A two-dimensional simulation of Martian atmospheric convection: dust injection due to convective wind

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A numerical simulation of possible Martian atmospheric convection driven by diurnally-varying radiative heating is performed with a two-dimensional anelastic model employing radiative process appropriate for clear sky conditions. The simulated convection has kilometer-size circulation cell which extends about 5 km horizontally and 10 km vertically. The values of calculated surface stress produced by the kilometer-size convection frequently exceed the minimum threshold value for raising dust from the surface. This result implies that kilometer-size convection forced by diurnally-varying radiative heating may strongly contribute to the dust injection into the Martian atmosphere.