



NOMAD on ExoMars Trace Gas Orbiter: One Martian year of observations

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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. The instrument probes the ultraviolet and infrared regions covering large parts of the 0.2–4.3 μm spectral range [1,2], with 3 spectral channels: a solar occultation channel (SO – Solar Occultation; 2.3–4.3 μm), a second infrared channel capable of nadir, solar occultation, and limb sounding (LNO – Limb Nadir and solar Occultation; 2.3–3.8 μm), and an ultraviolet/visible channel (UVIS – Ultraviolet and Visible Spectrometer, 200–650 nm).

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 during its first full Martian year of observations: investigation of the 2018 Global dust storm and its impact on the water uplifting and escape, on temperature and pressure increases within the atmosphere; dust and ice clouds distribution; ozone measurements; dayglow observations; detection of HCl vertical profiles 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.