

Center for Environmental & Applied Fluid Mechanics

“Oceanic submesoscale processes”

Presented by

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A new class of ocean dynamics arises at upper ocean fronts, one where Rossby and Richardson numbers are $O(1)$. Unlike oceanic mesoscale, these are characterized by regions coincident in strain rate and vorticity, with intense downwelling and upwelling velocities. This talk will first review the generation mechanisms for such motions, as they arise in both unforced and forced conditions in the ocean in presence of horizontal buoyancy gradients. The unforced submesoscale motions arising from baroclinic instability manifest themselves as mixed layer eddies that grow and restratify the mixed layer, which is important to capture in ocean climate models. However, the downfront wind stress component can act to destroy the stratification generated by mixed layer eddies. This competition between wind and the mixed layer eddies will be examined via a generalized Transformed Eulerian Mean framework.

**Friday, October 17, 2008
11:00 a.m., 110 Maryland Hall**