Stuart M. Evans

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Current Position

2018– **Assistant Professor**
Department of Geography & RENEW Institute, University at Buffalo

Education

2014–2017 **Postdoctoral Research Associate,** Princeton University
- *Advisors:* Elena Shevliakova and Paul A. Ginoux

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

2014–2017 **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

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*, 122, 12,827 – 12,844.

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

2019 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*.

In preparation

2019 **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.*

2019 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

Classes Taught

Global Climate Change

University at Buffalo, (GEO 106)

Examines climate changes of the past, present and future. Considers the various causes of past and present climate change and how to predict future changes. Describes predicted environmental and social impacts of, and possible solutions to, future climate change.

Climate and Weather

University at Buffalo, (GEO 344)

Examines the physical and chemical processes that determine the climate and weather of the Earth's atmosphere, land surface, and oceans: radiative transfer, energy balance, the hydrologic cycle, atmospheric and oceanic energy transport. Investigates factors controlling climate change, both past and present. Discusses the relationship between climate, weather, and extreme events.

Fundamentals of Climate Science

University at Buffalo, (GEO 503)

Fundamental physical processes give rise to the observed distributions of temperature, precipitation, wind, ice, vegetation, and ocean currents in Earth's climate system. We examine these processes and their effects on climate, as well as climate sensitivity, natural climate variability on I nterannual to decadal time scales, and an introduction to the use of global climate models.

Seminars and presentations

2018 Pegrum Lecture, Department of Geology, University at Buffalo: Windblown dust in the climate system: observations, simulations, and impacts, March 2018

2017 Evans, S.M., P.A. Ginoux, S. Malyshev, and E. Shevliakova: The impacts of the dust radiative effect on vegetation growth in the Sahel, AGU Fall Meeting, New Orleans, LA (oral)

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 23rd 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, 4th 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, 3rd 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, 4th Graduate Climate Conference
	Executive Committee member, 4th 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),