Joseph Schoonover joseph.schoonover@colorado.edu

Education

PhD in Geophysical Fluid Dynamics June 2011 - May 2016
Geophysical Fluid Dynamics Institute

Bachelor of Science in Applied Mathematics August 2008 - May 2011
Florida State University

Experience

Owner August 2017 - Present
Fluid Numerics, LLC

Associate Scientist II July 2017 - Present
CIRES

Post-Doctoral Researcher January 2016 - July 2017
Los Alamos National Laboratory

Graduate Research Assistant June 2011 - December 2015
Geophysical Fluid Dynamics Institute

Programming

Languages : Fortran, C/C++, Python
Parallel : OpenACC, CUDA, OpenMP, MPI

Software Development

SELF-Fluids
A code for solving the compressible Navier-Stokes equations on distributed memory clusters and multi-GPU platforms using the Discontinuous Galerkin Spectral Element Method.

Fast Equilibration of Ocean Tracers Software
github.com/schoonovernumerics/FEOTS
An ocean diagnostics code for capturing transport operators and rapidly equilibrating offline passive tracer system.

Teaching and Outreach

Organizer
Boulder GPU Hackathon August 2017-Present
Fluid Numerics, LLC / CIRES / CU Boulder
gpuhackathon.com

Mentor
BNL GPU Hackathon June 2017
Brookhaven National Laboratory
www.olcf.ornl.gov/training-event/2017-gpu-hackathons

Co-Lead/Mentor
Parallel Computing Summer Research Internship June 2016-July 2017
Los Alamos National Laboratory
parallelcomputing.lanl.gov

Teaching Assistant
Introduction to Oceanography Fall 2011, Fall 2015
Florida State University

Lecturer
Simple Climate Models Fall 2014
Geophysical Fluid Dynamics Institute

Tutor
Math Help Center Fall 2009 - Summer 2011
Florida State University

Presentations

- J. Schoonover, J. Estrada, and Y. Zamora, "Spectral Element Libraries in Fortran with OpenACC", (October 2016), Oak Ridge National Laboratory Hackathon, Knoxville, Tennessee.

- J. Estrada, J. Schoonover, and B. Robey, "You CUDA had it all : Object Oriented Fortran and Porting to CUDA", (August 2016), Los Alamos National Laboratory Student Symposium, Los Alamos, New Mexico.

- Y. Zamora, B. Robey, and J. Schoonover, "Effective OpenMP Implementations",(August 2016), Los Alamos National Laboratory Student Symposium, Los Alamos, New Mexico.

- J. Schoonover, W.K. Dewar, N. Wienders, and B. Deremble, "The Gulf Stream Separation and Topographic Wave Arrest", (February 2016), *Ocean Sciences Meeting*, New Orleans, Louisianna.

- J. Schoonover and W.K. Dewar, "Gulf Stream separation", (June 2015), 7^{th} *International Workshop on Modelling of the Ocean, ANU*, Canberra, ACT, Australia.

- J. Schoonover, "A tutorial on spectral element methods and the SELF software", (June - July 2015), *Organized and presented tutorial sessions at the Geophysical Fluid Dynamics Institute*, Tallahassee, FL

- J. Schoonover, W.K.Dewar, N. Wienders, J. Gula, J. Molemaker, J.McWilliams, S. Bates, G. Danabasoglu, and S. Yeager, "North Atlantic barotropic vorticity budgets and the Gulf Stream separation", (May 2015) , *Center for Non-Linear Studies* , Los Alamos, NM.

- J. Schoonover, W.K.Dewar, N. Wienders, J. Gula, J. Molemaker, J.McWilliams, S. Bates, G. Danabasoglu, and S. Yeager, "North Atlantic barotropic vorticity balances and the Gulf Stream separation in numerical models", (Dec. 2014) , *American Geophysical Union Fall meeting,* San Francisco, CA.

- W.K.Dewar, N. Wienders, J. Schoonover, S. Bates, and G. Danabasoglu, J. Gula, J. Molemaker, J.McWilliams, "Topographic Control of the Gulf Stream", (June 2012), *NSF Earth System Models PI meeting*, Washington DC.

Publications

[1] D. Banesh, J. Ahrens, F. Samsel J. Schoonover, and B. Hamann. Qualitative and Quantitative Feature Analysis using Computer Vision Algorithms. *SciVis*, 2017.

[2] D. Banesh, J. Schoonover, and J. Ahrens. Extracting, Visualizing and Tracking Mesoscale Eddies in Two-dimensional Image Sequences Using Contours and Moments. *Workshop on Visualisation in Environmental Sciences*, 2017.

[3] W.K. Dewar, J. Schoonover, T.J. McDougall, and R. Klein. Semi-Compressible Ocean Thermodynamics and Boussinesq Energy Conservation. *Fluids*, 1:1–9, 2016.

[4] W.K. Dewar, J. Schoonover, T.J. McDougall, and W.R. Young. Semi-Compressible Ocean Dynamics. *J. Phys. Oceanogr.*, 45:149–156, 2015.

[5] S. Fogerty, S. Bishnu, Y. Zamora, L. Monroe, S. Poole, M. Lam, J. Schoonover, and R. Robey. Thoughtful precision in mini-apps. *IEEE Cluster*, 2017.

[6] J. Schoonover. The Sigma-Coordinate Pressure Gradient Error Under the Spectral Element Discretization. *Ocean Modeling*, (in preparation), 2018.

[7] J. Schoonover, W.K. Dewar, N. Wienders, and B. Deremble. Local Sensitivities of the Gulf Stream Separation. *J. Phys. Oceanogr.*, 47:353–373, 2017.

[8] J. Schoonover, W.K.Dewar, N. Wienders, J. Gula, J. Molemaker, J.McWilliams, S. Bates, G. Danabasoglu, and S. Yeager. North Atlantic Barotropic Vorticity Balances and the Gulf Stream Separation in Numerical Models. *J. Phys. Oceanogr.*, 46:289–303, 2016.