
John B. Drake

Computer Science and Mathematics Division
Oak Ridge National Laboratory, PO Box 2008
Oak Ridge, TN 37831-6016

Phone: (865) 574-8670
Fax: (865) 576-5491
E-mail: drakejb@ornl.gov
URL: <http://www.csm.ornl.gov/~bbd>

Professional Preparation

Ph.D. Mathematics, University of Tennessee, Knoxville, Tennessee, 1991
M.S. Mathematics, Purdue University, West Lafayette, Indiana, 1979
B.S. Mathematics, University of Kentucky, Lexington, Kentucky, 1977

Appointments

2006-present Computational Earth Sciences Group Leader, Oak Ridge National Laboratory (ORNL)
1999-2006 Climate Dynamics Group Leader, Computer Science & Mathematics Division, ORNL
1984-1999 Mathematics Group, Mathematical Sciences Section, ORNL
1979-1984 Engineering Mechanics Section, Computer Science Division, ORNL
1977-1979 Graduate Teaching Assistant, Purdue University
1973-1977 Computer Graphics Laboratory, University of Kentucky College of Architecture

Related Publications (available at <http://www.csm.ornl.gov/~bbd/pubs>)

J.B. Drake, P.W. Jones, G.R. Carr, "Overview of the Software Design and Parallel Algorithms of the CCSM," *Int. J. High Perf. Comput. Appl.*, August 2005

P.H. Worley, J.B. Drake, "Software Design for Performance Portability in the Community Atmosphere Model," *Int. J. High Perf. Comput. Appl.*, August 2005

J. B. Drake, P. W. Jones, M. Vertenstein, J. B. While III, and P. H. Worley, "Software Design for Petascale Climate Science," in *Petascale Computing: Algorithms and Applications*, ed. D. Bader, Chapman & Hall / CRC Press, Taylor and Francis Group, 2007.

J.B. Drake, P.W. Jones, "Developing Models for Predictive Climate Science," *SciDAC Review*, Vol 3, pp. 44-56, (2007).

J. B. Drake, P. H. Worley, and E. F. D'Azevedo, "Spherical Harmonic Transform Algorithms," *ACM Transactions on Mathematical Software*, 2007 (accepted).

Other Significant Publications

D.L. Williamson, J.B. Drake, J.J. Hack, R. Jakob, and P.N. Swarztrauber, "A Standard Test Set for Numerical Approximations to the Shallow Water Equations on the Sphere," *J. Comp. Phys.* (102), pp. 211-224, 1992.

J.B. Drake, I.T. Foster, J.G. Michalakes, B. Toonen, and P.H. Worley, "Design and Performance of a Scalable Parallel Community Climate Model," *Parallel Computing*, Vol. 21, No. 10, pp. 1571-1591, October 1995.

J.B. Drake, I.T. Foster, J.G. Michalakes, and P.H. Worley, "Parallel Algorithms for Semi-Lagrangian Transport in Global Atmospheric Circulation Models," *Parallel Processing for Scientific Computing*, SIAM, pp. 119-124, February 1995.

P.N. Swarztrauber, D.L. Williamson, J.B. Drake, "The Cartesian Method for Solving Partial Differential Equations in Spherical Geometry," *Dynamics of Oceans and Atmospheres*, Vol. 27, pp. 6779-706, 1997.

J.B. Drake, S. Hammond, R. James, and P.W. Worley, "Performance Tuning and Evaluation of a Parallel Community Climate Model," *Proc. of IEEE SC99*, Portland, OR, November 1999.

W.M. Putman, J.B. Drake, and G. Ostrouchov, "Statistical Downscaling of the United States Regional Climate from Transient GCM Scenarios," *Proc. of AMS 12th Conf. on Applied Climatology*, May 2000.

D.X. Guo and J.B. Drake, "A Global Semi-Lagrangian Spectral Model for the Shallow Water Equations with Variable Resolution," *J. Comp. Phys.*, Vol. 206 (2005), pp. 559-577.

Synergetic Activities

- Contributing editor, *SciDAC Journal, Computational Geosciences*
- Guest editor: *International Journal of High Performance Computing and Applications*, August 2005
- Organizing Committee - *PDE's on the Sphere*, 1991-present
- Project mentor with high school, college, graduate students and post-docs at ORNL
- Member of the DOE OBER/CCPP Executive Committee, 2003-present
- Member - CCSM Advisory Board (CAB), 2001-2007
- Host - *PDE's on the Sphere*, April 29 - May 1, 1998, Gatlinburg
- Organizing Committee - *SIAM Computational Science and Engineering*, San Diego, February 2003
- Member of the DOE OBER/ACPI Planning team, 1998-2000
- Member of the DOE OBER/CHAMMP Executive Committee, 1991-1997
- Member of the DOE Energy Sciences Network (ESnet) Steering Committee, 1995-1997
- Member of the LMES Computer User Advisory Committee and the UAC Steering Committee, 1987-1990

Research Collaborators

- Robert Jacob, Ray Loy (Argonne National Laboratory)
- Robert McGraw (Brookhaven National Laboratory)
- Bill Collins, Michael Wehner (Lawrence Berkeley National Laboratory)
- Phillip Cameron-Smith, Arthur Mirin, David Bader, Cathy Chuang, Cyndi Atherton, and Peter Connell (Lawrence Livermore National Laboratory)
- Philip Jones, Scott Elliot, William Lipscomb, and Matt Maltrud (Los Alamos National Laboratory)
- Lawrence Buja, Tony Craig, Peter Gent, Jean Francois Lamarque, Mariana Vertenstein, and Warren Washington (National Center for Atmospheric Research)
- Jim Hack, David Erickson, Forest Hoffman, and Patrick Worley (Oak Ridge National Laboratory)
- Steven Ghan (Pacific Northwest National Laboratory)
- Mark Taylor (Sandia National Laboratories)