

Observations of the Martian atmosphere by NOMAD on ExoMars Trace Gas Orbiter

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The NOMAD (“Nadir and Occultation for MArs Discovery”) spectrometer suite on board the ExoMars Trace Gas Orbiter has been designed to investigate the composition of Mars' atmosphere, with a particular focus on trace gases, clouds and dust probing the ultraviolet and infrared regions covering large parts of the 0.2-4.3 μm spectral range [1,2].

Since its arrival at Mars in April 2018, NOMAD performed solar occultation, nadir and limb observations dedicated to the determination of the composition and structure of the atmosphere. Here we report on the different discoveries highlighted by the instrument: investigation of the 2018 Global dust storm and its impact on the water uplifting and escape, its impact on temperature increases within the atmosphere as inferred by GCM modeling and observations, the dust and ice clouds distribution during the event, ozone measurements, dayglow observations and in general advances in the analysis of the spectra recorded by the three channels of NOMAD.

References

[1] Vandaele, A.C., et al., 2015. Planet. Space Sci. 119, 233-249.

[2] Vandaele et al., 2018. Space Sci. Rev., 214:80, doi.org/10.1007/s11214-11018-10517-11212.

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