



Martian atmospheric ozone column content and dust optical depth retrieved from SPICAM nadir measurements in twilight conditions.

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SPICAM is an ultraviolet-infrared spectrometer onboard the Mars Express satellite. SPICAM UV channel wavelength domain covers the ozone Hartley band what allows to retrieve ozone content spatio-temporal distribution from nadir measurements. Ozone content was retrieved from SPICAM nadir measurements by Perrier et al., (2006) in parallel atmosphere approximation, rejecting parts of orbit where solar zenith angles (SZAs) were larger than 85°. In this paper ozone content and dust optical depth are retrieved from SPICAM nadir measurements at SZAs 88-90° in the spherical atmosphere approximation. Monte Carlo code Siro (Oikarinen et al., 1999) was adapted for Martian atmosphere and used to construct a forward model. Ozone and dust retrieval from measurements acquired in twilight conditions extend the spatial and temporal coverage of the retrieved quantities what is especially important for polar regions in winter periods. Another advantage is a possibility to neglect the surface albedo contribution what is important because the surface albedo and atmospheric dust have very similar spectral signatures in the UV and it is difficult to separate their contributions correctly.

The period of two and a half Martian years was considered. The retrieved ozone content varied in the range 0-33 $\mu\text{m-atm}$, and dust optical depth varied from 0.1 to 0.8.