ATS/CIRA Colloquium

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Non-QG Sub-mesoscale ocean dynamics and a recent update from the Indian Ocean

Hosted by Thomas Birner

Friday, October 17, 2014

ATS room 101; Discussion will begin at 11:15am
Refreshments will be served at 10:45am in the weather lab

Increased resolution in modeling and in observations in the ocean have revealed rich dynamics at O(km) lateral scales in the ocean associated with O(1) Rossby and Richardson numbers. These sub-mesoscale oceanic processes are very different from the quasi-geostrophic dynamics at the large scale and the isotropic mixing at the small scales. They are important in the upper ocean frontal regions and make important contribution to vertical fluxes of buoyancy and tracers in the ocean. Several theoretical ideas from atmospheric literature : (a) Semi-geostrophic dynamics and resulting potential vorticity is useful to diagnose submesoscale instabilities. (b) Residual mean theory is useful in analyzing the contribution of sub-mesoscale eddies to the transport of buoyancy and tracers. Finally, we will discuss observations from a recent cruise in the Bay of Bengal in the Indian Ocean in support of Air-Sea Interactions in the Northern Indian Ocean – Regional Initiative (ASIRI DRI), a natural extension to the recent DYNAMO experiment. These new observations show evidence for submesoscale instabilities in shallow salt stratified upper ocean boundary layer.

Link to colloquium videos and announcement page: http://www.atmos.colostate.edu/dept/colloquia.php