ARLENE M. FIORE

Department of Earth and Environmental Sciences
Lamont-Doherty Earth Observatory
61 Route 9W, Palisades NY, 10964

amfiore@ldeo.columbia.edu
phone: 845 365 8580
http://blog.ldeo.columbia.edu/atmoschem/

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

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

Fellowships and Honors

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.
Invited ACCESS (Atmospheric Chemistry Colloquium for Emerging Senior Scientists) participant, September 2003.
National Science Foundation Fellowship, July 1998-July 2002.
Bok Center Distinction in Teaching Awards (overall evaluations of 4.5 or higher out of 5), Fall 1998, Fall 1999, Spring 2002.
Ecole Normale Superieure Fellowship, Paris, France, Sept. 1997-June 1998.
Summa cum laude honors thesis, Harvard College, June 1997.

Professional Activities

Member, Board on Atmospheric Sciences and Climate of the National Academy of Sciences, 2014-present.
Invited Critical Review Author for Air & Waste Management Association, 2015.
American Geophysical Union EOS Editorial Advisory Board (Atmospheric Sciences), Jan. 2010-present.
Principal Investigator, NASA Air Quality Applied Sciences Team Member, 2011-2015.
Member, Scientific Steering Committee, IGAC/SPARC Chemistry-Climate Modeling Initiative, May 2013-present.
Member, Scientific Steering Committee, AerChemMIP (chemistry-climate model intercomparison project), Fall 2014-present.
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.
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-convener 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 theTF 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-convener of Session on Chemistry-Climate Interactions, American Geophysical Union, San Francisco, CA, Dec., 2006.
Contributing Author, U.S. EPA Integrated Science Assessment for Oxides of Nitrogen, 2006.
Meeting Host, EPA/NOAA Workshop on Emerging Issues in the Atmospheric Chemistry of NO_x and SO_x, July 2006.
Contributing Author, U.S. EPA Air Quality Criteria Document for Ozone and Related Photochemical Oxidants, 2003-2005.
Co-convener of Session on Biosphere-Atmosphere Exchange, American Geophysical Union, San Francisco, CA, Dec., 2005.
Co-convener of Special Science-Policy Session, American Geophysical Union Spring Meeting,Washington, D.C., May, 2002.
Participant in American Meteorological Society Summer Policy Colloquium, Washington, D.C., June, 2001.
Reviewer*, J. Geophys. Res.-Atmospheres*, *Geophys. Res. Lett.*, *Atmos. Environ.*, *J. Air & Waste Management*, *Atmos. Chem. Phys.*, *Earth Interactions, J. Appl. Meteoolog. & Climatology, Environ. Sci. & Technol., Environ. Res. Lett., Nature, Nat.*

Climate Change, Nat. Geosci., National Academy of Sciences National Research Council, proposals for *National Science Foundation (NSF), Environmental Protection Agency (EPA), National Aeronautics and Space Agency (NASA).*
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.

Publications

- Rieder, H. E., A. M. Fiore, L. W. Horowitz, and V. Naik (2015), Projecting policy-relevant metrics for high summertime ozone pollution events over the eastern United States due to climate and emission changes during the 21st century, J. Geophys. Res. Atmos., 120, doi:10.1002/2014JD022303.

--2014--

- Clifton, O. E., A. M. Fiore, G. Correa, L. W. Horowitz, and V. Naik (2014), Twenty-first century reversal of the surface ozone seasonal cycle over the northeastern United States, Geophys. Res. Lett., 41, 7343–7350, doi:10.1002/2014GL061378.
- **Fiore, A.M.,** J.T Oberman, M. Lin, L. Zhang, O.E. Clifton, D.J. Jacob, V. Naik, L.W. Horowitz, J.P. Pinto (2014), Estimating North American background ozone in U.S. surface air with two independent global models: Variability, uncertainties, and recommendations*, Atmos. Environ*., 96, 284-300.
- Duncan, B.N., A.I Prados, L. Lamsal, Y. Liu, D.G. Streets, P. Gupta, E. Hilsenrath, R.A. Kahn, J.E. Nielsen, A.J. Beyersdorf, S.P. Burton, **A.M. Fiore**, and 12 others (2014), Satellite data of atmospheric pollution for U.S. air quality applications: Examples of applications, summary of data end-user resources, answers to FAQs, and common mistakes to avoid, *Atmos. Environ., 94*, 647-662.
- Zoogman, P., Jacob, D. J., Chance, K., Liu, X., Lin, M., **Fiore, A.,** and Travis, K. (2014), Monitoring high-ozone events in the US Intermountain West using TEMPO geostationary satellite observations, *Atmos. Chem. Phys., 14*, 6261-6271, doi:10.5194/acp-14-6261-2014.
- Anenberg, S.C., J.J. West, H. Yu, M. Chin, M. Schulz, D. Bergmann, I. Bey, H. Bian, T. Diehl, **A.M. Fiore**, P. Hess, E. Marmer, V. Montanaro, R. Park, D. Shindell, T. Takemura, F. Dentener (2014), Impacts of intercontinental transport of anthropogenic fine particulate matter on human mortality, *Air Quality, Atmosphere, and Health*, doi: 10.1007/s11869-014-0248-9.
- **Fiore, A.M.,** R.B. Pierce, R.R. Dickerson, M. Lin (2014), Detecting and Attributing Episodic High Background Ozone Events, *Environmental Manager* (*EM*; Special Issue for NASA AQAST), *Feb*., 22-28.
- Mickley, L.J., **A.M. Fiore**, D.K. Henze, Interactions between Climate Change and U.S. Air Quality, *Environmental Manager* (*EM*; Special Issue for NASA AQAST), *Feb*., 32-35.
- Lapina, K., D. K. Henze, J. B. Milford, M. Huang, M. Lin, **A. M. Fiore**, G. Carmichael, G. G. Pfister, and K. Bowman (2014), Assessment of source contributions to seasonal vegetative exposure to ozone in the U.S., *J. Geophys. Res. Atmos., 119*, doi:10.1002/2013JD020905.
- Lin, M., L. W. Horowitz, S.J. Oltmans, **A.M. Fiore**, S. Fan (2014), Tropospheric ozone trends at Mauna Loa Observatory tied to decadal climate variability, *Nat. Geosci.,* doi:10.1038/NGEO2066.

--2013--

- Naik, V., L.W. Horowitz, **A.M. Fiore**, P. Ginoux, J. Mao, A. Aghedo, H. Levy II (2013), Impact of preindustrial to present-day changes in short-lived pollutant emissions on atmospheric composition and climate forcing, *J. Geophys. Res.,* 118, 8086–8110, doi:10.1002/jgrd.50608.
- Fang Y., D.L. Mauzerall, J. Liu, **A.M. Fiore**, L.W. Horowitz (2013), Impacts of 21st century climate change on global air pollution-related premature mortality, Climatic Change, 1-15, 10.1007/s10584-013-0847-8.
- Naik, V., Voulgarakis, A., **A.M. Fiore**, L.W. Horowitz,… (2013), Preindustrial to present-day changes in tropospheric hydroxyl radical and methane lifetime from the Atmospheric Chemistry and Climate Model Intercomparison Project (ACCMIP), *Atmos. Chem. Phys., 13*, 5277-5298, doi:10.5194/acp-13-5277-2013.
- Barnes, E.A., and **A.M. Fiore** (2013), Surface ozone variability and the jet position: Implications for projecting future air quality, *Geophys. Res. Lett*., 40, doi:10.1002/grl.50411.
- Doherty, R.M., O. Wild, D.T. Shindell, G. Zeng, W.J. Collins, I.A. MacKenzie, **A.M. Fiore**, D.S. Stevenson, F.J. Dentener, M. Schultz, P. Hess, R.G. Derwent, and T.J. Keating (2013), Impacts of climate change on surface ozone and intercontinental pollution: A multi-model study, *J. Geophys. Res*., 118, 3744–3763, doi:10.1002/jgrd.50266..
- Mao, J., L.W. Horowitz, V. Naik, S. Fan, J. Liu, and **A.M. Fiore** (2013), Sensitivity of tropospheric oxidants to biomass burning emissions: implications for radiative forcing, *Geophys. Res. Lett*., 40, 1241–1246, doi:10.1002/grl.50210.

- Fang, Y., **A.M. Fiore**, J.-F. Lamarque, L.W. Horowitz, M. Lin (2013), Using synthetic tracers as a proxy for summertime PM2.5 air quality over the Northeastern United States in physical climate models, *Geophys. Res. Lett*, *40,* doi: 10.1002/grl.50162.
- Turner, A. J., **A.M. Fiore,** L.W. Horowitz, and M. Bauer (2013): Summertime cyclones 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.
- Rieder, H., **A.M. Fiore,** L.M. Polvani, J.-F. Lamarque, Y. Fang (2013), Changes in the frequency and return level of high ozone pollution events over the Eastern United States following emission controls, *Environ. Res. Lett.*, *8*, doi:10.1088/1748-9326/8/1/014012.
- Avnery, S., D.L. Mauzerall, **A.M. Fiore** (2013), Increasing Global Agricultural Production by Reducing Ozone Damages via Methane Emission Controls and Ozone Resistant Cultivar Selection, *Glob. Change. Biol*., *19*, 1285-1299, 10.1111/gcb.12118.

--2012--

- John, J. G., **A. M. Fiore**, V. Naik, L.W. Horowitz, and J.P. Dunne (2012), Climate versus emission drivers of methane lifetime from 1860–2100, *Atmos. Chem. Phys*., 12, 12021–12036, doi:10.5194/acp-12-12021-2012.
- **Fiore, A.M**., V. Naik, D. Spracklen, A. Steiner, N. Unger, M. Prather, D. Bergmann, P.J. Cameron-Smith, B. Collins, S. Dalsøren, G. Folberth, P. Ginoux, L.W. Horowitz, B. Josse, J.-F. Lamarque, T. Nagashima, F. O'Connor, S. Rumbold, D.T. Shindell, R.B. Skeie, K. Sudo, T. Takemura, G. Zeng, Global Air Quality and Climate (2012), *Chem. Soc. Rev*., 41, 6663–6683.
- Lin, M., **A. M. Fiore**, O. R. Cooper, L. W. Horowitz, A. O. Langford, H. Levy II, B. J. Johnson, V. Naik, S. J. Oltmans, and C. J. Senff (2012), Springtime high surface ozone events over the western United States: Quantifying the role of stratospheric intrusions, *J. Geophys. Res.*, 117, D00V22, doi:10.1029/2012JD018151.
- Fry, M., V. Naik, J.J. West, M.D. Schwarzkopf, **A.M. Fiore**, W.J. Collins, F.J. Dentener, D.T. Shindell, C. Atherton, D. Bergmann, B.N. Duncan, P. Hess, I.A. MacKenzie, E. Marmer, M.G. Schultz, S. Szopa, O. Wild, G. Zeng (2012), The influence of ozone precursor emissions from four world regions on tropospheric composition and radiative climate forcing, J. *Geophys. Res., 117*, D07306, doi:10.1029/2011JD017134.
- West, J.J., **A.M. Fiore**, L.W. Horowitz (2012), Scenarios of methane emission reductions to 2030: abatement costs and co-benefits to ozone air quality and human mortality, Climatic Change, 114, 441-461, doi: 10.1007/s10584-012-0426-4.
- Wild, O., **A.M. Fiore**, D.T. Shindell, R.M. Doherty, W.J. Collins, F.J. Dentener, M.G. Schultz, S. Gong, I.A. MacKenzie, G. Zeng, P. Hess, B.N. Duncan, D.J. Bergmann, S. Szopa, J.E. Jonson, T.J. Keating, A. Zuber, Future changes in surface ozone: A parameterized approach, *Atmos. Chem. Phys*. 12, 2037-2054, 2012.
- Lin, M., **A.M. Fiore**, L.W. Horowitz, O.R. Cooper, V. Naik, J. Holloway, B.J Johnson, A.M. Middlebrook, S.J. Oltmans, I.B. Pollack, T.B. Ryerson, J.X. Warner, C. Wiedinmyer, J. Wilson, B. Wyman, Transport of Asian ozone pollution into surface air over the western United States in spring, *J. Geophys. Res*, 117, D00V07, doi:10.1029/2011JD016961, 2012.
- Rasmussen, D.J., **A.M. Fiore**, V. Naik, L.W. Horowitz, S.J. McGinnis, M.G. Schultz, Surface ozone-temperature relationships in the eastern US: A monthly climatology for evaluating chemistry-climate models, *Atmos. Environ., 47*, 142-153, doi:10.1016/j.atmosenv.2011.11.021, 2012.

--2011--

- Fang, Y., **A.M. Fiore**, L. W. Horowitz, A. Gnanadesikan, I. Held, G. Chen, G. Vecchi, H. Levy II, The impacts of changing transport and precipitation on pollutant distributions in a future climate, *J. Geophys. Res., 116,* D18303, doi:10.1029/2011JD015642, 2011.
- Zoogman, P., D.J. Jacob, K. Chance, L. Zhang, P. Le Sager, **A.M. Fiore**, A. Eldering, X. Liu, V. Natraj, S.S. Kulawik, Ozone Air Quality Measurement Requirements for a Geostationary Satellite Mission, *Atmos. Environ., 45(39)*, 7143-7150, 2011.
- **Fiore, A.M.**, H. Levy II, D.A. Jaffe, North American isoprene influence on intercontinental ozone pollution, *Atmos. Chem. Phys., 11*, 1697–1710, doi:10.5194/acp-11-1697-2011, 2011.

--2010--

- Steiner, A.L., A.J. Davis, S.Sillman, R.C. Owen, A.M. Michalak**, A.M. Fiore**, Observed suppression of ozone formation at extremely high temperatures due to chemical and biophysical feedbacks, *Proc. Natl. Acad. Sci*., www.pnas.org/cgi/doi/10.1073/pnas.1008336107, 2010.
- Naik, V., **A. M. Fiore**, L. W. Horowitz, H. B. Singh, C. Wiedinmyer, A. Guenther, J. A. de Gouw, D. B. Millet, P. D. Goldan, W. C. Kuster, A. Goldstein, Observational Constraints on the Global Atmospheric Budget of Ethanol, *Atmos. Chem. Phys*, *10*, 5361-5370, 2010.
- Fang, Y., **A.M. Fiore**, L.W. Horowitz, H. Levy II, Y Hu, A.G. Russell, Sensitivity of the NO_y budget over the United States to anthropogenic and lightning NO_x in summer, *J. Geophys. Res*., 115, D18312, doi:10.1029/2010JD014079, 2010.

- Jonson, J.E., A. Stohl, **A.M. Fiore**, P. Hess et al., A multi-model analysis of vertical ozone profiles, *Atmos. Chem. Phys. 10(12),* 5759-5783, 2010.
- Lin, M., T. Holloway, G.R. Carmichael, **A.M. Fiore**, Quantifying pollution inflow and outflow over East Asia in spring with regional and global models, *Atmos. Chem. Phys., 10*, 4221-4239, 2010.

--2009--

- Fang, Y., **A.M. Fiore**, L.W. Horowitz, A. Gnanadesikan, H. Levy II., Y. Hu, A.G. Russell, Estimating the contribution of strong daily export events to total pollutant export from the United States in summer, *J. Geophys. Res.*, 114, D23303, doi:10.1029/2008JD010946, 2009.
- Crevoisier, C., D. Nobileau, **A.M. Fiore**, R. Amante, A. Chédin, N.A. Scott, Tropospheric methane in the tropics- first year from IASI hyperspectral infrared observations, *Atmos. Chem. Phys.*, 9, 6337-6350, 2009.
- Reidmiller, D.R., **A.M. Fiore**, D.J. Jaffe… , The influence of foreign vs. North American emissions on surface ozone in the US, *Atmos. Chem. Phys., 9*, 5027-5042, 2009.
- Casper-Anenberg, S. J.J. West, **A.M. Fiore**…, Intercontinental impacts of ozone pollution on human mortality, *Environ. Sci. & Technol*., 43: 6482-6487, doi: 10.1021/es900518z, 2009.
- West, J.J., V.Naik, L.W. Horowitz, **A.M. Fiore**, Effect of regional precursor emission controls on long-range ozone transport: 1. Short-term changes in ozone air quality, *Atmos. Chem. Phys*., 9, 6077-6093, 2009.
- West, J.J., V.Naik, L.W. Horowitz, **A.M. Fiore**, Effect of regional precursor emission controls on long-range ozone transport: 2. Steady-state changes in ozone air quality and on human mortality, *Atmos. Chem. Phys*., 9, 6095-6107, 2009.
- Liu, J., D.L. Mauzerall, L.W. Horowitz, P. Ginoux, and **A.M. Fiore**, Evaluating Inter-Continental Transport of Fine Aerosols: (1) Methodology, Global Aerosol Distribution and Optical Depth, *Atmos. Environ*., 43, 4327-4338, 2009.
- Wu, S., B.N. Duncan, D.J. Jacob, **A.M. Fiore** and O. Wild, Chemical nonlinearities in relating intercontinental ozone pollution to anthropogenic emissions, *Geophys. Res. Lett*., L05806, doi:10.1029/2008GL036607, 2009.
- **Fiore, A.M**., F.J. Dentener, O. Wild, C. Cuvelier, M.G. Schultz, P. Hess, C. Textor, M. Schulz,…., Multi-model Estimates of Intercontinental Source-Receptor Relationships for Ozone Pollution, *J. Geophys. Res.*, *114*, D04301, doi:10.1029/2008jd010816, 2009.

--2008--

- Sanderson M. G., F.J. Dentener, **A.M. Fiore**..., A multi-model study of the hemispheric transport and deposition of oxidised nitrogen, *Geophys. Res. Lett., 35*, L17815, doi:10.1029/2008GL035389, 2008.
- 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.
- Shindell, D.T., H. Teich, M. Chin, F. Dentener, R.M. Doherty, G. Faluvegi, **A.M. Fiore**..., A multi-model assessment of pollution transport to the Arctic, *Atmos. Chem. Phys., 8,* 5353-5372., 2008.
- Quinn, P.K., T.S. Bates, E. Baum, N. Doubleday, **A.M. Fiore**…, Short-lived pollutants in the Arctic: their climate impact and possible mitigation strategies, *Atmos. Chem. Phys., 8*, 1723-1735, 2008.
- Duncan, B.N., J.J. West, Y. Yoshida, **A.M. Fiore**, and J.R. Ziemke, The influence of European pollution on ozone in the Near East and northern Africa, *Atmos. Chem. Phys., 8,* 2267-2283, 2008.
- **Fiore, A.M**., J.J. West, L.W. Horowitz, V. Naik, and M.D. Schwarzkopf Characterizing the Tropospheric Ozone Response to Methane Emission Controls and the Benefits to Climate and Air Quality , *J. Geophys. Res. , 113*, D08307, doi:10.1029/2007JD009162, 2008.

--2007--

- Horowitz, L.W., **A.M. Fiore**, G.P. Milly, R.C. Cohen, A. Perring, P.J. Wooldridge, P.G. Hess, L.K. Emmons, J.F. Lamarque, Observational constraints on the chemistry of isoprene nitrates over the eastern United States, *J. Geophys. Res*., 112, D12S08, doi:10.1029/2006JD007747, 2007.
- West, J.J., **A.M. Fiore**, V. Naik, L.W. Horowitz, M.D. Schwarzkopf, D.L. Mauzerall, Ozone air quality and radiative forcing consequences of changes in ozone precursor emissions, *Geophys. Res. Lett*., 34, L06806, doi:10.1029/2006GL029173, 2007.
- Donner, L.J., L.W. Horowitz, **A.M. Fiore**, C.J. Seman, D.R. Blake, N.J. Blake, Transport of Radon-222 and Methyl Iodide by Deep Convection in the GFDL Global Atmospheric Model AM2, *J. Geophys. Res*., 112, D17303, doi:10.1029/2006JD007548, 2007.

--2006--

- **Fiore, A.M**., L.W. Horowitz, E.J. Dlugokencky, J.J. West, Impact of Meteorology and Emissions on Methane Trends, 1990-2004 , *Geophys. Res. Lett*., 33, L12809, doi:10.1029/2006GL026199, 2006.
- West, J.J., **A.M. Fiore**, L.W. Horowitz, and D.L. Mauzerall, Mitigating ozone pollution with methane emission controls: Global health benefits, *Proc. Natl. Acad. Sci*., 103(11), 3998-3993, 2006.
- Dentener, F., J. Drevet, J.F. Lamarque, I. Bey, B. Eickhout, **A.M. Fiore**..., Nitrogen and sulfur deposition on regional and global scales: a multi-model evaluation, *Global Biogeochem. Cycles*, 20, GB4003, doi:10.1029/2005GB002672, 2006.

- Dentener, F., D. Stevenson, K. Ellingsen,... **A.M. Fiore**..., The global atmospheric environment for the next generation, *Environ. Sci. Technol*., 40, 3586-3594, 2006.
- Stevenson, D.S., F.J. Dentener, M.G. Schultz,... **A.M. Fiore**…, Multi-model ensemble simulations of present-day and near-future tropospheric ozone, *J. Geophys. Res*., 111, D08301, doi:10.1029/2005JD006338, 2006.
- van Noije, T.P.C., H.J. Eskes, F.J. Dentener,... **A.M. Fiore**..., Multi-model ensemble simulations of tropospheric NO_2 compared with GOME retrievals for the year 2000, *Atmos. Chem. Phys.*, 6(10), 2943-2979, 2006.
- Shindell, D.T., G. Faluvegi, , D.S. Stevenson,... **A.M. Fiore**…, Multi-model simulations of carbon monoxide: Comparison with observations and projected near-future changes, *J. Geophys. Res*., 111, D19306, doi:10.1029/2006JD007100, 2006.

--2005--

- **Fiore, A.M.**, L.W. Horowitz, D.W. Purves, H. Levy II, M.J. Evans, Y. Wang, Q. Li, and R.M. Yantosca, Evaluating the contribution of changes in isoprene emissions to surface ozone trends over the eastern United States, *J. Geophys. Res*., 110, D12303, doi:10.1029/2004JD005485, 2005.
- West, J.J., and **A.M. Fiore**, Management of tropospheric ozone by reducing methane emissions, *Environ. Sci. & Technol*., 39(13): 4685-4691, doi:10.1021/es048629f, 2005.

--2004 and earlier--

- Martin, R.V., **A.M. Fiore**, A.V. Donkelaar, Space-based diagnosis of surface ozone sensitivity to anthropogenic emissions, *Geophys. Res. Lett.**, 31***, L06120, doi:10.1029/2004GL019416, 2004.
- Liu, H., D.J. Jacob, J.E. Dibb, **A.M. Fiore**, R.M. Yantosca, Constraints on the sources of tropospheric ozone from ^{210}Pb-^{7}Be-O_3 Correlations, *J. Geophys. Res*., *109*, D07306, doi:10.1029/2003JD003988, 2004.
- **Fiore, A.M**., T. Holloway, M.G. Hastings, A Global Perspective on Air Quality: Intercontinental Transport and Linkages with Climate, *EM*, December, 2003.
- **Fiore, A.M**., D.J. Jacob, H. Liu, R.M. Yantosca, T.D. Fairlie, Q. Li, Variability in surface ozone background over the United States: Implications for air quality policy, *J. Geophys. Res*., *108*, doi:10.1029/2003JD003855, 2003.
- **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.
- Holloway, T., **A.M. Fiore**, M.G. Hastings, Intercontinental Transport of Air Pollution: Will emerging science lead to a new hemispheric treaty?, *Environ. Sci. & Technol*., *37*, 4535-4542, 2003.
- Heald, C.L., D.J. Jacob, **A.M. Fiore**, and 17 others, Asian outflow and transpacific transport of carbon monoxide and ozone pollution: An integrated satellite, aircraft and model perspective, *J. Geophys. Res.*, *108*, 4804, 2003.
- Palmer, P.I. D.J. Jacob, **A.M. Fiore**, R.V. Martin, K. Chance, and T. Kuruso, Mapping isoprene emissions over North America using formaldehyde column observations from space, *J. Geophys. Res., 108*, 4180, 2003.
- **Fiore, A.M.**, D.J. Jacob, B.D. Field, D.G. Streets, S.D. Fernandes, and C. Jang, Linking ozone pollution with climate change: The case for controlling methane, *Geophys. Res. Lett., 29*, 1919, doi:10.1029/2002GL015601, 2002.
- **Fiore, A.M.**, D.J. Jacob, I. Bey, R.M. Yantosca, B.D. Field, A.C. Fusco, and J.G. Wilkinson, Background ozone over the United States in Summer: Origin, trend, and contribution to pollution episodes, *J. Geophys. Res., 107* (D15), doi:10.1029/2001JD000982, 2002.
- Li, Q., D.J. Jacob, I. Bey,…**A.M. Fiore**…, Transatlantic transport of pollution and its effects on surface ozone in Europe and North America, *J. Geophys. Res.*, *107*, 4166, 10.1029/2001JD001422, 2002.
- Martin, R.V., K. Chance, D.J. Jacob,…**A.M. Fiore**…, An improved retrieval of tropospheric nitrogen dioxide from GOME, *J. Geophys. Res.*, (D20), 4437, doi:10.1029/2001JD001027, 2002.
- Martin, R.V., D.J. Jacob, J.A. Logan,…**A.M. Fiore**…, Interpretation of TOMS observations of tropical tropospheric ozone with a global model and in-situ observations, *J. Geophys. Res.*, doi:10.1029/2001JD001480, 2002.
- Lin, C.-Y. C, D.J. Jacob and **A.M. Fiore**, Trends in exceedances of the ozone air quality standard in the continental United States, 1980-1998, *Atmos. Environ*., *35,* 3217-3228, 2001.
- Li, Q., D.J. Jacob, J.A. Logan, I. Bey,...**A.M. Fiore**…, A tropospheric ozone maximum over the Middle East*, Geophys. Res. Lett., 28,* 3235-3238, 2001.
- Bey I., D.J. Jacob, R.M. Yantosca,…**A.M. Fiore**…, Global modeling of tropospheric chemistry with assimilated meteorology: Model description and evaluation, *J. Geophys. Res., 106*, 23,073-23,096, 2001.
- Palmer, P. I., D. J. Jacob, K.Chance,…**A. Fiore**…, Air mass factor formulation for spectroscopic measurements from satellites: application to formaldehyde retrievals from GOME, *J. Geophys. Res., 106*, 14,539-14,550, 2001.
- Lin, C.-Y. C, D.J. Jacob, J.W. Munger, and **A.M. Fiore**, Increasing background ozone in surface air over the United States*, Geophys. Res. Lett., 27*, 3465-3468, 2000.
- **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.

- 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.

Invited Talks (since 2004)

- *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.
- *Anthropogenic and biogenic contributions to intercontinental transport of ozone pollution at northern mid-latitudes*, Topics in Atmospheric and Oceanic Sciences Seminar, **Stony Brook University**, NY, September, 2010.
- *Regional to Hemispheric Influences of BVOCand AVOC on ozone air quality***, Gordon Research Conference on Biogenic Hydrocarbons and the Atmosphere**, Les Diablerets, Switzerland, May, 2010.
- *External influences on ozone air quality: Intercontinental transport, changing climate, and stratospheric exchange*, **Environmental Geology & Geochemistry Seminar, Princeton University**, Princeton, NJ, May 2010.
- *Climate and Air Quality*, **Geophysical Fluid Dynamics Laboratory Review**, Princeton, NJ, June, 2009.
- *Interactions Between Climate and Air Quality*, **30th NATO/SPS International Technical Meeting on Air Pollution Modelling and its Application**, San Francisco, CA, presented by Hiram Levy II of GFDL, May, 2009.
- *Characterizing uncertainties in chemistry/transport models*, to the National Academy of Sciences Intercontinental Transport of Air Pollution (**NAS ITAP**) Committee, Washington, D.C., August, 2008.
- *Hemispheric Transport of Ozone Pollution: Multi-model Assessment of the Role of Methane and the Conventional Ozone Precursors*, **Quadrennial Ozone Symposium**, Tromsö, Norway, July, 2008.
- *TF HTAP Multi-model Estimates of Source-Receptor Relationships for Ozone Pollution,* **TF HTAP Workshop,** Washington, DC, June, 2008.
- *Intercontinental Source-Receptor Relationships for Ozone Pollution*, **40th Air Pollution Workshop and Symposium**, Raleigh, NC, April, 2008.
- *Tropospheric ozone response to methane emission controls: Implications for climate and global air quality*, **IGERT Joint Program Colloquium, Columbia University**, New York City, NY, April, 2007.
- *Estimating Intercontinental Source-Receptor Relationships for Ozone Pollution,* **Department of Environmental Sciences, Rutgers University***,* New Brunswick, NJ, March, 2007.
- *Air Quality and Climate Connections*, presentated during the **Deputy Secretary of the U.S. Commerce Department** visit to GFDL, Princeton, NJ, March, 2007.
- *Connecting Climate and Air Quality: The Contribution of Methane to Hemispheric Ozone Pollution,* **Center for Atmospheric and Ocean Science, New York University**, New York City, NY, February, 2007.
- *Air Quality and Climate Connections,* Green and Environmental Systems Event, Regional and Urban Air Quality: Now and in the Future, **New York Academy of Sciences,** New York City, NY, April 2007.
- *Preliminary Ozone Results from the TF HTAP Model Intercomparison*, **Task Force on Hemispheric Transport of Air Pollution Observations Workshop**, World Meteorological Organization, Geneva, Switzerland, January 2007.
- *Reducing tropospheric ozone with methane controls: Impact on Arctic radiative forcing*, **Non-CO_2 and Arctic Climate Impacts Workshop**, NASA Goddard Institute for Space Studies, New York City, NY, January 2007.

- *Recent and Future Trends in Atmospheric Methane: Connecting global chemistry, climate, and ozone pollution,* **Berkeley Atmospheric Sciences Symposium, University of California at Berkeley**, Berkeley, CA, September 2006.
- *Abating Global Ozone Pollution with Methane Emission Controls*, **EMEP Second Meeting of the Task Force on Hemispheric Transport of Air Pollution**, Moscow, Russia, June 2006.
- *Natural vs. Anthropogenic Contributions to Surface O_3 over the United States,* Prinn group meeting, **Massachusetts Institute of Technology**, Cambridge, MA, February, 2006.
- *Source vs. Sink Contributions to Atmospheric Methane Trends: 1990-2004*, **Global Monitoring Division, NOAA/ESRL**, Boulder, CO, January 2006.
- *Atmospheric Methane Distribution and Trends: Impacts on Climate and Ozone Air Quality*, **Earth, Atmospheric, and Planetary Sciences Department, Massachusetts Institute of Technology**, Cambridge, MA, December, 2005.
- *Background Ozone in Surface Air: Origin, Variability, and Policy Implications*, **Goddard Insititute for Space Studies**, New York City, NY, May 2005.
- *Estimating background ozone in surface air over the United States with global 3-D models of tropospheric chemistry: Description, Evaluation, and Results*, to the **U.S. EPA Clean Air Science Advisory Committee Ozone Review Panel**, Research Triangle Park, NC, May 2005.
- *Background Ozone in Surface Air over the United States: Variability, Climate Linkages, and Policy Implications*, **Department of Environmental Sciences, Rutgers University**, New Brunswick, NJ, Mar. 2005.
- *Recent Changes in Eastern U.S. Forests: Implications for Air Quality*, **Center for Sustainability and the Global Environment, University of Wisconsin-Madison**, Madison, WI, Dec. 2004.
- *Background Ozone in Surface Air over the United States: Variability, Climate Linkages, and Policy Implications*, **Department of Atmospheric and Oceanic Sciences, University of Wisconsin-Madison**, Madison, WI, Dec. 2004.
- *Evaluating the impact of recent changes in isoprene and anthropogenic emissions on surface ozone over the eastern United States*, **National Center for Atmospheric Research**, Boulder, CO, Oct. 2004.
- *Uncertainties in isoprene-NO_x-O_3 chemistry: Implications for surface ozone over the eastern United States*, **Telluride Atmospheric Chemistry Workshop,** Telluride, CO, Aug. 2004.
- *Background ozone and particulate matter (PM) in the United States: Implications for public policy,* briefing with Daniel J. Jacob to **U.S. Senate Environment and Public Works Committee Staff**, Washington, D.C., Mar. 2004.

Conference and Workshop Presentations (since 2004; P for poster presentations)

- *Regional to global source contributions to Eastern U.S. high-O_3 episodes*, **NASA AQAST8 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 PM2.5 pollution episodes across the Eastern United States*, **NASA AQAST7 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 AQAST6 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 O_3 seasonality, variability, and extreme events,* **Chemistry-Climate Modeling Initiative Workshop**, Boulder, CO, May, 2013 also presented at **NASA AQAST 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 AQAST 4 Meeting**, California Air Resources Board, Sacramento, CA, November, 2012.
- *Processes contributing to model differences in North American background ozone estimates*, **NASA AQAST 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.
- *North American isoprene influence on intercontinental ozone pollution*, **AGU Fall Meeting**, Abstract A41J-06, 2010.
- *CAM-Chem and hemispheric transport of ozone and PAN*, **Chemistry-Climate Working Group at the 15th Annual CCSM Workshop**, Breckenridge, CO, June, 2010.
- *Measured and modeled PAN at N. mid-latitude mountain sites: Insights into hemispheric ozone transport?,* **Symposium on Atmospheric Chemistry and Physics at Mountain Sites**, presented by D. Jaffe and E. Fischer of University of Washington, Interlaken, Switzerland, June, 2010. (P)
- *Methane, Air Quality and Climate*, presented during the visit of the **NOAA Administrator** to GFDL, Princeton, NJ, September, 2009.
- *Air Pollution at Northern Mid-latitude in a Future Climate*, **TFMM-TF HTAP Joint Workshop**, presented by Yi Ming of GFDL, Paris, France, June, 2009. (P)
- *Impacts on air quality objectives: Initial HTAP SR results and next steps*, **TF HTAP Workshop**, Washington DC, June, 2008.
- *Constraining uncertainties in observed methane inter-annual variability: A proposal for multi-decadal hindcast simulations*, **Joint TF HTAP and AC&C Workshop**, Washington, DC, June, 2008.
- *North America as a source and receptor of ozone pollution: Seasonal variability, uncertainties, and policy implications*, *Eos Trans.* **AGU***, 89*(23), Jt. Assem. Suppl., Abstract A33E-01, 2008.
- *Preliminary Ozone Results from the TF HTAP Model Intercomparison, Part II*, **Task Force on Hemispheric Transport of Air Pollution Modeling Workshop**, World Meteorological Organization, Geneva, Switzerland, 2007.
- *Connecting Climate and Air Quality: Tropospheric Ozone Response to Methane Emission Controls*, *Eos Trans*. **AGU**, 87(52), Fall Meet. Suppl., Abstract A21E-0863, 2006. (P)
- *Producing Science to Inform Policy on Hemispheric Transport of Air Pollution, Eos Trans.* **AGU**, 87(52), Fall Meet. Suppl., Abstract PA31A-0815, 2006. (P)
- *Estimating Policy-Relevant Background over the United States: Contribution to NO_2, SO_2, SO_4, and deposition of NO_y and SO_x,* **EPA/NOAA Workshop of Emerging Issues in the Atmospheric Chemistry of Nitrogen and Sulfur Oxides**, NOAA GFDL, Princeton, NJ, 2006.
- *Atmospheric Methane Distribution, Trend, and Linkage with Surface Ozone,* Convention on Long-Range Transboundary Air Pollution Task Force on **Hemispheric Transport of Pollution Intercontinental Transport Modelling Intercomparison Organizational Workshop**, Washington, D.C., 2006.
- *Biogenic Contributions to Methane Trends from 1990 to 2004*, **iLEAPS Science Conference**, Boulder, CO, 2006. (P)
- *Uncertain Isoprene Emissions and Chemistry: Implications for Ozone in the Eastern United States*, *Eos Trans.* **AGU***, 86*(52), Fall Meet. Suppl., Abstract A51B-0036, 2005. (P)
- *MOZART Development, Evaluation, and Applications at GFDL,* **MOZART Users' Meeting**, Boulder, CO, 2005.
- *Sensitivity of U.S. Surface Ozone to Isoprene Emissions and Chemistry: An application of the 1°x1° North American Nested GEOS-CHEM Model,* **2nd GEOS-CHEM Users' Meeting**, Cambridge, MA, 2005
- *Recent and Future Changes in BVOC vs. Anthropogenic Emissions over the Eastern United States: Impact on Surface Ozone*, **Gordon Research Conference on Biogenic Hydrocarbons and the Atmosphere**, Barga, Italy, May 2004.(P)

Teaching Experience

- Co-Instructor, *Extreme Weather and Climate*, Atmos. Sci. Seminar, EESC G9910, Fall 2014.
- Instructor, *Introduction to Atmospheric Chemistry*, EESC W4924, Columbia University, Spring 2013, 2014, 2015.
- Co-Instructor, *Climate Change 2013: The Physical Science Basis* (IPCC AR5 WG1 report), Atmos. Sci. Seminar, EESCG9910, 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, Fall 2012.
- Guest Lecturer, *Environmental Studies 202*, Princeton University, February 2005, 2006.
- Guest Lecturer, *Two Science Issues in the News: Climate Change and Air Pollution, Are they linked?* Hillsborough High School Physics Classes, May 2004, 2005.

- Teaching Fellow, *An Introduction to Environmental Science: The Solid Earth*, Harvard University, Spring 2001, 2002.
- Participant, Graduate Science Teaching Seminar, Derek Bok Center, Spring 2002.
- Teaching Fellow, *Natural and Environmental Disasters*, Harvard University, Fall 1999.
- Participant in Graduate Writing Fellows Program, Derek Bok Center, Harvard University, Fall 1999.
- Teaching Fellow, *An Introduction to Atmospheric Chemistry*, Harvard University, Fall 1998.