EPSC Abstracts,
Vol. 2, EPSC2007-A-00137, 2007
European Planetary Science Congress 2007

Ion density profiles of Jupiter's upper atmopshere

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Jupiter's upper atmosphere is the interface between the planet itself and its magnetosphere and is the locus of large energy inputs (several hundred TW) and of dynamic and variable electromagnetic coupling. However, despite decades of study, fundamental characteristics about the Jovian upper atmosphere are not well-understood, such as the ion composition of the ionosphere. In an attempt to remedy this lack of understanding regarding the ion composition, we present H3+ ion density profiles that extend several thousand kilometers above the planet's 1 bar pressure level. These profiles were calculated from infrared emission spectra recently obtained from high-resolution spectroscopic ground-based observations. We compare these measured profiles with current models and discuss the LTE and non-LTE effects.