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Subject: Abstract for AGU

ATMOS Version 3 retrievals of H2O, CH4, HDO, and CH3D

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The Atmospheric Trace MOlecule Spectroscopy (ATMOS) experiment is a Fourier-transform infrared spectrometer that flew on four space shuttle missions. In solar occultation mode, its frequency response of 600 - 4800 cm-1 has allowed retrievals of some 30 trace gases within the upper troposphere, stratosphere and lower mesosphere. Previous reports of ATMOS results (version 2) rarely extended below the tropopause due to limitations in the onion-peeling retrieval software. A new version (version 3) uses a global-fit algorithm and is significantly more reliable for upper tropospheric measurements. We report retrievals of H2O, CH4, HDO, CH3D, and deuterium depletions in water (both corrected and uncorrected for methane oxidation), from ~8 to ~35 km. We also re-evaluate ATMOS retrievals of H2O + 2*CH4 for evidence of net consumption of H2 in the stratosphere and lower mesosphere.

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