

Modeling of aerosols from TIRVIM solar occultations onboard ExoMars/TGO

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The ExoMars Trace Gas Orbiter (TGO) is a joint ESA-Roscosmos mission to Mars that has been launched in March 2016. The aerobreaking phase has ended in February 2018 followed by the start of nominal scientific work on the near-circular 400 km orbit in April 2018. The Atmospheric Chemistry Suite (ACS) is a set of three spectrometers (NIR, MIR, and TIRVIM), capable to observe Mars atmosphere in solar occultations, nadir and limb geometry [1]. TIRVIM instrument is a Fourier-spectrometer operating in the 1.7 to 17 μm spectral range in solar occultation and nadir operation modes.

The main fraction of aerosols on Mars consists of mineral dust, while H_2O ice and CO_2 ice crystals are also encountered depending on the season and location. TIRVIM with its wide spectral range permits a spectral separation between dust and H_2O ice clouds particles. This work is dedicated to aerosols modeling in the solar occultation mode. Preliminary analysis of the transmission spectra retrieved from the TIRVIM solar occultation data shows presence of both dust and H_2O ice aerosol particles on some altitudes.

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References

[1] Korablev, O. et al. The Atmospheric Chemistry Suite (ACS) of Three Spectrometers for the ExoMars 2016 Trace Gas Orbiter. *Space Science Reviews*, 214(1), 7, 2018. <http://doi.org/10.1007/s11214-017-0437-6>