



JIRAM-Juno: Overview of Preliminary Results in the Study of Jupiter "Infrared-Bright" Areas

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The JIRAM instrument on board the Juno spacecraft includes a spectrometer channel that operates in the range 2-5 microns with a spectral resolution of about 15 nm.

Data from this channel are particularly valuable in the study of bright IR regions, where the upper cloud decks are relatively thin and the thermal radiation emitted at pressures down to 3-5 bars can be measured by infrared remote-sensing instruments.

Previous studies using NIMS-Galileo [1] and VIMS-Cassini [2] data, as well as a specific assessment for the JIRAM instrument [3], have demonstrated the possibility of constraining the water, ammonia and phosphine content using moderate-resolution spectra spanning the methane transparency window at 5 microns.

While considerable efforts have been devoted to the study of brightest features - the so-called "Hot-Spots", located between the Equatorial zone and the North equatorial Belt - other prominent bright areas over the disk of Jupiter remain largely uninvestigated.

This talk reviews preliminary results of the JIRAM observations acquired around the first Juno "perijove" (closest approach of Jupiter) after orbit insertion. In general terms, the retrieved contents of the gaseous species mentioned above agree with the global latitudinal trends presented in [3] and [4]. Nonetheless, in several instances, the spatial capabilities of JIRAM allow one to detect specific spatial trends, likely to be associated to dynamic regimes at regional scale.

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[1] Irwin et al., 1998, doi:10.1029/98JE00948

[2] Giles et al., 2015, doi:10.1016/j.icarus.2015.05.030

[3] Grassi et al., 2010, doi:10.1016/j.pss.2010.05.003

[4] Giles et al., 2016, arXiv:1610.09073