

Observations of the Jupiter poles by the infrared spectral-imager JIRAM on board Juno

A. Adriani (1), A. Mura (1), M. L. Moriconi (2), F. Altieri (1), B.M. Dinelli (2), G. Sindoni (1), D. Turrini (1), G. Filacchione (1), A. Migliorini (1), F. Tosi (1), R. Noschese (1), A. Cicchetti (1), F. Fabiano (2,3), G. Piccioni (1), C. Plainaki (4), A. Olivieri (4), M. Amoroso (4), S. Bolton (5), S. Atreya (6), J. Lunine (7)
(1) INAF-Istituto di Astrofisica e Planetologia Spaziali, Roma, Italy (alberto.adriani@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, (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

The Juno polar orbit permitted JIRAM, the InfraRed Auroral Mapper [1], to observe the Jupiter poles with unprecedented resolution during the perijove passes PJ4 and PJ5. During PJ4 the coverage was complete while only partial during PJ5 due to the different attitude of the spacecraft. The images have been collected in the 4.5-5 μ m wavelength range in several scans at different spatial resolutions varying from 14 km to 90 km, depending on the distance of the spacecraft from the planet.

JIRAM could identify clusters of circumpolar cyclones (CPCs) surrounding the polar cyclones, which appear to be off the geographical poles with significant differences between north and south. Also the number of CPCs is different in the north compared to the south. The CPCs are arranged in a quasi-octagonal shape in the north while in the south they are approximately distributed on the vertices of a pentagon centered on the polar cyclone.

On the basis of successive observation sequences it is possible to reconstruct the motion of the cyclones where the rotation speed can reach velocities of up to a few hundred kilometers per hour.

Comparison between PJ4 and PJ5 images permits the identification of the motion of the structures in the time elapsed between the two perijove passes, currently about 53 days.

Detailed results will be presented in this talk.

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.