

Falk Feddersen: Observational Seminar Spring 2015 (SIO 219)

Observational Seminar Spring 2015

SIO 219 Section 833060, 1 unit S/U

Professor Falk Feddersen

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Meetings Friday 12:00pm, Center for Coastal Studies Basement Conference Room

Description The broad theme of the observational seminar this quarter will be observations of tracer transport and lateral and vertical dispersion (mixing) from the surfzone, estuary, shelf, and ocean-scale. Through examination across scales we will see unifying methods and themes from the basin scale to the surfzone. Each week the first half of class will consist of student-led presentations of a key papers in the field, followed by a hopefully broad and energetic discussion by all present. Though students are encouraged to formally register for the class, collegial participation by interested post-docs and PIs is highly welcome.

Course Requirements Students should register as S/U. Students will be expected to present at least one paper during the quarter and participate in the discussion each week. To encourage thoughtful discussion, registered students will be asked to submit a hand-written question or comment on the paper prior to the commencement of the discussion.

Presenters and Papers will be posted here

- April 3:
- April 10:
- April 17:
- April 24:
- May 1:
- May 8:
- May 15:
- May 22:
- May 29:
- June 5th:

Potential Papers Include (feel free to provide suggestions)

- The large scale, Southern Ocean tracer release experiments DIMES:
 - Tulloch, R., R. Ferrari, O. Jahn, A. Klocker, J. LaCasce, J. Ledwell, J. Marshall, M.-J. Messias, K. Speer and A. Watson: 2014: Direct Estimate of Lateral Eddy Diffusivity Upstream of Drake Passage. *J. Phys. Oceanogr.*, 44, 2593. [link](#)
 - LaCasce, J. H., R. Ferrari, J. Marshall, R. Tulloch, D. Balwada and K. Speer: Float-derived isopycnal diffusivities in the DIMES experiment, *J. Phys. Oceanogr.*, Vol. 44, 764-780, 2014. [link](#)
- Abyssal Ocean Vertical Mixing:
 - Ledwell, J. R., E. T. Montgomery, K. L. Polzin, L. C. St. Laurent, R. W. Schmitt, and J. M. Toole, Evidence for enhanced mixing over rough topography in the abyssal ocean, *Nature*, 403, 179-182, 2000. [link](#)
 - Polzin, K. L., J. M. Toole, J.R. Ledwell, and R.W. Schmitt, Spatial variability of turbulent mixing in the Abyssal Ocean, *Science*, 276, pp. 96, 1997. [link](#) (note not actually tracers but should be read w/ above)
- Thermocline Vertical Mixing:
 - J. R. Ledwell, L. C. St. Laurent, J. B. Girton, and J. M. Toole, 2011: Diapycnal Mixing in the Antarctic Circumpolar Current. *J. Phys. Oceanogr.*, 41, 24doi: <http://dx.doi.org/10.1175/2010JPO4557.1> [link](#)
 - Ledwell, J. R., A. J. Watson, and C. S. Law, Evidence for slow mixing across the pycnocline from an ocean release experiment, *Nature*, 364, 703, 1993. [link](#)
- LatMix Upper-ocean stirring
 - Shcherbina, A.Y. et al., The LatMix Summer Campaign: Submesoscale Stirring in the Upper Ocean. 2014. [link](#)
- Continental Shelf Lateral and Vertical Mixing:
 - Ryan J. Moniz, Derek A. Fong, C. Brock Woodson, Susan K. Willis, Mark T. Stacey, and Stephen G. Monismith, 2014: Scale-Dependent Dispersion within the Stratified Interior on the Shelf of Northern Monterey Bay. *J. Phys. Oceanogr.*, 44, 10doi: <http://dx.doi.org/10.1175/JPO-D-12-0229.1> [link](#)
 - Dale, A. C., M. D. Levine, J. A. Barth, and J. A. Austin (2006), A dye tracer reveals cross-shelf dispersion and interleaving on the Oregon shelf, *Geophysical Research Letters*, 33(3). [link](#)
 - Fong, D.A., and Stacey, M. Horizontal dispersion of a near bed coastal *Journal of Fluid Mechanics*, v.489, pp.239-26doi: <http://dx.doi.org/10.1175/JPO-D-13-0120.1> , 2003. [link](#)
 - Sundermeyer, M., and J. Ledwell (2001), Lateral dispersion over the continental shelf: Analysis of dye release experiments, *J. Geophys. Res.*, 106(C5), 9603 [link](#)
 - Ledwell, J. R., T. F. Duda, M. A. Sundermeyer, and H. E. Seim (2004), Mixing in a coastal environment: 1. A view from dye dispersion, *J. Geophys. Res.*, 109, C10013, doi:10.1029/2003JC002194. [link](#)
- Ocean Outfall Plume Mapping
 - Rogowski, P., E. Terrill, M. Otero, L. Hazard, and W. Middleton (2012), Mapping ocean outfall plumes and their mixing using autonomous underwater vehicles, *J. Geophys. Res.*, 117, C07016, doi:10.1029/2011JC007804. [link](#)

- Surfzone Lateral Mixing:
 - Clark, D. B., F. Feddersen, and R. T. Guza (2010), Cross-shore surfzone tracer dispersion in an alongshore current, *J. Geophys. Res.*, 115(C10035), doi:10.1029/2009JC005683. [link](#)
 - Wong, S. H. C.; Monismith, S. G.; Boehm, A. B. Simple estimate of entrainment rate of pollutants from a coastal discharge into the surf zone *Environ. Sci. Technol.* 2013, 47, 11554 [link](#)
- Estuary Dispersion:
 - Robert J. Chant, Wayne R. Geyer, Robert Houghton, Elias Hunter, and James Lerczak, 2007: Estuarine Boundary Layer Mixing Processes: Insights from Dye Experiments*. *J. Phys. Oceanogr.*, 37, 18doi: <http://dx.doi.org/10.1175/JPO3088.1> [link](#)
 - Matthew H. Alford, Michael C. Gregg, and Eric A. D'Asaro, 2005: Mixing, 3D Mapping, and Lagrangian Evolution of a Thermohaline Intrusion. *J. Phys. Oceanogr.*, 35, 1689-1711. doi: <http://dx.doi.org/10.1175/JPO2780.1> [link](#)

If you have any questions or comments, please contact me at falk@coast.ucsd.edu.
