Simulation of equatorial Indian Ocean mixed layer dynamics during DYNAMO 2011-12

Large eddy simulation is used to create a 100-200 m ocean mixed layer in a 1 km periodic domain. The simulation is initialized using temperature, salinity, and velocity profiles from the 2011 DYNAMO cruise and driven at the upper boundary by the wind, wave, as well as heat and salinity flux data collected. Synthetic time series are compared with observations. Mixed layer processes are identified using vertical transports and energy spectra. Initial simulations using constant wind and wave forcing show qualitative agreement with observations. Additional simulations using surface forcing time series from observations as well as process studies which isolate the individual contributions of surface forcings and their interaction, are in the planning stage.

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