

## **John L. Wilkin**

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### **Professional Positions:**

- 2001- Assistant/Associate Professor, Department of Marine and Coastal Sciences, Rutgers University, New Jersey
- 2000-2001: Research Scientist, NIWA, Auckland, New Zealand.
- 1998-1999: Senior Lecturer, School of Environmental and Marine Sciences, University of Auckland, New Zealand.
- 1990-1997: Senior Research Scientist, CSIRO Division of Marine Research, Hobart, Tasmania, Australia.
- 1988-1990: Scientist, DSIR Division of Water Sciences, New Zealand Oceanographic Institute, Wellington, New Zealand.
- 1982-1988: Graduate Research Assistant, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution, Massachusetts, USA.
- 1982: Junior Lecturer in Engineering Mathematics, School of Engineering, University of Auckland, New Zealand.

### **Education:**

- Ph.D., 1988, Joint Program in Oceanographic Engineering, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution.
- S.M., 1985, Department of Civil Engineering, Massachusetts Institute of Technology.
- B.E. (Hons), 1982, Department of Theoretical and Applied Mechanics, School of Engineering, University of Auckland.

### **Refereed Publications:**

- Wilkin, J., and A. G. Jeffs (2011), Energetics of swimming to shore in the puerulus stage of a spiny lobster: Can a lobster post-larva afford the cost of crossing the continental shelf? *Limnology and Oceanography Environment and Fluids*, submitted.
- Zavala-Garay, J., J. Wilkin and H. Arango (2011), Predictability of mesoscale variability in the East Australia Current given strong-constraint data assimilation, *Journal of Physical Oceanography*, submitted.
- Zhang, W. G., G. Gawarkiewicz, D. McGillicuddy and J. Wilkin (2011), Climatological mean circulation at the New England shelf break, *Journal of Physical Oceanography*, in press.

- Renault, L., G. Vizoso, A. Jansa, J. Wilkin and J. Tintoré (2011), Toward the predictability of meteo-tsunamis in the Balearic Sea using coupled Atmosphere-Ocean Modeling, *Geophysical Research Letters*, 38, L10601, doi: 10.1029/2011GL047361.
- Wilkin, J., W. G. Zhang, B. Cahill and R. C. Chant (2011), Integrating coastal models and observations for studies of ocean dynamics, observing systems and forecasting, In *Operational Oceanography in the 21st Century*, A. Schiller and G. Brassington (Eds.), Springer, doi: 10.1007/978-94-007-0332-2\_19
- Hofmann, E. E., B. Cahill, K. Fennel, M. Friedrichs, K. Hyde, C. Lee, A. Mannino, R. Najjar, J. O'Reilly, J. Wilkin and J. Xue (2010), Modeling the Dynamics of Continental Shelf Carbon, *Annual Review of Marine Science*, 3, 93-122, doi: 10.1146/annurev-marine-120709-142740.
- Zhang, W., J. Wilkin and J. Levin (2010), Towards an integrated observation and modeling system in the New York Bight using variational methods, Part II: Representer-based observing system design, *Ocean Modelling*, 35, 134-145, 10.1016/j.ocemod.2010.06.006.
- Zhang, W., J. Wilkin and H. Arango (2010), Towards an integrated observation and modeling system in the New York Bight using variational methods, Part I: 4DVAR Data Assimilation, *Ocean Modelling*, 35, 119-133, doi: 10.1016/j.ocemod.2010.08.003.
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- Zhang, W., J. Wilkin and O. Schofield (2010), Simulation of water age and residence time in the New York Bight, *Journal of Physical Oceanography*, 40, 965-982, doi: 10.1175/2009JPO4249.1.
- Druon, J.-N., A. Mannino, S. Signorini, C. McClain, M. Friedrichs, J. Wilkin and K. Fennel (2010), Modeling the dynamics and export of dissolved organic matter in the Northeastern U.S. continental shelf, *Estuarine and Coastal Shelf Science*, 88, 488-507.
- Previdi, M., K. Fennel, J. Wilkin and D. Haidvogel (2009), Interannual Variability in Atmospheric CO<sub>2</sub> Uptake on the Northeast U.S. Continental Shelf, *Journal of Geophysical Research*, 114, G04003, doi: 10.1029/2008JG000881.
- Hofmann, E., D. Bushek, S. Ford, X. Guo, D. Haidvogel, D. Hedgecock, J. Klinck, C. Milbury, D. Narváez, E. Powell, Y. Wang, Z. Wang, J. Wilkin and L. Zhang (2009), Understanding how disease and environment combine to structure resistance in estuarine bivalve populations, *Oceanography*, 22(4), 212-231.
- Fennel, K., and J. Wilkin (2009), Quantifying biological carbon export for the northwest North Atlantic continental shelves, *Geophysical Research Letters*, 36, L18605, doi: 10.1029/2009GL039818
- Zhang, W., J. Wilkin, J. Levin and H. Arango (2009), An Adjoint Sensitivity Study of Buoyancy- and Wind-driven Circulation on the New Jersey Inner Shelf. *Journal of Physical Oceanography*, doi: 10.1175/2009JPO4050.1, **39**, 1652-1668.
- Zhang, W., J. Wilkin and R. Chant (2009), Modeling the pathways and mean dynamics of river plume dispersal in New York Bight. *Journal of Physical Oceanography*, doi: 10.1175/2008JPO4082.1, **39**, 1167-1183.
- Chassignet, E., H. Hurlburt, E. Metzger, O. M. Smedstad, J. Cummings, G. Halliwell, R. Bleck, R. Baraille, A. Wallcraft, C. Lozano, H. Tolman, A. Srinivasan, S. Hankin, P. Cornillon, R. Weisberg, A. Barth, R. He, F. Werner and J. Wilkin (2009), U.S. GODAE: Global Ocean Prediction with the HYbrid Coordinate Ocean Model (HYCOM), *Oceanography*, 22(2), 64-75.

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- Fennel, K., J. Wilkin, M. Previdi, and R. Najjar (2008), Denitrification effects on air-sea CO<sub>2</sub> flux in the coastal ocean: Simulations for the northwest North Atlantic, *Geophysical Research Letters*, 35, L24608, doi: 10.1029/2008GL036147.
- Cahill, B., O. Schofield, R. Chant, J. Wilkin, E. Hunter, S. Glenn, and P. Bissett (2008), Dynamics of turbid buoyant plumes and the feedbacks on near-shore biogeochemistry and physics, *Geophysical Research Letters*, 35, L10605, doi: 10.1029/2008GL033595.
- Hofmann, E. E., J.-N. Druon, K. Fennel, M. Friedrichs, D. Haidvogel, C. Lee, A. Mannino, C. McClain, R. Najjar, J. Siewert, J. O'Reilly, D. Pollard, M. Previdi, S. Seitzinger, S. Signorini, J. Wilkin, (2008), Eastern U.S. Continental Shelf Carbon Budget: Integrating Models, Data Assimilation, and Analysis, *Oceanography*, 21, 86-104.
- Haidvogel, D. B., H. Arango, W. P. Budgell, B. Cornuelle, E. Curchitser, E. Di Lorenzo, K. Fennel, W. R. Geyer, A. Hermann, L. Lanerolle, J. Levin, J. McWilliams, A. Miller, A. Moore, T. Powell, A. Shchepetkin, C. Sherwood, R. Signell, J. C. Warner and J. Wilkin, (2008), Ocean forecasting in terrain-following coordinates: Formulation and skill assessment of the Regional Ocean Modeling System, *Journal of Computational Physics*, 227, 3595-3624.
- Castelao, R., S. Glenn, O. Schofield, R. Chant, J. Wilkin and J. Kohut, (2008): Seasonal evolution of hydrographic fields in the central Middle Atlantic Bight from glider observations, *Geophysical Research Letters*, 35, L03617, doi: 10.1029/2007GL032335.
- Choi, B.-J., and J. L. Wilkin (2007), The effect of wind on the dispersal of the Hudson River plume, *Journal of Physical Oceanography*, 37, 1878-1897.
- Wilkin, J., and W. Zhang, (2006), Modes of mesoscale sea surface height and temperature variability in the East Australian Current, *Journal of Geophysical Research*, 112, C01013, doi: 10.1029/2006JC003590
- Wilkin, J. (2006), Modeling the summertime heat budget and circulation of southeast New England shelf waters, *Journal of Physical Oceanography*, 36, 1997-2011.
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- He, R., and J. Wilkin (2006), Barotropic tides on the southeast New England shelf: A view from a hybrid data assimilative modeling approach. *Journal of Geophysical Research*, 111, C08002, doi: 10.1029/2005JC003254.
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- Wilkin, J., and L. Lanerolle, (2005), Ocean Forecast and Analysis Models for Coastal Observatories, In *Ocean Weather Forecasting: An Integrated View of Oceanography*, E. Chassignet and J. Verron, Eds., 549-572, Springer.

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- Bowen, M. M., J. L. Wilkin and W. J. Emery (2005), Variability and forcing of the East Australian Current, *Journal of Geophysical Research*, 110, C03019, doi: 10.1029/2004JC002533.
- Moisan, J. R., A. J. Miller, E. Di Lorenzo and J. Wilkin (2005), Modeling and Data Assimilation, In: *Remote Sensing in Coastal Aquatic Environments*, p. 229-257, Miller, R. L., C. E. Del Castillo, B. A. McKee (Eds.), Springer, New York.
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- Wilkin, J., M. Bowen and W. J. Emery (2002), Mapping mesoscale currents by optimal interpolation of satellite radiometer and altimeter data, *Ocean Dynamics*, 52, 95-103.
- Griffin, D., J. Wilkin, C. Chubb, A. Pearce and N. Caputi (2001), Ocean currents and the larval phase of Australian western rock lobster, *Panulirus cygnus*, *Marine and Freshwater Research*, 52, 1187-1200.
- Carter, L., and J. L. Wilkin (1999), Abyssal circulation around New Zealand: A comparison between observations and a global circulation model, *Marine Geology*, 159, 221-239.
- Moore, M. I., and J. Wilkin (1998), Variability in the South Pacific Deep Western Boundary Current from Current-meter Observations and a High Resolution Global Model, *Journal of Geophysical Research*, 103, 5439-5457.
- Walker, A. E., and J. Wilkin (1998), Optimal averaging of NOAA/NASA Pathfinder satellite sea surface temperature data, *Journal of Geophysical Research*, 103, 12,869-12,883.
- Wilkin, J. L., J. Mansbridge and K. Hedstrom (1995), An Application of the Capacitance Matrix Method to Accommodate Masked Land Areas and Island Circulations in a Primitive Equation Ocean Model, *International Journal of Numerical Methods in Fluids*, 20, 649-662, doi: 10.1002/flid.1650200705.
- Wilkin, J., J. Mansbridge and J. S. Godfrey (1995), Pacific Ocean Heat Transport at 240N in a High-resolution Global Model, *Journal of Physical Oceanography*, 25, 2204-2214.
- Godfrey, J. S., and J. Wilkin (1995), Reply to "When is 'appearance' reality? Indonesian throughflow is primarily derived from North Pacific water masses," by A. L. Gordon, *Journal of Physical Oceanography*, 25, 1568-1570.
- Wilkin, J. L., and R. Morrow (1994), Eddy kinetic energy and momentum flux in the Southern Ocean: Comparison of a global eddy-resolving model with altimeter, drifter, and current-meter data, *Journal Geophysical Research*, 99, 7903-7916.
- Godfrey, J. S., A. Hirst and J. Wilkin (1993), Why does the Indonesian throughflow appear to originate from the North Pacific? *Journal of Physical Oceanography*, 23, 1087-1098.

- Haidvogel, D. B., J. Wilkin and R. Young (1991), A semi-spectral primitive equation ocean circulation model using vertical sigma and orthogonal curvilinear horizontal coordinates, *Journal of Computational Physics*, 94, 151-184.
- Wilkin, J. L., and D. C. Chapman (1990), Scattering of coastal-trapped waves by irregularities in coastline and topography, *Journal of Physical Oceanography*, 20, 396-421.
- Wilkin, J. L., and D. C. Chapman (1988), Comment on 'Scattering of a Continental Shelf Wave by a Long Thin Barrier Lying Parallel to the Coast' by W.W. Hsieh and V.T. Buchwald, *Journal of Physical Oceanography*, 18, 389-393.
- Wilkin, J. L., and D. C. Chapman (1987), Scattering of continental shelf waves at a discontinuity in shelf width, *Journal of Physical Oceanography*, 17, 713-724.

### **Technical Reports:**

- Druon, J.-N., A. Mannino, S. Signorini, C.R. McClain, M. Friedrichs, J. Wilkin, and K Fennel, Modeling the Dynamics and Export of Dissolved Organic Matter in the Northeastern U.S. Continental Shelf, NASA Tech. Rep. NASA/TM-2009-214177, 50 pp., 2009.

### **Membership of Professional Societies:**

- American Geophysical Union (1983-)  
New Zealand Marine Sciences Society (1989-)

### **Professional activities:**

- Vice-Chair, *Gordon Research Conference on Coastal Ocean Modeling*, June 2011.
- Chair, *Gordon Research Conference on Coastal Ocean Modeling*, scheduled for June 2015.
- Program Committee for the *Gordon Research Conference on Coastal Oceanography*, June 2009.
- Associate Developer of ROMS, the *Regional Ocean Modeling System* (<http://www.myroms.org>).  
Since 2001 – ongoing.
- Co-convener, *Regional Ocean Modeling System User Workshop*, Sydney, Australia, March 31 – April 2, 2009.
- Co-convener, *Regional Ocean Modeling System User Workshop*, Grenoble, France, 6-8 October 2008.
- Member, User Working Group review panel for the *NASA-JPL Physical Oceanography Distributed Active Archive Center (PO-DAAC)*.
- Member, U.S. Scientific Steering Team for the Vietnamese East Sea DRI
- U.S. Integrated Ocean Observing System (IOOS): *Modeling and Analysis Steering Team*. 2006–2008.
- U.S. IOOS Data Management and Communications Steering Team (DMAC-ST) *Modelers Caucus*.  
2005-2008
- National Federation of Regional Associations (NFRA) of U.S. IOOS, Chair of Modeling Subcommittee.  
Since 2008 – ongoing.
- Scientific Working Team for NASA/CNES Ocean Surface Topography Mission. Since 2008 – ongoing.
- Associate Editor, *Ocean Dynamics* journal, Springer. Since 2000 – ongoing.

Journal article reviewer for: Continental Shelf Research, Dynamics of Atmospheres and Oceans, Geophysical Research Letters, Journal of Geophysical Research, Journal of Physical Oceanography, Ocean Dynamics, Ocean Modelling, Oceanography, Remote Sensing of Environment, Science

Grant proposal reviewer for: National Science Foundation, NASA, Sea Grant, Australian Research Council, N.Z. Foundation for Research Science and Technology

**Awards:**

Fulbright Graduate Student, 1982.

National Oceanographic Partnership Program's (NOPP's) 2008 Excellence in Partnering Award, with colleagues of the U.S. Global Ocean Data Assimilation Experiment (GODAE): Global Ocean Prediction with the HYbrid Coordinate Ocean Model (HYCOM) project.

**Collaborators:**

Present collaborators: Hernan Arango (RU), Robert Chant (RU), Bronwyn Cahill (RU), Tim Duda (WHOI), Katja Fennel (Dalhousie), Marjorie Friedrichs (VIMS), Scott Glenn (RU), Dale Haidvogel (RU), Ruoying He (NCSU), Eileen Hofmann (ODU), Julia Levin (RU), Dennis McGillicuddy (WHOI), Thomas Miller (UMd), Oscar Schofield (RU), Douglas Vandemark (UNH), Javier Zavala-Garay (RU), Aijun Zhang (NOAA), Weifeng Zhang (WHOI)

**Ph.D. graduate advisor:** David C. Chapman (WHOI)

**Thesis advising and Post-doctoral sponsorship:**

Post-doctoral scholars supervised: Melissa Bowen (Victoria University of Wellington), Paul Goodman (Arizona State University), Byoung-Ju Choi (Kunsan National University), Renato Castelao (Georgia Tech), Greg Gerbi (Swarthmore).

Students graduated: Gregg Foti, MS (Data Engineer, NASA Jet Propulsion Laboratory), Weifeng Gordon Zhang, PhD (Assistant Scientist, WHOI).

Students present: Naomi Fleming, Aboozar Tabatabai.