

Jeffrey D. O. Strong

CONTACT INFORMATION

Lamont-Doherty Earth Observatory
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RESEARCH INTERESTS

Climate and weather extremes, tropical cyclones, aerosol-forced changes to climate and weather, regional climate variability and predictability, combined modeling and data analysis

EDUCATION

Princeton University, Princeton, New Jersey USA

Ph.D., Atmospheric and Oceanic Sciences, 2016

- Thesis: “The Climatological Effect of Perturbations in Atmospheric Burden and Optical Properties of Saharan Dust”
- Advisor: Gabriel A. Vecchi
- Committee Members: Thomas L. Delworth, Paul A. Ginoux, and Thomas R. Knutson

M.A., Atmospheric and Oceanic Sciences, 2013

University of Virginia, Charlottesville, Virginia USA

B.S. with high distinction, Environmental Sciences and Mathematics (Double Major), 2011

- Thesis: “Determining the Relative Impact of Dry Air Entrainment in Developing Tropical Cyclones”
- Advisors: Robert E. Davis and Amato T. Evan

RESEARCH EXPERIENCE

Postdoctoral Research

2017 - Present

Lamont-Doherty Earth Observatory of Columbia University, Palisades, NY

PIs: Adam Sobel & Suzana Camargo

Main work involves testing the ability of NASA GISS GCMs to accurately simulate tropical cyclones and aid in the model development process to better this ability. Additional ongoing projects include modeling the regional impacts of anthropogenic aerosols on tropical cyclones, understanding intermodel variability in simulating tropical cyclones, and developing new indices to describe tropical cyclone predictability.

Postdoctoral Research

2016 - 2017

University of California San Diego, Scripps Institute of Oceanography, La Jolla, CA

PI: Shang-Ping Xie

Principal research examining the regional climate response to historical shifts in scattering aerosols using global climate models of varying complexity. Found several interesting regional hydrometeorological responses which were examined in historical observations and model runs.

Graduate Student Research

2011 - 2016

Princeton University Program in Atmospheric and Oceanic Sciences & NOAA Geophysical Fluid Dynamics Laboratory, Princeton, NJ

Advisor: Gabriel A. Vecchi

Projects focus on exploring the response of the climate to changes in optical properties and emissions of dust from the Sahara using a fully-coupled modeling framework. Specific avenues of research include: the thermodynamic and hydrologic anomalies from a localized mineral dust aerosol perturbation, analyzed across the globe and particular regions; changes to the global tropical cyclone climatology from the same aerosol perturbation; mean state differences across

the atmosphere and ocean with various optical regimes of mineral dust; predictability analyses of tropical cyclones in various basins using an ensemble forecasting system.

Research Assistant

2010 - 2011

The University of Virginia Climatology Office, University of Virginia, Charlottesville, VA

Supervisor: Jerry Stenger

Primary work dealt with updating and maintaining the lengthy meteorological observations held at the University of Virginia by collecting and transcribing records from across the mid- Atlantic region. A project was conducted to analyze the degree to which modern climate change has impacted the climate of Virginia.

Undergraduate Student Research

2010 - 2011

Department of Environmental Sciences, University of Virginia, Charlottesville, VA

Advisors: Robert E. Davis and Amato T. Evan

Undergraduate thesis work analyzed the impact of dry air intrusions on developing tropical cyclones in the North Atlantic using a variety of observations and model tools. The thesis was later defended in front of a department panel as a part of the distinguished majors program at the University of Virginia and awarded high distinction.

Research Intern

Summer 2010

NCEP/NOAA Ocean Prediction Center, Camp Springs, MD

Supervisor: Joseph Sienkiewicz

Summer internship exploring the development and predictability of historic mid-latitude cyclones going through bombogenesis across the North Atlantic basin. Culminated in a presentation before a NOAA panel in Silver Springs, MD.

PUBLICATIONS

Strong, J. D. O., A. H. Sobel, S. J. Camargo, A. D. Del Genio, and M. Kelley, 2019: Parameter Sensitivity of Tropical Cyclones in a Newly Developed NASA GISS AGCM. *in prep.*

Aarons, Z., S. J. Camargo, J. D. O. Strong, and H. Murakami, 2019: Tropical Cyclones in the NASA GEOS-5 Model and MERRA-2 Reanalysis. *in prep.*

Strong, J. D. O., S.-P. Xie, 2019: Simulating the Sensitivity of Tropical Hydroclimate to Regional Sulfate Aerosol Forcing. *in prep.*

Strong, J. D. O., G. A. Vecchi, and P. A. Ginoux, 2018: The climatological effect of Saharan dust on global tropical cyclones in a fully coupled GCM *J. Geophys. Res. Atmos.*, 123 (**10**), 5538-5559, doi:10.1029/2017JD027808.

Strong, J. D. O., G. A. Vecchi, and P. A. Ginoux, 2015: The response of the tropical Atlantic and West African climate to Saharan dust in a fully coupled GCM. *J. Climate*, 28, 7071-7092, doi:10.1175/JCLI-D-14-00797.1.

PRESENTATIONS

Talks

- **Strong, J. D. O.**, G. A. Vecchi, and P. A. Ginoux: The climatological effect of perturbations in atmospheric burden and optical properties of Saharan dust. *AGU Fall Meeting*, San Francisco, CA Dec 2016
- **Strong, J. D. O.**, G. A. Vecchi, and P. A. Ginoux: The effect of Saharan dust on North Atlantic hydroclimate and tropical cyclones in a high-resolution GCM. *32nd AMS Conference on Hurricanes and Tropical Meteorology*, San Juan, PR Apr 2016

- **Strong, J. D. O.**, G. A. Vecchi, and P. A. Ginoux: The response of the tropical Atlantic and West African climate to Saharan dust in a fully coupled GCM. *31st AMS Conference on Hurricanes and Tropical Meteorology*, San Diego, CA Apr 2014

Posters

- Aarons, Z., S. J. Camargo, **J. D. O. Strong**, and H. Murakami: Tropical Cyclones in the NASA GEOS-5 Model and MERRA-2 Reanalysis. *AMS Student Conference*, Phoenix AZ Jan 2019
- **Strong, J. D. O.**, S. J. Camargo, A. H. Sobel, M. Kelley, and A. Del Genio: Studying tropical cyclones in NASA-GISS ModelE3. *AGU Fall Meeting*, Washington DC Dec 2018
- Camargo, S. J., C. F. Giulivi, A. H. Sobel, A. A. Wing, D. Kim, Y. Moon, A. D. Del Genio, M. Kelley, H. Murakami, K. A. Reed, E. Scoccimarro, **J. D. O. Strong**, G. A. Vecchi, M. F. Wehner, C. M. Zarzycki, and M. Zhao: How strong is the relationship between the large-scale environment and tropical cyclone climatology in climate models? *AGU Fall Meeting*, Washington DC Dec 2018
- **Strong, J. D. O.**, G. A. Vecchi, and P. A. Ginoux: The effect of Saharan dust on North Atlantic hydroclimate and tropical cyclones in a high-resolution GCM. *AGU Fall Meeting*, San Francisco, CA Dec 2015

AWARDS

Student Awards – University of Virginia, Department of Environmental Sciences

- Michael Garstang Award for Atmospheric Sciences 2011
- NOAA Ernest F. Hollings Scholarship 2010-2011

Student Awards – Princeton University, Atmospheric and Oceanic Sciences Program

- Cooperative Institute for Climate Science Funding Grant 2011-2016

TEACHING
EXPERIENCE

Guest Lecturer

Spring 2019

UN2100 - Earth's Environmental System: Climate Systems
Instructor: Arlene M. Fiore & Galen A. McKinley
Department of Earth and Environmental Sciences,
Columbia University

Outreach Instructor

Fall 2018

Lamont-Doherty Earth Observatory Open House
Columbia University

Guest Lecturer

Fall 2018

UN2100 - Earth's Environmental System: Climate Systems
Instructor: Arlene M. Fiore & Jerry McManus
Department of Earth and Environmental Sciences,
Columbia University

Assistant in Instruction

Spring 2015

GEO 202 - Introduction to Atmospheres, Oceans, and Climate
Instructor: Jorge L. Sarmiento
Department of Geosciences,
Princeton University

Guest Lecturer

Spring 2014

Seminar Series on Mid-latitude Circulation Systems
Atmospheric and Oceanic Sciences Program,
Princeton University

ACADEMIC
LEADERSHIP

Co-Organizer of Division Seminar

2018-2019

- Organized the Lamont-Doherty Earth Observatory's Division of Ocean and Climate Physics seminar series which included inviting numerous speakers from various institutions, organizing their travel, and setting up daily schedules for them.

Organizer of Division Happy Hour 2018-2019

- Organized the Lamont-Doherty Earth Observatory's Division of Ocean and Climate Physics informal happy hour which included inviting all members of the division to various establishments in New York City and increase department cohesion while initiating further scientific discussions.

Co-Organizer of Program Retreat 2012-2015

- Co-founded and planned annual Atmospheric and Oceanic Sciences Program Retreat for several years which involved organizing scientific experiments such as a weather balloon launch as well as group activities.

Co-Organizer of Annual Climate Workshop 2014

- Organized the second annual Atmospheric and Oceanic Sciences Program Workshop entitled Ice in the Climate System which included inviting several speakers from other institutions, scheduling multi-day events, and leading discussions.

Co-Organizer of Summer Journal Clubs 2013-2014

- Assisted in developing several journal reading groups covering topics such as the Intergovernmental Panel on Climate Change 5th Assessment Report, tropical convection, and predictability.

Lead Forecaster of Cavalier Weather Service 2009-2011

- Led a team of students to produce forecasts for the University of Virginia newspaper and several local media outlets. Won a class award for a forecast skill competition.

PROFESSIONAL ORGANIZATIONS

American Geophysical Union
Member since 2011

American Meteorological Association
Member since 2011

SKILLS

Computer Programming:

- Java, GIS, IDL, LaTeX, Fortran 90, LINUX shell, MatLab, Python

Practical:

- NAUI Open Water Certified SCUBA diver
- FCC Licensed Amateur Radio Operator
- Conversational in Spanish