

SMS-303: Integrative marine sciences III.

Lab 4, Coriolis.

Stations and activities (most of which will be demo given the time it takes to spin the experiments and the number of rotating tables we have):

Rotating table 2:

VI. Taylor sheets.

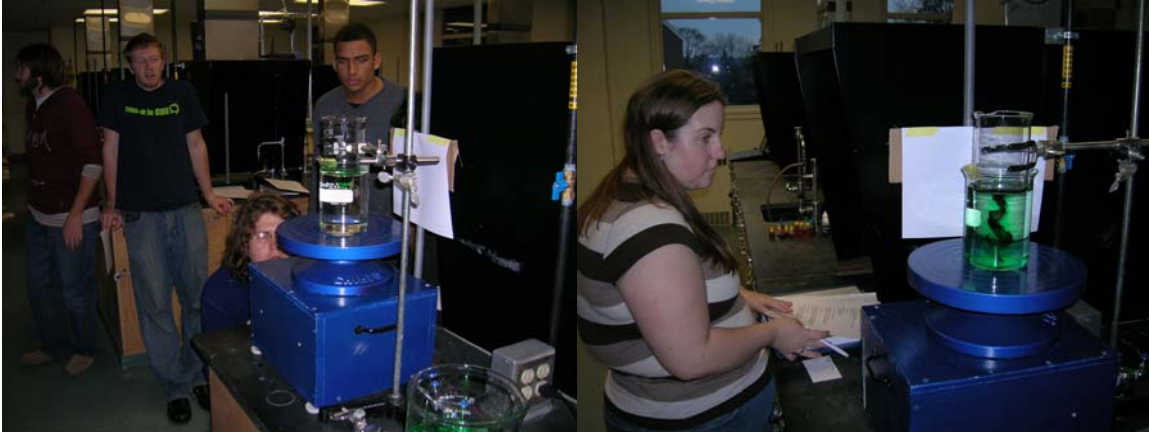
Put dye in a rotating tank and a non rotating tank. Observe how the dye spread. Why is it different between the two?



Gordon puts dye into a rotating tank under the watchful eye of Emmanuel, James and Sarah. The dye in a rotating fluid does not spread the same as in a non-rotating fluid due to constraint on the motion of water parcels imparted by rotation; A Fluid parcel (or column in a nonstratified fluid) stays at the location that fits its angular momentum. When perturbed it oscillates around that location (these are the inertial oscillations we saw in another activity).

VII. Ekman pumping.

Have a tank with a viscous fluid come to solid body rotation by spinning about 5min. Once in solid body rotation put a stationary beaker on top generating stress on the upper surface of the fluid. What direction is the stress (plot it) ? How would such a stress affect a fluid on the ocean? Using dye observe the motion within the fluid. Is it consistent with what you learned about Ekman pumping?



Best demo of the year award. Stress applied on the fluid causes the fluid at the surface to converge on the bottom of the surface disk and sink towards the bottom. Kyle, Nathan and Kayla are clearly impressed!

©Boss, 2006

This page was last edited on 12/15/2006