



Study of local time dependence of the attenuation band associated to the Jovian hectometric emission

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Abstract

We study the phenomenological spectral features of the Jovian hectometric (HOM) emission recorded during the Jupiter flyby by the RPWS experiment onboard the Cassini spacecraft. The capability of this experiment allowed a frequency coverage from a few hertz to 16 MHz with a large dynamic range of about 80 dB. HOM emission was regularly observed several weeks before and after the closest approach of the planet. We analyze the Jovian radio dynamic spectra recorded from the end of November 2000 to the second week of January 2001. During this period, the spacecraft approached Jupiter from a distance of more than $500 R_J$ to $137 R_J$ (closest approach on December 30, 2010) and back to about $250 R_J$. We attempt in this study to investigate the local time (LT) dependence of the attenuation band due to refraction effects caused by the presence of the Io plasma torus. We analyze the spectral features of the attenuation band taking into consideration three local time intervals [10.0 LT, 13.2 LT], [13.6 LT, 16.5 LT], and [16.7 LT, 20 LT]. A statistical study leads us to characterize the spectral features of the attenuation band principally on the day-side and the late afternoon sector of the planet. This will allow us to discuss the LT variation of the electronic density of the Io plasma torus versus the central meridian longitude (CML) and the Jovian magnetic latitude.

