

Zhaoyi Shen

Environmental Science and Engineering, California Institute of Technology

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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 Temporospacial 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, 2018: Constraining aerosol forcing from land surface air temperature records. In preparation.

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

Organizer , Princeton AOS Workshop: Tropical Dynamics	2016
Organizer , Princeton AOS Student/Postdoc Seminar Series	2015-2016
Reviewer for <i>Geophysical Research Letters</i> , <i>Journal of Geophysical Research</i> , and <i>Atmospheric Research</i>	

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)