



Vertical profiles of water vapour isotopes in the Martian atmosphere using ExoMars TGO/ACS

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The Atmospheric Chemistry Suite (ACS) on board ESA-Roscosmos ExoMars Trace Gas Orbiter started routine science operations in March 2018. The mid-infrared channel (MIR), operating in the 2.2-4.4 μm range, allows the detection of trace gases in the Martian atmosphere, as well as the simultaneous profiling of several species in solar occultation observations.

We report retrievals in the 2.51 – 2.64 μm spectral region which allow simultaneous measurement, for the first time, of vertical profiles of H_2^{16}O , H_2^{18}O , H_2^{17}O and HD^{16}O . The spectral region also includes CO_2 spectral lines which allow temperature and pressure retrieval through the assumption of hydrostatic equilibrium.

Monitoring of this spectral region with ACS-MIR will provide a better understanding of the isotopic fractionation of water vapour, its local and seasonal variability, and its fractionation in condensation/evaporation processes.