



Testing Lagrangian theories of internal wave spectra

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Our incomplete understanding of physical dissipation processes within an internal gravity wave field impacts on questions of mixing in both the atmosphere and ocean, with enormous dynamical ramifications in the case of the middle atmosphere. Efforts to solve the puzzle have centered on nonlinear interactions among internal waves, but the inherent complexity has hindered progress. There is a growing body of literature which maintains that this complexity can be circumvented by using a Lagrangian, rather than Eulerian, formulation. I have investigated this proposition with a Lagrangian wave model; the results have important implications for certain Lagrangian theories of wave spectra, specifically those advanced by Hines and Allen and Joseph.