



Analysis of OMEGA-MEX spot pointing observations: Aerosol types and particle size distributions

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Besides nadir and limb modes, the mapping spectrometer OMEGA, onboard Mars Express, performs spot pointing observations. During these sequences, the instrument measures the diffuse solar light and surface emission while pointing for a certain time at the same area on the surface as the spacecraft passes above it. This provides reflectance as a function of a wide range of emission and phase angles from the VIS to the NIR. As the contribution from the surface and that from the atmosphere depend on the observation geometry in a different manner, both components can be separated. Then, the aerosol optical depth and optical properties can be inferred as a function of wavelength. Moreover, the change of the extinction cross section with wavelength is a diagnostic for particle size and therefore it is possible to derive the aerosol size distribution. We have retrieved aerosol optical depths and sizes by fitting OMEGA measurements with reflectance simulated with SHDOM. We have allowed for both atmospheric ice and dust considering them as non-spherical particles. We present the results derived for several OMEGA spot pointing sequences taken at different locations and different seasons of the martian year.