MARS EXPRESS AND EXOMARS 2016 TRACE GAS ORBITER: MISSION STATUS AND RECENT SCIENTIFIC HIGHLIGHTS

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Abstract

This contribution provides a status report of both Mars Express and Trace Gas Orbiter missions, with a brief review of the recent science highlights and an outline of future plans for synergistic science opportunities.

1. Mars Express mission

Mars Express is celebrating its 15th anniversary around Mars and has proven to be one of ESA's most scientifically productive Solar System missions, with a publication record over 1200 papers. The mission is in very good shape and the scientific outcome is still outstanding, with some particularly remarkable discoveries in the past year: first discovery of a liquid water lake below the South Pole (Orosei et al, Science 2018); ion escape causing ~10 mbar atmospheric removal over the Mars history (Ramstadt et al, JGR-Planets 2018) and the independent confirmation of a Methane spike on Mars (Giuranna et al, Nature GeoSciences 2019).

2. ExoMars Trace Gas Orbiter mission

The ExoMars 2016 Trace Gas Orbiter mission started the science operations in April 2018 and has been observing the atmosphere and surface of Mars continuously for the past year. The spacecraft and scientific instruments are working nominally and we are now seeing the first scientific results being published. The NOMAD and ACS spectrometers have presented the first discoveries on Methane, water and aerosols during the dust storm (Korablev, Vandaele et al, Nature 2019). The FREND instrument is now producing the first global maps of surface ice content (Mitrofanov, Malakhov et al, Proceedings Russian Academy of Science 2019). Additionally the CASSIS camera is regularly producing amazing high resolution colour images of the surface.

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4. References

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