Dr. Brian L. White

CONTACT INFORMATION

Associate Professor
Department of Marine Sciences
University of North Carolina at Chapel Hill
3117e Venable Hall, CB #3300
Chapel Hill, NC 27599 USA

Phone: +1-919-962-1677
Fax: +1-919-962-1254
E-mail: bwhite@unc.edu
WWW: fluids.web.unc.edu

RESEARCH INTERESTS

Environmental Fluid Dynamics: stratified flows, turbulent mixing, internal waves, ocean submesoscale processes, convection, energetics of the ocean circulation, particle transport in marine environments, biological-physical interactions, hydrodynamics of coastal ecosystems, experimental and computational fluid dynamics, fluid-structure interaction, optimization techniques in fluids

EDUCATION

Massachusetts Institute of Technology
Ph.D., Civil and Environmental Engineering, August 2006
Concentration: *Environmental Fluid Dynamics*

M.S., Civil and Environmental Engineering, 2002

The Pennsylvania State University
B.S., Civil and Environmental Engineering, 1999

PROFESSIONAL EXPERIENCE

University of North Carolina at Chapel Hill, **Department of Marine Sciences**
Associate Professor January 1, 2015-present
Assistant Professor January 2008-December 2014
Co-PI, UNC Marine Sciences-Applied Mathematics Joint Fluids Lab

Woods Hole Oceanographic Institution
Postdoctoral Investigator August 2007-December 2007
Coastal Ocean Institute Postdoctoral Scholar January 2006-August 2007
Departments of Physical Oceanography and Biology

HONORS AND FELLOWSHIPS

Faculty Fellow, UNC Center for Galapagos Studies, 2010-present
Coastal Ocean Institute Postdoctoral Scholar,
Woods Hole Oceanographic Institution, 2006-2008
Martin Fellow for Sustainability, MIT, 2002
Kappe Environmental Engineering Scholarship, Penn State University, 1998

SELECTED PUBLICATIONS

[1] Prairie, J.C., Ziervogel, K., Camassa, R., McLaughlin, R.M., **White, B.L.**, Dewald, C and Arnosti, C. 2015 Delayed settling of marine snow: effects of density gradient and particle properties and implications for carbon cycling. *Journal of Marine Chemistry*, 175, 28-38. doi: 10.1016/j.marchem.2015.04.006.

[2] Zemskova, V., **White, B.L.** and Scotti, A. 2015 Available Potential Energy and the General Circulation: Partitioning Wind, Buoyancy Forcing, and Diapycnal Mixing. *Journal of Physical Oceanography*. doi: http://dx.doi.org/10.1175/JPO-D-14-0043.1

[3] **White, B.L.** and Helfrich, K.R. 2014 A model for internal bores in continuous stratification. *Journal of Fluid Mechanics*, 761, 282-304.

[4] Scotti, A. and **White, B.L.** 2014 Diagnosing mixing in stratified turbulent flows with a locally defined available potential energy. *Journal of Fluid Mechanics*, 740, 114-135.

[5] **White, B.L.** and Helfrich, K.R. 2013b Rapid gravitational adjustment of horizontal shear flows. *Journal of Fluid Mechanics*, 721, 86-117.

[6] Camassa, R., Khatri, S., McLaughlin, R.M., Prairie, J.C., **White, B.L.**, and Yu, S. 2013. Retention and entrainment effects: Experiments and theory for porous spheres settling in sharply stratified fluids. *Physics of Fluids*, 25, 081701. doi:10.1063/1.4819407.

[7] Prairie, J.C., Ziervogel, K., Arnosti, C., Camassa, R., Falcon, C., Khatri, S., McLaughlin, R.M., **White, B.L.**, Yu, S. 2013. Delayed settling of marine snow at sharp density transitions driven by fluid entrainment and diffusion-limited retention. *Marine Ecology Progress Series*. 487, 185-200. doi:10.3354/meps10387.

[8] **White, B.L.** and Helfrich, K.R. 2012 A complete description of a gravity current front propagating in a two-layer stratified fluid, *Journal of Fluid Mechanics*, 711, 545-575.

[9] Scotti, A. and **White, B.L.** 2011 Is horizontal convection really "non-turbulent"? *Geophysical Research Letters*, 38, L21609. doi:10.1029/2011GL049701.

[10] Helfrich, K.R. and **White, B.L.** 2010 A model for large-amplitude internal solitary waves with trapped cores. *Nonlinear Processes in Geophysics*, 17, 303-318. Special Issue: Large amplitude internal waves in the coastal ocean. doi:10.5194/npg-17-303-2010.

[11] **White, B.L.** and Helfrich, K.R. 2008 Gravity currents and internal waves in a stratified fluid, *Journal of Fluid Mechanics*, 616, 327-356.

[12] **White, B.L.** and Nepf, H.M. 2008 A vortex-based model of velocity and shear stress in a partially vegetated shallow channel. *Water Resources Research*, 44, W01412, doi: 10.1029/2006WR005651.

[13] **White, B.L.** and Nepf, H.M. 2007 Shear instability and coherent structures in a shallow flow adjacent to a porous layer. *Journal of Fluid Mechanics*, 593, 1-32.

[14] Nepf, H.M., Ghisalberti, M., **White, B.L.** and Murphy, E. 2007. Retention time and dispersion associated with submerged aquatic canopies. *Water Resources Research*. 43, W04422. doi:10.1029/2006WR005362.

[15] **White, B.L.** and Nepf, H.M. 2003 Scalar transport in random cylinder arrays at moderate Reynolds number. *Journal of Fluid Mechanics*. 487, 43-79.