **Fiore, A.M.**, D.J. Jacob, J.A. Logan, J.H. Yin, Long-term trends in ground level ozone over the contiguous United States, 1980-1995, *J. Geophys. Res.*, *103*, 1471-1480, 1998.
153. Liang, J., L.W. Horowitz, D.J. Jacob, ...**A.M. Fiore**..., Seasonal variations of reactive nitrogen species and ozone over the United States, and export fluxes to the global atmosphere, *J. Geophys. Res.*, *103*, 13,435-13,450, 1998.

Other Publications

154. McGinnis, J., T. Holloway, J. Bratburd, M. Tao, and **A. Fiore** (2023) Satellite Data on Ozone Precursors: Getting Started with Google Earth Engine, *EM*, December issue.
155. West, J.J., C.G. Nolte, M.L. Bell, **A.M. Fiore**, P.G. Georgopoulos, J.J. Hess, L.J. Mickley, S.M. O'Neill, J.R. Pierce, R.W. Pinder, S. Pusede, D.T. Shindell, and S.M. Wilson, 2023: Ch. 14. Air quality. In: *Fifth National Climate Assessment*. Crimmins, A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock, Eds. U.S. Global Change Research Program, Washington, DC, USA. <https://doi.org/10.7930/NCA5.2023.CH14>
156. **Fiore, A.M.**, V. Naik, E.M. Leibensperger (2015), A summary of the 45th A&WMA Critical Review: Air quality and climate connections, *Environmental Manager (EM)*, June, 31-35.
157. Kleinman, M., J.D. Bachman, H.J. Feldman, D. McCabe, J.J. West, and A.M. Fiore (2015), Connecting air quality and climate change, *J. Air & Waste Manage. Assoc.*, *65* (11), 1283–1291, doi: 10.1080/10962247.2015.1095599.
158. **Fiore, A.M.** (2014), No equatorial divide for a cleansing radical, *Nature News & Views*, *513*, 176-177.
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160. Draft Contributing Author to IPCC (2013), Summary for Policymakers, In *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
161. Contributing Author to IPCC, 2013: Annex II: Climate System Scenario Tables [Prather, M., G. Flato, P. Friedlingstein, C. Jones, J.-F. Lamarque, H. Liao and P. Rasch (eds.)]. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
162. Contributing Author to U.S. EPA. 2013 Final Report: Integrated Science Assessment of Ozone and Related Photochemical Oxidants. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-10/076F, 2013.
163. Ellingsen, K., M. Gauss, R. Van Dingenen, F.J. Dentener, L. Emberson, **A.M. Fiore**..., Global ozone and air quality: a multi-model assessment of risks to human health and crops, *Atmos. Chem. Phys. Discuss.*, *8*, 2163-

2223, 2008.

164. Contributing Author to U.S. EPA. Air Quality Criteria for Ozone and Related Photochemical Oxidants (2006 Final). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-05/004aF-cF, 2006.

Invited Talks (since 2011)

- *Imprints of climate variability and global change on tropospheric ozone trends*, **WCRP Open Science Conference**, virtual presentation, October, 2023.
- *Investigating chemistry and climate drivers of tropospheric OH variations*, **ALE/GAGE/AGAGE 45th Anniversary Science Symposium**, Dedham, MA, October 2023.
- *Addressing Air Quality and Climate Change: Cross-scale Chemistry Connections*, **Atmospheric Chemistry Gordon Research Conference**, Newry, ME, July 2023.
- *Sensing Air Pollution from space: Detecting Smog-forming chemistry*, **IEEE GRSS Boston Meeting** (Virtual), May, 2022.
- *Methane lifetime and short-lived climate forcers*, **A Tapestry of ‘Flying Leaps’ Virtual Symposium Celebrating Jasmin John**, NOAA/GFDL, February, 2022.
- *Connecting regional air pollution with climate change near and far*, **Department of Atmospheric and Oceanic Science (Virtual) Seminar, University of Maryland**, February, 2022.
- *Connecting regional air pollution with climate change near and far*, **Atmospheric Chemistry Colloquium, MIT**, Cambridge, MA, February, 2022.
- *Sensing Ozone-Forming Chemistry from Space*, **A&WMA Chesapeake Chapter Meeting** (virtual), December, 2021.
- *Investigating climate-chemistry-air quality connections, from urban to global scales*, **MIT Joint Program on the Science and Policy of Global Change Weekly Meeting**, November, 2021.
- *A new perspective on tropospheric ozone trends*, **Sack Lunch Seminar Series PAOC/EAPS/MIT** (virtual), October, 2021.
- *Linking Air Pollution and Climate from the Anthroposphere to the Biosphere*, **UC-Riverside CEE Colloquium** (virtual), May, 2021.
- *Linking Air Pollution and Climate from the Anthroposphere to the Biosphere*, **GEOMAR Helmholtz Centre for Ocean Research Marie Tharp Lecture Series** (virtual), May, 2021.
- Panelist on ‘*Clean Skies Over Our Cities: Lessons from the Covid-19 Lockdown*’, **Columbia Global Centers** (joint Mumbai, Beijing, Nairobi), Webinar, October, 2020.
- *Air pollution-climate linkages: A bidirectional, regional-to-global view*, **MIT Department Lecture Series**, October, 2020.
- *Air pollution-climate linkages: A bidirectional, regional-to-global view*, **U Wisconsin-Madison AOS Virtual Colloquium**, September, 2020.
- *Coupled Conundrums: Climate Change and Air Pollution*, with D. Westervelt, **Lamont-Doherty Earth Observatory Open House**, Palisades, NY, October, 2019.
- *Science with Stakeholders: Collaborative research with air quality and health applications*, **NCAR Thompson Lecture Series**, Boulder, CO, July 2019.
- *Chemistry-climate connections from polluted to remote atmospheric regions*, **NCAR Thompson Lecture Series**, Boulder, CO, July 2019.
- *Variability in background U.S. ozone pollution: An underappreciated role for the terrestrial biosphere?* **Parsons Seminar, MIT**, Cambridge, MA, March, 2019.
- *Chemistry-climate connections from polluted to remote atmospheric regions*, **Sack Lunch Seminar, MIT**, Cambridge, MA, March, 2019.
- *Diagnosing changes in the frequency and duration of pollution and heat events in chemistry-climate model ensembles*, **AGU Fall Meeting**, Abstract 421196, Washington, D.C., December, 2018.
- *Variability and trends in U.S. surface ozone: Background sources, regional chemistry, and the terrestrial sink*, **New Insights in Atmospheric Chemistry Seminar Series**, U.S. EPA, Research Triangle Park, NC, November, 2018.
- *Coupled Conundrums: Climate Change and Air Quality*, **Sustainable Development Seminar Series**, School of International and Public Affairs, Columbia University, November, 2018.
- *Seeking observational constraints on variations in atmospheric oxidation*, **New Insights into Gas Phase Atmospheric Chemistry Telluride Workshop**, Telluride, CO, July, 2018.

- *Two (brief) tales of air pollution-climate connections*, **Ants Leetmaa Memorial Symposium**, Princeton, NJ, June, 2018.
- *Coupled Conundrums: Connecting Climate Change with Regional Air Quality*, **36th International Technical Meeting (ITM) on Air Pollution Modeling and its Application**, Ottawa, Canada, May, 2018.
- *Downstream from energy production: Synergies and tradeoffs for air quality and Climate*, **Center for Global Energy Policy Lunchtime Round Table**, Columbia University, New York, NY, May, 2018.
- *Global dimensions to ground-level ozone: Transboundary Transport and Climate Change*, **Health Effects Institute 2018 Annual Conference**, Chicago, IL, April, 2018.
- *Air Pollution over Asia: Current status, possible futures, and climate connections*, **ExxonMobil Research and Engineering Climate Science Seminar**, Annandale, NJ, December, 2017.
- *Detecting and attributing interactions between U.S. air pollution and climate amidst variability*, **Atmospheric Science Graduate Program 10th Anniversary Symposium, Rutgers University**, New Brunswick, NJ, May, 2017.
- *Influence of climate change and variability on (mostly U.S. ozone) air quality*, **Air Quality in a Changing World, U.S. EPA, RTP, NC**, April, 2017
- *Detecting and attributing changes in air pollution and temperature over the eastern U.S.A. amidst climate variability*, **MIT MASS Seminar**, Cambridge, MA, May, 2016.
- *Variability & uncertainty in background ozone: Relevance to present & future O₃ NAAQS*, **EPRI ENVISION Conference-- Air Quality-Background Ozone II**, Washington, D.C., May, 2016.
- *Applying models, ground- and space-based data to investigate Northeastern U.S. ozone air quality: Recent trends and future projections*, **New York Department of Environmental Conservation**, Albany, NY, January, 2016.
- *Impacts of changing U.S. NO_x emissions on ozone pollution: Insights from satellites, ground-based measurements and air quality models*, **ExxonMobil Research and Engineering NO_x Controls Workshop**, Bridgewater, NJ, January, 2016.
- *A regional-to-global perspective on attaining the new U.S. ozone NAAQS*, Panel on Meeting the New Ozone Standard, **University of Wisconsin Energy Summit 2015**, Madison, WI, October, 2015.
- *Air quality and climate connections*, **Critical Review Presentation, 2015 Air & Waste Management Association Annual Conference**, Raleigh, NC, June, 2015.
- *Detecting changes in Southeast U.S. ozone means and extremes amidst climate variability*, **SAS Modeling Workshop**, NOAA GFDL, Princeton, NJ, June, 2015.
- *Characterizing and interpreting changes in U.S. climate and air pollution means and extremes*, **Climate and Health Seminar**, Columbia University Mailman School of Public Health, New York, NY, April, 2015.
- *U.S. air pollution and climate connections: From background variability to extreme events*, **Code 610 Atmospheres Seminar Series**, NASA GSFC, Greenbelt, MD, March, 2015.
- *U.S. air pollution and climate: Trends, variability, and interactions*, **Department of Earth & Planetary Sciences Colloquium**, Harvard University, Cambridge, MA, May, 2014.
- *Ozone Pollution extremes over the eastern USA in summer: Recent trends, future projections*, **U.S. NCER/ASD Webinar**, EPA Applied Sciences Webinar Series, August, 2013.
- *NASA Air Quality Applied Sciences Team: Investigating processes affecting Western U.S. air quality*, **Western U.S. Air Quality Workshop**, Boulder, CO (remote presentation), July 2013.
- *"Ozone in rural areas of the United States": Recent trends, future projections*, **Symposium in celebration of Jennifer Logan, Harvard School of Engineering and Applied Sciences**, Cambridge, MA, May, 2013.
- *Influence of Changes in Emissions and Climate on Background and Extreme Levels of Air Pollution*, **Symposium on Abrupt Climate Change in a Warming World, Lamont-Doherty Earth Observatory**, Palisades, NY, May, 2013.
- *Analyzing western U.S. air quality with models and satellite data*, **WESTAR Council and University of Nevada Conference on Western Ozone Transport**, Reno, NV, October, 2012.
- *Identifying Chemistry-Climate-Air Quality Connections To Inform Public Policy*, **AAAS Meeting**, Vancouver, Canada, February, 2012.
- *Non-local influences on U.S. air quality: Asian pollution, stratospheric exchange, and climate change*, **Harvard Engineering and Applied Sciences Atmospheric Sciences Seminar**, Cambridge, MA, September, 2011.

- *Global dimensions to U.S. air quality: Intercontinental transport, stratospheric exchange, and climate warming*, **Lamont-Doherty Earth Observatory Earth Science Colloquium**, Palisades, NY, September, 2011.
- *Air pollutants: Drivers or riders on the climate change express?* **Atmospheric Chemistry Gordon Conference**, Mount Snow, VT, July 2011.

Conference and Workshop Presentations (since 2011; P for poster presentations)

- *Linking NO₂, HCHO, and surface ozone: Insights from analysis and modeling of LISTOS data (June-August 2018)*, **HAQAST Utah**, Salt Lake City, UT, October, 2023.
- *Anticipating TEMPO applications for ground-level ozone and public health*, **HAQAST Missouri**, St. Louis, MO, April, 2023.
- *Understanding recent tropospheric ozone trends in the context of internal variability*, **CESM Chemistry-Climate Winter Working Group Meeting**, Remote Participant, January, 2023.
- *Characterizing 'typical' pollution exposures and events*, **HAQAST Wisconsin**, Madison WI, October, 2022.
- *Correlated summertime air pollution and heat over the Northeast U.S.A.*, **HAQAST Texas**, Houston, TX, June, 2022.
- *User-driven applications in climate and health: Air quality models for decision-making*, **Bringing Computation to the Climate Challenge Initial Planning Workshop**, MIT, Cambridge, MA, April, 2022.
- *Detecting and attributing tropospheric ozone trends amidst climate variability: A new perspective from full chemistry-climate model ensembles*, **AMS 102nd Annual Meeting**, January, 2022.
- *Updates on our work at the nexus of air pollution, climate, and public health over the Northeast U.S.A.*, **HAQAST Update22 Meeting**, January, 2022.
- *Satellite Data for Air Quality Applications*, A remote lecture for the **Certificate program on air quality management and science in East Africa**, July, 2021.
- *Investigating spatiotemporal patterns at the nexus of air pollution, climate, and public health*, **HAQAST Launch21** virtual meeting, March, 2021.
- *Including GEOS-Chem simulations in the Intermountain West Data Warehouse for regional haze applications*, **Regional Technical Operations Working Group** virtual meeting, December, 2020.
- *Source Attribution using satellite products and models to inform air quality planning and health accountability*, recorded for **HAQAST 2020 Showcase**, July 2020.
- Panelist on *Expanding the NASA Orbit: How HAQAST Has Grown the User Community*, **HAQAST 2020 Showcase**, July 2020.
- Panelist on *Global Background Ozone and Its Effect on the U.S.*, **HAQAST 2020 Showcase**, July 2020.
- *Evaluating observable proxies for variability in atmospheric oxidation*, Abstract 13A.5, **100th American Meteorological Society Annual Meeting**, Boston, MA, January 2020.
- Panelist on "From One Extreme to Another: What Do Higher Temperatures Mean for the Global Population?", **Climate Change: Response and Resilience Leadership Forum**, Columbia U., New York, NY, November 2019.
- *Updates from the Haze Tiger Team*, **NASA HAQAST6 Meeting**, Pasadena, CA, July 2019.
- *More frequent and longer duration pollution and heat events over the 21st century in a small chemistry-climate model ensemble*, **Workshop on Correlated Extremes**, New York City, NY, May, 2019.
- *Quantifying health benefits of emission reduction over New York State using multiple PM_{2.5} products* (X. Jin first author), **NYSERDA Air Quality and Health Effects Workshop**, Albany, NY, April, 2019 (P).
- *Overview and updates from the Haze Tiger Team*, **NASA HAQAST5 Meeting**, Phoenix, AZ, January, 2019.
- *Assessing and communicating uncertainties in PM_{2.5} estimates derived from satellite aerosol optical depth*, **AGU Fall Meeting**, Abstract 444823, Washington, D.C., December, 2018.
- *Quantifying risks from changing U.S. PM_{2.5} distributions due to climate variability and warming with large multi-model ensembles and high-resolution downscaling*, **PM in a changing world**, U.S. EPA, Research Triangle Park, NC, November, 2018.
- *HAQAST Tiger Team: Supporting the use of satellite data in State Implementation Plans (SIPs)*, **NASA HAQAST4 Meeting**, Madison, WI, July, 2018.
- *What is background ozone?* **NASEM Board on Atmospheric Science and Climate Meeting**, Washington, D.C., May, 2018.
- *HAQAST Tiger Team: Satellite data in State Implementation Plans (SIPs)*, **NASA HAQAST3 Meeting**, Lamont-Doherty Earth Observatory, Palisades, NY, November, 2017.

- *Observed variability in formaldehyde and reactive nitrogen: Constraints on “background” oxidation in chemistry-climate models?*, **ATom Science Team Meeting**, Boulder, CO, July, 2017 (P).
- *Connecting U.S. PM_{2.5} means and extremes with regional meteorology and global change*, **Air Quality in a Changing World, U.S. EPA**, RTP, NC, April, 2017.
- *Estimates of background ozone and its sources from global models*, **Background Ozone Scientific Assessment Workshop**, Denver, CO, March, 2017.
- Mapping PM_{2.5} exposures over New York State, **NASA HAQAST2 Meeting**, University of Washington, Seattle, WA, February, 2017.
- Source attribution using satellite products and models to inform air quality planning and health accountability, **NASA HAQAST1 Meeting**, Emory University, Atlanta, GA, November, 2016.
- *Quantifying the frequency and duration of U.S. regional pollution episodes with EOF analysis: Model evaluation and 21st century changes*, **2016 IGAC Science Conference**, Breckenridge, CO, September, 2016.
- *Quantifying background and anthropogenic contributions to U.S. air quality*, **NASA AQAAS10 Meeting**, U.S. EPA, Research Triangle Park, NC, January, 2016.
- *LDEO/CU Modeling contributions to ATom*, presented by Jean-François Lamarque from NCAR, **ATom Science Team Meeting**, Palmdale, CA, July, 2015.
- *Air quality and Climate Connections*, **AQAAS9 Meeting**, St. Louis University, St. Louis, MO, 2015.
- *Regional to global source contributions to Eastern U.S. high-O₃ episodes*, **NASA AQAAS8 Meeting**, Georgia Institute of Technology, Atlanta, GA, December, 2014.
- *Extreme Pollution and Weather Events: Characterization, underlying processes, and response to global change*, **Virtual “Site Visit”**, via phone with EPA Program Manager Alan Leinbach, September, 2014.
- *Quantifying source contributions to O₃ and PM_{2.5} pollution episodes across the Eastern United States*, **NASA AQAAS7 Meeting**, Harvard University, Cambridge, MA, June 2014.
- *The role of dynamics in determining tropospheric variability and trends*, presented for Meiyun Lin of GFDL at the **Chemistry-Climate Modeling Initiative Workshop**, University of Lancaster, Lancaster, UK, May, 2014.
- *21st Century Reversal of the surface ozone seasonal cycle over the Northeastern United States*, presented for Olivia Clifton at the **Chemistry-Climate Modeling Initiative Workshop**, University of Lancaster, Lancaster, UK, May, 2014 (P).
- *Key drivers of surface ozone variability, from WUS background to EUS extremes*, **NASA AQAAS6 Meeting**, Rice University, Houston, TX, January, 2014.
- *Recent trends and 21st Century projections of ozone pollution extremes over the Northeastern USA during summer*, **NYSERDA 2013 EMEP Conference**, Albany, NY, November, 2013.
- *Characterizing the “Normal Atmosphere” from background oxidation to extreme pollution*, **Symposium in celebration of Hiram Levy II**, Geophysical Fluid Dynamics Laboratory, Princeton, NJ, August, 2013.
- *Influence of chemistry-climate interactions and emission controls on 21st century U.S. surface O₃ seasonality, variability, and extreme events*, **Chemistry-Climate Modeling Initiative Workshop**, Boulder, CO, May, 2013 also presented at **NASA AQAAS 5 Meeting**, University of Maryland, College Park, MD, June, 2013. (P)
- *Characterizing U.S. air pollution extremes and influences from changing emissions and climate*, **U.S. EPA STAR Research Forum on Extreme Events**, Arlington, VA, February, 2013.
- *Asian and stratospheric influences on western U.S. ozone air quality*, **NASA AQAAS 4 Meeting**, California Air Resources Board, Sacramento, CA, November, 2012.
- *Processes contributing to model differences in North American background ozone estimates*, **NASA AQAAS 3 Meeting**, University of Wisconsin-Madison, WI, June, 2012.
- *Establishing process-oriented constraints on chemistry-climate models for projecting ozone air quality over the next century*, **IGAC / SPARC Global Chemistry-Climate Modeling and Evaluation Workshop**, Davos, Switzerland, May, 2012 (P)
- *Methane lifetime in CMIP5 simulations*, **NCAR CESM Chemistry-Climate Working Group Meeting**, Breckenridge, CO, June, 2011.
- *Ozone pollution (events) in the GFDL AM3 chemistry-climate model*, **CESM Chemistry-Climate Working Group**, Boulder, CO, March 2011.

Teaching Experience (since 2012)

- Co-Instructor, *Atmospheric Chemistry Climate and Models*, 12.806 / 12.306 / 10.571, MIT, Spring 2024.
- Guest Lecturer, *Aerospace, Energy & the Environment*, Lectures on Stratospheric and Tropospheric Chemistry, 16.715, MIT, Fall 2023.

- Co-Instructor, *EAPS First-year Graduate Seminar*, 12.900, MIT, Fall 2023.
- Co-Instructor, *Seminar in Computational Earth Science*, 12.S596/1.S977/6.S964, MIT, Spring 2023.
- Guest Lecturer, *CEE Climate Seminar* Lecture on Methane Trends, MIT, Spring 2023.
- Guest Lecturer, Lecture on Science with Stakeholders: Collaborative research for air quality and health applications, *IDS.410J*, MIT, Spring 2023.
- Co-Instructor, *Introduction to Climate Science*, 12.842 / 12.301, MIT, Fall, 2022, 2023.
- Instructor, *Introduction to Atmospheric Chemistry*, EESC GU4924 (W4924), Columbia University, Spring 2013-2017, 2019-2021.
- Co-Instructor, *Idealized Models of Climate Processes*, EESC GR6926, Columbia University, Fall 2019, Spring 2021.
- Co-Instructor, *Earth's Environmental Systems: Climate System*, EESC UN2100, Columbia University, Fall 2018, Spring 2019.
- Co-Instructor, *Insights into Climate and Carbon Cycling from Simple Models*, Atmos. Sci. Seminar, EESC G9910, Columbia University, Fall 2016.
- Co-Instructor, *Dust in the Earth System*, Atmos. Sci. Seminar, EESC G9910, Columbia University, Spring 2016.
- Lecturer, *Atmosphere Tutorial: Chemistry*, NCAR ASP Summer Colloquium, Boulder, CO, July 2015.
- Co-Instructor, *Extreme Weather and Climate*, Atmos. Sci. Seminar, EESC G9910, Columbia University, Fall 2014.
- Co-Instructor, *Climate Change 2013: The Physical Science Basis* (IPCC AR5 WG1 report), Atmos. Sci. Seminar, EESCG9910, Columbia University, Spring 2014.
- Guest Lecturer, *Ozone smog in surface air: Background contributions and climate connections*, Columbia SIPA ESP MPA Program, LDEO, Palisades, NY, July 2013.
- Instructor, *Connecting atmospheric composition with climate variability and change*, Atmos. Sci. Seminar, EESC G9910, Columbia University, Fall 2012.