

## BIOGRAPHICAL SKETCH

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### CHARLES S. JACKSON

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### Professional Preparation

Princeton University	Climate Modeling	Post-doctoral appointment 1998-2000
University of Chicago	Geophysical Science (Geophysical Fluid Dynamics)	Ph.D. 1998
Haverford College	Physics	B.S. 1992

### Appointments

2005-	Research Scientist, Institute for Geophysics, Univ. of Texas at Austin
2000-2005	Research Associate, Institute for Geophysics, Univ. of Texas at Austin
1998-2000	Visiting Scientist, GFDL/NOAA, Princeton University

### Honors

- National Academy of Sciences Kavli Frontiers of Science Fellow (November 2006)
- Invited Speaker Tokyo University Tamura Symposium "Frontiers in Dynamics: Physical and Biological Systems" *Inverse Modeling the Greenland Ice Core Record of Abrupt Climate Change in a World of Uncertain Physics*.
- Jackson School of Geosciences Young Investigator Award 2005 – 2006

### Select Publications

- Jackson, C. S. 2009: Use of Bayesian Inference and Data to Improve Simulations of Multi-physics Climate Phenomena. *Journal of Physics: Conference Series* 180 doi:10.1088/1742-6596/180/1/012029
- Villagran, A., G. Huerta, C. S. Jackson, M. K. Sen (2008) Parameter Uncertainty Estimation in Climate Models. *Bayesian Analysis* 3(4), 823-850. DOI:10.1214/08-BA331
- Jackson, C. S., M. K. Sen, G. Huerta, Y. Deng, and K. P. Bowman (2008) Error Reduction and Convergence in Climate Prediction. *Journal of Climate*, 21(24), 6698-6709. DOI: 10.1175/2008JCLI2112.1
- Deng, Y., K. P. Bowman, and C. Jackson (2007), Differences in rain rate intensities between TRMM observations and community atmosphere model simulations, *Geophys. Res. Lett.*, 34, L01808, doi:10.1029/2006GL027246.
- Jackson, C., Y. Liu, and O. Marchal (2006), Can Models of Abrupt Climate Change be tested from Sea Level Reconstructions? *PAGES NEWS*, 14(2).
- Jackson, C., M. Sen, and P. Stoffa (2004) An Efficient Stochastic Bayesian Approach to Optimal Parameter and Uncertainty Estimation for Climate Model Predictions, *Journal of Climate*, 17(14), 2828-2841.
- Jackson, C., Y. Xia, M. Sen, and P. Stoffa (2003) Optimal parameter and uncertainty estimation of a land surface model: A case example using data from Cabauw, Netherlands, *Journal of Geophysical Research*, 108 (D18), 4583 10.1029/2002JD002991.
- Marchal O., Jackson C., Nilsson J., Paul A., and Stocker T. F., Buoyancy-driven flow and nature of vertical mixing in a zonally averaged model, in "Ocean Circulation: Mechanisms and Impacts ", A. Schmittner, J. C.H. Chiang, and S. R. Hemming (editors), American Geophysical Union, Washington, DC, *Geophysical Monograph* 173, 33-52, 2007.
- Mu, Q., C. S. Jackson, P. L. Stoffa (2004) A multivariate empirical-orthogonal-function-based measure of climate model performance, *J. Geophys. Res.*, 109, D15101, doi:10.1029/2004JD004584.

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- Hall, A., A. Clement, D. Thompson, A. Broccoli, C. Jackson (2004) Atmospheric dynamics govern northern hemisphere wintertime climate variations forced by changes in earth's orbit. *Journal of Climate* 18, 1315-1325.
- Jackson, C., and A. J. Broccoli (2003) Orbital Forcing of Arctic Climate: Mechanisms of climate response and implications for continental glaciation, *Climate Dynamics*, 21, 539-557, DOI: 10.1007/s00382-003-0351-3.
- Jackson, C. (2000) Sensitivity of stationary wave amplitude to regional changes in Laurentide ice sheet topography in single-layer models of the atmosphere, *Journal of Geophysical Research*, 105 (D19), 24443-24454.

### **Book Chapters**

- Jackson, C. S., M. K. Sen, P. L. Stoffa, and G. Huerta. "Data Directed Importance Sampling for Climate Model Parameter Uncertainty Estimation". Chapter in "Advanced Computational Infrastructures for Parallel and Distributed Adaptive Applications", John Wiley and Sons, under preparation, estimated Fall 2009.
- Jackson, C.S. Quaternary Environments (2006), In: S. A. Elias (ed) Encyclopedia of Quaternary Science (4 volumes, 3376 pp). Elsevier, Amsterdam.

### **Conference Organization**

- Co-organized Harrington Fellows Symposium on *Abrupt Climate Change* at the University of Texas, April 15, 2005. Honored speakers included Richard Alley (Penn State), Thomas Stocker (Univ. Bern), Philip Marcus (UC Berkeley), and Lonnie Thompson (Ohio State).

### **Project Leader**

- Co-Lead Investigator DOE sponsored project "Searching for Atlantic Thermohaline Circulation Strength Threshold Leading to Abrupt Change of the African Monsoon"
- Co-Lead Investigator NSF sponsored project "Dynamics of Ice Sheets: Advanced Simulation Models, Large-Scale Data Inversion, and Quantification of Uncertainty in Sea Level Rise Projections"
- Co-Lead Investigator DOE sponsored project "Uncertainty Quantification for Large-Scale Ice Sheet Modeling and Simulation"
- Lead Investigator KAUST Program in Computation Earth Sciences and Engineering (CESE) "Toward Robust Estimates of Climate Prediction Uncertainty"

### **Professional Service**

- Associate Editor for Reviews of Geophysics (2/05 through present).
- Associate Editor for Geophysical Research Letters (7/01 through 2/04).
- Jackson School Geosciences Strategic Planning Council
- Member of American Meteorological Society
- Member of American Geophysical Union

### **Research Scientist Associate Supervision**

Michael Tobis, Dmitri Matrosov

### **Postdoctoral Fellow Supervision**

Qiaozhen Mu, Youlong Xia, Faming Wang, Yi Deng, Christina Holland

### **Graduate Student Supervision**

Lindsey Gulden, Yurun Liu, Shaoping Lu, Srivatsan Ramanujam

### **Undergraduate Student Supervision**

Dmitri Matrosov

### **High School Student Supervision**

Amrita Sen, Vikram Parolkar

September 2009