

YAN FENG
Argonne National Laboratory
Environmental Science Division
Tel: (630) 252-2550 Email: yfeng@anl.gov

EDUCATION

University of Michigan, Ann Arbor	Ph.D. in Atmospheric Science	2005
University of Michigan, Ann Arbor	M.S. in Computer Science and Engineering	2002
Peking University, P.R. China	B. S. in Atmospheric Science	1997

RESEARCH INTEREST

Global and regional modeling of aerosols, clouds, and interactions with climate and biogeochemical cycles.

PROFESSIONAL EXPERIENCE

2020–present	Principal atmospheric and climate scientist, Argonne National Laboratory
2020–present	Graduate Faculty Scholar, Northern Illinois University
2018–present	Scientist at Large of the Consortium for Advanced Science and Engineering, University of Chicago
2014–2020	Atmospheric and climate scientist, Argonne National Laboratory
2014–2018	Fellow, Computation Institute, University of Chicago
2010–2014	Assistant computational atmospheric scientist (RD2), Argonne National Laboratory
2005–2010	Postdoctoral researcher, Scripps Institution of Oceanography, University of California at San Diego
Jun-Aug, 2001	Visiting graduate student research assistant, Goddard Institute for Space Studies, NASA
1997–2004	Graduate student research assistant, University of Michigan, Ann Arbor

PUBLICATIONS

Peer-reviewed journal papers

1. Brown, E., J. Wang and **Y. Feng**, U.S. Wildfire Potential: a Historical View and Future Projection using High-resolution Climate Data, *Environ. Res. Lett.*, 16 034060, <https://doi.org/10.1088/1748-9326/aba868>, 2021.
2. Wu, M., Liu, X., Yu, H., Wang, H., Shi, Y., Yang, K., Darmenov, A., Wu, C., Wang, Z., Luo, T., **Feng, Y.**, and Ke, Z.: Understanding Processes that Control Dust Spatial Distributions with Global Climate Models and Satellite Observations, *Atmos. Chem. Phys.*, 20, 13835-13855, <https://acp.copernicus.org/articles/20/13835/2020/>, 2020.
3. Shinozuka, Y., Saide, P. E., Ferrada, G. A., Burton, S. P., Ferrare, R., Doherty, S. J., Gordon, H., Longo, K., Mallet, M., **Feng, Y.**, Wang, Q., Cheng, Y., Dobracki, A., Freitag, S., Howell, S. G., LeBlanc, S., Flynn, C., Segal-Rosenhaimer, M., Pistone, K., Podolske, J. R., Stith, E. J., Bennett, J. R., Carmichael, G. R., da Silva, A., Govindaraju, R., Leung, R., Zhang, Y., Pfister, L., Ryoo, J.-M., Redemann, J., Wood, R., and Zuidema, P.: Modeling the smoky troposphere of the southeast Atlantic: a comparison to ORACLES airborne observations from September of 2016, *Atmos. Chem. Phys.*, 20, 11491–11526, <https://doi.org/10.5194/acp-20-11491-2020>, 2020.
4. Painemal, D., F. Chang, R. Ferrare, S. Burton, Z. Li, W. L. Smith Jr., P. Minnis, **Y. Feng**, and M. Clayton, Reducing uncertainties in satellite estimates of aerosol-cloud interactions over the subtropical ocean by integrating vertically resolved aerosol observations, *Atmos. Chem. Phys.*, 20, 7167–7177, <https://doi.org/10.5194/acp-20-7167-2020>, 2020.
5. Zheng, G., A. J. Sedlacek, A. C. Aiken, **Y. Feng**, T. B. Watson, S. Raveh-Rubin, J. Uin, E. R. Lewis and J. Wang, Long-range transported North American wildfire aerosols observed in marine boundary layer of eastern North Atlantic, *Environment International*, 139, <https://doi.org/10.1016/j.envint.2020.105680>, 2020.

6. Wang, H., R. C. Easter, R. Zhang, P. - L. Ma, B. Singh, K. Zhang, D. Ganguly, P. J. Rasch, S. M. Burrows, S. J. Ghan, S. Lou, Y. Qian, Y. Yang, **Y. Feng**, M. Flanner, L. R. Leung, X. Liu, M. Shrivastava, J. Sun, Q. Tang, S. Xie, and J. Yoon: Aerosols in the E3SM version 1: New developments and their impacts on radiative forcing, *J. Adv. Mod. Earth Sys.*, doi:10.1029/2019MS001851, 2019.
7. Caldwell P. M., Mametjanov, A., Tang, Q., Van Roekel, L. P., Golaz, J. C., Lin, W. Y., Bader, D. C., Keen, N. D., **Feng, Y.**, Jacob, R., Maltrud, M. E., Roberts, A. F., Taylor, M. A., Veneziani, M., Wang, H. L., Wolfe, J. D., Balaguru, K., Cameron-Smith, P., Dong, L., Klein, S. A., Leung, L. R., Li, H. Y., Li, Q., Liu, X. H., Neale, R. B., Pinheiro, M., Qian, Y., Ullrich, P. A., Xie, S. C., Yang, Y., Zhang, Y. Y., Zhang, K., and Zhou, T., The DOE E3SM coupled model version 1: Description and results at high resolution, *J. Adv. Mod. Earth Sys.*, 11, <https://doi.org/10.1029/2019MS001870>, 2019.
8. McDaniel, M. F.; Ingall, E.; Morton, P.; Castorina, E.; Weber, R.; Shelley, R.; Landing, W.; Longo, A.; **Feng, Y.**; Lai, B., Relationship between atmospheric aerosol mineral surface area and iron solubility, *ACS Earth and Space Chemistry*, DOI: 10.1021/acsearthspacechem.9b00152, 2019.
9. Hamilton, D.S., Scanza, R.S., **Feng, Y.**, Guinness, J., Kok, J., Li, L., Liu, X., Rathod, S., Wan, J.S., Wu, M., and Mahowald, N.M., Improved methodologies for Earth system modelling of atmospheric soluble iron and observation comparisons, *Geosci. Model Dev.*, 12, 3835-3862. doi:10.5194/gmd-12-3835-2019, 2019.
10. Sullivan, R. C., V. R. Kotamarthi, and **Y. Feng**, Recovering evapotranspiration trends from biased CMIP5 simulations and sensitivity to changing climate over North America, *Journal of Hydrometeorology*, 20 (8): 1619–1633, 2019.
11. Ito, A., S. Myriokefalitakis, M. Kanakidou, N. M. Mahowald, R. A. Scanza, D. S. Hamilton, A. R. Baker, T. Jickells, M. Sarin, S. Bikkina, Y. Gao, R. U. Shelley, C. S. Buck, W. M. Landing, A. R. Bowie, M. G. Perron, C. Guieu, N. Meskhidze, M. S. Johnson, **Y. Feng**, J. F. Kok, A. Nenes, R. A. Duce, Constraints on attribution of labile iron in aerosols to combustion and mineral dust sources from observations and models, *Science Advances*, 5, eaau7671, 10.1126/sciadv.aau7671, 2019.
12. Meskhidze, N., C. Voelker, H. Al-Abadleh, K. Barbeau, M. Bressa, C. Buck, R. Bundy, P. Croot, **Y. Feng**, A. Ito, A. M. Johansen, W. Landing, J. Mao, S. Myriokefalitakis, D. Ohnemus, B. Pasquier, and Y. Ye: Perspective on identifying and characterizing the processes controlling iron speciation and residence time at the atmosphere-ocean interface. *Marine Chemistry*, Volume 217, 103704, doi:10.1016/j.marchem.2019.103704, 2019.
13. Golaz, J.-C., P.M. Caldwell, L.P. Van Roekel, M.R. Petersen, Q. Tang, J.D. Wolfe, G. Abeshu, V. Anantharaj, X. S. Asay - Davis, D. C. Bader, S. A. Baldwin, G. Bisht, P. A. Bogenschutz, M. Branstetter, M. A. Brunke, S. R. Brus, S. M. Burrows, P. J. Cameron - Smith, A. S. Donahue, M. Deakin, R. C. Easter, K. J. Evans, **Y. Feng**, M. Flanner, J. G. Foucar, J. G. Fyke, B. M. Griffin, C. Hannay, B. E. Harrop, M. J. Hoffman, E. C. Hunke, R. L. Jacob, D. W. Jacobsen, N. Jeffery, P. W. Jones, N. D. Keen, S. A. Klein, V. E. Larson, L. R. Leung, H. - Y. Li, W. Lin, W. H. Lipscomb, P. - L. Ma, S. Mahajan, M. E. Maltrud, A. Mametjanov, J. L. McClean, R. B. McCoy, R. B. Neale, S. F. Price, Y. Qian, P. J. Rasch, J. E. J. R. Eyre, W. J. Riley, T. D. Ringler, A. F. Roberts, E. L. Roesler, A. G. Salinger, Z. Shaheen, X. Shi, B. Singh, J. Tang, M. A. Taylor, P. E. Thornton, A. K. Turner, M. Veneziani, H. Wan, H. Wang, S. Wang, D. N. Williams, P. J. Wolfram, P. H. Worley, S. Xie, Y. Yang, J. - H Yoon, M. D. Zelinka, C. S. Zender, X. Zeng, C. Zhang, K. Zhang, Y. Zhang, X. Zheng, T. Zhou, and Q. Zhu: The DOE E3SM couple model version 1: Overview and evaluation at standard resolution, *J. Adv. Mod. Earth Sys.*, doi: 10.1029/2018MS001603, 2019.
14. Sullivan, R. C., D. R. Cook, V. P. Ghate, V. R. Kotamarthi, **Y. Feng**, Improved Spatiotemporal Representativeness and Bias Reduction of Satellite-Based Evapotranspiration Retrievals via Use of In Situ Meteorology and Constrained Canopy Surface Resistance, *JGR-Biogeosciences*, 124. <https://doi.org/10.1029/2018JG004744>, 2019.
15. Brown, H., X. Liu, **Y. Feng**, Y. Jiang, M. Wu, Z. Lu, C. Wu, S. Murphy, and R. Pokhrel, Radiative forcing and climate impacts of Brown Carbon with the Community Atmosphere Model (CAM5), *Atmos. Chem. Phys.*, 18, 17745-17768, <https://doi.org/10.5194/acp-18-17745-2018>, 2018.

16. Ingall, E., **Y. Feng**, A. Longo, B. Lai, R. Shelley, W. Landing, P. Morton, A. Nenes, N. Mihalopoulos, K. Violaki, Y. Gao, S. Sahai, and E. Castorina, Enhanced Iron Solubility at Low pH in Global Aerosols, *Atmosphere*, 9, 201; doi:10.3390/atmos9050201, 2018.
17. Creamean, J. M., Maahn, M., de Boer, G., McComiskey, A., Sedlacek, A. J., and **Feng, Y.**, The influence of local oil exploration and regional wildfires on summer 2015 aerosol over the North Slope of Alaska, *Atmos. Chem. Phys.*, 555-570, <https://doi.org/10.5194/acp-18-555-2018>, 2018.
18. Mirocha, J. D., Churchfield, M. J., Muñoz-Esparza, D., Rai, R. K., **Feng, Y.**, Kosović, B., et al.: Large-Eddy Simulation Sensitivities to Variations of Configuration and Forcing Parameters in Canonical Boundary-Layer Flows for Wind Energy Applications, *Wind Energ. Sci.*, 3, 589-613, <https://doi.org/10.5194/wes-3-589-2018>, 2018.
19. Cai, H., J. Wang, **Y. Feng**, M. Wang, Z. Qin, and J. B. Dunn, Consideration of Land Use Change-Induced Surface Albedo Effects in Life-Cycle Analysis of Biofuels, *Energy & Environmental Science*, doi: 10.1039/C6EE01728B, 2016.
20. **Feng, Y.**, M. Cadeddu, V. R. Kotamarthi, R. Renju and C. Suresh Raju, Humidity Bias and Effect on Simulated Aerosol Optical Properties during the Ganges Valley Experiment, *Current Science*, Vol. 111, No. 1, 93-100, 2016.
21. Longo, A. F., **Y. Feng**, B. Lai, W. M. Landing, R. U. Shelley, A. Nenes, N. Mihalopoulos, K. Violaki, and E. Ingall, Influence of Atmospheric Processes on the Solubility and Composition of Iron in Saharan Dust, *Environ. Sci. Technol.*, 50 (13), 6912–6920, doi: 10.1021/acs.est.6b02605, 2016.
22. **Feng, Y.**, V. R. Kotamarthi, R. Coulter, C. Zhao, and M. Cadeddu, Radiative and Thermodynamic Responses to Aerosol Extinction Profiles during the Pre-monsoon Month over South Asia, *Atmos. Chem. Phys.*, 16, 247-264, doi:10.5194/acp-16-247-2016, 2016.
23. Lu, Z., D. G. Streets, E. Winijkul, F. Yan, Y. Chen, T. Bond, **Y. Feng**, M. Dubey, S. Liu, J. Pinto, and G. Carmichael, Light Absorption Properties and Radiative Effects of Primary Organic Aerosol Emissions, *Environ. Sci. Technol.*, 49 (8), 4868–4877, DOI: 10.1021/acs.est.5b00211, 2015.
24. Manoharan, V. S., R. Kotamarthi, **Y. Feng**, and M. P. Cadeddu, Increased absorption by coarse aerosol particles over the Gangetic–Himalayan region, *Atmos. Chem. Phys.*, 14, 1159-1165, doi: 10.5194/acp-14-1159-2014, 2014.
25. **Feng, Y.**, Ramanathan, V., and Kotamarthi, V. R., Brown Carbon: a Significant Atmospheric Absorber of Solar Radiation?, *Atmos. Chem. Phys.*, 13, 8607–8621, 2013.
26. Ito, A., J. F. Kok, **Y. Feng**, and J. E. Penner, Does a theoretical estimation of the dust size distribution at emission suggest more bioavailable iron deposition? *Geophys. Res. Lett.*, doi:10.1029/2011GL050455, 39, 5807-5807, 2012.
27. Ito, A., and **Y. Feng**. Iron mobilization in North African dust, *Procedia Environmental Sciences*, 6, 27-34, doi:10.1016/j.proenv.2011.05.004, 2011.
28. Bahadur, R., **Y. Feng**, L. M. Russell, and V. Ramanathan, Response to comments on “Impact of California’s Air Pollution Laws on Black Carbon and its Direct Radiative Forcing” by R. Bahadur et al., *Atmos. Environ.*, Vol 45, 24, 4119-4121, doi:10.1016/j.atmosenv.2011.04.043, 2011.
29. Bahadur, R., **Y. Feng**, L. M. Russell, and V. Ramanathan, Impact of California’s Air Pollution Laws on Black Carbon and its Direct Radiative Forcing, *Atmos. Environ.*, Vol 45, 5, 1162-1167, doi:10.1016/j.atmosenv.2010.10.054, 2011.
30. Ramana, M. V., V. Ramanathan, **Y. Feng**, S.-C. Yoon, S.-W. Kim, G. R. Carmichael, and J. J. Schauer, Warming influenced by the ratio of black carbon to sulphate and the black-carbon source, *Nature Geoscience*, DOI: 10.1038/ngeo918, 2010.
31. Ito A., and **Y. Feng**, Role of dust alkalinity in acid mobilization of iron, *Atmos. Chem. Phys.*, 10, 9237-9250, 2010.
32. **Feng Y.**, and V. Ramanathan “Investigation of aerosol-cloud interactions using a chemical transport model constrained by satellite observations”, *Tellus B – Chemical and Physical Meteorology*, 62, 69-86, 2010.
33. Rotstayn, L. D., M. A. Collier, M. R. Dix, **Y. Feng**, H. B. Gordon, S. P. O’Farrell, I. N. Smith, J. Syktus. Improved simulation of Australian climate and ENSO-related climate variability in a GCM with an interactive aerosol treatment. *Int. J. Climatol.*, 30, 1067-1088, doi: 10.1002/joc.1952, 2010.

34. Stith, J. L., V. Ramanathan, W. A. Cooper, G. Roberts, P. J. DeMott, G. Carmichael, C. D. Hatch, B. Adhikary, C. H. Twohy, D. C. Rogers, D. Baumgardner, A. J. Prenni, T. Campos, R. Gao, J. Anderson, and **Y. Feng** “An overview of aircraft observation from the Pacific Dust Experiment campaign”, *J. Geophys. Res.*, 114, D05207, doi:10.1029/2008JD010924, 2009.
35. Ramanathan, V., and **Y. Feng** “Air pollution, greenhouse gases and climate change: global and regional perspectives”, *Atmos. Environ.*, 43, 37-50, 2009.
36. Ramanathan, V., and **Y. Feng** “On avoiding dangerous anthropogenic interference with the climate system: formidable challenges ahead”, *Proc. Natl. Acad. Sci.*, 105, 14245-14250, 2008.
37. **Feng Y.**, and J. E. Penner “Global modeling of nitrate and ammonium: Interaction of aerosols and tropospheric chemistry”, *J. Geophys. Res.*, 112, D01304, doi:10.1029/2005JD006404, 2007.
38. Rotstain, L. D., W. Cai, M. R. Dix, G. D. Farquhar, **Y. Feng**, P. Ginoux, M. Herzog, A. Ito, J. E. Penner, M. L. Roderick, and M. Wang “Have Australian rainfall and cloudiness increased due to the remote effects of Asian anthropogenic aerosols?” *J. Geophys. Res.*, 112, D09202, doi:10.1029/2006JD007712, 2007.
39. Liu, X., J. E. Penner, B. Das, D. Bergmann, J. M. Rodriguez, S. Strahan, M. Wang, and **Y. Feng** “Uncertainties in global aerosol simulations: Assessment using three meteorological data sets”, *J. Geophys. Res.*, 112, D11212, doi:10.1029/2006JD008216, 2007.
40. Liu, H., J.H. Crawford, R.B. Pierce, P. Norris, S.E. Platnick, G. Chen, J.A. Logan, R.M. Yantosca, M.J. Evans, C. Kittaka, **Y. Feng**, and X. Tie “Radiative effect of clouds on tropospheric chemistry in a global three-dimensional chemical transport model”, *J. Geophys. Res.*, 111, D20303, doi:10.1029/2005JD006403, 2006.
41. **Feng, Y.**, J.E. Penner, S. Sillman, and X. Liu “Effects of Cloud Overlap in Photochemical Models”, *J. Geophys. Res.*, 109, D4, D0431010.1029/2003JD004040, 2004.
42. Penner, J.E., S.Y. Zhang, M. Chin, C.C. Chuang, J. Feichter, **Y. Feng**, I.V. Geogdzhayev, P. Ginoux, M. Herzog, A. Higurashi, D. Koch, C. Land, U. Lohmann, M. Mishchenko, T. Nakajima, G. Pitari, B. Soden, I. Tegen, and L. Stowe, “A comparison of model- and satellite-derived aerosol optical depth and reflectivity”, *J. Atmos. Sci.*, 59, 441-460, 2002.

Book chapters

43. Ramanathan, V., et al. “Summary: Summary for Policy Makers and Technical Summary” in *Atmospheric Brown Clouds: Regional Assessment Report with Focus on Asia*, published by the United Nations Environment Programme, Nairobi, Kenya, 2008.
44. Ramanathan, V., et al. “Part I Atmospheric Brown Clouds and Regional Climate Change” in *Atmospheric Brown Clouds: Regional Assessment Report with Focus on Asia*, published by the United Nations Environment Programme, Nairobi, Kenya, pp. 1-360, 2008.
45. Penner, J.E., et al., “Chapter 5: Aerosols, their Direct and Indirect Effects”, in *Climate Change 2001: The Scientific Basis*, Report to the Intergovernmental Panel on Climate Change from the Scientific Assessment Working Group (WG I), Cambridge University Press, 2001.

SYNERGISTIC ACTIVITIES

- Associate Editor (2021-2023) for the Journal of Advances in Modeling Earth Systems, AGU.
- Invited attendee of the NSF/DOE/NASA sponsored Workshop on “Identifying and Characterizing the Processes Controlling Iron Speciation and Residence Time at the Atmosphere-Ocean Interface”, at Telluride Science Research Center (TSRC), Telluride, CO, July 30- Aug 3, (2018)
- Invited attendee of the DOE ARM Aerosol Measurement and Science Group (AMSG) Strategic Planning Workshop, Argonne National Laboratory (2017)
- Invited attendee of the DOE ASR Absorbing Aerosols Workshop (2016)
- Co-organizer of the workshop on “Atmospheric modeling at the Large Eddy Scale” held at Argonne National Laboratories (2013)
- DOE review panels for the BER/ASR, EESM, ASCR, and PNNL/EMSL programs
- NASA review panels for the MAP and CCST programs

- Reviewer for the NOAA NWS Unified Forecast System (UFS) project, Climate Program’s Earth System Science (ESS) Program and NSF

CURRENT RESEARCH PROJECTS

- PI of the Argonne Primary LDRD project “Climate Intervention Strategies through Cloud Albedo Modification” (2020-2022)
- PI of the Argonne Primary LDRD project “Variability and Trends in Land Surface Properties: Effects on boundary layer physics and Extremes Onset” (2018-2020)
- Investigator of the DOE ESM multi-lab SFA on development of DOE Energy Exascale Earth System Model (E3SM) (2017-)
- Investigator of the DOE ASR BNL-ANL SFA on aerosols and clouds (2018-)
- Co-PI of the NASA CALIPSO Science Team Re-compete project “Investigate Cloud-Aerosol Interactions in Marine Boundary Layers” (2017-2020)
- Co-PI of the Argonne LDRD project “Enabling Automatic Learning of Atmospheric Particles through APS-U” (2019-2020)
- Co-PI of the Argonne LDRD project “A Risk Assessment and Mitigation Framework for Fire Hazards Caused by Power Delivery Infrastructures” (2020-2021)

INVITED CONFERENCE TALKS AND PLENARY PRESENTATIONS

1. [INVITED SPEAKER] “*Dynamically Evolving Absorption of Biomass Burning Aerosols and Impact on Radiation*”, presented at the AMS 2021 Annual meeting (virtual), Jan 10-15, **2021**.
2. [PLENARY TALK] “*Characterization of Aerosol Above-cloud Incidence and Optical Properties over the Southeastern Atlantic*”, presented at the ARM/ASR Joint User Facility and PI Meeting on June 12, **2019**.
3. [INVITED SPEAKER] “*Radiative and Cloud Responses to Absorbing Aerosols in a Global Climate Model*”, presented at the AMS 2018 Annual meeting, Austin, TX, Jan 7-11, **2018**.
4. [INVITED SPEAKER] “*Radiative and Cloud Responses to Light-absorbing Aerosols in a Global Climate Model*”, presented at the Harvard University Atmospheric & Environmental Chemistry Seminar, Oct 27th, **2017**.
5. [PLENARY TALK] “*Cloud Responses to Increased Absorption by Brown Carbon in Biomass Burning*”, presented at the ARM/ASR Joint User Facility and PI Meeting on, March 14-15, **2017**.
6. [INVITED SPEAKER] “*Reconciling Radiative Properties of Black Carbon in Global Modeling and Observations*”, presented at the 5th biennial International Aerosol Modeling Algorithms (IAMA): Dynamic Models Branching Out to Explain an Evolving Atmosphere, Dec. 9-11, **2015**.
7. [INVITED SPEAKER] “*Understanding the Aerosol Interactions with Warm Clouds*”, presented at the 26th International Union of Geodesy and Geophysics (IUGG) General Assembly, International Association of Meteorology and Atmospheric Sciences (IAMAS) Symposia, Session M06 “Observations of Anthropogenic Aerosol-Cloud Interactions”, Prague, Czech Republic, June 22-July 2, **2015**.
8. [PLENARY TALK] “*Modeling Radiative Impact of Aerosols over S Asia Constrained by Observation of Vertical Distribution*”, Presented at the 2013 DOE Atmospheric System Research Science Meeting, March 18-21 at the Bolger Center in Potomac, Maryland, **2013**.
9. [PLENARY TALK] “*Fluxes of Bio-Available Iron to the Ocean*” Presented at the Earth System Science 2010 (Analysis, Integration and Modeling of the Earth System Open Science Conference), Edinburgh, UK, May, **2010**.