

# Stuart M. Evans

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## Current Position

2014– **Postdoctoral Research Associate**,  
Princeton Environmental Institute, Princeton University  
Advisors: Paul Ginoux and Elena Shevliakova

## Education

2007–2014 **Ph.D., Atmospheric Sciences**, University of Washington  
• *Advisors:* Thomas P. Ackerman and Roger T. Marchand  
1999–2003 **B.A., Astronomy and Physics**, Haverford College

## Research Experience

2014– **Postdoctoral Research Associate**, GFDL / Princeton University

- Member, Land Working Group and Atmosphere Working Group
- Implemented a new dust emission parameterization in CM3 that accounts for wind speed, topography, soil moisture, vegetation, and land use and quantified the importance of these variables to dust variability.
- Identified a positive feedback wherein dust suppresses rainfall and amplifies drought.
- Discovered sensitivity of ITCZ location to hemispheric asymmetry of dust burden.
- *Advisors:* Paul Ginoux and Elena Shevliakova.

2007–2014 **Research assistant**, University of Washington

- Developed a cluster analysis-based atmospheric classification using satellite and ground-based measurements of cloud, precipitation, and radiative properties to better understand the variability of tropical Australia and identify relationships between the Australian monsoon, MJO, and recent precipitation trends.
- Created an atmospheric classification using cluster analysis for the southern Great Plains. Used the classification to compare the

- distribution of dynamic states in GFDL's AM3 model to the distribution from reanalysis. Further used the classification to evaluate the cloud/precipitation/radiative properties of each state in the model against satellite and ground-based measurements.
- *Advisors:* Thomas P. Ackerman and Roger T. Marchand.
- 2011 **Field Assistant**, Storm Peak Laboratory
- StormVEx field campaign.
  - Maintained cloud and precipitation particle imagers, aerosol collectors, radiometers, anemometers, and snow collectors; collected and recorded data.
  - *Supervisors:* Jay Mace and Matthew Shupe.
- 2004–2006 **Post-baccalaureate Research Assistant**, Los Alamos Nat'l Laboratory
- Calibrated, operated, and maintained robotic telescopes observing optical afterglows of gamma-ray bursts.
  - Developed automated software to identify passing satellites in the telescopic field of view.
  - *Advisor:* W. Thomas Vestrand
- 2004 **Field Assistant**, Yosemite National Park
- Conducted wildlife population surveys
  - *Supervisor:* Susan Roberts

## Publications

### *Published*

- 2016 **Evans, S.M.**, P.A. Ginoux, S. Malyshev, and E. Shevliakova: Climate – vegetation interaction and amplification of Australian dust variability, *Geophysical Research Letters*, 43, doi: 10.1002/2016GL071016.
- 2014 **Evans, S.M.**, R.T. Marchand, and T.P. Ackerman: Variability of the Australian monsoon and precipitation trends at Darwin, *Journal of Climate*, 27, 8487-8500.
- 2014 Muhlbauer, A., T.P. Ackerman, J.M. Comstock, G.S. Diskin, **S.M. Evans**, R.P. Lawson, and R.T. Marchand: Impact of large-scale dynamics on the microphysical properties of mid-latitude cirrus. *Journal of Geophysical Research*, 119, 3976-3996.
- 2012 **Evans, S.M.**, R.T. Marchand, T.P. Ackerman, and N. Beagley, Identification and analysis of atmospheric states and associated cloud properties for Darwin, Australia. *Journal of Geophysical Research*. 117. D06204.
- 2006 Vestrand, W.T., J.A. Wren, P.R. Wozniak, R. Aptekar, S. Golentskii, V. Pal'shin, T. Sakamoto, R.R. White, **S.M. Evans**, D. Casperson, and E. Fenimore: Energy

- input and response from prompt and early optical afterglow emission in gamma-ray bursts. *Nature*. 442, 172-175.
- 2006 Wozniak, P.R., W.T. Vestrand, J.A. Wren, R.R. White, **S.M. Evans**, and D. Casperson: Raptor observations of delayed explosive activity in the high-redshift gamma-ray burst GRB 060206. *Astrophysical Journal*, 642, L99-L102.
- 2006 White, R.R., **S.M. Evans**, W.T. Vestrand, M.S. Warren, J.A. Wren, P.R. Wozniak: Thinking telescopes and the future astronomical meta-network. *Astronomische Nachrichten*, 327, 758-762.
- 2005 Wozniak, P.R., W.T. Vestrand, J.A. Wren, R.R. White, **S.M. Evans**, and D. Casperson: Raptor observations of the early optical afterglow from GRB 050319. *Astrophysical Journal*, 627, L13-L16.
- 2005 Vestrand, W.T., P.R. Wozniak, J.A. Wren, E.E. Fenimore, T. Sakamoto, R.R. White, D. Casperson, H. Davis, **S.M. Evans**, M. Galassi, K.E. McGowan, J.A. Schier, J.W. Asa, S.D. Barthelmy, J.R. Cummings, N. Gehreis, D. Hullinger, H.A. Krimm, C.B. Markwardt, K. McLean, D. Palmer, A. Parsons, and J. Tueller: A link between prompt optical and prompt gamma-ray emission in gamma-ray bursts. *Nature*. 435. 178-180.

*In review*

- 2017 Dawson, E., **S. M. Evans** and P. A. Ginoux: Variability of the Inter-Tropical Convergence Zone related to changes in inter-hemispheric dust load, *Geophysical Research Letters*, *in review*.
- 2017 **Evans, S.M.**, R.T. Marchand, T.P. Ackerman, L.J. Donner, J.-C. Golaz, and C. Seman: Diagnosing cloud biases in the GFDL AM3 model with atmospheric classification, *Journal of Geophysical Research*, *in review*.

*In preparation*

- 2017 **Evans, S.M.**, E. Shevliakova, S. Malyshev, and P. A. Ginoux: Dust radiative effect on vegetation growth in the Sahel, *Glob. Biogeochem. Cyc.*, *in prep*.
- 2017 Mishra, S., D. Turner, R. A. Ferrare, M. B. Clayton, and **S.M. Evans**: Average water vapor mixing ratio and aerosol extinction profiles over Darwin, Australia for different synoptic conditions, *Journal of Climate*. *In prep*.

## **Awards**

- 2011 **Student Poster Award**, Atmospheric Radiation Measurement Program / Atmospheric System Research Science Team Meeting, San Antonio, TX
- 2010 **Student Poster Award**, Atmospheric Radiation Measurement Program / Atmospheric System Research Science Team Meeting, Bethesda, MD

## **Teaching Experience**

- 2014 **Teaching Assistant**, University of Washington,
- ATMS 103: Hurricanes and Thunderstorms: Their Science and Impact
- 2014 **Guest Lecturer**, University of Washington
- *Class*: Climate Change Impacts on Marine Ecosystems
  - *Topic*: Fundamentals of Climate and Climate Change
- 2014 **Guest Lecturer**, The Evergreen State College
- *Class*: Our Changing Oceans.
  - *Topic*: Fundamentals of Climate and Climate Myths
- 2013 **Guest Lecturer**, Newport High School, Bellevue, WA
- *Class*: AP Environmental Science.
  - *Topic*: Global Warming Myths.
- 2009 **Teaching Assistant**, University of Washington,
- ATMS 111: Global Warming
- 2001–2003 **Teaching Assistant**, Haverford College
- Physics 101: Classical and Modern Physics I.
  - Physics 102: Classical and Modern Physics II.
  - Physics 111: Physics of Time.
  - Physics 108: Physics of Modern Medicine.
  - Physics 211: Laboratory in Electronics, Waves, and Optics.

## Seminars and presentations

- 2017** Lamont-Doherty Earth Observatory Geochemistry seminar: Windblown dust in the climate system: observations, simulations, and impacts, April 2017
- Evans, S.M., P.A. Ginoux, S. Malyshev, and E. Shevliakova: Dust amplification of ENSO related rainfall anomalies over Australia in the NOAA/GFDL Coupled Model 3, AMS Annual Meeting, Seattle, WA (poster)
- 2016** Evans, S.M., P.A. Ginoux, S. Malyshev, and E. Shevliakova: Dust amplification of ENSO related rainfall anomalies over Australia in the NOAA/GFDL Coupled Model 3, AGU Fall Meeting, San Francisco, CA (oral)
- GFDL Seminar: Simulating dust variability and its effects on regional climate, November 2016
- 2015** Evans, S.M., P.A. Ginoux, S. Malyshev, and E. Shevliakova: Influence of land surface processes on seasonal and interannual variability of Australian dust and climate in the NOAA/GFDL CM3 model, AGU Fall Meeting, San Francisco, CA (poster)
- Evans, S.M., R. Marchand, T. Ackerman: Diagnosing cloud occurrence biases

- in the AM3 using atmospheric classification, ASR Science Team Meeting, Tysons Corner, VA (poster)
- Princeton AOS Student/Postdoc Seminar Series, Variability of the Australian monsoon and precipitation trends at Darwin , January 2015
- 2014** Evans, S.M., R. Marchand, T. Ackerman: Diagnosing cloud occurrence biases in the AM3 using atmospheric classification, AGU Fall Meeting, San Francisco, CA (poster)
- UW Atmospheric Sciences Colloquium: Evaluating modeled cloud properties using atmospheric classification, August 2014
- Evans, S.M., R. Marchand, T. Ackerman: Evaluating clouds in the AM3 model using atmospheric classification, ASR Science Team Meeting, Potomac, MD. (poster)
- 2013** Evans, S.M., R. Marchand, T. Ackerman: Evaluating clouds in the AM3 model using atmospheric classification, AGU Fall Meeting, San Francisco, CA. (poster).
- Evans, S.M., R. Marchand, T. Ackerman: Investigating variability in the Australian monsoon and rainfall with cluster analysis, ASR Science Team Meeting, Potomac, MD. (poster)
- UW Graduate Student Climate Seminar: An Introduction to the Australian Monsoon, January 2013
- 2012** Evans, S.M., R. Marchand, T. Ackerman: The influence of ENSO and the MJO on the variability of the Australian monsoon, AGU Fall Meeting, San Francisco, CA. (poster).
- Evans, S.M., R. Marchand, T. Ackerman: Atmospheric classification as a means to study interactions between the Australian monsoon, ENSO, and the MJO, Eatonville, WA. (poster)
- UW AMS Student Chapter: The Real Consensus on Climate Change forum panelist, May 2012
- UW Atmospheric Physics and Chemistry Seminar: Atmospheric classification as a model evaluation tool, April 2012
- Evans, S.M., R. Marchand, T. Ackerman: A decadal climatology of atmospheric state at Southern Great Plains, ASR Science Team Meeting, Crystal City, VA. (poster)
- 2011** Evans, S.M., R. Marchand, T. Ackerman: A decadal climatology of atmospheric state at Southern Great Plains, AGU Fall Meeting, San Francisco, CA. (poster).
- Evans, S.M., R. Marchand, T. Ackerman: Use of a cluster analysis to investigate the relationship between large-scale dynamics and clouds, Graduate Climate Conference 2011, Woods Hole, MA. (poster)
- Evans, S.M., R. Marchand, T. Ackerman: Use of a cluster analysis to investigate

- the relationship between large-scale dynamics and clouds, ASR Science Team Meeting, San Antonio, TX. (poster)
- Evans, S.M., R. Marchand, T. Ackerman: On the relationship between large scale dynamics and clouds: a decadal climatology of cloud properties for the Southern Great Plains, AMS 23<sup>rd</sup> Conference on Climate Change and Variability, Seattle, WA. (talk)
- 2010** Evans, S.M., R. Marchand, T. Ackerman: Atmospheric Classification at Darwin, Australia, AGU Fall Meeting, San Francisco, CA. (poster)
- Evans, S.M., R. Marchand, T. Ackerman: Atmospheric Classification at Darwin, Australia, UW Program on Climate Change Summer Institute. (poster)
- Evans, S.M.: Connecting cloud properties with large-scale dynamics, 4<sup>th</sup> Graduate Climate Conference, Eatonville, WA. (talk)
- UW Atmospheric Physics and Chemistry Seminar: Identification and analysis of atmospheric states and related cloud structures for Darwin, Australia.
- Evans, S.M., R. Marchand, T. Ackerman: Atmospheric Classification at Darwin, Australia, ASR Science Team Meeting, Bethesda, MD. (poster)
- 2009** Evans, S.M., R. Marchand, T. Ackerman: Application of an iterative weather classification method to the tropical west Pacific, 3<sup>rd</sup> Graduate Climate Conference, Eatonville, WA. (poster)

## Professional Activities and Memberships

- 2016– Member, American Meteorological Society
- 2013– Reviewer for Journal of Geophysical Research
- 2013 Participant, EUCLIPSE Clouds & Climate Summer School
- 2011–2012 Graduate Climate Seminar Coordinator
- 2010– Member, American Geophysical Union
- 2009–2010 Abstract Committee Co-chair, 4<sup>th</sup> Graduate Climate Conference
- Executive Committee member, 4<sup>th</sup> Graduate Climate Conference
- 2009 Participant, NCAR CAM Modeling Tutorial

## Outreach and Service

- 2015– **GFDL Outreach Volunteer**  
*Events:* Ocean Fun Days (2015)
- 2012–2013 **Graduate Student Representative**  
The Board of the Program on Climate Change, University of Washington
- 2012–2013 **Distinguished Visiting Speaker Coordinator**  
Department of Atmospheric Sciences, University of Washington

2008–2010 **Graduate Student Representative**  
Department of Atmospheric Sciences.

2008–2014 **Atmospheric Sciences Outreach Volunteer**  
*Events:* NASA Climate Day (2013), BF Day Elementary School Science Night (2013), Paws on Science (2012), Polar Science Weekend (2009, 2010), Lake Forest Park Elementary School Science Night (2008, 2009),