



Atmospheric mapping of Mars from ground-based IR imaging spectroscopy

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High-resolution infrared imaging-spectroscopy of Mars has been achieved at IRTF in June 2003, using the TEXES instrument at the NASA Telescope Infrared Facility (Hawaii). Following the detection and mapping of H₂O₂ on Mars (Encrenaz et al., Icarus 170, 424, 2004), we have obtained, with the same data set, a mapping of the H₂O abundance and the surface temperature over the martian disk. We have also obtained information upon the variations of the temperature of the lower atmosphere between the morning and evening side. The results appear in global general agreement with the predictions of the Global Circulation Model developed at the Laboratoire de Meteorologie Dynamique. We have performed a search for CH₄ over the martian disk, but no signatures were found within the detection limit. Finally, we have obtained new determinations of the ¹⁸O/¹⁷O and ¹³C/¹²C isotopic ratios in martian CO₂. Results are consistent with the terrestrial values of these ratios. They differ from the results obtained by Krasnopolsky et al. (Icarus 124, 553, 1996), who indicated ¹⁸O/¹⁷O and ¹³C/¹²C ratios different from the terrestrial values.