

DANIEL J. VIMONT

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University of Wisconsin – Madison

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PERSONAL INFORMATION

PROFESSIONAL HISTORY:

2018 – Present: UW Madison Vilas Associate

2017 – Present: Director, Center for Climatic Research

2016 – Present: Professor, Department of Atmospheric and Oceanic Sciences, University of Wisconsin – Madison

2012 – 2016: Bryson Distinguished Professor of Climate, People, and the Environment

2011 – Present: Co-Director, Wisconsin Initiative on Climate Change Impacts (WICCI)

2011 – 2016: Associate Professor, Department of Atmospheric and Oceanic Sciences, University of Wisconsin – Madison

2003 – 2011: Assistant Professor, Department of Atmospheric and Oceanic Sciences, University of Wisconsin – Madison

2002 – 2003: Research Associate, Earth Institute, Columbia University

2002: Research Associate, Joint Institute for the Study of the Atmosphere and Ocean

1996 – 2002: Research Assistant / Teaching Assistant, Department of Atmospheric Sciences, University of Washington

EDUCATION:

3/2002: Ph. D., Department of Atmospheric Sciences, University of Washington.

3/2000: M.S. Atmospheric Sciences, University of Washington.

5/1996: B.S. Physics, Gonzaga University, Spokane, WA

ADDITIONAL EDUCATION:

NCAR Advanced Study Program on Decadal and Centennial Variability (July, 2000; presented).

Spring semester, 2005: Instructional Materials Development Course (DELTA program, University of Wisconsin – Madison).

Workshop on Inclusive Teaching; Fall Semester, 2016

RESEARCH

JOURNAL PUBLICATIONS

Formatting indicates: Students, *Post Doctoral Advisees*

PAPERS IN PREPARATION

Larson, S. and D. J. Vimont, 2018: On interpreting causality from surface heat flux variations. *In Preparation.*

Henderson, S. and D. J. Vimont, 2018: The role of tropical and mid-latitude interactions in MJO variability. *In Preparation.*

Thomas, E., D. J. Vimont, M. Newman, and C. Penland, 2018: Noise forcing of ENSO diversity in the NCAR CESM. *In Preparation.*

SUBMITTED OR IN REVISION

Thomas, E., D. J. Vimont, M. Newman, C. Penland, and C. Martinez-Villalobos, 2017. The role of stochastic forcing in generating ENSO diversity. *J. Climate*, *In Revision.*

ACCEPTED OR IN PRESS

2018 *Larson, S.*, D. J. Vimont, A. C. Clement, and B. P. Kirtman, 2018. How Momentum Coupling Affects SST Variance and Large-Scale Pacific Climate Variability in CESM. *J. Climate*. Early Online Release. doi:10.1175/JCLI-D-17-0645.1

Martinez-Villalobos, C., D. J. Vimont, C. Penland, M. Newman, and J. D. Neelin, 2018. Calculating State-Dependent Noise in a Linear Inverse Model Framework. *J. Atmos. Sci.* **75**, 479–496 (2018).

2017 Atwood, A. R., D. S. Battisti, A. T. Wittenberg, W. H. G. Roberts, and D. J. Vimont, 2017: Characterizing unforced multi-decadal variability of ENSO: a case study with the GFDL CM2.1 coupled GCM. *Clim. Dyn.*, 49, 2845–2862, doi:10.1007/s00382-016-3477-9.

Dixon, R., D. J. Vimont, and M. Biasutti, 2017: Saharan Heat Low Biases in the CMIP5 Dataset. *J. Climate*, 30(8), 2867–2884. doi:10.1175/JCLI-D-16-0134.1

Dixon, R. D., D. J. Vimont, and *A. S. Daloz*, 2017: The relationship between tropical precipitation biases and the Saharan heat low bias in CMIP5 models. *Clim. Dyn.*, 1–16, doi:10.1007/s00382-017-3838-z.

Larson, S., B. P. Kirtman, and D. J. Vimont, 2017: A Framework to Decompose Wind-driven Biases in Climate Models Applied to CCSM/CESM in the Eastern Pacific. *J. Climate*, **30**, 8763-8782. doi:10.1175/JCLI-D-17-0099.1

Martinez-Villalobos, C. and D. J. Vimont, 2017: An analytical framework for understanding tropical Meridional Modes. *J. Climate*, 30(9), 3303-3323. doi: 10.1175/JCLI-D-16-0450.1

2016 Kirchmeier-Young, M. C., D. J. Lorenz and D. J. Vimont, 2015: Extreme Event Verification for Probabilistic Downscaling. *J. Appl. Meteor. Climatol.*, 55(11), 2411–2430

Martinez-Villalobos, C. and D. J. Vimont, 2016: The Role of the Mean State in Meridional Mode Structure and Growth. *J. Climate*, 29(10), 3907–3921

Newman, M., M.A. Alexander, T.R. Ault, K.M. Cobb, C. Deser, E. Di Lorenzo, N.J. Mantua, A.J. Miller, S. Minobe, H. Nakamura, N. Schneider, D.J. Vimont, A.S.

Phillips, J.D. Scott, and C.A. Smith, 2016: The Pacific Decadal Oscillation, Revisited. *J. Climate*, **29**, 4399–4427, <https://doi.org/10.1175/JCLI-D-15-0508.1>

- Thomas, E. E. and D. J. Vimont, 2016: Modeling the Mechanisms of linear and nonlinear Meridional Mode and ENSO interactions. *J. Climate*, 29(24), 8745–8761
- Zimmerman, B. G., D. J. Vimont, and P. J. Block (2016). Utilizing the state of ENSO as a means for season-ahead predictor selection, *Water Resour. Res.*, **52**, 3761–3774, doi:[10.1002/2015WR017644](https://doi.org/10.1002/2015WR017644).
- 2014** Vimont, D., M. A. Alexander, and M. Newman 2014: [Optimal growth of Central and East Pacific ENSO events](#). *Geophys. Res. Lett.*, 41, doi: 10.1002/2014GL059997.
- Kirchmeier, M. C., D. J. Lorenz and D. J. Vimont, 2014: Statistical Downscaling of Daily Wind Speed Variations. *J. Appl. Meteor. Climatol.*, 53, 660–675. doi: <http://dx.doi.org/10.1175/JAMC-D-13-0230.1>
- Patz J. A., H. Frumkin, T. Holloway, D. J. Vimont, A. Haines, 2014: Climate Change: Challenges and Opportunities for Global Health. *Journal of the American Medical Association*. **312** (15), 1565-80. doi: 10.1001/jama.2014.13186
- 2013** Delcambre, S.C., D.J. Lorenz, D.J. Vimont and J.E. Martin, 2013: Diagnosing northern hemisphere jet portrayal in 17 CMIP3 global climate models: Twentieth-century intermodel variability. *J. Climate*, 26 (14), 4910-4929. doi: [10.1175/JCLI-D-12-00337.1](https://doi.org/10.1175/JCLI-D-12-00337.1)
- Delcambre, S.C., D.J. Lorenz, D.J. Vimont and J.E. Martin, 2013: Diagnosing northern hemisphere jet portrayal in 17 CMIP3 global climate models: Twenty-first-century projections. *J. Climate*, 26 (14), 4930-4946. doi: [10.1175/JCLI-D-12-00359.1](https://doi.org/10.1175/JCLI-D-12-00359.1)
- Evan, A.T., R. Allen, R. Bennartz, and D.J. Vimont, 2013: The modification of sea surface temperature anomaly linear damping time scales by stratocumulus clouds. *J. Climate*, 26 (11), 3619-3630. doi: [10.1175/JCLI-D-12-00370.1](https://doi.org/10.1175/JCLI-D-12-00370.1)
- 2012** Smirnov, D. and D. J. Vimont, 2012: Extratropical Forcing of Tropical Atlantic variability during the boreal summer and fall. *J. Climate*, 25 (6), pp. 2056-2076. doi: [10.1175/JCLI-D-11-00104.1](https://doi.org/10.1175/JCLI-D-11-00104.1)
- Turner, D.D., A. Merrelli, D. Vimont, and E.J. Mlawer, 2012: Impact of modifying the longwave water vapor continuum absorption model on community Earth system model simulations. *J. Geophys. Res.*, 117, D04106, doi:10.1029/2011JD016440
- Veloz, S., J.W. Williams, D.J. Lorenz, M. Notaro, S. Vavrus, and D.J. Vimont, 2012: Identifying climatic analogs for Wisconsin under 21st-century climate change scenarios. *Climatic Change*, 112, 1037-1058. doi: 10.1007/s10584-011-0261-z
- Vimont, D. J. 2011: Analysis of the Atlantic Meridional Mode Using Linear Inverse Modeling: Seasonality and Regional Influences. *J. Climate*, **25**(4), 1194–1212
- 2011** Evan, A. T., G. R. Foltz, D. Zhang and D. J. Vimont (2011) Influence of African dust on ocean-atmosphere variability in the tropical Atlantic, *Nature Geoscience*, 4, 762–765 (2011) doi:10.1038/ngeo1276.
- Jaffe, S. C., J. E. Martin, D. J. Vimont, and D. J. Lorenz, 2010: A synoptic-climatology of episodic, sub-seasonal retractions of the Pacific Jet. *J. Climate*, **24**(11), 2846-2860. ([Link to abstract](#))
- Notaro, M., D. J. Lorenz, D. J. Vimont, S. Vavrus, C. Kucharik, and K. Franz, (2011), 21st century Wisconsin snow projections based on an operational snow model driven by statistically downscaled climate data. *Int. J. Climatol.*, 31: 1615–1633. doi: 10.1002/joc.2179
- Smirnov, D. and D.J. Vimont, 2011: Variability of the Atlantic Meridional Mode during the Atlantic hurricane season. *J. Climate* **24**(5), 1409-1424, doi: 10.1175/2010JCLI3549.1. ([Link to abstract](#))
- Solomon, A., L. Goddard, A. Kumar, J. Carton, C. Deser, I. Fukumori, A. M. Greene, G. Hegerl, B. Kirtman, Y. Kushnir, M. Newman, D. Smith, D. Vimont, T. Delworth, G.

- A. Meehl, T. Stockdale, 2011: Distinguishing the Roles of Natural and Anthropogenically Forced Decadal Climate Variability. *Bull. Amer. Meteor. Soc.*, **92**(2), 141-156. doi: 10.1175/2010BAMS2962.1 ([Link to abstract](#))
- 2010** Vimont, D.J., 2010: Transient growth of thermodynamically coupled disturbances in the tropics under an equatorially symmetric mean state. *J. Climate* **23**(21), 5771-5789. doi: 10.1175/2010JCLI3532.1. ([PDF Version](#))
- Alexander, M.A., D.J. Vimont, P. Chang and J.D. Scott 2010: The impact of extratropical atmospheric variability on ENSO: testing the Seasonal Footprinting Mechanism using coupled model experiments. *J. Climate*, **23**(11), 2885-2901. ([Link to abstract](#))
- Di Lorenzo, K. M. Cobb, J. Furtado, N. Schneider, B. Anderson, A. Bracco, M. A. Alexander, and D. Vimont , 2010: Central Pacific El Niño and decadal climate change in the North Pacific. *Nature Geosciences*, **3** (11), 762-765, doi: 10.1038/NGEO984 ([link to PDF](#))
- Lorenz, D. J., E. T. DeWeaver and D. J. Vimont, 2010: Evaporation change and global warming - the role of net radiation and relative humidity. *J. Geophys. Res.*, **115** (D20118), doi:10.1029/2010JD013949. ([Link to abstract](#))
- Penland, C., D.-Z. Sun, A. Capotondi and D.J. Vimont, 2010: Chapter 3: A brief introduction to El Niño and La Niña. *Climate Dynamics: Why does Climate Vary?*, Geophysical Monograph 189, The American Geophysical Union.
- 2009** Vimont, D.J., M. Alexander, and A. Fontaine, 2009: Midlatitude Excitation of Tropical Variability in the Pacific: The Role of Thermodynamic Coupling and Seasonality. *J. Climate*, **22**, 518–534. ([PDF version](#))
- Vimont, D.J., D.S. Battisti, and R.L. Naylor, 2009: Downscaling Indonesian precipitation using large-scale meteorological fields. *Int. J. Climatology*, Published online 24 Aug, 2009. ([PDF Version](#))
- Evan, A. T., D. J. Vimont, R. Bennartz, J. P. Kossin & A. K. Heidinger (2008) The dominant role of aerosols in the evolution of tropical Atlantic Ocean temperature, *Science*, DOI: 10.1126/science.1167404.
- 2007** Vimont, D. J., and J. P. Kossin, 2007: The Atlantic meridional mode and hurricane activity. *Geophys. Res. Lett.*, **34**, L07709, doi:10.1029/2007GL029683. ([PDF version](#))
- Chang, P., L. Zhang, R. Saravanan, D.J. Vimont, J.C.H. Chiang, L. Ji, H. Seidel, and M.K. Tippet, 2007: Pacific Meridional Mode and El Niño - Southern Oscillation. *Geophys. Res. Lett.*, **34**, L16608, doi:10.1029/2007GL030302. ([PDF version](#))
- Evan , A. T., A. K. Heidinger, and D. J. Vimont, 2007: Arguments against a physical long-term trend in global ISCCP cloud amounts", *Geophys. Res. Lett.*, **34**, L04701, doi:10.1029/2006GL028083. ([PDF version](#))
- Kossin, J. P., K. R. Knapp, D. J. Vimont, R. J. Murnane, and B. A. Harper, 2007: A globally consistent reanalysis of hurricane variability and trends. *Geophys. Res. Lett.*, **34**, L04815, doi:10.1029/2006GL028836. ([Link to Kossin's publications page](#))
- Kossin, J. P., and D. J. Vimont, 2007: A more general framework for understanding Atlantic hurricane variability and trends. *Bull. Amer. Meteor. Soc.*, **88**, 1767-1781. ([PDF version](#))
- Naylor, R. L., D. S. Battisti, D. J. Vimont, W. P. Falcon, and M. B. Burke, 2007: Assessing risks of climate variability and climate change for Indonesian rice agriculture. *Proc. Nat. Acad. Sci.*, **104** (19), 7752-7757. ([PDF version](#))
- 2005** Vimont, D. J., 2005: The contribution of the interannual ENSO cycle to the spatial pattern of ENSO-like decadal variability. *J. Climate*, **18**(2), 2080-2092. ([PDF version](#))

- 2004 Chiang, J. C. H., and D. J. Vimont, 2004: Analagous meridional modes of atmosphere-ocean variability in the tropical Pacific and tropical Atlantic. *J. Climate*, 17(21), 4143–4158. ([PDF version](#))
- 2003 Vimont, D.J., J.M. Wallace, and D.S. Battisti, 2003: The Seasonal Footprinting Mechanism in the Pacific: Implications for ENSO. *J. Climate*, 16, 2668–2675. ([PDF version](#))
 Vimont, D.J., D.S. Battisti, and A.C. Hirst, 2003: The Seasonal Footprinting Mechanism in the CSIRO General Circulation Models. *J. Climate*, 16, 2653–2667. ([PDF version](#))
- 2002 Vimont, D.J., D.S. Battisti, and A.C. Hirst, 2002: Pacific Interannual and Interdecadal Equatorial Variability in a 1000-Yr Simulation of the CSIRO Coupled General Circulation Model. *J. Climate*, 15, 160–178. ([PDF version](#))
- 2001 Vimont, D. J., D. S. Battisti, and A. C. Hirst, 2001: Footprinting: a seasonal link between the mid-latitudes and tropics. *Geophys. Res. Lett.*, 28(20), 3923–3926. ([PDF version](#))
- 1995 Ulrickson, B.L., J.S. Hoffmaster, J. Robinson, and D. Vimont, 1995: A numerical modeling study of the Catalina Eddy. *Mon. Wea. Rev.*, 123, 1364-1373. ([J. Climate Abstract](#))

DOCTORAL DISSERTATION:

2002: Vimont, D. J.: The Seasonal Footprinting Mechanism in the CSIRO Coupled General Circulation Models and in Observations. Ph.D. Thesis, University of Washington.

MASTERS THESIS:

2000: Vimont, D. J.: Pacific interannual to interdecadal variability in a 1000 year simulation of the CSIRO Coupled General Circulation Model. M.S. Thesis, University of Washington.

OTHER PUBLICATIONS:

- 2011: Wisconsin's Changing Climate: Impacts and Adaptation. 2011. Wisconsin Initiative on Climate Change Impacts. Nelson Institute for Environmental Studies, University of Wisconsin-Madison and the Wisconsin Department of Natural Resources, Madison, Wisconsin.
- 2010: Notaro, M., D. Lorenz, and D. Vimont: 21st century Wisconsin gardening – Transformed by climate change. *Wisconsin Natural Resources*, August 2010, 17-19.
- 2002: Sarachik, E. S., and D. J. Vimont: “Decadal variability in the Pacific”. In O. Editore, editor: *Chaos in geophysical flows*, pp. 125-167.
- 2000: Hurrell, J. W., Z. Wu, and D. J. Vimont: “Observations of extratropical variability”. Lecture notes for 2000 NCAR ASP on Decadal and Centennial Climate Variability.
- 2000: Saravanan, R., D. J. Vimont, and Z. Wu: “Exotic mechanisms for coupled ocean-atmosphere variability in mid-latitudes”. Lecture notes for 2000 NCAR ASP on Decadal and Centennial Climate Variability.

TEACHING

CURRENT STUDENTS:

C.J. Begalke (M.S. Track) D. J. Lorenz, Research Advisor; Vimont, Academic Advisor

PAST STUDENTS:

Ph.D:

Ross Dixon (Ph.D. 2017); Ph.D. Title: “On the Saharan Heat Low Bias in CMIP5 Models and its Relationship with Tropical Precipitation and Global Energy Transport Biases”. Current Position: Postdoctoral Research Associate, Centre National de Recherches Météorologiques (CNRM), Météo-France, Toulouse, France

Amato Evan (Ph.D. 2009; co-advised with R. Bennartz): “The role of aerosols in northern tropical Atlantic sea surface temperature anomalies”. Current position: Assistant Professor at Scripps Institution of Oceanography.

Sharon Delcambre (Jaffe) (Ph.D. 2012): Jet Stream Portrayal in Present and Future Climate Model Simulations. Current position: Adjunct, Concordia University, Portland, OR

Kathleen Holman (Ph.D. 2013; Academic Advisor for Ph.D.; M. Notaro and D. J. Lorenz Research Advisors): An investigation of historical lake-atmosphere interactions in the Great Lakes Basin.

M. Kirchmeier-Young (Ph.D. 2015); Ph.D. Title: “A probabilistic perspective for statistical downscaling of climate variables: model development, application, and evaluation”. Current Position: Research Scientist, Environment Canada, Toronto, Canada

Cristian Martinez Villalobos (Ph.D. 2016); Ph.D. Title: “Deterministic and stochastic models of tropical climate variability”. Current position: Postdoctoral research associate, UCLA

Matt Sitkowski (Ph.D. 2012; Research advisor J. Kossin): “Investigation and Prediction of Hurricane Eyewall Replacement Cycles”. Current position: Science and Weather Content Coordinator, The Weather Channel.

Dimitry Smirnov (Ph.D. 2011): Post-doctoral Research Associate at NOAA ESRL, PSD with M. Alexander and M. Newman; now with Dewberry Consulting.

Erin Thomas (Ph.D. 2017); Ph.D. Title: “ENSO Initiation Mechanisms”. Current position: Postdoctoral Research Associate, Norwegian Meteorological Institute.

Masters:

Nicole Colasacco-Thumm (M.S. 2015): “An Investigation of Surface Heat Fluxes during El Niño – Southern Oscillation (ENSO) Evolution in Reanalyses”

Abigail Fontaine (M.S. 2007): “Investigation of mid-latitude excitation of tropical variability in the Pacific”. Current position: Photochemical Modeler, Lake Michigan Air Directors Consortium

Sharon Jaffe (M.S., 2010): “A composite perspective of intraseasonal retractions of the Pacific jet”.

Dimitry Smirnov (M.S. 2009): “The Atlantic Meridional Mode: Observations, modeling and predictability”.

Kelsey Watkins (M.S. 2012): “Modeling the Impact of African Dust on the Tropical Atlantic Sea Surface Temperature”.

B. Zimmerman (M.S. 2017; Paul Block, official advisor). Research: Hydrological predictability during ENSO events.

Undergraduate:

Hannah Barnes (undergraduate research adviser, 2009-2010): Characterizing biases in NHC tropical cyclone forecasts

Alexander Haugstad (undergraduate research advisor, 2014-2015): The influence of “The Blob” on climatic conditions over North America during winter and spring 2014.

POST-DOCTORAL ADVISEES:

Anne Sophie Daloz (2012-2014): Atlantic climate variability and tropical cyclones. Current Position: Research Scientist, Space Science and Engineering Center

Stephanie Henderson (2017-): NSF Postdoctoral Fellow: Tropical / Midlatitude connections and the Madden Julian Oscillation

Julie Leloup (2009-2011): Understanding ENSO biases in Global Climate Models.

Sarah Larson (2016-): NOAA Climate and Global Change Postdoctoral Program; Understanding the role of dynamical coupling in climate variability

CLASSES TAUGHT:

AOS 100/101: Weather and Climate

AOS 425: Global Climate Processes (with G. McKinley)

AOS 528: Past Climates and Climate Change

AOS 575: Climatological Analysis (statistical applications in atmospheric and oceanic sciences)

AOS 611: Geophysical Fluid Dynamics II

AOS 650: Analysis of Atmospheric Systems

AOS 760: Large Scale Ocean/Atmosphere Interactions

AOS 712: General Circulation of the Atmosphere

AOS 801: Advanced Statistical Analysis in Atmospheric and Oceanic Sciences

AOS 405: Undergraduate Capstone Seminar

AOS 900: Seminar: Meteorology

AOS 925: Seminar: Climatology

AOS 925: Seminar: The NCAR Climate Model

AOS 925: Seminar: Convection and the General Circulation

AOS 980: Seminar: Climate Change: Science and Issues

ATMS 101: *Teaching Assistant*: Weather and Climate (U. Washington)

ATMS 508: *Teaching Assistant*: Geophysical Fluid Dynamics (U. Washington)

COMMUNITY

National / International Committees

US CLIVAR: Chair, Science Steering committee, 2018. Co-Chair, US CLIVAR Science Steering Committee, 2016-2017. The Scientific Steering Committee (SSC) directs the scientific and implementation planning of the program, setting the program goals, implementation strategies, and research challenges to be pursued.

NSF Atmosphere Section Committee of Visitors, 2016.

AMS Climate Variability and Change Committee (2015-Present), Co-Organizer 29th Conference on Climate Variability and Change (2017), Co-Organizer 28th Conference on Climate Variability and Change (2016). AMS Air-Sea Interaction Committee (2004-2008), Organizer for 15th Conference on Air-Sea Interactions, (Summer 2007).

Editor, Journal of Climate, 2012-2014

CLIVAR Phenomena and Observations Committee (POC), 2007-2010; Member, U.S. CLIVAR Working Group on Decadal Predictability (major contributor to prospectus)

2017: National Academies of Science Review Team for U.S. Global Change Research Program Climate Science Special Report (CSSR).

Wisconsin Initiative on Climate Change Impacts (WICCI):

I am currently the Co-Director of WICCI. WICCI is a state-wide initiative that began in Summer, 2007, and by 2011 had grown to include over 200 scientists, managers, business and industry representatives, policy-makers, educators, and a wide variety of other stakeholders across Wisconsin. The initiative was initially a partnership between the WI Department of Natural Resources and UW-Madison, and now includes numerous state agencies and educational institutions. I have been closely involved with WICCI since its inception in summer 2007, and have been actively participating in various WICCI working groups, including chairing the Climate Working Group, which is central to WICCI science. Since 2009 I have presented around 60 talks about Climate in Wisconsin, spoken on radio call-in shows, presented on local, national, and international news, participated in numerous workshops, provided climate data for numerous research projects around Wisconsin and the Eastern US and Canada, and advised other related organizations.

2011 – Present: Co-Director, WICCI

2011 – Present: Member, Coordinating Committee

2007 – 2011: Member, Science Council

2008 – Present: Chair, Climate Working Group

Summer, 2007: Member of ad-hoc committee that designed the organizational structure for WICCI.

HONORS AND AWARDS:

2001 Ford Fellowship

2009 Hildale Award for Undergraduate Research (with H. Barnes)

2011 UW-Madison Residence Hall Teaching Award

2012 Kavli Fellow, Attendee of Indonesian-American Frontiers of Science Symposium, Solo Indonesia

2017 UW-Madison Residence Hall Teaching Award

2018 Vilas Associate