Katherine J. Evans

Contact Information

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Education and Training

Institution	Degree	Year(s)	Field of Study
Georgia Institute of Technology, Atlanta, GA	Ph.D	2000	Atmospheric Science
Georgia Institute of Technology, Atlanta, GA	M.S.	1999	Atmospheric Science
Haverford College, Haverford, PA	B.S.	1993	Physics

Research and Professional Experience

2013-present, Faculty Member, Bredesen Center for Interdisciplinary Research and Education and the Deptartment of Mathematics, U. Tennessee
2013-present, Group Leader, 2007-2013, Technical Research Staff, Computer Science and Mathematics Division, Oak Ridge National Laboratory.
2006-2007, Limited Term Technical Staff Member, 2004-2006, Postdoctoral Research Associate, Fluid Dynamics Group, Theoretical Division, Los Alamos National Laboratory.
2003-2004, Posdoctoral Research Associate, Joint with Decision Applications and Earth and Environmental Sciences Division, Los Alamos National Laboratory.
1995-2000, Graduate Research Assistant, School of Earth and Atmospheric Sciences, Georgia Institute of Technology, Atlanta, GA. 1992-1993, Research Assistant, Physics Department, Haverford College, Haverford, PA.

Synergistic Activities

2012-2017 Site-PI, Science Lead for V&V. Predicting Ice Sheet and Climate Evolution at Extreme Scales, 2M over 5 years to ORNL.

2012 Organizing Committee Member, DOE ASCR Workshop on Extreme Solvers: Transition to Future Architectures, American Geophysical Union, Washington DC.

2009-12 Principal Investigator, DOE Office of Advanced Scientific Computing Grant, ”A Scalable, Efficient, and Accurate Community Ice Sheet Model”, 2M over 3 years. Oak Ridge National Laboratory.

2009 Organizing Committee Member, ”Frontiers of Geophysical Simulation”, Theme of the Year Workshop. National Center for Atmospheric Research.

2009 Atmospheric and Oceanic Computational Science Workshop co-chair, International Conference on Computational Sciences, Baton Rouge, LA.

Selected Publications

1) “Progress toward accelerating HOMME for hybrid multi-core architectures”, I. Carpenter, R. Archibald, K. J. Evans, P. Micikevicius, J. Larkin, J. Rosinski, J. Schwarzmeier, M. A. Taylor *Int. J. High Perf. Comp. Appl.*, in press, DOI:10.177/1094342012462751, (2013).

2) “Spectral Deferred Correction Method in time applied to solving the shallow water equations”, J. Jia, J. C. Hill, K. J. Evans, G. I. Fann *Mon. Wea. Rev.*, in press, DOI:10.1775/MWR-D-12-00048.1, (2013).

3) “AMIP simulation with the CAM4 Spectral element dynamical core”, K. Evans, P. Lauritzen, S. Mishra, R. Neale, M. Taylor, J. Tribbia *J. Climate*, **26**:689-709, DOI:10.1775/JCLI-D-11-00448.1, (2013).

4) “A modern solver framework to manage solution algorithms in the Community Earth System Model”, K. J. Evans, A. G. Salinger, P. H. Worley, S. Price, W. Lipscomb, J. Nichols, J. B. White III, M. Perego, J. Edwards, M. Vertenstein, J.-F. Lemieux *Int. J. High Perf. Computing Apps.*, **26**:54-62 (2012).

5) “A scalable spectral element dynamical core for the Community Atmosphere Model”, J. Dennis, J. Edwards, K. J. Evans, O. Guba, P.H. Lauritzen, A. Mirin, A. St-Cyr, M. Taylor, P. Worley *Int. J. High Perf. Computing Apps.*, **26**:74-89 (2012).

6) “Implementation of the Jacobian-Free Newton-Krylov method for solving the first-order ice sheet momentum balance”, J.-F. Lemieux, S. Price, K. J. Evans, D. A. Knoll, A. Salinger, D. Holland, T. Payne *J. Comp.. Phys.*, **230**:6531-6545 (2011).

7) “Accuracy analysis of a spectral element atmospheric model using a fully implicit solution framework”, K. Evans, M. Taylor, J. Drake *Mon. Wea. Rev.*, **138**:3333-3341 (2010).

8) “A scalable and adaptable solution framework within components of the Community Climate System Model”, K. Evans, D. Rouson, A. Salinger, M. Taylor, W. Weijer, and J. White *Lecture Notes in Computer Science* **5545**:332-341, (2009)

9) “Enhanced algorithm efficiency using a multigrid preconditioner and SIMPLE based smoother”, K. Evans, D. Knoll, and M. Pernice, *J. Comp Phys.* **223**:121-126 (2007)

10) “Development of a 2-D algorithm to simulate convection and phase transition efficiently”, K. Evans, D. Knoll, and M. Pernice, *J. Comp Phys.* **219**:404-417 (2006)

Collaborators and Co-Authors

R. Archibald (ORNL), R. Black (Georgia Tech), I. Carpenter (NREL), J. Dennis (NCAR), J. Edwards (NCAR), J. Drake (ORNL), O. Guba, D. Holland (NYU), D. Knoll (LANL), J. Larkin (Nvidia), P.H. Lauritzen (NCAR), J.-F. Lemieux (NYU), W. Lispcomb (LANL), A. Mirin (LLNL), S. Mishra (NCAR), P. Micikevicius (Nvidia), A. Mirin (LLNL), R, Neale (NCAR), J. Nichols (ORNL), T. Payne (U. Bristol), M. Perego (FSU), M. Pernice (INL), J. Rosinski (NOAA), D. Rouson (SNL), S. Price (LANL), A. Salinger (SNL), J. Schwarzmeier (Nvidia), A. St.-Cyr (Shell), M. Taylor (SNL), J. Tribbia (NCAR), M. Vertenstein (NCAR), W. Weijer (LANL), J. White III (ORNL), P. Worley (ORNL)

Graduate and Postdoctoral Advisors, Advisees

Graduate Advisor: R. X. Black - Georgia Institute of Technology Postdoctoral Advisors: D. A. Knoll and D. Decroix - LANL Graduate Student: Jennifer Ribbeck - University of TN and Katherine Roddy, Dartmouth College (now UNC) Undergraduate Summer Advisees: Tianyu Jiang - Georgia Inst. of Tech., Adrianna Boghozian - University of TN.