

Variation characteristics of Jupiter's hectometric radiation - II

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It is well known that aurorae and auroral radio emissions in the earth are primarily driven by interaction between the solar wind and the magnetosphere, while in case of Jupiter, it is thought that some internal processes, probably initiated by the rapid planetary rotation, primarily drive the auroral activity and the solar wind is a limiting control parameter. There are many in situ and remote observations support the idea, however, the role of the solar wind to the magnetic phenomena and pure characteristics of internal processes have not been revealed well.

In order to investigate characteristics of the solar wind and non solar wind controls on Jupiter's magnetic activities in detail, occurrence characteristics of Jupiter's radio emission (HOM in this study) have been analyzed. The analysis period is particularly selected for June to September in 2008, when the solar activity was considerably calm and predicted solar wind condition at Jupiter was stable and also showed clear periodicity synchronized with the solar rotation. The results of the analysis show that occurrence features of HOM emissions clearly depend on the solar wind parameters: the spectral morphologies are different between low and high dynamic pressure periods. This implies that locations and/or plasma conditions in the source (and propagation) regions varies with the solar wind variations and effects of the solar wind variations reach to the inner magnetosphere. We will show the spectral feature differences and also discuss causalities of the difference viewed from ray-tracing analyses.

Acknowledgements: We would greatly appreciate M. Kaiser, J.-L. Bougeret and the WIND/WAVES team for providing the radio wave data.

Keywords: Jupiter, hectometer radiation, solar wind, time variation