

# 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, 2019: Constraining aerosol forcing from land surface air temperature records. In preparation.

Pressel, K., **Z. Shen**, 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.

### **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 *Geophysical Research Letters*, *Journal of Geophysical Research*, 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)