

# Kyle L. Swanson

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## Current Position

Associate Professor, Atmospheric Science Group  
Department of Mathematical Sciences  
University of Wisconsin–Milwaukee  
Milwaukee, WI 53201 USA  
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## Research Interests

Climate Dynamics, Dynamic Meteorology,  
Tropical Meteorology, Climate/Energy System  
Interactions

## Education

**Ph.D. Atmospheric Sciences**  
August 1995                      University of Chicago  
Dissertation Title “Dynamics and Mean Flow  
Interactions of Nonlinear Baroclinic Wave Packets”

**B.A. Mathematics and Physics, Magna Cum Laude**  
May 1991    Saint Olaf College                      Northfield, MN

## Professional Experience

2002–present                      Associate Professor  
University of Wisconsin–Milwaukee

1997–2002                      Assistant Professor  
University of Wisconsin–Milwaukee

1996–1997                      NSF/NATO Postdoctoral Fellow  
Laboratoire de Météorologie Dynamique  
Ecole Normale Supérieure, Paris

1995–1996                      Postdoctoral Associate  
Geophysical Fluid Dynamics Laboratory  
Princeton University

1993 – Fellow – Summer GFD Program  
Woods Hole Oceanographic Institute

1991–1995  
Research Assistant  
Department of Geophysical Sciences  
University of Chicago

**Awards**

UWM Foundation Research Award – 2003

NSF/NATO Postdoctoral Fellowship – 1996

**Community Service**

Associate Editor, Journal of the Atmospheric Sciences.

Speaker: Elementary through High School.

UWM Science Bag “Energy, Exponentials, and the Environment” March 2007

Article reviews for: EOS, Monthly Weather Review, Geophysical Research Letters, J. Climate, J. Atmospheric Sciences, Weather and Forecasting, Quarterly J. Royal Met. Soc., Tellus, J. Fluid Mechanics.

IMA/NSF Workshop “Frontiers of Mathematics in Geosciences” – March 2001

Proposal reviews for: NOAA, NSF.

**Professional Organizations**

American Geophysical Union

American Meteorological Society

**Refereed Publications**

Swanson, K.L, 2008: False causality between Atlantic hurricane activity fluctuations and seasonal lower atmospheric wind anomalies. *Geophys. Rev. Lett.*, in press.

\_\_\_\_\_, 2008: Co-existing turbulent attractors in a two-layer quasi-geostrophic model. *J. Atmos. Sci.*, in press.

Tsonis, A.A. and \_\_\_\_\_, 2008: Topology and predictability of El Niño and La Niña networks. *Phys. Rev. Lett.*, **100**, doi:10.1103/PhysRevLett.100.228502.

Roebber, P.J. and \_\_\_\_\_, 2008: Synoptic control of mesoscale precipitating systems in the Pacific Northwest. *Mon. Wea. Rev.*, in press.

\_\_\_\_\_ and P.J. Roebber, 2008: The impact of analysis error on

medium range weather forecasts. *Mon. Wea. Rev.*, in press.

Tsonis, A. and \_\_\_\_\_, and G. Wang 2008: Estimating the clustering coefficient in scale-free networks on lattices with local spatial correlation structure. *Physica A*, in press.

\_\_\_\_\_, 2008: Nonlocality of Atlantic tropical cyclone intensities. *Geochem., Geophys., Geosys*, **9**, Q04V01, doi:10.1029/2007GC001844.

Tsonis, A.A, \_\_\_\_\_, and G. Wang, 2008: On the role of atmospheric teleconnections in climate. *J. Climate*, in press.

\_\_\_\_\_, 2007: The impact of scaling behavior on tropical cyclone intensities. *Geophys. Res. Lett.*, **34**, L18815.

Tsonis, A. A., \_\_\_\_\_, and S. Kravtsov 2007: A new dynamical mechanism for major climate shifts. *Geophys. Res. Lett.*, **34**, L13705.

\_\_\_\_\_, 2007: Storm track dynamics. In *General Circulation of the Atmosphere*, T. Schneider and A. Sobel, eds. Princeton University Press.

Tsonis, A. A., \_\_\_\_\_, and P.J. Roebber, 2006: What do networks have to do with climate? *Bulletin of the American Meteorological Society*, **87**, 585–595.

Panayatova, I., and \_\_\_\_\_, 2006: Edge wave asymmetries. *J. Atmos. Sci.* **63**, 1357–1364.

\_\_\_\_\_, 2002: Dynamical aspects of extra-tropical low frequency variability. *J. Climate*, **15**, 2145–2162.

Chang, E., S. Lee, and \_\_\_\_\_, 2002: Storm track dynamics. *J. Climate*, **15**, 2163–2183.

\_\_\_\_\_ 2001: Oscillatory instabilities to zonally varying flows. *J. Atmos. Sci.*, **58**, 3135–3147.

\_\_\_\_\_ 2001: Upper tropospheric PV fluctuations, the tropopause, and the dynamical relevance of the time mean. *J. Atmos. Sci.*, **58**, 1815–1826.

\_\_\_\_\_ 2001: Blocking as a local instability to zonally varying flow. *Q. J. Roy. Met. Soc.*, **127**, 1341–1356.

\_\_\_\_\_ 2000: Stationary wave accumulation and the generation of extra-tropical low frequency variability. *J. Atmos. Sci.*, **57**, 2262–2280.

\_\_\_\_\_, T. N. Palmer, and R. Vautard, 2000: Observational error structure and the power of four-dimensional variational assimilation. *J. Atmos. Sci.*, **57**, 1327–1340.

\_\_\_\_\_ 1999: *Extra-tropical Atmospheric Circulations* in *Handbook for Weather, Climate, and Water*. T. Potter and B. Colman, Eds. McGraw-Hill.

\_\_\_\_\_, R. Vautard, and C. Pires, 1998: Four dimensional variational assimilation and predictability in a quasi-geostrophic model. *Tellus*, **50A**, 369–390.

\_\_\_\_\_, P. J. Kushner, and I. M. Held, 1997: Dynamics of barotropic storm tracks. *J. Atmos. Sci.*, **54**, 791–810.

\_\_\_\_\_ and R. T. Pierrehumbert, 1995: Stationary Rossby wave external modes in a homogenized potential vorticity atmosphere. *J. Atmos. Sci.*, **52**, 990–994.

\_\_\_\_\_ and R. T. Pierrehumbert, 1997: Lower tropospheric mixing within the Pacific storm track. *J. Atmos. Sci.*, **54**, 1533–1543.

Mu, M., T. G. Shepherd, and \_\_\_\_\_, 1996: On nonlinear symmetric stability and the nonlinear saturation of symmetric instability. *J. Atmos. Sci.*, **53**, 2918–2923.

\_\_\_\_\_, 1995: *Dynamics and mean flow interactions of nonlinear baroclinic wave packets*. Ph.D. Dissertation, University of Chicago.

R. T. Pierrehumbert and \_\_\_\_\_, 1995: Baroclinic instability. *Ann. Rev. Fluid Mech.*, **27**, 419–467.

Held, I. M., R. T. Pierrehumbert, S. T. Garner, and \_\_\_\_\_, 1995: Surface quasi-geostrophic dynamics. *J. Fluid Mech.*, **282**, 1–20.

Pierrehumbert, R. T., I. M. Held, and \_\_\_\_\_, 1994: Spectra of local and nonlocal two-dimensional turbulence. *Chaos, Solitons, and Fractals*, **4**, 1111–1116.

\_\_\_\_\_ and R. T. Pierrehumbert, 1994: Nonlinear wave packet evolution on a baroclinically unstable jet. *J. Atmos. Sci.*, **51**, 384–396.

## **Textbook:**

Swanson, K. L., 2003: *Meteorology Lab Manual*. Kendall–Hunt. 93 pp.

## **External Funding:**

NOAA NA86GP0211 – 1998–2000 “The role of eddy variability in the extratropical response to tropical sea surface temperature anomalies” \$140,000.

NSF ATM–9907867 – 2000–2002 “Inverse methods for climate model parameter estimation and climate sensitivity” \$160,000.

NSF ATM–0106584 –2001–2005 “Synoptic control of mesoscale precipitating systems in the Pacific Northwest” \$427,000 (with Roebber).

NSF ATM–0438612 – 2005–2008 “A network approach to study atmospheric teleconnections” \$327,000 (with Tsonis).

## **Graduate Students**

David Rudack (Masters, 2000), NCEP

Philip Kurimski (Masters,2000), National Weather Service

Tom Grafenauer (Masters,2004), National Weather Service

Iordanka Panayatova (Ph.D., 2005), Assistant Professor, Old Dominion U.

Sarah Levinson (Masters, 2006), NCEP

Eron Jones (Masters, 2007), Midwest Wind Energy Consulting

Dawn Thielke (Masters, Current)

Jennifer Knapewicz (Masters, Current)

Nate Jamison (Ph.D., Current)

## **Selected Invited Presentations**

WFS–Planetary Emergencies – August 2008

SUNY–Stony Brook – March 2008

EGU General Assembly – April 2007

University of Toronto – April 2006

AGU Chapman Conference on Annular Modes – January 2006

California Institute of Technology – November 2004

University of Wisconsin – April 2003

Massachusetts Institute of Technology – November 2001

University of Illinois – November 2000

3<sup>rd</sup> WMO Meeting on Data Assimilation – June 1999