



Vertical transport of dust in convective boundary layer

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A model is proposed that relates the vertical mass flux of sand (dust) Q to the number density N of convective elements (including vortices), the friction velocity u^* and the buoyancy flux B . It is inferred that the flux Q is proportional to the product of the square root of B and the sixth power of u^* . This does not contradict to empirical dependencies $Q(u^*)$ reported in the literature. Two methods of determination of the number density N are discussed when the dust lifting is mainly due to (terrestrial and Martian) dust devils. The first method is based on optical observations of dust devils produced from a fixed point on the ground and on analysis of dust devil angular size–frequency distribution. The second method uses dust devil close encounters with a fixed array of meteorological stations.