



The influence of high frequency gravity waves on forcing efficiency

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The interaction between convection and convectively-generated gravity waves is a challenging problem in mesoscale dynamics. It has been hypothesized that gravity waves act as communicators between neighbouring cells in a convective ensemble, but the precise language by which this communication takes place is not well understood. The purpose of this investigation is to examine this interaction in an idealised model in which an arbitrary time dependent wave forcing generates a dynamical response that can interact with neighbouring forcing episodes. The total energy generated by the collection of forcing episodes is dependent on this dynamical response. Gravity waves arriving from a neighbouring forcing episode may either inhibit or support the forcing, depending on the phase relationship between these events. It is shown that the efficiency of a forcing depends on the spacing between adjacent forcing regions, the characteristics of the individual forcing episodes themselves, as well as the properties of the background environment into which the forcings are introduced.