

Jupiter Brightness Temperature Maps as derived from Juno/JIRAM data

F. Altieri (1), M. L. Moriconi (2), A. Mura (1), A. Adriani (1), G. Sindoni (1), A. Migliorini (1), G. Filacchione (1), B.M. Dinelli (2), F. Tosi (1), F. Fabiano (3), D. Turrini (1), R. Noschese (1), A. Cicchetti (1), G. Piccioni (1), C. Plainaki (4), A. Olivieri (4), S. Bolton (5), S. Atreya (6), J. Lunine (7)

(1) INAF-Istituto di Astrofisica e Planetologia Spaziali, Roma, Italy (francesca.altieri@iaps.inaf.it), (2) CNR-Istituto di Scienze dell'Atmosfera e del Clima, Bologna e Roma, Italy, (3) Dipartimento di Fisica e Astronomia, Università di Bologna, Italy (4) Agenzia Spaziale Italiana, Roma, Italy, (5) Southwest Research Institute, San Antonio, Texas, USA, (6) University of Michigan, Ann Arbor, Michigan, USA, (7) Cornell University, Ithaca, New York, USA

Abstract

JIRAM is the InfraRed Auroral Mapper on board the Juno mission arrived at Jupiter on July 4 2016. The instrument is composed by two imager channels (L and M), and a spectrometer channel (SPE) [1]. L channel is centered at 3.455 μm with a 290 nm bandwidth, devoted to the auroral emission mapping. M channel is centered is at 4.780 μm with a 480 nm bandwidth and can sound the thermal emission from the deeper atmosphere of the planet. Their Field of View (FOV) is of the order of $1.75^\circ \times 5.94^\circ$ (128×432 pixels corresponding to the along and across track directions), with an Instantaneous Field of View (IFOV) of $250 \times 250 \mu\text{rad}$. The spectrometer channel covers the 2.0–5.0 μm range with a spectral sampling of about 8.99 nm/band. It is able to realize co-located imaging spectroscopy in the M-filter channel FOV by using a slit 256 samples-wide with a FOV of 3.52° and an IFOV of $250 \mu\text{rad}$.

In this work we derive Jupiter brightness temperature maps from both the M channel (4.780 μm) and the spectrometer (4.6-5.0 μm range), compare their distribution and discuss the results.

Acknowledgements

The project JIRAM is funded by the Italian Space Agency.

References

[1] Adriani et al. (2014), JIRAM, the Jovian Infrared Auroral Mapper. Space Sci. Rev., doi 10.1007/s11214-014-0094-y.