Zhaoyi Shen

Environmental Science and Engineering, California Institute of Technology
1200 E California Blvd. MC C1-221 Pasadena, CA 91125
Phone: 626-395-2039
E-mail: zhaoyi@caltech.edu

Research Interests

Climate dynamics, clouds and convection, climate sensitivity, aerosol-climate interactions, long-range transport of air pollution, atmospheric modeling

Education

Princeton University, Princeton, NJ
Ph.D., Atmospheric and Oceanic Sciences, August 2018
Advisor: Dr. Yi Ming
Committee members: Drs. Isaac M. Held, Larry W. Horowitz, and V. Ramaswamy
Peking University, Beijing, China
B.S., Environmental Science, July 2013
B.A., Economics, July 2013

Employment

California Institute of Technology, Pasadena, CA 09/2018 - Present
Postdoctoral Scholar, Environmental Science and Engineering

Publications

Peer-reviewed

Li, Y., Y. Deng, S. Yang, H. Zhang, Y. Ming, and **Z. Shen**, 2019: Multi-Scale Temporospatial Variability of the East Asian Summer Monsoon Frontal System: Observation versus its Representation in the GFDL HiRAM. *Climate Dynamics* (2019) 52: 6787. https://doi.org/10.1007/s00382-018-4546-z.

Persad, G. G., Y. Ming, **Z. Shen,** and V. Ramaswamy, 2018: Spatially similar surface energy flux perturbations due to greenhouse gases and aerosols. *Nature Communications*, 9, 3247 (2018), doi:10.1038/s41467-018-05735-y.

Shen, Z. and Y. Ming, 2018: The influence of aerosol absorption on the extratropical circulation. *Journal of climate*, 31 (15), 5961–5975, doi:10.1175/JCLI-D-17-0839.1.

Zhao, M. and coauthors, 2018: The GFDL global atmosphere and land model AM4.0/LM4.0: 2. Model description, sensitivity studies, and tuning strategies. *Journal of Advances in Modeling Earth Systems*, 10. https://doi.org/10.1002/2017MS001209.

Zhao, M. and coauthors, 2018: The GFDL global atmosphere and land model AM4.0/LM4.0: 1. Simulation characteristics with prescribed SSTs. *Journal of Advances in Modeling Earth Systems*, 10. https://doi.org/10.1002/2017MS001208.

Shen, Z., Y. Ming, L. W. Horowitz, V. Ramaswamy, and M. Lin, 2017: On the seasonality of Arctic black carbon. *Journal of Climate*, 30 (12), 4429–4441, doi:10.1175/JCLI-D-16-0580.1.

Shen, Z., J. Liu, L. W. Horowitz, D. K. Henze, S. Fan, H. Levy II, D. L. Mauzerall, J. T. Lin, and S. Tao, 2014: Analysis of transpacific transport of black carbon during HIPPO-3: Implications for black carbon aging. *Atmospheric Chemistry and Physics*, 14 (12), 6315–6327, doi:10.5194/acp-14-6315-2014.

Shen, Z., Z. Chen, Z. Hou, T. Li, and X. Lu., 2015: Ecotoxicological effect of zinc oxide nanoparticles on soil microorganisms. *Frontiers of Environmental Science & Engineering*, 9 (5), 912-918, doi: 10.1007/s11783-015-0789-7.

Submitted/in preparation

Shen, Z., Y. Ming, and I. M. Held, 2019: Constraining aerosol forcing from land surface air temperature records. In preparation.

Shen, Z., K. Pressel, Z. Tan, and T. Schneider, 2019: Statistically steady state large-eddy simulations forced by an idealized general circulation model: 1. Forcing framework and simulation characteristics. Submitted to *Journal of Advances in Modeling Earth Systems*.

Honors and Awards

NASA JPL Center for Climate Sciences Summer School participant	2016
King Peh Kwoh Fellowship, Princeton University	2013-2014
Outstanding graduate of Beijing	2013
Outstanding thesis for Undergraduate Research & Training Program, Peking University	2013
Zeng Xianzi Scholarship for Excellent Students, Peking University	2009-2012

Professional Service

Session co-chair, Tri-MIP-athlon-2	2019
Organizer, Princeton AOS Workshop: Tropical Dynamics	2016
Organizer, Princeton AOS Student/Postdoc Seminar Series	2015-2016

Reviewer for *Natural Climate Change*, *Geophysical Research Letters*, *Atmospheric Chemistry and Physics*, *Journal of Geophysical Research*, *Earth's future*, *Climate Dynamics,* and *Atmospheric Research*

Teaching Experience

Assistant in Instruction Fall 2015

Princeton University, GEO102, "Climate: Past, Present, and Future"

Instructor: Dr. Daniel M. Sigman

Community Outreach

Monmouth Junction Elementary School 12th Annual Science Fair. Visiting Scientist. Brooks Crossing Elementary School, Monmouth Junction, NJ. (02/2018)

Selected Presentations

"Nonlinearity in the climate response to greenhouse gas and aerosol forcing". Oral. *99th AMS Annual Meeting*, Phoenix, AZ (01/2019)
"The influence of aerosols on large-scale circulation and regional climate". Oral. UCLA AOS 271 Seminar Series, Los Angeles, CA (11/2018)
"The influence of aerosols on large-scale circulation and regional climate". Oral. Lamont-Doherty Earth Observatory OCP Seminar Series, Palisades, NY (09/2018)
"Constraining aerosol forcing from the land surface temperature record". Oral. *98th AMS Annual Meeting*, Austin, TX (01/2018)
"Constraining aerosol forcing from the land surface temperature record". Oral. *AGU 2017 Fall Meeting*, New Orleans, LA (12/2017)
"The influence of aerosol absorption on the extratropical circulation". Poster. *Gordon Research Conference on Radiation and Climate*, Lewiston, ME. (07/2017)
"The influence of aerosol absorption on the extratropical circulation". Poster. *AGU 2016 Fall Meeting*, San Francisco, CA. (12/2016)
"Factors controlling the seasonal cycle of Arctic black carbon". Poster. *AGU 2015 Fall Meeting*, San Francisco, CA. (12/2015)
"Factors controlling the seasonal cycle of Arctic black carbon". Poster. *Gordon Research Conference on Radiation and Climate*, Lewiston, ME. (07/2015)
"Analysis of transpacific transport of black carbon during HIPPO-3: implications for black carbon aging". Oral. *Princeton AOS Student/Postdoc Seminar Series*, Princeton, NJ. (07/2015)
"Analysis of transpacific transport of black carbon during HIPPO-3: implications for black carbon aging". Poster. *AGU 2013 Fall Meeting*, San Francisco, CA. (12/2013)