

## Geeta G. Persad

Postdoctoral Research Scientist  
Carnegie Institution for Science, Dept. of Global Ecology  
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### RESEARCH INTERESTS

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- Regional and global circulation and radiative impacts of aerosols; spatial patterns of climate response to evolving anthropogenic aerosol emissions
- Climate response to short-lived vs. long-lived climate forcers and associated mitigation co-benefits

### EDUCATION

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#### Princeton University, Princeton, NJ.

*Ph.D.*, Atmospheric and Oceanic Science *May 2016*

Advisors: Drs. V. Ramaswamy and Yi Ming.

Dissertation: “Climate Implications of the Heterogeneity of Anthropogenic Aerosol Forcing”

*Certificate* in Science, Technology, and Environmental Policy *May 2016*

Advisor: Dr. Michael Oppenheimer.

Project: “Trade and the Future of China’s Black Carbon Emissions”

*M.A.*, Atmospheric and Oceanic Sciences *May 2013*

#### Stanford University, Stanford, CA.

*B.S.* with Departmental Honors, Geophysics *June 2010*

Thesis: “The Global Tropical Response to Black Carbon: Implications for Climate Forcing”

### PEER-REVIEWED PUBLICATIONS

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**Persad, G. G.**, Y. Ming, and V. Ramaswamy, 2014: The Role of Aerosol Absorption in Driving Solar Dimming over East Asia. *J. Geophys. Res. Atmos.*, 119, 410–20. doi: 10.1002/2014JD021577.

**Persad, G. G.**, Y. Ming, and V. Ramaswamy, 2012: Tropical Troposphere-Only Responses to Absorbing Aerosols. *J. Climate*, 25, 2471-2480. doi: 10.1175/JCLI-D-11-00122.1

Ming, Y., V. Ramaswamy, and **G. Persad**, 2010: Two Opposing Effects of Absorbing Aerosols on Global-mean Precipitation. *Geophys. Res. Lett.*, 37, L13701. doi: 10.1029/2010GL042895.

### SUBMITTED MANUSCRIPTS

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**Persad, G. G.**, Y. Ming, and V. Ramaswamy: Spatially Similar Surface Energy Flux Perturbations due to Greenhouse Gases and Aerosols. *Nature Communications*.

**Persad, G. G.**, X. Zhang, and K. Caldeira: Natural Gas and Carbon Intensity in the Transportation Sector: Compressed Natural Gas versus Battery Electric Vehicles. *Env. Res. Lett.*

### MANUSCRIPTS IN PREPARATION

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**Persad, G. G.**, D. Paynter, Y. Ming, and V. Ramaswamy: Competing Atmospheric- and Surface-Driven Impacts of Absorbing Aerosols on the East Asian Summertime Climate. *In preparation*.

**Persad, G. G.**, V. Naik, and M. Oppenheimer: Trade and the Future of China’s Black Carbon Emissions. *In preparation*.

**RESEARCH AND PROFESSIONAL EXPERIENCE**

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- Postdoctoral Research Scientist.** Carnegie Institution for Science. Stanford, CA. *2016-present*  
Caldeira Lab, Dept. of Global Ecology. Developing new research program to analyze the influence of anthropogenic aerosols' geographic distribution on patterns of global climate change.
- Science, Tech., and Env. Policy Fellow.** Princeton University. Princeton, NJ *2012-2016*  
 PI: Dr. Michael Oppenheimer. Evaluated the implications of China's black carbon embodied in trade using mathematical, general circulation, and integrated assessment modeling.
- NSF Graduate Research Fellow.** Princeton University. Princeton, NJ. *2011-2016*  
 PIs: Drs. V. Ramaswamy and Yi Ming. Investigated the impact of anthropogenic aerosol emissions on regional and global climate using general circulation models.
- Physical Scientist.** NOAA/Geophysical Fluid Dynamics Lab (GFDL). Princeton, NJ. *2010-11*  
Atmospheric Physics and Chemistry Group. Analyzed aerosols' impact on the surface energy balance, regional precipitation, and cloud properties. Contributed internal peer review to Group projects and represented NOAA at international conferences.
- Hollings Research Fellow.** NOAA/GFDL. Princeton, NJ. *Summer 2009*  
 PI: Dr. Yi Ming. Analyzed the cloud interactions responsible for black carbon aerosol's radiative impact in general circulation models.
- DOE Research Fellow.** Lawrence Berkeley National Laboratory. Berkeley, CA. *Summer 2008*  
 PI: Dr. Surabi Menon. Assessed the fidelity of aerosol/cloud interactions in general circulation models using satellite data.

**FELLOWSHIPS, AWARDS, AND HONORS**

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- Ford Science, Technology, and Environmental Policy (STEP) Fellowship,** *2013-present*  
 Princeton Environmental Inst. and Woodrow Wilson School of Public and International Affairs
- National Science Foundation Graduate Research Fellowship** *2011-present*
- Student Oral Presentation Award,** American Meteorological Society 95<sup>th</sup> Annual Meeting *2015*
- Outstanding Student Paper Award,** American Geophysical Union Fall Meeting *2014*
- Outstanding Student Paper Award,** American Geophysical Union Fall Meeting *2013*
- 1<sup>st</sup> Place Grad. Student Poster Presentation,** Amer. Met. Soc. 92<sup>nd</sup> Annual Meeting *2012*
- Princeton Energy and Climate Scholarship,** Princeton Environmental Institute *2011-13*
- American Meteorological Society Graduate/Industry Fellowship** *2011-12*
- Centennial Fellowship,** Princeton University Graduate School *2011-15*
- Kennedy Prize:** awarded to Stanford's top undergraduate science thesis university-wide *2010*  
 Thesis title: *The Global Tropical Response to Black Carbon: Implications for Climate Forcing*
- Firestone Medal** for excellence in undergraduate research, Stanford University *2010*
- Dean's Award** for undergraduate academic achievement, Stanford School of Earth Sciences *2010*
- Barry M. Goldwater Scholarship** *2009-10*
- Ernest F. Hollings Scholarship,** National Oceanic and Atmospheric Administration *2008-10*

**PROFESSIONAL ACTIVITIES AND UNIVERSITY SERVICE**

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- Session Co-convener and Chair**, American Geophysical Union Fall Meeting *2016*  
“Atmospheric Circulation and Hydrological Cycle Under a Changing Climate: Monsoons, Storm Tracks, and the ITCZ”
- Session Co-convener and Chair**, American Geophysical Union Fall Meeting *2015*  
“Climate Change is a Cross-Disciplinary Challenge: Disciplinary Advances in an Accessible Framework.”
- Chair**, 2015 Gordon Research Seminar on Radiation and Climate *2013-15*
- Cofounder/Organizer**, Princeton Women in Geosciences (PWiGs) Initiative *2013-15*
- Policy Training**, American Meteorological Society Summer Policy Colloquium *Summer 2013*  
10-day intensive training in domestic policy process, policy analysis, and use of science in policy.
- Member**, Princeton University Women in STEM Leadership Council *2013-14*
- Department Representative**, Princeton Graduate Student Government *2013-14*
- Organizer**, Energy Table, Princeton Env. Inst./Andlinger Center for Energy and Env. *2012-15*
- Rapporteur**, Princeton Institute for International & Regional Studies Research Community *2011-14*  
“Communicating Uncertainty: Science, Institutions, & Ethics in the Politics of Global Climate Change”
- Reviewer**, *Climate Dynamics, Geophys. Research Letters, Journal of Geophys. Research, PLOS One* *Ongoing*

**TEACHING, OUTREACH, AND MENTORSHIP EXPERIENCE**

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**TEACHING**

- Assistant in Instruction**, GEO 197: Environmental Decision-Making *Fall 2014*  
Developed and implemented in-class activities and assignments, graded assignments, assisted in the preparation and grading of exams, developed final grading rubric.
- Co-organizer and Lecturer**, AOS 577: Seminar on Mid-latitude Circulation Systems *Summer 2014*  
Created curriculum based on retired course, coordinated student lecturers, and delivered lectures
- Guest Lecturer**, WWS 585b: Living in a Greenhouse: Technology and Policy *Fall 2012*  
Developed and delivered lecture on aerosols, provided advising on integration of aerosol science into course material.

**FORMAL ADVISING AND MENTORSHIP**

- Research Advisor** – Pranay Nadella, High School Intern, NOAA/GFDL
- Research Mentor** – Michelle Frazer, Hollings Undergraduate Intern, NOAA/GFDL
- PWiGs Mentor** – Emma Kast, Graduate Student, Princeton Univ. Dept. of Geosciences

**OUTREACH**

- Mentor**, Youth Careers in Science Program, *California Academy of Sciences*
- Expert Scientist**, Science Game Jams, *California Academy of Sciences*
- E-lecture** for *The Alliance for Climate Education’s* Science Friday – “Atmospheric Aerosols: What They Are and Why/How We Study Them.”
- Guest Blogger** for *The Alliance for Climate Education’s Hot and Bothered* online blog
- Organizer and Lecturer**, Princeton SPLASH Workshop “Tackling Climate Change: Play the Game!”
- Climate Science and Policy Primer**, Invited Lecture at Princeton Day School
- Science Outreach Coordinator**, Princeton Energy and Climate Scholars *2011-13*

**SELECTED INVITED TALKS**

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- Persad G.**, 2016: Exploring the Climate Implication of Aerosol Forcing's Spatial Heterogeneity. *Lawrence Livermore National Laboratory*. Livermore, CA.
- Persad, G.**, 2015: Black Carbon Aerosol: The Hare to Carbon Dioxide's Tortoise. *University of Texas at Austin, Jackson School of Geosciences Climate Forum*. Austin, TX.
- Persad, G.**, Y. Ming (presenter), and V. Ramaswamy, 2014: The Role of Aerosol Absorption in Solar Dimming over East Asia and Its Implications for Regional Climate. *European Geosciences Union General Assembly*, Vienna, Austria.
- Persad, G.**, 2011: General Circulation Modeling of Black Carbon: Climate Forcing, Challenges, and Insights from GFDL's AM2.1 Model. *4<sup>th</sup> International Training School on Atmospheric Brown Cloud*, Kathmandu, Nepal.

**CONFERENCE ABSTRACTS**

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° Oral; +Poster; ‡ Recognized by award

- Persad, G.**, V. Naik, M. Oppenheimer, 2016: Trade and the Future of China's Black Carbon Emissions. *American Geophysical Union Fall Meeting*, San Francisco, CA. °
- Persad, G.**, D. Paynter, Y. Ming, and V. Ramaswamy, 2015: Competing Atmosphere- and Surface-Driven Impacts of Aerosol Absorption on the East Asian Summer Monsoon. *American Geophysical Union Fall Meeting*, San Francisco, CA. +
- Persad, G.**, D. Paynter, Y. Ming, and V. Ramaswamy, 2015: The Regional Climate Response to Absorption-Driven Solar Dimming over East Asia. *Gordon Research Conference on Radiation and Climate*. Waterville, ME. +
- Persad, G.**, D. Paynter, Y. Ming, and V. Ramaswamy, 2015: The Regional Climate Response to Absorption-Driven Solar Dimming over East Asia. *27<sup>th</sup> Conference on Climate Variability and Change at 95<sup>th</sup> AMS Annual Meeting*, Phoenix, AZ. °‡
- Persad, G.**, Y. Ming, and V. Ramaswamy, 2014: Similarities in the Spatial Pattern of the Surface Flux Response to Present-Day Greenhouse Gases and Aerosols. *American Geophysical Union Fall Meetings*, San Francisco, CA. ° ‡
- Persad, G.**, Y. Ming, and V. Ramaswamy, 2013: The Role of Aerosol Absorption in Solar Dimming over East Asia and Its Implications for Regional Climate. *American Geophysical Union Fall Meeting*, San Francisco, CA. ° ‡
- Persad, G.**, Y. Ming, and V. Ramaswamy, 2013: Aerosol Direct Radiative Effects through the Lens of East Asian Solar Dimming. *Gordon Research Conference on Radiation & Climate*. New London, NH. +
- Persad, G.**, Y. Ming, and V. Ramaswamy, 2013: Surface and Atmospheric Forcing by Anthropogenic Aerosols: Insights from a Model-Observation Intercomparison. *Fifth Symposium on Aerosol-Cloud-Climate Interactions at 93<sup>rd</sup> AMS Annual Meeting*, Austin, TX. +
- Persad, G.**, Y. Ming, and V. Ramaswamy, 2012: Aerosol-Driven Surface Solar Dimming over Asia: Insights from a Model-Observation Intercomparison. *American Geophysical Union Fall Meeting*, San Francisco, CA. °
- Persad, G.**, Y. Ming, and V. Ramaswamy, 2012: Aerosols and the Surface Energy Balance: A Modeling Perspective. *Fourth Symposium on Aerosol-Cloud-Climate Interactions* ° and *11<sup>th</sup> Annual AMS Student Conference* + at *92<sup>nd</sup> AMS Annual Meeting*, New Orleans, LA. ‡

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**CONFERENCE ABSTRACTS (CONT.)**

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° Oral; +Poster; ‡ Recognized by award

**Persad, G.,** Y. Ming, and V. Ramaswamy, 2011: Using Energy Balance Constraint to Analyze the Robustness of the Modeled Tropospheric Response to Absorbing Aerosols: Implications for Radiative and Hydrological Forcing. *XXV IUGG General Assembly*, Melbourne, Australia. Abstract M03S7-2092.°

**Persad, G.,** Y. Ming, V. Ramaswamy, 2011: The Tropospheric Response to Absorbing Aerosols in the GFDL Model Suite: Implications for Climate Forcing. *Gordon Research Conference on Radiation & Climate*. Waterville, ME.+

**Persad, G.,** and Y. Ming, 2009: Investigating the Climate Impacts of Black Carbon in GFDL's AM2.1 Atmospheric General Circulation Model. *American Geophysical Union Fall Meeting*, San Francisco, CA.°

**Persad, G.,** S. Menon, and I. Sednev, 2008: An Assessment of Uncertainties in the NASA GISS ModelE GCM due to Variations in the Representation of Aerosol/Cloud Interactions. *American Geophysical Union Fall Meeting*, San Francisco, CA.+

**PROFESSIONAL MEMBERSHIPS**

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American Geophysical Union, Student Member since 2007.

American Meteorological Society, Student Member since 2009.

Earth Science Women's Network, Member since 2010.