CO2 ice grain size retrievals from SPICAM IR/MEX spectra

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CO2 cycle on Mars defines fundamental processes both on the surface and in the atmosphere. On poles condensation of a large part of the atmosphere (up to 30%) results seasonal growth and retreat of polar caps, changing reflectance and emissivity of the surface, that has dramatic consequences for energy budget and changes local and global climate on the planet. SPICAM-IR is an AOTF-based infrared spectrometer onboard Mars Express mission operating in range 1-1.7 μm with middle resolving power about 2000. SPICAM provides continuous monitoring of the Martian surface in near IR since 2004 during already 8 Martian Years. Still, the surface albedo that can be derived from this dataset was never analyzed. In this work, we will focus on the retrieval of the CO2 ice properties (like grain size) from the SPICAM dataset based on the Hapke model. We will present the retrieval algorithm and results for a number of selected orbits over the South pole.