

Curriculum vitae for *Peter Hjort Lauritzen*

Peter Hjort Lauritzen	Atmospheric Modeling and Predictability
pe1@ucar.edu	Climate & Global Dynamics
http://www.cgd.ucar.edu/cms/pe1	NCAR Earth System Laboratory
born July 14, 1976 in Luxembourg	National Center for Atmospheric Research
Citizenship: Danish	1850 Table Mesa Drive
Wife: Silvia Agnona (Italian citizenship)	Boulder, Colorado 80307-3000, U.S.A.
Children: Vincenzo Agnona Lauritzen & Thorvald Agnona Lauritzen	Phone: (+1) 303 497 1316
	Fax: (+1) 303 497 1324

Education

- Nov. 2005 Ph.D., University of Copenhagen, Denmark.
Accomplishments: *Derivation, implementation & testing of a new locally mass-conservative dynamical core in HIRLAM using the cell-integrated semi-Lagrangian (CISL) method.*
Advisers: Dr. B. Machenhauer, Prof. E. Kaas and Prof. J. Ray Bates.
- Feb. 2002 M.Sc., Geophysics, University of Copenhagen, Denmark.
Adviser: Prof. J. Ray Bates
- Spring 2000 Exchange student, Meteorology, University of Bergen, Norway.
- Fall 1998 Military Service, Danish Emergency Agency, Denmark.
- July 1998 B.Sc., Physics, University of Aarhus, Denmark.
- 1996 Music School, Byhøjskolen, Aarhus, Denmark.
- July 1994 Baccalaureate, Mathematics & Languages, European school, Luxembourg.

Professional Experience

- Jan 2008 - ... Scientist I, Atmospheric Modeling and Prediction Section, NCAR, Boulder.
- 2006 - 2007 Postdoctoral fellowship under the Advanced Study Program, NCAR, Boulder.
- Fall 2005 Research Associate in HIRLAM group, Danish Meteorological Institute, Denmark.
Accomplishments: *Coupling new CISL dynamical core with HIRLAM physics module.*
- 2002-2003 Teaching assistant, Department of Physics, University of Copenhagen, Denmark.
Courses: *Calculus* and *An introduction to numerical weather prediction.*
- Spring 2002 Teaching assistant, Department of Informatics, University of Bergen, Norway.
Course: *Discrete structures.*

Editorships

Editor for book **Numerical Techniques for Global Atmospheric Models** to be published in Springer series *Lecture Notes in Computational Science and Engineering*.

Co-Editor-in-Chief of the Special Issue of *International Journal of Ecology & Development* on **Mathematical Modeling for Earth System Sciences**.

Associate Editor for *Mon. Wea. Rev.* (2009-present).

Selected Publications

L.M. Harris and **P.H. Lauritzen**, 2010: A Flux-Form version of the Conservative Semi-Lagrangian Multi-tracer transport scheme (CSLAM) on the cubed sphere grid, *J. Comput. Phys.*, in prep.

P.H. Lauritzen, 2010: Atmospheric transport schemes: Desirable properties and a semi-Lagrangian view on finite-volume discretizations. Chapter in **Springer** book entitled **Numerical Techniques for Global Atmospheric Models** in series *Lecture Notes in Computational Science and Engineering*, submitted.

R.D. Nair and **P.H. Lauritzen**, 2010: A Class of Deformational Flow Test-Cases for the Advection Problems on the Sphere. *J. Comput. Phys.*, submitted.

P.H. Lauritzen, C. Jablonowski, M.A. Taylor, R.D. Nair, 2010: Rotated versions of the Jablonowski steady-state and baroclinic wave test case: Results from 8 models, *Journal of Advances in Modeling Earth Systems*, in press.

P.H. Lauritzen, R.D. Nair and P.A. Ullrich, 2010: A Conservative Semi-Lagrangian Multi-Tracer Transport scheme on the cubed sphere (CSLAM), *J. Comput. Phys.*, **229**(5), 1401-1424.

B. Machenhauer, E. Kaas, **P.H. Lauritzen**, 2009: Finite-Volume Methods in Meteorology, *Computational Methods for the Atmosphere and the Oceans*, Special Vol. 14, Elsevier press.

A. Gettelman, **P.H. Lauritzen**, M. Park and J. Kay, 2009: Processes Regulating Short Lived Species in the TTL, *J. Geo. Res.*, **114**(D13303).

P.A. Ullrich, **P.H. Lauritzen** and C. Jablonowski, 2008: Geometrically Exact Conservative Remapping (GECORE): Regular latitude-longitude and cubed-sphere grids, *Mon. Wea. Rev.*, **137**(6), 1721-1741.

P.H. Lauritzen, E. Kaas, B. Machenhauer, K. Lindberg, 2008: A mass-conservative version of the semi-implicit semi-Lagrangian HIRLAM, *Q.J.R. Meteorol. Soc.*, **134**(635), 1583-1595.

P.H. Lauritzen and R.D. Nair, 2008: Monotone and conservative Cascade Remapping between Spherical grids (CaRS): Regular latitude-longitude and cubed-sphere grids, *Mon. Wea. Rev.*, **136**(4), 1416-1432.

P.H. Lauritzen, 2007: A stability analysis of finite-volume advection schemes permitting long time steps, *Mon. Wea. Rev.*, **135**(7), 2658-2673.

P.H. Lauritzen, E. Kaas, and B. Machenhauer, 2006: A mass-conservative semi-implicit semi-Lagrangian limited area shallow water model on the sphere, *Mon. Wea. Rev.*, **134**(4), 1205-1221.

Invited talks

- April 2010 Presentation at Workshop on **Numerical Hierarchies for Climate Modeling**. Institute for Pure & Applied Mathematics (IPAM), *University of California Los Angeles (UCLA)*.
- Aug 2009 Some NCAR activities on next generation global dynamical cores. *Danish Meteorological Institute*, Copenhagen, Denmark.
- Aug 2009 Extension of CSLAM to icosahedral grids (triangles and hexagons/pentagons) and a flux-form version of CSLAM, *Max Planck Institute for Meteorology (MPI)*, Hamburg, Germany.
- Jun 2009 Numerical methods for atmospheric dynamical cores, *International Centre for Theoretical Physics (ICTP)*, Trieste, Italy.
- Oct 2008 Some algorithmic challenges in climate modeling, *2008 Young Investigators Symposium*, Oak Ridge National Laboratory (ORNL), Tennessee.
- Mar 2007 Numerical methods for computational modeling of weather and climate that respect important physical properties, University of Exeter, Exeter, UK.

Conference Presentations, Workshops and Summer Schools

- May 2009 Participant and poster presentation at *Scoping Meeting on Multi-Scale Modelling of the Atmosphere and Ocean*, University of Reading, UK.
- Mar 2009 Participant in *Global Atmospheric Core workshop*, NCAR, Boulder.
- Dec 2008 Poster presentation at the *AGU fall meeting*, San Francisco.
- Oct 2008 Presentation at *4th Workshop on the Use of Isentropic & other Quasi-Lagrangian Vertical Coordinates in Atmosphere & Ocean Modeling*, NOAA, Boulder.
- May 2008 Participant in *World Modelling Summit for Climate Prediction*, ECMWF, Reading, UK.
- 2004 / 2006 /
2007 / 2009 Presentations at the *Workshop on the Solution of Partial Differential Equations on the Sphere*, Tokyo, Japan (2004), Monterey (2006), Exeter (UK) (2007), Santa Fe (2009).
- Jun 2006-9 Presentations at the *11th to 14th Annual CCSM Workshop*, Breckenridge.
- Apr 2006 Presentation at *University of British Columbia*, Vancouver, Canada.
- Apr 2005/7 Presentation at the *EGU General Assembly 2005 and 2007*, Vienna, Austria.
- Sep 2004 Participant in ECMWF Seminar on *Developments in Numerical Methods for Atmospheric and Ocean Modelling*, Reading, UK.
- Jul 2003 Summer school on *Applications of Advanced Mathematical and Computational Methods to Atmospheric and Oceanic Problems*, NCAR, Boulder.
- Jun 2001 *Third Annual PIMS Fluid Dynamics Summer School*, University of Alberta, Canada.
- Aug 2000 Summer school on *Decomposition Algorithms in Parallel Scientific Computing*, Technical University of Denmark, Lyngby, Denmark.

Research grants

NCAR PI on DOE grant. Proposal title: Toward a Non-Hydrostatic HOMME.

Committees

NCAR's Advanced Study Program (ASP) postdoctoral fellow selection (2008-10).

NCAR's Summer Internships in Parallel Computational Science (SIParCS) selection committee (2007-10).

Awards

NCAR's Advanced Study Program (ASP) fellowship award.

EGU *Young Scientists Outstanding Poster Paper* (YSOPP) Award in the Atmospheric Science Division (2007).

NCAR's Advanced Study Program (ASP) 2008 colloquium award: Grant of approximately 65,000\$ from ASP to organize summer colloquium. Additional support was provided by NASA (approximately 15,000\$) as well as Department of Energy (DOE) and University of Michigan.

Students and postdoctoral fellows supervised

Graduate student supervisor for the NCAR SIParCS program in 2007 (A. Rahunathan, University of Wyoming), 2008 (P. Ullrich, University of Michigan) and 2009 (L. Harris, University of Washington).

Supervising (jointly with MMM) ASP postdoctoral fellow R. Mittal (2009-present).

Other

Organizer of the 2008 NCAR Advanced Study Program summer colloquium on *Numerical Techniques for Global Atmospheric Models*.

Co-convener at AGU 2008 for session *Recent Advances in Atmospheric General Circulation Models: Toward Earth System Models*.

Languages: Mother tongue Danish, advanced English, fluent Italian.

Expert knowledge of the Unix operating system and all related applications, and programming languages (Fortran, C++, Java, HTML and MPI).