**MIKE WAITE**, University of Waterloo
*Random Forcing of Slow Modes in Rotating-Stratified Turbulence*

This talk will discuss the details and implications of random forcing of geostrophic motion in idealized simulations of rotating stratified turbulence. Random forcing accounts for the injection of energy into large-scale vortices by unresolved large-scale processes (e.g. baroclinic instability or interactions with larger scale vortices). White noise is a popular choice because it is simple and is unbiased in that it excites all frequencies equally. However, white noise includes frequencies much higher than the natural frequencies of large-scale vortices, which such forcing is meant to represent. The effects of these unrealistic high frequencies in the forcing are investigated and discussed here. Geostrophic modes are forced with red noise over a range of decorrelation time scales $\tau$, from a few time steps to the large-scale vortex time scale. Fast forcing, (short $\tau$, i.e. nearly white noise) results in about $40\%$ more gravity wave energy than slow forcing (longer $\tau$), despite the fact that wave modes are never forced directly. This effect is explored by analyzing wave-vortex interactions, through which the high frequencies in the forcing excite waves at their natural frequencies. These results suggest that white noise forcing of slow geostrophic modes should be avoided when a careful representation of wave-vortex energy exchange is required.