

## Ian N. Williams

Lawrence Berkeley National Laboratory  
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**Research Interests** Atmospheric dynamics and physics; land carbon cycles and land-atmosphere interactions; atmospheric transport and mixing; convection and turbulence parameterization

**Education** **University of Chicago**, Chicago, IL  
Ph.D., Geophysical Sciences, March, 2012  
Thesis Title: Tropical convection and climate sensitivity  
Advisor: Raymond Pierrehumbert  
Committee Members: Dorian Abbot, Noboru Nakamura, Frank Richter, Paul O’Gorman (MIT)

**Cornell University**, Ithaca, NY  
M.S., Atmospheric Science, December 2007  
Minor Concentration: Environmental Fluid Mechanics  
Thesis Title: Characteristics of baroclinic wave packets over the North Atlantic during strong and weak stratospheric polar vortex events  
Advisor: Stephen Colucci

**Cornell University**, Ithaca, NY  
B.S., Atmospheric Science, May 2005  
Advisor: Art DeGaetano

**Positions Held** **Postdoctoral Scholar**, Lawrence Berkeley National Laboratory, Berkeley, CA  
Climate Science Department, Earth Sciences Division  
(January, 2012-current)  
Advisors: Margaret Torn, Bill Riley

**Student Research Assistant**, Lawrence Berkeley National Laboratory, Berkeley, CA (May - September 2005, 2006, 2009)

**Teaching Assistant**, University of Chicago, Department of Geophysical Sciences (2006-2010)

- Introduction to the Atmosphere
- Physics of the Earth
- Introduction to Geophysical Fluid Dynamics
- Introduction to Global Warming

**Research Assistant**, Institute for Genomic Diversity, Cornell University (2004)

## Ian N. Williams

- Developed K-12 classroom presentations with Theresa Fulton, as outreach for the NSF grant “Genetic Architecture of Maize and Teosinte”

### Publications

Williams, I. N., Riley, W. J., Torn, M. S., Biraud, S. C., and Fischer, M. L. (2013): Biases in regional carbon budgets from covariation of surface fluxes and weather in transport model inversions, *Atmos. Chem. Phys. Discuss.*, 13, 19051-19083, doi:10.5194/acpd-13-19051-2013

Williams, I. N., Riley, W. J., Torn, M. S., Berry, J. A., and Biraud, S. C. (2011): Using boundary layer equilibrium to reduce uncertainties in transport models and CO<sub>2</sub> flux inversions, *Atmos. Chem. Phys.*, 11, 9631-9641, doi:10.5194/acp-11-9631-2011

Williams, I. N., and Colucci, S. J. (2010), Characteristics of baroclinic wave packets during strong and weak stratospheric polar vortex events, *Journal of the Atmospheric Sciences*, 67(10), 3190-3207

Williams, I. N., Pierrehumbert, R. T., and Huber, M. (2009), Global warming, convective threshold and false thermostats, *Geophysical Research Letters*, 36. doi:10.1029/2009GL03984

Williams, I. N., and Pierrehumbert, R. T. (in preparation for ACP), Precipitation sensitivity to climate change: Energetic constraints and degrees of freedom.

Williams, I. N., and Pierrehumbert, R. T. (in preparation for Nature Geoscience), Variability in tropical convective threshold temperatures observed from CERES.

Williams, I. N., Torn, M. S., Riley, W. J., and Wehner, M. F. (in preparation for Nature Geoscience), Climate extremes and the stability of land climates and carbon cycles to global warming.

### Selected Talks and Abstracts

Williams I., Riley W. J., Torn M. s., Biraud S. C., Fischer M. L., and Berry J. (2012), A Stochastic method to evaluate carbon cycle and atmospheric transport models using atmospheric observations, Third Atmospheric System Research Science Team Meeting, March 12-16, Arlington, VA

Williams I.N., Riley W. J., Torn M. S., Berry J. A., and Biraud S. C. (2011), Challenges in constraining surface trace gas exchanges from observations, American Geophysical Union, December 5-9, San Francisco, CA.

Biraud S. C., Riley W. J., Williams I. N., and Torn, M. S. (2009), A multi-year record of airborne continuous CO<sub>2</sub> in the U.S. Southern Great Plains: Observations and mixing across the PBL, American Geophysical Union, December 14-18, San Francisco, CA.

Williams I. N., and Colucci S.J. (2009), Characteristics of baroclinic wave pack-

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ets over the North Atlantic during strong and weak polar vortex events, 17th Conference on Atmospheric and Oceanic Fluid Dynamics, June 8-12, Stowe, VT.

Riley W. J., Williams I. N., Torn M. S., Biraud S. C., Fischer M. L., and Berry J. A. (2008), Bottom-up and equilibrium top-down estimates of regional ecosystem carbon exchange in the Southern Great Plains, American Geophysical Union, December 10-14, San Francisco, CA.

Williams I. N., and Colucci, S. J. (2007), Stratosphere-troposphere coupling in east-coast winter storms, 16th Conference on Atmospheric and Oceanic Fluid Dynamics, June 24-29, Santa Fe, NM.

Williams I. N., Riley W. J., Berry J. A., Torn M. S., and Fischer, M. L. (2006), Regional-scale surface CO<sub>2</sub> exchange estimates using a boundary layer budget method over the Southern Great Plains, Annual ARM meeting, March 27 - 31, Albuquerque, NM.

**Invited Seminars** Convection, Climate Sensitivity, and the Carbon Cycle (2011), Lawrence Berkeley National Laboratory, June 30, Berkeley, CA.

Challenges in constraining regional carbon budgets from atmospheric measurements (2012), Iowa State University, November 5, Ames, IA.

**Technical Skills** Matlab, Python, R., Fortran, and the Community Earth System Model (CESM).

**Memberships** American Geophysical Union  
European Geophysical Union  
American Physical Society