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Jody M. Klymak Physical Oceanographer

Research Interests

I study the pathways of energy and mixing in the ocean and their affect on the mean fields. This includes investigating how energy is put into internal waves, how internal waves interact, and how they dissipate. Internal waves modify large scale processes via turbulent mixing, bottom friction, form drag, and wave-mean flow interactions.

Education

Doctor of Philosophy, Physical Oceanography, University of Washington, 2001. *Stratified flow and turbulence over an abrupt sill.* Performed an energy budget of the flow over the Knight Inlet sill, demonstrating that radiated internal waves are more important than near-sill dissipation. Demonstrated the importance of a density contrast across the sill in suppressing the growth of lee waves using observations and numerical simulations.

Master of Science, Physical Oceanography, University of Washington, 1997. *The threedimensional nature of flow near a sill*. Demonstrated the importance of headland vortices to tidally generated lee-waves by performing mass, vorticity, and energy budgets.

Bachelor of Science, Mathematics and Physics University of Victoria, 1993. Honors program; physics co-operative education program.

Publications

Preprints of these papers are available at my website: http://opgl.ucsd.edu/~jklymak/ PublicationList.html.

Papers in Refereed Journals

- Perlin, A., J.N. Moum, J.M. Klymak (2004). A Response of the bottom boundary layer over a sloping shelf to variations in along-shore wind. In press, *J. Geophys. Res.*.
- Perlin, A., J.N. Moum, J.M. Klymak, M.D. Levine, T. Boyd, and M. Kosro (2004). A modified law-of-the-wall applied to oceanic bottom boundary layers. In press, *J. Geophys. Res.*.
- Moum, J.N., A Perlin, J.M. Klymak, M.D. Levine, T. Boyd, and M. Kosro (2004). Convectivelydriven mixing in the bottom boundary layer. J. Phys. Oceanogr., 34, 2189–2202
- Edwards, K. A., P. MacCready, J. N. Moum, G. Pawlak, J. Klymak, and A. Perlin, (2004) Form Drag and Mixing due to Tidal Flow past a Sharp Point, *J. Phys. Oceanogr.*, 34, 1297–1312

- Klymak, J.M. and M.C. Gregg (2004). Tidally generated turbulence over the Knight Inlet sill. *J. Phys. Oceanogr.*, 34, 1135–1151
- Klymak, J.M. and J.N. Moum (2003), Internal solitary waves of elevation advancing on a shoaling shelf. *Geophys. Res. Lett.*, 30, 2045, doi10.1029/2003GL017706.
- Rudnick, D.L., T. Boyd, R.E. Brainard, G.S. Carter, G. Egbert, M.C. Gregg, P. Holloway, J.M. Klymak, E. Kunze, C. Lee, M. Levine, D. Luther, J. Martin, M. Merrifield, J. N. Moum, J.D. Nash, R. Pinkel, L. Rainville, T.B. Sanford (2003), From tides to mixing along the Hawaiian Ridge. *Science*, 301, 355–357.
- Klymak, J.M. and M.C. Gregg (2003), The role of upstream waves and a downstream densitypool in the growth of lee-waves: stratified flow over the Knight Inlet sill. *J. Phys. Oceanogr.*, 33, 1446–1461
- Klymak, J.M. and M.C. Gregg (2001), Three-dimensional nature of flow near a sill. J. Geophys. Res., 106, 22,295–22,311.

Submitted Papers

- Klymak, J.M., J N. Moum, J.D. Nash, E. Kunze, J.B. Girton, G.S. Carter, C. M. Lee, T.B. Sanford, and M.C. Gregg, (2004), An estimate of tidal energy lost to turbulence at the Hawaiian Ridge. Submitted, *J. Phys. Ocean.*.
- Perlin, A., J.N. Moum, J.M. Klymak, M.D. Levine, T. Boyd, and M. Kosro (2004). Concentration of Ekman transport in the bottom boundary layer by stratification. Submitted, *J. Geophys. Res.*.

In Preparation

- Klymak, J.M. and J N. Moum (2005), Deep horizontal internal wave spectra and their turbulent scaling.
- Klymak, J.M., R. Pinkel, and Luc Rainville (2005), Comparison of turbulent process at two diverse mixing environments.
- Klymak, J.M. and R. Pinkel (2005), Internal wave characteristics across the Pacific.
- Klymak, J.M. and R. Pinkel (2005), Recognizing and removing the effect of biologicallyinduced bias from Doppler sonar signals.

Presentations

- SCOR/IAPSO Ocean Mixing Conference, Oct. 12, 2004, Observations of (deep) diapycnal mixing rates.
- SCOR/IAPSO Ocean Mixing Conference, Oct. 11, 2004, Deep horizontal internal wave spectra and their scaling to turbulence.
- HOME investigators meeting, Kona, Aug. 16, 2004, Turbulence via overturn measurements from FLIP.
- HOME investigators meeting Kona, Aug. 16, 2004, A quick summary of direct turbulence measurements during HOME.
- GFD summer program, Woods Hole, July 21, 2004. The Tidal Graveyard: Turbulent Dissipation Near a Strong Tidal Generation Site
- AGU Ocean Sciences Meeting, Feb. 2004. Deep horizontal internal wave spectra and their scaling to turbulence.
- Timberline HOME Investigators Meeting, Aug. 26, 2003. An Estimate of Energy Lost to Turbulence at the Hawaiian Ridge.
- University of Victoria, Aug. 11, 2003. Where Does the Energy Go? Tidal Dissipation at the Hawaiian Ocean Ridge.

- Oregon State University, July 8th, 2003. Where Does the Energy Go? Tidal Dissipation at the Hawaiian Ocean Ridge.
- AGU 2002 Fall Meeting Dec. 2002. Priliminary Observations of Boundary Mixing: HOME 2002.

Field Experience

- Jan. 2003 R/V Revelle, Coastal Ocean Advances in Shelf Transport winter cruise
- Oct. 2002 R/V Wecoma, Hawaiian Ocean and Mixing near-field cruise
- Aug. 2001 R/V Thompson, Coastal Ocean Advances in Shelf Transport summer cruise
- Oct. 2001 *R/V Wecoma*, Oregon Coast Solitary wave experiment
- Mar. 2001 R/V Thompson, Three-tree Point and COAST engineering cruise.
- Aug. 2001 R/V Thompson, Coast Advances in Shelf Transport
- Oct. 2000 R/V Wecoma, Hawaiian Ocean and Mixing survey cruise
- Aug. 1998 R/V Pt. Sur, Monterey Canyon turbulence and internal waves.
- Mar. 1997 *R/V Knorr*, Coastal Mixing and Optics spring cruise.
- Sep. 1996 R/V Seward Johnson, Coastal Mixing and Optics summer cruise
- Aug. 1995 R/V Miller, Knight Inlet sill flows and solitary waves
- Sep. 1989 R/V Parizeau, IOS Vancouver shelf hydrography transects

Related Experience

2004-present	Post-doctoral Research Associate, Scripps Institution of Oceanogra-
	phy. Working with Dr. Robert Pinkel studying internal waves and turbulence,
	both at Hawaii and in the North Pacific.
2001–2003	Post-doctoral Research Associate, Oregon State University. Working
	with Dr. James Moum and the Ocean Mixing Group studying internal waves and
	turbulent dissipation near the Hawaiian ridge. Active participant in the COAST
	program, including first author on a GRL note documenting solitary waves of
	elevation.
1993–1994	Research Scientist, Quester Tangent Corporation, Sydney B.C. De-
	veloped techniques to identify sea-floor characteristics from sonar returns.
1989 & 1992	Research Assistant, Institute of Ocean Sciences, Sydney B.C. Worked
	with Dr. Eddy Carmack documenting the strength and regularity of winter over-
	turning events using historic temperature data from six lakes in the B.C. interior.
	Analyzed sediment transport data from tripods on the Beaufort Shelf.
1991	Research Assistant, CERN, Geneva, Switzerland. Determined calibra-
	tions co-efficients with Dr. Janis McKenna for a time-of-flight sensor on the
	OPAL detector, at the CERN particle accelerator.

Professional Activities

Teaching

Teaching assistant: Senior Undergraduate Physical Oceanography (U.W. - L. Thompson); Geophysical Fluid Dynamics Summer School - Friday Harbor (U.W. - P.B. Rhines); Graduate Fluid Mechanics (U.W. - K.K. Tung); Undergraduate Partial Differential Equations (U. Vic. - various)

Peer Reviews

Proceedings of the Royal Society; Journal of Geophysical Research; Deep Sea Research; Journal of Physical Oceanography; Journal of Atmospheric and Oceanic Technology; Journal of Marine Research; Geophysical Research Letters.

Service

Physical oceanography graduate student representative, UW. Organized Student Physical Oceanography Retreat, UW