Observations and Analysis of Near-Inertial Waves and Thermocline Mixing During the 2011 CINDY Cruise

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Velocity measurements using a lowered acoustic Doppler current profiler (LADCP) conducted aboard R\V Mirai at 8S 80E during the 2011 CINDY cruise clearly show a downward propagating near-inertial wave at depths below 100 meters while microstructure measurements indicate enhanced mixing correlated with the wave. We conduct a series of high-resolution idealized numerical experiments using Regional Ocean Modeling Systems (ROMS) aimed at understanding the generation of the wave, its propagation, and turbulent kinetic energy dissipation that accompanies it. We find that although our numerical model faithfully captures the generation and propagation of the near-inertial wave, the dissipation of wave energy is missing in model results. We discuss this and other discrepancies between the model and observations.