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Two Martian years at Mars: Observations 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 (TGO) 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). NOMAD performs solar occultation, nadir and limb observations dedicated to the determination of the composition and the structure of the Martian atmosphere.

TGO started its science phase in April 2018 and instruments have now been accumulating data for more than two Martian years. We will present selected results obtained by the NOMAD instrument covering the atmosphere composition with observations of several trace gases, dust, and clouds. We also report on the different discoveries highlighted by the instrument by pointing to a series of contributions to this conference that will present in detail several specific studies, like recent progress in the instrument calibration, the latest CO_2 and temperature vertical profiles, studies of aerosol nature and distribution, water vapor profiles and variability, carbon monoxide vertical distribution, ozone vertical profiles, climatology and relation with water, airglow observations, detection of CO_2 ice clouds, surface ices and in general advances in the analysis of the spectra recorded by the three channels of NOMAD.

References

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