



Observation of NO^+ $4.3 \mu\text{m}$ fundamental and first hot bands emissions by MIPAS/ENVISAT

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The Michelson Interferometer for Passive Atmospheric Sounding (MIPAS) is a high-resolution limb sounder on board the ENVISAT satellite, successfully launched on March 1, 2002. MIPAS has a wide spectral coverage, high spectral resolution (0.035 cm^{-1} , unapodised), and high sensitivity, which allows to measure most of atmospheric emissions in the mid-infrared in an ample altitude range. MIPAS spends most time observing in the 6-68 km altitude range but occasionally it also looks at high altitudes. Here we analyse the spectra taken in its upper atmosphere mode (40-170 km) in the $4.3 \mu\text{m}$ region during 14 June 2003. This spectral region is dominated by CO_2 emission but NO^+ fundamental and first hot bands emissions were also observed by MIPAS above about 100 km. The analysis shows that the line positions of the fundamental 1-0 band, as compiled in HITRAN, are shifted in about 0.15 cm^{-1} . A few lines of the NO^+ 2-1 first hot band were also detected and their line positions were found to be shifted by about 0.05 cm^{-1} . Implications of the observed NO^+ emission for the retrieval of CO_2 abundances by wideband radiometers using the $4.3 \mu\text{m}$ emission (e.g. SABER/TIMED) are also discussed.