



Internal wave radiation through surface mixed layer turbulence

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In a series of Large Eddy Simulations with different forcing, we study the generation of internal gravity waves at the base of the surface mixed layer. Turbulent eddies act as obstacles and undulate the base of the mixed layer, horizontal velocities caused by inertial oscillation and Ekman dynamics move the obstacles relative to the stratified interior where they excite internal gravity waves similar to lee waves. We show that the obstacle mechanism is able to excite large parts of the internal wave spectrum including near inertial waves. The high frequency part of the excited wave spectrum is filtered by the increased stratification in the transition layer between the mixed layer and lower stratified interior but a substantial part of the wave spectrum is able to overcome this barrier hence contributing to interior mixing. The magnitude of the downward radiated energy below the transition layer depends on the source of turbulence but a rough global estimate shows that the 'obstacle mechanism' contributes considerably to the internal wave energy in the interior ocean.