

**Kurt Polzin**

Associate Scientist with Tenure  
Department of Physical Oceanography  
Woods Hole Oceanographic Institution  
Woods Hole, Massachusetts 02543  
Tel: 508-289-3368; Fax: 508-457-2181  
Email: kpolzin@whoi.edu

**EDUCATION:**

B.A. (Physics), 1986, Whitman College  
Ph.D. (Physical Oceanography), 1992, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution Joint Program in Oceanography / Applied Ocean Sciences and Engineering

**PROFESSIONAL EXPERIENCE:**

- Postdoctoral Investigator, 1992 - 1993; Assistant Scientist, 1996 - 1999; Associate Scientist, 1999-2004; Associate Scientist with Tenure, 2004-present, Woods Hole Oceanographic Institution
- Postdoctoral Research Associate, 1994 -1996, School of Oceanography, University of Washington
- Graduate Research Assistant, 1986 -1992, Massachusetts Institute of Technology
- Summer Student Fellow, 1985, Woods Hole Oceanographic Institution

**AWARDS:**

Fridtjof Nansen Medal for Distinguished Research in Oceanography, European Geophysical Soc. (2003).

Awarded Frohlich Fellowship to CSIRO, Hobart, Tasmania (March-June 2010)

Awarded Visiting Fellowship to the Univ. Tasmania, Hobart, Tasmania (July-Oct. 2013)

**PROFESSIONAL AFFILIATIONS:**

- Member, American Geophysical Union
- Member, American Meteorological Society

**RESEARCH INTERESTS:**

Observation and modeling of energy exchanges between oceanic currents, internal waves and turbulence. My work tries to identify connections and relationships between phenomena and combines the development of theoretical constructs with the development and use of oceanographic instrumentation. Favorite topics are observing, modeling and parameterizing 2- and 3-D turbulence, diapycnal mixing, isopycnal stirring and T-S variability.

## PROFESSIONAL ACTIVITIES

### *WHOI*

- Chair, Physical Oceanography Seminar Committee, 1997
- WHOI/MIT Joint Program Admissions Committee, 1999-2003
- DOEI Oversight Committee, 2004-2006

### *Outside WHOI*

- Co-chaired ASLO 2000 Special Session, Flow Over Rough Topography, with Parker MacCready
- Co-chaired ASLO 2014 Special Session 071 Frontiers of Oceanographic Data and models, J. Lilly, Chair.
- Member, Representing Internal Wave Driven Mixing in Global Climate Models, a Climate Process Team; 2011-2015.

## PARTICIPATION IN EDUCATION PROGRAM:

### Key Note Lectures

Nansen Medal Lecture: Explorations of Ocean Mixing: Small Scales with Big Implications, 2003 EGS-AGU-EUG Joint Assembly, Nice, France, 4/7/03.

Nonlinear wave issues arising in, Representing Internal Wave Driven Mixing in Global Climate Models, a Climate Process Team. Applied Math Days at Rensselaer Polytechnic Institute, March 31, 2012.

### Seminars and Lectures

- Finescale Characteristics across the Northwest Atlantic Subtropical Front, 2/90, Physical Oceanography and Meteorological Seminar Series, Dalhousie University.
- Finescale Parameterizations of Turbulent Dissipation, 3/92, Physical Oceanography Department Seminar, Woods Hole Oceanographic Institution.
- Finescale Parameterizations of Ocean Dissipation, 10/92, Physical Oceanography Department Seminar, University of Oregon.
- Finescale Parameterizations of Ocean Dissipation, 10/92, Physical Oceanography Department Seminar, University of Washington.
- Internal Wave Dynamics and Parameterizations of Turbulent Dissipation in GM and non-GM Environments, 2/93, Physical Oceanography Department Seminar, University of Rhode Island.
- Partition of Small-Scale Energy into Internal Waves and Vortices: Implications for Horizontal Mixing, 5/94, Physical Oceanography Department, University of Washington.
- Partition of Small-Scale Energy into Internal Waves and Vortices: Implications for Horizontal Mixing, 5/94, Physical Oceanography Department Informal Seminar, Woods Hole Oceanographic Institution.
- Partition of Small-Scale Energy into Internal Waves and Vortices: Implications for Horizontal Mixing, 11/94, Physical Oceanography and Meteorological Seminar Series, Dalhousie University.

- Partition of Small-Scale Energy into Internal Waves and Vortices: Implications for Horizontal Mixing, 1/95, Centre for Earth and Ocean Research Seminar, University of Victoria.
- Abyssal Mixing - Where is It? 10/95, Physical Oceanography Department Seminar, Woods Hole Oceanographic Institution.
- Abyssal Mixing - Where is It? 10/95, Physical Oceanography Department Seminar, Lamont-Doherty Earth Observatory.
- Abyssal Mixing - Where is It? 10/95, Physical Oceanography Department Seminar, University of Rhode Island.
- Statistics of Richardson Number: Mixing Models and Finestructure, 10/95, Physical Oceanography Department Seminar, University of Washington.
- Abyssal Mixing - Where is It? 1/96, Physical Oceanography Department Seminar, IFREMER (Brest).
- The Partition of Small-Scale Energy into Internal Waves and Geostrophic Motions, 8/96, Physical Oceanography Department Seminar, Woods Hole Oceanographic Institution.
- A Theoretical Estimate of Baroclinic Tide Dissipation, 7/97, Physical Oceanography Department Seminar, Woods Hole Oceanographic Institution.
- Spatial Variability of, and a Theoretical Estimate for, Turbulent Mixing in the Abyssal Ocean, 9/97, Department of Physical Oceanography, University of Washington.
- Spatial Variability of, and a Theoretical Estimate for, Turbulent Mixing in the Abyssal Ocean, 9/97, Centre for Earth and Ocean Research Seminar, University of Victoria.
- Diapycnal Mixing in the Deep Brazil Basin: Observations and Some Modeling Thoughts, 3/98, Physical Oceanography Department Seminar, Bedford Institute of Oceanography.
- TWIST/Oceanus 324 Cruise Report, 8/98, Department of Physical Oceanography Buoy Lunch, Woods Hole Oceanographic Institution.
- A Rough Recipe for Diapycnal Mixing, 5/99, Physical Oceanography Department Seminar, Florida State University - invited talk.
- Oceanic Mixing: Stories from High Resolution Profiler Land, 9/99, PAOC (MIT's Program in Atmospheres, Oceans and Climate) student retreat - invited talk.
- Internal Wave Dynamics Physical Oceanography Department Seminar, Woods Hole Oceanographic Institution.
- Blobs: They're not Waves, They're Like Bubbles! (An Informal Talk about Vortical Modes), 6/02, Coastal and Ocean Fluid Dynamics Laboratory Talk.
- An `Analytic' Derivation of the GM spectrum, 10/02, Physical Oceanography Research Division Seminar, Scripps Institute of Oceanography.
- A View of the Oceanic Internal Wave Spectrum, 3/03, Rensselaer Polytechnic Institute Mathematical Sciences Colloquium.
- Explorations of Ocean Mixing: Small Scales with Big Implications, 4/03, The SOC Friday Seminar Program, Southampton Oceanography Centre - invited talk.
- How Rossby Waves Break. LDEO PO seminar, April 1, 2005.
- SIO Climate Dynamics Seminar; How Rossby Waves Break. Sept. 27, 2005. I
- APL-UW Seminar Series; How Rossby Waves Break. I. Sept. 30, 2005.
- Microstructure Suites for Semi-Autonomous Platforms. WHOI PO lunch time entertainment, Nov. 1, 2006.

- Mesoscale Eddy – Internal Wave Coupling II. Results from PolyMode and the End of the Enstrophy Cascade. Univ. of Washington Physical Oceanography Lunch Seminar Series, Nov. 29, 2006.
- On the Nature of Friction in a Stratified Rotating Fluid. Dept. Applied Math and Theoretical Physics, Cambridge University. G. K. Batchelor Dept. Seminar Series, Feb. 23, 2007.
- Mesoscale Eddy – Internal Wave Coupling. I. Results from MODE and Wave Capture. NOC-Southampton. The NOCS Physical Oceanography and Climate Seminar Series, Feb. 28, 2007.
- Mesoscale Eddy – Internal Wave Coupling. General Circulation – Rossby Wave Coupling. WHOI PO lunch time entertainment, April 11, 2007.
- Mesoscale Eddy – Internal Wave Coupling. I. Results from MODE and Wave Capture. Graduate School of Oceanography, University of Rhode Island. Physical Oceanography Seminar, April 13, 2007.
- Mesoscale Eddy – Internal Wave Coupling I. Results from MODE and Wave Capture. School of Earth and Ocean Sciences, University of Victoria. SEOS Seminar, April 24, 2007.
- Mesoscale Eddy – Internal Wave Coupling II. Results from PolyMode and the End of the Enstrophy Cascade. Scripps Institute of Oceanography. SIO 219 theory seminar, April 26, 2007.
- Mesoscale Eddy – Internal Wave Coupling II. Results from PolyMode and the End of the Enstrophy Cascade. Graduate School of Oceanography, University of Rhode Island. Physical Oceanography seminar, October 19, 2007.
- A Brazil Basin Reprise. WHOI Physical Oceanography Seminar, October 28, 2008.
- Transport and Modification of Weddell Sea Deep and Bottom Water in the Orkney Passage. Oxford University, March 23, 2009.
- Toward Regional Characterizations of the Oceanic Internal Wavefield. WHOI Physical Oceanography Seminar, August 4, 2009.
- Toward Regional Characterizations of the Oceanic Internal Wavefield. CSIRO Physical Oceanography Seminar, May 6, 2010.

#### **SUPERVISION AT WHOI:**

- 2002, advisor for R. Ferrari as Post-Doctoral Investigator
- 2011-2014, co-advisor for Oliver Sun as Post-Doctoral Investigator

#### **OTHER EDUCATIONAL ACTIVITIES:**

- 2002, advisor for R. Ferrari as Post-Doctoral Investigator
- 2002 Graduate Student Summer Research Advisor for Maxim Nikurashin
- Dissertation Committee member, Maxim Nikurashin (Ph.D. 2009) MIT/WHOI Joint Program
- Graduate Student host/advisor: Amelie Meyer 9/09-12/09 Univ. Tasmania. Dr. Helen Phillips, Ph. D. advisor.

- Graduate Student host/advisor: Maria Broadbridge 9/09-12/09 Univ. Southampton. Prof. Alberto Naveira Garabato, Ph. D. advisor.
- Dissertation Committee member, Amelie Meyer (2010-2014), Univ. Tasmania
- Dissertation Examiner (2010) Jan Zika, Univ. Tasmania.
- Dissertation Committee member, Yunfang Sun (2012), UMass Dartmouth
- Summer Student Fellow advisor: Vicky Hore (2010), Angelica Gilroy (2012)
- 2011-2014, co-advisor for Oliver Sun as Post-Doctoral Investigator
- NOCS Guest Student advisor Louis Clement (2012)

### **CRUISE PARTICIPATION:**

- RV *Moana Wave*, 02/06/89 - 03/05/89, 10°N Hydrographic Cruise. Watch stander.
- RV *Oceanus*, 09/08/90 - 09/11/90, HRP Test Cruise.
- RV *New Horizon*, 03/04/91 - 03/28/91, ONR Abrupt Topography Initiative, HRP ops
- RV *Oceanus* 03/25/92 - 04/24/92, North Atlantic Tracer Release Experiment, HRP ops
- RV *Le Noriot*, 11/20/94 - 12/10/94, Romanche Fracture Zone Sill Experiment, HRP ops, Co-Chief Scientist
- RV *Seward Johnson*, 01/22/96 - 02/27/96, Brazil Basin Tracer Release Experiment, HRP ops
- RV *Seward Johnson*, 03/13/97 - 04/18/97, Brazil Basin Tracer Release Experiment, HRP ops
- RV *Oceanus*, 05/10/98 - 06/08/98, Turbulence and Waves over Irregularly Sloping Topography, HRP ops, Chief Scientist
- RV *Oceanus*, 01/15/01 - 02/12/01, Salt Finger Tracer Release Experiment, HRP ops
- RV *Seward Johnson*, 10/29/01 - 12/04/01, Salt Finger Tracer Release Experiment, HRP ops
- RV *Knorr*, 03/21/02 - 04/14/02, Guyana Abyssal Gyre Experiment/Vema Exchange Experiment, hydrographic cruise. Watch stander.
- RV *Endeavor*, 01/10/04 - 01/14/04, HRPii test cruise, Chief Scientist
- RRS *James Clark Ross*, 02/06/07 - 02/18/07, VMP-5500 testing on ADELIE (Antarctic Drifter Experiment: Links to Isobaths and Ecosystems)
- RRS *James Cook*, 11/19/07 - 12/16/07, VMP-5500 testing and personnel training
- RRS *James Cook*, 11/01/08 - 12/22/08, Southern Ocean Finestructure (SOFine) Project cruise, VMP-5500 ops, software development
- RV *Atlantis*, 10/09/10 - 10/24/10, HRPii testing
- RV *Knorr*, 05/15/11 - 06/12/11, Dynamics of Abyssal Mixing and Interior Transports (Dynamite), HRPii ops
- RRS *James Cook*, 12/24/11 - 01/27/12, GEOTRACES 40S, VMP-5500 operations

**PAPERS IN REFERRED JOURNALS AND BOOKS:**

Author or co-author of 43 refereed scientific publications.

**Referred Publications:**

Weller, R. A., D. Rudnick, C. C. Eriksen, K. Polzin, N. S. Oakey, J. M. Toole, R. W. Schmitt, and R. T. Pollard, 1991. Forced ocean response during the frontal air-sea interaction experiment. *Journal of Geophysical Research*, **96**, 8611-8638.

Toole, J. M., K. L. Polzin, and R. W. Schmitt, 1994. New estimates of diapycnal mixing in the abyssal ocean. *Science*, **264**, 1120-1123.

Polzin, K., J. M. Toole, and R. W. Schmitt, 1995. Finescale parameterizations of turbulent dissipation. *Journal of Physical Oceanography*, **25**, 306-328.

Polzin, K. L., 1996. Statistics of the Richardson Number: Mixing models and finestructure. *Journal of Physical Oceanography*, **26**(8), 1409-1425.

Polzin, K. L., N. S. Oakey, J. M. Toole, and R. W. Schmitt, 1996. Fine- and microstructure characteristics across the northwest Atlantic subtropical front. *Journal of Geophysical Research*, **101**, 14,111-14,121.

Polzin, K. L., K. G. Speer, J. M. Toole, and R. W. Schmitt, 1996. Intense mixing of Antarctic bottom water in the equatorial Atlantic Ocean. *Nature*, **380**(6569), 54-57.

Polzin, K. L., J. M. Toole, J. R. Ledwell, and R. W. Schmitt, 1997. Spatial variability of turbulent mixing in the abyssal ocean. *Science*, **276**, 93-96.

Toole, John M., Raymond W. Schmitt, Kurt L. Polzin, and Eric Kunze, 1997. Near-boundary mixing above the flanks of a mid-latitude seamount. *Journal of Geophysical Research*, **102**(C1), 947-959.

Ferron, B., H. Mercier, K. Speer, A. Gargett, and K. L. Polzin, 1998. Mixing in the Romanche Fracture Zone. *Journal of Physical Oceanography*, **28**(10), 1929-1945.

Ledwell, J. R., E. T. Montgomery, K. L. Polzin, L. C. St. Laurent, R. W. Schmitt, and J. M. Toole, 2000. Evidence for enhanced mixing over rough topography in the abyssal ocean. *Nature*, **403**(6766), 179-182.

Polzin, K. L., E. Kunze, J. Hummon, and E. Firing, 2002. The finescale response of lowered ADCP velocity profilers. *Journal of Atmospheric and Oceanic Technology*, **19**, 205-224.

Mauritzen, C., K. L. Polzin, M. S. McCartney, R. C. Millard, and D. E. West-Mack, 2002. Evidence in hydrography and density finestructure for enhanced vertical mixing over the mid-Atlantic Ridge in the western Atlantic. *Journal of Geophysical Research*, **107**, 3147, doi:10.1029/2001JC 001114.

- Polzin, K. L., E. Kunze, J. M. Toole, and R. W. Schmitt, 2003. The partition of fine-scale energy into internal waves and subinertial motions. *Journal of Physical Oceanography*, **33**, 234-248.
- Polzin, K. L., 2004. A heuristic description of internal wave dynamics. *Journal of Physical Oceanography*, **34**, 214-230.
- Polzin, K. L., 2004. Idealized solutions for the energy balance of the finescale internal wavefield. *Journal of Physical Oceanography*, **34**, 231-246.
- Polzin, K. L., and R. Ferrari, 2004. Isopycnal dispersion in NATRE. *Journal of Physical Oceanography*, **34**, 247-257.
- Naveira Garabato, A., K. L. Polzin, B. A. King, K. J. Heywood, and M. Visbeck, 2004. Widespread intense mixing in the deep Southern Ocean. *Science*, **303**, 210-213.
- Lvov, Y. V., K. L. Polzin, and E. G. Tabak, 2004. Energy spectra of the ocean's internal wavefield: Theory and observations. *Physical Review Letters*, **92**(12), 12501, doi: 10.1103.
- Schmitt, R. W., J. R. Ledwell, E. T. Montgomery K. L. Polzin, and J. M. Toole, 2005. Enhanced Diapycnal Mixing by Salt Fingers in the Main Thermocline of the Tropical Atlantic. *Science*, **308**, 685-688.
- Ferrari, R., and K. L. Polzin, 2005. Finescale structure of the T-S relation in the Eastern North Atlantic. *Journal of Physical Oceanography*, **35**, 1437-1454.
- Polzin, K. L., 2008. Mesoscale Eddy – Internal Wave Coupling. I. Symmetry, wave capture and results from the Mid-Ocean Dynamics Experiment. *Journal of Physical Oceanography*, **38**(11), 2556-2574.
- Polzin, K. L., 2009. An Abyssal Recipe. *Ocean Modelling*, **20**, 298-309.
- Polzin, K. L., 2010. Mesoscale eddy–internal wave coupling. Part II. Energetics and results from PolyMode. *Journal of Physical Oceanography*, **40**, 789-801.
- Lvov, Y. V., K. Polzin, E. G. Tabak, and N. Yokoyama, 2010. The oceanic internal wavefield: Theory of scale-invariant spectra. *Journal of Physical Oceanography*, **40**, 2605-2623.
- Naveira Garabato, A. C., R. Ferrari, and K. L. Polzin, 2011. Eddy stirring in the Southern Ocean. *Journal of Geophysical Research*, **116**, C09019, doi10.1029/2010JC006818.
- Polzin, K. L., and Y. V. Lvov, 2011. Toward regional characterizations of the oceanic internal wavefield. *Reviews of Geophysics*, **49**, RG4003, doi:10.1029/2010RG000329.

- Lvov, Y. V., K. L. Polzin, and N. Yokoyama, 2012. Resonant and near-resonant internal wave interactions. *J. Phys. Oceanogr.*, **42**, 669-691, doi:10.1175/2011JPO4129.1.
- Waterman, S. N., A. C. Naveira Garabato, and K. L. Polzin, 2013. Internal waves and turbulence in the Antarctic Circumpolar Current. *Journal of Physical Oceanography*, **43**, 259-282, doi: <http://dx.doi.org/10.1175/JPO-D-11-0194.1>.
- Arbic, B. K., K. L. Polzin, R. B. Scott, J. G. Richman, and J. F. Shriver, 2013. On eddy viscosity, energy cascades, and the horizontal resolution of gridded satellite altimetry products. *Journal of Physical Oceanography*, **43**, 283-300.
- Melet, A., R. Hallberg, S. Legg, and K. Polzin, 2013. Sensitivity of the ocean state to the vertical distribution of internal-tide driven mixing. *Journal of Physical Oceanography*, **43**, 602-615. doi: <http://dx.doi.org/10.1175/JPO-D-12-055.1>.
- Sun, O. M., S. R. Jayne, K. L. Polzin, B. A. Rahter, and L. C. St. Laurent, 2013. Scaling turbulent dissipation in the transition layer. *Journal of Physical Oceanography*, **43**, 2475-2489.
- Polzin, K. L., A. C. Naveira Garabato, T. N. Huussen, B. Sloyan, and S. Waterman, 2014. Finescale parameterizations of turbulent dissipation. *JGR: Oceans*, **119**, 1383-1419, doi: 10.1002/2013JC008979.
- Waterman, S. N., A. C. Naveira Garabato, and K. L. Polzin, 2014. Suppression of internal wave breaking in the Antarctic Circumpolar Current near topography. *Journal of Physical Oceanography*, **44**, 1466-1492, doi: <http://dx.doi.org/10.1175/JPO-D-12-0154.1>.
- Nikurashin, M., R. Ferrari, N. Grisouard, and K. L. Polzin, 2014. The impact of finite amplitude topography on internal wave generation in the Southern Ocean. *Journal of Physical Oceanography*, **44**, 2938-2950.
- Sheen, K. L., A. C. Naveira Garabato, J. A. Brearley, M. P. Meredith, K. L. Polzin, D. A. Smeded, A. Forryan, B. A. King, J. B. Sallée, L. St. Laurent, J. R. Ledwell, A. M. Thurnherr, J. M. Toole, S. N. Waterman and A. J. Watson, 2014. Eddy-induced variability in Southern Ocean abyssal mixing on climatic timescales. *Nature Geoscience*, **7**, 577-582, doi:10.1038/ngeo2200.
- Waterhouse, A.F., J. A. MacKinnon, J.D. Nash, M. H. Alford, E. Kunze, H.L. Simmons, K.L. Polzin, L.C. St. Laurent, O.M. Sun, R. Pinkel, L.D. Talley, C.B. Whalen, T.N. Huussen, G. S. Cater, I. Fer, S.N. Waterman, A. C. Naveira Garabato, T. B. Sanford and C.M. Lee, 2014. Global patterns of diapycnal mixing from the turbulent dissipation rate. *Journal of Physical Oceanography*, **44**, 1854-1872.
- Polzin, K.L., A. C. Naveira Garabato, and E.P. Abrahamson, L. Jullion and M.P. Meredith, 2014. Boundary mixing in Orkney Passage Outflow. *Journal of Geophysical Research*, **119**, doi:10.1002/2014JC010099.
- Meyer, A., B.M. Sloyan, K.L. Polzin, H.E. Phillips and N.L. Bindoff. Mixing Variability in the Southern Ocean. *Journal of Physical Oceanography*, accepted.



- Meyer, A., K.L. Polzin, B.M. Sloyan and H.E. Phillips. Internal waves and mixing near the Kerguelen Plateau. *Journal of Physical Oceanography*, submitted.
- Forryan, A., A.C. Naveira Garabato, K.L. Polzin and, S. Waterman. Rapid Injection of near-inertial shear into the stratified upper ocean at an Antarctic Circumpolar front. *Geophysical Research Letters*, accepted.
- Weijer, W., M.E. Maltrund, W.B. Homoky, K.L. Polzin and, L.R.M. Maas. Eddy-driven sediment transport in the Argentine Basin: is the height of the Zapiola Rise hydrodynamically controlled? *Journal of Geophysical Research, Oceans*, accepted.
- Naveira Garabato, A.C., K.L. Polzin, R. Ferrari, J.D. Zika, and A. Forryan. A microscale view of mixing and overturning across the Antarctic Circumpolar Current. *Journal of Physical Oceanography*, submitted.
- Trossman, D.S., S. Waterman, K. L. Polzin, B. K. Arbic, S. T. Garner, A. C. Naveira Garabato and K. L. Sheen (2014), Can internal lee wave frameworks be validated using existing observations? *Journal of Geophysical Research, Oceans*, submitted.
- Polzin, K. L., and Y. V. Lvov. An Oceanic Ultraviolet Catastrophe, Wave-Particle Duality and a Strongly Nonlinear Concept of Geophysical Turbulence. In preparation.

#### **Non-Refereed Publications and Extended Abstracts**

- Toole, J.M., R. W. Schmitt, and K. L. Polzin, 1988. Fine- and microstructure characteristics near an upper ocean front. Seventh Conference on Ocean - Atmosphere Interaction, January 31 – February 5, 1988, Anaheim, California, American Meteorological Society, Boston.
- Schmitt, R. W., K. L. Polzin, and J. M. Toole, 1989. Shear and salt fingers. In: *Parameterization of Small-Scale Processes*, Peter Muller and Diane Henderson, editors. Proceedings, Hawaiian Winter Workshop, University of Hawaii at Manoa, January 17-20, 1989; Hawaii Institute of Geophysics, Special Publication; pp. 127-144.
- Polzin, K. L., J. M. Toole, and R. W. Schmitt, 1992. Finescale parameterizations of ocean dissipation. Tenth Conference of Turbulence and Diffusion, September 29 - October 3, 1992, Portland, Oregon, American Meteorological Society, Boston.
- Polzin, K. L., K. G. Speer, J. M. Toole, and R. W. Schmitt, 1996. Intense mixing of Antarctic Bottom Water in the Romanche Fracture Zone. *International WOCE Newsletter*, **19**, 20-23.
- Polzin, K. L., and E. T. Montgomery, 1996. Microstructure profiling with the High Resolution Profiler. In: Proceedings, Microstructure Sensor Workshop, 23-25 October 1996, Timberline Lodge, Mt. Hood, Oregon; Office of Naval Research, Seattle, Washington, 226pp.
- Toole, J., J. Ledwell, K. Polzin, R. Schmitt, E. Montgomery, and L. St. Laurent, 1997. The Brazil Basin Tracer Release Experiment. *International WOCE Newsletter*, No. 28, 25-28. (Available from the WOCE International Project Office, Southampton Oceanography Centre, Southampton, SO14 3ZH, U.K.)
- Polzin, K., and E. Firing, 1998. Estimates of diapycnal mixing using LADCP and CTD data from I8S. *International WOCE Newsletter*, **29**, 39-42.
- Polzin, K. L., John M. Toole, and Raymond W. Schmitt, 1998. Topographic roughness begets increased oceanic mixing. Woods Hole Oceanographic Institution 1998 Annual Report, pp. 21-22.

- Polzin, K. L., 1999. A rough recipe for the energy balance of quasi-stationary internal lee waves, *Internal Wave Modeling, Proceedings `Aha Huliko'a Hawaiian Winter Workshop*, P. Muller and D. Henderson, editors.
- Polzin, K. L., 2001. On the flux representation of internal wave spectral transports, 13th Conference on Atmospheric and Oceanic Fluid Dynamics, AMS, Boston, pp. 8-12.
- Montgomery, E. T., and K. L. Polzin, 2003. An integrated method of obtaining absolute ocean velocity from a profiling free vehicle. *Proceedings of the IEEE/OES Seventh Working Conference on Current Measurement Technology*, pp. 227-230.
- Thwaites, F., and K. L. Polzin, 2003. Structural design considerations of a profiling free vehicle used to measure ocean turbulence. *Proceedings of the IEEE/OES Seventh Working Conference on Current Measurement Technology*, pp. 231-236.
- Montgomery, E. T., E. Hobart, R. A. Petitt, F. T. Thwaites, K. W. Doherty, K. L. Polzin, R. W. Schmitt, and J. M. Toole, 2005. A new vehicle for measuring deep ocean mixing. *Oceans 2005 MTS/IEEE, Washington D.C. September 18-23*.

### Abstracts

- Polzin K. L., and J. M. Toole, 1989. Finescale characteristics across the Northwest Atlantic subtropical front. *EOS, Transactions, American Geophysical Union*, **70**(43), 1158.
- Polzin, K., and J. M. Toole, 1990. Finescale characteristics across the Northwest Atlantic subtropical front. *EOS, Transactions, American Geophysical Union*, **71**(2), 86.
- Schmitt, R. W., J. M. Toole, and K. L. Polzin, 1991. Near-inertial waves and mixing in a warm-core ring. IUGG, Vienna.
- Montgomery, E. T., R. W. Schmitt, J. M. Toole, and K. L. Polzin, 1992. Site survey results for the North Atlantic Tracer Release Experiment. *EOS, Transactions, American Geophysical Union*, **73**(43), 321.
- Polzin, K. L., J. M. Toole, and R. W. Schmitt, 1992. Finescale parameterizations of dissipation. *EOS Transactions, American Geophysical Union*, **73**(14), 157.
- Toole, J. M., R. W. Schmitt, and K. L. Polzin, 1992. Deep ocean estimates of turbulent velocity and temperature dissipation. *EOS, Transactions, American Geophysical Union*, **73**(43), 321.
- Polzin, K. L., J. M. Toole, and R. W. Schmitt, 1992. Application and interpretation of a Richardson number mixing model. *EOS, Transactions, American Geophysical Union*, **73**(43), 321.
- Schmitt, R. W., J. M. Toole, and K. L. Polzin, 1992. Velocity structure and mixing in a warm-core ring. *EOS Transactions, American Geophysical Union*, **73**(42), 321.
- Schmitt, R. W., J. M. Toole, and K. L. Polzin, 1993. Near-inertial waves and mixing in a warm-core ring. *IAPSO Proceedings*, No. 18, General Assembly, 328.
- Schmitt, R. W., K. L. Polzin, and J. M. Toole, 1994. A comparison of direct turbulence measurements with tracer dispersion in the North Atlantic Tracer Release Experiment. Ocean Sciences Meeting, *EOS, Transactions, American Geophysical Union*, **75**, 130.
- Polzin, K. L., R. W. Schmitt, and J. M. Toole, 1994. Internal wave dynamics in the transition region (.1-2 cpm). Ocean Sciences Meeting, *EOS Transactions, American Geophysical Union*, **75**, 130-131.
- Toole, J. M., E. Kunze, K. L. Polzin, and R. W. Schmitt, 1994. Finestructure and microstructure observations about a subtropical-latitude seamount. Ocean Sciences Meeting, *EOS, Transactions, American Geophysical Union*, **75**, 164.

- Polzin, K. L., K. G. Speer, J. M. Toole, and R. W. Schmitt, 1995. Intense mixing of Antarctic Bottom Water in the Romanche Fracture Zone. *IAPSO Proceedings*, No. 19, General Assembly.
- Polzin, K. L., N. S. Oakey, J. M. Toole, and R. W. Schmitt, 1995. On the competition between wave/wave and wave/mean flow interactions. *IAPSO Proceedings*, No. 19, General Assembly.
- Polzin, K. L., E. Kunze, J. M. Toole, and R. W. Schmitt, 1995. Horizontal mixing associated with small-scale vortices. *IAPSO Proceedings*, No. 19, General Assembly.
- Polzin, K. L., J. M. Toole, J. R. Ledwell, and R. W. Schmitt, 1996. Spatial variability of turbulent mixing in the Abyssal Ocean. American Geophysical Union. *EOS Transactions, American Geophysical Union*, **76**.
- Polzin, K. L., 1998. Abyssal Mixing: Inertial subrange solutions for the energy balance of the finescale internal wavefield. *EOS Transactions, American Geophysical Union*, **79**(1), Ocean Sciences Meeting, Suppl. Abstract OS11D-02, p.6.
- Ledwell, J. R., J. M. Toole, R. W. Schmitt, and K. L. Polzin, 1998. Mixing in the Abyssal Brazil Basin. *EOS, Transactions, American Geophysical Union*, **79**(1), Ocean Sciences Meeting, Suppl. Abstract OS31I-03, p. 97.
- Polzin, K. L., 1999. A Rough Recipe for Diapycnal Mixing. *Geophysical Research Abstracts*, **1**(2), *European Geophysical Society*, 24th General Assembly, p.79.
- Polzin, K. L., 2000. On the Energy Balance of Quasi-Steady Internal Lee Waves. *EOS, Transactions, American Geophysical Union*, **80**(49), Ocean Sciences Meeting, Suppl. Abstract OS41A-11, p. 221.
- Toole, J. M., Polzin, K. L., and R. W. Schmitt, 2000. A Fine- and Microstructure Section Across the Continental Slope and Gulf Stream. *EOS, Transactions, American Geophysical Union*, **80**(49), Ocean Sciences Meeting, Suppl. Abstract OS22H-02, p. 124.
- St. Laurent, L. C., J. M. Toole, R. W. Schmitt, and K. L. Polzin, 2000. Buoyancy forcing by turbulence above rough topography in the abyssal Brazil Basin. *EOS, Transactions, American Geophysical Union*, **80**(49), Ocean Sciences Meeting, Suppl. Abstract OS21H-01, p. 86.
- Polzin, K. L., 2002. On the energy balance of internal tides above rough topography. *EOS, Transactions, American Geophysical Union*, **83**(4), Ocean Sciences Meeting, Suppl. Abstract OS51D-07, p.373.
- Mauritzen, C., and K. L. Polzin, 2002. Enhanced Vertical Mixing over the Mid-Atlantic Ridge in the Western North Atlantic. *EOS, Transactions, American Geophysical Union*, **83**(4), Ocean Sciences Meeting, Suppl. Abstract OS31Q-05, p.230.
- Ferrari, R., and K. L. Polzin, 2002. The T-S Relation in NATRE. *EOS, Transactions, American Geophysical Union*, **83**(4), Ocean Sciences Meeting, Suppl. Abstract OS220-02, p.181.
- Schmitt, R. W., J. R. Ledwell, J. M. Toole, and K. L. Polzin, 2002. Initial results of the Salt Finger Tracer Release Experiment. *EOS, Transactions, American Geophysical Union*, **83**(4), Ocean Sciences Meeting, Suppl. Abstract OS220-01, p.181.
- Ledwell, J. R., J. M. Toole, R. W. Schmitt, K. Polzin, and E. Montgomery, 2002. Mixing in the deep Brazil Basin - An update. *EOS, Transactions, American Geophysical Union*, **83**(4), Ocean Sciences Meeting Supplement Abstract OS22O-03, p. 182.
- Polzin, K. L., 2003. The near-boundary decay of finescale internal waves. *Geophysical Research Abstracts*, **5**, European Geophysical Society, Abstract OS3-1TU4O-009.

- Mauritzen, C., and K. L. Polzin, 2003. Mixing in the Vema Fracture Zone. *Geophysical Research Abstracts*, **5**, European Geophysical Society, Abstract OS1-1MO40-003.
- Ledwell, J. R., R.W. Schmitt, J.M. Toole, K.L. Polzin, E. T. Montgomery. Diffusivities of heat, salt and SF6 in the thermohaline staircase east of Barbados. ASLO / TOS Ocean Research Conference, February 15-20, 2004, Honolulu, HI.
- Lvov, Y. and K.L. Polzin, Nonlinear internal wave interactions and spectra. IAPSO/SCOR Conference on Ocean Mixing, 11-14 October 2004, Victoria, B.C. Invited.
- Ledwell, J. R., R.W. Schmitt, J.M. Toole, K.L. Polzin, E. T. Montgomery, Diffusivities of heat, salt and SF6 in the thermohaline staircase east of Barbados. ASLO / TOS Ocean Research Conference, February 15-20, 2004, Honolulu, HI.
- Polzin, K. L., How oceanic Rossby waves break: Preliminary results from the Mid-Ocean Dynamics Experiment, EGU General Assembly, 2005. EGU05-A-08045.
- Polzin, K. L., How Rossby waves break: Preliminary results from Polymode, EGU General Assembly, 2005. EGU05-A-08308.
- Polzin, K. L., How Rossby waves break: Preliminary results from Polymode, AMS 15<sup>th</sup> Conference on Atmospheric and Oceanic Fluid Dynamics, June 13-17, 2005, Cambridge, MA.
- Polzin, K. L., Spontaneous Imbalance Workshop #1, Aug. 8, 2006: Asymmetry and Imbalance in a QuasiGeostrophic Parameter Regime – or – Mesoscale Eddy / Internal Wave Coupling as an Analogue of Radiative Damping – or – How to close the Thermocline Circulation.
- Meking et al., ASLO: Abyssal transport and mixing in the Vema Fracture Zone, 2006.
- Polzin, K., Mesoscale Eddy - Internal Wave Coupling and Closure of the Thermocline Circulation. Presented at the 2006 American Geophysical Union Fall Meeting, San Francisco CA.
- Scott, R. B., B. K. Arbic, and K. L. Polzin. Estimates of Small-Scale Dissipation Rates and Eddy Viscosity From Satellite Altimetry. Presented at the 2006 American Geophysical Union Fall Meeting, San Francisco CA.
- Arbic, B. K., K. L. Polzin, and R. B. Scott. Dissipation of midocean mesoscale eddies: Inferences from satellite altimetry data, in-situ data, and idealized models. Presented at the 2006 American Geophysical Union Fall Meeting, San Francisco CA.
- Polzin, K., B. Arbic, and R. Scott. Mesoscale Eddy - Internal Wave Coupling and Closure of the Thermocline Circulation. Presented at the 16th Conference on Atmospheric and Oceanic Fluid Dynamics, June 25-29, 2007, Santa Fe, New Mexico.
- Polzin, K., B. Arbic, and R. Scott. Mesoscale Eddy - Internal Wave Coupling and Closure of the Thermocline Circulation. Presented at the XXIV General Assembly of the International Union of Geodesy and Geophysics, July 2-13, 2007, Perugia, Italy.
- Arbic, B. K., K. L. Polzin, and R. B. Scott. On bottom drag, horizontal eddy viscosity and energy dissipation in models and observations of oceanic mesoscale eddies. Presented at the 16th Conference on Atmospheric and Oceanic Fluid Dynamics, 25–29 June 2007, Santa Fe, New Mexico.
- Arbic, B. K., K. L. Polzin, and R. B. Scott. On bottom drag, horizontal eddy viscosity and energy dissipation in models and observations of oceanic mesoscale eddies. Presented at the XXIV General Assembly of the International Union of Geodesy and Geophysics, Perugia, Italy.
- Naveira Garabato, A. C., R. Ferrari, K. L. Polzin and M. Nikurashin. Eddy-induced Mixing in the Southern Ocean. MOCA-09 P06.40/22315, Montreal, July 19-29, 2009.

- Polzin, K. L., and A. C. Naveira Garabato. Mixing and Dynamics in the Orkney Passage Outflow. MOCA-09 P04.24/23316, Montreal, July 19-29, 2009.
- Naveira Garabato et al. The Southern Ocean Finestructure (SOFine) Project. MOCA-09 P06.3/22417, Montreal, July 19-29, 2009.
- Naveira Garabato, A. C., R. Ferrari, and K. L. Polzin. Eddy-induced mixing in the Southern Ocean (*Invited*). *ASLO-Portland, PO31D-08*, 2010.
- Polzin, K. L., and Y. V. Lvov. Toward Regional Characterizations of the Oceanic Internal Wavefield (*Invited*). *ASLO-Portland, PO33D-08*, 2010.
- Waterman, S. N., A. C. Naveira Garabato, and K. L. Polzin. The Southern Ocean Fine Structure Project: Turbulent dissipation rates and mechanisms in a mixing hotspot. *ASLO-Portland, PO35K-11*, Ocean Sciences Meeting, 2010.
- Waterman, Stephanie, et al. The Southern Ocean FINEstructure project: Turbulent dissipation and mixing rates and mechanisms in a mixing hotspot. Challenger Conference-Southampton, September 6-9, 2010.
- Naveira Garabato, Alberto C., Loic Jullion, Kurt Polzin, Karen Heywood, and David Stevens. From Rossby waves to turbulence in the ocean. Challenger Conference, Southampton. poster #B3, September 6-9, 2010.
- Waterman, Stephanie N., Alberto C. Naveira Garabato, and Kurt L. Polzin. Jet-Topography Interactions in Leaky Southern Ocean Jets. Challenger Conference, Southampton. Poster #B14, September 6-9, 2010.
- Waterman, S. N., A. C. Naveira Garabato, and K. L. Polzin. Turbulent dissipation rates in the Southern Ocean: Lessons learned from observations in a mixing hotspot. 18th Conference on Atmospheric and Oceanic Fluid Dynamics, June 13-17, 2011, Spokane, WA.
- Meyer, A., B.M. Sloyan, K. Polzin, H.E. Phillips, and N.L. Bindoff. Distribution, Intensity and Origins of Mixing in the Southern Ocean: An Observational Study Surrounding the Kerguelen Plateau. IUGG, Melbourne # 3475, June 28-July 7, 2011.
- Naveira Garabato, A., S. Waterman, and K. Polzin (invited). Rates and mechanisms of turbulent dissipation in the Antarctic Circumpolar Current. IUGG, Melbourne #5670, June 28-July 7, 2011.
- Jullion, L., A. Naveira Garabato, K. Polzin, K. Heywood, and D. Stevens. From Rossby Waves to turbulence in the Southern Ocean. IUGG, Melbourne #4152, June 28-July 7, 2011.
- Polzin, K. L., and Y. V. Lvov (invited). Toward Regional Characterizations of the Oceanic Internal Wavefield. IUGG, Melbourne #4324, June 28-July 7, 2011.
- Polzin, K. L. On Stochastic Closures for Finite Amplitude Internal Waves. SIAM Conference on Nonlinear Waves and Coherent Structures, Seattle MS18, June 14, 2012.
- Polzin, K. L. and Y. Lvov. On Stochastic Closures for Finite Amplitude Internal Waves. 2012 Fall AGU, San Francisco, A21M-02, December 4, 2012. invited.
- Polzin, K. L. Mesoscale Eddy – Internal Wave Coupling. 2012 Fall AGU, San Francisco, OS33D-1854, December 5, 2012. invited.
- Sun, O. M., B. A. Rather, L. St. Laurent, S. R. Jayne and K. L. Polzin. Parameterization of transition layer mixing based on microstructure observations of turbulent dissipation. 2012 Fall AGU, San Francisco, OS43H-04, December 6, 2012.

Polzin, K. L. An Oceanic Ultraviolet Catastrophe, Wave Particle Duality and a Strongly Nonlinear Concept of Geophysical Turbulence. 33<sup>rd</sup> CNLS Annual Conference "Ocean Turbulence", Sante Fe, June 6, 2013. Invited.

### **Thesis and Technical Reports**

- Denbo, D. W., K. Polzin, J. S. Allen, A. Huyer, and R. L. Smith, 1984. Current Meter Observations over the Continental Shelf off Oregon and California, February 1981 - January 1984. *Data Report 112, Reference 84-12*, Oregon State University, Corvallis.
- Polzin, K. L., 1992. Observations of turbulence, internal waves and background flows: An inquiry into the relationships between scales of motion. Ph.D. Thesis, MIT/WHOI, *WHOI-92-39*.
- Montgomery, Ellyn T., and Kurt L. Polzin, 1999. Turbulence and waves over irregularly sloping topography, cruise report-*Oceanus*,324. *Woods Hole Oceanographic Institution Technical Report WHOI-99-16*, 45pp.

### **PAPERS PRESENTED AT MEETINGS AND INVITED LECTURES:**

- Finescale characteristics across the Northwest Atlantic sub-tropical front, 12/90, AGU Fall Meeting, San Francisco.
- Finescale parameterizations of dissipation, 5/92, AGU Spring Meeting, Montreal.
- Finescale parameterizations of ocean dissipation, 10/92, Tenth AMS Conference of Turbulence and Diffusion, Portland.
- Application and interpretation of a Richardson number mixing model, 12/92, AGU Fall Meeting, San Francisco.
- Internal wave dynamics in the transition region (.1-2 cpm), 2/94, ASLO Meeting, San Diego.
- Intense mixing of Antarctic Bottom Water in the Romanche Fracture Zone, 7/95, IAPSO General Assembly, Honolulu.
- On the competition between wave/wave and wave/mean flow interactions, 7/95, IAPSO General Assembly, Honolulu.
- Horizontal mixing associated with small-scale vortices, 7/95, IAPSO General Assembly, Honolulu.
- Horizontal Mixing Associated with Small-Scale Vortices, 1/96, North Atlantic Tracer Release Experiment summary meeting, Woods Hole Oceanographic Institution.
- A Study of Internal Waves and Turbulence above Irregular, Sloping Bathymetry: A Contribution to the Littoral Internal Wave Initiative (LIWI), 9/96, Presentation at ONR site review.
- Microstructure Profiling with the High Resolution Profiler, 10/96, ONR Workshop on microstructure sensors in the ocean, Timberline Lodge.
- Spatial Variability of Turbulent Mixing in the Abyssal Ocean, 12/96, Fall AGU meeting, San Francisco.
- Modeling Mixing in the Abyssal Ocean, 10/97, WHOI/MIT Symposium on Ocean Mixing, WHOI - invited talk.
- Abyssal Mixing: Inertial Subrange Solutions for the Energy Balance of the Finescale Internal Wavefield, 2/98, American Society of Limnology and Oceanography Conference, San Diego.

- Turbulence, Internal Waves and the Thermohaline Circulation, 7/98, Summer Student Lecture Series, Woods Hole Oceanographic Institution.
- Internal Wave Generation and Dissipation above Rough Bathymetry, 1/99, 'Aha Huliko'a Hawaiian Winter Workshop, Honolulu - invited talk.
- A Rough Recipe for Diapycnal Mixing, 4/99, European Geophysical Society Meeting, The Hauge - invited talk.
- A Rough Recipe for Mixing, 7/99, WHOI GFD Summer School Mini-Symposium on Mixing - invited talk.
- On the Energy Balance of Quasi-Steady Internal Lee Waves, 02/00, ASLO, Honolulu.
- A Fine- and Microstructure Section Across the Continental Slope and Gulf Stream, 02/00, ASLO, Honolulu.
- Continuing Analysis of TWIST Field Observations, 09/00, ONR site review.
- An Analysis of Permanent Density Finestructure, 09/00, ONR site review .
- On the Flux Representation of Internal Wave Spectral Transports, 06/01, 13th AMS Conference on Atmospheric and Oceanic Fluid Dynamics, Breckenridge.
- A Rough Recipe for the Energy Balance of the Internal Tide, 02/02, ASLO, Honolulu.
- Enhanced Vertical Mixing over the MAR in the Western N. Atlantic, 02/02, ASLO, Honolulu.
- A Rough Recipe for the Energy Balance of the Internal Tide, 02/02, Hawaiian Ocean Mixing Experiment PI meeting, Honolulu. Invited.
- Mixing in the Deep Ocean and Mid-Ocean Ridge Bathymetry, 10/02, Workshop on Satellite derived bathymetry, Scripps Institute of Oceanography - invited talk.
- The near-boundary decay of finescale internal waves, 01/03, 'Aha Huliko'a Hawaiian Winter Workshop - invited talk.
- The near-boundary decay of finescale internal waves, 04/03, European Geophysical Society Meeting, Nice.
- How oceanic Rossby waves break: Preliminary results from the Mid-Ocean Dynamics Experiment, EGU General Assembly, 2005. EGU05-A-08045.
- How Rossby waves break: Preliminary results from Polymode, EGU General Assembly, 2005. EGU05-A-08308.
- How Rossby waves break: Preliminary results from Polymode, AMS 15<sup>th</sup> Conference on Atmospheric and Oceanic Fluid Dynamics, June 13-17, 2005, Cambridge, MA.
- How Do Rossby Waves Break? Berloff/Marshall Eddy Dynamics meeting at MIT, Oct. 26, 2005.
- The Southern Ocean FINEstructure Project. Southern Ocean Mixing Workshop at WHOI, Nov. 15, 2005.
- How Rossby Waves Break. Results from the Mid-Ocean Dynamics Experiment. ASLO, Feb. 23, 2006.
- Asymmetry and Imbalance in a QuasiGeostrophic Parameter Regime – or – Mesoscale Eddy / Internal Wave Coupling as an Analogue of Radiative Damping – or – How to close the Thermocline Circulation. Spontaneous Imbalance Workshop #1, Aug. 8, 2006.
- Mesoscale Eddy - Internal Wave Coupling and Closure of the Thermocline Circulation. Presented at the 2006 American Geophysical Union Fall Meeting, San Francisco CA.

- Mesoscale Eddy - Internal Wave Coupling and Closure of the Thermocline Circulation. Presented at the 16th Conference on Atmospheric and Oceanic Fluid Dynamics, Santa Fe, New Mexico, June 25–29, 2007.
- Mesoscale Eddy - Internal Wave Coupling and Closure of the Thermocline Circulation. Presented at the XXIV General Assembly of the International Union of Geodesy and Geophysics, Perugia, Italy, July 2-13, 2007.
- Toward Regional Characterizations of the Oceanic Internal Wavefield. Invited talk for a symposium on, Assessing the State of the Art for Ocean Internal Wave Research, , Seattle, October 4, 2008.
- A Physical Oceanographic Contribution to the UK GEOTRACES survey along 40S in the S. Atlantic – GEOTRACES Consortium proposal, Oxford, working group, March 24, 2009.
- Mixing and Dynamics in the Orkney Passage Outflow. MOCA-09: IAMAS, IAPSO and IACS Joint Assembly, Montreal, July 23, 2009.
- An Abyssal Recipe for Internal Lee Waves. A presentation to collaborators concerned with representing drag and mixing associated with internal lee waves, NOCS, July, 2009.
- Toward Regional Characterizations of the Oceanic Internal Wavefield. ASLO, Portland. Invited. February 24, 2010.
- The role of radiation balance equations. Climate Process Team, Oct. 26, 2010.
- The role of Near-Inertial-Oscillations in the Internal Wavefield. NiO project meeting, J. Lilly, PI, Feb. 16, 2011.
- Toward Regional Characterizations of the Oceanic Internal Wavefield. IUGG, Melbourne. Invited. June 29, 2011.
- An Update on Radiation Balance Equations. Climate Process Team meeting, February 2, 2012.

### **Meetings Attended**

- American Geophysical Union Fall Meeting, 12/90, San Francisco
- American Geophysical Union Fall Meeting, 5/92, Montreal
- Tenth American Meteorological Society Conference of Turbulence and Diffusion, 10/92, Portland
- American Geophysical Union Fall Meeting, 12/92, San Francisco
- American Society of Limnology and Oceanography Conference, 2/94, San Diego
- International Association for the Physical Sciences of the Ocean, XXI General Assembly, 7/95, Honolulu
- North Atlantic Tracer Release Experiment summary meeting, 1/96, Woods Hole Oceanographic Institution
- Office of Naval Research Workshop on Microstructure Sensors in the Ocean, 10/96, Timberline Lodge
- American Geophysical Union Fall Meeting, 12/96, San Francisco
- Symposium on Ocean Mixing, Woods Hole Oceanographic Institution/Massachusetts Institute of Technology, 10/97, Woods Hole
- American Society of Limnology and Oceanography Conference, 2/98, San Diego
- 'Aha Huliko'a Hawaiian Winter Workshop on Dynamics of Oceanic Internal Gravity Waves, II, 1/99, Honolulu



- European Geophysical Society Meeting, 4/99, The Hague
- Geophysical Fluid Dynamics Summer School Mini-Symposium on Mixing, 7/99, Woods Hole Oceanographic Institution
- National Academy of Science Symposium on Sea-floor Observatories, 1/00, Islamorada FL
- American Society of Limnology and Oceanography Conference, 2/00, Honolulu
- U.S. GLOBEC / Office of Naval Research Workshop on Vertical Mixing in the Coastal Ocean, 4/00, Seattle
- 13th American Meteorological Society Conference on Atmospheric and Oceanic Fluid Dynamics, Breckenridge, 6/01
- American Society of Limnology and Oceanography Conference, 2/02, Honolulu
- Hawaiian Ocean Mixing Experiment PI meeting, 2/02, Honolulu
- Workshop on Bathymetry from Space: Oceanography, Geophysics and Climatology, 10/02, Scripps Institute of Oceanography
- 'Aha Huliko'a Hawaiian Winter Workshop on Near Boundary Processes and their Parameterization, 1/03, Honolulu
- European Geophysical Society Meeting, 4/03, Nice
- European Geophysical Society Meeting, 4/05, Vienna
- American Meteorological Society Meeting, 6/05, Cambridge MA
- Berloff/Marshall Eddy Dynamics, 10/05, Cambridge MA
- Southern Ocean Mixing Workshop at WHOI, 11/05, Woods Hole MA
- American Society of Limnology and Oceanography Conference, 2/06, Honolulu HI
- Spontaneous Imbalance Workshop, 8/06, Seattle
- American Geophysical Union Fall Meeting, 12/06, San Francisco CA
- American Meteorological Society Meeting, 6/07, Santa Fe NM
- General Assembly of the International Union of Geodesy and Geophysics, 7/07, Perugia
- Assessing the State of the Art for Ocean Internal Research, 11/08, Seattle
- Office of Naval Research Workshop on microstructure module implementations for gliders, 02/09, Orlando
- UK GEOTRACES Consortium Meeting, 3/09, Oxford
- IAMAS, IAPSO and IACS Joint Assembly, 7/09, Montreal
- American Society of Limnology and Oceanography Conference, 2/10, Portland OR
- Climate Process Team meeting, 10/10, Princeton NJ
- Near-Inertial Oscillations project meeting, 2/11, Seattle WA
- International Union of Geodesy and Geophysics, 6/11, Melbourne
- Climate Process Team meeting, 02/12, La Jolla CA
- Applied Math Days, 03/12, Troy NY

## **EQUIPMENT:**

HRPii development  
 facilitating UK VMP-5500 capability  
 mASTP glider applications