

Influence of changes in extinction of atmospheric dust on Martian spectra – the results of modeling and observations in the VNIR spectral range

M.I. Blecka (1), F. Altieri (2), G. Bellucci (2), J-P. Bibring (3)

(1) Space Research Centre, Warsaw, Poland, (2) INAF Istituto di Fisica dello Spazio Interplanetario, Rome, Italy, (3) Institut d' Astrophysique Spatiale ;CNRS, Orsay, Paris France,

(mib@cbk.waw.pl / Fax: +48228403131 / Phone : +48228403766)

Dust almost always present in the Martian atmosphere absorbs solar radiation and scatters it to space. The balance between dust absorption and scattering determine its ability to affect the reflectance of the surface. Using radiation transfer model we analyze how the changes in the single scattering albedo of atmospheric dust can change apparent reflectance of the surface+ atmosphere system over dark and bright region of Mars. Radiance multiply scattered from aerosols is a significant component in the visible and short IR. For this reason the influence of multiple scattering on spectra were also taken in consideration. Our theoretical results were compared with real spectrometric measurements done by OMEGA on board of Mars Express.