

Multidisciplinary Simulation, Estimation, and Assimilation Systems Seminar Series

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Ocean mixing: From large scale ocean circulation to molecular diffusion

I will discuss the mechanisms responsible for small scale turbulent mixing of density in the ocean, as well as the role of the small scale mixing on the ocean general circulation. My talk will be divided into three main parts. In the first part I will discuss the mechanisms responsible for turbulence transition in oceanic energetic shear zones, and will challenge the primary assumptions underlying the empirical relations commonly employed to estimate mixing rates from oceanic observations. In the second part I will investigate the sensitivity of the ocean meridional overturning circulation, which helps transport heat and tracers around the globe, to the spatial variations of mixing in the ocean. I will show that changes in intensity of mixing by factors well within the errors associated with small scale mixing estimates (as discussed in part one) lead to significant changes in ocean circulation. I will finish up by presenting some results from our work as a part of an ongoing international collaboration (DIMES), which brings together observations, theory, and numerical modeling, to make progress towards gaining a better understanding of ocean turbulence.

Friday, Dec. 5, 2014

2:00PM; Rm. 5-234

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Host: Tom Peacock

<http://mseas.mit.edu>

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