Daniel A. Rothenberg

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Education

Massachusetts Institute of Technology, Cambridge, MA
Ph.D., *Atmospheric Science* — EXP. 2016
Advisors: Chien Wang, Ron Prinn
Dissertation Title: Aerosol Impacts on the Production of Anvil Cirrus in Continental Deep Convection

Cornell University, Ithaca, NY
B.S., Atmospheric Science, *magna cum laude*, Honors in Research — 2010
Thesis Advisor: Natalie Mahowald
Thesis Title: Volcano Impacts on Climate and Biogeochemistry

Honors and Awards

National Science Foundation Graduate Research Fellowship, NSF — 2012
National Defense Science And Engineering Fellowship, ASEE (*declined*) — 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

Program in Atmospheres, Oceans, and Climate, MIT, Cambridge, MA
Research Assistant — 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

Department of Earth and Atmospheric Sciences, Cornell University, Ithaca, NY
Undergraduate Research Assistant — 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

Center for Multiscale Modeling of Atmospheric Processes, Colorado State University, Fort Collins, CO
Summer Intern — SUMMER 2010
Implemented end 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

AMS, Summer Policy Colloquium, Washington, DC — SUMMER 2014
CMMAP/NCAR/NCEP, Summer School on Atmospheric Modeling, Boulder, CO — SUMMER 2010

Teaching Experience

Graduate
Atmospheric Physics and Chemistry (12.806/12.306) — SPRING 2014
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 Asssitant

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

Science Policy Initiative Executive Committee 2013-PRESENT
Massachusetts Institute of Technology

Atmospheric Sciences Seminar Committee 2012-PRESENT
MIT Department of Earth, Atmospheric, and Planetary Sciences

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. 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-Cimate 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 anelsatic 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 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

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