

ALLISON L. STEINER

Professor, Department of Climate and Space Science and Engineering

University of Michigan, 2455 Hayward, Ann Arbor, MI 48109-2143

phone: 734.764.5150

email: alsteine@umich.edu

twitter: @alsteine

Research Description

My research group studies the interactions between the biosphere and the atmosphere to understand how vegetation affects atmospheric chemistry and climate. The biosphere is a living and dynamic component of the Earth System, and is constantly responding to the world around it. We focus on understanding how natural emissions from the biosphere can affect atmospheric chemistry and air quality, as well as understanding how changes at the land surface can affect regional climate and climate change.

Education and Training

Johns Hopkins University, Baltimore, MD, B.S. Chemical Engineering	1994
Georgia Institute of Technology, Atlanta, GA, Ph.D. Atmospheric Science	2003
University of California, Berkeley, Berkeley, CA, Postdoctoral Fellow	2003-6

Research and Professional Experience

Professor, University of Michigan, Ann Arbor, MI	2018-present
Associate Chair for Graduate Studies (2018-2020, 2021-2022); Acting Chair Fall 2023	
Department of Climate and Space Sciences and Engineering	
Department of Earth and Environmental Sciences	
Associate Professor, University of Michigan, Ann Arbor, MI	2012-2018
Department of Climate and Space Science and Engineering	
Department of Earth and Environmental Sciences	
Assistant Professor, University of Michigan, Ann Arbor, MI	2006-2012
Department of Atmospheric, Oceanic and Space Sciences	
Postdoctoral Research Fellow, University of California, Berkeley, CA	2003-2006
Department of Environmental Science, Policy and Management	
Graduate Research Asst., Georgia Institute of Technology, Atlanta, GA	1997-2003
School of Earth and Atmospheric Sciences	
Environmental Consultant, Sadat Associates, NJ; Dames & Moore, MD	1994-1996

Selected Awards

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| • American Meteorological Society Walter Orr Roberts Lecture | 2022 |
| • University of Michigan Harold R. Johnson Diversity Service Award | 2018 |
| • American Geophysical Union Atmospheric Sciences Ascent Award | 2015 |
| • University of Michigan Henry Russel Award | 2013 |
| • National Science Foundation CAREER Award | 2010 |
| • NASA Earth System Science Fellowship | 2000-2003 |

Selected International and National Professional Service

- President Atmospheric Sciences Section, American Geophysical Union, 2023-2024 (President-Elect, 2021-2022)
- Member, Scientific Steering Committee, Global Emissions Inventory Activity, 2017-2023
- Member, National Academy of Sciences Board on Atmospheric Sciences & Climate, 2016-2022
- Member, Scientific Steering Committee, iLEAPS, 2015-2022
- Member, American Meteorological Society, Board on Atmospheric Biogeosciences, 2015-2021
- Member, UCAR President's Advisory Committee on University Relations, 2015-2018
- Member, National Academy of Sciences, *The Future of Atmospheric Chemistry Research* report, 2015-6

- Editor, *Journal of Geophysical Research-Atmospheres*, 2014-2018
- Co-Founder and Board Member, Earth Sciences Women's Network (ESWN) –2008-2011

Selected University of Michigan Service

- Acting Chair, Climate and Space Sciences and Engineering, Fall 2023
- Associate Chair for Graduate Studies, 2018-2020
- Chair, Departmental DEI Committee, 2018-2019
- Departmental Diversity Ally, 2016-2020
- Chair, Dean's Advisory Committee on Female Faculty (DACFF), 2015-2018
- Co-Chair, NextProf Committee, 2017
- Member, Committee on Environment and Sustainability Programs, 2016

Advisees

- 6 prior postdoctoral fellows, 1 in progress
- 11 Ph.D. students graduated, 4 in progress
- 10 M.S. and MEng students
- 24 undergraduate students, including 8 NSF REU students

Selected Bibliography

Total Publications: Peer reviewed manuscripts (94), Grey literature (4), Book Chapters (2), Books (3)

Citation Metrics: h-index = 36 (Google Scholar, 10/31/24) *Postdocs*, [Graduate Students](#), [Undergraduate Students](#)

1. [Subba, T., Y. Zhang](#) and **A.L. Steiner**, Simulating the transport and rupture of pollen in the atmosphere, *Journal of Advances in Modeling Earth Systems*, 15, 3, e2022MS003329, 2023.
2. [Zhang, Yingxiao](#) and **A.L. Steiner**, Projected climate-driven changes in pollen emission season length and magnitude over the continental United States, *Nature Communications*, 13, 1234, doi: [10.1038/s41467-022-28764-0](https://doi.org/10.1038/s41467-022-28764-0), 2022.
3. [Minallah, S.](#) and **A.L. Steiner**, Role of the atmospheric moisture budget in defining the precipitation seasonality of the Great Lakes region, *Journal of Climate*, 34,2,643-657, doi: 10.1175/JCLI-D-19-0962.1, 2021a.
4. **Steiner, A.L.**, Role of the terrestrial biosphere in atmospheric chemistry and climate, *Accounts of Chemical Research*, 53,7,1260-1268, doi: [10.1021/acs.accounts.0c00116](https://doi.org/10.1021/acs.accounts.0c00116), 2020.
5. [Zhu, P., S. J. Cheng, Z. Butterfield, G. Keppel-Aleks,](#) and **A.L. Steiner**, The global influence of cloud optical thickness on terrestrial carbon uptake, *Earth Interactions*, 23, 6, 2019.
6. [Wozniak, M.C., F. Solmon,](#) and **A.L. Steiner**, Pollen rupture and its impact on precipitation in clean continental conditions, *Geophysical Research Letters*, 45, doi: 10.1029/2018GL077692, 2018.
7. [Basile, S.J., S.A. Rauscher,](#) and **A.L. Steiner**, Projected precipitation changes within the Great Lakes and Western Lake Erie Basin: A multi-model analysis of intensity and seasonality, *International Journal of Climatology*, doi:10.1002/joc.5128, 2017.
8. [Cheng, S.J. A.L. Steiner,](#) D.Y. Hollinger, G. Bohrer and K.J. Nadelhoffer, Using satellite-derived optical thickness to assess the influence of clouds on terrestrial carbon uptake, *JGR-Biogeosciences*, 121, doi:10.1002/2015JG003365, 2016.
9. **Steiner, A.L.**, S.D. Brooks, C. Deng, D.C.O. Thornton, M. Pendleton, and V. Bryant, Pollen as atmospheric cloud condensation nuclei, *Geophysical Research Letters*, 42, doi:10.1002/2015GL064060, 2015.
10. **Steiner, A.L.**, [D. Mermelstein, S.J. Cheng,](#) T.E. Twine and A. Oliphant, Observed impact of atmospheric aerosols on the surface energy budget, *Earth Interactions*, 17, 14, 1-22, doi: 10.1175/2013EI000523.1, 2013.
11. **Steiner, A.L.**, [A.J. Davis,](#) S. Sillman, R.C. Owen, A.M. Michalak and A.M. Fiore. Observed suppression of ozone formation at extremely high temperatures due to chemical and biophysical feedbacks, *Proceedings of the National Academy of Sciences*, 107, 46, 19685-19690, doi:10.1073/pnas.1008336107, 2010.