

## Excitation of the Earth's free oscillation by cumulus clouds in the atmosphere: source properties and response structure

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We examine the hypothesis that incessant excitation of the earth's free oscillation is caused by the cumulus clouds in the atmosphere. A computational fluid dynamical model is used to simulate the spatial temporal structure of the heat sources in a cumulus cloud. The resulting heat source is shown to be able to explain the observed amplitude of the incessant excitation. By examining the horizontal structure of the atmospheric response to a localized source, it is shown that the frequency spectrum of the surface pressure disturbance, which excites the earth's free oscillation, is determined by the local atmospheric structure, not by its global average. This is consistent with the existence of diurnal and seasonal variation of the observed incessant excitation.