



A time-dependent numerical model for size and height distributions of dust in the lower Martian atmosphere

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A simple time-dependent finite difference numerical model has been developed to study the size and height distributions of dust in the lower Martian atmosphere. The governing equations consider downward settling velocity, including the Cunningham slip-flow correction, and upward diffusion of dust particles. A lower boundary condition on the net flux is imposed in the model. The model incorporates a time-dependent eddy diffusivity, formulated to match results obtained with Savijarvi's Martian boundary-layer model, with a sharp cut-off above the boundary-layer depth. The model results are being used to refine data analysis strategies for a LIDAR to be carried by the Phoenix lander scheduled for launch in 2007 as a NASA/Canadian Space Agency Scout mission.