



Publication Year	2018
Acceptance in OA	2020-09-29T08:39:06Z
Title	JIRAM/Juno limb observations of H3+ in the mid- and low latitude Jovian atmosphere
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Handle	http://hdl.handle.net/20.500.12386/27510
Serie	GEOPHYSICAL RESEARCH ABSTRACTS



JIRAM/Juno limb observations of H_3^+ in the mid- and low latitude Jovian atmosphere

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NASA's Juno mission has been investigating Jupiter since August 2016, providing unprecedented insights into the giant planet's atmosphere. The Jupiter Infrared Auroral Mapper (JIRAM) experiment, on board Juno, performed spectroscopic observations of the H_3^+ emissions in both auroral regions (Dinelli et al., 2017; Adriani et al., 2017; Mura et al., 2017) and at mid-latitudes.

In this work we analyse observations acquired over five orbits by the JIRAM spectrometer during the period from August 2016 to March 2017. In particular, during these observations, the spectrometer slit sampled Jupiter's limb over latitudes ranging from 60° equatorward, in both hemispheres. Limb spectra show typical H_3^+ emission features in the $3\text{--}4\ \mu\text{m}$ spectral band, used to retrieve the H_3^+ densities and temperatures.

Spatial resolution of the limb observations ranges between 50 and 130 km and is favourable for investigating the vertical distribution of H_3^+ . Vertical profiles of H_3^+ limb intensities, in the $3\text{--}4\ \mu\text{m}$ spectral band, are presented along with preliminary retrievals of the vertical profiles of H_3^+ volume mixing ratio (VMR). We compare our results with predictions from various atmospheric models.

Acknowledgments

The project JIRAM is funded by the Italian Space Agency.