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Woods Hole Oceanographic Institution
B.A., University of Maine, 1975
Sc. D., Massachusetts Institute of Technology, Woods Hole Oceanographic Institution Joint Program,
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Physics Laboratory Instructor, University of Maine, 1974-1975
Summer Student Fellow, 1974, Woods Hole Oceanographic Institution
National Research Council Postdoctoral Research Associate, 1980-1982, Pacific Marine Environmental
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U.S. Patents:
No. 5,869,756: Moored water profiling apparatus. Inventors: K. W. Doherty, J. M. Toole and D. E. Frye,
Feb. 9, 1999.
No. 5,665,909: Free-fall, wire-guided hydrographic profiler. Inventors: K. W. Doherty, J. M. Toole, and
R.C. Millard, Sept. 9, 1997

Research Interests: The physics of ocean mixing including the nature of finescale and microscale
velocity, temperature and salinity fluctuations and the relationships between them. Polar oceanography and
upper-ocean/sea ice interactions, Annual to multi-decadal variability of ocean water properties, stratification and
circulation, ocean time-series stations. Global oceanic heat and fresh water budgets, water mass formation and
circulation. Low-latitude ocean circulation, El Niño. Oceanographic instrument development.

Refereed Publications

- Joyce, Terrence M., Walter Zenk, and John M. Toole, 1978. The anatomy of the Antarctic Polar Front in
the Drake Passage. *Journal of Geophysical Research*, 83(C12), 6093-6113.
- Horne, E. P. W., and J. M. Toole, 1980. Sensor response mismatches and lag correction techniques for
temperature-salinity profilers. *Journal of Physical Oceanography*, 10(7), 1122-1130.
- Toole, John M., and Daniel T. Georgi, 1981. On the dynamics and effects of double-diffusively driven
intrusions. *Progress in Oceanography*, 10, 123-145.
- Toole, John M., 1981. Sea ice, winter convection, and the temperature minimum layer in the Southern
Ocean. *Journal of Geophysical Research*, 86(C9), 8037-8047.
- Toole, John M., 1981. Intrusion characteristics in the Antarctic Polar Front. *Journal of Physical Ocean-*
ography, 11(6), 780-793.
- Toole, John M., 1981. Anomalous characteristics of equatorial thermohaline fine- structure. *Journal of*
Physical Oceanography, 11(6), 871-876.
- Georgi, Daniel T., and John M. Toole, 1982. The Antarctic Circumpolar Current and the oceanic heat
and freshwater budgets. *Journal of Marine Research*, Supplement to 40, 183-197.
- Hayes, S. P., J. M. Toole, and L. J. Mangum, 1983. Water-mass and transport variability at 110°W in the
equatorial Pacific. *Journal of Physical Oceanography*, 13(2), 153-168.
- Toole, John M., and Stanley P. Hayes, 1984. Finescale velocity-density characteristics and Richardson
Number statistics of the eastern equatorial Pacific. *Journal of Physical Oceanography*, 14(4), 712-
726.
- Toole, John M., and Mark D. Borges, 1984. Observations of horizontal velocities and vertical
displacements in the equatorial Pacific Ocean associated with the early stages of the 1982/83 El

- Niño. *Journal of Physical Oceanography*, 14(5), 948–959.
- Toole, John M., 1985. Near equatorial CTD observations at 85°W in October 1982. *Journal of Geophysical Research*, 90(C1), 929–933.
- Toole, John M., and Mary E. Raymer, 1985. Heat and fresh water budgets of the Indian Ocean – revisited. *Deep-Sea Research*, 32(8A), 917–928.
- Mangum, L. J., S. P. Hayes, and J. M. Toole, 1986. Eastern Pacific Ocean circulation near the onset of the 1982/83 El Niño. *Journal of Geophysical Research*, 91(C7), 8428–8436.
- Toole, John M., Hartmut Peters, and Michael C. Gregg, 1987. Upper ocean shear and density variability at the Equator during TROPIC HEAT. *Journal of Physical Oceanography*, 17(9), 1397–1406.
- Toole, John M., and Raymond W. Schmitt, 1987. Small-scale structures in the northwest Atlantic subtropical front. *Nature*, 327, 47–49.
- Leetmaa, A., D. W. Behringer, A. Huyer, R. L. Smith, and J. Toole, 1987. Hydrographic conditions in the eastern Pacific before, during and after the 1982/83 El Niño. *Progress in Oceanography*, 19, 1–47.
- Peters, H., M. C. Gregg, and J. M. Toole, 1988. On the parameterization of equatorial turbulence. *Journal of Geophysical Research*, 93, 1199–1218.
- Schmitt, Raymond W., John M. Toole, Richard L. Koehler, Edward C. Mellinger, and Kenneth W. Doherty, 1988. The development of a fine- and microstructure profiler. *Journal of Atmospheric and Oceanic Technology*, 5(4), 484–500.
- Toole, J. M., E. Zou, and R. C. Millard, 1988. On the circulation of the upper waters in the western equatorial Pacific Ocean. *Deep-Sea Research*, 35(9), 1451–1482.
- Peters, H., M. Gregg, and J. Toole, 1989. Meridional variability of turbulence through the equatorial undercurrent. *Journal of Geophysical Research*, 94(C12), 18,003–18,009.
- McPhaden, M. J., S. P. Hayes, L. J. Mangum, and J. M. Toole, 1990. Variability in the western equatorial Pacific Ocean during the 1986–87 El Niño/Southern Oscillation event. *Journal of Physical Oceanography*, 20(2), 190–208.
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- Mangum, L. J., S. P. Hayes, J. M. Toole, Z. Wang, S. Pu, and D. Hu, 1990. Thermohaline structure and zonal pressure gradient in the western equatorial Pacific. *Journal of Geophysical Research*, 95, 7279–7288.
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- Delcroix, Thierry, Gérard Eldin, Marie-Hélène Radenac, John Toole, and Eric Firing, 1992. Variation of the Western Equatorial Pacific Ocean, 1986–1988. *Journal of Geophysical Research*, 97(C4), 5423–5445.
- McPhaden, M. J., F. Bahr, Y. duPenhoat, E. Firing, S. P. Hayes, P. P. Niiler, P. L. Richardson, and J. M. Toole, 1993. The response of the western equatorial Pacific Ocean to westerly wind bursts during November 1989–January 1990. *Journal of Geophysical Research*, 97(C9), 14,289–14,303.
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- Johnson, Gregory C., and John M. Toole, 1993. Flow of deep and bottom waters in the Pacific at 10°N. *Deep-Sea Research*, 40(2), 371–394.
- Toole, John M., and Bruce A. Warren, 1993. A hydrographic section across the subtropical South Indian Ocean. *Deep-Sea Research*, 40(10), 1973–2019.
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- Toole, John M., Kurt L. Polzin, and Raymond W. Schmitt, 1994. New estimates of diapycnal mixing in

- the abyssal ocean. *Science*, 264, 1120–1123.
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- Kunze, Eric, Raymond W. Schmitt, and John M. Toole, 1995. The energy balance in a warm-core ring's near-inertial critical layer. *Journal of Physical Oceanography*, 25, 942–957.
- Wijffels, Susan, Eric Firing, and John Toole, 1995. The mean structure and variability of the Mindanao Current at 8°N. *Journal of Geophysical Research*, 100, 18,421–18,435.
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- Polzin, Kurt L., Kevin G. Speer, John M. Toole, and Raymond W. Schmitt, 1996. Intense mixing of Antarctic Bottom Water in the equatorial Atlantic. *Nature*, 380(6569), 54–57.
- Chiswell, S. M., J. Toole and J. Church, 1997. Transports across the Tasman Sea from WOCE repeat sections: the East Australian Current 1990-94. *New Zealand Journal of Marine and Freshwater Research*, 31, 469-475.
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- Kunze, Eric, and John M. Toole, 1997. Tidally driven vorticity, diurnal shear, and turbulence atop Fieberling Seamount, 1997. *Journal of Physical Oceanography*, 27(12), 2663–2693.
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- Timmermans, M.-L., R. Krishfield, S. Laney, and J. Toole, 2010. Ice-Tethered Profiler measurements of dissolved oxygen under permanent ice cover in the Arctic Ocean. *Journal of Atmospheric and Oceanic Technology*, in press.
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- Toole, J.M., R.G. Curry, T.M. Joyce, M. McCartney and B. Peña-Molino, 2010. Transport of the North Atlantic Deep Western Boundary Current about 39° N, 70° W: 2004-2008. *Deep-Sea Research II*, accepted.
- Rabe, B., M. Karcher, U. Schauer, J. M. Toole, R. A. Krish field, S. Pisarev, F. Kaukera, R. Gerdes and T. Kikuchi, 2010. An assessment of pan-Arctic Ocean freshwater content changes from the 1990s to the IPY period. Submitted to *Deep-Sea Research-I*, in revision.
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Non-refereed Publications

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- Morrison, A. T., III, J. D. Billings, K. W. Doherty, and J. M. Toole, 2000. The McLane Moored Profiler: A Platform for Physical Biological and Chemical Oceanographic Measurements. Proceedings of the Oceanology International 2000 Conference, March 7–10, 2000, Brighton, U.K.
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Thesis and Technical Reports

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- Toole, J. M., 1980. Wintertime convection and frontal interleaving in the Southern Ocean. Sc.D. Dissertation, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution Joint Program in Oceanography. Woods Hole Oceanographic Institution Technical Report WHOI-80-25, 326 pp.
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- Cook, M., L. Mangum, R. C. Millard, G. LaMontagne, S. Pu, J. Toole, Z. Wang, K. Yang, and L. Zhao, 1991. Hydrographic observations from the US/PRC cooperative program in the western equatorial Pacific Ocean: Cruises 1–4. Woods Hole Oceanographic Institution Technical Report WHOI-90-07, 379 pp.
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