

# DANIEL A. ROTHENBERG

77 Massachusetts Avenue  
Building 54-1415  
Cambridge, MA 02139

(502) 648-7513 ☎  
darothen@mit.edu ✉  
@danrothenberg 🐦  
danielrothenberg.com 🌐

EDUCATION	<b>Massachusetts Institute of Technology, Cambridge, MA</b> Ph.D., <i>Atmospheric Science</i> EXP. 2016 <i>Advisors:</i> Chien Wang, Ron Prinn <i>Dissertation Title:</i> Aerosol Impacts on the Production of Anvil Cirrus in Continental Deep Convection
	<b>Cornell University, Ithaca, NY</b> B.S., Atmospheric Science, <i>magna cum laude</i> , Honors in Research 2010 <i>Thesis Advisor:</i> Natalie Mahowald <i>Thesis Title:</i> Volcano Impacts on Climate and Biogeochemistry
HONORS AND AWARDS	Outstanding Student Presentation Award (†), AMS 2015 National Science Foundation Graduate Research Fellowship, NSF 2012 National Defense Science And Engineering Fellowship, ASEE ( <i>declined</i> ) 2012 Father James B. Macelwane Award in Meteorology, AMS 2011 Klein Fellowship, MIT-EAPS 2011 Charney Prize, MIT-EAPS 2011 Academic Excellence Award - Atmospheric Science, Cornell/CALS 2011 Richard and Helen Hagermeyer Scholarship, AMS 2010
RESEARCH EXPERIENCE	<b>Program in Atmospheres, Oceans, and Climate, MIT, Cambridge, MA</b> <i>Research Assistant</i> 2011-PRESENT Developed advanced statistical parameterization of cloud droplet activation for use in global climate models Studied the role of mixed-phase cloud microphysics in modulating aerosol invigoration of continental deep convection
	<b>Department of Earth and Atmospheric Sciences, Cornell University, Ithaca, NY</b> <i>Undergraduate Research Assistant</i> 2008-2011 Studied biogeochemical/climate processes and interactions with a coupled carbon-climate model Performed and analyzed fully-coupled model simulations studying transient climate change in the 20th century
	<b>Center for Multiscale Modeling of Atmospheric Processes, Colorado State University, Fort Collins, CO</b> <i>Summer Intern</i> SUMMER 2010 Implemented and evaluated a baroclinic instability test case on a very high resolution global atmospheric dynamical core, identifying numerical problems Developed novel visualization tools for analyzing model data on geodesic computational meshes
PROFESSIONAL DEVELOPMENT	<b>AMS, 7th Annual Geosciences Congressional Visits Day, Washington, DC</b> SEPTEMBER 2014 <b>AMS, Summer Policy Colloquium, Washington, DC</b> SUMMER 2014 <b>MIT/SPI, ASTE Science/Engineering Congressional Visits Day, Washington, DC</b> SPRING 2012/2014 <b>CMMAP/NCAR/NCEP, Summer School on Atmospheric Modeling, Boulder, CO</b> SUMMER 2010
TEACHING EXPERIENCE	<i>Graduate</i> <b>Atmospheric Physics and Chemistry (12.806/12.306)</b> SPRING 2014-2015 MIT, Department of Earth, Atmospheric, and Planetary Sciences Teaching Assistant

**"Climate Change Science" IAP Seminar**

WINTER 2011-2013

MIT, Joint Program on the Science and Policy of Global Change

Lecturer

*Undergraduate***Object-Oriented Programming and Data Structures (CS 2110)**

2009-2010

Cornell University, Department of Computer Science

Course Consultant, Teaching Assistant

**LEADERSHIP AND  
SERVICE****Student Conference Planning Committee**

American Meteorological Society

Co-Chair

2014

Session Chair

2011-2013

**Graduate Climate Conference Executive Committee**

MIT/Woods Hole Oceanographic Institution/University of Washington

Co-Chair

2013

Advisor; Fundraising Chair

2015

**Atmospheric Sciences Seminar Committee**

2012-PRESENT

MIT Department of Earth, Atmospheric, and Planetary Sciences

**Reviewer**

Journal of Geophysical Research - Atmospheres

2014-PRESENT

**Science Policy Initiative Executive Committee**

2013-PRESENT

Massachusetts Institute of Technology

**WORK  
EXPERIENCE****Google / Ravenbrook Software**

2011

Contract Developer

Ported a high-performance algorithm used in surface temperature analysis at the National Climatic Data Center from Fortran to Python

Developed extensive documentation and test suite for algorithm

Identified and corrected numerous numerical and programming bugs and validated algorithm against synthetic datasets

**Orion Network Services**

2006-2007

Software Developer

Developed an online river flooding visualization tool for NOAA using ArcGIS and other scripting tools

**PUBLICATIONS***Refereed/Peer-Reviewed*

1. **Rothenberg, D.**, Mahowald, N., Lindsay, K., Doney, S. C., Moore, J. K., and Thornton, P.: Volcano impacts on climate and biogeochemistry in a coupled carbon-climate model, *Earth Syst. Dynam.*, 3, 121-136, doi:10.5194/esd-3-121-2012, 2012.
2. Mahowald, N., Lindsay, K., **Rothenberg, D.**, Doney, S. C., Moore, J. K., Thornton, P., Randerson, J. T., and Jones, C. D.: Desert dust and anthropogenic aerosol interactions in the Community Climate System Model coupled-carbon-climate model, *Biogeosciences*, 8, 387-414, doi:10.5194/bg-8-387-2011, 2011.
3. Mahowald, N. M., Kloster, S., Engelstaedter, S., Moore, J. K., Mukhopadhyay, S., McConnell, J. R., Albani, S., Doney, S. C., Bhattacharya, A., Curran, M. A. J., Flanner, M. G., Hoffman, F. M., Lawrence, D. M., Lindsay, K., Mayewski, P. A., Neff, J., **Rothenberg, D.**, Thomas, E., Thornton, P. E., and Zender, C. S.: Observed 20th century desert dust variability: impact on climate and biogeochemistry, *Atmos. Chem. Phys.*, 10, 10875-10893, doi:10.5194/acp-10-10875-2010, 2010.

PRESENTATIONS  
AND  
TALKS*Conference Posters*

- Rothenberg, Daniel** and Chien Wang. Assessing the sensitivity of global aerosol indirect effects to activation treatment. Graduate Climate Conference, University of Washington. Seattle, WA. 2014
- Rothenberg, Daniel** and Chien Wang. A Novel Parameterization of Droplet Activation Suitable for Global Models. 14th Conference on Cloud Physics, American Meteorological Society. Boston, MA. 2014
- Rothenberg, Daniel** and Chien Wang. A Novel Parameterization of Droplet Activation Suitable for Global Climate Models. CENSAM Workshop. Singapore. 2014
- Rothenberg, Daniel** and Chien Wang. [Evaluating the Role of Aerosol Mixing State in Cloud Droplet Nucleation using a New Activation Parameterization](#). 94th Annual Meeting of the American Meteorological Society, Sixth Symposium on Aerosol-Cloud-Climate Interactions. Atlanta, GA. 2013.
- Rothenberg, Daniel** and Chien Wang. Global Climate Response to Enhanced Anthropogenic Aerosol Emissions in a “hazy world” Experiment with the CESM. 6th Graduate Climate Conference. 2013.
- Rothenberg, Daniel** and Ross Heikes. [A baroclinic instability test case on an anelastic dynamical core](#). 91st Annual Meeting of the American Meteorological Society, 24th Conference on Weather and Forecasting/20th Conference on Numerical Weather Prediction. Seattle, WA. 2012.

*Conference Talks*

- † **Rothenberg, Daniel**, Chien Wang and Alexander Avramov. Evaluating Advanced Aerosol Activation Treatments in a Coupled Climate/Mixing-State Resolving Aerosol Model. 95th Annual Meeting of the American Meteorological Society, 7th Symposium on Aerosol-Cloud-Climate Interactions. Phoenix, AZ. 2015.
- Rothenberg, Daniel** and Chien Wang. Evaluating the Role of Aerosol Mixing State in Cloud Droplet Nucleation using a New Activation Parameterization. American Geophysical Union Fall Meeting, (A34D-03). 2013.
- Rothenberg, Daniel** and Chien Wang. [Cloud and Climate Impacts in a Hazy World Simulation](#). 93rd Annual Meeting of the American Meteorological Society, 5th Symposium on Aerosol-Cloud-Climate Interactions. Austin, TX. 2013.
- Rothenberg, Daniel** and Nick Barnes. [Lessons From Deploying the USHCN Pairwise Homogenization Algorithm in Python](#). 92nd Annual Meeting of the American Meteorological Society, Second Symposium on Advances in Modeling and Analysis Using Python. New Orleans, LA. 2012

*Note: annotations (†, etc) correspond to “Honors and Awards” section.*

PROFESSIONAL  
AFFILIATIONS

American Meteorological Society	2010-PRESENT
American Physical Society	2011-PRESENT
American Geophysical Union	2013-PRESENT
Association for Computing Machinery	2011-2012

PERSONAL  
INTERESTS

Violin performance - classical (16 years), Winter sports, Backpacking/hiking, Software development/engineering, Meteorology education/forecasting, Debate and rhetoric, Science/Innovation policy