Zhaoyi Shen

Environmental Science and Engineering, Caltech
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Education

Princeton University, Princeton, NJ

Ph.D., Atmospheric and Oceanic Sciences, August 2018
Advisor: Dr. Yi Ming
Thesis: "The Influence of Aerosols on Large-scale Circulation and Regional Climate"

Peking University, Beijing, China

B.S., Environmental Science (second B.A., Economics), July 2013

Employment

California Institute of Technology, Pasadena, CA 09/2018 - Present

Postdoctoral Scholar, Environmental Science and Engineering

Publications

Peer-reviewed

Shen, Z., K. G. Pressel, Z. Tan, and T. Schneider, 2020: Statistically steady state large-eddy simulations forced by an idealized GCM: 1. Forcing framework and simulation characteristics. *Journal of Advances in Modeling Earth Systems*, 12, e2019MS001814. https://doi.org/10.1029/2019MS001814.

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

Shen, Z., Y. Ming, and I. M. Held, 2020: Detecting the disparate impacts of anthropogenic aerosols on regional land temperature. Submitted.

Professional Service

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

Session co-chair, The second joint AerChemMIP / RFMIP / PDRMIP Workshop 2019

Organizer, Princeton AOS Workshop: Tropical Dynamics 2016

Organizer, Princeton AOS Student/Postdoc Seminar Series 2015-2016

Invited Talks

"Constraining aerosol forcing from the land surface temperature record". Caltech Yuk Lunch Seminar, Pasadena, CA. (08/2019)

"The influence of aerosols on large-scale circulation and regional climate". UCLA AOS 271 Seminar Series, Los Angeles, CA. (11/2018)

"The influence of aerosols on large-scale circulation and regional climate". Lamont-Doherty Earth Observatory OCP Seminar Series, Palisades, NY. (09/2018)

Conference Presentations

"Steady state large-eddy simulations forced by an idealized general circulation model". Poster. *AGU 2019 Fall Meeting*, San Francisco, CA. (12/2019)

"Nonlinearity in the climate response to greenhouse gas and aerosol forcing". Oral. *99th AMS Annual Meeting*, Phoenix, AZ. (01/2019)

"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)

"Influences 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 seasonal variations in Arctic black carbon". Poster. *AGU 2015 Fall Meeting*, San Francisco, CA. (12/2015)

"Factors controlling seasonal variations in 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". Poster. *AGU 2013 Fall Meeting*, San Francisco, CA. (12/2013)

Awards and Fellowships

Held Symposium Travel Scholarship	2018
NASA JPL Center for Climate Sciences Summer School	2016
King Peh Kwoh Fellowship, Princeton University	2013-2014
Outstanding Graduates of Beijing's Higher Institutions	2013
Zeng Xianzi Scholarship for Excellent Students, Peking University	2009-2012

Teaching and Mentorship

Assistant in Instruction Fall 2015

Princeton University, GEO102, "Climate: Past, Present, and Future"
Instructor: Dr. Daniel M. Sigman

Community Outreach

Junior Watson Program. Lab Visit Host. California Institute of Technology, Pasadena, CA. (04/2019)

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