MODELIZATION AND SIMULATIONS OF THE ATMOSPHERIC DUST DYNAMIC

M.P. Velasco[1], D. Usero[2], S. Jiménez[1], J.L. Vázquez[2] y L. Vázquez[2]
[1]Universidad Politécnica de Madrid, [2]Universidad Complutense de Madrid

Introdución:

The dust aerosols play a fundamental role in the behavior of the Martian atmosphere [1]-[3]. They have a direct effect on both surface and atmospheric heating rates, which are also basic drivers of atmospheric dynamics. Aerosols cause an attenuation of the solar radiation traversing the atmosphere. This attenuation is modeled by the Lambert-Beer-Bouguer law, where the aerosol optical thickness plays an important role. Through Angstrom law, the aerosol optical thickness can be approximated and this law allows to model attenuation of the solar radiation traversing the atmosphere by a fractional diffusion equation [4]-[7].

Under different Martian atmospheric scenarios, the measure of the amount of solar radiation at the Martian surface will be useful to gain some insight into the following issues:

a) UV irradiation levels at the bottom of the Martian atmosphere to use them as an habitability index.
b) Incoming shortwave radiation and solar heating at the surface.
c) Relative local index of dust in the atmosphere.

Fuentes:

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