

Laurent White, PhD

Born on 10 November 1979 Citizenship: Belgian Marital status: married
Version of 30 October 2008

Mailing address: Geophysical Fluid Dynamics Laboratory
Princeton University
201 Forrestal Road
Princeton, NJ 08540
USA

Work phone: +1 (609) 452-5305
Cell: +1 (609) 802-8516
E-mail: laurentw@princeton.edu
Homepage: <http://www.princeton.edu/~laurentw>

Research interests

Numerical algorithms for solutions to ordinary and partial differential equations; computational finite elements and finite volumes; numerical ocean modeling; coastal, shelf and estuarine processes.

Education

2004 - 2007	Université catholique de Louvain Ph.D. in applied sciences, Mar. 2007	Louvain-la-Neuve, Belgium
2002 - 2003	University of Texas at Austin M.S.E. in civil engineering, Dec. 2003	Austin, USA
1997 - 2002	Université catholique de Louvain Diploma in engineering in applied mathematics, Jun. 2002 Exchange student at the University of Texas (2000-2001)	Louvain-la-Neuve, Belgium

Employment

Sep. 2007 - present	Princeton University (NOAA/GFDL) <i>Postdoctoral Research Associate</i> FNRS Postdoctoral Researcher (on leave) since Oct. 2007	Princeton, USA
Jan. 2004 - Aug. 2007	Université catholique de Louvain <i>Research Assistant</i> (PhD student until Mar. 2007) FNRS Research Fellow since Oct. 2003	Louvain-la-Neuve, Belgium
Aug. 2002 - Dec. 2003	University of Texas at Austin <i>Research Assistant</i> (MS student)	Austin, USA
Aug. 1999	Cartesis <i>Technical Assistant</i> (summer internship) Development of a database-oriented application using Microsoft Access and Visual Basic	Paris, France

Summer schools

14-22 Aug. 2006	Mathematical Methods in Physical Oceanography NFS Summer School	Breckenridge, USA
12-25 Sept. 2004	Geophysical and Environmental Fluid Dynamics University of Cambridge	Cambridge, United Kingdom

Research visits

30/11/2006-23/12/2006	Australian Institute of Marine Science (AIMS)	Townsville, Australia
-----------------------	---	-----------------------

Field experiences

1. 3/12/2006-8/12/2006: Research cruise and data collection (CTD and ADCP) at Rattray Island (Great Barrier Reef, Australia) supervised by the Australian Institute of Marine Science.
2. April 2003: Bathymetry measurement by echo sounding in the Guadalupe River (Central Texas), supervised by the Texas Water Development Board.

Invited seminars

Oct. 2008	ExxonMobil Corporate Strategic Research <i>Recent developments in finite element ocean modeling</i>	Clinton, NJ, USA
Apr. 2007	Geophysical Fluid Dynamics Laboratory, Princeton University <i>Recent advances in finite element ocean modeling</i>	Princeton, USA
Jan. 2007	Comité National Belge de Géodésie et Géophysique <i>A revolution in numerical model design: towards the second generation of geophysical fluid flow models</i>	Uccle, Belgium

Refereed journal publications

1. **White, L.**, Hodges, B. R. (2005). Filtering the signature of submerged Large Woody Debris from bathymetry data, *Journal of Hydrology* (IF 1.745), 309, 53-65.
2. **White, L.**, Hodges, B. R., Austin, B. N., Osting, T. (2006). Identification of submerged large woody debris from single-beam echo soundings, *Journal of Hydroinformatics* (IF 0.595), 8, 1-12.
3. **White, L.**, Legat, V., Deleersnijder, E., Le Roux, D. (2006). A one-dimensional benchmark for the propagation of Poincaré waves. *Ocean Modelling* (IF 2.897), 15, 101-123.
4. **White, L.**, Beckers, J.-M., Deleersnijder, E., Legat, V. (2006). Comparison of free-surface and rigid-lid finite element models of barotropic instabilities. *Ocean Dynamics*, (IF 1.165) 56, 86-103.
5. **White, L.**, Deleersnijder, E. (2007). Diagnoses of vertical transport in a three-dimensional finite-element model of the tidal circulation around an island. *Estuarine, Coastal and Shelf Science*, (IF 1.799) 74, 655-669.
6. Gourgue, O., Deleersnijder, E., **White, L.** (2007). Toward a generic method for studying water renewal, with application to the epilimnion of Lake Tanganyika. *Estuarine, Coastal and Shelf Science*, (IF 1.799) 74, 628-640.
7. Blaise, S., Deleersnijder, E., **White, L.**, Remacle, J.-F. (2007). Influence of the turbulence closure scheme on the finite-element simulation of the tidal flow around a shallow-water island. *Continental Shelf Research*, (IF 1.684) 27, 2329-2345.

8. **White, L.**, Legat, V., Deleersnijder, E. (2008). Tracer conservation for three-dimensional, finite element, free-surface, ocean modeling on moving prismatic meshes. *Monthly Weather Review*, 136, 420-442
9. **White, L.**, Wolanski, E. (2008). Flow separation and vertical motions in a tidal flow interacting with a shallow-water island. *Estuarine, Coastal and Shelf Science*, 77, 457-466.
10. **White, L.**, Deleersnijder, E., Legat, V. (2008). A three-dimensional unstructured mesh finite element shallow-water model, with application to the flows around an island and in a wind-driven, elongated basin. *Ocean Modelling*, 22, 26-47.
11. **White, L.**, Adcroft, A. (2008) A high-order finite volume remapping scheme for nonuniform grids: the piecewise quartic method (PQM). *Journal of Computational Physics*, 227, 7394-7422.
12. **White, L.**, Adcroft, A., Hallberg, R. High-order regridding/remapping schemes for generalized vertical coordinates in ocean models. *Ocean Modelling*, in preparation.

Theses

1. **White, L.** (June 2002). Modeling of the general circulation of the world ocean using finite elements. *Final year Mémoire, Université catholique de Louvain*. [pdf]
2. **White, L.** (December 2003). Filtering the signature of submerged Large Woody Debris from bathymetry data. *MS Thesis, University of Texas at Austin*. [pdf]
3. **White, L.** (March 2007). Accuracy and consistency in finite element ocean modeling. *PhD Dissertation, Université catholique de Louvain*. [pdf]

Conference proceedings (oral communications)

1. Hodges, B. R., **White, L.**, Austin, B. N. Identifying and filtering the large woody debris signature in river bathymetry data. Proceedings of the *Texas River and Reservoir Management Society Conference and Symposium*. Baylor University, Texas, 16-17 May 2005.
2. **White, L.**, Legat, V., Deleersnijder, E., Le Roux, D. The discontinuous Galerkin method to solve the propagation of Poincaré waves. *17th IMACS World Congress, Scientific Computation, Applied Mathematics and Simulation*. Paris (France), 11-15 July 2005.
3. **White, L.**, Deleersnijder, E., Legat, V. Diagnoses of vertical transport in a three-dimensional finite element model of the tidal circulation around an island. *The 13th conference of the Joint Numerical Sea Modelling (JONSMOD) group*. Plymouth (United Kingdom), 26-28 June 2006.
4. **White, L.**, Legat, V., Deleersnijder, E. Conservation and consistency in three-dimensional hydrostatic finite element ocean modeling. Proceedings of the *9th ICFD International Conference on Numerical Methods for Fluid Dynamics*. University of Reading, Reading (United Kingdom), 26-29 March 2007.
5. **White, L.**, Deleersnijder, E., Legat, V., Remacle, J.-F., Fichefet, T., Bernard, P.-E., Lambrechts J., Comblen, R., Lietaer, O., Gourgue, O. Recent developments in the unstructured mesh, finite element ice-ocean model SLIM. *European Geosciences Union, General Assembly*. Vienna (Austria), 16-20 April 2007.
6. Comblen, R., Legrand, S., **White, L.**, Deleersnijder, E., Legat, V. Development and validation of a finite element shallow-water model in spherical geometry. *European Geosciences Union, General Assembly*. Vienna (Austria), 16-20 April 2007.
7. Gourgue, O., Deleersnijder, E., Legat, V., Marchal, E., Naithani, J., Plisnier, P.-D., **White, L.** A finite element reduced-gravity model of Lake Tanganyika. *European Geosciences Union, General Assembly*. Vienna (Austria), 16-20 April 2007.

Conference proceedings (posters)

1. **White, L.**, Beckers, J.-M., Deleersnijder, E., Legat, V. Comparison of rigid-lid and free-surface finite-element models of barotropic and baroclinic instabilities. *European Geosciences Union, General Assembly*. Vienna (Austria), 24-29 April 2005.
2. **White, L.**, Deleersnijder, E., Legat V. A finite element model for the three-dimensional shallow-water equations with application to the tidal flow around an island. Proceedings of the *9th ICFD International Conference on Numerical Methods for Fluid Dynamics*. University of Reading, Reading (United Kingdom), 26-29 March 2007.
3. **White, L.**, Legat, V., Deleersnijder, E. Conservation and consistency for three-dimensional finite element hydrostatic ocean modeling on moving prismatic meshes. *European Geosciences Union, General Assembly*. Vienna (Austria), 16-20 April 2007.

Workshop participations (oral communications)

1. **White, L.**, Legat, V., Deleersnijder, E., Le Roux, D. A one-dimensional benchmark for the propagation of Poincaré waves. *The 3rd international workshop on unstructured grid numerical modelling of coastal, shelf and ocean flows*. Toulouse (France), 20-22 September 2004.
2. **White, L.**, Deleersnijder, E., Legat, V. Three-dimensional finite element modeling of the tidal circulation around an island. *The 4th international workshop on unstructured grid numerical modelling of coastal, shelf and ocean flows*. Bremerhaven (Germany), 10-12 October 2005.
3. **White, L.**, Deleersnijder, E., Legat, V. SLIM: design principles, application to a shallow-water island and diagnoses of vertical transport. *Rattray workshop on shallow-water eddies*. Louvain-la-Neuve (Belgium), 30-31 March 2006.
4. **White, L.**, Legat V., Deleersnijder, E. How to ensure mass conservation in a three-dimensional, free-surface, finite-element marine model on a moving mesh. *The 5th international workshop on unstructured grid numerical modelling of coastal, shelf and ocean flows*. Miami (Florida, USA), 13-15 November 2006.
5. **White, L.** Finite element ocean modeling on unstructured prismatic meshes. *Workshop on numerical methods in ocean models*. Bergen (Norway), 23-24 August 2007.

Workshop participations (posters)

1. **White, L.**, Blaise, S., Comblen, R., Legat V., Deleersnijder, E. Application of a three-dimensional finite element marine model to the flow around a shallow-water island. *The 5th international workshop on unstructured grid numerical modelling of coastal, shelf and ocean flows*. Miami (Florida, USA), 13-15 November 2006.

Seminars

1. **White, L.** Comparison of rigid-lid and free-surface finite-element models of barotropic and baroclinic instabilities. *Centre for Systems Engineering and Applied Mechanics, Université catholique de Louvain*, Louvain-la-Neuve (Belgium), 1 February 2005.
2. **White, L.** Three-dimensional finite element modeling of the tidal circulation around an island. *Delft Hydraulics, TU Delft*, Delft (The Netherlands), 22 November 2005.
3. **White, L.** SLIM: design principles, application to a shallow-water island and diagnoses of vertical transport. *G. Lemaitre Institute of Astronomy and Geophysics, Université catholique de Louvain*, Louvain-la-Neuve (Belgium), 18 April 2006.

Reviewing

Estuarine, Coastal and Shelf Science; Ocean Modelling; Ocean Dynamics.

Teaching experience

Teaching of 10 hours of fluid mechanics (in replacement of Prof. André Berger or Prof. Eric Deleersnijder) to second-year physics students.

Supervision of 20 hours of physics (fluid mechanics and electricity) labs for first-year bioengineering students.

Supervision of 20 hours of physics exercises for first-year bioengineering students.

Supervision of 90 hours of finite elements exercises for fourth-year engineering students.

Co-supervision of seven engineering final year projects (*Travaux de fin d'étude*).

Grants received

1. Free participation at the *Modern Mathematical Methods in Oceanography Summer School* held at Breckenridge, Colorado, United States (14-23 August 2006).

Other skills

Computer: C, C++, MySQL, HTML, Linux, Visual Basic, Fortran, Access, QT.

Languages: French: native language; English: fluent; Dutch: intermediate (high school level); Russian: beginner.

Social skills: Leader of a Boy Scouts troop (1998-2000).

Sport: Bicycle: about 12,000 km a year. Cycling trip across the USA (Washington DC to San Francisco) during the summer 1997. Hiking (Finland, Iceland, French Alps, Costa Rica).

Miscellaneous: Published a novel relating the bicycle trip across the USA. Strong interest in geopolitics and international finance.