

## **EDUCATION**

<b>1994</b>	<b>Ph.D. Atmospheric Science, University of Wisconsin</b> Dissertation: Soil Wetness and Climate Variability	<b>Madison, WI</b>
<b>1983</b>	<b>M.S. Meteorology, University of Wisconsin</b>	<b>Madison, WI</b>
<b>1979</b>	<b>B.A. Integrated Science, Northwestern University</b>	<b>Evanston, IL</b>

## **EMPLOYMENT**

	<b>Geophysical Fluid Dynamics Laboratory/NOAA</b>	<b>Princeton, NJ</b>
2001-present	Group Leader, Climate Dynamics and Prediction Group	
1984- 2001	Research Meteorologist, Climate Dynamics Group	

## **RESEARCH INTERESTS**

- Climate variability and change on decadal to centennial time scales, with emphasis on
  - the role of the oceans in climate
  - changes in continental hydrology, including extreme events
  - large-scale modes of climate variability, with emphasis on their mechanisms and potential changes
- The use of global coupled ocean-atmosphere models for the study of climate variability and change
- Interactions between forced climate change and internal variability

## **HONORS & AWARDS**

<b>2005</b>	<b>Silver Medal, Department of Commerce</b>
<b>1996, 2003</b>	<b>Outstanding Scientific Paper Award, NOAA</b>
<b>1980-1983</b>	<b>National Science Foundation, Graduate Fellowship</b>
<b>1979</b>	<b>Phi Beta Kappa Honorary Society</b>

## **ADDITIONAL ACTIVITIES**

<b>2007-present</b>	<b>US AMOC Science Planning Team</b>
<b>2007</b>	<b>Program Manager, NOAA Climate Predictions and Projections</b>
<b>2006-present</b>	<b>U.S. CLIVAR Working Group on Drought</b>
<b>2005-present</b>	<b>U.S. CLIVAR Prediction, Predictability, and Application Interface Panel</b>
<b>2004-2005</b>	<b>U.S. CLIVAR Scientific Steering Committee</b>
<b>2003-2004</b>	<b>Co-Leader, GFDL Coupled Model Development Team</b>
<b>2001-2004</b>	<b>NSF Arctic System Science Program - OAIL, Scientific Steering Committee</b>
<b>2000-2006</b>	<b>Joint Scientific Council/CLIVAR Working Group on Coupled Modeling</b>
<b>2000-2003</b>	<b>SEARCH Scientific Steering Committee (Interagency Arctic Program)</b>
<b>1999-2003</b>	<b>International CLIVAR Atlantic Implementation Panel</b>
<b>1995-2005</b>	<b>NSF Climate System Laboratory Computing Allocation Panel</b>
<b>1995, 2001, 2007</b>	<b>Intergovernmental Panel on Climate Change, Contributing Author</b>
<b>1995-1997</b>	<b>NOAA's Atlantic Climate Change Program, Scientific Working Group</b>
<b>1995-1996</b>	<b>Atlantic Climate and Circulation Experiment, Scientific Planning Committee</b>

## **PAPERS IN PREPARATION, SUBMITTED, OR IN PRESS**

1. Hurrell, J., G.A. Meehl, D Bader, T.L. Delworth, B. Kirtman, and B. Wielicki, 2008: Climate System Prediction, to be submitted to the American Meteorological Society.
2. Zhang, R. and T.L. Delworth, A New Method for Attributing Climate Variations over the Atlantic Hurricane Basin's Main Development Region, to be submitted to Geophysical Research Letters.
3. Stenchikov, G., T.L. Delworth, V.Ramaswamy, I. Held, R.J. Stouffer, A. Wittenberg, and F. Zeng, Volcanic Signals in Oceans. In preparation.

## **RECENT PUBLICATIONS (1999-2008)**

4. Meehl, G.A., C. Covey, T. Delworth, M. Latif, B. McAvaney, J.F.B. Mitchell, R.J. Stouffer, and K. Taylor, 2007: The WCRP CMIP3 multi-model dataset: A new era in climate change research. *Bulletin of the American Meteorological Society*, 88(9), 1383-1394.
5. Delworth, T.L., R. Zhang, and M.E. Mann, 2007, Decadal to Centennial Variability of the Atlantic from Observations and Models. In *Ocean Circulation: Mechanisms and Impacts*, Geophysical Monograph Series 173, Washington, DC: American Geophysical Union; 131-148.
6. Zhang, R., T. L. Delworth, and I. M. Held, 2007: Can the Atlantic Ocean drive the observed multidecadal variability in Northern Hemisphere mean temperature? *Geophysical Research Letters*, 34, L02709, doi:10.1029/2006GL028683.
7. Allen, M.R., N. P. Gillett, J. A. Kettleborough, G. C. Hegerl, R. Schnur, P. A. Stott, G. Boer, C. Covey, T. L. Delworth, G. S. Jones, J. F. B. Mitchell, T. P. Barnett, 2006, Quantifying anthropogenic influence on recent near-surface temperature change, *Surv. Geophys.*, 27:491-544, doi:10.1007/s10712-006-9011-6.
8. Hurrell, J.W., M. Visbeck, A. Busalacchi, R.A. Clarke, T.L. Delworth, R.R. Dickson, W.E. Johns, K.P. Koltermann, Y. Kushnir, D. Marshall, C. Mauritzen, M.S. McCartney, A. Piola, C. Reason, G. Reverdin, F. Schott, R. Sutton, I. Wainer, and D. Wright, 2006, Atlantic climate variability and predictability: A CLIVAR perspective. *Journal of Climate*, 19(20), 5100-5121
9. Zhang, R., and T.L. Delworth, 2006, Impact of Atlantic Multidecadal Oscillations on India/Sahel rainfall and Atlantic Hurricanes. *Geophys. Res. Lett.*, 33, L17712, doi:10.1029/2006GL026267.
10. Stott, P.A., J.F.B. Mitchell, J. M. Gregory, B.D. Santer, G.A. Meehl, and T.L. Delworth, Observational constraints on past attributable warming and predictions of future global warming. *Journal of Climate*, Vol. 19, No. 13, pp. 3055-3069.
11. Knutson, T.R., T.L. Delworth, K.W. Dixon, I.M. Held, J. Lu, V. Ramaswamy, D. Schwarzkopf, G. Stenchikov, and R.J. Stouffer, 2006: Assessment of Twentieth-Century regional surface temperature trends using the GFDL CM2 coupled models. *Journal of Climate*, Vol 19, 1624-1651.

12. Delworth, T.L., and K.W. Dixon, 2006: Have anthropogenic aerosols delayed a greenhouse gas-induced weakening of the North Atlantic thermohaline circulation? *Geophys. Res. Lett.*, **33**,L02606,doi:10.1029/2005GL024980
13. Delworth, T.L., et al., 2006: GFDL's CM2 global coupled climate models – Part 1: Formulation and simulation characteristics. *Journal of Climate*, Vol 19, 643-674.
14. Gnanadesikan, A., et al., 2006: GFDL's CM2 global coupled climate models – Part 2: The baseline ocean simulation. *Journal of Climate*, Vol 19, 675-697..
15. Stouffer,R.J., A.J. Broccoli, T.L. Delworth, et al., 2006: GFDL's CM2 global coupled climate models – Part 4: Idealized climate change. *Journal of Climate*, 723-740.
16. Delworth, T.L., V. Ramaswamy, and G. L. Stenchikov, The impact of aerosols on simulated ocean temperature and heat content in the 20<sup>th</sup> century. *Geophysical Research Letters*, **32**,L24709,doi:10.1029/2005GL024457.
17. Held, I.M., T.L. Delworth, J. Lu, K.L. Findell, T.R. Knutson, Simulation of Sahel drought in the 20<sup>th</sup> and 21<sup>st</sup> centuries. *Proceedings of the National Academy of Science*, **102**(50),17891-17896..
18. Findell, K. L., and T. L. Delworth, 2005: A modeling study of dynamic and thermodynamic mechanisms for summer drying in response to global warming. *Geophysical Research Letters*, **32**, L16702, doi: 10.1029/2005GL023414.
19. Zhang, R., and T.L. Delworth, 2005: Simulated tropical response to a substantial weakening of the Atlantic thermohaline circulation. *Journal of Climate*, **18**, 1853-1860.
20. Anderson, J.L., V. Balaji, A.J. Broccoli, W.F. Cooke, T.L., Delworth, et al (30 additional coauthors), 2004: The new GFDL global atmosphere and land model AM2/LM2: Evaluation with prescribed SST simulation. *Journal of Climate*, **17**, 4641-4673.
21. Manabe, S., R. T. Wetherald, P. C. D. Milly, T. L. Delworth, and R. J. Stouffer, 2004: Century-scale change in water availability: CO<sub>2</sub>-quadrupling experiment. *Climatic Change*, **64**(1-2), 59-76.
22. Broccoli, A. J., K.W. Dixon, T. D. Delworth, T. R. Knutson, R. J. Stouffer, and F. Zeng, 2003: Twentieth-century temperature and precipitation trends in ensemble climate simulations including natural and anthropogenic forcing. *Journal of Geophysical Research*, **108**(D24), 4798, doi:10.1029/2003JD003812.
23. Rutherford, S., M. E. Mann, T. L. Delworth, and R. J. Stouffer, 2003: Climate field reconstruction under stationary and nonstationary forcing. *Journal of Climate*, **16**(3), 462-479.
24. Visbeck, M. Chassignet, E.P., Curry, R.G., Delworth, T.L., Dickson, R.R., and Krahnmann, G., 2003: The Ocean's response to the North Atlantic Oscillation. Chapter 6 of *The North Atlantic Oscillation: Climatic Significance and Environmental Impact*. Geophysical Monograph 134, AGU.

25. Dixon, K.W., T.L. Delworth, T.R. Knutson, M.J. Spelman, and R.J. Stouffer, 2003: A comparison of climate change simulations produced by GFDL numerical models having different spatial resolutions. *Global and Planetary Change*, **37(1-2)**,81-102.
26. Delworth, T.L., R.J.Stouffer, K.W. Dixon, M.J. Spelman, T.R. Knutson, A.J. Broccoli, P.J. Kushner, and R.T. Wetherald, 2002: Review of simulations of climate variability and change by the GFDL R30 coupled climate model. *Climate Dynamics*, **19**, 555-574.
27. Milly, P.C., R.T. Wetherald, T.L. Delworth, and K.A. Dunne, 2001: Increasing risk of great floods in a changing climate. *Nature*, **415(6871)**, 514-517.
28. Levitus, S., J. I. Antonov, J. Wang, T. L. Delworth, K. W. Dixon, and A. J. Broccoli, 2001. Anthropogenic warming of Earth's climate system. *Science*, **292(5515)**, 267-270.
29. Kushner, P. J., I. M. Held, and T. L. Delworth, 2001: Southern Hemisphere atmospheric circulation response to global warming. *Journal of Climate*, **14(10)**, 2238-2249.
30. Broccoli, A. J., T. L. Delworth, and N-C Lau: 2001. The effect of changes in observational coverage on the association between surface temperature and the Arctic Oscillation. *Journal of Climate*, **14(11)**, 2481-2485.
31. Delworth, T.L., and K.W. Dixon, 2000: Implications of the recent trend in the Arctic/North Atlantic Oscillation for the North Atlantic thermohaline circulation. *J. Climate*, **13**, 3721-3727.
32. Manabe, S., T. R. Knutson, R. J. Stouffer, and T. L. Delworth, 2001: Exploring natural and anthropogenic variation of climate. *Quarterly Journal of the Royal Meteorological Society*, **127(571)**, 1-24.
33. Allen, M.R., P.A. Stott, J.F.B. Mitchell, R. Schnur, and T.L. Delworth, 2000: Uncertainty in forecasts of anthropogenic climate change. *Nature*, **407**, 617-620.
34. Delworth, T.L., and M.E. Mann, 2000: Observed and simulated multidecadal variability in the North Atlantic. *Climate Dynamics*, **16**, 661-676.
35. Delworth, T.L., and T.R. Knutson, 2000: Simulation of early 20th century global warming. *Science*, **287**, p. 2246-2250.
36. Delworth, T.L., and R.J. Greatbatch, 2000: Multidecadal thermohaline circulation variability driven by atmospheric surface flux forcing. *J. Climate*, **13**, 1481-1495.
37. Mehta, V.M., M.J. Suarez, J.Y. Manganello, and T.L. Delworth, 2000: Oceanic influence on the North Atlantic Oscillation and associated Northern Hemisphere climate variations: 1959-1993. *Geophys. Res. Lett.*, **27**, 121-124.
38. Knutson, T.R., T.L. Delworth, K.W. Dixon and R.J. Stouffer, 1999: Model assessment of regional surface temperature trends (1949-1997). *J. Geophys. Res.* **104(D24)**, 30,981-30,996.
39. Delworth, T.L., J.D. Mahlman, and T.R. Knutson, 1999: Changes in heat index associated with CO<sub>2</sub>-induced global warming. *Climatic Change*, **43**, 369-386.
40. Dixon, K.W., T.L. Delworth, M.J. Spelman, and R.J. Stouffer, 1999: The influence of transient surface fluxes on North Atlantic overturning in a coupled GCM climate change experiment. *Geophys. Res. Lett.*, **26**, 2749-2752.



<b>Invited</b>	“CO <sub>2</sub> -induced changes in extratropical continental hydrology in the new GFDL climate model”	
<b>12/2004 Invited</b>	<b>AGU Fall Meeting</b> “CO <sub>2</sub> -induced changes in extratropical continental hydrology”	<b>San Francisco, CA</b>
<b>11/2003 Invited</b>	<b>CLIVAR/PAGES/IPCC Workshop “A multi-millennial perspective on drought and implications for the future”</b> "Continental summer dryness in the new GFDL climate model”	<b>Tucson, AZ</b>
<b>3/2003 Invited</b>	<b>Duke University</b> “The Atlantic thermohaline circulation and climate”	<b>Durham, NC</b>
<b>2/2003 Invited</b>	<b>American Meteorological Society Annual Meeting</b> “The Atlantic thermohaline circulation and climate”	<b>Long Beach, CA</b>
<b>5/2002 Invited</b>	<b>Canadian Meteorological and Oceanographic Society Annual Meeting</b> "The potential role of thermohaline circulation fluctuations in 20 <sup>th</sup> century North Atlantic climate”	<b>Rimouski, Canada</b>
<b>5/2002 Invited</b>	<b>American Geophysical Union Spring Meeting</b> "The potential role of thermohaline circulation fluctuations in 20 <sup>th</sup> century North Atlantic climate”	<b>Washington, D.C.</b>
<b>8/2001 Invited</b>	<b>Utrecht University, Climate Conference 2001</b> “Observed and simulated decadal to centennial climate variability”	<b>The Netherlands</b>
<b>3/2001 Invited</b>	<b>Wadati Conference on Global Change and Polar Climate</b> “North Atlantic multidecadal variability and simulated 20 <sup>th</sup> century climate change”	<b>Tsukuba, Japan</b>
<b>12/2000 Invited</b>	<b>American Geophysical Union - Fall Meeting</b> “Implications of the recent trend in the Arctic/North Atlantic Oscillation for the North Atlantic thermohaline circulation”	<b>San Francisco, CA</b>
<b>5/2000 Invited</b>	<b>Brookhaven National Laboratory</b> “Simulation of climate change in the 20 <sup>th</sup> century”	<b>Upton, NY</b>

#### **AFFILIATIONS**

American Meteorological Society  
American Geophysical Union